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WT 10

Edition
2019

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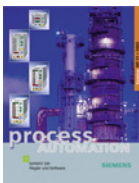


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SIMATIC

SIMATIC PCS 7 Process Control System
Vol. 1: System components

ST PCS 7

E86060-K4678-A111-C5-7600



SIMATIC

Add-ons for the
SIMATIC PCS 7
Process Control System

ST PCS 7 AO

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SIMATIC PCS 7 Process Control System
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Products for Weighing Technology

Process Automation



Catalog WT 10 · 2019 US Edition

Supersedes:
Catalog WT 10 · 2017 US Edition

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The products contained in this catalog can also be found
in the Interactive Catalog CA 01.
Article No.: E86060-D4001-A510-D8-7600

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The products and systems described in
this catalog are manufactured/distributed
under application of a certified quality
management system in accordance with
DIN EN ISO 9001. The certificate is recog-
nized by all IQNet countries.

Digital Enterprise

The building blocks that ensure everything works together perfectly in the digital enterprise

Digitalization is already changing all areas of life and existing business models. It is placing greater pressure on industry while at the same time creating new business opportunities. Today, thanks to scalable solutions from Siemens, companies can already become a digital enterprise and ensure their competitiveness.



Industry faces tremendous challenges



Reduce time-to-market

Today manufacturers have to bring products to market at an ever-increasing pace despite the growing complexity of these products. In the past, a major manufacturer would push aside a small one, but now it is a fast manufacturer that overtakes a slow one.



Boost flexibility

Consumers want customized products, but at a price they would pay for a mass-produced item. That only works if production is more flexible than ever before.



Improve quality

To ensure a high level of quality while meeting legal requirements, companies have to establish closed quality loops and enable the traceability of products.



Boost efficiency

Today the product itself needs to be sustainable and environmentally friendly, while energy efficiency in production has become a competitive advantage.



Increase security

Increasing networking escalates the threat to production facilities of cyberattacks. Today more than ever, companies need suitable security measures.



The digital enterprise has already become a reality

To fully benefit from all the advantages of digitalization, companies first have to achieve complete consistency of their data. Fully digitally integrated business processes, including those of suppliers, can help to create a digital representation of the entire value chain. This requires

- the integration of industrial software and automation,
- expansion of the communication networks,
- security in automation,
- and the use of business-specific industrial services.

MindSphere

The cloud-based open IoT operating system from Siemens

With MindSphere, Siemens offers a cost-effective and scalable cloud platform as a service (PaaS) for the development of applications. The platform, designed as an open operating system for the Internet of Things, makes it possible to improve the efficiency of plants by collecting and analyzing large volumes of production data.

Totally Integrated Automation (TIA) Where digitalization becomes reality

Totally Integrated Automation (TIA) ensures the seamless transition from the virtual to the real world. It already encompasses all the necessary conditions for transforming the benefits of digitalization into true added value. The data that will form the digital twin for actual production is generated from a common base.

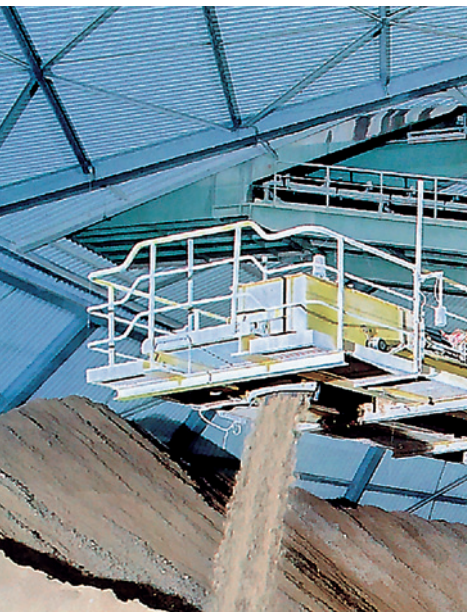
Digital Plant

Learn more about the digital enterprise for the process industry
www.siemens.com/digitalplant

Digital Enterprise Suite

Learn more about the digital enterprise for the discrete industry
www.siemens.com/digital-enterprise-suite

Weighing Technology



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Weighing products with proven reliability

Quality, costs, and time are crucial factors for all production companies – especially in today's competitive environment. Accurate and dependable weighing and controlling equipment helps manage these factors by optimizing formulations, reducing waste, and increasing production. In the end, improved processes mean profitability increases.

Weighing and batching systems play a growing role in production within various industries. Siemens weighing equipment offers reliable, accurate and integrated results that are cost-effective and long-term.

As a leader in automation and weighing for more than 50 years, Siemens is the only company that offers a complete range of weighing products that fit the rigorous demands of our customers. That's why manufacturers as well as end customers use Siemens weighing products. You will find us in almost any industry that involves the handling of bulk materials, from mining, aggregates, and cement, to food processing, chemicals or pharmaceuticals.

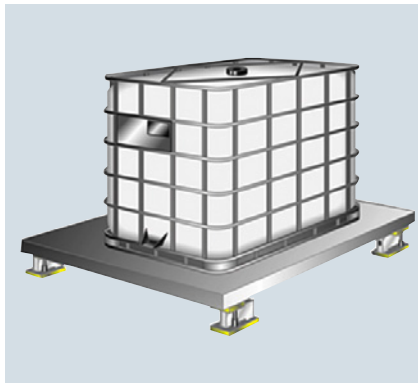
Experience you can trust

With more than 50 years of weighing experience, Siemens is the right partner for your application. With Siemens, you benefit from:

- Specialized weighing products with a broad range of function and flexibility
- Legal-for-trade products
- Seamless integration in Siemens' world-class automation systems – SIMATIC S7, TIA Portal and PCS7
- Stand-alone-capable products
- Versatile and flexible systems that allow you to expand as your needs change
- A global company that provides worldwide support whenever, wherever you need it
- The best cost of ownership available through highly accurate and reliable products



Not just about products ...



Platform scales

Platform scales are the most common scales in industry. No matter what your load is, a truck, a bin, a bucket or raw material. Siemens provides you with a broad range of load cells and weighing electronics to build cost-effective platform scales.

Use SIWAREX load cells to measure loads ranging from 5 kg to 1 000 t with an accuracy class up to C3 according to OIML R60.

Weighing data is easy to process with SIWAREX weighing processors. The SIWAREX U, CS, WT231, WP231, WP521ST, WP522ST, and WP321 are well suited for industrial platform scale.

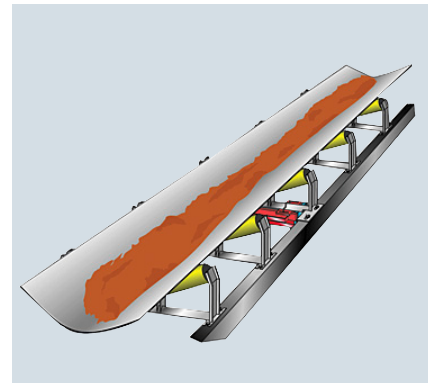


Hopper weighing

Liquids, powders, solids, and gases are stored or produced in a wide variety of tanks and bins. It is essential to know the precise levels of stored materials to ensure product availability for processing.

With Siemens weighing solutions, you can measure the level, no matter what kind of material is stored – whether it is corrosive, foamy, high or low dielectric, or dusty.

Using SIWAREX mounting units avoids incorrect measurement due to the transmission of secondary forces (e.g. through tank restraint or pipes). These devices make installation of the load cells quick and easy.



Conveyor scales

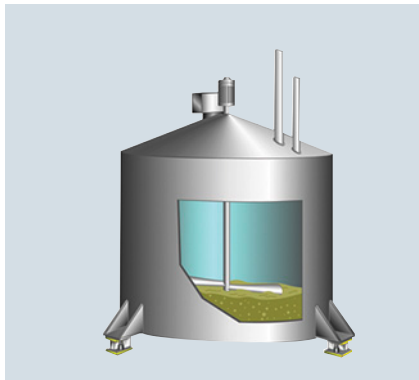
Belt scales help maximize the use of raw materials, control inventories, and aid in the consistent manufacturing. Siemens conveyor belt scales combine simple, drop-in installation, low maintenance (no moving parts) and repeatable accuracy for productive operation. They show minimal hysteresis and superior linearity, and ignore side loading. All load cells feature overload protection. With hazardous and trade approvals, Siemens belt scales can be used in almost any industrial environment or application. Combined with a SIWAREX FTC, WT241, or WP241, Siemens conveyor scales offer field proven technology for reliable performance. High accuracy, light-loading and heavy-duty models are available.

- SIWAREX load cells and mounting units
- SIWAREX WT231 weighing electronics
- SIWAREX WP231 weighing electronics
- SIWAREX WP321 weighing electronics
- SIWAREX WP521 ST / WP522 ST weighing electronics
- SIWAREX CS weighing electronics
- SIWAREX U weighing electronics
- SIWAREX FTA weighing electronics

- SIWAREX load cells and mounting units
- SIWAREX WT231 weighing electronics
- SIWAREX WP231 weighing electronics
- SIWAREX WP321 weighing electronics
- SIWAREX WP521 ST / WP522 ST weighing electronics
- SIWAREX CS weighing electronics
- SIWAREX U weighing electronics
- SIWAREX FTA weighing electronics

- Milltronics belt scales
- Speed sensors
- Milltronics BW500 and BW500/L integrators
- SIWAREX WT241 weighing electronics
- SIWAREX WP241 weighing electronics
- SIWAREX FTC weighing electronics

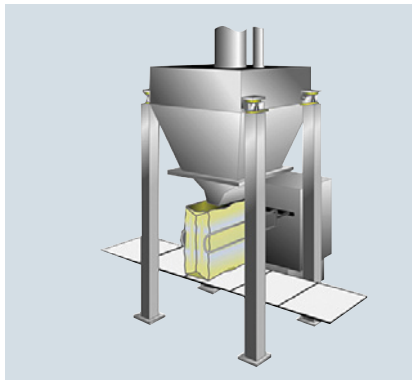
... but about solving problems.



Batch system

Successful, high quality products depend on precise dosing of components. High quality measuring equipment ensures precise dosing.

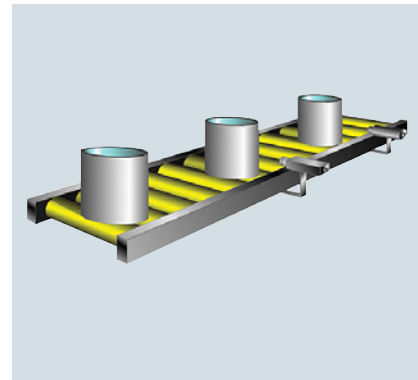
SIWAREX weighing electronics and load cells achieve best results for accurately and quickly controlling coarse and fine material flow, as well as filling and emptying. Due to SIWAREX's high scalability and integration in SIMATIC, it is easy to automate single or multiple dosing units with one SIMATIC automation station.



Filling machines

Filling, sack filling, and big bag machines are used in a wide range of industries. The filling of solid or liquid goods like cement has to be completed quickly and accurately.

In this case, SIWAREX is an excellent choice. These weighing electronics provide high resolutions, high accuracy and are legal-for-trade. With switching of dosing signals below 1 ms, the SIWAREX weighing electronics works well even on the fastest applications. They seamlessly integrate into Siemens automation systems S7 or PCS7 (SIWAREX FTA only), ensuring proper communication of the weighing system with the automation environment.



Checkweighing

Checkweighing assures the correct weight of the product package. The electronics are essential to the functionality of the checkweigher along with the proper mechanical construction.

State-of-the art SIWAREX weighing electronics provide high resolutions and accuracies. They are programmable and applicable for a broad spectrum of checkweighers. SIWAREX electronics seamlessly integrates into Siemens SIMATIC automation systems. With SIWAREX electronics it is easy to establish control stations for the complete checkweighing loop based on the SIWAREX weighing module, including machine vision, proximity switches or motion control.

- SIWAREX load cells and mounting units
- SIWAREX WP251 weighing electronics
- SIWAREX FTA weighing electronics

- SIWAREX load cells and mounting units
- SIWAREX WP251 weighing electronics
- SIWAREX FTA weighing electronics

- SIWAREX load cells and mounting units
- SIWAREX WP251 weighing electronics
- SIWAREX FTA weighing electronics

At the best cost of ownership!



Solids flowmeter

Solids flowmeters enhance process control, contributing to improved quality of your end product. These heavy-duty, low-maintenance, impact type solids flowmeters provide continuous in-line weighing of dry bulk solids, free-flowing powders, or granular material. A stand-alone SF500 integrator or SIWAREX FTC completes the system, processing sensor signals into operating data for flow measurement.

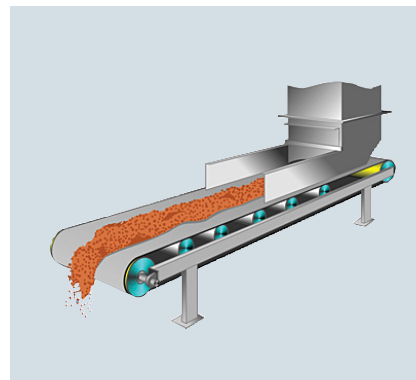
All models produce accurate, repeatable results and may be used for critical functions such as batch load-out and blending. Safe overload protection is a standard feature. All models are totally enclosed and dust-tight, and are constructed of painted mild steel. Stainless steel and hazardous area versions are also available.



Loss-in-weight

A loss-in-weight system can help you to achieve the needed level of accuracy in continuous dosing applications. With SIWAREX FTC weighing modules, you can set up and integrate the loss-in-weight system easily. Here the auto-setup functionality helps you in the commissioning of the scale. The electronics determine the most important settings like output, PID or stability parameter. While processing SIWAREX FTC steadily optimizes these settings.

SIWAREX FTC provides high measurement resolution, real-time signal processing, detection and filtering of signals that enables extremely high proportioning accuracy. Via HMI, PC connection or the control system, the operator has the option to manually control the system.



Weighfeeder

A weighfeeder system is an engineered-to-order conveyor integrated with a belt weigh bridge and speed sensor. A variable speed drive allows the flow of material to be controlled by a given setpoint chosen in the BW500 integrator or with a PLC through SIWAREX electronics. This allows the weighfeeder to provide precision weighing accuracies, and to improve blend consistencies, accountability and record keeping. Weighfeeders are indispensable when automated production processes require continuous in-line weighing and feeding. Their virtually maintenance-free construction promises unmatched performance. Belt widths and conveyor lengths are made to measure for the required application.

- SITRANS WF100 flowmeter
- SITRANS WF200 flowmeters
- SITRANS WF300 flowmeters
- SITRANS WFS300 sensing heads
- Milltronics SF500 integrator
- SIWAREX FTC weighing electronics

- SIWAREX load cells and mounting units
- SIWAREX FTC weighing electronics

- SITRANS weighfeeders
- Milltronics BW500 integrator
- SIWAREX FTC, WT241, and WP241 weighing electronics

Weighing Electronics



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Weighing Electronics

Introduction

Overview

Automation with integral weighing and proportioning technology

In addition to the accuracy when weighing and proportioning, incorporation of weighing technology into modern automation systems serves to increase the sustained success of a company.

Requirements on scales in industrial processes

The weighing and proportioning system is of significant importance in many industrial processes, where many different weighing tasks have to be handled. Both programmable controllers (PLC) and process control systems (PCS) are used to automate production processes.

There are many different types of scales that work together with automation systems, depending on requirements.

Production automation places the following demands on weighing technology:

- Flexibility with respect to typical scale functions
- Simple expansion of the weighing system
- adaptability to the automation task, and
- Integrated communications concept

Scales that are able to satisfy these demands can be classified as part of the automation system. In this sense, the scale is an intelligent automation object comprising:

- sensor technology,
- controller and
- actuator technology

and carries out its tasks according to the definitions of the control system.



Weighing electronics SIWAREX WP321 incorporated in SIMATIC ET 200SP

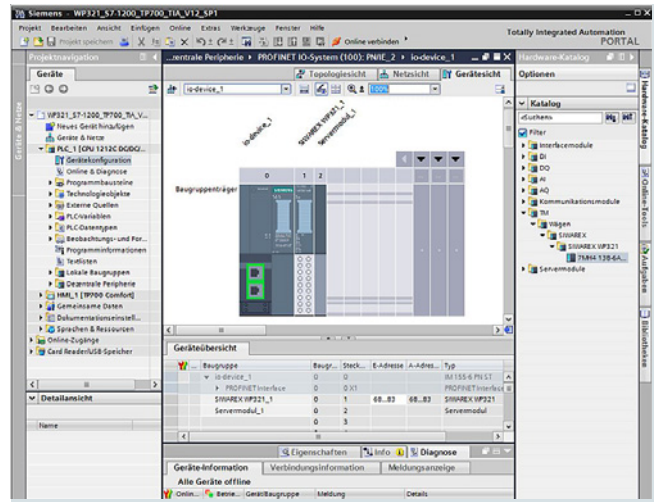
Distribution of weighing functions within automation system

The distribution of weighing functions within automation systems has been subject to constant change in recent years. The reasons for this can be found in the search for an efficient solution for weighing tasks in the automation environment. The performance of hardware components is no longer the only reason for deciding to use a specific solution architecture. The demands placed on a modern weighing solution include the following scale-related requirements:

- High operational reliability
- Simple operation
- Very good reproducibility
- High accuracy

as well as the requirements associated with the following automation properties:

- Integration (hardware/software)
- Flexibility
- Standardization



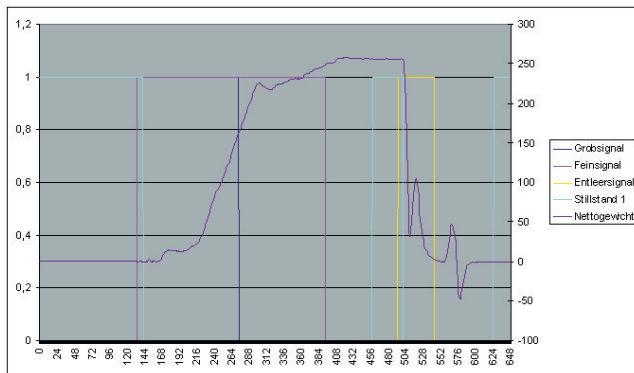
Hardware configuration TIA portal with weighing electronics SIWAREX WP321

Application-compatible implementation leads to the following three aspects:

- The demands for accuracy and reproducibility require the use of special, high-quality function units for signal recording, signal adaptation, A/D conversion and preprocessing, as well as open-loop and closed-loop control functions. The task means that the weighing signals must be resolved in up to 16 million digitization steps. During proportioning and filling, material flows must be controlled over binary scale signals with a time resolution of up to less than one millisecond.
- A range of other application-specific functions are also required to perform the overall task. It is therefore essential to take into account the complete value chain in the production process. These might include the automatic filling of supply hoppers or the unloading of the final product - so that a system is required that supports simple implementation of the necessary functions.
- It is also necessary to ensure full integration of the weighing systems into the total automation technology wherever possible. This covers not only communication, but also requires functional integration and the engineering of all automation functions using standard tools.

These aspects result in the following solution, which easily satisfies all requirements:

- Function modules and technology modules for weighing systems that contain the required hardware and firmware as standard, in order to satisfy the high accuracy requirements and time-critical tasks. These modules contain all the features of the standard automation system and are therefore completely compatible.
- Use of standard automation systems for the implementation of application-specific tasks. This not only enables the use of the standards already generally applied for engineering, visualization, archiving etc., but also supports full integration into the total automation technology without the need for any further adaptation. Sector-specific and application-specific solutions can be implemented particularly flexibly in this case. Special weighing and process methods or recipes can be protected from access by third-parties by means of software protection (know-how protected).
- This concept sees the weighing system as an automation object integrated in the total automation solution. The aforementioned total compatibility means that the standard automation functions and the weighing functions combine to form a homogenous entity for the user and meet the demands for uniformity, ease of use and flexibility on the basis of existing standards.
- This solution means that the component architecture can be central or distributed. The advantage of a central architecture is the time-optimized interaction between control CPU and weighing processor. With a distributed architecture, i.e. with integration of the components into the scale, the weighing system is easily transformed into an autonomous "field device" connected to the automation technology through the open PROFIBUS or PROFINET.



Curve display of proportioning, recorded over the weighing electronics using SIWAREX FTA

SIWAREX weighing systems in automation

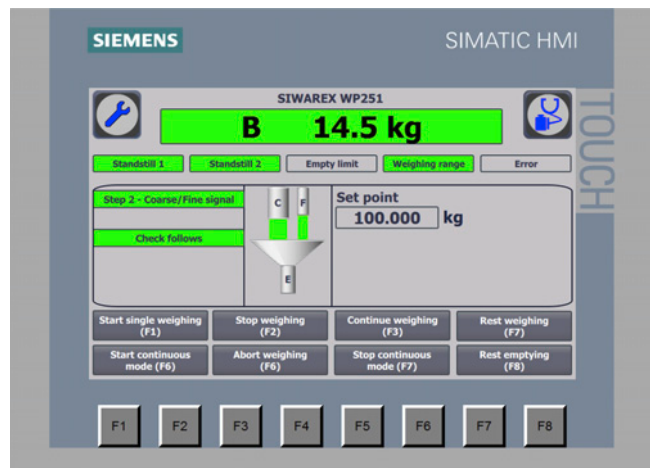
Totally Integrated Automation plays an essential role in SIWAREX weighing systems.

A key feature is the total integration of SIWAREX into the SIMATIC world.

This means:

- Implementation of central automation concepts by direct integration in SIMATIC S7
- Implementation of distributed automation concepts with ET 200
- Integration in the SIMATIC PCS 7 process control system
- Operator control and monitoring through SIMATIC HMI
- Uniform configuring and programming through SIMATIC software.

Proportioning control



Visualization of proportioning using SIMATIC HMI

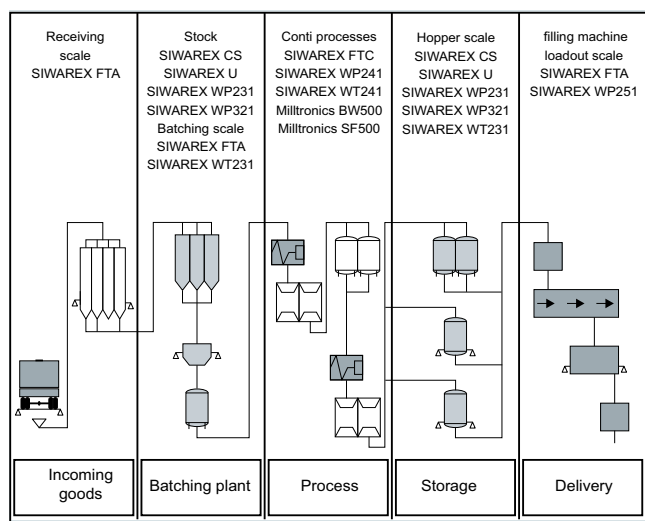
SIWAREX - weighing electronics - uniform SIMATIC system basis

By investing in SIWAREX weighing modules, you are investing in the uniform SIMATIC system basis on which the automation components of the entire production process can build – from incoming goods (upstream area) to the production process (main-stream area) down to the filling machine at the end of the production chain (downstream area) – a system basis which encompasses all hierarchic levels from the human-machine interface to the PROFIBUS DP or PROFINET fieldbus. Why use specialized technology for each weighing or proportioning problem when a uniform basis is available for all individual problem solutions? With SIWAREX, Siemens has created this uniform basis.

Weighing Electronics

Introduction

2



Applications of SIWAREX weighing technology in the production process

Integrated automation solutions with weighing technology

SIWAREX weighing modules are ideally suited to integrated automation solutions using weighing technology. SIWAREX can be used for every SIMATIC solution regardless of whether it is integrated into the SIMATIC S7 automation system in the form of a module or used as a distributed I/O with the SIMATIC S7.

The highlight: SIWAREX modules are integrated into the automation system with the same engineering tools as all other automation components. This is an excellent solution which reduces engineering costs and training expenses!

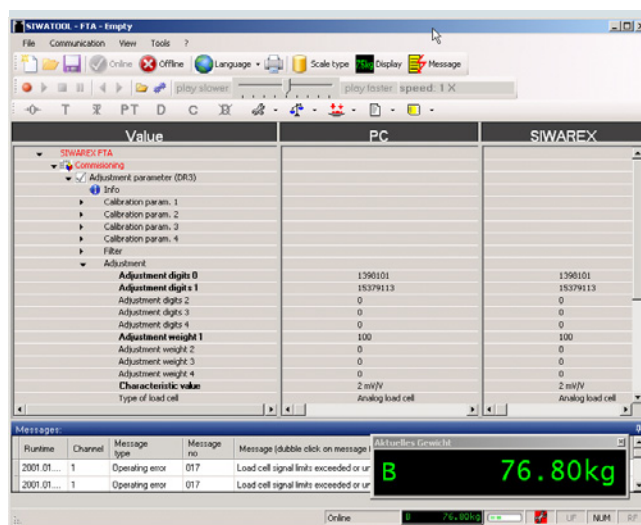
The ET 200 I/O station is designed as a modular system. The weighing electronics are selected from the module catalog and placed in the rack of the modular I/O station. The software addresses the weighing electronics as if they were modules plugged into the central controller of an automation system.

With the use of standard hardware (SIMATIC components) and standard software (STEP 7/TIA-Portal), freely programmable, modular weighing systems are available which can be inexpensively adapted to specific plant requirements, e.g. by means of:

- Additional SIMATIC digital outputs for controlling a mixer, heater, agitator, etc.
- Additional functions implemented in STEP 7 for determining and controlling the material flow or for correcting the setpoint based on material moisture.

The advantages of direct integration at a glance:

- Low-cost system integration because no additional coupling modules are required
- Low configuration costs due to the integrated system design
- System-compatible module behavior (diagnostics interrupts, hardware interrupts, command output disables, etc.)
- Tailor-made, low-cost weighing systems due to expansion with standard SIMATIC components
- High plant availability
- Easy installation thanks to snap-on technique
- Low space requirements due to compact design



Scales can also be adjusted without an automation system

High plant availability – to ensure that production does not come to a halt

Apart from the advantage that configuration know-how is only required for a single system, there are also enormous advantages in terms of plant availability.

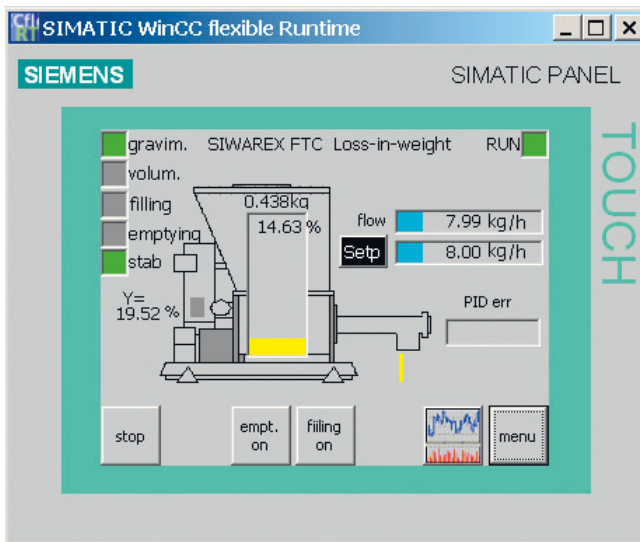
In the SIMATIC S7, for example, faults (measuring range exceeded, proportioning fault, sensor fault, etc.) are reported to the automation system via diagnostic interrupts without the need to input a single line of programming code.

Error messages from the weighing electronics are automatically transferred to the automation system. The diagnostic information enables easy location of the module from which the message originated.

Using a programmer or the plant visualization, operating personnel are then able to localize the fault, display its cause and, if necessary, replace the defective module.

A replaced module is automatically detected by the automation system. Thanks to the transparent data management, the scale parameters saved in the automation system can then be transferred to the new weighing electronics. The scales are immediately available again for weighing tasks – no need to readjust with control weights (except for applications that require legal-for-trade certification).

Because SIWAREX weighing systems are made solely of standard components (e.g. SIWAREX weighing modules, SIMATIC digital input/outputs, etc.), spare parts inventories are very easy to handle.



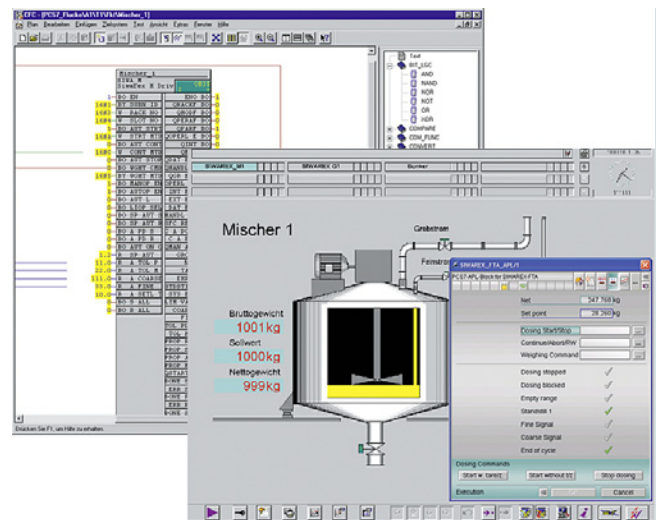
Scale faceplate of a differential proportioning weigher

Standard programming in the SIMATIC PCS 7 process control system as in the SIMATIC S7 automation system

While the weighing modules used with the SIMATIC S7 automation system are usually integrated into the system with the typical PLC programming languages; STL (Statement List), LAD (Ladder diagram) or FBD (Function Block Diagram), configuration in the SIMATIC PCS 7 process control system is usually implemented by means of graphic interconnection in the CFC (Continuous Function Chart). Configuration is used instead of programming.

The scales are displayed in the ES (engineering system) as "technology blocks" in the CFC. At the OS (operator station), however, faceplates are used to display the scales in the WinCC visualization system.

The faceplates can be used to monitor the weight values and operate the scales.



Scales displayed in the ES engineering system (on the left) and on the OS operator station (on the right)

Weighing Electronics

Introduction

SIWAREX application table

Application	Examples	Selection	For PLC	See page
Static weight measurements	Platform scales, container weighers, vehicle scales, silos	SIWAREX WP321	ET 200SP	2/17
		SIWAREX WP231 (OIML-R76)	S7-1200	2/12; 2/66
		SIWAREX WP521 ST	S7-1500 and ET 200MP	2/8
		SIWAREX WP522 ST	S7-1500 and ET 200MP	2/8
		SIWAREX CS	S7-1200	2/22
		SIWAREX U	S7 300 and ET 200M	2/25
		SIWAREX FTA (OIML R-76)	S7-300 and ET 200M	2/35
Force measurements	Rolling mills, monitoring of loads and belt tensions, overload protection, torque measurements	AI 2xSG 4-/6-wire HS	ET 200SP	2/60
		SIWAREX WP231	S7-1200	2/12; 2/66
		SIWAREX WP521 ST	S7-1500 and ET 200MP	2/8
		SIWAREX WP522 ST	S7-1500 and ET 200MP	2/8
		SIWAREX FTC	S7-300 and ET 200M	2/46; 2/53
Dosing, batching	Batching plants, batch processes, proportioning recipes, single-scale and multi-scale systems	SIWAREX WP251 (OIML R-51)	S7-1200	2/30; 2/75
		SIWAREX FTA (OIML R-51)	S7-300 and ET 200M	2/35
Dosing (continuous)	Batching plants, in continuous operation	SIWAREX FTC (operating mode loss-in-weight)	S7-300 and ET 200M	2/46; 2/53
Filling, bagging	Filling machines, bagging machines, big bag	SIWAREX WP251 (OIML R-51/R-61)	S7-1200	2/30; 2/75
		SIWAREX FTA (OIML R-51/R-61)	S7-300 and ET 200M	2/35
Loading	Loading scales for receiving and load operations	SIWAREX FTA (OIML R-107)	S7-300 and ET 200M	2/35
		SIWAREX WP251 (OIML R-107)*	S7-1200	2/30; 2/75
Check weighing (static)	Automatic check weighing in static mode, e.g. completeness check	SIWAREX FTA (OIML R-51)	S7-300 and ET 200M	2/35
Flow measurement	Solids flow meters	SIWAREX FTC (operating mode solids flow meters)	S7 300 and ET 200M	2/46; 2/53
Belt scales	Measurement of rate, load, speed, independent resettable totalizers	SIWAREX WP241	S7-1200	2/42; 2/81
		SIWAREX FTC (operating mode belt scales)	S7 300 and ET 200M	2/46; 2/53

*= in preparation

Overview

Platform and hopper scales

Weighing silos, vessels or platforms is a standard task in the industry. The corresponding SIWAREX electronics offers comprehensive properties and functions that fulfil all requirements.

Platform scales

In the various branches of industry the use of platform weighing machines is bound to very different requirements, in particular with regard to the load classes.

While platform weighing machines are also used for small loads, road vehicle and track scales are especially suited for heavy loads.

Hopper scales

In almost every industry, liquids, powders, bulk goods or gases are produced and stored in funnels or vessels. To ensure their availability, the exact fill levels of these vessels must be known.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC
Platform/hopper scale

SIWAREX WP521 ST / WP522 ST

Overview



SIWAREX WP521 ST (left) and SIWAREX WP522 ST weighing modules

SIWAREX WP521 ST / WP522 ST (ST = Standard) are versatile weighing modules for the SIMATIC S7-1500 Advanced Controller family. With these electronic weighing systems, simple weighing applications, such as platform or hopper scales, can be seamlessly integrated into the S7-1500 automation environment.

Benefits

SIWAREX WP521 ST / WP522 ST offer the following key advantages:

- Uniform design technology and consistent communication in SIMATIC S7-1500
- Uniform configuration with TIA Portal
- Single (WP521 ST) and dual-channel (WP522 ST) variants are available
- Operation possible with or without failed SIMATIC CPU
- Optional direct connection of an operator panel via Ethernet port (Modbus TCP/IP)
- Optional direct connection of a remote display via RS485 interface
- Modbus TCP/IP interface
- Modbus RTU interface
- Three digital inputs and four digital outputs
- Measurement of weight or force with a high resolution of up to ± 4 million parts and a measuring rate of 100/120 Hz
- Simple commissioning by means of HMI/CPU or PC software SIWATOOL V7 via the Ethernet interface
- Recovery-point for the simple restoration of all parameters
- Automatic calibration without the need for calibration weights
- Module can be replaced without renewed adjustment of scale
- Automatic impedance monitoring of the connected load cells
- Direct use in hazardous area zone 2
- Up to eight 350-ohm load cells can be connected per channel
- High EMC resistance

Application

SIWAREX WP521 ST and WP522 ST are the optimum solution for the integration of non-automatic scales, such as platform or hopper scales, into the SIMATIC S7-1500 automation environment. The two modules have the basic weighing functions: zeroing, taring and tare specification. Three limit values can also be freely defined and, if required, also output via the digital outputs. All further available status information can also be flexibly linked to the outputs. The digital inputs can be used for the direct wiring of pushbuttons, for example. Every weighing function (e.g. zeroing) can be freely and flexibly assigned to each input.

Design

SIWAREX WP521 ST and WP522 ST are technology modules of the SIMATIC S7-1500 Advanced Controller family and therefore communicate directly with the SIMATIC S7-1500 controller via the system bus. Additional expensive communication cards are therefore not required when using SIWAREX weighing technology.

The compact, 35 mm wide weighing modules can be mounted directly on the SIMATIC standard mounting rail. Assembly is therefore extremely easy and consistent with the remaining automation.

The modules are delivered ex works with a shielding set, comprising a shield clamp, shielding bracket and 24 V DC supply element with screw-type terminals. This set is assembled with an appropriate front connector (must be ordered separately, see accessories and ordering data) and therefore guarantees optimum hardware design and EMC immunity.

The power supply, load cells, RS485 interface and the digital inputs/outputs are also connected via the removable front connector. An RJ45 port is available on the bottom of the module for the Ethernet connection (SIWATOOL and Modbus TCP/IP).

Function

WP521 ST and WP522 ST provide simple weighing applications such as platform or hopper scales (ST = Standard). The basic functions zeroing, taring and tara specification can easily be issued by the CPU/HMI via the ready-made function block or alternatively via a 24 V signal at one of the three digital inputs.

The ready-made function block provides full access to all parameters. Commissioning, maintenance and operation of the scales can be performed fully from the CPU or HMI – without additional programming work. The free “ready-for-use” software (can be downloaded in the Siemens Online Support) also contains fully fledged HMI configuration, which can be transferred to your own project as you wish and freely edited. Customer- and plant-specific weighing applications can therefore be realized in an instant. In addition, languages can be added easily and quickly with the help of the corresponding functions von TIA Portal.

As an alternative to the CPU/HMI, the module can also be put into operation and maintained conveniently and without a knowledge of SIMATIC via the PC software SIWATOOL V7. This simplifies work considerably for the service staff as no interventions in the controller are required.

The automatic impedance monitoring of the module also increases plant safety and availability. The total impedance of the connected cells is determined as the reference value during commissioning. You can also freely define from which percentage deviation from the reference value a corresponding status bit is to be set. In the event of an error (e.g. severing of a load cell cable), this bit can generate corresponding alarms in the controller and initiate measures. The impedance is continuously monitored every 100 ms.

Up to eight 350 Ohm load cells switched in parallel can be connected per scale (per channel).

The modules can be integrated into the plant network via the Ethernet interface of the modules, so that during servicing, remote access is easily possible worldwide by means of SIWATOOL. Please refer to the information at

<http://www.siemens.com/industrialsecurity>

A firmware update of the modules can be performed via the TIA Portal (MMC card or by file selection) or SIWATOOL V7.



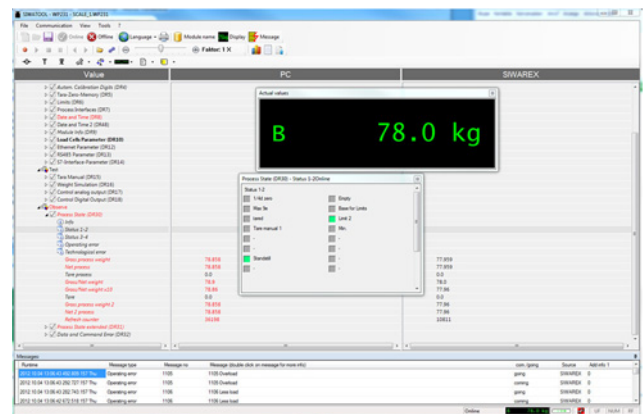
Software SIWATOOL V7

The software SIWATOOL V7 for Windows operating systems is optionally available for commissioning and servicing. The software is available to purchase and forms part of the configuration package (see accessories).

The program enables the scales to be parameterized and commissioned without the need for prior knowledge of the automation system. During servicing, the technician can use a PC to analyze and test the procedures in the scale. Reading the power fail-safe diagnostics buffer is also a useful feature for troubleshooting. A trace can also be started and read. This trace records all the weight values and status information in 10 ms intervals. The data can be read out using SIWATOOL V7 and exported to spreadsheet programs, thus enabling highly granular investigation and optimization.

The following are just some of the tasks that can be carried out using SIWATOOL V7:

- Parameter assignment and calibration of the scale
- Testing of scale properties
- Recording and analysis of weighing sequence (trace)
- Firmware update
- Creation/loading of external backup files



SIWATOOL V7, layout of the program window

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Platform/hopper scale

SIWAREX WP521 ST / WP522 ST

Technical specifications

SIWAREX WP521 ST, WP522 ST	
Weighing modes	Non-automatic scales, e.g. platform and hopper scales
Ports	1 x SIMATIC S7-1500 system bus 1 x Ethernet (SIWATOOL, Modbus TCP/IP) 1 x RS485 (Modbus RTU or remote display) per channel 3 x digital outputs (24 V DC) per channel 4 x digital outputs (24 V DC short-circuit proof) per channel
Functions	3 limits - Zeroing - Tare - Tare specification - Zero adjustment - Trace function for signal analysis - Internal restore point - SIMATIC S7-1500 integrated and/or stand-alone operation
Parameter assignment	- By means of function block in SIMATIC S7-1500 and HMI - Using SIWATOOL V7 - Using Modbus TCP/IP - Using Modbus RTU
Remote display (see accessories)	
Connection	via RS 485
Display	Additional display for weight value
Measuring accuracy	
Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution	Up to ±4 million parts
Number of measurements/second	100 or 120 (selectable)
Filter	- Low-pass filter 0.05 ... 50 Hz - Average value filter
Weighing functions	
Weight values	- Gross - Net - Tare
Limit values	2 x Min/Max 1 x empty
Zeroing	Per command
Tare	Per command
Tare specification	Per command

SIWAREX WP521 ST, WP522 ST	
Compatible sensors	Analog load cells / full-bridge strain gauges (1-4 mV/V) in 4-wire or 6-wire system
Load cell powering	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	
• R_{Lmin}	> 40 Ω
• R_{Lmax}	< 4 100 Ω
With SIWAREX IS Ex interface	
• R_{Lmin}	> 50 Ω
• R_{Lmax}	< 4 100 Ω
Load cell characteristic	1 ... 4 mV/V
Permissible range of the measurement signal (with 4 mV/V sensors)	-21.3 ... +21.3 mV
Max. distance of load cells	800 m (2 624 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface
Certificates	- ATEX Zone 2 - UL - KCC - EAC - RCM - FM - IECEx
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption WP521 ST / WP522 ST	120 mA / 200 mA
Max. power consumption SIMATIC Bus	35 mA @ 15 V
IP degree of protection according to DIN EN 60529; IEC 60529	IP20
Climatic requirements	
$T_{min(IND)}$... $T_{max(IND)}$ (operating temperature)	
• Horizontal installation	-10 ... +60 °C (14 ... 140 °F)
• Vertical installation	-10 ... +40 °C (14 ... 104 °F)
EMC requirements	according to IEC 61000-6-2:2004; IEC 61000-6-4:2007+A1:2011
Dimensions (W x H x D)	35 x 147 x 129 mm (1.38 x 5.79 x 5.08 in)

Selection and ordering data

Article No.

Article No.

**Weighing module TM
SIWAREX WP521 ST****7MH4980-1AA01**

Single-channel, for platform or hopper scale with analog load cells (1–4 mV/V), 1 x LC, 4 x DQ, 3 x DI, 1 x RS 485, Ethernet port, including shielding set.

**Weighing module TM
SIWAREX WP522 ST****7MH4980-2AA01**

Two-channel, for two separate platform or hopper scales with analog load cells (1–4 mV/V), per channel 1 x LC, 4 x DQ, 3 x DI, 1 x RS 485, Ethernet port, including shielding set.

**SIMATIC S7-1500, front connector
with screw-type terminals****6ES7592-1AM00-0XB0**

40-pole, for 35 mm wide modules, including 4 jumper links and cable ties

**SIMATIC S7-1500, front connector
with push-in technology****6ES7592-1BM00-0XB0**

40-pole, for 35 mm wide modules, including 4 jumper links and cable ties

SIWATOOL V4 & V7**7MH4900-1AK01**

Service and commissioning software for SIWAREX weighing modules

**Ethernet cable patch cord 2 m
(7 ft)****6XV1850-2GH20**

For connecting SIWAREX WP52x ST to a PC (SIWATOOL V7 or Modbus TCP/IP)

Remote display (optional)

The digital remote displays can be connected directly to the SIWAREX WP231 via the RS 485 interface.

Suitable remote display:
S102

Siebert Industrie Elektronik GmbH
Postfach 1180

D-66565 Eppelborn, Germany

Tel.: +49 6806/980-0

Fax: +49 6806/980-999

Internet:

<http://www.siebert-group.com/en>

Detailed information is available from the manufacturer.

Accessories**SIWAREX JB junction box,
aluminum housing****7MH4710-1BA**

For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.

**SIWAREX JB junction box,
stainless steel housing****7MH4710-1EA**

For connecting up to 4 load cells in parallel.

**SIWAREX JB junction box,
stainless steel housing (ATEX)****7MH4710-1EA01**

For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).

Ex interface SIWAREX IS

For intrinsically-safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked.

- Short-circuit current < 199 mA DC
- Short-circuit current < 137 mA DC

**7MH4710-5BA
7MH4710-5CA****Load cell cable (optional)****Cable Li2Y 1 x 2 x 0.75 ST +
2 x (2 x 0.34 ST) – CY**

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JBs.

For permanent installation. Occasional bending is possible.

External diameter:
approx. 10.8 mm (0.43 in)

Permissible ambient temperature
-40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color: orange
- For potentially explosive atmospheres. Sheath color: blue.

**7MH4702-8AG
7MH4702-8AF****Commissioning****Commissioning charge for one
static scale with SIWAREX
module**

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Static adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Adjustment weights available
- Free access to scale

Weighing Electronics

SIWAREX weighing electronics for SIMATIC
Platform/hopper scale

SIWAREX WP231

Overview



SIWAREX WP231 is a versatile, legal for trade weighing module for all simple weighing and force measuring tasks. The compact module is easy to install in the SIMATIC S7-1200 automation system. It can also be operated without a SIMATIC CPU.

Benefits

SIWAREX WP231 offers the following key advantages:

- Uniform design technology and consistent communication in SIMATIC S7-1200
- Uniform configuration with TIA Portal
- Legal-for-trade according to OIML R-76
- Operation without SIMATIC CPU possible
- Direct connection of an operator panel via Ethernet
- Direct connection of a remote display via RS 485 interface
- Modbus TCP/IP interface
- Modbus RTU interface
- Four digital inputs and outputs, one analog output
- Measurement of weight or force with a high resolution of up to ± 4 million parts and an accuracy of 0.05%
- Simple adjustment of scale using the SIWATOOL V7 program via the Ethernet interface
- Recovery-point for the simple restoration of all parameters
- Automatic calibration without the need for calibration weights
- Supports replacement of module without recalibration of scales
- Use in hazardous area zone 2
- Connection of digital force compensation load cells from WIPOTEC and Mettler-Toledo (type WM and PBK)

Application

SIWAREX WP231 is the optimum solution wherever load cells are used for measuring tasks. The following are typical SIWAREX WP231 applications:

- Non-automatic weighing instruments, also legal for trade
- Fill level monitoring of silos and bunkers
- Measuring of crane and cable loads
- Load measuring for industrial lifts and rolling mills
- Scales in zone 2 hazardous areas
- Force measuring, container weighing, hopper scales and crane scales

Design

SIWAREX WP231 is a compact technology module in the SIMATIC S7-1200 and communicates directly via the system bus with S7-1200 components. The rail mounting of the 70 mm (2.76 inch) wide weighing module means that it is extremely easy to mount/wire.

The power supply, load cells, the RS 485, digital input/outputs and the analog output are connected via the screw connector of the weighing module. An RJ45 connector is used for the Ethernet connection.

Function

The primary task of SIWAREX WP231 is the measurement and conversion of sensor voltage into a weight value. Up to three interpolation points are used for the weight calculation. The signal can also be digitally filtered if required.

Weighing functions

There are commands available for zeroing and taring. Up to three different tare default values can be activated for this. SIWAREX WP231 is factory-calibrated. This means the scale can be automatically adjusted without adjustment weights, and modules can be replaced without the need to readjust the scale.

Monitoring and control of the scale signals and states

In addition to weight determination, the SIWAREX WP231 monitors two freely programmable limits (optionally min/max) as well as the empty range. It signals violations of the limits. Consistent and uniform communication between all system components enables fast, reliable and cost-effective integration and diagnostics in process plants.

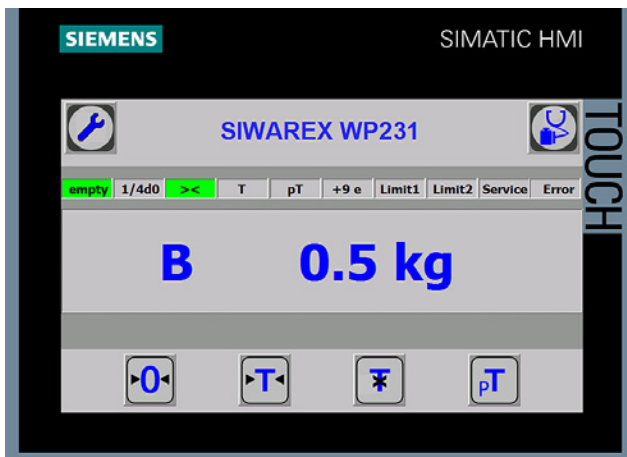
Integration in the plant environment

SIWAREX WP231 is directly integrated into the SIMATIC S7-1200 via the SIMATIC bus. All scale parameters can be read and edited by the CPU. Therefore a complete commissioning of the scales by the CPU or by a connected HMI device is possible. A wide variety of connection options are provided via the RS 485 and Ethernet interface. Via Modbus TCP/IP or Modbus RTU, control panels can be connected and it is also possible to communicate with various automation systems. A remote display can also be connected to the RS 485. A PC for configuring the SIWAREX WP231 can be connected to the Ethernet interface.

Weight value, status, tare, commands and messages are transmitted via the SIMATIC I/O area. The parameters of the data records can be set via SIWATOOL or with an operator panel connected directly to the weighing electronics.

SIWAREX WP231 can be integrated into the plant software with the aid of a ready-made function block. In contrast to serially linked weighing electronics, SIWAREX WP231 does not need costly additional modules to link it to SIMATIC.

Used in conjunction with SIWAREX WP231, it is possible to configure freely programmable, modular weighing systems in SIMATIC, which can be adapted to company-specific requirements as needed.



In addition to the configuration package, a fully-featured SIWAREX WP231 "Ready for use" software is also available free-of-charge. It shows beginners how to integrate the module in a TIA Portal program and offers a basis for application programming. This allows you to connect the scale application either directly to the SIMATIC CPU or to an operator panel connected directly to the SIWAREX WP231.

A "Ready for use" example program is available in the TIA Portal for legal for trade applications. This is designed so that it can be used directly with the legal trade SecureDisplay software. Required is a Windows CE-based operating panel (for example, SIMATIC Comfort Touch series).

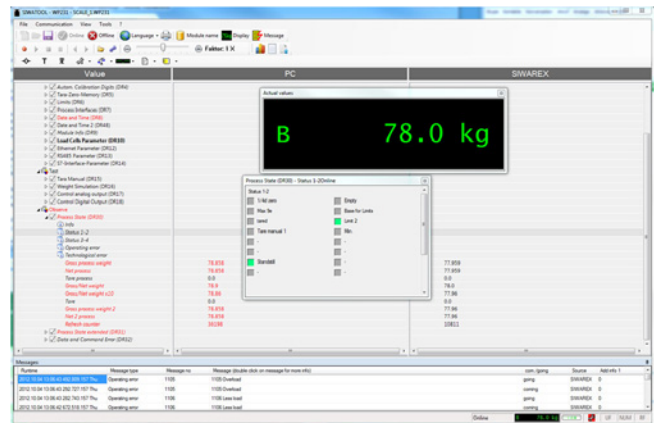
SIMATIC Basic and Key Panels cannot be used for legal for trade applications.

Software

SIWATOOL V7 is a special program for commissioning and servicing and runs with Windows operating systems. The program enables the user to perform scale calibration without requiring automation engineering skills. During servicing, the technician can use a PC to analyze and test the procedures in the scale. Reading the diagnostics buffer from the SIWAREX WP231 is extremely helpful when analyzing events.

The following are just some of the tasks that can be carried out using SIWATOOL V7:

- Parameter assignment and calibration of the scale
- Testing of scale properties
- Recording and analysis of weighing sequence



SIWATOOL V7 calibration software, layout of the individual program windows

It is also extremely helpful to analyze the diagnostics buffer which can be saved together with the parameters from the module in a backup file.

Trace mode is provided to optimize the weighing sequences in the SIWAREX WP231 weighing module. The recorded weight values and associated states can be displayed as trends using SIWATOOL V7 and MS Excel.

Upgrading firmware

An additional program function can be used to download a new firmware version onto the SIWAREX WP231 on site. This means that firmware upgrades can be carried out on site as required anywhere in the world.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Platform/hopper scale

SIWAREX WP231

Technical specifications

SIWAREX WP231	
Integration in automation systems	
S7-1200	SIMATIC S7-1200 system bus
Operator panel and/or automation systems from other vendors	Via Ethernet (Modbus TCP/IP) or RS 485 (Modbus RTU)
Communication interfaces	• SIMATIC S7-1200 backplane bus • RS 485 (Modbus RTU, Siebert remote display) • Ethernet (SIWATOOL V7, Modbus TCP/IP) • Analog output 0/4 - 20 mA • 4 x digital outputs, 24 V DC floating, short-circuit proof • 4 x digital inputs, 24 V DC floating
Commissioning options	• Using SIWATOOL V7 • Using function block in SIMATIC S7-1200 CPU / Touch Panel • Using Modbus TCP/IP • Using Modbus RTU
Measuring accuracy	
EU type approval as non-automatic weighing instrument, trade class III	3000 d $\geq 0.5 \mu\text{V/e}$
Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution	Up to ± 4 million parts
Measuring frequency	100 / 120 Hz
Digital filter	Variable adjustable low-pass and average filter
Typical applications	• Non-automatic weighing instruments • Force measurements • Fill-level monitoring • Belt tension monitors
Weighing functions	
Weight values	• Gross • Net • Tare
Limit values	• 2 x min/max • Empty
Zeroing	Per command
Tare	Per command
Tare specification	Per command

SIWAREX WP231	
Load cells	Full-bridge strain gauges in 4-wire or 6-wire system
Load cell powering	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	
• R_{Lmin}	$> 40 \Omega$
• R_{Lmax}	$< 4\,100 \Omega$
With SIWAREX IS Ex interface	
• R_{Lmin}	$> 50 \Omega$
• R_{Lmax}	$< 4\,100 \Omega$
Load cell characteristic	1 ... 4 mV/V
Permissible range of the measurement signal (with 4 mV/V sensors)	-21.3 ... +21.3 mV
Max. distance of load cells	500 m (229.66 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface (compatibility of the load cells must be checked)
Approvals/certificates	• ATEX Zone 2 • UL • EAC • KCC • RCM • OIML R76 • Design approval 2009/23/EC (NAWI)
Calibration approval	EU type approval OIML R76
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	200 mA
Max. power consumption SIMATIC Bus	3 mA
IP degree of protection according to DIN EN 60529; IEC 60529	IP20
Climatic requirements	
$T_{min(IND)} \dots T_{max(IND)}$ (operating temperature)	
• Vertical installation	-10 ... +40 °C (14 ... 104 °F)
• Horizontal installation	-10 ... +55 °C (14 ... 131 °F)
EMC requirements	according to EN 45501
Dimensions	70 x 75 x 100 mm (2.76 x 2.95 x 3.94 in)

Selection and ordering data		Article No.	Article No.
SIWAREX WP231 weighing module		7MH4960-2AA01	
Single-channel, legal-for-trade, for NAWI non-automatic weighing instruments (e.g. platform or hopper scales) with analog load cells (1–4 mV/V), 1 x LC, 4 x DQ, 4 x DI, 1 x AQ, 1 x RS 485, Ethernet port.			
SIWAREX S7-1200 manual			
Available in a range of languages			
Free download on the Internet at:			
http://www.siemens.com/weighing/documentation			
SIWAREX WP231 "Ready for Use"			
Complete software package for non-automatic weighing instrument (for S7-1200 and a directly connected operator panel).			
Free download on the Internet at:			
http://www.siemens.com/weighing/documentation			
SIWAREX WP231 "Ready for Use - legal-for-trade"			
Software package for legal for trade non-automatic weighing instruments for S7-1200.			
Free download on the Internet at:			
http://www.siemens.com/weighing/documentation			
Software SecureDisplay			
Software for a legal trade display on Windows CE-based Panel. SIMATIC Basic and Key Panels are excluded.			
Free download on the Internet at:			
http://www.siemens.com/weighing/documentation			
SIWATOOL V4 & V7		7MH4900-1AK01	
Service and commissioning software for SIWAREX weighing modules			
Calibration set for SIWAREX WP2xx		7MH4960-0AY10	
Valid for SIWAREX WP231 K and SIWAREX WP251.			
For verification of up to 3 scales, comprising:			
• 3 x inscription foil for labeling			
• 1 x protective film			
• 3 x calibration protection plate			
• Guidelines for verification, certificates and approvals, adaptable label, SIWAREX WP			
Ethernet cable patch cord 2 m (7 ft)		6XV1850-2GH20	
For connecting SIWAREX WP231 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.			
			Remote display (optional)
			The digital remote displays can be connected directly to the SIWAREX WP231 via the RS 485 interface.
			Suitable remote display:
			S102
			<i>Siebert Industrieelektronik GmbH</i>
			<i>Postfach 1180</i>
			<i>D-66565 Eppelborn, Germany</i>
			<i>Tel.: +49 6806/980-0</i>
			<i>Fax: +49 6806/980-999</i>
			Internet:
			http://www.siebert-group.com/en
			Detailed information is available from the manufacturer.
			Accessories
		SIWAREX JB junction box, aluminum housing	7MH4710-1BA
		For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.	
		SIWAREX JB junction box, stainless steel housing	7MH4710-1EA
		For connecting up to 4 load cells in parallel.	
		SIWAREX JB junction box, stainless steel housing (ATEX)	7MH4710-1EA01
		For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).	
		Ex interface SIWAREX IS	
		For intrinsically-safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked.	
		• Short-circuit current < 199 mA DC	7MH4710-5BA
		• Short-circuit current < 137 mA DC	7MH4710-5CA
		Cable (optional)	
		Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY	
		For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JB's.	
		For permanent installation. Occasional bending is possible.	
		External diameter: approx. 10.8 mm (0.43 in)	
		Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F).	
		Sold by the meter.	
		• Sheath color: orange	7MH4702-8AG
		• For potentially explosive atmospheres. Sheath color: blue.	7MH4702-8AF
		Ground terminal for connecting the load cell cable shield to the grounded DIN rail	6ES5728-8MA11

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Platform/hopper scale

SIWAREX WP231

Selection and ordering data

Article No.

Commissioning

Commissioning charge for one static scale with SIWAREX module

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Static adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Adjustment weights available
- Free access to scale



Overview



SIWAREX WP321 is a versatile and flexible weighing module for the seamless integration of a static scale into the SIMATIC automation environment.

The electronic weighing system is integrated in the SIMATIC ET 200SP series and uses all the features of a modern automation system, such as integrated communication, operator control and monitoring, diagnostic system and configuration tools in the TIA Portal, SIMATIC STEP 7, WinCC flexible and PCS7.

Benefits

The electronic weighing system described here is characterized by decisive advantages:

- Uniform design technology and consistent communication in SIMATIC ET 200SP
- Compact design with only 15 mm module width
- Parameterization of the scales via the control panel, CPU or PC
- Flexible configuration options in SIMATIC TIA Portal, SIMATIC STEP 7 and PCS7
- Measuring of weights and forces with a resolution of up to +/- 2 million parts
- 100 Hz / 120 Hz / 600 Hz measurement rate
- Internal scale monitoring of freely definable limit values
- Easy commissioning using the "SIWATOOL" software
- Automatic calibration without the need for calibration weights
- Modules can be replaced without recalibrating the scale
- Direct use in ATEX Zone 2 possible
- Wide range of status and diagnostic information
- "Ready-for-use" sample program

Application

SIWAREX WP321 is the optimum solution wherever analog load cells are used for measuring tasks.

The SIWAREX WP321 is suitable for the following applications:

- Non-automatic weighing instrument (NAWI), e.g. platform and hopper scales
- Fill-level monitoring of silos and hoppers
- Measuring of crane and cable loads
- Force measurements
- Monitoring of belt tensions
- Setup of scales in hazardous areas

Design

SIWAREX WP321 is a technology module (TM) of the SIMATIC ET 200SP series and is thus linked to the controller in a distributed manner by means of an ET 200SP interface module (Profibus/Profinet).

The following BaseUnits (Type A0) can be used for integration:

For opening a new potential group:

BU15P-16+A10+2D (6ES7193-6BP20-0DA0)

BU15P-16+A0+2D (6ES7193-6BP00-0DA0)

For continuing the potential group:

BU15P-16+A10+2B (6ES7193-6BP20-0BA0)

BU15P-16+A0+2B (6ES7193-6BP00-0BA0)

The load cells or force sensors are connected to the terminals of the BaseUnit. This means that modules can be replaced quickly, easily and without any wiring work.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC
Platform/hopper scale

SIWAREX WP321

Function

The primary task of the weighing electronics is to determine the current weight and force values on the basis of the signals supplied by the connected sensors. Thanks to the seamless integration into the SIMATIC environment, values can be processed directly and in any available programming language of the CPU. If the freely selectable and internally monitored values are exceeded or undershot, this is reported directly to the controller. A variety of status and diagnostic information can also be read out and evaluated in the CPU without difficulty.

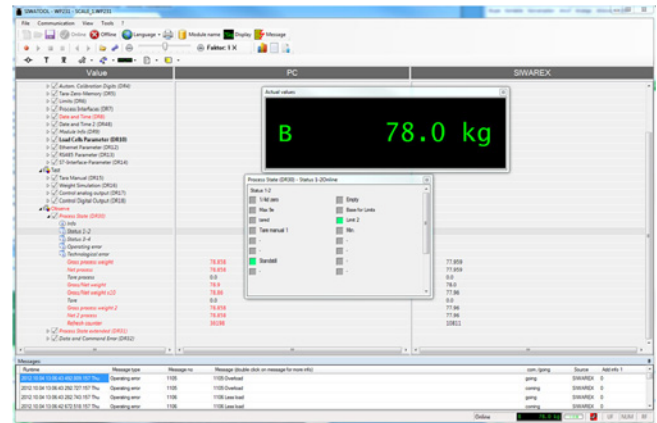
The SIWAREX WP321 is calibrated in the factory. This not only permits automatic calibration of the scales (without the need for calibration weights), but also the replacement of modules without the need for recalibration.

Via the integral RS 485 port, a PC can be connected for setting the parameters of the weighing electronics using the "SIWATOOL" software. A USB RS 485 interface converter is required for this purpose.

Thanks to its seamless integration into the SIMATIC environment, the use of SIWAREX weighing electronics requires no complicated or expensive communication drivers for the scales.

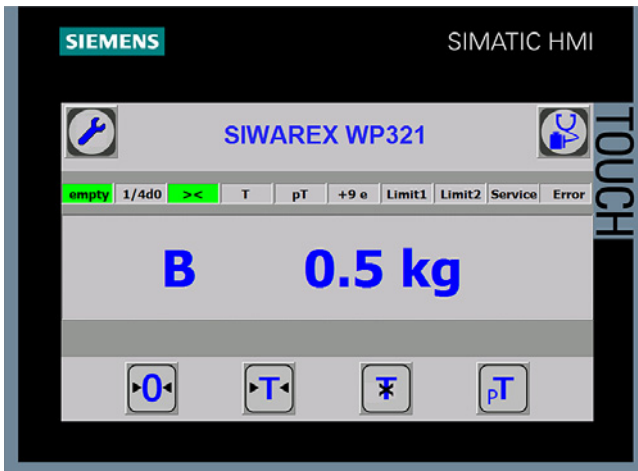
Programmable weighing applications tailored to any situation can be created and then adapted or extended at any time in combination with the functionalities of the TIA Portal and of the SIMATIC Manager and WinCC flexible.

Likewise, WP321 enables scales to be set up in hazardous areas. Depending on the zone and the load cells used, the use of the SIWAREX IS Ex interface may also be necessary.



SIWAREX WP321 SIWATOOL

SIWATOOL is a service software tool which enables you to calibrate the module quickly and efficiently on site, set or reset parameters, or perform diagnostics in the event of a fault. Furthermore, complete backup files can be created for the scales, which can be uploaded to a new module with a few mouse clicks, so that the module continues to operate exactly as it did before the backup, without the need for any recalibration. It is even possible to upload configuration files that were created of-line, or to read out the error buffer. No special SIMATIC knowledge is required to use SIWATOOL. It is connected via the RS 485 port of the module which requires the use of a USB RS 485 interface converter. Please refer to the WP321 manual for further recommendations.



SIWAREX WP321 Ready for use

For an easy introduction to the integration of the module into the TIA Portal and SIMATIC Manager, a "Ready for use" sample project is available free of charge. This project demonstrates the integration of the module into the hardware configuration and contains the function block for communication between the CPU and SIWAREX. It also contains a ready-made data block that contains all the parameters for the scales. The "Ready for use" project is rounded off with a touch panel configuration feature, which not only permits complete commissioning of the scales from the panel, but also includes an "operator view" that can be used as an example for the normal operation of the scales.

Technical specifications

SIWAREX WP321	
Integration in automation systems	
SIMATIC S7-300, S7-400, S7-1200 and S7-1500	Via SIMATIC ET 200SP interface module (PROFIBUS or PROFINET)
Other manufacturers (with restrictions)	Via SIMATIC ET 200SP interface module (PROFIBUS or PROFINET)
Communication interfaces	- SIMATIC ET 200SP backplane bus - RS 485 (SIWATOOL, Siebert remote display)
Commissioning options	- Using SIWATOOL V7 - Using function block in SIMATIC CPU / Touch Panel
Measuring accuracy	
according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution	± 2 million parts
Measuring frequency	100 / 120 / 600 Hz
Digital filter	Variable adjustable low-pass and average filter
Typical applications	- Non-automatic weighing instruments - Force measurements - Fill-level monitoring - Belt tension monitors
Weighing functions	
Weight values	- Gross - Net - Tare
Limit values	2 x min/max - Empty
Zeroing	Via command by controller or HMI
Tare	Via command by controller or HMI
External tare specification	Via command by controller or HMI
Calibration commands	Via command by controller or HMI

SIWAREX WP321	
Load cells	Full-bridge strain gauges in 4-wire or 6-wire system
Load cell powering	
Supply voltage (value applies at sensor, cable-related voltage drops of up to 5 V are controlled)	4.85 V DC ±2%
Permissible load resistance	
- R_{Lmin} - R_{Lmax}	> 40 Ω < 4100 Ω
With SIWAREX IS Ex interface	
- R_{Lmin} - R_{Lmax}	> 50 Ω < 4100 Ω
Load cell characteristic	1 ... 4 mV/V
Permissible range of measuring signal (at greatest set characteristic value)	-21.3 ... +21.3 mV
Max. distance of load cells	1000 m (459.32 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface (compatibility of the load cells must be checked)
Approvals/certificates	- ATEX Zone 2 - UL - FM - EAC - KCC - IECEX - RCM
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	typ. 0.1 A @ 24 V DC (0.2 A max.)
Max. power consumption SIMATIC Bus	30 mA
IP degree of protection according to DIN EN 60529; IEC 60529	IP20
Climatic requirements	
T _{min} (IND) ... T _{max} (IND) (operating temperature)	
- Vertical installation in SIMATIC S7 ¹⁾ - Horizontal installation in SIMATIC S7 ¹⁾	-25 ... +50 °C (-13 ... 122 °F) -25 ... +60 °C (-13 ... 140 °F)
EMC requirements	according to IEC 61000-6-2, IEC 61000-6-4, OIML-R76-1
Dimensions (width)	15 mm (0.6 in)

¹⁾ The S7 standard modules may not be operated at temperatures below 0 °C (32 °F).
 For operating conditions below 0 °C (32 °F), SIMATIC modules from the SIPLUS series must be used.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC
Platform/hopper scale

SIWAREX WP321

Selection and ordering data

Article No.

Article No.

Weighing module TM SIWAREX WP321

Single-channel, for platform or hopper scales with analog load cells (1–4 mV/V), 1 x LC, 1 x RS 485.

7MH4138-6AA00-0BA0

SIWAREX WP321 manual

Available in a range of languages

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWAREX WP321 "Ready for Use"

TIA Portal and SIMATIC Manager sample configuration

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWATOOL V4 & V7

Service and commissioning software for SIWAREX weighing modules

7MH4900-1AK01

SIWAREX PCS7 AddOn Library for PCS7 V8.x and V9.0

• Support of Profinet
APL faceplates and function block for:

- SIWAREX U
- SIWAREX FTA
- SIWAREX FTC_B (belt scale)
- SIWAREX WP321

Classic faceplate and function block for:

- SIWAREX FTC_L (Loss in weight)

7MH4900-1AK61

Accessories

(mandatory requirement)

BaseUnit (Type A0 – one BaseUnit required for each WP321)

- For opening a new potential group

- BU15P-16+A0+2D or
- BU15P-16+A10+2D

- For continuing the potential group

- BU15P-16+A0+2B
- BU15P-16+A10+2B

6ES7193-6BP00-0DA0
6ES7193-6BP20-0DA0

6ES7193-6BP00-0BA0
6ES7193-6BP20-0BA0

Shielded connection for BaseUnit (5 units / for 5 scales) For laying the load cell cable

6ES7193-6SC00-1AM0

Accessories (optional)

SIWAREX JB junction box, aluminum housing

For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.

7MH4710-1BA

SIWAREX JB junction box, stainless steel housing

For connecting up to 4 load cells in parallel.

7MH4710-1EA

SIWAREX JB junction box, stainless steel housing (ATEX)

For parallel connection of up to 4 load cells
(for zone allocation, see manual or type-examination certificate).

7MH4710-1EA01

Ex interface SIWAREX IS

For intrinsically-safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked.

Approved for use in the EU

- Short-circuit current < 199 mA DC
- Short-circuit current < 137 mA DC

7MH4710-5BA

7MH4710-5CA

Cable (optional)

Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JBs.

For permanent installation. Occasional bending is possible.

External diameter:

approx. 10.8 mm (0.43 in)

Permissible ambient temperature
-40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color: orange
- For potentially explosive atmospheres. Sheath color: blue.

7MH4702-8AG

7MH4702-8AF

RS 485/USB interface converter

Commercially available interface converter with FTDI chip, e.g. USB-Nano from CTI

<http://www.cti-shop.com/RS485-Konverter/USB-Nano-485>

Remote display

The Siebert S102 and S302 remote digital displays can be directly connected to the SIWAREX FTA via an RS 485 interface.

Siebert Industrie Elektronik GmbH
Postfach 1180D-65565 Eppelborn,
Germany
Tel.: +49 6806/980-9
Fax: +49 6806/980-999
Internet:

<http://www.siebert-group.com/en>

Detailed information is available from the manufacturer.

Selection and ordering data

Article No.

*Commissioning***Commissioning charge for one static scale with SIWAREX module**

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Static adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Adjustment weights available
- Free access to scale

Weighing Electronics

SIWAREX weighing electronics for SIMATIC
Platform/hopper scale

SIWAREX CS

Overview



SIWAREX CS is a versatile weighing module for all simple weighing and force measuring tasks. The compact module is easy to install in all SIMATIC automation systems. Data can be accessed directly in the SIMATIC.

Benefits

SIWAREX CS offers the following key advantages:

- Uniform design technology and consistent communication in SIMATIC
- Uniform configuration with SIMATIC
- Use in distributed plant concept through connection to PROFIBUS DP or PROFINET via ET 200S
- Measurement of weight or force with a high resolution of 65 000 parts and an accuracy of 0.05 %
- Direct connection of a remote display to the TTY interface
- Simple adjustment of scale using the SIWATOOL CS program via the RS 232 interface
- Supports theoretical adjustment without adjustment weights
- Supports replacement of module without renewed adjustment of scale
- For use in Ex zone 2, intrinsically-safe load cell powering for zone 1 using Ex interface.

Application

SIWAREX CS is the optimum solution wherever strain gauge sensors, such as load cells, force sensors or torque measuring shafts, are used for measuring tasks. The following are typical SIWAREX CS applications:

- Non-automatic weighing machines
- Fill level monitoring of silos and bunkers
- Measuring of crane and cable loads
- Load measuring of industrial lifts and roll trains
- Weighing in potentially explosive areas (zone 2 direct, zone 1 using Ex interface SIWAREX IS)
- Monitoring of belt tension
- Force measuring, container weighers, platform scales and crane scales

Design

SIWAREX CS is a compact function module (FM) in the SIMATIC ET 200S and can be plugged directly into a terminal module. The power supply is connected through a power module and the internal power rail.

The load cells and the serial interfaces are connected through the terminals of the terminal module. Using the terminal module enables the module to be replaced without disconnecting the connecting cables.

Function

The primary task of SIWAREX CS is the measurement of sensor voltage and the conversion of this measurement into a weight value. Up to 3 interpolation points are used for the weight calculation. The signal can also be digitally filtered if required.

As well as determining weights, the SIWAREX CS monitors two freely programmable limits (min./max. as required) and notifies SIMATIC if these values are exceeded.

The SIWAREX CS comes factory-calibrated. This means that theoretical adjustment of the scale is possible without adjustment weights, and that modules can be replaced without the need to readjust the scale.

Consistent and uniform communication between all system components enables fast, reliable and cost-effective integration and diagnostics in industrial processes.

Reading of the process data from the SIWAREX CS via the distributed I/O is possible with all head modules. In the case of PROFIBUS head modules that support the DP V1 protocol and PROFINET head modules the data record communication can additionally be used for reading out the data and performing settings.

Group diagnostics and hardware interrupts are possible with all PROFIBUS head modules with DP V1 and PROFINET modules. Head modules with DP V0 support group diagnostics, but not the hardware interrupts.

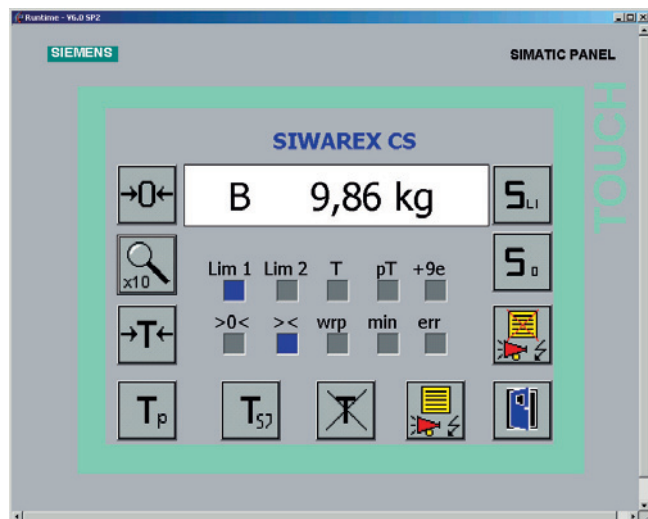
The SIWAREX CS has two serial interfaces. The TTY interface serves to connect digital remote displays. The remote displays can show the weight value with status information.

To parameterize the SIWAREX CS, a PC can be connected over the RS 232 interface.

SIWAREX CS can be integrated in the plant software using the classic PLC programming languages; STL (Statement List), LD (Ladder Diagram) SFC (Sequential Function Chart) or SCL (Structured Control Language).

In contrast to serially linked weighing electronics, SIWAREX CS does not need costly additional modules to link it to SIMATIC.

Used in conjunction with SIWAREX CS, it is possible to configure freely programmable, modular weighing systems in SIMATIC.



Scale faceplate in the SIWAREX CS "Getting started" software

In addition to the configuration package, the ready-made SIWAREX CS "Getting started" software is available free-of-charge and shows beginners how to integrate the module into a STEP 7 program and offers a basis for application programming. This allows you to implement the scale very easily with an operator panel connected directly to the SIMATIC CPU.

Using the SIWATOOL CS software, the SIWAREX weighing modules offer Windows convenience and are quick to get into operation. Screen forms allow all user-definable parameters of the weighing modules to be specified, saved and printed for plant documentation.

The diverse diagnostics options provided by SIWATOOL CS ensure fast fault locating in online mode.

The SIWAREX CS weighing module can be used in potentially explosive areas (zone 2). Zone 1 - It can also be used in zone 1 by implementing an optional Ex interface, whereby SIWAREX CS must be installed in a safe area.

Technical specifications

SIWAREX CS	
Integration in automation systems	- S7-400, S7-300, C7 - IM151-7 CPU - Automation systems from other manufacturers (possible with limitations)
Communication interfaces	SIMATIC S7 (ET 200S backplane bus), RS 232, TTY
Connection of remote display (via serial TTY interface)	Display for weight value
Adjustment of scales settings	Using SIMATIC S7 IM151-7 CPU or SIWATOOL CS PC parameter assignment software (RS 232)
Measuring accuracy	Error limit to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K) Internal resolution Data format of weight values
Number of measurements/second	50
Digital filter	0.05 ... 5 Hz (in 7 steps), mean value filter
Weighing functions	Weight values Limit values Zero setting function Tare function Tare specification
Load cells	Strain gages in 4-wire or 6-wire system
Load cell powering	Supply voltage U_s (rated value) Max. supply current Permissible load resistance R_{Lmin} R_{Lmax} With SIWAREX IS Ex interface: R_{Lmin} R_{Lmax}
Load cell characteristic	1 mV/V to 4 mV/V
Permissible range of measuring signal (at greatest set characteristic value)	-2.4 ... +26.4 mV
Max. distance of load cells	1 000 m
Intrinsically-safe load cell powering	Optional (SIWAREX IS Ex interface)
External load cell powering	Possible up to 24 V
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface
Ex approvals zone 2 and safety	ATEX 95, FM, cUL _{US} Haz. Loc.
Auxiliary power supply	Rated voltage Max. current consumption
IP degree of protection to EN 60529; IEC 60529	IP20
Climatic requirements	$T_{min}(IND)$ to $T_{max}(IND)$ (operating temperature) - Horizontal installation - Vertical installation
EMC requirements	according to EN 61326, EN 45501, NAMUR NE21, Part 1
Dimensions	80 x 125 x 130 mm (3.15 x 4.92 x 5.12 in)

Weighing Electronics

SIWAREX weighing electronics for SIMATIC
Platform/hopper scale

SIWAREX CS

Selection and ordering data

Article No.

Article No.

SIWAREX CS

Weighing electronics for scales in
SIMATIC ET 200S

7MH4910-0AA01

SIWAREX CS Manual

Available in a range of languages

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWAREX CS "Getting started"

Sample software shows beginners
how to program the scales in
STEP 7.

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWATOOL V4 & V7

7MH4900-1AK01

Service and commissioning
software for SIWAREX weighing
modules

SIWATOOL cable

from SIWAREX U/CS with serial PC
interface, for 9-pin PC interfaces
(RS 232), length 3 m (9.84 ft)

7MH4607-8CA

Installation material (mandatory)

Terminal module

TM-E 30 mm (1.18 in) wide
(required for each SIWAREX
module)

6ES7193-4CG20-0AA0
or compatible

Shield contact element

Contents: 5 items, sufficient for
5 cables

6ES7193-4GA00-0AA0

Shield connection terminal

Contents: 5 items, sufficient for
5 cables

6ES7193-4GB00-0AA0

Note: one shield connection
terminal is required each for the

- scales connection and
- TTY interface or
- RS 232 interface

N busbar, galvanized

3 x 10 mm (0.12 x 0.39 in),
1.0 m (3.28 ft) long

8WA2842

Feeder terminal for N busbar

8WA2868

Remote displays (option)

The digital remote displays can
be connected directly to the
SIWAREX CS through the TTY
interface.

Suitable remote display:

S102

Siebert Industrieelektronik GmbH
Postfach 1180
D-66565 Eppelborn, Germany
Tel.: +49 6806/980-0
Fax: +49 6806/980-999
Internet: <http://www.siebert.de>

Detailed information is available
from the manufacturer.

Accessories

SIWAREX JB junction box, aluminum housing

7MH4710-1BA

For connecting up to 4 load cells in
parallel, and for connecting multiple
junction boxes.

SIWAREX JB junction box, stainless steel housing

7MH4710-1EA

For connecting up to 4 load cells in
parallel.

SIWAREX JB junction box, stainless steel housing (ATEX)

7MH4710-1EA01

For parallel connection of up to 4
load cells (for zone allocation, see
manual or type-examination certi-
ficate).

Ex interface SIWAREX IS

For intrinsically-safe connection of
load cells. With ATEX approval (not
UL/FM). Suitable for SIWAREX elec-
tronic weighing system. Compatibil-
ity of load cells must be checked.

- With short-circuit current
< 199 mA DC
- With short-circuit current
< 137 mA DC

7MH4710-5BA

7MH4710-5CA

Cable (optional)

Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY

For connecting SIWAREX electronic
weighing systems to junction box
(JB), extension box (EB) and Ex
interface or between two JB's. For
permanent installation. Occasional
bending is possible.

External diameter:
approx. 10.8 mm (0.43 in)

Permissible ambient temperature
-40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color: orange
- For potentially explosive atmo-
spheres. Sheath color: blue.

7MH4702-8AG

7MH4702-8AF

Overview



SIWAREX U is a versatile weighing module for all simple weighing and force measuring tasks. The compact module can be integrated into SIMATIC automation systems without any problems. Complete data access is possible via the SIMATIC.

Benefits

SIWAREX U offers the following key advantages:

- Uniform design technology and consistent communication in SIMATIC
- Use in distributed plant concept through connection to PROFIBUS DP/PROFINET using ET 200M
- Measurement of weight or force with a high resolution of 65000 parts and an accuracy of 0.05 %
- Space saving through use of two-channel version for two scales
- Direct connection of a remote display to the TTY interface
- Simple adjustment of scale using the SIWATOOL U program
- Supports theoretical adjustment without adjustment weights
- Supports replacement of module without renewed adjustment of scale
- Can be used in Ex applications

Application

SIWAREX U is the optimum solution wherever strain gage sensors, such as load cells, force sensors or torque measuring shafts, are used for measuring tasks. The typical applications of SIWAREX U are:

- Fill level monitoring of silos and bunkers
- Monitoring of loads on cranes and cables
- Measuring the loading on conveyor belts
- Overload protection of industrial elevators or rolling mills
- Balances in hazardous areas (using an Ex interface)
- Monitoring of belt tension

Design

The SIWAREX U is a compact function module (FM) of the SIMATIC S7-300 and can be snapped directly onto the SIMATIC S7-300 or ET 200M backplane bus. Assembly and wiring are also greatly simplified by using rails with snap-on technology.

The load cells, the power supply and the serial interfaces are connected through the 20-pin standard front plug.

Operation of the SIWAREX U in SIMATIC means that complete integration of the weighing technology into the automation system is provided.

Function

SIWAREX U is available with either one or two measuring channels. One measuring channel is required for each set of scales.

The primary task of SIWAREX U is the measurement of sensor voltage and the conversion of this measurement into a weight value. The signal can also be digitally filtered if required.

As well as determining weights, the SIWAREX MS monitors two freely programmable limits (min./max. as required).

The SIWAREX U comes factory-calibrated. This means that theoretical adjustment of the scale is possible without adjustment weights, and that modules can be replaced without the need to readjust the scale. When using "active bus modules", replacement is also possible during operation.

Consistent and uniform communication between all system components enables fast, reliable and cost-effective integration and diagnosis in industrial processes.

The SIWAREX U has two serial interfaces. The TTY interface serves to connect up to four digital remote displays. In addition to the two weight values of weighing channels 1 and 2, another two values can be set via SIMATIC and indicated on the remote displays.

A PC for adjusting the scale can be connected through the RS 232 interface.

SIWAREX U can not only be integrated in the plant software using the classic PLC programming languages; STL (Statement List), LD (Ladder Diagram) SFC (Sequential Function Chart) or SCL (Structured Control Language), it can also be integrated by means of graphical configuration with CFCs (Continuous Function Chart), where faceplates are provided in PCS 7 for visualization of the scales.

In contrast to serially linked weighing electronics, SIWAREX U does not need costly additional modules to link it to SIMATIC.

Integration in SIMATIC produces freely-programmable, modular weighing systems which can be modified according to operational requirements.

Using the SIWATOOL U software, the SIWAREX weighing modules can be set up with the convenience of Windows independently of the automation system. Input masks allow all parameters for the weighing modules to be specified, saved and printed for plant documentation.

The diverse diagnostic options provided by SIWATOOL U ensure fast fault locating in online mode.

The SIWAREX U weighing module can be used for potentially explosive areas (zone 2). The load cells can be provided with an intrinsically-safe power supply through an optional Ex interface.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Platform/hopper scale

SIWAREX U

Technical specifications

SIWAREX U	
Integration in automation systems	
• S7-300	Direct integration
• S7-1500	Through ET 200M
• S7-400 (H)	Through ET 200M
• PCS 7 (H)	Through ET 200M
• Automation systems from other vendors	Through ET 200M
• Stand-alone (without SIMATIC CPU)	Possible with IM 153-1
Communication interfaces	
	• SIMATIC S7 (P bus) • RS 232 • TTY
Connection of remote displays (through TTY serial interface)	
	Gross, channel 1, 2 or default value 1, 2
Adjustment of scales settings	
	Through SIMATIC (P bus) or PC using SIWATOOL U (RS 232)
Measuring properties	
Error limit to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution ADC	65535
Data format of weight values	2 byte (fixed-point)
Number of measurements/second	
	50
Digital filter	
	0.05 ... 5 Hz (in 7 steps), mean value filter
Weighing functions	
Weight values	Gross
Limit values	2 (min./max.)
Zero setting function	Per command
Load cells	
	Strain gages in 4-wire or 6-wire system
Load cell powering	
Supply voltage U_s (rated value)	6 V DC ¹⁾
Max. supply current	≤ 150 mA per channel
Permissible load resistance	
• R_{Lmin}	> 40 Ω per channel
• R_{Lmax}	< 4010 Ω
With Ex(i) interface	
• R_{Lmin}	> 87 Ω per channel
• R_{Lmax}	< 4010 Ω
Permissible load cell characteristic	
	Up to 4 mV/V
Max. distance of load cells	
	500 m ²⁾ 150/500 m for gas group IIC 500 m ²⁾ for gas group IIB (see SIWAREX IS Manual)

SIWAREX U	
Intrinsically-safe load cell powering	Optional (Ex interface) with SIWAREX IS
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	150 mA (single-channel) / 240 mA (dual-channel)
Current consumption on backplane bus	≤ 100 mA
Certification	
	ATEX 95, FM, cUL _{US} Haz. Loc.
IP degree of protection to DIN EN 60529; IEC 60529	
	IP20
Climatic requirements	
T_{min} (IND) to T_{max} (IND) (operating temperature)	
• Horizontal installation	0 ... +60 °C (32 ... 140 °F)
• Vertical installation	0 ... +40 °C (32 ... 104 °F)
EMC requirements according to	
	according to NAMUR NE21, Part 1; EN 61326
Dimensions	
	40 x 125 x 130 mm (1.58 x 4.92 x 5.12 in)

¹⁾ Load cell supply changed to 6 V DC as compared to 7MH4601-1AA01 and ... 1BA01.

²⁾ Possible up to 1000 m under certain conditions when using the recommended cable (accessories).

Selection and ordering data

Article No.

Article No.

SIWAREX U

For SIMATIC S7 and ET 200M, incl. bus connector, weight 0.3 kg (0.661 lb)

Single-channel version¹⁾
for connecting one scale

7MH4950-1AA01

Two-channel version²⁾
for connecting two scales

7MH4950-2AA01**SIWATOOL V4 & V7**

Service and commissioning software for SIWAREX weighing modules

7MH4900-1AK01**SIWAREX U configuration package for PCS7, version 8.0**

Suitable for 7MH4950-xAA01

- Function block for CFC
- Faceplate
- Manual

7MH4950-3AK62**SIWAREX PCS7 AddOn Library for PCS7 V8.x and V9.0**

- Support of Profinet APL faceplates and function block for:

- SIWAREX U
- SIWAREX FTA
- SIWAREX FTC_B (belt scale)
- SIWAREX WP321

Classic faceplate and function block for:

- SIWAREX FTC_L (Loss in weight)

7MH4900-1AK61**SIWATOOL connecting cable**

From SIWAREX U/CS with serial PC interface, for 9-pin PC interfaces (RS 232), length 3 m (9.84 ft)

7MH4607-8CA**Installation material (mandatory)****20-pin front plug with screw contacts**

Required for each SIWAREX module

6ES7392-1AJ00-0AA0**Shield contact element**

Sufficient for two SIWAREX U modules

6ES7390-5AA00-0AA0**Shield connection terminal**

Contents: 2 units (suitable for cable with diameter 4 ... 13 mm) (0.16 ... 0.51 in)

6ES7390-5CA00-0AA0

Note:

one shield connection terminal each is required for:

- Scale connection
- RS 485 interface
- RS 232 interface

S7 DIN rail

- 160 mm (6.30 in)
- 480 mm (18.90 in)
- 530 mm (20.87 in)
- 830 mm (32.68 in)
- 2000 mm (78.74 in)

6ES7390-1AB60-0AA0
6ES7390-1AE80-0AA0
6ES7390-1AF30-0AA0
6ES7390-1AJ30-0AA0
6ES7390-1BC00-0AA0

Accessories (optional)**Labeling strips**

(10 units, spare part)

6ES7392-2XX00-0AA0**Remote displays (option)**

The digital remote displays can be connected directly to SIWAREX U through a TTY interface.

The following remote displays can be used:

S102, S302

Siebert Industrieelektronik GmbH
Postfach 1180

D-66565 Eppelborn, Germany

Tel.: +49 6806/980-0

Fax: +49 6806/980-999

Internet:

<http://www.siebert-group.com/en>

Detailed information is available from the manufacturer.

SIWAREX JB junction box, aluminum housing**7MH4710-1BA**

For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.

SIWAREX JB junction box, stainless steel housing**7MH4710-1EA**

For connecting up to 4 load cells in parallel.

SIWAREX JB junction box, stainless steel housing (ATEX)**7MH4710-1EA01**

For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).

Ex interface SIWAREX IS

For intrinsically-safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked.

- With short-circuit current < 199 mA DC
- With short-circuit current < 137 mA DC

7MH4710-5BA**7MH4710-5CA**

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Platform/hopper scale

SIWAREX U

Selection and ordering data

Article No.

Cable (optional)

Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JB's.

For permanent installation. Occasional bending is possible.

External diameter:
approx. 10.8 mm (0.43 in)

Permissible ambient temperature
-40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color: orange
- For potentially explosive atmospheres. Sheath color: blue.

7MH4702-8AG
7MH4702-8AF

Commissioning

Commissioning charge for one static scale with SIWAREX module

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Static adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Adjustment weights available
- Free access to scale

¹⁾ Compatible with 7MH4601-1AA01; supply of load cells changed to 6 V DC.

²⁾ Compatible with 7MH4601-1BA01; supply of load cells changed to 6 V DC.

Overview

Dosing, filling, bagging scale

Typical requirements in many industries are high-precision mixing and dosing, and packing and filling at high speed. The corresponding SIWAREX electronics offer comprehensive properties and functions that fulfill all requirements - including for legal-for-trade operation.

The dosing process used in production operations depends on a variety of factors: Depending on the type and quantity of materials weighed, different dosing systems and weighing processes are required. It must be possible to fill liquid or solid goods quickly and precisely.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Dosing/Filling/Bagging scale

SIWAREX WP251

Overview



SIWAREX WP251 electronic weighing module

SIWAREX WP251 is a flexible weighing module for dosing and filling processes. The compact module can be installed seamlessly in the SIMATIC S7-1200 automation system. It can also be used without a SIMATIC CPU in stand-alone mode.

Benefits

SIWAREX WP251 offers the following key advantages:

- Uniform design technology and consistent communication in SIMATIC S7-1200
- Uniform configuration with TIA Portal
- Legal-for-trade according to OIML R-76, R-51 and R-61
- Legal-for-trade according to OIML R-107 (available soon)
- Internal alibi memory for up to 550 000 entries
- Operation without SIMATIC CPU also possible
- Ethernet port ex works (Modbus TCP/IP / SIWATOOL)
- RS 485 interface ex works (Modbus RTU / remote display)
- Four digital inputs and outputs, one analog output ex works
- Measurement of weight and force with a high resolution of up to ± 4 million parts and an accuracy of 0.05%
- Simple calibration and setup of the scale using SIWATOOL V7 via the Ethernet interface
- Recovery-point for the simple restoration of all parameters
- Automatic calibration without the need for calibration weights
- Supports replacement of module without recalibration of scales
- Direct use in hazardous area zone 2

Application

SIWAREX WP251 is the optimum solution wherever fast and precise dosing and filling are required. The typical applications of SIWAREX WP251 are:

- Automatic catchweighing instruments (ACI) - legal-for-trade in accordance with OIML R-51
- Gravimetric filling instruments (GFI) - legal-for-trade in accordance with OIML R-61
- Non-automatic weighing instrument (NAWI) - legal-for-trade in accordance with OIML R-76
- Discontinuous Totalizing Automatic Weighing Instrument (SWT) Legal-for-trade according to OIML R-107 (in preparation)

Design

SIWAREX WP251 is a compact technology module in the SIMATIC S7-1200, and communicates directly via the system bus with the SIMATIC S7-1200 controller.

The compact weighing module with a width of 70 mm (2.76 inches) is installed using a mounting rail. This is extremely user-friendly.

The connections for the power supply, the load cells, the RS 485 port, the digital inputs/outputs, and the analog output are located on removable screw connector blocks. An RJ45 port is available for the Ethernet connection (SIWATOOL and Modbus TCP/IP).

Function

SIWAREX WP251 controls dosing and filling processes completely autonomously. The dosing valves (coarse/fine flow) can be controlled directly via the four digital outputs of the module. This achieves maximum accuracy since the weighing process is controlled completely independently of the CPU and its cycle time.

The CPU can be used to manage recipes and material parameters. These parameters and the desired setpoint are then transferred to SIWAREX WP251 by function block, and the dosing process is started. SIWAREX WP251 automatically optimizes the shut-off points, generates statistics, and logs every dosing task in the internal protocol memory that is also accessible from the CPU and can be read out by the CPU.

Diverse options are available for commissioning. The SIWAREX WP251 function block enables full access to all parameters of the SIWAREX WP251. The downloadable example application "ready-for-use" provides full data access to the weighing module, calibration options and operation of the scale - without any additional programming effort. Further, the PC service software SIWATOOL V7 that communicates via Ethernet with the SIWAREX module can be used for commissioning. Access using W-LAN is thus also possible by means of a WIFI access point. Consequently, remote access via the Internet is also no problem. For servicing purposes, centralized access to all scales from a single location is possible – worldwide. In addition, there is full access to all parameters and commands, both via the RS485 port (Modbus RTU) and via the Ethernet interface (Modbus TCP/IP), meaning that full commissioning and operation can also take place via these channels.

Weighing functions

SIWAREX WP251 provides the weighing modes Non-automatic weighing instrument, Automatic catchweighing instrument and Automatic gravimetric filling instrument.

In the operating modes Non-automatic weighing instrument and Automatic catchweighing instrument, there is a choice between filling mode and emptying mode. The entire filling or dosing process is fully controlled from SIWAREX WP251. It is only necessary to transfer a setpoint and a start command to the module. The coarse flow, fine flow and empty signals can be switched directly via the digital outputs of the module.

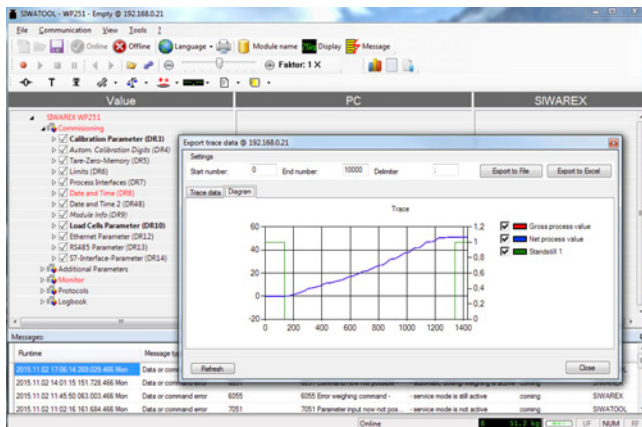
The weight, as well as all scale and dosing status bits, is available cyclically in the program code in the PLC for further evaluation. If stand-alone mode of the module is activated, there is an additional guarantee that dosing and operation of the scales can continue even in the event of a CPU stop.

Software

SIWATOOL V7 is a special program for commissioning and servicing and runs with Windows operating systems. The program enables the user to perform scale calibration without requiring automation engineering skills. During servicing, the technician can use a PC to analyze and test the procedures in the scale. Reading the diagnostics buffer from SIWAREX WP251 is extremely helpful when analyzing events.

The following are just some of the tasks that can be carried out using SIWATOOL V7:

- Parameter assignment and calibration of the scale
- Testing of scale properties
- Recording and analysis of weighing sequence



Software SIWATOOL V7, layout of the program window

It is also extremely helpful to analyze the diagnostics buffer which can be saved together with the parameters from the module in a backup file.

Trace mode is provided to optimize the weighing sequences in the SIWAREX WP251 weighing module. The recorded weight values and associated states can be displayed as trends using SIWATOOL V7 and MS Excel.

Upgrading firmware

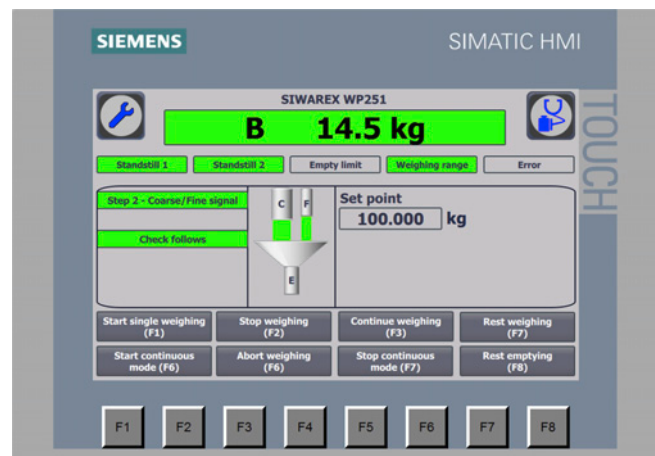
An additional program function can be used to download a new firmware version onto the SIWAREX WP251 on site. This means that firmware upgrades can be carried out on site as required anywhere in the world.

Integration

Integration into the automation environment

SIWAREX WP251 is part of the SIMATIC S7-1200 basic controller range, and is integrated seamlessly into the TIA Portal. The free function block enables full access to all parameters, actual values, setpoints, weight values and status information (e.g. limits, coarse flow signal, fine flow signal, empty signal) conveniently and without programming effort. Customized operator interfaces can thus be created in conjunction with SIMATIC HMI touch panels. Management of several languages can also be easily implemented and organized.

The example project "Ready-for-use SIWAREX WP251" is available free of charge to help you to get started quickly and simply. This TIA portal project contains both the function block and a fully fledged visualization system for commissioning, operating and monitoring the SIWAREX WP251. The visualization can be freely edited and adapted, or transferred completely into an existing HMI project.



Stand-alone mode

Alternatively, SIWAREX WP251 can also be used without a SIMATIC CPU. In this case, the module is connected with a supply voltage of 24 V DC only. In this case, a PC (e.g. using an OPC server) or a Modbus-enabled operator panel can be used for operator input. Both Modbus interfaces of SIWAREX WP251 (TCP/IP and RTU) enable access to all parameters, actual values, setpoints, weight values and status information. A customized and plant-specific operator interface can thus be created on the PC or the Modbus-enabled operator panel. Integration into third-party systems is also no problem via the Modbus interfaces.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Dosing/Filling/Bagging scale

SIWAREX WP251

Technical specifications

SIWAREX WP251	
Weighing modes	- Non-automatic weighing instrument (NAWI) (filling + removal) (legal-for-trade according to OIML R-76) - Automatic catchweighing instruments (ACI) (filling + removal) (legal-for-trade according to OIML R-51) - Gravimetric filling instruments (GFI) (legal-for-trade according to OIML R-61) - Discontinuous Totalizing Automatic Weighing Instrument (SWT) (legal-for-trade according to OIML R-107 - in preparation)
Integration in automation systems	
S7-1200	SIMATIC S7-1200 system bus
Operator panel and/or automation systems from other vendors	Via Ethernet (Modbus TCP/IP) or RS 485 (Modbus RTU)
Ports	1 x SIMATIC S7-1200 system bus 1 x Ethernet (SIWATOOL and Modbus TCP/IP) 1 x RS 485 (Modbus RTU or remote display) 1 x analog output (0/4 ... 20 mA) 4 x digital inputs (24 V DC, floating) 4 x digital outputs (24 V DC, floating, short-circuit proof)
Functions	3 limits - Tare - Tare specification - Zeroing - Zero adjustment - Statistics - Automatic correction of the shut-off points - Internal protocol memory for 550 000 entries - Trace function for signal analysis - Internal restore point - Stand-alone mode or SIMATIC S7-1200 integrated
Parameter assignment	- Full access using function block in SIMATIC S7-1200 - Full access using Modbus TCP/IP - Full access using Modbus RTU
Remote display	
Connection	via RS 485
Setting the scales	PC software SIWATOOL (Ethernet), S7-1200 function block and touch panel or directly connected operator panel (Modbus)
Measuring accuracy	
Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05 %
Internal resolution	Up to ± 4 million parts
Number of measurements/second	100 or 120 (selectable)
Filter	- Low-pass filter 0.1 ... 50 Hz - Average value filter

SIWAREX WP251	
Load cells	Full-bridge strain gauges in 4-wire or 6-wire system
Load cell powering	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	
• R_{Lmin}	> 40 Ω
• R_{Lmax}	< 4 100 Ω
With SIWAREX IS Ex interface	
• R_{Lmin}	> 50 Ω
• R_{Lmax}	< 4 100 Ω
Load cell characteristic	1 ... 4 mV/V
Permissible range of the measurement signal (with 4 mV/V sensors)	-21.3 ... +21.3 mV
Max. distance of load cells	500 m (229.66 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface
Certificates	- ATEX Zone 2 - UL - KCC - EAC - RCM
Calibration approvals	- EU type-examination certificate 2014/31/EU (NAWI) according to OIML R76 - EU type-examination certificate 2014/32/EU (MID) according to OIML R61 and OIML R51 - EU type-examination certificate 2014/32/EU (MID) according to OIML R107 (available soon)
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	200 mA
Max. power consumption SIMATIC Bus	3 mA
IP degree of protection according to DIN EN 60529; IEC 60529	IP20
Climatic requirements	
T_{min} (IND) to T_{max} (IND) (operating temperature)	
• Vertical installation	-10 ... +40 °C (14 ... 104 °F)
• Horizontal installation	-10 ... +55 °C (14 ... 131 °F)
EMC requirements	according to EN 45501
Dimensions	70 x 75 x 100 mm (2.76 x 2.95 x 3.94 in)

Selection and ordering data

Article No.

Article No.

SIWAREX WP251 weighing module

Single-channel, legal-for-trade, for automatic dosing and batching scales (GFI, ACI, NAWI) with analog load cells / full-bridge strain gauges (1 - 4 mV/V), 1 x LC, 4 x DQ, 4 x DI, 1 x AQ, 1 x RS 485, Ethernet port.

7MH4960-6AA01**SIWAREX WP251 equipment manual**

Available in a range of languages

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWAREX WP251 "Ready for Use"

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWATOOL V4 & V7

Service and commissioning software for SIWAREX weighing modules

7MH4900-1AK01**Calibration set for SIWAREX WP2xx**

Valid for SIWAREX WP231 K and SIWAREX WP251.

For verification of up to 3 scales, comprising:

- 3 x inscription foil for labeling
- 1 x protective film
- 3 x calibration protection plate
- Guidelines for verification, certificates and approvals, adaptable label, SIWAREX WP

7MH4960-0AY10**Ethernet cable patch cord 2 m (7 ft)**

For connecting SIWAREX WP251 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.

6XV1850-2GH20**Remote display (optional)**

The digital remote displays can be connected directly to the SIWAREX WP251 via the RS 485 interface.

Suitable remote display: S102
 Siebert Industrieelektronik GmbH
 Postfach 1180
 D-66565 Eppelborn, Germany
 Tel.: +49 6806/980-0
 Fax: +49 6806/980-999
 Internet:
<http://www.siebert-group.com/en>
 Detailed information is available from the manufacturer.

Accessories**SIWAREX JB junction box, aluminum housing**

For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.

7MH4710-1BA**SIWAREX JB junction box, stainless steel housing**

For connecting up to 4 load cells in parallel.

7MH4710-1EA**SIWAREX JB junction box, stainless steel housing (ATEX)**

For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).

7MH4710-1EA01**Ex interface SIWAREX IS**

For intrinsically-safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked.

- Short-circuit current < 199 mA DC
- Short-circuit current < 137 mA DC

7MH4710-5BA**7MH4710-5CA****Cable (optional)****Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY**

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JBs.

For permanent installation. Occasional bending is possible.

External diameter: approx. 10.8 mm (0.43 in)

Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color: orange
- For potentially explosive atmospheres. Sheath color: blue.

7MH4702-8AG**7MH4702-8AF****Ground terminal for connecting the load cell cable shield to the grounded DIN rail****6ES5728-8MA11**

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Dosing/Filling/Bagging scale

SIWAREX WP251

Selection and ordering data

Article No.

Commissioning

Commissioning charge for one static scale with SIWAREX module

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Static adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Adjustment weights available
- Free access to scale

2

Overview



SIWAREX FTA (Flexible Technology, Automatic Weighing Instrument) is a versatile and flexible weighing module for industrial use. It can be used in both non-automatic and automatic weighing operation, for example the production of mixtures, and for filling, loading, monitoring and bag filling.

It has the corresponding scale approvals and is also suitable for legal-for-trade weighing systems.

The SIWAREX FTA function module is integrated in SIMATIC S7/PCS7, and uses the features of this modern automation system, such as integrated communication, diagnostics and configuration tools.

Benefits

SIWAREX FTA is characterized by the following features:

- Uniform design, and totally integrated communication in SIMATIC S7 and SIMATIC PCS 7
- Uniform configuration with SIMATIC
- Direct use in the SIMATIC automation system
- Use in distributed plant concept through connection to PROFIBUS DP/PROFINET using ET 200M
- Measurement of weight or force with high resolution of 16 million intervals
- High accuracy 3 x 6 000d, legal-for-trade according to OIML R-76, R-51, R-61 and R-107
- Use with analog strain-gage load cells of types SIWAREX R and SIWAREX WL200
- Alternative option of connecting individual load cells from the manufacturers METTLER TOLEDO, Wipotec and PESA
- Legal-for-trade display with Windows-based panels, e.g. SIMATIC Comfort Panels
- Stepless or stepped dosing control
- Exact switching of dosing signals (< 1 ms)
- Parameterizable inputs and outputs
- Parameterizable for highly versatile applications
- Flexible adaptation to different requirements with SIMATIC
- Simple adjustment of scale using the SIWATOOL FTA program
- Theoretical adjustment without adjustment weights
- Replacement of module without renewed adjustment of scale
- Recording of weighing sequence
- Alibi memory with calibration capability
- Can be used in Ex applications

Application

The SIWAREX FTA weighing module is the optimum solution wherever high demands are placed on accuracy and speed.

Thanks to its outstanding measuring properties, weights can be measured with extreme accuracy in up to three ranges.

SIWAREX FTA can be used to design legal-for-trade dosing systems, such as filling plants, loading stations, bagging stations, rotapackers, mixers or test stations.

Typical fields of application include:

- Filling of liquids
- Bagging of solid matter (also big bag)
- Proportioning as deduction weighing or fill weighing
- Checking of individual quantities
- Loading or receiving of materials
- Static checkweigher
- Check weigher (in combination with Wipotec load cells)

Design

SIWAREX FTA is a function module of SIMATIC S7-300 which can be directly snapped onto the SIMATIC S7-300 or ET 200M backplane bus. Thanks to the snap-on mounting rail system, very little work is required to install/cable the 80 mm wide weighing module.

The load cells, the RS 485 serial interface, the analog output and the digital inputs and outputs are connected by means of the 40-pin standard front connector, the PC (RS 232) by means of a 9-pin SUB-D connector and the power supply by means of a separate 2-pin connector.

Operation of SIWAREX FTA in SIMATIC enables the weighing system to be completely integrated into the automation system.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Dosing/Filling/Bagging scale

SIWAREX FTA

Function

The main tasks of the SIWAREX FTA are the high-precision measurement of the current weight in up to three measuring ranges, and exact control of the weighing procedures.

The weighing module controls the weighing procedures fully automatically. However, integration in SIMATIC means that it is also possible to directly influence the weighing procedures using a PLC program. This means that the tasks can be sensibly divided: The very fast weighing functions are implemented in the SIWAREX FTA, the interlocking and logic functions in the SIMATIC CPU.

Weighing functions

The SIWAREX FTA is easy to parameterize for the various automatic weighing functions.

The following legal-for-trade weighing functions can be parameterized:

- NAWI (**N**on-**A**utomatic **W**eighing **I**nstrument) according to OIML R76
- AGFI (**A**utomatic **G**ravimetric **F**illing **I**nstrument) according to OIML R61
- ACI (**A**utomatic **C**atchweighing **I**nstrument) according to OIML R51
- DTAWI (**D**iscontinuous **T**otalizing **A**utomatic **W**eighing **I**nstrument (Totalizing Hopper Weigher)) according to OIML R107

Monitoring and control of the load cell signals and statuses

During the weighing procedure, the SIWAREX FTA weighing module monitors and controls the load cell signals and statuses. The optimized exchange of data within SIMATIC permits direct evaluation of the load cell signals and statuses in the PLC program.

The SIWAREX FTA can easily be adapted to changes in the system technology thanks to the PLC's influence on the weighing process.

The SIWAREX FTA is already factory-calibrated. This means that the theoretical adjustment of the scale is possible without adjustment weights, and that modules can be replaced without readjustment of the scale. When using "active bus modules", replacement is also possible during operation.

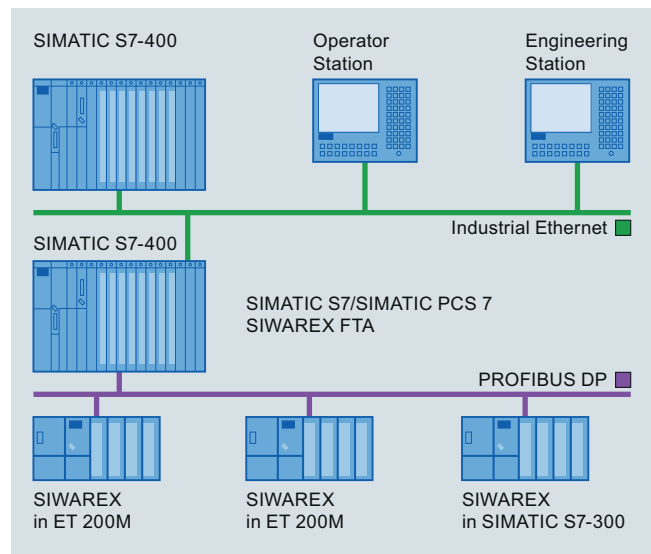
Integration in SIMATIC

SIWAREX FTA is completely integrated into the SIMATIC S7 and SIMATIC PCS 7. Users can freely configure their automation solution – including the weighing application.

The right combination of SIMATIC components can produce optimum solutions for small, medium-size and large plants. The scales are operated and monitored using SIMATIC standard operator panels. Needless to say, these operator panels can also be simultaneously used for the operator control and monitoring of the plant.

Customized or sector-specific solutions can be developed extremely quickly using the configuration package and example applications for SIMATIC. The following Figure shows a typical configuration of a medium-size plant.

The ready-to-use function blocks for the automation system and the faceplates for the operator station are used for the configuration in SIMATIC PCS 7.



SIMATIC S7/PCS 7 configuration with SIWAREX FTA

Software

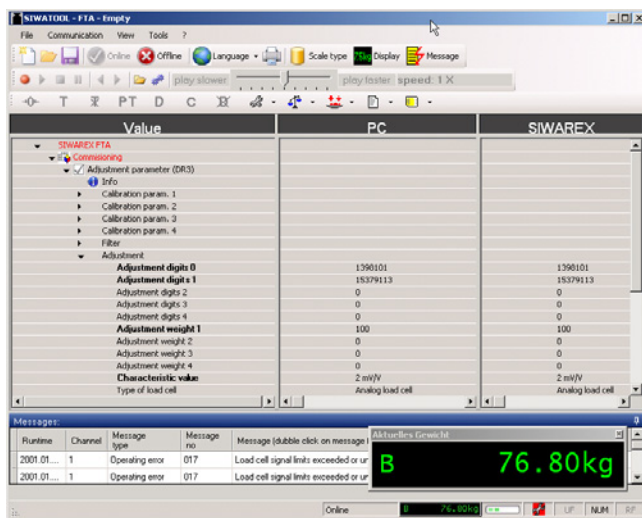
SIWATOOL FTA commissioning software

SIWATOOL FTA is a special program for commissioning and servicing and runs with Windows operating systems.

The program enables the scales to be set without the need for prior knowledge of the automation system. During servicing, the technician can use a PC to analyze and test the procedures in the scale. Reading out the diagnostics buffer from the SIWAREX FTA is extremely helpful when analyzing events.

The following are just some of the tasks that can be carried out using SIWATOOL FTA:

- Parameter assignment and calibration of the scale
- Testing of scale properties
- Saving and printing scale data
- Recording and analysis of weighing sequence



Settings in SIWAREX FTA software

It is extremely helpful to analyze the diagnostics buffer, which can be saved together with the parameters from the module in a backup file.

The SIWAREX FTA weighing module includes a trace mode for optimization of weighing sequences. The recorded weight values and associated statuses can be displayed as traces using SIWATOOL FTA and MS Excel.

Upgrading firmware

A further program function can be used to download a new firmware version onto the SIWAREX FTA on site. This means that firmware upgrades can be carried out on site as required anywhere in the world.

Reading out of weighing reports

The weighing reports are saved on an MMC (Micro Memory Card) inserted in the SIWAREX FTA for the duration specified by the Weights and Measures Act. If complaints are received concerning a particular weighing procedure, the associated data can be read out of the MMC using SIWATOOL.

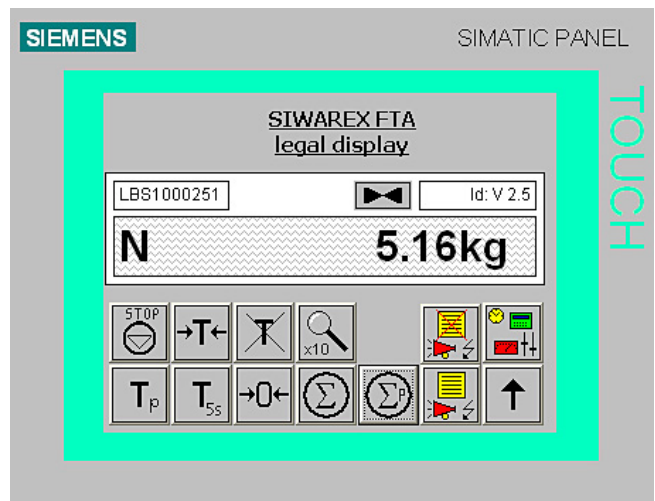
SIWAREX FTA – simple configuration

Integration in SIMATIC results in freely-programmable, modular weighing systems which can be modified according to operational requirements.

The ready-to-use SIWAREX FTA software "Getting started" is also available free-of-charge and shows beginners how to integrate the module into a STEP 7 program and offers a basis for application programming. This allows you to connect the scale very easily to an operator panel connected directly to the SIMATIC CPU.

Configuring the legal trade display on the panel

The software SecureOCX is available in systems running WinCC flexible. It provides a function for configuration of the legal trade display directly in WinCC flexible. In the TIA Portal, the SecureDisplay software is used. This is installed directly on a Windows CE-based panel (for example, SIMATIC Comfort Touch series). There is a separate "Getting Started" for using this software in the TIA Portal. This solution requires a SIMATIC CPU with an Ethernet port. SIMATIC Basic and Key Panels cannot be used.



Scale faceplate in the SIWAREX FTA "Getting started" software

In addition, the STEP 7 program SIWAREX FTA Multiscale provides a professional basis for the implementation of batching or filling plants.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Dosing/Filling/Bagging scale

SIWAREX FTA

Technical specifications

SIWAREX FTA	
Use in automation systems	
S7-300	Directly or through ET 200M
S7-1500	Through ET 200M
S7-400 (H)	Through ET 200M
PCS 7 (H)	Through ET 200M
Communication interfaces	
S7	Through backplane bus
RS 232	For SIWATOOL or printer connection
RS 485	For remote display or digital load cell
Module parameterization	
	Using SIMATIC S7
	Using SIWATOOL FTA software (RS 232)
Measuring properties	
EU type approval as non-automatic weighing machine, trade class III	3 x 6 000 d $\geq 0.5 \mu\text{V/e}$
Internal resolution	16 million parts
Internal/external updating rate	400/100 Hz
Several parameterizable digital filters	
	Critically damped, Bessel, Butterworth (0.05 ... 20 Hz), mean-value filter
Weighing functions	
Non-automatic weighing machine	OIML R76
Automatic weighing machine	OIML R51, R61, R107
Load cells	
3 characteristic value ranges	Strain gages in 4-wire or 6-wire system 1, 2 or 4 mV/V
Load cell powering	
Supply voltage U_S (rated value)	10.3 V DC
Max. supply current	184 mA
Permissible load cell resistance	
• R_{Lmin}	$> 56 \Omega$ $> 87 \Omega$ with Ex interface
• R_{Lmax}	$\leq 4\,010 \Omega$
Max. distance of load cells	
When using the recommended cable:	
Standard	1 000 m (3 280 ft)
In hazardous area ¹⁾	
• For gases of group IIC	300 m (984 ft)
• For gases of group IIB	1 000 m (3 280 ft)

SIWAREX FTA	
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface
Ex approvals zone 2 and safety	ATEX 95, FM, cUL _{US} Haz. Loc.
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	500 mA
Current consumption from backplane bus	typ. 55 mA
Inputs/outputs	
Digital inputs	7 DI electrically isolated
Digital outputs	8 DO electrically isolated
Counter input	Up to 10 kHz
Analog output	
• Current range	0/4 ... 20 mA
• Updating rate	100 Hz
Approvals	
	EU type approval (CE, OIML R76)
	EU prototype test to MID (OIML R51, R61, R107)
Degree of protection according to EN 60529; IEC 60529	
	IP20
Climatic requirements	
$T_{min}(\text{IND}) \dots T_{max}(\text{IND})$ (operating temperature)	
• Horizontal installation	-10 ... 60 °C (14 ... 140 °F)
• Vertical installation	-10 ... 40 °C (14 ... 104 °F)
EMC requirements	
	EN 61326, EN 45501, NAMUR NE21, Part 1
Dimensions	
	80 x 125 x 130 mm (3.15 x 4.92 x 5.12 in)
Weight	
	600 g (0.44 lb)

¹⁾ For further details, see Ex interface, type SIWAREX IS.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Dosing/Filling/Bagging scale

SIWAREX FTA

Selection and ordering data

Article No.

Article No.

Remote displays (option)

The Siebert S102 and S302 remote digital displays can be directly connected to the SIWAREX FTA via an RS 485 interface.

Siebert Industrieelektronik GmbH
Postfach 1180
D-66565 Eppelborn, Germany
Tel.: +49 6806/980-0
Fax: +49 6806/980-999
Internet:
<http://www.siebert-group.com/en>

Detailed information is available from the manufacturer.

SIWAREX JB junction box, aluminum housing

7MH4710-1BA

For connecting up to 4 load cells in parallel, and for connecting several junction boxes

SIWAREX JB junction box, stainless steel housing

7MH4710-1EA

For connecting up to 4 load cells in parallel.

SIWAREX JB junction box, stainless steel housing (ATEX)

7MH4710-1EA01

For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).

Ex interface SIWAREX IS

For intrinsically-safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked.

- With short-circuit current < 199 mA DC
- With short-circuit current < 137 mA DC

7MH4710-5BA

7MH4710-5CA

Cable (optional)

Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JBs.

For permanent installation. Occasional bending is possible.

External diameter:
approx. 10.8 mm (0.43 in)

Permissible ambient temperature
-40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color: orange
- For potentially explosive atmospheres. Sheath color: blue.

7MH4702-8AG

7MH4702-8AF

Commissioning

Commissioning charge for one static scale with SIWAREX module

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Static adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Adjustment weights available
- Free access to scale

Overview**Belt scales**

The gravel, cement, coal, recycling and mining industries require exact weight measurement of the material to be conveyed using belt scales. The corresponding SIWAREX electronics offers comprehensive properties and functions that fulfil all requirements.

The Milltronics belt scales from Siemens combine simple installation and low maintenance costs (no moving parts) with higher reproducibility. This results in high productivity. With minimum hysteresis and maximum linearity, lateral forces have no influence on measuring accuracy. All load cells are equipped with overload protection.

The installation of belt scales in danger zones is also available as option. Various versions are available for high accuracy, small loads and heavy loads.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Belt scale

SIWAREX WP241

Overview



SIWAREX WP241

SIWAREX WP241 is a flexible weighing module for belt scales. The compact module is easy to install in the SIMATIC S7-1200 automation system. It can also be operated as a standalone module, i.e. without a SIMATIC CPU.

Benefits

SIWAREX WP241 offers the following key advantages:

- Uniform design technology and consistent communication in SIMATIC S7-1200
- Uniform configuration with TIA Portal
- Operation without SIMATIC CPU possible
- Direct connection of an operator panel via Ethernet
- Four digital inputs and outputs, one analog output
- Measurement of weight with a high resolution of ± 4 million parts
- Simple adjustment of belt scales using the SIWATOOL V7 program via the Ethernet interface - even without knowledge of SIMATIC
- Replacement of module possible without renewed calibration of the scale
- Use in hazardous area zone 2
- Different calibration methods: With test weights, test chain, automatically or via material batch.
- Specification of belt inclination angle
- 6 totalization memories
- Simulation of speed and belt load for test purposes
- Comprehensive diagnostics functions

Application

SIWAREX WP241 is the optimal solution wherever belt scales are used that demand high accuracy, high user-friendliness, and flexible system integration. The typical applications of the SIWAREX WP241 are determining the current material flow rate, belt load and belt speed. Furthermore, 6 totalizers are available for evaluating the amount of material conveyed.

Design

SIWAREX WP241 is a compact technology module in the SIMATIC S7-1200, and it allows direct connection to S7-1200 components via a sliding connector. Thanks to standard rail mounting, the installation and wiring outlay for the 70 mm-wide (2.76 inch) weighing module are very low. The power supply, load cells, RS 485, digital input/outputs, and analog output are connected via the screw connector of the weighing module. An RJ45 connector is used for the Ethernet connection.

Function

The primary task of the SIWAREX WP241 is to measure the speed of the belt, to measure and convert the sensor voltage to a weight value, and to precisely calculate the amount of material conveyed or material flow rate.

The volume of material conveyed can be recorded in 6 totalization memories: The accumulated totalization memory determines the conveyed material over the entire operating time of the scale (can only be reset by loading the factory settings). The overall total and the four remaining totalization memories are available for use as required. e.g. for recording the daily or weekly totals.

Four different options are available for rapid commissioning:

- **Automatic calibration**
The calibration is calculated automatically using the load cell parameters entered. Only the zero point has to be calculated on the actual plant.
- **Calibration with calibration weights or test weights**
Test weights are secured to the weighing equipment and the conveyor belt is started. The calibration values are calculated while the belt is running. The zero point must also be calculated.
- **Calibration with test chain**
Instead of test weights, a chain of a known weight can be placed on the measuring points of the belt. The calibration values are calculated as for calibration with test weights.
- **Calibration via material test**
This method can be used if a volume of material is available, but neither test weights nor a chain are available. The material can either be preweighed or weighed afterwards. The material is passed over the belt scale, and the weighing module calculates the calibration characteristic automatically.

If "Automatic set to zero" is active, the electronic weighing system automatically executes a "set to zero" procedure when the belt reaches the "set to zero" area.

Extensive diagnostics functions are available. Diagnostic messages are output to the different interfaces. In simulation mode, both the speed and the belt load can be specified by the user, i.e. simulated. This makes it possible to test many functions in advance without operating belt scales. The digital inputs/outputs and the analog output can also be simulated for testing purposes. The "Trace" function is very helpful for optimizing the plant or when troubleshooting. This records the weighing history stored in the internal module memory (e.g. material flow rate, belt load, speed) and exports it to Excel in a graphical format.

Monitoring of the scale signals and states

The SIWAREX WP241 monitors the belt load, the material flow rate, and the belt speed, and it signals if the limits are exceeded. The respective limits can be parameterized as required.

Consistent and uniform communication between all system components enables fast, reliable and cost-effective integration and diagnosis in industrial processes.

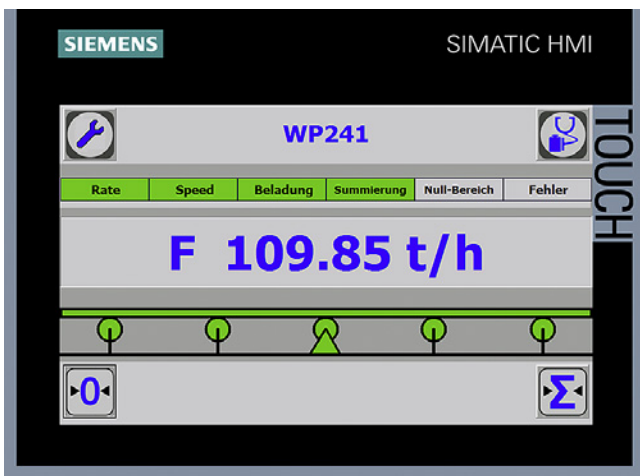
Integration in the plant environment

SIWAREX WP241 can be directly integrated into the SIMATIC S7-1200 via the SIMATIC bus. Standalone operation without SIMATIC is also possible.

A wide variety of connection options are provided via the RS 485 and Ethernet interface. Via Modbus TCP/IP or Modbus RTU, control panels can be connected and it is also possible to communicate with various automation systems. A PC for programming the SIWAREX WP241 via SIWATOOL can be connected to the Ethernet interface.

SIWAREX WP241 can be integrated into the system software using all standard PLC programming languages from the TIA Portal. In contrast to serially linked electronic weighing systems, SIWAREX WP241 does not need costly additional modules to link it to SIMATIC.

Used in conjunction with SIWAREX WP241, it is possible to configure freely programmable, modular weighing systems in SIMATIC, which can be adapted to company-specific requirements as needed.



SIWAREX WP241 "Ready for use"

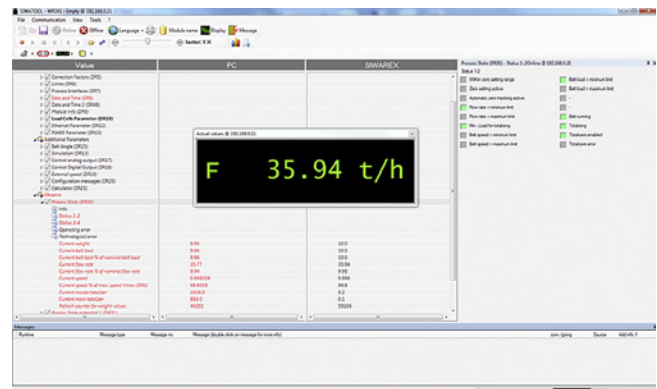
In addition to the configuration package, fully-featured SIWAREX WP241 "Ready for use" software is also available free-of-charge. It shows beginners how to integrate the module in a STEP 7 program and offers a basis for application programming. This allows you to connect the scale either directly to the SIMATIC CPU or to an operator panel connected directly to the SIWAREX WP241.

Software

There is also the option of using a Windows PC for commissioning and servicing. The program SIWATOOL enables the belt scales to be set without prior knowledge of the automation system, as required. During servicing, the technician can use a PC to quickly and simply analyze and test the procedures in the scale.

The following are just some of the tasks that can be carried out using SIWATOOL V7:

- Parameterization and calibration of the scale
- Testing/Simulation of scale properties
- Recording, analysis and export of scale traces ("Trace")
- Creation of backup files for rapidly replacing modules without calibration



SIWAREX WP241 SIWATOOL

It is also extremely helpful to analyze the diagnostics buffer which can be saved together with the parameters following reading out from the module.

Trace mode is provided to optimize the weighing sequences in the SIWAREX WP241 weighing module. The recorded weight values and associated states can be displayed as trends using SIWATOOL V7 and MS Excel.

Upgrading firmware

An additional program function can be used to download a new firmware version onto the SIWAREX WP241 on site. This means that firmware upgrades can be carried out on site as required anywhere in the world.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Belt scale

SIWAREX WP241

Technical specifications

SIWAREX WP241	
Integration in automation systems	
S7-1200	SIMATIC S7-1200 system bus
Operator panel and/or automation systems from other vendors	Via Ethernet (Modbus TCP/IP) or RS 485 (Modbus RTU)
Communication interfaces	• SIMATIC S7-1200 backplane bus • RS 485 (Modbus RTU) • Ethernet (SIWATOOL V7, Modbus TCP/IP) • Analog output 0/4 - 20 mA • 4 x digital outputs, 24 V DC floating, short-circuit proof • 4 x digital outputs, 24 V DC floating
Commissioning options	• Using SIWATOOL V7 • Using function block in SIMATIC S7-1200 CPU / Touch Panel • Using Modbus TCP/IP • Using Modbus RTU
Measuring accuracy	
Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution	up to ±4 million parts
Measuring frequency	100 / 120 Hz
Digital filter	Separate, variable adjustable low-pass and average filter for loading and speed
Filter for conveyor load	Low-pass filter (limit frequency 0.05 ... 50 Hz)
Filter for belt speed	Low-pass filter (limit frequency 0.05 ... 50 Hz)
Weighing functions	
Readout data	• Weight • Belt load • Material flow rate • Accumulated total • Main total • Free totals 1 ... 4 • Belt speed
Limits (min/max)	• Belt load • Material flow rate • Belt speed
Load cells	Full-bridge strain gauges in 4-wire or 6-wire system

SIWAREX WP241	
Load cell excitation	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	• R_{Lmin} • R_{Lmax}
With SIWAREX IS Ex interface	• R_{Lmin} • R_{Lmax}
Load cell characteristic	1 ... 4 mV/V
Permissible measurement signal range	-21.3 ... +21.3 mV
Max. distance of load cells	500 m (229.66 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface (compatibility of the load cells must be checked)
Approvals/certificates	• ATEX Zone 2 • UL • EAC • KCC • RCM
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	200 mA
Max. power consumption SIMATIC Bus	3 mA
IP degree of protection to DIN EN 60529; IEC 60529	IP20
Climatic requirements	
T_{min} (IND) ... T_{max} (IND) (operating temperature)	
• Vertical installation	-10 ... +40 °C (14 ... 104 °F)
• Horizontal installation	-10 ... +55 °C (14 ... 131 °F)
EMC requirements	according to EN 45501
Dimensions	70 x 75 x 100 mm (2.76 x 2.95 x 3.94 in)

Selection and ordering data		Article No.	Article No.
SIWAREX WP241 weighing module Single-channel, for conveyor scales with analog load cells / full-bridge strain gauges (1 - 4 mV/V), 1 x LC, 4 x DQ, 4 x DI, 1 x AQ, 1 x RS 485, Ethernet port.		7MH4960-4AA01	Cable (optional) Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JB's. For permanent installation. Occasional bending is possible. External diameter: approx. 10.8 mm (0.43 in) Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F). Sold by the meter. • Sheath color: orange • For potentially explosive atmospheres. Sheath color: blue. Ground terminal for connecting the load cell cable shield to the grounded DIN rail Commissioning Commissioning charge for one belt scale with SIWAREX module (Travel and setup charge must be ordered separately) Scope: • Recording of data • Checking of mechanical installation of the scale • Checking of electrical wiring and function • Dynamic adjustment of the scale Requirements: • Mechanical design functional • Modules electrically wired and tested • Adjustment weights available • Free access to scale
SIWAREX S7-1200 manual Available in a range of languages Free download on the Internet at: http://www.siemens.com/weighing/documentation			
SIWAREX WP241 "Ready for Use" Complete software package for belt scales (for S7-1200 and a directly connected operator panel) Free download on the Internet at: http://www.siemens.com/weighing/documentation			
SIWATOOL V4 & V7 Service and commissioning software for SIWAREX weighing modules		7MH4900-1AK01	
Ethernet cable patch cord 2 m (7 ft) For connecting SIWAREX WP241 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.		6XV1850-2GH20	
Accessories SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.		7MH4710-1BA	
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel.		7MH4710-1EA	
SIWAREX JB junction box, stainless steel housing (ATEX) For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).		7MH4710-1EA01	
Ex interface SIWAREX IS For intrinsically-safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked. • Short-circuit current < 199 mA DC • Short-circuit current < 137 mA DC		7MH4710-5BA 7MH4710-5CA	

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Belt scale

SIWAREX FTC

Overview



The SIWAREX FTC (Flexible Technology for Continuous Weighing) is a versatile and flexible weighing module for conveyor scales, differential proportioning weighers and bulk flow meters. It can also be used to record weights and measure force. The SIWAREX FTC function module is integrated in SIMATIC S7/PCS7, and uses the features of this modern automation system, such as integral communication, diagnostics and configuration tools.

Benefits

SIWAREX FTC is characterized by the following features:

- Uniform design, and totally integrated communication in SIMATIC S7 and SIMATIC PCS 7
- Uniform configuration with SIMATIC
- Direct use in the SIMATIC automation system
- Use in distributed plant concept through connection to PROFIBUS DP/PROFINET using ET 200M
- Measurement of weight or force with high resolution of 16 million intervals
- High accuracy $3 \times 6\,000$ d
- Use with analog strain-gage load cells of types SIWAREX R and SIWAREX WL200
- Alternative option of connecting individual load cells from the manufacturers METTLER TOLEDO, WIPOTEC and PESA
- Display with SIMATIC standard operator panels
- Parameterizable inputs and outputs
- Parameterizable for highly versatile applications
- Flexible adaptation to different requirements with SIMATIC
- Simple adjustment of scale using the SIWATOOL FTC program
- Theoretical adjustment without adjustment weights
- Replacement of module without renewed adjustment of scale
- Recording of weighing sequence
- 8 totalization memories with different digit intervals
- Can be used in Ex applications

Application

The SIWAREX FTC weighing module is the optimum solution wherever high demands are placed on continuous weighing procedures. Thanks to its outstanding measuring properties, weights can be measured with extreme accuracy in up to three ranges. In the case of force measurements, the value can be measured bidirectionally.

Typical applications for SIWAREX FTC include:

- Flowrate/flow measurement
- Volume measurement
- Material loading, summation
- Flowrate/flow control
- Belt load measurement
- Belt scale/weighfeeder
- Loss-in-weight scale
- Force measurement

Design

SIWAREX FTC is a function module of SIMATIC S7-300 which can be directly snapped onto the SIMATIC S7-300 or ET 200M backplane bus. Thanks to the snap-on mounting rail system, very little work is required to install/cable the 80 mm wide weighing module.

The load cells, the RS 485 serial interface, the analog output and the digital inputs and outputs are connected by means of the 40-pin standard front connector, the PC (RS 232) by means of a 9-pin SUB-D connector and the power supply by means of a separate 2-pin connector.

Operation of SIWAREX FTC in SIMATIC enables the weighing system to be completely integrated into the automation system.

Function

The main tasks of SIWAREX FTC are the high-precision measurement of the current weight, and the exact calculation of the conveyed quantity or flow. In "Force measurement" mode, SIWAREX FTC measures the force bidirectionally.

The conveyed quantity can be recorded in 8 totalization memories. Through integration in SIMATIC it is also possible to directly control scale operation by means of a PLC program. This means that the tasks can be sensibly divided: The weighing functions are implemented in the SIWAREX FTC, the interlocking and logic functions for the plant control in the SIMATIC CPU.

Weighing functions

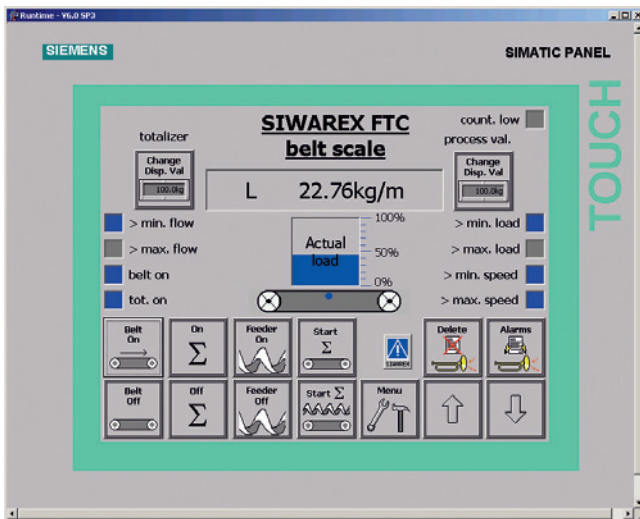
The following operating modes can be set:

Weight measurement and force measurement

In this operating mode, the weight value or the force is determined, processed in the PLC and then displayed. For this purpose, the configuration package can be selected.

Conveyor scale / weighfeeder

The functions of a conveyor scale are implemented in this operating mode. Calculations are performed for the typical process values; belt load, flowrate and belt speed. Commands can be used to control the belt and display the required values. A weighfeeder can be implemented by activating the SIMATIC PID controller.



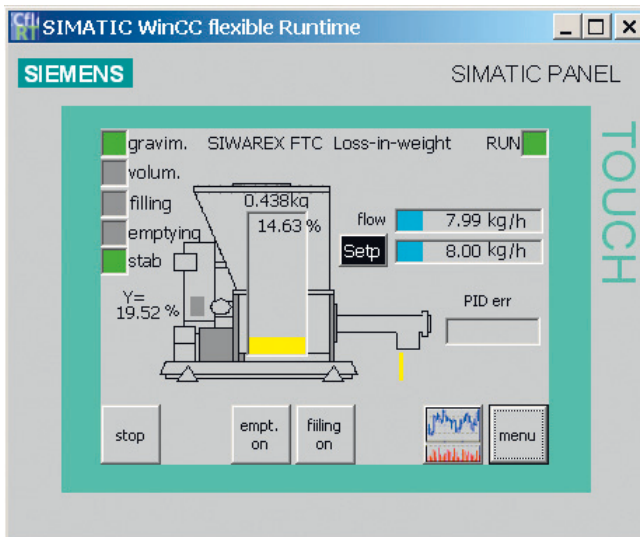
Scale faceplate of a conveyor scale

Differential proportioning weigher - Loss-in-weight

The functions of a differential proportioning weigher are implemented in this operating mode. The actual weight of the container is measured and the flowrate is regulated according to the preset setpoint.

Application-specific parameters, such as proportioning parameters, device and material characteristics, can be set directly in SIWAREX FTC. Various commands are available that have been fine-tuned to the requirements of the differential proportioning weigher, such as proportioning (manual, automatic, gravimetric, volumetric), filling and emptying.

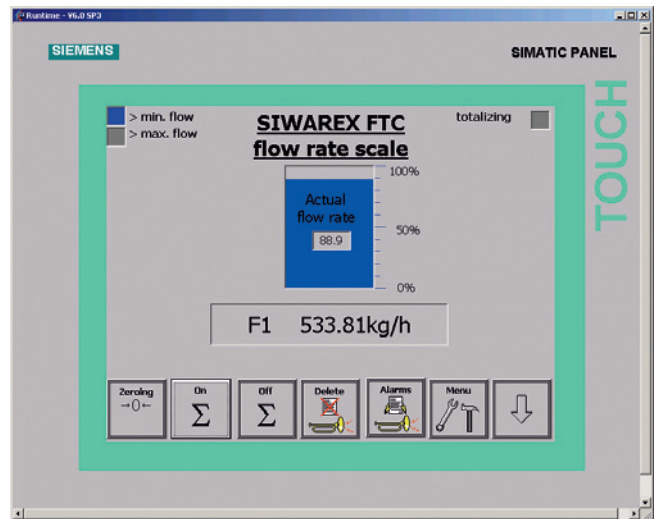
The high measurement resolution, real-time signal processing, detection and filtering of signals in the weighing electronics enable extremely high proportioning accuracy.



Scale faceplate of a differential proportioning weigher

Bulk flow meter

The functions of a bulk flow meter are implemented in this operating mode. The calculations for the typical process values; flow and conveyed quantity, are performed in the SIWAREX module. Application-specific parameters for setting the scales and commands for their operation are also available.



View of a bulk flow meter

Monitoring and control of the load cell signals and statuses

The SIWAREX FTC weighing module monitors the statuses during the weighing process, and informs the operator of any irregularities. The optimized exchange of data within SIMATIC permits direct evaluation of the load cell signals in the PLC program.

Influencing of the weighing sequences by the PLC means that the SIWAREX FTC can be easily adapted to any modifications in system technology.

A module can be replaced without recalibrating the scales. When using "active bus modules", replacement is also possible during operation.



Applications of SIWAREX FTC

Integration in SIMATIC

SIWAREX FTC is completely integrated into the SIMATIC S7 and SIMATIC PCS 7. Users can freely configure their automation solution – including the weighing application.

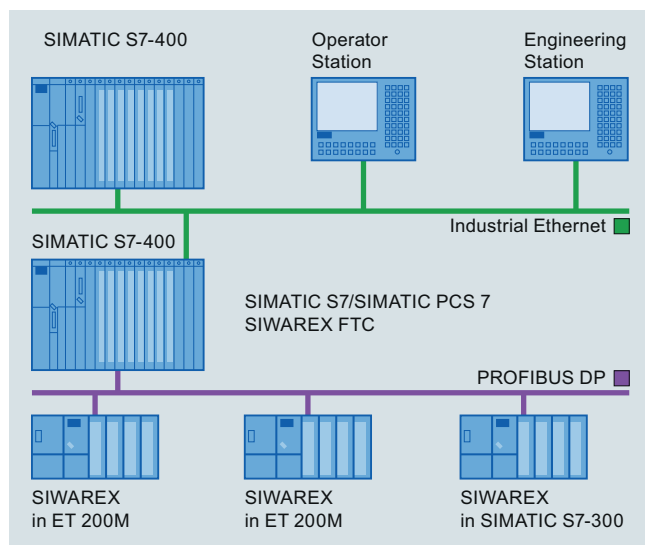
The right combination of SIMATIC components can produce optimum solutions for small, medium-size and large plants. The scales are operated and monitored using SIMATIC standard operator panels. Needless to say, these operator panels can also be simultaneously used for the operator control and monitoring of the plant.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC
Belt scale

SIWAREX FTC

Customized or sector-specific solutions can be developed extremely quickly using the configuration package and example applications for SIMATIC.



SIMATIC S7/PCS 7 configuration with SIWAREX FTC (medium-sized plants)

Software

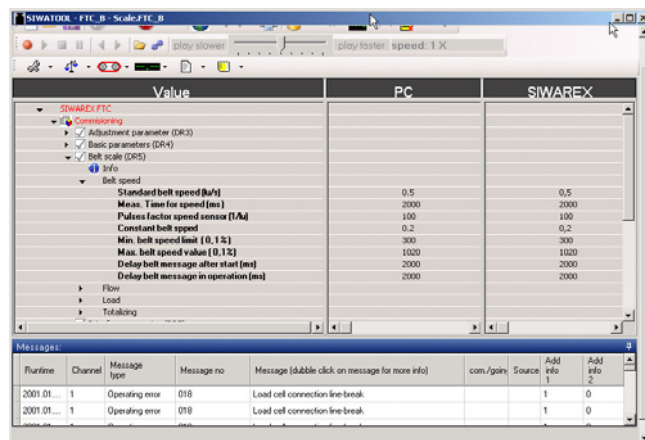
Adjustment of the scale using SIWATOOL FTC

SIWATOOL FTC is a special program for adjusting and servicing the scale and runs with Windows operating systems.

The program enables the scales to be commissioned without the need for prior knowledge of the automation system. When servicing, the technician can use a PC to analyze and test the procedures in the scale. Reading out the diagnostics buffer from the SIWAREX FTC is extremely helpful when analyzing events.

The following are just some of the tasks that can be carried out using SIWATOOL FTC:

- Parameterization and adjustment of the scale
- Testing of scale properties
- Saving and printing scale data
- Recording and analysis of weighing sequence



Settings in SIWAREX FTC software

It is also extremely helpful to analyze the diagnostics buffer which can be saved together with the parameters following reading out from the module.

The SIWAREX FTC weighing module includes a trace mode for checking of weighing sequences. The recorded weight values and associated statuses can be displayed as traces using SIWATOOL FTC and MS Excel.

Upgrading firmware

A further program function can be used to download a new firmware version onto the SIWAREX FTC on site. This means that firmware upgrades can be carried out on site as required anywhere in the world.

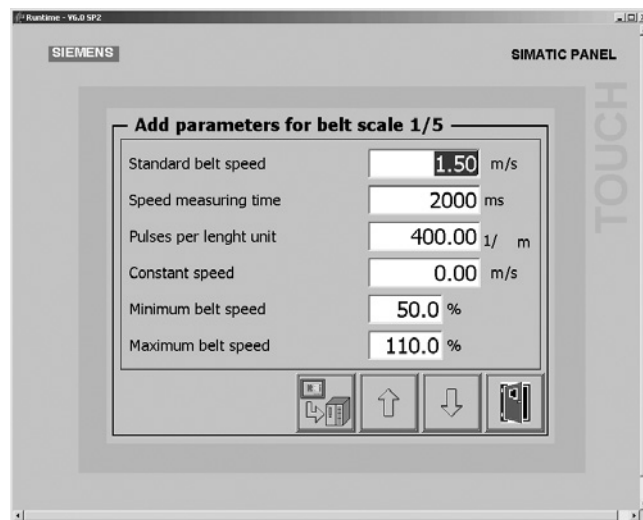
Reading out of weighing reports

The totalization memories can be saved on a MMC (Micro Memory Card) inserted into the SIWAREX FTC.

SIWAREX FTC – simple configuring

Integration in SIMATIC can result in freely-programmable, modular weighing systems for conveyor scales, bulk flow meters and differential proportioning weighers, which can be modified to meet operational requirements.

A free version of the ready-to-use SIWAREX FTC software "Getting started" is also available respectively for the conveyor scale, bulk flow meter and loss-in-weight feeder modes. It shows beginners how to integrate the module into a STEP 7 program and provides a basis for application programming. This allows you to implement the belt scale very easily with an operator panel connected directly to the SIMATIC CPU.



Scale faceplate in the SIWAREX FTC "Getting started" software

Technical specifications

SIWAREX FTC	
Use in automation systems	
S7-300	Directly or via ET 200M
S7-1500	Through ET 200M
S7-400 (H)	Through ET 200M
PCS 7 (H)	Through ET 200M
Communication interfaces	
S7	Through backplane bus
RS 232	For SIWATOOL or printer connection
RS 485	For remote display or digital load cell
Module parameterization	
	Using SIMATIC S7
	Using SIWATOOL FTC software (RS 232)
Measuring properties	
Accuracy to EN 45501	$3 \times 6\,000\,d \geq 0.5\,\mu\text{V/e}$
Internal resolution	+/- 8 million parts
Internal/external updating rate	400/100 Hz
Several parameterizable digital filters	
	Critically dampened, Bessel, Butterworth (0.05 ... 20 Hz), mean-value filter
Weighing functions	
	- Non-automatic weighing machine, force measurement - Conveyor scale - Differential proportioning weigher - Bulk flow meter
Load cells	
	Strain gages in 4-wire or 6-wire system
3 characteristic value ranges	1, 2 or 4 mV/V
Load cell powering	
Supply voltage U_S (rated value)	10.3 V DC
Max. supply current	184 mA
Permissible load cell resistance	
• $R_{L\min}$	$> 56\,\Omega$
	$> 87\,\Omega$ with Ex interface
• $R_{L\max}$	$\leq 4\,010\,\Omega$

SIWAREX FTC	
Max. distance of load cells	
When using the recommended cable:	
Standard	1 000 m (3 280 ft)
In hazardous area ¹⁾	
• For gases of group IIC	300 m (984 ft)
• For gases of group IIB	1 000 m (3 280 ft)
Connection to load cells in Ex zone 1	
	Optionally via SIWAREX IS Ex interface
Ex approvals zone 2 and safety	
	ATEX 95, FM, cUL _{US} Haz. Loc.
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	500 mA
Current consumption from backplane bus	typ. 55 mA
Inputs/outputs	
Digital inputs	7, electrically isolated
Digital outputs	8, electrically isolated
Counter input	Up to 10 kHz
Analog output	
• Current range	0/4 ... 20 mA
• Updating rate	100 Hz
Degree of protection according to EN 60529; IEC 60529	
	IP20
Climatic requirements	
$T_{\min}(\text{IND}) \dots T_{\max}(\text{IND})$ (operating temperature)	
• Horizontal installation	-10 ... 60 °C (14 ... 140 °F)
• Vertical installation	-10 ... 40 °C (14 ... 104 °F)
EMC requirements	
	EN 61326, EN 45501, NAMUR NE21, Part 1
Dimensions	
	80 x 125 x 130 mm (3.15 x 4.92 x 5.12 in)
Weight	
	600 g (0.44 lb)

¹⁾ For further details, see Ex interface, type SIWAREX IS

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Belt scale

SIWAREX FTC

Selection and ordering data

Article No.

Article No.

SIWAREX FTC

Weighing electronics for S7-300 and ET 200M.

Applications: Belt scales, force measurement, loss-in-weight feeders and solids flowmeters

7MH4900-3AA01

SIWAREX FTC_B manual for belt scales

Available in a range of languages

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWAREX FTC_L manual for solids flowmeters and loss-in-weight feeders

Available in a range of languages

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWAREX FTC "Getting started" for belt scales

Sample software shows beginners how to program the scales in STEP 7 for conveyor scale mode

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWAREX FTC "Getting started" for solids flowmeters

Sample software shows beginners how to program the scales in STEP 7 for bulk flow meter mode

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWAREX FTC "Getting started" for loss-in-weight feeders

Sample software shows beginners how to program scales in STEP 7 for differential proportioning weigher mode

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWATOOL V4 & V7

Service and commissioning software for SIWAREX weighing modules

7MH4900-1AK01

SIWAREX PCS7 AddOn Library for PCS7 V8.x and V9.0

• Support of Profinet
APL faceplates and function block for:

- SIWAREX U
 - SIWAREX FTA
 - SIWAREX FTC_B (belt scale)
 - SIWAREX WP321
- Classic faceplate and function block for:
- SIWAREX FTC_L (Loss in weight)

7MH4900-1AK61

SIWATOOL cable

from SIWAREX FTC with serial PC interface, for 9-pin PC interfaces (RS 232)

- 2 m long (6.56 ft)
- 5 m long (16.40 ft)

7MH4702-8CA
7MH4702-8CB

40-pin front plug with screw contacts

Required for each SIWAREX module

- With screw contacts
- With spring-loaded terminals

6ES7392-1AM00-0AA0
6ES7392-1BM01-0AA0

Shield contact element

Sufficient for one SIWAREX FTC module

6ES7390-5AA00-0AA0

Shield connection terminal

Contents: 2 units (suitable for cable with diameter 4 ... 13 mm)

Note:
one shield connection terminal each is required for:

- Scale connection
- RS 485 interface
- RS 232 interface

6ES7390-5CA00-0AA0

S7 DIN rail

- 160 mm (6.30 in)
- 480 mm (18.90 in)
- 530 mm (20.87 in)
- 830 mm (32.68 inch)
- 2 000 mm (78.74 in)

6ES7390-1AB60-0AA0
6ES7390-1AE80-0AA0
6ES7390-1AF30-0AA0
6ES7390-1AJ30-0AA0
6ES7390-1BC00-0AA0

MMC memory

For data recording up to 16 MB

7MH4900-2AY20

Selection and ordering data

Article No.

Article No.

Remote display (optional)

The Siebert S102 and S302 remote digital displays can be directly connected to the SIWAREX FTC via an RS 485 interface. (not suitable for belt scale mode)

Siebert Industrieelektronik GmbH
Postfach 1180
D-66565 Eppelborn, Germany
Tel.: +49 6806/980-0
Fax: +49 6806/980-999
Internet:
<http://www.siebert-group.com/en>

Detailed information is available from the manufacturer.

SIWAREX JB junction box, aluminum housing**7MH4710-1BA**

For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.

SIWAREX JB junction box, stainless steel housing**7MH4710-1EA**

For connecting up to 4 load cells in parallel.

SIWAREX JB junction box, stainless steel housing (ATEX)**7MH4710-1EA01**

For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).

Ex interface SIWAREX IS

For intrinsically-safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked.

- With short-circuit current < 199 mA DC
- With short-circuit current < 137 mA DC

7MH4710-5BA**7MH4710-5CA****Cable (optional)****Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY**

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JBs.

For permanent installation. Occasional bending is possible.

External diameter:
approx. 10.8 mm (0.43 in)

Permissible ambient temperature
-40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color: orange
- For potentially explosive atmospheres. Sheath color: blue.

7MH4702-8AG
7MH4702-8AF**Commissioning****Commissioning charge for one belt scale with SIWAREX module**

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Dynamic adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Adjustment weights available
- Free access to scale

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Loss-in-weight scale

Introduction

Overview



SIWAREX FTC weighing module

The very demanding task of differential dosing can be mastered without difficulty using SIWAREX FTC. The electronic weighing system provides extensive functionalities and can be commissioned in only 15 minutes using the auto setup function. The module automatically determines the most important parameters, such as dosing power, measurement time, stability and PID parameters and saves them. The parameters are continuously optimized during operation. The standard operator control and monitoring components from Siemens provide options for operating and calibrating the scales, as well as for error diagnostics.

Both single components and applications for multi-component dosing can be implemented in relation to one another.

Benefits

- High metering accuracy
- High reproducibility
- Real-time signal processing
- Openness and freedom to act for the user enable individual optimization by the company's own personnel or specialists

Overview

The SIWAREX FTC (Flexible Technology for Continuous Weighing) is a versatile and flexible weighing module for conveyor scales, differential proportioning weighers and bulk flow meters. It can also be used to record weights and measure force. The SIWAREX FTC function module is integrated in SIMATIC S7/PCS7, and uses the features of this modern automation system, such as integral communication, diagnostics and configuration tools.

Benefits

SIWAREX FTC is characterized by the following features:

- Uniform design, and totally integrated communication in SIMATIC S7 and SIMATIC PCS 7
- Uniform configuration with SIMATIC
- Direct use in the SIMATIC automation system
- Use in distributed plant concept through connection to PROFIBUS DP/PROFINET using ET 200M
- Measurement of weight or force with high resolution of 16 million intervals
- High accuracy $3 \times 6\,000\,d$
- Use with analog strain-gage load cells of types SIWAREX R and SIWAREX WL200
- Alternative option of connecting individual load cells from the manufacturers METTLER TOLEDO, WIPOTEC and PESA
- Display with SIMATIC standard operator panels
- Parameterizable inputs and outputs
- Parameterizable for highly versatile applications
- Flexible adaptation to different requirements with SIMATIC
- Simple adjustment of scale using the SIWATOOL FTC program
- Theoretical adjustment without adjustment weights
- Replacement of module without renewed adjustment of scale
- Recording of weighing sequence
- 8 totalization memories with different digit intervals
- Can be used in Ex applications

Application

The SIWAREX FTC weighing module is the optimum solution wherever high demands are placed on continuous weighing procedures. Thanks to its outstanding measuring properties, weights can be measured with extreme accuracy in up to three ranges. In the case of force measurements, the value can be measured bidirectionally.

Typical applications for SIWAREX FTC include:

- Flowrate/flow measurement
- Volume measurement
- Material loading, summation
- Flowrate/flow control
- Belt load measurement
- Belt scale/weighfeeder
- Loss-in-weight scale
- Force measurement

Design

SIWAREX FTC is a function module of SIMATIC S7-300 which can be directly snapped onto the SIMATIC S7-300 or ET 200M backplane bus. Thanks to the snap-on mounting rail system, very little work is required to install/cable the 80 mm wide weighing module.

The load cells, the RS 485 serial interface, the analog output and the digital inputs and outputs are connected by means of the 40-pin standard front connector, the PC (RS 232) by means of a 9-pin SUB-D connector and the power supply by means of a separate 2-pin connector.

Operation of SIWAREX FTC in SIMATIC enables the weighing system to be completely integrated into the automation system.

Function

The main tasks of SIWAREX FTC are the high-precision measurement of the current weight, and the exact calculation of the conveyed quantity or flow. In "Force measurement" mode, SIWAREX FTC measures the force bidirectionally.

The conveyed quantity can be recorded in 8 totalization memories. Through integration in SIMATIC it is also possible to directly control scale operation by means of a PLC program. This means that the tasks can be sensibly divided: The weighing functions are implemented in the SIWAREX FTC, the interlocking and logic functions for the plant control in the SIMATIC CPU.

Weighing functions

The following operating modes can be set:

Weight measurement and force measurement

In this operating mode, the weight value or the force is determined, processed in the PLC and then displayed. For this purpose, the configuration package can be selected.

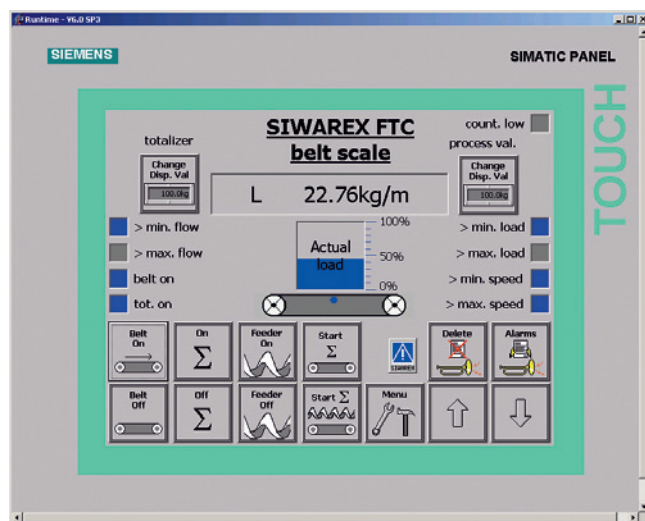
Conveyor scale / weighfeeder

The functions of a conveyor scale are implemented in this operating mode. Calculations are performed for the typical process values; belt load, flowrate and belt speed. Commands can be used to control the belt and display the required values. A weighfeeder can be implemented by activating the SIMATIC PID controller.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC
Loss-in-weight scale

SIWAREX FTC



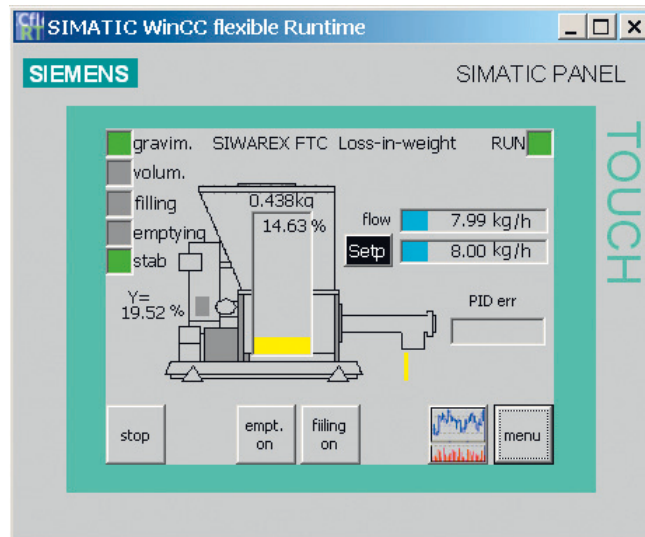
Scale faceplate of a conveyor scale

Differential proportioning weigher - Loss-in-weight

The functions of a differential proportioning weigher are implemented in this operating mode. The actual weight of the container is measured and the flowrate is regulated according to the preset setpoint.

Application-specific parameters, such as proportioning parameters, device and material characteristics, can be set directly in SIWAREX FTC. Various commands are available that have been fine-tuned to the requirements of the differential proportioning weigher, such as proportioning (manual, automatic, gravimetric, volumetric), filling and emptying.

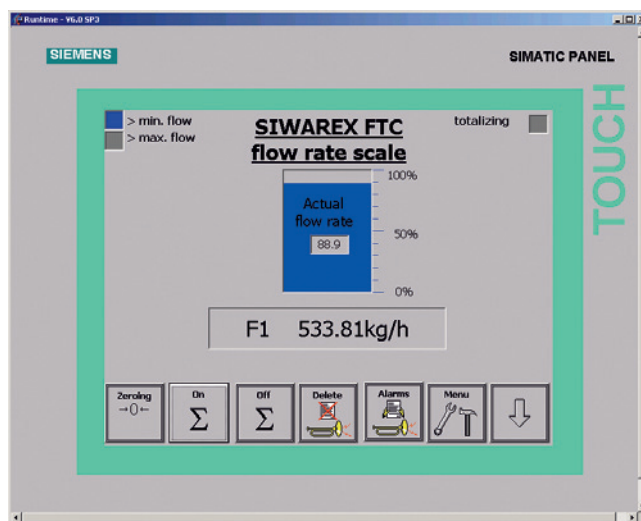
The high measurement resolution, real-time signal processing, detection and filtering of signals in the weighing electronics enable extremely high proportioning accuracy.



Scale faceplate of a differential proportioning weigher

Bulk flow meter

The functions of a bulk flow meter are implemented in this operating mode. The calculations for the typical process values; flow and conveyed quantity, are performed in the SIWAREX module. Application-specific parameters for setting the scales and commands for their operation are also available.



View of a bulk flow meter

Monitoring and control of the load cell signals and statuses

The SIWAREX FTC weighing module monitors the statuses during the weighing process, and informs the operator of any irregularities. The optimized exchange of data within SIMATIC permits direct evaluation of the load cell signals in the PLC program.

Influencing of the weighing sequences by the PLC means that the SIWAREX FTC can be easily adapted to any modifications in system technology.

A module can be replaced without recalibrating the scales. When using "active bus modules", replacement is also possible during operation.



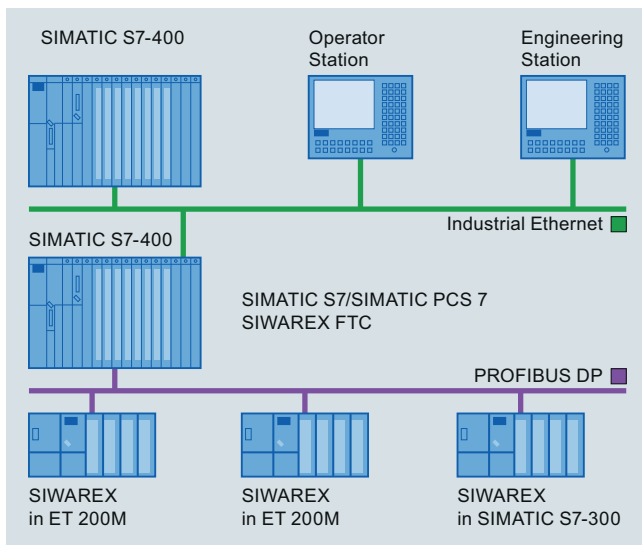
Applications of SIWAREX FTC

Integration in SIMATIC

SIWAREX FTC is completely integrated into the SIMATIC S7 and SIMATIC PCS 7. Users can freely configure their automation solution – including the weighing application.

The right combination of SIMATIC components can produce optimum solutions for small, medium-size and large plants. The scales are operated and monitored using SIMATIC standard operator panels. Needless to say, these operator panels can also be simultaneously used for the operator control and monitoring of the plant.

Customized or sector-specific solutions can be developed extremely quickly using the configuration package and example applications for SIMATIC.



SIAMATIC S7/PCS 7 configuration with SIWAREX FTC (medium-sized plants)

Software

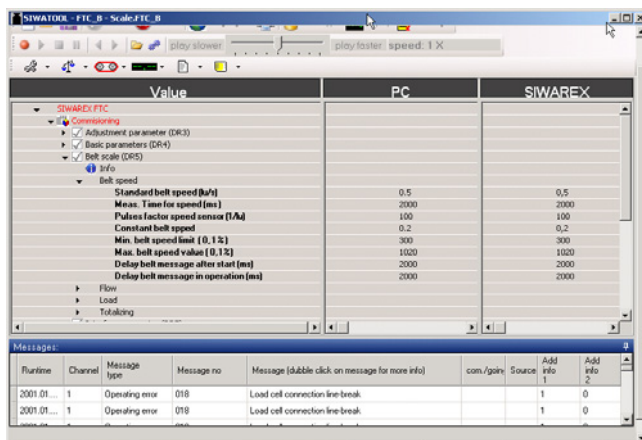
Adjustment of the scale using SIWATOOL FTC

SIWATOOL FTC is a special program for adjusting and servicing the scale and runs with Windows operating systems.

The program enables the scales to be commissioned without the need for prior knowledge of the automation system. When servicing, the technician can use a PC to analyze and test the procedures in the scale. Reading out the diagnostics buffer from the SIWAREX FTC is extremely helpful when analyzing events.

The following are just some of the tasks that can be carried out using SIWATOOL FTC:

- Parameterization and adjustment of the scale
- Testing of scale properties
- Saving and printing scale data
- Recording and analysis of weighing sequence



Settings in SIWAREX FTC software

It is also extremely helpful to analyze the diagnostics buffer which can be saved together with the parameters following reading out from the module.

The SIWAREX FTC weighing module includes a trace mode for checking of weighing sequences. The recorded weight values and associated statuses can be displayed as traces using SIWATOOL FTC and MS Excel.

Upgrading firmware

A further program function can be used to download a new firmware version onto the SIWAREX FTC on site. This means that firmware upgrades can be carried out on site as required anywhere in the world.

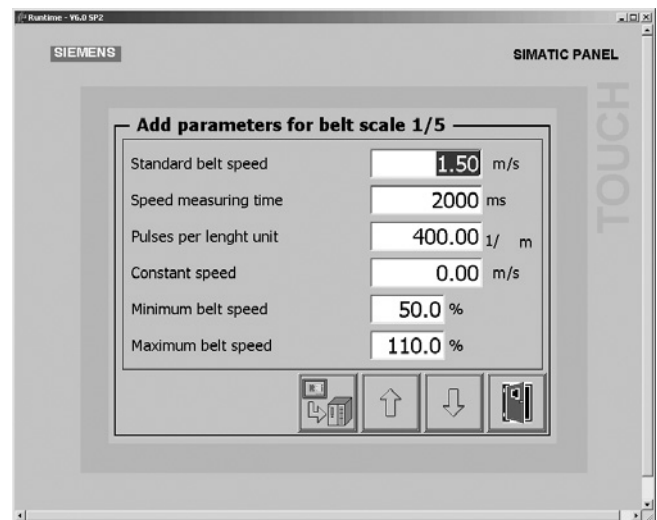
Reading out of weighing reports

The totalization memories can be saved on a MMC (Micro Memory Card) inserted into the SIWAREX FTC.

SIWAREX FTC – simple configuring

Integration in SIMATIC can result in freely-programmable, modular weighing systems for conveyor scales, bulk flow meters and differential proportioning weighers, which can be modified to meet operational requirements.

A free version of the ready-to-use SIWAREX FTC software "Getting started" is also available respectively for the conveyor scale, bulk flow meter and loss-in-weight feeder modes. It shows beginners how to integrate the module into a STEP 7 program and provides a basis for application programming. This allows you to implement the belt scale very easily with an operator panel connected directly to the SIMATIC CPU.



Scale faceplate in the SIWAREX FTC "Getting started" software

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Loss-in-weight scale

SIWAREX FTC

Technical specifications

SIWAREX FTC	
Use in automation systems	
S7-300	Directly or via ET 200M
S7-1500	Through ET 200M
S7-400 (H)	Through ET 200M
PCS 7 (H)	Through ET 200M
Communication interfaces	
S7	Through backplane bus
RS 232	For SIWATOOL or printer connection
RS 485	For remote display or digital load cell
Module parameterization	
	Using SIMATIC S7
	Using SIWATOOL FTC software (RS 232)
Measuring properties	
Accuracy to EN 45501	$3 \times 6\,000\,d \geq 0.5\,\mu\text{V/e}$
Internal resolution	+/- 8 million parts
Internal/external updating rate	400/100 Hz
Several parameterizable digital filters	Critically dampened, Bessel, Butterworth (0.05 ... 20 Hz), mean-value filter
Weighing functions	- Non-automatic weighing machine, force measurement - Conveyor scale - Differential proportioning weigher - Bulk flow meter
Load cells	Strain gages in 4-wire or 6-wire system
3 characteristic value ranges	1, 2 or 4 mV/V
Load cell powering	
Supply voltage U_S (rated value)	10.3 V DC
Max. supply current	184 mA
Permissible load cell resistance	
• $R_{L\min}$	$> 56\,\Omega$
	$> 87\,\Omega$ with Ex interface
• $R_{L\max}$	$\leq 4\,010\,\Omega$

SIWAREX FTC	
Max. distance of load cells	
When using the recommended cable:	
Standard	1 000 m (3 280 ft)
In hazardous area ¹⁾	
• For gases of group IIC	300 m (984 ft)
• For gases of group IIB	1 000 m (3 280 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface
Ex approvals zone 2 and safety	ATEX 95, FM, cUL _{US} Haz. Loc.
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	500 mA
Current consumption from backplane bus	typ. 55 mA
Inputs/outputs	
Digital inputs	7, electrically isolated
Digital outputs	8, electrically isolated
Counter input	Up to 10 kHz
Analog output	
• Current range	0/4 ... 20 mA
• Updating rate	100 Hz
Degree of protection according to EN 60529; IEC 60529	IP20
Climatic requirements	
$T_{\min}(\text{IND}) \dots T_{\max}(\text{IND})$ (operating temperature)	
• Horizontal installation	-10 ... 60 °C (14 ... 140 °F)
• Vertical installation	-10 ... 40 °C (14 ... 104 °F)
EMC requirements	EN 61326, EN 45501, NAMUR NE21, Part 1
Dimensions	80 x 125 x 130 mm (3.15 x 4.92 x 5.12 in)
Weight	600 g (0.44 lb)

¹⁾ For further details, see Ex interface, type SIWAREX IS.

Selection and ordering data		Article No.	Article No.
SIWAREX FTC Weighing electronics for S7-300 and ET 200M. Applications: Belt scales, force measurement, loss-in-weight feeders and solids flowmeters		7MH4900-3AA01	SIWAREX PCS7 AddOn Library for PCS7 V8.x and V9.0 • Support of Profinet APL faceplates and function block for: • SIWAREX U • SIWAREX FTA • SIWAREX FTC_B (belt scale) • SIWAREX WP321 Classic faceplate and function block for: • SIWAREX FTC_L (Loss in weight)
SIWAREX FTC_B manual for belt scales Available in a range of languages Free download on the Internet at: http://www.siemens.com/weighing/documentation			7MH4900-1AK61
SIWAREX FTC_L manual for solids flowmeters and loss-in-weight feeders Available in a range of languages Free download on the Internet at: http://www.siemens.com/weighing/documentation			SIWATOOL cable from SIWAREX FTC with serial PC interface, for 9-pin PC interfaces (RS 232) • 2 m long (6.56 ft) • 5 m long (16.40 ft)
SIWAREX FTC "Getting started" for belt scales Sample software shows beginners how to program the scales in STEP 7 for conveyor scale mode Free download on the Internet at: http://www.siemens.com/weighing/documentation			40-pin front plug with screw contacts Required for each SIWAREX module • With screw contacts • With spring-loaded terminals
SIWAREX FTC "Getting started" for solids flowmeters Sample software shows beginners how to program the scales in STEP 7 for bulk flow meter mode Free download on the Internet at: http://www.siemens.com/weighing/documentation			Shield contact element Sufficient for one SIWAREX FTC module
SIWAREX FTC "Getting started" for loss-in-weight feeders Sample software shows beginners how to program scales in STEP 7 for differential proportioning weigher mode Free download on the Internet at: http://www.siemens.com/weighing/documentation			Shield connection terminal Contents: 2 units (suitable for cable with diameter 4 ... 13 mm) Note: one shield connection terminal each is required for: • Scale connection • RS 485 interface • RS 232 interface
SIWATOOL V4 & V7 Service and commissioning software for SIWAREX weighing modules	7MH4900-1AK01		S7 DIN rail • 160 mm (6.30 in) • 480 mm (18.90 in) • 530 mm (20.87 in) • 830 mm (32.68 inch) • 2 000 mm (78.74 in)
			MMC memory For data recording up to 16 MB
			6ES7392-1AM00-0AA0 6ES7392-1BM01-0AA0 6ES7390-5AA00-0AA0 6ES7390-1AB60-0AA0 6ES7390-1AE80-0AA0 6ES7390-1AF30-0AA0 6ES7390-1AJ30-0AA0 6ES7390-1BC00-0AA0 7MH4900-2AY20

Weighing Electronics

SIWAREX weighing electronics for SIMATIC

Loss-in-weight scale

SIWAREX FTC

Selection and ordering data

Article No.

Article No.

Remote display (optional)

The Siebert S102 and S302 remote digital displays can be directly connected to the SIWAREX FTC via an RS 485 interface. (not suitable for belt scale mode)

Siebert Industrieelektronik GmbH
Postfach 1180
D-66565 Eppelborn, Germany
Tel.: +49 6806/980-0
Fax: +49 6806/980-999
Internet:
<http://www.siebert-group.com/en>

Detailed information is available from the manufacturer.

SIWAREX JB junction box, aluminum housing

7MH4710-1BA

For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.

SIWAREX JB junction box, stainless steel housing

7MH4710-1EA

For connecting up to 4 load cells in parallel.

SIWAREX JB junction box, stainless steel housing (ATEX)

7MH4710-1EA01

For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).

Ex interface SIWAREX IS

For intrinsically-safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked.

- With short-circuit current < 199 mA DC
- With short-circuit current < 137 mA DC

7MH4710-5BA

7MH4710-5CA

Cable (optional)

Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JB's.

For permanent installation. Occasional bending is possible.

External diameter:
approx. 10.8 mm (0.43 in)

Permissible ambient temperature
-40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color: orange
- For potentially explosive atmospheres. Sheath color: blue.

7MH4702-8AG
7MH4702-8AF

Commissioning

Commissioning charge for one belt scale with SIWAREX module

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Dynamic adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Adjustment weights available
- Free access to scale

Overview



AI 2xSG 4/6-wire HS, ET 200SP analog input module for force and torque sensors

Automation with integral force measuring technology

In addition to accuracy when measuring force, incorporating force measuring technology in modern automation systems is also a significant feature.

Due to the direct connection of the force sensor to the SIMATIC-integrated evaluation electronics, there is no need for costly, difficult-to-integrate external interface converters. In addition, the measuring accuracy of SIMATIC-based solutions is increased enormously, because only one A/D conversion takes place before the measured value is available in the automation system. These properties facilitate the integration of a final product test and other tests into the SIMATIC environment.

Weighing Electronics

SIWAREX weighing electronics for SIMATIC
Force/torque measurement

AI 2xSG 4/6-wire HS

Overview



ET 200SP analog input module for force and torque sensors.

Technical specifications

SIMATIC ET 200SP, analog input module, AI 2x SG 4-, 6-Wire High Speed

General information	
Product type designation	AI 2xSG 4-/6-wire HS
Product function	
• I&M data	Yes; I&M0 to I&M3
• Measuring range scalable	Yes
• Scalable measured values	No
• Adjustment of measuring range	Yes; $\pm 0.5 \dots 320$ mV/V
Engineering with	
• STEP 7 TIA Portal configurable/integrated as of version	V14 SP1
• STEP 7 configurable/integrated as of version	V5.6
• PROFIBUS as of GSD version/GSD revision	V03.01.105
• PROFINET as of GSD version/GSD revision	GSDML V2.33
Operating mode	
• Oversampling	Yes; 2 channels per module
• MSI	No
CiR – Configuration in RUN	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	No
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Analog inputs	
Number of analog inputs	2; Differential inputs
Cycle time (all channels), min.	100 μ s
Analog input with oversampling	Yes
• Values per cycle, max.	14
• Resolution, min.	100 μ s
Input ranges	
• Strain gauges (full bridges)	Yes
Cable length	
• shielded, max.	500 m

SIMATIC ET 200SP, analog input module, AI 2x SG 4-, 6-Wire High Speed

Analog value generation for the inputs	
Measurement principle	Sigma Delta
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	28 bit; 16 bits with oversampling
• Integration time, parameterizable	Yes
• Interference voltage suppression for interference frequency f1 in Hz	60 / 50 Hz / no
• Conversion time (per channel)	100 μ s
Smoothing of measured values	
• IIR low-pass filter frequency	0.01 ... 600 Hz
• IIR low-pass filter ordinal number	1 ... 4
• Notch filter frequency	0.1 ... 1 000 Hz
• Notch filter quality	5.00 ... 250.00
• Average value filter	0.1 ... 655.3 ms
Encoder	
Connection of signal encoders	
• For strain gauges (full bridges) with 4-conductor connection	Yes
• For strain gauges (full bridges) with 6-conductor connection	Yes
• Resistance of full bridge, min.	80 Ω
• Resistance of full bridge, max.	5 000 Ω
Errors/accuracies	
Temperature coefficient, zero point	$\leq \pm 0.25$ μ V/K
Temperature coefficient, span, 4-conductor connection (referred to end value)	$\leq \pm 5$ ppm/K
Temperature coefficient, span, 6-conductor connection (referred to end value)	$\leq \pm 10$ ppm/K
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-) 0.05 %; See manual for details	

**SIMATIC ET 200SP, analog input module,
 AI 2x SG 4-, 6-Wire High Speed**
Isochronous mode

Isochronous operation (application synchronized up to terminal)	Yes
Filtering and processing time (TCI), min.	87 µs
Bus cycle time (TDP), min.	125 µs

**Interrupts/diagnostics/
 status information**

Diagnostics function	Yes
----------------------	-----

Alarms

• Diagnostic alarm	Yes
• Limit value alarm	Yes; two upper and two lower limit values in each case

Diagnostic messages

• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• Group error	Yes
• Overflow/underflow	Yes

Diagnostics indication LED

• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; green/red DIAG LED

Potential separation
Potential separation channels

• between the channels and backplane bus	Yes
--	-----

Isolation

Isolation tested with	707 V DC (type test)
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Standards, approvals, certificates

Suitable for safety functions	No
-------------------------------	----

Ambient conditions
**Ambient temperature
 during operation**

• horizontal installation, min.	-25 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-25 °C
• vertical installation, max.	50 °C

**Altitude during operation
 relating to sea level**

• Ambient air temperature-barometric pressure-altitude	$T_{\min} \dots T_{\max}$ at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // $T_{\min} \dots (T_{\max} - 1 \text{ K/100 m})$ at 795 hPa ... 701 hPa (+2 000 m ... +3 000 m)
--	---

Dimensions

Width	15 mm
Height	73 mm
Depth	58 mm

Weights

Weight, approx.	45 g
-----------------	------

Selection and ordering data

Article No.

**SIMATIC ET 200SP analog input
 module, AI 2x SG 4-, 6-wire high
 speed**

Suitable for BU type A0 color code CC00, channel diagnostics, 28/16 bit, +/- 0.05% for full bridge strain gauges

7MH4134-6LB00-0DA0

Accessories

SIMATIC ET 200SP, BaseUnit BU15-P16+A0+2B, BU type A0, push-in terminals, without AUX terminals, bridged to the left, W x H: 15 mm x 117 mm

6ES7193-6BP00-0BA0

SIMATIC ET 200SP, BaseUnit BU15-P16+A0+2D, BU type A0, push-in terminals, without AUX terminals, new load group, W x H: 15 mm x 117 mm

6ES7193-6BP00-0DA0

SIMATIC ET 200SP, BaseUnit BU15-P16+A10+2B, BU type A0, push-in terminals, with 10 AUX terminals, bridged to the left, W x H: 15 mm x 141 mm

6ES7193-6BP20-0BA0

SIMATIC ET 200SP, BaseUnit BU15-P16+A10+2D, BU type A0, push-in terminals, without AUX terminals, new load group, W x H: 15 mm x 141 mm

6ES7193-6BP20-0DA0

SIMATIC ET 200SP, 5 shield terminals and 5 shield supports, for direct connection

6ES7193-6SC00-1AM0

Weighing Electronics

SIWAREX weighing electronics for SIMATIC Ex-Interface

Introduction

Overview



SIWAREX IS, Ex-Interface

Additional parts are required aside from the weighing modules in order to construct scales. Special interface modules are used for scales in hazardous areas.

The recommended cable and connection lengths are listed together with the weighing modules.

Overview



SIWAREX IS New Generation

The Ex-Interface SIWAREX IS can be used for SIWAREX weighing modules. It comprises six safety barriers and has been granted the approvals stated in the technical data. The Ex interface must be installed outside the potentially explosive area. It is installed inside the control cabinet, preferably under the electronic weighing system, and fixed using a 35 mm mounting rail.

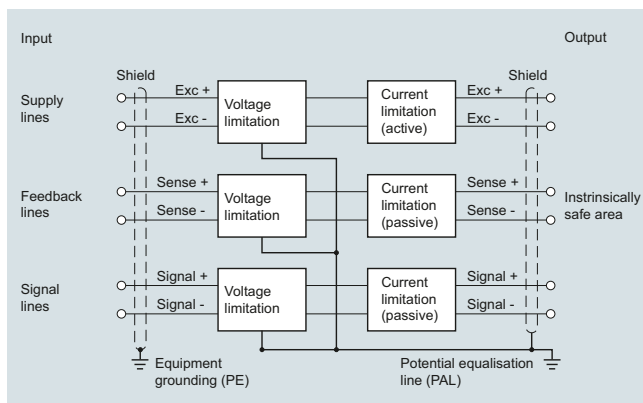
The SIWAREX IS only interferes with the load cell signal to a very small extent and is therefore approved for scales requiring verification.

The connection is made at the front using two clamp-type plugs. A separate screw terminal is available for connection of the equipotential bonding conductor (EBC).

Function

Principle of operation

The safety barriers limit current and voltage in the power, sensor and measuring signal lines of load cells installed in the potentially explosive area.



Function chart

Technical specifications

Ex interface, type SIWAREX IS	Standard	Low-current version
Non-intrinsically-safe circuits		
Load cell powering		
Rated voltage U_{n1}	10 V DC	
Permissible error voltage	250 V AC	
Internal resistance of load cells depending on input voltage	$\geq 8.7 \Omega/V$	$\geq 18 \Omega/V$
Total	$< 4\,010 \Omega$	
Sensor line		
Rated voltage U_{n2}	10 V DC	
Permissible error voltage	250 V AC	
Measuring signal line		
Rated voltage U_{n3}	10 ... 40 mV DC	
Permissible error voltage	250 V AC	
Intrinsically safe circuits		
Load cell powering		
No-load voltage U_{01}	≤ 13.1 V DC	
Voltage against equipotential bonding cond.	≤ 6.6 V DC	
Short-circuit current I_{K1}	≤ 120 mA	≤ 58 mA
Sensor line		
No-load voltage U_{02}	≤ 14.4 V DC	
Voltage against equipotential bonding cond.	≤ 7.2 V DC	
Short-circuit current I_{K2}	≤ 25 mA	
Measuring signal line		
No-load voltage U_{03}	≤ 12.8 V DC	
Voltage against equipotential bonding cond.	≤ 6.4 V DC	
Short-circuit current I_{K3}	≤ 54 mA	
Total connection load (when circuits are connected together)		
No-load voltage U_0	≤ 14.4 V DC	
Short-circuit current I_K	≤ 199 mA	≤ 137 mA
Power P_0	≤ 1.835 W	≤ 1.025 W
For gas group II C		
Max. permissible external capacitance C_{a3}	500 nF	450 nF
Max. permissible external inductance L_a	0.15 mH	0.5 mH
For gas group II B		
Max. permissible external capacitance C_{a3}	2 000 nF	
Max. permissible external inductance L_a	1 mH	2 mH

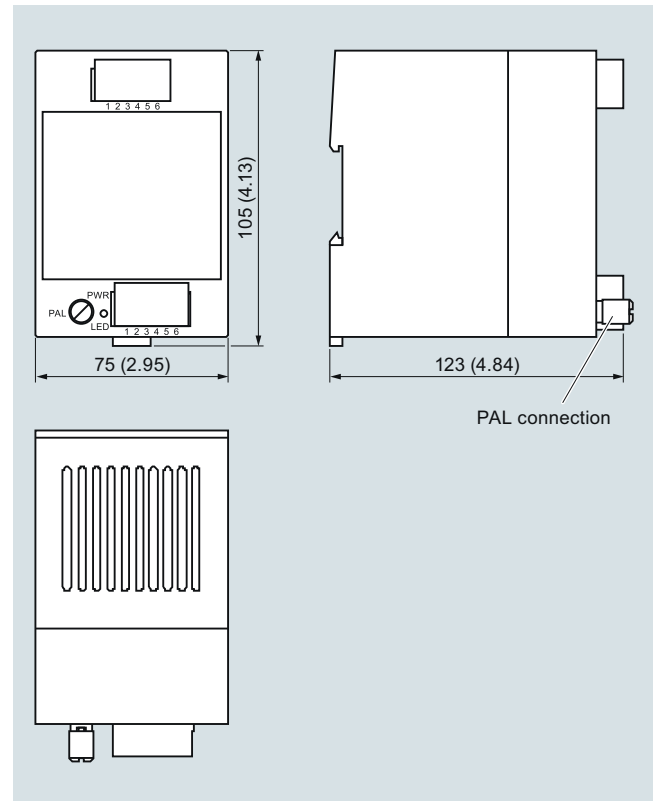
Weighing Electronics

SIWAREX weighing electronics for SIMATIC
Ex-Interface

SIWAREX IS

Ex interface, type SIWAREX IS	Standard	Low-current version
General data		
Weight, approx.	500 g	
Permissible ambient temperature		
• During operation	-10 ... +60 °C (14 ... 140 °F) (for vertical mounting)	
• During operation for legal-for-trade medium accuracy weighing machines	-10 ... +40 °C (14 ... 104 °F) (for vertical mounting)	
• During transportation and storage	-40 ... +85 °C (-40 ... +185 °F)	
Permissible relative humidity	≤ 95%	
Degree of protection	IP20	
Approvals		
EC type test certificates No.	TÜV 01 ATEX 1722 X	
Type of explosion protection	Intrinsic safety "i" II (2) G [Ex ibGb] IIC or II (2) D [Ex ib Db] IIIC	
IEC certification	IECEX TUN 06.0002 X [Ex ib Gb] IIC or [Ex ib Db] IIIC	
Calibration approval (German Testing Laboratory test certificate) according to	EN 45501, OIML R76-1, 90/384/EEC	

Dimensional drawings



SIWAREX IS Ex interface, dimensions in mm (inch)

Selection and ordering data

Article No.

Ex interface SIWAREX IS

For intrinsically-safe connection of load cells. Suitable for SIWAREX electronic weighing system. The compatibility of the load cells must be checked.

- With short-circuit current < 199 mA DC
- With short-circuit current < 137 mA DC

7MH4710-5BA

7MH4710-5CA

Cable (optional)

Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JBs.

For permanent installation. Occasional bending is possible.

External diameter:
approx. 10.8 mm (0.43 in)

Permissible ambient temperature
-40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color orange.
- For potentially explosive atmospheres. Sheath color: blue.

7MH4702-8AG

7MH4702-8AF

Overview

Stand-alone platform and hopper scales

Weighing silos, vessels or platforms is a standard task in the industry. The corresponding SIWAREX electronics offers comprehensive properties and functions that fulfil all requirements.

Platform scales

In the various branches of industry the use of platform weighing machines is bound to very different requirements, in particular with regard to the load classes.

While platform weighing machines can also be used for small loads, road vehicle and track scales are especially suitable for heavy loads.

Hopper scales

In almost every industry, liquids, powders, bulk goods or gases are produced and stored in vessels. To ensure their availability, the exact fill levels of these vessels must be known.

Weighing Electronics

Stand-alone electronics

Platform/hopper scale

SIWAREX WP231

Overview



SIWAREX WP231 is a versatile, legal for trade weighing module for all simple weighing and force measuring tasks. The compact module is easy to install in the SIMATIC S7-1200 automation system. It can also be operated without a SIMATIC CPU.

Benefits

SIWAREX WP231 offers the following key advantages:

- Uniform design technology and consistent communication in SIMATIC S7-1200
- Uniform configuration with TIA Portal
- Legal-for-trade according to OIML R-76
- Operation without SIMATIC CPU possible
- Direct connection of an operator panel via Ethernet
- Direct connection of a remote display via RS 485 interface
- Modbus TCP/IP interface
- Modbus RTU interface
- Four digital inputs and outputs, one analog output
- Measurement of weight or force with a high resolution of up to ± 4 million parts and an accuracy of 0.05%
- Simple adjustment of scale using the SIWATOOL V7 program via the Ethernet interface
- Recovery-point for the simple restoration of all parameters
- Automatic calibration without the need for calibration weights
- Supports replacement of module without recalibration of scales
- Use in hazardous area zone 2
- Connection of digital force compensation load cells from WIPOTEC and Mettler-Toledo (type WM and PBK)

Application

SIWAREX WP231 is the optimum solution wherever load cells are used for measuring tasks. The following are typical SIWAREX WP231 applications:

- Non-automatic weighing instruments, also legal for trade
- Fill level monitoring of silos and bunkers
- Measuring of crane and cable loads
- Load measuring for industrial lifts and rolling mills
- Scales in zone 2 hazardous areas
- Force measuring, container weighing, hopper scales and crane scales

Design

SIWAREX WP231 is a compact technology module in the SIMATIC S7-1200 and communicates directly via the system bus with S7-1200 components. The rail mounting of the 70 mm (2.76 inch) wide weighing module means that it is extremely easy to mount/wire.

The power supply, load cells, the RS 485, digital input/outputs and the analog output are connected via the screw connector of the weighing module. An RJ45 connector is used for the Ethernet connection.

Function

The primary task of SIWAREX WP231 is the measurement and conversion of sensor voltage into a weight value. Up to three interpolation points are used for the weight calculation. The signal can also be digitally filtered if required.

Weighing functions

There are commands available for zeroing and taring. Up to three different tare default values can be activated for this. SIWAREX WP231 is factory-calibrated. This means the scale can be automatically adjusted without adjustment weights, and modules can be replaced without the need to readjust the scale.

Monitoring and control of the scale signals and states

In addition to weight determination, the SIWAREX WP231 monitors two freely programmable limits (optionally min/max) as well as the empty range. It signals violations of the limits. Consistent and uniform communication between all system components enables fast, reliable and cost-effective integration and diagnostics in process plants.

Integration in the plant environment

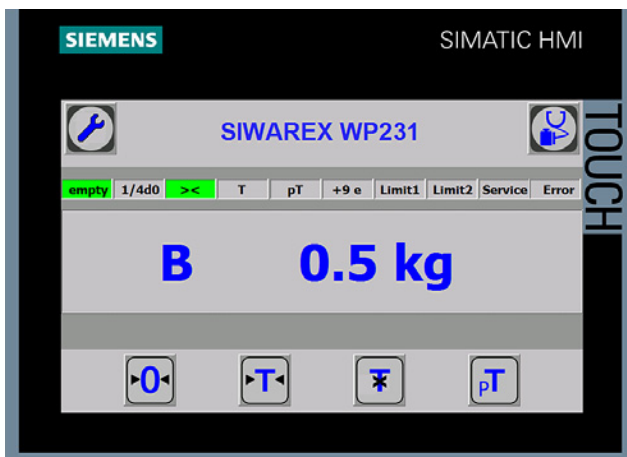
SIWAREX WP231 is directly integrated into the SIMATIC S7-1200 via the SIMATIC bus. All scale parameters can be read and edited by the CPU. Therefore a complete commissioning of the scales by the CPU or by a connected HMI device is possible. A wide variety of connection options are provided via the RS 485 and Ethernet interface. Via Modbus TCP/IP or Modbus RTU, control panels can be connected and it is also possible to communicate with various automation systems. A remote display can also be connected to the RS 485.

A PC for configuring the SIWAREX WP231 can be connected to the Ethernet interface.

Weight value, status, tare, commands and messages are transmitted via the SIMATIC I/O area. The parameters of the data records can be set via SIWATOOL or with an operator panel connected directly to the weighing electronics.

SIWAREX WP231 can be integrated into the plant software with the aid of a ready-made function block. In contrast to serially linked weighing electronics, SIWAREX WP231 does not need costly additional modules to link it to SIMATIC.

Used in conjunction with SIWAREX WP231, it is possible to configure freely programmable, modular weighing systems in SIMATIC, which can be adapted to company-specific requirements as needed.



In addition to the configuration package, a fully-featured SIWAREX WP231 "Ready for use" software is also available free-of-charge. It shows beginners how to integrate the module in a TIA Portal program and offers a basis for application programming. This allows you to connect the scale application either directly to the SIMATIC CPU or to an operator panel connected directly to the SIWAREX WP231.

A "Ready for use" example program is available in the TIA Portal for legal for trade applications. This is designed so that it can be used directly with the legal trade SecureDisplay software. Required is a Windows CE-based operating panel (for example, SIMATIC Comfort Touch series).

SIMATIC Basic and Key Panels cannot be used for legal for trade applications.

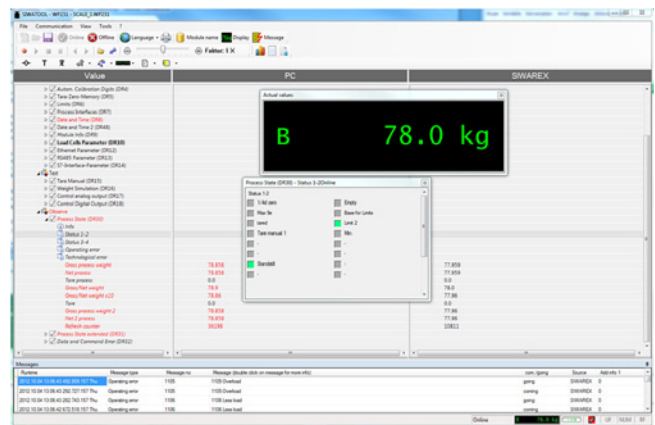
Software

SIWATOOL V7 is a special program for commissioning and servicing and runs with Windows operating systems.

The program enables the user to perform scale calibration without requiring automation engineering skills. During servicing, the technician can use a PC to analyze and test the procedures in the scale. Reading the diagnostics buffer from the SIWAREX WP231 is extremely helpful when analyzing events.

The following are just some of the tasks that can be carried out using SIWATOOL V7:

- Parameter assignment and calibration of the scale
- Testing of scale properties
- Recording and analysis of weighing sequence



SIWATOOL V7 calibration software, layout of the individual program windows

It is also extremely helpful to analyze the diagnostics buffer which can be saved together with the parameters from the module in a backup file.

Trace mode is provided to optimize the weighing sequences in the SIWAREX WP231 weighing module. The recorded weight values and associated states can be displayed as trends using SIWATOOL V7 and MS Excel.

Upgrading firmware

An additional program function can be used to download a new firmware version onto the SIWAREX WP231 on site. This means that firmware upgrades can be carried out on site as required anywhere in the world.

Weighing Electronics

Stand-alone electronics

Platform/hopper scale

SIWAREX WP231

Technical specifications

SIWAREX WP231

Integration in automation systems

S7-1200

SIMATIC S7-1200 system bus

Operator panel and/or automation systems from other vendors

Via Ethernet (Modbus TCP/IP) or RS 485 (Modbus RTU)

Communication interfaces

- SIMATIC S7-1200 backplane bus
- RS 485 (Modbus RTU, Siebert remote display)
- Ethernet (SIWATOOL V7, Modbus TCP/IP)
- Analog output 0/4 - 20 mA
- 4 x digital outputs, 24 V DC floating, short-circuit proof
- 4 x digital inputs, 24 V DC floating

Commissioning options

- Using SIWATOOL V7
- Using function block in SIMATIC S7-1200 CPU / Touch Panel
- Using Modbus TCP/IP
- Using Modbus RTU

Measuring accuracy

EU type approval as non-automatic weighing instrument, trade class III

3000 d 0.5 μ V/eError limit according to DIN 1319-1 of full-scale value at 20 °C $\pm$ 10 K (68 °F $\pm$ 10 K)

0.05%

Internal resolution

Up to $\pm$ 4 million parts

Measuring frequency

100 / 120 Hz

Digital filter

Variable adjustable low-pass and average filter

Typical applications

- Non-automatic weighing instruments
- Force measurements
- Fill-level monitoring
- Belt tension monitors

Weighing functions

Weight values

- Gross
- Net
- Tare

Limit values

- 2 x min/max
- Empty

Zeroing

Per command

Tare

Per command

Tare specification

Per command

SIWAREX WP231

Load cells

Full-bridge strain gauges in 4-wire or 6-wire system

Load cell powering

Supply voltage (regulated via feedback)

4.85 V DC

Permissible load resistance

- R_{Lmin}
- R_{Lmax}

> 40 Ω
< 4 100 Ω

With SIWAREX IS Ex interface

- R_{Lmin}
- R_{Lmax}

> 50 Ω
< 4 100 Ω

Load cell characteristic

1 ... 4 mV/V

Permissible range of the measurement signal (with 4 mV/V sensors)

-21.3 ... +21.3 mV

Max. distance of load cells

500 m (229.66 ft)

Connection to load cells in Ex zone 1

Optionally via SIWAREX IS Ex interface (compatibility of the load cells must be checked)

Approvals/certificates

- ATEX Zone 2
- UL
- EAC
- KCC
- RCM
- OIML R76
- Design approval 2009/23/EC (NAWI)

Calibration approval

EU type approval OIML R76

Auxiliary power supply

Rated voltage

24 V DC

Max. power consumption

200 mA

Max. power consumption SIMATIC Bus

3 mA

IP degree of protection according to DIN EN 60529; IEC 60529

IP20

Climatic requirements

 T_{min} (IND) ... T_{max} (IND) (operating temperature)

- Vertical installation
- Horizontal installation

-10 ... +40 °C (14 ... 104 °F)
-10 ... +55 °C (14 ... 131 °F)

EMC requirements

according to EN 45501

Dimensions

70 x 75 x 100 mm (2.76 x 2.95 x 3.94 in)

Selection and ordering data		Article No.	Article No.
SIWAREX WP231 weighing module		7MH4960-2AA01	
Single-channel, legal-for-trade, for NAWI non-automatic weighing instruments (e.g. platform or hopper scales) with analog load cells (1–4 mV/V), 1 x LC, 4 x DQ, 4 x DI, 1 x AQ, 1 x RS 485, Ethernet port.			
SIWAREX S7-1200 manual			
Available in a range of languages			
Free download on the Internet at:			
http://www.siemens.com/weighing/documentation			
SIWAREX WP231 "Ready for Use"			
Complete software package for non-automatic weighing instrument (for S7-1200 and a directly connected operator panel).			
Free download on the Internet at:			
http://www.siemens.com/weighing/documentation			
SIWAREX WP231 "Ready for Use - legal-for-trade"			
Software package for legal for trade non-automatic weighing instruments for S7-1200.			
Free download on the Internet at:			
http://www.siemens.com/weighing/documentation			
Software SecureDisplay			
Software for a legal trade display on Windows CE-based Panel. SIMATIC Basic and Key Panels are excluded.			
Free download on the Internet at:			
http://www.siemens.com/weighing/documentation			
SIWATOOL V4 & V7		7MH4900-1AK01	
Service and commissioning software for SIWAREX weighing modules			
Calibration set for SIWAREX WP2xx		7MH4960-0AY10	
Valid for SIWAREX WP231 K and SIWAREX WP251.			
For verification of up to 3 scales, comprising:			
• 3 x inscription foil for labeling			
• 1 x protective film			
• 3 x calibration protection plate			
• Guidelines for verification, certificates and approvals, adaptable label, SIWAREX WP			
Ethernet cable patch cord 2 m (7 ft)		6XV1850-2GH20	
For connecting SIWAREX WP231 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.			
			Remote display (optional)
			The digital remote displays can be connected directly to the SIWAREX WP231 via the RS 485 interface.
			Suitable remote display:
			S102
			<i>Siebert Industrieelektronik GmbH</i>
			<i>Postfach 1180</i>
			<i>D-66565 Eppelborn, Germany</i>
			<i>Tel.: +49 6806/980-0</i>
			<i>Fax: +49 6806/980-999</i>
			Internet:
			http://www.siebert-group.com/en
			Detailed information is available from the manufacturer.
			Accessories
		SIWAREX JB junction box, aluminum housing	7MH4710-1BA
		For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.	
		SIWAREX JB junction box, stainless steel housing	7MH4710-1EA
		For connecting up to 4 load cells in parallel.	
		SIWAREX JB junction box, stainless steel housing (ATEX)	7MH4710-1EA01
		For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).	
		Ex interface SIWAREX IS	
		For intrinsically-safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked.	
		• Short-circuit current < 199 mA DC	7MH4710-5BA
		• Short-circuit current < 137 mA DC	7MH4710-5CA
		Cable (optional)	
		Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY	
		For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JBs.	
		For permanent installation. Occasional bending is possible.	
		External diameter: approx. 10.8 mm (0.43 in)	
		Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F).	
		Sold by the meter.	
		• Sheath color: orange	7MH4702-8AG
		• For potentially explosive atmospheres. Sheath color: blue.	7MH4702-8AF
		Ground terminal for connecting the load cell cable shield to the grounded DIN rail	6ES5728-8MA11

Weighing Electronics

Stand-alone electronics

Platform/hopper scale

SIWAREX WP231

Selection and ordering data

Article No.

Commissioning

Commissioning charge for one static scale with SIWAREX module

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Static adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Adjustment weights available
- Free access to scale

Overview



SIWAREX WT231 weighing module

The SIWAREX WT231 is a weighing terminal for industrial use. Siemens standard components are installed in a stainless steel enclosure with numerous connection options. This ensures the tried and tested SIWAREX quality as standalone solution and is ideal for container weighers or platform scales.

Benefits

SIWAREX WT231 offers the following key advantages:

- Complete solution – no configuration in SIMATIC required
- Fast and easy commissioning due to intuitive operating concept
- The stainless steel enclosure permits applications in many diverse environments
- Integrated connecting terminals for up to 4 load cells
- Flexible connection to different systems through diverse interfaces
 - four digital inputs
 - four digital outputs
 - one analog output
 - RS 485 interface and Modbus RTU
- High resolution of the load cell signal of up to ± 4 million parts
- Comprehensive diagnostics functions
- Recovery-point for the simple restoration of all parameters
- Automatic calibration is possible without the need for calibration weights
- All diagnostic and error messages as well as all scale parameters in plain text
- 100 ... 240 V AC supply range

Application

SIWAREX WT231 is the optimum solution wherever strain gauge sensors, such as load cells, force sensors or torque measuring shafts, are used for measuring tasks. The typical applications of SIWAREX WT231 are:

- Non-automatic scales
- Fill level monitoring of silos and bunkers
- Measuring of crane and cable loads
- Load measuring for industrial lifts and rolling mills
- Force measuring, container weighers, platform scales and crane scales

Design

SIWAREX WT231 is a standalone weighing terminal based on the tried and tested Siemens SIWAREX WP231 products and the Siemens SIMATIC KTP 400 touch display. Supplemented with a connection board and a wide-range power supply, these components are preinstalled in a compact stainless steel enclosure. The enclosure can be wall mounted and has 9 cable entries, of which 5 are equipped with cable glands at the factory. A variety of interfaces support the integration into the plant environment.

The SIWAREX WT231 is preconfigured with the SIWAREX "Ready for use" software. This means that no further commissioning is required in SIMATIC.

Function

The primary task of SIWAREX WT231 is the measurement and conversion of sensor voltage into a weight value. Up to three interpolation points are used for the weight calculation. The signal can also be digitally filtered if required.

Weighing functions

There are commands available for zeroing and taring. Up to three different tare default values can be activated. The SIWAREX WT231 is calibrated at the factory. This means the scale can be automatically adjusted without adjustment weights, and modules can be replaced without the need to readjust the scale.

Monitoring and control of the scale signals and states

In addition to weight determination, the SIWAREX WT231 monitors two freely programmable limits (optionally min/max) as well as the empty range. A violation of the limit values is signaled.

1.3.1 Limits

	Limit 1		Limit 2		Empty range	
Limit "ON"	99.00	%	50.00	%	1.00	%
Delay "ON"	0.000	s	0.000	s	1.000	s
Limit "OFF"	98.00	%	49.00	%	% of 100.0	kg
Delay "OFF"	0.000	s	0.000	s		
Reference	Gross weight (% of max. weigh					



SIWAREX WT231 operating view "Limit values"

Weighing Electronics

Stand-alone electronics

Platform/hopper scale

SIWAREX WT231

Software

The touch panel is preconfigured with the SIWAREX "Ready for use" software. Thus the user interface is clearly structured and can be operated intuitively; the languages German, English, French, and Chinese are available. The structured menu-based operation facilitates the operation of the scale and supports the user through guided commissioning.

Furthermore, a variety of diagnostics options are offered. Using the trace function, weighing histories can be recorded and exported. There is also the option of simulating the behavior of the scale with the device.

The service tool "SIWATOOL V7", which is included in the optional configuration package, is required for reading out this trace data. In addition, using SIWATOOL a scale backup can be created and reimported whenever required. Thus, in the event of an error, the WT231 can be replaced within seconds without requiring a new adjustment.

Integration

Integration in the plant environment

Using the onboard RS 485 interface and the Modbus RTU protocol, the SIWAREX WT231 can be connected to many different automation systems or a PC.

Furthermore, 4 digital inputs, 4 digital outputs, and an analog output are available. Direct, straightforward further processing of alarms or status messages is thus made possible.

Technical specifications

SIWAREX WT231	
Enclosure	Stainless steel enclosure (1.4301) with the interfaces: • 1 x wall bushing for power supply • 4 x wall bushing for load cell connection with EMC screw connection • 4 x wall bushing with blanking plugs • Ground connection bolt
Connection board	Internal connection board • Connection of up to 4 load cells • Type of analog output • Type of 24 V direct voltage
Integration in automation systems	
Any automation systems	Via RS 485 (Modbus RTU)
Communication interfaces	• RS 485 (Modbus RTU) • 4 digital outputs (24 V DC) • 4 digital inputs (24 V DC) • 1 analog output (0/4 ... 20 mA)
Commissioning options for the scale	Directly via the color touch panel and the preinstalled "Ready for use" operating software
Calibration approval	No
Internal resolution	up to ± 4 million parts
Number of measurements/second (internal)	100 Hz
Filter	• Low-pass filter 0.1 ... 50 Hz • Mean value filter
Weighing functions	
Weight values	• Gross • Net • Tare
Limits	• Min/max • Empty
Zeroing function	Per command
Tare function	Per command
Tare specification	Per command

SIWAREX WT231	
Load cells	Strain gauges in 4-wire or 6-wire system
Load cell excitation	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	
• R_{Lmin}	$> 40 \Omega$
• R_{Lmax}	$< 4\ 100 \Omega$
With SIWAREX IS Ex interface	
• R_{Lmin}	$> 50 \Omega$
• R_{Lmax}	$< 4\ 100 \Omega$
Load cell characteristic	1 ... 4 mV/V
Permissible range of measuring signal (at greatest set characteristic value)	-21.3 ... +21.3 mV
Max. distance of load cells	500 m (229.66 ft)
Auxiliary power supply	
Rated voltage	100 ... 240 V AC
Line frequency	50 ... 60 Hz
Max. power consumption	0.12 A
IP degree of protection to DIN EN 60529; IEC 60529	IP65
Climatic requirements	
$T_{min} (IND) \dots T_{max} (IND)$ (operating temperature)	
Vertical installation	0 ... +40 °C (32 ... 104 °F)
EMC requirements according to	EN 45501
Dimensions	264 x 185 x 97 mm (10.39 x 7.28 x 3.82 in)
Weight	4 kg (8.82 lb)

Selection and ordering data		Article No.	Article No.
SIWAREX WT231 Weighing terminal for industrial scales		7MH4965-2AA01	Cable (optional) Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JB's. For permanent installation. Occasional bending is possible. External diameter: approx. 10.8 mm (0.43 in) Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F). Sold by the meter. • Sheath color: orange • For potentially explosive atmospheres. Sheath color: blue. 7MH4702-8AG 7MH4702-8AF
SIWAREX WT231 Manual In various languages. Free download on the Internet at: http://www.siemens.com/weighing/documentation			
Accessories			
SIWATOOL V4 & V7 Service and commissioning software for SIWAREX weighing modules		7MH4900-1AK01	
Ethernet cable patch cord 2 m (7 ft) For connecting SIWAREX WT231 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.		6XV1850-2GH20	
SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.		7MH4710-1BA	
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel.		7MH4710-1EA	Commissioning Commissioning charge for one static scale with SIWAREX module (Travel and setup charge must be ordered separately) Scope: • Recording of data • Checking of mechanical installation of the scale • Checking of electrical wiring and function • Static adjustment of the scale Requirements: • Mechanical design functional • Modules electrically wired and tested • Adjustment weights available • Free access to scale
SIWAREX JB junction box, stainless steel housing (ATEX) For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).		7MH4710-1EA01	

Weighing Electronics

Stand-alone electronics

Dosing/Filling/Bagging scale

Introduction

Overview

2



SIWAREX WP251 electronic weighing module

Typical requirements in many industries are high-precision mixing and dosing, and packing and filling at high speed. The corresponding SIWAREX electronics offers comprehensive properties and functions that fulfil all requirements.

The dosing process used in production operations depends on a variety of factors: Depending on the type and quantity of materials weighed, different dosing systems and weighing processes are required. It must be possible to fill liquid or solid goods, such as cement, quickly and precisely.

Overview



SIWAREX WP251 electronic weighing module

SIWAREX WP251 is a flexible weighing module for dosing and filling processes. The compact module can be installed seamlessly in the SIMATIC S7-1200 automation system. It can also be used without a SIMATIC CPU in stand-alone mode.

Benefits

SIWAREX WP251 offers the following key advantages:

- Uniform design technology and consistent communication in SIMATIC S7-1200
- Uniform configuration with TIA Portal
- Legal-for-trade according to OIML R-76, R-51 and R-61
- Legal-for-trade according to OIML R-107 (available soon)
- Internal alibi memory for up to 550 000 entries
- Operation without SIMATIC CPU also possible
- Ethernet port ex works (Modbus TCP/IP / SIWATOOL)
- RS 485 interface ex works (Modbus RTU / remote display)
- Four digital inputs and outputs, one analog output ex works
- Measurement of weight and force with a high resolution of up to ± 4 million parts and an accuracy of 0.05%
- Simple calibration and setup of the scale using SIWATOOL V7 via the Ethernet interface
- Recovery-point for the simple restoration of all parameters
- Automatic calibration without the need for calibration weights
- Supports replacement of module without recalibration of scales
- Direct use in hazardous area zone 2

Application

SIWAREX WP251 is the optimum solution wherever fast and precise dosing and filling are required. The typical applications of SIWAREX WP251 are:

- Automatic catchweighing instruments (ACI) - legal-for-trade in accordance with OIML R-51
- Gravimetric filling instruments (GFI) - legal-for-trade in accordance with OIML R-61
- Non-automatic weighing instrument (NAWI) - legal-for-trade in accordance with OIML R-76
- Discontinuous Totalizing Automatic Weighing Instrument (SWT) Legal-for-trade according to OIML R-107 (in preparation)

Design

SIWAREX WP251 is a compact technology module in the SIMATIC S7-1200, and communicates directly via the system bus with the SIMATIC S7-1200 controller.

The compact weighing module with a width of 70 mm (2.76 inches) is installed using a mounting rail. This is extremely user-friendly.

The connections for the power supply, the load cells, the RS 485 port, the digital inputs/outputs, and the analog output are located on removable screw connector blocks. An RJ45 port is available for the Ethernet connection (SIWATOOL and Modbus TCP/IP).

Function

SIWAREX WP251 controls dosing and filling processes completely autonomously. The dosing valves (coarse/fine flow) can be controlled directly via the four digital outputs of the module. This achieves maximum accuracy since the weighing process is controlled completely independently of the CPU and its cycle time.

The CPU can be used to manage recipes and material parameters. These parameters and the desired setpoint are then transferred to SIWAREX WP251 by function block, and the dosing process is started. SIWAREX WP251 automatically optimizes the shut-off points, generates statistics, and logs every dosing task in the internal protocol memory that is also accessible from the CPU and can be read out by the CPU.

Diverse options are available for commissioning. The SIWAREX WP251 function block enables full access to all parameters of the SIWAREX WP251. The downloadable example application "ready-for-use" provides full data access to the weighing module, calibration options and operation of the scale - without any additional programming effort. Further, the PC service software SIWATOOL V7 that communicates via Ethernet with the SIWAREX module can be used for commissioning. Access using W-LAN is thus also possible by means of a WIFI access point. Consequently, remote access via the Internet is also no problem. For servicing purposes, centralized access to all scales from a single location is possible – worldwide. In addition, there is full access to all parameters and commands, both via the RS485 port (Modbus RTU) and via the Ethernet interface (Modbus TCP/IP), meaning that full commissioning and operation can also take place via these channels.

Weighing Electronics

Stand-alone electronics

Dosing/Filling/Bagging scale

SIWAREX WP251

Weighing functions

SIWAREX WP251 provides the weighing modes Non-automatic weighing instrument, Automatic catchweighing instrument and Automatic gravimetric filling instrument.

In the operating modes Non-automatic weighing instrument and Automatic catchweighing instrument, there is a choice between filling mode and emptying mode. The entire filling or dosing process is fully controlled from SIWAREX WP251. It is only necessary to transfer a setpoint and a start command to the module. The coarse flow, fine flow and empty signals can be switched directly via the digital outputs of the module.

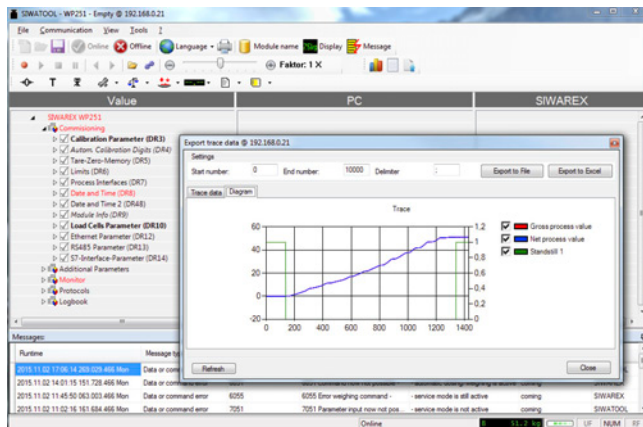
The weight, as well as all scale and dosing status bits, is available cyclically in the program code in the PLC for further evaluation. If stand-alone mode of the module is activated, there is an additional guarantee that dosing and operation of the scales can continue even in the event of a CPU stop.

Software

SIWATOOL V7 is a special program for commissioning and servicing and runs with Windows operating systems. The program enables the user to perform scale calibration without requiring automation engineering skills. During servicing, the technician can use a PC to analyze and test the procedures in the scale. Reading the diagnostics buffer from SIWAREX WP251 is extremely helpful when analyzing events.

The following are just some of the tasks that can be carried out using SIWATOOL V7:

- Parameter assignment and calibration of the scale
- Testing of scale properties
- Recording and analysis of weighing sequence



Software SIWATOOL V7, layout of the program window

It is also extremely helpful to analyze the diagnostics buffer which can be saved together with the parameters from the module in a backup file.

Trace mode is provided to optimize the weighing sequences in the SIWAREX WP251 weighing module. The recorded weight values and associated states can be displayed as trends using SIWATOOL V7 and MS Excel.

Upgrading firmware

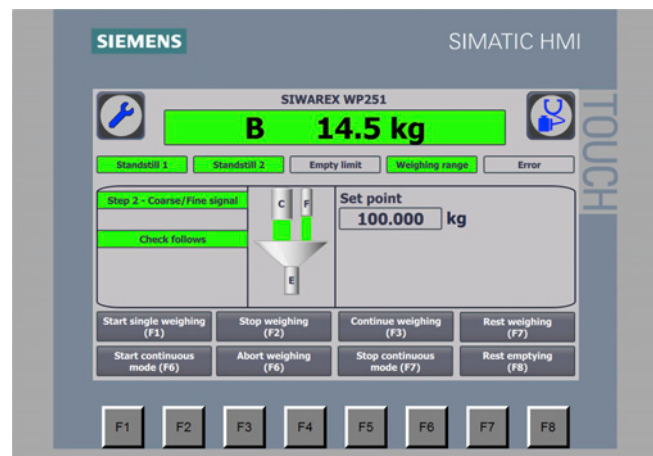
An additional program function can be used to download a new firmware version onto the SIWAREX WP251 on site. This means that firmware upgrades can be carried out on site as required anywhere in the world.

Integration

Integration into the automation environment

SIWAREX WP251 is part of the SIMATIC S7-1200 basic controller range, and is integrated seamlessly into the TIA Portal. The free function block enables full access to all parameters, actual values, setpoints, weight values and status information (e.g. limits, coarse flow signal, fine flow signal, empty signal) conveniently and without programming effort. Customized operator interfaces can thus be created in conjunction with SIMATIC HMI touch panels. Management of several languages can also be easily implemented and organized.

The example project "Ready-for-use SIWAREX WP251" is available free of charge to help you to get started quickly and simply. This TIA portal project contains both the function block and a fully fledged visualization system for commissioning, operating and monitoring the SIWAREX WP251. The visualization can be freely edited and adapted, or transferred completely into an existing HMI project.



Stand-alone mode

Alternatively, SIWAREX WP251 can also be used without a SIMATIC CPU. In this case, the module is connected with a supply voltage of 24 V DC only. In this case, a PC (e.g. using an OPC server) or a Modbus-enabled operator panel can be used for operator input. Both Modbus interfaces of SIWAREX WP251 (TCP/IP and RTU) enable access to all parameters, actual values, setpoints, weight values and status information. A customized and plant-specific operator interface can thus be created on the PC or the Modbus-enabled operator panel. Integration into third-party systems is also no problem via the Modbus interfaces.

Technical specifications

SIWAREX WP251	
Weighing modes	- Non-automatic weighing instrument (NAWI) (filling + removal) (legal-for-trade according to OIML R-76) - Automatic catchweighing instruments (ACI) (filling + removal) (legal-for-trade according to OIML R-51) - Gravimetric filling instruments (GFI) (legal-for-trade according to OIML R-61) - Discontinuous Totalizing Automatic Weighing Instrument (SWT) (legal-for-trade according to OIML R-107 - in preparation)
Integration in automation systems	
S7-1200	SIMATIC S7-1200 system bus
Operator panel and/or automation systems from other vendors	Via Ethernet (Modbus TCP/IP) or RS 485 (Modbus RTU)
Ports	1 x SIMATIC S7-1200 system bus 1 x Ethernet (SIWATOOL and Modbus TCP/IP) 1 x RS 485 (Modbus RTU or remote display) 1 x analog output (0/4 ... 20 mA) 4 x digital inputs (24 V DC, floating) 4 x digital outputs (24 V DC, floating, short-circuit proof)
Functions	3 limits - Tare - Tare specification - Zeroing - Zero adjustment - Statistics - Automatic correction of the shut-off points - Internal protocol memory for 550 000 entries - Trace function for signal analysis - Internal restore point - Stand-alone mode or SIMATIC S7-1200 integrated
Parameter assignment	- Full access using function block in SIMATIC S7-1200 - Full access using Modbus TCP/IP - Full access using Modbus RTU
Remote display	
Connection	via RS 485
Setting the scales	PC software SIWATOOL (Ethernet), S7-1200 function block and touch panel or directly connected operator panel (Modbus)
Measuring accuracy	
Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05 %
Internal resolution	Up to ± 4 million parts
Number of measurements/second	100 or 120 (selectable)
Filter	- Low-pass filter 0.1 ... 50 Hz - Average value filter

SIWAREX WP251	
Load cells	Full-bridge strain gauges in 4-wire or 6-wire system
Load cell powering	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	
• R_{Lmin}	> 40 Ω
• R_{Lmax}	< 4 100 Ω
With SIWAREX IS Ex interface	
• R_{Lmin}	> 50 Ω
• R_{Lmax}	< 4 100 Ω
Load cell characteristic	1 ... 4 mV/V
Permissible range of the measurement signal (with 4 mV/V sensors)	-21.3 ... +21.3 mV
Max. distance of load cells	500 m (229.66 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface
Certificates	- ATEX Zone 2 - UL - KCC - EAC - RCM
Calibration approvals	- EU type-examination certificate 2014/31/EU (NAWI) according to OIML R76 - EU type-examination certificate 2014/32/EU (MID) according to OIML R61 and OIML R51 - EU type-examination certificate 2014/32/EU (MID) according to OIML R107 (available soon)
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	200 mA
Max. power consumption SIMATIC Bus	3 mA
IP degree of protection according to DIN EN 60529; IEC 60529	IP20
Climatic requirements	
T_{min} (IND) ... T_{max} (IND) (operating temperature)	
• Vertical installation	-10 ... +40 °C (14 ... 104 °F)
• Horizontal installation	-10 ... +55 °C (14 ... 131 °F)
EMC requirements	according to EN 45501
Dimensions	70 x 75 x 100 mm (2.76 x 2.95 x 3.94 in)

Weighing Electronics

Stand-alone electronics

Dosing/Filling/Bagging scale

SIWAREX WP251

Selection and ordering data

Article No.

Article No.

SIWAREX WP251 weighing module

Single-channel, legal-for-trade, for automatic dosing and batching scales (GFI, ACI, NAWI) with analog load cells / full-bridge strain gauges (1 - 4 mV/V), 1 x LC, 4 x DQ, 4 x DI, 1 x AQ, 1 x RS 485, Ethernet port.

7MH4960-6AA01

SIWAREX WP251 equipment manual

Available in a range of languages

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWAREX WP251 "Ready for Use"

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWATOOL V4 & V7

Service and commissioning software for SIWAREX weighing modules

7MH4900-1AK01

Calibration set for SIWAREX WP2xx

Valid for SIWAREX WP231 K and SIWAREX WP251.

For verification of up to 3 scales, comprising:

- 3 x inscription foil for labeling
- 1 x protective film
- 3 x calibration protection plate
- Guidelines for verification, certificates and approvals, adaptable label, SIWAREX WP

7MH4960-0AY10

Ethernet cable patch cord 2 m (7 ft)

For connecting SIWAREX WP251 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.

6XV1850-2GH20

Remote display (optional)

The digital remote displays can be connected directly to the SIWAREX WP251 via the RS 485 interface.

Suitable remote display: S102
Siebert Industrieelektronik GmbH
Postfach 1180
D-66565 Eppelborn, Germany
Tel.: +49 6806/980-0
Fax: +49 6806/980-999
Internet:
<http://www.siebert-group.com/en>
Detailed information is available from the manufacturer.

Accessories

SIWAREX JB junction box, aluminum housing

For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.

7MH4710-1BA

SIWAREX JB junction box, stainless steel housing

For connecting up to 4 load cells in parallel.

7MH4710-1EA

SIWAREX JB junction box, stainless steel housing (ATEX)

For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).

7MH4710-1EA01

Ex interface SIWAREX IS

For intrinsically-safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked.

- Short-circuit current < 199 mA DC
- Short-circuit current < 137 mA DC

7MH4710-5BA

7MH4710-5CA

Cable (optional)

Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JBs.

For permanent installation. Occasional bending is possible.

External diameter: approx. 10.8 mm (0.43 in)

Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color: orange
- For potentially explosive atmospheres. Sheath color: blue.

7MH4702-8AG

7MH4702-8AF

Ground terminal for connecting the load cell cable shield to the grounded DIN rail

6ES5728-8MA11

Selection and ordering data

Article No.

*Commissioning***Commissioning charge for one static scale with SIWAREX module**

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Static adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Adjustment weights available
- Free access to scale

Weighing Electronics

Stand-alone electronics

Belt scale

Introduction

Overview



Stand-alone belt scales

The gravel, cement, coal, recycling and mining industries require exact weight measurement of the material to be conveyed using belt scales. The corresponding SIWAREX electronics offers comprehensive properties and functions that fulfil all requirements.

The Milltronics belt scales from Siemens combine simple installation and low maintenance costs (no moving parts) with higher reproducibility. This results in high productivity. With minimum hysteresis and maximum linearity, lateral forces have no influence on measuring accuracy. All load cells are equipped with overload protection.

The installation of belt scales in danger zones is also available as option. Various versions are available for high accuracy, small loads and heavy loads.

Overview



SIWAREX WP241

SIWAREX WP241 is a flexible weighing module for belt scales. The compact module is easy to install in the SIMATIC S7-1200 automation system. It can also be operated as a standalone module, i.e. without a SIMATIC CPU.

Benefits

SIWAREX WP241 offers the following key advantages:

- Uniform design technology and consistent communication in SIMATIC S7-1200
- Uniform configuration with TIA Portal
- Operation without SIMATIC CPU possible
- Direct connection of an operator panel via Ethernet
- Four digital inputs and outputs, one analog output
- Measurement of weight with a high resolution of ± 4 million parts
- Simple adjustment of belt scales using the SIWATOOL V7 program via the Ethernet interface - even without knowledge of SIMATIC
- Replacement of module possible without renewed calibration of the scale
- Use in hazardous area zone 2
- Different calibration methods: With test weights, test chain, automatically or via material batch.
- Specification of belt inclination angle
- 6 totalization memories
- Simulation of speed and belt load for test purposes
- Comprehensive diagnostics functions

Application

SIWAREX WP241 is the optimal solution wherever belt scales are used that demand high accuracy, high user-friendliness, and flexible system integration. The typical applications of the SIWAREX WP241 are determining the current material flow rate, belt load and belt speed. Furthermore, 6 totalizers are available for evaluating the amount of material conveyed.

Design

SIWAREX WP241 is a compact technology module in the SIMATIC S7-1200, and it allows direct connection to S7-1200 components via a sliding connector. Thanks to standard rail mounting, the installation and wiring outlay for the 70 mm-wide (2.76 inch) weighing module are very low. The power supply, load cells, RS 485, digital input/outputs, and analog output are connected via the screw connector of the weighing module. An RJ45 connector is used for the Ethernet connection.

Function

The primary task of the SIWAREX WP241 is to measure the speed of the belt, to measure and convert the sensor voltage to a weight value, and to precisely calculate the amount of material conveyed or material flow rate.

The volume of material conveyed can be recorded in 6 totalization memories: The accumulated totalization memory determines the conveyed material over the entire operating time of the scale (can only be reset by loading the factory settings). The overall total and the four remaining totalization memories are available for use as required. e.g. for recording the daily or weekly totals.

Four different options are available for rapid commissioning:

- **Automatic calibration**
The calibration is calculated automatically using the load cell parameters entered. Only the zero point has to be calculated on the actual plant.
- **Calibration with calibration weights or test weights**
Test weights are secured to the weighing equipment and the conveyor belt is started. The calibration values are calculated while the belt is running. The zero point must also be calculated.
- **Calibration with test chain**
Instead of test weights, a chain of a known weight can be placed on the measuring points of the belt. The calibration values are calculated as for calibration with test weights.
- **Calibration via material test**
This method can be used if a volume of material is available, but neither test weights nor a chain are available. The material can either be preweighed or weighed afterwards. The material is passed over the belt scale, and the weighing module calculates the calibration characteristic automatically.

If "Automatic set to zero" is active, the electronic weighing system automatically executes a "set to zero" procedure when the belt reaches the "set to zero" area.

Weighing Electronics

Stand-alone electronics

Belt scale

SIWAREX WP241

Extensive diagnostics functions are available. Diagnostic messages are output to the different interfaces. In simulation mode, both the speed and the belt load can be specified by the user, i.e. simulated. This makes it possible to test many functions in advance without operating belt scales. The digital inputs/outputs and the analog output can also be simulated for testing purposes. The "Trace" function is very helpful for optimizing the plant or when troubleshooting. This records the weighing history stored in the internal module memory (e.g. material flow rate, belt load, speed) and exports it to Excel in a graphical format.

Monitoring of the scale signals and states

The SIWAREX WP241 monitors the belt load, the material flow rate, and the belt speed, and it signals if the limits are exceeded. The respective limits can be parameterized as required.

Consistent and uniform communication between all system components enables fast, reliable and cost-effective integration and diagnosis in industrial processes.

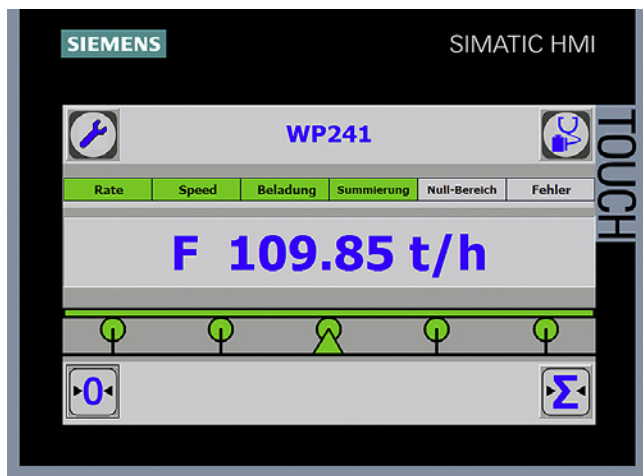
Integration in the plant environment

SIWAREX WP241 can be directly integrated into the SIMATIC S7-1200 via the SIMATIC bus. Standalone operation without SIMATIC is also possible.

A wide variety of connection options are provided via the RS 485 and Ethernet interface. Via Modbus TCP/IP or Modbus RTU, control panels can be connected and it is also possible to communicate with various automation systems. A PC for programming the SIWAREX WP241 via SIWATOOL can be connected to the Ethernet interface.

SIWAREX WP241 can be integrated into the system software using all standard PLC programming languages from the TIA Portal. In contrast to serially linked electronic weighing systems, SIWAREX WP241 does not need costly additional modules to link it to SIMATIC.

Used in conjunction with SIWAREX WP241, it is possible to configure freely programmable, modular weighing systems in SIMATIC, which can be adapted to company-specific requirements as needed.



SIWAREX WP241 "Ready for use"

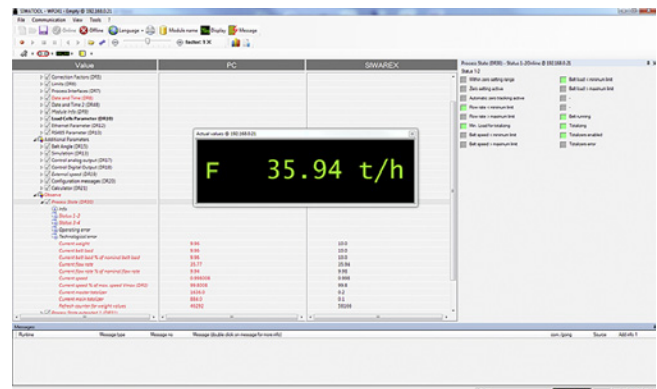
In addition to the configuration package, fully-featured SIWAREX WP241 "Ready for use" software is also available free-of-charge. It shows beginners how to integrate the module in a STEP 7 program and offers a basis for application programming. This allows you to connect the scale either directly to the SIMATIC CPU or to an operator panel connected directly to the SIWAREX WP241.

Software

There is also the option of using a Windows PC for commissioning and servicing. The program SIWATOOL enables the belt scales to be set without prior knowledge of the automation system, as required. During servicing, the technician can use a PC to quickly and simply analyze and test the procedures in the scale.

The following are just some of the tasks that can be carried out using SIWATOOL V7:

- Parameterization and calibration of the scale
- Testing/Simulation of scale properties
- Recording, analysis and export of scale traces ("Trace")
- Creation of backup files for rapidly replacing modules without calibration



SIWAREX WP241 SIWATOOL

It is also extremely helpful to analyze the diagnostics buffer which can be saved together with the parameters following reading out from the module.

Trace mode is provided to optimize the weighing sequences in the SIWAREX WP241 weighing module. The recorded weight values and associated states can be displayed as trends using SIWATOOL V7 and MS Excel.

Upgrading firmware

An additional program function can be used to download a new firmware version onto the SIWAREX WP241 on site. This means that firmware upgrades can be carried out on site as required anywhere in the world.

Technical specifications

SIWAREX WP241	
Integration in automation systems	
S7-1200	SIMATIC S7-1200 system bus
Operator panel and/or automation systems from other vendors	Via Ethernet (Modbus TCP/IP) or RS 485 (Modbus RTU)
Communication interfaces	• SIMATIC S7-1200 backplane bus • RS 485 (Modbus RTU) • Ethernet (SIWATOOL V7, Modbus TCP/IP) • Analog output 0/4 - 20 mA • 4 x digital outputs, 24 V DC floating, short-circuit proof • 4 x digital outputs, 24 V DC, floating
Commissioning options	• Using SIWATOOL V7 • Using function block in SIMATIC S7-1200 CPU / Touch Panel • Using Modbus TCP/IP • Using Modbus RTU
Measuring accuracy	
Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution	up to ±4 million parts
Measuring frequency	100 / 120 Hz
Digital filter	Separate, variable adjustable low-pass and average filter for loading and speed
Filter for conveyor load	Low-pass filter (limit frequency 0.05 ... 50 Hz)
Filter for belt speed	Low-pass filter (limit frequency 0.05 ... 50 Hz)
Weighing functions	
Readout data	• Weight • Belt load • Material flow rate • Accumulated total • Main total • Free totals 1 ... 4 • Belt speed
Limits (min/max)	• Belt load • Material flow rate • Belt speed
Load cells	Full-bridge strain gauges in 4-wire or 6-wire system

SIWAREX WP241	
Load cell excitation	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	
• R_{Lmin}	> 40 Ω
• R_{Lmax}	< 4100 Ω
With SIWAREX IS Ex interface	
• R_{Lmin}	> 50 Ω
• R_{Lmax}	< 4100 Ω
Load cell characteristic	1 ... 4 mV/V
Permissible measurement signal range	-21.3 ... +21.3 mV
Max. distance of load cells	500 m (229.66 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface (compatibility of the load cells must be checked)
Approvals/certificates	• ATEX Zone 2 • UL • EAC • KCC • RCM
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	200 mA
Max. power consumption SIMATIC Bus	3 mA
IP degree of protection to DIN EN 60529; IEC 60529	IP20
Climatic requirements	
T_{min} (IND) ... T_{max} (IND) (operating temperature)	
• Vertical installation	-10 ... +40 °C (14 ... 104 °F)
• Horizontal installation	-10 ... +55 °C (14 ... 131 °F)
EMC requirements	according to EN 45501
Dimensions	70 x 75 x 100 mm (2.76 x 2.95 x 3.94 in)

Weighing Electronics

Stand-alone electronics

Belt scale

SIWAREX WP241

Selection and ordering data

Article No.

Article No.

SIWAREX WP241 weighing module

Single-channel, for conveyor scales with analog load cells / full-bridge strain gauges (1 - 4 mV/V), 1 x LC, 4 x DQ, 4 x DI, 1 x AQ, 1 x RS 485, Ethernet port.

7MH4960-4AA01

SIWAREX S7-1200 manual

Available in a range of languages

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWAREX WP241 "Ready for Use"

Complete software package for belt scales (for S7-1200 and a directly connected operator panel)

Free download on the Internet at:

<http://www.siemens.com/weighing/documentation>

SIWATOOL V4 & V7

Service and commissioning software for SIWAREX weighing modules

7MH4900-1AK01

Ethernet cable patch cord 2 m (7 ft)

For connecting SIWAREX WP241 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.

6XV1850-2GH20

Accessories

SIWAREX JB junction box, aluminum housing

For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.

7MH4710-1BA

SIWAREX JB junction box, stainless steel housing

For connecting up to 4 load cells in parallel.

7MH4710-1EA

SIWAREX JB junction box, stainless steel housing (ATEX)

For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).

7MH4710-1EA01

Ex interface SIWAREX IS

For intrinsically-safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked.

- Short-circuit current < 199 mA DC
- Short-circuit current < 137 mA DC

7MH4710-5BA

7MH4710-5CA

Cable (optional)

Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JBs.

For permanent installation. Occasional bending is possible.

External diameter: approx. 10.8 mm (0.43 in)

Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color: orange
- For potentially explosive atmospheres. Sheath color: blue.

7MH4702-8AG
7MH4702-8AF

Ground terminal for connecting the load cell cable shield to the grounded DIN rail

6ES5728-8MA11

Commissioning

Commissioning charge for one belt scale with SIWAREX module

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Dynamic adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Adjustment weights available
- Free access to scale

Overview



SIWAREX WT241 weighing terminal

The SIWAREX WT241 is a weighing terminal for belt scales. Siemens standard components are installed in a stainless steel enclosure with numerous connection options. This ensures the tried and tested SIWAREX quality as standalone solution and is ideal for belt scales.

Benefits

SIWAREX WT241 offers the following key advantages:

- Complete solution – no configuration in SIMATIC required
- Fast and easy commissioning due to intuitive operating concept
- The stainless steel enclosure permits applications in many diverse environments
- Flexible connection to different systems through
 - four digital inputs
 - four digital outputs
 - one analog output
 - RS 485 interface and Modbus RTU
- Connection to analog load cells (1 ... 4 mV/V)
- High resolution of the load cell signal of up to ± 4 million parts
- Different calibration methods: with test weights, test chain, automatically or via material batch.
- Specification of belt inclination angle
- 6 totalization memories
- Simulation of speed and belt load for test purposes
- Comprehensive diagnostics functions
- Logging/log book
- All diagnostic and error messages as well as all scale parameters in plain text
- 100 ... 240 V AC supply range
- Parameterizable pulse signal (24 V DC) for external totalizer
- Correction of material flow rate by means of correction factor

Application

SIWAREX WT241 is the optimal solution wherever belt scales are used that demand high accuracy, high user-friendliness, and comprehensive adjustment options.

The typical applications of the SIWAREX WT241 are determining the current material flow rate, belt load, and belt speed. Furthermore, 6 totalizers are available for evaluating the amount of material conveyed.

Design

SIWAREX WT241 is a standalone weighing terminal based on the tried and tested Siemens SIWAREX WP241 products and the Siemens SIMATIC KTP 400 touch display. Supplemented with a connection board and a wide-range power supply, these components are preinstalled in a compact stainless steel enclosure. The enclosure can be wall mounted and has nine cable entries, of which five are equipped with cable glands at the factory. A variety of interfaces support the integration into the plant environment.

The integrated connection board permits the direct connection of the belt scales and of the speed sensor.

The SIWAREX WT241 is preconfigured with the SIWAREX "Ready for Use" software. This means that no further commissioning is required in SIMATIC.

Function

The primary task of the SIWAREX WT241 is to measure the speed of the belt, to measure and convert the sensor voltage to a weight value, and to precisely calculate the amount of material conveyed or material flow rate.

The volume of material conveyed can be recorded in 6 totalization memories: The accumulated totalization memory determines the conveyed material over the entire operating time of the scale (can only be reset by loading the factory settings), the main total is used in applications that need to be officially calibrated (available soon). The four remaining totalization memories are freely available. For example, for recording the daily or weekly totals.

Four different options are available for rapid commissioning:

- **Automatic calibration**
The calibration is performed automatically using the load cell parameters entered. Only the zero point has to be calculated at the actual plant.
- **Calibration with calibration weights or test weights**
Test weights are secured to the weighing equipment and the conveyor belt is started. The calibration values are determined while the belt is running. A zero point must also be determined.
- **Calibration with test chain**
Instead of test weights, a chain of a known weight can be placed on the measuring points of the belt. The calibration values are calculated as for calibration with test weights.
- **Calibration via material batch**
This method can be used if a volume of material is available, but neither test weights nor a chain are available. The material can either be preweighed or weighed afterwards. The material is passed over the belt scale. Then the weighing module calculates the calibration characteristic automatically.

If "Automatic set to zero" is active, the electronic weighing system automatically executes a "set to zero" procedure when the belt reaches the "set to zero" area.

Weighing Electronics

Stand-alone electronics

Belt scale

SIWAREX WT241

Extensive diagnostics functions are available. Diagnostic messages are output to the different interfaces. In simulation mode, both the speed and the belt load can be specified by the user, i.e. simulated. This makes it possible to test many functions in advance without operating belt scales. Both the digital inputs/outputs and the analog output can be simulated for test purposes. The "Trace" function is very helpful for optimizing the plant or when troubleshooting. This records the weighing history stored in the internal module memory (e.g. material flow rate, belt load, speed) and exports it to Excel in a graphical format.

The service tool "SIWATOOL V7", which is included in the optional configuration package, is required for reading out this trace data. In addition, using SIWATOOL a scale backup can be created and reimported whenever required. Thus, in the event of an error, the WT241 can be replaced within seconds without requiring readjustment.

Monitoring of the scale signals and states

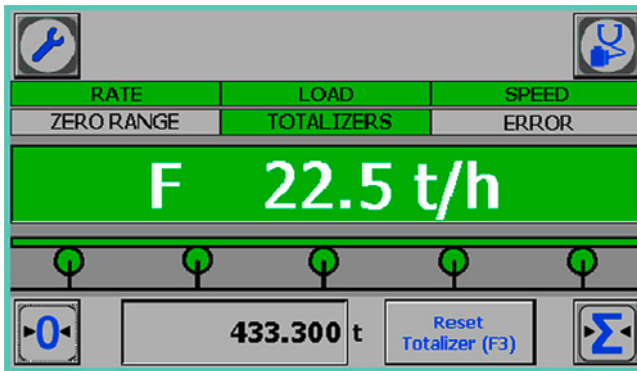
Using the onboard RS 485 interface and the Modbus RTU protocol, the SIWAREX WT241 can be connected to many different automation systems or a PC.

Furthermore, 4 digital inputs, 4 digital outputs, and an analog output are available. Direct, straightforward further processing of alarms or status messages is thus made possible.

Software

The touch panel is preconfigured with the SIWAREX "Ready for use" software. Thus the user interface is clearly structured and can be operated intuitively; the languages German, English, French, and Chinese are available. The structured menu-based operation facilitates the operation of the scale and supports the user through guided commissioning.

Furthermore, a variety of diagnostics options are offered. Using the trace function, weighing histories can be recorded and exported. There is also the option of simulating the behavior of the scale with the device.



SIWAREX WT241 weighing terminal operating view

Technical specifications

SIWAREX WT241	
Enclosure	Stainless steel enclosure (1.4301) with the interfaces: • 1 x wall bushing for power supply • 4 x wall bushing for load cell connection with EMC screw connection • 4 x wall bushing with blanking plugs • Ground connection bolt
Connection board	Internal connection board • Connection of up to 4 load cells • Type of analog output • Connection of speed sensor • Type of 24 V direct voltage
Integration in automation systems	
Any automation systems	Via RS 485 (Modbus RTU)
Communication interfaces	• RS 485 (Modbus RTU) • 4 digital outputs (24 V DC) • 3 digital inputs (24 V DC) • 1 speed sensor input (24 V DC, up to 5 kHz) • 1 analog output (0/4 ... 20 mA)
Commissioning options for the scale	Directly via the color touch panel and the preinstalled "Ready for use" operating software
Calibration approval	No
Internal resolution	up to ±4 million parts
Number of measurements/second (internal)	100 Hz
Updating time for material flow rate	100 ms
Filter	
Filter for material flow rate	Low-pass filter 0.1 ... 50 Hz
Filter for weight values	Low-pass filter 0.1 ... 50 Hz
Filter for belt speed	Low-pass filter 0.1 ... 50 Hz
Weighing functions	
Readout data	• Weight • Belt load • Material flow rate • Accumulated total • Main total • Free totals 1 ... 4 • Belt speed
Limits (min./max.)	• Belt load • Material flow rate • Belt speed
Zeroing function	On command or automatic set to zero

SIWAREX WT241	
Load cells	Strain gauges in 4-wire or 6-wire system
Load cell excitation	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	
• R_{Lmin}	> 40 Ω
• R_{Lmax}	< 4 100 Ω
With SIWAREX IS Ex interface	
• R_{Lmin}	> 50 Ω
• R_{Lmax}	< 4 100 Ω
Load cell characteristic	1 ... 4 mV/V
Permissible range of measuring signal (at greatest set characteristic value)	-21.3 ... +21.3 mV
Max. distance of load cells	500 m (229.66 ft)
Auxiliary power supply	
Rated voltage	100 ... 240 V AC
Line frequency	50 ... 60 Hz
Max. power consumption	0.12 A
IP degree of protection to DIN EN 60529; IEC 60529	IP65
Climatic requirements	
$T_{min} (IND) \dots T_{max} (IND)$ (operating temperature)	
Vertical installation	0 ... +40 °C (32 ... 104 °F)
EMC requirements according to	EN 45501
Dimensions	264 x 185 x 97 mm (10.39 x 7.28 x 3.82 in)
Weight	4 kg (8.82 lb)

Weighing Electronics

Stand-alone electronics

Belt scale

SIWAREX WT241

Selection and ordering data

Article No.

Article No.

SIWAREX WT241 Weighing terminal for belt scales	7MH4965-4AA01
SIWAREX WT241 Manual In various languages. Free download on the Internet at: http://www.siemens.com/weighing/documentation	
Accessories	
SIWATOOL V4 & V7 Service and commissioning software for SIWAREX weighing modules	7MH4900-1AK01
Ethernet cable patch cord 2 m (7 ft) For connecting SIWAREX WT241 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.	6XV1850-2GH20
SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.	7MH4710-1BA
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel.	7MH4710-1EA
SIWAREX JB junction box, stainless steel housing (ATEX) For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).	7MH4710-1EA01

Cable (optional)

Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JBs.

For permanent installation. Occasional bending is possible.

External diameter:
approx. 10.8 mm (0.43 in)

Permissible ambient temperature
-40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color: orange
- For potentially explosive atmospheres. Sheath color: blue.

7MH4702-8AG
7MH4702-8AF

Commissioning

Commissioning charge for one belt scale with SIWAREX module

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Dynamic adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Adjustment weights available
- Free access to scale

Overview



Milltronics BW500 is a full feature integrator for use with both belt scales and weighfeeders.
 Milltronics BW500/L is an integrator for use in basic belt scale or weighbelt applications.

Benefits

- Automatic zero and electronic span calibration
- Alarms for rate, load, speed, or diagnostic error
- On-board Modbus and optional: PROFIBUS DP, Modbus TCP/IP, PROFINET, EtherNet/IP, and DeviceNet
- Comprehensive weighfeeder control functions
- PID control and on-line calibration with optional analog I/O card
- Differential speed detection with second speed sensor
- Moisture meter input with optional analog I/O card for calculation of dry weight
- Inclinator input with optional analog I/O card to compensate for conveyor slope
- Suitable for belt scale custody approval
- Measurement Canada, OIML, MID, EAC, and NTEP approved

2

Application

Milltronics BW500 and BW500/L operate with a belt scale and a speed sensor. Belt load and speed signals are processed for accurate flow rate and totalized weight of bulk solids.

BW500 can take on lower level control functions traditionally handled by other devices, and it supports popular industrial communication buses. Its proven load cell balance function eliminates matching of load cells.

The PID function may be used for rate control on shearing weighfeeders - where belt loading is constant - but can also control pre-feeding devices. Operating in tandem with two or more weighfeeders, the BW500 may be used for ratio blending and controlling additives. Batching, load out, and alarm functions are also provided by the BW500.

Dolphin Plus software may be used for programming the unit on a PC.

Integrator selection guide

	BW500 (advanced feature set)	BW500/L (basic feature set)
PID control	With optional I/O card	N/A
Differential speed detection	Standard	N/A
Online calibration	Standard	N/A
Trade approval (OIML, MID, Measurement Canada, GOST, NTEP)	Optional	N/A
SmartLinx communications (DeviceNET, PROFINET, Modbus, TCP/IP, EtherNet/ IP, and PROFIBUS DP)	Optional	Optional
Modbus	Standard	Standard
Ratio blending and batching	Standard	N/A
Moisture and incline compensation	• With optional I/O card, or • Parameter set	Parameter set
Multi Span	Standard	N/A
RD500 connectivity	Standard	Standard
Relay output	5	2
Time/date stamped printing	Standard	N/A
mA output	3 ¹⁾	1
mA input	2 ¹⁾	0

¹⁾ mA input/output for BW500 is based on I/O card

Weighing Electronics

Stand-alone electronics

Belt scale

Milltronics BW500 and BW500/L

Technical specifications

Milltronics BW500, BW500/L

Mode of operation	
Measuring principle	Belt scale integrator
Typical application	- Compatible with Milltronics belt scales or equivalent 1, 2, 4¹⁾, or 6¹⁾ load cell scales - Compatible with LVDT equipped scales, with use of optional interface board (remotely mounted)
Inputs	
Load cell	0 ... 45 mV DC per load cell
Speed sensor	
• Pulse train	0 ... 5 V low, 5 ... 15 V high 1 ... 3 000 Hz, or - Open collector switch, or - Relay dry contact
Auto zero	Dry contact from external device
mA	See optional mA I/O board ¹⁾
Auxiliary	5 discrete inputs for external contacts, each programmable for either: display scrolling, totalizer 1 reset, zero, span, multi-span, print, batch reset, PID function or online calibration, 2nd speed sensor
Outputs (load and speed)	
mA	Programmable 0/4 ... 20 mA, for rate, optically isolated, 0.1 % of 20 mA resolution, 750 Ω load max. (see optional mA I/O board)
Load cell	10 V DC compensated excitation for strain gauge type, 6 cells max, 150 mA max.
Speed sensor(s)	12 V DC, 150 mA max. excitation
Remote totalizer 1	- Contact closure 10 ... 300 ms duration - Solid state relay contact 30 V DC, 100 mA max. - Max. contact on-resistance = 36 ohms - Max. off-state leakage = 1 μA
Remote totalizer 2	- Contact closure 10 ... 300 ms duration - Solid state relay contact rated 240 V AC/DC, 100 mA max. - Max. contact on-resistance = 36 ohms - Max. off-state leakage = 1 μA
Relay output	5 alarm/control relays, 1 SPST Form A relay contact per relay, rated 5 A at 250 V AC, non-inductive or 30 V DC
Measuring accuracy	
Resolution	0.02 % of full scale
Accuracy	0.1 % of full scale

Milltronics BW500, BW500/L

Rated operating conditions	
Ambient conditions	
Location	Indoor/outdoor
Ambient temperature	-20 ... +50 °C (-5 ... +122 °F)
Relative humidity/ingress protection	Suitable for outdoor/Type 4X/ NEMA 4X/IP65
Installation category	II
Pollution degree	4
Design	
Material (enclosure)	Polycarbonate
Dimensions	209 W x 285 H x 92 D mm (8.2 W x 11.2 H x 3.6 D inch)
Weight	2.6 kg (5.7 lb)
Power supply	
Standard	AC version 100 ... 240 V AC, ± 10 %, 50/60 Hz, 55 VA max. - Fuse FU3 = 2AG, 2 AMP, 250 V Slo Blo DC version 10 ... 30 V DC, 26 W max. - Fuse FU2 = 3.75 A resettable (not user replaceable)
Controls and displays	
Displays	Illuminated 5 x 7 dot matrix liquid crystal display with 2 lines of 40 characters each
Programming	Via local keypad and/or Dolphin Plus interface
Memory	Program and parameters stored in non-volatile Flash memory, upgradeable via Dolphin Plus interface
Communications	- Two RS 232 ports - One RS 485 port - SmartLinX compatible
mA I/O board	
Inputs	2 programmable 0/4 ... 20 mA for PID control and on-line calibration, optically isolated, 0.1 % of 20 mA resolution, 200 Ω input impedance
Outputs	2 programmable 0/4 ... 20 mA for PID control, rate, load, and speed output, optically isolated, 0.1 % of 20 mA resolution, 750 Ω load max
Output supply	Isolated 24 V DC at 50 mA, short circuit protected
Approvals	
BW500	CE, CSA _{US/C} , FM, Measurement Canada, NTEP, MID, OIML, GOST, RCM, EAC, SABS, STAMEQ, KCC
BW500/L	CE, CSA _{US/C} , FM, RCM, EAC, KCC
Options	
- Speed sensor: MD-36/36A, MD-256, SITRANS WS300, TASS, or RBSS, or compatible - Dolphin Plus: Windows based software interface. Refer to associated product documentation. - SmartLinX Modules: protocol specific modules for interface with popular industrial communications systems. Refer to product documentation. - LVDT interface card: for interface with LVDT based scales	

¹⁾ BW500 only.

Selection and ordering data	Article No.	Order Code
Milltronics BW500 and BW500/L A full-feature, powerful integrator designed for use with both belt scales and weighfeeders ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7MH7152- 	
Input voltage		
AC voltage	2	
DC voltage	3	
Auxiliary input/output board		
None	A	
Board with 2 analog inputs and 2 analog outputs ¹⁾	B	
Feature software		
BW500, 1 ... 6 load cell input (advanced feature set)	A	
BW500/L, 1... 2 load cell input ²⁾ (basic feature set)	B	
Auxiliary memory		
None	0	
Data communications³⁾		
SmartLinx ready	0	
SmartLinx PROFIBUS DP module	2	
SmartLinx DeviceNet module	3	
SmartLinx PROFINET module	4	
SmartLinx EtherNet/IP module	5	
SmartLinx Modbus TCP/IP module	6	
Enclosures		
Standard enclosure, no entry holes	1	
Standard enclosure, 4 entries, for M20 glands	2	
Trade approval stickers		
No trade approval sticker	A	
Not legal for Canadian and EU trade sticker	B	
Legal for Canadian trade ⁴⁾⁵⁾⁶⁾	C	
Legal for U.S. trade (NTEP) ⁴⁾⁵⁾⁶⁾	D	
Legal for World trade (OIML), European trade (MID) ⁴⁾⁵⁾⁶⁾	E	
Approvals		
CE, CSA _{US/CA} , FM, RCM, EAC, KCC	A	
Further designs		
Please add "-Z" to article no. and specify order code(s).		
Stainless steel tag (69 x 50 mm), Measuring-point number/identification (max 27 characters), specify in plain text.		Y15
Manufacturer's test certificate: According to EN 10204-2.2		C11
OIML/MID approval additional nameplate (submit application data with order)		Y77
NTEP approval additional nameplate (submit application data with order)		Y78
LVDT conditioner card mounted and connected for use with LVDT belt scales		G21
Stainless steel, sun/weather shield 357 x 305 x 203 mm (14 x 12 x 8 inch) (finished unit is field mounted with enclosure)		S50
Stainless steel enclosure, 304 (1.4301), [406 x 305 x 152 mm (16 x 12 x 6 inch), Nema/Type 4X, IP66; (finished unit is mounted inside enclosure)]		
• With window		A11
• Without window		A12
Painted mild steel, [406 x 305 x 152 mm (16 x 12 x 6 inch), Nema/Type 4, IP65; (finished unit is mounted inside enclosure)]		
• With window		A13
• Without window		A14
Painted mild steel, anti-vibration enclosure with viewing window [406 x 305 x 203 mm (16 x 12 x 8 inch), Nema/Type 4, IP66; (finished unit is mounted inside enclosure)]		A15
Painted mild steel, heated enclosure with viewing window for use down to -50 °C (-58 °F); finished unit is mounted inside enclosure 483 x 584 x 203 mm (19 x 23 x 8 inch)		A35

¹⁾ Required for PID control and online calibration, available with feature software option A only.

²⁾ Available with auxiliary I/O option A, and trade approval stickers A, B only.

³⁾ Required for industrial communications.

⁴⁾ Requires use with applicable certified MSI or MMI.

⁵⁾ Complete specification data sheet on page 4/27 and submit with order.

⁶⁾ Available with feature software option A only.

Weighing Electronics

Stand-alone electronics

Belt scale

Milltronics BW500 and BW500/L

Selection and ordering data

Article No.

Article No.

Instruction manuals

BW500 and BW500/L, English

A5E33482052

Note: the instruction manual should be ordered as a separate item on the order.

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

Optional equipment

Auxiliary I/O card spare

7MH7723-1BJ

LVDT Conditioners in Nema 4 enclosure
(to interface LVDT Flowmeter/Belt scale without internal pre-amplifier)

7MH7723-1AJ

Supply voltage regulators, 120 V AC, 60 Hz

7MH7726-1AN

Cables to connect BW500, BW500/L, and SF500 keypad to motherboard

7MH7723-1CB

SIMATIC Touch panel 277, 6 inch

6AV6643-0AA01-1AX0

SIMATIC Touch panel TP277B, 6 inch

6AV6642-0BA01-1AX1

SIMATIC Multi-panel MP277, 8 inch

6AV6643-0CB01-1AX1

Programmed MMC for SIMATIC panel TP277

7MH7726-1AW

Programmed MMC for SIMATIC panel TP177B

7MH7726-1AX

Programmed MMC for SIMATIC panel MP277

7MH7726-1AY

SITRANS RD100 Remote displays,
see RD100 on page 2/100

SITRANS RD200 Remote displays,
see RD200 on page 2/102

SITRANS RD300 Remote displays,
see RD300 on page 2/106

SITRANS RD500 web, datalogging, alarming,
Ethernet, and modem support for instrumentation,
see page 2/110

7ML5750-1AA00-0

Large LED display, 150 mm (6 inch) high
characters

A5E31871009

Spare parts

Display card

7MH7723-1AF

BW500 motherboard, AC

A5E34320772

BW500/L motherboard, AC

A5E34320773

BW500 motherboard, DC

A5E34320774

BW500/L motherboard, DC

A5E34320775

Fuse, 2 A, 250 V, BW500, BW500/L,
and SF500, spare

7MH7723-1DG

Lid with overlay and keypad for BW500

7MH7723-1AK

Lid with overlay and keypad for trade approved
BW500

7MH7723-1HN

Lid with overlay and keypad for BW500/L

A5E34699647

Keypads spare for BW500, BW500/L, and SF500

7MH7723-1CD

LVDT card spare

A5E34699664

Modbus TCP/IP, EtherNet/IP module

7ML1830-1PN

PROFINET IO module

7ML1830-1PM

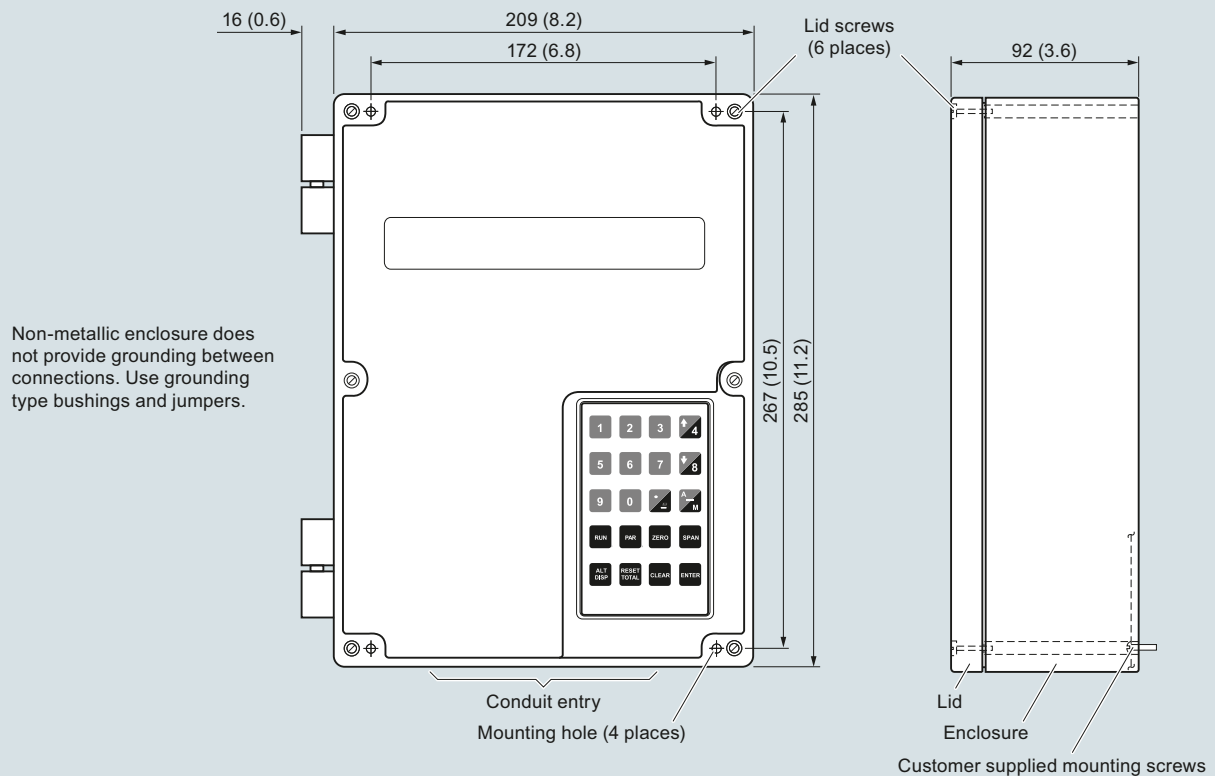
PROFIBUS DP module

7ML1830-1HR

DeviceNet module

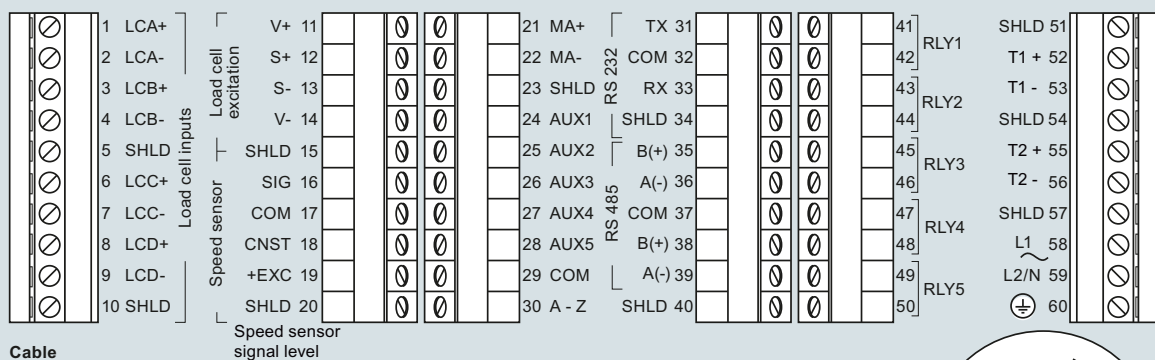
7ML1830-1HT

Dimensional drawings



Milltronics BW500 and BW500/L, dimensions in mm (inch)

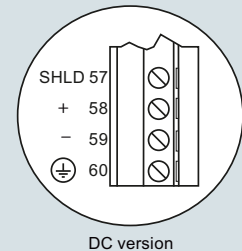
Circuit diagrams



Cable

- One load cell:
 - Non-sensing: Belden 8404, 4 wire shielded, 20 AWG (0.5 mm²) or equivalent, 150 m (500 ft) max.
 - Sensing: Belden 9260, 6 wire shielded, 20 AWG (0.5 mm²) or equivalent, 300 m (1 000 ft) max.
- Two/four/six¹ load cells:
 - Non-sensing: Belden 9260, 6 wire shielded, 20 AWG (0.5 mm²) or equivalent, 150 m (500 ft) max.
 - Sensing: Belden 8418, 8 wire shielded, 20 AWG (0.5 mm²) or equivalent, 300 m (1 000 ft) max.
- Speed sensor: Belden 8770, 3 wire shielded, 18 AWG (0.75 mm²) or equivalent, 300 m (1 000 ft)
- Auto zero: Belden 8760, 1 pair, twisted/shielded, 18 AWG (0.75 mm²) or equivalent, 300 m (1 000 ft) max.
- Remote total: Belden 8760, 1 pair, twisted/shielded, 18 AWG (0.75 mm²) or equivalent, 300 m (1 000 ft) max.

¹⁾ For four/six load cell scale, run two separate cables of two load cell configuration



Weighing Electronics

Stand-alone electronics

Belt scale

Milltronics SF500

Overview



Milltronics SF500 is a full feature integrator for use with solids flowmeters.

Benefits

- Automatic zero and electronic span calibration
- Alarms for rate or diagnostic error
- On-board Modbus, optional PROFIBUS DP, PROFINET, Modbus TCP/IP, EtherNet/IP, and DeviceNet
- On-line calibration and dual PID control with optional analog I/O card
- Multi-point linearizer for high turn down accuracy
- Up to 8 multi-spans for application of more than one flow condition and/or material
- Moisture meter input with optional analog I/O card for calculation of dry weight

Application

Milltronics SF500 operates with any solids flowmeter with up to two strain gauge load cells or LVDT sensor. The SF500 processes sensor signals for accurate flow rate and totalized weight of bulk solids. It can take on lower level control functions traditionally handled by other devices, and it supports popular industrial communication buses. Its proven load cell balance function eliminates matching of load cells.

The PID function may be used for rate control of pre-feeding devices and/or control of additives with two internal PID controllers. Operating in tandem with two or more solids flowmeters or weighfeeders, the SF500 may be used for ratio blending and controlling additives. Batching, load out, and alarm functions are also provided by the SF500.

Dolphin Plus software may be used for programming the unit with a PC.

Technical specifications

Milltronics SF500		Milltronics SF500	
Mode of operation		Design	
Measuring principle	Flowmeter integrator	Material (enclosure)	Polycarbonate
Typical application	- Compatible with SITRANS solids flowmeters or equivalent 1 or 2 load cell models - Compatible with LVDT equipped solids flowmeters, with use of optional interface board (remotely mounted)	Dimensions	209 W x 285 H x 92 D mm (8.2 W x 11.2 H x 3.6 D inch)
Input		Weight	2.6 kg (5.7 lb)
Load cell/LVDT	0 ... 45 mV DC per load cell or LVDT interface card	Power supply	
Auto zero	Dry contact from external device	Standard	AC version
mA	See optional mA I/O board		100 ... 240 V AC $\pm$ 10 %, 50/60 Hz, 55 VA max. - Fuse FU3 = 2AG, 2 AMP, 250 V Slo Blo
Auxiliary	5 discrete inputs for external contacts, each programmable for either: display scrolling, totalizer 1 reset, zero, span, multi-span, print, batch reset, PID function, or on-line calibration	DC version	
Output		Controls and displays	
mA	Programmable 0/4 ... 20 mA, for rate, optically isolated, 0.1 % of 20 mA resolution, 750 Ω load max. (see optional mA I/O board)	Display	Illuminated 5 x 7 dot matrix liquid crystal display with 2 lines of 40 characters each
Load cell/LVDT conditioner card	10 V DC compensated excitation for strain gauge type, 2 cells max., 150 mA max.	Programming	Via local keypad and/or Dolphin Plus interface
Remote totalizer 1	- Contact closure 10 ... 300 ms duration - Solid state relay contact 30 V DC, 100 mA max. - Max. contact on-resistance = 36 ohms - Max. off-state leakage = 1 μA	Memory	- Program stored in non-volatile FLASH ROM, upgradeable via Dolphin Plus interface - Parameters stored in battery backed RAM, 3 V NEDA 5003LC or equivalent, 10 year life
Remote totalizer 2	- Contact closure 10 ... 300 ms duration - Solid state relay contact rated 240 V AC/DC, 100 mA max. - Max. contact on-resistance = 36 ohms - Max. off-state leakage = 1 μA	Communications	Two RS 232 ports One RS 485 port SmartLinX compatible
Relay output	5 alarm/control relays, 1 SPST Form A relay contact per relay, rated 5 A at 250 V AC, non-inductive or 30 V DC	Approvals	
Measuring accuracy		Options	
Resolution	0.02 % of full scale	- Dolphin Plus: Windows based software interface. Refer to associated product documentation. - SmartLinX modules: protocol specific modules for interface with popular industrial communications systems. Refer to associated product documentation. - LVDT interface card: for interface with LVDT based solids flowmeters - mA I/O board - Inputs: 2 programmable 0/4 ... 20 mA for PID control or on-line calibration, optically isolated, 0.1 % ... 20 mA resolution, 200 Ω input impedance - Outputs: 2 programmable 0/4 ... 20 mA for PID control or rate output, optically isolated, 0.1 % of 20 mA resolution, 750 Ω load max - Output supply: isolated 24 V DC at 50 mA, short circuit protected	
Accuracy	0.1 % of full scale		
Rated operating conditions			
Ambient conditions			
Location	Indoor/outdoor		
Ambient temperature	-20 ... +50 °C (-5 ... +122 °F)		
Relative humidity/ingress protection	Suitable for outdoor/ Type 4X/NEMA 4X/IP65		
Installation category	II		
Pollution degree	4		

Weighing Electronics

Stand-alone electronics

Belt scale

Milltronics SF500

Selection and ordering data

Article No.

Order code

Milltronics SF500

A full feature, powerful integrator designed for use with solids flowmeters.

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Input voltage

AC voltage

DC voltage

Auxiliary input/output boards¹⁾

None

Board with 2 analog inputs and 2 analog outputs

Feature software

Standard

Auxiliary memory

None

Data communications²⁾

SmartLinx Ready

SmartLinx PROFIBUS DP module

SmartLinx DeviceNet module

SmartLinx PROFINET module

SmartLinx EtherNet/IP module

SmartLinx Modbus TCP/IP module

Enclosures

Standard enclosure, no entry holes

Standard enclosure, 4 entries, for M20 glands

Trade approval stickers

No trade approval sticker

Not legal for Canadian and EU trade sticker

Approvals

CE, CSAus/c, FM, RCM, EAC, KCC

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Further designs

Please add "-Z" to article no. and specify order code(s).

Stainless steel tag (69 mm x 50 mm),
Measuring-point number/identification
(max 27 characters), specify in plain text.

Stainless steel, sun/weather shield
357 x 305 x 203 mm (14 x 12 x 8 inch)
(finished unit is field mounted with enclosure)

Manufacturer's test certificate:
According to EN 10204-2.2

LVDT conditioner card mounted and connected for
use with LVDT flowmeters

Stainless steel enclosure, 304 (1.4301),
[406 x 305 x 152 mm (16 x 12 x 6 inch), Type 4X, IP66;
(finished unit is mounted inside enclosure)]

- With window

- Without window

Painted mild steel, [406 x 305 x 152 mm
(16 x 12 x 6 inch), Type 4, IP65; (finished unit is
mounted inside enclosure)]

- With window

- Without window

Painted mild steel, anti-vibration enclosure with
viewing window [406 x 305 x 203 mm
(16 x 12 x 8 inch), Nema/Type 4, IP66; (finished unit is
mounted inside enclosure)]

Painted mild steel, heated enclosure with viewing win-
dow for use down to -50 °C (-58 °F)
(finished unit is mounted inside enclosure)
483 x 584 x 203 mm (19 x 23 x 8 inch)

Instruction manuals

All literature is available to download for free, in a
range of languages, at

<http://www.siemens.com/weighing/documentation>

¹⁾ Required for PID control and online calibration.

²⁾ Required for industrial communications.

Selection and ordering data

Article No.

Optional equipment

Auxiliary I/O card spare	7MH7723-1BJ
LVDT Conditioners in NEMA 4 enclosure (to interface LVDT Flowmeter/Belt scale without internal pre-amplifier)	7MH7723-1AJ
Cables to connect BW500/SF500 keypad to motherboard	7MH7723-1CB
SITRANS RD100 Remote displays - see RD100 on page 2/100	
SITRANS RD200 Remote displays - see RD200 on page 2/102	
SITRANS RD300 Remote displays - see RD300 on page 2/106	
SITRANS RD500 web, datalogging, alarming, Ethernet, and modem support for instrumentation - see on page 2/110	7ML5750-1AA00-0

Spare parts

Display card	7MH7723-1AF
Lid with overlay and keypad	7MH7723-1AG
SF500 motherboard, AC	A5E34320776
SF500 motherboard, DC	A5E34320778
Fuse, 2 A, 250 V, BW500, BW500/L, and SF500, spare	7MH7723-1DG
Keypad spare for BW500, BW500/L, and SF500	7MH7723-1CD
LVDT card spare	A5E34699664
PROFINET IO module	7ML1830-1PM
Modbus TCP/IP, EtherNet/IP module	7ML1830-1PN
PROFIBUS DP module	7ML1830-1HR
DeviceNet module	7ML1830-1HT

1) Required for PID control and online calibration.

2) Required for industrial communications.

Weighing Electronics

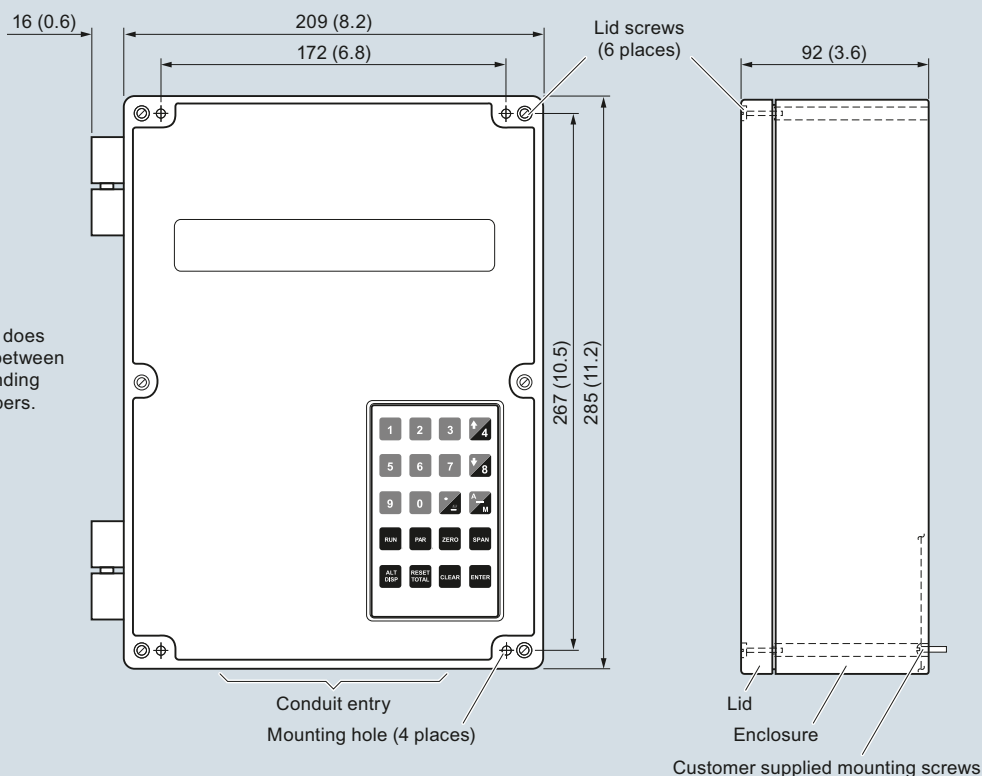
Stand-alone electronics

Belt scale

Milltronics SF500

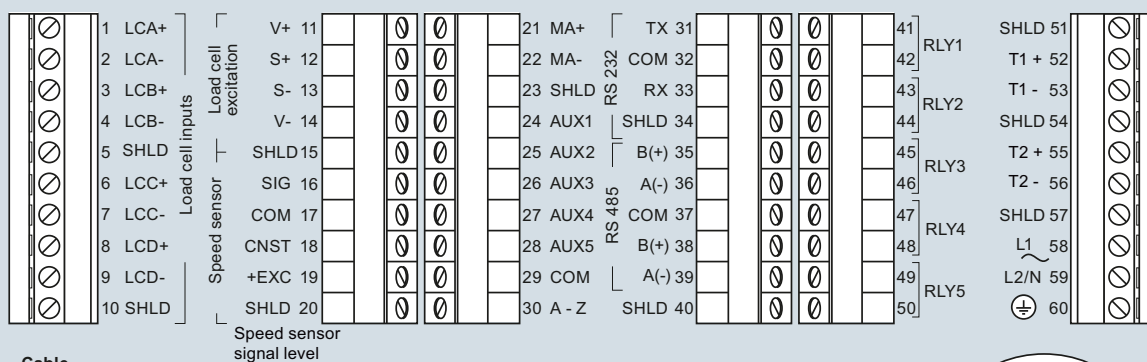
Dimensional drawings

Non-metallic enclosure does not provide grounding between connections. Use grounding type bushings and jumpers.



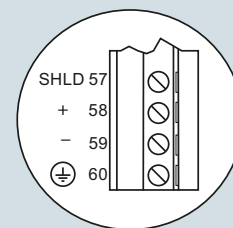
Milltronics SF500, dimensions in mm (inch)

Schematics



Cable

- One load cell:
 - Non-sensing: Belden 8404, 4 wire shielded, 20 AWG (0.5 mm²) or equivalent, 150 m (500 ft) max.
 - Sensing: Belden 9260, 6 wire shielded, 20 AWG (0.5 mm²) or equivalent, 300 m (1 000 ft) max.
- Two load cells:
 - Non-sensing: Belden 9260, 6 wire shielded, 20 AWG (0.5 mm²) or equivalent, 150 m (500 ft) max.
 - Sensing: Belden 8418, 8 wire shielded, 20 AWG (0.5 mm²) or equivalent, 300 m (1 000 ft) max.
- Auto zero: Belden 8760, 1 pair, twisted/shielded, 18 AWG (0.75 mm²) or equivalent, 300 m (1 000 ft) max.
- Remote total: Belden 8760, 1 pair, twisted/shielded, 18 AWG (0.75 mm²) or equivalent, 300 m (1 000 ft) max.



DC version

Milltronics SF500 connections

Overview



Dolphin Plus is instrument configuration software that allows you to quickly and easily configure, monitor, tune and diagnose several Siemens level devices remotely (see list below). Remote access is available using your desktop PC or connected directly in the field using a laptop.

Benefits

- Real-time monitoring and adjustment of parameters
- On-screen visualization of process values
- Saving and visualization of echo profiles for a wide range of Siemens level meters
- Copying of data for programming several devices
- Quick setup and commissioning of device
- Generation of configuration reports within seconds

Note:

The Dolphin Plus software is only available in English.

Application

Dolphin Plus is easy to install and use. Just load the software from the CD. In minutes, you're ready to set up or modify complete parameter configurations for one or more devices.

Following configuration, you can alter parameters, upload and download parameter sets to and from disk, and use parameter sets saved from other instruments. Reading of echo profiles permits fine tuning without the need for special instruments. Built-in quick start wizards and help functions guide you through the entire process.

Compatibility

Dolphin Plus is compatible with Microsoft Windows 95/98/NT4/Me/2000/XP and works with a wide range of Siemens products, including:

- Milltronics BW500
- Milltronics BW500/L
- Milltronics SF500

Connection to a Siemens instrument may be a direct RS 232 serial connection or via an RS 485 converter or Siemens infrared ComVerter, depending on the instrument being configured.

Meets VDE 2187 user interface requirements.

Most other Siemens level devices use Simatic PDM configuration software.

Selection and ordering data

Article No.

Dolphin Plus

Instrument configuration software to quickly and easily configure, monitor, tune and diagnose most Siemens Milltronics devices remotely, from your desktop PC or connected directly in the field using a laptop.

Dolphin Plus Software includes a software DVD, and a nine pin adapter with a 2.1 m (82.7 inch) cable for connection to a PC serial port.

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

RS 485 to RS 232 converters

No

Yes

ComVerter

No

Yes

Instruction manuals

Connection manual, English:
included on Dolphin Plus DVD and available at

www.siemens.com/weighing/documentation

Spare parts

Converters, RS 485 to RS 232 (D-Sub)

Kits containing one 9-pin D-Sub to RJ11 adapter and one 2.1 m (82.7 ft) telephone cable with two male jacks

ComVerter, Infrared link

7ML1841-

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7ML1830-1HA

7ML1830-1MC

7ML1830-1MM

Weighing Electronics

Accessories for stand-alone electronics

SITRANS RD100

Overview



The SITRANS RD100 is a 2-wire loop powered, NEMA 4X enclosed remote digital display for process instrumentation.

Benefits

- Easy setup
- Approved for hazardous locations
- NEMA 4X, IP67 impact-resistant enclosure
- Simple two-step calibration
- Two modes of input allow for easy servicing, with no interruption of loop required

Application

The RD100 is very versatile. It can be installed indoors or outdoors, in hot or cold environments, and in safe or hazardous areas.

It has been approved by FM and CSA as Intrinsically Safe and non-incendive, and operates from -40 to +85 °C (-40 to +185 °F), adding only 1 V to the loop.

Calibration consists of a quick two-step process involving the adjustment of only two non-interacting potentiometers.

- Key Applications: remotely displays process variables in level, flow, pressure, temperature, and weighing applications, in a 4 to 20 mA loop.

Technical specifications

SITRANS RD100	
Mode of operation	
Measuring principle	Analog to digital conversion
Measuring range	4 ... 20 mA
Measuring points	1 instrument only
Accuracy	
± 0.1 % of span ± 1 count	
Rated operating conditions	
Ambient conditions	
• Operating temperature range	-40 ... +85 °C (-40 ... +185 °F)
Design	
Weight	340 g (12 oz)
Material (enclosure)	Impact-resistant glass filled polycarbonate body and clear polycarbonate cover
Degree of protection	NEMA 4X, IP67
Power supply	
External loop power supply	30 V DC max.
Display	
• 1.0 inch (2.54 cm) high LCD • Numeric range from -1 000 ... +1 999	
Certificates and approvals	
Non-hazardous	CE
Hazardous	
• Intrinsically Safe	• CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G T4 • CSA/FM Class I, Zone 0, Group IIC • CSA/FM Class I, Div. 2, Groups A, B, C, D • CSA/FM Class II and III, Div. 2, Groups F and G
• Non-incendive	
Options	
Mounting	• 2 inch (5.08 cm) pipe mounting kit (zinc plated or stainless steel) • Panel mounting kit

Selection and ordering data

Article No.

SITRANS RD100

A 2-wire loop powered, NEMA 4X enclosed remote digital display for process instrumentation.

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Conduit hole location (½ inch)

None
Bottom
Rear
Top

Approvals

FM/CSA
CE

Instruction manuals

All literature is available to download for free, in a range of languages, at
<http://www.siemens.com/weighing/documentation>

Accessories

Panel mount kits
2 inch (5.08 cm) pipe mounting kit (zinc plated seal)
2 inch (5.08 cm) pipe mounting kit (stainless steel, Type 304, EN 1.4301)

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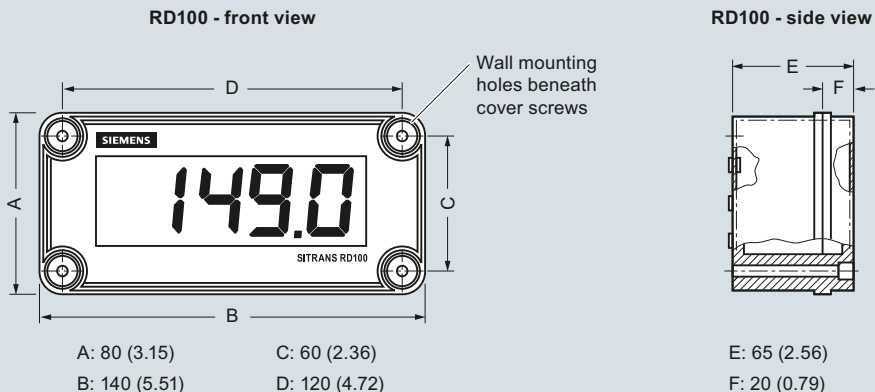
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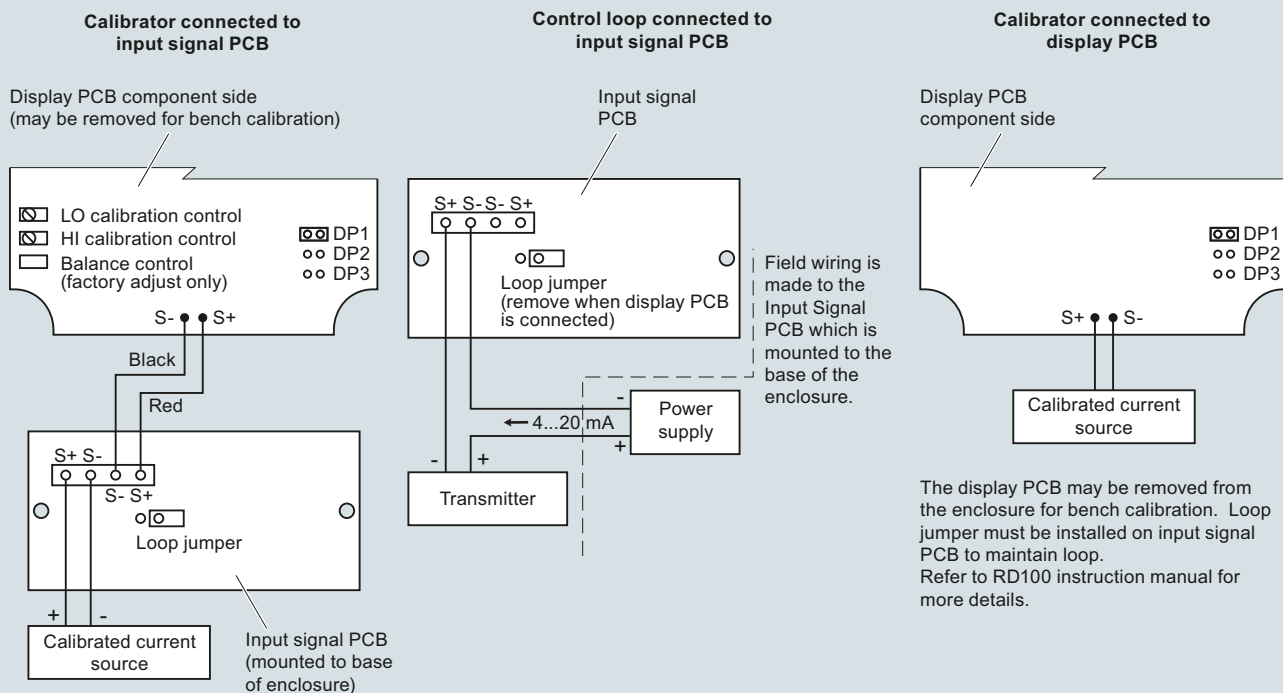
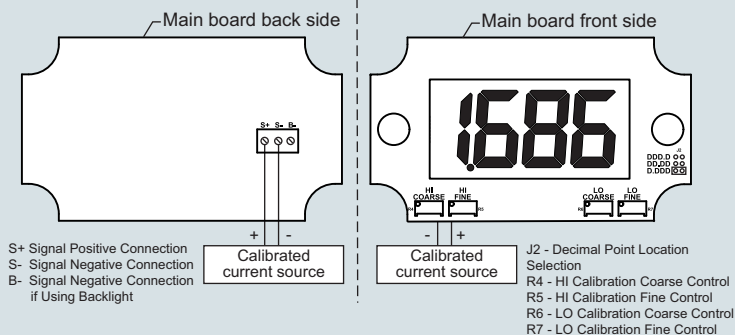
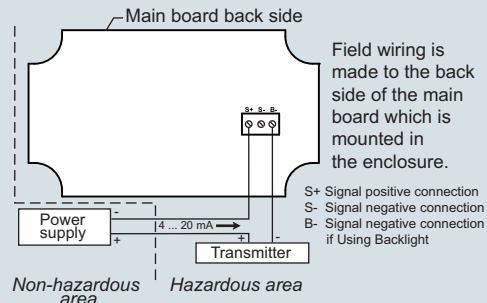
7ML1930-1BN

7ML1930-1BP

7ML1930-1BQ

Dimensional drawings


SITRANS RD100, dimensions in mm (inch)

Circuit diagrams

CE version
Figure 1: Calibrator connected to main board with no backlight

Figure 2: Control loop connected to main board with backlight


Weighing Electronics

Accessories for stand-alone electronics

SITRANS RD200

Overview



The SITRANS RD200 is a universal input, panel mount remote digital display for process instrumentation.

Benefits

- Easy setup and programming via front panel buttons or remotely using RD software
- Display readable in sunlight
- Universal input: accepts current, voltage, thermocouple, and RTD signals
- Single or dual 24 V DC transmitter power supply
- Serial communication using built in protocol or Modbus RTU
- Two optional relays for alarm indication or process control applications
- Linear or square root function supported
- Meter Copy feature to reduce setup time, cost, and errors
- RD software supports remote configuration, monitoring, and logging for up to 100 displays
- Other features include: 4 to 20 mA analog output option, pump alternation control, and optional NEMA 4 and 4X field enclosures
- 2X option for 30.5 mm (1.2 inch) high, red LED display

Application

The RD200 is a universal remote display for level, flow, pressure, temperature, weighing, and other process instruments.

Data can be remotely collected, logged and presented from as many as 100 displays on your local computer using the free downloadable RD Software.

The display accepts a single input of current, voltage, thermocouple, and RTD. This makes the RD200 an ideal fit for use with most field instruments.

The RD200 can be set up as a standard panel mount, or combined with optional enclosures to allow it to house up to 6 displays.

- Key Applications: tank farms, pump alternation control, local or remote display of level, temperature, flow, pressure and weighing instrument values, PC monitoring, and data logging with RD Software.

Technical specifications

SITRANS RD200

Mode of operation

Measuring principle

Analog to digital conversion

Measuring points

- 1 instrument
- Remote monitoring of 100 instruments with PC and RD software

Input

Measuring range

- Current
- Voltage
- Thermocouple temperature

- 4 ... 20 mA, 0 ... 20 mA
- 0 V DC ... 10 V DC, 1 ... 5 V, 0 ... 5 V
- Type J: -50 ... +750 °C (-58 ... +1382 °F)
- Type K: -50 ... +1260 °C (-58 ... +2300 °F)
- Type E: -50 ... +870 °C (-58 ... +1578 °F)
- Type T: -180 ... +371 °C (-292 ... +700 °F)
- Type T, 0.1° resolution: -180.0 ... +371 °C (-199.9 ... +700 °F)
- 100 Ω RTD: -200 ... +750 °C (-328 ... +1382 °F)

Output signal

Output

- 4 ... 20 mA (optional)
- Modbus RTU

Relays

2 SPDT Form C relays, rated 3 A at 30 V DC or 3 A at 250 V AC, non-inductive, auto-initializing (optional)

Communications

- RS 232 with PDC or Modbus RTU
- RS 422/485 with PDC or Modbus RTU

Accuracy

4 ... 20 mA optional output

± 0.1 % FS ± 0.004 mA

Process input

± 0.05 % of span ± 1 count, square root: 10 ... 100 % FS

Thermocouple temperature input

- Type J: ± 1 °C (± 2 °F)
- Type K: ± 1 °C (± 2 °F)
- Type E: ± 1 °C (± 2 °F)
- Type T: ± 1 °C (± 2 °F)
- Type T, 0.1° resolution: ± 1 °C (± 1.8 °F)

RTD temperature input

- 100 Ω RTD: ± 1 °C (± 1 °F)

Rated operating conditions

Ambient conditions

- Storage temperature range
- Operating temperature range

-40 ... +85 °C (-40 ... +185 °F)
-40 ... +65 °C (-40 ... +149 °F)

Design

Weight

269 g (9.5 oz) (including options)

Material (enclosure)

- 1/8 DIN, high impact plastic, UL94V-0, color: gray
- Optional plastic, steel and stainless steel (Type 304, EN 1.4301) NEMA 4 enclosures

Degree of protection

Type 4X, NEMA 4X, IP65 (front cover); panel gasket provided

Electrical connection

mA output signal

2-core copper conductor, twisted, shielded, 0.82 ... 3.30 mm² (18 ... 12 AWG), Belden 8760 or equivalent is acceptable

Electrical connection and relay connection

Copper conductor according to local requirements, rated 3 A at 250 V AC

SITRANS RD200**Power supply**

Input voltage option 1	85 ... 265 V AC, 50/60 Hz; 90 ... 265 V DC, 20 W max.
Input voltage option 2	12 ... 36 V DC; 12 ... 24 V AC, 6 W max.
Transmitter power supply	One or two isolated transmitter power supplies (optional)
• Single power supply • Dual power supplies	One 24 V DC $\pm$ 10 % at 200 mA max. Two 24 V DC $\pm$ 10 % at 200 mA and 40 mA max.
External loop power supply	35 V DC max.
Output loop resistance	• 24 V DC, 10 ... 700 Ω max. • 35 V DC (external), 100 ... 1 200 Ω max.

Displays and controls

Display	• 14 mm (0.56 inch) high LED • 2X option for 30.5 mm (1.2 inch) high, red LED • Numeric range from -1 999 ... +9 999 • Four digits, automatic lead zero blanking • Eight intensity levels
Memory	• Non-volatile • Stores settings for minimum of 10 years if power is lost
Programming	• Primary: front panel • Secondary: meter copy or PC with SITRANS RD software

Certificates and approvals

CE, UL, cUL

Options

Enclosures	Plastic, steel, and stainless steel (Type 304, EN 1.4301) NEMA 4 and 4X enclosures
Mounting	• 2 inch (5.08 cm) pipe mounting kit (zinc plated seal) • 2 inch (5.08 cm) pipe mounting kit (stainless steel, Type 304, EN 1.4301)

Weighing Electronics

Accessories for stand-alone electronics

SITRANS RD200

Selection and ordering data

SITRANS RD200

A universal input, panel mount remote digital display for process instrumentation.

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Input voltage

85 ... 265 V AC, 50/60 Hz;

90 ... 265 V DC, 20 W max.

12 ... 36 V DC; 12 ... 24 V AC, 6 W max.

Transmitter supply

None

Single 24 V DC transmitter supply¹⁾

Dual 24 V DC transmitter supply¹⁾²⁾

Output

None

2 relays

4 ... 20 mA output

Communication

Modbus RTU

Approvals

CE, UL, cUL

Display size

Standard

2X option for 30.5 mm (1.2 inch) high, red LED

Instruction manuals

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

Article No.

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Accessories

SITRANS RD200 copy cables 2.1 m (7 ft)

SITRANS RD200 RS 232 serial adapters (copy cable included)

SITRANS RD200 RS 422/485 serial adapters (copy cable included)

RS 232 to RS 422/485 isolated converters

RS 232 to RS 422/485 non-isolated converters

SITRANS RD200 RS 232 and RS 485 isolated multi-input adapter boards

USB to RS 422/485 isolated converters

USB to RS 422/485 non-isolated converters

RD200 USB serial adapter

USB to RS 232 converter

RD Software CD for 1 ... 100 displays

Low cost polycarbonate plastic enclosures for 1 display

2 inch (5.08 cm) pipe mounting kit (zinc plated seal) only available with 7ML19301-CF

2 inch (5.08 cm) pipe mounting kit (stainless steel, Type 304, EN 1.4301) only available with 7ML19301-CF

Thermoplastic enclosures

For use with 1 display

For use with 2 displays

For use with 3 displays

For use with 4 displays

For use with 5 displays

For use with 6 displays

Stainless steel enclosures (Type 304, EN 1.4301)

For use with 1 display

For use with 2 displays

For use with 3 displays

For use with 4 displays

For use with 5 displays

For use with 6 displays

Steel enclosures

For use with 1 display

For use with 2 displays

For use with 3 displays

For use with 4 displays

For use with 5 displays

For use with 6 displays

Article No.

7ML1930-1BR

7ML1930-1BS

7ML1930-1BT

7ML1930-1BU

7ML1930-1BV

7ML1930-1BW

7ML1930-1BX

7ML1930-1BY

7ML1930-6AH

7ML1930-6AK

7ML1930-1CC

7ML1930-1CF

7ML1930-1BP

7ML1930-1BQ

7ML1930-1CG

7ML1930-1CH

7ML1930-1CJ

7ML1930-1CK

7ML1930-1CL

7ML1930-1CM

7ML1930-1CN

7ML1930-1CP

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7ML1930-1CT

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7ML1930-1CV

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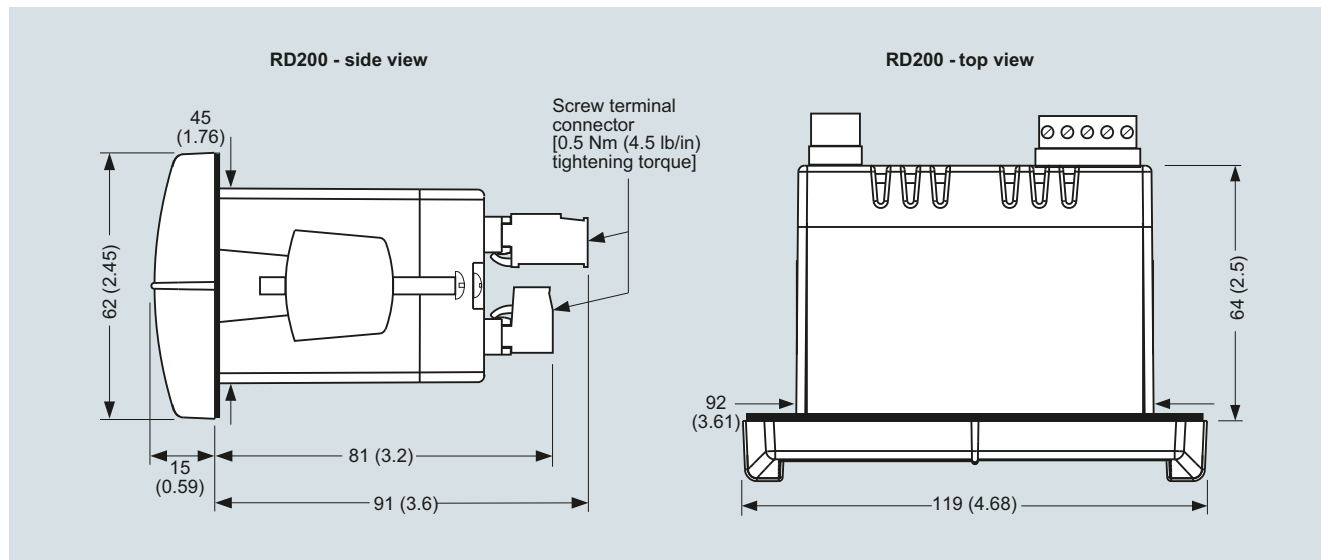
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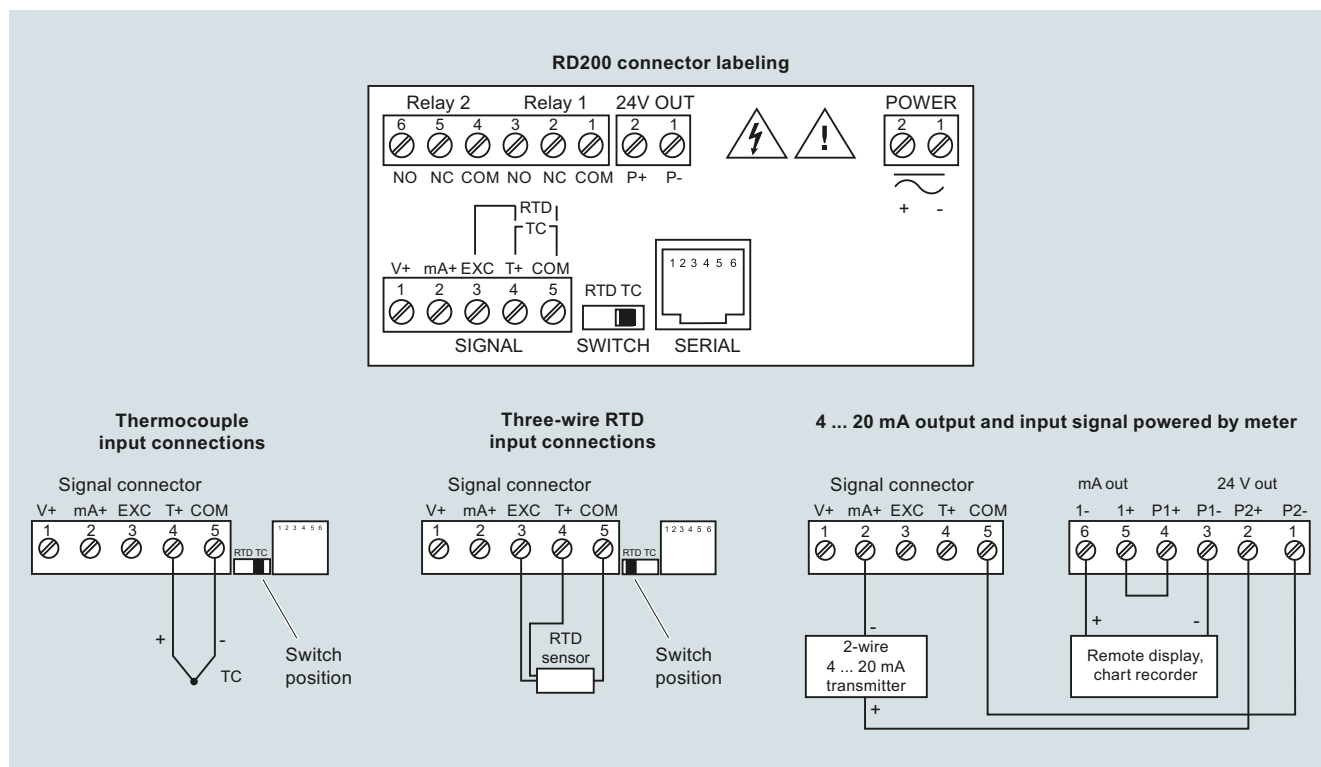
7ML1930-1DA

¹⁾ Available with input voltage option 1 only.

²⁾ Available with output option C only.

Dimensional drawings


SITRANS RD200, dimensions in mm (inch)

Circuit diagrams


SITRANS RD200 connections

Weighing Electronics

Accessories for stand-alone electronics

SITRANS RD300

Overview



The SITRANS RD300 is a panel mount remote digital display for process instrumentation and acts as a multi-purpose, easy to use, rate/totalizer ideal for flow rate, total, and control applications.

Benefits

- Easy setup and programming via front panel buttons or using free RD software available via USB drive
- Display readable in sunlight
- Input: accepts current and voltage
- Single or dual 24 V DC transmitter power supply
- Serial communication using built in protocol or Modbus RTU
- Supports up to 8 relays and 8 digital I/O for process control and alarming
- 32-Point linearization, square root or exponential linearization
- Multi-pump alternation control
- Supports total, grand total or non-resettable grand total
- 9-digit totalizer with total overflow feature
- Large dual-line, 6-digit display
- Configure, monitor, and datalog from a PC
- Dual-input option with math functions: addition, difference, average, multiplication, division, minimum, maximum, weighted average, ratio, concentration

Application

The RD300 is a remote display for level, flow, pressure, weighing, and other process instruments. This display also acts as a multi-purpose, easy to use rate/totalizer ideal for flow rate, total, and control applications.

Data can be remotely collected, logged and presented on your local computer using the free RD software available via USB drive.

The display accepts a single or dual input of current and voltage. This makes the RD300 an ideal fit for use with most field instruments.

The RD300 can be set up as a standard panel mount, or combined with optional enclosures to allow it to house up to 6 displays.

- Key Applications: tank farms, pump alternation control, local or remote display of level, flow, pressure and weighing instrument values, PC monitoring and data logging with RD Software.

Technical specifications

SITRANS RD300	
Mode of operation	
Measuring principle	Analog to digital conversion
Measuring points	1 or 2 instruments
Input	
Measuring range	
• Current	4 ... 20 mA, 0 ... 20 mA
• Voltage	0 V DC ... +10 V DC, 1 ... 5 V, 0 ... 5 V
Output signal	
Output	• 4 ... 20 mA (optional) • Modbus RTU
Relays	2 or 4 SPDT (Form C) internal and/or 4 SPST (Form A) external; rated 3 A at 30 V DC and 125/250 V AC resistive load; 1/14 HP (50 W) at 125/250 V AC for inductive loads (optional)
Communications	• RS 232 with Modbus RTU • RS 422/485 with Modbus RTU • USB configuration and monitoring port
Accuracy	
4 ... 20 mA optional output	± 0.1 % FS ± 0.004 mA
Process input	± 0.05 % of span ± 1 count, square root: 10 ... 100 % FS
Rated operating conditions	
Ambient conditions	
• Storage temperature range	-40 ... +85 °C (-40 ... +185 °F)
• Operating temperature range	-40 ... +65 °C (-40 ... +149 °F)
Design	
Weight	269 g (9.5 oz) (including options)
Material (enclosure)	• 1/8 DIN, high impact plastic, UL94V-0, color: gray • Optional plastic, steel and stainless steel (Type 304, EN 1.4301) NEMA 4 enclosures
Degree of protection	Type 4X, NEMA 4X, IP65 (front cover); panel gasket provided

SITRANS RD300	
Electrical connection	
mA output signal	2-core copper conductor, twisted, shielded, 0.82 ... 3.30 mm ² (18 ... 12 AWG), Belden 8 760 or equivalent is acceptable
Electrical connection and relay connection	Copper conductor according to local requirements, rated 3A at 250 V AC
Power supply	
Input voltage option	85 ... 265 V AC, 50/60 Hz; 90 ... 265 V DC, 20 W max. or jumper selectable 12/24 V DC ± 10 %, 15 W max.
Transmitter power supply	Terminals P+ & P-: 24 V DC ± 10 %, 12/24 V DC powered models selectable for 24, 10, or 5 V DC supply (internal jumper J4), 85 ... 265 V AC models rated at 200 mA max, 12/24 V DC powered models rated at 100 mA max, at 50 mA max for 5 or 10 V DC supply.
External loop power supply	35 V DC max.
Output loop resistance	• 24 V DC, 10 ... 700 Ω max. • 35 V DC (external), 100 ... 1 200 Ω max.
Displays and controls	
Main display	0.6 inch (15 mm) high, red LEDs
Second display	0.46 inch (12 mm) high, red LEDs, 6-digits: each (-99 999 ... 999 999)
Memory	• Non-volatile • Stores settings for minimum of 10 years if power is lost
Programming	• Primary: front panel • Secondary: Meter Copy or PC with SITRANS RD Software
Certificates and approvals	
CE, UL, cUL	
Options	
Enclosures	Plastic, steel and stainless steel (Type 304, EN 1.4301) NEMA 4 and 4X enclosures

Weighing Electronics

Accessories for stand-alone electronics

SITRANS RD300

Selection and ordering data

SITRANS RD300

Dual line remote digital display compatible with PI instruments

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Input voltage

85 ... 265 V AC, 50/60 Hz; 90 ... 265 V DC, 20 W max.

12 ... 36 V DC; 12 ... 24 V AC, 6 W max.

Output

None

2 relays

4 relays

4 ... 20 mA output

2 relays and 4 ... 20 mA output

4 relays and 4 ... 20 mA output

Type

Single input process and flow R/T Mtr

Dual input process Mtr

Display

Standard

SunBright

Approvals

UL, C-UL, and CE

Article No.

7ML5744-

- 0 A

1

2

A

B

C

D

E

F

A

B

0

1

0

Operating instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

Accessories

DIN-rail mounting kit

4 Relays expansion module

4 Digital I/O Module

Dual output 4 ... 20 mA expansion module for dual input meter

Meter copy cable

RS 232 serial adapter

RS 422/485 serial adapter

RD300 USB serial adapter

USB to RS 232 converter

Snubber

Plastic enclosure for 1 Meter

Plastic enclosure for 2 Meters

Plastic enclosure for 4 Meters

Plastic enclosure for 5 Meters

Plastic enclosure for 6 Meters

Article No.

7ML1930-6AB

7ML1930-6AC

7ML1930-6AD

7ML1930-6AP

7ML1930-6AE

7ML1930-6AF

7ML1930-6AG

7ML1930-6AJ

7ML1930-6AK

7ML1930-6AL

7ML1930-6AM

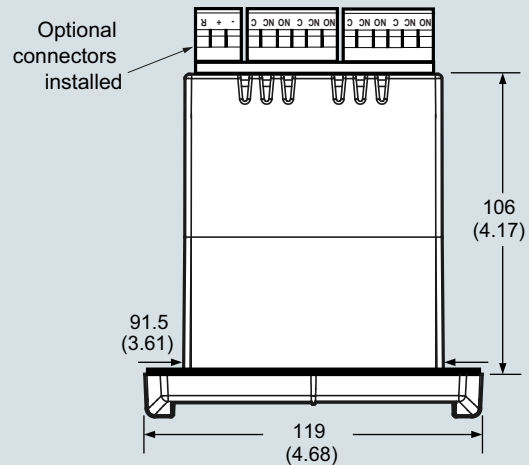
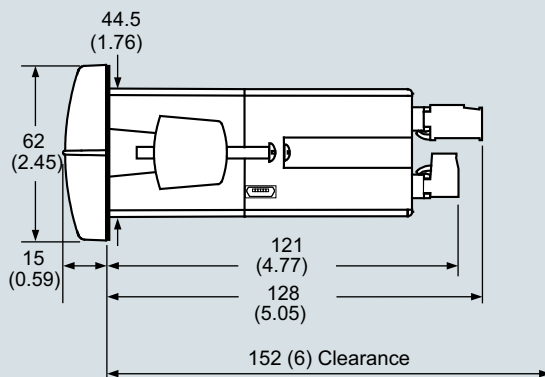
7ML1930-6AN

7ML1930-1CK

7ML1930-1CL

7ML1930-1CM

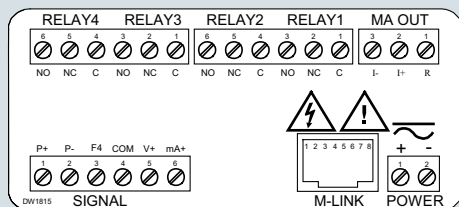
Dimensional drawings



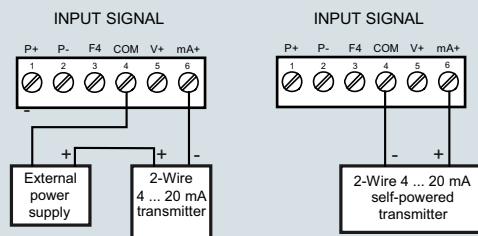
SITRANS RD300, dimensions in mm (inch)

Circuit diagrams

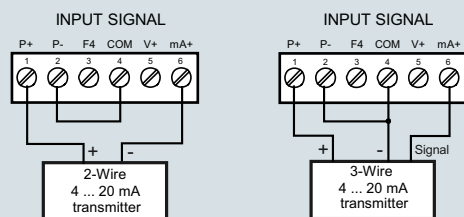
Connector labeling for fully loaded single input meter



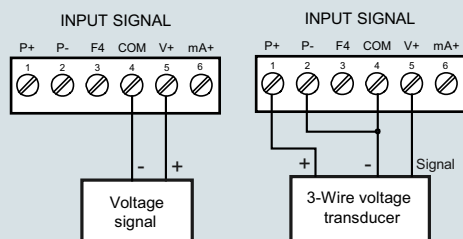
Transmitter powered by external supply or self-powered



Transmitter powered by internal supply



Voltage Input Connections



SITRANS RD300 connections

Weighing Electronics

Accessories for stand-alone electronics

SITRANS RD500

Overview



The SITRANS RD500 is a remote data manager providing remote monitoring through integrated web access, alarm event handling, and data capture for instrumentation and other devices.

Benefits

- RD500 supports report and alarm events via email, SMS, and FTP transfer
- Web provides worldwide access to instrument data and RD500 configuration and setup
- Simple configuration using a standard web browser, no programming or additional software required.
- Offers scalability with optional I/O modules for current (4 to 20 mA), voltage (0 to 10 V), thermocouple (TC), resistance temperature detector (RTD), and digital input, output and counter
- 10 base-TI 100 Base-TX Ethernet and support for GSM, GPRS, 3G, and PSTN provide flexible remote communications options
- Supports up to 128 devices with the flexible I/O modules and supports addressing for Modbus serial devices via RS 232 and RS 485 serial ports
- Integrated FTP server and client support FTP data synchronization to central servers
- Compact flash slot supports up to 2 gigabytes of expandable memory for data capture and storage, 1 gigabyte industrial compact flash card included
- Log files formats are CSV (comma separated values) for data files and HTML for report files
- Supports Modbus TCP via Ethernet and GPRS for easy integration into control systems
- Optional cellular modem offers VPN support

Application

The RD500 is an easy-to-use remote data monitoring solution, using a web-based application and hardware modules. The unique modular approach allows a variety of process signals to be monitored, while the serial ports allow data to be collected from Modbus RTU devices and Modbus TCP via EtherNet.

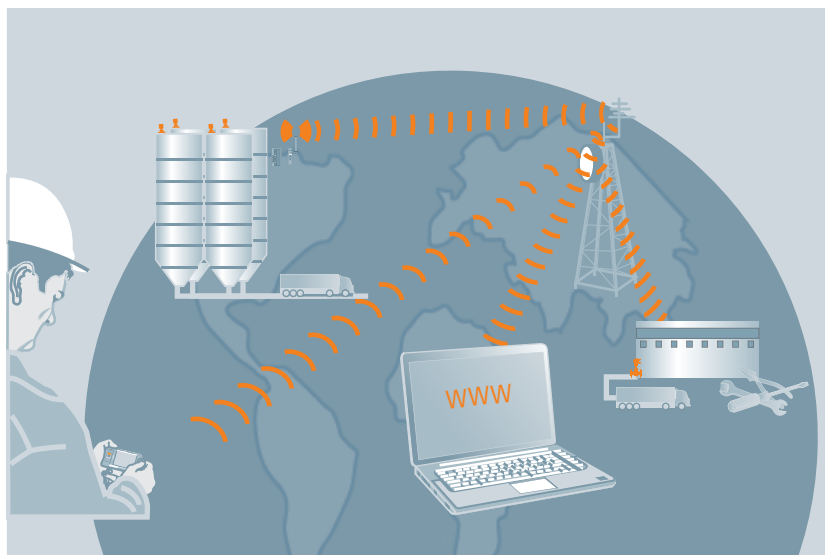
The RD500 comprises a master communications module, and up to 16 slave modules. Various module types are available, allowing up to a maximum of 128 conventional inputs and outputs. The RD500's serial ports can support addressing for Modbus RTU slave devices including field instruments.

The RD500's built-in web server, FTP, and email client allows the process to be monitored remotely. Alarm notifications are communicated through email and SMS text messages to one or more recipients to ensure that appropriate actions are taken by personnel.

The RD500 supports modems, providing flexibility for applications in which cellular or landline connectivity is desired.

The RD500 is configured via a web-based interface - a standard browser is all the software you need to configure your system.

- Key Applications: remote monitoring of inventory, process, and maintenance applications, with web access to field instrumentation



With SITRANS RD500, monitor inventory levels, process, environmental, and remote maintenance applications, and get web access to most types of field instrumentation, including flow, level, pressure, temperature measurement, and weighing.

Technical specifications

SITRANS RD500	
Mode of operation	
Measuring principle	Remote data monitor
Measuring points	- Up to 128 standard inputs (conventional IO, see optional IO modules) - Addressing for Modbus devices (Modbus RTU and Modbus TCP)
Input	See SITRANS RD500 module specifications table
Output	See SITRANS RD500 module specifications table
Accuracy	See SITRANS RD500 module specifications table
Rated operating conditions	
Storage temperature range	-30 ... +70 °C (-22 ... +158 °F)
Operating temperature	0 ... 50 °C (32 ... 122 °F)
Operating and storage humidity	80 % max relative humidity, non-condensing, from 0 ... 50 °C (32 ... 122 °F)
Design	
Material (enclosure)	High impact plastic and stainless steel
Installation category	I
Pollution degree	2
Weight	456.4 g (15.1 oz)
Mounting	Snaps onto standard DIN style top hat (T) profile mounting rails according to EN 50022 – 35 x 7.5 and – 35 x 15
Power	24 V DC ± 10 % 400 mA min. (1 module) 3.5 amps max. (16 modules) Must use Class 2 or SELV-rated power supply
Display	
Status LEDs	- STS - status LED indicates condition of master - TX/RX - transmit/receive LEDs show serial activity - Ethernet - link and activity LEDs - CF - CompactFlash LED indicates card status and read/write activity
Memory	
On-board user memory	4 MB of non-volatile Flash memory
On-board SDRAM	2 MB
Memory card	CompactFlash Type II slot for Type I and Type II cards; 1 GB (optional 2 GB)
Certificates and approvals	
Safety	- UL listed to U.S. and Canadian safety standards for use in Class I, II, and III, Division 1 and 2 hazardous locations - CE, RCM

SITRANS RD500	
Communication	
USB/PG port	Adheres to USB specifications 1.1. Device only using Type B connection.
Serial ports	Format and baud rates for each port are individually software programmable up to 115, 200 baud
RS232/PG port	RS 232 port via RJ12
Comms ports	RS 422/485 port via RJ45 and RS 232 port via RJ12
Ethernet port	10 BASE-T/100 BASE-TX; RJ45 jack is wired as a NIC (Network Interface Card)

Weighing Electronics

Accessories for stand-alone electronics

SITRANS RD500

SITRANS RD500 Module Specifications

	8 inputs, 6 solid state outputs	8 inputs, 6 relay outputs	8 channel, 4 ... 20 mA	8 channel ± 10 V	6 channel, RTD	8 channel thermocouple module
Order number	7ML1930-1ES	7ML1930-1ER	7ML1930-1EP	7ML1930-1EQ	7ML1930-1ET	7ML1930-1EU
Application	8 inputs, 6 outputs used to monitor contact or sensor inputs	8 inputs, 6 outputs used to monitor contact or sensor inputs	16 bit analog input module provides high density signal measurement for data monitoring applications and accepts 0/4 ... 20 mA process signals	16 bit analog input module provides high density signal measurement for data monitoring applications and accepts ± 10 V process signals	16 bit analog input module provides high-density signal measurement for data acquisition applications and accepts various RTD inputs	16 bit thermocouple input module provides high density signal measurement for data acquisition applications and accepts wide range of thermocouple types
Accuracy	Not applicable	Not applicable	± 0.1 % of span	± 0.1 % of span	$\pm (0.2$ % of span, 1 °C) 0 ... 50 °C (32 ... 122 °F); $\pm (0.1$ % of span, 1 °C) 18 ... 28 °C (64 ... 82 °F); includes NIST conformity, A/D conversion errors, temperature coefficient and linearization conformity at 23 °C after 20 minutes warm-up	$\pm (0.3$ % of span, 1 °C); includes NIST conformity, cold junction effect, A/D conversion errors, temperature coefficient and linearization conformity at 23 °C after 20 minute warm-up
Mounting	Snaps onto standard DIN style top hat (T) profile mounting rails according to EN 50022 – 35 x 7.5 and - 35 x 15					
Inputs	Dip switch selectable for sink or source	- Dip switch selectable for sink or source - max. voltage: 30 V DC, reverse polarity protected - Off voltage: < 1.2 V - On voltage: > 3.8 V - Input frequency: - Filter switch on: 50 Hz - Filter switch off: 300 Hz	8 single-ended ranges: 0 ... 20 mA or 4 ... 20 mA - resolution: full 16-bit - Sample time: 50 ... 400 ms depending on number of enabled inputs	8 single-ended ranges: 0 ... 10 V DC or ± 10 V DC - resolution: full 16-bit - Sample time: 50 ... 400 ms depending on number of enabled inputs	6 single-ended resolution: full 16-bit - Sample time: 67 ... 400 ms depending on number of enabled inputs	8 single-ended resolution: full 16-bit - Sample time: 50 ... 400 ms depending on number of enabled inputs
Outputs	Solid state output, switched DC, contact rating 1 A DC max.	Form A, NO pairs share common terminals: 1&2, 3&4, 5&6 Current rating by pair: 3 A at 30 V DC/ 125 V AC resistive 1/10 HP at 125 V AC	Not applicable	Not applicable	Not applicable	Not applicable

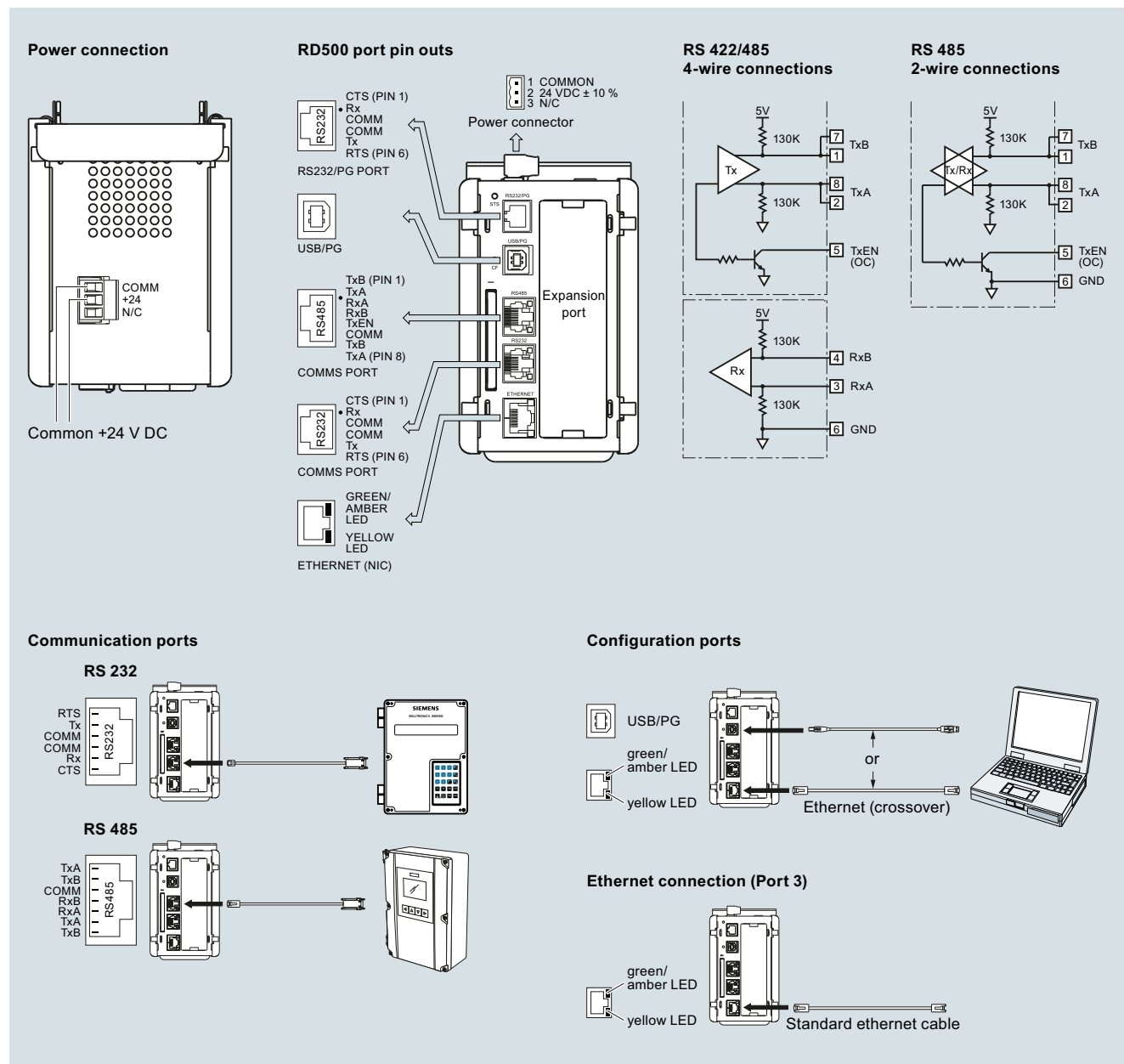
Note: in order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions only form one element of such a concept. For more information about industrial security, <http://www.siemens.com/industrialsecurity>

Selection and ordering data	Article No.	Article No.
SITRANS RD500 The SITRANS RD500 is a remote data manager providing integrated web access, alarm event handling and data capture for instrumentation. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5750- A 0 0 - 0	Optional equipment
Communications connection Ethernet ¹⁾	1	Internal modem card with antenna 7ML1930-1EY
Digital communications to instruments RS 485 Modbus RTU and Modbus TCP	A	Industrial CompactFlash card, 2 GB 7ML1930-1FB Industrial CompactFlash card, 1 GB 7ML1930-1FC RJ11 serial to terminal block RS 232 7ML1930-1FD RJ45 serial to terminal block RS 485 7ML1930-1FE Modem antenna 7ML1930-1FF RD500 spare module base 7ML1930-1FG RD500 spare end terminator 7ML1930-1FH Ethernet Cat 5e Red X/O cable for configuration, 1.52 (5 ft) 7ML1930-1FM USB cable type A to B 7ML1930-1FN Remote mount external antenna 17 ft (5 m) 7ML1930-1FY External cellular modem ²⁾ 7ML1930-1GJ
Input configuration modules Note: one RD500 supports 16 input modules RD500 8 channel 0/4 ... 20 mA input module 7ML1930-1EP RD500 8 channel ± 10 V input module 7ML1930-1EQ RD500 8 digital inputs, 6 relay outputs module 7ML1930-1ER RD500 8 digital inputs, 6 solid state outputs module ¹⁾ 7ML1930-1ES RD500 6 channel input, RTD module 7ML1930-1ET RD500 8 channel thermocouple module 7ML1930-1EU		
Operating Instructions RD500 8 channel 0/4 ... 20 mA input module manual, English Note: operating Instructions should be ordered as a separate line item. All literature is available to download for free, in a range of languages, at http://www.siemens.com/weighing/documentation	7ML19985MB01	

¹⁾ Configuration limited to 16 modules.

²⁾ Antenna, power cord, and cable included.

Circuit diagrams



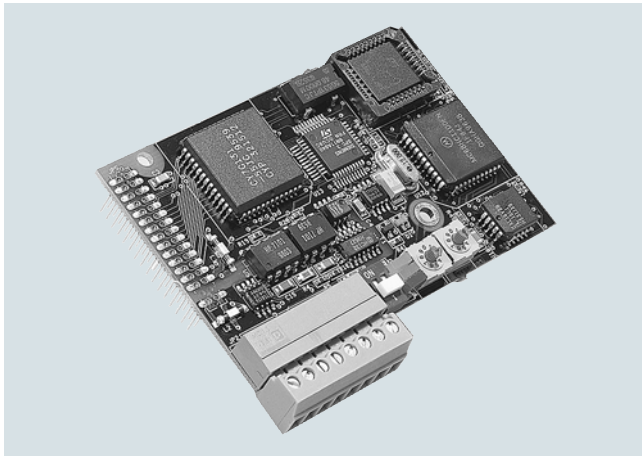
SITRANS RD500 connections

Weighing Electronics

Accessories for stand-alone electronics

SmartLinX communication modules

Overview



SmartLinX communication modules provide direct digital connection to popular industrial communications buses with true plug-and-play compatibility with products manufactured by Siemens.

Benefits

- Fast, easy installation
- Direct connection: no additional installation required
- Scalable application layer allows for optimized network bandwidth and memory requirements
- Modules available for PROFIBUS DP, PROFINET, Modbus TCP/IP, EtherNet/IP, and DeviceNet

Application

Many Siemens Milltronics products include Modbus communications. For additional communication modules, SmartLinX cards are the answer.

They are fast and easy to install, and can be added at any time. The module simply plugs into the socket on any SmartLinX-enabled product. They require no secondary private buses or gateways and no separate wiring. There are no extra boxes to connect to your network so there's a minimum load on engineering and maintenance staff.

SmartLinX provides all data from the instrument, including measurement and status, and allows changes to operation parameters to be done over the bus. The user can select which data in the application layer to transfer over the bus. This selection saves bandwidth and memory and optimizes data throughput and speeds up the network, enabling you to connect more instruments to your network.

Technical specifications

SmartLinX communication modules

Module type	PROFIBUS DP
Interface	RS 485 (PROFIBUS standard)
Transmission rate	All valid PROFIBUS DP rates from 9 600 kbps to 12 Mbps
Rack address	0 ... 99
Connection	Slave
SmartLinX module compatibility	• Milltronics BW500 • Milltronics SF500
Module type	DeviceNet
Interface	DeviceNet physical layer
Transmission rate	125, 250, 500 kbps
Rack address	0 ... 63
Connection	Slave (group 2)
SmartLinX module compatibility	• Milltronics BW500 • Milltronics SF500
Module type	PROFINET IO module
Interface	RJ 45 female
Transmission rate	10/100 Mbit/s
Address	IP address through dip switches or via DCP or DHCP
Connection	Slave/server
SmartLinX module compatibility	• Milltronics BW500 • Milltronics SF500
Module type	Modbus TCP/IP, EtherNet/IP
Interface	RJ 45 female
Transmission rate	10/100 Mbit/s
Address	IP address through dip switches or via DCP or DHCP
Connection	Slave/server
SmartLinX module compatibility	• Milltronics BW500 • Milltronics SF500

Selection and ordering data

Article No.

SmartLinX communication modules

PROFIBUS DP modules	7ML1830-1HR
DeviceNet modules	7ML1830-1HT
PROFINET IO module	7ML1830-1PM
Modbus TCP/IP, EtherNet/IP	7ML1830-1PN

Instruction manuals

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

Overview



Configuration software for easy integration

For fast, simple integration of our weighing modules, we offer configuration packages for the SIMATIC S7 automation system and the SIMATIC PCS 7 process control system.

As well as the operating tools, both PCS 7 faceplates and function blocks make the commissioning and control of the SIWAREX electronic weighing system as easy and convenient as conceivably possible.

Tools and add-ons for Siemens weighing components

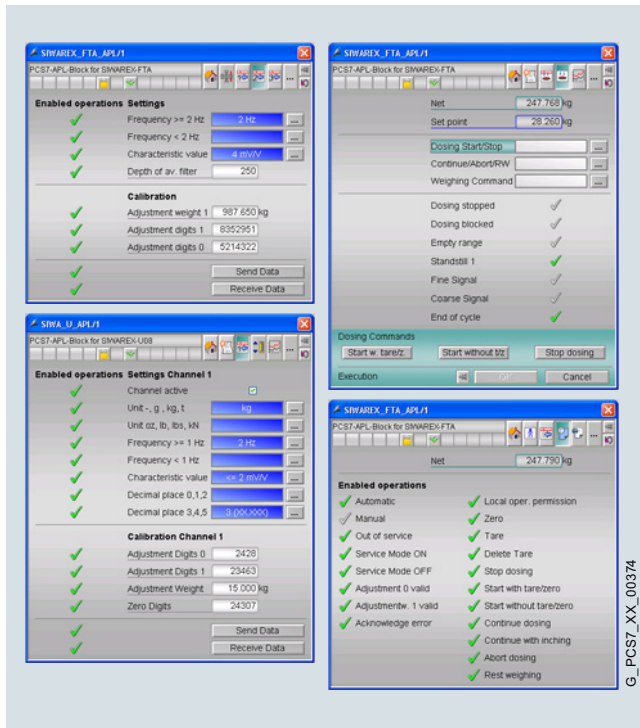
Our configuration packages enable uncomplicated data exchange between the SIMATIC S7 or SIMATIC PCS 7 automation system and our weighing modules. Integrated signaling behavior and maintenance functions such as the reading or writing of all weighing parameters enable high plant availability and correspondingly low downtimes.

Weighing Electronics

Software

SIMATIC PCS 7 Add-ons

Overview



Level, proportioning, belt, and loss-in-weight scales in process engineering applications can be quickly and efficiently configured using pre-configured weighing blocks. The uniform design of the SIWAREX weighing controllers matching that of SIMATIC ET 200M or ET 200SP also enables easy and consistent wiring in the control cabinet.

For the SIMATIC PCS 7 process control system, Siemens offers the **SIWAREX PCS 7 AddOn Library** with function blocks for the SIWAREX U, SIWAREX FTA, SIWAREX FTC and SIWAREX WP321 weighing controllers. These weighing blocks are suitable for both standard and fault-tolerant automation systems. In high-availability automation systems, the singularly installed SIWAREX U/FTA/FTC/WP321 can be accessed via both subsystems.

The weighing blocks supplied with the faceplate not only allow the rational integration of the SIWAREX U/FTA/FTC/WP321 weighing controllers into the engineering system, they also enable user-friendly operation and commissioning of the scales via the SIMATIC PCS 7 operator stations. Integrated signaling behavior and maintenance functions such as the reading or writing of all scale parameters ensure short standstill times and help to increase the availability.

The pixel-graphics engineering with the CFC editor is very clear and easy to use. The use of prepared blocks also eliminates possible sources of errors and reduces the configuration costs.

The SIWAREX PCS 7 AddOn Library also supports the communication over PROFINET.

Note:

The function blocks and faceplates for weighing controllers can be used in combination with SIMATIC PCS 7 V8.x and V9.0.

Configuration packages for SIMATIC PCS 7 V8.x in the style of PCS 7 Standard Library for SIWAREX U and SIWAREX FTA are still available.

Design
Product overview SIWAREX configuration packages for SIMATIC PCS 7 and the associated weighing controller

Configuration packages, variants	Associated hardware (SIWAREX weighing controller)	Article number	
SIWAREX U (platform scales / level measurements) - SIWAREX PCS 7 AddOn Library for SIMATIC PCS 7 V8.x and V9.0, Design PCS 7 Advanced Process Library (APL) - Configuration package SIWAREX U for SIMATIC PCS 7 V8.x, Design PCS 7 Standard Library	SIWAREX U (1-channel), in design of ET 200M	7MH4950-1AA01	
	SIWAREX U (2-channel), in design of ET 200M	7MH4950-2AA01	
SIWAREX FTA (automatic dosing and filling scales) - SIWAREX PCS 7 AddOn Library for SIMATIC PCS 7 V8.x and V9.0, Design PCS 7 Advanced Process Library (APL) - Configuration package SIWAREX FTA for SIMATIC PCS 7 V8.x, Design PCS 7 Standard Library	SIWAREX FTA, in design of ET 200M	7MH4900-2AA01	
SIWAREX FTC_B (belt scales) SIWAREX PCS 7 AddOn Library for SIMATIC PCS 7 V8.x and V9.0, Design PCS 7 Advanced Process Library (APL)	SIWAREX FTC, with ET 200M design	7MH4900-3AA01	
SIWAREX FTC_L (loss-in-weight scales) SIWAREX PCS 7 AddOn Library for SIMATIC PCS 7 V8.x and V9.0, Design PCS 7 Advanced Process Library (APL)			
SIWAREX WP321 (platform scales / level measurements) SIWAREX PCS 7 AddOn Library for SIMATIC PCS 7 V8.x and V9.0, Design PCS 7 Advanced Process Library (APL)	SIWAREX WP321, in design of ET 200SP	7MH4138-6AA00-0BA0	

Weighing Electronics

Software

SIMATIC PCS 7 Add-ons

Selection and ordering data

Article No.

Article No.

SIWAREX PCS 7 AddOn Library

SIWAREX PCS 7 AddOn Library for SIMATIC PCS 7 V8.x and V9.0

Consisting of function block, faceplate and manual, 2 languages (English, German), engineering license for SIWAREX weighing modules, single license for 1 installation

- APL faceplates and function block for:
 - SIWAREX U
 - SIWAREX FTA
 - SIWAREX FTC_B (belt scale)
 - SIWAREX WP321
- Classic faceplate and function block for:
 - SIWAREX FTC_L (Loss in weight)

Engineering and runtime software, software class A

Delivery package: Software and electronic documentation on CD, engineering license (certificate of license)

7MH4900-1AK61

Configuration packages in design of PCS 7 Standard Library for SIMATIC PCS 7 V8.x

Configuration package SIWAREX U for SIMATIC PCS 7 V8.x

Consisting of function block, faceplate and manual, 2 languages (English, German), engineering license for SIWAREX U, single license for 1 installation

Engineering and runtime software, software class A

Delivery package: Software and electronic documentation on CD, engineering license (certificate of license)

7MH4900-3AK62

Configuration package SIWAREX FTA for SIMATIC PCS 7 V8.x

Consisting of function block, faceplate and manual, 2 languages (English, German), engineering license for SIWAREX FTA, single license for 1 installation

Engineering and runtime software, software class A

Delivery package: Software and electronic documentation on CD, engineering license (certificate of license)

7MH4900-2AK63

¹⁾ For further accessories (earthing terminals, etc.), refer to the corresponding device manual!!

Associated hardware

SIWAREX U weighing controller

- SIWAREX U (1-channel)¹⁾
- SIWAREX U (2-channel)¹⁾

7MH4950-1AA01
7MH4950-2AA01

SIWAREX FTA weighing controller

SIWAREX FTA¹⁾

7MH4900-2AA01

SIWAREX FTC weighing controller

SIWAREX FTC¹⁾

7MH4900-3AA01

SIWAREX WP321 weighing controller

SIWAREX WP321¹⁾

7MH4138-6AA00-0BA0

More information

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Process Industries and Drives
Process Automation
Process Instrumentation, Weighing Technology

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E-mail: piabusales.industry@siemens.com

You can find additional information on the Internet at:

<http://www.siemens.com/weighing-technology>

Overview

SIWATOOL is a service software tool which enables you to calibrate the module quickly and efficiently on site, set or reset parameters, and perform diagnostics in the event of a fault. Furthermore, complete backup files can be created for the scales before module replacement. These can be uploaded to the new module with a few mouse clicks, so that it operates exactly the same as at the point of backup of the old module without the need for any recalibration. It is even possible to upload configuration files created offline or read out the error buffer. No special SIMATIC knowledge is required to use SIWATOOL.

Benefits

- No special SIMATIC knowledge is required
- Fast adjustment and definition of parameters

Selection and ordering data

Article No.

SIWATOOL V4 & V7 Service and commissioning software for SIWAREX weighing modules	7MH4900-1AK01
Ethernet cable patch cord 2 m (7 ft) For connecting SIWAREX WP2xx and 5xx to a PC	6XV1850-2GH20
SIWATOOL connecting cable For connecting SIWAREX U/CS to a PC (RS 232), length 3 m (9.84 ft)	7MH4607-8CA
SIWATOOL connecting cable For connecting SIWAREX FTx to a PC (RS 232) • 2 m long (6.56 ft) • 5 m long (16.40 ft)	7MH4702-8CA 7MH4702-8CB

Weighing Electronics

Notes

2

Load Cells

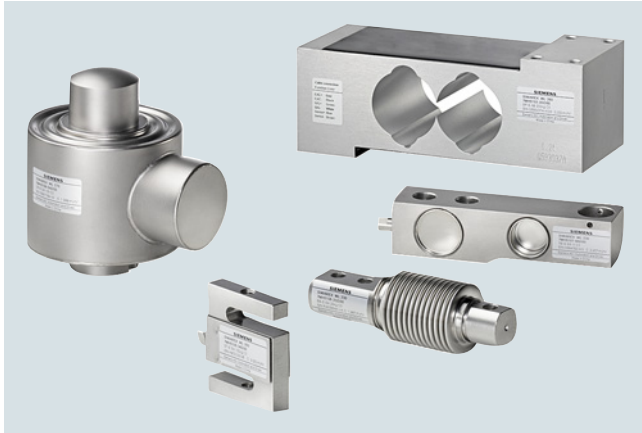


3/2	Introduction	3/37	Compression load cells
3/3	Mounting components	3/37	Overview
3/3	Introduction	3/38	SIWAREX WL270 CP-S SA
3/4	Single point load cells	3/38	- Load cell
3/4	Overview	3/40	- Mounting unit and guide element
3/5	SIWAREX WL260 SP-S AA	3/43	- Pressure piece set and adapter plates
3/5	- Load cell	3/44	SIWAREX WL270 CP-S SB
3/6	SIWAREX WL260 SP-S AB	3/44	- Load cell
3/6	- Load cell	3/46	- Mounting unit
3/7	SIWAREX WL260 SP-S AE	3/47	SIWAREX WL270 CP-S SB
3/7	- Load cell	3/47	- Pressure piece set
3/8	SIWAREX WL260 SP-S SA	3/48	SIWAREX WL270 K-S CA
3/8	- Load cell	3/48	- Load cell
3/10	SIWAREX WL260 SP-S SB	3/53	SIWAREX WL270 K-S CA
3/10	- Load cell	3/53	- Self-aligning bearing
3/12	SIWAREX WL260 SP-S SC		
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3/14	Bending beam load cells	3/55	Overview
3/14	Overview	3/56	SIWAREX WL280 RN-S SA
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3/15	- Load cell	3/64	- Self-aligning bearing
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3/21	Overview	3/70	Junction box SIWAREX JB
3/22	SIWAREX WL230 SB-S SA	3/72	Extension box SIWAREX EB
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3/24	- Mounting unit		
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3/28	- Load cell	3/76	Configuration example 1
		3/77	Configuration example 2
		3/78	Configuration example 3
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3/30	Overview		
3/31	SIWAREX WL290 DB-S CA		
3/31	- Load cell		
3/33	- Mounting unit for vehicles		
3/34	S-Type load cells		
3/34	Overview		
3/35	SIWAREX WL250 ST-S SA		
3/35	- Load cell		

Load Cells

Introduction

Overview



Siemens offers load cells in the SIWAREX WL200 series. All load cells are equipped with strain gauges. They are used for static and dynamic weight measurements.

The different load cell series cover rated loads from 0.3 kg (0.661 lb) to 500 t (492.103 tn. L.).

The variety of modules available and their characteristics, including

- predominantly stainless steel for high anti-corrosion protection
- predominantly hermetically sealed housing for use even in hostile or corrosive environments
- compact modules for easy installation

make SIWAREX load cells suitable for virtually all applications in industrial weighing, e.g. hopper scales and bin weighing equipment, platform weighing machines, vehicle scales, hybrid scales etc.

Almost all series have been approved for use with Class III legal-for-trade commercial scales in accordance with EN 45501 and conform to OIML R60.

Of course, load cells can also be supplied for other rated loads, higher accuracy, and/or Ex approval, depending on requirements.

Design

Load cells are sensors that convert a mechanical variable (i.e. weight) into an electrical signal, usually a voltage.

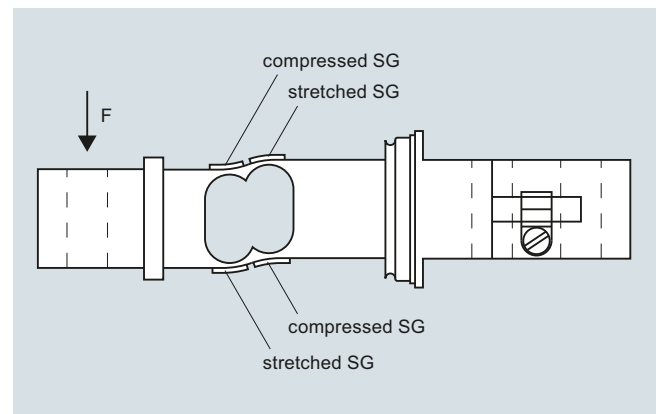
They work with different measuring principles. Siemens load cells in the SIWAREX WL200 series use so-called strain gauges. These are specially formed electrical conductors which are insulated by means of a suitable material. The strain gauges are attached to the basic element, a specially formed spring body, by friction locking.

Under the influence of a weight force F , the spring body is deformed (see schematic presentation) and as a result the strain gauge deforms elastically. Due to the change in the external shape of the strain gauge, the ohmic resistance of its conductor also changes. The top left and bottom right strain gauges are compressed, their resistance films are shortened and the ohmic resistance is reduced accordingly. The top right and bottom left strain gauges are stretched, their resistance films are extended and the ohmic resistance is increased.

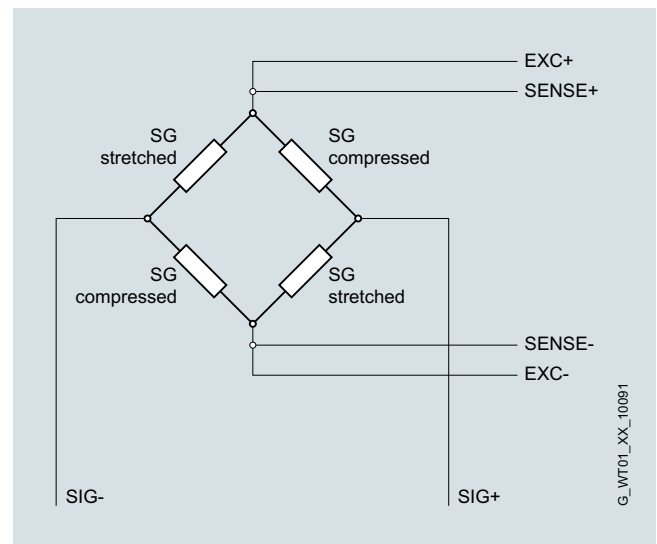
For each load cell, at least four strain gauges are connected together to form a complete Wheatstone bridge. The stretched or compressed strain gauges are connected so that the positive or negative resistance changes are added together to form a total imbalance in the bridge.

On one bridge diagonal, the power voltage is applied (with 6-conductor technique, also the sensor voltage, SENSE) and on the other diagonal, the measured voltage is tapped.

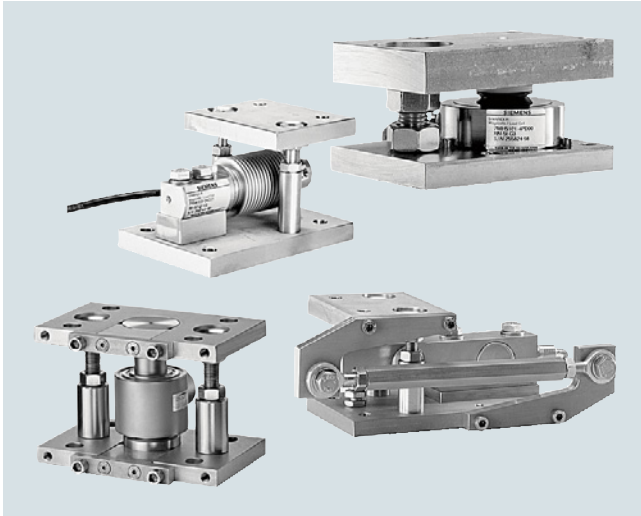
With a constant power voltage (EXC), the measured voltage (SIG) changes proportionally to the introduced load.



Principle of a bending load cell, loaded



Principle of a Wheatstone bridge

Overview

The use of SIWAREX WL200 installation accessories avoids incorrect loading such as eccentric load introduction, torsion torques etc. on the load cells. enables full exploitation of the measuring accuracy of the load cells.

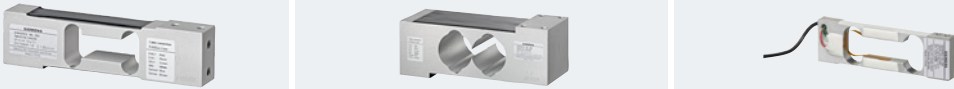
The standardized SIWAREX WL200 installation components are always coordinated precisely to the requirements of the respective load cell design. This ensures that the force to be measured is directed to the load cells in the best possible way.

At the same time the mounting elements simplify the installation of the load cells and increase safety during installation work. The wide variety of mounting components permits implementation of all key applications used with industrial weighing technology. In addition to the mounting components listed below, a wide range of special accessories is available for special requirements.

Load Cells

Single point load cells

Overview

Type	Single point		
Possible applications	Small platform scales, small conveyor scales		
Example picture			
Series	WL260 SP-S AA	WL260 SP-S AB	WL260 SP-S AE
Rated load $E_{\max}$	3 ... 100 kg (6.61 ... 220.46 lb)	50 ... 500 kg (110.23 ... 1 102.31 lb)	0,3 kg ... 3 kg (0.66 ... 6.61 lb)
Accuracy class	C3 ²⁾	C3 ¹⁾	0.015 %
Max. load cell verification interval (n_{IC})	3 000	3 000	3 000
Min. load cell verification interval ($V_{\min}$)	$E_{\max}/12\,000$	$E_{\max}/10\,000$	k. A.
Supply voltage (U_{sr})	5 ... 12 V	5 ... 12 V	6 ... 12 V
Rated characteristic value	2 mV/V	2 mV/V	0,9 mV/V
Degree of protection	IP65	IP65	IP65
Material	Aluminum	Aluminum	Aluminum
Ex protection according to ATEX (optional)	-	-	-

Type	Single point		
Possible applications	Platform scales, small conveyor scales		
Example picture			
Series	WL260 SP-S SA	WL260 SP-S SB	WL260 SP-S SC
Rated load $E_{\max}$	5 ... 200 kg (11.02 ... 440.92 lb)	6 ... 60 kg (13.23 ... 132.28 lb)	10 ... 500 kg (22.05 ... 1 102.31 lb)
Accuracy class	C3	C3	C3, C3 MR, C4 MR
Max. load cell verification interval (n_{IC})	3 000	3 000	3 000
Min. load cell verification interval ($V_{\min}$)	$E_{\max}/9\,000$	$E_{\max}/15\,000$	$E_{\max}/10\,000$ with C3 $E_{\max}/20\,000$ with C3 MR $E_{\max}/40\,000$ with C4 MR
Supply voltage (U_{sr})	5 ... 12 V	5 ... 12 V	5 ... 12 V
Rated characteristic value	2 mV/V	2 mV/V	2 mV/V
Degree of protection	IP67	IP68	IP68, IP69K
Material	Stainless steel	Stainless steel	Stainless steel
Ex protection according to ATEX (optional)	II 1 G EX IA IIC T4 II 1 D EX IAD 20 T73GRAD C II 3G EX NL IIC T4	-	-

¹⁾ OIML type approval for SIWAREX WL260 SP-S AB types available soon.

²⁾ Available in C4 with Y = 20 000 upon request.

Load Cells

Single point load cells

SIWAREX WL260 SP-S AA

Load cell

Overview



The load cell is suitable for small platform scales with one load cell (max. platform size 400 x 400 mm (15.75 x 15.75 inch)) as well as for use in medium accuracy weighing machines of Class III with a max. scale verification intervals $n_{\max} = 3000d$.

Design

The load cell is hermetically sealed.

Technical specifications

SIWAREX WL260 SP-S AA

Possible applications	- Platform scales - Small belt scales
Model	Single point load cell
Loads	
Rated load $E_{\max}$	3 kg (6.61 lb) 5 kg (11.02 lb) 10 kg (22.05 lb) 20 kg (44.09 lb) 50 kg (110.23 lb) 100 kg (220.46 lb)
Minimum initial loading $E_{\min}$	0% $E_{\max}$
Maximum working load L_U	150% $E_{\max}$
Break load L_D	300% $E_{\max}$
Maximum lateral load L_{Lq}	100% $E_{\max}$
Measurement characteristic values	
Rated measuring path h_n at $E_{\max}$	< 0.6 mm (0.05 in)
Rated characteristic value C_n	2.0 ± 0.2 mV/V
Tolerance D_0 of zero signal	$\pm 2\%$ C_n
Maximum scale interval n_{IC}	3 000
Min. load cell verification interval $V_{\min}$	$E_{\max}/12\ 000$
Combined error F_{comb}	$\pm 0.02\%$ C_n
Repeatability F_v	$\pm 0.017\%$ C_n
Creep error F_{cr}	
• 30 min	$\pm 0.02\%$ C_n
Temperature coefficient	
• Zero signal T_{K0}	0.017% $C_n/5$ K
• Characteristic value T_{KC}	0.014% $C_n/5$ K
Electrical characteristic values	
Recommended reference voltage U_{ref}	5 ... 12 V DC
Input resistance R_e	$409\ \Omega \pm 6\ \Omega$
Output resistance R_a	$350\ \Omega \pm 3\ \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC

SIWAREX WL260 SP-S AA

Connection and environmental conditions

Rated temperature range B_{Tn}	-10 ... +40 °C (14 ... 104 °F)
Operating temperature range B_{Tu}	-35 ... +65 °C (-31 ... 149 °F)
Storage temperature range B_{Ts}	-35 ... +65 °C (-31 ... 149 °F)
Sensor material (DIN)	Aluminum
Maximum tightening torque of the fixing screws	15 ... 20 Nm
Degree of protection to EN 60529; IEC 60529	IP65

Cable connection

Function	Color
• EXC + (supply +)	red
• EXC - (supply -)	black
• SIG + (measured signal +)	green
• SIG - (measured signal -)	white
• Sense + (sensor line +)	blue
• Sense - (sensor line -)	brown
• Shield	transparent

Certificates and approvals

Accuracy class according to OIML R60	C3
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Selection and ordering data

Load cell type WL 260 SP-S AA

Legal-for-trade according to OIML R60 to 3000d, 3 m connection cable

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Article No.

7MH5102-

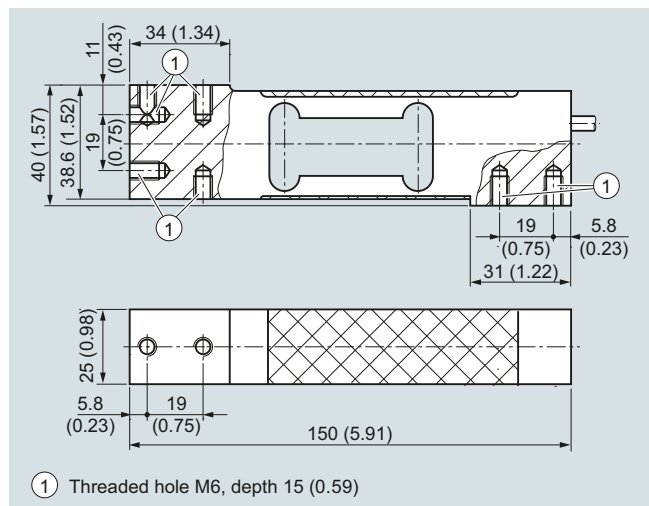
D 0 0

Rated load

- 3 kg (6.61 lb)
- 5 kg (11.02 lb)
- 10 kg (22.05 lb)
- 20 kg (44.09 lb)
- 50 kg (110.23 lb)
- 100 kg (220.46 lb)

1 K
1 P
2 A
2 G
2 P
3 A

Dimensional drawings



SIWAREX WL 260 SP-S AA load cell, dimensions in mm (inch)

Load Cells

Single point load cells

SIWAREX WL260 SP-S AB

Load cell

Overview



The load cell is suitable for small to medium platform scales with one load cell (max. platform size 600 x 600 mm (23.62 x 23.62 inch)) as well as for use in medium accuracy weighing machines of Class III with a max. verification interval $n_{\max} = 3000$ d.

Design

The load cell is hermetically sealed.

Technical specifications

SIWAREX WL260 SP-S AB

Possible applications	- Platform scales - Conveyor scales
Model	Single point load cell
Loads	
Rated load $E_{\max}$	50 kg (110.23 lb) 75 kg (165.35 lb) 100 kg (220.46 lb) 150 kg (330.69 lb) 200 kg (440.92 lb) 300 kg (661.37 lb) 500 kg (1 102.31 lb)
Minimum initial loading $E_{\min}$	0 kg
Maximum working load L_u	150% $E_{\max}$
Break load L_d	300% $E_{\max}$
Maximum lateral load L_{lq}	100% $E_{\max}$
Measurement characteristic values	
Rated measuring path h_n at $E_{\max}$	< 1.22 mm (0.05 in)
Rated characteristic value C_n	2.0 ± 0.2 mV/V
Tolerance D_0 of zero signal	< $\pm 2\%$ C_n
Maximum scale interval n_{lc}	3 000
Min. scale interval $V_{\min}$	$E_{\max}/10\,000$
Combined error F_{comb}	$\pm 0.02\%$ C_n
Repeatability F_v	$\pm 0.017\%$ C_n
Creep error F_{cr}	
• 30 min	$\pm 0.02\%$ C_n
Temperature effect	
• Zero signal T_{K0}	0.017% $C_n/5$ K
• Characteristic value T_{Kc}	0.014% $C_n/5$ K
Electrical characteristic values	
Recommended input voltage	5 ... 12 V DC
Input resistance R_e	$409\ \Omega \pm 6\ \Omega$
Output resistance R_a	$350\ \Omega \pm 3\ \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC

SIWAREX WL260 SP-S AB

Connection and ambient conditions

Sensor material (DIN)	Aluminum
Maximum tightening torque of the fixing screws	35 ... 40 Nm
Rated temperature range B_{tn}	-10 ... +40 °C (14 ... 104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... +149 °F)
Degree of protection to EN 60529, IEC 60529	IP65

Cable connection

Function	Color
• EXC + (supply +)	Red
• EXC - (supply -)	Black
• SIG + (measured signal +)	Green
• SIG - (measured signal -)	White
• Sense + (sensor cable +)	Blue
• Sense - (sensor cable -)	Brown
• Shield	Transparent

Certificates and approvals

Accuracy class according to OIML R60	C3 ¹⁾
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Selection and ordering data

Article No.

Load cell, type WL260 SP-S AB

7MH5103-

Connecting cable 3 m (9.84 ft)

D 0 0

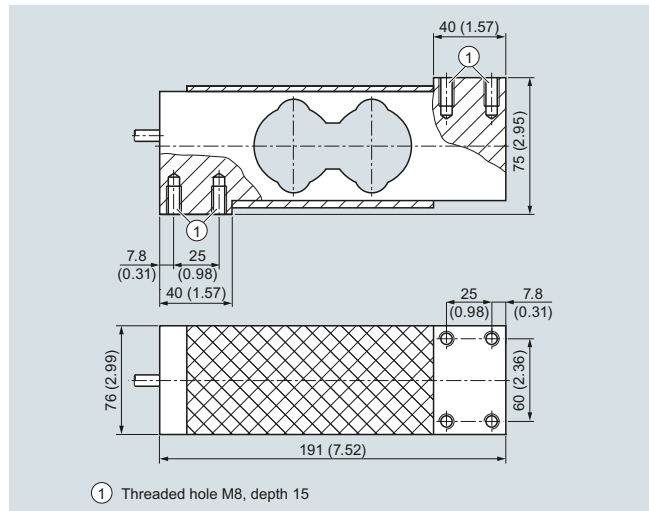
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Rated load

- 50 kg (110.23 lb)
- 75 kg (165.35 lb)
- 100 kg (220.46 lb)
- 150 kg (330.69 lb)
- 200 kg (440.92 lb)
- 300 kg (661.37 lb)
- 500 kg (1 102.31 lb)

2 P
2 S
3 A
3 E
3 G
3 K
3 P

Dimensional drawings



SIWAREX WL 260 SP-S AB load cell, dimensions in mm (inch)

¹⁾ OIML type approval for SIWAREX WL260 SP-S AB available soon.

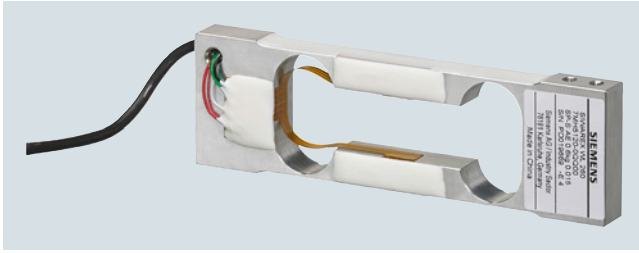
Load Cells

Single point load cells

SIWAREX WL260 SP-S AE

Load cell

Overview



SIWAREX WL260 SP-S AE load cell

The SIWAREX WL260 SP-S AE single point load cell is suitable for the smallest load ranges from 0.3 kg to 3 kg and platform sizes up to 200 mm x 200 mm. The load cell can be used in high resolution scales. The error amounts to a maximum of 0.015% in relation to the rated characteristic value.

Design

The measurement element is a spring body made of aluminum. Due to IP65 degree of protection, the load cell is suitable for cleaning with water jets.

Technical specifications

SIWAREX WL260 SP-S AE	
Possible applications	• Small platform scales • Small belt scales
Model	Single point load cell
Loads	
Rated load $E_{\max}$	• 0.3 kg (0.66 lb) • 0.6 kg (1.32 lb) • 1 kg (2.20 lb) • 1.2 kg (2.64 lb) • 1.5 kg (3.31 lb) • 3 kg (6.61 lb)
Measurement characteristic values	
Rated measuring path h_n at $E_{\max}$	
• $E_{\max} = 0.3 \text{ kg (0.66 lb)}$ and 0.6 kg (1.32 lb)	0.25 mm
• $E_{\max} = 1.2 \text{ kg (2.64 lb)}$, 1.5 kg (3.31 lb) , 3 kg (6.61 lb)	0.22 mm
Rated characteristic value C_n	$0.9 \pm 0.1 \text{ mV/V}$
Combined error F_{comb}	$\pm 0.015\% C_n$
Repeatability F_v	$\pm 0.017\% C_n$
Creep error F_{Cr}	
• 30 min	$\pm 0.015\% C_n$
Temperature effect	
• Zero signal T_{K0}	$0.03\% C_n/10 \text{ K}$
• Characteristic value T_{Kc}	$0.03\% C_n/10 \text{ K}$
Electrical characteristic values	
Recommended reference voltage U_{ref}	6 ... 12 V DC
Input resistance R_e	$383 \Omega \pm 6 \Omega$
Output resistance R_a	$351 \Omega \pm 3 \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC

SIWAREX WL260 SP-S AE

Connection and environmental conditions

Rated temperature range B_{Tn}	-10 ... +40 °C (14 ... 104 °F)
Operating temperature range B_{Tu}	-20 ... +50 °C (-4 ... 122 °F)
Storage temperature range B_{Ts}	-20 ... +50 °C (-4 ... 122 °F)
Sensor material (DIN)	Aluminum
Degree of protection to EN 60529	IP65

Cable connection

Function	Color
• EXC + (supply +)	red
• EXC - (supply -)	black
• SIG + (measured signal +)	green
• SIG - (measured signal -)	white
• Screening	transparent

Selection and ordering data

Article No.

Load cell of the type WL260 SP-S AE

7MH5120-

Connecting cable 0.4 m (14.4 inch)

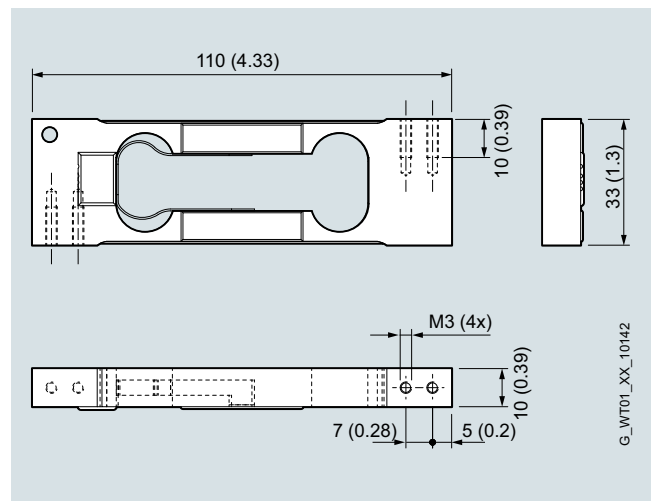
Click on the Article No. for the online configuration in the PLI Life Cycle Portal.

Rated load

- 0,3 kg (0.66 lb)
- 0,6 kg (1.32 lb)
- 1 kg (2.20 lb)
- 1,2 kg (2.64 lb)
- 1,5 kg (3.31 lb)
- 3 kg (6.61 lb)
- Accuracy class 0.015%

0 K
0 Q
1 A
1 B
1 E
1 K
Q 0 0

Dimensional drawings



SIWAREX WL260 SP-S AE Load Cell

Load Cells

Single point load cells

SIWAREX WL260 SP-S SA

Load cell

Overview



The load cell is suitable for small to medium platform scales with one load cell (max. platform size 400 x 400 mm) as well as for use in medium accuracy weighing machines of Class III with a max. scale interval number $n_{\max} = 3000d$.

It is made of stainless steel and therefore also suitable for use in harsh environments.

Design

The load cell is hermetically sealed.

Technical specifications

SIWAREX WL260 SP-S SA

Possible applications	- Platform scales - Small conveyor scales
Model	Single point load cell
Loads	
Rated load $E_{\max}$	5 kg (11.02 lb) 10 kg (22.05 lb) 20 kg (44.09 lb) 50 kg (110.23 lb) 100 kg (220.46 lb) 200 kg (440.92 lb)
Minimum initial loading $E_{\min}$	0% $E_{\max}$
Maximum working load L_u	150% $E_{\max}$
Break load L_d	300% $E_{\max}$
Maximum lateral load L_{lq}	100% $E_{\max}$
Measurement characteristic values	
Rated measuring path h_n at $E_{\max}$	0.27 ± 0.05 mm (0.01 ± 0.002 in)
Rated characteristic value C_n	2.0 ± 0.2 mV/V
Tolerance D_0 of zero signal	$< \pm 1\%$ C_n
Maximum scale interval n_{lc}	3 000
Min. load cell verification interval $V_{\min}$	$E_{\max}/9\ 000$
Combined error F_{comb}	$\pm 0.02\%$ C_n
Repeatability F_v	$\pm 0.017\%$ C_n
Creep error F_{cr}	
• 30 min	$\pm 0.02\%$ C_n
Temperature coefficient	
• Zero signal T_{K0}	0.017% $C_n/5$ K
• Characteristic value T_{Kc}	0.014% $C_n/5$ K

SIWAREX WL260 SP-S SA

Electrical characteristic values

Recommended input voltage	5 ... 12 V DC
Input resistance R_e	$383 \Omega \pm 6 \Omega$
Output resistance R_a	$351 \Omega \pm 3 \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC

Connection and ambient conditions

Sensor material (DIN)	Stainless steel
Maximum tightening torque of the fixing screws	
• $E_{\max} = 3, 5, 10, 20, 50, 100$ kg (6.61, 11.02, 22.05, 44.09, 110.23, 220.46 lb)	14 Nm
• $E_{\max} = 200$ kg (440.92 lb)	16 Nm
Rated temperature range B_{tn}	-10 ... +40 °C (14 ... 104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-40 ... +70 °C (-40 ... +158 °F)
Degree of protection to EN 60529, IEC 60529	IP67

Cable connection

Function	Color
• EXC + (supply +)	Green
• EXC - (supply -)	Black
• SIG + (measured signal +)	White
• SIG - (measured signal -)	Red
• Sense + (sensor cable +)	blue
• Sense - (sensor cable -)	yellow
• Shield	Transparent

Certificates and approvals

Accuracy class according to OIML R60	C3
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Selection and ordering data

Article No.

Load cell, type WL260 SP-S SA

7MH5104-

Legal-for-trade according to OIML R60 to 3000d, 1 m connecting cable (3.28 ft)

D 0

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

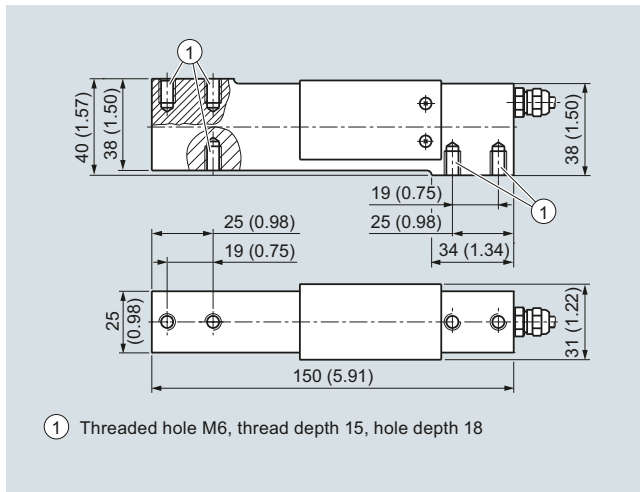
Rated load

- 5 kg (11.02 lb)
- 10 kg (22.05 lb)
- 20 kg (44.09 lb)
- 50 kg (110.23 lb)
- 100 kg (220.46 lb)
- 200 kg (440.92 lb)

1 P
2 A
2 G
2 P
3 A
3 G

Explosion protection

Without	0
Explosion protection for zones 0, 1, 2, 20, 21, 22	1

Dimensional drawings

SIWAREX WL 260 SP-S SA load cell, dimensions in mm (inch)

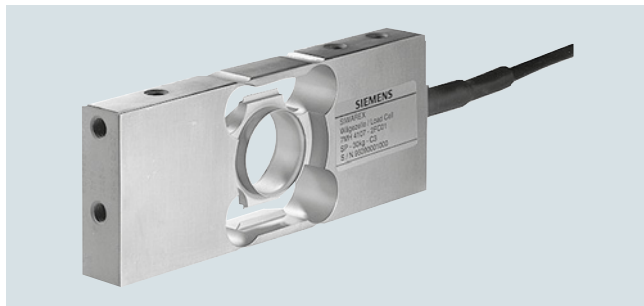
Load Cells

Single point load cells

SIWAREX WL260 SP-S SB

Load cell

Overview



The single point load cell SIWAREX WL260 SP-S SB is excellently suited for use in platform scales with dimensions up to and including 350 x 350 mm (13.78 x 13.78 inch). It is approved for use in Class III commercial scales with maximum divisions of $n_{\max}$ to 3 000d.

Design

The load cell is made of stainless steel and is hermetically sealed. The load cell meets the IP68 degree of protection.

Technical specifications

SIWAREX WL260 SP-S SB

Possible applications

- Platform scales
- Small belt scales

Model Single point load cell

Loads

Rated load $E_{\max}$

- 6 kg (13.23 lb)
- 12 kg (26.46 lb)
- 30 kg (66.14 lb)
- 60 kg (132.28 lb)

Minimum initial loading $E_{\min}$ 0% $E_{\max}$

Maximum working load L_u 150 % $E_{\max}$

Ultimate load L_d 300% $E_{\max}$

Maximum lateral load L_{lq} 100% $E_{\max}$

Measurement characteristic values

Rated measuring path h_n with

- $E_{\max} = 6$ kg (13.23 lb) 0.24 ± 0.02 mm (0.009 ± 0.0008 in)
- $E_{\max} = 12$ kg (26.46 lb) 0.19 ± 0.01 mm (0.008 ± 0.0004 in)
- $E_{\max} = 30$ kg (66.14 lb) 0.15 ± 0.01 mm (0.006 ± 0.0004 in)
- $E_{\max} = 60$ kg (132.28 lb) 0.22 ± 0.03 mm (0.009 ± 0.0011 in)

Rated characteristic value C_n 2.0 ± 0.2 mV/V

Tolerance D_0 of zero signal < ± 2.0% C_n

Maximum scale interval n_{lc} 3 000

Min. interval $V_{\min}$ with

- $E_{\max} = 6, 12, 30, 60$ kg (13.23, 26.46, 66.14, 132.28 lb) $E_{\max}/15\ 000$

SIWAREX WL260 SP-S SB

Combined error F_{comb} ≤ ± 0.02% C_n

Repeatability F_v ≤ ± 0.02% C_n

Creep error F_{cr}
30 min ≤ ± 0.025% C_n

Temperature coefficient
• Zero signal T_{K0} 0.009% $C_n/10$ °C (50 °F)
• Characteristic value T_{KC} 0.009% $C_n/10$ °C (50 °F)

Electrical characteristic values

Recommended reference voltage U_{ref} 5 ... 12 V DC

Input resistance R_e 400 Ω ± 20 Ω

Output resistance R_a 350 Ω ± 3.5 Ω

Insulation resistance R_{is} 5 000 MΩ at 50 V DC

Connection and environmental conditions

Sensor material (DIN) Stainless steel

Maximum tightening torque of the fixing screws 10 Nm

Cable connection

Function

- EXC + (supply +) green
- EXC - (supply -) black
- SIG + (measured signal +) white
- SIG - (measured signal -) red
- Sense + (sensor line +) yellow
- Sense - (sensor line -) blue
- Shield (not connected to housing) transparent

Rated temperature range B_{tn} -10 ... +40 °C (14 ... 104 °F)

Operating temperature range B_{tu} -35 ... +65 °C (-31 ... +149 °F)

Storage temperature range B_{ts} -35 ... +65 °C (-31 ... +149 °F)

Degree of protection according to EN 60529; IEC 60529 IP68

Certificates and approvals

Accuracy class according to OIML R60 C3

Selection and ordering data

Article No.

Load cell, type WL260 SP-S SB

Capable of calibration according to OIML R60 up to 3 000d, connecting cable 6 m (19.69 ft)

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Rated load

- 6 kg (13.23 lb)
- 12 kg (26.45 lb)
- 30 kg (66.14 lb)
- 60 kg (132.28 lb)

7MH5117-

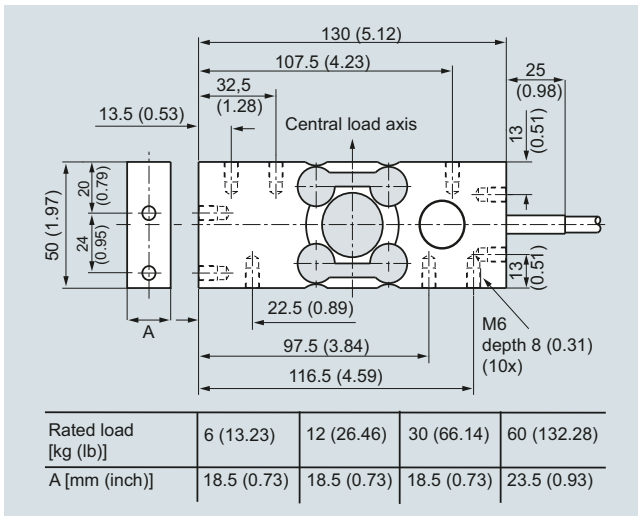
D 0 0

1 Q

2 B

2 K

2 Q

Dimensional drawings

SIWAREX WL260 SP-S SB, dimensions in mm (inch)

Load Cells

Single point load cells

SIWAREX WL260 SP-S SC

Load cell

Overview



The SIWAREX WL260 SP-S SC load cells are designed for use in legal-for-trade platform scales. It is approved for use in Class III commercial scales with maximum divisions of $n_{\max}$ to 4 000d. An C4 MR variant with a $Y = 40\,000$ is available for high-precision applications.

The use of stainless steel and the IP68/IP69K high degree protection make the SIWAREX WL260 SP-S SC highly suitable for use in the food, beverages and tobacco industries or pharmaceutical industry.

Design

The load cell is made of stainless steel and is hermetically sealed.

The platform size can be up to 400 x 400 mm (15.75 x 15.75 inches) for load cells rated for 10 to 50 kg. The platform size can be up to 800 x 800 mm (31.50 x 31.50 inches) for load cells rated for 100 to 500 kg.

Technical specifications

SIWAREX WL260 SP-S SC

Possible applications

- Platform scales
- Small conveyor scales

Model

Single point load cell

Loads

Rated load $E_{\max}$.

- 10 kg (22.05 lb)
- 20 kg (44.09 lb)
- 50 kg (110.23 lb)
- 100 kg (220.46 lb)
- 200 kg (440.92 lb)
- 300 kg (661.39 lb)
- 400 kg (881.85 lb)
- 500 kg (1102.31 lb)

Minimum initial loading $E_{\min}$

0 % $E_{\max}$

Maximum working load L_u

150 % $E_{\max}$

Ultimate load L_d

300 % $E_{\max}$

Maximum lateral load L_{lq}

100 % $E_{\max}$

SIWAREX WL260 SP-S SC

Measurement characteristic values

Nominal measurement path s_{nom} for

- 10 kg (22.05 lb) 0.03 mm (0.001 inch)
- 20 kg (44.09 lb) 0.08 mm (0.003 inch)
- 50 kg (110.23 lb) 0.15 mm (0.006 inch)
- 100 kg (220.46 lb) 0.12 mm (0.005 inch)
- 200 kg (440.92 lb) 0.15 mm (0.006 inch)
- 300 kg (661.39 lb) 0.18 mm (0.007 inch)
- 400 kg (881.85 lb) 0.17 mm (0.007 inch)
- 500 kg (1102.31 lb) 0.19 mm (0.008 inch)

Rated characteristic value C_n

$2.0 \pm 0.2 \text{ mV/V}$

Tolerance D_0 of zero signal

$< \pm 2.0 \% C_n$

Maximum scale interval n_{lc}

- $e_{\max} = 10, 20, 50, 100, 200, 300, 400, 500 \text{ kg}$ and accuracy classes C3, C3 MR 3 000

- $e_{\max} = 10, 20, 50 \text{ kg}$ and accuracy class C4 MR 4 000

Min. interval $V_{\min}$ with

- $e_{\max} = 10, 20, 50, 100, 200, 300, 400, 500 \text{ kg}$ (22.05, 44.09, 110.23, 220.46, 440.92, 661.39, 881.85, 1102.31 lb) C3: $E_{\max}/10\,000$
C3 MR: $E_{\max}/20\,000$
- $e_{\max} = 10, 20, 50 \text{ kg}$ (22.05, 44.09, 110.23 lb) C4 MR: $E_{\max}/40\,000$

Combined error F_{comb}

$\leq \pm 0.02 \% C_n$

Repeatability F_v

$\leq \pm 0.02 \% C_n$

Creep error F_{cr}

$\leq \pm 0.025 \% C_n$

30 min

Temperature coefficient

- Zero signal T_{K0} 0.014 % $C_n/10^\circ\text{C}$ (50 °F)
- Characteristic value T_{KC} 0.01 % $C_n/10^\circ\text{C}$ (50 °F)

Electrical characteristic values

Recommended reference voltage U_{ref}

5 ... 12 V DC

Input resistance R_e with

- 10, 20, 50 kg (22.05, 44.09, 110.23 lb) $380 \Omega \pm 15 \Omega$
- 100, 200, 300, 400, 500 kg (220.46, 440.92, 661.39, 881.85, 1102.31 lb) $350 \Omega \pm 3.5 \Omega$

Output resistance R_a

$350 \Omega \pm 3.5 \Omega$

Insulation resistance R_{is}

5 000 M Ω at 50 V DC

Load Cells

Single point load cells

SIWAREX WL260 SP-S SC

Load cell

SIWAREX WL260 SP-S SC**Connection and environmental conditions**

Material of the load cell (DIN) Stainless steel

Maximum tightening torque of the fixing screws with

- 10, 20, 50 kg (22.05, 44.09, 110.23 lb) 10 Nm
- 100, 200, 300, 400, 500 kg (220.46, 440.92, 661.39, 881.85, 1102.31 lb) 20 Nm

Function

- EXC + (supply +)
- EXC - (supply -)
- SIG + (measured signal +)
- SIG - (measured signal -)
- Sense + (sensor line +)
- Sense - (sensor line -)
- Shield (not connected to housing)

Color

- red
- black
- green
- white
- blue¹⁾
- yellow¹⁾
- transparent

Rated temperature range B_{in} -10 ... +40 °C (14 ... 104 °F)Operating temperature range B_{tu} -35 ... +65 °C (-31 ... +149 °F)Storage temperature range B_{ts} -35 ... +65 °C (-31 ... +149 °F)

Degree of protection according to EN 60529; IEC 60529 IP68, IP69K

Certificates and approvals

Available accuracy classes acc. to OIML R60

- With rated load 10 kg up to 500 kg C3, C3 MR
- With rated load 10 kg, 20 kg, 50 kg C4 MR

Selection and ordering data

Article No.

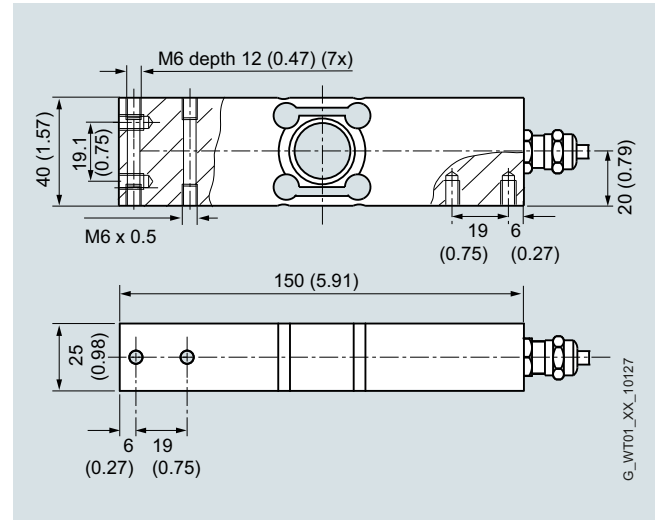
Load cell, type WL260 SP-S SC

Capable of calibration according to OIML R60 up to 3 000d, connecting cable 3 m (9.84 ft)

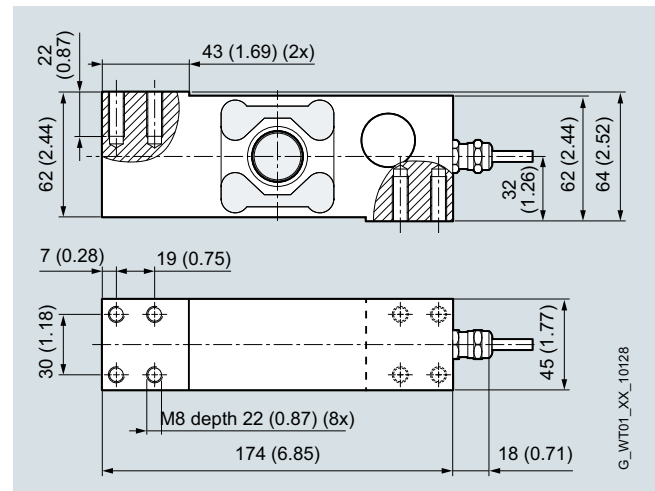
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Rated load**In accuracy class C3**

- 10 kg (22.05 lb)
- 20 kg (44.09 lb)
- 50 kg (110.23 lb)
- 100 kg (220.46 lb)
- 200 kg (440.92 lb)
- 300 kg (661.91 lb)
- 400 kg (881.85 lb)
- 500 kg (1 102.31 lb)

Options**In accuracy class C3 MR**Capable of calibration according to OIML R60 up to 3 000d and $V_{min} = E_{max}/20\ 000$ **In accuracy class C4 MR**Capable of calibration according to OIML R60 up to 4 000d and $V_{min} = E_{max}/40\ 000$; only for $E_{max} = 10, 20, 50$ kg (22.05, 44.09, 110.23 lb)**Dimensional drawings**

SIWAREX WL260 SP-S SC (10 ... 50 kg / 22.05 ... 110.23 lb), dimensions in mm (inches)



SIWAREX WL260 SP-S SC (100 ... 500 kg / 220.46 ... 1102.31 lb), dimensions in mm (inches)

¹⁾ Only with 10, 20 and 50 kg variants.

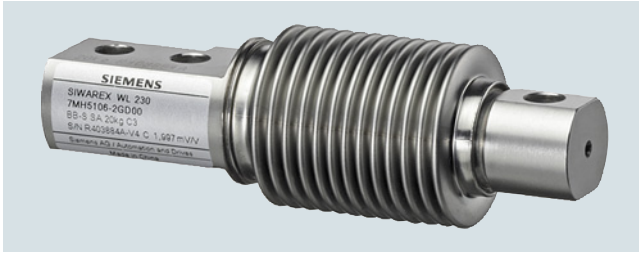
Load Cells

Bending beam load cells

Overview

Type	Bending beam
Possible applications	Hopper and belt scales, platform weighing machines
Example picture	
Series	
Rated load $E_{\max}$	10 ... 500 kg (22.05 ... 1 102.31 lb)
Accuracy class	C3
Max. load cell verification interval (n_{IC})	3 000
Min. load cell verification interval ($V_{\min}$)	$E_{\max}/15\,000$
Supply voltage (U_{sr})	5 ... 10 V
Rated characteristic value	2 mV/V
Degree of protection	IP68
Material	Stainless steel
Ex protection according to ATEX (optional)	II 1G Ex ia IIC T4 Ta= -20 °C ... +40 °C II 3G Ex nL IIC T4 Ta= -20 °C ... +40 °C II 1D Ex iaD 20 IP6x T 73 °C

Overview



The bending beam load cell is particularly suitable for use in small-scale container and platform scales.

Design

The measuring element is a double bending beam made of stainless steel to which 4 strain gauges are applied.

The strain gauges are arranged so that two are stretched and two are compressed.

Under the influence of the load acting in the measuring direction, the spring bodies and therefore the friction-locked strain gauges are elastically deformed. This generates a measuring signal voltage that is proportional to the load.

Technical specifications

SIWAREX WL230 BB-S SA

Possible applications

- Hopper scales
- Conveyor belt scales
- Platform scales

Model Bending beam load cell

Loads

Rated load $E_{\max}$	• 10 kg (22.05 lb) • 20 kg (44.09 lb) • 50 kg (110.23 lb) • 100 kg (220.46 lb) • 200 kg (440.92 lb) • 300 kg (661.39 lb) • 350 kg (771.62 lb) • 500 kg (1102.31 lb)
Minimum initial loading $E_{\min}$	0% $E_{\max}$
Maximum working load L_u	150% $E_{\max}$
Break load L_d	300% $E_{\max}$
Safe lateral load L_{lq}	100% $E_{\max}$

SIWAREX WL230 BB-S SA

Measurement characteristic values

Rated measuring path h_n at $E_{\max}$	0.3 mm (0.01 in)
Rated characteristic value C_n	$2.0 \pm 0.02\%$ mV/V
Tolerance D_0 of zero signal	$< \pm 1.0\%$ C_n
Maximum load cell verification interval n_{LC}	3 000 ¹⁾
Min. load cell verification interval $V_{\min}$	$E_{\max}/15\ 000$
Minimum application range $R_{\min(LC)}$	20%
Combined error F_{comb}	$\leq 0.02\%$ C_n
Repeatability F_v	$\leq 0.017\%$ C_n
Creep error F_{cr}	
30 min	$\leq \pm 0.02\%$ C_n
Temperature coefficient	
• Zero signal T_{K0}	$\leq \pm 0.017\%$ $C_n/5$ K
• Characteristic value T_{KC}	$\leq \pm 0.014\%$ $C_n/5$ K

Electrical characteristic values

Recommended reference voltage U_{ref}	5 ... 10 V DC
Input resistance R_e	$460\ \Omega \pm 50\ \Omega$
Output resistance R_a	$350\ \Omega \pm 3.5\ \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Current calibration	Standard

Connection and environmental conditions

Sensor material (DIN)	Stainless steel
Max. tightening torque of the fixing screws	
• $E_{\max} = 10, 20, 50, 100, 200$ kg (22.05, 44.09, 110.23, 220.46, 440.92 lb)	23 Nm ²⁾
• $E_{\max} = 350, 500$ kg (771.62, 1102.31 lb)	70 Nm ²⁾
Function	Color
• EXC + (supply +)	Green
• EXC - (supply -)	Black
• SIG + (measured signal +)	White
• SIG - (measured signal -)	Red
• Shield	Transparent
Rated temperature range B_{ln}	-10 ... +40 °C (14 ... 104 °F)
Operating temperature range B_{lu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ls}	-35 ... +65 °C (-31 ... +149 °F)
Degree of protection according to EN 60529; IEC 60529	IP68

Certificates and approvals

Accuracy class according to OIML R60	C3
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¹⁾ Higher accuracy class available on request

²⁾ The tightening torque is to be selected according to the strength class of the screws.

Load Cells

Bending beam load cells
SIWAREX WL230 BB-S SA

Load cell

Selection and ordering data

Article No.

Load cells type WL230 BB-S SA

Legal-for-trade according to OIML R60 to 3 000d,
connecting cable 3 m (9.84 ft)

➤ Click on the Article No. for the online configuration in
the PIA Life Cycle Portal.

Rated load

- 10 kg (22.05 lb)
- 20 kg (44.09 lb)
- 50 kg (110.23 lb)
- 100 kg (220.46 lb)
- 200 kg (440.92 lb)
- 350 kg (771.62 lb)
- 500 kg (1 102.31 lb)

Explosion protection

Without

Explosion protection for zones 0, 1, 2, 20, 21, 22

Article No.

7MH5106-

D 0

2 A

2 G

2 P

3 A

3 G

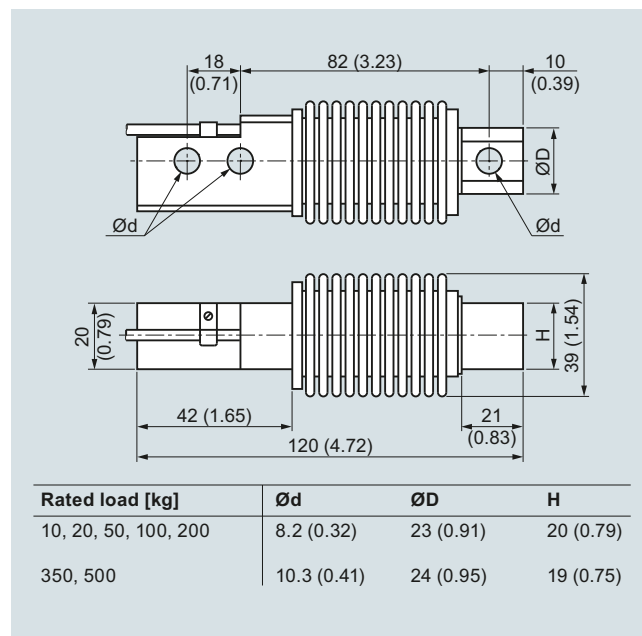
3 L

3 P

0

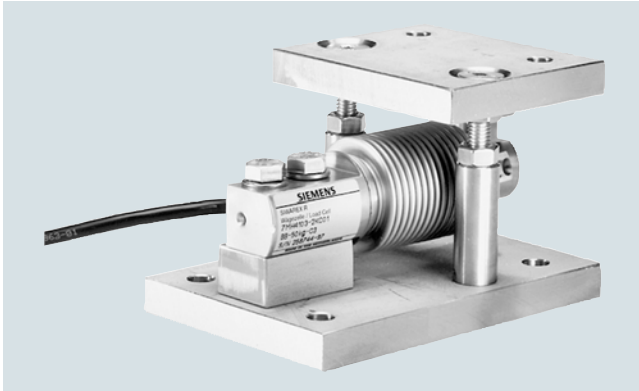
1

Dimensional drawings



SIWAREX WL230 BB-S SA load cell, dimensions in mm (inch)

Overview



The self-aligning mounting unit for SIWAREX WL230 BB-S SA load cells is particularly suitable for implementation in small-scale container, platform and roller table scales.

Design

The mounting unit comprises a base plate and a top plate, a self-aligning bolt, two countersunk screws and overload protection.

The top plate is aligned and fixed above the base plate with the two countersunk screws. This results in a stable unit. The height of the top plate can be adjusted so that it is two millimeters above the installation height with load cell.

In this state the mounting unit serves as an installation aid and can be used as a dummy for light installation jobs.

Prior to installation, the load cell is inserted with the self-aligning bolt into the mounting unit. Then the complete unit is installed in the scales. As the result, the load bearing implement and the installation units are aligned. The load cells are not yet loaded.

Finally the load bearing implement is lowered by undoing two hex nuts under the top plate. The weight now rests on the load cells.

In this state the load cell and the pressure pieces together form a self-centering unit. The mounting unit permits sideways displacement of the top plate, and hence of the load bearing implement, by up to 1.5 mm (0.06 in.).

The overload protection is set so that the load cell cannot be loaded beyond the limit load.

Technical specifications

Mounting unit for load cells of the SIWAREX WL230 BB-S SA series

Rated load	10 ... 200 kg (22.01 ... 440.92 lb)	350, 500 kg (771.62, 1102.31 lb)
Permissible lateral deflection:	± 2 mm (0.08 inch)	± 2.5 mm (0.10 inch)
Lifting path of the top plate	2 ... 2.5 mm (0.08 ... 0.10 inch)	3 ... 3.5 mm (0.12 ... 0.14 inch)
Max. lateral force	1.7 kN	2.5 kN
Max. lifting force	2.5 kN	2.5 kN

Selection and ordering data

Article No.

Mounting unit

For load cells of the SIWAREX WL230 BB-S SA series

Material: Stainless steel

for load cells with a rated load of

- 10 ... 200 kg (22.05 ... 440.92 lb)¹⁾²⁾
- 350, 500 kg (771.61, 1 102.3 lb)¹⁾

7MH4133-3DC11**7MH4133-3KC11**

Shims (accessories)

For mounting units of the SIWAREX WL230 BB-S SA series

Material: Stainless steel

For load cells with a rated load of¹⁾

- 10 ... 200 kg (22.05 ... 440.92 lb);
Contents: 16 units, each 0.5 mm thick

7MH5713-3JG00

¹⁾ The load cell is not included in the scope of delivery.

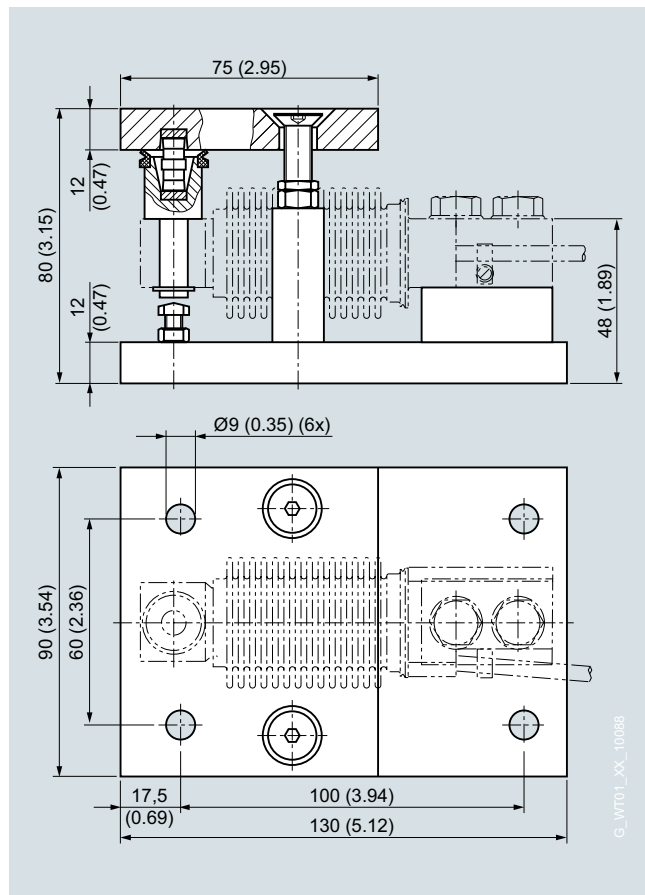
²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

Load Cells

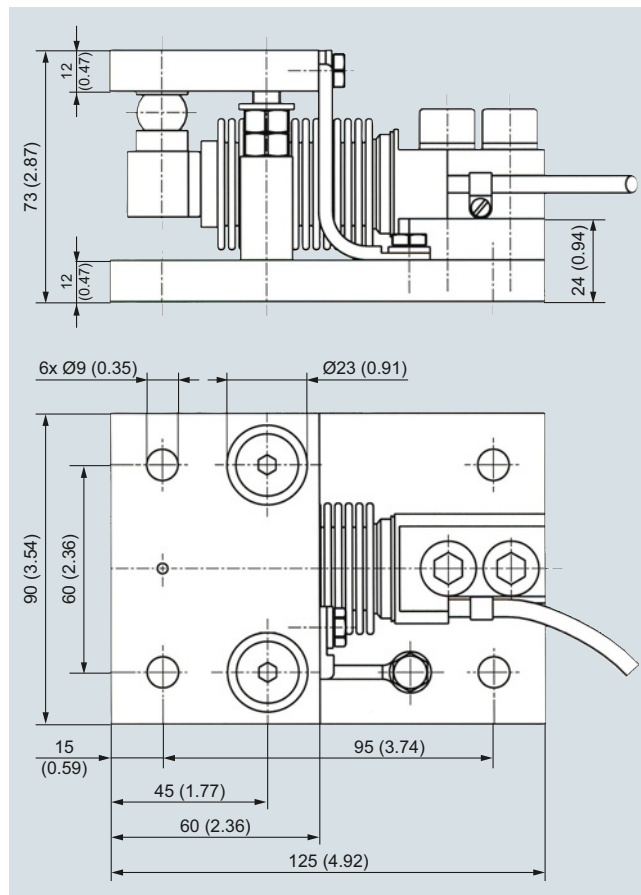
Bending beam load cells
SIWAREX WL230 BB-S SA

Mounting unit

Dimensional drawings



Mounting unit for SIWAREX WL230 BB-S SA load cells,
10 ... 200 kg, dimensions in mm (inches)



Mounting unit for SIWAREX WL230 BB-S SA load cells,
350 and 500 kg, dimensions in mm (inches)

Overview



The self-centering elastomer bearing for load cells of the SIWAREX WL230 BB-S SA series is the ideal load introduction element for scales without guide elements. It serves to damp vibrations and shocks.

Design

Elastomer bearings are rubber-metal composites made of neoprene and stainless steel. They ensure large spring excursions (i.e. a high degree of damping) despite small dimensions.

If the load support is displaced by more than 4 mm (0.16 in.) in the horizontal direction, measures for restricting sideways play (e.g. stops) must be provided in the construction of the load bearing implement.

In combination with the base plate and integral overload protection, it is ensured that the load cell is not damaged by static overloading with vertical forces of up to 5 kN.

The load cell and the base plate are not included in the scope of delivery of the elastomer bearing.

Technical specifications

Elastomeric bearing for load cells of the SIWAREX WL230 BB-S SA series

Rated load	10 ... 200 kg (22.01 ... 440.92 lb)	350, 500 kg (771.62, 1102.31 lb)
Permissible lateral deflection	± 4 mm (0.16 inch)	± 4 mm (0.16 inch)

Selection and ordering data

Article No.

Elastomer bearings

For load cells of the SIWAREX WL230 BB-S SA series

Material: Stainless steel

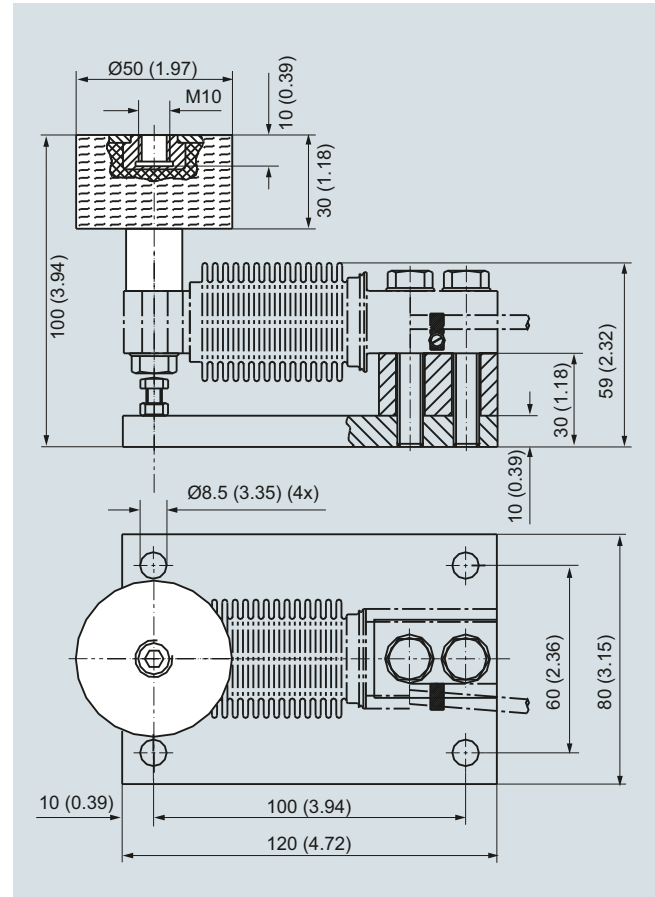
For load cells with a rated load of¹⁾²⁾

- 10 ... 50 kg (22.05 ... 110.23 lb)
- 100 ... 200 kg (220.46 ... 440.92 lb)
- 350, 500 kg (771.61, 1102.31 lb)

7MH4133-2KE11**7MH4133-3DE11**

On request

Dimensional drawings



Elastomer bearings for SIWAREX WL230 BB S SA load cells, 10 ... 200 kg (22.05 ... 440.92 lb), dimensions in mm (inch)

¹⁾ The load cell is not included in the scope of delivery.

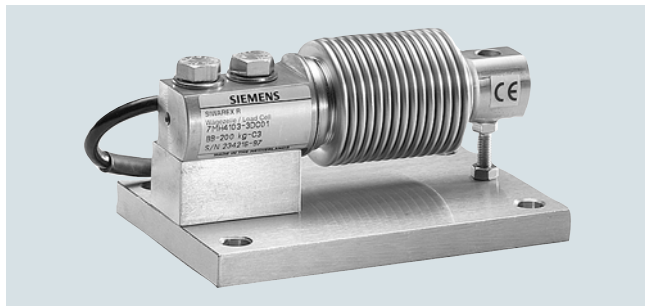
²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

Load Cells

Bending beam load cells
SIWAREX WL230 BB-S SA

Base plate

Overview



The base plate with integral overload protection for load cells of the SIWAREX WL230 BB-S SA series ensures easy, correct installation of the load cell.

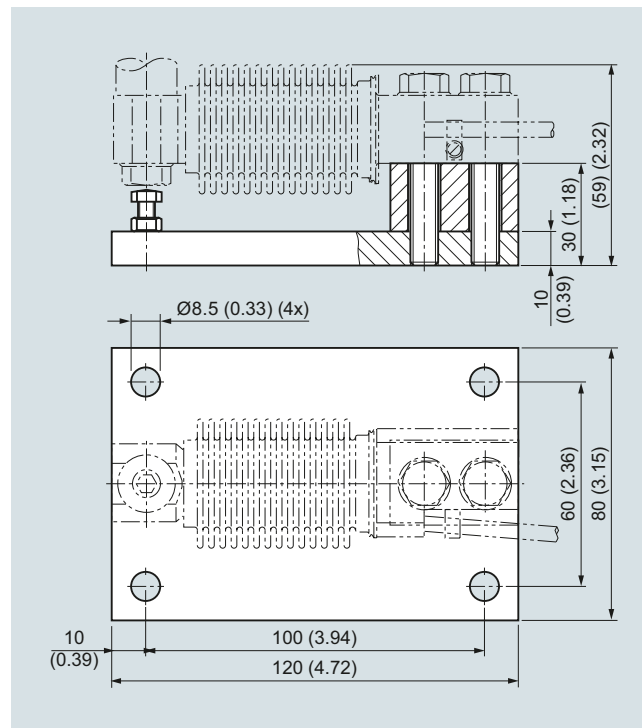
Design

The integrated overload protection ensures that the load cell is not damaged by static overloading with vertical forces of up to 5 kN.

The load cells can be installed on the base plate and aligned even before final installation of the scales. This ensures that the permissible spring excursion of the load cell is precisely set, up to contact with the overload protection.

The load cell is not included in the scope of delivery of the base plate with overload protection.

Dimensional drawings



Elastomer bearing and base plate with overload protection for SIWAREX WL230 BB-S SA load cells, 10 ... 200 kg (22.05 ... 440.92 lb), dimensions in mm (inch)

Selection and ordering data

Article No.

Base plate with overload protection

For load cells of the SIWAREX WL230 BB-S SA series

Material: Stainless steel

For load cells with a rated load of¹⁾²⁾

- 10 ... 200 kg (22.05 ... 440.92 lb)
- 350 kg (771.62 lb), 500 kg (1102.31 lb)

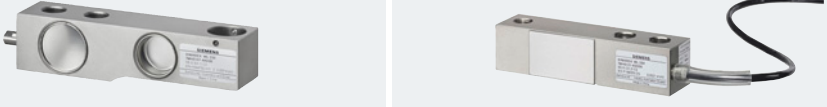
7MH4133-3DG11

7MH4133-3KG11

¹⁾ The load cell is not included in the scope of delivery

²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

Overview

Type	Shear beam		
Possible applications	Hopper, belt, and overhead rail scales and platform weighing machines		
Example picture			
Series	WL230 SB-S SA		WL230 SB-S CA
Rated load $E_{\max}$	500 kg (1 102.31 lb)	1 ... 5 t (0.98 ... 4.92 tn. L.)	100 kg ... 10 t (220.46 lb ... 9.84 tn. L.)
Accuracy class	C3		C3, C4, C5
Max. load cell verification interval (n_{IC})	3 000	3 000	with C3: 3 000 with C4: 4 000 with C5: 5 000
Min. load cell verification interval ($V_{\min}$)	$E_{\max}/10\,000$	$E_{\max}/15\,000$	with C3: 10 000 with C4: 15 000 with C5: 18 000 (3 t ... 10 t / 2.95 ... 9.84 tn. L.) or 20 000 (0,1 t ... 2 t / 0.1 ... 1.97 tn. L.)
Supply voltage (U_{sr})	5 ... 12 V		5 ... 12 V
Rated characteristic value	2 mV/V		3 mV/V
Degree of protection	IP68	IP68	IP67
Material	Stainless steel		Special steel, nickel-plated
Ex protection according to ATEX (optional)	II 1G Ex ia IIC T4 Ta= -20 °C ... +40 °C II 3G Ex nL IIC T4 Ta= -20 °C ... +40 °C II 1D Ex iaD 20 IP6x T 73 °C.		–

Load Cells

Shear beam load cells

SIWAREX WL230 SB-S SA

Load cell

Overview



The shear beam load cell is particularly suitable for implementation in container, overhead rail conveyor and platform scales.

Design

The measuring element is a shear tension spring made of stainless steel to which strain gauges are applied. The strain gauges are arranged at 45° to the longitudinal axis on the side of the spring body and are therefore subject to shear forces. Under the influence of the load acting in the measuring direction, the spring bodies and therefore the friction-locked strain gauges are elastically deformed. This generates a measuring signal voltage that is proportional to the load.

Technical specifications

SIWAREX WL230 SB-S SA

Possible applications	• Hopper scales • Conveyor belt scales • Overhead rail scales • Platform scales
Model	Shear beam load cell
Loads	
Rated load/maximum load E_{max}	• 0.5 t (0.49 tn. L.) • 1 t (0.98 tn. L.) • 2 t (1.97 tn. L.) • 5 t (4.92 tn. L.)
Minimum initial loading E_{min}	0 kg
Max. working load L_u	150% E_{max}
Break load L_d	300% E_{max}
Safe lateral load L_{lq}	100% E_{max}
Measurement characteristic values	
Rated measuring path h_n at E_{max}	
• $E_{max} = 500$ kg (0.49 tn. L.)	0.13 mm (0.005 in)
• $E_{max} = 1$ t (0.98 tn. L.)	0.21 mm (0.008 in)
• $E_{max} = 2$ t (1.97 tn. L.)	0.29 mm (0.011 in)
• $E_{max} = 5$ t (4.92 tn. L.)	0.38 mm (0.014 in)
Rated characteristic value C_n	2.0 ± 0.002 mV/V
Tolerance D_0 of zero signal	$\leq \pm 1.0\%$ C_n
Max. load cell verification intervals n_{LC}	3 000
Min. load cell verification intervals V_{min}	
• $E_{max} = 500$ kg (0.49 tn. L.)	$E_{max}/10\ 000$
• $E_{max} = 1, 2, 5$ t (0.98, 1.97, 4.92 tn. L.)	$E_{max}/15\ 000$
Minimum application range $R_{min(LC)}$	
• $E_{max} = 500$ kg (0.49 tn. L.)	30%
• $E_{max} = 1, 2, 5$ t (0.98, 1.97, 4.92 tn. L.)	20%

SIWAREX WL230 SB-S SA

Combined error F_{comb}	$\pm 0.02\%$ C_n
Repeatability F_v	$\pm 0.02\%$ C_n
Creep error F_{cr}	
• 30 min	$\leq \pm 0.02\%$ C_n
Temperature coefficient	
• Zero signal T_{K0}	0.023% $C_n/5$ K
• Characteristic value T_{KC}	0.017% $C_n/5$ K
Electrical characteristic values	
Recommended reference voltage U_{ref}	5 ... 12 V DC
Input resistance R_e	1000 ± 10 Ω
Output resistance R_a	1004 ± 5 Ω
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Connection and environmental conditions	
Rated temperature range B_{tn}	-10 ... +40 °C (14 ... 104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... +149 °F)
Sensor material (DIN)	Stainless steel
Degree of protection according to EN 60529; IEC 60529	IP68
Recommended tightening torque of the fixing screws	
• $E_{max} = 0.5, 1, 2$ t	150 Nm ¹⁾
• $E_{max} = 5$ t	550 Nm ¹⁾
Cable connection	
<u>Function</u>	<u>Color</u>
• EXC +	Green
• EXC -	Black
• SIG +	White
• SIG -	Red
• Shield	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3

¹⁾ The tightening torque is to be selected according to the strength class of the screws.

Load Cells

Shear beam load cells
SIWAREX WL230 SB-S SA

Load cell**Selection and ordering data**

Article No.

Load cells type WL230 SB-S SA

7MH5107-

Legal-for-trade acc. to OIML R60 up to 3 000d,
connecting cable 3 m (9.84 ft) at 500 kg (1 102.31 lb)
up to 1 t (0.98 tn. L.), connecting cable 6 m (19.68 ft) at
2 t (1.97 tn. L.) up to 5 t (4.92 tn. L.)

Click on the Article No. for the online configuration in
the PIA Life Cycle Portal.

Rated load

- 500 kg (1 102.31 lb)
- 1 t (0.98 tn. L.)
- 2 t (1.97 tn. L.)
- 5 t (4.92 tn. L.)

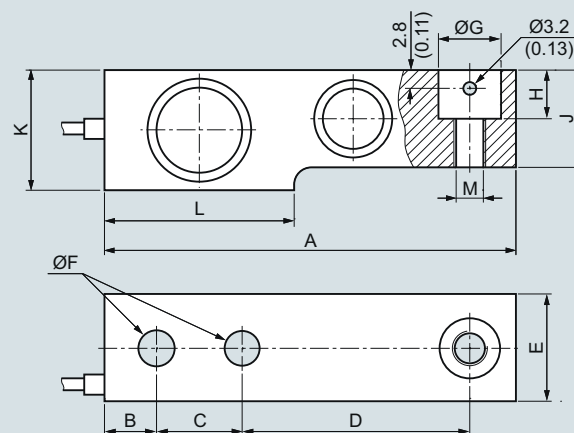
3 P
4 A
4 G
4 P

Explosion protection

Without

Explosion protection for zones 0, 1, 2, 20, 21, 22

0
1

Dimensional drawings

Rated load [t]	A	B	C	D	E	ØF
0.5	130 (5.12)	16 (0.63)	25.4 (1.00)	76 (2.99)	32 (1.26)	13 (0.51)
1	130 (5.12)	16 (0.63)	25.4 (1.00)	76 (2.99)	32 (1.26)	13 (0.51)
2	130 (5.12)	16 (0.63)	25.4 (1.00)	76 (2.99)	32 (1.26)	13 (0.51)
5	172 (6.77)	19 (0.63)	38.1 (1.50)	95 (3.74)	38 (1.50)	20.5 (0.81)
Rated load [t]	ØG	H	J	K	L	M
0.5	20.5 (0.81)	14 (0.55)	26 (1.02)	32 (1.26)	57 (2.24)	M12
1	20.5 (0.81)	14 (0.55)	28 (1.10)	32 (1.26)	57 (2.24)	M12
2	20.5 (0.81)	14 (0.55)	32 (1.26)	36 (1.42)	57 (2.24)	M12
5	30.2 (1.89)	20 (0.79)	40 (1.57)	44 (1.73)	76 (2.99)	M20

SIWAREX WL230 SB-S SA load cell, dimensions in mm (inch)

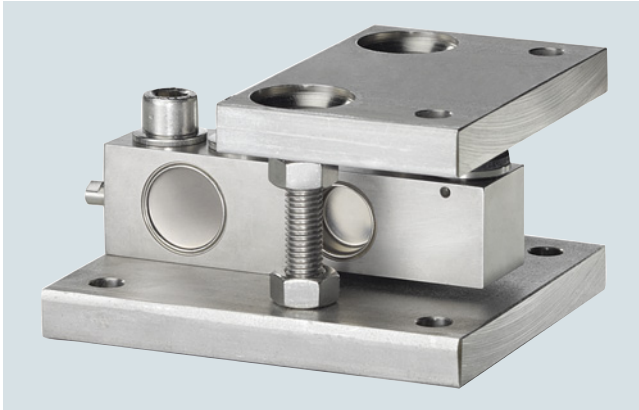
Load Cells

Shear beam load cells

SIWAREX WL230 SB-S SA

Mounting unit

Overview



The self-aligning mounting unit for SIWAREX WL230 SB-S SA load cells is particularly suitable for implementation in container, platform and roller table scales.

Design

The mounting unit comprises a base plate and a top plate, a self-aligning bolt and two countersunk screws.

The top plate is aligned and fixed above the base plate with the two countersunk screws. This results in a stable unit. The height of the top plate is adjusted so that it is three millimeters above the installation height with load cell.

In this state the mounting unit serves as an installation aid and can be used as a dummy for light installation jobs.

Prior to installation, the load cell is inserted with the self-aligning bolt into the mounting unit. Then the complete unit is installed in the scales. As the result, the load bearing implement and the installation units are aligned. The load cells are not yet loaded.

Finally the load bearing implement is lowered by undoing two hex nuts under the top plate. The weight now rests on the load cells.

In this state the load cell and the pressure pieces together form a self-centering unit. The mounting unit permits sideways displacement of the top plate, and hence of the load bearing implement, by up to three millimeters.

Technical specifications

Mounting unit for load cells of the SIWAREX WL230 SB-S SA series

Rated load	0.5, 1, 2 t (0.49, 0.98, 1.97 tn. L.)	5 t (4.92 tn. L.)
Maximum lateral deflection with load cell	± 3 mm (0.12 inch)	± 3 mm (0.12 inch)
Lifting path of the top plate	3 mm (0.12 inch)	3 mm (0.12 inch)
Restoring force per millimeter of lateral deflection of the top plate in % of the applied load with load cell	13 %/mm	10%/mm
Permitted supporting load with fixed top plate	25 kN	35 kN
Permitted lifting force on the top plate	25 kN	50 kN
Permitted transverse force on the top plate with fixed top plate	3 kN	5 kN

Selection and ordering data

Article No.

Mounting units



7MH5707-

For load cells of the SIWAREX WL230 SB-S SA series

Material: Stainless steel

For load cells with a rated load of:¹⁾²⁾

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

• 500 kg (1 102.31 lb), 1 t (0.98 tn. L.)

• 2 t (1.97 tn. L.)

• 5 t (4.92 tn. L.)

A

G

P

Shims (accessories)

For mounting units of the SIWAREX WL230 SB-S SA series

Material: Stainless steel

For load cells with a rated load of¹⁾²⁾

• 500 kg, 1 t, 2 t (0.49, 0.98, 1.97 tn. L.)
Contents: 16 units, each 0.5 mm thick

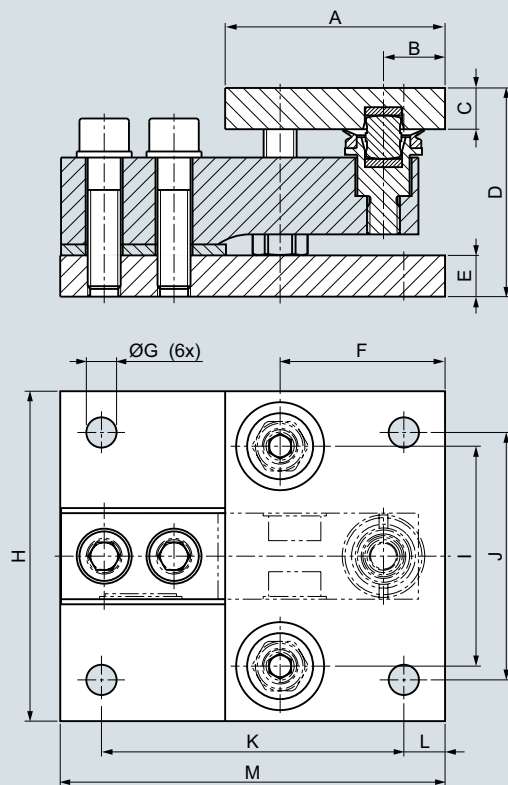
• 5 t (4.92 tn. L.)
Contents: 4 units each 0.5 mm thick, 16 units each 1 mm thick

7MH5713-3JG00

7MH5713-4PG00

¹⁾ The load cell is not included in the scope of delivery.

²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

Dimensional drawings

Rated load [t]	A	B	C	D	E	F
0,5 ... 2	80 (3.15)	22.4 (0.88)	15 (0.59)	76 (2.99)	15 (0.59)	60 (2.36)
5	105 (4.13)	31.6 (1.24)	20 (0.79)	108 (4.25)	25 (0.98)	80 (3.15)

Rated load [t]	ØG	H	I	J	K	L	M	s
0,5 ... 2	11 (4.33)	120 (4.72)	80 (3.14)	90 (3.54)	110 (4.33)	15 (0.59)	140 (5.51)	3 (0.12)
5	13.5 (0.53)	150 (5.91)	100 (3.94)	110 (4.33)	145 (5.71)	20 (0.79)	185 (7.28)	3 (0.12)

G_WT01_XX_10092

Mounting unit for SIWAREX WL230 SB-S SA load cells,
dimensions in mm (inch)

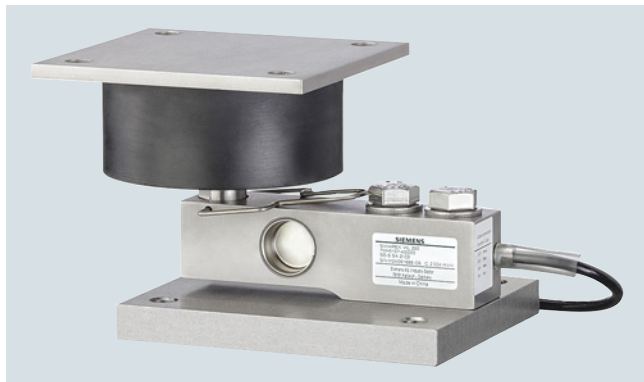
Load Cells

Shear beam load cells

SIWAREX WL230 SB-S SA

Base plate with elastomer bearing

Overview



The base plate and the elastomer bearing form a self-centering bearing unit together with the load cells of the SIWAREX WL230 SB-S SA series. It suppresses oscillations and shocks to a certain extent.

Design

Elastomer bearings are rubber-metal composites made of neoprene and stainless steel. Their special design means that lateral movement of the load bearing implement does not result in high transverse force on the load cell.

If the load bearing implement is displaced by more than 4 mm (0.16 inch) in the horizontal direction, measures for restricting sideways play (e.g. stops) must be provided in the construction of the load bearing implement.

The base plate of stainless steel is used for suitable fixing of the load cell on the base.

The load cell is not included in the scope of delivery of the base plate or elastomer bearing.

Selection and ordering data

Article No.

Base plate

For load cells of the SIWAREX WL230 SB-S SA series

Material: Stainless steel

For load cells with a rated load of: ¹⁾²⁾

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

0,5 ... 1 t (0.49 ... 0.98 tn L.)

2 t (1.97 tn L.)

5 t (4.92 tn L.)

Elastomer bearings

For load cells of the SIWAREX WL230 SB-S SA series

Material: neoprene, stainless steel

For load cells with a rated load of: ¹⁾²⁾

0,5 ... 1 t (0.49 ... 0.98 tn L.)

2 t (1.97 tn L.)

5 t (4.92 tn L.)

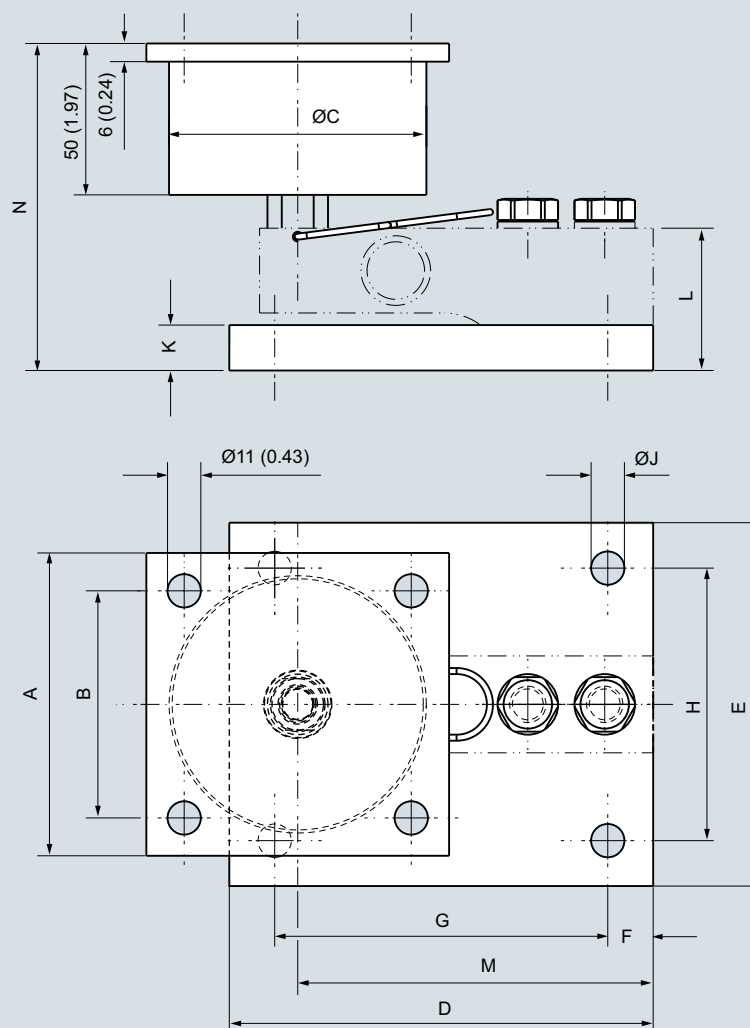
7MH5707-			
4	0	0	0
A	B		
G	B		
P	B		
A	C		
G	C		
P	C		

Technical specifications

Base plate with elastomer bearing for SIWAREX WL230 SB-S SA load cells				
Rated load	500 kg (0.49 tn. L.)	1 t (0.98 tn. L.)	2 t (1.97 tn. L.)	5 t (4.92 tn. L.)
Maximum permitted lateral deflection	± 4 mm (0.16 in)	± 4 mm (0.16 in)	± 4 mm (0.16 in)	± 4 mm (0.16 in)
Vertical rigidity	5.9 kN/mm	5.9 kN/mm	29.98 kN/mm	29.98 kN/mm
Horizontal rigidity	0.16 kN/mm	0.16 kN/mm	0.54 kN/mm	0.54 kN/mm
Compression at rated load	0.68 mm (0.037 in)	1.28 mm (0.050 in)	0.62 mm (0.024 in)	1.46 mm (0.057 in)

¹⁾ The load cell is not included in the scope of delivery.

²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

Dimensional drawings

Rated load [t]	A	B	ØC	D	E	F	G
0,5, 1	100 (3.94)	75 (2.95)	85 (3.35)	140 (5.51)	120 (4.72)	15 (0.59)	110 (4.33)
2	120 (4.72)	90 (3.54)	100 (3.94)	140 (5.51)	120 (4.72)	15 (0.59)	110 (4.33)
5	120 (4.72)	90 (3.54)	100 (3.94)	185 (7.28)	150 (5.91)	20 (0.79)	145 (5.71)

Rated load [t]	H	ØJ	K	L	M	N
0,5, 1	90 (3.54)	11 (0.43)	15 (0.59)	47 (1.85)	117.4 (4.62)	108 (4.25)
2	90 (3.54)	11 (0.43)	15 (0.59)	51 (2.01)	117.4 (4.62)	112 (4.41)
5	110 (4.33)	13.5 (0.53)	25 (0.98)	69 (2.72)	153.1 (6.03)	134 (5.28)

G_WT01_XX_10133

Base plate with elastomer bearing for SIWAREX WL230 SB-S SA load cells, dimensions in mm (inch)

Load Cells

Shear beam load cells

SIWAREX WL230 SB-S CA

Load cell

Overview



The SIWAREX WL230 SB-S CA shear beam load cell is made of special nickel-plated steel. The 100 kg (220.46 lb) and 250 kg (551.16 lb) load classes are implemented as bending beams.

The WL230 SB-S CA load cells are especially suited for platform scales and hopper scales where it is easy to introduce the load into the load cell by means of an adjustable foot. The load cell is available in rated loads from 100 kg to 10 t. This means that scales with multiple weighing ranges can be equipped with a single cell type.

Load cells are legal-for-trade according to OIML R60. They are available in accuracy classes C3, C4 and C5.

Design

The measuring element is a spring body made of special steel. Due to the galvanic coating of nickel and the IP67 degree of protection it is suitable for use in harsh environments.

Technical specifications

SIWAREX WL230 SB-S CA

Possible applications	- Platform scales - Hopper scales			
Model	- Bending beam up to rated load 250 kg (551.16 lb) - Shear beam from rated load 500 kg (1 102.31 lb)			
Loads				
Minimum initial loading $E_{\min}$	0 kg			
Max. working load L_u	150% $E_{\max}$.			
Break load L_d	300% $E_{\max}$.			
Safe lateral load L_{lq}	100% $E_{\max}$			
Accuracy class OIML R60	OIML C3	OIML C4	OIML C5	
Rated load/maximum load $E_{\max}$.	100 kg, 250 kg, 500 kg, 1 000 kg, 2 000 kg, 3 000 kg 5 000 kg, 10 000 kg (220.46 lb, 551.16 lb, 1 102.31 lb, 2 204.62 lb, 4 409.25 lb, 6 613.87 lb, 11 023.11 lb, 22 046.23 lb)		100 kg, 250 kg, 500 kg, 1 000 kg, 2 000 kg (220.46 lb, 551.16 lb, 1 102.31 lb, 2 204.62 lb, 4 409.25 lb)	3 000 kg, 5 000 kg, 10 000 kg (6 613.87 lb, 11 023.11 lb, 22 046.23 lb)
Max. load cell verification intervals n_{LC}	3 000	4 000	5 000	
Min. load cell verification intervals $V_{\min}$	$E_{\max}/10\,000$	$E_{\max}/15\,000$	$E_{\max}/20\,000$	$E_{\max}/18\,000$
Measurement characteristic values				
Combined error F_{comb}	$\leq \pm 0.023\% C_n$	$\leq \pm 0.018\% C_n$	$\leq \pm 0.014\% C_n$	
Recommended supply voltage	5 ... 12 V DC			
Maximum supply voltage	18 V DC			
Rated characteristic value C_n	3.0 $\pm$ 0.003 mV/V			
Tolerance D_o of zero signal	$\leq \pm 1.0\% C_n$			
Creep error 30 min F_{cr}	$\leq \pm 0.015\% C_n$			
Electrical characteristic values				
Input resistance R_e	350 $\pm$ 3.5 Ω			
Output resistance R_a	350 $\pm$ 3.5 Ω			
Insulation resistance R_{is}	$\geq 5\,000\text{ M}\Omega$ at 50 V DC			
Connection and ambient conditions				
Rated temperature range B_{tn}	-10 ... +40 $^{\circ}\text{C}$ (14 ... 104 $^{\circ}\text{F}$)			
Operating temperature range B_{tu}	-35 ... +65 $^{\circ}\text{C}$ (-31 ... 149 $^{\circ}\text{F}$)			
Storage temperature range B_{ts}	-40 ... +80 $^{\circ}\text{C}$ (-40 ... 176 $^{\circ}\text{F}$)			
Sensor material (DIN)	Steel, nickel-plated			
Degree of protection acc. to EN 60529	IP67			

SIWAREX WL230 SB-S CARated measuring path n at $E_{\max}$

- 100 kg
- 250 kg
- 500 kg
- 1 t
- 2 t
- 3 t
- 5 t
- 10 t

- 0.17 mm
- 0.15 mm
- 0.32 mm
- 0.63 mm
- 1.2 mm
- 0.9 mm
- 0.6 mm
- 0.8 mm

Recommended tightening torque of the fixing screws

- For M12
- For M18
- For M24

- 75 Nm
- 500 Nm
- 750 Nm

Length of the connecting cable (four-core)

- For rated loads up to 2 t
- For rated loads more than 2 t

- Length 4 m
- Length 6 m

Diameter of the connecting cable

5 mm

Color coding of the connecting cable

Color

- EXC +
- EXC -
- SIG +
- SIG -
- Shield (not connected to the load cell body)

- red
- black
- green
- white
- transparent

ATEX

-

Selection and ordering data

Article No.

Load cell, type SIWAREX WL230 SB-S CA

7MH5121-

Material: Stahl, vernickelt

Length of the connecting cable:

4 m for rated load up to 2 t,
6 m for rated load more than 3 t

Click on the Article No. for the online configuration in the
PIA Life Cycle Portal.

Rated load

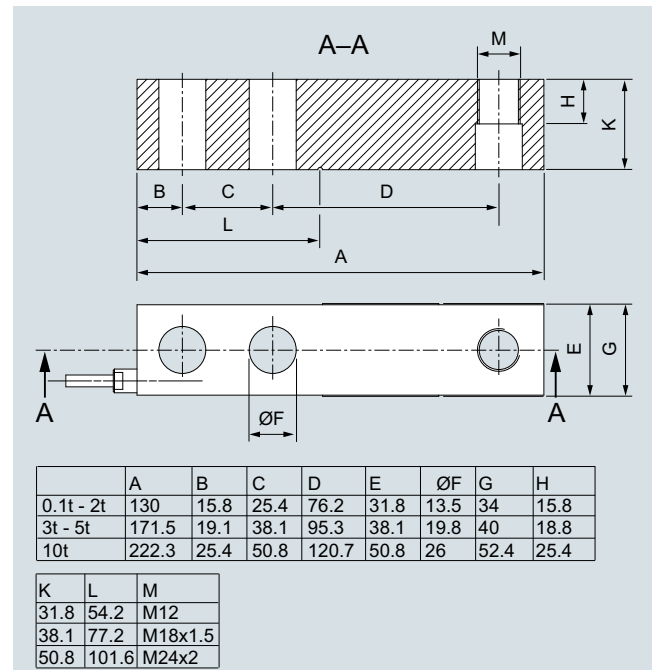
100 kg (220.46 lb)
250 kg (551.16 lb)
500 kg (1 102.31 lb)
1 t (0.98 tn. L.)
2 t (1.97 tn. L.)
3 t (2.95 tn. L.)
5 t (4.92 tn. L.)
10 t (9.84 tn. L.)

3 A
3 H
3 P
4 A
4 G
4 K
4 P
5 A

Accuracy class according to OIML R60

C3
C4
C5

D
E
F

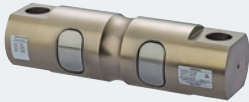
Dimensional drawings

SIWAREX WL230 SB-S CA load cell

Load Cells

Double shear beam load cells

Overview

Type	Double shear beam
Possible applications	Platform scales, hopper scales, vehicle scales
Example picture	
Series	WL290 DB-S CA
Rated load $E_{\max}$	13,6 t 34 t (13.39 ... 33.46 tn. L.)
Accuracy class	C3
Max. load cell verification interval (n_{IC})	3 000
Min. load cell verification interval ($V_{\min}$)	$E_{\max}/10\,000$
Supply voltage (U_{sr})	5 ... 12 V
Rated characteristic value	3 mV/V
Degree of protection	IP67
Material	Steel, nickel-plated
Ex protection according to ATEX (optional)	—

Overview



The SIWAREX WL290 DB-S CA double shear beam load cell is made of nickel-plated specialty steel.

WL290 DB-S CA load cells are especially suited for large platform and hopper scales. A special mounting unit makes them particularly suitable for assembling scales in vehicles. The double shear beam load cell is installed without oscillation or elastomer force-transmitting mechanisms since transverse forces do not result in the otherwise usual oscillating or deflection effects in the load cell.

Load cells are legal-for-trade according to OIML R60. They are available in accuracy class C3.

Design

The measuring element is a spring body made of special steel. Due to the galvanic coating of nickel and the IP67 degree of protection it is suitable for use in harsh environments.

Technical specifications

SIWAREX WL290 DB-S CA	
Possible applications	Platform scales, hopper scales, vehicle scales
Model	Double shear beam
Rated load/maximum load $E_{\max}$	• 13.6 t (13.39 tn. L.) • 18.1 t (17.81 tn. L.) • 22.6 t (22.24 tn. L.) • 27.2 t (26.77 tn. L.) • 34 t (33.46 tn. L.)
Accuracy class according to OIML R60	C3
Max. load cell verification intervals n_{LC}	3 000
Min. scale interval $V_{\min}$	$E_{\max}/10\,000$
Combined error F_{comb}	$\leq \pm 0.023\% C_n$
Min. dead load $E_{\min}$	0 kg
Safe load limit L_u	150% $E_{\max}$
Ultimate load L_d	300% $E_{\max}$
Recommended supply voltage	5 ... 12 V DC
Maximum supply voltage	18 V DC
Rated measuring path h_n at $E_{\max}$	0.5 mm
• $E_{\max} = 13.6\text{ t (13.39 tn. L.)}, 18.1\text{ t (17.81 tn. L.)}$ • $E_{\max} = 27.2\text{ t (26.77 tn. L.)}$ • $E_{\max} = 34\text{ t (33.46 tn. L.)}$	22.6 t (22.24 tn. L.) 0.6 mm 0.5 mm
Rated characteristic value C_n	$3.0 \pm 0.008\text{ mV/V}$
Tolerance D_0 of zero signal	$\leq \pm 1.0\% C_n$
Creep error 30 min F_{Cr}	$\leq \pm 0.015\% C_n$
Input resistance R_i	$700 \pm 7\ \Omega$
Output resistance R_a	$703\ \Omega \pm 4\ \Omega$
Insulation resistance R_{is}	$\geq 5\,000\text{ M}\Omega$ at 50 V DC
Rated temperature range B_{tn}	-10 ... +40 °C (14 ... 104 °F)
Operating temperature range B_{tu}	-35 ... +60 °C (-31 ... 140 °F)
Storage temperature range B_{ts}	-40 ... +80 °C (-40 ... 176 °F)
Sensor material (DIN)	Steel, nickel-plated
Degree of protection according to EN 60529; IEC 60529	IP67
Cable connection	
Length of the connecting cable (four-core)	9 m (30 ft)
Diameter of the connecting cable	8 mm
Color coding of the connecting cable	Color
• EXC +	Red
• EXC -	Black
• SIG +	Green
• SIG -	White
• Shield (not connected to the load cell body)	Transparent
ATEX	-

Load Cells

Double shear beam load cells
SIWAREX WL290 DB-S CA

Load cell

Selection and ordering data

Article No.

SIWAREX WL290 DB-S CA load cell

7MH5122-

Material: Steel, nickel-plated

Length of the connecting cable: 9 m (30 ft)

Click on the Article No. for the online configuration in the
PIA Life Cycle Portal.

Rated load

- 13,6 t (13.39 tn. L.)
- 18 t (17.81 tn. L.)
- 23 t (22.24 tn. L.)
- 27 t (26.77 tn. L.)
- 34 t (33.46 tn. L.)

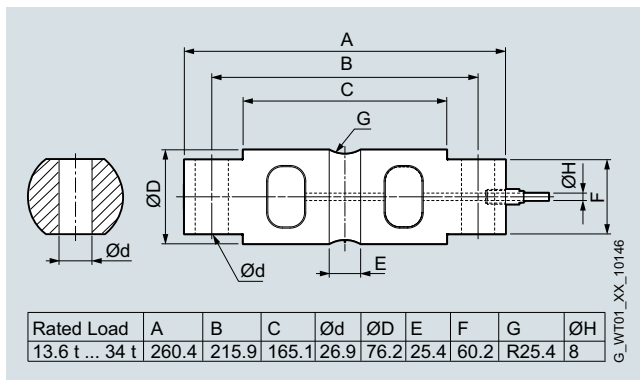
5 D
5 F
5 G
5 J
5 L

Accuracy class C3 acc. to OIML R60

C3

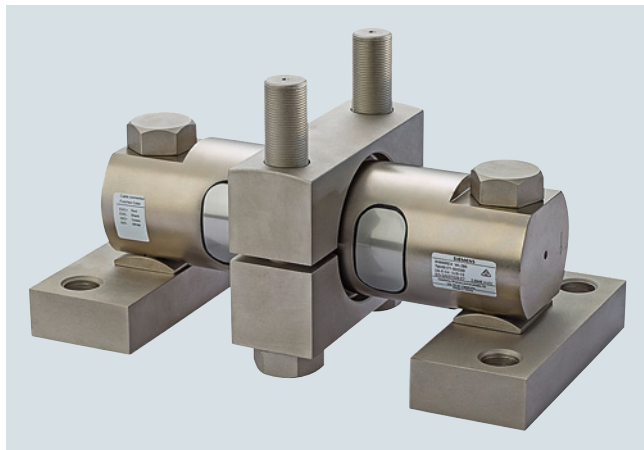
D

Dimensional drawings



SIWAREX WL290 DB-S CA load cell (dimensions in mm)

A	B	C	d	D	E	F	G	H
260.4	215.9	165.1	26.9	76.2	25.4	60.2	25.4	8

Overview

SIWAREX WL290 DB-S CA load cell with mounting unit

The mounting unit for the SIWAREX WL290 DB-S CA load cells makes setting up platform and hopper scales easy and safe. Since the load cell is securely bolted onto the bearing plates, it is particularly suitable for use in scales in vehicles. The mounting unit transmits the force directly into the load cell and absorbs any lateral and lifting forces which occur. The mounting unit covers load cell rated loads from 13.6 to 34 t (13.39 to 33.46 tn. L.).

Design

The load cell is bolted onto the bearing plates. A two-part bearing collar is used to connect the load bearer to the load cell, firmly and without play. The bearing collar transfers the weight force centered into the load cell.

Since all connections are tight, possible acceleration forces, caused for example by a container on a vehicle, are directed to the chassis from the load cell and mounting unit. Additional latching mechanisms are not required. Due to the zero play mounting of the load cell no wear can occur, making any maintenance measures superfluous.

Technical specifications**Installation unit for load cells of the SIWAREX WL290 DB-S CA series**

Rated load	13.6 ... 34 t (13.39 ... 33.46 tn. L.).
Maximum lateral deflection	0 mm
Lifting path of top plate	0 mm
Permissible lateral force	20 kN
Permissible lifting force	35 kN
Tightening torque of mounting bolts for load cells	650 Nm
Tightening torque of mounting bolts for clamp collars	650 Nm
Material	Steel, nickel-plated

Selection and ordering data

Article No.

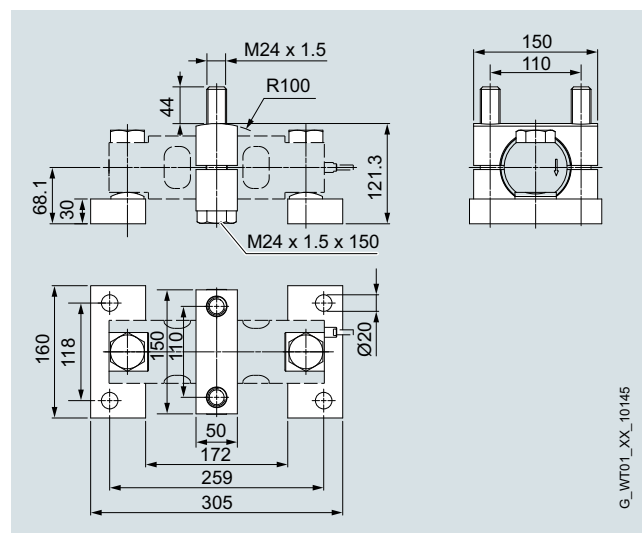
Mounting unit

for SIWAREX WL290 DB-S CA series load cells

Material: Steel, nickel-plated

for load cells with a rated load of ¹⁾

- 13,6 ... 34 t (13.39 ... 33.46 tn. L.)

7MH5722-5LA11**Dimensional drawings**

Mounting unit for SIWAREX WL290 DB-S CA load cell

¹⁾ The load cell is not included in the scope of delivery

Load Cells

S-Type load cells

Overview

Type	S-Type		
Possible applications	Tension and pressure applications, suspended scales, container weighers, hybrid scales		
Example picture			
Series	WL250 ST-S SA		
Rated load $E_{\max}$	50 ... 100 kg (110.23 ... 220.46 lb)	0,25 ... 2,5 t (0.25 ... 2.46 tn. L.)	5 ... 10 t (4.92 ... 9.84 tn. L.)
Accuracy class	C3		
Max. load cell verification interval (n_{IC})	3 000		
Min. load cell verification interval ($V_{\min}$)	$E_{\max}/7\ 000$	$E_{\max}/10\ 000$	$E_{\max}/12\ 000$
Supply voltage (U_{sr})	5 ... 12 V		
Rated characteristic value	3 mV/V		
Degree of protection	IP67		
Material	Stainless steel		
Ex protection according to ATEX (optional)	II 1G Ex ia IIC T4 Ta= -20 °C ... +40 °C II 3G Ex nL IIC T4 Ta= -20 °C ... +40 °C II 1D Ex iaD 20 IP6x T 73 °C.		

Overview



The load cell is ideal for use in tank weighing, hybrid scales or suspended container weighing. It is made of stainless steel and therefore also suitable for use in harsh environments.

The SIWAREX WL250 ST-S SA is suitable for both s-type tension and compression loads. The preferred direction of measurement is tension, with factory calibration for the load cells. For compression applications, adherence to the characteristic values and error limits cannot be guaranteed.

Design

The measuring element is hermetically encapsulated and has a calibrated output current.

Technical specifications

SIWAREX WL 250 ST-S SA

Possible applications	- Voltage and pressure applications - Suspended scales - Container weighers - Hybrid scales
Model	S-Type
Rated load $E_{\max}$	50 kg (110.23 lb) 100 kg (220.46 lb) 250 kg (551.16 lb) 500 kg (1 102.31 lb) 1 t (0.98 tn. L.) 2.5 t (2.46 tn. L.) 5 t (4.92 tn. L.) 10 t (9.84 tn. L.)
Accuracy class according to OIML R60	C3
Max. load cell verification intervals n_{LC}	3 000
Min. load cell verification intervals $V_{\min}$	
$E_{\max} = 50, 100$ kg $E_{\max} = 0.25, 0.5, 1, 2.5$ t $E_{\max} = 5, 10$ t	$E_{\max}/7000$ $E_{\max}/10\,000$ $E_{\max}/12\,000$
Combined error F_{comb}	$\pm 0.02\% C_n$
Repeatability F_v	$\pm 0.02\% C_n$
Creep error F_{cr}	
30 min	$\pm 0.02\% C_n$

SIWAREX WL 250 ST-S SA

Temperature effect	
- Zero signal T_{K0} - Characteristic value T_{KC}	0.017 % $C_n/5$ K 0.014 % $C_n/5$ K
Min. dead load $E_{\min}$	0 kg
Safe load limit L_u	150 % $E_{\max}$
Ultimate load L_d	300 % $E_{\max}$
Safe side load L_{lq}	100 % $E_{\max}$
Rated measuring path h_n	
$E_{\max} = 50, 100$ kg $E_{\max} = 250, 500$ kg $E_{\max} = 1$ t $E_{\max} = 2.5, 5$ t $E_{\max} = 10$ t	0.18 mm 0.24 mm 0.37 mm 0.8 mm 0.57 mm
Rated characteristic value C_n	3.0 ± 0.008 mV/V
Tolerance D_0 of zero signal	$\pm 1.0\% C_n$
Input resistance R_e	$430\ \Omega \pm 4\ \Omega$
Output resistance R_a	$350\ \Omega \pm 3.5\ \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Rated temperature range B_{tn}	-10 ... +40 °C (14 ... 104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... +149 °F)
Sensor material (DIN)	Stainless steel
Maximum tightening torque for fixing screws	
$E_{\max} = 50, 100$ kg $E_{\max} = 250, 500$ kg, 1 t $E_{\max} = 2.5, 5$ t $E_{\max} = 10$ t	25 Nm 75 Nm 450 Nm 1 450 Nm
Degree of protection to EN 60529; IEC 60529	IP67

Cable connection

Function	Color
• EXC + (supply +)	Red
• EXC - (supply -)	Black
• SIG + (measured signal +)	Green
• SIG - (measured signal -)	White
• Screening	Transparent

Load Cells

S-Type load cells

SIWAREX WL250 ST-S SA

Load cell

Selection and ordering data

Article No.

Load cells type WL250 ST-S SA

7MH5105-

Legal-for-trade according to OIML R60 up to 3 000d, connecting cable 6 m (19.69 ft)

D 0

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Rated load

- 50 kg (110.23 lb)
- 100 kg (220.46 lb)
- 250 kg (551.16 lb)
- 500 kg (tn. L..31 lb)
- 1 t (0.98 tn. L.)
- 2,5 t (2.46 tn. L.)
- 5 t (4.92 tn. L.)
- 10 t (9.84 tn. L.)

2 P

3 A

3 H

3 P

4 A

4 H

4 P

5 A

Explosion protection

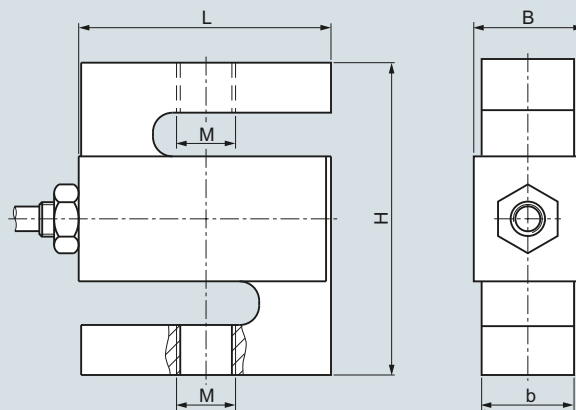
Without

0

Explosion protection for zones 0, 1, 2, 20, 21, 22

1

Dimensional drawings



Rated load [kg]	L	H	b	B	M
50 ... 100	50.8 (2.00)	60.96 (2.40)	11.68 (0.46)	15.06 (0.59)	M8
250 ... 500	50.8 (2.00)	60.96 (2.40)	18.03 (0.71)	21.41 (0.84)	M12

Rated load [t]	L	H	b	B	M
1	50.8 (2.00)	60.96 (2.40)	24.38 (0.96)	27.76 (1.09)	M12
2.5	76.2 (3.00)	99.06 (3.90)	24.38 (0.96)	27.76 (1.09)	M20 x 1.5
5.0	74.68 (2.94)	99.06 (3.90)	30.74 (1.21)	34.12 (1.34)	M20 x 1.5
10	112.78 (4.44)	177.8 (7.00)	42.93 (1.69)	46.31 (1.82)	M30 x 2

SIWAREX WL 250 ST-S SA load cell, dimensions in mm (inch)

Overview

Type	Compression cell		
Possible applications	Bin weighing equipment and hopper and vehicle scales		
Example picture			
Series	WL270 CP-S SA	WL270 CP-S SB	WL270 K-S CA
Rated load $E_{\max}$	0,5 ... 50 t (0.49 ... 49.21 tn. L.)	100 t (98.42 tn. L.)	2,8 ... 500 t (2.76 ... 492.10 tn. L.)
Accuracy class	C3 ¹⁾	C3	0,1 %
Max. load cell verification interval (n_{IC})	3 000	3 000	(not legal-for-trade)
Min. load cell verification interval ($V_{\min}$)	$E_{\max}/10\,000$	$E_{\max}/12\,000$	(not legal-for-trade)
Supply voltage (U_{sr})	5 ... 12 V	5 ... 12 V	6 ... 12 V
Rated characteristic value	2 mV/V	2 mV/V	1,5 mV/V
Degree of protection	IP68	IP68	IP65
Material	Stainless steel	Stainless steel	Steel, painted
Ex protection according to ATEX (optional)	II 1G Ex ia IIC T4 Ta= -20 °C ... +40 °C II 3G Ex nL IIC T4 Ta= -20 °C ... +40 °C II 1D Ex iaD 20 IP6x T 73 °C.	II 1G Ex ia IIC T4 Ta= -20 °C ... +40 °C II 3G Ex nL IIC T4 Ta= -20 °C ... +40 °C II 1D Ex iaD 20 IP6x T 73 °C.	-

¹⁾ 0.5 t (0.49 tn. L.), 1 t (0.98 tn. L.), 2 t (1.97 tn. L.) and 5 t (4.92 tn. L.) versions are not legal-for-trade.

Load Cells

Compression load cells SIWAREX WL270 CP-S SA

Load cell

Overview



The compression load cell is particularly suitable for implementation in container, hopper and vehicle scales.

Design

The measuring element is a solid cylinder made of stainless steel to which 4 strain gauges are applied.

The load which acts centrally in the measuring direction causes the spring bodies and therefore the friction-locked strain gauges to be elastically deformed. This generates a measuring signal voltage that is proportional to the load.

Technical specifications

SIWAREX WL270 CP-S SA

Possible applications	Vehicle scales, overhead rail scales, hopper scales
Model	Compression load cell
Rated load/maximum load $E_{\max}$	• 0.5 t (0.49 tn. L.) • 1 t (0.98 tn. L.) • 2 t (1.97 tn. L.) • 5 t (4.42 tn. L.) • 10 t (9.84 tn. L.) • 20 t (19.68 tn. L.) • 30 t (29.53 tn. L.) • 50 t (49.21 tn. L.)
Accuracy class according to OIML R60	C3 ¹⁾
Max. load cell verification intervals n_{lc}	3 000
Min. load cell verification intervals $V_{\min}$	$E_{\max}/10\,000$
Minimum application range $R_{\min(lc)}$	30%
Combined error F_{comb}	$\pm 0.02\% C_n$
Repeatability F_v	Not applicable
Creep error F_{cr}	
• 30 min	$\pm 0.023\% C_n$
Temperature effect	
• Zero signal T_{K0}	$0.023\% C_n/5\text{ K}$
• Characteristic value T_{Kc}	$0.017\% C_n/5\text{ K}$
Min. dead load $E_{\min}$	0 kg
Safe load limit L_u	$150\% E_{\max}$

SIWAREX WL270 CP-S SA

Ultimate load L_d	$150\% E_{\max}$
Safe side load L_{lq}	$75\% E_{\max}$
Rated measuring path h_n at $E_{\max}$	0.5 mm
Recommended supply voltage (range)	5 ... 12 V DC
Rated characteristic value C_n	$2.0 \pm 0.02\text{ mV/V}$
Tolerance D_0 of zero signal	$\leq \pm 1.0\% C_n$
Input resistance R_e	$700\ \Omega \pm 7\ \Omega$
Output resistance R_a	$700\ \Omega \pm 7\ \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Rated temperature range B_{tn}	-10 ... +40 °C (-14 ... 104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... 149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... 149 °F)
Sensor material	Stainless steel
Degree of protection according to EN 60529; IEC 60529	IP68

Cable connection

Function	Color
• EXC + (supply +)	red
• EXC - (supply -)	black
• SIG + (measured signal +)	green
• SIG - (measured signal -)	white
• Screening	transparent

Selection and ordering data

Article No.

Load cells type WL270 CP-S SA

7MH5108-

Legal-for-trade according to OIML R60 to 3000d, 15 m connecting cable (49.21 ft)

D 0

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Rated load

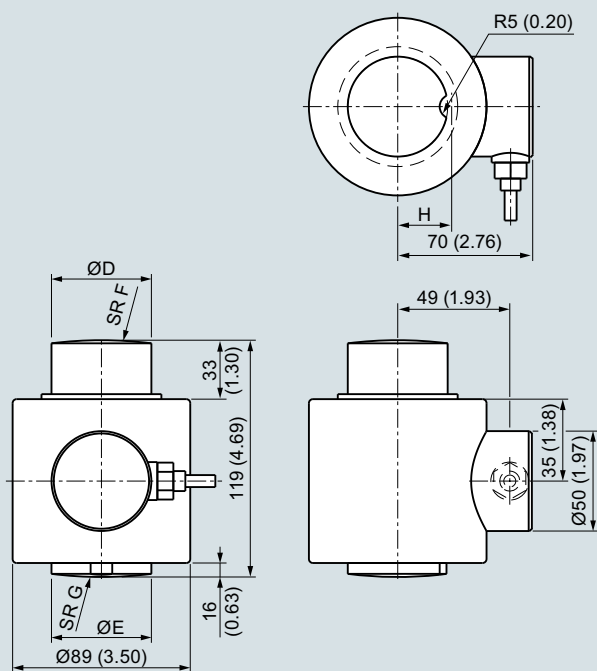
0,5 t (0.49 tn. L.) ¹⁾	3 P
1 t (0.98 tn. L.) ¹⁾	4 A
2 t (1.97 tn. L.) ¹⁾	4 G
5 t (4.92 tn. L.) ¹⁾	4 P
10 t (9.84 tn. L.)	5 A
20 t (19.68 tn. L.)	5 G
30 t (29.63 tn. L.)	5 K
50 t (49.21 tn. L.)	5 P

Explosion protection

Without	0
Explosion protection for zones 0, 1, 2, 20, 21, 22	1

¹⁾ SIWAREX WL270 CP-S SA 0.5 t, 1 t, 2 t and 5 t are not approved for legal-for-trade operation.

Dimensional drawings



Rated load [t]	ØD	ØE	F	G	H
0,5, 1, 2, 5, 10, 20, 30	40 (1.57)	40 (1.57)	38 (1.50)	150 (5.91)	22 (8.67)
50	50 (1.97)	50 (1.97)	200 (7.87)	200 (7.87)	27 (1.06)

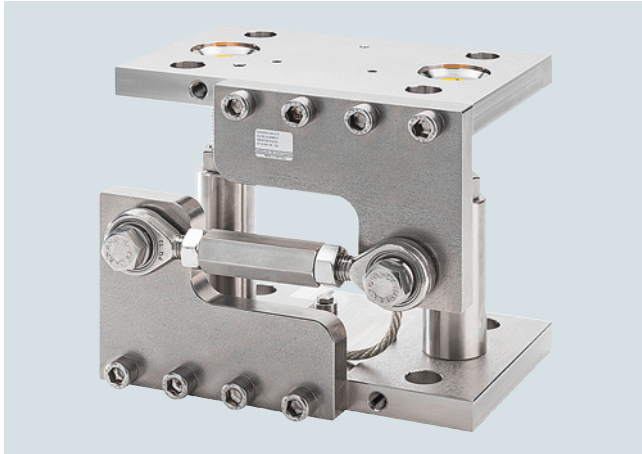
SIWAREX WL270 CP-S SA load cell, dimensions in mm (inch)

Load Cells

Compression load cells
SIWAREX WL270 CP-S SA

Mounting unit and guide element

Overview



The self-aligning mounting unit for SIWAREX WL270 CP-S SA load cells is particularly suitable for implementation in container, platform, vehicle and roller table scales. The guide elements prevent containers, for example, from moving sideways due to an external lateral force. The guide elements can be mounted on one or both sides of the mounting unit.

Design

The mounting unit comprises a base plate and a top plate, two pressure pieces and two countersunk screws. A highly flexible grounding cable between the top and base plate conducts any fault currents past the load cell. On both sides of the base and top plate, there are threaded holes for the later flange-fitting of guide elements.

The top plate is aligned and fixed above the base plate with the two countersunk screws. This results in a stable unit. The height of the top plate is adjusted so that it is three millimeters above the installation height with load cell.

In this state the mounting unit serves as an installation aid and can be used as a dummy for light installation jobs.

The load cell can be inserted into the mounting unit together with the two thrust pads. Load cell and thrust pad are secured with clamping washers.

The load cell can be inserted in the scale before installing the mounting unit. In the same way, it is possible to insert the load cell after installation in the mounting unit.

After the mounting unit has been mounted in the scale, the load bearing element is ideally aligned. The load cells are not yet loaded.

Finally the load bearing implement is lowered by undoing two hex nuts under the top plate. The weight now rests on the load cells.

In this state the load cell and the pressure pieces together form a self-centering unit. The mounting unit permits sideways displacement of the top plate, and hence of the load bearing implement, by up to three millimeters in all directions. The countersunk screws prevent the load bearing implement from being lifted off or toppling off.

Using the mounting unit as an installation aid results in optimum alignment of the load cells. This is essential for the load cells to perform at their best in terms of accuracy.

For maintenance or troubleshooting purposes the load cell can be relieved again by screwing up the hex nuts. After loosening the clamping washers, it can then easily be replaced.

Guide elements are used if the lateral movement of a load bearing element is to be prevented. Lateral movements can be initiated by agitator start-up in a container, by braking or accelerating forces in a roller conveyor, or through forces exerted by the wind on outdoor silos.

A guide element consists of two flanges and one clamping screw. The clamping screw is adjusted to the correct length. The guide element is attached to the operational mounting unit. A guide element can be mounted on the front or rear of the mounting unit. If necessary, two guide elements can be used in parallel in order to double the transferrable lateral force.

In the case of scales with four load cells, only three mounting units may be equipped with guide elements.

Shims are used to compensate for angular errors and delays in the lugs. If more than three load cells are used, the shims are also used to adjust the height of the lugs.

Technical specifications

Mounting unit for load cells of the SIWAREX WL270 CP-S SA series

Rated load	0.5, 1, 2, 5, 10, 20, 30 t (0.49, 0.98, 1.97, 5.92, 9.84, 19.68, 29.53 tn. L.)	50 t (49.21 tn. L.)
Maximum lateral deflection with load cell	± 3 mm (0.12 inch)	± 3 mm (0.12 inch)
Lifting path of the top plate	3 mm (0.12 inch)	3 mm (0.12 inch)
Restoring force per millimeter of lateral deflection of the top plate in % of the applied load with load cell	0.5%/mm	2%/mm
Permitted supporting load with fixed top plate	70 kN	70 kN
Permitted lifting force on the top plate	70 kN	70 kN
Permitted transverse force on the top plate with fixed top plate	30 kN	30 kN

Stainless steel guide elements

Size	Values with rated load				
	0.5 t ... 1 t	2 t ... 5 t	10 t ... 20 t	30 t	50 t
Permitted transverse force ¹⁾	2.5 kN	5 kN	10 kN	15 kN	25 kN

Selection and ordering data

Article No.

Mounting units

For load cells of the SIWAREX WL270 CP-S SA series

Material: Stainless steel

For load cells with a rated load of²⁾

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

- 0.5, 1, 2, 5, 10, 20, 30 t
(0.49, 0.98, 1.97, 5.92, 9.84, 19.68, 29.53 tn. L.)
- 50 t (49.21 tn. L.)

Guide element (optional)

For mounting units of the SIWAREX WL270 CP-S SA series

Material: Edelstahl

For load cells with a rated load of

- 0.5... 1 t (0.49 ... 0.98 tn. L.);
Permitted transverse force: 2,5 kN
- 2 ... 5 t (1.97 ... 5.92 tn. L.);
Permitted transverse force: 5 kN
- 10 ... 13 t (9.84 ... 12.79 tn. L.);
Permitted transverse force: 10 kN
- 30 t (29.53 tn. L.);
Permitted transverse force: 15 kN
- 50 t (49.21 tn. L.);
Permitted transverse force: 25 kN

Shims (accessories)

For mounting units of the SIWAREX WL270 CP-S SA series

Material: Stainless steel

For load cells with a rated load of²⁾

- 0.5 ... 50 t (1.97 ... 29.53 tn. L.);
Contents: 4 units, each 0.5 mm; 20 units, each 1 mm

¹⁾ The values apply to one guide element.

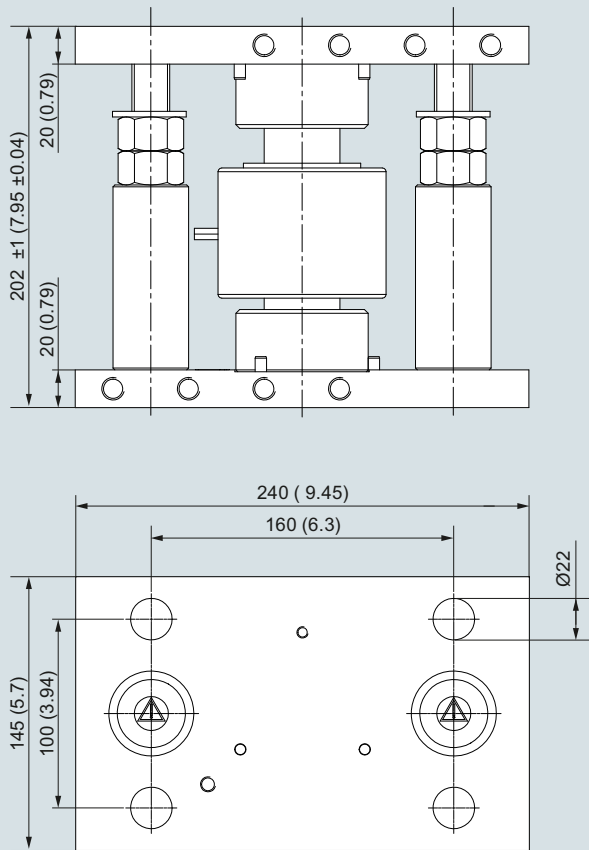
²⁾ The load cell and the guide elements are not included in the scope of delivery

Load Cells

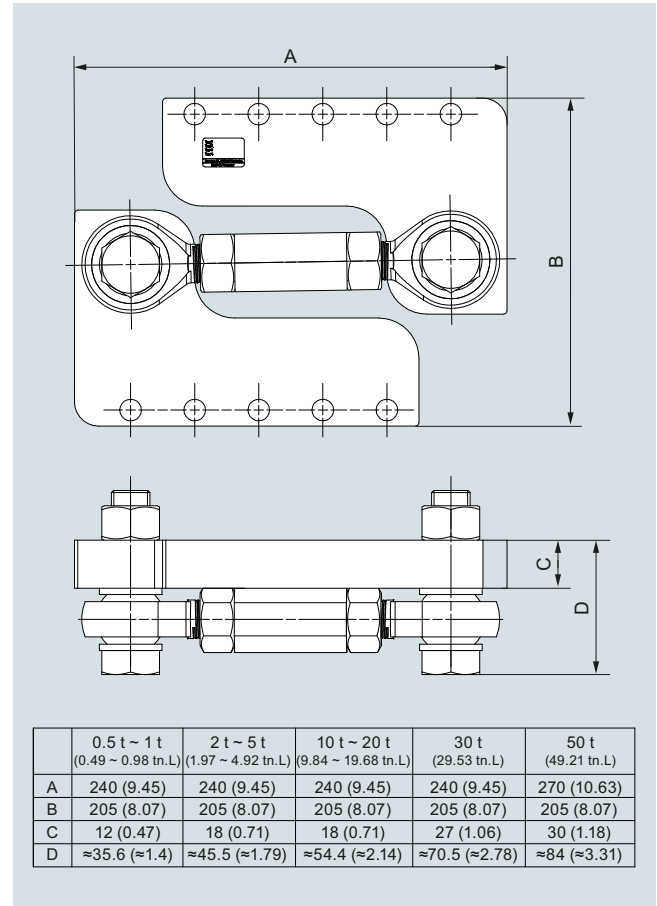
Compression load cells
SIWAREX WL270 CP-S SA

Mounting unit and guide element

Dimensional drawings



Mounting unit for SIWAREX WL270 CP-S SA load cells, dimensions in mm (inches)



Guide element for SIWAREX WL270 CP-S SA load cells, dimensions in mm (inches)

Load Cells

Compression load cells

SIWAREX WL270 CP-S SA

Pressure piece set and adapter plates

Overview



In combination with a pressure piece set and adapter plate the SIWAREX WL270 CP-S SA produces a self-centering self-aligning bearing. This unit is particularly suitable for installation in container, hopper and vehicle scales.

Design

The pressure piece set consists of an upper and lower pressure piece. Together with the load cell the pressure piece set forms a self-centering unit with integrated torsion guard. Two adapter plates serve to hold the pressure pieces and round off the unit into a self-aligning bearing. The adapter plates can be bolted by means of the existing holes directly to the load bearing implement.

The self-centering, self-aligning bearing thus formed allows the load bearing implement to follow horizontal displacements (e.g. due to temperature fluctuations). In this case the construction of the self-aligning bearing creates a restoring force which is dependent on the size of the displacement and the applied load.

If the load bearing implement is displaced by more than 3 mm in the lateral direction, measures for restricting sideways play must be provided in the construction of the load bearing implement (e.g. stops or guide elements). Lifting of the load support must be prevented by suitable measures provided in the construction of the load bearing implement.

The load cell must be ordered separately.

The adapter plate package item consists of one unit.

Technical specifications

Pressure piece set for the individual installation of load cells of the SIWAREX WL270 CP-S SA series

Rated load	0.5, 1, 2, 5, 10, 20, 30 t (0.49, 0.98, 1.97, 5.92, 9.84, 19.68, 29.53 tn. L.)	50 t (49.21 tn. L.)
Maximum lateral deflection with load cell	± 3 mm (0.12 inch)	± 3 mm (0.12 inch)
Restoring force per millimeter of lateral deflection of the top plate in % of the applied load with load cell	0.5 %/mm	2 %/mm

Selection and ordering data

Article No.

Pressure piece set¹⁾

For the individual installation of load cells from the SIWAREX WL270 CP-S SA series

Material: Stainless steel

For load cells with a rated load of:²⁾³⁾

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

• 0.5, 1, 2, 5, 10, 20, 30 t
(0.49, 0.98, 1.97, 5.92, 9.84, 19.68, 29.53 tn. L.)

• 50 t (49.21 tn. L.)

Adapter plate

Adapter for SIWAREX WL270 CP-S SA
The package item consists of one plate.

Material: Stainless steel

For load cells with a rated load of:²⁾³⁾

0.5 ... 50 t (0.49 ... 49.21 tn. L.)

7MH5708-

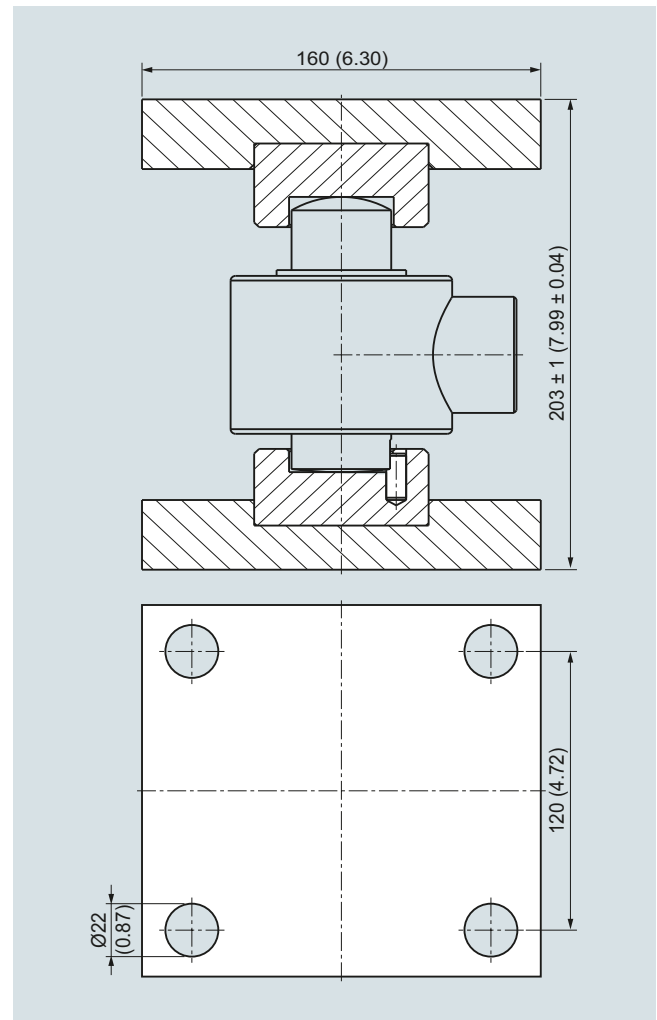
5 D 0 0

7MH5708-

5 B 0 0

P

Dimensional drawings



Pressure piece set and adapter plates for SIWAREX WL270 CP-S SA load cells (mounting condition), dimensions in mm (inch)

¹⁾ The principles of general mechanical engineering and safety must be observed.

²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

³⁾ The load cell is not included in the scope of delivery.

Load Cells

Compression load cells SIWAREX WL270 CP-S SB

Load cell

Overview



The compression load cell is particularly suitable for implementation in container, hopper and vehicle scales.

Design

The measuring element is a solid cylinder made of stainless steel to which 4 strain gauges are applied.

The load which acts centrally in the measuring direction causes the spring bodies and therefore the friction-locked strain gauges to be elastically deformed. This generates a measuring signal voltage that is proportional to the load.

Technical specifications

SIWAREX WL270 CP-S SB

Possible applications	Container weighers
Model	Compression load cell
Rated load/maximum load $E_{\max}$	100 t
Accuracy class according to OIML R60	C3
Max. load cell verification intervals n_{LC}	3 000
Min. scale intervals $V_{\min}$	
• $E_{\max} = 100$ t	$E_{\max}/9\,000$
Minimum application range $R_{\min(LC)}$	33%
Combined error F_{comb}	$\pm 0.02\% C_n$
Repeatability F_v	$\pm 0.02\% C_n$
Creep error F_{Cr}	
• 30 min	$\pm 0.023\% C_n$
Temperature effect	
• Zero signal T_{K0}	$0.023\% C_n/5\text{ K}$
• Characteristic value T_{Kc}	$0.017\% C_n/5\text{ K}$
Min. dead load $E_{\min}$	0 kg
Safe load limit L_u	$150\% E_{\max}$
Ultimate load L_D	$300\% E_{\max}$
Safe side load L_{Iq}	$10\% E_{\max}$
Rated measuring path h_n at $E_{\max}$	0.36 mm
Recommended supply voltage (range)	5 ... 12 V DC

SIWAREX WL270 CP-S SB

Rated characteristic value C_n	$2.0 \pm 0.02\text{ mV/V}$
Tolerance D_0 of zero signal	$\leq \pm 1.0\% C_n$
Input resistance R_e	$700\ \Omega \pm 7\ \Omega$
Output resistance R_a	$700\ \Omega \pm 7\ \Omega$
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Rated temperature range B_{tn}	-10 ... +40 °C (14 ... 104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... 149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... 149 °F)
Sensor material	Stainless steel
Degree of protection according to EN 60529; IEC 60529	IP68

Cable connection

Function	Color
• EXC + (supply +)	green
• EXC - (supply -)	black
• SIG + (measured signal +)	white
• SIG - (measured signal -)	red
• Sense + (sensor line +)	yellow
• Sense - (sensor line -)	blue
• Screening	transparent

Selection and ordering data

Article No.

Load cells type WL270 CP-S SB

7MH5110-

Legal-for-trade according to OIML R60 to 3000d,
20 m connecting cable

D 0

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Rated load

100 t (98.42 tn. L.)

6 A

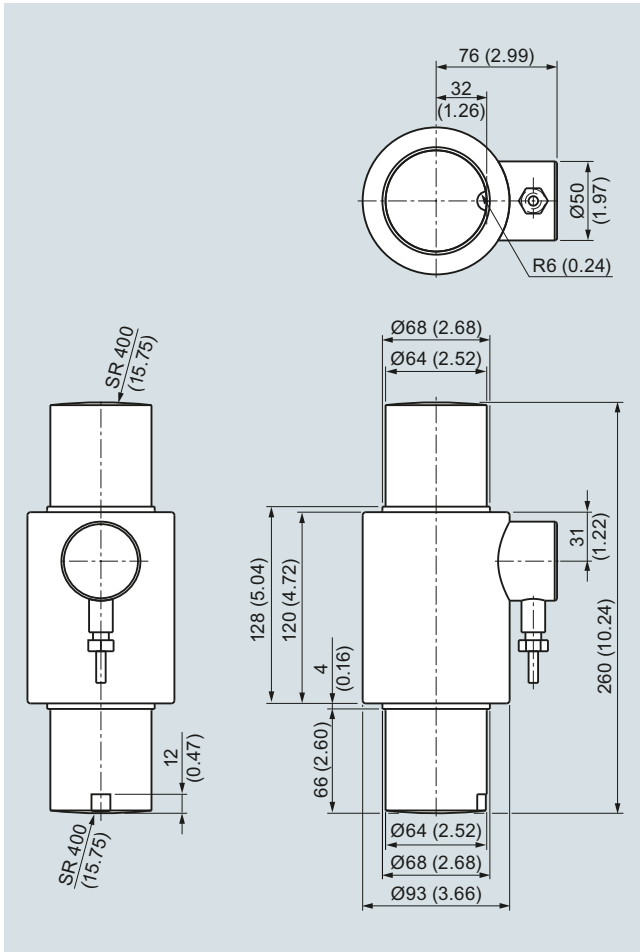
Explosion protection

- Without
- Explosion protection for zones 0, 1, 2, 20, 21, 22

0

1

Dimensional drawings



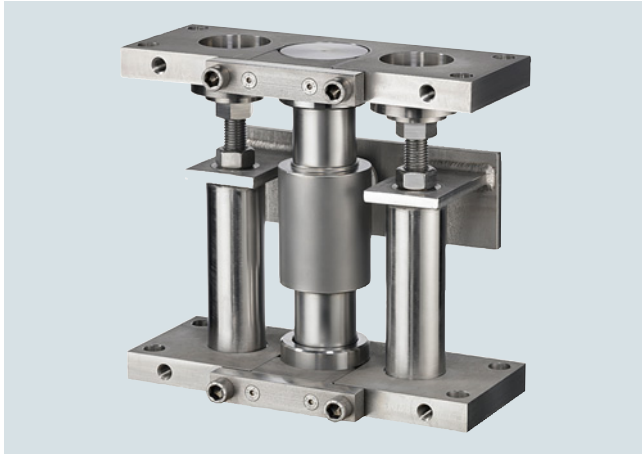
SIWAREX WL 270 CP-S SB load cell, dimensions in mm (inch)

Load Cells

Compression load cells
SIWAREX WL270 CP-S SB

Mounting unit

Overview



The self-centering compact mounting unit for SIWAREX WL270 CP-S SA load cells is particularly suitable for implementation in container scales.

Design

The compact mounting unit comprises a base plate and a top plate, two pressure pieces, two clamping pieces and two centering sleeves. There are threaded holes in the base plate and top plate for the subsequent flange-fitting of guide elements.

The top plate is aligned and fixed above the base plate with the two centering sleeves. This results in a stable unit. The height of the top plate is adjusted so that it is five millimeters above the installation height with load cell.

Two pressure pieces are used to mount the load cell. They are fastened flush with the head plate and base plate using the clamping pieces.

In this state the compact mounting unit serves as an installation aid and can be used as a dummy for light installation jobs.

Prior to installation, the load cell is inserted into the compact mounting unit. Then the complete unit is installed in the scales. As the result, the load bearing implement and the mounting units are aligned. The load cells are not yet loaded.

Finally the load bearing implement is lowered by undoing two hex nuts under the centering sleeves. The weight now rests on the load cells.

In this state the load cell and the pressure pieces together form a self-centering unit. The compact mounting unit permits sideways displacement of the top plate, and hence of the load bearing implement, by up to eight millimeters in all directions. Two countersunk screws prevent the load bearing implement from being lifted off or toppling off.

Using the compact mounting unit as an installation aid results in optimum alignment of the load cells. This is essential for the load cells to perform at their best in terms of accuracy.

For maintenance or troubleshooting purposes the load cell can be relieved again by screwing up the hex nuts. Replacement of the load cell is then easy after the clamping pieces are released.

Technical specifications

Mounting unit for load cells of the SIWAREX WL270 CP-S SB series

Rated load	100 t (98.42 tn. L)
Maximum lateral deflection with load cell	± 8 mm (0.12 inch)
Lifting path of the top plate	3 ... 5 mm (0.12 ... 0.20 inch)
Restoring force per millimeter of lateral deflection of the top plate in % of the applied load with load cell	0.5 %/mm
Permitted supporting load with fixed top plate	140 kN
Permitted lifting force on the top plate	140 kN
Permitted transverse force on the top plate with fixed top plate	50 kN

Selection and ordering data

Article No.

Compact mounting units

for load cells of the SIWAREX WL270 CP-S SB series

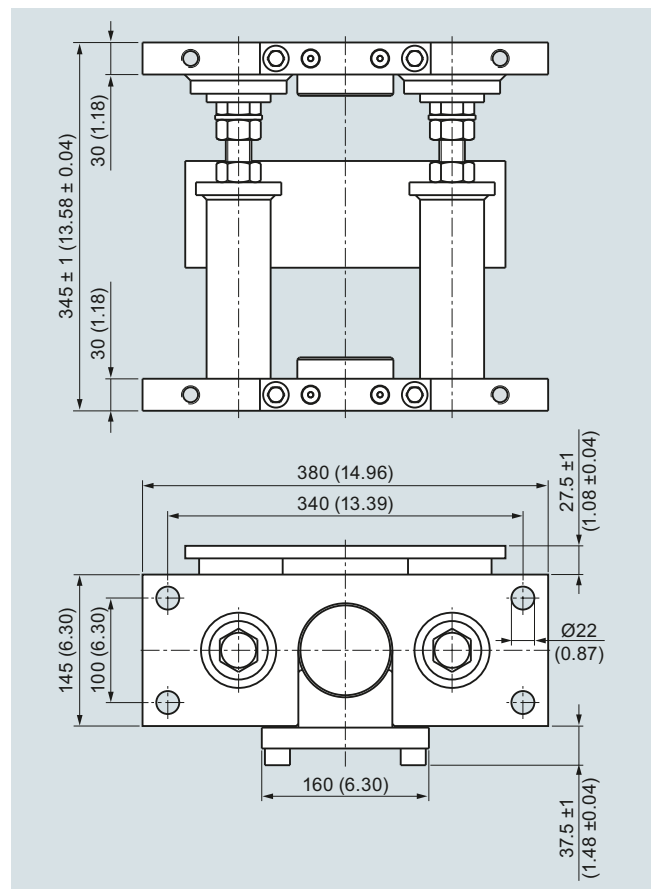
Material: Stainless steel

for load cells with a rated load of:¹⁾²⁾

100 t (98.42 tn. L.)

7MH5710-6AA00

Dimensional drawings



Compact mounting unit for SIWAREX WL270 CP-S SB load cells (mounting condition), dimensions in mm (inch)

¹⁾ The load cell is not included in the scope of delivery

²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

Overview



In combination with a pressure piece set, the SIWAREX WL270 CP-S SA load cell produces a self-centering self-aligning bearing. This unit is particularly suitable for installation in container, hopper and vehicle scales.

Design

The pressure piece set consists of an upper and lower pressure piece. Together with the load cell the pressure piece set forms a self-centering unit with integrated torsion guard.

The self-centering, self-aligning bearing thus formed allows the load bearing implement to follow horizontal displacements (e.g. due to temperature fluctuations). In this case the construction of the self-aligning bearing creates a restoring force which is dependent on the size of the displacement and the applied load.

If the load support is laterally displaced by more than 8 mm (0.32"), the design of the load support must include measures for restricting sideways play (e.g. stops or guide elements). Lifting of the load support must be prevented by suitable measures provided in the construction of the load bearing implement.

The load cell must be ordered separately.

Technical specifications

Pressure piece set for the individual installation of load cells of the SIWAREX WL270 CP-S SB series

Rated load	100 t (98.42 tn. L.)
Maximum lateral deflection with load cell	± 8 mm (0.12 inch)
Restoring force per millimeter of lateral deflection of the top plate in % of the applied load with load cell	0.5 %/mm

Selection and ordering data

Article No.

Pressure piece set¹⁾

For the individual installation of load cells from the SIWAREX WL270 CP-S SB series

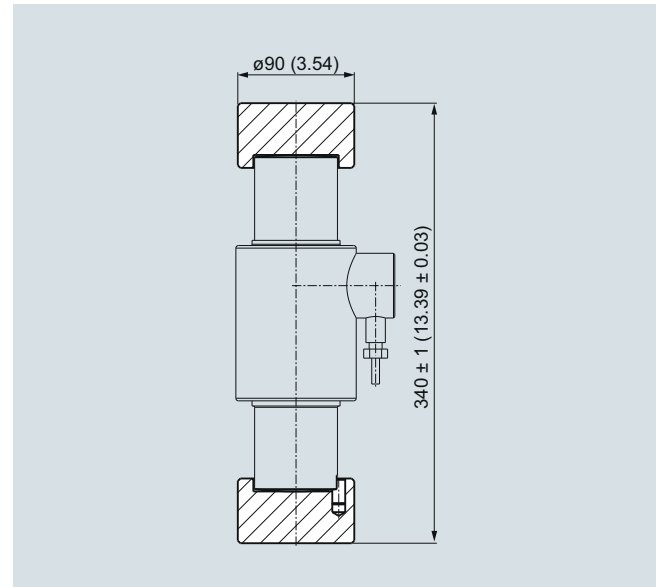
Material: Stainless steel

For load cells with a rated load of²⁾³⁾

100 t (98.42 tn. L.)

7MH5710-6AD00

Dimensional drawings



Pressure piece for SIWAREX WL270 CP-S SB load cells, dimensions in mm (inch)

¹⁾ The principles of general mechanical engineering and safety must be observed.

²⁾ It is highly recommendable to use a grounding cable (7MH3701-1AA1) in order to protect the load cell.

³⁾ The load cell is not included in the scope of delivery.

Load Cells

Compression load cells
SIWAREX WL270 K-S CA

Load cell

Overview



The compression force load cell is particularly suitable for use in container and bin weighing equipment.

Design

The measuring element is a cylinder made of stainless steel to which 4 strain gauges are applied.

The load which acts centrally in the measuring direction elastically deforms the spring body and thus the force-fitted strain gauges. This generates a measuring signal voltage that is proportional to the load. The load cell's rated measuring path depends on the rated load and is between 0.23 and 3.11 mm (0.01 and 0.12 in).

An enclosure made from painted steel protects the strain gauge from environmental influences. The load cell is fitted with a heat-resistant cable as standard.

Heavy load versions

Heavy load versions with a rated load of 350 and 500 t (344.47 and 492.10 tn. L.) are available for extreme requirements.

Option: Two measuring circuits for your plant safety

In especially sensitive applications such as cranes, enhanced safety is required. This is also true of measurement plants. Using double bridges in load cells achieves the equivalent of a redundant configuration. Both measuring bridges supply consistent measured values. If one bridge fails, the other takes over.

This option can be ordered for all load classes from 13 t (12.79 tn. L.).

Technical specifications

SIWAREX WL270 K-S CA	
Possible applications	• Container weighers • Bin weighing equipment
Type of construction	Compression load cell
Loads	
Rated load $E_{\max}$	• 2.8 t (2.76 tn. L.) • 6 t (5.91 tn. L.) • 13 t (12.79 tn. L.) • 28 t (27.56 tn. L.) • 60 t (59.05 tn. L.) • 130 t (127.95 tn. L.) • 280 t (275.58 tn. L.) • 350 t (344.47 tn. L.) • 500 t (492.10 tn. L.)
Minimum initial loading $E_{\min}$	0% $E_{\max}$
Maximum working load L_u	120% $E_{\max}$
Breaking load L_d	300% $E_{\max}$
Maximum lateral load L_{lq}	10% $E_{\max}$

SIWAREX WL270 K-S CA	
Measurement characteristic values	
Rated measuring path h_n at $E_{\max}$	
• 2.8 t (2.76 tn. L.)	0.23 mm (0.009 in)
• 6 t (5.91 tn. L.)	0.38 mm (0.015 in)
• 13 t (12.79 tn. L.)	0.54 mm (0.02 in)
• 28 t (27.56 tn. L.)	0.82 mm (0.03 in)
• 60 t (59.05 tn. L.)	1.19 mm (0.05 in)
• 130 t (127.95 tn. L.)	1.81 mm (0.07 in)
• 280 t (275.58 tn. L.)	2.66 mm (0.10 in)
• 350 t (344.47 tn. L.)	2.73 mm (0.11 in)
• 500 t (492.10 tn. L.)	3.11 mm (0.12 in)
Rated characteristic value C_n	1.5 mV/V
Tolerance D_0 of zero signal	$\leq \pm 1.5\% C_n$
Tolerance D_c of characteristic value	$\pm 0.5\%$
Combined error F_{comb}	$\leq \pm 0.1\%$
Variability F_v	$\leq \pm 0.1\%$
Creepage error F_{cr}	
30 min	$\leq \pm 0.06\%$
Temperature coefficient	
• Zero signal T_{K0}	$\leq \pm 0.25\% C_n/5K$
• Characteristic value T_{Kc}	$\leq \pm 0.25\% C_n/5K$

SIWAREX WL270 K-S CA		SIWAREX WL270 K-S CA	
Electrical characteristic values		Connection and environmental conditions	
Recommended reference voltage U_{ref}	6 ... 12 V DC	Sensor material (DIN)	Steel, painted
Supply voltage U_{Sr} (reference value)	6 V	<u>Function</u>	<u>Color</u>
Input resistance R_e		• EXC + (supply +)	red
• 2.8, 6, 13, 28, 60, 130, 280 t (2.76, 5.91, 12.79, 27.56, 59.05, 127.95, 275.58 tn. L.)	275 $\Omega \pm 50 \Omega$	• EXC - (supply -)	white
• 350, 500 t (344.47, 492.10 tn. L.)	840 $\Omega \pm 30 \Omega$	• SIG + (measured signal +)	black
Output resistance R_a		• SIG - (measured signal -)	blue
• 2.8, 6, 13, 28, 60, 130, 280 t (2.76, 5.91, 12.79, 27.56, 59.05, 127.95, 275.58 tn. L.)	245 $\Omega \pm 0.2 \Omega$	• Shield	transparent
• 350, 500 t (344.47, 492.10 tn. L.)	703 $\Omega \pm 5 \Omega$	Rated temperature range B_{tn}	-10 ... +40 °C (14 ... 104 °F)
Insulation resistance R_{is}	$\geq 5000 M\Omega$	Operating temperature range B_{tu}	-20 ... +70 °C (-4 ... +158 °F)
		Storage temperature range B_{ts}	-30 ... +70 °C (-22 ... +158 °F)
		Degree of protection according to EN 60529; IEC 60529	IP66
		Accuracy class	0.1%

SIWAREX WL270 K-S CA, high temperature versions	-30 ... +150 °C (-22 ... +238 °F)	150 ... 180 °C (238 ... 356 °F)	180 ... 250 °C (356 ... 482 °F)
Rated characteristic value C_n	1,5 $\pm$ 0,02 mV/V	1,5 $\pm$ 0,1 mV/V	1,5 $\pm$ 0,1 mV/V
Tolerance D_o of zero signal	$\leq \pm 1,0 \% C_n$	$\leq \pm 1,5 \% C_n$	$\leq \pm 3 \% C_n$
Measurement characteristic values			
Combined error F_{comb}	$\leq \pm 0,3 \%$	$\leq \pm 0,5 \%$	$\leq \pm 5 \%$
Repeatability F_v	$\leq \pm 0,3 \%$	$\leq \pm 0,5 \%$	$\leq \pm 5 \%$
Creepage error F_{cr}			
30 min	$\leq \pm 0,3 \%$	$\leq \pm 0,4 \%$	$\leq \pm 4 \%$
Temperature coefficient			
• Zero signal T_{K0}	$\leq \pm 0,25 \% C_n/5 K$	$\leq \pm 0,25 \% C_n/5 K$	$\leq \pm 0,5 \% C_n/5 K$
• Characteristic value T_{KC}	$\leq \pm 0,25 \% C_n/5 K$	$\leq \pm 0,5 \% C_n/5 K$	$\leq \pm 0,5 \% C_n/5 K$
Electrical characteristic values			
Input resistance R_e			
• 2.8, 6, 13, 28, 60, 130, 280 t (2.76, 5.91, 12.79, 27.56, 59.05, 127.95, 275.58 tn. L.)	275 $\Omega \pm 7 \Omega$	275 $\Omega \pm 15 \Omega$	275 $\Omega \pm 15 \Omega$
• 350, 500 t (344.47, 492.10 tn. L.)	840 $\Omega \pm 30 \Omega$	840 $\Omega \pm 30 \Omega$	840 $\Omega \pm 30 \Omega$
Output resistance R_a			
• 2.8, 6, 13, 28, 60, 130, 280 t (2.76, 5.91, 12.79, 27.56, 59.05, 127.95, 275.58 tn. L.)	245 $\Omega \pm 0,5 \Omega$	245 $\Omega \pm 1 \Omega$	245 $\Omega \pm 1 \Omega$
• 350, 500 t (344.47, 492.10 tn. L.)	703 $\Omega \pm 5 \Omega$	703 $\Omega \pm 5 \Omega$	703 $\Omega \pm 5 \Omega$
Insulation resistance R_{is}	$\geq 5000 M\Omega$		
Connection and environmental conditions			
Rated temperature range B_{tn}	-30 ... +180 °C (-22 ... +356 °F)		
Operating temperature range B_{tu}	-30 ... +250 °C (-22 ... +482 °F)		
Storage temperature range B_{ts}	-30 ... +250 °C (-22 ... +482 °F)		

Load Cells

Compression load cells
SIWAREX WL270 K-S CA

Load cell

Selection and ordering data

SIWAREX WL270 K-S CA load cell

Accuracy class 0.1%
Heat-resistant connecting cable¹⁾

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Rated load

- 2,8 t (2.76 tn. L.)
- 6 t (5.91 tn. L.)
- 13 t (12.79 tn. L.)
- 28 t (27.56 tn. L.)
- 60 t (59.05 tn. L.)
- 130 t (127.95 tn. L.)
- 280 t (275.58 tn. L.)
- 350 t (244.47 tn. L.)
- 500 t (492.10 tn. L.)

Cable length

- 6 m (19.68 ft)
- 6 m (19.68 ft)
- 15 m (49.21 ft)
- 15 m (49.21 ft)
- 15 m (49.21 ft)
- 20 m (65.62 ft)
- 20 m (65.62 ft)
- 25 m (65.62 ft)
- 25 m (65.62 ft)

Article No.

7MH5114-

L

J

D

Q

J

D

J

Q

D

J

L

L

P

Article No.

7MH5114-

L

J

D

Q

J

D

J

Q

D

J

L

L

P

SIWAREX WL270 K-S CA load cell

Accuracy class 0.1%
Heat-resistant connecting cable¹⁾

Explosion protection

None

Explosion protection for zones 2, 22

Options

Double bridge²⁾

Load cell, redundant design, without explosion protection

High temperature²⁾

Temperature range -30 °C ... +250 °C (-22 °F ... +482 °F), accuracy varies over temperature range, cables and components designed for temperature range, without explosion protection.

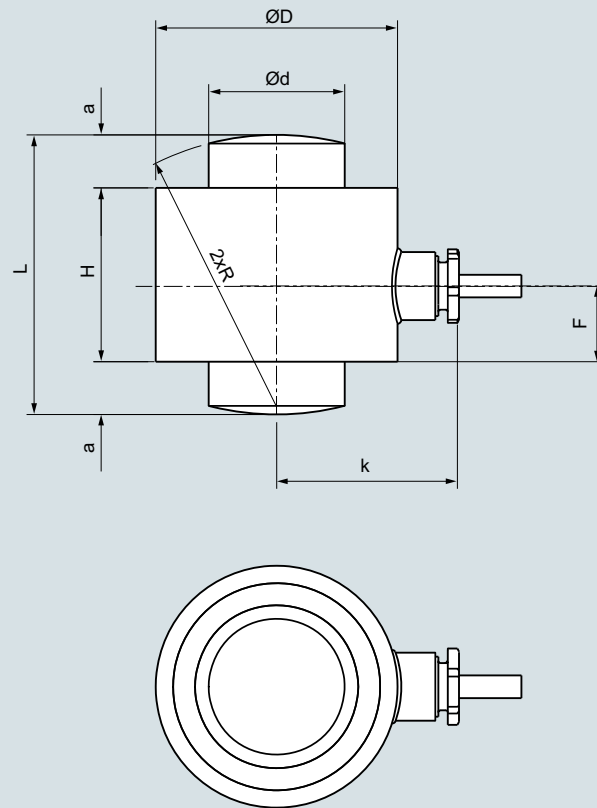
Double bridge and high temperature²⁾

Redundant design load cell, temperature range -30 °C ... +250 °C (-22 °F ... +482 °F), accuracy varies over temperature range, cables and components designed for temperature range, without explosion protection.

¹⁾ Heat-resistant cable: -60 ... +180 °C (-76 ... +356 °F). The cable for high temperatures versions is heat resistant to 250 °C (238 °F).

²⁾ Can be ordered from 13 t (12.79 tn. L.).

Dimensional drawings



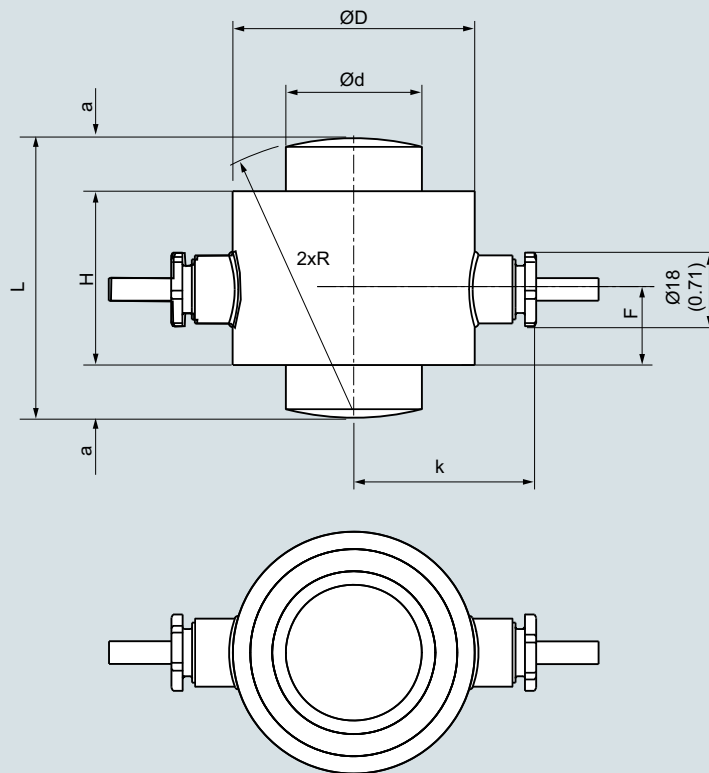
Rated load [t (tn. L.)]	a	ød	øD	F	H	k	L	R
2,8, 6 (2.76, 5.91)	8 (0.31)	16.7 (0.65)	45 (1.77)	20 (0.59)	40 (1.57)	40,5 (1.59)	56 (2.2)	50 (1.96)
13 (12.79)	12 (0.47)	24,5 (0.96)	55 (2.16)	20 (0.59)	44 (1.73)	45,5 (1.79)	68 (2.67)	66 (2.6)
28 (27.56)	14 (0.55)	36 (1.41)	64 (2.51)	20 (0.59)	46 (1.81)	50 (1.89)	74 (2.91)	72 (2.83)
60 (59.05)	20 (0.78)	52,7 (2.07)	90 (3.54)	20 (0.59)	50 (1.96)	63 (2.48)	90 (3.54)	100 (3.93)
130 (127.95)	26 (1.02)	77,5 (3.05)	121 (4.76)	20 (0.59)	64 (2.51)	78,5 (3.09)	116 (4.56)	125 (4.92)
280 (275.58)	45 (1.77)	114 (4.48)	165 (6.5)	20 (0.59)	90 (3.14)	100,5 (3.96)	170 (6.7)	183 (7.2)
350 (344.47)	40 (1.58)	132 (5.20)	192 (7.95)	50.5 (1.97)	139 (6.30)	124 (5.00)	240 (9.45)	325 (12.80)
500 (492.10)	47 (1.85)	155 (6.10)	236 (9.29)	99.5 (1.97)	164 (7.13)	146 (5.67)	275 (10.83)	450 (17.72)

SIWAREX WL270 K-S CA load cell, dimensions in mm (inch)

Load Cells

Compression load cells
SIWAREX WL270 K-S CA

Load cell



Rated load [t (tn.L.)]	a	Ød	ØD	F	H	k	L	R
13 (12.79)	12 (0.47)	24,5 (0.96)	55 (2.16)	20 (0.79)	44 (1.73)	45,5 (1.79)	68 (2.67)	66 (2.6)
28 (27.56)	14 (0.55)	36 (1.41)	64 (2.51)	20 (0.79)	46 (1.81)	50 (1.88)	74 (2.91)	72 (2.83)
60 (59.05)	20 (0.78)	52,7 (2.07)	90 (3.54)	20 (0.79)	50 (1.96)	63 (2.48)	90 (3.54)	100 (3.93)
130 (127.95)	26 (1.02)	77,5 (3.05)	121 (4.76)	20 (0.79)	64 (2.51)	78,5 (3.09)	116 (4.56)	125 (4.92)
280 (275.58)	45 (1.77)	114 (4.48)	165 (6.5)	20 (0.79)	90 (3.14)	100,5 (3.96)	170 (6.7)	183 (7.2)
350 (344.47)	40 (1.58)	132 (5.20)	192 (7.95)	50,5 (1.97)	139 (6.30)	124 (5.00)	240 (9.45)	325 (12.80)
500 (492.10)	47 (1.85)	155 (6.10)	236 (9.29)	99,5 (1.97)	164 (7.13)	146 (5.67)	275 (10.83)	450 (17.72)

SIWAREX WL270 K-S CA load cell, with double bridge, dimensions in mm (inch)

Overview



The self-centering self-aligning bearing for SIWAREX WL270 K-S CA load cells is particularly suitable for use in container and hopper scales.

Design

The self-aligning bearing comprises two pressure plates.

Together with the load cell, the pressure plates form a self-centering unit. This allows the top plate, and thus the load bearing implement, to accommodate horizontal displacements (e.g. due to temperature fluctuations). The design of the self-aligning bearing creates a restoring force which is dependent on the size of the displacement and the applied load.

If the load bearing implement is displaced by more than value s (see dimensional drawing table) in the horizontal direction, measures for restricting sideways play (e.g. stops) must be provided in the construction of the load bearing implement. Lifting of the load bearing implement must be prevented by suitable measures provided in the construction of the load bearing implement.

The load cell is not included in the scope of delivery of the self-aligning bearing.

Heavy load versions

Suitable mounting units are also available for heavy load cells with 350 and 500 t (344.47 and 492.10 tn. L.) rated loads. These are also designed as self-centering, self-aligning bearings.

Technical specifications

Pressure plate for load cell type SIWAREX WL270 K-S CA

Rated load t (tn. L.)	2.8 (2.76)	6 (5.91)	13 (12.80)	28 (27.56)	60 (59.10)	130 (127.95)	280 (275.88)
Permissible lateral deflection in mm (inch):	2 (0.08)	2 (0.08)	2.5 (0.10)	2.5 (0.10)	3 (0.12)	4 (0.16)	6 (0.24)
Rated measuring path h_n at E_{max} mm (inch)	0.23 (0.009)	0.35 (0.014)	0.53 (0.021)	0.80 (0.032)	1.22 (0.048)	1.85 (0.073)	2.67 (0.11)

Selection and ordering data

Article No.

Pressure plate¹⁾²⁾

For SIWAREX WL270 K-S CA load cells
2 pressure plates are required to set up a self-aligning bearing, one each at the top and bottom respectively.

Material: Steel, painted

For load cells with a rated load of

- 2,8, 6 t (2.76, 5.91 tn. L.)
- 13 t (12.79 tn. L.)
- 28 t (27.56 tn. L.)
- 60 t (59.05 tn. L.)
- 130 t (127.95 tn. L.)
- 280 t (275.58 tn. L.)
- 350 t (344.47 tn. L.)
- 500 t (492.10 tn. L.)

7MH3115-3AA1
7MH3115-1BA1
7MH3115-2BA1
7MH3115-3BA1
7MH3115-1CA1
7MH3115-2CA1
7MH5714-6LD10
7MH5714-6PD10

¹⁾ The load cell is not included in the scope of delivery.

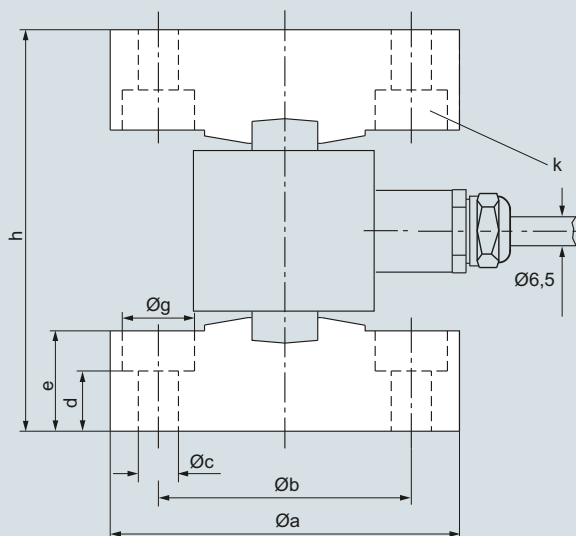
²⁾ Use of a grounding cable (7MH3701-1AA1) to protect the load cell is highly recommended.

Load Cells

Compression load cells
SIWAREX WL270 K-S CA

Self-aligning bearing

Dimensional drawings



Rated load [t]	Øa	Øb	Øc	d	e
2,8, 6	87 (3.43)	63 (2.48)	11 (0.43)	14 (0.55)	25 (0.98)
13	97 (3.82)	73 (2.87)	11 (0.43)	21 (0.83)	32 (1.26)
28	108 (4.25)	84 (3.31)	11 (0.43)	-	28 (1.10)
60	137 (5.39)	112 (4.41)	11 (0.43)	-	42 (1.65)
130	176 (6.93)	148 (5.83)	11 (0.43)	-	52 (2.05)
280	226 (8.90)	190 (7.48)	14 (0.55)	-	65 (2.56)
350	240 (9.45)	200 (7.87)	26 (1.02)	-	30 (1.18)
500	280 (11.02)	240 (9.45)	26 (1.02)	-	45 (1.77)

Rated load [t]	Øg	h	k	s (allowed sideways displacement)
2,8, 6	18 (0.71)	100 ± 0,5/-1	2 x 180°	2 (0.08)
13	18 (0.71)	120 ± 0,5/-1	2 x 180°	2.5 (0.98)
28	-	136 ± 0,5/-1	2 x 180°	2.5 (0.98)
60	-	174 ± 0,5/-1	4 x 90°	3 (0.12)
130	-	220 ± 0,5/-1	4 x 90°	4 (0.16)
280	-	300 ± 0,6/-1,2	2 x 180°	6 (0.24)
350	-	390 (15.35)	2 x 180°	6 (0.24)
500	-	490 (19.29)	2 x 180°	6 (0.24)

Self-aligning bearing for SIWAREX WL270 K-S CA load cells,
dimensions in mm (inch)

Overview

Type	Ring torsion		
Possible applications	Hopper and belt scales, platform weighing machines and roller table scales		
Example picture			
Series	WL280 RN-S SA		
Rated load $E_{\max}$	60 ... 280 kg (132.28 ... 617.29 lb)	0,5 ... 10 t (0.49 ... 9.84 tn. L.)	13 ... 60 t (12.79 ... 59.05 tn. L.)
Accuracy class	C3		
Max. load cell verification interval (n_{IC})	3 000		
Min. load cell verification interval ($V_{\min}$)	$E_{\max}/16\ 000$	$E_{\max}/17\ 500$	$E_{\max}/17\ 500$
Supply voltage (U_{sr})	5 ... 30 V		
Rated characteristic value	1 mV/V	2 mV/V	2 mV/V
Degree of protection	IP66/IP68		
Material	Stainless steel		
Ex protection according to ATEX (optional)	II 1 G Ex ia IIC T4 Ga II 1 D Ex ia IIIC T73 °C Da II 3 G Ex ic IIC T4 Gc II 3 G Ex nA IIC T4 Gc II 3 D Ex tc IIIC T63 °C Dc		

Load Cells

Ring torsion load cells

SIWAREX WL280 RN-S SA

Load cell

Overview



The ring torsion load cell is particularly suitable for use in container, conveyor, platform and roller table scales.

Design

The measurement element is a ring torsion spring made of stainless steel. Two strain-gage spirals (DMS) are applied to the upper and lower faces of the ring respectively. The spring element is deformed by the load acting centrally in the measurement direction. This compresses the strain-gage of the upper face of the ring and extends the strain-gage on the lower face of the ring. This causes a change in the electrical resistance of the force-locked strain-gage, which is detected by means of a bridge circuit.

All load cells with a rated load of up to 13 t (12.79 tn. L.) are equipped with an integral overload protection.

Technical specifications

SIWAREX WL280 RN-S SA load cells

Possible applications	Container, conveyor, platform and roller table scales		
Model	Ring torsion load cell		
Rated load/maximum load $E_{\max}$	• 60 kg (132.28 lb) • 130 kg (286.60 lb) • 280 kg (617.29 lb)	• 0.5 t (0.49 tn. L.) • 1 t (0.98 tn. L.) • 2 t (1.97 tn. L.) • 3.5 t (3.45 tn. L.) • 5 t (4.92 tn. L.) • 10 t (9.84 tn. L.)	• 13 t (12.80 tn. L.) • 28 t (27.56 tn. L.) • 60 t (59.05 tn. L.)
Accuracy class according to OIML R60	C3		
Max. load cell verification intervals n_{LC}	3 000		
Min. load cell verification intervals $V_{\min}$	$E_{\max}/16\,000$	$E_{\max}/17\,500$	
Minimum application range $R_{\min(LC)}$	19 %	17 %	
Combined error F_{comb}	$\leq \pm 0.023 \text{ \% } C_n$		
Repeatability F_v	$\leq \pm 0.01 \text{ \% } C_n$		
Return of zero signal	$\leq \pm 0.0167 \text{ \% } C_n^{1)}$		
Creep error F_{cr}			
• 30 min • 20 ... 30 min	$\leq \pm 0.0245 \text{ \% } C_n^{1)}$ $\leq \pm 0.0053 \text{ \% } C_n^{1)}$		
Temperature coefficient			
• Zero signal T_{K0} • Characteristic value T_{KC}	$\leq \pm 0.004 \text{ \% } C_n/5K$ $\leq \pm 0.004 \text{ \% } C_n/5K$		
Min. dead load $E_{\min}$	$\geq \pm 0 \text{ \% } E_{\max}$		
Safe load limit L_u	200 % $E_{\max}$	150 % $E_{\max}$	
Ultimate load L_d	500 % $E_{\max}$	300 % $E_{\max}$	300 % $E_{\max}$
Safe side load L_{Iq}	75 % $E_{\max}$	100 % $E_{\max}$	75 % $E_{\max}$
Rated measuring path h_n at $E_{\max}$	0.07 mm	0.1 ± 0.02 mm	0.11 ... 0.2 mm
Overload protection	Integrated	Integrated	Integrated at 13 t
Supply voltage U_{Sr} (reference value)	15 V	10 V	15 V
Supply voltage (range)	5 ... 30 V+		
Rated characteristic value C_n	1 mV/V	2 mV/V	2 mV/V
Tolerance D_c of characteristic value	Up to 500 kg: 0.01 mV/V from 500 kg: 0.1 mV/V		

Load Cells

Ring torsion load cells

SIWAREX WL280 RN-S SA

Load cell

SIWAREX WL280 RN-S SA load cells

Tolerance D_0 of zero signal	$\leq \pm 1.0 \% C_n$		
Input resistance R_e	60 kg: $1260 \Omega \pm 100 \Omega$ 130 kg: $1260 \Omega \pm 100 \Omega$ 280 kg: $1260 \Omega \pm 250 \Omega$	$1100 \Omega \pm 100 \Omega$	13 t: $1200 \Omega \pm 100 \Omega$ 28 t: $1075 \Omega \pm 100 \Omega$ 60 t: $1350 \Omega \pm 200 \Omega$
Output resistance R_a	$1020 \Omega \pm 0.5 \Omega$	$1025 \Omega \pm 25 \Omega$	13 t: $1000 \Omega \pm 0.5 \Omega$ 28 t: $930 \Omega \pm 0.5 \Omega$ 60 t: $1175 \Omega \pm 0.5 \Omega$
Insulation resistance R_{is}	$\geq 5\,000\text{ M}\Omega$	$\geq 5\,000\text{ M}\Omega$	$\geq 5\,000\text{ M}\Omega$
Rated temperature range B_{in}	$-10 \dots +40\text{ }^\circ\text{C}$ ($14 \dots 104\text{ }^\circ\text{F}$)		
Operating temperature range B_{lu}	$-35 \dots +70\text{ }^\circ\text{C}$ ($-31 \dots 158\text{ }^\circ\text{F}$)		
Storage temperature range B_{is}	$-50 \dots +90\text{ }^\circ\text{C}$ ($-58 \dots 194\text{ }^\circ\text{F}$)		
Sensor material (DIN)	Stainless steel, mat. no. 14542		
Degree of protection according to EN 60529; IEC 60529	IP66/68		
Recommended tightening torque of the fixing screws	8 Nm	14 Nm (0.5 ... 5 t) 10 Nm (10 t)	-
Current calibration ²⁾	Standard		
Ex protection to ATEX (optional)	II 1 G Ex ia IIC T4 Ga II 1 D Ex ia IIIC T73 °C Da II 3 G Ex ic IIC T4 Gc II 3 G Ex nA IIC T4 Gc II 3 G Ex tc IIIC T63 °C Dc		

Cable connection

Function	Color
• EXC +	pink
• EXC -	gray
• SIG +	brown
• SIG -	white
• Screening	transparent

Selection and ordering data

Article No.

SIWAREX WL280 RN-S SA load cell

Stainless steel, low mounting height, IP66/68
accuracy class C3 according to OIML R60

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Rated load	Cable length	
• 60 kg (132.28 lb)	3 m (9.84 ft)	2 Q
• 130 kg (286.60 lb)	3 m (9.84 ft)	3 D
• 280 kg (617.29 lb)	3 m (9.84 ft)	3 J
• 500 kg (1 102.31 lb)	3 m (9.84 ft)	3 P
• 1 t (0.98 tn. L.)	3 m (9.84 ft)	4 A
• 2 t (1.97 tn. L.)	6 m (19.68 ft)	4 G
• 3,5 t (3.44 tn. L.)	6 m (19.68 ft)	4 L
• 5 t (4.92 tn. L.)	6 m (19.68 ft)	4 P
• 10 t (9.84 tn. L.)	15 m (49.21 ft)	5 A
• 13 t (12.79 tn. L.)	15 m (49.21 ft)	5 D
• 28 t (27.56 tn. L.)	15 m (49.21 ft)	5 J
• 60 t (59.05 tn. L.)	15 m (49.21 ft)	5 Q
Explosion protection		
None		0
Explosion protection for zones 1, 2, 20, 21, 22		1

¹⁾ For rated temperature $-10 \dots +40\text{ }^\circ\text{C}$ ($14 \dots 104\text{ }^\circ\text{F}$)

²⁾ Current calibration: rated characteristic value and output resistance are adjusted so that the output current is calibrated within 0.05 % of a reference value. This makes it easier to connect several load cells in parallel.

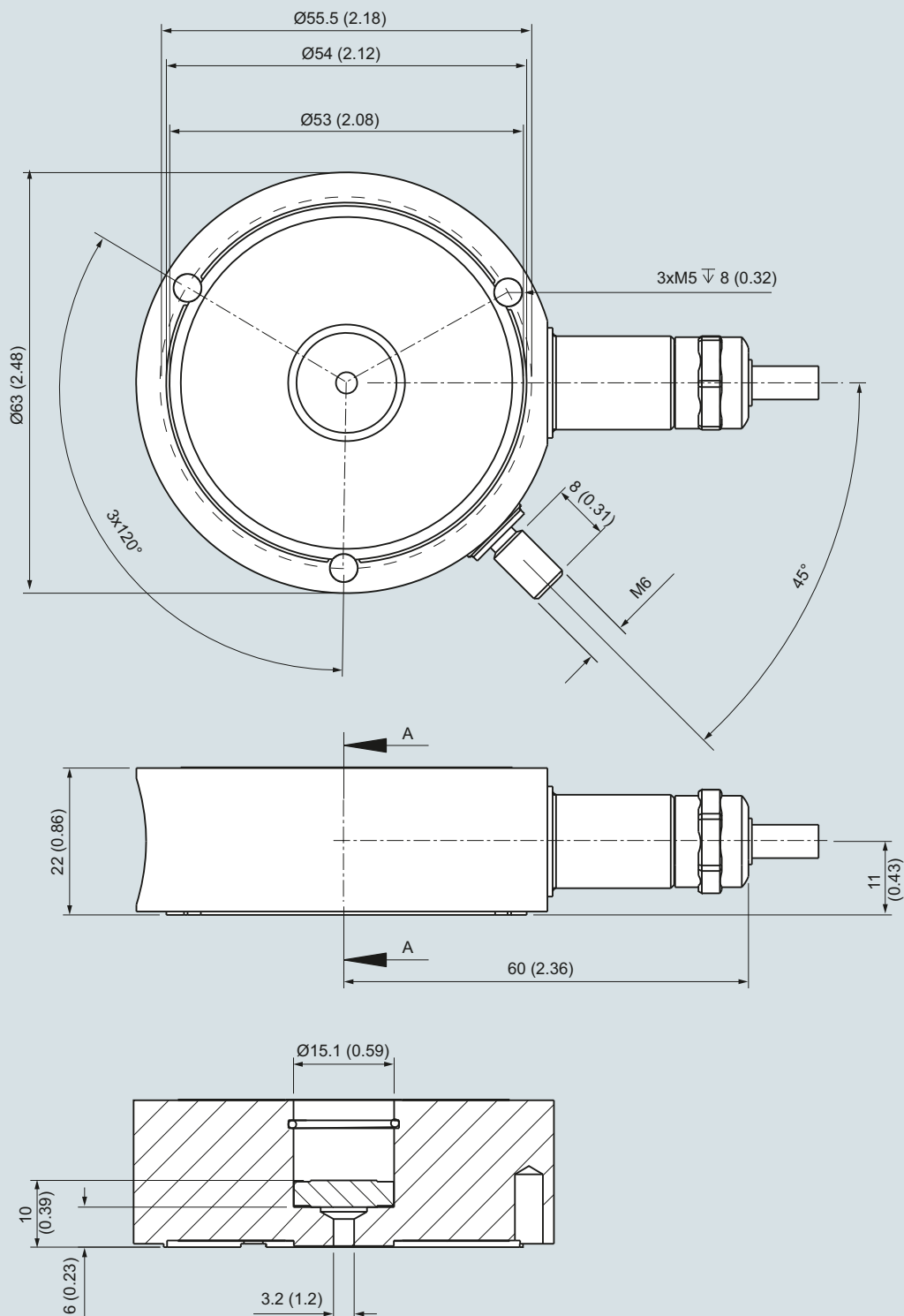
Load Cells

Ring torsion load cells

SIWAREX WL280 RN-S SA

Load cell

Dimensional drawings



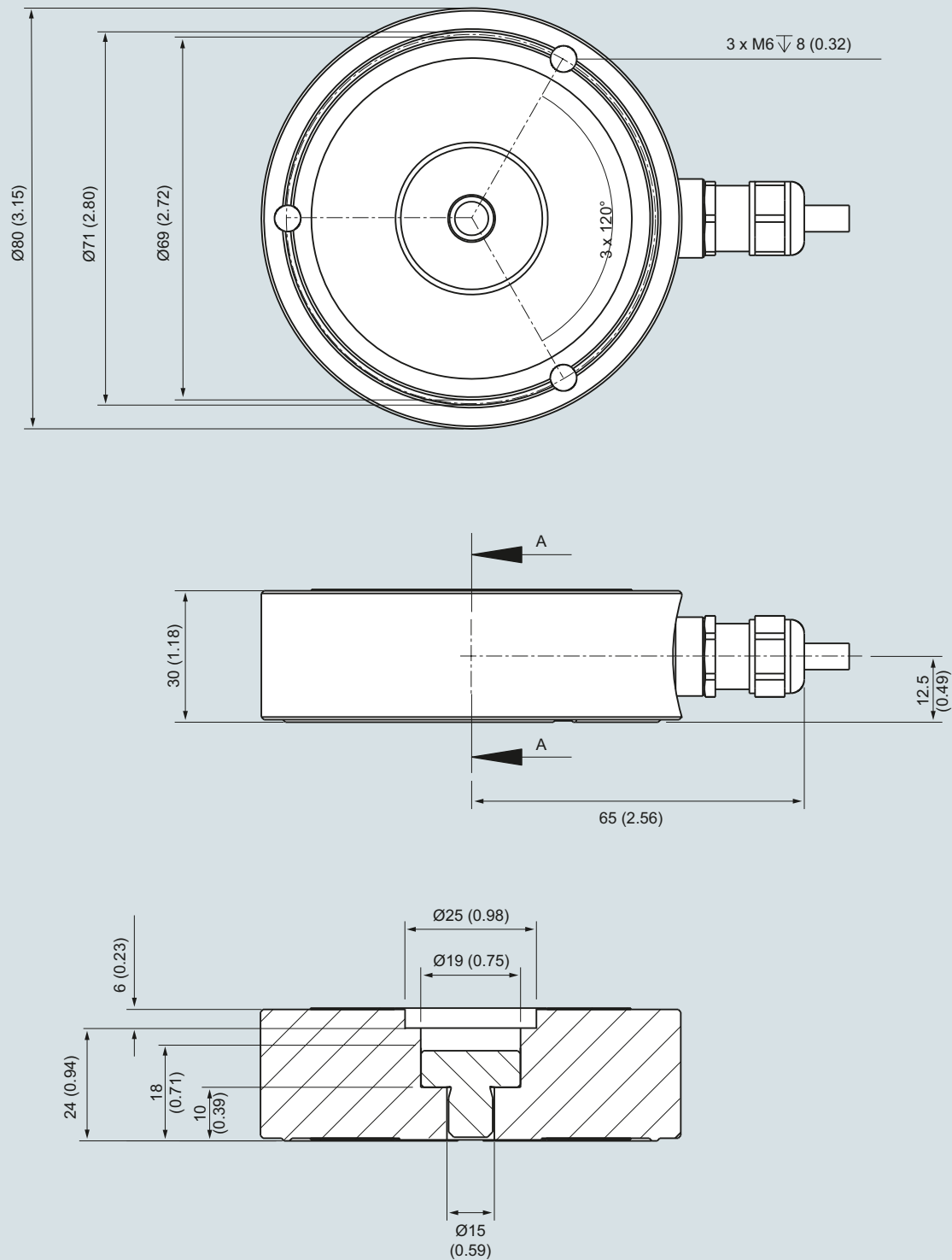
SIWAREX WL280 RN-S SA load cell (60 kg, 130 kg, 280 kg / 132.28, 286.60, 617.29 lb), dimensions in mm (inch)



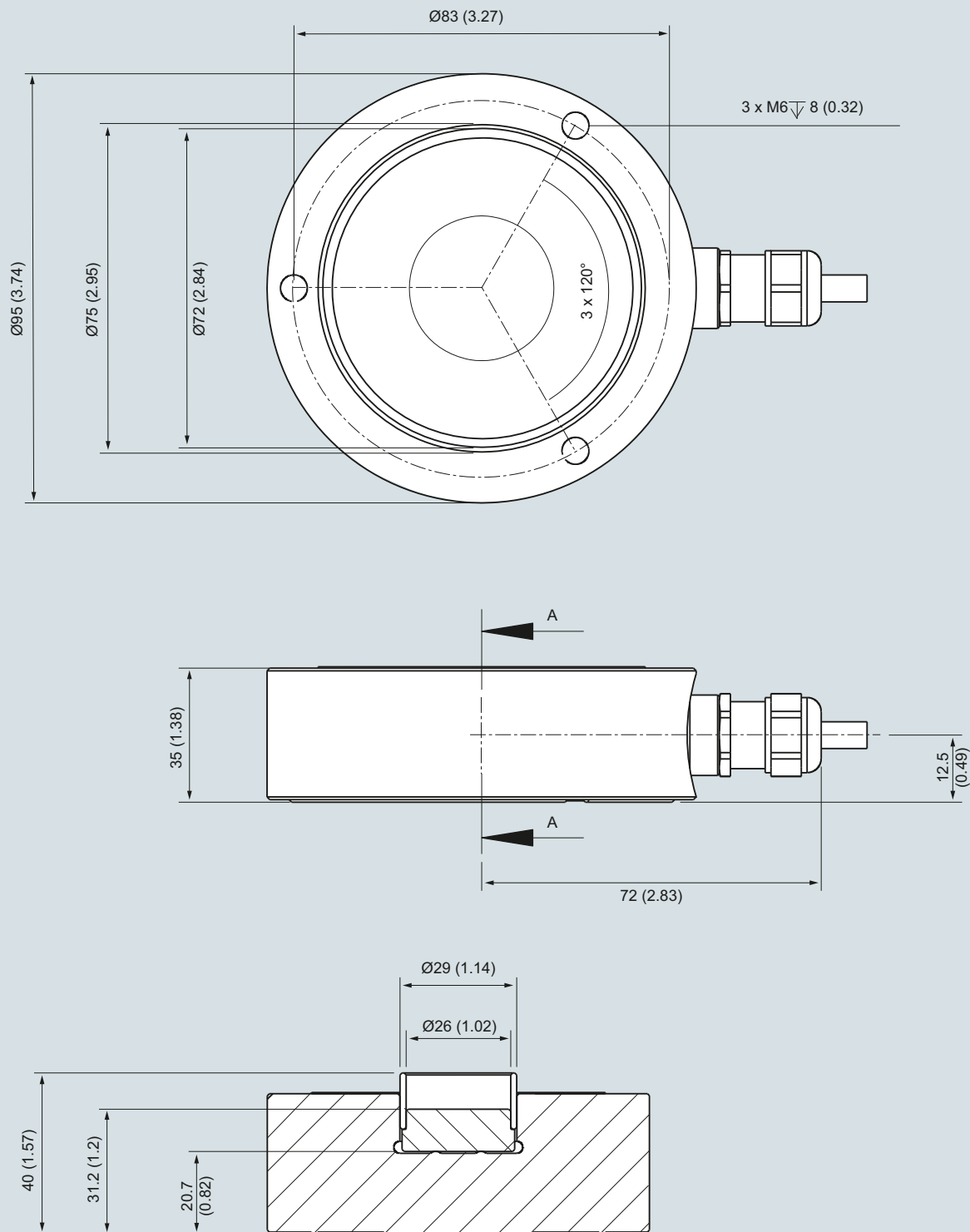
Load Cells

Ring torsion load cells

SIWAREX WL280 RN-S SA

Load cell

SIWAREX WL280 RN-S SA load cell (2 t, 3 t, 5 t / 1.97, 2.95, 4.92 tn. L.), dimensions in mm (inch)

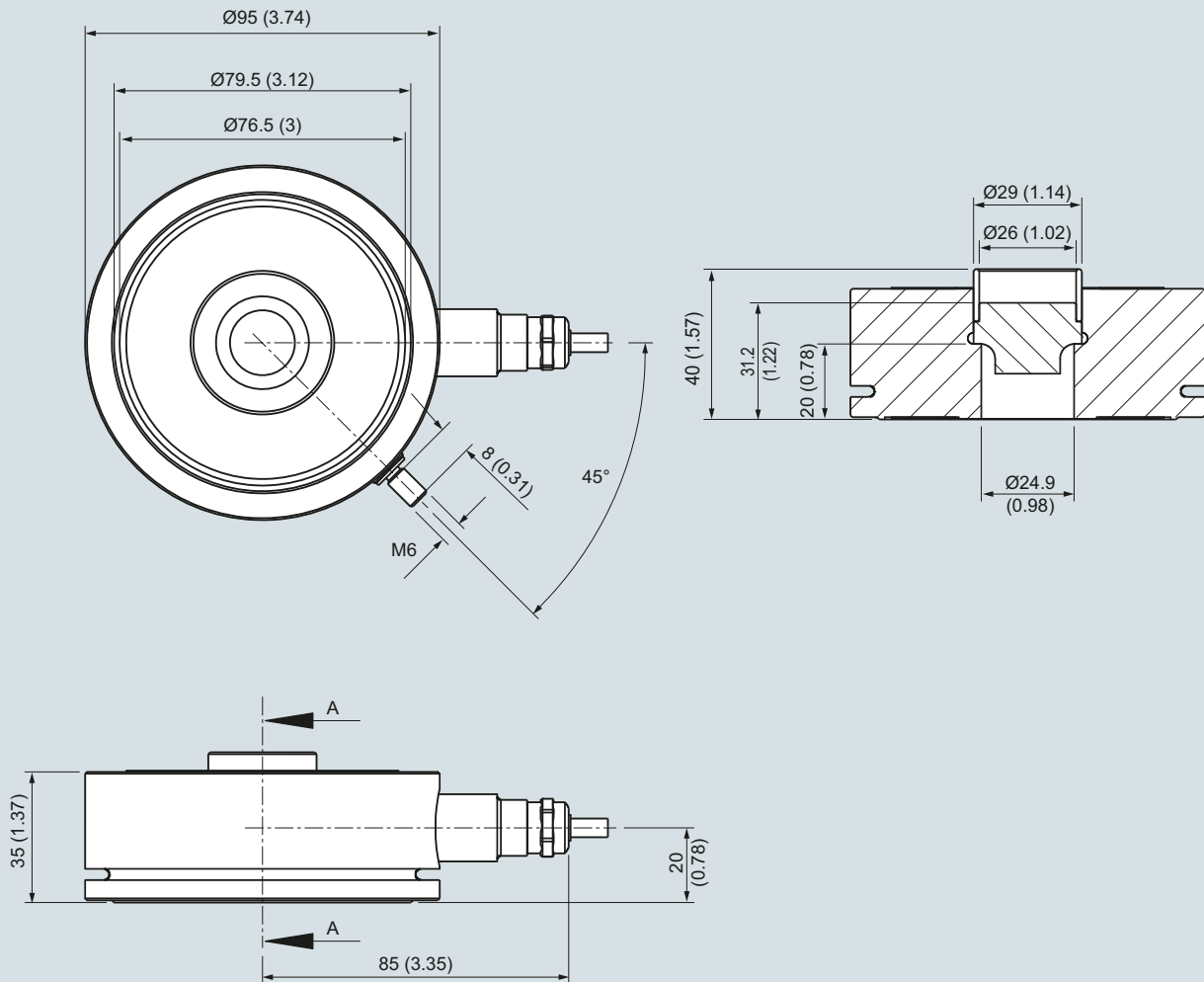


SIWAREX WL280 RN-S SA load cell (10 t / 9.84 tn. L.), dimensions in mm (inch)

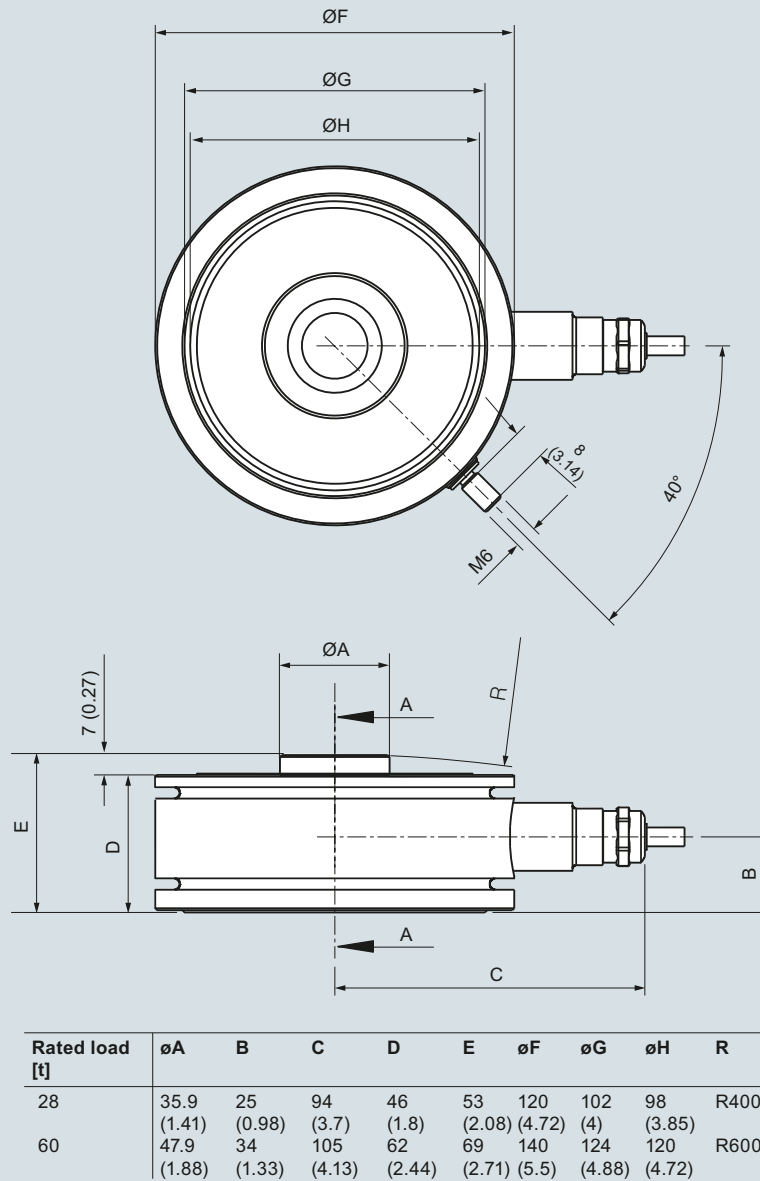
Load Cells

Ring torsion load cells

SIWAREX WL280 RN-S SA

Load cell

SIWAREX WL280 RN-S SA load cell (13 t / 12.79 tn. L.), dimensions in mm (inch)



SIWAREX WL280 RN-S SA load cell (28 t, 60 t / 27.56, 59.05 tn. L.), dimensions in mm (inch)

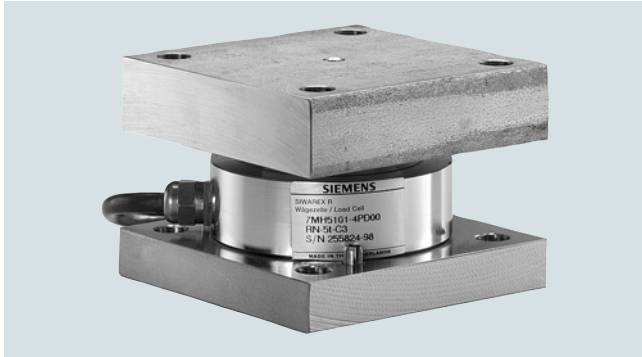
Load Cells

Ring torsion load cells

SIWAREX WL280 RN-S SA

Self-aligning bearing

Overview



The self-centering self-aligning bearing for SIWAREX WL280 RN-S SA load cells is particularly suitable for container and platform scales due to its low mounting height.

Design

The self-aligning bearing comprises a self-aligning bolt, a top plate (self-aligning bearing, top part) and a base plate (self-aligning bearing, base part).

The self-centering, self-aligning bolt allows the top plate, and thus the load support, to accommodate horizontal displacements (e.g. due to temperature fluctuations). The design of the self-aligning bolt creates a restoring force, which is dependent on the size of the displacement and the applied load.

The design of the load support must be such as to limit the lateral play (e.g. with limit stops), if the load support is displaced horizontally by the following values:

- > 4 mm (0.16") (up to 5 t (4.92 tn. l.) rated load)
- > 7 mm (0.28") (up to 13 t (12.80 tn. l.) rated load)
- > 10 mm (0.39") (up to 60 t (59.05 tn. l.) rated load)

Lifting of the load support must be prevented by suitable measures provided in the construction of the load bearing implementation.

The load cell is not included in the scope of delivery of the self-aligning bearing.

Technical specifications

Self-aligning bearing for SIWAREX WL280 RN-S SA load cells

Rated load t (tn. L.)	0.06 ... 5 (0.06 ... 4.92)	10 ... 13 (9.84 ... 12.80)	28 ... 60 (27.56 ... 59.02)
Permissible lateral deflection in mm (inch):	± 4 (0.16)	± 7 (0.28)	± 10 (0.39)

Selection and ordering data

Article No.

Self-aligning bearing top part¹⁾²⁾

For SIWAREX WL280 RN-S SA load cells comprising: Top plate with seal holder and sealing ring, top plate pressure piece, self-aligning bolt, cell pressure piece (not for 28 t / 27.56 tn. l. and 60 t / 59.05 tn. l.)

Material: Stainless steel

For load cells with a rated load of

- 60, 130, 280 kg (132.28, 286.60, 617.29 lb)
- 0.5, 1 t (0.49, 0.98 tn. L.)
- 2, 3.5, 5 t (1.97, 3.45, 4.92 tn. L.)
- 10, 13 t (9.84, 12.80 tn. l.)
- 28 t (27.56 tn. l.)
- 60 t (59.05 tn. l.)

7MH4115-3DB11

7MH4132-4AK11

7MH4132-4KK11

7MH4115-5BB11

7MH4115-5DB11

7MH4115-5GB11

Self-aligning bearing base part¹⁾

For SIWAREX WL280 RN-S SA

load cells comprising:

Base plate, 3 tension pins

Material: Stainless steel

For load cells with a rated load of

- 60, 130, 280 kg (132.28, 286.60, 617.29 lb)
- 0.5, 1, 2, 3.5, 5 t (0.49, 0.98, 1.97, 3.45, 4.92 tn. L.)
- 10, 13 t (9.84, 12.80 tn. L.)
- 28 t (27.56 tn. L.)
- 60 t (59.05 tn. L.)

7MH4115-3DC11

7MH4132-4AG11

7MH4115-5BC11

7MH4115-5DC11

7MH4115-5GC11

Accessories

Pressure piece set

For SIWAREX WL280 RN-S SA load cells. Comprising pressure piece and pendulum support. The pressure piece set enables customer-specific installation requirements to be implemented. Material: Stainless steel

for load cells with rated load of:

- 60, 130, 280 kg (132.28, 286.60, 617.29 lb)
- 0.5, 1 t (0.49, 0.98 tn. L.)

7MH5713-3JD00

7MH5713-4AD00

Shims (accessories)

For self-aligning bearing base parts

Material: Stainless steel

For load cells with a rated load of¹⁾

- 10 t, 13 t (9.84, 12.80 tn. L.)
Contents: 16 units, each 0.5 mm thick
- 28 t, 60 t (27.56, 59.05 tn. L.)
Contents: 4 units each 0.5 mm thick, 20 units each 1 mm thick

7MH5713-3JG00

7MH5713-5DG00

¹⁾ The load cell is not included in the scope of delivery.

²⁾ The self-aligning bearing base part is not included in delivery.

Load Cells

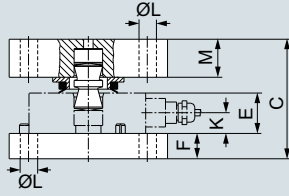
Ring torsion load cells

SIWAREX WL280 RN-S SA

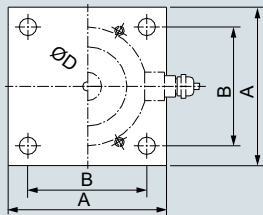
Self-aligning bearing

Dimensional drawings

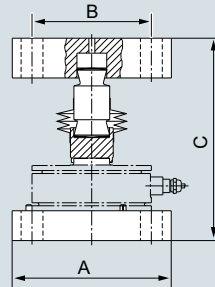
Front view
60 kg ... 13 t



Plan view
60 kg ... 13 t



Front view
28 t / 60 t



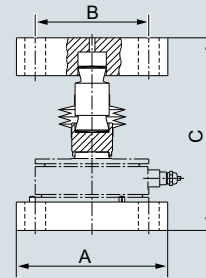
*s = permissible lateral deflection

Rated load	A	B	C	ØD	E	s*
60 ... 280 kg	80 (3.15)	60 (2.36)	52 (2.05)	63 (2.48)	22 (0.87)	4 (0.16)
0.5 t, 1 t	100 (3.94)	75 (2.95)	79 (3.11)	80 (3.15)	25 (0.98)	4 (0.16)
2 t, 3.5 t, 5 t	100 (3.94)	75 (2.95)	79 (3.11)	80 (3.15)	30 (1.18)	4 (0.16)
10 t, 13 t	120 (4.72)	90 (3.54)	121.2 (4.77)	95 (3.74)	35 (1.97)	7 (0.28)
28 t	160 (6.30)	120 (4.72)	203 (7.99)	40 (1.57)	46 (1.81)	10 (0.39)
60 t	200 (7.87)	140 (5.51)	254 (10.00)	50 (1.97)	62 (2.44)	10 (0.39)

Rated load	F	K	ØL	M
60 ... 280 kg	8 (0.31)	11 (0.43)	9 (0.35)	12 (0.47)
0.5 t, 1 t	15 (0.59)	10 (0.39)	11 (0.43)	25 (0.98)
2 t, 3.5 t, 5 t	15 (0.59)	8.5 (0.33)	11 (0.43)	25 (0.98)
10 t, 13 t	20 (0.79)	20 (0.79)	14 (0.55)	40 (1.57)
28 t	30 (1.18)	25 (0.98)	22 (0.87)	40 (1.57)
60 t	36 (1.42)	34 (1.34)	28 (1.10)	50 (1.97)

G_WT01_XX_10122

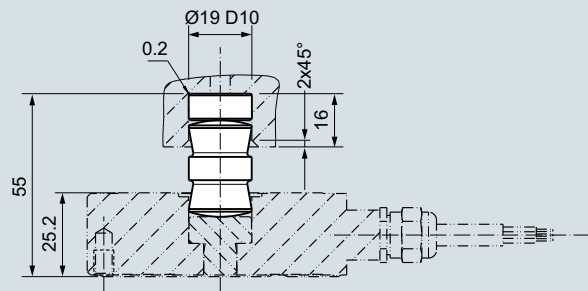
Self-aligning bearing for SIWAREX WL280 RN-S SA load cells, for 0.06 ... 13 t (0.07 ... 14.33 tn. L.), dimensions in mm (inch)



Rated load [t]	A	B	C	s
28	160 (6.30)	120 (4.72)	203 (7.99)	10 (0.39)
60	200 (7.87)	140 (5.51)	254 (10.00)	10 (0.39)

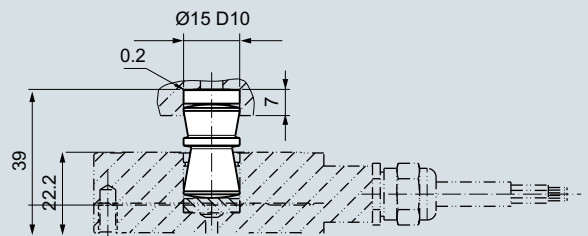
G_WT01_XX_10118

Self-aligning bearing for SIWAREX WL280 RN-S SA load cells, for 28 ... 60 t (27.56 ... 59.05 tn. L.), dimensions in mm (inch)



G_WT01_XX_10138

Self-aligning bearing for SIWAREX WL280 RN-S SA load cells, for 28 ... 60 t (27.56 ... 59.05 tn. L.), dimensions in mm (inch)



G_WT01_XX_10139

Pressure piece set WL280 RN-S SA for 60, 130, 280 kg (132.28, 286.60, 617.29 lb)

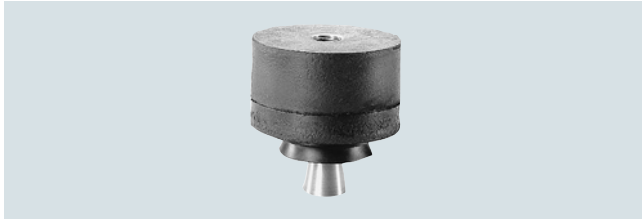
Load Cells

Ring torsion load cells

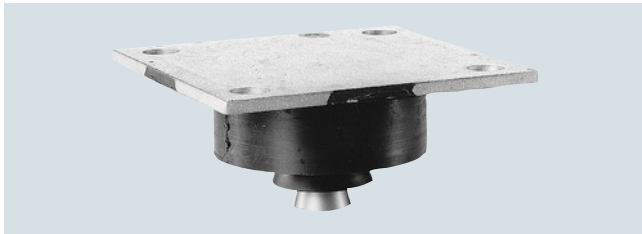
SIWAREX WL280 RN-S SA

Elastomer bearing

Overview



Elastomer bearing for SIWAREX WL280 RN-S SA load cells, 60 ... 280 kg (132.28 ... 617.29 lb)



Elastomer bearing for SIWAREX WL280 RN-S SA load cells, 0.5 ... 13 t (0.49 ... 12.80 lb)

Used in combination with the self-aligning bearing base part, the self-centering elastomer bearing for SIWAREX WL280 RN-S SA load cells is the ideal load introduction element for scales without guide elements. It is used in container, platform and roller table scales and dampens vibrations and shocks.

Design

Elastomer bearings are rubber-metal composites made of neoprene and stainless steel. They ensure large spring excursions (i.e. a high degree of damping) despite small dimensions.

If the load support is horizontally displaced by more than 4 mm (0.16") or 6 mm (0.24") for a rated load of 10 t (9.84 tn. L.) and 13 t (12.80 tn. L.), the design of the load support must include measures to restrict lateral play (e.g. limit stops). Lifting of the load support must be prevented by suitable measures provided in the construction of the load bearing implement.

The load cell and the self-aligning bearing bottom part are not included in the scope of delivery of the elastomer bearing.

Technical specifications

Elastomeric bearings for load cells of the SIWAREX WL280 RN-S SA series

Rated load t (tn. L.)	0.06 ... 5 (0.06 ... 4.92)	10 ... 13 (9.84 ... 12.80)
Permissible lateral deflection in mm (inch):	± 4 (0.16)	± 6 (0.24)

Selection and ordering data

Article No.

Elastomer bearings¹⁾

For SIWAREX WL280 RN-S SA load cells comprising: Elastomer package with fixing plate, force transfer, seal

Material: Stainless steel and neoprene

For load cells with a rated load of

- 60, 130, 280 kg (132.28, 286.60, 617.29 lb)
- 0.5, 1 t (0.49, 0.98 tn. L.)
- 2, 3.5, 5 t (1.97, 3.44, 4.92 tn. L.)
- 10, 13 t (9.84, 12.80 tn. L.)

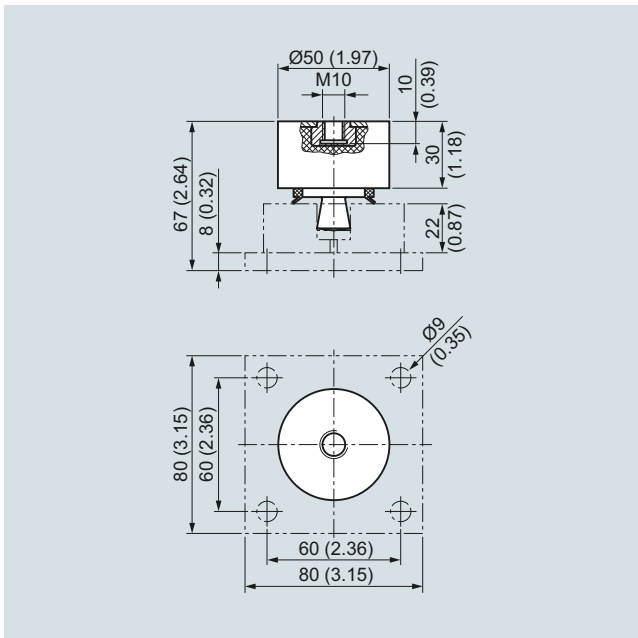
7MH4130-3EE11

7MH4130-4AE11

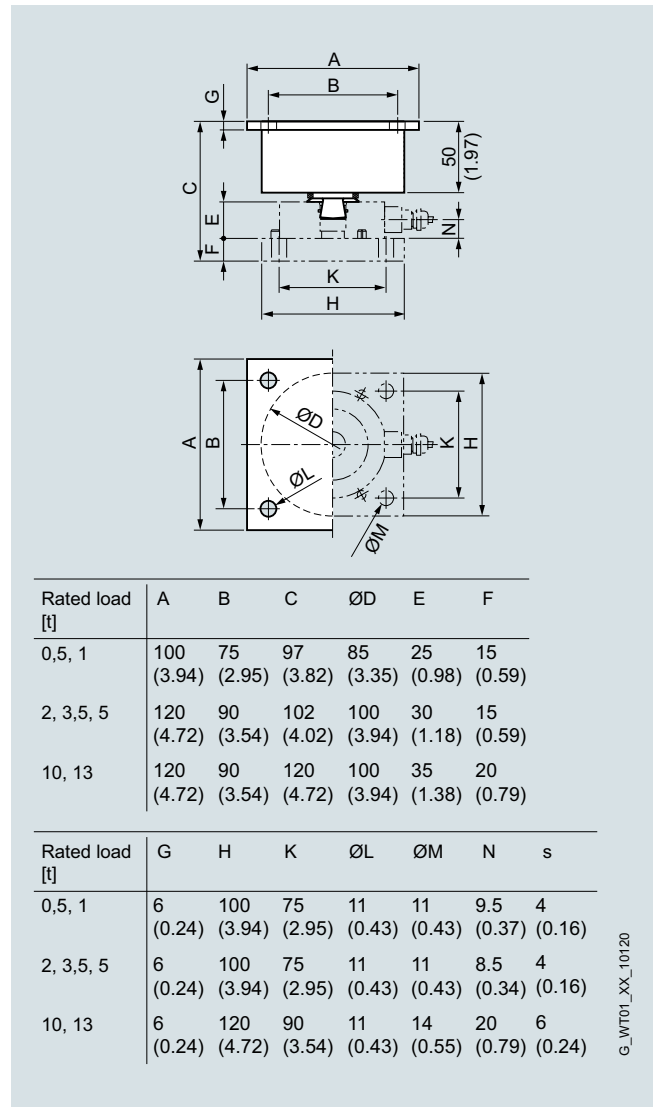
7MH4130-4KE11

7MH4130-5CE11

¹⁾ The load cell and the self-aligning bearing bottom part are not included in the scope of delivery.

Dimensional drawings

Elastomer bearing for SIWAREX WL280 RN-S SA load cells,
60 ... 280 kg (132.28 ... 617.30 lb), dimensions in mm (inch)



Elastomer bearing for SIWAREX WL280 RN-S SA load cells, 0.5 ... 13 t
(0.49 ... 12.80 tn. L.), dimensions in mm (inch)

Load Cells

Ring torsion load cells

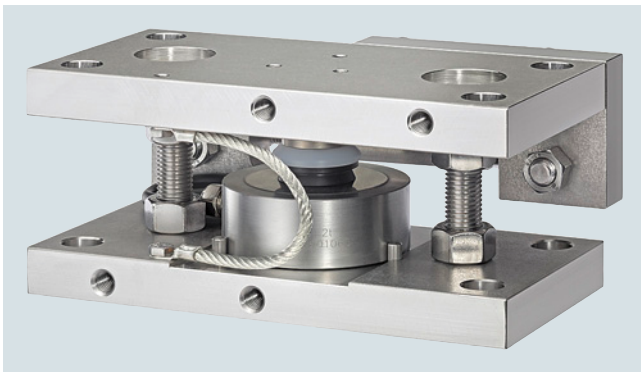
SIWAREX WL280 RN-S SA

Mounting unit and guide element

Overview



SIWAREX WL280 RN-S SA mounting unit and guide element, front



SIWAREX WL280 RN-S SA mounting unit and guide element, rear

The mounting unit, together with the load cells of the SIWAREX WL280 RN-S SA series, form a self-centering unit. The guide elements prevent a container, for example, from moving sideways due to an external lateral force. The guide elements can be mounted on one or both sides of the mounting unit.

Design

The mounting unit comprises a base plate and a top plate, a thrust pad with a flat gasket and a pendulum support. A very flexible grounding cable between the top and base plate conducts any fault currents past the load cell. The top plate is connected to the base plate by means of two countersunk head screws. On both sides of the base and top plate there are threaded holes for the later flange-fitting of guide elements.

The top plate is fixed above the base plate by means of two countersunk head screws. This results in a single unit that is easily handled. The top plate must be precisely aligned above the base plate. The height of the top plate is set so that it is 2 millimeters (for the 60 ... 280 kg version) or 3 millimeters (for the 0.5 ... 13 t versions) above the installation height with load cell.

In this state the mounting unit serves as an installation aid and can be used as a dummy for lighter installation jobs.

The load cell, together with the pendulum support and the thrust pad, can be inserted into the mounting unit. Load cell and thrust pad are secured with clamping washers.

The load cell can be inserted in the scale before installing the mounting unit. In the same way, it is possible to insert the load cell after installation in the mounting unit.

The fixing holes of the mounting unit are 6 mm wider in diameter than the necessary fixing screws. This means that a greater tolerance error is permissible in the connection measurements. The mounting unit is clamped tightly using the washers supplied.

After the mounting units have been mounted in the scales, the load bearing element is ideally aligned. The load cells are not yet loaded. Finally, the load bearing implement is lowered by loosening the hexagonal bolts under the top plate. The weight now rests on the load cells.

In this state the load cell and the mounting unit together form a self-centering bearing unit. The mounting unit allows the top plate (and thus the load bearing implement) to be displaced up to two millimeters (for the 60 ... 280 kg version) or three millimeters (for the 0.5 ... 13 t versions) to the side in all directions. The countersunk head screws prevent the load bearing element from being lifted off or tipping up. The countersunk head screws secure the load bearing element against sharp lateral movement on the occurrence of sporadic transverse forces.

By using the mounting unit as an installation aid, the load cells are optimally aligned. This is absolutely essential for the best utilization of the load cells in terms of accuracy. In the event of maintenance or a fault, the load cell can be released again by undoing the hexagonal nuts. After loosening the clamping washers, the cell can then easily be replaced.

Guide elements are used if the lateral movement of a load bearing element is to be prevented. The lateral movements can be initiated by agitator start-up in a container, by braking or accelerating forces in a roller conveyor or through forces exerted by the wind on outdoor silos.

A guide element consists of two flanges and one clamping screw. The clamping screw is adjusted to the correct length. The guide element is attached to the operational mounting unit. A guide unit can be mounted on the front or rear of the mounting unit. If necessary, two guide elements can be used in parallel in order to double the transferrable lateral force.

In the case of scales with four load cells, only three mounting units may be equipped with guide units.

Shims are used to compensate for angular errors in the lugs. If more than three load cells are used, the shims are also used to adjust the height of the lugs.

Load Cells

Ring torsion load cells
SIWAREX WL280 RN-S SA

Mounting unit and guide element**Selection and ordering data**

Article No.

Mounting units

For SIWAREX WL280 RN-S SA load cells

Material: Stainless steel

For load cells with a rated load of¹⁾

- 60 ... 280 kg (132.28 ... 617.29 lb)
- 0,5 ... 1 t (0.49 ... 0.98 tn. L.)
- 2 ... 5 t (1.97 ... 4.92 tn. L.)
- 10 ... 13 t (9.84 ... 12.80 tn. L.)

7MH5713-3JA00**7MH5713-4AA00****7MH5713-4PA00****7MH5713-5DA00****Guide elements (optional)**

for mounting units of the SIWAREX WL280 RN-S SA series

Material: Stainless steel

For load cells with a rated load of

- 60 ... 280 kg (132.28 ... 617.29 lb); Permitted transverse force: 1,5 kN
- 0,5 ... 1 t (0.49 ... 0.98 tn. L.); Permitted transverse force: 2,5 kN
- 2 ... 5 t (1.97 ... 4.92 tn. L.); Permitted transverse force: 5 kN
- 10 ... 13 t (9.84 ... 12.80 tn. L.); Permitted transverse force: 10 kN

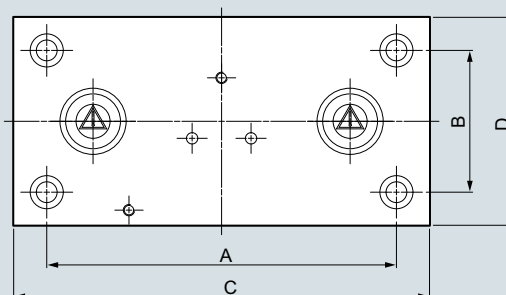
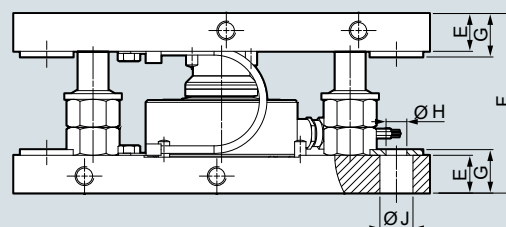
7MH5713-3JE00**7MH5713-4AE00****7MH5713-4PE00****7MH5713-5DE00****Shims (accessories)**

For mounting units of the SIWAREX WL280 RN-S SA series

Material: Stainless steel

For load cells with a rated load of¹⁾

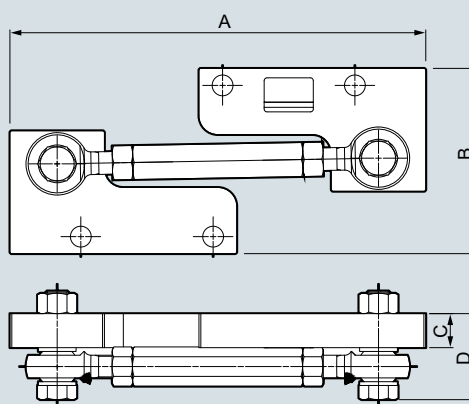
- 60 ... 280 kg (132.28 ... 617.29 lb); Contents: 16 units, each 0.5 mm thick
- 0,5 ... 1 t (0.49 ... 0.98 tn. L.); Contents: 24 units, each 0.5 mm thick
- 2 ... 5 t (1.97 ... 4.92 tn. L.); Contents: 4 units each 0.5 mm thick, 16 units each 1 mm thick
- 10 ... 13 t (9.84 ... 12.80 tn. L.); Contents: 4 units each 0.5 mm thick, 20 units each 1 mm thick

7MH5713-3JG00**7MH5713-4AG00****7MH5713-4PG00****7MH5713-5DG00****Dimensional drawings**

	60 ... 280 kg	0.5 t / 1 t	2 t ... 5 t	10 t / 13 t
A	136	165	185	200
B	60	75	75	90
C	166	200	220	240
D	90	110	110	130
E	12	15	20	20
F	60	85	95	127.2
G	14.5	18	23	24
Ø H	9	11	11	13.5
Ø J	13.5	17.5	17.5	20

G_WT01_XX_10140

WL280 mounting unit



	60 ... 280 kg	0.5 t / 1 t	2 t ... 5 t	10 t / 13 t
A	166	200	220	240
B	60	85	95	127.2
C	10	12	18	18
D	~30.5	~35	~45.5	~54.4

G_WT01_XX_10141

WL280 guide element

¹⁾ The load cell and the compact mounting unit are not included in the scope of delivery.

Load Cells

Load cell accessories

Junction box SIWAREX JB

Overview



SIWAREX JB junction box, aluminum steel



SIWAREX JB junction box, stainless steel

The JB junction box in aluminum or in stainless steel is required for parallel connection of load cells. A maximum of 4 load cells can be connected to one junction box.

Only for junction boxes in aluminum:

If more than 4 load cells are to be connected, a second junction box must be connected in parallel via a cross connection. An expansion set is required for this purpose. The cross-connection can be used to connect up to three load cells in the first junction box. Up to four load cells can be connected in the second junction box.

Design

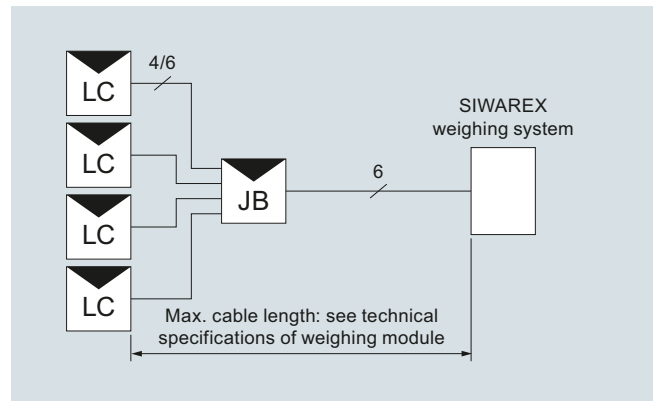
The junction box of die-cast aluminum consists of a lower section and cover. The enclosure is dust-protected and splashproof according to IP66 degree of protection. The cables are fed in through metric cable glands. In the enclosure, screw terminals are fixed onto a connection board.

Internal resistance, characteristic value and rated load of all parallel-switched load cells must be identical. The value of these variables is not limited by the junction box. Load cells can be connected in 4-wire or 6-wire systems.

For 6-wire systems, two jumpers must also be separated.

Connection examples

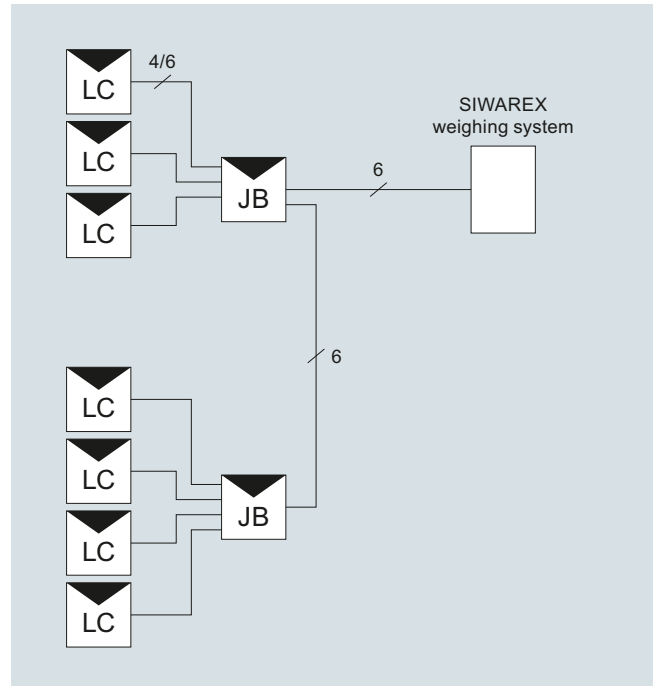
Four load cells



LC: Load cell

JB: Junction box in aluminum or stainless steel

Eight load cells



LC: Load cell

JB: Only for junction boxes in aluminum

Technical specifications

SIWAREX JB junction box, aluminum and stainless steel enclosure

Cable glands	
• Of load cells	4 x M16
• Of signal cable	1 x M20
Permissible ambient temperature	
• During operation	-50 ... +80 °C (-58 ... 176 °F)
• During operation for legal-for-trade medium accuracy weighing machine	-10 ... +40 °C (14 ... 104 °F)
• During transportation and storage	-50 ... +100 °C (-58 ... 212 °F)
Degree of protection	IP66 to EN 60529
Vibration resistance of terminals to DIN VDE 0611 11/77	10 Hz and 150 Hz, amplitude 0.35 mm

Selection and ordering data

Article No.

SIWAREX JB junction box, aluminum housing

For connecting up to 4 load cells in parallel, and for connecting several junction boxes

7MH5001-0AA20**SIWAREX JB junction box, stainless steel housing**

For connecting up to 4 load cells in parallel

7MH5001-0AA00**SIWAREX JB junction box, stainless steel housing (ATEX)**

For connecting up to 4 load cells in parallel

7MH4710-1EA01

(For zone allocation, see manual or type examination certificate)

Cable (optional)**Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY**

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JBs.

For permanent installation. Occasional bending is possible.

External diameter:
approx. 10.8 mm (0.43 in)

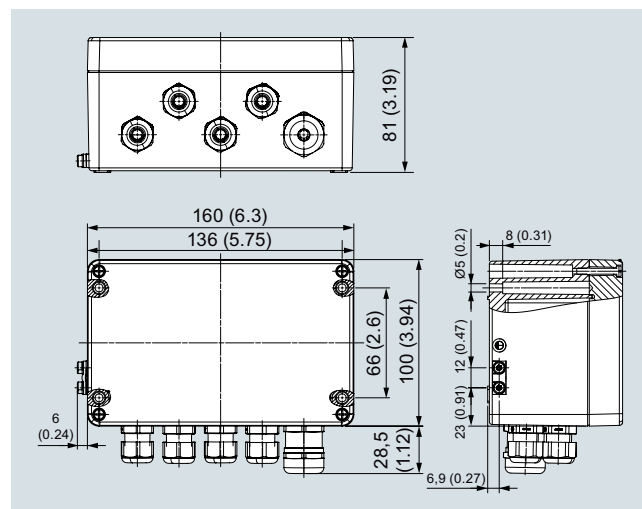
Permissible ambient temperature
-40 ... +80 °C (-104 ... +176 °F).

Sold by the meter.

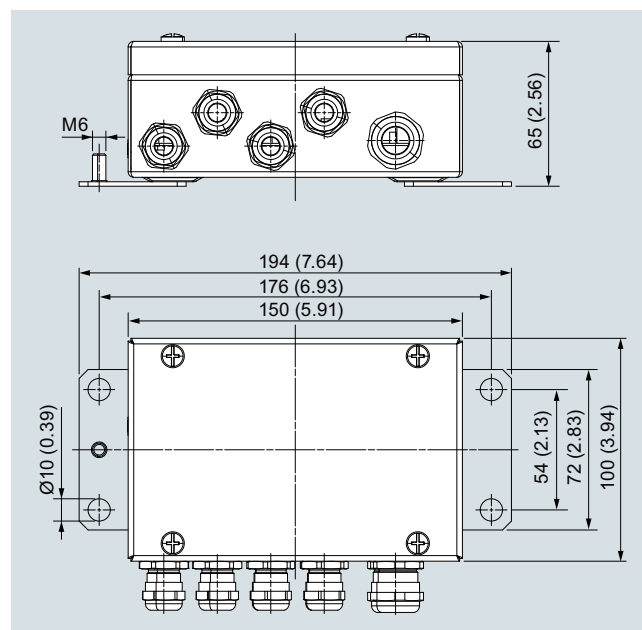
- Sheath color: orange
- For potentially explosive atmospheres. Sheath color: blue.

7MH4702-8AG**7MH4702-8AF**

Dimensional drawings



SIWAREX JB junction box in aluminum (7MH5001-0AA20), dimensions in mm (inches)



SIWAREX JB junction box in stainless steel (7MH5001-0AA00), dimensions in mm (inches)

Load Cells

Load cell accessories

Extension box SIWAREX EB

Overview



The EB extension box is used to lengthen load cell connection cables.

Load cells can be connected in 4-wire or 6-wire systems. The cable connection to the weighing module or to the JB junction box must always be implemented in 6-wire systems. The 7MH4 702-8AG or ...-8AF SIWAREX connecting cable is recommended for this purpose.

If load cell cables are extended to a JB junction box, the M16 x 1.5 cable glands on the box must be replaced. The following is required for each load cell:

- 1 EMC cable gland M20 x 1.5
- 1 extension M16 x 1.5 male thread to M20 x 1.5 female thread.

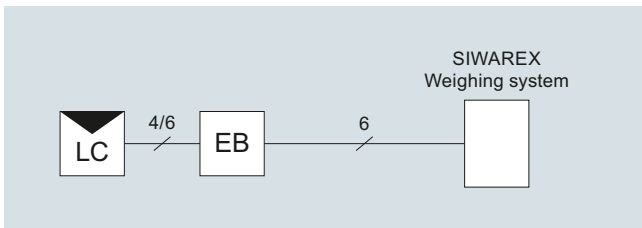
Design

The EB extension box has a housing made of die-cast aluminium. The housing is sealed against penetration of dust and splashed water in accordance with IP66. The cables enter the casing via metric EMC cable glands and are connected to spring-mounted terminals. The spring-mounted system results in vibration-resistant, maintenance-free connections.

When connecting load cells with a 4-wire system, two jumper elements are inserted for feedback of the sense signal.

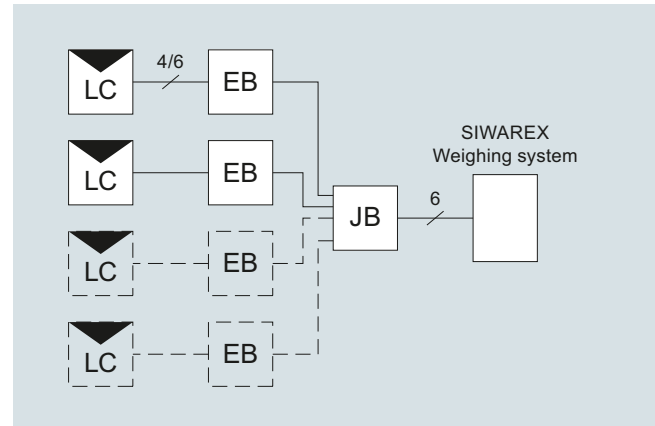
Connection examples

Connection of one load cell



LC: Load cell
EB: Extension box

Connection of several load cells



LC: Load cell
EB: Extension box
JB: Junction box

Technical specifications

Cable glands

- of load cell cable M16 x 1.5
- of signal cable M20 x 1.5

Permissible ambient temperature

- During operation -30 ... +85 °C (-22 ... 185 °F)
- During operation for legal-for-trade medium accuracy weighing machine -10 ... +40 °C (14 ... 104 °F)
- During transportation and storage -40 ... +90 °C (-40 ... 194 °F)

Degree of protection to EN 60529

IP66

Vibration resistance of terminals to DIN VDE 0611 11/77

12 Hz and 50 Hz, amplitude 1 mm

Insulation resistance of the terminals

$\geq 10^{12} \Omega$

Dimensions (H x W x D) in mm

80 x 75 x 57

Selection and ordering data

Article No.

Accessories

SIWAREX EB extension box, aluminum housing**7MH4710-2AA**

For extending load cell connection cables

Cable (optional)**Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY**

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two JBs.

For permanent installation. Occasional bending is possible.

External diameter: approx. 10.8 mm (0.43 inch)

Permissible ambient temperature -40 ... +80 °C (-104 ... +176 °F).

Sold by the meter.

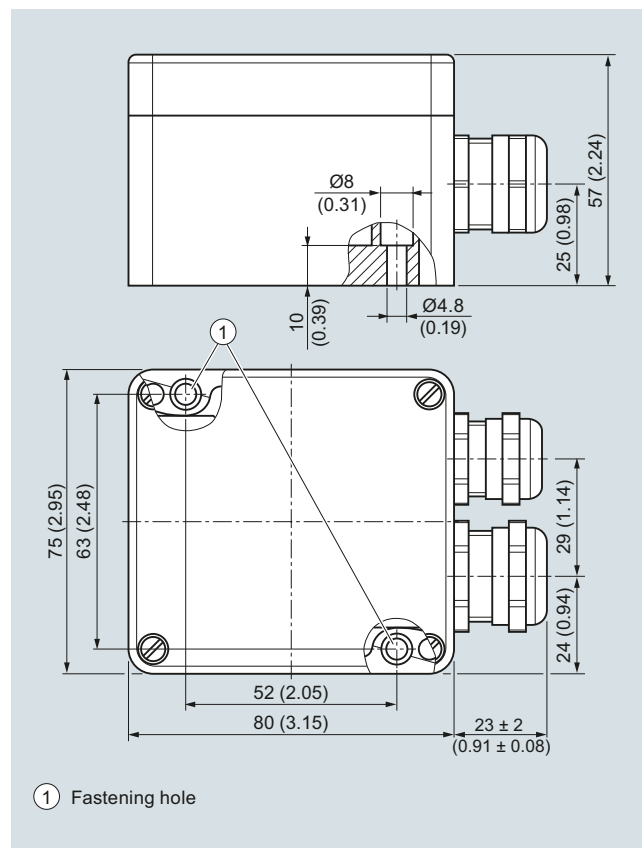
• Sheath color: orange

7MH4702-8AG

• For potentially explosive atmospheres. Sheath color: blue

7MH4702-8AF

Dimensional drawings



SIWAREX EB extension box (7MH4 710-2AA), dimensions in mm (inch)

Load Cells

Load cell accessories

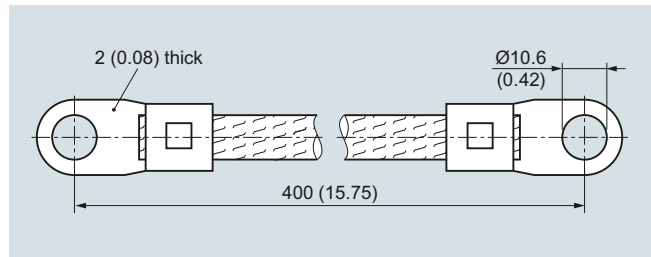
Cables

Overview



The ultra-flexible grounding cable is for discharging parasitic currents.

Dimensional drawings



Grounding cable, dimensions in mm (inch)

Design

The grounding cable is 400 mm long and corresponds to an electrical bypass.

It protects the load cell from undesirable voltages which can occur e.g. when welding or as a result of lightning.

We recommend using one grounding cable for each load cell.

The load cell and/or other mounting elements are not included in the scope of delivery of the grounding cable.

Selection and ordering data

Article No.

Grounding cable made of copper

for discharging parasitic currents

400 mm long

7MH3701-1AA1

Overview

Number of load cells

The three-point bearing is statically determined and offers a stable setup for any application.

If there are more than three bearing points, the load is likely to be unevenly positioned and, in extreme cases, that two diagonally positioned load cells would have to accommodate the entire load. Three-point bearing should therefore be used wherever possible.

To exclude the possibility of an uneven base, in the case of a bearing with more than three load cells, the prevailing weight distribution on the relevant load cells should be checked and a height adjustment performed if necessary. This can be achieved by using a suitable support to raise the load cells carrying less weight.

Force bypass

Force bypasses are produced if a partial load is transferred past the load cells into the base. There are various reasons for a force bypass (e.g. third-party supports, frictional forces, stresses, etc.).

Force bypasses must be avoided at all costs as they lead to measuring errors.

Rated load of load cells

The rated load is selected under maximum load, taking into account centers of gravity and load distribution on the individual load cells. The rated load is generally selected according to the most heavily loaded load cell. A check also needs to be performed to check if any dynamic forces are superimposed on the static load of the load cell. In this case, the rated load of the load cell must be calculated from the sum of the static load and the peak dynamic force.

Example (please also refer to configuration example 1)

Even load distribution without dynamic influences

Number of load cells	4
Empty weight of container	1.2 t (1.18 tn. L.)
Maximum capacity	1.8 t (1.77 tn. L.)
Total load	3 t (2.95 tn. L.)

The 4 load cells are each loaded with 0.75 t (0.74 tn. L.) in order to ensure even load distribution. During configuration and selection of load cells, approx. 20 % should be added to the calculated rated load for safety reasons. This produces a required load cell rated load of $0.75 \text{ t} \times 1.2 = 0.9 \text{ t}$ ($0.74 \text{ tn. L.} \times 1.2 = 0.89 \text{ tn. L.}$)

It therefore follows that it is necessary to select the next highest rated load level, with 1 t (0.98 tn. L.).

Load Cells

Configuration examples

Configuration example 1

Overview

Example 1: Container weighing

The total center of gravity **S** of the suspended container lies above the level of the load cells.

It is supported on 4 brackets (container manufacturer specification), has an empty weight (dead load) of 1.2 t (1.18 tn. L.), and a maximum capacity of 1.8 t (1.77 tn. L.). The load is evenly distributed across all 4 load cells.

Note

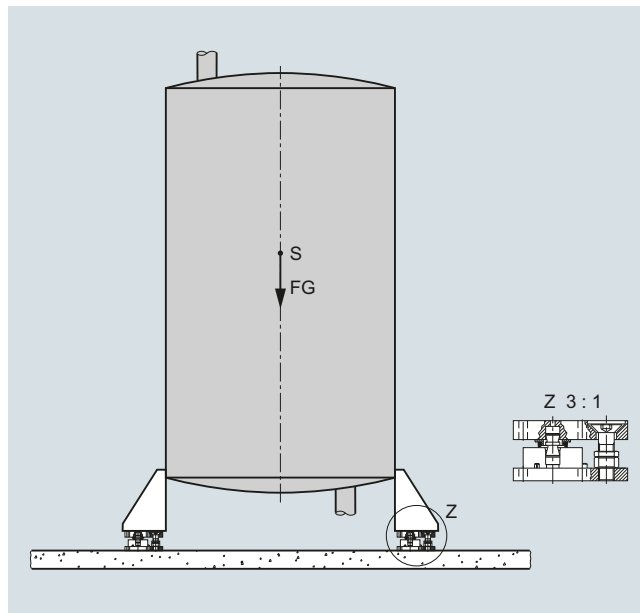
The three-point bearing of the container is statically determined and represents a stable state (see comment in the introduction).

Selection of load cells and mounting components

The determination of the rated load, as described in the introduction, results in a rated load of 1 t (0.98 tn. L.).

For the above example, 4 SIWAREX WL280 RN-S SA load cells were used with a rated load of 1 t (0.98 tn. L.) because the high-quality WL280 RN-S SA precision load cells have an extremely low constructional height.

Self-centering compact mounting units are used as mounting components because, in addition to their oscillation function and oscillation limitation, they are also fitted with anti-lift protection. The anti-lift protection can absorb a maximum vertical force of 4.2 kN. In the event of greater lifting forces (e.g. due to wind load), the container must be safeguarded with additional catastrophe protection.



Container on SIWAREX WL280 RN-S SA load cells and compact mounting units

Configurator for container weighing (basic configuration)

Item	Description	Article No.	Selection criterion	Number in example
1	SIWAREX WL280 RN-S SA, rated load 1 t (0.98 tn. L.), C3	7MH5113-4AD00	High-quality ring torsion load cells with low structure height, ideal for container weighing.	4
2	Compact mounting unit for SIWAREX WL280 RN-S SA load cell, rated load 0.5 / 1 t (0.49 / 0.98 tn. L.) Material: Stainless steel	7MH5713-4AA00	Ensures anti-lift functionality in addition to the oscillation function with oscillation limitation. Incl. grounding cable for dissipation of unwanted electrical current.	4

More information

Example 2: Container weighing

The combined center of gravity **S** of the suspended container lies below the level of the load cells.

It is mounted on three lugs, has an empty weight (total load) of 1.2 t and a maximum capacity of 1.8 t. The container has a diameter of 1 m (3.3 ft). Weighing of the individual components produces a chemical reaction that raises the temperature of the container with contents from approx. 18 °C to approx. 55 °C (131 °C).

Selection of load cells and mounting components

We recommend using 3 SIWAREX WL280 RN-S SA load cells with a rated load of 2 t (1.97 tn. L.) (for determination of the rated load: please refer to introduction). Due to its low constructional height, the WL280 RN load cell was selected.

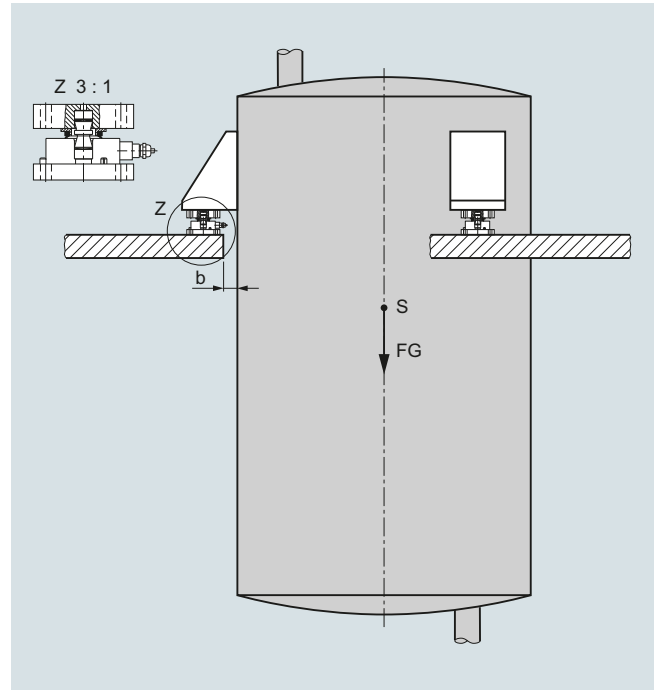
Self-centering self-aligning bearings are used as mounting components as the container is suspended and cannot lift up from the self-aligning bearing.

The 37 K temperature rise will cause the diameter of the container to increase by 0.4 mm (0.02 inch).

The self-aligning bearing permits a maximum oscillation path of ± 4 mm (0.16 inch) and is therefore able to accommodate the temperature expansion of the container.

An oscillation limitation is not necessary because there is a small gap of $b = 3$ mm (0.12 inch) between the container and the platform. In this case, the platform acts as an oscillation limitation.

For wider gaps in other applications, either mounting units have to be used (instead of the self-aligning bearings) or external pendulum limiters must be provided as an alternative.



Container weighing with SIWAREX WL280 RN-S SA load cells and self-aligning bearing

Configurator for container weighing (basic configuration)

Item	Description	Article No.	Selection criterion	Number in example
1	SIWAREX WL280 RN-S SA, rated load 2 t (1.97 tn. L.), C3	7MH5113-4GD00	High-quality ring torsion load cells with low structure height, ideal for container weighing.	3
2	Self-aligning bearing base part for SIWAREX WL280 RN-S SA load cell, rated load 2 t (1.97 tn. L.) Material: Stainless steel	7MH4132-4AG11	Allows the load cells to follow temperature expansions without conducting disruptive reaction forces into the load cells.	3
3	Self-aligning bearing base part for SIWAREX WL280 RN-S SA load cell, rated load 2 t (1.97 tn. L.) Material: Stainless steel	7MH4132-4KK11		3
4	Grounding cable	7MH3701-1AA1	For diverting unwanted currents.	3

Load Cells

Configuration examples

Configuration example 3

More information

Example 3: Mixer weighing

The combined center of gravity **S** of the suspended container lies below the level of the load cells.

It is supported on 3 brackets, has an empty weight (dead load) of 2.8 t (2.76 tn. L.) and a maximum capacity of 4.5 t (4.43 tn. L.). To improve mixing of the individual components, an agitator is mounted on the container, which also operates during the weighing process.

To improve mixing of the individual components, an agitator is mounted on the container which also operates during the weighing process.

Selection of load cells and mounting components

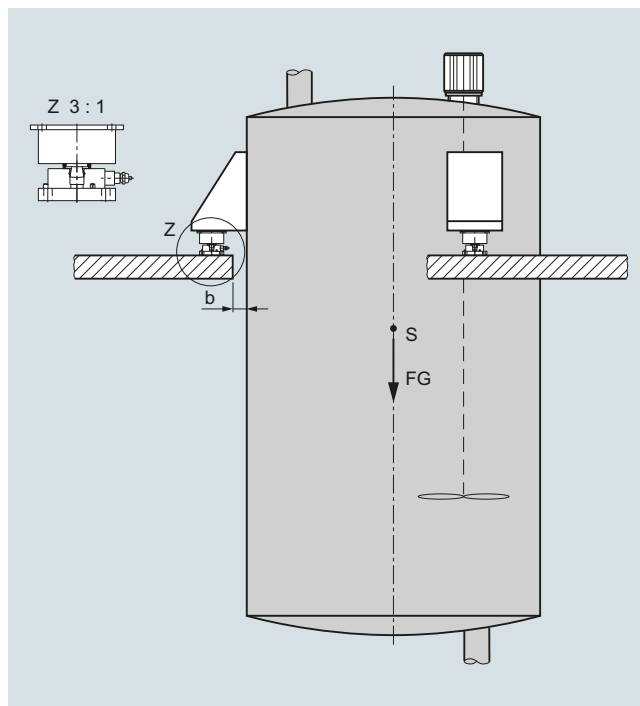
We recommend using 3 SIWAREX WL280 RN-S SA load cells with a rated load of 3.5 t (3.45 tn. L.) because the high-quality WL280 RN-S SA precision load cell has an extremely low constructional height (for determination of rated load, please refer to introduction).

Self-centering elastomer bearings are used as the mounting components to minimize the vibrations caused by the mixer.

The elastomer bearing permits a maximum oscillation path of ± 4 mm (0.16 inch).

An oscillation limitation is not necessary because there is a small gap of $b = 3$ mm (0.12 inch) between the container and the platform.

For wider gaps in other applications, endstops or external pendulum limiters must be provided.



Container with agitator on SIWAREX WL280 RN-S SA load cell and elastomer bearing

Mixed weighing processes configurator (basic configuration)

Item	Description	Article No.	Selection criterion	Number in example
1	SIWAREX WL280 RN-S SA, rated load 3.5 t, C3, without EEx	7MH5113-4LD00	High-quality ring torsion load cells with low structure height, ideal for container weighing.	3
2	Self-aligning bearing base part for SIWAREX WL280 RN-S SA load cell, rated load 2 t (1.97 tn. L.) Material: Stainless steel	7MH4132-4AG11		3
3	Elastomeric bearing for SIWAREX WL280 RN-S SA load cell, rated load 2 t (1.97 tn. L.) Material: neoprene and stainless steel	7MH4130-4KE11	Enables the damping of vibrations, thereby minimizing the influences on the load cells.	3
4	Grounding cable	7MH3701-1AA1	For diverting unwanted currents.	3

Belt Weighing



4/2	Introduction
4/4	Belt scales
4/4	Milltronics MLC
4/9	Milltronics MUS
4/14	Milltronics MCS
4/19	Milltronics MSI and MMI
4/28	Milltronics WD600
4/31	SITRANS WB300
4/35	SITRANS WB310
4/38	Speed sensors
4/38	Milltronics TASS
4/40	Milltronics RBSS
4/43	SITRANS WS300
4/48	Accessories
4/48	Calibration weight lifter Milltronics MWL
4/53	Milltronics flat bar calibration weights
4/54	Test chain
4/58	Test chain storage reel
4/61	Bend pulleys
4/65	Belt scale peripherals

Belt Weighing

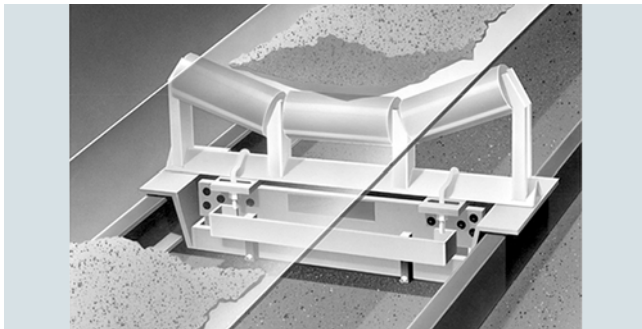
Introduction

Overview

Belt scales help maximize the use of raw materials, control inventories, and aid in the manufacturing of a consistent product. Belt scales from Siemens are easy to install and require little maintenance. They produce repeatable, accurate results. These belt scales show minimal hysteresis and superior linearity, and ignore side loading. Load cell overload protection is a feature of the belt scale design.

Typical system

A typical belt scale system has a weigh bridge structure supported on load cells, an electronic integrator, and a belt speed sensor. The load cells measure the material weight on the belt, and send a signal to the integrator. The integrator also receives input in the form of electrical pulses from a belt speed sensor connected to a tail or bend pulley. Using these two sources of data, the integrator calculates the rate of material transferred along the belt using the equation $\text{weight} \times \text{speed} = \text{rate}$.

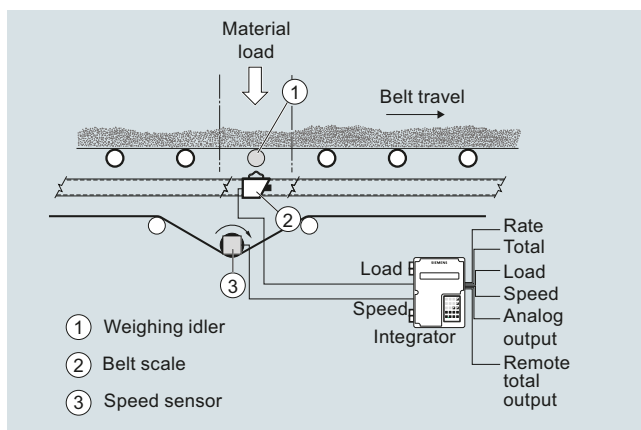


Belt scale operation

Mode of operation

Siemens belt scales only measure the vertical component of the applied force. As material moves down the conveyor belt and travels over the belt scale, it exerts a force proportional to the material load through the suspended idler directly to the load cells. The resulting force applied in each load cell is sensed by its strain gauges. When the strain gauges are excited by voltage from the electronic integrator, they produce an electrical signal proportional to belt loading, which is then applied to the integrator.

The vertical movement of the load cells is limited by the positive overload stop incorporated into the design of the belt scale or load cells. The stops protect the load cells from failure in the event of extreme overload forces.



Installation tips

Position the scale

Locate the scale close to the tail section of the conveyor belt where tension is minimal and more consistent. Mount the scale on rigid mountings, away from equipment that may produce measurement disturbing vibrations. Avoid variable tension points, transition points, or slope change. The ideal location is a horizontal, even belt section, but you can achieve good results on slopes if the idlers are properly aligned. If the conveyor curves, locate the scale a proper distance from the tangent points of the curve. For concave curved conveyors, the recommended minimum distance is 12 m (40 ft) from the tangent points of the curve. With convex conveyors, the minimum distance is 6 m (20 ft) on the approach side, and 12 m (40 ft) on the retreat side. Be sure to install the scale a sufficient distance from the infeed section (at least one idler space) so the material has time to settle properly on the belt.

Reduce variable belt tension

With temperature variations, load, and other circumstances, the belt tension will change. To maintain proper tension, a gravity take-up is recommended. This is a weight designed to take up slack on the belt. A gravity take-up should move freely and place consistent tension on the belt. The use of screw take-ups should be limited to conveyors with pulley centers to 18.3 m (60 ft) or less. The amount of weight should conform to the conveyor design specifications.

Align the idlers

Precise idler alignment is essential. At least two idlers on each side of the scale should be aligned with the belt scale; use three or more for high accuracy applications. To check alignment, use wire, string, or fishing line across the top outer edges of the rollers and tighten enough to eliminate sag. Adjust the height of the rollers with shims until they are all even, or at least within $\pm 0.8 \text{ mm}$ (1/32 inch). All of the scale-area idlers should be the same type (size, diameter, style, trough angle, and manufacture) and should be spaced at equal distances. Locate training idlers a minimum of 9 m (30 ft) from the belt scale idler.

Install speed sensors

The speed sensor should be attached to the tail pulley or bend pulley shaft so the connection does not slip. It is important that the speed sensor be properly mounted as described in the Operating Instructions and free of excessive vibration. Whenever possible, mount the speed sensor on a solid face pulley. The use of wing- or beater-type pulleys is not recommended.

Wheel driven speed sensors, that are applied to the return strand of the belt, should be located close to a return idler to ensure a stable drive surface.

Wire the scale

Follow good instrumentation wiring practices to protect the load cell and speed sensor signals from radio frequency interference and induction. Use terminal blocks, shielded cable, and grounded metal conduit for all wiring.

Technical specifications

Criteria	Typical industries	Typical applications	Maximum capacity	Maximum belt speed	Loading range	Accuracy ¹⁾		Approvals
						Value	Specified range	
Milltronics MLC	- Animal feed - Fertilizers - Food processing - Tobacco	Secondary industries	50 t/h (55 STPH) at max. belt speed	2.0 m/s (400 fpm)	Light	± 0.5 ... 1 %	25 ... 100 %	CE, RCM, EAC
Milltronics MUS	- Aggregates - Agricultural - Mining - Cement	- Aggregates - Medium- to heavy-duty	5 000 t/h (5 500 STPH) at max. belt speed	3.0 m/s (600 fpm)	Light to heavy	± 0.5 ... 1 %	25 ... 100 %	CE, RCM, EAC
Milltronics MCS	Aggregates	- Mobile crushers - Aggregates - Screening plants - Heavy-duty	2 400 t/h (2 640 STPH) at max. belt speed	3.0 m/s (600 fpm)	Light to heavy	± 0.5 ... 1 %	25 ... 100 %	CE, CSA/FM, ATEX, IECEx, RCM, EAC
Milltronics MSI	- Cement - Chemicals - Coal - Food processing - Mineral processing - Mining	- Industrial heavy-duty - Custody transfer	12 000 t/h (13 200 STPH) at max. belt speed	5.0 m/s (984 fpm)	Moderate to heavy	± 0.5 % or better	20 ... 100 %	SABS, MID, OIML, Measurement Canada, CE, CSA/FM, ATEX, IECEx, RCM, EAC
Milltronics MMI	- Cement - Chemicals - Coal - Food processing - Mineral processing - Mining	- Industrial heavy-duty - Custody transfer	12 000 t/h (13 200 STPH) at max. belt speed	5.0 m/s (984 fpm)	Moderate to heavy	MMI-2 (2 idler): ± 0.25 % or better MMI-3 (3 idler): ± 0.125 % or better	20 ... 100 % 25 ... 10 %	NTEP, MID, OIML, Measurement Canada, CE, CSA/FM, ATEX, IECEx, RCM, EAC
Milltronics WD600	- Food - Pharmaceutical and tobacco industries	- Process and load-out control - Light- to medium-duty	Up to 100 t/h	2.0 m/s (400 fpm) maximum	Light to moderate	± 0.5 ... 1 %	25 ... 100 %	CE, meets FDA/USDA requirements for food processors, RCM, EAC
SITRANS WB300	Cement	Heavy-duty pan conveyors	Up to 5 000 t/h	1 m/s (200 fpm) maximum	Heavy	± 2 %	33 ... 100 %	CE, RCM
SITRANS WB310	Recycle	Light-duty	Up to 5 000 t/h	1 m/s (200 fpm) maximum	Light to moderate	± 5 %	25 ... 100 %	CE, RCM

¹⁾ Accuracy subject to: on factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

Belt Weighing

Belt scales

Milltronics MLC

Overview



Milltronics MLC is a low-capacity scale for light belt loading.

Application

The MLC is suitable for monitoring such products as fertilizer, tobacco, animal feed pellets, or sugar.

The MLC's proven use of parallelogram style load cells results in fast reaction to vertical forces, ensuring instant response to product loading. This enables it to provide outstanding accuracy and repeatability even with very light loading. The MLC may be easily installed in existing flat belt conveyors or belt feeders.

Operating with Milltronics BW500, SIWAREX WT241, WP241, or FTC microprocessor-based integrators, the MLC provides indication of flow rate, total weight, belt load and belt speed of bulk solids materials on a belt conveyor. A speed sensor monitors conveyor belt speed for input to the integrator. When used in conjunction with Milltronics BW500 integrator with PID controller, the MLC may also be used in the food industry as part of a pre-feed control system for extruders, cookers and de-hydrators.

Benefits

- Unique parallelogram style load cell design
- Designed for light product loading
- Compact and easy to install
- System includes weighing idler
- Stainless steel option
- Low cost of ownership

Technical specifications

Milltronics MLC	
Mode of operation	
Measuring principle	Strain gauge load cell measuring load on flat belt conveyor idler
Typical application	Monitor fertilizer, tobacco, animal feed pellets, sugar, cereal
Performance	
Accuracy ¹⁾	± 0.5 ... 1.0 % of totalization over 25 ... 100 % operating range
Repeatability	± 0.1 %
Medium conditions	
Max. material temperature	85 °C (185 °F)
Belt design	
Belt width	• 450 ... 1 200 mm • 18 ... 48 inch
Belt speed	2.0 m/s (400 fpm) maximum
Capacity	Up to 50 t/h (55 STPH)
Conveyor incline	• ± 20° from horizontal, fixed incline • Up to ± 30° with reduced accuracy
Idlers	
Conveyor idler	Horizontal
Idler diameter	50 or 60 mm (1.90 or 2.30 inch)
Idler spacing	0.5 ... 1.5 m (1.6 ... 5.0 ft)

Milltronics MLC	
Load cell	
Construction	17-4 PH (1.4568) stainless steel construction with 304 (1.4301) stainless steel cover Strain gauge protection: polybutadiene
Degree of protection	IP67
Cable length	3 m (10 ft)
Excitation	10 V DC nominal, 15 V DC maximum
Output	2 mV/V excitation at rated load cell capacity
Non-linearity	0.03 % of rated output
Hysteresis	0.05 % of rated output
Non-repeatability	0.03 % of rated output
Capacity	10 or 20 lb
Overload	150 % of rated capacity, ultimate 300 % of rated capacity
Temperature	• -40 ... +85 °C (-40 ... +185 °F) operating range • -10 ... +60 °C (14 ... 140 °F) compensated
Mounting dimensions	Identical for all capacities
Hazardous locations	Consult the factory
Approvals	CE, RCM, EAC, KCC

¹⁾ Accuracy subject to: on factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

Belt Weighing

Belt scales

Milltronics MLC

Selection and ordering data

Milltronics MLC belt scale

Low-capacity scale for light belt loading that comes complete with a weighing idler.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Belt width/Scale construction

C5-M rated polyester painted mild steel

18 inch (457 mm)

24 inch (610 mm)

30 inch (762 mm)

36 inch (914 mm)

42 inch (1 067 mm)

48 inch (1 219 mm)

500 mm (20 inch)

650 mm (26 inch)

800 mm (32 inch)

1 000 mm (39 inch)

1 200 mm (47 inch)

450 mm (18 inch)

Stainless steel 304 (1.4301), bead blast finish
(1 ... 6 µm, 40 ... 240 µin)

18 inch (457 mm)

24 inch (610 mm)

30 inch (762 mm)

36 inch (914 mm)

42 inch (1 067 mm)

48 inch (1 219 mm)

500 mm (20 inch)

650 mm (26 inch)

800 mm (32 inch)

1 000 mm (39 inch)

1 200 mm (47 inch)

450 mm (18 inch)

Load cell capacity

10 lb (4.55 kg)

20 lb (9.09 kg)

Not specified¹⁾

Weighing idler dimensions

50 mm (1.96 inch)²⁾

60 mm (2.40 inch)³⁾

1.90 inch (48.2 mm)⁴⁾

Article No.

7MH7126-

1 A

1 B

1 C

1 D

1 E

1 F

1 G

1 H

1 J

1 K

1 L

1 M

2 A

2 B

2 C

2 D

2 E

2 F

2 G

2 H

2 J

2 K

2 L

2 M

A

B

X

1

2

5

Further designs

Please add "-Z" to article no. and specify order code(s).

Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)],
Measuring-point number/ identification
(max 27 characters), specify in plain text.

Application Eng. reference number
(max. 15 characters), specify in plain text.

Manufacturer's test certificate: according to EN 10204-2.2
FDA compliant version. Conduit and fittings designed for
food applications conforming to FDA/USDA standards

Operating instructions

All literature is available to download for free, in a
range of languages, at

<http://www.siemens.com/weighing/documentation>

Spare parts

Load cell, 10 lb (4.55 kg), 17-4 PH (1.4568) stainless
steel construction with 304 (1.4301) stainless steel
cover, includes hardware

Load cell, 20 lb (9.09 kg), 17-4 PH (1.4568) stainless
steel construction with 304 (1.4301) stainless steel
cover, includes hardware

Conduit replacement kit

FDA conduit replacement kit

Milltronics MLC calibration weight [Stainless Steel 304 (1.4301)]

For scales with belt width of 18 inch or 500 mm or
450 mm

1.05 lb (0.47 kg)

1.63 lb (0.73 kg)

2.35 lb (1.06 kg)

3.21 lb (1.45 kg)

For scales with belt width of 24 inch or 650 mm

1.38 lb (0.62 kg)

2.15 lb (0.97 kg)

3.11 lb (1.41 kg)

4.24 lb (1.91 kg)

For scales with belt width of 30 inch or 800 mm

1.72 lb (0.77 kg)

2.67 lb (1.21 kg)

3.85 lb (1.73 kg)

5.26 lb (2.37 kg)

For scales with belt width of 36 inch or 1 000 mm

2.05 lb (0.92 kg)

3.19 lb (1.44 kg)

4.56 lb (2.07 kg)

6.29 lb (2.83 kg)

For scales with belt width of 42 inch or 1 000 mm

2.38 lb (1.07 kg)

3.71 lb (1.67 kg)

5.35 lb (2.41 kg)

7.31 lb (3.29 kg)

Order Code

Y15

Y31

C11

K01

Article No.

PBD-23900244

PBD-23900245

7MH7723-1NA

7MH7723-1QL

7MH7724-1AL

7MH7724-1AM

7MH7724-1AN

7MH7724-1AP

7MH7724-1AQ

7MH7724-1AR

7MH7724-1AS

7MH7724-1AT

7MH7724-1AU

7MH7724-1AV

7MH7724-1AW

7MH7724-1AX

7MH7724-1AY

7MH7724-1BA

7MH7724-1BB

7MH7724-1BC

7MH7724-1BD

7MH7724-1BE

7MH7724-1BF

7MH7724-1BG

¹⁾ Only for quotation purposes, not a valid ordering option.

²⁾ Available with Belt width/Scale construction options 1G ... 1M and 2G ... 2M only.

³⁾ Available with Belt width/Scale construction options 1G ... 1M only.

⁴⁾ Available with Belt width/Scale construction options 1A ... 1F and 2A ... 2F only.

Selection and ordering data

Article No.

For scales with belt width of 48 inch or 1 200 mm

2.72 lb (1.22 kg)

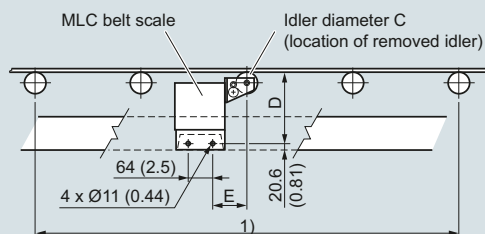
4.23 lb (1.92 kg)

6.06 lb (2.75 kg)

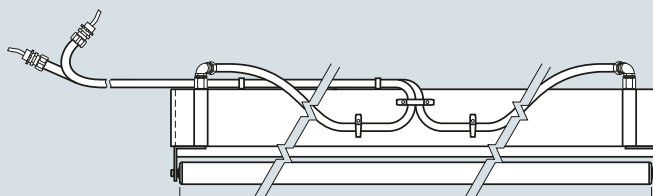
8.34 lb (3.75 kg)

 Note: calibration accessories should be ordered as
 a separate item on the order.
7MH7724-1BH**7MH7724-1BJ****7MH7724-1BK****7MH7724-1BL**
Dimensional drawings

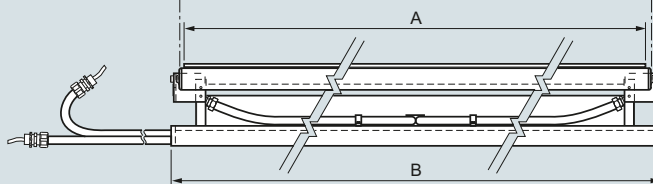
Installation



Plan View



Front View



1) For pan supported belts, the belt should be cut out to allow the MLC and at least two (preferably four) other idlers to be installed.

Imperial designs [dimensions in inch (mm)]

Scale size	'A' roller width	'B' dimension	'C' dimension	'D' dimension	'E' dimension
18 (457)	18 (457)	19 (483)	1.90 (48.3)	6.19 (157)	3.5 (89)
24 (610)	24 (610)	25 (635)	1.90 (48.3)	6.19 (157)	3.5 (89)
30 (762)	30 (762)	31 (787)	1.90 (48.3)	6.19 (157)	3.5 (89)
36 (914)	36 (914)	37 (940)	1.90 (48.3)	6.19 (157)	3.5 (89)
42 (1 067)	42 (1 067)	43 (1 092)	1.90 (48.3)	6.19 (157)	3.5 (89)
48 (1 219)	48 (1 219)	49 (1 245)	1.90 (48.3)	6.19 (157)	3.5 (89)

Metric designs [dimensions in mm (inch)]

Scale size	'A' roller width	'B' dimension	'C' dimension	'D' dimension	'E' dimension
450 (17.72)	450 (17.72)	500 (19.69)	50 (1.97)	158 (6.22)	96 (3.78)
500 (19.69)	500 (19.69)	550 (21.65)	50 (1.97)	158 (6.22)	96 (3.78)
650 (25.59)	650 (25.59)	700 (27.56)	50 (1.97)	158 (6.22)	96 (3.78)
800 (31.50)	800 (31.50)	850 (33.46)	50 (1.97)	158 (6.22)	96 (3.78)
1 000 (39.37)	1 000 (39.37)	1 050 (41.34)	60 (2.36)	158 (6.22)	96 (3.78)
1 200 (47.24)	1 200 (47.24)	1 250 (49.21)	60 (2.36)	158 (6.22)	96 (3.78)

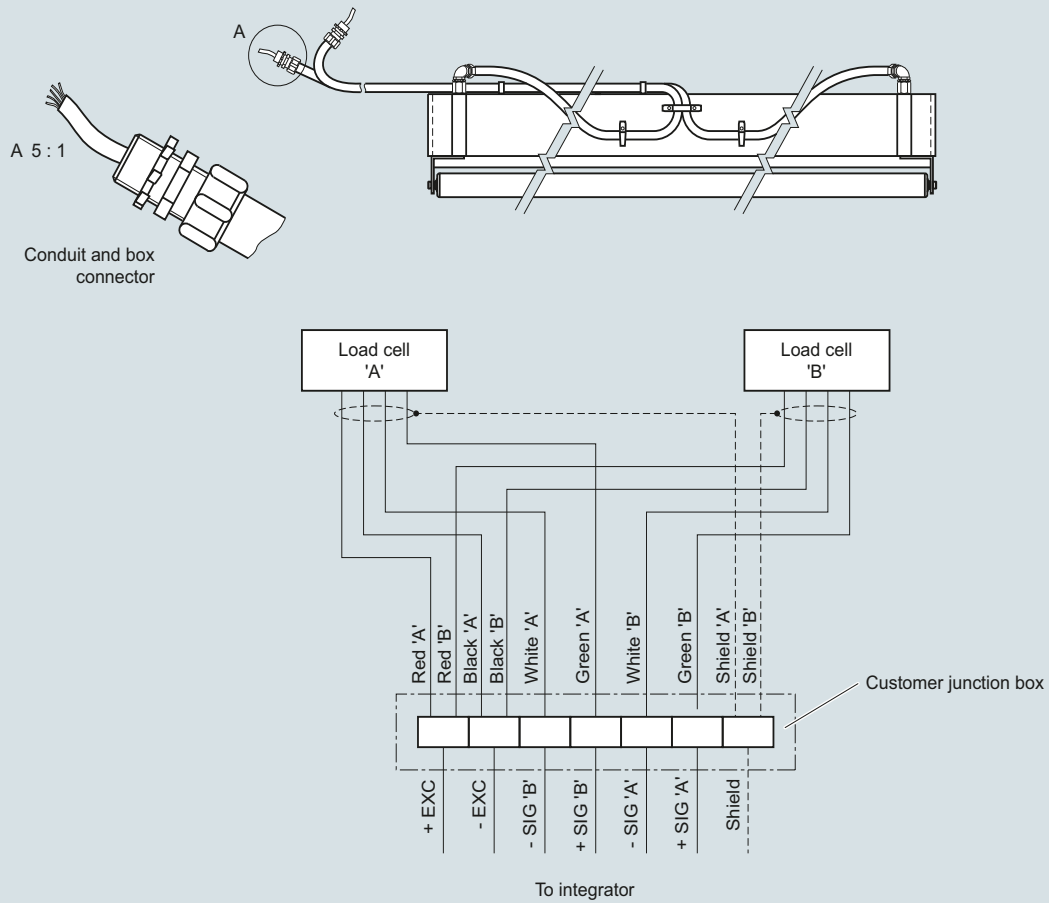
MLC, dimensions in mm (inch)

Belt Weighing

Belt scales

Milltronics MLC

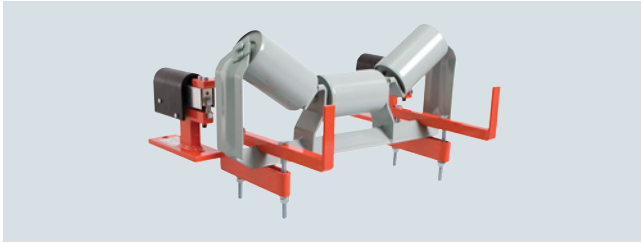
Circuit diagrams



Note:

Conduit and cable arrangement may differ from example shown.

MLC connections

Overview

Milltronics MUS is a modular designed, medium- to heavy-duty belt scale for process indication.

Idler not included with belt scale.

Benefits

- Unique modular design
- Simple installation
- Low cost
- Easy retrofit

Application

Milltronics MUS operates with products like aggregates, sand, or minerals, providing continuous in-line weighing at a minimal cost. With no cross bridge, this versatile unit will fit most conveyor widths and standard idlers, and product build-up is reduced.

The construction and easy assembly of the MUS ensures quick delivery to meet even the tightest of schedules. Where scales are moved from conveyor to conveyor, the MUS also provides unmatched flexibility.

Operating with Milltronics BW500, SIWAREX WT241, WP241, or FTC microprocessor-based integrators, the MUS provides indication of flow rate, total weight, belt load, and speed of bulk solids materials on a belt conveyor. A speed sensor monitors conveyor belt speed for input to the integrator.

Belt Weighing

Belt scales

Milltronics MUS

Technical specifications

Milltronics MUS	
Mode of operation	
Measuring principle	Heavy duty strain gauge load cells measuring load on belt conveyor idlers
Typical applications	- Monitor fractionated stone on secondary surge belts and recirculating loads - Track daily production totals
Measurement accuracy	
Accuracy ¹⁾	± 0.5 ... 1 % of totalization over 25 ... 100 % operating range, application dependent
Repeatability	± 0.1 %
Medium conditions	
Max. material temperature	65 °C (150 °F)
Belt design	
Belt width	- Standard duty up to 1 000 mm (CEMA width up to 42 inch) - Heavy-duty up to 1 524 mm (CEMA width up to 60 inch) - Refer to dimensional drawing
Belt speed	Up to 3.0 m/s (600 fpm)
Capacity	Up to 5 000 t/h at maximum belt speed
Conveyor incline	± 20° from horizontal, fixed incline - Up to ± 30° with reduced accuracy²⁾
Idlers	
Idler profile	- Flat to 35° - To 45° with reduced accuracy²⁾
Idler diameter	50 ... 180 mm (2 ... 7 inch)
Idler spacing	0.6 ... 1.5 m (2.0 ... 5.0 ft)

Milltronics MUS	
Load cell	
Construction	Nickel plated alloy steel Strain gauge protection: silicon
Degree of protection	IP66
Cable length	3 m (10 ft)
Excitation	10 V DC nominal, 15 V DC max.
Output	2 mV/V excitation at rated load cell capacity
Non-linearity and hysteresis	0.02 % of rated output
Non-repeatability	0.01 % of rated output
Capacity	
• Standard duty ranges	20, 30, 50, 75, 100 kg (44, 66, 110, 165, 220 lb)
• Heavy-duty ranges	50, 100, 150, 200, 500 kg (110, 220, 330, 440, 1 100 lb)
Overload	150 % of rated capacity, ultimate 200 % of rated capacity
Temperature	-40 ... +65 °C (-40 ... +150 °F) operating range -10 ... +40 °C (15 ... 105 °F) compensated
Weight	
	Standard duty up to 44 lb (20 kg), 22 lb (10 kg) per side
	Heavy-duty up to 64 lb (30 kg), 32 lb (15 kg) per side
Interconnection wiring (to integrator)	
	< 150 m (500 ft) 18 AWG (0.75 mm²) 6 conductor shielded cable > 150 m ... 300 m (500 ... 1 000 ft) 18 ... 22 AWG (0.75 ... 0.34 mm²) 8 conductor shielded cable
Hazardous locations	
	Consult the factory
Approvals	
	CE, RCM, EAC, CMC, KCC

¹⁾ Accuracy subject to: on factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

²⁾ Review by Siemens application engineer required.

Selection and ordering data		Article No.	Article No.
Milltronics MUS belt scale Modular design, medium- to heavy-duty scale for process indication. Flat bar calibration weights are optional and should be ordered as separate items, see page 4/53. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7MH7123-0	Spare parts Standard Duty Scale Load Cell 20 kg (44.1 lb) 30 kg (66.1 lb) 50 kg (110.2 lb) 75 kg (165.3) 100 kg (220.5 lb) Heavy-Duty Scale Load Cell 50 kg (110.2 lb) 100 kg (220.5 lb) 150 kg (330.7 lb) 200 kg (440.9 lb) 300 kg (661.4 lb) 500 kg (1 120.3 lb) Rock Guard, MUS Standard Duty Scale, spare Conduit replacement kit Calibration weights Milltronics flat bar calibration weights, see page 4/53. Note: calibration accessories should be ordered as a separate item on the order.	A5E00826934 A5E00826935 A5E00826936 A5E00826938 A5E00826939 A5E00826941 A5E00826942 A5E00826943 A5E00826944 A5E00826945 A5E00826946 7MH7723-1DM 7MH7723-1NA
Scale construction Standard for belt width up to 1 000 mm (42 inch), nickel plated steel load cells Heavy-duty for belt width up to 1 524 mm (60 inch), nickel plated steel load cells	1 2		
Load cell capacity Standard Duty Scale Load Cell 20 kg (44.1 lb)¹⁾ 30 kg (66.1 lb)¹⁾ 50 kg (110.2 lb)¹⁾ 75 kg (165.3 lb)¹⁾ 100 kg (220.4 lb)¹⁾ Not specified²⁾ Heavy-Duty Scale Load Cell 50 kg (110.2 lb)³⁾ 100 kg (220.4 lb)³⁾ 150 kg (330.7 lb)³⁾ 200 kg (440.9 lb)³⁾ 300 kg (661.4 lb)³⁾ 500 kg (1 102.3 lb)³⁾	AA AB AC AD AE XX BA BB BC BD BE BF		
Fabrication C5-M rated polyester painted mild steel	1		
Further designs Please add "-Z" to article no. and specify order code(s). Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)], Measuring-point number / identification (max. 27 characters), specify in plain text. Application Eng. reference number (max. 15 characters), specify in plain text. Manufacturer's test certificate: According to EN 10204-2.2	Order Code Y15 Y31 C11		
Operating instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/weighing/documentation			

1) For use with scale construction option 1 only.

2) Only for quotation purposes, not a valid ordering option.

3) For use with scale construction option 2 only.

Belt Weighing

Belt scales

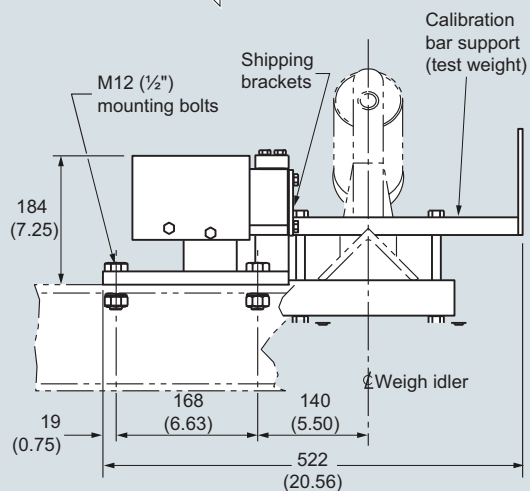
Milltronics MUS

Dimensional drawings

Standard duty

Belt direction for all flat or inclined conveyors

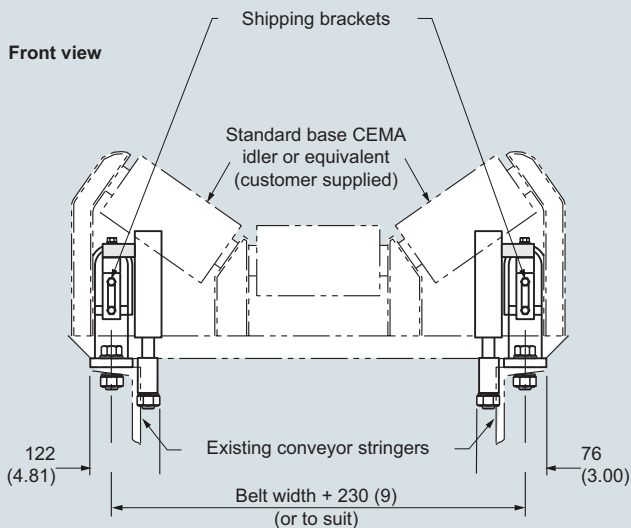
Side view



Note:

(2) approach and (2) retreat idlers should be aligned with the weigh idler to within 0.8 (+1/3) to 0 (0).

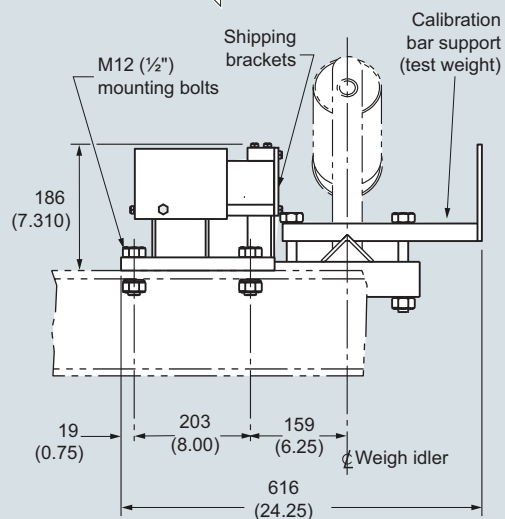
Front view



Heavy duty

Belt direction for all flat or inclined conveyors

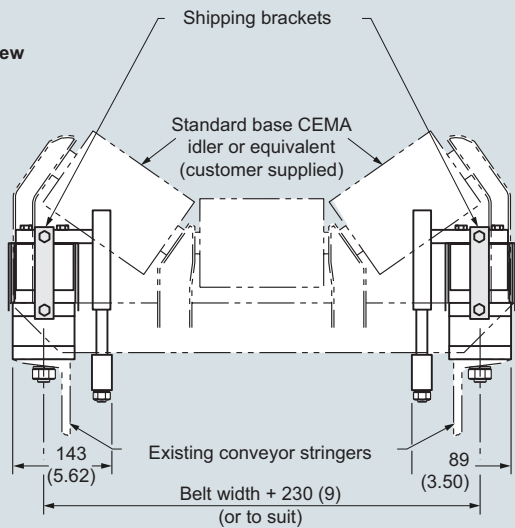
Side view



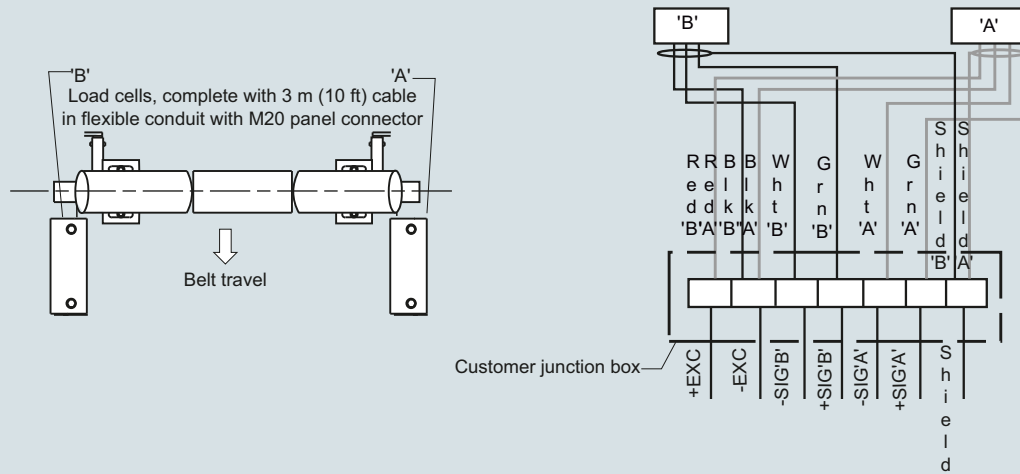
Note:

(2) approach and (2) retreat idlers should be aligned with the weigh idler to within 0.8 (+1/3) to 0 (0).

Front view



MUS, dimensions in mm (inch)

Circuit diagrams


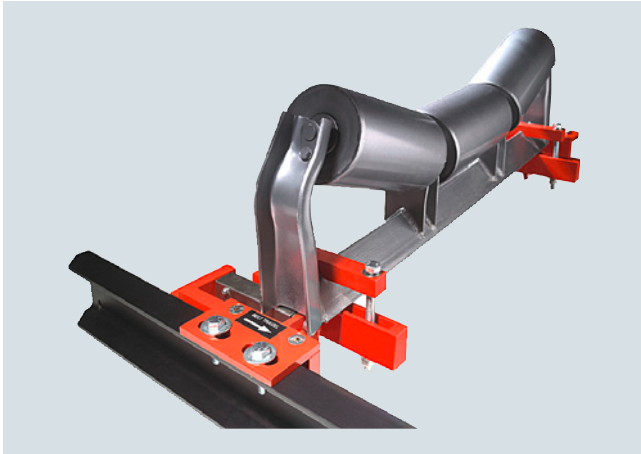
MUS connections

Belt Weighing

Belt scales

Milltronics MCS

Overview



Milltronics MCS is a compact, rugged, modular, heavy-duty belt scale for use in mobile crushers and aggregate screening plants.

Idler not included with belt scale.

Application

Milltronics MCS provides continuous, in-line weighing at minimal cost. The stainless steel load cells ensure long-term, consistent, reliable measurement. The modular construction and easy assembly of the MCS ensures quick delivery to meet even the tightest of schedules.

Operating with Milltronics BW500, SIWAREX WT241, WP241, or FTC microprocessor-based integrators, the MCS provides indication of flow rate, total weight, belt load, and belt speed of bulk solids materials on a belt conveyor.

To complete the weighing system, include a speed sensor to monitor conveyor belt speed for input to the integrator. On mobile crushing equipment, the TASS speed sensor is a compact, rugged speed sensor designed for use with the MCS.

4

Benefits

- Rugged design
- Low profile
- Easy retrofit
- Low cost
- Stainless steel load cells

Technical specifications

Milltronics MCS	
Mode of operation	
Measuring principle	Strain gauge load cells measuring load on belt conveyor idlers
Typical application	Mobile crusher systems
Measurement accuracy	
Accuracy ¹⁾	• $\pm 0.5 \dots 1$ % of totalization over 25 ... 100 % operating range, application dependent • ± 2 % of totalization over 25 ... 100 % operating range on mobile crusher applications
Repeatability	± 0.1 %
Belt design	
Belt width	• Up to 1 600 mm (60 inch CEMA) width • Refer to the outline dimension section
Belt speed	Up to 4 m/s (800 fpm)
Capacity	Up to 2 400 t/h (2 640 STPH) at maximum belt speed
Conveyor incline	• $\pm 20^\circ$ from horizontal, fixed incline • Up to $\pm 30^\circ$ with reduced accuracy²⁾
Idlers	
Idler profile	• Flat to 35° • To 45° with reduced accuracy²⁾
Idler diameter	100 ... 150 mm (4 ... 6 inch)
Idler spacing	0.6 ... 1.2 m (2.0 ... 4.0 ft)
Load cell	
Construction	17-4 PH (1.4568) stainless steel construction with 304 (1.4301) stainless steel cover Strain gauge protection: polybutadiene
Degree of protection	IP67, IP65 on hazardous approved models
Cable length	3 m (10 ft)
Excitation	10 V DC nominal, 15 V maximum
Output	2 mV/V excitation at rated load cell capacity
Non-linearity and hysteresis	0.02 % of rated output
Non-repeatability	0.01 % of rated output
Capacity	25, 50, 100, 250, 500 lb stainless steel
Overload	150 % of rated capacity, ultimate 300 % of rated capacity
Temperature	• $-50 \dots +75$ °C ($-58 \dots +167$ °F) operating range • $-40 \dots +65$ °C ($-40 \dots +150$ °F) compensated

Milltronics MCS	
Weight	Up to 20 kg (44 lb), 10 kg (22 lb) per side
Interconnection wiring (to integrator)	• < 150 m (500 ft) 18 AWG (0.75 mm²) 6 conductor shielded cable • > 150 m (500 ft) to 300 m (1 000 ft) 18 ... 22 AWG (0.75 ... 0.34 mm²), 8 conductor shielded cable
Approvals	• CSA/FM Class II, Div. 1, Groups E, F, G and Class III • ATEX II 2D, Ex tD A21 IP65 T90 °C • EAC Ex • IEC Ex, Ex tD A21 IP65 T90 °C • CE, RCM, EAC, KCC, RTN

¹⁾ Accuracy subject to: on factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

²⁾ Review by Siemens application engineer required.

Belt Weighing

Belt scales

Milltronics MCS

Selection and ordering data

Milltronics MCS belt scale

A compact, rugged, modular, heavy-duty belt scale for use in mining and aggregate screening plants

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Scale construction

Standard duty, CE, RCM, EAC, KCC

Hazardous Duty

CSA/FM Class II, Div. 1, Groups E, F, G and Class III, ATEX II 2D, IECEx, EAC Ex, CE, RCM, EAC, KCC

Load cell capacity

50 lb (22.7 kg) (use not recommended for mobile crushers)

100 lb (45.5 kg) (use not recommended for mobile crushers)

250 lb (113.6 kg)

500 lb (226.8 kg)

25 lb (11.3 kg) (use not recommended for mobile crushers)

Not specified¹⁾

Fabrication

C5-M rated polyester painted mild steel

C5-M rated polyester painted mild steel, for use with flat bar or MWL calibration

Further designs

Please add **"-Z"** to article no. and specify order code(s).

Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)], Measuring-point number / identification (max 27 characters), specify in plain text.

Application Eng. reference number (max. 15 characters), specify in plain text.

Manufacturer's test certificate: According to EN 10204-2.2

Operating instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

Article No.

7MH7125-

0

1

2

AA

AB

AC

AD

AE

BB

1

2

Order Code

Y15

Y31

C11

Article No.

Spare parts

Stainless steel load cell

[17-4 PH (1.4568) stainless steel construction with 304 (1.4301) stainless steel cover]

25 lb (11.3 kg)

A5E01673047

50 lb (22.7 kg)

A5E01135823

100 lb (45.4 kg)

A5E01135824

250 lb (113.4 kg)

A5E01135825

500 lb (226.8 kg)

A5E01135826

Calibration weights

Flat bar/MWL retrofit kit

7MH7723-1HA

Calibration test arm assembly, c/w one 8.2 kg (18 lb) calibration weight

7MH7723-1FR

Calibration test arm assembly, c/w two 8.2 kg (18 lb) calibration weights

7MH7723-1FS

MCS calibration arm c/w idler clip [holds up to two 8.2 kg (18 lb) weights]

7MH7726-1AD

Calibration weight, 18 lb (8.2 kg)

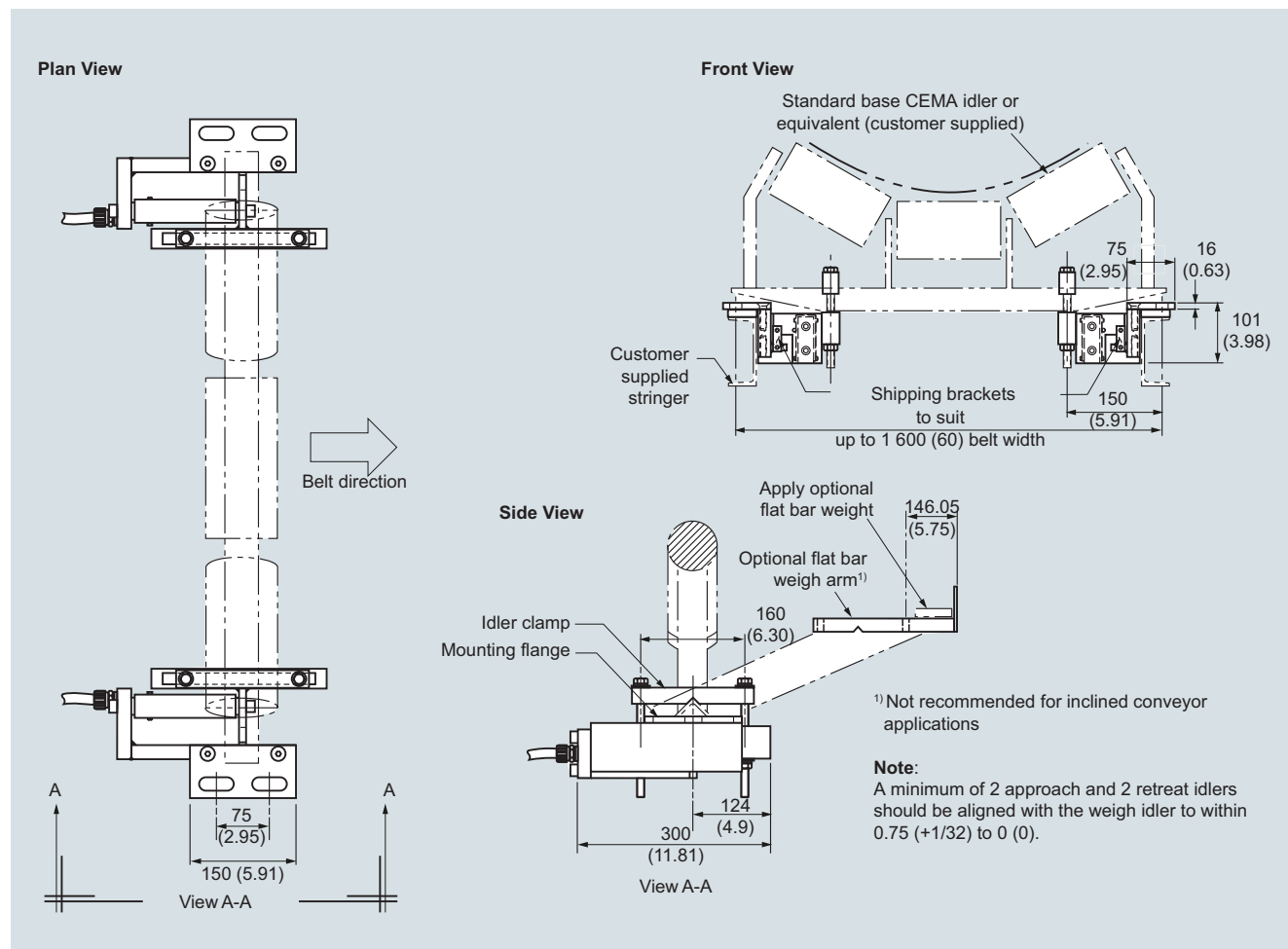
7MH7724-1AA

Calibration weight, 6 lb (2.7 kg)

7MH7724-1AB

Milltronics flat bar calibration weights, see page 4/53.
Note: calibration accessories should be ordered as a separate item on the order.

¹⁾ Only for quotation purposes, not a valid ordering option.

Dimensional drawings


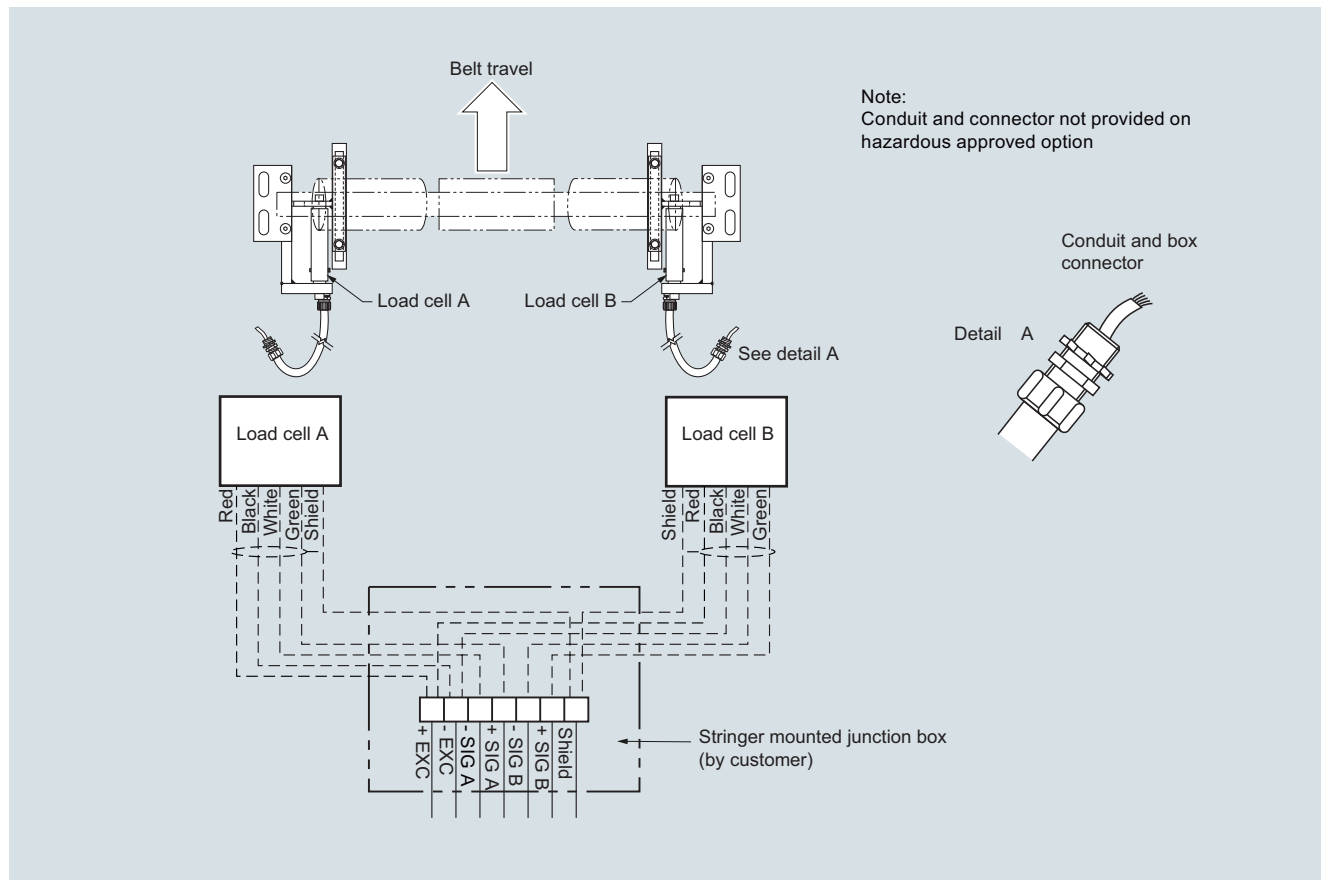
MCS, dimensions in mm (inch)

Belt Weighing

Belt scales

Milltronics MCS

Circuit diagrams



MCS connections

Overview



Milltronics MSI is a heavy-duty, high accuracy full-frame single idler belt scale used for process and load-out control. Idler not included with belt scale.



Milltronics MMI is a heavy-duty, high accuracy multiple idler belt scale used for critical process and load-out control. Idler not included with belt scale.

Benefits

Milltronics MSI belt scale

- Outstanding accuracy and repeatability
- Unique parallelogram style load cell design
- Fast reaction to product loading; capable of monitoring fast moving belts
- Rugged construction
- SABS approval (South Africa), OIML, MID, and Measurement Canada

Milltronics MMI belt scale

- Exceptional accuracy and repeatability
- Unique parallelogram style load cell design
- Suitable for uneven or light product loading
- Capable of monitoring fast moving belts
- Low cost of ownership
- NTEP, OIML, MID, and Measurement Canada approved

Application

Milltronics MSI belt scale

Milltronics MSI belt scale provides continuous in-line weighing on a variety of products in primary and secondary industries. It is proven in a wide range of tough applications from extraction (in mines, quarries and pits), to power generation, iron and steel, food processing and chemicals. The MSI is suitable for monitoring such diverse products as sand, flour, coal, or sugar.

The MSI's proven use of parallelogram-style load cells results in fast reaction to vertical forces, ensuring instant response to product loading. This enables it to provide outstanding accuracy and repeatability even with uneven loading and fast belt speeds.

Operating with Milltronics BW500, SIWAREX WT241, WP241, or FTC microprocessor-based integrators, the MSI provides indication of flow rate, totalized weight, belt load, and belt speed of bulk solid materials. A speed sensor monitors conveyor belt speed for input to the integrator.

The MSI is installed in a simple drop-in operation and may be secured with just four bolts. An existing idler is then attached to the MSI dynamic beam. With no moving parts, maintenance is kept to a minimum, with just periodic calibration checks required.

Milltronics MMI belt scale

Milltronics MMI belt scale consists of two or more MSI single idler belt scales installed in series. It provides high accuracy continuous in-line weighing on a variety of products in primary and secondary industries. The MMI system is proven in a wide range of tough applications from extraction to power generation, iron and steel, food processing and chemicals. The MMI is suitable for monitoring such diverse products as fertilizer, sand, grain, flour, coal, or sugar.

The MMI's proven use of parallelogram-style load cells results in fast reaction to vertical forces, ensuring instant response to product loading. This enables it to provide outstanding accuracy and repeatability even with uneven or light loading, short idler spacing and fast belt speeds. Operating with Milltronics BW500 integrator (for custody transfer applications), the MMI provides indication of flow rate, total weight, belt load and belt speed of bulk solids materials on a belt conveyor. A speed sensor monitors conveyor belt speed for input to the integrator.

The MMI is installed in a simple drop-in operation and may be secured with just eight bolts and existing idler sets, secured to the dynamic beam. With no moving parts, maintenance is kept to a minimum, with just periodic calibration checks required.

Belt Weighing

Belt scales

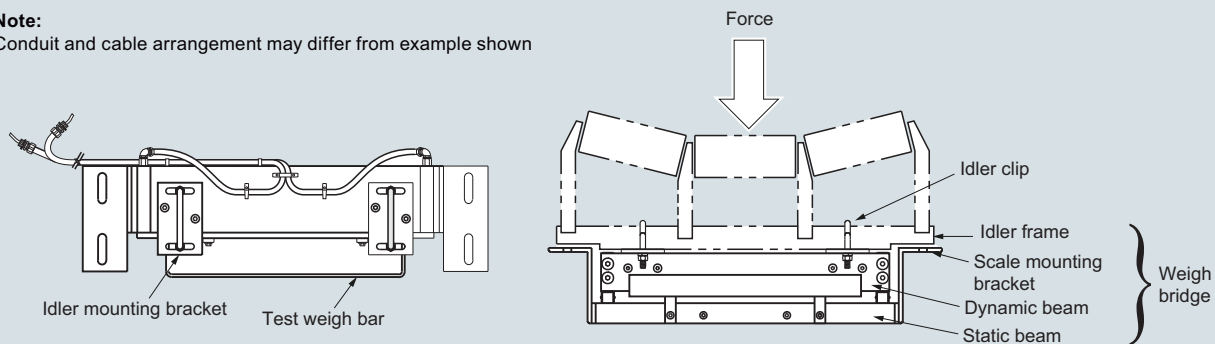
Milltronics MSI and MMI

Design

Mounting

Note:

Conduit and cable arrangement may differ from example shown



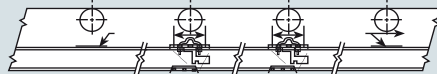
MSI/MMI mounting

4

Applications with 2 MSIs (MMI-2)

450 ... 1 525 mm (18 ... 60 inch) idler spacing

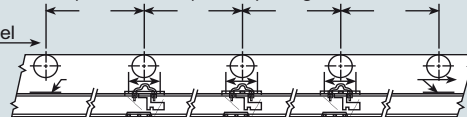
Belt travel →



Applications with 3 MSIs (MMI-3)

450 ... 1 525 mm (18 ... 60 inch) idler spacing

Belt travel →



Mounting (two or more MSI units)

Technical specifications

Milltronics MSI/MMIf	
Mode of operation	
Measuring principle	Strain gauge load cells measuring load on belt conveyor idler(s)
Typical application	
• MSI	Control in fractionated stone blending tunnels
• MMI	Custody transfer
Measurement accuracy	
Accuracy ¹⁾	
• MSI	± 0.5 % or better of totalization over 20 ... 100 % operating range
• MMI-2 (2 idler)	± 0.25 % or better of totalization over 20 ... 100 % operating range
• MMI-3 (3 idler)	± 0.125 % or better of totalization over 25 ... 100 % operating range
Note: available with system specification option D only	
Repeatability	± 0.1 %
Medium conditions	
Material temperature	-50 ... +200 °C (-58 ... +392 °F)
Belt design	
Belt width	• 18 ... 96 inch in CEMA sizes • Equivalent to 500 ... 2 000 mm in metric size • Refer to dimensions section
Belt speed	Up to 5 m/s (1 000 fpm)
Capacity	
	Up to 12 000 t/h (13 200 STPH) at maximum belt speed. Please contact a Siemens representative for higher rates.
Conveyor incline	
	• ± 20° from horizontal, fixed incline • Up to ± 30° with reduced accuracy²⁾
Idlers	
Idler profile	• Flat to 35° • Up to 45° with reduced accuracy²⁾
Idler diameter	50 ... 180 mm (2 ... 7 inch)
Idler spacing	0.5 ... 1.5 m (1.5 ... 5.0 ft)

Milltronics MSI/MMIf	
Load cell	
Construction	Stainless steel construction with 304 (1.4301) stainless steel cover Strain gauge protection: polybutadiene
Degree of protection	IP67, IP65 on hazardous approved models
Cable length	3 m (10 ft) Note: to calculate installation cable length subtract 3 048 mm (120 inch) from the "A" dimension
Excitation	10 V DC nominal, 15 V DC maximum
Output	2 ± 0.002 mV/V excitation (nominal) at rated load cell capacity
Non-linearity and hysteresis	0.02 % of rated output
Non-repeatability	0.01 % of rated output
Capacity	
• Maximum ranges	25, 50, 100, 250, 500, 750, 1 000, 1 250, 1 500, 2 000 lb
Overload	150 % of rated capacity, ultimate 300 % of rated capacity
Temperature	• -50 ... +75 °C (-58 ... +167 °F) operating range, optional -50 ... +175 °C (-58 ... 347 °F) • -40 ... +65 °C (-40 ... +150 °F) compensated • -10 ... +40 °C (14 ... 104 °F) compensated on trade approved versions
Weight	
	See dimensions section
Interconnection wiring (to integrator, per MSI)	
	< 150 m (500 ft) 18 AWG (0.75 mm ²) 6 conductor shielded cable > 150 m ... 300 m (500 ft ... 1 000 ft) 18 ... 22 AWG (0.75 ... 0.34 mm ²), 8 conductor shielded cable
Approvals	
	• CSA/FM Class I, Div. 1, Groups A, B, C, Class II, Div. 1, Groups E, F, G, and Class III • ATEX II 1GD, Ex ia IIC T4 Ga, Ex ia IIIC T135 °C Da, ATEX I M1, Ex ia I Ma • ATEX II 2D Ex tD A21 IP65 T90 °C • EAC Ex • IEC Ex 1G Ex ia IIC T4 Ga, Ex ia IIIC T135 °C Da M1, Ex ia I Ma • MSHA • CE, RCM, EAC, KCC, CMC, RTN
Metrology approvals	
	Measurement Canada, MID, OIML, SABS ³⁾ , NTEP ⁴⁾ , STAMEQ, GOST

¹⁾ Accuracy subject to: on factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test.

The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

²⁾ Review by Siemens application engineer required.

³⁾ MSI only.

⁴⁾ MMI only.

Belt Weighing

Belt scales

Milltronics MSI and MMI

Selection and ordering data

Milltronics MSI belt scale

A heavy-duty, high-accuracy single idler belt scale for process and load-out control. For Milltronics MMI belt scale system, two or more MSI belt scales are required. Calibration weights are required and ordered as separate items.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Scale construction

Standard duty, CE, RCM, EAC, KCC

Hazardous Duty

CSA/FM Class II, Div. 1, Groups E, F, G and Class III, ATEX II 2D, EAC Ex, IECEx, CE, RCM

CSA/FM Class I, Div. 1, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G and Class III, ATEX II 1GD IEC Ex 1GD

MSHA, ATEX I M1, IEC Ex I M1

Belt width and 'A' dimension

18 inch, 'A' = 27 inch (686 mm)	AA
19 inch, 'A' = 28 inch (711 mm)	AB
20 inch, 'A' = 29 inch (737 mm)	AC
21 inch, 'A' = 30 inch (762 mm)	AD
22 inch, 'A' = 31 inch (787 mm)	AE
23 inch, 'A' = 32 inch (813 mm)	AF
24 inch, 'A' = 33 inch (838 mm)	AG
25 inch, 'A' = 34 inch (864 mm)	AH
26 inch, 'A' = 35 inch (889 mm)	AJ
27 inch, 'A' = 36 inch (914 mm)	AK
28 inch, 'A' = 37 inch (940 mm)	AL
29 inch, 'A' = 38 inch (965 mm)	AM
30 inch, 'A' = 39 inch (991 mm)	AN
31 inch, 'A' = 40 inch (1 016 mm)	AP
32 inch, 'A' = 41 inch (1 041 mm)	AQ
33 inch, 'A' = 42 inch (1 067 mm)	AR
34 inch, 'A' = 43 inch (1 092 mm)	AS
35 inch, 'A' = 44 inch (1 118 mm)	AT
36 inch, 'A' = 45 inch (1 143 mm)	AU
37 inch, 'A' = 46 inch (1 168 mm)	AV
38 inch, 'A' = 47 inch (1 194 mm)	AW
39 inch, 'A' = 48 inch (1 219 mm)	BA
40 inch, 'A' = 49 inch (1 245 mm)	BB
41 inch, 'A' = 50 inch (1 270 mm)	BC
42 inch, 'A' = 51 inch (1 295 mm)	BD
43 inch, 'A' = 52 inch (1 321 mm)	BE
44 inch, 'A' = 53 inch (1 346 mm)	BF
45 inch, 'A' = 54 inch (1 372 mm)	BG
46 inch, 'A' = 55 inch (1 397 mm)	BH
47 inch, 'A' = 56 inch (1 422 mm)	BJ
48 inch, 'A' = 57 inch (1 448 mm)	BK
49 inch, 'A' = 58 inch (1 473 mm)	BL
50 inch, 'A' = 59 inch (1 499 mm)	BM
51 inch, 'A' = 60 inch (1 524 mm)	BN
52 inch, 'A' = 61 inch (1 549 mm)	BP
53 inch, 'A' = 62 inch (1 575 mm)	BQ
54 inch, 'A' = 63 inch (1 600 mm)	BR

Article No.

7MH7122-

Milltronics MSI belt scale

A heavy-duty, high-accuracy single idler belt scale for process and load-out control. For Milltronics MMI belt scale system, two or more MSI belt scales are required. Calibration weights are required and ordered as separate items.

55 inch, 'A' = 64 inch (1 626 mm)	BS
56 inch, 'A' = 65 inch (1 651 mm)	BT
57 inch, 'A' = 66 inch (1 676 mm)	BU
58 inch, 'A' = 67 inch (1 702 mm)	BV
59 inch, 'A' = 68 inch (1 727 mm)	BW
60 inch, 'A' = 69 inch (1 753 mm)	CA
61 inch, 'A' = 70 inch (1 778 mm)	CB
62 inch, 'A' = 71 inch (1 803 mm)	CC
63 inch, 'A' = 72 inch (1 829 mm)	CD
64 inch, 'A' = 73 inch (1 854 mm)	CE
65 inch, 'A' = 74 inch (1 880 mm)	CF
66 inch, 'A' = 75 inch (1 905 mm)	CG
67 inch, 'A' = 76 inch (1 930 mm)	CH
68 inch, 'A' = 77 inch (1 956 mm)	CJ
69 inch, 'A' = 78 inch (1 981 mm)	CK
70 inch, 'A' = 79 inch (2 007 mm)	CL
71 inch, 'A' = 80 inch (2 032 mm)	CM
72 inch, 'A' = 81 inch (2 057 mm)	CN
73 inch, 'A' = 82 inch (2 083 mm)	CP
74 inch, 'A' = 83 inch (2 108 mm)	CQ
75 inch, 'A' = 84 inch (2 134 mm)	CR
76 inch, 'A' = 85 inch (2 159 mm)	CS
77 inch, 'A' = 86 inch (2 184 mm)	CT
78 inch, 'A' = 87 inch (2 210 mm)	CU
79 inch, 'A' = 88 inch (2 235 mm)	CV
80 inch, 'A' = 89 inch (2 261 mm)	CW
81 inch, 'A' = 90 inch (2 286 mm)	DA
82 inch, 'A' = 91 inch (2 311 mm)	DB
83 inch, 'A' = 92 inch (2 337 mm)	DC
84 inch, 'A' = 93 inch (2 362 mm)	DD
85 inch, 'A' = 94 inch (2 388 mm)	DE
86 inch, 'A' = 95 inch (2 413 mm)	DF
87 inch, 'A' = 96 inch (2 438 mm)	DG
88 inch, 'A' = 97 inch (2 464 mm)	DH
89 inch, 'A' = 98 inch (2 489 mm)	DJ
90 inch, 'A' = 99 inch (2 515 mm)	DK
91 inch, 'A' = 100 inch (2 540 mm)	DL
92 inch, 'A' = 101 inch (2 565 mm)	DM
93 inch, 'A' = 102 inch (2 591 mm)	DN
94 inch, 'A' = 103 inch (2 616 mm)	DP
95 inch, 'A' = 104 inch (2 642 mm)	DQ
96 inch, 'A' = 105 inch (2 667 mm)	DR

Article No.

7MH7122-

Selection and ordering data

Article No.

Article No.

Milltronics MSI belt scale

7MH7122-

A heavy-duty, high-accuracy single idler belt scale for process and load-out control.
For Milltronics MMI belt scale system, two or more MSI belt scales are required. Calibration weights are required and ordered as separate items.

Load cell capacity

Not specified¹⁾

25 lb (11.3 kg)

50 lb (22.7 kg)

100 lb (45.4 kg)

250 lb (113.4 kg)

500 lb (226.8 kg)

750 lb (340.2 kg)

1 000 lb (453.6 kg)

1 250 lb (567 kg)²⁾1 500 lb (680.4 kg)²⁾

2 000 lb (907.2 kg)

Fabrication

C5-M rated polyester painted mild steel

Electro-galvanized mild steel:

18 ... 29 inch (457.2 ... 736.6 mm)

30 ... 41 inch (762 ... 1 041.4 mm)

42 ... 53 inch (1 066.8 ... 1 346.2 mm)

54 ... 65 inch (1 371.6 ... 1 651 mm)

66 ... 77 inch (1 676.4 ... 1 955.8 mm)

78 ... 89 inch (1 981.2 ... 2 260.6 mm)

90 ... 96 inch (2 286 ... 2 438.4 mm)

Stainless steel 304 (1.4301), bead blast finish
(1 ... 6 µm, 40 ... 240 µin) for belt width scales:

18 ... 29 inch (457.2 ... 736.6 mm)

30 ... 41 inch (762 ... 1 041.4 mm)

42 ... 53 inch (1 066.8 ... 1 346.2 mm)

54 ... 65 inch (1 371.6 ... 1 651 mm)

66 ... 77 inch (1 676.4 ... 1 955.8 mm)

78 ... 89 inch (1 981.2 ... 2 260.6 mm)

90 ... 96 inch (2 286 ... 2 438.4 mm)

Stainless steel 316 (1.4401), bead blast finish
(1 ... 6 µm, 40 ... 240 µin) for belt width scales:

18 ... 29 inch (457.2 ... 736.6 mm)

30 ... 41 inch (762 ... 1 041.4 mm)

42 ... 53 inch (1 066.8 ... 1 346.2 mm)

54 ... 65 inch (1 371.6 ... 1 651 mm)

66 ... 77 inch (1 676.4 ... 1 955.8 mm)

78 ... 89 inch (1 981.2 ... 2 260.6 mm)

90 ... 96 inch (2 286 ... 2 438.4 mm)

C5-M rated polyester painted mild steel (compati-
ble with MWL or flat bar weight calibration system)

Milltronics MSI belt scale

7MH7122-

A heavy-duty, high-accuracy single idler belt scale for process and load-out control.
For Milltronics MMI belt scale system, two or more MSI belt scales are required. Calibration weights are required and ordered as separate items.

Galvanized, for belt width scales:

(compatible with MWL or flat bar weight system)

18 ... 29 inch (457.2 ... 736.6 mm)

30 ... 41 inch (762 ... 1 041.4 mm)

42 ... 53 inch (1 066.8 ... 1 346.2 mm)

54 ... 65 inch (1 371.6 ... 1 651 mm)

66 ... 77 inch (1 676.4 ... 1 955.8 mm)

78 ... 89 inch (1 981.2 ... 2 260.6 mm)

90 ... 96 inch (2 286 ... 2 438.4 mm)

System specification

Standard MSI and MMI

NTEP Certified MMI³⁾⁴⁾⁵⁾OIML/MID Certified⁴⁾⁵⁾MSI for MMI-3 ± 0.125 % accuracy⁶⁾

Further designs

Please add **"-Z"** to article no. and specify order
code(s).

Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)],
Measuring-point number / identification
(max 27 characters), specify in plain text.

Application Eng. reference number
(max. 15 characters), specify in plain text.

Manufacturer's test certificate:
According to EN 10204-2.2

Factory calibration certificate

OIML/MID approval additional nameplate
(submit application data with order)⁵⁾

NTEP approval additional nameplate
(submit application data with order)⁵⁾

Extended cable length (For spare part pricing and
part number consult factory)
Load cell with 15 m (49.2 ft) cable length
[standard is 3 m (9.8 ft)]

High temp load cell (For spare part pricing and part
number consult factory)
Load cell suitable for high temp up to 175 °C (347 °F)
[standard is 75 °C (167 °F)]⁷⁾

Load cell with 316 (1.4401) cover (For spare part
pricing and part number consult factory)
Load cell cover is constructed from 316 (1.4401)
stainless steel [standard is 304 (1.4301)]

FDA compliant version
Conduit and fittings designed for food applications
conforming to FDA/USDA standards

Operating instructions

MSI Manuals

- English

Note: the operating instructions should be
ordered as a separate item on the order.

All literature is available to download for free,
in a range of languages, at

<http://www.siemens.com/weighing/documentation>

Order Code

Y15

Y31

C11

Y33

Y77

Y78

A08

T50

H53

K01

Article No.

7ML1998-5CY04

Belt Weighing

Belt scales

Milltronics MSI and MMI

Selection and ordering data

Article No.

Article No.

Spare parts

Flat bar/MWL retrofit kit

7MH7723-1FW

Conduit replacement kit

7MH7723-1NA

FDA conduit replacement kit

7MH7723-1QL

MWL calibration weight support brackets
galvanized

7MH7723-1JT

Stainless steel load cells

Standard load cell with 304 (1.4301) stainless steel
cover

25 lb (11.3 kg)

A5E35801457

50 lb (22.7 kg)

PBD-23900246

100 lb (45.4 kg)

PBD-23900247

250 lb (113.4 kg)

PBD-23900248

500 lb (226.8 kg)

PBD-23900249

750 lb (340.2 kg)

PBD-23900250

1 000 lb (453.6 kg)

PBD-23900251

1 250 lb (567 kg)

A5E02235671

1 500 lb (680.4 kg)

A5E02239623

2 000 lb (907.2 kg)

A5E35801460

25 lb (11.3 kg), NTEP, OIML/MID

A5E35801462

50 lb (22.7 kg), NTEP, OIML/MID

A5E03324790

100 lb (45.4 kg), NTEP, OIML/MID

PBD-23900261

250 lb (113.4 kg), NTEP, OIML/MID

PBD-23900262

500 lb (226.8 kg), NTEP, OIML/MID

PBD-23900263

750 lb (340.2 kg), NTEP, OIML/MID

PBD-23900264

1 000 lb (453.6 kg), NTEP, OIML/MID

PBD-23900265

1 250 lb (567 kg), NTEP, OIML/MID

A5E02235672

1 500 lb (680.4 kg), NTEP, OIML/MID

A5E02239620

2 000 lb (907.2 kg), NTEP, OIML/MID

A5E35801463

Load cell with 316 (1.4401) stainless steel cover

25 lb (11.3 kg)

PBD-25851-A8H53

50 lb (22.7 kg)

PBD-25851-A0H53

100 lb (45.4 kg)

PBD-25851-A1H53

250 lb (113.4 kg)

PBD-25851-A2H53

500 lb (226.8 kg)

PBD-25851-A3H53

750 lb (340.2 kg)

PBD-25851-A4H53

1 000 lb (453.6 kg)

PBD-25851-A5H53

1 250 lb (567 kg)

PBD-25851-A6H53

1 500 lb (680.4 kg)

PBD-25851-A7H53

2 000 lb (907.2 kg)

PBD-25851-A9H53

100 lb (45.4 kg), NTEP, OIML/MID

PBD-25851-B1H53

250 lb (113.4 kg), NTEP, OIML/MID

PBD-25851-B2H53

500 lb (226.8 kg), NTEP, OIML/MID

PBD-25851-B3H53

750 lb (340.2 kg), NTEP, OIML/MID

PBD-25851-B4H53

1 000 lb (453.6 kg), NTEP, OIML/MID

PBD-25851-B5H53

Load cell, high temperature up to 175 °C (347 °F)

25 lb (11.3 kg)

PBD-25851-A8T50

50 lb (22.7 kg)

PBD-25851-A0T50

100 lb (45.4 kg)

PBD-25851-A1T50

250 lb (113.4 kg)

PBD-25851-A2T50

500 lb (226.8 kg)

PBD-25851-A3T50

750 lb (340.2 kg)

PBD-25851-A4T50

1 000 lb (453.6 kg)

PBD-25851-A5T50

1 250 lb (567 kg)

PBD-25851-A6T50

1 500 lb (680.4 kg)

PBD-25851-A7T50

2 000 lb (907.2 kg)

PBD-25851-A9T50

Load cell, high temperature up to 175 °C (347 °F)
with 316 (1.4401) stainless steel cover

25 lb (11.3 kg)

PBD-25851-A8TH

50 lb (22.7 kg)

PBD-25851-A0TH

100 lb (45.4 kg)

PBD-25851-A1TH

250 lb (113.4 kg)

PBD-25851-A2TH

500 lb (226.8 kg)

PBD-25851-A3TH

750 lb (340.2 kg)

PBD-25851-A4TH

1 000 lb (453.6 kg)

PBD-25851-A5TH

1 250 lb (567 kg)

PBD-25851-A6TH

1 500 lb (680.4 kg)

PBD-25851-A7TH

2 000 lb (907.2 kg)

PBH-25851-A9TH

Load cell with 15 m (49.2 ft) cable length

25 lb (11.3 kg)

PBD-25851-A8A08

50 lb (22.7 kg)

PBD-25851-A0A08

100 lb (45.4 kg)

PBD-25851-A1A08

250 lb (113.4 kg)

PBD-25851-A2A08

500 lb (226.8 kg)

PBD-25851-A3A08

750 lb (340.2 kg)

PBD-25851-A4A08

1 000 lb (453.6 kg)

PBD-25851-A5A08

1 250 lb (567 kg)

PBD-25851-A6A08

1 500 lb (680.4 kg)

PBD-25851-A7A08

2 000 lb (907.2 kg)

PBD-25851-A9A08

100 lb (45.4 kg), NTEP, OIML/MID

PBD-25851-B1A08

250 lb (113.4 kg), NTEP, OIML/MID

PBD-25851-B2A08

500 lb (226.8 kg), NTEP, OIML/MID

PBD-25851-B3A08

750 lb (340.2 kg), NTEP, OIML/MID

PBD-25851-B4A08

1 000 lb (45.4 kg), NTEP, OIML/MID

PBD-25851-B5A08

Load cell with 15 m (49.2 ft) cable length and
316 (1.4401) stainless steel cover

25 lb (11.3 kg)

PBD-25851-A8AH

50 lb (22.7 kg)

PBD-25851-A0AH

100 lb (45.4 kg)

PBD-25851-A1AH

250 lb (113.4 kg)

PBD-25851-A2AH

500 lb (226.8 kg)

PBD-25851-A3AH

750 lb (340.2 kg)

PBD-25851-A4AH

1 000 lb (453.6 kg)

PBD-25851-A5AH

Selection and ordering data	Article No.		Article No.
1 250 lb (567 kg)	PBD-25851-A6AH	<i>Idler clips</i>	
1 500 lb (680.4 kg)	PBD-25851-A7AH	5 inch (127 mm) for 27 ... 62 inch (686 ... 1 575 mm) "A" dimensions	7MH7723-1BT
2 000 lb (907.2 kg)	PBD-25851-A9AH	7 inch (178 mm) for 63 ... 74 inch (1 600 ... 1 880 mm) "A" dimensions	7MH7723-1DF
100 lb (45.4 kg), NTEP, OIML/MID	PBD-25851-B1AH	<i>Calibration weights</i>	
250 lb (113.4 kg), NTEP, OIML/MID	PBD-25851-B2AH	6.0 lb/ 2.7 kg	7MH7724-1AB
500 lb (226.8 kg), NTEP, OIML/MID	PBD-25851-B3AH	18 lb/ 8.2 kg	7MH7724-1AA
750 lb (340.2 kg), NTEP, OIML/MID	PBD-25851-B4AH	18 lb/ 8.2 kg certified weight	A5E32423812
1 000 lb (453.6 kg), NTEP, OIML/MID	PBD-25851-B5AH	Milltronics flat bar calibration weights, see page 4/53	
<u>Load cell, high temperature up to 175 °C (347 °F) with 15 m (49.2 ft) cable length</u>		Note: calibration accessories should be ordered as a separate line order	
25 lb (11.3 kg)	PBD-25851-A8TA		
50 lb (22.7 kg)	PBD-25851-A0TA		
100 lb (45.4 kg)	PBD-25851-A1TA		
250 lb (113.4 kg)	PBD-25851-A2TA		
500 lb (226.8 kg)	PBD-25851-A3TA		
750 lb (340.2 kg)	PBD-25851-A4TA		
1 000 lb (453.6 kg)	PBD-25851-A5TA		
1 250 lb (567 kg)	PBD-25851-A6TA		
1 500 lb (680.4 kg)	PBD-25851-A7TA		
2 000 lb (907.2 kg)	PBD-25851-A9TA		
<u>Load cell, high temperature up to 175 °C (347 °F) with 15 m (49.2 ft) cable length and 316 (1.4401) stainless steel cover</u>			
25 lb (11.3 kg)	PBD-25851-A8AHT		
50 lb (22.7 kg)	PBD-25851-A0AHT		
100 lb (45.4 kg)	PBD-25851-A1AHT		
250 lb (113.4 kg)	PBD-25851-A2AHT		
500 lb (226.8 kg)	PBD-25851-A3AHT		
750 lb (340.2 kg)	PBD-25851-A4AHT		
1 000 lb (453.6 kg)	PBD-25851-A5AHT		
1 250 lb (567 kg)	PBD-25851-A6AHT		
1 500 lb (680.4 kg)	PBD-25851-A7AHT		
2 000 lb (907.2 kg)	PBD-25851-A9AHT		

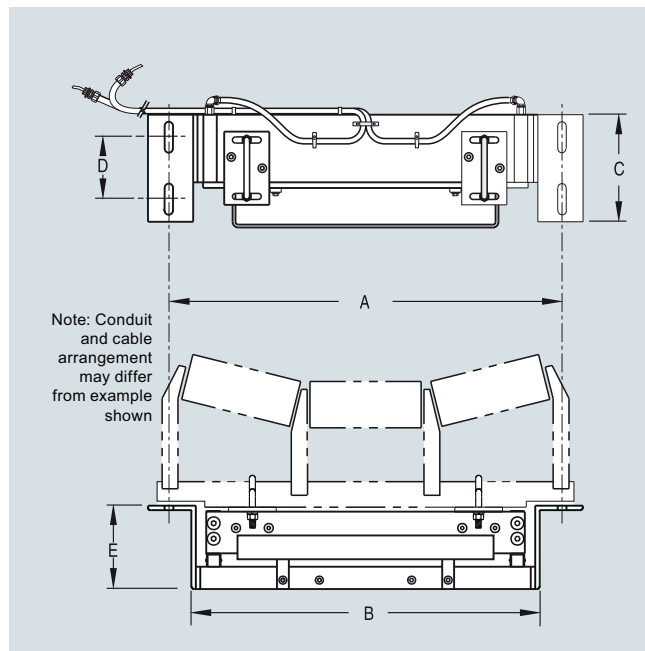
- 1) Only for quotation purposes, not a valid ordering option.
- 2) Available with Fabrication options 11 ... 18 and 41 ... 48 only, and with System specification option A only.
- 3) Two MSI are required to make the NTEP approved MMI.
- 4) Approval available with load cell options 2 ... 6 only and applicable BW500.
- 5) Complete specification data sheet on page 4/27 and submit with order "legal for trade" version.
- 6) Includes metrological approved load cells.
- 7) Not available with construction option 2, or system specification options B, C, D.

Belt Weighing

Belt scales

Milltronics MSI and MMI

Dimensional drawings



MSI dimensions

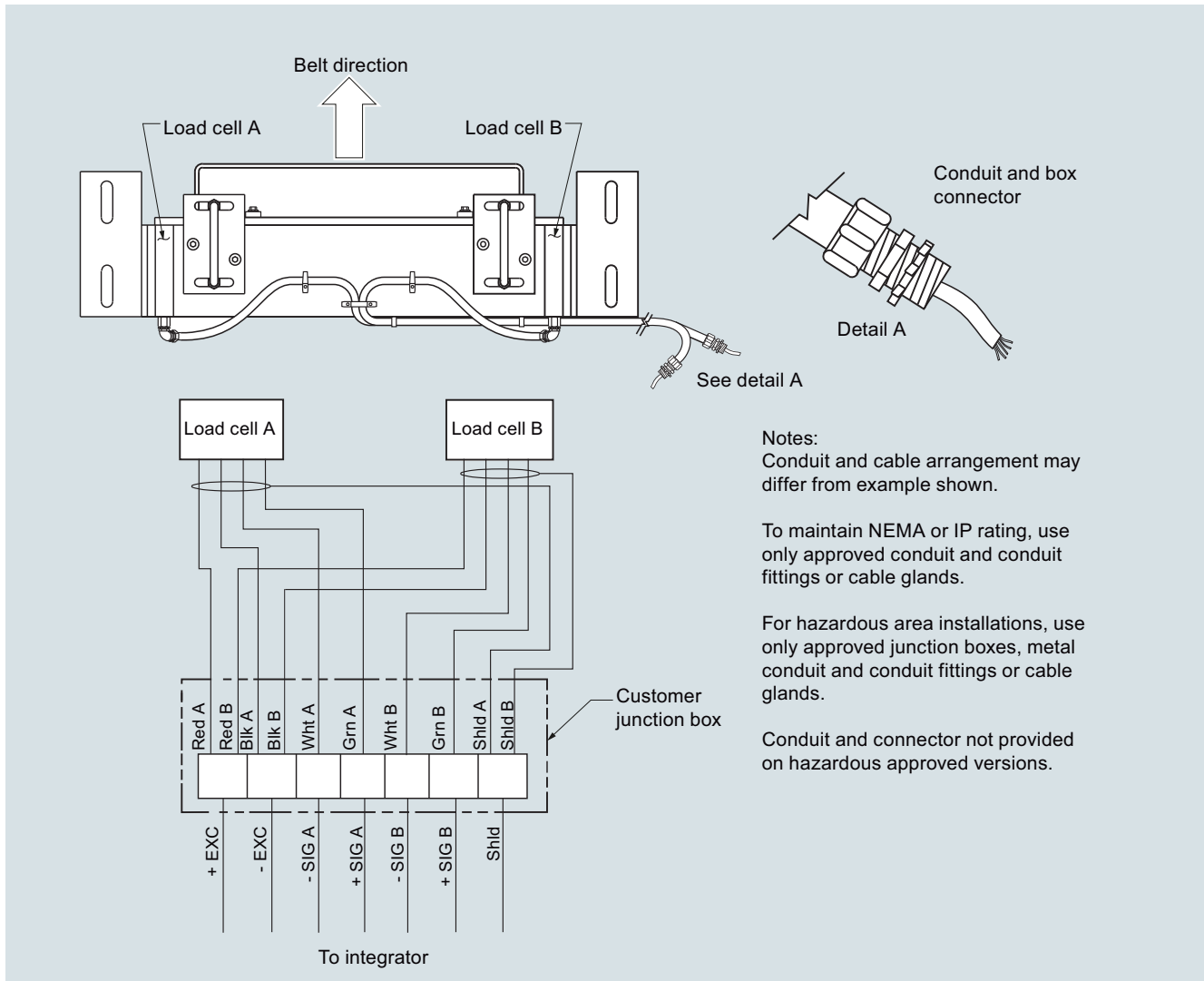
Conveyor belt width	Mounting scale width A	Minimum drop-in width B	C	D	E	Weight (approx.)
18 inch (457 mm)	27 inch (686 mm)	23.25 inch (591 mm)	9.5 inch (241 mm)	5.5 inch (140 mm)	7 inch (178 mm)	82 lb (37 kg)
20 inch (508 mm)	29 inch (737 mm)	25.25 inch (641 mm)	9.5 inch (241 mm)	5.5 inch (140 mm)	7 inch (178 mm)	85 lb (39 kg)
24 inch (610 mm)	33 inch (838 mm)	29.25 inch (743 mm)	9.5 inch (241 mm)	5.5 inch (140 mm)	7 inch (178 mm)	90 lb (41 kg)
30 inch (762 mm)	39 inch (991 mm)	35.25 inch (895 mm)	9.5 inch (241 mm)	5.5 inch (140 mm)	7 inch (178 mm)	99 lb (45 kg)
36 inch (914 mm)	45 inch (1 143 mm)	41.25 inch (1 048 mm)	9.5 inch (241 mm)	5.5 inch (140 mm)	7 inch (178 mm)	107 lb (49 kg)
42 inch (1 067 mm)	51 inch (1 295 mm)	47.25 inch (1 200 mm)	9.5 inch (241 mm)	5.5 inch (140 mm)	7 inch (178 mm)	116 lb (53 kg)
48 inch (1 219 mm)	57 inch (1 448 mm)	53.25 inch (1 353 mm)	9.5 inch (241 mm)	5.5 inch (140 mm)	7 inch (178 mm)	125 lb (57 kg)
54 inch (1 372 mm)	63 inch (1 600 mm)	59.25 inch (1 505 mm)	12 inch (305 mm)	8 inch (203 mm)	7 inch (178 mm)	175 lb (79 kg)
60 inch (1 524 mm)	69 inch (1 753 mm)	65.25 inch (1 657 mm)	12 inch (305 mm)	8 inch (203 mm)	7 inch (178 mm)	193 lb (88 kg)
66 inch (1 676 mm)	75 inch (1 905 mm)	71.25 inch (1 810 mm)	12 inch (305 mm)	8 inch (203 mm)	8 inch (203 mm)	229 lb (104 kg)
72 inch (1 829 mm)	81 inch (2 057 mm)	77.25 inch (1 962 mm)	12 inch (305 mm)	8 inch (203 mm)	8 inch (203 mm)	247 lb (112 kg)

Other widths available - check configuration information.

Sizes are from 18 inch (457 mm) to 96 inch (2 438 mm) in 1 inch (25.4 mm) increments.

All sizes are nominal.

Note: dimension B must be approx. 3/8 inch or 10 mm less than Y dimension of the conveyor (see Application Questionnaire at <http://www.siemens.com/weighing/application-questionnaires>)

Circuit diagrams


MSI/MMI connections

More information
NTEP/Measurement Canada/OIML & MID Specification Data

Please complete and submit the relevant details listed below when ordering NTEP, Measurement Canada, or OIML & MID approval options	Value
NTEP	
Maximum rated capacity (TPH)	
Minimum rated capacity (TPH)	
Belt speed (FPM)	
Scale division (tons)	
Maximum loading (lb/ft)	
Measurement Canada	
Rate	
Speed (min/max m/s, FPM)	
Test load (kg/m, lb/ft)	

Please complete and submit the relevant details listed below when ordering NTEP, Measurement Canada, or OIML & MID approval options	Value
OIML & MID	
Totalization scale interval (tonnes)	
Belt speed max/min (m/s)	
Maximum flow rate (MTPH)	
Minimum flow rate (MTPH)	
Minimum totalized load (tonnes)	
Product to be weighed	
Maximum capacity (tonnes)	
Weigh length (m)	
Ratio between minimum net load and maximum capacity	
Zero testing should have a duration of at least (____) revolutions	

Belt Weighing

Belt scales

Milltronics WD600

Overview



Milltronics WD600 is a light- to medium-duty slider bed belt scale used for process and load-out control in manufacturing, including the food, pharmaceutical and tobacco industries.

Benefits

- Simple installation
- Long weigh span for more retention time on load cells

Application

WD600 belt scale works with an existing flat belt conveyor and the selected Siemens integrator. As material is moving along the conveyor belt and travels over the belt scale, it exerts a force proportional to the material load through the suspended weigh-bridge to the load cells.

WD600 belt scale reacts only to the vertical component of the applied force. The resulting movement in each load cell is sensed by its strain gauges. When the strain gauges are excited by voltage from the electronic integrator, they produce an electrical signal proportional to weight, which is then applied to the integrator.

The vertical movement of the load cells is limited by the positive overload stop incorporated into the design of the load cell mount.

Technical specifications

Milltronics WD600	
Accuracy¹⁾	± 0.5 ... 1 % totalization over 25 ... 100 % operating range, application dependent
Repeatability	± 0.1 %
Belt width	12, 18, 24, 30, 36, 42, 48 inch (300, 450, 600, 750, 900, 1 000, 1 200 mm)
Belt speed	2.0 m/s (400 fpm) maximum
Capacity	Up to 100 t/h
Conveyor incline	• ± 20° from horizontal, fixed incline • Up to ± 30° with reduced accuracy²⁾
Conveyor idler/slider profile	Horizontal
Loading	• Minimum 1.0 kg/m (0.6 lb/ft) • Maximum 76 kg/m (51 lb/ft)
Load cell	
Construction	17-4 PH (1.4568) stainless steel or nickel plated alloy steel Strain gauge protection: silicon (nickel plated version only)
Degree of protection	• Stainless steel: IP68 • Nickel plated alloy steel: IP66
Cable length	3 m (10 ft)
Excitation	10 V DC nominal, 15 V DC maximum
Output	2 mV/V
Non-linearity	0.02 % of rated output
Non-repeatability	0.01 % of rated output
Capacity	Stainless steel range: 6, 12, 30 kg Nickel-plated range: 10, 15, 20, 30, 50 kg
Overload	150 % of rated capacity
Temperature	• -40 ... +65 °C (-40 ... +149 °F) operating range • -10 ... +40 °C (14 ... 104 °F) compensated
Scale construction	• Stainless steel construction, bead blast finish (1 ... 6 µm, 40 ... 240 µin) • Acetal sliders
Hazardous locations	Consult the factory
Approvals	CE, meets FDA/USDA requirements for food processing, RCM, EAC, KCC

¹⁾ Accuracy subject to: on factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

²⁾ Review by Siemens application engineer required.

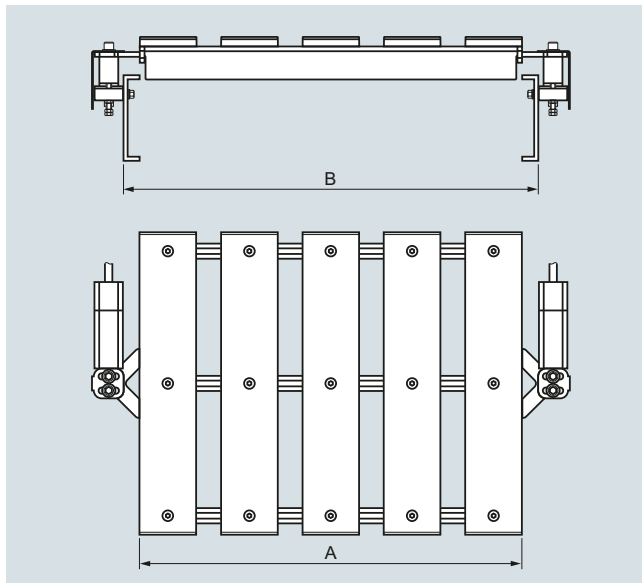
Selection and ordering data		Article No.	Article No.	
Milltronics WD600 A low- to medium- capacity scale for light to medium belt loading. 304 stainless steel construction with Delrin sliders. Load cells are available in nickel plated, or stainless steel. Two calibration weights are required and are ordered as separate line item. Refer to Calibration weights. ➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	➤ 7MH7185-A0		Spare parts Load cells <u>Stainless steel</u> 6 kg (13.2 lb) 12 kg (26.4 lb) 30 kg (66.2 lb) <u>Nickel plated</u> 10 kg (22 lb) 15 kg (33.1 lb) 20 kg (44 lb) 30 kg (66.2 lb) 50 kg (110 lb) Slider bar middle UHMW PE (for old style WD600) Slider bar side UHMW PE (for old style WD600) Slider bar acetal Test chain 1.62 lb/ft (2.41 kg/m), 60 inch Calibration Hanger Weights 200 g (0.4 lb) 500 g (1.1 lb) 1 000 g (2.2 lb) 2 000 g (4.4 lb) 3 500 g (7.7 lb) 5 000 g (11 lb) 7 500 g (16.5 lb) 8 500 g (18.7 lb) 10 000 g (22 lb) 12 000 g (26.5 lb) 15 000 g (33.1 lb) Note: calibration accessories should be ordered as a separate item on the order.	7MH7725-1EG 7MH7725-1EH 7MH7725-1EJ 7MH7725-1EK 7MH7725-1EL 7MH7725-1EM 7MH7725-1EN 7MH7725-1EP 7MH7723-1KF 7MH7723-1KE 7MH7723-1KG 7MH7723-1NF 7MH7724-1AF 7MH7724-1AG 7MH7724-1AH 7MH7724-1AJ 7MH7724-1BQ 7MH7724-1AK 7MH7724-1BR 7MH7724-1BS 7MH7724-1BT 7MH7724-1BU 7MH7724-1BV
Belt width 12 inch (300 mm) 18 inch (450 mm) 24 inch (600 mm) 30 inch (750 mm) 36 inch (900 mm) 42 inch (1 000 mm) 48 inch (1 200 mm)	1 2 3 4 5 6 7			
Load cell capacity <u>Nickel plated</u> 10 kg (22 lb) 15 kg (33.1 lb) 20 kg (44 lb) 30 kg (66.2 lb) 50 kg (110 lb) <u>Stainless steel</u> 6 kg (13.2 lb) 12 kg (26.4 lb) 30 kg (66.2 lb)	D E F G L H J K			
Further designs Please add "-Z" to article no. and specify order code(s). Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)], Measuring-point number / identification (max 27 characters), specify in plain text. Application Eng. reference number (max. 15 characters), specify in plain text. Manufacturer's test certificate: According to EN 10204-2.2	Order Code Y15 Y31 C11			
Operating instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/weighing/documentation				

Belt Weighing

Belt scales

Milltronics WD600

Dimensional drawings

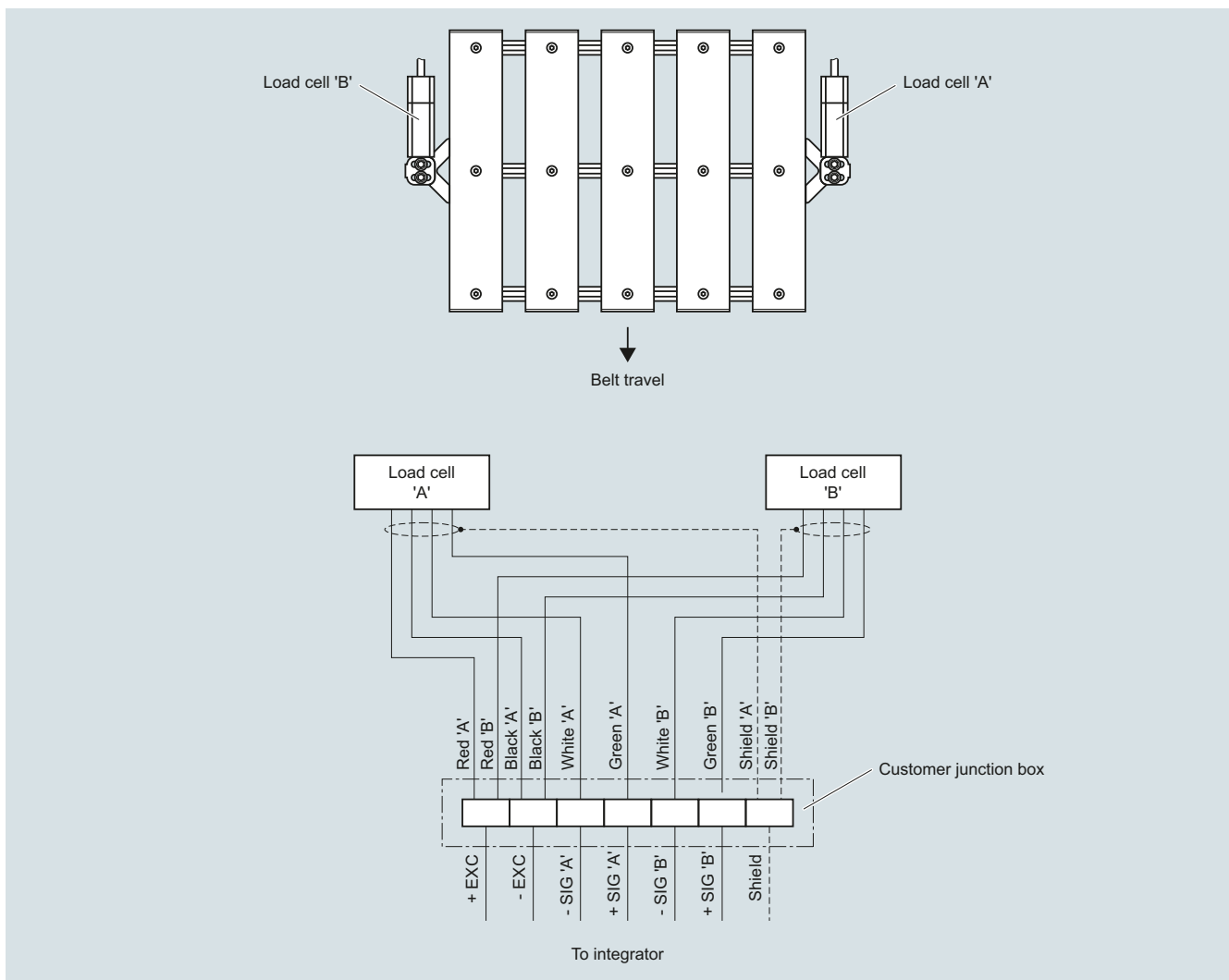


Belt width	A	B (min.)	B (max.)
12 (300)	14.25 (362)	15 (381)	16.5 (419)
18 (450)	20.25 (514)	21 (533)	22.5 (572)
24 (600)	26.25 (667)	27 (686)	28.5 (724)
30 (750)	32.25 (819)	33 (838)	34.5 (876)
36 (900)	38.25 (972)	39 (991)	40.5 (1 029)
42 (1 000)	44.25 (1 124)	45 (1 143)	46.5 (1 181)
48 (1 200)	50.25 (1 276)	51 (1 295)	52.5 (1 334)

WD600, dimensions in mm (inch)

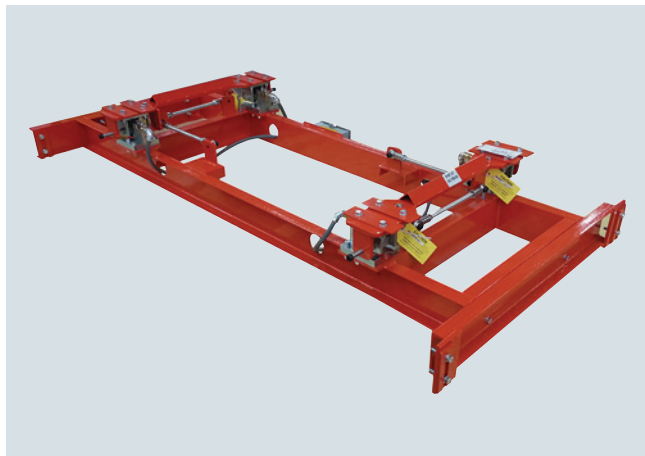
4

Circuit diagrams



WD600 connections

Overview



SITRANS WB300 is a heavy-duty, full-frame four load cell belt scale used for process and load-out control. Rails not included with belt scale.

Benefits

- Outstanding reliability and repeatability
- Fast reaction to product loading; capable of monitoring high product temperatures
- Rugged construction
- Shear beam design load cells with unique mounting do not react to horizontal forces from rollers/aprons

Application

SITRANS WB300 belt scale provides continuous in-line weighing on a variety of products in primary and secondary industries. It is proven in a wide range of tough applications from clinker (in cement production), to mining, iron, and steel.

The WB300's proven use of shear beam style load cells results in fast reaction to vertical forces, ensuring instant response to product loading. This enables it to provide optimum accuracy and repeatability even with uneven loading and fast pan speeds.

Operating with Milltronics BW500, SIWAREX WT241, WP241, or FTC microprocessor-based integrators, the WB300 provides indication of flow rate, totalized weight, belt load, and belt speed of bulk solid materials. A speed sensor monitors conveyor pan speed for input to the integrator.

The WB300 is installed in a simple drop-in assembly and has a complete full length frame to ensure support during operation. Existing rails are then attached to the mounting points. Maintenance is kept to a minimum, with just periodic calibration checks required.

Technical specifications

SITRANS WB300	
Mode of operation	
Measuring principle	Strain gauge load cells measuring load on pan conveyor rails
Typical application	Control in cement production
Measurement accuracy	
Accuracy ¹⁾	± 2 % or better of totalization over 33 ... 100 % operating range
Repeatability	± 0.1 %
Medium conditions	
Material temperature	-40 ... +150 °C (-40 ... +300 °F)
Apron design	
Pan width	• 24 ... 72 inch • Equivalent to 600 ... 1 800 mm in metric size
Pan speed	Up to 1 m/s (200 fpm)
Capacity	
	Up to 5 000 t/h (5 500 STPH) at maximum pan speed. Please contact a Siemens representative for higher rates.
Conveyor incline	
	• ± 20° from horizontal, fixed incline • Up to ± 30° with reduced accuracy²⁾
Load cell	
Construction	17-4 PH (1.4568) stainless steel construction
Degree of protection	IP67
Cable length	3 m (10 ft)
Excitation	10 V DC nominal, 15 V DC maximum
Output	2 ± 0.002 mV/V excitation (nominal) at rated load cell capacity
Non-linearity and hysteresis	0.02 % of rated output
Non-repeatability	0.01 % of rated output
Capacity	
• Maximum ranges	500, 1 000, 2 500, 4 000, 5 000 lb
Overload	150 % of rated capacity, ultimate 300 % of rated capacity
Temperature	• -40 ... +75 °C (-40 ... +167 °F) operating range • -10 ... +40 °C (14 ... 104 °F) compensated
Weight	
	Contact factory
Interconnection wiring (to integrator)	
	• < 150 m (500 ft) 18 AWG (0.75 mm²) 10 conductor shielded cable • > 150 ... 300 m (500 ... 1 000 ft) 18 ... 22 AWG (0.75 ... 0.34 mm²), 12 conductor shielded cable
Approvals	
	CE, RCM

¹⁾ Accuracy subject to: on factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

²⁾ Review by Siemens application engineer required.

Belt Weighing

Belt scales

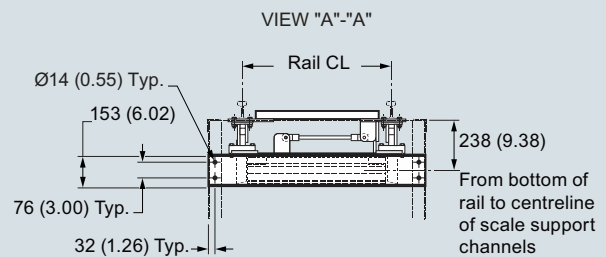
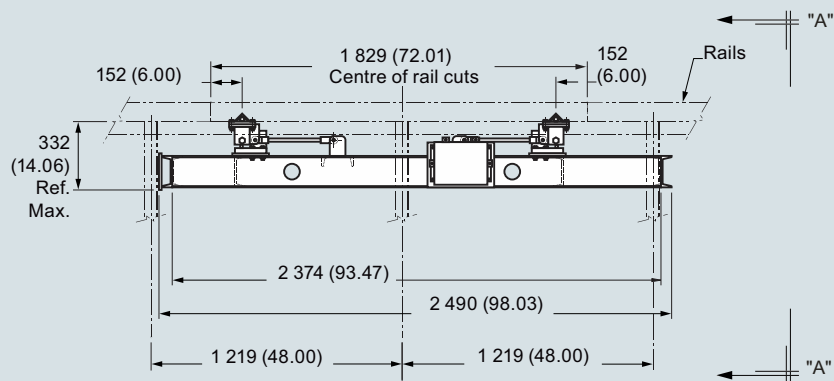
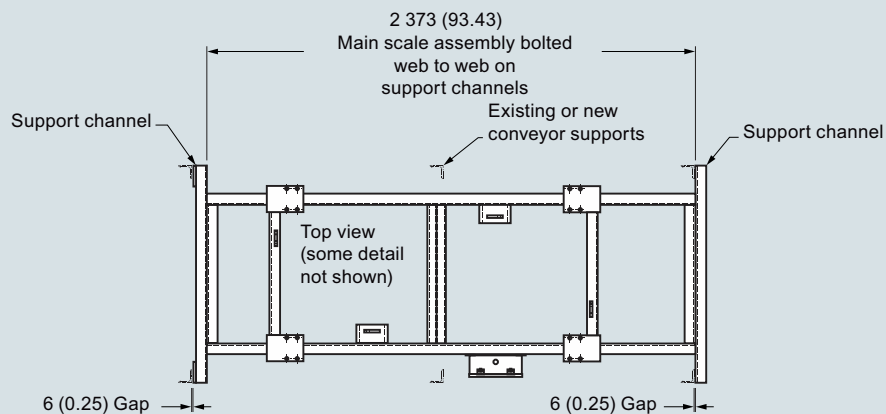
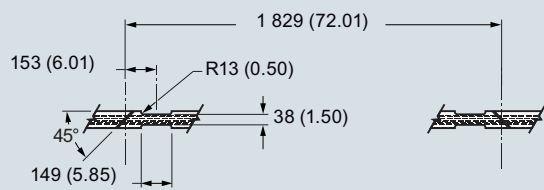
SITRANS WB300

Selection and ordering data

SITRANS WB300

SITRANS WB300 is a heavy-duty, full-frame four load cell belt scale used for process and load-out control. Rails not included with belt scale.



Dimensional drawings


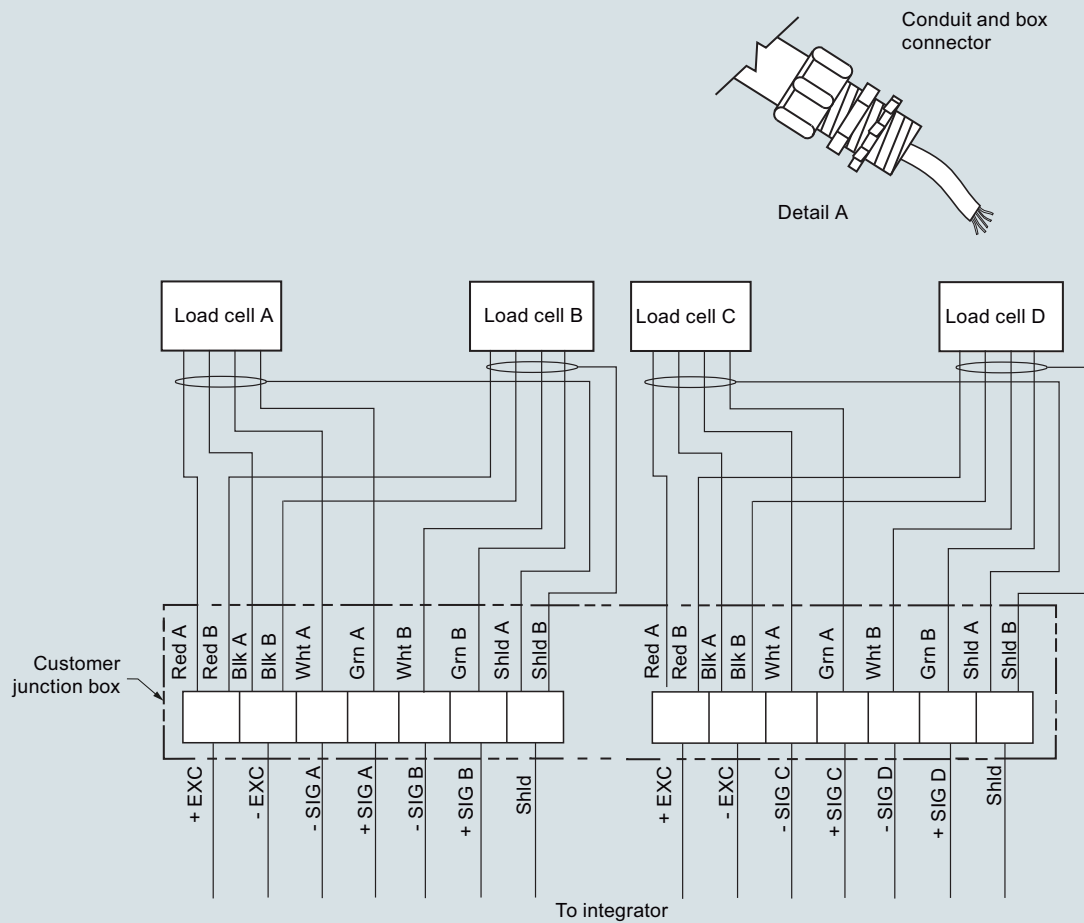
SITRANS WB300, dimensions in mm (inch)

Belt Weighing

Belt scales

SITRANS WB300

Circuit diagrams



Notes:

Conduit and cable arrangement may differ from example shown.

To maintain NEMA or IP rating, use only approved conduit and conduit fittings or cable glands.

SITRANS WB300 connections

Overview



SITRANS WB310 is a heavy-duty, full-frame two load cell, pivoted pan based, belt scale used for process monitoring.

Benefits

- Outstanding reliability and repeatability
- Unique parallelogram style load cell design
- Fast reaction to product loading; capable of monitoring low to high material loads
- Rugged construction
- Heavy duty slider pan with counter weight-pivoted design to minimized dead loads
- Suitable for uneven or light product loading

Application

SITRANS WB310 belt scale provides continuous in-line weighing on a variety of products in recycling industries. It is proven in a wide range of tough applications from sorting (in-coming processes) to production monitoring.

SITRANS WB310 uses parallelogram-style load cells that result in fast reaction to vertical forces, ensuring instant response to product loading. This enables it to provide optimum accuracy and repeatability even with uneven loading.

Operating with Milltronics BW500, SIWAREX WT241, WP241, or FTC microprocessor-based integrators, WB310 provides indication of flow rate, totalized weight, belt load, and belt speed of bulk solid materials. A speed sensor monitors conveyor belt speed for input to the integrator.

SITRANS WB310 is installed in a simple drop-in operation and has a complete full length frame to ensure support during operation. With minimal rotating parts, maintenance is kept simple and easy, with just periodic calibration checks and greasing of bearings required.

Technical specifications

SITRANS WB310	
Mode of operation	
Measuring principle	Strain gauge load cells measuring load on belt conveyor pan
Typical application	Control in recycling
Measurement accuracy	
Accuracy ¹⁾	± 5 % or better of totalization over 25 ... 100 % operating range
Repeatability	± 0.1 %
Medium conditions	
Material temperature	-40 ... +75 °C (-40 ... +167 °F)
Belt design	
Belt width	• 54 ... 72 inch • Equivalent to 1 300 ... 1 800 mm in metric size
Belt speed	Up to 1 m/s (200 fpm)
Capacity	
	Up to 5 000 t/h (5 500 STPH) at maximum belt speed. Please contact a Siemens representative for higher rates.
Conveyor incline	
	• ± 20° from horizontal, fixed incline • Up to ± 30° with reduced accuracy²⁾
Load cell	
Construction	17-4 PH (1.4568) stainless steel construction with 304 (1.4301) stainless steel cover.
Degree of protection	IP67
Cable length	3 m (10 ft)
	Note: to calculate installation cable length subtract 3 048 mm (120 inch) from the "A" dimension
Excitation	10 V DC nominal, 15 V DC maximum
Output	2 ± 0.002 mV/V excitation (nominal) at rated load cell capacity
Non-linearity and hysteresis	0.02 % of rated output
Non-repeatability	0.01 % of rated output
Capacity	
• Maximum ranges	50, 100, 250, 500 lb
Overload	150 % of rated capacity, ultimate 300 % of rated capacity
Temperature	• -50 ... +75 °C (-58 ... +167 °F) operating range • -40 ... +65 °C (-40 ... +149 °F) compensated
Weight	
	Contact factory
Interconnection wiring (to integrator)	
	• < 150 m (500 ft) 18 AWG (0.75 mm²) 6 conductor shielded cable • > 150 ... 300 m (500 ... 1 000 ft) 18 ... 22 AWG (0.75 ... 0.34 mm²), 8 conductor shielded cable
Approvals	
	CE, RCM

¹⁾ Accuracy subject to: on factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

²⁾ Review by Siemens application engineer required.

Belt Weighing

Belt scales

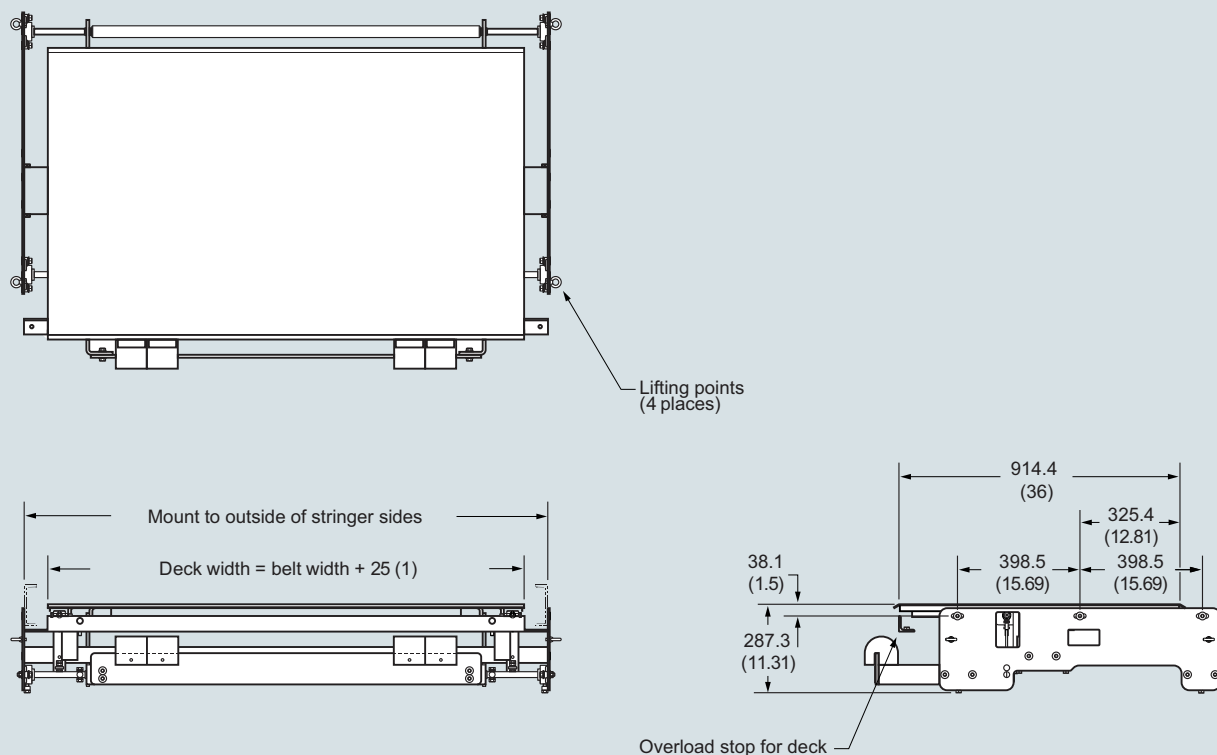
SITRANS WB310

Selection and ordering data

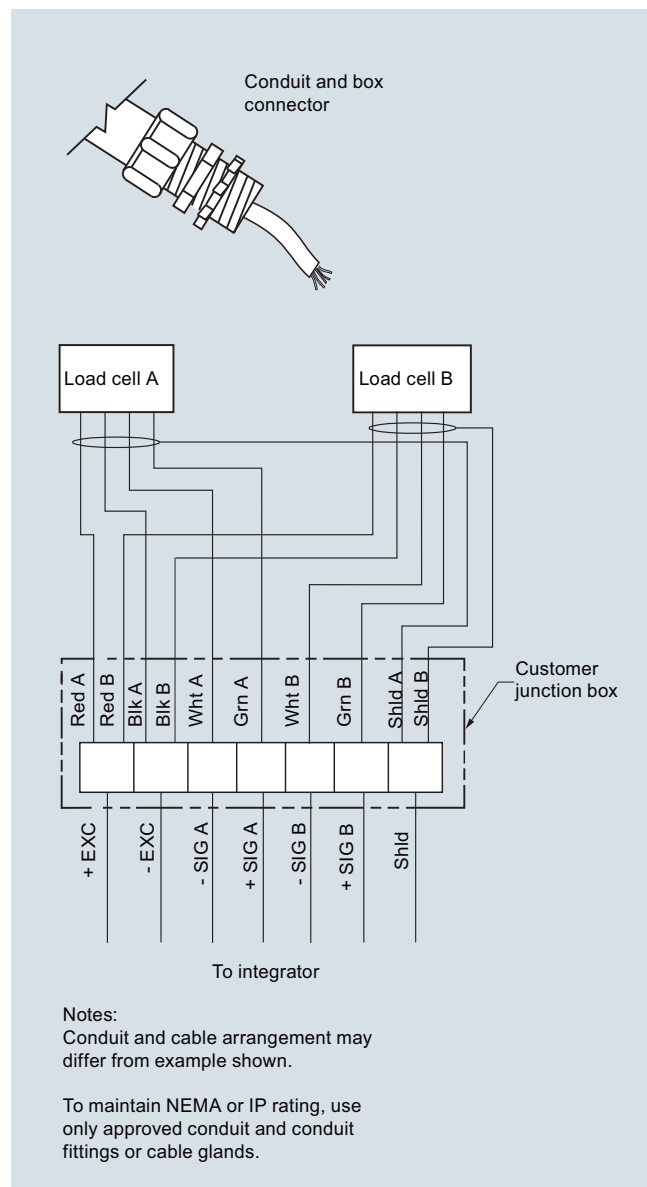
SITRANS WB310

SITRANS WB310 is a heavy-duty, full-frame two load cell, pivoted pan based, belt scale used for process monitoring.

Dimensional drawings



SITRANS WB310, dimensions in mm (inch)

Circuit diagrams


SITRANS WB310 connections

Belt Weighing

Speed sensors

Milltronics TASS

Overview



Milltronics TASS is a compact low-profile, wheel-driven return belt speed sensor, ideal for use on mobile crushers and in constricted spaces.

Benefits

- Rugged design
- Easy, low cost installation
- Compact, low-profile speed sensor
- IP67 rated

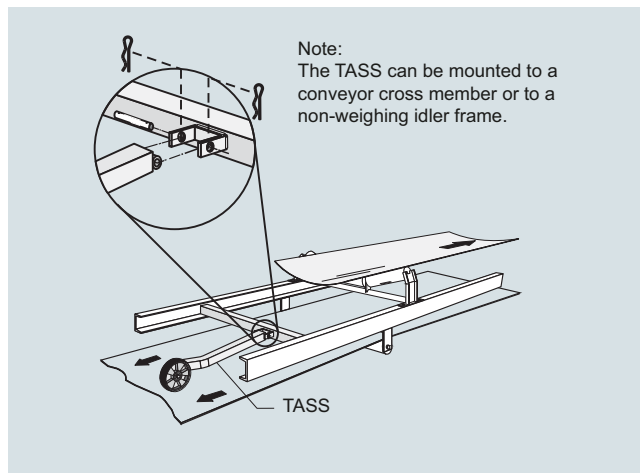
Application

Milltronics TASS speed sensor operates in conjunction with a conveyor belt scale, providing signals to an integrator (Milltronics BW500, or SIWAREX FTC) which computes the rate of material being conveyed. The trailing arm speed sensor monitors conveyor belt speed, with the output signal transmitted by cable connection to the integrator.

Easily installed close to the belt scale assembly, the TASS provides a signal generated as the wheel rotates on the return belt. Pulses are generated by the internal proximity switch detecting the rotation of the five spoked wheel. The TASS is mounted to the static beam of the belt scale or to a structural cross member via a pivoting bracket assembly.

The TASS is a compact, low-profile, rugged speed sensor, most often used on mobile crusher applications where space is limited. The TASS output can be applied to any Milltronics belt scale integrator.

Design



TASS Installation

Technical specifications

Milltronics TASS	
Mode of operation	
Measuring principle	Inductive proximity sensor provides pulse to integrator
Typical application	Mobile crusher
Input	
• Bi-directional wheel rotation • 25 ... 350 rpm	
Output	
• Inductive proximity sensor • Open collector, NPN, sinking output, max. 200 mA • Pulses: 5 per revolution • 9.947 pulses/m, 3.03 pulses/ft	
Rated operating conditions	
Operating temperature	-25 ... +70 °C (-13 ... +158 °F)
Max. belt speed	3 m/s (590 fpm)
Degree of protection	IP67
Design	
Trailing arm assembly	Painted mild steel
Wheel	160 mm (6.3 inch) diameter cast aluminum with polyurethane tread
Power supply	
10 ... 35 V DC, 15 mA at 24 V DC maximum	
Wiring	
Brown	+ Excitation (10 ... 35 V DC)
Black	+ Signal
Blue	- Common
Interconnection wiring (to integrator)	
• 5 m, 3 conductor shielded PVC cable, 3 x 0.25 mm² (23 AWG), protected with 1 000 mm of flexible conduit • 300 m (1 000 ft) maximum cable run	
Approvals	
CE, RCM, EAC, KCC	

Selection and ordering data

Milltronics TASS speed sensor

Compact, low-profile, wheel driven return belt speed sensor for belt conveyors; ideal for use on mobile crushers and in constricted spaces.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Model

5 pulses per revolution

Fabrication

Standard, C5-M rated polyester painted mild steel

Stainless steel 304 (1.4301), bead blast finish (1 ... 6 µm, 40 ... 240 µin)

Note: wheel is aluminum for all versions

Mounting options

Complete with standard mounting kit

Approvals

CE, RCM, EAC, KCC

Article No.

➤ 7MH7131-

0

1

A

B

A

1

Further designs

Please add "-Z" to article no. and specify order code(s).

Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)]
Measuring-point number / identification (max 27 characters), specify in plain text.

Manufacturer's test certificate:
According to EN 10204-2.2

Operating instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

Spare parts

TASS wheel

TASS proximity switch

TASS wheel, stainless steel sealed bearing

Conduit replacement kit

Order Code

Y15

C11

Article No.

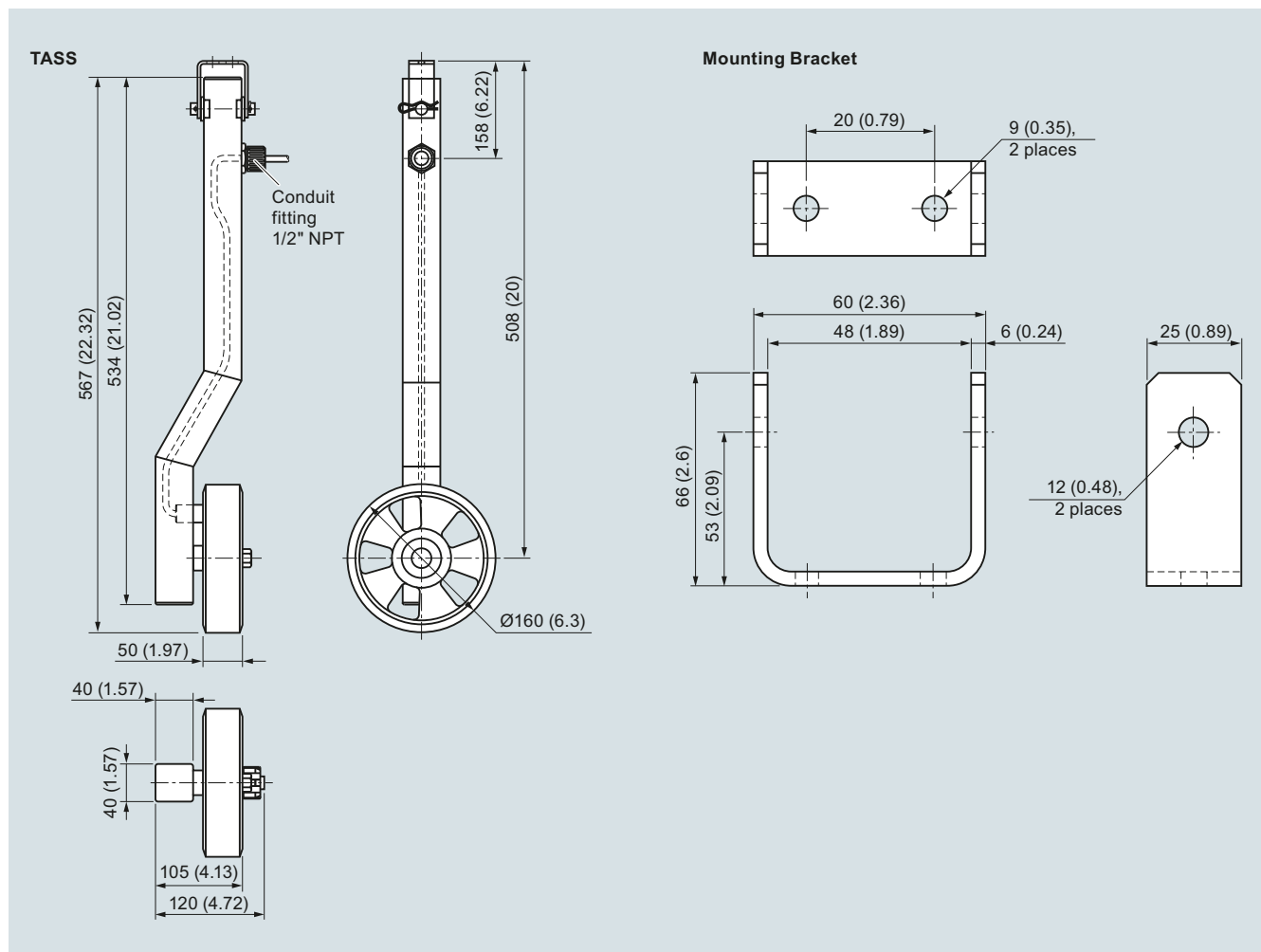
7MH7723-1AN

7MH7723-1AP

7MH7723-1GW

7MH7723-1NA

Dimensional drawings



TASS, dimensions in mm (inch)

Belt Weighing

Speed sensors

Milltronics RBSS

Overview



Milltronics RBSS is a high resolution, wheel-driven return belt speed sensor.

Benefits

- Rugged design
- IP67 rated
- Easy, low cost installation
- Accurate belt speed detection

Application

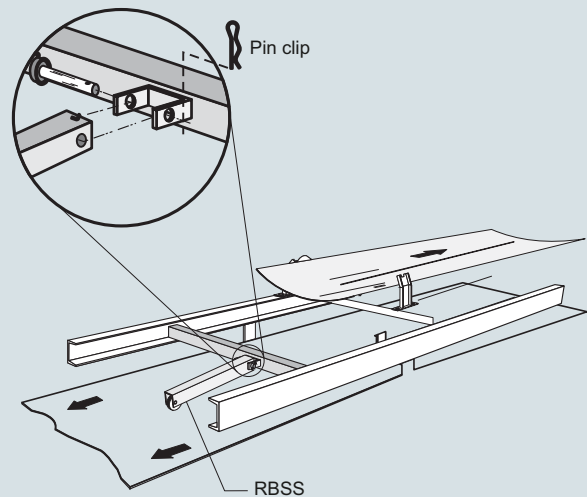
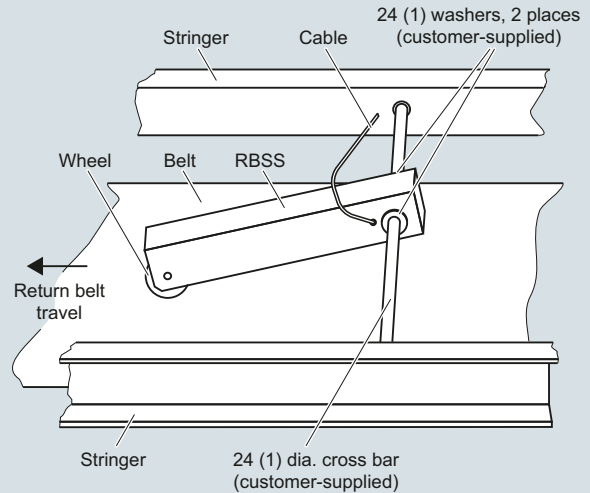
Milltronics RBSS monitors conveyor belt speed, with the output signal transmitted by cable connection to the integrator (Milltronics BW500, or SIWAREX FTC).

Easily installed close to the belt scale assembly, the RBSS provides a signal generated as the wheel on the sensor rotates on the return belt. To secure this cost-effective unit in place, position a cross bar between stringers - either just before or after a return belt idler, or use the optional mounting bracket. The weight of the RBSS ensures positive rotation of the wheel in the middle of the return belt, and pulses from the magnetic sensor are generated by the rotation of the 60 toothed speed sprocket driven by the wheel.

The RBSS output can be applied to any belt scale integrator.

Design

RBSS Standard Mounting



RBSS installation, dimensions in mm (inch)

Technical specifications

Milltronics RBSS	
Mode of operation	
Measuring principle	Magnetic proximity sensor provides pulse to integrator
Typical application	Aggregate belt conveyors
Input	Wheel rotation 2 ... 450 rpm, bi-directional
Output	60 pulses per revolution, 2 ... 450 Hz, 150.4 pulses/m (4.58 pulses/ft) - RBSS: open collector, NPN sinking output, max. 17 mA - RBSS IS: NAMUR NC, load current, 0 ... 15 mA
Rated operating conditions	
Ambient temperature	- RBSS: -40 ... +105 °C (-40 ... +220 °F) - RBSS IS: -25 ... +100 °C (-14 ... +212 °F)
Max. belt speed	3 m/s (590 fpm)
Degree of protection	IP67
Design	
Trailing arm	Painted mild steel
Sensor wheel	127 mm (5 inch) diameter, polyurethane tread
Power supply	- RBSS: 4.5 ... 28 V DC, 16 mA - RBSS IS: 5 ... 25 V DC from IS switch isolator
Interconnection wiring (to integrator)	- RBSS: 3 m, 3 conductor 22 AWG shielded cable - 300 m (1 000 ft) maximum cable run - RBSS IS: 2 m, 2 conductor 26 AWG PVC covered cable - 300 m (1 000 ft) maximum cable run to IS switch isolator - 300 m (1 000 ft) maximum cable run from IS switch isolator and integrator
Approvals	
RBSS	CE, RCM, EAC, KCC ¹⁾
RBSS IS (with suitable IS switch isolator or switch amplifier) ²⁾	- ATEX II 1G Eex ia IIC T6 - ATEX II 1D Ex iaD 20 T 108 °C - CSA/UL: Class I, Div. 1, Groups A, B, C, and D; Class II, Div. 1, Groups E, F, and G; Class III, Div. 1, EAC Ex - CE, RCM, EAC, KCC²⁾
Proximity switch approval ratings (Pepperl+Fuchs #NJ0.8-5GM-N)	- ATEX II 1G EEx ia IIC T6 - ATEX II 1D Ex iaD 20 T 108 °C - CE, CSA, UL²⁾
Optional switch isolator (required for RBSS IS) ³⁾	- ATEX II (1) G [EEx ia] IIC - CSA/UL: Class 1, Div. 1, Groups A, B, C, and D. Class II, Div. 1, Groups E, F, and G, Class III, EAC Ex - CE, RCM, EAC, KCC²⁾
• Pepperl+Fuchs #KFA5-SOT2-Ex2 or #KFA6-SOT2-Ex2	

Selection and ordering data

Article No.

Milltronics RBSS speed sensor	➤ 7MH7134-
A high resolution wheel-driven return belt speed sensor	
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Model	60 pulses per revolution
Fabrication	Standard, C5-M rated polyester painted mild steel
Mounting options	With mounting kit
Approvals	CE, RCM, KCC, ATEX II 1G, Ex ia IIC T6, ATEX II 1D Ex iaD 20 T108 °C, CSA/UL Class I, Div. 1, Groups A, B, C, and D; Class II, Div. 1, Groups E, F, and G; Class III, Div. 1, EAC Ex ⁶⁾
Switch isolator	CE, RCM, EAC, KCC
Not required	
115 V AC ⁴⁾	
230 V AC ⁴⁾	
Further designs	Order Code
Please add "-Z" to article no. and specify order code(s).	
Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)], Measuring-point number / identification (max 27 characters), specify in plain text.	
Manufacturer's test certificate: According to EN 10204-2.2	
Operating instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/weighing/documentation	
Spare parts	Article No.
Wheel, 127 dia-polyurethane, sealed bearing	7MH7723-1FX
Magnetic proximity switch	7MH7723-1GA
Switch, inductive, NJ0.8-5GM-N (approvals option 2) ⁴⁾	7MH7723-1AS
P & F switch isolator, 115 V AC ⁴⁾	7MH7723-1EB
P & F switch isolator, 230 V AC ⁴⁾	7MH7723-1EC
Wheel and shaft, 152 mm diameter ⁵⁾	7MH7723-1EN
60 tooth gear ⁵⁾	7MH7723-1EQ
Bearing (two required) ⁵⁾	7MH7723-1ER
Accessories	
Conduit kit	7MH7723-1NA

1) EMC performance available upon request.

2) Approvals for RBSS IS are based on internally mounted NAMUR slotted proximity switch (Pepperl+Fuchs #NJ0.8-5GM-N) and use of suitable IS switch isolator (amplifier). Please see RBSS operating Instructions for more information.

3) Approval ratings for the proximity switch and IS switch isolator are the property of Pepperl+Fuchs. Copies of these Approval Certificates may be obtained at <http://www.siemens.com/weighing/documentation>

4) Required with RBSS IS.

5) For use with old style RBSS PBD-51033452.

6) Switch isolator required.

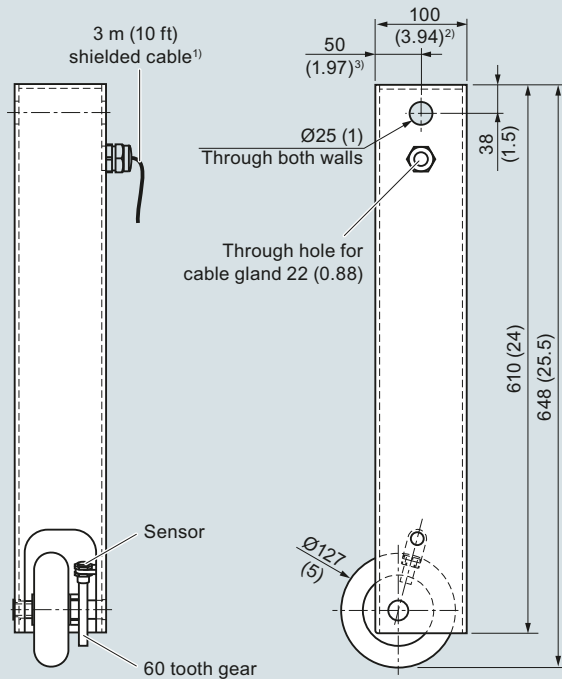
Belt Weighing

Speed sensors

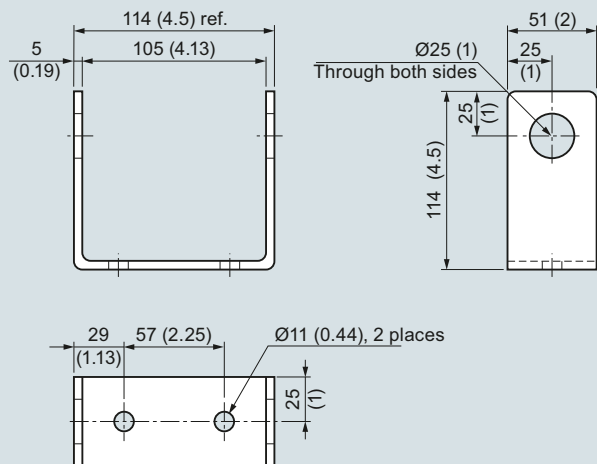
Milltronics RBSS

Dimensional drawings

RBSS



Mounting Bracket



¹⁾ Cable for RBSS (IS, 5 ... 25 V) and RBSS (CE, 10 ... 30 V) is 2 m (6.5 ft).

²⁾ Dimension equals 102 (4) if manufactured in Canada.

³⁾ Dimension equals 51 (2) if manufactured in Canada.

RBSS, dimensions in mm (inch)

Overview



SITRANS WS300 is a low- to high-resolution shaft-driven speed sensor.

Benefits

- Compact and economical
- Easy, low-cost installation
- Accurate belt speed detection
- Optional resolutions for measurement over a range of belt speeds
- Corrosion resistant

Application

SITRANS WS300 speed sensor operates in conjunction with a conveyor belt scale, providing a signal to an integrator which computes the rate of material being conveyed. At only 1.22 kg (2.68 lb), it is one of the lightest and most durable units ever developed for monitoring conveyor belt speed. With its rugged cast aluminum housing, it is suitable for outdoor installation, and its low weight prolongs bearing life.

It is directly coupled to a rotating tail or bend pulley shaft to ensure accurate belt-travel readout, eliminating problems caused by belt slippage or material build-up. The WS300 converts shaft rotation into a pulse train of 32, 256, 1 000 or 2 000 pulses per revolution using a high precision rotary optical encoder. The digital signal is transmitted as speed input to any Siemens integrator for calculation of belt speed, flow rate and totalized weight.

This low- to high-resolution speed sensor provides a frequency signal proportional to the shaft speed, enabling a range of speeds to be read accurately. The quadrature type shaft encoder prevents erroneous speed signals due to vibration or shaft oscillation. The WS300 is easily mounted and is bi-directional for either clockwise or counter-clockwise belt travel.

The IS version uses an inductive proximity switch detecting rotating targets.

Belt Weighing

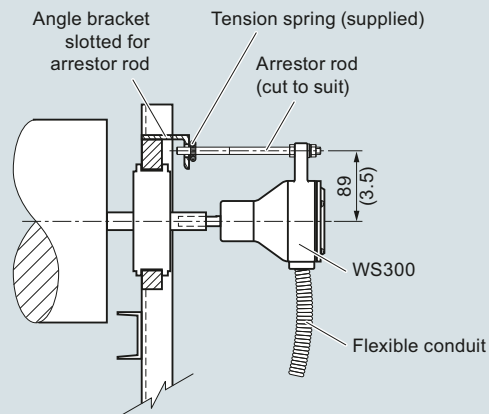
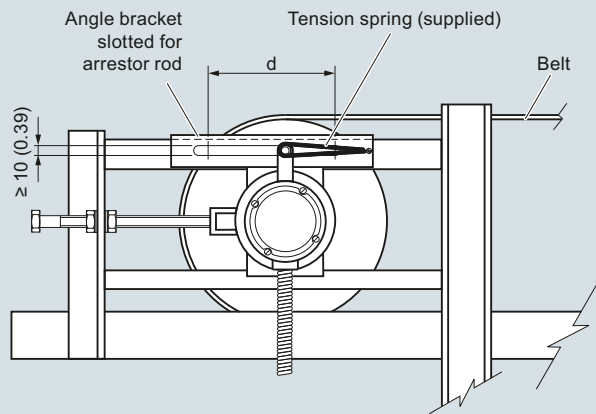
Speed sensors

SITRANS WS300

Design

Mounting

Mounting to a Tail Pulley

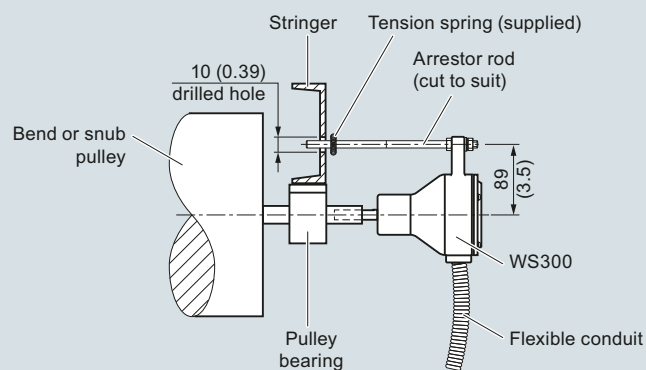
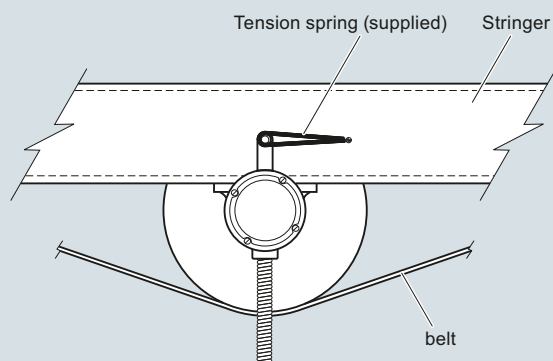


Notes:

Distance 'd' is the take-up travel on the tail pulley.

When adjusting the belt take-up, ensure that there is play on the arrestor rod. If the arrestor rod is pushed against the end of its travel slot, premature bearing wear may result.

Mounting to a Bend or Snub Pulley

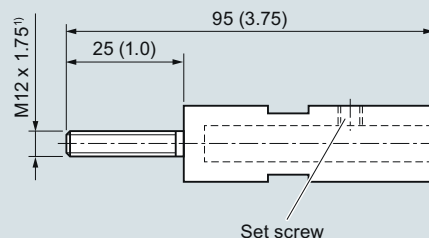
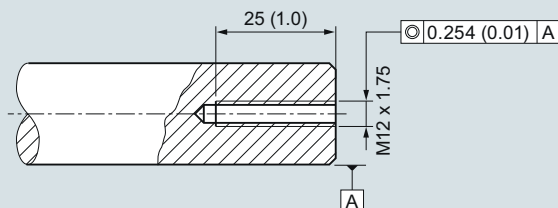


Notes:

When mounting to a bend or a snub pulley only, a 10 mm (0.39 inch) drilled hole is required for the arrestor rod.

WS300 mounting, in mm (inch)

Mounting using optional threaded shaft coupling



¹⁾ Use adhesive when installing threaded shaft coupling (e.g. Loctite).

WS300 mounting using threaded shaft coupling, in mm (inch)

Technical specifications

SITRANS WS300		SITRANS WS300	
Mode of operation		Approvals	
Measuring principle	Standard: pulse from shaft rotation using high precision rotary optical encoder IS: pulse from inductive proximity switch	WS300 Standard	• General • CE, RCM, EAC, KCC
Typical application	When a low- to high-resolution speed sensor is required	Hazardous	• CSA/FM Class II, Div. 1, Groups E, F, G; Class III • ATEX I M1, ATEX II 2D Ex tD A21 IP65 T170 °C • MSHA • EAC Ex, RTN • IEC Ex, Ex tD A21 IP65 T70 °C
Input	Shaft rotation 0.3 ... 2 000 rpm, bi-directional, resolution dependent	WS300 IS (with suitable IS switch isolator or switch amplifier) ¹⁾	• ATEX II 1G EEx ia IIC T6 • ATEX II 1D Ex iaD 20 T 108 °C • CSA/UL: Class I, Div. 1, Groups A, B, C and D; Class II, Div. 1, Groups E, F and G; Class III, Div. 1 • CE, RCM²⁾
Output	• Unidirectional open collector, NPN, sinking output • Standard: 10 ... 30 V DC, 25 mA max. • IS: NAMUR NC, load current, 0 ... 15 mA • 32, 256, 1 000, or 2 000 pulses per revolution (ppr) • 32 ppr: 2 000 max. rpm, 1 066 Hz • 256 ppr: 2 000 max. rpm, 8 530 Hz • 1 000 ppr: 900 max. rpm, 15 000 Hz • 2 000 ppr: 450 max. rpm, 15 000 Hz	Proximity switch approval ratings (Pepperl+Fuchs #NJ0.8-5GM-N)	• ATEX II 1G EEx ia IIC T6 • ATEX II 1D Ex iaD 20 T 108 °C • CSA, UL • CE²⁾
Rated operating conditions		Optional switch isolator (required for WS300 IS) ³⁾	• Pepperl+Fuchs #KFA5-SOT2-Ex2 or #KFA6-SOT2-Ex2 • ATEX II (1) G [EEx ia] IIC • CSA/UL: Class 1, Div. I, Groups A, B, C, and D. Class II, Div. 1, Groups E, F, and G, Class III • CE²⁾
Ambient temperature	Standard: -40 ... +70 °C (-40 ... +158 °F) IS: -25 ... +100 °C (-13 ... +212 °F)		
Degree of protection	NEMA 4X, Type 4X, IP65		
Design			
Enclosure	• Rated NEMA 4X, Type 4X, IP65 • Painted aluminum • Stainless steel (optional)		
Power supply	• Standard: 10 ... 30 V DC, 60 mA max. • IS: 5 ... 16 V DC, 25 mA max. (from IS switch isolator)		
Cable			
Recommended	• Standard: 3-wire shielded, 0.82 mm² (18 AWG) • IS: 2-wire shielded 0.324 mm² (22 AWG) • Max. run 305 m (1 000 ft)		

¹⁾ Approvals for WS300 IS are based on internally mounted NAMUR proximity switch (Pepperl+Fuchs #NJ0.8-5GM-N) and use of suitable IS switch isolator (amplifier). Please see WS300 operating instructions for more information.
²⁾ Approvals for WS300 IS are based on internally mounted NAMUR slotted proximity switch (Pepperl+Fuchs #NJ0.8-5GM-N) and use of suitable IS switch isolator (amplifier). Please see WS300 operating instructions for more information.
³⁾ Approval ratings for the proximity switch and IS switch isolator are the property of Pepperl+Fuchs. Copies of these approval certificates may be obtained at <http://www.siemens.com/weighing/documentation>.

Belt Weighing

Speed sensors

SITRANS WS300

Selection and ordering data

SITRANS WS300 speed sensor

A medium- to high-resolution shaft-driven speed sensor used with Milltronics belt scales.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Resolution (pulses per revolution)

32

256

1 000

2 000

Enclosure

C5-M rated polyester painted aluminum, NEMA 4X

304 (1.4301) stainless steel, vibra finish NEMA 4X

Approvals

CSA/FM Class II, Div. 1, Groups E, F, G Class III

ATEX II 2D, Ex tD A21 IP65 T70 °C, EAC Ex CE, RCM, IEC Ex, Ex tD A21 IP65 T70 °C

CSA/UL Class I, Div. 1, Groups A, B, C, and D; Class II, Div. 1, Groups E, F, and G; Class III, Div. 1, ATEX II 1G, EEx ia IIC T6, ATEX II 1D Ex iaD 20 T108 °C, CE, RCM¹⁾²⁾

MSHA, ATEX II 1GD, Ex ia IIC T4 Ga, Ex ia IIIC T135 °C Da, ATEX I M1, Ex ia I Ma, IEC Ex 1GD, Ex ia IIC T4 Ga, Ex ia IIIC T135 °C Da, IEC Ex I M1, Ex ia I Ma

CE, RCM, EAC, KCC

Connections

Standard, up to 2 integrators

Multiple, up to 10 integrators

Switch isolator

Not required

115 V AC³⁾

230 V AC³⁾

Further designs

Please add **"-Z"** to article no. and specify order code(s).

Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]; Measuring-point number/identification (max. 16 characters), specify in plain text

Manufacturer's test certificate:
According to EN 10204-2.2

Article No.

7MH7177-

0

1

2

3

4

A

B

A

B

C

D

1

2

0

1

2

Order Code

Y17

C11

Operating instructions

English

Note: the operating instructions should be ordered as a separate item on the order.

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

Spare parts

Circuit card 32 PPR, up to 2 integrators

Circuit card 32 PPR, up to 10 integrators

Circuit card 256 PPR, up to 2 integrators

Circuit card 256 PPR, up to 10 integrators

Circuit card 1 000 PPR, up to 2 integrators

Circuit card 1 000 PPR, up to 10 integrators

Circuit card 2 000 PPR, up to 2 integrators

Circuit card 2 000 PPR, up to 10 integrators

Circuit card 32 PPR, IS

Rubber coupling

Coupling hub for 32, 256 PPR versions

Coupling hub for 1 000, 2 000 PPR versions

Enclosure cover

Enclosure bearing assembly

Enclosure cover, stainless steel

Enclosure bearing assembly, stainless steel

Threaded shaft coupling

Arrestor rod

Arrester rod tension spring

WS300 mounting bracket for MD-36 retrofit

WS300 mounting bracket SS for MD-36 retrofit

Cable for speed sensor connection to termination box 3 cond, 18G (order per meter)⁴⁾

Cable for IS speed sensor connection to termination box 3 cond, 22G (order per meter)⁴⁾

Pepperl+Fuchs IS switch isolator, 115 V AC

Pepperl+Fuchs IS switch isolator, 230 V AC

Article No.

7ML1998-5ML01

7MH7723-1GL

7MH7723-1GK

7MH7723-1GM

7MH7723-1GN

7MH7723-1GP

7MH7723-1GQ

7MH7723-1JL

7MH7723-1JM

7MH7723-1HC

7MH7723-1CM

7MH7723-1CN

7MH7723-1GR

7MH7723-1CJ

7MH7723-1CK

7MH7723-1GS

7MH7723-1GT

7MH7723-1GH

7MH7723-1FV

7MH7723-1CP

7MH7723-1NB

7MH7723-1NC

7MH7723-1JP

7MH7723-1JQ

7MH7723-1EB

7MH7723-1EC

¹⁾ The Approval Ratings for the Proximity Switch and the IS switch isolator are the property of Pepperl+Fuchs.

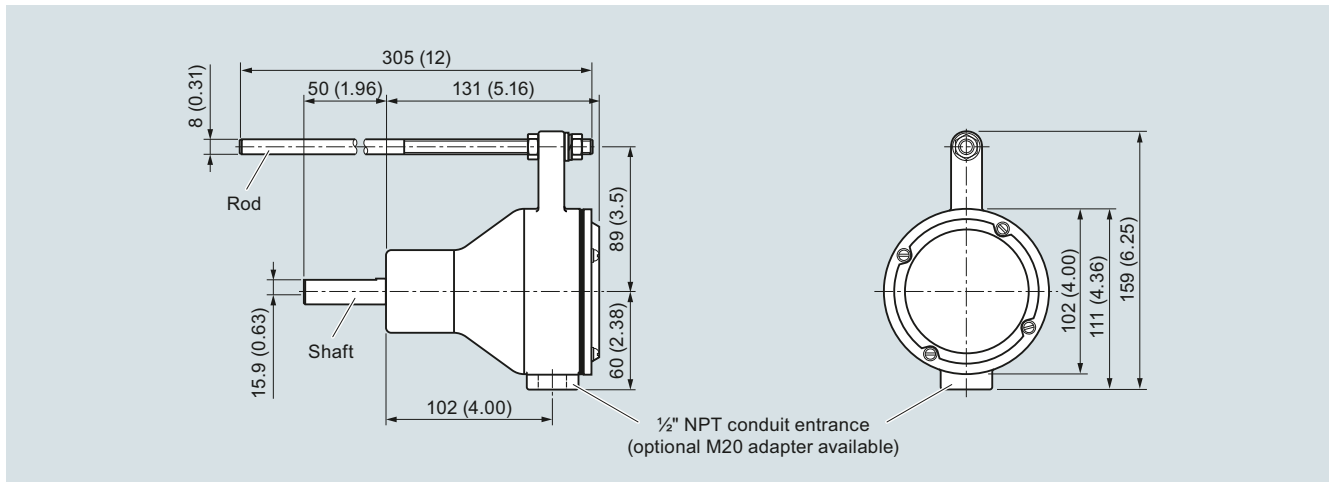
For current approvals, go to: <http://www.am.pepperl-fuchs.com>.

²⁾ Approval option B requires use of switch isolator to interface with the belt scale integrator, and is available with Resolution option 1, and Connections option 1 only.

³⁾ For use with IS approval option B.

⁴⁾ Cable length orders exceeding 150 m (500 ft) may not be supplied as a continuous length.

Dimensional drawings



WS300, dimensions in mm (inch)

Circuit diagrams

Connections (Standard)

Description	Terminal
10 ... 30 V DC	1
Speed out-CW	2
Speed out-CCW	3
Common	4
Ground	GND

- Determine the pulley shaft rotation on the end of the pulley shaft to which the WS300 is attached.
- If the pulley shaft is rotating clockwise, connect the appropriate wire to terminal 2. If the pulley shaft is rotating counter-clockwise, connect the appropriate wire to terminal 3.
- Do not connect terminals 2 and 3 at the same time.
- Connection between the WS300 standard unit and the integrator should be made with three-wire shielded, 0.82 mm² (18 AWG) cable.
- Ground shield of cable at integrator only.
- Connect shield to appropriate terminal at the integrator.

Terminal Connections to integrator

WS300	1 +V	2 CW	3 CCW	4 Cmn	GND
Milltronics BW500	19	16	16	17	N/C
SIWAREX FTC	CI+, 1L+	CI-	CI-	1M	N/C
SIWAREX WP241	1L+	DI.0	DI.0	2M, 1M	N/C

Connections (IS)

Description	Terminal
5 ... 16 V DC, 25 mA max. (from IS Switch Isolator)	1
Speed out	2
Ground	GND

- Only terminals 1 and 2 are required; rotation in a clockwise or counter-clockwise direction is not required.
- To connect the switch isolator, use two-wire shielded 0.324 mm² (22 AWG) cable. Use the same cable to connect the switch isolator to the integrator.
- Ground shield of cable at integrator only.
- Connect shield to appropriate terminal at the integrator.

Terminal Connections to integrator

W300 IS	IS Switch Isolator Terminal	Milltronics BW500	SIWAREX FTC	SIWAREX WP241
1	3			
2	1			
	7	16	1L+	1L+
	8	17	CI+	CI+

Connect CI- to Common

Belt Weighing

Accessories

Calibration weight lifter Milltronics MWL

Overview



Milltronics MWL weight lifter is a mechanical calibration weight lifter for MCS, MSI, MMI, and MUS belt scales.

Benefits

- Safe and easy application of belt scale reference weights with the operator remaining external to the conveyor
- Modular construction, easily adaptable to different conveyor widths
- Low profile allowing easy fit into belt conveyor
- Easy to install and apply
- Easy to store drive handle that can be applied to left or right side of MWL
- Security pin used to ensure safe storage of weight
- Can be used with new and existing applications

Application

Milltronics MWL mechanically raises and lowers the static weights and then stores the weights securely above the belt scale calibration arms, and allows the operator to lower and apply them safely without having to lean into the conveyor. The MWL is manually operated, and uses a high mechanical advantage to enable weights up to 340 kg (750 lb) to be applied with very limited effort. The crank handle uses twelve rotations for full range of motion, and can be removed and stored for safety with the locking ball-pin which secures the MWL when it is not in use.

Two lifting arms support a base-bar weight above the calibration (test) weight brackets of the belt scale: either flat bar or round bar style calibration weights are applicable. Locating notches in the base-bar weight engage the calibration weights securely on the lifting arms in the stored position, and the gear drive locks the lifting arms in place.

Installation is easy, just four bolt holes to drill after locating the MWL gear modules (LH and RH) on the conveyor with respect to the belt scale. After running the MWL empty to ensure proper alignment, and then tightening mounting bolts, you are ready for the loading of the calibration weights. This is the last time that they will have to be lifted by hand.

Technical specifications

Milltronics MWL weight lifter	
Mode of operation	
Principle of operation	Mechanical gear drive
Typical application	Belt scale calibration
Medium conditions	
Max. ambient temperature	75 °C (167 °F)
Belt design	
Belt width	• MCS: up to 1 600 mm (60 inch) CEMA width • MUS-STD standard duty: up to 1 000 mm (42 inch) CEMA width • MUS-HD heavy-duty: up to 1 600 mm (60 inch) CEMA width • MSI: 18 ... 96 inch CEMA belt width
Conveyor incline	± 15° from horizontal
Idlers	20° or more troughed idlers
Idler spacing	Minimum of 610 mm (24 inch)
Calibration weight capacity	Up to 340 kg (750 lb)
Crank arm	
Mechanical advantage	20:1
Number of revolutions required for raising or lowering	12
Mounting dimensions	See reverse for standard and heavy-duty MUS, MCS, and MSI/MMI belt scales
Approvals	
Motorized option	The MWL is in compliance with directive 98/37/EC, CE, RCM CE, RCM, EAC, KCC, CSA _{C/US}

Selection and ordering data		Article No.		Article No.
Milltronics MWL weight lifter A mechanical calibration weight lifter for MSI, MMI, MCS, and MUS belt scale ¹⁾ For use with MSI, ensure MSI fabrication option 4 1 is selected. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		7MH7218-		7MH7218-
Actuation Manually		1		
Belt width and 'A' dimension 18 inch, 'A'=27 inch (686 mm) 19 inch, 'A'=28 inch (711 mm) 20 inch, 'A'=29 inch (737 mm) 21 inch, 'A'=30 inch (762 mm) 22 inch, 'A'=31 inch (787 mm) 23 inch, 'A'=32 inch (813 mm) 24 inch, 'A'=33 inch (838 mm) 25 inch, 'A'=34 inch (864 mm) 26 inch, 'A'=35 inch (889 mm) 27 inch, 'A'=36 inch (914 mm) 28 inch, 'A'=37 inch (940 mm) 29 inch, 'A'=38 inch (965 mm) 30 inch, 'A'=39 inch (991 mm) 31 inch, 'A'=40 inch (1 016 mm) 32 inch, 'A'=41 inch (1 041 mm) 33 inch, 'A'=42 inch (1 067 mm) 34 inch, 'A'=43 inch (1 092 mm) 35 inch, 'A'=44 inch (1 118 mm) 36 inch, 'A'=45 inch (1 143 mm) 37 inch, 'A'=46 inch (1 168 mm) 38 inch, 'A'=47 inch (1 194 mm) 39 inch, 'A'=48 inch (1 219 mm) 40 inch, 'A'=49 inch (1 245 mm) 41 inch, 'A'=50 inch (1 270 mm) 42 inch, 'A'=51 inch (1 295 mm) 43 inch, 'A'=52 inch (1 321 mm) 44 inch, 'A'=53 inch (1 346 mm) 45 inch, 'A'=54 inch (1 372 mm) 46 inch, 'A'=55 inch (1 397 mm) 47 inch, 'A'=56 inch (1 422 mm) 48 inch, 'A'=57 inch (1 448 mm) 49 inch, 'A'=58 inch (1 473 mm) 50 inch, 'A'=59 inch (1 499 mm) 51 inch, 'A'=60 inch (1 524 mm) 52 inch, 'A'=61 inch (1 549 mm) 53 inch, 'A'=62 inch (1 575 mm) 54 inch, 'A'=63 inch (1 600 mm) 55 inch, 'A'=64 inch (1 626 mm) 56 inch, 'A'=65 inch (1 651 mm) 57 inch, 'A'=66 inch (1 676 mm) 58 inch, 'A'=67 inch (1 702 mm) 59 inch, 'A'=68 inch (1 727 mm) 60 inch, 'A'=69 inch (1 753 mm) 61 inch, 'A'=70 inch (1 778 mm) 62 inch, 'A'=71 inch (1 803 mm) 63 inch, 'A'=72 inch (1 829 mm) 64 inch, 'A'=73 inch (1 854 mm)		AA AB AC AD AE AF AG AH AJ AK AL AM AN AP AQ AR AS AT AU AV AW BA BB BC BD BE BF BG BH BJ BK BL BM BN BP BQ BR BS BT BU BV BW CA CB CC CD CE		Milltronics MWL weight lifter A mechanical calibration weight lifter for MSI, MMI, MCS, and MUS belt scale ¹⁾ For use with MSI, ensure MSI fabrication option 4 1 is selected. 65 inch, 'A'=74 inch (1 880 mm) 66 inch, 'A'=75 inch (1 905 mm) 67 inch, 'A'=76 inch (1 930 mm) 68 inch, 'A'=77 inch (1 956 mm) 69 inch, 'A'=78 inch (1 981 mm) 70 inch, 'A'=79 inch (2 007 mm) 71 inch, 'A'=80 inch (2 032 mm) 72 inch, 'A'=81 inch (2 057 mm) 73 inch, 'A'=82 inch (2 083 mm) 74 inch, 'A'=83 inch (2 108 mm) 75 inch, 'A'=84 inch (2 134 mm) 76 inch, 'A'=85 inch (2 159 mm) 77 inch, 'A'=86 inch (2 184 mm) 78 inch, 'A'=87 inch (2 210 mm) 79 inch, 'A'=88 inch (2 235 mm) 80 inch, 'A'=89 inch (2 261 mm) 81 inch, 'A'=90 inch (2 286 mm) 82 inch, 'A'=91 inch (2 311 mm) 83 inch, 'A'=92 inch (2 337 mm) 84 inch, 'A'=93 inch (2 362 mm) 85 inch, 'A'=94 inch (2 388 mm) 86 inch, 'A'=95 inch (2 413 mm) 87 inch, 'A'=96 inch (2 438 mm) 88 inch, 'A'=97 inch (2 464 mm) 89 inch, 'A'=98 inch (2 489 mm) 90 inch, 'A'=99 inch (2 515 mm) 91 inch, 'A'=100 inch (2 540 mm) 92 inch, 'A'=101 inch (2 565 mm) 93 inch, 'A'=102 inch (2 591 mm) 94 inch, 'A'=103 inch (2 616 mm) 95 inch, 'A'=104 inch (2 642 mm) 96 inch, 'A'=105 inch (2 667 mm) No width parts ³⁾ Weight type None For use with flat bar weights (weights not included) <u>Width based on belt width</u> 3 inch integrated round bar weight (18 ... 29 inch, 15.9 ... 22.7 kg) 3 inch integrated round bar weight (30 ... 41 inch, 26.8 ... 33.6 kg) 3 inch integrated round bar weight (42 ... 53 inch, 37.7 ... 44.5 kg) 3 inch integrated round bar weight (54 ... 65 inch, 48.6 ... 58.6 kg) 3 inch integrated round bar weight (66 ... 77 inch, 59.5 ... 69.5 kg) 3 inch integrated round bar weight (78 ... 89 inch, 70.4 ... 80.4 kg) 3 inch integrated round bar weight (90 ... 96 inch, 81.3 ... 86.8 kg) 4 inch integrated round bar weight (18 ... 29 inch, 23.3 ... 34.3 kg)
				CF CG CH CJ CK CL CM CN CP CQ CR CS CT CU CV CW DA DB DC DD DE DF DG DH DJ DK DL DM DN DP DQ DR XX
				00 11 31 32 33 34 35 36 37 41

Belt Weighing

Accessories

Calibration weight lifter Milltronics MWL

Selection and ordering data

Milltronics MWL weight lifter

A mechanical calibration weight lifter for MSI, MMI, MCS, and MUS belt scale¹⁾

For use with MSI, ensure MSI fabrication option 4 1 is selected.

4 inch integrated round bar weight
(30 ... 41 inch, 42.7 ... 53.7 kg)

4 2

4 inch integrated round bar weight
(42 ... 53 inch, 62.1 ... 73.1 kg)

4 3

4 inch integrated round bar weight
(54 ... 65 inch, 81.5 ... 99.3 kg)

4 4

4 inch integrated round bar weight
(66 ... 77 inch, 100.9 ... 118.6 kg)

4 5

4 inch integrated round bar weight
(78 ... 89 inch, 120.3 ... 138.0 kg)

4 6

4 inch integrated round bar weight
(90 ... 96 inch, 139.6 ... 149.3 kg)

4 7

5 inch integrated round bar weight
(18 ... 29 inch, 32.9 ... 49.3 kg)

5 1

5 inch integrated round bar weight
(30 ... 41 inch, 63.2 ... 79.6 kg)

5 2

5 inch integrated round bar weight
(42 ... 53 inch, 93.5 ... 109.9 kg)

5 3

5 inch integrated round bar weight
(54 ... 65 inch, 123.7 ... 151.5 kg)

5 4

5 inch integrated round bar weight
(66 ... 77 inch, 154.0 ... 181.8 kg)

5 5

5 inch integrated round bar weight
(78 ... 89 inch, 184.3 ... 212.1 kg)

5 6

5 inch integrated round bar weight
(90 ... 96 inch, 214.6 ... 229.7 kg)

5 7

6 inch integrated round bar weight
(18 ... 29 inch, 44.5 ... 67.6 kg)

6 1

6 inch integrated round bar weight
(30 ... 41 inch, 88.2 ... 111.2 kg)

6 2

6 inch integrated round bar weight
(42 ... 53 inch, 131.8 ... 154.8 kg)

6 3

6 inch integrated round bar weight
(54 ... 65 inch, 175.4 ... 215.3 kg)

6 4

6 inch integrated round bar weight
(66 ... 77 inch, 219.0 ... 258.9 kg)

6 5

6 inch integrated round bar weight
(78 ... 89 inch, 262.6 ... 302.5 kg)

6 6

6 inch integrated round bar weight
(90 ... 96 inch, 306.2 ... 328.0 kg)

6 7

Fabrication

Standard, C5-M rated polyester painted mild steel

1

Electro galvanized mild steel

2

Other materials available upon request.

Article No.

7MH7218-

4 2 3 4 5 6 7

Further designs

Please add **"-Z"** to article no. and specify order code(s).

Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)],
Measuring-point number / identification
(max 27 characters), specify in plain text.

Y15

Manufacturer's test certificate:
According to EN 10204-2.2

C11

Operating instruction

All literature is available to download for free, in a
range of languages, at

<http://www.siemens.com/weighing/documentation>

Spare parts

MWL handle shaft extension, 3.75 inch (95 mm)

Article No.

7MH7726-1AM

MWL module LH unit

7MH7723-1GU

MWL module RH unit

7MH7723-1GV

MWL handle

7MH7723-1GX

MWL retrofit kit (for Milltronics MSI, MMI belt
scales)

7MH7723-1FW

MWL retrofit kit galvanized (for Milltronics MSI,
MMI belt scales)

7MH7723-1JT

MWL retrofit kit (for Milltronics MCS belt scales)

7MH7723-1HA

MWL handle shaft extension galvanized
[3.75 inch (95 mm)]

7MH7723-1JS

MWL module LH unit galvanized

7MH7723-1HK

MWL module RH unit galvanized

7MH7723-1HL

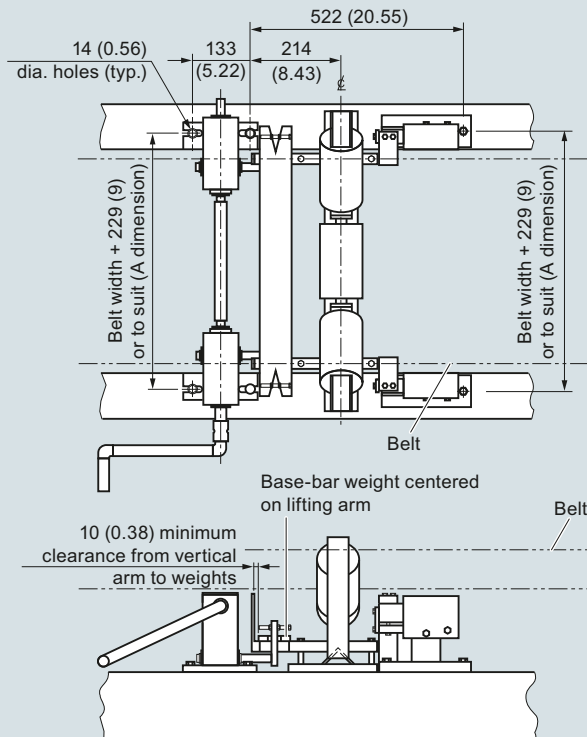
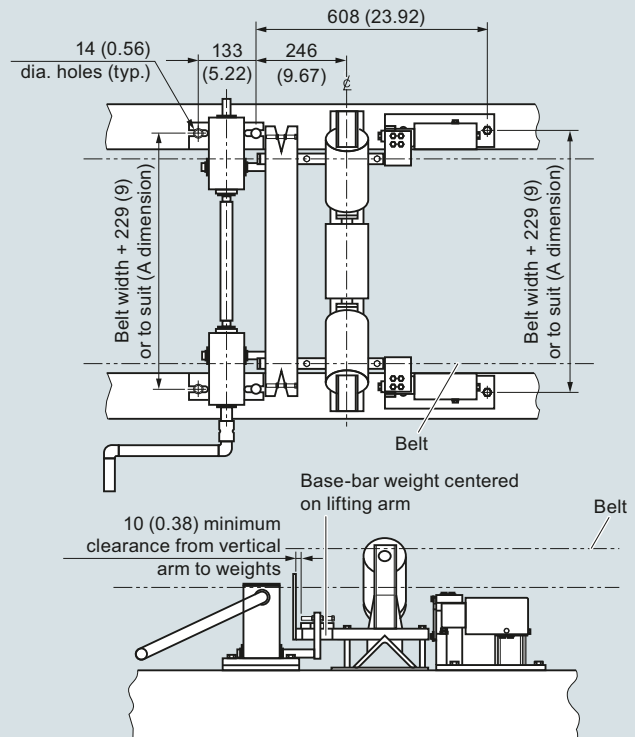
MWL handle galvanized

7MH7723-1HM

¹⁾ One MWL is required for each scale (MMI-2 requires 2 MWL).

²⁾ Select motor mounting, order code options M30 or M31.

³⁾ Available with weight type option 00 only.

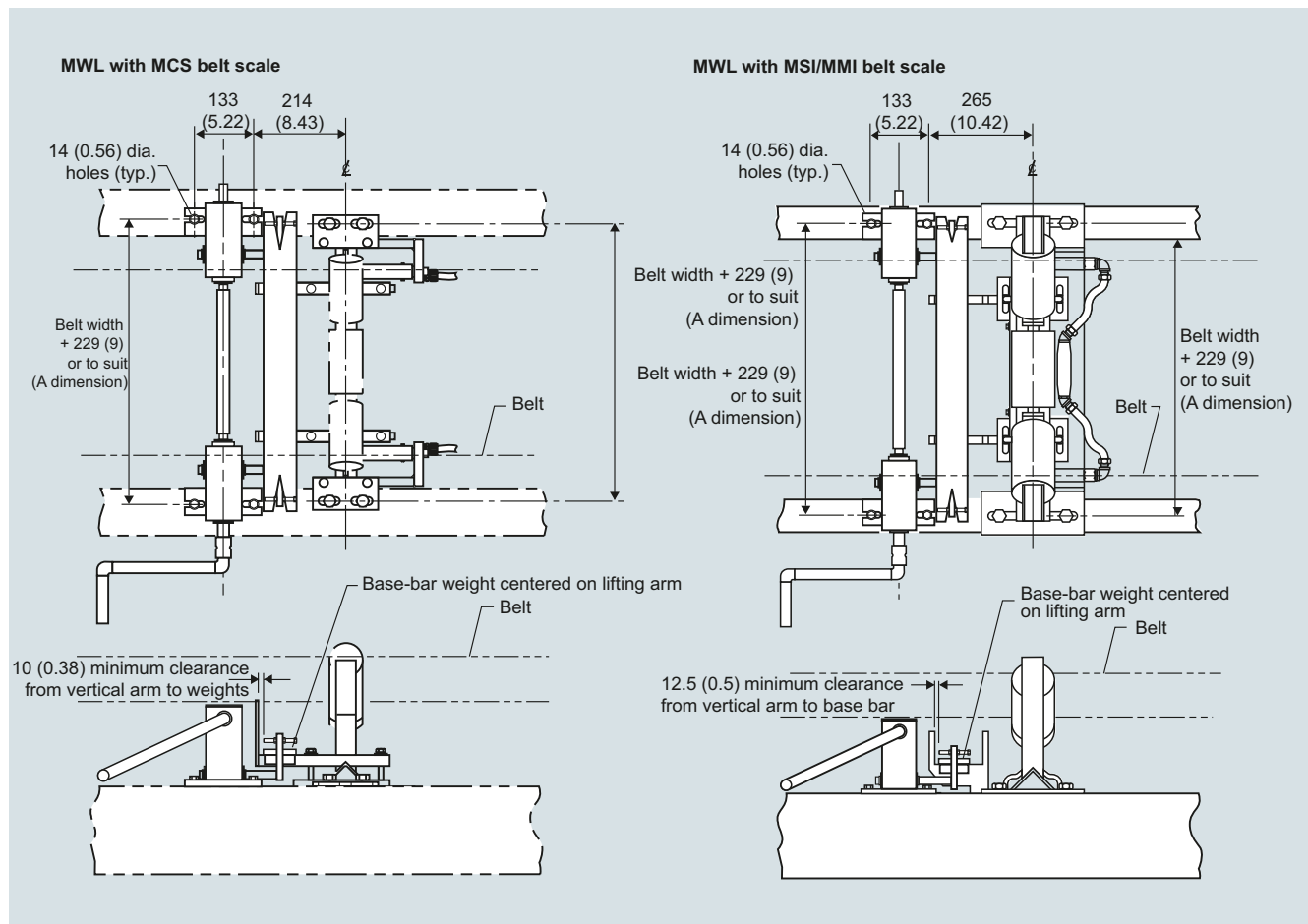
Dimensional drawings
MWL with MUS - STD Standard Duty Belt Scale

MWL with MUS - HD Heavy Duty Belt Scale


MWL, dimensions in mm (inch)

Belt Weighing

Accessories

Calibration weight lifter Milltronics MWL



MWL, dimensions in mm (inch)

Overview

Roller test chains are used for belt scale calibration when material tests are not practical. All test chains are bushed. Minimum length is 4 feet (1.2 m).

Selection and ordering data

Article No.

Milltronics flat bar calibration weights

Designed for use with Milltronics belt scales.
 Length of bar weight is A dimension minus
 3 inch (76 mm). Listed weight is an approximation.

 **7MH7127-**

 Click on the Article No. for the online
 configuration in the PIA Life Cycle Portal.

Bar width, belt width and A dimension, weight

3 inch, 18 inch, A=27 inch (686 mm), 4.63 kg	1 AA
3 inch, 24 inch, A=33 inch (838 mm), 5.78 kg	1 AG
3 inch, 30 inch, A=39 inch (991 mm), 6.94 kg	1 AN
3 inch, 36 inch, A=45 inch (1 143 mm), 8.10 kg	1 AU
3 inch, 42 inch, A=51 inch (1 295 mm), 9.25 kg	1 BD
3 inch, 48 inch, A=57 inch (1 448 mm), 10.41 kg	1 BK
3 inch, 54 inch, A=63 inch (1 600 mm), 11.57 kg	1 BR
3 inch, 60 inch, A=69 inch (1 753 mm), 12.73 kg	1 CA
3 inch, 66 inch, A=75 inch (1 905 mm), 13.89 kg	1 CG
3 inch, 72 inch, A=81 inch (2 057 mm), 15.05 kg	1 CN
3 inch, 78 inch, A=87 inch (2 210 mm), 16.21 kg	1 CU
3 inch, 84 inch, A=93 inch (2 362 mm), 17.37 kg	1 DD
3 inch, 90 inch, A=99 inch (2 515 mm), 18.53 kg	1 DK
3 inch, 96 inch, A=105 inch (2 667 mm), 19.69 kg	1 DR
4 inch, 18 inch, A=27 inch (686 mm), 6.17 kg	2 AA
4 inch, 24 inch, A=33 inch (838 mm), 7.71 kg	2 AG
4 inch, 30 inch, A=39 inch (991 mm), 9.26 kg	2 AN
4 inch, 36 inch, A=45 inch (1 143 mm), 10.80 kg	2 AU
4 inch, 42 inch, A=51 inch (1 295 mm), 12.34 kg	2 BD
4 inch, 48 inch, A=57 inch (1 448 mm), 13.89 kg	2 BK
4 inch, 54 inch, A=63 inch (1 600 mm), 15.42 kg	2 BR
4 inch, 60 inch, A=69 inch (1 753 mm), 16.97 kg	2 CA
4 inch, 66 inch, A=75 inch (1 905 mm), 18.52 kg	2 CG
4 inch, 72 inch, A=81 inch (2 057 mm), 20.07 kg	2 CN
4 inch, 78 inch, A=87 inch (2 210 mm), 21.62 kg	2 CU
4 inch, 84 inch, A=93 inch (2 362 mm), 23.17 kg	2 DD
4 inch, 90 inch, A=99 inch (2 515 mm), 24.72 kg	2 DK
4 inch, 96 inch, A=105 inch (2 667 mm), 26.27 kg	2 DR

Fabrication

Standard, C5-M rated polyester painted mild steel

1

Belt Weighing

Accessories

Test chain

Overview



Roller test chains are used for belt scale calibration when material tests are not practical. All test chains are bushed. Minimum length is 4 feet (1.2 m).

Benefits

- Heavy-duty design for rugged applications and long life
- Precision machined components for accurate calibration
- Bushed rollers to ensure rotation during calibration
- Alternative to material tests when they are not possible

Application

Milltronics calibration test chains provide simulated material flow on a conveyor belt for use with belt scale calibration. Designed for use in environments where material tests cannot be performed, test chains come in a variety of capacity options for use in any application. They ensure constant and uniform belt loading similar to material being conveyed, and can be stored on a storage reel for quick and easy application. The use of a calibration test chain ensures that production totals are guaranteed.

Technical specifications

Test chain

Mode of operation

Principle of operation	Rides on carrying side of belt to simulate material loading
------------------------	---

Medium conditions

Max. ambient temperature	65 °C (150 °F)
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Design

Belt loading to meet any application	5 lb/ft (7.4 kg/m) ... 100 lb/ft (148.8 kg/m)
--------------------------------------	---

Length

Made to suit conveyor design

Idler

Flat to 45° troughed idlers

Max belt speed

5 m/s 1 000 fpm

Mounting

Connected to conveyor at start and end of chain at both sides for uniform loading.
Storage and application with test chain storage reel.

Approvals

CE, RCM, EAC, KCC

Selection and ordering data

Article No.

Article No.

Milltronics test chains



7MH7161-

Roller test chains are used for belt scale calibration when material tests are not practical. All test chains are bushed. Minimum length is 4 feet (1.2 m).

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

5 lb/ft (7.4 kg/m), 6 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)
8 ... 11 ft (2.4 ... 3.4 m)
12 ... 15 ft (3.7 ... 4.6 m)
16 ... 19 ft (4.9 ... 5.8 m)
20 ... 23 ft (6.1 ... 7.0 m)
24 ... 27 ft (7.3 ... 8.2 m)
28 ... 31 ft (8.5 ... 9.4 m)
32 ... 35 ft (9.8 ... 10.7 m)

AA 1
AA 2
AA 3
AA 4
AA 5
AA 6
AA 7
AA 8

7.5 lb/ft (11.2 kg/m), 6 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)
8 ... 11 ft (2.4 ... 3.4 m)
12 ... 15 ft (3.7 ... 4.6 m)
16 ... 19 ft (4.9 ... 5.8 m)
20 ... 23 ft (6.1 ... 7.0 m)
24 ... 27 ft (7.3 ... 8.2 m)
28 ... 31 ft (8.5 ... 9.4 m)
32 ... 35 ft (9.8 ... 10.7 m)

BB 1
BB 2
BB 3
BB 4
BB 5
BB 6
BB 7
BB 8

10 lb/ft (14.9 kg/m), 4 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)
8 ... 11 ft (2.4 ... 3.4 m)
12 ... 15 ft (3.7 ... 4.6 m)
16 ... 19 ft (4.9 ... 5.8 m)
20 ... 23 ft (6.1 ... 7.0 m)
24 ... 27 ft (7.3 ... 8.2 m)
28 ... 31 ft (8.5 ... 9.4 m)
32 ... 35 ft (9.8 ... 10.7 m)

CC 1
CC 2
CC 3
CC 4
CC 5
CC 6
CC 7
CC 8

15 lb/ft (22.3 kg/m), 4 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)
8 ... 11 ft (2.4 ... 3.4 m)
12 ... 15 ft (3.7 ... 4.6 m)
16 ... 19 ft (4.9 ... 5.8 m)
20 ... 23 ft (6.1 ... 7.0 m)
24 ... 27 ft (7.3 ... 8.2 m)
28 ... 31 ft (8.5 ... 9.4 m)
32 ... 35 ft (9.8 ... 10.7 m)

DD 1
DD 2
DD 3
DD 4
DD 5
DD 6
DD 7
DD 8

20 lb/ft (29.8 kg/m), 4 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)
8 ... 11 ft (2.4 ... 3.4 m)
12 ... 15 ft (3.7 ... 4.6 m)
16 ... 19 ft (4.9 ... 5.8 m)
20 ... 23 ft (6.1 ... 7.0 m)
24 ... 27 ft (7.3 ... 8.2 m)
28 ... 31 ft (8.5 ... 9.4 m)
32 ... 35 ft (9.8 ... 10.7 m)

EE 1
EE 2
EE 3
EE 4
EE 5
EE 6
EE 7
EE 8

Milltronics test chains

Roller test chains are used for belt scale calibration when material tests are not practical. All test chains are bushed. Minimum length is 4 feet (1.2 m).

25 lb/ft (37.2 kg/m), 4 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)
8 ... 11 ft (2.4 ... 3.4 m)
12 ... 15 ft (3.7 ... 4.6 m)
16 ... 19 ft (4.9 ... 5.8 m)
20 ... 23 ft (6.1 ... 7.0 m)
24 ... 27 ft (7.3 ... 8.2 m)
28 ... 31 ft (8.5 ... 9.4 m)
32 ... 35 ft (9.8 ... 10.7 m)

FF 1
FF 2
FF 3
FF 4
FF 5
FF 6
FF 7
FF 8

30 lb/ft (44.6 kg/m), 4 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)
8 ... 11 ft (2.4 ... 3.4 m)
12 ... 15 ft (3.7 ... 4.6 m)
16 ... 19 ft (4.9 ... 5.8 m)
20 ... 23 ft (6.1 ... 7.0 m)
24 ... 27 ft (7.3 ... 8.2 m)
28 ... 31 ft (8.5 ... 9.4 m)
32 ... 35 ft (9.8 ... 10.7 m)

GG 1
GG 2
GG 3
GG 4
GG 5
GG 6
GG 7
GG 8

35 lb/ft (52.1 kg/m), 4 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)
8 ... 11 ft (2.4 ... 3.4 m)
12 ... 15 ft (3.7 ... 4.6 m)
16 ... 19 ft (4.8 ... 5.8 m)
20 ... 23 ft (6.1 ... 7.0 m)
24 ... 27 ft (7.3 ... 8.2 m)
28 ... 31 ft (8.5 ... 9.4 m)
32 ... 35 ft (9.8 ... 10.7 m)

HH 1
HH 2
HH 3
HH 4
HH 5
HH 6
HH 7
HH 8

40 lb/ft (59.5 kg/m), 4 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)
8 ... 11 ft (2.4 ... 3.4 m)
12 ... 15 ft (3.7 ... 4.6 m)
16 ... 19 ft (4.9 ... 5.8 m)
20 ... 23 ft (6.1 ... 7.0 m)
24 ... 27 ft (7.3 ... 8.2 m)
28 ... 31 ft (8.5 ... 9.4 m)
32 ... 35 ft (9.8 ... 10.7 m)

JJ 1
JJ 2
JJ 3
JJ 4
JJ 5
JJ 6
JJ 7
JJ 8

45 lb/ft (67.0 kg/m), 4 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)
8 ... 11 ft (2.4 ... 3.4 m)
12 ... 15 ft (3.7 ... 4.6 m)
16 ... 19 ft (4.9 ... 5.8 m)
20 ... 23 ft (6.1 ... 7.0 m)
24 ... 27 ft (7.3 ... 8.2 m)
28 ... 31 ft (8.5 ... 9.4 m)
32 ... 35 ft (9.8 ... 10.7 m)

KK 1
KK 2
KK 3
KK 4
KK 5
KK 6
KK 7
KK 8

Belt Weighing

Accessories

Test chain

Selection and ordering data

Milltronics test chains

Roller test chains are used for belt scale calibration when material tests are not practical. All test chains are bushed. Minimum length is 4 feet (1.2 m).

↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

50 lb/ft (74.4 kg/m), 4 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)

8 ... 11 ft (2.4 ... 3.4 m)

12 ... 15 ft (3.7 ... 4.6 m)

16 ... 19 ft (4.9 ... 5.8 m)

20 ... 23 ft (6.1 ... 7.0 m)

24 ... 27 ft (7.3 ... 8.2 m)

28 ... 31 ft (8.5 ... 9.4 m)

32 ... 35 ft (9.8 ... 10.7 m)

60 lb/ft (89.3 kg/m), 6 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)

8 ... 11 ft (2.4 ... 3.4 m)

12 ... 15 ft (3.7 ... 4.6 m)

16 ... 19 ft (4.9 ... 5.8 m)

20 ... 23 ft (6.1 ... 7.0 m)

24 ... 27 ft (7.3 ... 8.2 m)

28 ... 31 ft (8.5 ... 9.4 m)

32 ... 35 ft (9.8 ... 10.7 m)

70 lb/ft (104.2 kg/m), 6 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)

8 ... 11 ft (2.4 ... 3.4 m)

12 ... 15 ft (3.7 ... 4.6 m)

16 ... 19 ft (4.9 ... 5.8 m)

20 ... 23 ft (6.1 ... 7.0 m)

24 ... 27 ft (7.3 ... 8.2 m)

28 ... 31 ft (8.5 ... 9.4 m)

32 ... 35 ft (9.8 ... 10.7 m)

80 lb/ft (119.1 kg/m), 6 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)

8 ... 11 ft (2.4 ... 3.4 m)

12 ... 15 ft (3.7 ... 4.6 m)

16 ... 19 ft (4.9 ... 5.8 m)

20 ... 23 ft (6.1 ... 7.0 m)

24 ... 27 ft (7.3 ... 8.2 m)

28 ... 31 ft (8.5 ... 9.4 m)

32 ... 35 ft (9.8 ... 10.7 m)

90 lb/ft (133.9 kg/m), 6 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)

8 ... 11 ft (2.4 ... 3.4 m)

12 ... 15 ft (3.7 ... 4.6 m)

16 ... 19 ft (4.9 ... 5.8 m)

20 ... 23 ft (6.1 ... 7.0 m)

24 ... 27 ft (7.3 ... 8.2 m)

28 ... 31 ft (8.5 ... 9.4 m)

32 ... 35 ft (9.8 ... 10.7 m)

Article No.

7MH7161-

0 0

LL 1**LL 2****LL 3****LL 4****LL 5****LL 6****LL 7****LL 8****NN 1****NN 2****NN 3****NN 4****NN 5****NN 6****NN 7****NN 8****PP 1****PP 2****PP 3****PP 4****PP 5****PP 6****PP 7****PP 8****QQ 1****QQ 2****QQ 3****QQ 4****QQ 5****QQ 6****QQ 7****QQ 8****RR 1****RR 2****RR 3****RR 4****RR 5****RR 6****RR 7****RR 8**

Article No.

7MH7161-

0 0

SS 1**SS 2****SS 3****SS 4****SS 5****SS 6****SS 7****SS 8**

Order Code

Milltronics test chains

Roller test chains are used for belt scale calibration when material tests are not practical. All test chains are bushed. Minimum length is 4 feet (1.2 m).

100 lb/ft (148.8 kg/m), 6 inch pitch

4 ... 7 ft (1.2 ... 2.1 m)

8 ... 11 ft (2.4 ... 3.4 m)

12 ... 15 ft (3.7 ... 4.6 m)

16 ... 19 ft (4.9 ... 5.8 m)

20 ... 23 ft (6.1 ... 7.0 m)

24 ... 27 ft (7.3 ... 8.2 m)

28 ... 31 ft (8.5 ... 9.4 m)

32 ... 35 ft (9.8 ... 10.7 m)

Further models

Please add **"-Z"** to article no. and specify order codes(s)

Total length

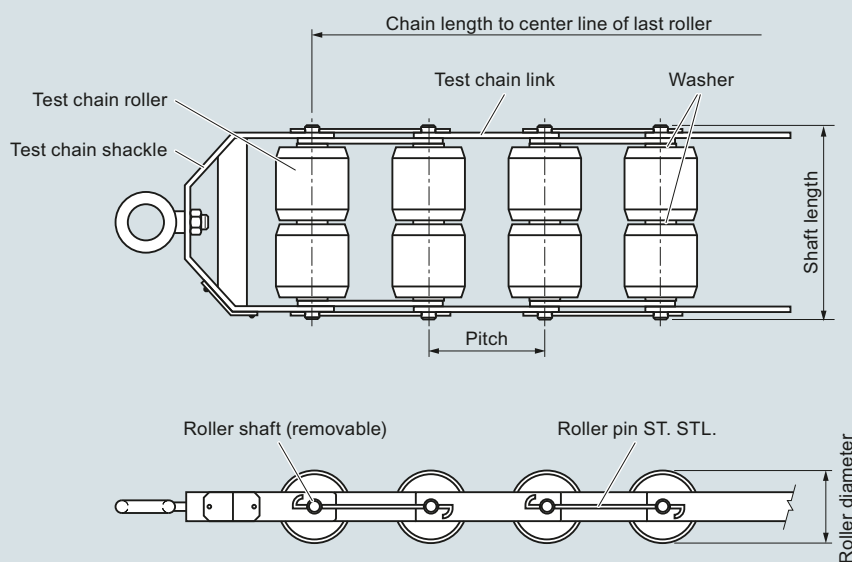
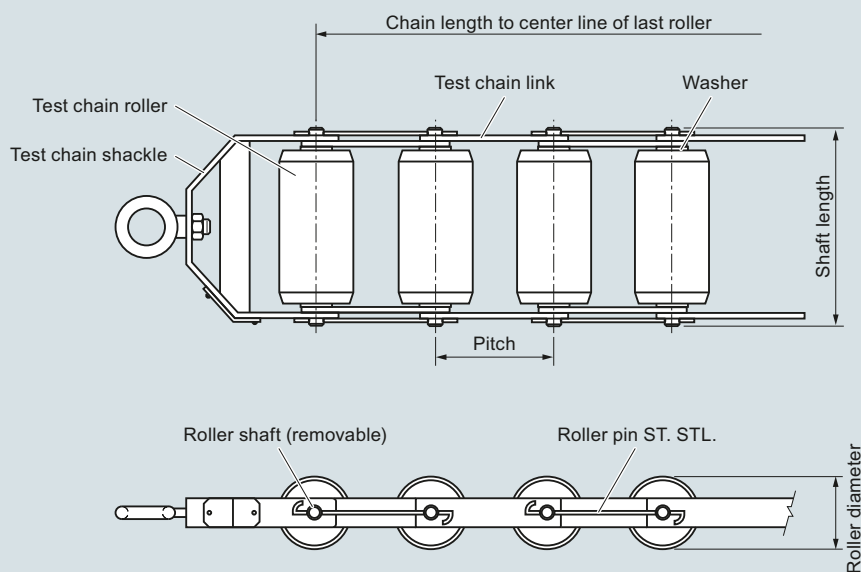
Enter the total length in plain text description:
Y01: Total length ... mm (must be equivalent to whole feet, e.g. 1 ft = 304.8 mm)

Y01

Operating instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

Dimensional drawings
Double roller

Single roller


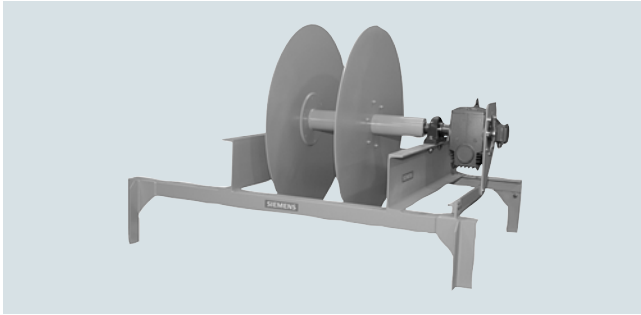
Test chain dimensions

Belt Weighing

Accessories

Test chain storage reel

Overview



Test chain storage reels are used to store roller test chains. All test chain storage reels come with a geared brake motor.

Benefits

- Mounts to existing conveyor structure above belt
- Motorized application and retraction of test chains for calibration
- Fast and easy calibration

Application

Milltronics calibration test chain storage reels provide motorized application and retraction of test chains. Complete with an AC motorized storage reel, test chain reels ensure safe and quick use of calibration test chains. Designed for use in environments where material tests cannot be performed, test chain storage reels are available in any belt width to meet existing customer conveyor geometry. For linearity tests dual compartment reels are available for different chain weight calibration. Test chain storage reels have a brake integral to the motor ensuring that test chains do not un-reel during power outages or material running.

Technical specifications

Test chain storage reel	
Medium conditions	
Operating temperature	-10 ... +60 °C (14 ... 140 °F)
Design	• C5-M rated polyester painted structural steel • 10 mm (3/8 inch) galvanized rope provided for chain spooling • Self-aligning pillow block bearings
Reel	Up to 1 524 mm (60 inch) Chain application at 7 ... 10 RPM
Drive motor	TEFC, AC, three phase motor with shaft mounted helical bevel gear reducer
Approvals	CE, RCM, EAC, KCC

Selection and ordering data

Article No.

Test chain storage reel

7MH7163-

Test chain storage reels are used to store roller test chains. All test chain storage reels come with a geared brake motor.

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Compartment size

5 inch (127 mm) for chain sizes: 5 lb/ft (7.4 kg/m), 10 lb/ft (14.9 kg/m)

6 inch (152 mm) for chain sizes: 7.5 lb/ft (11.2 kg/m)

7 inch (178 mm) for chain sizes: 15 lb/ft (22.3 kg/m), 20 lb/ft (29.8 kg/m), 25 lb/ft (37.2 kg/m)

8 inch (203 mm) for chain sizes: 30 lb/ft (44.6 kg/m), 35 lb/ft (52.1 kg/m)

11 inch (279 mm) for chain sizes: 40 lb/ft (59.5 kg/m), 45 lb/ft (67.0 kg/m), 50 lb/ft (74.4 kg/m)

12 inch (305 mm) for chain sizes: 55 lb/ft (81.9 kg/m), 60 lb/ft (89.3 kg/m)

13 inch (330 mm) for chain sizes: 70 lb/ft (104.2 kg/m)

14 inch (356 mm) for chain sizes: 80 lb/ft (119.1 kg/m), 100 lb/ft (148.8 kg/m)

16 inch (406 mm) for chain sizes: 90 lb/ft (133.9 kg/m)

C dimension

25 inch (635 mm)

26 inch (660 mm)

27 inch (686 mm)

28 inch (711 mm)

29 inch (737 mm)

30 inch (762 mm)

31 inch (787 mm)

32 inch (813 mm)

33 inch (838 mm)

34 inch (864 mm)

35 inch (889 mm)

36 inch (914 mm)

37 inch (940 mm)

38 inch (965 mm)

39 inch (991 mm)

40 inch (1 016 mm)

41 inch (1 041 mm)

42 inch (1 067 mm)

43 inch (1 092 mm)

44 inch (1 118 mm)

45 inch (1 143 mm)

46 inch (1 168 mm)

47 inch (1 194 mm)

48 inch (1 219 mm)

49 inch (1 245 mm)

50 inch (1 270 mm)

51 inch (1 295 mm)

52 inch (1 321 mm)

53 inch (1 346 mm)

54 inch (1 372 mm)

55 inch (1 397 mm)

AA

AB

AC

AD

AE

AF

AG

AH

AJ

AK

AL

AM

AN

AP

AQ

AR

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BA

BB

BC

BD

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BF

BG

BH

BJ

BK

Selection and ordering data

Article No.

Article No.

Test chain storage reel

7MH7163-

Test chain storage reels are used to store roller test chains. All test chain storage reels come with a geared brake motor.

56 inch (1 422 mm)
57 inch (1 448 mm)
58 inch (1 473 mm)
59 inch (1 499 mm)
60 inch (1 524 mm)
61 inch (1 549 mm)
62 inch (1 575 mm)
63 inch (1 600 mm)
64 inch (1 626 mm)
65 inch (1 651 mm)
66 inch (1 676 mm)
67 inch (1 702 mm)
68 inch (1 727 mm)
69 inch (1 753 mm)
70 inch (1 778 mm)
71 inch (1 803 mm)
72 inch (1 829 mm)
73 inch (1 854 mm)
74 inch (1 880 mm)
75 inch (1 905 mm)
76 inch (1 930 mm)
77 inch (1 956 mm)
78 inch (1 981 mm)
79 inch (2 007 mm)
80 inch (2 032 mm)
81 inch (2 057 mm)
82 inch (2 083 mm)
83 inch (2 108 mm)
84 inch (2 134 mm)
85 inch (2 159 mm)
86 inch (2 184 mm)
87 inch (2 210 mm)
88 inch (2 235 mm)
89 inch (2 261 mm)
90 inch (2 286 mm)
91 inch (2 311 mm)
92 inch (2 337 mm)
93 inch (2 362 mm)
94 inch (2 388 mm)
95 inch (2 413 mm)
96 inch (2 438 mm)
97 inch (2 464 mm)
98 inch (2 489 mm)
99 inch (2 515 mm)
100 inch (2 540 mm)
101 inch (2 565 mm)
102 inch (2 591 mm)
103 inch (2 616 mm)
104 inch (2 642 mm)
105 inch (2 667 mm)

BL
BM
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CA
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CC
CD
CE
CF
CG
CH
CJ
CK
CL
CM
CN
CP
CQ
CR
CS
CT
CU
CV
CW
DA
DB
DC
DD
DE
DF
DG
DH
DJ
DK
DL
DM
DN
DP
DQ
DR
DS
DT

Test chain storage reel

7MH7163-

Test chain storage reels are used to store roller test chains. All test chain storage reels come with a geared brake motor.

3 Phase motor voltage

230/460 V 60 Hz
200/400 V 50 Hz
575 V 60 Hz
190/380 V 50 Hz
190/380 V 60 Hz
220 V 60 Hz
415 V 50 Hz

1
2
3
4
5
6
7

Reel type

Single compartment for 1 calibration test chain
Double compartment for 2 calibration test chains

0
1

Reel diameter/motor mount location

36 inch (914 mm) / right hand access
42 inch (1 067 mm) / right hand access
48 inch (1 219 mm) / right hand access
60 inch (1 524 mm) / right hand access
36 inch (914 mm) / left hand access
42 inch (1 067 mm) / left hand access
48 inch (1 219 mm) / left hand access
60 inch (1 524 mm) / left hand access

0
1
2
3
4
5
6
7

Motor power

0.75 HP (0.56 kW)
1 HP (0.75 kW)
1.5 HP (1.12 kW)
2 HP (1.5 kW)
3 HP (2.24 kW)
5 HP (3.73 kW)
7.5 HP (5.59 kW)
10 HP (7.5 kW)
15 HP (11.19 kW)
20 HP (14.91 kW)

A
B
C
D
E
F
G
H
J
K

Operating instructions

All literature is available to download for free, in a range of languages, at
<http://www.siemens.com/weighing/documentation>

Accessories

Local operator station: forward, reverse, e-stop, off/on
Note: motor starter and voltage transformer required for use with controller, 120 V AC required for controller

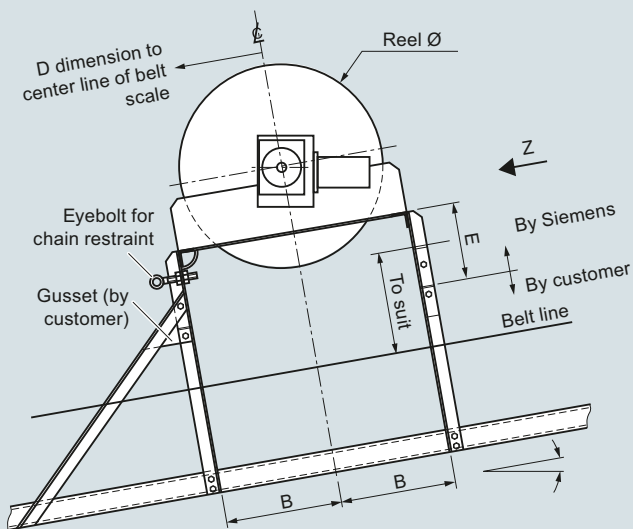
7MH7723-1JY

Belt Weighing

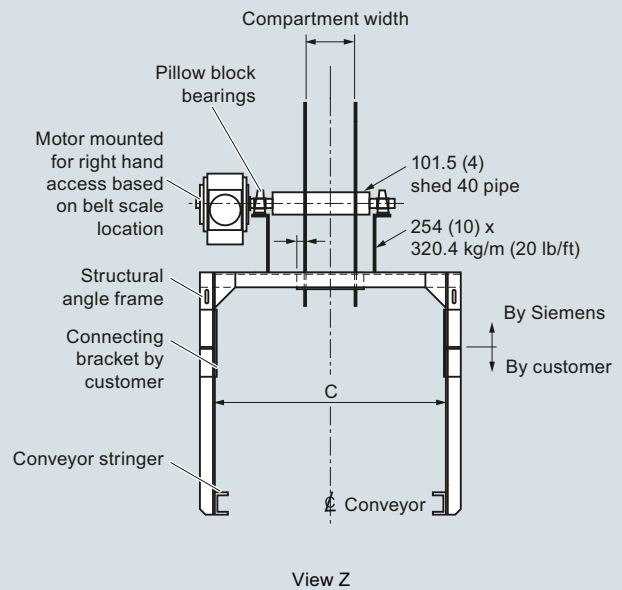
Accessories

Test chain storage reel

Dimensional drawings



Reel Ø	B	E
915 (36)	520 (20.5)	340 (13.25)
1 070 (42)	600 (23.5)	340 (13.25)
1 220 (48)	670 (26.5)	340 (13.25)
1 520 (60)	830 (32.5)	450 (17.75)



Milltronics test chain storage reel, dimension in mm (inch)

Overview



Return belt driven pulley provides rotation for shaft-driven speed sensors. 4.5 inch size is self-cleaning.

Benefits

- Heavy-duty design for high belt tension
- Self-cleaning 114 mm (4.5 inch) diameter option
- Steel drum 152 mm (6 inch) diameter option
- Steel drum 152 mm (6 inch) with 6 mm (¼ inch) rubber lagged option
- Spherical self-aligning pillow block bearings
- Fast installation, easy maintenance

Application

Milltronics bend pulleys provide constant belt contact for use with Siemens speed sensors. Designed for use in rugged operating environments common to mining, aggregates, cement, minerals, and other process industries. They ensure concentric speed sensor rotation to reduce pre-mature bearing failure. The use of a bend pulley driven speed sensor ensures no modification is required on any existing conveyor shaft. Options include stainless steel construction, epoxy painting, polymer bearings, self-cleaning style, and lagged style.

Technical specifications

Milltronics bend pulleys	
Typical application	Mining, aggregates, cement, minerals, and other process industries
Medium conditions	
Operating temperature	-40 ... +110 °C (-40 ... +230 °F)
Shaft material	Mild steel 316 (1.44) stainless steel, option
Pulleys	
Self-cleaning rubber disc style	114 mm (4.5 inch) diameter
Steel drum	152 mm (6 inch) diameter
Steel drum	152 mm (6 inch) diameter with 6 mm (¼ inch) rubber lagged option
Bearings	• Heavy-duty self-aligning pillow block bearings, standard • Polymer self-aligning pillow block bearings option
Belt speed	
Self-cleaning	1.79 m/s (350 fpm) max.
Drum	3 m/s (600 fpm)
Approvals	CE, RCM, EAC, KCC

Belt Weighing

Accessories

Bend pulleys

Selection and ordering data

Article No.

Milltronics bend pulley, 4.5 inch and 6 inch diameter

 **7MH7170-**
 0

Return belt driven pulley provides rotation for shaft-driven speed sensors. 4.5 inch size is self-cleaning.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Size

4.5 inch diameter self cleaning¹⁾

1

6 inch diameter

2

Belt width and 'A' dimension

18 inch, A=27 ... 29.5 inch (686 ... 749 mm),
20 inch, A=29 inch (737 mm)

A

24 inch, A=33 ... 35.5 inch (838 ... 901 mm)

B

30 inch, A=39 ... 41.5 inch (991 ... 1 054 mm)

C

36 inch, A=45 ... 47.5 inch (1 143 ... 1 206 mm)

E

42 inch, A=51 inch (1 295 mm)

G

48 inch, A=57 ... 59.5 inch (1 448 ... 1 511 mm)

H

54 inch, A=63 ... 65.5 inch (1 600 ... 1 663 mm)

K

60 inch, A=69 ... 71.5 inch (1 753 ... 1 816 mm)

L

66 inch, A=75 ... 77.5 inch (1 905 ... 1 968 mm)

M

500 mm, A=29 ... 31.5 inch (740 ... 800 mm)

N

650 mm, A=35 ... 37.6 inch (890 ... 954 mm)

P

800 mm, A=41 ... 43.5 inch (1 040 ... 1 104 mm)

Q

800 mm, A=43 ... 45.4 inch (1 090 ... 1 154 mm)

R

1 000 mm, A=48.8 ... 51.3 inch (1 240 ... 1 304 mm)

S

1 200 mm, A=56.6 ... 59.2 inch (1 440 ... 1 504 mm)

T

1 400 mm, A=64.6 ... 67.1 inch (1 640 ... 1 704 mm)

U

1 450 mm, A=66.5 ... 69.0 inch (1 690 ... 1 754 mm)

V

1 600 mm, A=72.4 ... 74.9 inch (1 840 ... 1 904 mm)

W

Finish

Standard, C5-M rated polyester painted mild steel²⁾

A

316 (1.4401) stainless steel³⁾

B

316 (1.4401) stainless steel⁴⁾

C

Epoxy painted⁵⁾

D

Epoxy painted, with corrosion resistant bearings⁵⁾

E

Bearings

Imperial size

0

Metric size

1

No bearings

2

Operating instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

Selection and ordering data

Article No.

Milltronics bend pulley, 6 inch diameter with 1/4 inch lagging

 **7MH7171-**
 0

Return belt driven pulley provides rotation for shaft-driven speed sensors.

The lagging offers self-cleaning advantages and ensures positive rotation.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Size

6 inch diameter with 1/4 inch lagging

3

Belt width and 'A' dimension

18 inch, A=27 ... 29.5 inch (686 ... 749 mm),
20 inch, A=29 inch (737 mm)

A

24 inch, A=33 ... 35.5 inch (838 ... 901 mm)

B

30 inch, A=39 ... 41.5 inch (991 ... 1 054 mm)

C

36 inch, A=45 ... 47.5 inch (1 143 ... 1 206 mm)

E

42 inch, A=51 ... 53.5 inch (1 295 ... 1 358 mm)

G

48 inch, A=57 ... 59.5 inch (1 448 ... 1 511 mm)

H

54 inch, A=63 ... 65.5 inch (1 600 ... 1 663 mm)

K

60 inch, A=69 ... 71.5 inch (1 753 ... 1 816 mm)

L

66 inch, A=75 ... 77.5 inch (1 905 ... 1 968 mm)

M

500 mm, A=29 ... 31.5 inch (740 ... 800 mm)

N

650 mm, A=35 ... 37.6 inch (890 ... 954 mm)

P

800 mm, A=41 ... 43.5 inch (1 040 ... 1 104 mm)

Q

800 mm, A=43 ... 45.4 inch (1 090 ... 1 154 mm)

R

1 000 mm, A=48.8 ... 51.3 inch (1 240 ... 1 304 mm)

S

1 200 mm, A=56.6 ... 59.2 inch (1 440 ... 1 504 mm)

T

1 400 mm, A=64.6 ... 67.1 inch (1 640 ... 1 704 mm)

U

1 450 mm, A=66.5 ... 69.0 inch (1 690 ... 1 754 mm)

V

1 600 mm, A=72.4 ... 74.9 inch (1 840 ... 1 904 mm)

W

Finish

Standard, C5-M rated polyester painted mild steel

A

316 (1.4401) stainless steel

B

316 (1.4401) stainless steel with corrosion resistant bearings

C

Bearings

Imperial size

0

Metric size

1

No bearings

2

Operating instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

¹⁾ Available with belt width and 'A' dimension options A ... H and N ... T only.

²⁾ Not painted with 4.5 inch diameter model.

³⁾ 316 (1.4401) stainless steel shaft on 4.5 inch diameter models only.

⁴⁾ With corrosion resistant bearings, 316 (1.4401) stainless steel shaft on 4.5 inch diameter models only.

⁵⁾ For 6 inch diameter models only.

Selection and ordering data

Article No.

Milltronics bend pulley, 8 inch diameter➤ **7MH7187-**

Belt driven pulley for WS Series speed sensors.

0

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Size

8 inch diameter

4

Belt width and 'A' dimension

48 inch, A=57 ... 59.5 inch (1 447.8 ... 1 511 mm)
 54 inch, A=63 ... 65.5 inch (1 600.2 ... 1 663 mm)
 60 inch, A=69 ... 71.5 inch (1 752.6 ... 1 816 mm)
 66 inch, A=75 ... 77.5 inch (1 905 ... 1 968 mm)
 72 inch, A=81 ... 83.5 inch (2 057 ... 2 121 mm)
 78 inch, A=87 ... 89.5 inch (2 210 ... 2 273 mm)
 84 inch, A=93 ... 95.5 inch (2 362 ... 2 426 mm)
 90 inch, A=99 ... 101.5 inch (2 515 ... 2 578 mm)
 96 inch, A=105 ... 107.5 inch (2 667 ... 2 731 mm)
 1 200 mm, A=56.6 ... 59.2 inch (1 440 ... 1 504 mm)
 1 400 mm, A=64.6 ... 67.1 inch (1 640 ... 1 704 mm)
 1 450 mm, A=66.5 ... 69.0 inch (1 690 ... 1 754 mm)
 1 600 mm, A=72.4 ... 74.9 inch (1 840 ... 1 904 mm)
 1 800 mm, A=80.3 ... 82.8 inch (2 040 ... 2 104 mm)
 2 000 mm, A=88.2 ... 90.7 inch (2 240 ... 2 304 mm)
 2 200 mm, A=96.1 ... 98.6 inch (2 440 ... 2 504 mm)
 2 400 mm, A=103.9 ... 106.4 inch (2 640 ... 2 704 mm)
 2 500 mm, A=107.9 ... 110.4 inch (2 740 ... 2 804 mm)

A
B
C
E
G
H
J
K
L
M
N
P
Q
R
S
T
U
V

Finish

Standard, C5-M rated polyester painted mild steel
 316 (1.4401) stainless steel
 316 (1.4401) stainless steel with corrosion resistant bearings
 Epoxy painted
 Epoxy painted with corrosion resistant bearings

A
B
C

D
E

Bearings

Imperial size
 Metric size
 No bearings

0
1
2

Operating instructions

All literature is available to download for free, in a range of languages, at
<http://www.siemens.com/weighing/documentation>

Selection and ordering data

Article No.

Milltronics bend pulley, 8 inch diameter with 1/4 inch lagging➤ **7MH7188-**

Belt driven pulley for WS Series speed sensors. The lagging offers self-cleaning advantages and ensures positive rotation.

0

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Size

8 inch diameter with 1/4 inch lagging

5

Belt width and 'A' dimension

48 inch, A=57 ... 59.5 inch (1 447.8 ... 1 511 mm)
 54 inch, A=63 ... 65.5 inch (1 600.2 ... 1 663 mm)
 60 inch, A=69 ... 71.5 inch (1 752.6 ... 1 816 mm)
 66 inch, A=75 ... 77.5 inch (1 905 ... 1 968 mm)
 72 inch, A=81 ... 83.5 inch (2 057 ... 2 121 mm)
 78 inch, A=87 ... 89.5 inch (2 210 ... 2 273 mm)
 84 inch, A=93 ... 95.5 inch (2 362 ... 2 426 mm)
 90 inch, A=99 ... 101.5 inch (2 515 ... 2 578 mm)
 96 inch, A=105 ... 107.5 inch (2 667 ... 2 731 mm)
 1 200 mm, A=56.6 ... 59.2 inch (1 440 ... 1 504 mm)
 1 400 mm, A=64.6 ... 67.1 inch (1 640 ... 1 704 mm)
 1 450 mm, A=66.5 ... 69.0 inch (1 690 ... 1 754 mm)
 1 600 mm, A=72.4 ... 74.9 inch (1 840 ... 1 904 mm)
 1 800 mm, A=80.3 ... 82.8 inch (2 040 ... 2 104 mm)
 2 000 mm, A=88.2 ... 90.7 inch (2 240 ... 2 304 mm)
 2 200 mm, A=96.1 ... 98.6 inch (2 440 ... 2 504 mm)
 2 400 mm, A=103.9 ... 106.4 inch (2 640 ... 2 704 mm)
 2 500 mm, A=107.9 ... 110.4 inch (2 740 ... 2 804 mm)

A
B
C
E
G
H
J
K
L
M
N
P
Q
R
S
T
U
V

Finish

Standard, C5-M rated polyester painted mild steel
 316 (1.4401) stainless steel
 316 (1.4401) stainless steel with corrosion resistant bearings

A
B
C

Bearings

Imperial size
 Metric size
 No bearings

0
1
2

Operating instructions

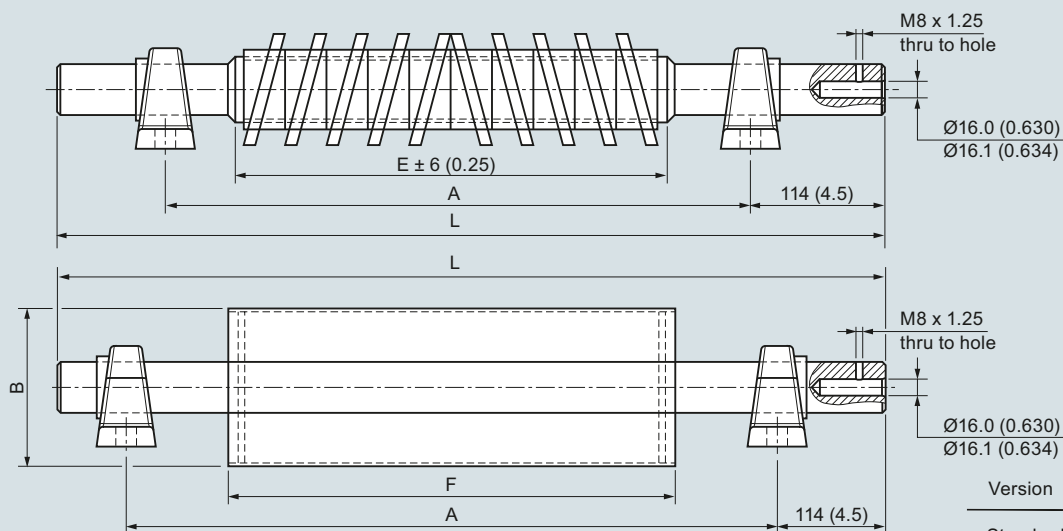
All literature is available to download for free, in a range of languages, at
<http://www.siemens.com/weighing/documentation>

Belt Weighing

Accessories

Bend pulleys

Dimensional drawings



Version	B
Standard	Ø152 (6.0) or 203 (8.0)
Lagged	Ø165 (6.5) or 216 (8.50)

Belt size	E	A	L	F
18 inch, 20 inch	18 inch (460 mm), 20 inch (508 mm)	27 inch (686 mm), 29 inch (737 mm)	34.5 inch (876 mm)	20 inch (508 mm)
24 inch	24 inch (610 mm)	33 inch (838 mm)	40.5 inch (1 029 mm)	26 inch (660 mm)
30 inch	30 inch (762 mm)	39 inch (991 mm)	46.5 inch (1 181 mm)	32 inch (812 mm)
36 inch	36 inch (915 mm)	45 inch (1 143 mm)	52.5 inch (1 334 mm)	38 inch (965 mm)
42 inch	42 inch (1 066 mm)	51 inch (1 295 mm)	58.5 inch (1 486 mm)	44 inch (1 118 mm)
48 inch	48 inch (1 220 mm)	57 inch (1 448 mm)	64.5 inch (1 638 mm)	51 inch (1 296 mm)
54 inch	54 inch (1 371 mm)	63 inch (1 600 mm)	70.5 inch (1 791 mm)	57 inch (1 448 mm)
60 inch	60 inch (1 524 mm)	69 inch (1 753 mm)	76.5 inch (1 943 mm)	63 inch (1 600 mm)
66 inch	66 inch (1 676 mm)	75 inch (1 905 mm)	82.5 inch (2 096 mm)	69 inch (1 752 mm)
72 inch	72 inch (1 828 mm)	81 inch (2 057 mm)	88.5 inch (2 250 mm)	75 inch (1 905 mm)
78 inch	78 inch (1 981 mm)	87 inch (2 210 mm)	94.4 inch (2 400 mm)	81 inch (2 057 mm)
84 inch	84 inch (2 133 mm)	93 inch (2 362 mm)	100.5 inch (2 553 mm)	87 inch (2 210 mm)
90 inch	90 inch (2 286 mm)	99 inch (2 515 mm)	106.5 inch (2 705 mm)	93 inch (2 362 mm)
96 inch	96 inch (2 438 mm)	105 inch (2 667 mm)	112.5 inch (2 858 mm)	99 inch (2 515 mm)
500 mm	500 mm (19.7 inch)	737 mm (29 inch)	34.8 inch (884 mm)	551 mm (21.7 inch)
650 mm	650 mm (25.6 inch)	890 mm (35 inch)	40.7 inch (1 034 mm)	701 mm (27.6 inch)
800 mm	800 mm (31.5 inch)	1 040 mm (41 inch)	46.6 inch (1 184 mm)	851 mm (33.5 inch)
800 mm	800 mm (31.5 inch)	1 090 mm (43 inch)	48.6 inch (1 234 mm)	851 mm (33.5 inch)
1 000 mm	1 000 mm (39.4 inch)	1 240 mm (48.8 inch)	56.3 inch (1 430 mm)	1 052 mm (41.4 inch)
1 200 mm	1 200 mm (47.2 inch)	1 540 mm (60.6 inch)	64.2 inch (1 630 mm)	1 275 mm (50.2 inch)
1 400 mm	1 400 mm (55.1 inch)	1 650 mm (65 inch)	72.0 inch (1 830 mm)	1 476 mm (58.1 inch)
1 450 mm	1 450 mm (57.1 inch)	1 702 mm (67 inch)	74.0 inch (1 880 mm)	1 527 mm (60.1 inch)
1 600 mm	1 600 mm (63.0 inch)	1 940 mm (76.4 inch)	79.9 inch (2 030 mm)	1 676 mm (66 inch)
1 800 mm	1 800 mm (70.7 inch)	80.3 inch (2 040 mm)	87.8 inch (2 230 mm)	73.8 inch (1 875 mm)
2 000 mm	2 000 mm (78.7 inch)	88.2 inch (2 240 mm)	95.7 inch (2 430 mm)	81.7 inch (2 075 mm)
2 200 mm	2 200 mm (86.6 inch)	96.1 inch (2 440 mm)	103.5 inch (2 630 mm)	89.6 inch (2 275 mm)
2 400 mm	2 400 mm (94.5 inch)	103.9 inch (2 640 mm)	111.9 inch (2 830 mm)	97.4 inch (2 475 mm)
2 500 mm	2 500 mm (94.2 inch)	107.9 inch (2 740 mm)	115.4 inch (2 930 mm)	101.4 inch (2 575 mm)

Bend pulley, dimensions in mm (inch)

Selection and ordering data

	Article No.	
Totalizer 150 x 150 x 100D Nema 4 /IP65 enclosure Panel mount totalizer	7MH7723-1GG 7MH7726-1AU	
Ticket printers Ticket printer, TM-U295, 100 ... 240 V	7MH7726-1AK 7MH7723-1GE	
Ribbon Ink EPSON TM-U295		
Printer cables Printer cables for TM-U295 and TMU220B, RS 232, DB25 ... open end	7MH7726-1AH 7MH7726-1AJ	
RS 485 ... RS 232 DB25 male converters for TMU295 and TMU220B printer		
Portable Printer FastMark M4DT, USB/BT	A5E36716278	
Roll printer Roll printer, TMU220B, 100 ... 240 V (required for German and Spanish printing)	7MH7726-1AT	
Chart recorder Totalizer with Hi/Low alarm lights, 584 x 483 x 203D Nema 4 /IP65 enclosure	7MH7726-1AL	
SIREC D200 display recorder	7ND41211AA011 AA2	

	Article No.	
Terminal box 1, 2, or 4 load cell(s) / speed sensor, 150 x 200 x 100 NEMA 4 /IP65 enclosure Mild steel Stainless steel Termination board spare Note: For MMI-3, 2 terminal boxes are required	7MH7723-1ND 7MH7723-1NE A5E03623963	
Belt scale connection cable 6 cond, 20 G (order per meter) Note: For use with 1 or 2 load cell belt scales, for 4 or 6 load cell belt scales use 2 cables. This cable is intended for less than 150 m (500 ft). Cable length orders exceeding 150 m (500 ft) may not be supplied as a continuous length.	7MH7723-1JR	
Belt scale installation kit Note: Comes with idler shims, alignment wire, and spacer blocks for idler alignment	7MH7723-1KC	
Inclinometer Celesco model IT9420	7MH7726-1AP	

Belt Weighing Accessories

Belt scale peripherals

	Article No.			Article No.	
Belt scale spare load cells For Milltronics Torque shaft belt scale (MTS), model CD or CFI, mounting hardware included			For retrofitting older MMW & MCS belt scales that do not have a conduit adaptor, belt scale mounting hardware included 50 lb 100 lb 250 lb	7MH7725-1BN 7MH7725-1BP 7MH7725-1BQ	
50 lb (22.7 kg) 75 lb (34 kg) 100 lb (45.4 kg) 150 lb (68 kg) 300 lb (136.1 kg) 500 lb (226.8 kg) 750 lb (340.2 kg) 1 000 lb (453.6 kg) 1 500 lb (680.4 kg)	7MH7725-1BA 7MH7725-1BB 7MH7725-1BC 7MH7725-1BD 7MH7725-1BE 7MH7725-1BF 7MH7725-1BG 7MH7725-1BH 7MH7725-1BJ		For retrofitting older MIC belt scale, mounting hardware included 25 lb 50 lb (22.7 kg) 100 lb (45.4 kg) 250 lb (113.4 kg) 500 lb (226.8 kg) 1 000 lb (453.6 kg) Kit, 2 idler cable suspension Kit, 2 idler cable suspension, heavy duty Kit, 4 idler cable suspension, heavy duty Kit, 4 idler cable suspension, magnum Kit, 4 idler cable suspension, standard Shock washers Bearing flange 1 3/16	Replace with 50 lb PBD-61009735 PBD-61009731 PBD-61009732 PBD-61009733 PBD-61009734 PBD-61010081 PBD-61010082 PBD-61010742 PBD-61010743 PBD-61010741 PBD-54000161 PBD-20250015	
For MSI belt scale with round static beam, low-profile, mounting hardware included, model 60048-XXX-0137 or 60048-XXX-0129 25 lb (11.3 kg) 50 lb (22.7 kg) 100 lb (45.4 kg) 200 lb (90.7 kg) 400 lb (181.4 kg) 500 lb (226.8 kg) 1 000 lb (453.6 kg)	7MH7725-1AJ 7MH7725-1AK 7MH7725-1AL 7MH7725-1AM 7MH7725-1AN 7MH7725-1AP 7MH7725-1AQ		For retrofitting current and older version of MSI with Group 4, mounting hardware included, sensortronics 60048-xxx-0138, or RTI, Model 6500 50 lb (22.7 kg) 100 lb (45.4 kg) 250 lb (113.4 kg) 500 lb (226.8 kg) 750 lb (340.2 kg) 1 000 lb (453.6 kg)	7MH7725-1AC 7MH7725-1AD 7MH7725-1AE 7MH7725-1AF 7MH7725-1AG 7MH7725-1AH	
For retrofitting older version of MSI C462 (transducers incorporated), mounting hardware included 50 lb (22.7 kg) 100 lb (45.4 kg) 250 lb (113.4 kg)	PBD-23900005 PBD-23900010 PBD-23900012		For MUS HD aluminum, model 7MH71202, mounting hardware included 50 kg (110.2 lb) 100 kg (220.4 lb) 150 kg (330.7 lb) 200 kg (440.9 lb) 300 kg (661.4 lb) 500 kg (1 102.3 lb)	7MH7725-1BW 7MH7725-1BX 7MH7725-1BY 7MH7725-1CA 7MH7725-1CB 7MH7725-1CC	
			For WD600, model 7MH7185 25 lb (11.3 kg) 50 lb (22.7 kg)	PBD-23900224 PBD-23900225	

Weighfeeders



5/2	Introduction
5/4	SITRANS WW100
5/4	Introduction
5/6	Ordering data
5/9	Dimensional drawings and schematics
5/11	SITRANS WW200
5/11	Introduction
5/13	Open style
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5/44	Weighfeeders accessories
5/44	Weighfeeders peripherals

Weighfeeders

Introduction

Overview

SITRANS weighfeeders from Siemens can improve the accuracy of processing, blend consistencies, accountability, and record keeping. All weighfeeders come standard with a belt weigh bridge and speed sensor. An integrator is required to complete the system.

Mode of operation

The weighfeeder is used to deliver an accurate mass flow rate of material. In the majority of applications, material is profiled by an adjustable mechanical shear gate, which fixes the correct material bed depth for a given particle size.

The feed rate is then maintained and adjusted by varying the speed of the belt. However, in some cases the belt speed is constant with rate control (if any) done by a pre-feeding device.

The system consists of three components: weight and speed sensing, integration and control, and the mechanical conveying system. Using the belt load and the belt speed signals, small incremental totals of weight per time are measured by the integrator and then the flow rate is calculated. The measured flowrate is compared against the desired flowrate and the on-board PID controller makes necessary corrections to the belt speed.

Design and Applications

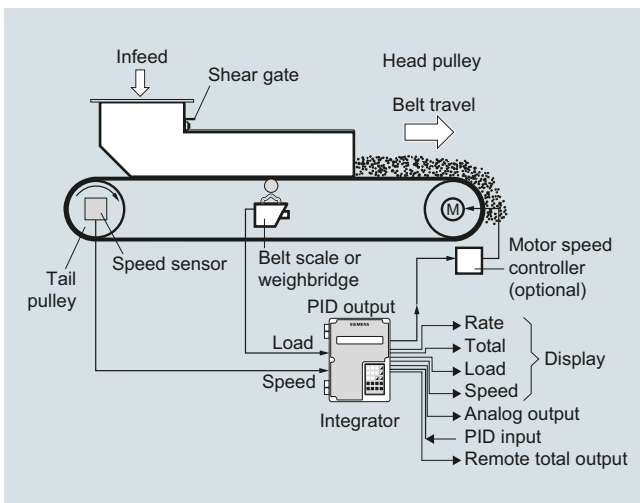
SITRANS WW100

The platform weigh bridge mounts directly to a corrosion-resistant platform load cell. The direct load design eliminates all intermediate mechanical suspension and allows material weight to be directly applied to the load cell.

This design minimizes zero drift normally caused by intermediary suspension components and allows for the use of a very sensitive precision platform load cell. Load cell size and construction are chosen for each specific application.

SITRANS WW200

A stainless steel platform weighdeck with a PD-HD slider bar assembly mounts directly to two corrosion-resistant, sealed platform load cells. The direct load design eliminates all intermediate mechanical suspension and allows material weight to be directly applied to the load cells. The frame of the WW200 is sturdy and rigid, ensuring stable and repeatable results, maximizing resolution and weighing accuracy.



Weighfeeder operation

Technical specifications

Criteria See page	SITRANS WW100 5/4	SITRANS WW200 5/11
Typical industries	Bulk chemicals, tobacco, food, water treatment	Bulk chemicals, tobacco, food, recycling
Typical applications	High-accuracy, low-capacity for minor ingredient additives	Low- to medium-capacity for minor ingredient additives
Design rate range	45 kg/h ... 18 t/h (100 lb/h ... 20 STPH)	0.45 ... 100 t/h (1 000 lb/h ... 110 STPH)
Belt speed	0.005 ... 0.36 m/s (1 ... 70 fpm)	0.005 ... 0.36 m/s (1 ... 70 fpm)
Accuracy¹⁾	± 0.5 % or better	± 0.5 % or better
Specified range	10 ... 100 % based on speed	10 ... 100 % based on speed
Sensing element	Long length platform weigh bridge Single load cell	Platform weigh bridge Dual load cells
Approvals	• Declaration of incorporation of partly completed machinery acc. directive 2006/42/EC. • Stainless steel options meet FDA requirements for food processing. • Hazardous approvals per configuration options (WW200 only).	

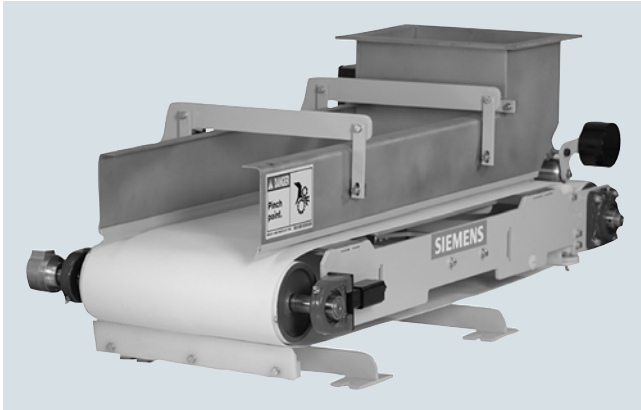
¹⁾ Accuracy subject to: on factory approved installations the weigh feeder system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

Weighfeeders

SITRANS WW100

Introduction

Overview



SITRANS WW100 is a high-accuracy, low-capacity weighfeeder used for minor ingredient additives.

Benefits

- High accuracy
- High turn down ratio; 100 to 10 % of capacity
- Corrosion resistant components
- Fast and easy belt removal for replacement or cleaning
- Simple installation, easy to clean and maintain
- Available with gear or servomotor

Application

SITRANS WW100 is one of the most accurate in-motion weighing systems on the market. It is specially designed for high accuracy on light loading processes. The design eliminates material buildup to ensure accurate, reliable measurement.

The unique long length platform weigh bridge mounts directly to a corrosion-resistant platform load cell. An adjustable mechanical shear gate profiles the material and fixes the correct material bed depth for a given material particle size. The belt speed can be automatically adjusted to attain the correct feed rate.

Standard components include an anti-static food grade belt, gravity tensioned roller, tail pulley driven belt for maximum weighing accuracy, belt tracking rollers, belt scraper and plow for self-cleaning.

Technical specifications

SITRANS WW100		SITRANS WW100	
Mode of operation		Belting	- Polyester carcass with polyurethane top cover and static control with vulcanized endless finger splice for max. weighing consistency (standard); optionally available in blue and as low capacity belt; product temperature up to 100 °C (212 °C) - Belt properties in compliance with food safety regulation (EU) 10/2011 and (EC) 1935/2004 - Meets FDA 21CFR and Halal - HACCP concept supported: resistant to hot water and ideal for frequent cleaning cycles - Silicone high temp belt for hot material applications [product temperature up to 177 °C (350 °F)], in compliance with (EU) 10/2011 and (EC) 1935/2004, meets FDA 21CFR
Measuring principle	Strain gauge load cell and digital speed sensor		
Typical application	Control and monitor feed rates and blending in bulk chemicals, tobacco, food, and water treatment		
Measuring accuracy		Belt tension	- Counter-weighted stainless steel [304 (1.4301) or 316 (1.4401)] tensioning idler for consistent tension, required for high accuracy weighing - Screw type, telescoper module with 25 mm (1 inch) travel, stainless steel 304 (1.4301)
Accuracy ¹⁾	± 0.25 ... 0.5 %		
Repeatability	± 0.1 %	Belt cleaning	- PE-HD blade type with counter-weight at the head pulley for cleaning product side of belt - Return plow
Specified range	10 ... 100 % based on speed		
Design rate range	45 kg/h ... 18 t/h (100 lb/h ... 20 STPH)	Servomotor	SIMOTICS Servomotor; optionally including SINAMICS S120 drive, PROFIBUS DP or ProfiNet option, length of motor and communication cables customizable.
Max volumetric flow	30 m³/h (1 060 ft³/h)	Standard gearmotor	Helical-worm geared motor, AC, Efficiency class IE1, IEC or UL-R/CSA, IP55, incl. PTC, RAL7031, C2 coating acc. EN12944.
Medium conditions		Food grade gearmotor	Helical-worm geared motor, AC, Efficiency class IE3, IEC or UL-R/CSA, IP66, including PTC, corrosion resistant Aluminium housing, sealed surface treatment nsd tupH, complies with FDA.
Operating temperature	-10 ... +55 °C (10 ... 131 °F)		
Material		Variable frequency drive: SINAMICS S120 servomotor controller (included with supply of WW100 based on ordering options)	1 ph, 200 ... 240 V or 3 ph, 380 ... 480 V - BOP for local control - External 24 V DC power supply - RS 232 connection port 4 DI, DO - PROFIBUS DP, optionally ProfiNet
	Stainless steel [304 (1.4301) or 316 (1.4401)], bead blast finish (1 ... 6 µm, 40 ... 240 µin)	Shipping weight	91 kg (200 lb) ... 181 kg (400 lb) maximum
Load cells		Approvals	- Declaration of incorporation of partly completed machinery acc. directive 2006/42/EC. - Meets FDA requirements for food processing
Construction	17-4 PH (1.4568) stainless steel		
Degree of protection	IP68		
Excitation	10 V DC nominal, 15 V DC maximum		
Output	2 mV/V		
• Non-linearity	± 0.02 % of rated output		
• Non-repeatability	± 0.01 % of rated output		
Capacity	Stainless steel range: 6, 12, 30 kg		
Overload	150 % of rated capacity		
Temperature	- Operating range: -40 ... +65 °C (-40 ... +149 °F) - Compensated: -10 ... +40 °C (14 ... 104 °F)		
Speed sensors			
Optical encoder output	- RS 422 (TTL) 5 V DC, 150 mA max. 1 000 or 2 500 pulses per revolution (ppr)		
Degree of protection	- Standard: IP64 - Stainless steel: IP66		
Temperature	-10 ... +70 °C (14 ... 158 °F)		
Framework			
	- Precision machined, stainless [304 (1.4301) or 316 (1.4401)] or mild steel - Cantilevered design for easy belt replacement		
Pulleys			
	115 mm (4.5 inch) diameter, crowned and lagged		
Bearings			
	4-bolt flange mount on drive pulley 2-bolt threaded base pillow block on driven pulley		
Belt speed			
	0.005 ... 0.36 m/s (1 ... 70 fpm)		
Belt support			
	Slider bed frame		

¹⁾ Accuracy subject to: on factory approved installations the weigh feeder system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

Weighfeeders

SITRANS WW100

Ordering data

Selection and ordering data

Article No.

Article No.

SITRANS WW100

High accuracy solids weighfeeder for low capacity applications.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Add order code Y71 ... Y73 for all models to specify design data.

Frame and enclosure construction

304 stainless steel open style

0 B

316 stainless steel open style

0 D

304 stainless steel enclosed style with painted mild steel enclosure

1 B

304 stainless steel enclosed style with 304 stainless steel enclosure

1 D

316 stainless steel enclosed style with painted mild steel enclosure

1 G

316 stainless steel enclosed style with 304 stainless steel enclosure

1 J

316 stainless steel enclosed style with 316 stainless steel enclosure

1 M

Material containment construction

Add order code Y74 and plain text: "Arc radius in inches ... XX.XXX inch" for options A ... H

Shear gate inlet and skirtboards 304 stainless steel

A

Shear gate inlet and skirtboards 304 stainless steel with cover

B

Shear gate inlet and skirtboards 304 stainless steel, #4 polished

C

Shear gate inlet and skirtboards 304 stainless steel, #4 polished with cover

D

Shear gate inlet and skirtboards 316 stainless steel

E

Shear gate inlet and skirtboards 316 stainless steel with cover

F

Shear gate inlet and skirtboards 316 stainless steel, #4 polished

G

Shear gate inlet and skirtboards 316 stainless steel, #4 polished with cover

H

Horseshoe inlet 304 stainless steel¹⁾

J

Horseshoe inlet 304 stainless steel, #4 polished¹⁾

K

Horseshoe inlet 316 stainless steel¹⁾

L

Horseshoe inlet 316 stainless steel, #4 polished¹⁾

M

Load cell

6 kg (13.2 lb) stainless steel, hermetically sealed

4

12 kg (26.5 lb) stainless steel, hermetically sealed

5

30 kg (66.1 lb) stainless steel, hermetically sealed

6

Speed sensor

1 000 PPR shaft mounted optical encoder

1

2 500 PPR shaft mounted optical encoder

2

1 000 PPR shaft mounted optical encoder, stainless steel

4

2 500 PPR shaft mounted optical encoder, stainless steel

5

SITRANS WW100

High accuracy solids weighfeeder for low capacity applications.

Drive configuration

SIMOTICS Servomotor incl. SINAMICS control unit with PROFIBUS DP, BOP and power module

200 ... 240 V 1 ph²⁾

0 A

380 ... 480 V 3 ph²⁾

0 B

200 ... 240 V 1 ph, with 5 m (16.4 ft) communication and power cables

1 A

380 ... 480 V 3 ph, with 5 m (16.4 ft) communication and power cables

1 B

200 ... 240 V 1 ph, with 10 m (33 ft) communication and power cables

2 A

380 ... 480 V 3 ph, with 10 m (33 ft) communication and power cables

2 B

200 ... 240 V 1 ph, with 25 m (82 ft) communication and power cables

3 A

380 ... 480 V 3 ph, with 25 m (82 ft) communication and power cables

3 B

200 ... 240 V 1 ph, with 50 m (164 ft) communication and power cables

4 A

380 ... 480 V 3 ph, with 50 m (164 ft) communication and power cables

4 B

200 ... 240 V 1 ph, with 100 m (328 ft) communication and power cables

5 A

380 ... 480 V 3 ph, with 100 m (328 ft) communication and power cables

5 B

Standard AC gearmotor without drive (Drive required for desired belt speed)

Add order code Y76 for electrical style: IEC, UL-R/CSA or CCC.

Add order code Y75 reduction ratio in plain text: "X:1".

220 ... 240/380 ... 480 V 3 ph 50/60 Hz AC

6 A

575 V 3 ph 60 Hz AC

6 B

Food grade AC gearmotor without drive (Drive required for desired belt speed)

Add order code Y76 for electrical style: IEC, UL-R/CSA or CCC.

Add order code Y75 reduction ratio in plain text: "X:1".

220 ... 240/380 ... 480 V 3 ph 50/60 Hz AC food grade gearmotor

7 A

575 V 3 ph 60 Hz AC food grade gearmotor

7 B

SIMOTICS servomotor without accessories

Control unit, BOP, power module and input choke as well as power and communication cables should be ordered separately.

8 A

Calibration Method

None

A

1 calibration chain strand approx. 2.41 kg/m (1.62 lb/ft)

B

2 calibration chain strands approx. 4.82 kg/m (3.24 lb/ft)

C

3 calibration chain strands approx. 7.23 kg/m (4.86 lb/ft)

D

Belt change access side (looking from inlet to discharge)

Left hand

0

Right hand

1

Selection and ordering data	Order code	Article No.
Further designs		
Please add "-Z" to article no. and specify order code(s).		
Application Eng. reference number (max. 15 characters), specify in plain text.	Y31	
Shear gate arc radius: Enter shear gate arc radius in inches (xxx.xx inch) ³⁾	Y74	
Enter design units (TPH, MTPH, lb/h, kg/h)	Y71	
Enter design speed (ft/m, m/s)	Y72	
Enter design capacity/rate	Y73	
AC gearmotor reduction ratio: Enter reduction ratio in plain text (X:1).	Y75	
AC gearmotor electrical style: IEC, UL-R/CSA or CCC	Y76	
Manufacturer's test certificate: according to EN 10204-2.2	C11	
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text.	Y15	
Plastic shear curtain to control dust at the infeed for floodable materials and dusty applications ³⁾	G11	
Pointek CLS100 Capacitance switch for plugged discharge chute detection	G12	
Belt cleaner, stainless steel, nylon brush, mounted under belt plow, cleaning dirty side of belt	G14	
Low weight belt for light loading, low rate applications (recommended for under 1 t/h). Anti-static, FDA approved.	G15	
High temp belt for hot material applications (product temp up to 177 °C (350 °F). High temp silicone, FDA approved.	G17	
SINAMICS control unit with ProfiNet (only available with drive configuration options 0A ... 5B)	G21	
Discharge dust hood, painted mild steel with de-dust port ¹⁾	H50	
Discharge dust hood, 304 stainless steel with de-dust port ¹⁾	H51	
Discharge dust hood, 316 stainless steel with de-dust port ¹⁾	H52	
Operating instructions		
All literature is available to download for free, in a range of languages, at http://www.siemens.com/weighing/documentation		
Spare parts		
6 kg (13.2 lb) stainless steel load cell		7MH5117-1QD00
12 kg (26.4 lb) stainless steel load cell		7MH5117-2BD00
30 kg (66.2 lb) stainless steel load cell		7MH5117-2KD00
10 kg (22 lb) nickel plated steel load cell		7MH7725-1EK
15 kg (33.1 lb) nickel plated steel load cell		7MH7725-1EL
20 kg (44 lb) nickel plated steel load cell		7MH7725-1EM
500 PPR optical encoder ⁴⁾		6FX2001-2PA50
1 000 PPR optical encoder ⁴⁾		6FX2001-2PB00
2 500 PPR optical encoder ⁴⁾		6FX2001-2PC50
30 kg (66.2 lb) nickel plated steel load cell		7MH7725-1EN
500 PPR optical encoder		6FX2001-4QA50
1 000 PPR optical encoder		6FX2001-4QB00
2 500 PPR optical encoder		6FX2001-4QC50
Optical encoder connector		6FX2003-0SU12
Speed encoder plug-in with 3 m cable ⁵⁾		7MH7723-1KM
Optical encoder connector with 20 ft (6 m) of cable ⁶⁾		7MH7723-1KD
Speed Encoder, 1000 ppr, stainless steel		7MH7723-1HH
Speed Encoder, 2500 ppr, stainless steel		7MH7723-1HJ
Calibration chain, approx. 2.41 kg/m (1.62 lb/ft)		7MH7723-1HP
Calibration chain, approx. 4.82 kg/m (3.24 lb/ft)		7MH7723-1HQ
Calibration chain, approx. 7.23 kg/m (4.86 lb/ft)		7MH7723-1HR
Customers interested in servomotor and drive spares and peripherals should consult a local sales person. For more information, please visit http://www.automation.siemens.com/aspa_app		

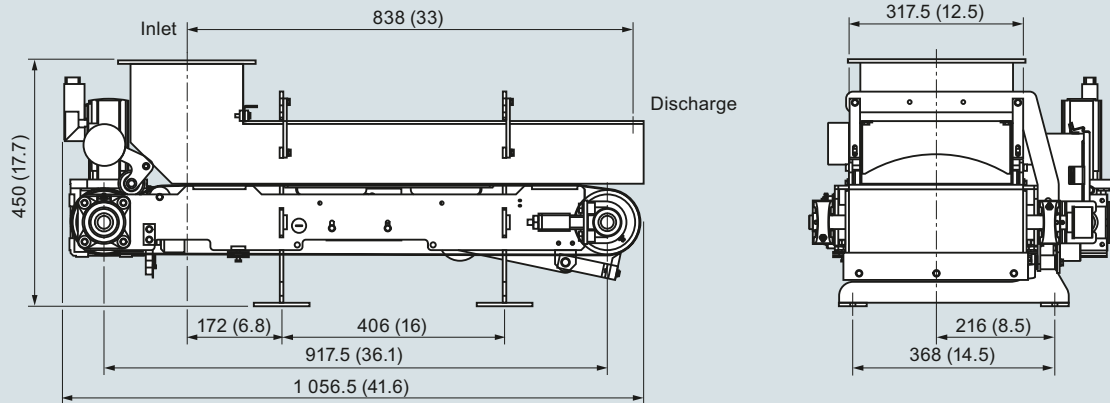
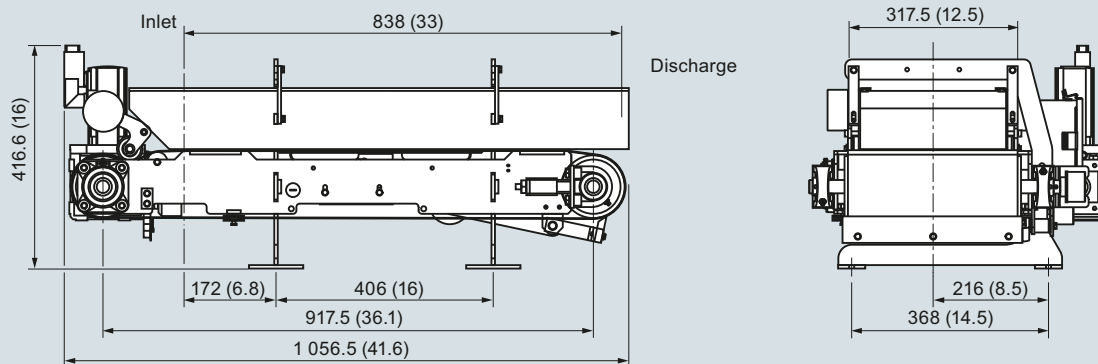
Weighfeeders

SITRANS WW100

Ordering data

Selection and ordering data	Article No.
AC 220 ... 240/380 ... 480 V standard gearmotor ⁷⁾	A5E02796139
AC 575 V standard gearmotor ⁷⁾	A5E02798953
AC 220 ... 240/380 ... 480 V epoxy coated gearmotor ⁷⁾	A5E02798968
AC 575 V epoxy coated gearmotor ⁷⁾	A5E02798955
Standard belt, white	7MH7723-1SA
Standard belt, blue	7MH7723-1SB
Low capacity belt, white	7MH7723-1SC
Low capacity belt, blue	7MH7723-1SD
High temperature belt, white	7MH7723-1SE
High temperature belt, blue	7MH7723-1SF
Skirtboard sealing	7MH7723-1SG
Guide rollers	7MH7723-1SH
Gravimetric tensioning device	7MH7723-1SJ
Telescopes for WW100, stainless steel	7MH7723-1SY
Circuit board for termination box	A5E03623963
Bearing replacement kit, 2 bearings each for headpulley and tailpulley	7MH7723-1HV
Pulley replacement kit, for head and tailpulley, crowned, with lagging	7MH7723-1HY
Belt cleaning kit	7MH7723-1HW
Spare brush, 12 inch belt width	7MH7723-1SN
Accessories	
Start, Stop, Hand/Off/Auto, speed pot local operator station	7MH7723-1JA
E-stop push button, enclosed style	3SB3801-0DF3
24 V Power supply, 4 A	6EP1332-1SH52
Power transformer 600 ... 480 V AC 3 ph	7MH7726-1AV
CLS100 plugged discharge chute retrofit kit (includes CLS100, material hood)	7MH7723-1JE

¹⁾ Available with Frame Construction options 0B ... 0D only.
²⁾ Communication and power cables required.
³⁾ Available with Material Containment options A ... H only.
⁴⁾ For use with 5 V DC supply from RS 422 circuit card.
⁵⁾ For use with PPR optical encoders: 6FX20012PA50, 6FX20012PB00, 6FX20012PC50.
⁶⁾ For use with PPR optical encoders: 6FX20014QA50, 6FX20014QB00, 6FX20014QC5.
⁷⁾ Available for WW100 weighfeeder, made in Canada prior to 2016; specify Y75 reduction ratio on the order.

Dimensional drawings
Open Construction

Open Horseshoe Inlet


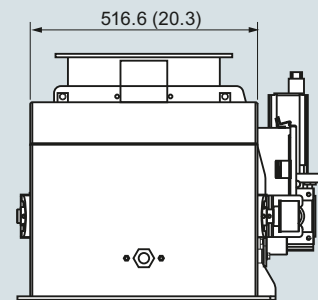
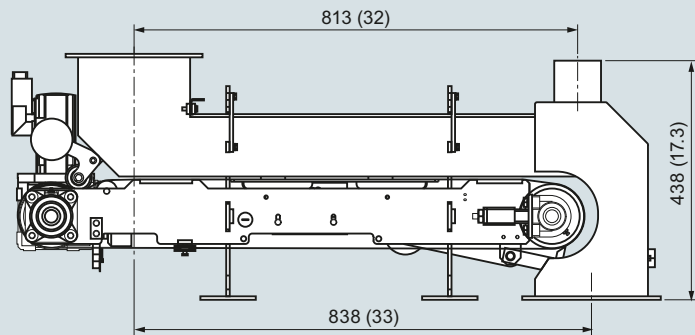
SITRANS WW100, dimensions in mm (inch)

Weighfeeders

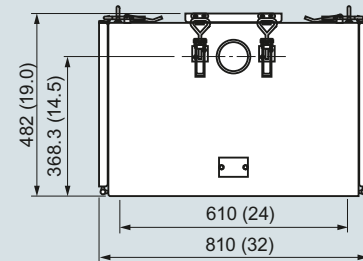
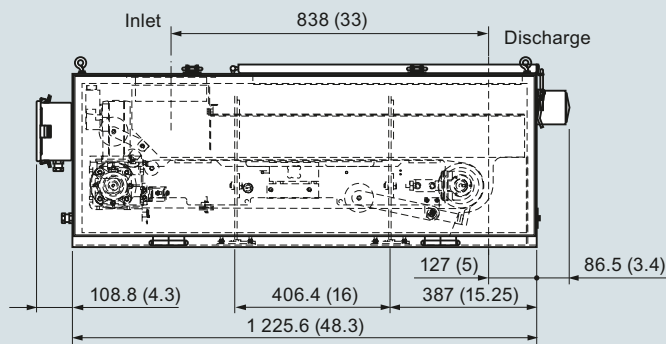
SITRANS WW100

Dimensional drawings and schematics

Open Dust Hood

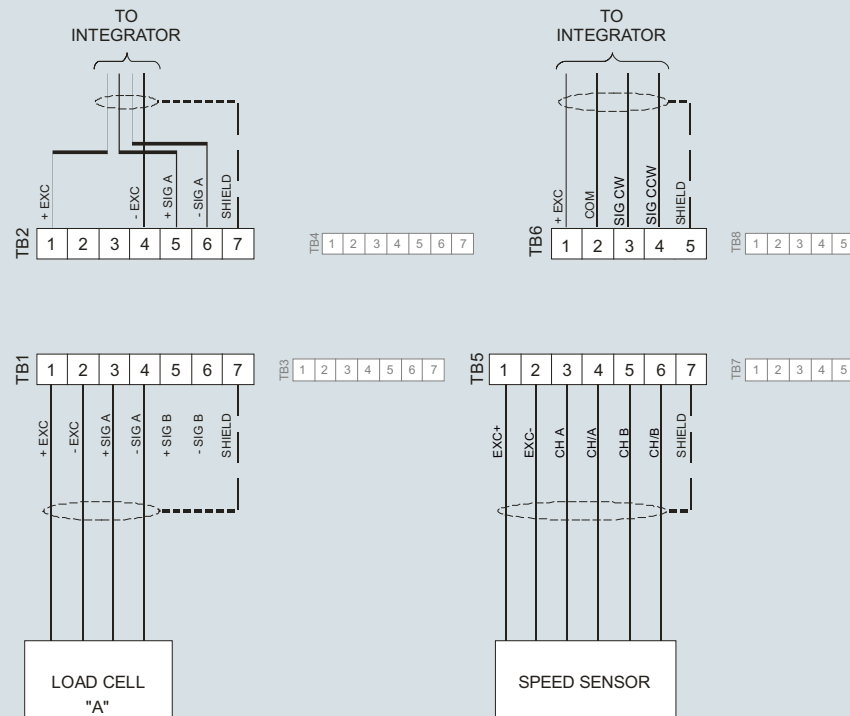


Enclosed Construction



SITRANS WW100, dimensions in mm (inch)

Circuit diagrams



SITRANS WW100 connections

Overview

SITRANS WW200 is a low- to medium-capacity weighfeeder used for minor ingredient additives.

Benefits

- High accuracy
- Ideal for low- to medium-capacity loads
- Fast installation, easy to clean and maintain
- Flexible, rugged design allows configurations to suit many applications
- Quick delivery on standard units
- Outboard mounted load cells with protective cover

Application

SITRANS WW200 has been field tested and proven in hundreds of applications.

The unit can be customized to meet exact application needs. Stainless or mild steel units are available in open or enclosed styles. Custom lengths, belt types, inlet configurations, drives, and other options are available to meet your requirements.

The MS (mild steel) model is ideal for use with chemicals, powders, or any granular product in applications not requiring wash-down. The SD (sanitary duty) model is designed for the food industry where high pressure wash-down is required. It meets all FDA requirements.

Its cantilevered mechanical design provides for quick belt removal and easy maintenance. It is designed to eliminate material build-up, ensuring high accuracy and reliability. The unique weigh system reduces dead load and applies live load directly to two platform load cells. Load cells are externally mounted for easy access and maintenance.

Standard components include an anti-static food grade belt option, horizontal slider bars for self-cleaning and minimal product build up, belt tracking rollers, belt scraper, and plow for self-cleaning.

Weighfeeders

SITRANS WW200

Introduction

Technical specifications

SITRANS WW200	
Mode of operation	
Measuring principle	Strain gauge load cells and digital speed sensor
Typical application	Control and monitor feed rates and blending of minerals or powdered additives into a process
Measuring accuracy	
Accuracy ¹⁾	± 0.5 % or better
Repeatability	± 0.1 %
Specified range	10 ... 100 % based on speed
Design rate range	0.45 ... 100 t/h (1 000 lb/h ... 110 STPH)
Max volumetric flow	120 m ³ /h (4 237 ft ³ /h)
Medium conditions	
Operating temperature	-10 ... +55 °C (14 ... 131 °F)
Material	
	Mild steel or stainless steel [304 (1.4301) or 316 (1.4401)], bead blast finish (1 ... 6 µm, 40 ... 240 µin)
Load cells	
Construction	17-4 PH (1.4568) stainless steel or nickel plated alloy steel
Degree of protection	- Stainless steel: IP68 - Nickel plated alloy steel: IP66
Excitation	10 V DC nominal, 15 V DC maximum
Output	2 mV/V
- Non-linearity - Non-repeatability	± 0.02 % of rated output ± 0.01 % of rated output
Capacity	- Stainless steel range: 6, 12, 30 kg - Nickel-plated range: 10, 15, 20, 30, 50 kg
Overload	150 % of rated capacity
Temperature	- Operating range: -40 ... +65 °C (-40 ... +150 °F) - Compensated: -10 ... +40 °C (15 ... 105 °F)
Speed sensor	
Optical encoder output	RS 422 (TTL) 5 V DC, 150 mA max. 1 000 or 2 000 ppr
Temperature	-10 ... +70 °C (14 ... 158 °F)
Degree of protection	- Standard: IP64 - Stainless steel: IP67
Belt tracking switch	
Aluminum spring rod (un-wired)	1 NO, 1 NC switch blocks - Rated operating voltage 600 V AC max.
Temperature	-30 ... +85 °C (-22 ... +185 °F)
Degree of protection	IP67

SITRANS WW200	
Framework	
	- Precision machined, stainless [304 (1.4301) or 316 (1.4401)] or mild steel - Cantilevered design for easy belt replacement
Pulleys	
	152 mm (6 inch) diameter with 6 mm (¼ inch) neoprene lagging
Belt speed	
	0.005 ... 0.36 m/s (1 ... 70 fpm)
Belt support	
	Edge of flat bar eliminates material buildup
Bearings	
	2-bolt flange mount on drive pulley 2-bolt threaded base pillow block on driven pulley
Belting	
	- Polyester carcass with polyurethane top cover and static control with vulcanized endless finger splice for maximum weighing consistency (standard); optionally available in blue - Maximum rated material temperature 82 °C (180 °F) - Silicone HT belt rated for max. material temp. of 177 °C (350 °F)
Belt tension	
	Screw type, telescoper module with 150 mm (6 inch) travel - mild or stainless steel 304 (1.4301)
Belt cleaning	
	- PE-HD blade type with spring tensioning at head pulley - Return plow - Cleaning brush, optional
Drive motor	
	- AC gearmotor: helical-worm geared motor, IE1, IP55, C2 coating. - Optional food grade style: helical-worm geared motor, IE3, IP66, sealed surface treatment, meets FDA requirements.
Shipping weight	
	280 kg (600 lb) minimum
Approvals	
	- Declaration of incorporation of partly completed machinery acc. directive 2006/42/EC. - Stainless steel options meet FDA requirements for food processing. - Belt properties in compliance with food safety regulation (EU) 10/2011 and (EC) 1935/2004. - Meets FDA 21CFR and Halal. - HACCP concept supported: resistant to hot water and ideal for frequent cleaning cycles. - Hazardous approvals per configuration options.
Note: weighfeeder as a whole is not approved for hazardous locations only electrical components.	

¹⁾ Accuracy subject to: on factory approved installations the weigh feeder system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

Selection and ordering data

Article No.

Article No.

SITRANS WW200, open style**7MH7300-**

High accuracy solids weighfeeder for low to medium capacity applications.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Add order code Y71 ... Y76 for all models to specify design data.

Painted mild steel, open style, with C/L infeed to C/L discharge12 inch (305 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

0 A
0 B
0 C
0 D
0 E
0 F
0 G
0 H
0 J

18 inch (457 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

1 A
1 B
1 C
1 D
1 E
1 F
1 G
1 H
1 J

24 inch (610 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

2 A
2 B
2 C
2 D
2 E
2 F
2 G
2 H
2 J

30 inch (762 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

3 A
3 B
3 C
3 D
3 E
3 F
3 G
3 H
3 J

SITRANS WW200, open style

High accuracy solids weighfeeder for low to medium capacity applications.

36 inch (914 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

4 A
4 B
4 C
4 D
4 E
4 F
4 G
4 H
4 J

42 inch (1 067 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

5 A
5 B
5 C
5 D
5 E
5 F
5 G
5 H
5 J

48 inch (1 219 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

6 A
6 B
6 C
6 D
6 E
6 F
6 G
6 H
6 J

Selection and ordering data	Order code
Further designs	
Please add "-Z" to article no. and specify order code(s).	
Application Eng. reference number (max. 15 characters), specify in plain text	Y31
Shear gate arc radius: Enter shear gate arc radius in inches (xxx.xx inch) ¹⁾	Y74
Enter design units (TPH, MTPH, lb/h, kg/h)	Y71
Enter design speed (ft/m, m/s)	Y72
Enter design capacity/rate	Y73
AC gearmotor reduction ratio: Enter reduction ratio in plain text (X:1)	Y75
AC gearmotor electrical style: enter IEC, UL-R/CSA or CCC style	Y76
Custom length: Select next longest option and specify infeed CL to discharge CL in plain text (indicated inches or millimeters)	Y01
Manufacturer's test certificate: according to EN 10204-2.2	C11
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Class I, Div. 1, Groups C and D; Class II, Div. 1, Groups F and G, approved electrical components; without junction boxes	E90
ATEX II 2D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes	E91
ATEX II 2D approved electrical components; only available with speed encoder option 4 and 5; with Stainless steel junction boxes	E92
ATEX II 3D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes	E93
Note: weighfeeder does not carry hazardous approval, only motor, loadcells, speed encoder, and tracking switches; approval not available with load cell options 0 ... 4 or motor options 4C ... 4H ³⁾	
Plastic shear curtain to control dust at the infeed for floodable materials and dusty applications ¹⁾	G11
Pointek CLS100 Capacitance switch for plugged discharge chute detection	G12
Belt cleaner, stainless steel, nylon brush, mounted under belt plow, cleaning dirty side of belt	G14
Blue colored belt, anti-static, 2 ply, FDA approved	G18
Secondary speed encoder at motor (not for hazardous areas; not suitable for use with integrator)	G19
Motor corrosion protection C5 acc. EN 12944 (available with standard AC motor)	G20
Discharge dust hood, painted mild steel with de-dust port	H50
Discharge dust hood, 304 stainless steel with de-dust port	H51
Discharge dust hood, 316 stainless steel with de-dust port	H52
Custom design	Y99
Specify quote reference when ordering	
Operating instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/weighing/documentation	

¹⁾ Available with material containment options D ... L only.

²⁾ 575 V versions meet 4:1 ct inverter rating, all other voltages meet 10:1.

³⁾ Available with drive configuration standard motor options only, all motors suitable for 400 V operation only.

Weighfeeders

SITRANS WW200

Open style

Selection and ordering data

Article No.

Article No.

SITRANS WW200, open style

High accuracy solids weighfeeder for low to medium capacity applications.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Add order code Y71 ... Y76 for all models to specify design data.

304 stainless steel, open style, with C/L infeed to C/L discharge

12 inch (305 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

0 A
0 B
0 C
0 D
0 E
0 F
0 G
0 H
0 J

18 inch (457 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

1 A
1 B
1 C
1 D
1 E
1 F
1 G
1 H
1 J

24 inch (610 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

2 A
2 B
2 C
2 D
2 E
2 F
2 G
2 H
2 J

30 inch (762 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

3 A
3 B
3 C
3 D
3 E
3 F
3 G
3 H
3 J

SITRANS WW200, open style

High accuracy solids weighfeeder for low to medium capacity applications.

36 inch (914 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

4 A
4 B
4 C
4 D
4 E
4 F
4 G
4 H
4 J

42 inch (1 067 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
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5 G
5 H
5 J

48 inch (1 219 mm) belt width

52 inch (1 321 mm)
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68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

6 A
6 B
6 C
6 D
6 E
6 F
6 G
6 H
6 J

Selection and ordering data		Article No.				Article No.	
SITRANS WW200, open style		7MH7301-		SITRANS WW200, open style		7MH7301-	
High accuracy solids weighfeeder for low to medium capacity applications.				High accuracy solids weighfeeder for low to medium capacity applications.			
Material containment construction				Drive configuration			
None		A		Add order code Y75 (reduction ratio) and Y76 (electrical style).			
Add order code Y74 and plain text: "Arc radius in inches ... XX.XXX" for options D ... L				<u>Standard AC motor</u>			
<u>Shear gate inlet</u>				0.5 HP (0.37 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz		0 C	
Skirtboards 304 stainless steel		D		0.5 HP (0.37 kW) 575 V 3 ph 60 Hz		0 D	
Skirtboards 304 stainless steel, with cover		E		1 HP (0.75 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz		0 G	
Skirtboards 304 stainless steel, #4 polished		F		1 HP (0.75 kW) 575 V 3 ph 60 Hz		0 H	
Skirtboards 304 stainless steel, #4 polished with cover		G		<u>Food grade AC motor</u>			
Skirtboards 316 stainless steel		H		0.5 HP (0.37 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz		4 C	
Skirtboards 316 stainless steel, with cover		J		0.5 HP (0.37 kW) 575 V 3 ph 60 Hz		4 D	
Skirtboards 316 stainless steel, #4 polished		K		1 HP (0.75 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz		4 G	
Skirtboards 316 stainless steel, #4 polished with cover		L		1 HP (0.75 kW) 575 V 3 ph 60 Hz		4 H	
<u>Horseshoe inlet</u>				Belting			
304 stainless steel		M		Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved		A	
304 stainless steel, #4 polished		N		Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with B-section flange walls		B	
316 stainless steel		P		Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls		C	
316 stainless steel, #4 polished		Q		Silicone, HT 177 °C (350 °F), anti-static 45 PIW, 2 ply, FDA approved		D	
Load cell				Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved		K	
6 kg (13.2 lb) stainless steel, hermetically sealed		5		Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with B-section flange walls		L	
12 kg (26.5 lb) stainless steel, hermetically sealed		6		Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls		M	
30 kg (66.1 lb) stainless steel, hermetically sealed		7		Belt change access side (looking from inlet to discharge)			
Speed sensor				Left hand		0	
<u>Shaft mounted</u>				Right hand		1	
1 000 PPR optical encoder		1					
2 500 PPR optical encoder		2					
1 000 PPR optical encoder, stainless steel		4					
2 500 PPR optical encoder, stainless steel		5					

Weighfeeders

SITRANS WW200

Open style

Selection and ordering data

Order code

Further designs

Please add **"-Z"** to article no. and specify order code(s).

Application Eng. reference number
(max. 15 characters), specify in plain text.

Y31

Shear gate arc radius: Enter shear gate arc radius
in inches (xxx.xx inch)

Y74

Enter design units (TPH, MTPH, lb/h, kg/h)

Y71

Enter design speed (ft/m, m/s)

Y72

Enter design capacity/rate

Y73

AC gearmotor reduction ratio: Enter reduction ratio
in plain text (X:1)

Y75

AC gearmotor electrical style: enter IEC, UL-R/CSA
or CCC style

Y76

Custom length: Select next longest option and
specify infeed CL to discharge CL in plain text
(indicated inches or millimeters)

Y01

Manufacturer's test certificate:
According to EN 10204-2.2

C11

Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]:
Measuring-point number/identification
(max. 27 characters) specify in plain text

Y15

Class I, Div. 1, Groups C and D; Class II, Div. 1,
Groups F and G, approved electrical components;
without junction boxes

E90

ATEX II 2D approved electrical components; only
available with speed encoder option 1 and 2; with
Aluminum junction boxes

E91

ATEX II 2D approved electrical components; only
available with speed encoder option 4 and 5; with
Stainless steel junction boxes

E92

ATEX II 3D approved electrical components; only
available with speed encoder option 1 and 2; with
Aluminum junction boxes

E93

Note: weighfeeder does not carry hazardous
approval, only motor, loadcells, speed encoder,
and tracking switches; approval not available with
load cell options 0 ... 4 or motor options 4C ... 4H³⁾

Plastic shear curtain to control dust at the infeed for
floodable materials and dusty applications¹⁾

G11

Pointek CLS100
Capacitance switch for plugged discharge chute
detection

G12

Belt cleaner, stainless steel, nylon brush, mounted
under belt plow, cleaning dirty side of belt

G14

Blue colored belt, anti-static, 2 ply, FDA approved

G18

Secondary speed encoder at motor
(not for hazardous areas; not suitable for use with
integrator)

G19

Motor corrosion protection C5 acc. EN 12944
(available with standard AC motor)

G20

Discharge dust hood, painted mild steel with
de-dust port

H50

Discharge dust hood, 304 stainless steel with
de-dust port

H51

Discharge dust hood, 316 stainless steel with
de-dust port

H52

Custom design

Y99

Specify quote reference when ordering

Operating instructions

All literature is available to download for free, in a
range of languages, at

<http://www.siemens.com/weighing/documentation>

¹⁾ Available with material containment options D ... L only.

²⁾ 575 V versions meet 4:1 ct inverter rating, all other voltages meet 10:1.

³⁾ Available with Drive Configuration standard motor options only, all motors. suitable for 400 V operation only.

Selection and ordering data

Article No.

Article No.

SITRANS WW200, open style

High accuracy solids weighfeeder for low to medium capacity applications.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Add order code Y71 ... Y76 for all models to specify design data.

316 stainless steel, open style, with C/L infeed to C/L discharge12 inch (305 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

0 A
0 B
0 C
0 D
0 E
0 F
0 G
0 H
0 J

18 inch (457 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

1 A
1 B
1 C
1 D
1 E
1 F
1 G
1 H
1 J

24 inch (610 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

2 A
2 B
2 C
2 D
2 E
2 F
2 G
2 H
2 J

30 inch (762 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

3 A
3 B
3 C
3 D
3 E
3 F
3 G
3 H
3 J

SITRANS WW200, open style

High accuracy solids weighfeeder for low to medium capacity applications.

36 inch (914 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

4 A
4 B
4 C
4 D
4 E
4 F
4 G
4 H
4 J

42 inch (1 067 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

5 A
5 B
5 C
5 D
5 E
5 F
5 G
5 H
5 J

48 inch (1 219 mm) belt width

52 inch (1 321 mm)
60 inch (1 524 mm)
68 inch (1 727 mm)
76 inch (1 930 mm)
84 inch (2 134 mm)
92 inch (2 337 mm)
100 inch (2 540 mm)
108 inch (2 743 mm)
116 inch (2 946 mm)

6 A
6 B
6 C
6 D
6 E
6 F
6 G
6 H
6 J

Weighfeeders

SITRANS WW200

Open style

Selection and ordering data

Article No.

Article No.

SITRANS WW200, open style

High accuracy solids weighfeeder for low to medium capacity applications.

Material containment construction

None

Add order code Y74 and plain text: "Arc radius in inches ... XX.XXX inch" for options H ... L

Shear gate inlet

Skirtboards 316 stainless steel

Skirtboards 316 stainless steel, with cover

Skirtboards 316 stainless steel, #4 polished

Skirtboards 316 stainless steel, #4 polished with cover

Horseshoe inlet

316 stainless steel

316 stainless steel, #4 polished

Load cell

6 kg (13.2 lb) stainless steel, hermetically sealed

12 kg (26.5 lb) stainless steel, hermetically sealed

30 kg (66.1 lb) stainless steel, hermetically sealed

Speed sensor

Shaft mounted

1 000 PPR optical encoder

2 500 PPR optical encoder

1 000 PPR optical encoder, stainless steel

2 500 PPR optical encoder, stainless steel

Drive configuration

Add order code Y75 (reduction ratio) and Y76 (electrical style).

Standard AC motor

0.5 HP (0.37 kW)

220 ... 240/380 ... 480 V 3 ph 50/60 Hz

0.5 HP (0.37 kW) 575 V 3 ph 60 Hz

1 HP (0.75 kW)

220 ... 240/380 ... 480 V 3 ph 50/60 Hz

1 HP (0.75 kW) 575 V 3 ph 60 Hz

Food grade AC motor

0.5 HP (0.37 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz

0.5 HP (0.37 kW) 575 V 3 ph 60 Hz

1 HP (0.75 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz

1 HP (0.75 kW) 575 V 3 ph 60 Hz

7MH7302-



A

H

J

K

L

P

Q

5

6

7

1

2

4

5

0 C

0 D

0 G

0 H

4 C

4 D

4 G

4 H

SITRANS WW200, open style

High accuracy solids weighfeeder for low to medium capacity applications.

Belting

Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved

Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with B-section flange walls

Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls

Silicone, HT 177 °C (350 °F), anti-static 45 PIW, 2 ply, FDA approved

Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved

Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with B-section flange walls

Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls

Belt change access side (looking from inlet to discharge)

Left hand

Right hand

7MH7302-



A

B

C

D

K

L

M

0

1

Selection and ordering data	Order code
Further designs	
Please add "-Z" to article no. and specify order code(s).	
Application Eng. reference number (max. 15 characters), specify in plain text.	Y31
Shear gate arc radius: Enter shear gate arc radius in inches (xxx.xx inch) ¹⁾	Y74
Enter design units (TPH, MTPH, lb/h, kg/h)	Y71
Enter design speed (ft/m, m/s)	Y72
Enter design capacity/rate	Y73
AC gearmotor reduction ratio: Enter reduction ratio in plain text (X:1)	Y75
AC gearmotor electrical style: enter IEC, UL-R/CSA or CCC style	Y76
Custom length: Select next longest option and specify infeed CL to discharge CL in plain text (indicated inches or millimeters)	Y01
Manufacturer's test certificate: According to EN 10204-2.2	C11
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Class I, Div. 1, Groups C and D; Class II, Div. 1, Groups F and G, approved electrical components; without junction boxes	E90
ATEX II 2D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes	E91
ATEX II 2D approved electrical components; only available with speed encoder option 4 and 5; with Stainless steel junction boxes	E92
ATEX II 3D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes	E93
Note: weighfeeder does not carry hazardous approval, only motor, loadcells, speed encoder, and tracking switches; approval not available with load cell options 0 ... 4 or motor options 4C ... 4H ³⁾	
Plastic shear curtain to control dust at the infeed for floodable materials and dusty applications ¹⁾	G11
Pointek CLS100 Capacitance switch for plugged discharge chute detection	G12
Belt cleaner, stainless steel, nylon brush, mounted under belt plow, cleaning dirty side of belt	G14
Blue colored belt, anti-static, 2 ply, FDA approved	G18
Secondary speed encoder at motor (not for hazardous areas; not suitable for use with integrator)	G19
Motor corrosion protection C5 acc. EN 12944 (available with standard AC motor)	G20
Discharge dust hood, painted mild steel with de-dust port	H50
Discharge dust hood, 304 stainless steel with de-dust port	H51
Discharge dust hood, 316 stainless steel with de-dust port	H52
Custom design	Y99
Specify quote reference when ordering	
Operating instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/weighing/documentation	

¹⁾ Available with material containment options H ... L only.²⁾ 575 V versions meet 4:1 ct inverter rating, all other voltages meet 10:1.³⁾ Available with Drive Configuration standard motor options only, all motors suitable for 400 V operation only.

Selection and ordering data	Article No.	Article No.	
SITRANS WW200, enclosed style High accuracy solids weighfeeder for low to medium capacity applications.	7MH7303- 	SITRANS WW200, enclosed style High accuracy solids weighfeeder for low to medium capacity applications.	7MH7303- 
Material containment construction Add order code Y74 and plain text: "Arc radius in inches ... XX.XXX inch" for options D ... L <u>Shear gate inlet</u> Skirtboards 304 stainless steel Skirtboards 304 stainless steel, with cover Skirtboards 304 stainless steel, #4 polished Skirtboards 304 stainless steel, #4 polished with cover Skirtboards 316 stainless steel Skirtboards 316 stainless steel, with cover Skirtboards 316 stainless steel, #4 polished Skirtboards 316 stainless steel, #4 polished with cover	D E F G H J K L	Drive configuration Add order code Y75 (reduction ratio) and Y76 (electrical style). <u>Standard AC motor</u> 0.5 HP (0.37 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz 0.5 HP (0.37 kW) 575 V 3 ph 60 Hz 1 HP (0.75 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz 1 HP (0.75 kW) 575 V 3 ph 60 Hz <u>Food grade AC motor</u> 0.5 HP (0.37 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz 0.5 HP (0.37 kW) 575 V 3 ph 60 Hz 1 HP (0.75 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz 1 HP (0.75 kW) 575 V 3 ph 60 Hz	0 C 0 D 0 G 0 H 4 C 4 D 4 G 4 H
Load cell <u>Nickel plated steel</u> 10 kg (22 lb) 15 kg (33 lb) 20 kg (44 lb) 30 kg (66 lb) 50 kg (110 lb) <u>Stainless steel</u> 6 kg (13.2 lb) hermetically sealed 12 kg (26.5 lb) hermetically sealed 30 kg (66.1 lb) hermetically sealed	0 1 2 3 4 5 6 7	Belting Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with B-section flange walls Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls Silicone, HT 177 °C (350 °F), anti-static 45 PIW, 2 ply, FDA approved Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with B-section flange walls Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls	A B C D K L M
Speed sensor <u>Shaft mounted</u> 1 000 PPR optical encoder 2 500 PPR optical encoder 1 000 PPR optical encoder, stainless steel 2 500 PPR optical encoder, stainless steel	1 2 4 5	Belt change access side (looking from inlet to discharge) Left hand Right hand	0 1

Weighfeeders

SITRANS WW200

Enclosed style

Selection and ordering data Order code

Further designs

Please add **"-Z"** to article no. and specify order code(s).

Application eng. reference number (max. 15 characters), specify in plain text. **Y31**

Shear gate arc radius: Enter shear gate arc radius in inches (xxx.xx inch)¹⁾ **Y74**

Enter design units (TPH, MTPH, lb/h, kg/h) **Y71**

Enter design speed (ft/m, m/s) **Y72**

Enter design capacity/rate **Y73**

AC gearmotor reduction ratio: Enter reduction ratio in plain text (X:1) **Y75**

AC gearmotor electrical style: enter IEC, UL-R/CSA or CCC style **Y76**

Custom length: Select next longest option and specify infeed CL to discharge CL in plain text (indicated inches or millimeters) **Y01**

Manufacturer's test certificate: according to EN 10204-2.2 **C11**

Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text **Y15**

Class I, Div. 1, Groups C and D; Class II, Div. 1, Groups F and G, approved electrical components; without junction boxes **E90**

ATEX II 2D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes **E91**

ATEX II 2D approved electrical components; only available with speed encoder option 4 and 5; with Stainless steel junction boxes **E92**

ATEX II 3D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes **E93**

Note: weighfeeder does not carry hazardous approval, only motor, loadcells, speed encoder, and tracking switches; approval not available with load cell options 0 ... 4 or motor options 4C ... 4H³⁾

Plastic shear curtain to control dust at the infeed for floodable materials and dusty applications¹⁾ **G11**

Pointek CLS100 Capacitance switch for plugged discharge chute detection **G12**

Belt cleaner, stainless steel, nylon brush, mounted under belt plow, cleaning dirty side of belt **G14**

Blue colored belt, anti-static, 2 ply, FDA approved **G18**

Secondary speed encoder at motor (not for hazardous areas; not suitable for use with integrator) **G19**

Motor corrosion protection C5 acc. EN 12944 (available with standard AC motor) **G20**

Custom design **Y99**
Specify quote reference when ordering

Operating instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

¹⁾ Available with material containment options D ... L only.

²⁾ 575 V versions meet 4:1 ct inverter rating, all other voltages meet 10:1.

³⁾ Available with Drive Configuration standard motor options only, all motors suitable for 400 V operation only.

Selection and ordering data		Article No.	
SITRANS WW200, enclosed style High accuracy solids weighfeeder for low to medium capacity applications. Click on the Article No. for the online configuration in the PIA Life Cycle Portal. Add order code Y71 ... Y76 for all models to specify design data. 304 stainless steel frame with painted mild steel enclosure style with C/L infeed to C/L discharge <u>12 inch (305 mm) belt width</u> 52 inch (1 321 mm) 60 inch (1 524 mm) 68 inch (1 727 mm) 76 inch (1 930 mm) 184 inch (2 134 mm) 92 inch (2 337 mm) 100 inch (2 540 mm) 108 inch (2 743 mm) 116 inch (2 946 mm) <u>18 inch (457 mm) belt width</u> 52 inch (1 321 mm) 60 inch (1 524 mm) 68 inch (1 727 mm) 76 inch (1 930 mm) 84 inch (2 134 mm) 92 inch (2 337 mm) 100 inch (2 540 mm) 108 inch (2 743 mm) 116 inch (2 946 mm) <u>24 inch (610 mm) belt width</u> 52 inch (1 321 mm) 60 inch (1 524 mm) 68 inch (1 727 mm) 76 inch (1 930 mm) 84 inch (2 134 mm) 92 inch (2 337 mm) 100 inch (2 540 mm) 108 inch (2 743 mm) 116 inch (2 946 mm) <u>30 inch (762 mm) belt width</u> 52 inch (1 321 mm) 60 inch (1 524 mm) 68 inch (1 727 mm) 76 inch (1 930 mm) 84 inch (2 134 mm) 92 inch (2 337 mm) 100 inch (2 540 mm) 108 inch (2 743 mm) 116 inch (2 946 mm)	7MH7304- 		

Weighfeeders**SITRANS WW200****Enclosed style****Selection and ordering data**

Article No.

Article No.

SITRANS WW200, enclosed style

High accuracy solids weighfeeder for low to medium capacity applications.

7MH7304-**Material containment construction**

Add order code Y74 and plain text: "Arc radius in inches ... XX.XXX inch" for options D ... L

Shear gate inlet

Skirtboards 304 stainless steel

Skirtboards 304 stainless steel, with cover

Skirtboards 304 stainless steel, #4 polished

Skirtboards 304 stainless steel, #4 polished with cover

Skirtboards 316 stainless steel

Skirtboards 316 stainless steel, with cover

Skirtboards 316 stainless steel, #4 polished

Skirtboards 316 stainless steel, #4 polished with cover

Load cell

6 kg (13.2 lb) stainless steel, hermetically sealed

12 kg (26.5 lb) stainless steel, hermetically sealed

30 kg (66.1 lb) stainless steel, hermetically sealed

Speed sensorShaft mounted

1 000 PPR optical encoder

2 500 PPR optical encoder

1 000 PPR optical encoder, stainless steel

2 500 PPR optical encoder, stainless steel

Drive configuration

Add order code Y75 (reduction ratio) and Y76 (electrical style).

Standard AC motor

0.5 HP (0.37 kW)

220 ... 240/380 ... 480 V 3 ph 50/60 Hz

0.5 HP (0.37 kW) 575 V 3 ph 60 Hz

1 HP (0.75 kW)

220 ... 240/380 ... 480 V 3 ph 50/60 Hz

1 HP (0.75 kW) 575 V 3 ph 60 Hz

Food grade AC motor

0.5 HP (0.37 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz

0.5 HP (0.37 kW) 575 V 3 ph 60 Hz

1 HP (0.75 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz

1 HP (0.75 kW) 575 V 3 ph 60 Hz

SITRANS WW200, enclosed style

High accuracy solids weighfeeder for low to medium capacity applications.

7MH7304-**Belting**

Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved

Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with B-section flange walls

Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls

Silicone, HT 177 °C (350 °F), anti-static 45 PIW, 2 ply, FDA approved

Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved

Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with B-section flange walls

Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls

Belt change access side**(looking from inlet to discharge)**

Left hand

Right hand

A**B****C****D****K****L****M****0****1**

Selection and ordering data	Order code
Further designs	
Please add "-Z" to article no. and specify order code(s).	
Application Eng. reference number (max. 15 characters), specify in plain text.	Y31
Shear gate arc radius: Enter shear gate arc radius in inches (xxx.xx inch) ¹⁾	Y74
Enter design units (TPH, MTPH, lb/h, kg/h)	Y71
Enter design speed (ft/m, m/s)	Y72
Enter design capacity/rate	Y73
AC gearmotor reduction ratio: Enter reduction ratio in plain text (X:1)	Y75
AC gearmotor electrical style: enter IEC, UL-R/CSA or CCC style	Y76
Custom length: Select next longest option and specify infeed CL to discharge CL in plain text (indicated inches or millimeters)	Y01
Manufacturer's test certificate: according to EN 10204-2.2	C11
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Class I, Div. 1, Groups C and D; Class II, Div. 1, Groups F and G, approved electrical components; without junction boxes	E90
ATEX II 2D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes	E91
ATEX II 2D approved electrical components; only available with speed encoder option 4 and 5; with Stainless steel junction boxes	E92
ATEX II 3D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes	E93
Note: weighfeeder does not carry hazardous approval, only motor, loadcells, speed encoder, and tracking switches; approval not available with load cell options 0 ... 4 or motor options 4C ... 4H ³⁾	
Plastic shear curtain to control dust at the infeed for floodable materials and dusty applications ¹⁾	G11
Pointek CLS100 Capacitance switch for plugged discharge chute detection	G12
Belt cleaner, stainless steel, nylon brush, mounted under belt plow, cleaning dirty side of belt	G14
Blue colored belt, anti-static, 2 ply, FDA approved	G18
Secondary speed encoder at motor (not for hazardous areas; not suitable for use with integrator)	G19
Motor corrosion protection C5 acc. EN 12944 (available with standard AC motor)	G20
Custom design	Y99
Specify quote reference when ordering	
Operating instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/weighing/documentation	

¹⁾ Available with material containment options D ... L only.

²⁾ 575 V versions meet 4:1 ct inverter rating, all other voltages meet 10:1.

³⁾ Available with Drive Configuration standard motor options only; all motors suitable for 400 V operation only.

Selection and ordering data	Article No.	Article No.	
SITRANS WW200, enclosed style High accuracy solids weighfeeder for low to medium capacity applications.	7MH7305- 	SITRANS WW200, enclosed style High accuracy solids weighfeeder for low to medium capacity applications.	7MH7305- 
Material containment construction Add order code Y74 and plain text: "Arc radius in inches ... XX.XXX inch" for options D ... L <u>Shear gate inlet</u> Skirtboards 304 stainless steel Skirtboards 304 stainless steel, with cover Skirtboards 304 stainless steel, #4 polished Skirtboards 304 stainless steel, #4 polished with cover Skirtboards 316 stainless steel Skirtboards 316 stainless steel, with cover Skirtboards 316 stainless steel, #4 polished Skirtboards 316 stainless steel, #4 polished with cover	 D E F G H J K L	Belting Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with B-section flange walls Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls Silicone, HT 177 °C (350 °F), anti-static 45 PIW, 2 ply, FDA approved Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with B-section flange walls Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls	 A B C D K L M
Load cell 6 kg (13.2 lb) stainless steel, hermetically sealed 12 kg (26.5 lb) stainless steel, hermetically sealed 30 kg (66.1 lb) stainless steel, hermetically sealed	 5 6 7	Belt change access side (looking from inlet to discharge) Left hand Right hand	 0 1
Speed sensor <u>Shaft mounted</u> 1 000 PPR optical encoder 2 500 PPR optical encoder 1 000 PPR optical encoder, stainless steel 2 500 PPR optical encoder, stainless steel	 1 2 4 5		
Drive configuration Add order code Y75 (reduction ratio) and Y76 (electrical style). <u>Standard AC motor</u> 0.5 HP (0.37 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz 0.5 HP (0.37 kW) 575 V 3 ph 60 Hz 1 HP (0.75 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz 1 HP (0.75 kW) 575 V 3 ph 60 Hz	 0 C 0 D 0 G 0 H		
<u>Food grade AC motor</u> 0.5 HP (0.37 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz 0.5 HP (0.37 kW) 575 V 3 ph 60 Hz 1 HP (0.75 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz 1 HP (0.75 kW) 575 V 3 ph 60 Hz	 4 C 4 D 4 G 4 H		

Weighfeeders

SITRANS WW200

Enclosed style

Selection and ordering data

Order code

Further designs

Please add **"-Z"** to article no. and specify order code(s).

Application Eng. reference number (max. 15 characters), specify in plain text.

Y31

Shear gate arc radius: Enter shear gate arc radius in inches (xxx.xx inch)¹⁾

Y74

Enter design units (TPH, MTPH, lb/h, kg/h)

Y71

Enter design speed (ft/m, m/s)

Y72

Enter design capacity/rate

Y73

AC gearmotor reduction ratio: Enter reduction ratio in plain text (X:1)

Y75

AC gearmotor electrical style: enter IEC, UL-R/CSA or CCC style

Y76

Custom length: Select next longest option and specify infeed CL to discharge CL in plain text (indicated inches or millimeters)

Y01

Manufacturer's test certificate: according to EN 10204-2.2

C11

Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text

Y15

Class I, Div. 1, Groups C and D; Class II, Div. 1, Groups F and G, approved electrical components; without junction boxes

E90

ATEX II 2D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes

E91

ATEX II 2D approved electrical components; only available with speed encoder option 4 and 5; with Stainless steel junction boxes

E92

ATEX II 3D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes

E93

Note: weighfeeder does not carry hazardous approval, only motor, loadcells, speed encoder, and tracking switches; approval not available with load cell options 0 ... 4 or motor options 4C ... 4H³⁾

Plastic shear curtain to control dust at the infeed for floodable materials and dusty applications¹⁾

G11

Pointek CLS100 Capacitance switch for plugged discharge chute detection

G12

Siemens start/stop, auto/manual, speed control, hand held operator

G13

Belt cleaner, stainless steel, nylon brush, mounted under belt plow, cleaning dirty side of belt

G14

Blue colored belt, anti-static, 2 ply, FDA approved

G18

Secondary speed encoder at motor (not for hazardous areas; not suitable for use with integrator)

G19

Motor corrosion protection C5 acc. EN 12944 (available with standard AC motor)

G20

Custom design

Y99

Specify quote reference when ordering

Operating instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

¹⁾ Available with material containment options D ... L only.

²⁾ 575 V versions meet 4:1 ct inverter rating, all other voltages meet 10:1.

³⁾ Available with Drive Configuration standard motor options only, all motors suitable for 400 V operation only.

Selection and ordering data

Article No.

Article No.

SITRANS WW200, enclosed style

High accuracy solids weighfeeder for low to medium capacity applications.

 Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Add order code Y71 ... Y76 for all models to specify design data.

316 stainless steel frame with painted mild steel enclosure style with C/L infeed to C/L discharge12 inch (305 mm) belt width

52 inch (1 321 mm)

60 inch (1 524 mm)

68 inch (1 727 mm)

76 inch (1 930 mm)

84 inch (2 134 mm)

92 inch (2 337 mm)

100 inch (2 540 mm)

108 inch (2 743 mm)

116 inch (2 946 mm)

18 inch (457 mm) belt width

52 inch (1 321 mm)

60 inch (1 524 mm)

68 inch (1 727 mm)

76 inch (1 930 mm)

84 inch (2 134 mm)

92 inch (2 337 mm)

100 inch (2 540 mm)

108 inch (2 743 mm)

116 inch (2 946 mm)

24 inch (610 mm) belt width

52 inch (1 321 mm)

60 inch (1 524 mm)

68 inch (1 727 mm)

76 inch (1 930 mm)

84 inch (2 134 mm)

92 inch (2 337 mm)

100 inch (2 540 mm)

108 inch (2 743 mm)

116 inch (2 946 mm)

30 inch (762 mm) belt width

52 inch (1 321 mm)

60 inch (1 524 mm)

68 inch (1 727 mm)

76 inch (1 930 mm)

84 inch (2 134 mm)

92 inch (2 337 mm)

100 inch (2 540 mm)

108 inch (2 743 mm)

116 inch (2 946 mm)

7MH7306-



0 A

0 B

0 C

0 D

0 E

0 F

0 G

0 H

0 J

1 A

1 B

1 C

1 D

1 E

1 F

1 G

1 H

1 J

2 A

2 B

2 C

2 D

2 E

2 F

2 G

2 H

2 J

3 A

3 B

3 C

3 D

3 E

3 F

3 G

3 H

3 J

SITRANS WW200, enclosed style

High accuracy solids weighfeeder for low to medium capacity applications.

36 inch (914 mm) belt width

52 inch (1 321 mm)

60 inch (1 524 mm)

68 inch (1 727 mm)

76 inch (1 930 mm)

84 inch (2 134 mm)

92 inch (2 337 mm)

100 inch (2 540 mm)

108 inch (2 743 mm)

116 inch (2 946 mm)

42 inch (1 067 mm) belt width

52 inch (1 321 mm)

60 inch (1 524 mm)

68 inch (1 727 mm)

76 inch (1 930 mm)

84 inch (2 134 mm)

92 inch (2 337 mm)

100 inch (2 540 mm)

108 inch (2 743 mm)

116 inch (2 946 mm)

48 inch (1 219 mm) belt width

52 inch (1 321 mm)

60 inch (1 524 mm)

68 inch (1 727 mm)

76 inch (1 930 mm)

84 inch (2 134 mm)

92 inch (2 337 mm)

100 inch (2 540 mm)

108 inch (2 743 mm)

116 inch (2 946 mm)

7MH7306-



4 A

4 B

4 C

4 D

4 E

4 F

4 G

4 H

4 J

5 A

5 B

5 C

5 D

5 E

5 F

5 G

5 H

5 J

6 A

6 B

6 C

6 D

6 E

6 F

6 G

6 H

6 J

Weighfeeders**SITRANS WW200****Enclosed style****Selection and ordering data**

Article No.

Article No.

SITRANS WW200, enclosed style

High accuracy solids weighfeeder for low to medium capacity applications.

Add order code Y74 and plain text: "Arc radius in inches ... XX.XXX" for options H ... L

Shear gate inlet

Skirtboards 316 stainless steel

Skirtboards 316 stainless steel, with cover

Skirtboards 316 stainless steel, #4 polished

Skirtboards 316 stainless steel, #4 polished with cover

Load cell

6 kg (13.2 lb) stainless steel, hermetically sealed

12 kg (26.5 lb) stainless steel, hermetically sealed

30 kg (66.1 lb) stainless steel, hermetically sealed

Speed sensorShaft mounted

1 000 PPR optical encoder

2 500 PPR optical encoder

1 000 PPR optical encoder, stainless steel

2 500 PPR optical encoder, stainless steel

Drive configuration

Add order code Y75 (reduction ratio) and Y76 (electrical style).

Standard AC motor

0.5 HP (0.37 kW)

220 ... 240/380 ... 480 V 3 ph 50/60 Hz

0.5 HP (0.37 kW) 575 V 3 ph 60 Hz

1 HP (0.75 kW)

220 ... 240/380 ... 480 V 3 ph 50/60 Hz

1 HP (0.75 kW) 575 V 3 ph 60 Hz

Food grade AC motor

0.5 HP (0.37 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz

0.5 HP (0.37 kW) 575 V 3 ph 60 Hz

1 HP (0.75 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz

1 HP (0.75 kW) 575 V 3 ph 60 Hz

7MH7306-

**SITRANS WW200, enclosed style**

High accuracy solids weighfeeder for low to medium capacity applications.

Belting

Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved

Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with B-section flange walls

Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls

Silicone, HT 177 °C (350 °F), anti-static 45 PIW, 2 ply, FDA approved

Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved

Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with B-section flange walls

Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls

Belt change access side (looking from inlet to discharge)

Left hand

Right hand

7MH7306-



A

B

C

D

K

L

M

0

1

Selection and ordering data	Order Code
Further designs	
Please add "-Z" to article no. and specify order code(s).	
Application Eng. reference number (max. 15 characters), specify in plain text.	Y31
Shear gate arc radius: Enter shear gate arc radius in inches (xxx.xx inch) ¹⁾	Y74
Enter design units (TPH, MTPH, lb/h, kg/h)	Y71
Enter design speed (ft/m, m/s)	Y72
Enter design capacity/rate	Y73
AC gearmotor reduction ratio: Enter reduction ratio in plain text (X:1)	Y75
AC gearmotor electrical style: enter IEC, UL-R/CSA or CCC style	Y76
Custom length: Select next longest option and specify infeed CL to discharge CL in plain text (indicated inches or millimeters)	Y01
Manufacturer's test certificate: According to EN 10204-2.2	C11
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Class I, Div. 1, Groups C and D; Class II, Div. 1, Groups F and G, approved electrical components; without junction boxes	E90
ATEX II 2D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes	E91
ATEX II 2D approved electrical components; only available with speed encoder option 4 and 5; with Stainless steel junction boxes	E92
ATEX II 3D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes	E93
Note: weighfeeder does not carry hazardous approval, only motor, loadcells, speed encoder, and tracking switches; approval not available with load cell options 0 ... 4 or motor options 4C ... 4H ³⁾	
Plastic shear curtain to control dust at the infeed for floodable materials and dusty applications ¹⁾	G11
Pointek CLS100 Capacitance switch for plugged discharge chute detection	G12
Belt cleaner, stainless steel, nylon brush, mounted under belt plow, cleaning dirty side of belt	G14
Blue colored belt, anti-static, 2 ply, FDA approved	G18
Secondary speed encoder at motor (not for hazardous areas; not suitable for use with integrator)	G19
Motor corrosion protection C5 acc. EN 12944 (available with standard AC motor)	G20
Custom design	Y99
Specify quote reference when ordering	
Operating instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/weighing/documentation	

¹⁾ Available with material containment options H ... L only.

²⁾ 575 V versions meet 4:1 ct inverter rating, all other voltages meet 10:1.

³⁾ Available with Drive Configuration standard motor options only, all motors suitable for 400 V operation only.

Selection and ordering data		Article No.	Article No.
SITRANS WW200, enclosed style High accuracy solids weighfeeder for low to medium capacity applications.		7MH7307-	7MH7307-
Material containment construction Add order code Y74 and plain text: "Arc radius in inches ... XX.XXX inch" for options H ... L Shear gate inlet and skirtboards 316 stainless steel Shear gate inlet and skirtboards 316 stainless steel, with cover Shear gate inlet and skirtboards 316 stainless steel, #4 polished Shear gate inlet and skirtboards 316 stainless steel, #4 polished with cover		H J K L	
Load cell 6 kg (13.2 lb) stainless steel, hermetically sealed 12 kg (26.5 lb) stainless steel, hermetically sealed 30 kg (66.1 lb) stainless steel, hermetically sealed		5 6 7	
Speed sensor 1 000 PPR shaft mounted optical encoder 2 500 PPR shaft mounted optical encoder 1 000 PPR shaft mounted optical encoder, stainless steel 2 500 PPR shaft mounted optical encoder, stainless steel		1 2 4 5	
Drive configuration Add order code Y75 (reduction ratio) and Y76 (electrical style). <u>Standard AC motor</u> 0.5 HP (0.37 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz 0.5 HP (0.37 kW) 575 V 3 ph 60 Hz 1 HP (0.75 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz 1 HP (0.75 kW) 575 V 3 ph 60 Hz <u>Food grade AC motor</u> 0.5 HP (0.37 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz 0.5 HP (0.37 kW) 575 V 3 ph 60 Hz 1 HP (0.75 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz 1 HP (0.75 kW) 575 V 3 ph 60 Hz		0 C 0 D 0 G 0 H 4 C 4 D 4 G 4 H	
SITRANS WW200, enclosed style High accuracy solids weighfeeder for low to medium capacity applications. <u>Food grade AC motor, Aluminum</u> 0.5 HP (0.37 kW), 200 ... 240 V 1 ph, 50/60 Hz 0.5 HP (0.37 kW), 380 ... 480 V, 3 ph, 50/60 Hz 1 HP (0.75 kW), 200 ... 240 V 1 ph, 50/60 Hz 1 HP (0.75 kW), 380 ... 480 V, 3 ph, 50/60 Hz			4 C 4 D 4 G 4 H
Belting Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with B-section flange walls Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls Silicone, HT 177 °C (350 °F), anti-static 45 PIW, 2 ply, FDA approved Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with B-section flange walls Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls			A B C D K L M
Belt change access side (looking from inlet to discharge) Left hand Right hand			0 1

Weighfeeders

SITRANS WW200

Enclosed style

Selection and ordering data

Order code

Further designs

Please add **"-Z"** to article no. and specify order code(s).

Application Eng. reference number (max. 15 characters), specify in plain text.

Y31

Shear gate arc radius: Enter shear gate arc radius in inches (xxx.xx inch)¹⁾

Y74

Enter design units (TPH, MTPH, lb/h, kg/h)

Y71

Enter design speed (ft/m, m/s)

Y72

Enter design capacity/rate

Y73

AC gearmotor reduction ratio: Enter reduction ratio in plain text (X:1)

Y75

AC gearmotor electrical style: enter IEC, UL-R/CSA or CCC style

Y76

Custom length: Select next longest option and specify infeed CL to discharge CL in plain text (indicated inches or millimeters)

Y01

Manufacturer's test certificate: according to EN 10204-2.2

C11

Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text

Y15

Class I, Div. 1, Groups C and D; Class II, Div. 1, Groups F and G, approved electrical components; without junction boxes

E90

ATEX II 2D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes

E91

ATEX II 2D approved electrical components; only available with speed encoder option 4 and 5; with Stainless steel junction boxes

E92

ATEX II 3D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes

E93

Note: weighfeeder does not carry hazardous approval, only motor, loadcells, speed encoder, and tracking switches; approval not available with load cell options 0 ... 4 or motor options 4C ... 4H³⁾

Plastic shear curtain to control dust at the infeed for floodable materials and dusty applications¹⁾

G11

Pointek CLS100
Capacitance switch for plugged discharge chute detection

G12

Belt cleaner, stainless steel, nylon brush, mounted under belt plow, cleaning dirty side of belt

G14

Blue colored belt, anti-static, 2 ply, FDA approved

G18

Secondary speed encoder at motor (not for hazardous areas; not suitable for use with integrator)

G19

Motor corrosion protection C5 acc. EN 12944 (available with standard AC motor)

G20

Custom design

Y99

Specify quote reference when ordering

Operating instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

¹⁾ Available with material containment options H ... L only.

²⁾ 575 V versions meet 4:1 ct inverter rating, all other voltages meet 10:1.

³⁾ Available with Drive Configuration standard motor options only, all motors suitable for 400 V operation only.

Selection and ordering data

Article No.

Article No.

SITRANS WW200, enclosed style

High accuracy solids weighfeeder for low to medium capacity applications.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Add order code Y71 ... Y76 for all models to specify design data.

316 stainless steel frame with 316 stainless steel enclosure style with C/L infeed to C/L discharge12 inch (305 mm) belt width

52 inch (1 321 mm)
 60 inch (1 524 mm)
 68 inch (1 727 mm)
 76 inch (1 930 mm)
 84 inch (2 134 mm)
 92 inch (2 337 mm)
 100 inch (2 540 mm)
 108 inch (2 743 mm)
 116 inch (2 946 mm)

0 A
0 B
0 C
0 D
0 E
0 F
0 G
0 H
0 J

18 inch (457 mm) belt width

52 inch (1 321 mm)
 60 inch (1 524 mm)
 68 inch (1 727 mm)
 76 inch (1 930 mm)
 84 inch (2 134 mm)
 92 inch (2 337 mm)
 100 inch (2 540 mm)
 108 inch (2 743 mm)
 116 inch (2 946 mm)

1 A
1 B
1 C
1 D
1 E
1 F
1 G
1 H
1 J

24 inch (610 mm) belt width

52 inch (1 321 mm)
 60 inch (1 524 mm)
 68 inch (1 727 mm)
 76 inch (1 930 mm)
 84 inch (2 134 mm)
 92 inch (2 337 mm)
 100 inch (2 540 mm)
 108 inch (2 743 mm)
 116 inch (2 946 mm)

2 A
2 B
2 C
2 D
2 E
2 F
2 G
2 H
2 J

30 inch (762 mm) belt width

52 inch (1 321 mm)
 60 inch (1 524 mm)
 68 inch (1 727 mm)
 76 inch (1 930 mm)
 84 inch (2 134 mm)
 92 inch (2 337 mm)
 100 inch (2 540 mm)
 108 inch (2 743 mm)
 116 inch (2 946 mm)

3 A
3 B
3 C
3 D
3 E
3 F
3 G
3 H
3 J

SITRANS WW200, enclosed style

High accuracy solids weighfeeder for low to medium capacity applications.

36 inch (914 mm) belt width

52 inch (1 321 mm)
 60 inch (1 524 mm)
 68 inch (1 727 mm)
 76 inch (1 930 mm)
 84 inch (2 134 mm)
 92 inch (2 337 mm)
 100 inch (2 540 mm)
 108 inch (2 743 mm)
 116 inch (2 946 mm)

4 A
4 B
4 C
4 D
4 E
4 F
4 G
4 H
4 J

42 inch (1 067 mm) belt width

52 inch (1 321 mm)
 60 inch (1 524 mm)
 68 inch (1 727 mm)
 76 inch (1 930 mm)
 84 inch (2 134 mm)
 92 inch (2 337 mm)
 100 inch (2 540 mm)
 108 inch (2 743 mm)
 116 inch (2 946 mm)

5 A
5 B
5 C
5 D
5 E
5 F
5 G
5 H
5 J

48 inch (1 219 mm) belt width

52 inch (1 321 mm)
 60 inch (1 524 mm)
 68 inch (1 727 mm)
 76 inch (1 930 mm)
 84 inch (2 134 mm)
 92 inch (2 337 mm)
 100 inch (2 540 mm)
 108 inch (2 743 mm)
 116 inch (2 946 mm)

6 A
6 B
6 C
6 D
6 E
6 F
6 G
6 H
6 J

Weighfeeders

SITRANS WW200

Enclosed style

Selection and ordering data

Article No.

Article No.

SITRANS WW200, enclosed style

High accuracy solids weighfeeder for low to medium capacity applications.

Material containment construction

Add order code Y74 and plain text: "Arc radius in inches ... XX.XXX inch" for options H ... L

Shear gate inlet

Skirtboards 316 stainless steel

Skirtboards 316 stainless steel, with cover

Skirtboards 316 stainless steel, #4 polished

Skirtboards 316 stainless steel, #4 polished with cover

Load cell

6 kg (13.2 lb) stainless steel, hermetically sealed

12 kg (26.5 lb) stainless steel, hermetically sealed

30 kg (66.1 lb) stainless steel, hermetically sealed

Speed sensor

Shaft mounted

1 000 PPR optical encoder

2 500 PPR optical encoder

1 000 PPR optical encoder, stainless steel

2 500 PPR optical encoder, stainless steel

Drive configuration

Add order code Y75 (reduction ratio) and Y76 (electrical style).

Standard AC motor

0.5 HP (0.37 kW)

220 ... 240/380 ... 480 V 3 ph 50/60 Hz

0.5 HP (0.37 kW) 575 V 3 ph 60 Hz

1 HP (0.75 kW)

220 ... 240/380 ... 480 V 3 ph 50/60 Hz

1 HP (0.75 kW) 575 V 3 ph 60 Hz

Food grade AC motor

0.5 HP (0.37 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz

0.5 HP (0.37 kW) 575 V 3 ph 60 Hz

1 HP (0.75 kW) 220 ... 240/380 ... 480 V 3 ph 50/60 Hz

1 HP (0.75 kW) 575 V 3 ph 60 Hz

7MH7308-



SITRANS WW200, enclosed style

High accuracy solids weighfeeder for low to medium capacity applications.

Belting

Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved

Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with B-section flange walls

Polyurethane, 1.35 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls

Silicone, HT 177 °C (350 °F), anti-static 45 PIW, 2 ply, FDA approved

Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved

Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with B-section flange walls

Polyurethane, 2.9 mm, anti-static, 2 ply, FDA approved, with 2 inch (50 mm) corrugated side walls

Belt change access side

(looking from inlet to discharge)

Left hand

Right hand

7MH7308-



A

B

C

D

K

L

M

0

1

Selection and ordering data		Order code
Further designs		
Please add "-Z" to article no. and specify order code(s).		
Application Eng. reference number (max. 15 characters), specify in plain text.		Y31
Shear gate arc radius: Enter shear gate arc radius in inches (xxx.xx inch) ¹⁾		Y74
Enter design units (TPH, MTPH, lb/h, kg/h)		Y71
Enter design speed (ft/m, m/s)		Y72
Enter design capacity/rate		Y73
AC gearmotor reduction ratio: Enter reduction ratio in plain text (X:1)		Y75
AC gearmotor electrical style: enter IEC, UL-R/CSA or CCC style		Y76
Custom length: Select next longest option and specify infeed CL to discharge CL in plain text (indicated inches or millimeters)		Y01
Manufacturer's test certificate: according to EN 10204-2.2		C11
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text		Y15
Class I, Div. 1, Groups C and D; Class II, Div. 1, Groups F and G, approved electrical components; without junction boxes		E90
ATEX II 2D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes		E91
ATEX II 2D approved electrical components; only available with speed encoder option 4 and 5; with Stainless steel junction boxes		E92
ATEX II 3D approved electrical components; only available with speed encoder option 1 and 2; with Aluminum junction boxes		E93
Note: weighfeeder does not carry hazardous approval, only motor, loadcells, speed encoder, and tracking switches; approval not available with load cell options 0 ... 4 or motor options 4C ... 4H ³⁾		
Plastic shear curtain to control dust at the infeed for floodable materials and dusty applications ¹⁾		G11
Pointek CLS100 Capacitance switch for plugged discharge chute detection		G12
Belt cleaner, stainless steel, nylon brush, mounted under belt plow, cleaning dirty side of belt		G14
Blue colored belt, anti-static, 2 ply, FDA approved		G18
Secondary speed encoder at motor (not for hazardous areas; not suitable for use with integrator)		G19
Motor corrosion protection C5 acc. EN 12944 (available with standard AC motor)		G20
Custom design		Y99
Specify quote reference when ordering		
Operating instructions		
All literature is available to download for free, in a range of languages, at		
http://www.siemens.com/weighing/documentation		

¹⁾ Available with material containment options H ... L only.

²⁾ 575 V versions meet 4:1 ct inverter rating, all other voltages meet 10:1.

³⁾ Available with Drive Configuration standard motor options only, all motors suitable for 400 V operation only.

Weighfeeders

SITRANS WW200

Accessories and spare parts

Selection and ordering data

Accessories

Test chain 1.62 lb/ft, 2.41 kg/m - 60 inches long

Start, Stop, Hand/Off/Auto, speed pot local operator station

E-stop push button, enclosed style

CLS100 plugged discharge chute retrofit kit (includes CLS100, material hood)

Calibration hanger weights

200 g (0.4 lb)

500 g (1.1 lb)

1 000 g (2.2 lb)

2 000 g (4.4 lb)

3 500 g (7.7 lb)

5 000 g (11 lb)

7 500 g (16.5 lb)

8 500 g (18.7 lb)

10 000 (22 lb)

12 000 g (26.5 lb)

15 000 g (33.1 lb)

Note: calibration accessories should be ordered as a separate item on the order.

Spare parts

6 kg (13.2 lb) stainless steel load cell

12 kg (26.4 lb) stainless steel load cell

30 kg (66.2 lb) stainless steel load cell

10 kg (22 lb) nickel plated steel load cell

15 kg (33.1 lb) nickel plated steel load cell

20 kg (44 lb) nickel plated steel load cell

30 kg (66.2 lb) nickel plated steel load cell

50 kg (110.2 lb) nickel plated steel load cell

500 PPR optical encoder

1 000 PPR optical encoder

2 500 PPR optical encoder

Optical encoder connector

Speed encoder plug-in with cable

Encoder, Stainless steel, 500 PPR

Speed Encoder, 1 000 ppr, stainless steel

Speed Encoder, 2 500 ppr, stainless steel

Magnetic proximity switch

Motor mounted sensor flange 56C

Termination board for Junction Box

Belt tracking switch

Belt tracking switch, ATEX II 2D/Class I, Div. 1, Groups C and D, Class II, Div. 1, Groups F and G

WW200 outline approval drawing

Head bearing replacement kit mild steel (includes 2 bearings)¹⁾

Tail bearing replacement kit mild steel (includes 2 bearings)¹⁾

Head bearing replacement kit stainless steel (includes 2 bearings)

Tail bearing replacement kit stainless steel (includes 2 bearings)

Skirtboard seal replacement kit, 7 meters

Article No.

7MH7723-1NF

7MH7723-1JA

3SB3801-0DF3

7MH7723-1JE

7MH7724-1AF

7MH7724-1AG

7MH7724-1AH

7MH7724-1AJ

7MH7724-1BQ

7MH7724-1AK

7MH7724-1BR

7MH7724-1BS

7MH7724-1BT

7MH7724-1BU

7MH7724-1BV

7MH5117-1QD00

7MH5117-2BD00

7MH5117-2KD00

7MH7725-1EK

7MH7725-1EL

7MH7725-1EM

7MH7725-1EN

7MH7725-1EP

6FX20012PA50

6FX20012PB00

6FX20012PC50

6FX20030SU12

7MH7723-1KM

7MH7723-1HG

7MH7723-1HH

7MH7723-1HJ

7MH7723-1GA

7MH7723-1RB

A5E03623963

3SE5112-0CR01

7MH7723-1RA

7MH7726-1BU

7MH7723-1QM

7MH7723-1QN

7MH7723-1QP

7MH7723-1QQ

7MH7723-1QR

Article No.

Enclosure latches stainless steel (includes 5 latches)

7MH7723-1QT

Calibration chain 2.26 kg/m

7MH7723-1SK

Guide rollers

7MH7723-1SM

Spare Brush, 12 inch belt width

7MH7723-1SN

Spare Brush, 18 inch belt width

7MH7723-1SP

Spare Brush, 24 inch belt width

7MH7723-1SQ

Spare Brush, 30 inch belt width

7MH7723-1SR

Spare Brush, 36 inch belt width

7MH7723-1SS

Spare Brush, 42 inch belt width

7MH7723-1ST

Spare Brush, 48 inch belt width

7MH7723-1SU

Weighdeck Slider bar, PE-HD, 1 piece

7MH7723-1SV

Telescopers, set of 2, mild steel

7MH7723-1SW

Telescopers, set of 2, stainless steel

7MH7723-1SX

Spare Motors

Available for WW200 weighfeeders, made in Canada prior to 2016, with separate motor and gearbox.

Motor, 0.25 HP (0.19 kW) STD, 200/400 V – 50 Hz 3 ph, 230/460 V – 60 Hz 3 ph

7MH7723-1NG

Motor, 0.5 HP (0.37 kW) STD, 200/400 V – 50 Hz 3 ph, 230/460 V – 60 Hz 3 ph

7MH7723-1NH

Motor, 0.75 HP (0.56 kW) STD, 200/400 V – 50 Hz 3 ph, 230/460 V – 60 Hz 3 ph

7MH7723-1NJ

Motor, 1 HP (0.75 kW) STD, 200/400 V – 50 Hz 3 ph, 230/460 V – 60 Hz 3 ph

7MH7723-1NK

Motor, 0.25 HP (0.19 kW) STD, 575 V – 60 Hz 3 ph

7MH7723-1NL

Motor, 0.5 HP (0.37 kW) STD, 575 V – 60 Hz 3 ph

7MH7723-1NM

Motor, 0.75 HP (0.56 kW) STD, 575 V – 60 Hz 3 ph

7MH7723-1NN

Motor, 1 HP (0.75 kW) STD, 575 V – 60 Hz 3 ph

7MH7723-1NP

Motor, 0.25 HP (0.19 kW) epoxy coated, 200/400 V – 50 Hz 3 ph, 230/460 V – 60 Hz 3 ph

7MH7723-1NQ

Motor, 0.5 HP (0.37 kW) epoxy coated, 200/400 V – 50 Hz 3 ph, 230/460 V – 60 Hz 3 ph

7MH7723-1NR

Motor, 1 HP (0.75 kW) epoxy coated, 200/400 V – 50 Hz 3 ph, 230/460 V – 60 Hz 3 ph

7MH7723-1NS

Motor, 0.25 HP (0.19 kW) epoxy coated, 575 V – 60 Hz 3 ph

7MH7723-1NT

Motor, 0.5 HP (0.37 kW) epoxy coated, 575 V – 60 Hz 3 ph

7MH7723-1NU

Motor, 1 HP (0.75 kW) epoxy coated, 575 V – 60 Hz 3 ph

7MH7723-1NW

Motor, 0.33 HP (0.25 kW) stainless steel, 200/400 V – 50 Hz 3 ph, 230/460 V – 60 Hz 3 ph

7MH7723-1NX

Motor, 0.5 HP (0.37 kW) stainless steel, 200/400 V – 50 Hz 3 ph, 230/460 V – 60 Hz 3 ph

7MH7723-1NY

Motor, 1 HP (0.75 kW) stainless steel, 200/400 V – 50 Hz 3 ph, 230/460 V – 60 Hz 3 ph

7MH7723-1PA

Selection and ordering data

Article No.

Hazardous rated electrical spare partsOptical encoders
 500 PPR optical encoder,
 Class I, Div. 1, Groups C and D,
 Class II, Div. 1, Groups F and G
7MH7723-1QU
 1 000 PPR optical encoder,
 Class I, Div. 1, Groups C and D,
 Class II, Div. 1, Groups F and G
7MH7723-1QV
 2 500 PPR optical encoder,
 Class I, Div. 1, Groups C and D,
 Class II, Div. 1, Groups F and G
7MH7723-1QW

1 000 PPR optical encoder, ATEX II 2D

7MH7723-1QX

2 000 PPR optical encoder, ATEX II 2D

7MH7723-1QYSpare motors
 Available for WW200 weighfeeders, made in
 Canada prior to 2016, with separate motor and
 gearbox.

 Motor, 0.25 HP 0.19 kW,
 Class I, Div. 1, Groups C and D, Class II, Div. 1,
 Groups F and G, 230/460 V – 60 Hz 3 ph
7MH7723-1PB
 Motor, 0.5 HP 0.37 kW,
 Class I, Div. 1, Groups C and D, Class II, Div. 1,
 Groups F and G, 230/460 V – 60 Hz 3 ph
7MH7723-1PC
 Motor, 0.75 HP 0.56 kW,
 Class I, Div. 1, Groups C and D, Class II, Div. 1,
 Groups F and G, 230/460 V – 60 Hz 3 ph
7MH7723-1PD
 Motor, 1 HP 0.75 kW,
 Class I, Div. 1, Groups C and D, Class II, Div. 1,
 Groups F and G, 230/460 V – 60 Hz 3 ph
7MH7723-1NV
 Motor, 0.25 HP 0.19 kW,
 Class I, Div. 1, Groups C and D, Class II, Div. 1,
 Groups F and G, 575 V – 60 Hz 3 ph
7MH7723-1QA
 Motor, 0.5 HP 0.37 kW,
 Class I, Div. 1, Groups C and D, Class II, Div. 1,
 Groups F and G, 575 V – 60 Hz 3 ph
7MH7723-1QB
 Motor, 0.75 HP 0.56 kW,
 Class I, Div. 1, Groups C and D, Class II, Div. 1,
 Groups F and G, 575 V – 60 Hz 3 ph
7MH7723-1QC
 Motor, 1 HP 0.75 kW,
 Class I, Div. 1, Groups C and D, Class II, Div. 1,
 Groups F and G, 575 V – 60 Hz 3 ph
7MH7723-1QD

1) Suitable for weighfeeders made in CA prior to 2016.

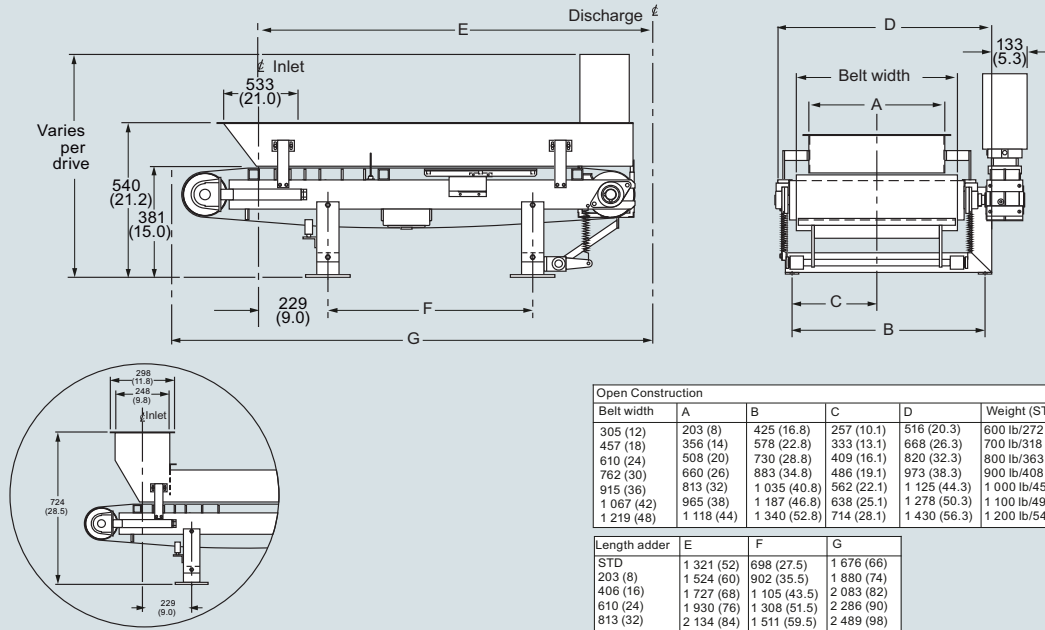
Weighfeeders

SITRANS WW200

Dimensional drawings and schematics

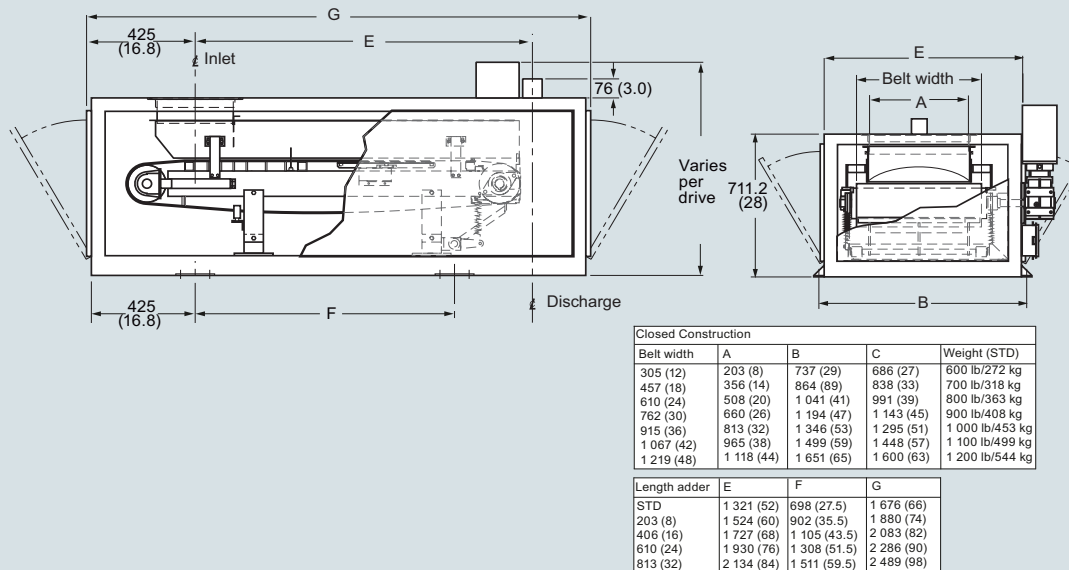
Dimensional drawings

Open Construction

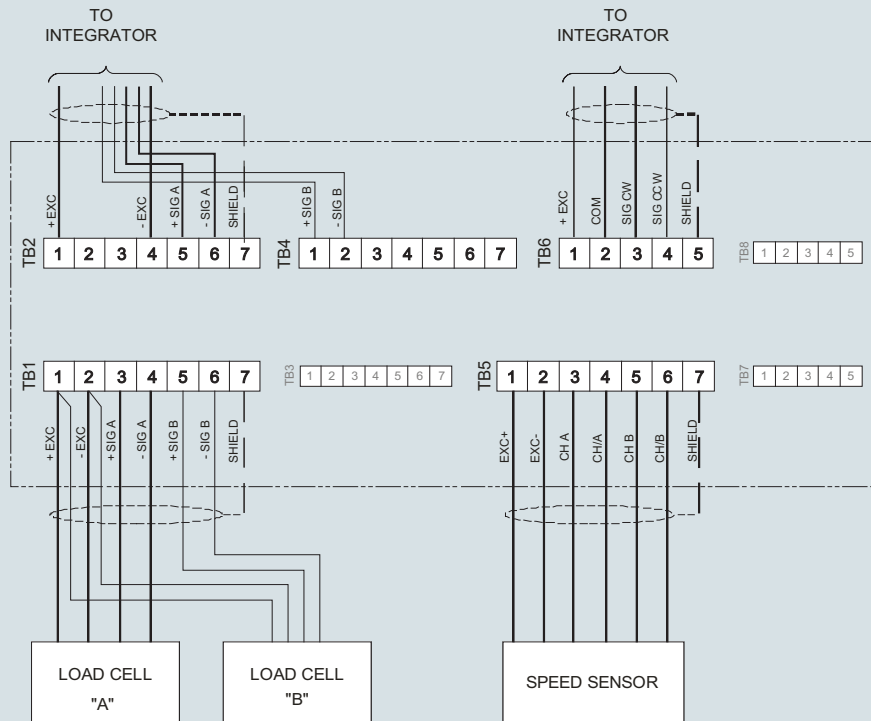


Shear gate infed version

Closed Construction



SITRANS WW200, dimensions in mm (inch)

Circuit diagrams


Note: termination box not supplied on hazardous rated options.

SITRANS WW200 connections

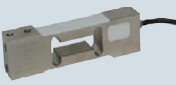
Weighfeeders

Weighfeeder accessories

Weighfeeder peripherals

Selection and ordering data

Milltronics Weighfeeder 400, 600, and 800

	Article No.	
Nickel plated, standard duty		
10 kg (22 lb)	7MH7725-1EK	
15 kg (33.1 lb)	7MH7725-1EL	
20 kg (44 lb)	7MH7725-1EM	
30 kg (66.2 lb)	7MH7725-1EN	
Stainless steel		
6 kg (13.2 lb)	7MH7725-1EG	
12 kg (26.4 lb)	7MH7725-1EH	
30 kg (66.2 lb)	7MH7725-1EJ	
25 lb (11.3 kg)	PBD:23900224	
50 lb (22.7 kg)	PBD:23900225	
100 lb (45.4 kg)	PBD:23900242	

Milltronics Weighfeeder 1200, SITRANS WW300 and WW310 spare load cells

	Article No.	
Nickel plated, standard duty		
10 kg (22 lb)	7MH7725-1EK	
15 kg (33.1 lb)	7MH7725-1EL	
20 kg (44 lb)	7MH7725-1EM	
30 kg (66.2 lb)	7MH7725-1EN	
50 kg (110.2 lb)	7MH7725-1EP	
75 kg (165 lb)	7MH7725-1CS	
100 kg (220 lb)	7MH7725-1CT	
Nickel plated, heavy duty		
50 kg (110.2 lb)	7MH7725-1CU	
100 kg (220.5 lb)	7MH7725-1CV	
150 kg (330.7 lb)	7MH7725-1CW	
200 kg (440.9 lb)	7MH7725-1CX	
Stainless steel		
22.7 kg (50 lb)	7MH7725-1AC	
45.4 kg (100 lb)	7MH7725-1AD	
113.4 kg (250 lb)	7MH7725-1AE	
226.8 kg (500 lb)	7MH7725-1AF	
11 kg (25 lb), CSA/FM/ATEX/IEC EX	7MH7725-1DQ	
23 kg (50 lb), CSA/FM/ATEX/IEC EX	7MH7725-1DL	
45 kg (100 lb), CSA/FM/ATEX/IEC EX	7MH7725-1DM	
113 kg (250 lb), CSA/FM/ATEX/IEC EX	7MH7725-1DN	
227 kg (500 lb), CSA/FM/ATEX/IEC EX	7MH7725-1DP	
6 kg (13.2 lb)	7MH7725-1EG	
12 kg (26.5 lb)	7MH7725-1EH	
30 kg (66.1 lb)	7MH7725-1EJ	
24 kg (50 lb), CSA/FM/ATEX/IEC EX	7MH7725-1DT	
45 kg (100 lb), CSA/FM/ATEX/IEC EX	7MH7725-1DU	
113 kg (250 lb), CSA/FM/ATEX/IEC EX	7MH7725-1DV	

Calibration hanger weights

	Article No.	
200 g (0.4 lb)	7MH7724-1AF	
500 g (1.1 lb)	7MH7724-1AG	
1 000 g (2.2 lb)	7MH7724-1AH	
2 000 g (4.4 lb)	7MH7724-1AJ	
3 500 g (7.7 lb)	7MH7724-1BQ	
5 000 g (11 lb)	7MH7724-1AK	
7 500 g (16.5 lb)	7MH7724-1BR	
8 500 g (18.7 lb)	7MH7724-1BS	
10 000 g (22 lb)	7MH7724-1BT	
12 000 g (26.5 lb)	7MH7724-1BU	
15 000 g (33.1 lb)	7MH7724-1BV	

SITRANS WW300 and WW310 spare parts and accessories

	Article No.	
Start, Stop, Hand/Off/Auto, speed pot local operator station	7MH7723-1JA	
E-stop push button, enclosed style	3SB3801-0DF3	
500 PPR optical encoder	6FX20012PA50	
1 000 PPR optical encoder	6FX20012PB00	
2 500 PPR optical encoder	6FX20012PC50	
Optical encoder connector	6FX20030SU12	
Speed encoder plug-in with cable	7MH7723-1KM	
Belt tracking switch	3SE5112-0CR01	
Belt tracking switch, ATEX II 2D/Class I, Div. 1, Groups C and D, Class II, Div. 1, Groups F and G	7MH7723-1RA	
Pull cord switch	3SE7120-2DD01	
Pull cord switch cable	3SE7910-3AA	
Pull cord switch cable clamp	3SE7941-1AC	
Termination box 1, 2, 4 load cell and speed sensor, mild steel	7MH7723-1ND	
Termination box 1, 2, 4 load cell and speed sensor, stainless steel	7MH7723-1NE	
Bearing, flange, NTN, UCF2, 1 ... 15/16 inch, 4-bolt	A5E01213250	
Bearing, flange, NTN, UCF2, 2 ... 15/16 inch, 4-bolt	A5E03856041	
Bearing, PB, UCP, 1 ... 7/16 inch	A5E01213243	
Bearing, PB, UCP, 2 ... 7/16 inch	PBD:24191273	

Solid Flowmeters



6/2	Introduction
6/5	LVDT flowmeters
6/5	SITRANS WF100
6/10	SITRANS WF200 series
6/16	SITRANS WF300 series
6/27	Sensing heads
6/27	SITRANS WFS300 series sensing heads
6/34	Sensing plates
6/34	SITRANS flowmeter sensing plates
6/35	Solids flowmeters accessories

Solid Flowmeters

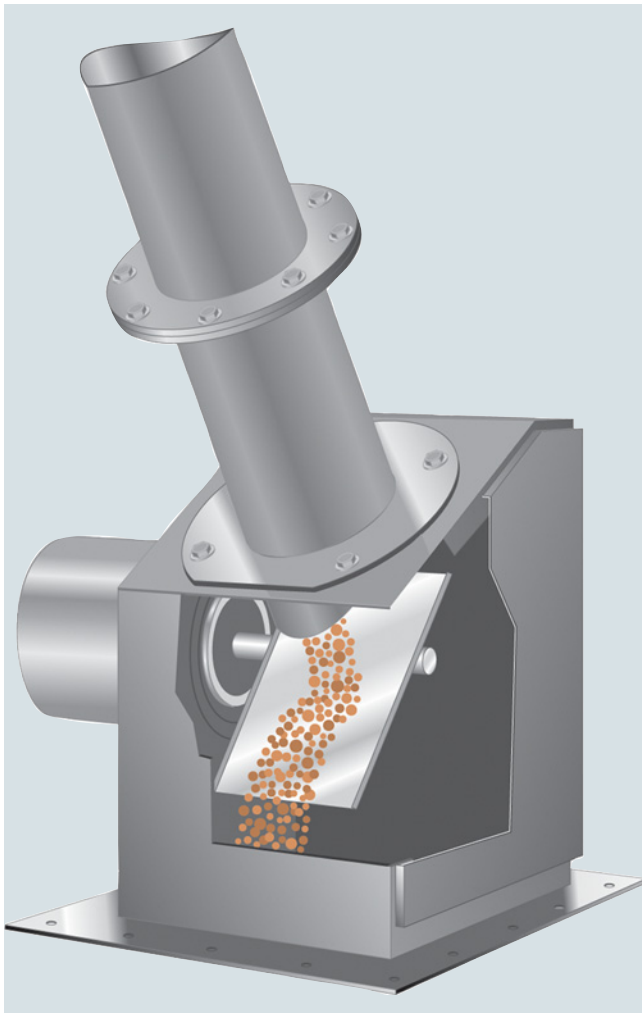
Introduction

Overview

SITRANS WF solids flowmeters monitor the rate of bulk material flow in a process. They continuously measure the impact force of the material under gravity feed conditions, and convert this signal into a flow rate used to control the rate into a process or blending operation. Solids flowmeters can function in stand-alone measuring operations, or they can interface to a facility's process control system using industry standard protocols.

Applications

SITRANS WF flowmeters measure any dry material from powders to granulates. Material densities range from puffed wheat to iron ore, while fluidity covers the spectrum from fluidized powder, such as fly-ash, to sluggish flowing material such as lathe turnings. Typical materials monitored include cement, gravel, coke, coal, minerals, wood chips, cereals, seeds, grains, soybean and rice hulls, unshelled peanuts, starch, sugar, potato flakes, grain tailings and screenings, and plastic pellets.



Solids flowmeter with sensing plate detail

Mode of operation

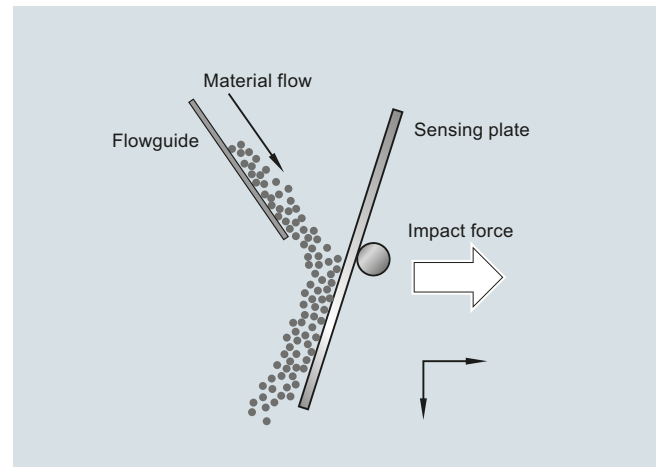
Flowmeters are installed in a gravity fed process. Entering the flowmeter through the flowguide, the material flow produces a mechanical deflection as it strikes the flowmeter's sensing plate. The SITRANS WF flowmeter converts the deflection into an electrical signal that feeds into an accompanying integrator, which instantaneously provides the flow rate and totalizes the weight.

SITRANS WF flowmeters measure only the horizontal force component of material flow striking the sensing plate. The horizontal force is dependent on particle mass and velocity, angle of particle impact against the plate, and the energy absorbing characteristics of the particle. The flowmeters respond to the mass or weight of the material striking the plate.

Because SITRANS WF flowmeter measures only the horizontal force, they are unaffected by vertical force changes caused by material buildup on the non-impact area of the sensing plate. Consequently, there is no zero drift, which in turn eliminates the need for frequent recalibration.

Siemens SITRANS WF product portfolio includes two basic types of impact flowmeters: the linear variable differential transformer (LVDT), and the strain gauge load cell. Each uses a different sensor to convert the horizontal force on the sensing plate to flow rate.

The totally enclosed design of SITRANS WF heavy-duty solids flowmeters eliminates product waste or contamination, and reduces plant maintenance. The dust-tight design creates a healthier work environment, especially when monitoring hazardous substances.



Mode of operation

Technical specifications

Solids flowmeter selection guide

Criteria	SITRANS WF100	SITRANS WF200	SITRANS WF250	SITRANS WF330	SITRANS WF340	SITRANS WF350
Typical industries	Food, grain, milling, animal feed, plastics, glass	Aggregates, grain, cement	Cement, mineral processing	Food, grain, milling, animal feed, chemicals, plastics, glass, cement, mineral processing	Food, grain, milling, animal feed, chemicals, plastics, glass, cement, mineral processing	Cement, mineral processing, mining
Typical applications	Monitoring of food ingredients, pet food blending, plastic pellet production, silica sand in glass making	Grinding mill rejects in cement, load-out of grains and seeds	Cement in aerated gravity conveyor	Fly-ash, lime dosing, cement flow and control in mining, flour stream monitoring	Fly-ash load-out, lime dosing, gypsum flow	Powders and granulates conveyed by aerated gravity conveyors, fly-ash load-out, precipitator dust
Typical capacity	1 ... 200 t/h (4 ... 220 STPH)	200 ... 900 t/h (220 ... 990 STPH)	200 ... 900 t/h (220 ... 990 STPH)	Sensing element dependent, see 'Sensing element' chart, page 6/4.	Sensing element dependent, see 'Sensing element' chart, page 6/4.	Sensing element dependent, see 'Sensing element' chart, page 6/4.
Volumetric capacity	90 m ³ /h (3 178 ft ³ /h)	500 m ³ /h (17 657 ft ³ /h)	600 m ³ /h (21 189 ft ³ /h)	40 t/h: 90 m ³ /h (3 178 ft ³ /h) 300 t/h: 290 m ³ /h (10 241 ft ³ /h)	40 t/h: 96 m ³ /h (3 390 ft ³ /h) 300 t/h: 230 m ³ /h (8 122 ft ³ /h)	40 t/h: 178 m ³ /h (6 286 ft ³ /h) 300 t/h: 545 m ³ /h (19 246 ft ³ /h)
Maximum particle size	13 mm (0.5 inch)	25 mm (1 inch)	25 mm (1 inch)	Sensing element dependent, see 'Sensing element' chart, page 6/4.	Sensing element dependent, see 'Sensing element' chart, page 6/4.	Sensing element dependent, see 'Sensing element' chart, page 6/4.
Ambient temperature	-20 ... +65 °C (-4 ... +150 °F)	-40 ... +65 °C (-40 ... +150 °F)	-40 ... +65 °C (-40 ... +150 °F)	-40 ... +60 °C (-40 ... +140 °F)	-40 ... +60 °C (-40 ... +140 °F)	-40 ... +60 °C (-40 ... +140 °F)
Maximum process temperature	65 °C (150 °F)	100 °C (212 °F)	100 °C (212 °F)	232 °C (450 °F)	232 °C (450 °F)	232 °C (450 °F)
Inlet sizes	100 ... 250 mm (4 ... 10 inch) in universal ANSI/DIN flanges	305 x 533 mm (12 x 21 inch) 305 x 635 mm (12 x 26 inch)	406 x 635 mm (16 x 25 inch) 508 x 940 mm (20 x 37 inch)	Sensing element dependent, see 'Sensing element' chart, page 6/4.	Sensing element dependent, see 'Sensing element' chart, page 6/4.	Sensing element dependent, see 'Sensing element' chart, page 6/4.
Accuracy¹⁾	± 1 % (33 ... 100 % of rate)	± 1 % (33 ... 100 % of rate)	± 1 % (33 ... 100 % of rate)	± 1 % (33 ... 100 % of rate)	± 1 % (33 ... 100 % of rate)	± 1 % (33 ... 100 % of rate)
Repeatability	± 0.2 %	± 0.2 %	± 0.2 %	± 0.2 %	± 0.2 %	± 0.2 %
Options	304 or 316 stainless steel, bead blast finish (1 ... 6 µin, 4 ... 240 µin) construction (meets FDA and USDA requirements for food processing)	304 or 316 stainless steel, bead blast finish (1 ... 6 µin, 4 ... 240 µin) construction (meets FDA and USDA requirements for food processing)	304 or 316 stainless steel, bead blast finish (1 ... 6 µin, 4 ... 240 µin) construction (meets FDA and USDA requirements for food processing)	304 or 316 stainless steel, bead blast finish (1 ... 6 µin, 4 ... 240 µin) construction (meets FDA and USDA requirements for food processing) - Food grade epoxy coating on sensing head	304 or 316 stainless steel, bead blast finish (1 ... 6 µin, 4 ... 240 µin) construction (meets FDA and USDA requirements for food processing) - Food grade epoxy coating on sensing head	304 or 316 stainless steel, bead blast finish (1 ... 6 µin, 4 ... 240 µin) construction (meets FDA and USDA requirements for food processing) - Food grade epoxy coating on sensing head
Sensing element	One triple beam parallelogram style, stainless steel, strain gauge load cell	Two triple beam parallelogram style, stainless steel, strain gauge load cells	Two triple beam parallelogram style, stainless steel, strain gauge load cells	Deflection measurement using LVDT (linear variable differential transformer)	Deflection measurement using LVDT (linear variable differential transformer)	Deflection measurement using LVDT (linear variable differential transformer)
Sensing plate	304 stainless steel - Option: 316 stainless steel	304 stainless steel - Option: 316 stainless steel	304 stainless steel - Option: 316 stainless steel	304 stainless steel - Option: 316 stainless steel	304 stainless steel - Option: 316 stainless steel	304 stainless steel - Option: 316 stainless steel
Liners	- PTFE - Polyurethane	- Polyurethane - Alumina ceramic	- Polyurethane - Alumina ceramic	- Plasma A/R - PTFE - Polyurethane - Alumina ceramic	- Plasma A/R - PTFE - Polyurethane - Alumina ceramic	- Plasma A/R - PTFE - Polyurethane - Alumina ceramic
Approvals	CE, RCM, CSA, FM, ATEX, IEC Ex, EAC	CE, RCM, CSA, FM, ATEX, IEC Ex, EAC	CE, RCM, CSA, FM, ATEX, IEC Ex, EAC	CE, RCM, EAC	CE, RCM, EAC	CE, RCM, EAC

¹⁾ Accuracy subject to: on factory approved installations the flowmeter system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for at least ten minutes running time.

Solid Flowmeters

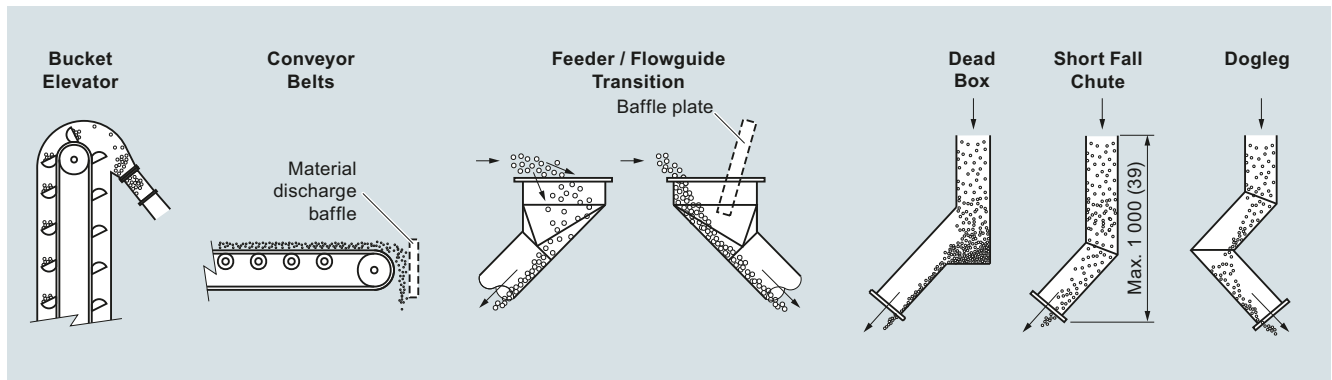
Introduction

Sensing element

	SITRANS WF330	SITRANS WF340	SITRANS WF350
Capacity range			
- SITRANS WFS300	0.2 ... 40 t/h (0.2 ... 44 STPH)	0.2 ... 40 t/h (0.2 ... 44 STPH)	0.2 ... 40 t/h (0.2 ... 44 STPH)
- SITRANS WFS320	20 ... 300 t/h (22 ... 330 STPH)	20 ... 300 t/h (22 ... 330 STPH)	20 ... 300 t/h (22 ... 330 STPH)
Particle size (max.)			
- SITRANS WFS300	12 mm (0.5 inch)	12 mm (0.5 inch)	3 mm (0.13 inch)
- SITRANS WFS320	25 mm (1 inch)	25 mm (1 inch)	3 mm (0.13 inch)
Inlet sizes			
- SITRANS WFS300	50 ... 250 mm (2 ... 10 inch) (ASME or DIN flanges)	• 76 x 152 mm (3 x 6 inch) • 102 x 254 mm (4 x 10 inch) • 127 x 305 mm (5 x 12 inch)	• 203 x 203 mm (8 x 8 inch) • 203 x 305 mm (8 x 12 inch)
- SITRANS WFS320	150 ... 400 mm (6 ... 16 inch) (ASME or DIN flanges)	• 127 x 406 mm (5 x 16 inch) • 152 x 508 mm (6 x 20 inch)	• 305 x 254 mm (12 x 10 inch) • 305 x 356 mm (12 x 14 inch) • 305 x 508 mm (12 x 20 inch)

Common flowmeter infeed types

A solids flowmeter's performance will be as repeatable and consistent as the flow of material it is measuring. The following arrangements are typical of pre-feed chute configurations used to ensure consistent flow patterns. Arrangements will vary depending on the upstream equipment or chute work. Applications should be reviewed by a Siemens solids flowmeter specialist to achieve best results. During initial setup, use pre-weighing or post-weighing of material samples to calibrate the flowmeter and verify accuracy using the material sample weights.



Solids flowmeters, dimensions in mm (inch)

Overview

SITRANS WF100 flowmeter is a low to medium capacity flowmeter for various product sizes, densities, and fluidities in restricted spaces.

Benefits

- Flowrates from 3 to 200 t/h (4 to 220 STPH)
- Continuous monitoring of the material flow without interrupting the process
- Dust-tight construction: suitable for use in hazardous areas and in washdown applications that require frequent cleaning
- Minimal maintenance or recalibration after the initial installation and material tests

Application

WF100 is unaffected by corrosive, abrasive, or hot materials. Handling various product sizes, densities, and fluidities including fine powders such as sugar, the WF100 helps to improve final product, increase operating efficiency, and realize significant cost savings.

Dry bulk solids enter the flow guide producing a mechanical deflection as they strike the flowmeter sensing plate before continuing through the process un-hindered. The WF100 converts the deflection into an electrical signal that feeds into an accompanying integrator, which instantaneously displays the flow rate and totalizes the weight.

- Key applications: cement, wood chips, cereals, seeds, grains, soybean and rice hulls, unshelled peanuts, starch, sugar, potato flakes, grain tailings and screenings, and plastic pellets

Solid Flowmeters

LVDT flowmeters

SITRANS WF100

Selection and ordering data

SITRANS WF100

Impact solids flowmeter for low to medium capacity applications. Low cost compact unit improves processing, increases efficiency and provides significant cost savings.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Flowguide size (Universal flat-faced flange fits ASME/DIN flanges)

4 inch (100 mm)
Available with fabrication options A ... E and sensing plate options 10 ... 15 only

6 inch (150 mm)
Available with fabrication options F ... K and sensing plate options 20 ... 25 only

8 inch (200 mm)
Available with fabrication options L ... Q and sensing plate options 30 ... 35 only

10 inch (250 mm)
Available with fabrication options R ... V and sensing plate options 40 ... 45 only

Fabrication

Mild steel, painted 4 inch (100 mm) flowguide

AISI 304 stainless steel 4 inch (100 mm) flowguide

AISI 304 stainless steel with PTFE coated infeed
4 inch (100 mm) flowguide

AISI 316 stainless steel 4 inch (100 mm) flowguide

AISI 316 stainless steel with PTFE coated infeed
4 inch (100 mm) flowguide

Mild steel, painted 6 inch (150 mm) flowguide

AISI 304 stainless steel 6 inch (150 mm) flowguide

AISI 304 stainless steel with PTFE coated infeed
6 inch (150 mm) flowguide

AISI 316 stainless steel 6 inch (150 mm) flowguide

AISI 316 stainless steel with PTFE coated infeed
6 inch (150 mm) flowguide

Mild steel, painted 8 inch (200 mm) flowguide

AISI 304 stainless steel 8 inch (200 mm) flowguide

AISI 304 stainless steel with PTFE coated infeed
8 inch (200 mm) flowguide

AISI 316 stainless steel 8 inch (200 mm) flowguide

AISI 316 stainless steel with PTFE coated infeed
8 inch (200 mm) flowguide

Mild steel, painted 10 inch (250 mm) flowguide

AISI 304 stainless steel 10 inch (250 mm) flowguide

AISI 304 stainless steel with PTFE coated infeed
10 inch (250 mm) flowguide

AISI 316 stainless steel 10 inch (250 mm) flowguide

AISI 316 stainless steel with PTFE coated infeed
10 inch (250 mm) flowguide

Load cell, stainless steel [17-4 PH (1.4568) construction with 304 (1.4301) stainless steel cover]

2 lb (0.9 kg)

5 lb (2.3 kg)

10 lb (4.5 kg)

20 lb (9.1 kg)

Not specified (Only for quotation purposes, not a valid ordering option)

Article No.

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SITRANS WF100

Impact solids flowmeter for low to medium capacity applications. Low cost compact unit improves processing, increases efficiency and provides significant cost savings.

Sensing plate fabrication

4 inch (100 mm) AISI 304 stainless steel

4 inch (100 mm) AISI 304 stainless steel with PTFE coating

4 inch (100 mm) AISI 304 stainless steel with polyurethane coating

4 inch (100 mm) AISI 316 stainless steel

4 inch (100 mm) AISI 316 stainless steel with PTFE coating

4 inch (100 mm) AISI 316 stainless steel with polyurethane coating

6 inch (150 mm) AISI 304 stainless steel

6 inch (150 mm) AISI 304 stainless steel with PTFE coating

6 inch (150 mm) AISI 304 stainless steel with polyurethane coating

6 inch (150 mm) AISI 316 stainless steel

6 inch (150 mm) AISI 316 stainless steel with PTFE coating

6 inch (150 mm) AISI 316 stainless steel with polyurethane coating

8 inch (200 mm) AISI 304 stainless steel

8 inch (200 mm) AISI 304 stainless steel with PTFE coating

8 inch (200 mm) AISI 304 stainless steel with polyurethane coating

8 inch (200 mm) AISI 316 stainless steel

8 inch (200 mm) AISI 316 stainless steel with PTFE coating

8 inch (200 mm) AISI 316 stainless steel with polyurethane coating

10 inch (250 mm) AISI 304 stainless steel

10 inch (250 mm) AISI 304 stainless steel with PTFE coating

10 inch (250 mm) AISI 304 stainless steel with polyurethane coating

10 inch (250 mm) AISI 316 stainless steel

10 inch (250 mm) AISI 316 stainless steel with PTFE coating

10 inch (250 mm) AISI 316 stainless steel with polyurethane coating

Approvals

Standard: CE, RCM, EAC, KCC

CSA/FM Class II, Div. 1, Groups E, F, G and Class III, ATEX II 2D, Ex tD A21 IP65 T70 °C, CE, RCM, IECEx, Ex tD A21 IP65 T70 °C, EAC Ex

Article No.

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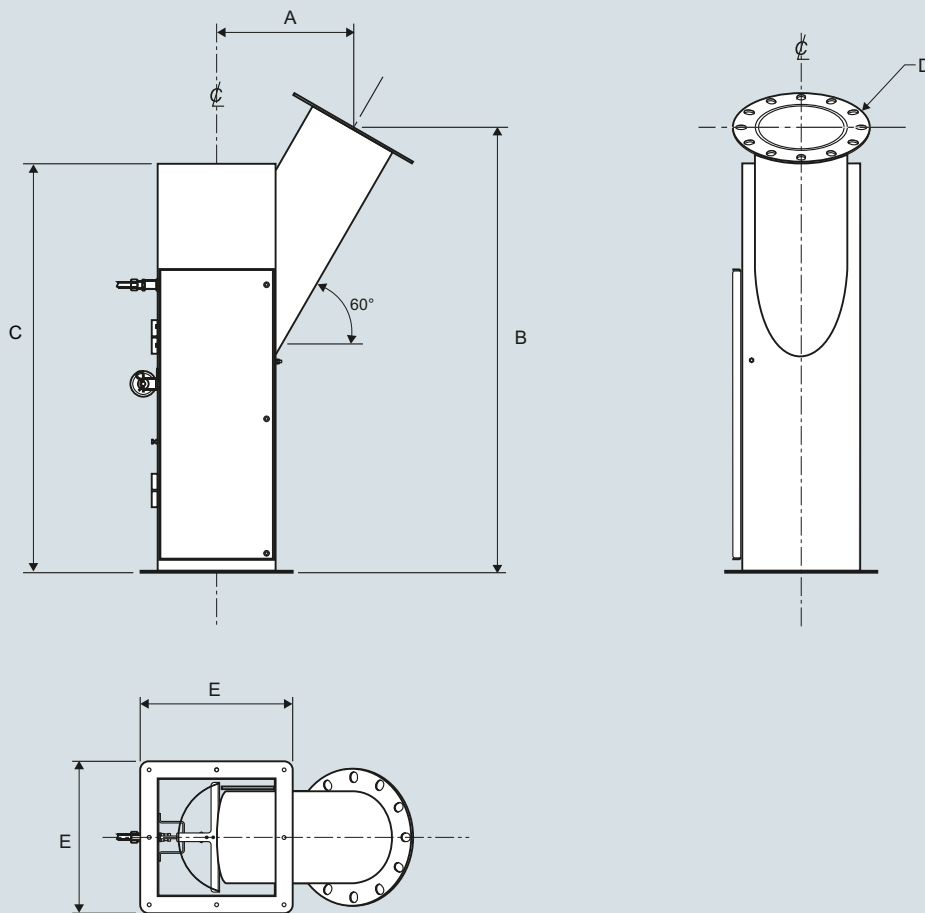
Selection and ordering data		Order Code	Article No.
Further designs			
Please add "-Z" to article no. and specify order code(s).			
Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)], Measuring-point number/identification (max 27 characters), specify in plain text.		Y15	WF100 10 inch (250 mm) sensing plate 304 PTFE lined 7MH7723-1LA
Application Eng. reference number (max.15 characters), specify in plain text.		Y31	WF100 4 inch (100 mm) sensing plate 316 PTFE lined 7MH7723-1LB
Manufacturer's test certificate: According to EN 10204-2.2		C11	WF100 6 inch (150 mm) sensing plate 316 PTFE lined 7MH7723-1LC
Inspection certificate type 3.1 per EN 10204 Not available with fabrication options A, F, L, R		C12	WF100 8 inch (200 mm) sensing plate 316 PTFE lined 7MH7723-1LD
			WF100 10 inch (250 mm) sensing plate 316 PTFE lined 7MH7723-1LE
			WF100 4 inch (100 mm) sensing plate 304 polyurethane lined 7MH7723-1LF
			WF100 6 inch (150 mm) sensing plate 304 polyurethane lined 7MH7723-1LG
			WF100 8 inch (200 mm) sensing plate 304 polyurethane lined 7MH7723-1LH
			WF100 10 inch (250 mm) sensing plate 304 polyurethane lined 7MH7723-1LJ
			WF100 4 inch (100 mm) sensing plate 316 polyurethane lined 7MH7723-1LK
			WF100 6 inch (150 mm) sensing plate 316 polyurethane lined 7MH7723-1LL
			WF100 8 inch (200 mm) sensing plate 316 polyurethane lined 7MH7723-1LM
			WF100 10 inch (250 mm) sensing plate 316 polyurethane lined 7MH7723-1LN
			WF100 load cell spare 2 lb PBD-23900176
			WF100 load cell spare 5 lb PBD-23900177
			WF100 load cell spare 10 lb PBD-23900244
			WF100 load cell spare 20 lb PBD-23900245
			WF calibration pulley with hardware and cable spare 7MH7723-1LT
Instruction manuals			
All literature is available to download for free, in a range of languages, at http://www.siemens.com/weighing/documentation			
Calibration hanger weights		Article No.	
20 g (0.04 lb)		7MH7724-1AC	
50 g (0.1 lb)		7MH7724-1AD	
100 g (0.2 lb)		7MH7724-1AE	
200 g (0.4 lb)		7MH7724-1AF	
500 g (1.1 lb)		7MH7724-1AG	
1 000 g (2.2 lb)		7MH7724-1AH	
2 000 g (4.4 lb)		7MH7724-1AJ	
5 000 g (11 lb)		7MH7724-1AK	
Note: calibration accessories should be ordered as a separate item on the order.			
Spare parts			
WF100 4 inch (100 mm) sensing plate 304 standard		7MH7723-1KN	
WF100 6 inch (150 mm) sensing plate 304 standard		7MH7723-1KP	
WF100 8 inch (200 mm) sensing plate 304 standard		7MH7723-1KQ	
WF100 10 inch (250 mm) sensing plate 304 standard		7MH7723-1KR	
WF100 4 inch (100 mm) sensing plate 316 standard		7MH7723-1KS	
WF100 6 inch (150 mm) sensing plate 316 standard		7MH7723-1KT	
WF100 8 inch (200 mm) sensing plate 316 standard		7MH7723-1KU	
WF100 10 inch (250 mm) sensing plate 316 standard		7MH7723-1KV	
WF100 4 inch (100 mm) sensing plate 304 PTFE lined		7MH7723-1KW	
WF100 6 inch (150 mm) sensing plate 304 PTFE lined		7MH7723-1KX	
WF100 8 inch (200 mm) sensing plate 304 PTFE lined		7MH7723-1KY	

Solid Flowmeters

LVDT flowmeters

SITRANS WF100

Dimensional drawings

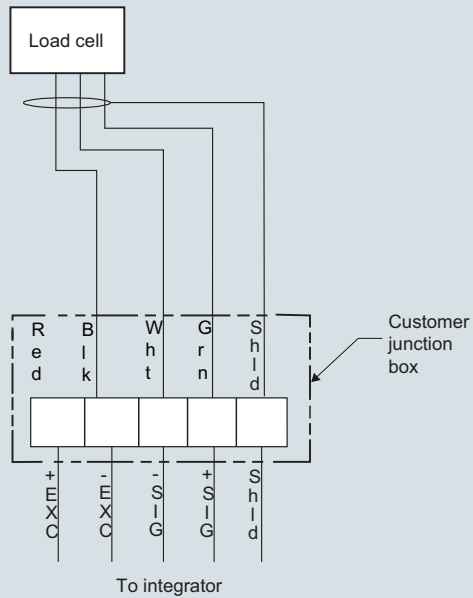
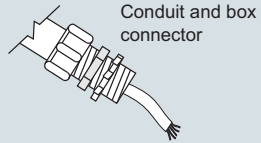


	A	B	C	D (flange)	E	F (x 8)
4 inch (100 mm)	8 inch (203.2 mm)	23.5 inch (596.9 mm)	21.87 inch (555.5 mm)	Ø ASME 4 inch DIN 100 mm	11.25 inch (285.8 mm)	Ø 0.43 inch (11 mm)
6 inch (150 mm)	10 inch (254 mm)	33 inch (838.2 mm)	31.12 inch (790.4 mm)	Ø ASME 6 inch DIN 150 mm	13.35 inch (339.1 mm)	Ø 0.43 inch (11 mm)
8 inch (200 mm)	14 inch (355.6 mm)	46 inch (1 168.4 mm)	42.62 inch (1 082.5 mm)	Ø ASME 8 inch DIN 200 mm	16.5 inch (419.1 mm)	Ø 0.43 inch (11 mm)
10 inch (250 mm)	16 inch (406.4 mm)	52 inch (1 320.8 mm)	48.74 inch (1 238.1 mm)	Ø ASME 10 inch DIN 250 mm	19 inch (482.6 mm)	Ø 0.43 inch (11 mm)

SITRANS WF100, dimensions

Circuit diagrams

Note: Conduit and cable arrangement may differ from example shown. Conduit and connector not provided on hazardous option



SITRANS WF100 connections

Solid Flowmeters

LVDT flowmeters

SITRANS WF200 series

Overview



SITRANS WF200 and WF250 flowmeters are medium to high capacity flowmeters for various product sizes, densities, and fluidities.

Application

Operating with a microprocessor based integrator package, the WF200 series flowmeters display flow rate, totalized flow, and rate alarms. Outputs are 0/4 to 20 mA proportional to rate and contact closure for remote totalization. Dry bulk solids enter the flowmeter before continuing through the process unhindered. The load cells convert the horizontal force of the deflection into an electrical signal. The integrator processes this into flowrate and integrated total weight. The sensing process is immune to the effect of product build-up as only the horizontal force is measured.

With load cells located externally to the process, the WF200 series flowmeters measure high capacities with a maximum rate of 900 t/h (990 STPH). For high capacity aerated gravity conveyor pre-feed, the WF250 has a maximum rate of 900 t/h (990 STPH).

- Key applications: aggregates, grain, cement, mineral processing

Benefits

- For specialized pre-feed applications
- Sensing element mounted outside process
- Flowrates from 200 to 900 t/h (220 to 990 STPH)
- Continuously monitoring of the material flow without interrupting the process
- Dust-tight construction: suitable for use in hazardous areas and in washdown applications that require frequent cleaning
- Minimal maintenance or recalibration after the initial installation and material tests

Selection and ordering data		Article No.	Order Code
SITRANS WF200 series flowmeters SITRANS WF200 and WF250 flowmeters are medium to high capacity flowmeters for various product sizes, densities, and fluidities. WF250 features aerated style designed for air slide gravity conveyors. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		7MH7115- 	Further designs Please add "-Z" to article no. and specify order code(s). Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)], Measuring-point number/identification (max 27 characters), specify in plain text. Application Eng. reference number (max. 15 characters), specify in plain text. Manufacturer's test certificate: According to EN 10204-2.2 Inspection certificate type 3.1 per EN 10204 ¹⁾
Model <u>SITRANS WF200</u> 500 t/h maximum design capacity 900 t/h maximum design capacity <u>SITRANS WF250, aerated style</u> 500 t/h maximum design capacity 900 t/h maximum design capacity		1 2 3 4	Y15 Y31 C11 C12
Construction <u>Painted mild steel</u> 304 stainless steel for model option 1 304 stainless steel for model option 2 304 stainless steel for model option 3 304 stainless steel for model option 4 316 stainless steel for model option 1 316 stainless steel for model option 2 316 stainless steel for model option 3 316 stainless steel for model option 4		A B C D E F G H J	Instruction manuals All literature is available to download for free, in a range of languages, at http://www.siemens.com/weighing/documentation Calibration hanger weights 20 g (0.04 lb) 50 g (0.1 lb) 100 g (0.2 lb) 200 g (0.4 lb) 500 g (1.1 lb) 1 000 g (2.2 lb) 2 000 g (4.4 lb) 5 000 g (11 lb) Note: calibration accessories should be ordered as a separate item on the order.
Sensing plate liner None (standard 304 stainless steel, 316 for construction options F ... J) <u>Polyurethane</u> For model options 1 and 3 For model options 2 and 4 <u>Alumina ceramic tiles</u> For model options 1 and 3 For model options 2 and 4		A B C D E	
Load cell 50 lb 100 lb Not specified (for quotation purposes only, not a valid ordering option)		1 2 0	Article No. 7MH7724-1AC 7MH7724-1AD 7MH7724-1AE 7MH7724-1AF 7MH7724-1AG 7MH7724-1AH 7MH7724-1AJ 7MH7724-1AK
Approvals CE, RCM, EAC, KCC CE, RCM, CSA/FM Class II, Div. 1, Groups E, F, G and Class III ATEX II 2D, Ex tD A21 IP65 T70 °C, CE, RCM, IECEx, Ex tD A21 IP65 T70 °C, EAC Ex		1 2	

¹⁾ Not available with construction option A.

Solid Flowmeters

LVDT flowmeters

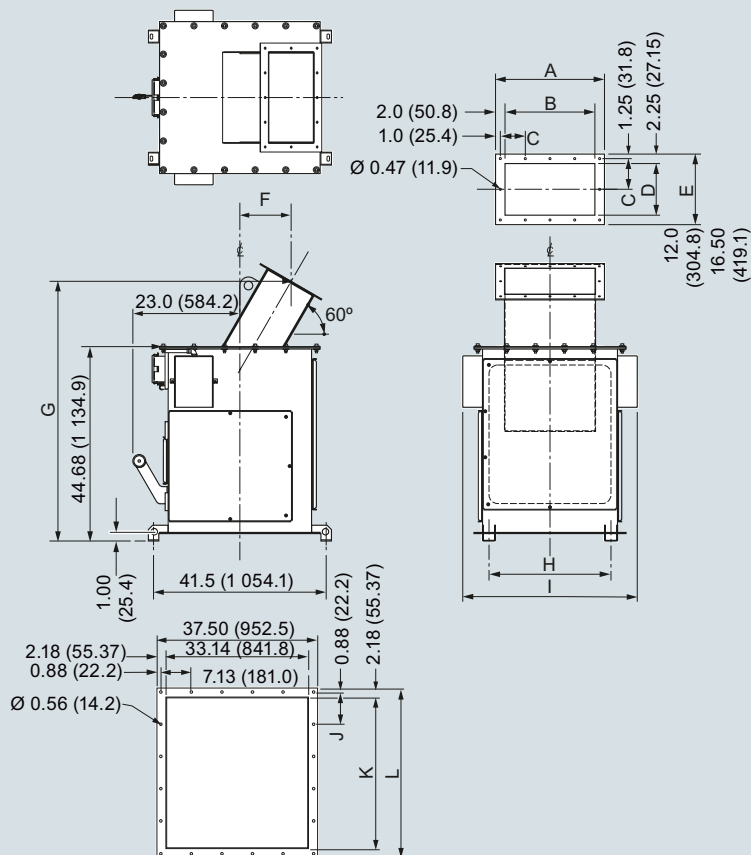
SITRANS WF200 series

Selection and ordering data

Article No.

Spare parts

Load cell, 50 lb, stainless steel	PBD-23900246
Load cell, 100 lb, stainless steel	PBD-23900247
WF calibration pulley with hardware and cable spare	7MH7723-1LT
WF200 series bearing with plate mount shaft, standard, spare	7MH7723-1LU
WF200 series bearing with plate mount shaft, stainless steel, spare	7MH7723-1LV
WF200 series sensing plate support cables, spare	7MH7723-1LW
WF250 series sensing plate support cables, spare	7MH7723-1LX
WF200 sensing plate 500 TPH 304, standard	7MH7723-1LY
WF200 sensing plate 900 TPH 304, standard	7MH7723-1MA
WF250 sensing plate 500 TPH 304, standard	7MH7723-1MB
WF250 sensing plate 900 TPH 304, standard	7MH7723-1MC
WF200 sensing plate 500 TPH 304, polyurethane lined	7MH7723-1MD
WF200 sensing plate 900 TPH 304, polyurethane lined	7MH7723-1ME
WF250 sensing plate 500 TPH 304, polyurethane lined	7MH7723-1MF
WF250 sensing plate 900 TPH 304, polyurethane lined	7MH7723-1MG
WF200 sensing plate 500 TPH 304, ceramic lined	7MH7723-1MH
WF200 sensing plate 900 TPH 304, ceramic lined	7MH7723-1MJ
WF250 sensing plate 500 TPH 304, ceramic lined	7MH7723-1MK
WF250 sensing plate 900 TPH 304, ceramic lined	7MH7723-1ML
WF200 sensing plate 500 TPH 316, standard	7MH7723-1MM
WF200 sensing plate 900 TPH 316, standard	7MH7723-1MN
WF250 sensing plate 500 TPH 316, standard	7MH7723-1MP
WF250 sensing plate 900 TPH 316, standard	7MH7723-1MQ
WF200 sensing plate 500 TPH 316, polyurethane lined	7MH7723-1MR
WF200 sensing plate 900 TPH 316, polyurethane lined	7MH7723-1MS
WF250 sensing plate 500 TPH 316, polyurethane lined	7MH7723-1MT
WF250 sensing plate 900 TPH 316, polyurethane lined	7MH7723-1MU
WF200 sensing plate 500 TPH 316, ceramic lined	7MH7723-1MV
WF200 sensing plate 900 TPH 316, ceramic lined	7MH7723-1MW
WF250 sensing plate 500 TPH 316, ceramic lined	7MH7723-1MX
WF250 sensing plate 900 TPH 316, ceramic lined	7MH7723-1MY

Dimensional drawings


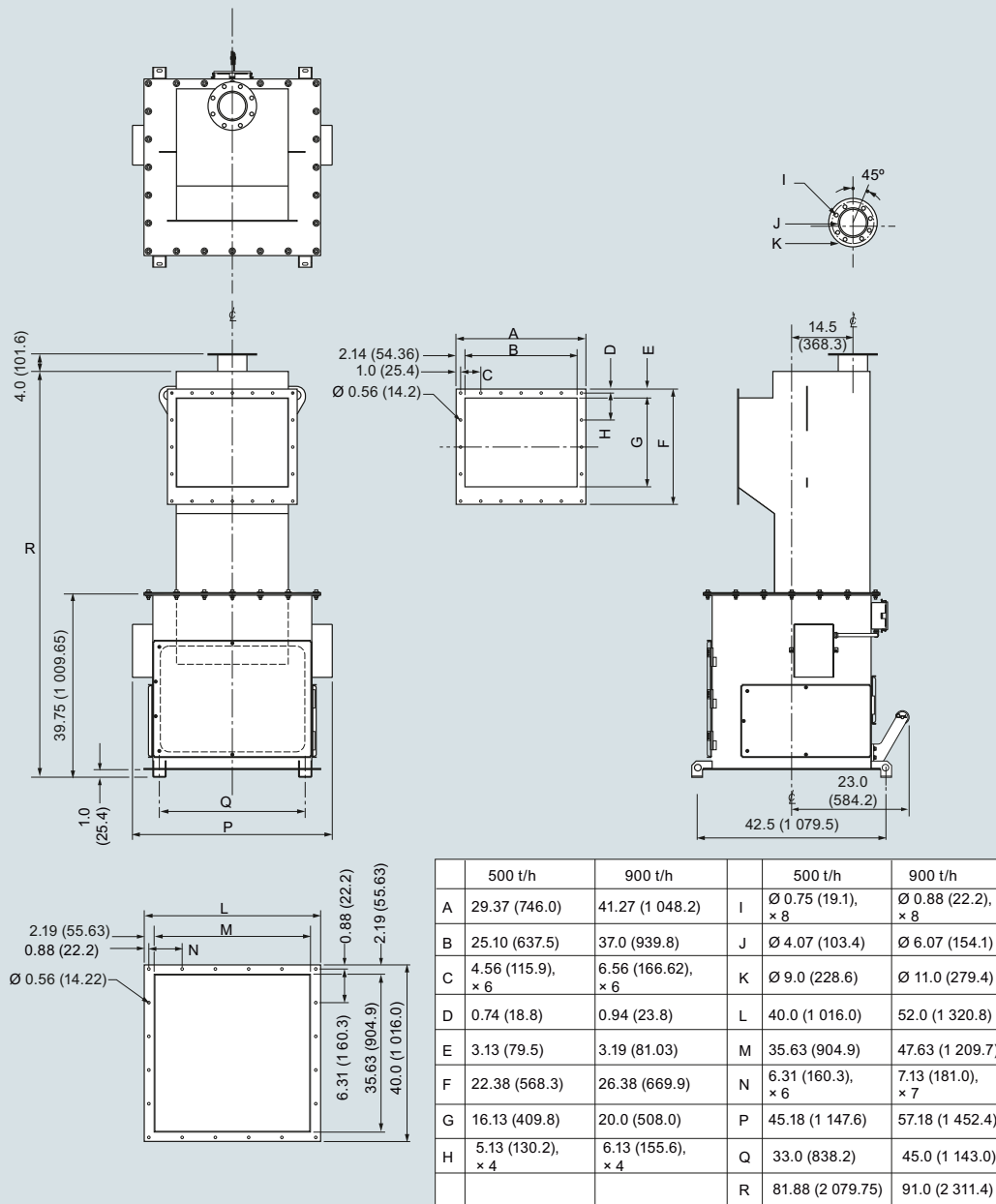
	500 t/h	900 t/h
A	25.0 (635.0)	30.0 (762.0)
B	21.0 (533.4)	26.0 (660.4)
C	5.75 (146.1), x 4	7.0 (177.8), x 4
D	12.0 (304.8)	12.0 (304.8)
E	16.5 (419.1)	16.5 (419.1)
F	11.97 (304.1)	14.86 (377.4)
G	59.0 (1498.6)	64.0 (1 625.6)
H	29.13 (739.8)	35.13 (892.2)
I	40.68 (1 033.3)	46.68 (1 185.7)
J	6.75 (171.5), x 5	6.63 (168.3), x 6
K	31.14 (791.0)	37.14 (943.4)
L	35.5 (901.7)	41.5 (1 054.1)

SITRANS WF200, dimensions in inch (mm)

Solid Flowmeters

LVDT flowmeters

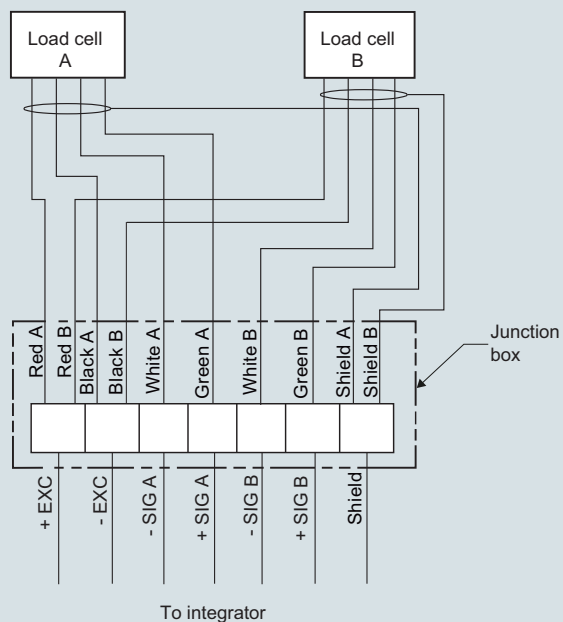
SITRANS WF200 series



SITRANS WF250, dimensions in inch (mm)

Circuit diagrams

Note: conduit and cable arrangement may differ from example shown.
 Conduit and connector not provided on hazardous option



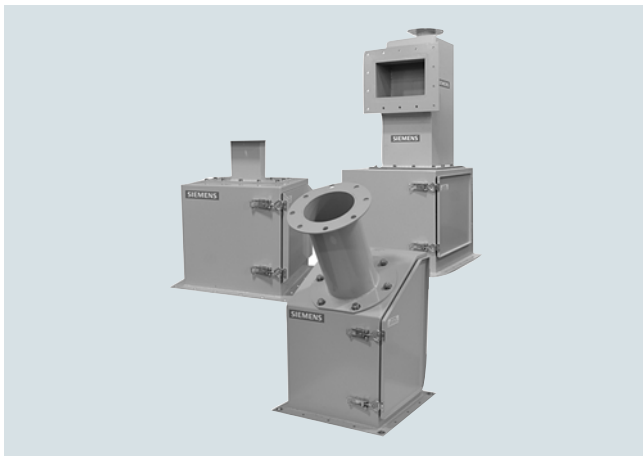
SITRANS WF200 series connections

Solid Flowmeters

LVDT flowmeters

SITRANS WF300 series

Overview



SITRANS WF300 series are low to medium capacity flowmeters for various product sizes, densities, and fluidities.

Benefits

- For specialized pre-feed applications
- Sensing element mounted outside process
- Flowrates from 0.2 to 300 t/h (0.2 to 330 STPH)
- Continuously monitoring of the material flow without interrupting the process
- Dust-tight construction: suitable for use in hazardous areas and in washdown applications that require frequent cleaning
- Minimal maintenance or recalibration after the initial installation and material tests

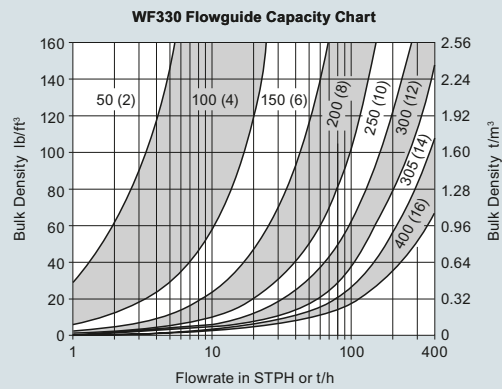
Application

With weighing mechanics located externally, the WF300 series solids flowmeters are unaffected by corrosive, abrasive, or hot materials. Handling a wide range of product sizes, densities, and fluidities including fine powders such as cement, they operate at process temperatures to 230 °C (450 °F). The flowmeters help to improve final product, increase operating efficiency, and realize significant cost savings.

Operating with the appropriate SITRANS WFS sensing head and a micro-processor-based integrator package, the WF300 series flowmeters provide a display of the flow rate, totalized flow, and alarms. Outputs are 0/4 to 20 mA proportional to rate, and open collector output for remote totalization.

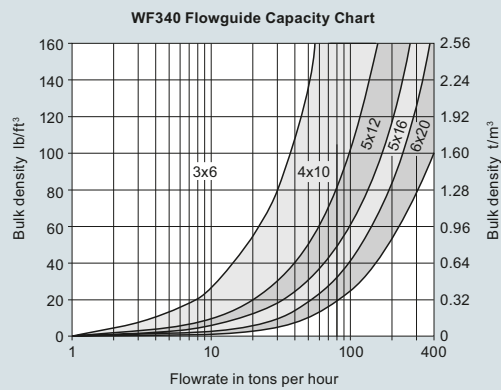
Dry bulk solids enter the flow guide producing a mechanical deflection as they strike the flowmeter sensing plate before continuing through the process unhindered. The LVDT in the sensing head converts the deflection of the horizontal force into an electrical signal. The integrator processes this signal into a display of flowrate and integrated total weight. The weighing process is immune to the effect of product build-up as only the horizontal force is measured.

SITRANS WF330 flowmeters are totally enclosed, with external weighing mechanics, operating with corrosive, abrasive or hot materials. SITRANS WF350 series operates with aerated gravity conveyors, and includes integral vents and baffles for air separation. For applications with little available headroom, the SITRANS WF340 series flowmeters provide the answer.

Characteristic curves


Flowrate in STPH or t/h (use highest applicable flowrate for size selection)
 Example: 25 t/h of material at 1.4 t/m³, the selection is a 150 mm flowguide.
 Dimensions are provided as examples only.

SITRANS WF330 flowguide capacity chart



Should the material bulk density and flowrate be near a flowguide upper limit, choose the next larger flowguide.

SITRANS WF340 flowguide capacity chart

Solid Flowmeters

LVDT flowmeters

SITRANS WF300 series

Selection and ordering data

Article No.

Order Code

SITRANS WF330

 **7MH7102-**

Low to medium capacity solids flowmeters for various product sizes, densities, and fluidities, particularly fine powders. A sensing plate, sensing head and integrator are required to complete the system.

 Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Model

Base mount, 40 t/h (44 STPH) maximum design capacity

1

Side mount, 40 t/h (44 STPH) maximum design capacity

2

Base mount, 300 t/h (330 STPH) maximum design capacity

3

Flowguide size

No flowguide

A

2 inch ASME flange pattern¹⁾

B

4 inch ASME flange pattern¹⁾

C

6 inch ASME flange pattern²⁾

D

8 inch ASME flange pattern²⁾

E

10 inch ASME flange pattern²⁾

F

12 inch ASME flange pattern³⁾

G

14 inch ASME flange pattern³⁾

H

16 inch ASME flange pattern³⁾

J

DN 50 flange pattern¹⁾

K

DN 100 flange pattern¹⁾

L

DN 150 flange pattern²⁾

M

DN 200 flange pattern²⁾

N

DN 250 flange pattern²⁾

P

DN 300 flange pattern³⁾

Q

DN 350 flange pattern³⁾

R

DN 400 flange pattern³⁾

S

Flowguide construction

No flowguide

A

Mild steel, C5-M rated polyester painted

B

Mild steel, epoxy painted with zinc primer¹⁾

C

Mild steel, epoxy painted with zinc primer³⁾

D

304 (1.4301) stainless steel¹⁾

E

304 (1.4301) stainless steel³⁾

F

316 (1.4401) stainless steel¹⁾

G

316 (1.4401) stainless steel³⁾

H

Cabinet construction

Mild steel, C5-M rated polyester painted

1

Mild steel, epoxy painted with zinc primer¹⁾

2

Mild steel, epoxy painted with zinc primer³⁾

3

304 (1.4301) stainless steel¹⁾

4

304 (1.4301) stainless steel³⁾

5

316 (1.4401) stainless steel¹⁾

6

316 (1.4401) stainless steel³⁾

7

Further designs

Please add **"-Z"** to Article No. and specify order code(s).

Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)],
Measuring-point number/identification
(max. 27 characters), specify in plain text.

Y15

Application Eng. reference number
(max. 15 characters), specify in plain text.

Y31

Manufacturer's test certificate:
According to EN 10204-2.2

C11

Inspection certificate type 3.1 per EN 10204⁴⁾

Note: not available with cabinet construction
option 1

C12

Instruction manuals

All literature is available to download for free, in a
range of languages, at
<http://www.siemens.com/weighing/documentation>

¹⁾ For versions 1 and 2 only
²⁾ For versions 1, 2 or 3
³⁾ For version 3 only
⁴⁾ Not available with cabinet construction options 1, 2, 3

Selection and ordering data	Article No.		Article No.
<i>Spare parts</i>		<u>300 TPH, 316 (1.4401) stainless steel flowguide</u>	
<u>40 TPH, mild steel flowguide</u>		6 inch ASME	PBD:20388-115
2 inch ASME	PBD:20377-111	8 inch ASME	PBD:20388-215
4 inch ASME	PBD:20377-211	10 inch ASME	PBD:20388-315
6 inch ASME	PBD:20377-311	12 inch ASME	PBD:20388-415
8 inch ASME	PBD:20377-411	14 inch ASME	PBD:20388-515
10 inch ASME	PBD:20377-511	16 inch ASME	PBD:20388-615
<u>40 TPH, mild steel-epoxy flowguide</u>		<u>40 TPH, mild steel flowguide</u>	
2 inch ASME	PBD:20377-112	2 inch DIN	PBD:20377-121
4 inch ASME	PBD:20377-212	4 inch DIN	PBD:20377-221
6 inch ASME	PBD:20377-312	6 inch DIN	PBD:20377-321
8 inch ASME	PBD:20377-412	8 inch DIN	PBD:20377-421
10 inch ASME	PBD:20377-512	10 inch DIN	PBD:20377-521
<u>40 TPH, 304 (1.4301) stainless steel flowguide</u>		<u>40 TPH, mild steel-epoxy flowguide</u>	
2 inch ASME	PBD:20377-114	2 inch DIN	PBD:20377-122
4 inch ASME	PBD:20377-214	4 inch DIN	PBD:20377-222
6 inch ASME	PBD:20377-314	6 inch DIN	PBD:20377-322
8 inch ASME	PBD:20377-414	8 inch DIN	PBD:20377-422
10 inch ASME	PBD:20377-514	10 inch DIN	PBD:20377-522
<u>40 TPH, 316 (1.4401) stainless steel flowguide</u>		<u>40 TPH, 304 (1.4301) stainless steel flowguide</u>	
2 inch ASME	PBD:20377-115	2 inch DIN	PBD:20377-124
4 inch ASME	PBD:20377-215	4 inch DIN	PBD:20377-224
6 inch ASME	PBD:20377-315	6 inch DIN	PBD:20377-324
8 inch ASME	PBD:20377-415	8 inch DIN	PBD:20377-424
10 inch ASME	PBD:20377-515	10 inch DIN	PBD:20377-524
<u>300 TPH, mild steel flowguide</u>		<u>40 TPH, 316 (1.4401) stainless steel flowguide</u>	
6 inch ASME	PBD:20388-111	2 inch DIN	PBD:20377-125
8 inch ASME	PBD:20388-211	4 inch DIN	PBD:20377-225
10 inch ASME	PBD:20388-311	6 inch DIN	PBD:20377-325
12 inch ASME	PBD:20388-411	8 inch DIN	PBD:20377-425
14 inch ASME	PBD:20388-511	10 inch DIN	PBD:20377-525
16 inch ASME	PBD:20388-611	<u>300 TPH, mild steel flowguide</u>	
<u>300 TPH, mild steel-epoxy flowguide</u>		6 inch DIN	PBD:20388-121
6 inch ASME	PBD:20388-112	8 inch DIN	PBD:20388-221
8 inch ASME	PBD:20388-212	10 inch DIN	PBD:20388-321
10 inch ASME	PBD:20388-312	12 inch DIN	PBD:20388-421
12 inch ASME	PBD:20388-412	14 inch DIN	PBD:20388-521
14 inch ASME	PBD:20388-512	16 inch DIN	PBD:20388-621
16 inch ASME	PBD:20388-612	<u>300 TPH, mild steel-epoxy flowguide</u>	
<u>300 TPH, 304 (1.4301) stainless steel flowguide</u>		6 inch DIN	PBD:20388-122
6 inch ASME	PBD:20388-114	8 inch DIN	PBD:20388-222
8 inch ASME	PBD:20388-214	10 inch DIN	PBD:20388-322
10 inch ASME	PBD:20388-314	12 inch DIN	PBD:20388-422
12 inch ASME	PBD:20388-414	14 inch DIN	PBD:20388-522
14 inch ASME	PBD:20388-514	16 inch DIN	PBD:20388-622
16 inch ASME	PBD:20388-614		

Solid Flowmeters

LVDT flowmeters

SITRANS WF300 series

Selection and ordering data

Article No.

300 TPH, 304 (1.4301) stainless steel flowguide

6 inch DIN	PBD:20388-124
8 inch DIN	PBD:20388-224
10 inch DIN	PBD:20388-324
12 inch DIN	PBD:20388-424
14 inch DIN	PBD:20388-524
16 inch DIN	PBD:20388-624

300 TPH, 316 (1.4401) stainless steel flowguide

6 inch DIN	PBD:20388-125
8 inch DIN	PBD:20388-225
10 inch DIN	PBD:20388-325
12 inch DIN	PBD:20388-425
14 inch DIN	PBD:20388-525
16 inch DIN	PBD:20388-625

Gasketing

40 TPH, gasket	PBD:22600493
300 TPH, gasket	PBD:22600494

Selection and ordering data	Article No.	Order Code
SITRANS WF340 Compact vertical flow, low to medium-capacity solid flowmeters for various product sizes, densities, and fluidities, particularly fine powders. A sensing plate, sensing head and integrator are required to complete the system. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7MH7104- 	Further designs Please add "-Z" to article no. and specify order code(s). Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)], Measuring-point number/identification (max 27 characters), specify in plain text. Application Eng. reference number (max. 15 characters), specify in plain text. Manufacturer's test certificate: According to EN 10204-2.2 Inspection certificate type 3.1 per EN 10204 ³⁾
Version Base mount, 40 t/h (44 STPH) max. design capacity Side mount, 40 t/h (44 STPH) max. design capacity Base mount, 300 t/h (330 STPH) max. design capacity	1 2 3	Y15 Y31 C11 C12
Flowguide size No flowguide (5 x 16 inch model) 3 x 6 inch (76 x 152 mm) ¹⁾ 4 x 10 inch (102 x 254 mm) ¹⁾ 5 x 12 inch (127 x 305 mm) ¹⁾ 5 x 16 inch (127 x 406 mm) ²⁾ 6 x 20 inch (152 x 508 mm) ²⁾ No flowguide (WF340-300 6 x 20 inch model)	A B C D E F G	
Flowguide construction No flowguide Mild steel, C5-M rated polyester painted 304 (1.4301) stainless steel ¹⁾ 304 (1.4301) stainless steel ²⁾ 316 (1.4401) stainless steel ¹⁾ 316 (1.4401) stainless steel ²⁾ Mild steel, C5-M rated polyester painted with PTFE liner Mild steel, C5-M rated polyester painted with abrasion resistant liner 304 (1.4301) stainless steel, with PTFE liner ¹⁾ 304 (1.4301) stainless steel, with PTFE liner ²⁾ Mild steel, epoxy paint with zinc primer ¹⁾ Mild steel, epoxy paint with zinc primer ²⁾ Other flowguide materials available upon request	A B C D E F G H J K L M	
Cabinet construction Mild steel, painted 304 (1.4301) stainless steel ¹⁾ 304 (1.4301) stainless steel ²⁾ 316 (1.4401) stainless steel ¹⁾ 316 (1.4401) stainless steel ²⁾ Mild steel, epoxy paint with zinc primer ¹⁾ Mild steel, epoxy paint with zinc primer ²⁾	1 2 3 4 5 6 7	

¹⁾ For versions 1 and 2 only²⁾ For version 3 only³⁾ Not available with cabinet construction option 1

Solid Flowmeters

LVDT flowmeters

SITRANS WF300 series

Selection and ordering data

Spare parts

40 TPH, mild steel flowguide

3 x 6 inch

4 x 10 inch

5 x 12 inch

40 TPH, mild steel-epoxy flowguide

3 x 6 inch

4 x 10 inch

5 x 12 inch

40 TPH, 304 (1.4301) stainless steel flowguide

3 x 6 inch

4 x 10 inch

5 x 12 inch

40 TPH, 316 (1.4401) stainless steel flowguide

3 x 6 inch

4 x 10 inch

5 x 12 inch

40 TPH, mild steel-PTFE flowguide

3 x 6 inch

4 x 10 inch

5 x 12 inch

40 TPH, 304 (1.4301) stainless steel-PTFE flowguide

3 x 6 inch

4 x 10 inch

5 x 12 inch

40 TPH, mild steel-AR flowguide

3 x 6 inch

4 x 10 inch

5 x 12 inch

300 TPH, mild steel flowguide

5 x 16 inch

6 x 20 inch

300 TPH, mild steel-epoxy flowguide

5 x 16 inch

6 x 20 inch

Article No.

PBD:20401-100**PBD:20395-100****PBD:20405-100****PBD:20401-200****PBD:20395-200****PBD:20405-200****PBD:20401-300****PBD:20395-300****PBD:20405-300****PBD:20401-400****PBD:20395-400****PBD:20405-400****PBD:20401-500****PBD:20395-500****PBD:20405-500****PBD:20401-600****PBD:20395-600****PBD:20405-600****PBD:20401-700****PBD:20395-700****PBD:20405-700****PBD:20455-10****PBD:20458-10****PBD:20455-20****PBD:20458-20**

Article No.

300 TPH, 304 (1.4301) stainless steel flowguide

5 x 16 inch

6 x 20 inch

PBD:20455-30**PBD:20458-30**

300 TPH, 304 (1.4301) stainless steel-PTFE flowguide

5 x 16 inch

6 x 20 inch

PBD:20455-40**PBD:20458-40**

300 TPH, 316 (1.4401) stainless steel flowguide

5 x 16 inch

6 x 20 inch

PBD:20455-50**PBD:20458-50**

300 TPH, mild steel-PTFE flowguide

5 x 16 inch

6 x 20 inch

PBD:20455-60**PBD:20458-60**

300 TPH, mild steel-AR flowguide

5 x 16 inch

6 x 20 inch

PBD:20455-70**PBD:20458-70**

Gasketing

40 TPH, gasket

PBD:22600495

300 TPH, gasket

• 5 x 16 inch

PBD:45000969

• 6 x 20 inch

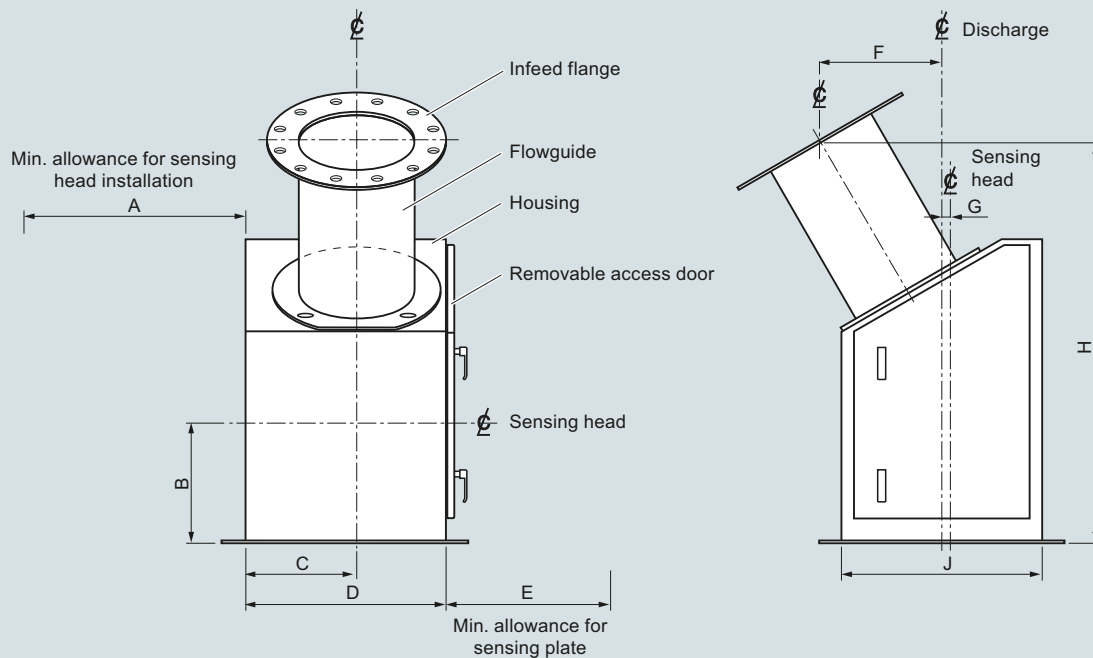
PBD:45000970

Solid Flowmeters

LVDT flowmeters

SITRANS WF300 series

Dimensional drawings



Model	A	B	C	D	E	F	G	H	J
40 t/h (44 STPH)	686 (27)	356 (14)	254 (10)	457 (18)	610 (24)	279 (11)	25 (1)	914 (36)	457 (18)
300 t/h (330 STPH)	1 042 (41)	457 (18)	305 (12)	610 (24)	610 (24)	330 (13)	38 (1.5)	1 270 (50)	610 (24)

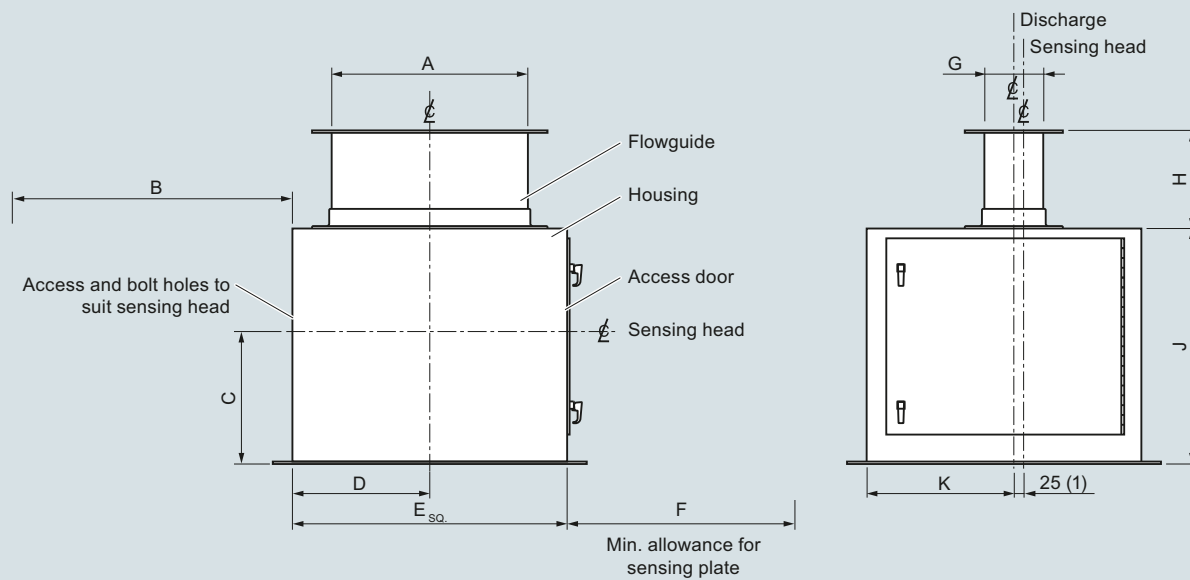
40 t/h version inlet sizes

51 (2)	102 (4)	152 (6)	203 (8)	254 (10)
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300 t/h version inlet sizes

152 (6)	203 (8)	254 (10)	305 (12)	356 (14)	406 (16)
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SITRANS WF330, dimensions in mm (inch)



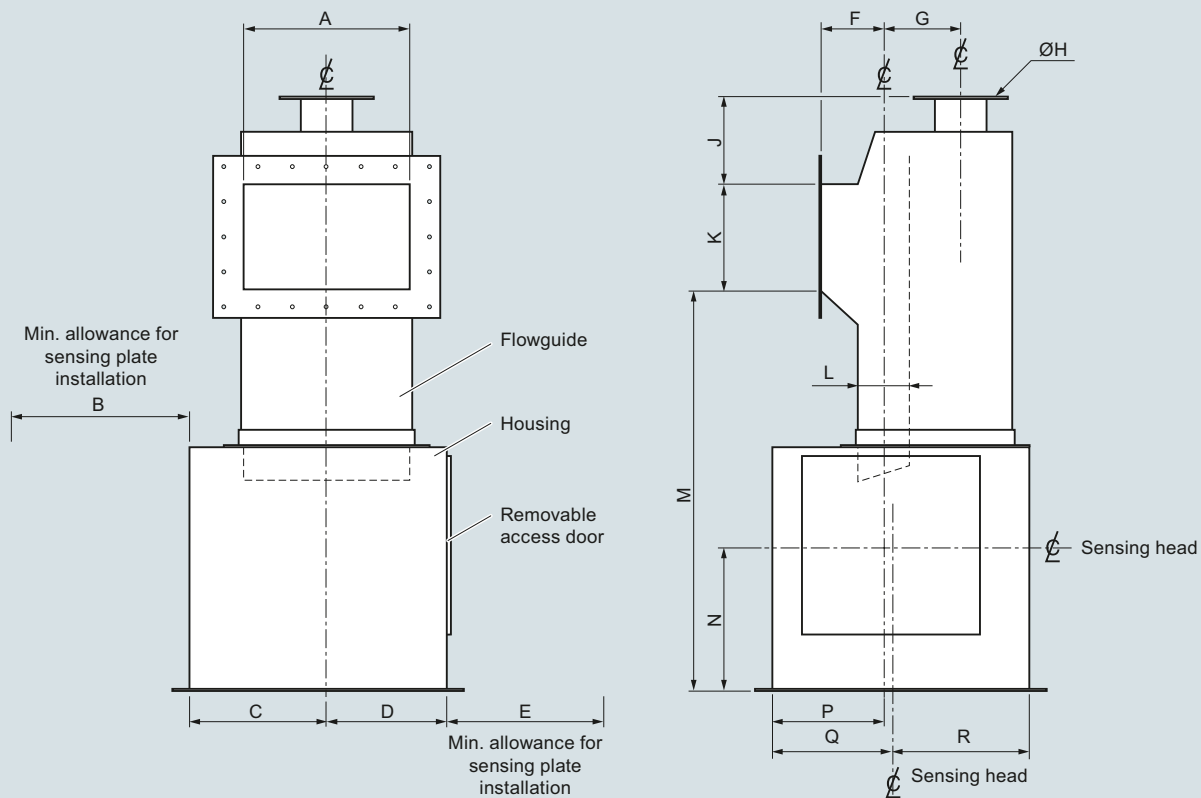
Size	A	B	C	D	E	F	G	H	J	K
40 t/h (44 STPH)	152 (6)	686 (27)	304 (12)	254 (10)	508 (20)	457 (18)	76 (3)	203 (8)	508 (20)	254 (10)
40 t/h (44 STPH)	254 (10)	686 (27)	304 (12)	254 (10)	508 (20)	457 (18)	102 (4)	203 (8)	508 (20)	254 (10)
40 t/h (44 STPH)	305 (12)	686 (27)	304 (12)	254 (10)	508 (20)	457 (18)	127 (5)	203 (8)	508 (20)	254 (10)
300 t/h (330 STPH)	406 (16)	1 041 (41)	343 (13.5)	305 (12)	610 (24)	762 (30)	127 (5)	254 (10)	610 (24)	330 (13)
300 t/h (330 STPH)	508 (20)	1 041 (41)	343 (13.5)	356 (14)	711 (28)	762 (30)	152 (6)	254 (10)	610 (24)	381 (15)

SITRANS WF340, dimensions in mm (inch)

Solid Flowmeters

LVDT flowmeters

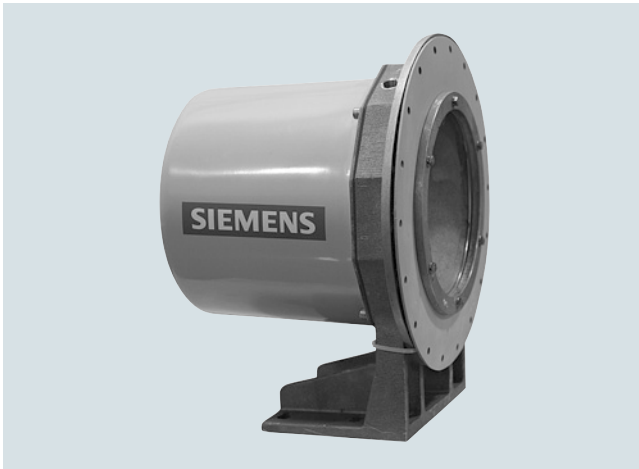
SITRANS WF300 series



Size	A	B	C	D	E	F	G	H
40 t/h (44 STPH)	203 (8)	686 (27)	305 (12)	254 (10)	711 (28)	127 (5)	203 (8)	102 (4)
40 t/h (44 STPH)	305 (12)	686 (27)	305 (12)	254 (10)	711 (28)	127 (5)	203 (8)	102 (4)
300 t/h (330 STPH)	254 (10)	1 041 (41)	406 (16)	356 (14)	889 (35)	191 (7.5)	229 (9)	152 (6)
300 t/h (330 STPH)	356 (14)	1 041 (41)	406 (16)	356 (14)	889 (35)	191 (7.5)	229 (9)	152 (6)
300 t/h (330 STPH)	508 (20)	1 041 (41)	406 (16)	356 (14)	889 (35)	191 (7.5)	229 (9)	152 (6)

Size	J	K	L	M	N	P	Q	R
40 t/h (44 STPH)	229 (9)	203 (8)	76 (3)	914 (36)	305 (12)	229 (9)	229 (9)	330 (13)
40 t/h (44 STPH)	229 (9)	203 (8)	102 (4)	914 (36)	305 (12)	229 (9)	229 (9)	330 (13)
300 t/h (330 STPH)	254 (10)	305 (12)	127 (5)	1 168 (46)	419 (16.5)	330 (13)	356 (14)	406 (16)
300 t/h (330 STPH)	254 (10)	305 (12)	152 (6)	1 168 (46)	419 (16.5)	330 (13)	356 (14)	406 (16)
300 t/h (330 STPH)	254 (10)	305 (12)	178 (7)	1 168 (46)	419 (16.5)	330 (13)	356 (14)	406 (16)

SITRANS WF350, dimensions in mm (inch)

Overview

SITRANS WFS300 and WFS320 sensing heads are out-of-the process sensing elements for SITRANS WF300 series solids flowmeters.

Benefits

- Easy installation with modular assembly
- $\pm 1\%$ accuracy (or better) with high repeatability
- Totally enclosed, dust-tight, flow metering of bulk solids
- Sensing mechanism is outside the process, protected from contamination
- No zero drift, due to unique sensing mechanism
- Low maintenance; only the sensing plate is in the process
- No restriction of product flow

Application

SITRANS WFS300 and WFS320 sensing heads are used in applications such as product rationing, batch load-out, and process feed rate control, the WFS series of sensing heads has been field-proven in thousands of applications with some units providing over a quarter century of reliable performance. The WFS sensing heads use only the horizontal force created by impact of product upon the sensing plate and then apply the horizontal deflection to a highly reliable linear variable differential transformer (LVDT).

Friction-less pivots exclude the vertical force from the sensing process and the LVDT travel range is controlled by a coil spring selected for the specified full-scale flow rate. A viscous fluid damper provides mechanical damping in the event of pulsating flows.

The LVDT converts the horizontal movement, proportional to the impact forces into an electrical signal, which is converted by the integrator to time-based flow rate indication and totaling. This method of sensing material flow has been proven best in thousands of applications all over the world.

Solid Flowmeters

Sensing heads

SITRANS WFS300 series sensing heads

Technical specifications

Sensing heads	WFS300	WFS320
Mode of operation		
Measuring principle	Deflection measurement using LVDT (linear variable differential transformer)	
Typical application	For use in all WF300 series flowmeters	
Flow input		
Maximum particle size	13 mm (0.5 inch)	25 mm (1 inch)
Minimum flow rate	0 ... 0.2 t/h (0 ... 0.2 STPH)	0 ... 20 t/h (0 ... 22 STPH)
Maximum flow rate	0 ... 40 t/h (0 ... 44 STPH)	0 ... 300 t/h (0 ... 330 STPH)
Performance		
Accuracy ¹⁾	± 1 % or better of full scale, higher accuracy with linearizing features offered by integrators	
Repeatability	± 0.2 %	
Specified range	33 ... 100 %	
Medium conditions		
Ambient temperature		
• Without internally mounted LVDT card	-40 ... +60 °C (-40 ... +140 °F)	-40 ... +60 °C (-40 ... +140 °F)
• With optional internally mounted LVDT card	-40 ... +50 °C (-40 ... +122 °F)	-40 ... +50 °C (-40 ... +122 °F)
Maximum product temperature	232 °C (450 °F)	232 °C (450 °F)
Design	IP64 Aluminum body, fiberglass cover, 304 (1.4306) stainless steel sensing plate	
Options	• Epoxy paint coating of external aluminum casting surfaces • Internally mounted LVDT conditioner card for use with SF500 integrator • Externally mounted LVDT conditioner card in NEMA 4 (IP65) enclosure for use with Milltronics SF500 or SIWAREX FTC integrator when sensing head is mounted in hazardous areas or with high ambient temperatures	
Approvals	CE, RCM, CSA, FM, EAC, KCC, ATEX, IEC Ex, EAC Ex	CE, RCM, CSA, FM, EAC, KCC, ATEX, IEC Ex, EAC Ex

¹⁾ Accuracy subject to: On factory approved installations the flowmeter system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for at least ten minutes running time.

Selection and ordering data	Article No.	Order Code
SITRANS WFS300 sensing head Out-of-the-process sensing element for 40 t/h (44 STPH) solids flowmeters. A flowguide, sensing plate and integrator are required to complete the system. Order flowguide, sensing plate and integrator separately. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7MH7110- 	Further designs Please add "-Z" to article no. and specify order code(s). Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)], Measuring-point number/identification (max. 27 characters), specify in plain text. Application Eng. reference number (max. 15 characters), specify in plain text. Manufacturer's test certificate: According to EN 10204-2.2
Mounting Base Side Base, explosion proof, CSA/FM Class I, Div. 1, Groups C and D; Class II, Div. 1, Groups E, F and G, ATEX II 2D - Ex tb IIIC T70 °C Db IP64, ATEX II 3D, Ex tc IIIB T70 °C Dc IP5X, IECEx FMG 13.0016X, Ex nA IIC T6 Gc, Ex tb IIIC T70 °C Db IP64, EAC Ex, RCM, EAC, KCC Side, explosion proof, CSA/FM Class I, Div. 1 Groups C and D; Class II, Div. 1, Groups E, F, and G, ATEX II 2D - Ex tb IIIC T70 °C Db IP64, ATEX II 3D, Ex tc IIIB T70 °C Dc IP5X, IECEx FMG 13.0016X, Ex nA IIC T6 Gc, Ex tb IIIC T70 °C Db IP64, EAC Ex, RCM, EAC, KCC Note: Externally mounted LVDT Conditioner in NEMA 4 enclosure required for use with SF500 or SIWAREX FTC and mounting options 3 and 4. See optional equipment.	0 1 3 4	Y15 Y31 C11
Range (Range spring size/leaf spring thickness/viscosity of damping fluid) C2/A2/1 000 C3/A2/1 000 C4/A2/1 000 C5/A2/1 000 C6/A2/1 000 C7/A2/1 000 C8/A2/3 000 C9/A2/3 000 C10/A2/3 000 C11/A3/5 000 C12/A3/5 000 C13/A3/5 000 C14/A3/5 000 C0/A2/500 C0/A3/500 C10/A3/3 000	A B C D E F G H J K L M N P Q R	Calibration hanger weights 20 g (0.04 lb) 50 g (0.1 lb) 100 g (0.2 lb) 200 g (0.4 lb) 500 g (1.1 lb) 1 000 g (2.2 lb) 2 000 g (4.4 lb) 5 000 g (11 lb) Note: calibration accessories should be ordered as a separate item on the order.
Gasketing Silicone Silicone, light duty PTFE	A B E	Article No. 7MH7724-1AC 7MH7724-1AD 7MH7724-1AE 7MH7724-1AF 7MH7724-1AG 7MH7724-1AH 7MH7724-1AJ 7MH7724-1AK
Coating (process side only) None, standard aluminum Epoxy - white/aluminum, external castings only	0 1	
Sensing head mounted LVDT conditioner None ¹⁾ Included, required for use with SF500 or SIWAREX FTC integrator ²⁾	0 1	

¹⁾ For use with Compu Series integrators or when externally mounted LVDT conditioner required.

²⁾ Applicable for mounting options 0 and 1 only.

Solid Flowmeters

Sensing heads

SITRANS WFS300 series sensing heads

Selection and ordering data

Article No.

Spare parts

LDVT conditioner in NEMA 4 enclosure (to interface SF500 or SIWAREX FTC and LDVT sensor)	7MH7723-1AJ
Silicone inner diaphragm	7MH7723-1DN
Silicone outer diaphragm	7MH7723-1DP
PTFE inner diaphragm	7MH7723-1AL
PTFE outer diaphragm	7MH7723-1AM
LVDT transformer and core, standard spare	7MH7723-1DS
Encapsulated LVDT replacement kit	7MH7723-1DE
Damping fluid, 1 000 CS, 1 lb bottle	7MH7723-1EU
Damping fluid, 3 000 CS, 1 lb bottle	7MH7723-1EV
Damping fluid, 5 000 CS, 1 lb bottle	7MH7723-1EW
Range spring assembly, C2	7MH7723-1EX
Range spring assembly, C3	7MH7723-1EY
Range spring assembly, C4	7MH7723-1FA
Range spring assembly, C5	7MH7723-1FB
Range spring assembly, C6	7MH7723-1FC
Range spring assembly, C7	7MH7723-1FD
Range spring assembly, C8	7MH7723-1FE
Range spring assembly, C9	7MH7723-1FF
Range spring assembly, C10	7MH7723-1FG
Range spring assembly, C11	7MH7723-1FH
Range spring assembly, C12	7MH7723-1FJ
Range spring assembly, C13	7MH7723-1FK
Range spring assembly, C14	7MH7723-1FL
Leaf spring, A2, kit	7MH7723-1BN
Leaf spring, A3, kit	7MH7723-1BP
WFS300 calibration wheel kit	7MH7723-1KB
Circuit card, LVDT, conditioner	7MH7723-1ET
WFS300 replacement O-ring kit	7MH7723-1DC
Side mount gasket replacement	7MH7723-1FT

Selection and ordering data		Article No.	Order Code
SITRANS WFS320 sensing head Out-of-the-process sensing element for use with 300 t/h (330 STPH) flowmeters. A flowguide, sensing plate and integrator are required to complete the system. Order flowguide, sensing plate and integrator separately. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		7MH7112- 	Further designs Please add "-Z" to article no. and specify order code(s). Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)], Measuring-point number/identification (max. 27 characters), specify in plain text. Application Eng. reference number (max. 15 characters), specify in plain text. Manufacturer's test certificate: According to EN 10204-2.2
Classification Non-hazardous Hazardous, CSA/FM Class I, Div. 1, Groups C and D; Class II, Div. 1, Groups E, F and G, ATEX II 2D - Ex tb IIIC T70 °C Db IP64, ATEX II 3D, Ex tc IIIB T70 °C Dc IP5X, IECEx FMG 13.0016X, Ex nA IIC T6 Gc, Ex tb IIIC T70 °C Db IP64, EAC Ex Note: Externally mounted LVDT conditioner in NEMA 4 enclosure required for use with SF500 or SIWAREX FTC and classification option 2. See calibration hanger weights.		1 2	Y15 Y31 C11
Range (range spring size/viscosity of damping fluid) D1/1 000 Position 1 D1/1 000 Position 2 D1/1 000 Position 3 D2/1 000 Position 1 D2/1 000 Position 2 D2/1 000 Position 3 D3/3 000 Position 1 D3/3 000 Position 2 D3/3 000 Position 3 D4/5 000 Position 1 D4/5 000 Position 2 D4/5 000 Position 3 D5/5 000 Position 1 D5/5 000 Position 2 D5/5 000 Position 3		A B C D E F G H J K L M N P Q	Calibration hanger weights 20 g (0.04 lb) 50 g (0.1 lb) 100 g (0.2 lb) 200 g (0.4 lb) 500 g (1.1 lb) 1 000 g (2.2 lb) 2 000 g (4.4 lb) 5 000 g (11 lb) Note: calibration accessories should be ordered as a separate item on the order.
Gasketing Silicone PTFE Other gasketing available upon request		A D	Spare parts LVDT conditioner in NEMA 4 enclosure to interface SF500 and LVDT sensor Silicone inner diaphragm Silicone outer diaphragm PTFE inner diaphragm PTFE outer diaphragm LVDT transformer and core, standard spare Encapsulated LVDT replacement kit Damping fluid, 1 000 CS, 1 lb bottle Damping fluid, 3 000 CS, 1 lb bottle Damping fluid, 5 000 CS, 1 lb bottle Range spring assembly, D1 Range spring assembly, D2 Range spring assembly, D3 Range spring assembly, D4 Range spring assembly, D5 Leaf spring kit Circuit card, LVDT, conditioner WFS320 calibration wheel kit WFS320 replacement o-ring kit WFS320 Taper Pin, spare
Coating (process side only) None, standard aluminum Epoxy - white/aluminum, external castings only Other coatings available upon request.		0 1	7MH7724-1AC 7MH7724-1AD 7MH7724-1AE 7MH7724-1AF 7MH7724-1AG 7MH7724-1AH 7MH7724-1AJ 7MH7724-1AK 7MH7723-1AJ 7MH7723-1DQ 7MH7723-1DR 7MH7723-1BA 7MH7723-1BB 7MH7723-1DS 7MH7723-1DE 7MH7723-1EU 7MH7723-1EV 7MH7723-1EW 7MH7723-1FM 7MH7723-1FN 7MH7723-1FP 7MH7723-1FQ 7MH7723-1GJ 7MH7723-1BQ 7MH7723-1ET 7MH7723-1KA 7MH7723-1DD 7MH7723-1GD
Sensing head mounted LVDT conditioner None ¹⁾ Included, required for use with SF500 or SIWAREX FTC integrator ²⁾		0 1	

¹⁾ For use with Compu series integrators or when externally mounted LVDT conditioner required. See Note under Classification.

²⁾ Available with classification option 1 only.

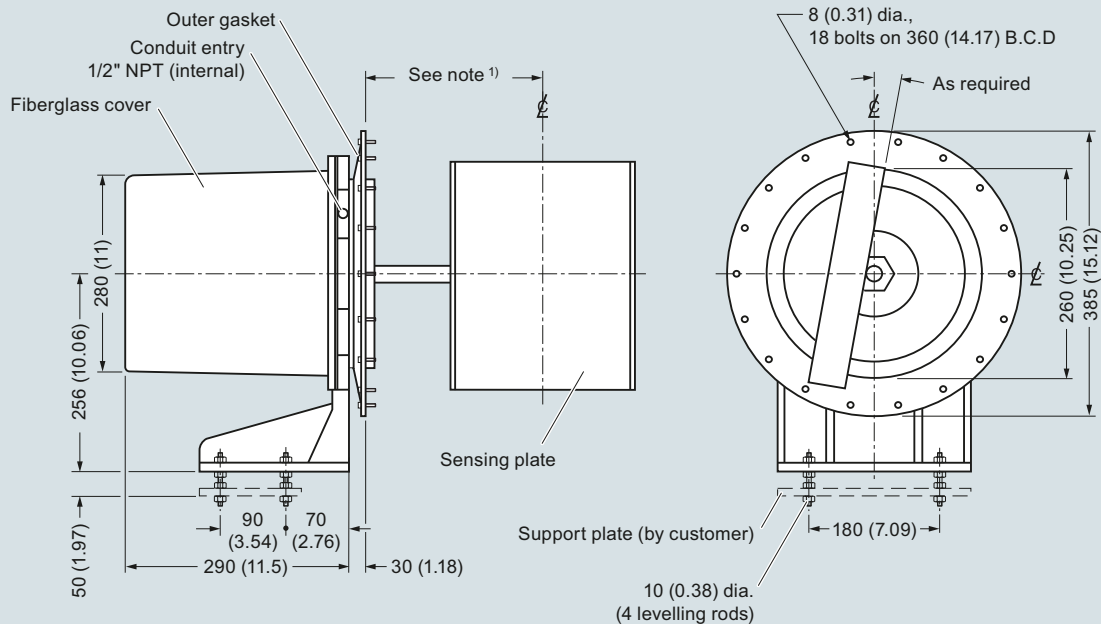
Solid Flowmeters

Sensing heads

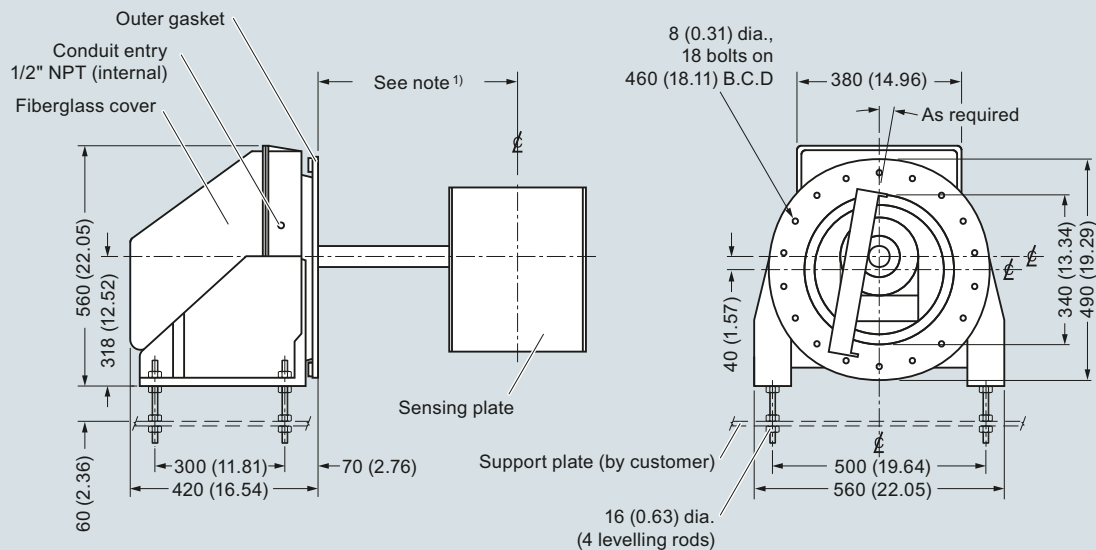
SITRANS WFS300 series sensing heads

Dimensional drawings

WFS300 Sensing Head



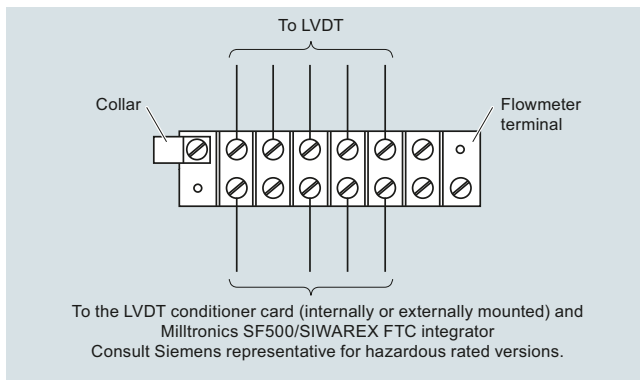
WFS320 Sensing Head



Notes:

- ¹⁾ Refer to flowmeter drawing for sensing head mounting hole to flowguide centerline dimension.
- ²⁾ Sensing head support plate should be rigid and independent of flowmeter housing.
- ³⁾ Ensure outer gasket seals dust tight to flowmeter housing wall.

SITRANS WFS300 sensing heads, dimensions in mm (inch)

Circuit diagrams

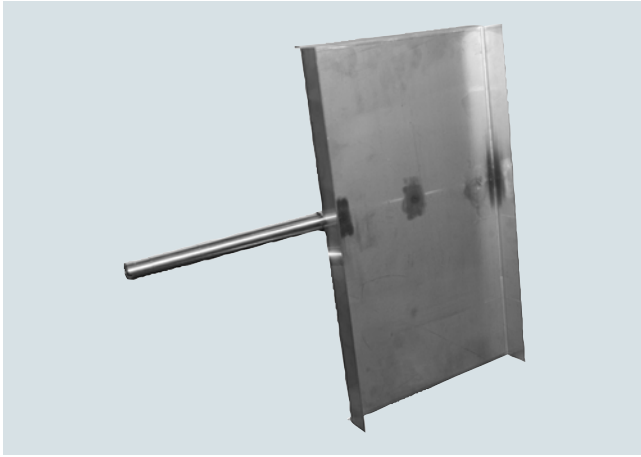
SITRANS WFS300 sensing heads connections

Solid Flowmeters

Sensing plates

SITRANS flowmeter sensing plates

Overview



The sensing plate transfers the impact force to the sensing head of the flowmeter.

Selection and ordering data

SITRANS flowmeter sensing plates

The sensing plate transfers the impact force to the sensing head of the flowmeter

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Version

WF330, 40 t/h, base mount or side mount	1
WF340, 40 t/h, base mount or side mount	3
WF350, 40 t/h, base mount or side mount	4
WF330, 300 t/h	5
WF340, 300 t/h	6
WF350, 300 t/h	7
C-40	8

Plate size

18 x 10 inch (457.2 x 254 mm), for version option 1 with 2, 4 or 6 inch (50.8, 101.6 or 152.4 mm) flowguide ¹⁾	A
20 x 12 inch (508 x 304.8 mm), for version option 1 with 8 inch (203.2 mm) flowguide ¹⁾	B
20 x 14 inch (508 x 355.6 mm), for version option 1 with 10 inch (254 mm) flowguide ¹⁾	C
22 x 12 inch (558.8 x 304.8 mm), for version option 5 with 6 or 8 inch (152.4 or 203.2 mm) flowguide ¹⁾	D
24 x 16 inch (609.6 x 406.4 mm), for version option 5 with 10 or 12 inch (254 or 304.8 mm) flowguide ¹⁾	E
24 x 20 inch (609.6 x 508 mm), for version option 5 with 14 or 16 inch (355.6 or 406.4 mm) flowguide ¹⁾	F
12 x 12 inch (304.8 x 304.8 mm), for version option 4 with 8 inch (203.2 mm) flowguide ²⁾	G
16 x 14 inch (406.4 x 355.6 mm), for version option 4 with 12 inch (304.8 mm) flowguide ²⁾	H

Article No.

➤ 7MH7114-0

Selection and ordering data

Article No.

SITRANS flowmeter sensing plates

The sensing plate transfers the impact force to the sensing head of the flowmeter

14 x 18 inch (355.6 x 457.2 mm), for version option 7 with 10 inch (254 mm) flowguide ²⁾	J
18 x 20 inch (457.2 x 508 mm), for version option 7 with 14 inch (355.6 mm) flowguide ²⁾	K
24 x 22 inch (609.6 x 558.8 mm), for version option 7 with 20 inch (508 mm) flowguide ²⁾	L
12 x 10 inch (304.8 x 254 mm), for version option 3 with 3 x 6 inch (76.2 x 152.4 mm) flowguide ³⁾	M
14 x 14 inch (355.6 x 355.6 mm), for version option 3 with 4 x 10 inch (101.6 x 254 mm) flowguide ³⁾	N
16 x 16 inch (406.4 x 406.4 mm), for version option 3 with 5 x 12 inch (127 x 304.8 mm) flowguide ³⁾	P
18 x 20 inch (457.2 x 508 mm), for version option 6 with 5 x 16 inch (127 x 406.4 mm) flowguide ³⁾	Q
20 x 24 inch (508 x 609.6 mm), for version option 6 with 6 x 20 inch (152.4 x 508 mm) flowguide ³⁾	R
12 x 12 inch (304.8 x 304.8 mm), for C-40 with 6 inch (152.4 mm) flowguide ⁴⁾	S
12 x 14 inch (304.8 x 355.6 mm), for C-40 with 10 inch (254 mm) flowguide ⁴⁾	T

Plate material

304 (1.4301) stainless steel ⁵⁾	A
304 (1.4301) stainless steel ⁶⁾	B
316 (1.4401) stainless steel ⁷⁾	C
316 (1.4401) stainless steel ⁶⁾	D
304 (1.4301) stainless steel, heavy-duty ⁷⁾	E
304 (1.4301) stainless steel, heavy-duty ⁶⁾	F
316 (1.4401) stainless steel, light-duty ⁸⁾	G
316 (1.4401) stainless steel, heavy-duty ⁷⁾	H
316 (1.4401) stainless steel, heavy-duty ⁶⁾	J

Plate liner

No liner	1
Polyurethane ⁷⁾	2
Polyurethane ⁶⁾ 9)	3
PTFE ⁷⁾	4
PTFE ⁶⁾	5
Alumina ceramic tiles ⁷⁾	6
Alumina ceramic tiles ⁶⁾	7
Plasma A/R ⁷⁾	8
Plasma A/R ⁶⁾	0

Further designs

Please add "-Z" to article no. and specify order code(s).

Inspection certificate type 3.1 per EN 10204

Instruction manuals

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/weighing/documentation>

7MH7114-

0

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B

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D

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F

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J

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Order Code

C12

¹⁾ See 7MH7102, page 6/18.

²⁾ See 7MH7106, page 6/23.

³⁾ See 7MH7104, page 6/21.

⁴⁾ Available as spare part only.

⁵⁾ Available with flowmeter version 1 ... 4 and 8 only.

⁶⁾ Available with flowmeter version 5 ... 7 only.

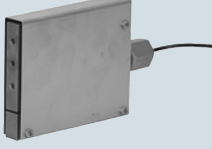
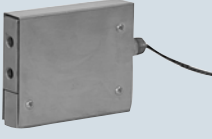
⁷⁾ Available with flowmeter version 1 ... 4 only.

⁸⁾ Available with flowmeter version 1, 2 and 3 only.

⁹⁾ Maximum material temperature: 85 °C (185 °F).

Selection and ordering data

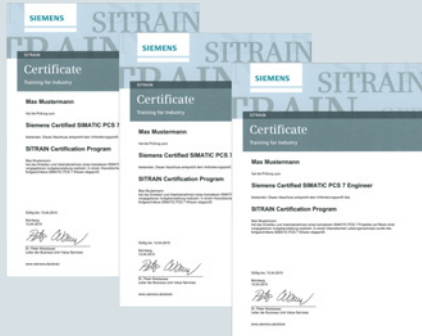
Flowmeter spare load cells

Millflo flowmeters stainless steel, with hardware	Article No.	
1 lb (0.5 kg)	Replace with 2 lb	
2 lb (0.9 kg)	PBD-23900176	
5 lb (2.3 kg)	PBD-23900177	
10 lb (4.6 kg)	7MH7725-1AA	
20 lb (9.2 kg)	7MH7725-1AB	
Millflo L, M, and MA series flowmeters stainless steel, with hardware		
50 lb (22.7 kg)	7MH7725-1AC	
100 lb (45.4 kg)	7MH7725-1AD	

Solid Flowmeters

Notes

Appendix



7/2	SITRAIN – Training for Industry
7/3	Siemens Automation Cooperates with Education
7/3	Simplify your education in automation
7/5	Partner at Siemens
7/5	Partner · Industry Mall and Interactive Catalog CA 01
7/6	Online Services
7/6	Information and Download Center
7/7	Industry Services
7/8	Portfolio
7/10	Online Support
7/11	Software licenses
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Appendix

SITRAIN – Training for Industry

Introduction



Your benefit from practical training directly from the manufacturer

SITRAIN – Training for Industry – provides you with comprehensive support in solving your tasks.

Training directly from the manufacturer enables you to make correct decisions with confidence.

Increased profits and lower costs:

- Shorter times for commissioning, maintenance and servicing
- Optimized production operations
- Reliable configuration and commissioning
- Shortened startup times, reduced downtimes, and faster troubleshooting
- Exclude expensive faulty planning right from the start.
- Flexible plant adaptation to market requirements
- Compliance with quality standards in production
- Increased employee satisfaction and motivation
- Shorter familiarization times following changes in technology and staff

Contact

Visit our site on the Internet at:

www.siemens.com/sitrain

or let us advise you personally:

Customer Support

Tel.: (800) 365-8766

Fax: (972) 522-4503

Email: piabusales.industry@siemens.com

Your benefits with SITRAIN – Training for Industry

Certified top trainers

Our trainers are skilled specialists with practical experience. Course developers have close contact with product development, and pass on their knowledge to the trainers and then to you.

Practical application with practice

Practice, practice, practice! We have designed the trainings with an emphasis on practical exercises. They take up to half of the course time in our trainings. You can therefore implement your new knowledge in practice even faster.

300 courses in more than 60 countries

We offer a total of about 300 classroom-based courses. You can find us at more than 50 locations in Germany, and in 62 countries worldwide. You can find which course is offered at which location at:

www.siemens.com/sitrain

Skills development

Do you want to develop skills and fill in gaps in your knowledge? Our solution: We will provide a program tailored exactly to your personal requirements. After an individual requirements analysis, we will train you in our training centers near you or directly at your offices. You will practice on the most modern training equipment with special exercise units. The individual training courses are optimally matched to each other and help with the continuous development of knowledge and skills. After finishing a training module, the follow-up measures make success certain, as well as the refreshment and deepening of the knowledge gained.

Unique support for educators and students in educational institutions

Cooperates
with Education

Automation

SIEMENS

Siemens Automation Cooperates with Education (SCE)

offers a global system for sustained support of technical skills. SCE supports educational institutions in their teaching assignment in the industrial automation sector and offers added value in the form of partnerships, technical expertise, and know-how. As the technological leader, our comprehensive range of services can support you in the knowledge transfer for Industry 4.0.

Our services at a glance

- Training curriculums for your lessons
- Trainer packages for hands-on learning
- Courses convey up-to-date specialist knowledge
- Support for your projects / textbooks
- Complete didactic solutions from our partners
- Personal contact for individual support

Training curriculums for your lessons

Use our profound industrial know-how for practice-oriented and individual design of your course. We offer you more than 100 didactically prepared training curriculums on the topics of automation and drives technology free of charge. These materials are perfectly matched to your curricula and syllabuses, and optimally suited for use with our trainer packages. This takes into account all aspects of a modern industrial solution: installation, configuration, programming, and commissioning. All documents, including projects, can be individually matched to your specific requirements.

Particular highlights:

- The new SIMATIC PCS 7 curriculums and trainer packages. Using plant simulation, you can pass on basic, practice-oriented PCS 7 knowledge at universities within about 60 hours (= 1 semester).

- The new TIA Portal training materials for SIMATIC S7-1500 / S7-1200 / S7-300 are available in English, German, French, Italian, Spanish, Portuguese and Chinese for download.

www.siemens.com/sce/curriculums

Trainer packages for hands-on learning

Our SCE trainer packages offer a specific combination of original industrial automation and drives components which are perfectly matched to your requirements and can be conveniently used in your course. These price-reduced bundles available exclusively to schools include innovative and flexible hardware and software packages.

We currently offer more than 80 SCE trainer packages including the complete accessories. These cover both the factory and process automation sectors. You can use them to impart the complete course contents on industrial automation at a very low cost.

Trainer packages are available for:

- Introduction to automation technology with LOGO! logic module
- PLC engineering with SIMATIC S7 hardware and STEP 7 software (S7-1500, S7-1200, S7-300 and TIA Portal)
- Operator control and monitoring with SIMATIC HMI
- Industrial networking over bus systems with SIMATIC NET (PROFINET, PROFIBUS, IO-Link)
- Sensor systems with VISION, RFID and SIWAREX
- Process automation with SIMATIC PCS 7
- Networked drive and motion technologies with SINAMICS/SIMOTION
- Power Monitoring Devices SENTRON PAC 4200
- Motor Management SIMOCODE
- CNC programming with SinuTrain

Important ordering notes:

Only the following institutions are authorized to obtain trainer packages: vocational colleges, vocational training institutes, schools for technicians, technical schools, universities and universities of applied sciences, non-profit research institutions and in-house initial vocational training centers.

To purchase a trainer package, you require a specific end-use certificate, which you can obtain from your regional sales office.

www.siemens.com/sce/tp

Appendix

Siemens Automation Cooperates with Education

Simplify your education in automation

Unique support for educators and students in educational institutions (continued)

Courses convey up-to-date specialist knowledge



Profit from our excellent know-how as the leader in industrial technologies. We offer you specific courses for automation and drive technology worldwide. These support you in the practice-oriented transferring of product and system know-how, are in conformance with curriculums, and derived from the training fields. Compact technical courses especially for use at universities are also available.

Our range of courses comprises a wide variety of training modules based on the principle of Totally Integrated Automation (TIA). The focus is on the same subject areas as with the SCE trainer packages.

Every PLC and drive course is oriented on state-of-the-art technology. Your graduates can thus be prepared optimally for their future professional life.

In some countries we are offering classes based on our training curriculums. Please inquire with your SCE contact partner.

www.siemens.com/sce/courses

Support for your projects/textbooks



Automation and drive technology is characterized by continuous and rapid developments. Service and Support therefore play an important role.

We can provide you with consulting for selected projects and support from your personal SCE contact as well as our regional Customer Support.

As a particular service, SCE supports technical authors with our know-how as well as with intensive technical consulting. Siemens library of special textbooks covering the industrial automation sector provides an additional resource for you and your students. These can be found at the SCE web site.

www.siemens.com/sce/contact
www.siemens.com/sce/books

Complete didactic solutions from our partners



Our partners for learning systems offer a wide range of training systems and solutions for use in your courses or laboratory.

These models have been designed based on our trainer packages and thus save you the time and cost of selfconstruction of individual components. The Partner systems provide you with simple and effective help in the fulfillment of your teaching assignment.

www.siemens.com/sce/partner

Contact for individual support

You can find your personal SCE contact on our Internet site. Your local SCE Promoter will answer all your questions concerning the complete SCE offering, and provide you with timely and competent information about innovations. When you encounter challenges, you can profit from our global team of excellence.

If a direct SCE contact is not listed for your country, please contact your local Siemens office.

www.siemens.com/sce/contact

SCE Support Finder for your Internet request

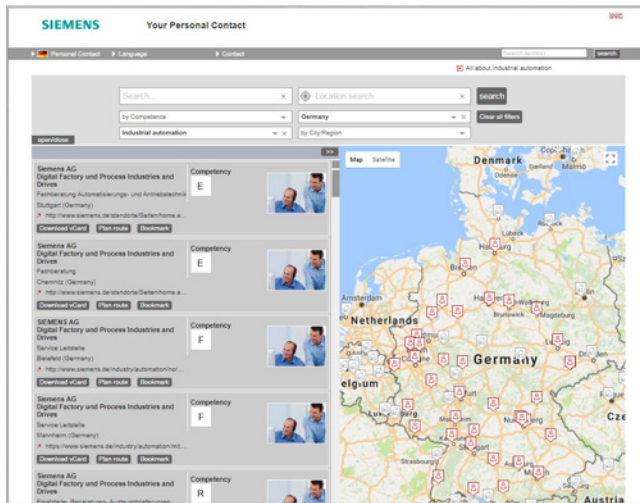
You are an educator and need support on the topic of industry automation? Send us your request:

www.siemens.com/sce/supportfinder

Discover
SCE



Partner at Siemens



At your service locally, around the globe for consulting, sales, training, service, support, spare parts on the entire portfolio of Digital Factory and Process Industries and Drives.

Your partner can be found in our Personal Contacts Database at: www.siemens.com/automation-contact

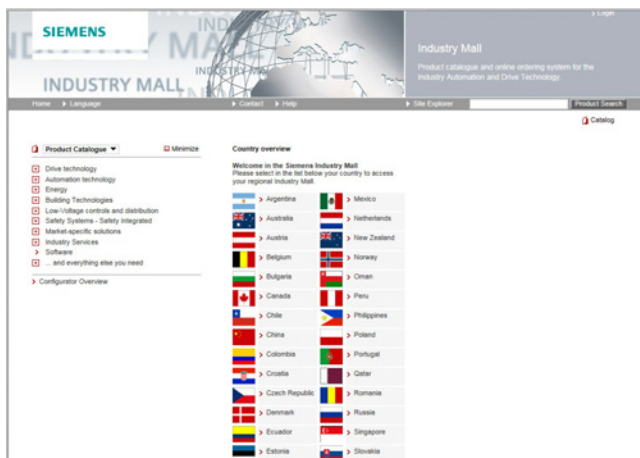
You start by selecting

- the required competence,
- products and branches,
- a country and a city

or by a

- location search or free text search.

Easy product selection and ordering in the Industry Mall and with the Interactive Catalog CA 01



Industry Mall

The Industry Mall is a Siemens Internet ordering platform. Here you have a clear and informative online access to a huge range of products.

Powerful search functions make it easy to select the required products. Configurators enable you to configure complex product and system components quickly and easily. CAX data types are also provided here.

Data transfer allows the whole procedure, from selection through ordering to tracking and tracing, to be carried out online. Availability checks, customer-specific discounts and bid creation are also possible.

www.siemens.com/industrymall



Interactive Catalog CA 01 - Products for Automation and Drives

The Interactive Catalog CA 01 combined with the Siemens Industry Mall unites the benefits of offline and online media in one application – the performance of an offline catalog with the availability of manifold and up-to-date information on the Internet.

Select products and assemble orders with the CA 01, determine the availability of the selected products and track & trace via the Industry Mall.

More information and download:

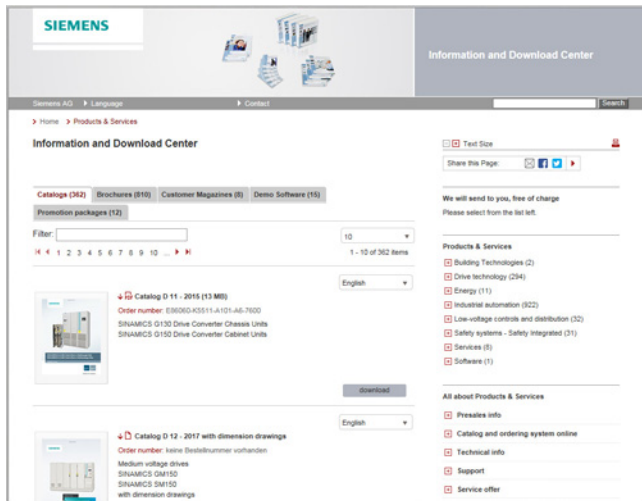
www.siemens.com/automation/ca01

Appendix

Online Services

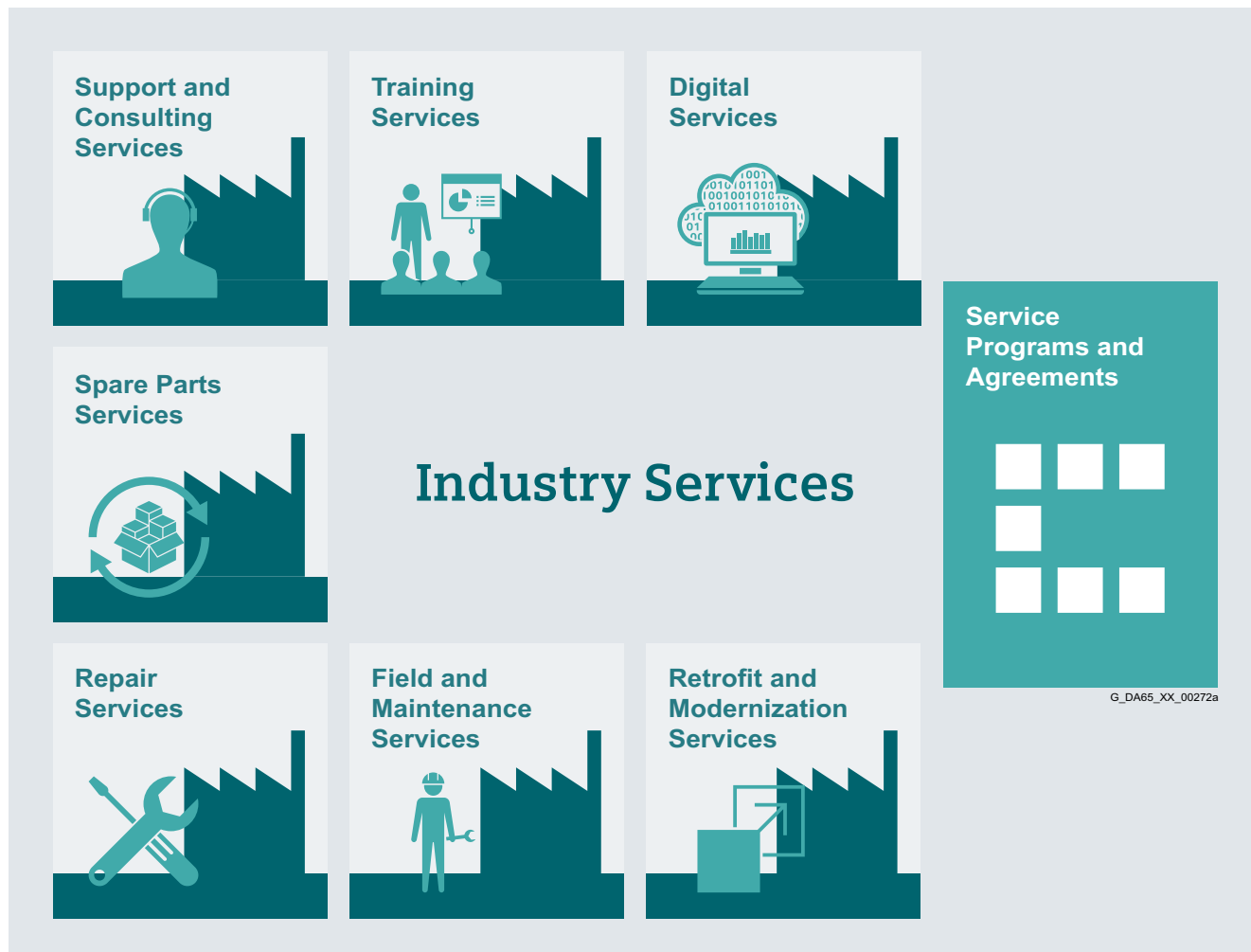
Information and Download Center

Downloading catalogs



In the Information and Download Center you can download catalogs and brochures in PDF format without having to register. The filter dialog makes it possible to carry out targeted searches.

www.siemens.com/industry/infocenter

Overview

Keep your business running and shaping your digital future – with Industry Services

Optimizing the productivity of your equipment and operations can be a challenge, especially with constantly changing market conditions. Working with our service experts makes it easier. We understand your industry's unique processes and provide the services needed so that you can better achieve your business goals.

You can count on us to maximize your uptime and minimize your downtime, increasing your operations' productivity and reliability. When your operations have to be changed quickly to meet a new demand or business opportunity, our services give you the flexibility to adapt. Of course, we take care that your production is protected against cyber threats. We assist in keeping your operations as energy and resource efficient as possible and reducing your total cost of ownership. As a trendsetter, we ensure that you can capitalize on the opportunities of digitalization and by applying data analytics to enhance decision making: You can be sure that your plant reaches its full potential and retains this over the longer lifespan.

You can rely on our highly dedicated team of engineers, technicians and specialists to deliver the services you need – safely, professionally and in compliance with all regulations. We are there for you, where you need us, when you need us.

<https://www.industry.usa.siemens.com/automation/us/en/process-instrumentation-and-analytics/process-instrumentation/service-and-support>

Appendix

Industry Services

Portfolio

Overview

Digital Services



Digital Services make your industrial processes transparent to gain improvements in productivity, asset availability, and energy efficiency.

Production data is generated, filtered and translated with intelligent analytics to enhance decision-making.

This is done whilst taking data security into consideration and with continuous protection against cyber-attack threats.

<http://www.industry.usa.siemens.com/automation/us/en/process-instrumentation-and-analytics/process-instrumentation/service-and-support>

Training Services



From the basics and advanced to specialist skills, SITRAIN courses provide expertise right from the manufacturer – and encompass the entire spectrum of Siemens products and systems for the industry.

Worldwide, SITRAIN courses are available wherever you need a training course in more than 170 locations in over 60 countries.

<http://www.industry.usa.siemens.com/automation/us/en/process-instrumentation-and-analytics/process-instrumentation/service-and-support>

Support and Consulting Services



Industry Online Support site for comprehensive information, application examples, FAQs and support requests.

Technical and Engineering Support for advice and answers for all inquiries about functionality, handling, and fault clearance. The Service Card as prepaid support for value added services such as Priority Call Back or Extended Support offers the clear advantage of quick and easy purchasing.

Information & Consulting Services, e.g. SIMATIC System Audit; clarity about the state and service capability of your automation system or Lifecycle Information Services; transparency on the lifecycle of the products in your plants.

<http://www.industry.usa.siemens.com/automation/us/en/process-instrumentation-and-analytics/process-instrumentation/service-and-support>

Spare Parts Services



Spare Parts Services are available worldwide for smooth and fast supply of spare parts – and thus optimal plant availability. Genuine spare parts are available for up to ten years. Logistic experts take care of procurement, transport, custom clearance, storage and order management. Reliable logistics processes ensure that components reach their destination as needed.

Since not all spare parts can be kept in stock at all times, Siemens offers a preventive measure for spare parts provisioning on the customer's premises with optimized **Spare Parts Packages** for individual products, custom-assembled drive components and entire integrated drive trains – including risk consulting.

Asset Optimization Services help you design a strategy for parts supply where your investment and carrying costs are reduced and the risk of obsolescence is avoided.

<http://www.industry.usa.siemens.com/automation/us/en/process-instrumentation-and-analytics/process-instrumentation/service-and-support>

Overview (continued)

Repair Services


Repair Services are offered on-site and in regional repair centers for fast restoration of faulty devices' functionality.

Also available are extended repair services, which include additional diagnostic and repair measures, as well as emergency services.

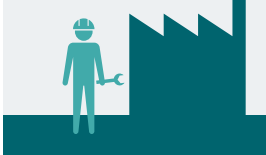
<http://www.industry.usa.siemens.com/automation/us/en/process-instrumentation-and-analytics/process-instrumentation/service-and-support>

Retrofit and Modernization Services


Provide a cost-effective solution for the expansion of entire plants, optimization of systems or upgrading existing products to the latest technology and software, e.g. migration services for automation systems.

Service experts support projects from planning through commissioning and, if desired over the entire extended lifespan, e.g. Retrofit for Integrated Drive Systems for an extended lifetime of your machines and plants.

<http://www.industry.usa.siemens.com/automation/us/en/process-instrumentation-and-analytics/process-instrumentation/service-and-support>

Field and Maintenance Services


Siemens specialists are available globally to provide expert field and maintenance services, including commissioning, functional testing, preventive maintenance and fault clearance. All services can be included in customized service agreements with defined reaction times or fixed maintenance intervals.

<http://www.industry.usa.siemens.com/automation/us/en/process-instrumentation-and-analytics/process-instrumentation/service-and-support>

Service Programs and Agreements


A technical Service Program or Agreement enables you to easily bundle a wide range of services into a single annual or multi-year agreement.

You pick the services you need to match your unique requirements or fill gaps in your organization's maintenance capabilities.

Programs and agreements can be customized as KPI-based and/or performance-based contracts.

<http://www.industry.usa.siemens.com/automation/us/en/process-instrumentation-and-analytics/process-instrumentation/service-and-support>

Appendix

Industry Services

Online Support

Overview

Online Support – fast, intuitive, whenever you want, wherever you need



Web
support.industry.siemens.com

App
SIEMENS

Google Play App Store Microsoft

Scan the QR code for information on our Online Support app.



	FAQ / Application examples Information about industrial products, programming and configuration as well as application examples
	Technical Information Videos, documentation, manuals, updates, product notes, compatibility tool, certificates, planning data such as dimensional drawings, product data, 3D models
	Forum Exchange information and experience with other users and experts

Online Support for Siemens Products for Industry

Siemens Industry and Online Support with some 1.7 million visitors per month is one of the most popular web services provided by Siemens. It is the central access point for comprehensive technical know-how about products, systems and services for automation and drives applications as well as for process industries.

In connection with the challenges and opportunities related to digitalization you can look forward to continued support with innovative offerings.

Overview

Software types

Software requiring a license is categorized into types. The following software types have been defined:

- Engineering software
- Runtime software

Engineering software

This includes all software products for creating (engineering) user software, e.g. for configuring, programming, parameterizing, testing, commissioning or servicing.

Data generated with engineering software and executable programs can be duplicated for your own use or for use by third parties free-of-charge.

Runtime software

This includes all software products required for plant/machine operation, e.g. operating system, basic system, system expansions, drivers, etc.

The duplication of the runtime software and executable programs created with the runtime software for your own use or for use by third-parties is subject to a charge.

You can find information about license fees according to use in the ordering data (e.g. in the catalog). Examples of categories of use include per CPU, per installation, per channel, per instance, per axis, per control loop, per variable, etc.

Information about extended rights of use for parameterization/configuration tools supplied as integral components of the scope of delivery can be found in the readme file supplied with the relevant product(s).

License types

Siemens Industry Automation & Drive Technologies offers various types of software license:

- Floating license
- Single license
- Rental license
- Rental floating license
- Trial license
- Demo license
- Demo floating license

Floating license

The software may be installed for internal use on any number of devices by the licensee. Only the concurrent user is licensed. The concurrent user is the person using the program. Use begins when the software is started. A license is required for each concurrent user.

Single license

Unlike the floating license, a single license permits only one installation of the software per license.

The type of use licensed is specified in the ordering data and in the Certificate of License (CoL). Types of use include for example per instance, per axis, per channel, etc.

One single license is required for each type of use defined.

Rental license

A rental license supports the "sporadic use" of engineering software. Once the license key has been installed, the software can be used for a specific period of time (the operating hours do not have to be consecutive).

One license is required for each installation of the software.

Rental floating license

The rental floating license corresponds to the rental license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Trial license

A trial license supports "short-term use" of the software in a non-productive context, e.g. for testing and evaluation purposes. It can be transferred to another license.

Demo license

The demo license support the "sporadic use" of engineering software in a non-productive context, for example, use for testing and evaluation purposes. It can be transferred to another license. After the installation of the license key, the software can be operated for a specific period of time, whereby usage can be interrupted as often as required.

One license is required per installation of the software.

Demo floating license

The demo floating license corresponds to the demo license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Certificate of License (CoL)

The CoL is the licensee's proof that the use of the software has been licensed by Siemens. A CoL is required for every type of use and must be kept in a safe place.

Downgrading

The licensee is permitted to use the software or an earlier version/release of the software, provided that the licensee owns such a version/release and its use is technically feasible.

Delivery versions

Software is constantly being updated.

The following delivery versions

- PowerPack
- Upgrade

can be used to access updates.

Existing bug fixes are supplied with the ServicePack version.

PowerPack

PowerPacks can be used to upgrade to more powerful software. The licensee receives a new license agreement and CoL (Certificate of License) with the PowerPack. This CoL, together with the CoL for the original product, proves that the new software is licensed.

A separate PowerPack must be purchased for each original license of the software to be replaced.

Upgrade

An upgrade permits the use of a new version of the software on the condition that a license for a previous version of the product is already held.

The licensee receives a new license agreement and CoL with the upgrade. This CoL, together with the CoL for the previous product, proves that the new version is licensed.

A separate upgrade must be purchased for each original license of the software to be upgraded.

Appendix

Software licenses

Overview

ServicePack

ServicePacks are used to debug existing products. ServicePacks may be duplicated for use as prescribed according to the number of existing original licenses.

License key

Siemens Industry Automation & Drive Technologies supplies software products with and without license keys.

The license key serves as an electronic license stamp and is also the "switch" for activating the software (floating license, rental license, etc.).

The complete installation of software products requiring license keys includes the program to be licensed (the software) and the license key (which represents the license).

Software Update Service (SUS)

As part of the SUS contract, all software updates for the respective product are made available to you free of charge for a period of one year from the invoice date. The contract will automatically be extended for one year if it is not canceled three months before it expires.

The possession of the current version of the respective software is a basic condition for entering into an SUS contract.

You can download explanations concerning license conditions from www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

1. General Provisions

By using this catalog you can acquire hardware and software products described therein from Siemens AG subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Please note that the scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

1.1 For customers with a seat or registered office in Germany

For customers with a seat or registered office in Germany, the following applies subordinate to the T&C:

- for installation work the "General Conditions for Erection Works – Germany"¹⁾ ("Allgemeine Montagebedingungen – Deutschland" (only available in German at the moment)) and/or
- for Plant Analytics Services the "Standard Terms and Conditions for Plant Analytics Services – for Customer in Germany"¹⁾ ("Allgemeine Geschäftsbedingungen für das Plant Analytics Services – für Kunden in Deutschland" (only available in German at the moment)) and/or
- for stand-alone software products and software products forming a part of a product or project, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or registered Office in Germany"¹⁾ and/or
- for other supplies and/or services the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"¹⁾.
In case such supplies and/or services should contain Open Source Software, the conditions of which shall prevail over the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"¹⁾. A notice will be contained in the scope of delivery in which the applicable conditions for Open Source Software are specified. This shall apply mutatis mutandis for notices referring to other third party software components.

1.2 For customers with a seat or registered office outside Germany

For customers with a seat or registered office outside Germany, the following applies subordinate to the T&C:

- for Plant Analytics Services the "Standard Terms and Conditions for Plant Analytics Services"¹⁾ and/or
- for services the "International Terms & Conditions for Services"¹⁾ supplemented by "Software Licensing Conditions"¹⁾ and/or
- for other supplies of hard- and/or software the "International Terms & Conditions for Products"¹⁾ supplemented by "Software Licensing Conditions"¹⁾

1.3 For customers with master or framework agreement

To the extent our supplies and/or services offered are covered by an existing master or framework agreement, the terms and conditions of that agreement shall apply instead of T&C.

2. Prices

The prices are in € (Euro) ex point of delivery, exclusive of packaging.

The sales tax (value added tax) is not included in the prices. It shall be charged separately at the respective rate according to the applicable statutory legal regulations.

Prices are subject to change without prior notice. We will charge the prices valid at the time of delivery.

To compensate for variations in the price of raw materials (e.g. silver, copper, aluminum, lead, gold, dysprosium and neodym), surcharges are calculated on a daily basis using the so-called metal factor for products containing these raw materials. A surcharge for the respective raw material is calculated as a supplement to the price of a product if the basic official price of the raw material in question is exceeded.

The metal factor of a product indicates the basic official price (for those raw materials concerned) as of which the surcharges on the price of the product are applied, and with what method of calculation.

An exact explanation of the metal factor can be downloaded at:

www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

To calculate the surcharge (except in the cases of dysprosium and neodym), the official price from the day prior to that on which the order was received or the release order was effected is used.

To calculate the surcharge applicable to dysprosium and neodym ("rare earths"), the corresponding three-month basic average price in the quarter prior to that in which the order was received or the release order was effected is used with a one-month buffer (details on the calculation can be found in the explanation of the metal factor).

3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches apply only to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the individual pages of this catalog - especially with regard to data, dimensions and weights given - these are subject to change without prior notice.

¹⁾ The text of the Terms and Conditions of Siemens AG can be downloaded at
www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

Appendix

Conditions of sale and delivery

4. Export regulations

We shall not be obligated to fulfill any agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes and/or other sanctions.

Export may be subject to license. We shall indicate in the delivery details whether licenses are required under German, European and US export lists.

Our products are controlled by the U.S. Government (when labeled with "ECCN" unequal "N") and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. Government or as otherwise authorized by U.S. law and regulations.

The export indications can be viewed in advance in the description of the respective goods on the Industry Mall, our online catalog system. Only the export labels "AL" and "ECCN" indicated on order confirmations, delivery notes and invoices are authoritative.

Products labeled with "AL" unequal "N" are subject to European / national export authorization. Products without label, with label "AL:N" / "ECCN:N", or label "AL:9X9999" / "ECCN: 9X9999" may require authorization from responsible authorities depending on the final end-use, or the destination.

If you transfer goods (hardware and/or software and/or technology as well as corresponding documentation, regardless of the mode of provision) delivered by us or works and services (including all kinds of technical support) performed by us to a third party worldwide, you must comply with all applicable national and international (re-)export control regulations.

If required for the purpose of conducting export control checks, you (upon request by us) shall promptly provide us with all information pertaining to the particular end customer, final disposition and intended use of goods delivered by us respectively works and services provided by us, as well as to any export control restrictions existing in this relation.

The products listed in this catalog may be subject to European/German and/or US export regulations. Any export requiring approval is therefore subject to authorization by the relevant authorities.

Errors excepted and subject to change without prior notice.

Further information can be obtained from our branch offices listed at www.siemens.com/automation-contact

Interactive Catalog on DVD		<i>Catalog</i>
Products for Automation and Drives	CA 01	
Building Control		
GAMMA Building Control	ET G1	
Drive Systems		
SINAMICS G130 Drive Converter Chassis Units	D 11	
SINAMICS G150 Drive Converter Cabinet Units		
SINAMICS GM150, SINAMICS SM150 Medium-Voltage Converters	D 12	
<i>Digital: SINAMICS PERFECT HARMONY GH180 Medium-Voltage Air-Cooled Drives (Germany Edition)</i>	D 15.1	
SINAMICS G180 Converters – Compact Units, Cabinet Systems, Cabinet Units Air-Cooled and Liquid-Cooled	D 18.1	
SINAMICS S120 Chassis Format Converter Units	D 21.3	
SINAMICS S120 Cabinet Modules		
SINAMICS S150 Converter Cabinet Units		
SINAMICS S120 and SIMOTICS	D 21.4	
SINAMICS DCM DC Converter, Control Module	D 23.1	
SINAMICS Inverters for Single-Axis Drives · Built-In Units	D 31.1	
SINAMICS Inverters for Single-Axis Drives · Distributed Inverters	D 31.2	
<i>Digital: SINAMICS S210 Servo Drive System</i>	D 32	
<i>Digital: SINAMICS V90 Basic Servo Drive System</i>	D 33	
SINAMICS G120P and SINAMICS G120P Cabinet pump, fan, compressor converters	D 35	
LOHER VARIO High Voltage Motors Flameproof, Type Series 1PS4, 1PS5, 1MV4 and 1MV5 Frame Size 355 to 1000, Power Range 80 to 7100 kW	D 83.2	
<i>Digital: Three-Phase Induction Motors SIMOTICS HV, SIMOTICS TN</i>	D 84.1	
<i>Digital: Three-Phase Induction Motors SIMOTICS HV</i>	D 84.3	
High Voltage Three-phase Induction Motors	D 84.9	
SIMOTICS HV Series A-compact PLUS		
<i>Digital: Modular Industrial Generators SIGENTICS M</i>	D 85.1	
Three-Phase Induction Motors SIMOTICS HV, Series H-compact	D 86.1	
Synchronous Motors with Permanent-Magnet Technology, HT-direct	D 86.2	
DC Motors	DA 12	
SIMOVERT PM Modular Converter Systems	DA 45	
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