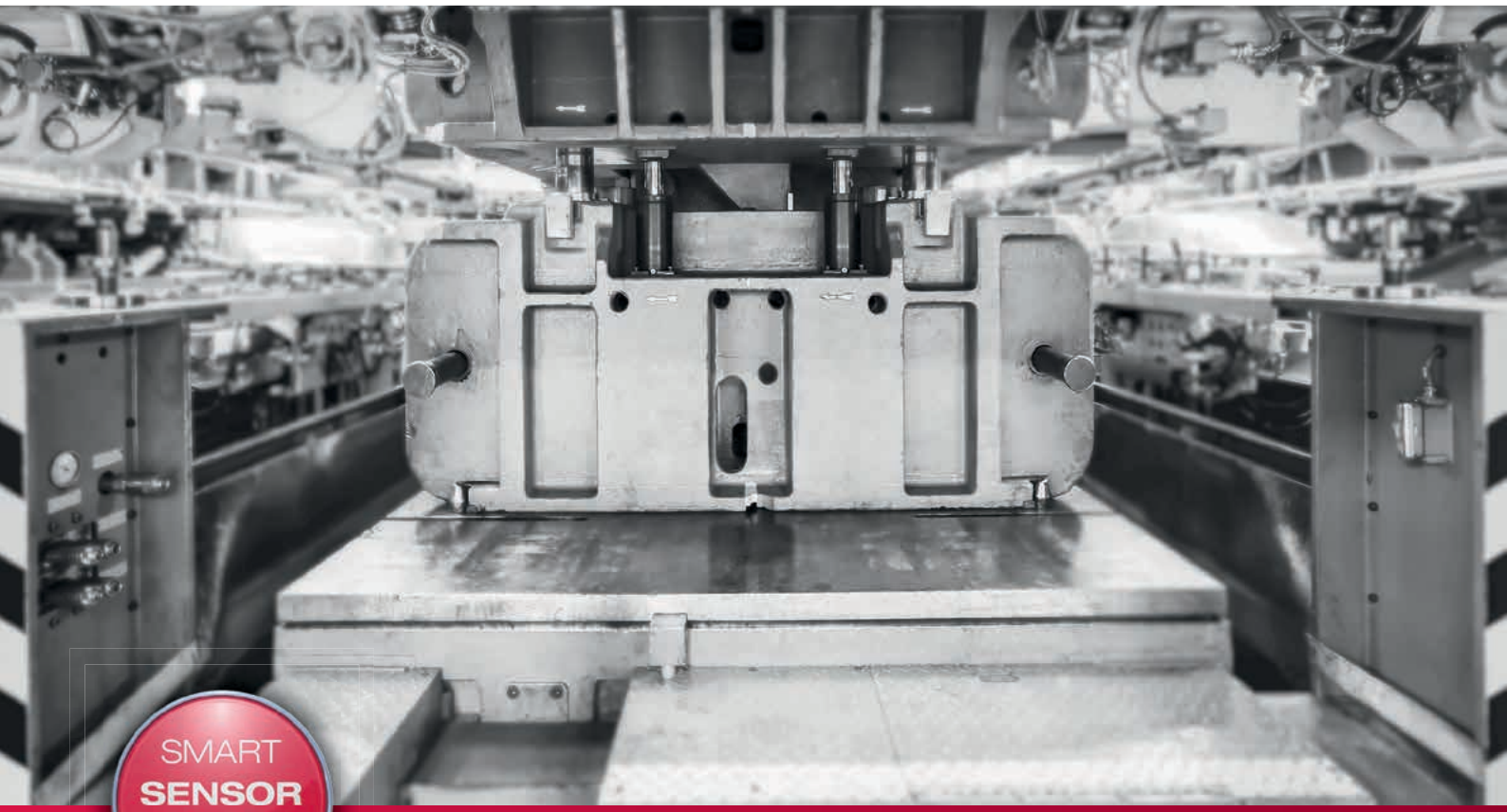
Leuze electronic

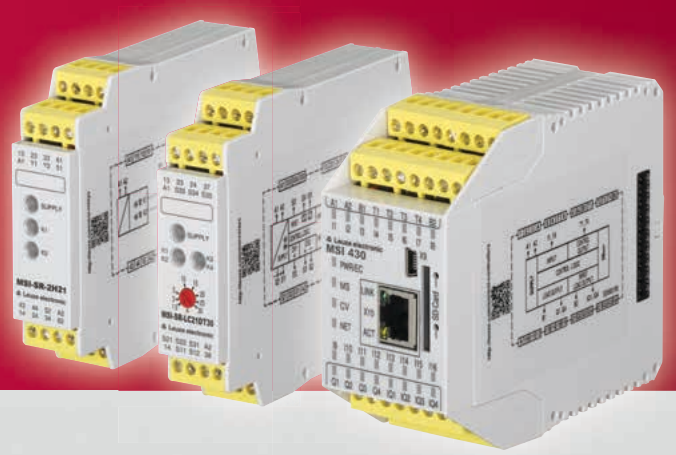
the sensor people



SMART
SENSOR
BUSINESS

MSI

Safety PLCs and safety relays



www.leuze.com

ПРОМЭЛЕКТРОНИКА / sales@prom-elec.com

SAFE CONTROLS AND RELAYS

MSI safety PLCs and relays ensure efficient integration of all safety devices in the machine control.

Regardless of whether you would like to integrate safety sensors, switches or command devices in the safety circuit of the machine control: the MSI safety PLCs and safety relays ensure efficient integration of all safety devices.

SAFETY PLCS

For small to medium-size machines, compact safety controls are increasingly being used for monitoring the safety circuit. Thanks to simple commissioning, flexible configuration options and broad, on-board functionality, the MSI 400 programmable safety PLCs are the optimum system solution here.

SAFETY RELAYS

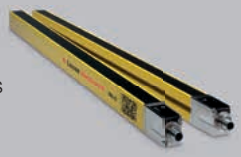
For individual sensors, safety relays offer integration with minimum effort. Our extensive product range of individually tailored and universal devices offers efficient solutions for every requirement.

All modules of the MSI series offer flexible connection technology and are available with either screw or spring-cage terminals. For you, this means optimum adaptation to your installation requirements and simple replacement of the devices, e.g., should servicing be required.

COMPLETE SOLUTIONS THROUGH SAFETY SENSORS

Together with our wide range of safety switches and sensors, we offer complete solutions for guarding machines and systems. Services covering all aspects of machine safety provide you with support during implementation.

Light curtains



Photoelectric sensors (single and multi-beam)

Laser scanners

Switch

Proximity sensors

Guard interlockings

Command devices

CONTROLLING YOUR EFFICIENCY IS THIS SIMPLE

Our MSI control modules and matching add-ons provide solutions for a wide variety of different applications.

YOU DECIDE WHICH MODEL BEST SUITS YOUR TASK

The safety PLCs of the MSI 400 series provide efficient solutions for integrating multiple safety sensors in machines and systems. The compact design and the integrated Ethernet interface save space in the switch cabinet. In addition, the optional extension modules allow you to adapt the number of inputs and outputs flexibly to your specific requirements. Configuration and commissioning is quick and easy using our MSI.designer programming software.

MSI 410

- USB interface
- 20 inputs
- 4 outputs

MSI 420

- USB and Ethernet interface
- 16 inputs
- 4 outputs
- 4 configurable I/Os

MSI 430

- Industrial Ethernet protocols
- USB and Ethernet interface
- 16 inputs
- 4 outputs
- 4 configurable I/Os

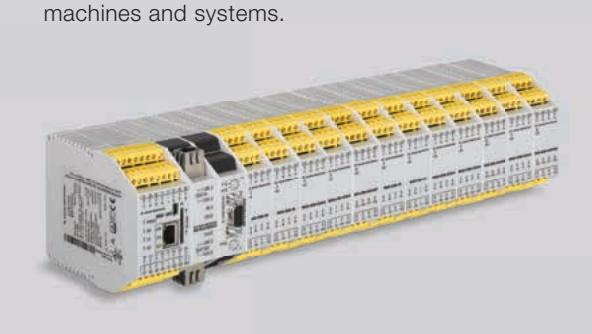
F50 function package

- Function blocks for press control
- Standstill monitoring and safely reduced speed

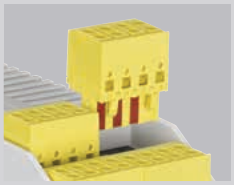
think modular.

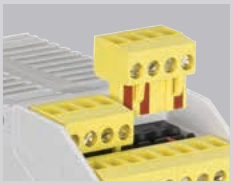
- **Perfect start**
  The different basic modules of the MSI 400 family are customized entry-level devices which can be extended flexibly. Though they measure just 45 mm, even the industrial Ethernet protocols are optionally integrated in the base module.

- **Modularly expandable**
  The I/O extension modules allow modular expansion to up to 116 secure inputs and 56 secure outputs – ideal for safeguarding large machines and systems.



- **Flexible connection technologies**
  All modules are available with either pluggable screw-type terminals or with spring-force/ push-in terminals – this means even better adaptation to your installation requirements.





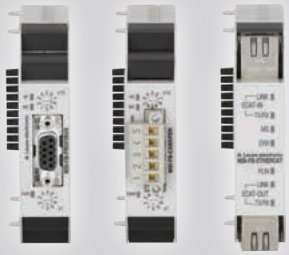
integrated connectivity.

Whether with the integrated industrial Ethernet protocols or the fieldbus gateways: the MSI 400 safety PLCs are easy to integrate in industrial networks.

- **Ethernet interface and industrial Ethernet protocols**
  measuring just 45 mm.

45 mm

- **Gateway modules**
  for integration in other fieldbuses.

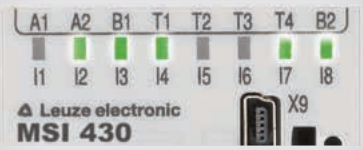


- **Always quickly connected**
  Integrated USB and Ethernet interfaces enable flexible access to the system. As a result, status and diagnostic information is available quickly during configuration and operation.

*easy*handling.

- **Removable program memory**
  The removable program memory in SD-card format, which can be accessed on the front side, offers large memory space for application programs. Handling of the projects is thereby simplified, saving a great deal of time during commissioning, duplication and should servicing be required. The cover fastened to the control protects the memory from unintended removal.

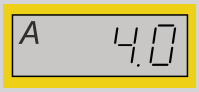
- **Optical function indicator via LED**
  All inputs and outputs of the system feature clearly assigned LED indicators located above the connections. These are supplemented with other LEDs for displaying the module status. As a result, the operating state of a system can be identified quickly and unmistakably.



*power*reserve.

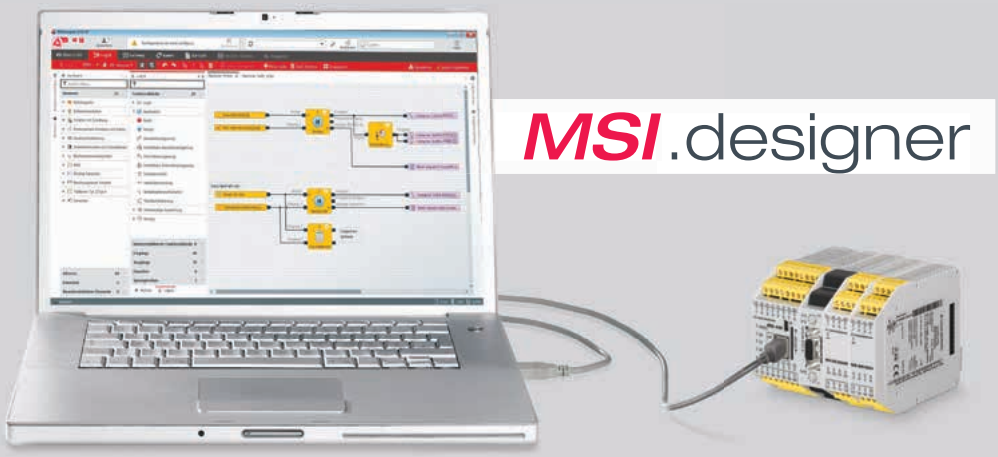
- **300 function blocks**
  Up to 300 function blocks are available for each project. The inputs and outputs can be freely assigned for the function blocks. As a result, simple solutions can be found for even more complex safety tasks.

- **Maximum switching power**
  Available at each output of the system is 4A of wear-free switching power. In certain applications, this offers an efficient alternative to contactors and relays, e.g., for the control of pneumatic components.



EFFICIENT PROGRAMMING IS THIS EASY

With the graphical user interface of the MSI.designer software, all MSI devices can be programmed very quickly.



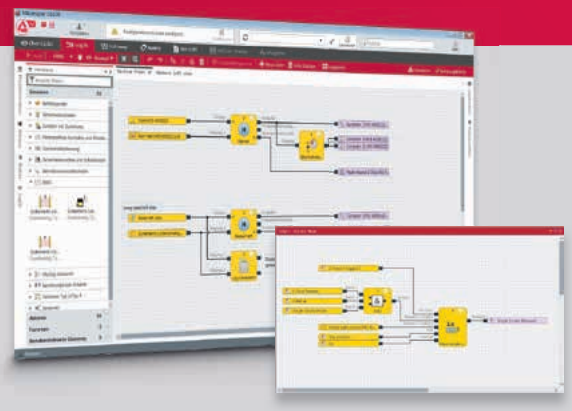
REACH YOUR GOAL QUICKLY WITH EASY PROGRAMMING

With the new MSI.designer programming tool, you can create projects for the MSI safety PLCs easily and efficiently. The license-free software supports you during the creation, testing and documentation of projects. For logic programming, an extensive library of certified function blocks is available. These can be arbitrarily arranged on freely definable logic pages by means of drag & drop. In addition, MSI.designer offers a great deal of flexibility for the creation and management of user elements. Programs can be created very quickly through the direct use of sensors and actuators in the logic editor. The connection with the inputs and outputs of the modules takes place automatically here.

In addition to the comfortable simulation on a PC, the MSI 400 also features a force mode, with which you can assign the inputs fixed state values. This enables the targeted testing of processes directly on the machine. As a result, you are ideally prepared for all situations.

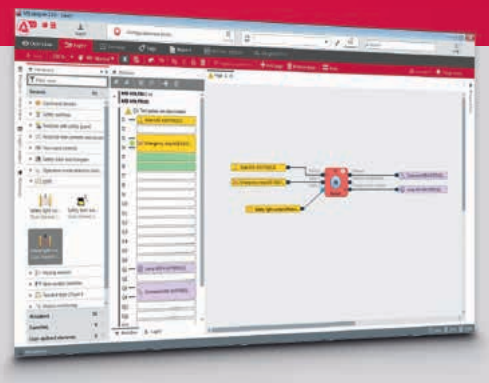
- Simple logic programming
- Simulation and logic analysis for testing the safety function right from a PC
- Force mode for detailed function tests
- Configurable report for professional and well-organized documentation
- Online diagnosis for a fast state overview, including remote maintenance

GRAPHIC – INTUITIVE – EASY



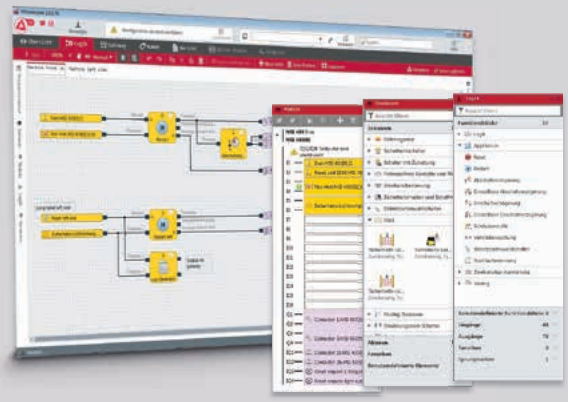
INTUITIVE PROGRAMMING

More than 40 certified function modules are available for programming the logic. The intuitive operation allows programs to be set up quickly. The summary of function blocks and arrangement on freely definable pages ensure a good overview, even with complex projects.



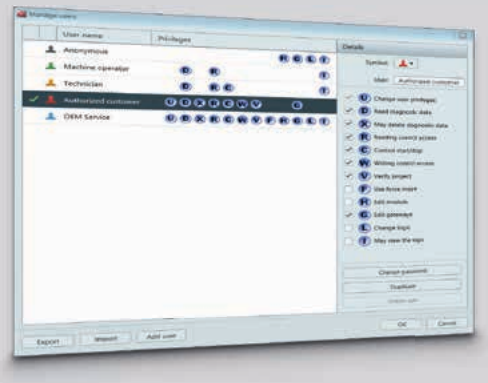
CREATE LOGIC QUICKLY

It couldn't be faster: sensors and actuators can be used directly in the logic editor and connected to a function block in the same step. MSI.designer thereby automatically assigns the elements to the inputs and outputs of the modules. If necessary, the assignment can be optimized freely at any time and across modules.



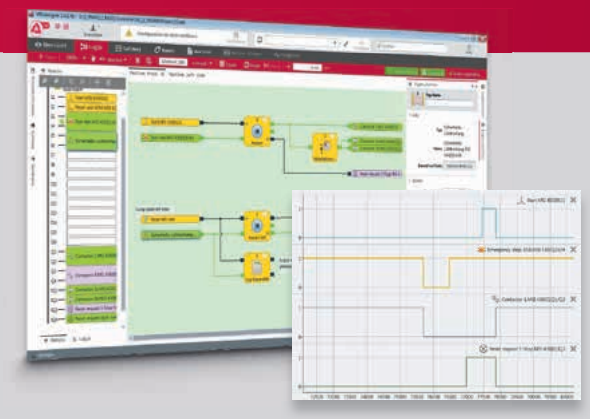
FREELY DESIGN VIEWS

Everyone works differently. For this reason, MSI.designer offers freely arrangeable windows. Whether across multiple monitors or docked individually, you always see the elements that optimally support your work. It is even possible to view multiple logic pages in parallel.



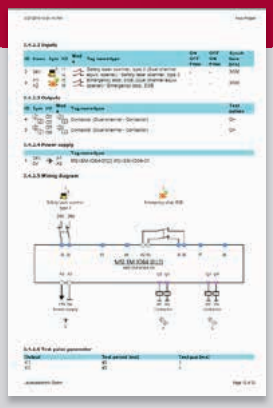
PROTECT KNOW-HOW

Expand the predefined libraries if necessary with application-specific sensors and function blocks. The project and the function blocks can be protected on various levels by means of passwords. With the flexible user management, you can adapt the access rights to the respective user.



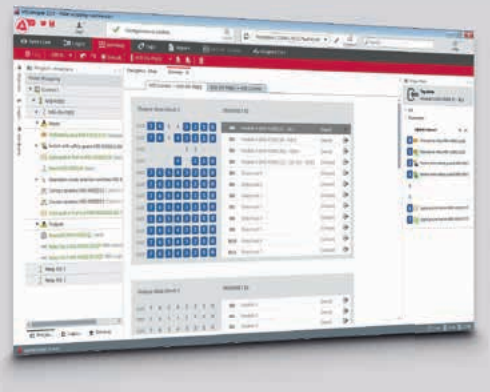
INTEGRATED SIMULATION

The simulation function and the integrated logic analyzer allow the programmed functions to be checked right from a PC. Any necessary modifications are already performed in the office, and not in the installation area on the machine. This saves considerable time during commissioning on site.



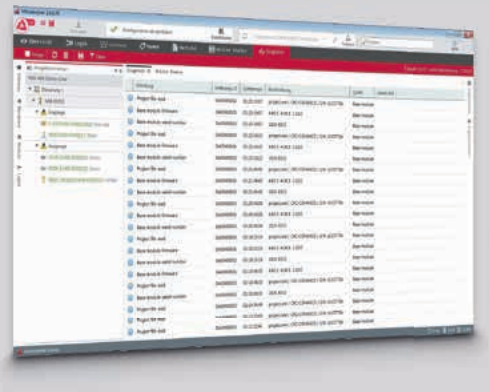
PROFESSIONAL REPORTS

The documentation function summarizes all project information in a detailed, well-structured report. The report can be configured by the user and thereby provides an important part of the directive-compliant documentation for a machine at the press of a button.



TRANSFER IMPORTANT DATA

All industrial Ethernet and fieldbus protocols are easy to use thanks to the comfortable configuration.



FAST ONLINE DIAGNOSIS

The integrated online diagnosis and the system logbook provide a quick overview of the system status. Possible problems can thereby be quickly localized. Solutions for remote maintenance can also be implemented without additional effort, thereby often eliminating the need for expensive maintenance work.

BASE MODULES, GATEWAYS AND I/O EXTENSIONS

	MSI 410	MSI 420	MSI 430
Device type / function	Safety PLC		
Inputs/outputs	20 inputs / 4 outputs	16 inputs / 4 outputs / 4 configurable I/Os	
Test outputs	4 (4 test signal generators)		
Cat./performance level (EN ISO 13849-1)	4 / PL e		
Safety Integrity Level (IEC 61508/EN IEC 62061)	SIL 3 / SIL_{CL} 3		
Interfaces	USB mini	USB mini, Ethernet TCP/IP	
Fieldbus protocols	–	–	Modbus TCP Profinet IO EtherNet/IP
Interface functionality	Configuration Diagnostics via PC	Configuration Diagnostics via PC Diagnostics via PLC	Configuration Diagnostics via PC Diagnostics via PLC Gateway functionality
Maximum number of extension modules / gateways	12 I/O extensions 2 gateways		
Configuration	MSI.designer configuration software, license-free		
Function blocks	300 blocks per project, free assignment		
Program memory	Exchangeable, SD card format, 512 MB		
Function indicator	24 LEDs – green (1x for each I/O) 4 LEDs – green / red / yellow for module status		
Maximum switching power per output	4 A, short-circuit proof		
Supply voltage	24 V DC (16.8 … 30 VDC)		
Power consumption	3.5 W		
Dimensions (W × H × D)	45 × 96 × 115 mm		
Ambient temperature, operation	–25 … +65 °C		
Certifications	TÜV, $_{C}UL_{US}$		

	MSI-FB-ETHERCAT	MSI-FB-PROFIBUS	MSI-FB-CANOPEN
Device type / function	Gateway		
Interfaces	2 × RJ45 sockets	1 × RS485 (Sub-D, 9-pin)	Screw terminals, 5-pin
Fieldbus protocols	EtherCAT	Profibus-DP	CANopen
Data transmission rate	100 Mbit/s	12 Mbit/s	up to 1 Mbit/s
Function indicators	5 LEDs	3 LEDs	3 LEDs
Supply voltage	24 VDC (16.8 … 30 VDC) via MSI 400 base module, internal bus		
Power consumption	max. 2.4 W		
Ambient temp., operation	–25 … +55 °C		
Dimensions (W × H × D)	22.5 × 96.5 × 121 mm		

	MSI-EM-I8	MSI-EM-I084	MSI-EM-I084NP
Device type / function	Safe extension module		Non-safe ext. module
Inputs/outputs	8 inputs	8 inputs / 4 outputs	4 inputs / 4 outputs / 4 configurable I/Os
Test outputs	8 (2 test signal generators)	2 (2 test signal generators)	–
Cat. / Performance Level	4 / PL e		–
Safety Integrity Level	SIL 3 / SIL_{CL}		–
Function indicator	8 LEDs (1 × per I) 1 LED for module status	12 LEDs (1 × per I/O) 1 LED for module status	
Maximum switching power per output	–	4 A	0.5 A
Supply voltage	24 VDC (16.8 … 30 VDC)		
Power consumption	max. 1.4 W	max. 1.1 W	Max. 0.5 W
Dimensions (W × H × D)	22.5 × 93.7 × 120.8 mm		
Ambient temp., operation	–25 … +65 °C		
Certifications	TÜV, $_{C}UL_{US}$	TÜV, $_{C}UL_{US}$	$_{C}UL_{US}$

COMPACT SAFETY FOR YOUR APPLICATION

Our extensive range of safety relays always offers the right link between safety device and machine.

COMPACT AND SAFE

For the fast integration of individual safety sensors in the safety circuit of machines and systems, the compact and reliable safety relays offer the right solution.

Available in the product range are both evaluation units that are specifically tailored to various sensor types and technologies as well as units that can be used universally.

The applications range from the monitoring of simple components, such as E-Stops or safety switches, to the integration of optoelectronic sensors, the implementation of time-delayed applications or the standstill monitoring of motors.

All relays are available with either pluggable screw terminals or with spring-cage terminals. For the user, this means flexibility during installation and allows devices to be quickly exchanged should service be necessary.

- **Evaluation units**
  For the various safety switches, sensors and command devices, both custom as well as universal evaluation units are available.

- **Evaluation units with time function**
  These relays control, e.g., safe stopping for applications with stop category 1 with time delays up to 3 sec. or up to 30 sec.

- **Contact extensions**
  The contact-extension relays are suitable both for simple output extension for OSSDs as well as for contact multiplication for evaluation units or safety PLCs.

- **Standstill monitoring**
  The safe monitoring of standstill or low speed is performed by evaluating the pulses from incremental transmitters or proximity switches. It is used, e.g., to release guard interlocks or to monitor during setup mode.

THE RIGHT SAFETY RELAY AT A GLANCE

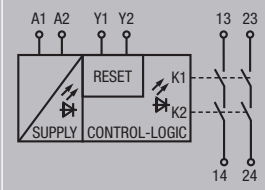
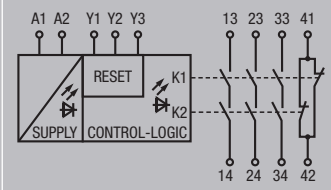
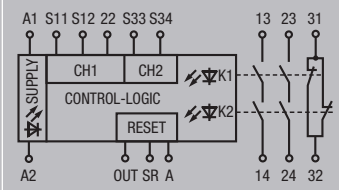
Here, you can quickly and easily find the right link between sensor and machine.

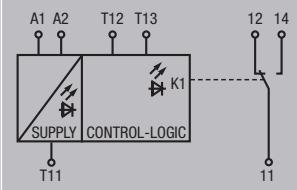
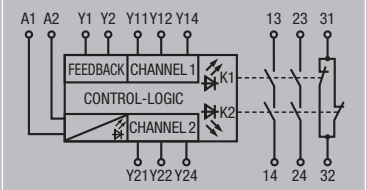
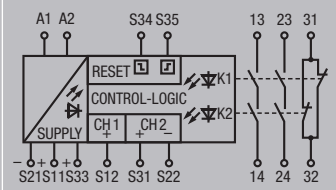
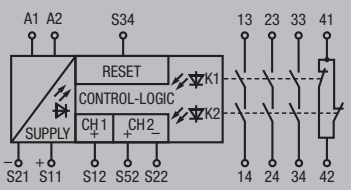
Sensor / application	Restart Manual / automatic	Contacts NO / NC	Additional functions	Performance Level	Product
Evaluation units					
		1 / 1		PL c	MSI-SR-2H1
		2 / 1		PL e	MSI-SR-2H21
	M / A	2/–		PL d	MSI-SR-ES20
	M / A	3 / 1		PL e	MSI-SR-ES31
	M / A	2 / 1		PL e	MSI-MC310
	M / A	2/–		PL e	MSI-MC311
	M / A	2 / 1		PL e	MSI-SR-LC21
	–/A	3 / 1		PL e	MSI-SR-LC31AR
	M/–	3 / 1		PL e	MSI-SR-LC31MR
	M / A	3 / 1		PL e	MSI-SR4
	M / A	2/–	2 x sensor inputs	PL e	MSI-SR5
	M / A	2 / 1		PL e	MSI-SR-LC21M
Evaluation units with time function					
	M / A	2/–	≤ 3 s/1 contact	PL e / d	MSI-SR-LC21DT03
	M / A	2/–	≤ 30 s/1 contact	PL e / d	MSI-SR-LC21DT30
	M / A	2/–	≤ 30 s/2 contacts	PL e	MSI-DT30

Two-hand control	Safety solenoid switches	Safety PS mat	Contact extension
E-Stop	Protective sensors / safety light curtains	Standstill monitoring	Type 2 safety sensor, testable
Safety switches and safety locking devices	Safety laser scanners	Time delay	Type 4 safety sensor, testable

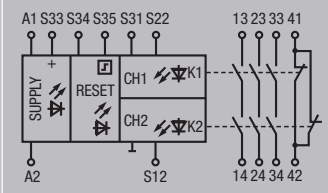
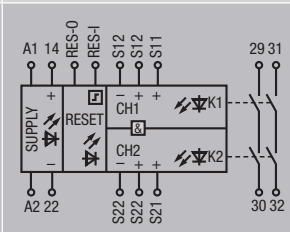
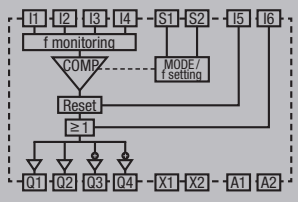
Sensor / application	Restart Manual / automatic	Contacts NO / NC	Additional functions	Performance Level	Product
Monitoring of standstill / low speed					
	M / A	2 / 2 semiconductor	≤ 99 Hz	PL e	MSI-SR-SM420S
Contact extensions					
OSSD output extension	A / –	2 / 1		PL e	MSI-RM2
	A / –	3 / 2		PL e	MSI-SR-CM32
A1 13 32 33 43 A2 14 24 34 44	A / –	4 / 3		PL d	MSI-SR-CM43
	A / –	5 / 2		PL e	MSI-CM52
	A / –	2 x (2 / 1)		PL e	MSI-SR-CM42R
A1 13 32 33 43 A2 14 24 34 44	A / –	4 / 3	= 3 s	PL d	MSI-SR-CM43DT03
Evaluation units for periodic testing					
	A / M	2 / 2		PL c	MSI-TR1
	A / M	2 / 2	130 ms filter	PL c	MSI-TR2
	A / M	2 / 2	=0.6 s/1 signal	PL c	MSI-TS
	A / M	2 / 2		PL e	MSI-TRM
Muting controller (field module)					
	– / M	OSSD outputs		PL e	MSI-MD-FB

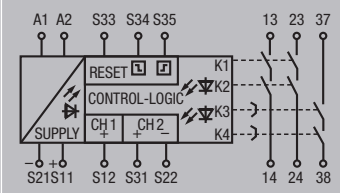
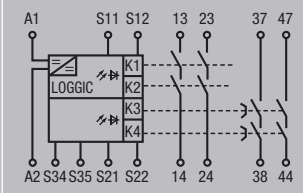
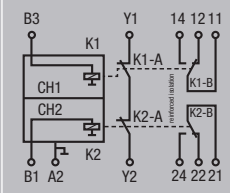
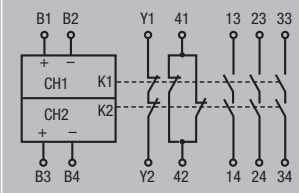
EVALUATION UNITS

	MSI-SR-ES20	MSI-SR-ES31	MSI-MC310 / 311
Device type / function	Evaluation unit	Evaluation unit	Evaluation unit
Sensors / application	E-STOP Safety switches with relay contacts	E-STOP Safety switches with relay contacts	Safety solenoid switches
Special function	–	–	–
Cat./performance level (EN ISO 13849-1)	3 / PL d	4 / PL e	4 / PL e
Safety Integrity Level (IEC 61508/EN IEC 62061)	SIL 2 / SIL_{CL} 2	SIL 3 / SIL_{CL} 3	–
Number of release contacts (NO contact)	2	3	2
Number of signal contacts (NC contact)	–	1	MC 310: 1 MC 311: –
Inputs / actuation	1- or 2-channel	1- or 2-channel	MC 310: 1 NC, 1 NO MC 311: 2 NC
Start, restart	Automatic, manual	Automatic, manual	Automatic, manual
Contactor monitoring (EDM)	X	X	X
Function indicator	2 LEDs	2 LEDs	3 LEDs
Regression delay	70 ms	60 ms	20 ms
Max. continuous current per path	6 A	8 A	3 A
Mech. Life expectancy	1×10^7	1×10^7	1×10^7
Ambient temp., operation	–25 … +55 °C	–25 … +55 °C	MC 310: 0 … +55 °C MC 311: –5 … +55 °C
Dimensions with screw terminals (W × H × D)	96.5 × 22.5 × 91.5 mm	96.5 × 22.5 × 107.6 mm	99.5 × 22.5 × 113.6 mm
Certifications	TÜV, $_{C}UL_{US}$	DGUV, $_{C}UL_{US}$	TÜV, $_{C}UL_{US}$
Functions overview			

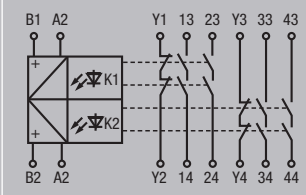
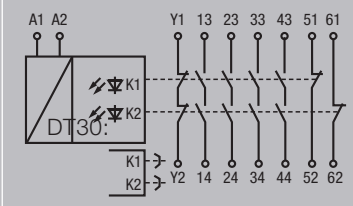
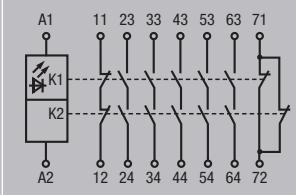
MSI-SR-2H1	MSI-SR-2H21	MSI-SR-LC21	MSI-SR-LC21M	MSI-SR-LC31MR	MSI-SR-LC31AR
Evaluation unit	Evaluation unit	Evaluation unit		Evaluation unit	
Two-hand control devices (type III A, EN 574)	Two-hand control devices (type III C, EN 574)	E-STOP Safety switches: - with relay contacts - with OSSD outputs - with magnetic contacts Safety light barriers Safety laser scanner LC21M: 4-conductor PS mat		E-STOP Safety switches: - with relay contacts - with OSSD outputs - with magnetic contacts Safety light barriers Safety laser scanner	
–	–	–		–	
1 / PL c	4 / PL e	4 / PL e		4 / PL e	
SIL 1 / SIL_{CL} 1	SIL 3 / SIL_{CL} 3	SIL 3 / SIL_{CL} 3		SIL 3 / SIL_{CL} 3	
1 (change-over contact)	2	2		3	
1 (change-over contact)	1	1		1	
1-channel (1 NC, 1 NO)	2-channel (1 NC and 1 NO per channel)	1- or 2-channel		1- or 2-channel	
Through synchronous actuation	Through synchronous actuation	Automatic, manual		Manual	Automatic
–	X	X		X	
2 LEDs	3 LEDs	3 LEDs		3 LEDs	
20 ms	50 ms	25 ms		10 ms	
5 A	6 A	6 A		8 A	
1×10^7	1×10^7	1×10^7		1×10^7	
–25 … +55 °C	–25 … +55 °C	–25 … +55 °C		–25 … +55 °C	
96.5 × 22.5 × 91.5 mm	96.5 × 22.5 × 114 mm	96.5 × 22.5 × 114 mm		96.5 × 22.5 × 114 mm	
TÜV, $_{C}UL_{US}$	DGUV, $_{C}UL_{US}$	DGUV, $_{C}UL_{US}$		TÜV, $_{C}UL_{US}$	
					

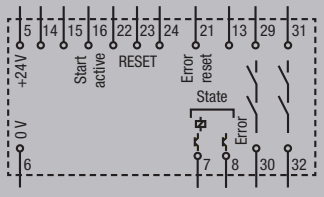
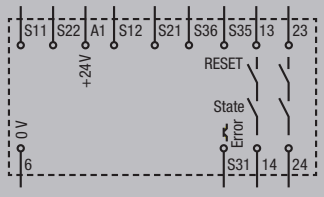
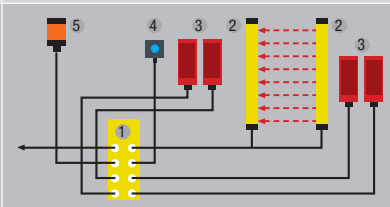
EVALUATION UNITS / WITH TIME FUNCTION, STANDSTILL MONITORING, OUTPUT EXTENSION FOR OSSDS

	MSI-SR-4	MSI-SR-5	MSI-SR-SM42OS
Device type / function	Evaluation unit	Evaluation unit	Monitoring of standstill and low speed
Sensors / application	E-STOP Safety switches: - with relay contacts - with OSSD outputs - with magnetic contacts Safety light barriers Safety laser scanner	E-STOP Safety switches: - with relay contacts - with OSSD outputs - with magnetic contacts Safety light barriers Safety laser scanner	Proximity switches A / B incremental transmitters, HTL
Special function	–	Parallel evaluation of 2 sensors	Speed limit / monitoring frequency 0.5 – 99 Hz
Cat./performance level (EN ISO 13849-1)	4 / PL e	4 / PL e	4 / PL e
Safety Integrity Level (IEC 61508/EN IEC 62061)	SIL 3 / SIL_{CL} 3	SIL 3 / SIL_{CL} 3	SIL 3 / SIL_{CL} 3
Number of release contacts (NO contact)	3	2	2 (semiconductor)
Number of signal contacts (NC contact)	1	–	2 (semiconductor)
Inputs / actuation	1- or 2-channel	2 x (1- or 2-channel)	1 or 2 sensors / encoders
Start, restart	Automatic, manual	Automatic, manual	Automatic, manual
Contactor monitoring (EDM)	X	X	X
Function indicator	4 LEDs	4 LEDs	12 LEDs
Regression delay	10 ms	10 ms	12 ms + 1,6 / f_{ST}
Max. continuous current per path	3 A	2 A	2 A
Mech. Life expectancy	1×10^7	1×10^7	Semiconductor, free from wear
Ambient temp., operation	0 … +55 °C	0 … +55 °C	–25 … +55 °C
Dimensions with screw terminals (W × H × D)	99.5 × 22.5 × 111.5 mm	99.5 × 22.5 × 111.5 mm	96.5 × 22.5 × 121 mm
Certifications	TÜV, $_{C}UL_{US}$	TÜV, $_{C}UL_{US}$	TÜV, $_{C}UL_{US}$
Functions overview			

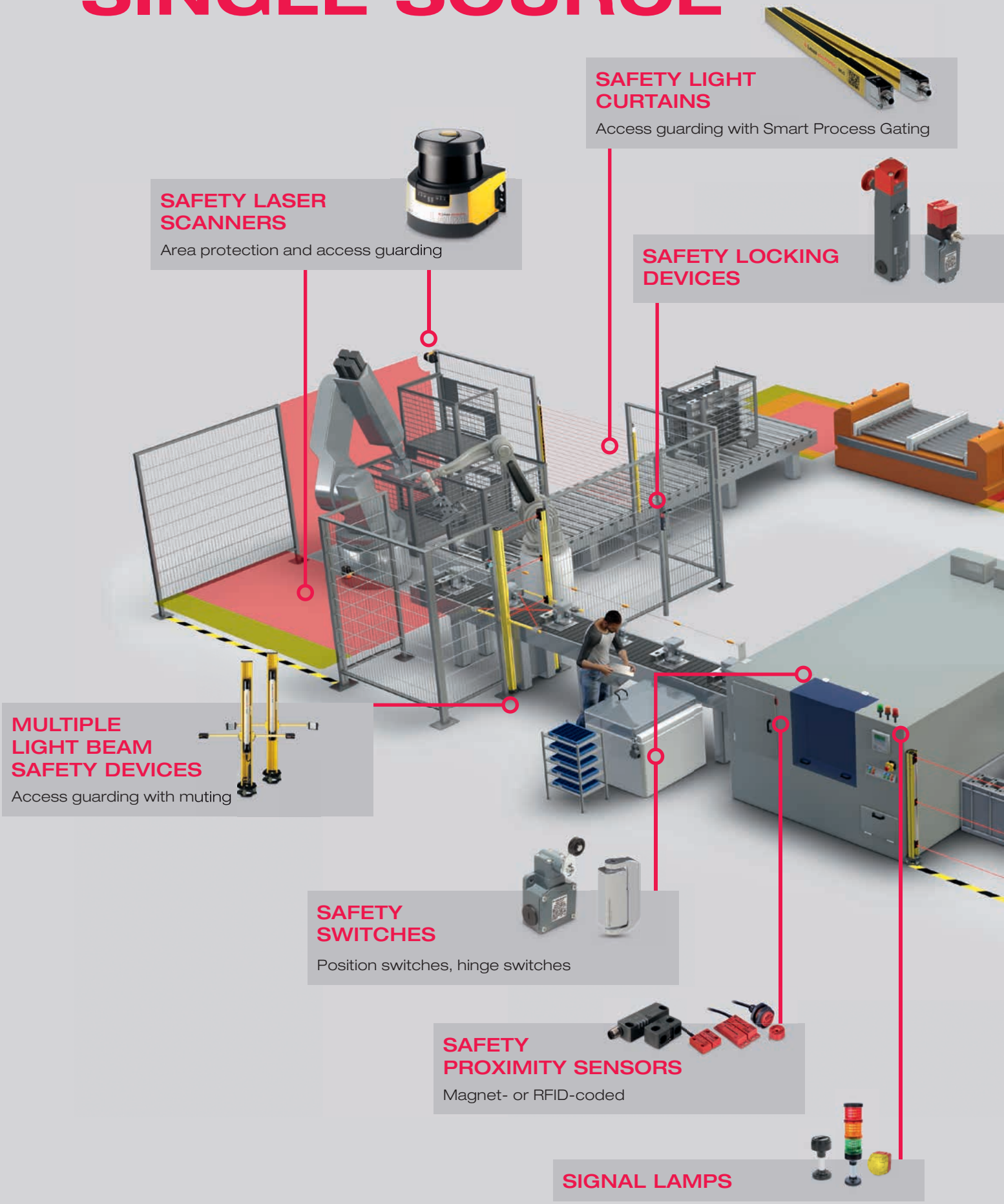
MSI-SR-LC21DT03/30	MSI-DT-30	MSI-RM2	MSI-SR-CM32
Evaluation unit with time delay	Evaluation unit with time delay	Output extension for OSSDs	Output extension for OSSDs
E-STOP Safety switches: - with relay contacts - with OSSD outputs Safety light barriers Safety laser scanner	E-STOP Safety switches: - with relay contacts - with OSSD outputs Safety light barriers Safety laser scanner	Safety light barriers Safety laser scanner Safety switches: - with OSSD outputs	Safety light barriers Safety laser scanner Safety switches: - with OSSD outputs
DT03: delay: 0.15 – 3 s DT30: delay: 1.5 – 30 s	Delay: 0.1 – 30 s	–	–
4 / PL e (3 / PL d for delayed contact)	4 / PL e	4 / PL e	4 / PL e
SIL 3 / SIL_{CL} 3 (2 / SIL_{CL} 2 for delayed contact)	SIL 3 / SIL_{CL} 3	SIL 3 / SIL_{CL} 3	SIL 3 / SIL_{CL} 3
2 + 1 delayed	2 + 2 delayed	2 (change-over contact)	3
–	–	1	2
1- or 2-channel	1- or 2-channel	2-channel OSSDs	2-channel OSSDs
Automatic, manual	Automatic, manual	Automatic	Automatic
X	X	–	–
3 LEDs	3 LEDs	2 LEDs	2 LEDs
25 ms	20 ms	10 ms	20 ms
6 A	6 A	3 A	6 A
1×10^7	1×10^7	1×10^7	1×10^7
–25 … +55 °C	–20 … +55 °C	0 … +50 °C	–25 … +55 °C
96.5 × 22.5 × 114 mm	99.5 × 22.5 × 111.5 mm	99 × 17.5 × 111.5 mm	96.5 × 22.5 × 114 mm
TÜV, $_{C}UL_{US}$	TÜV, $_{C}UL_{US}$	TÜV, $_{C}UL_{US}$	DGUV, $_{C}UL_{US}$
			

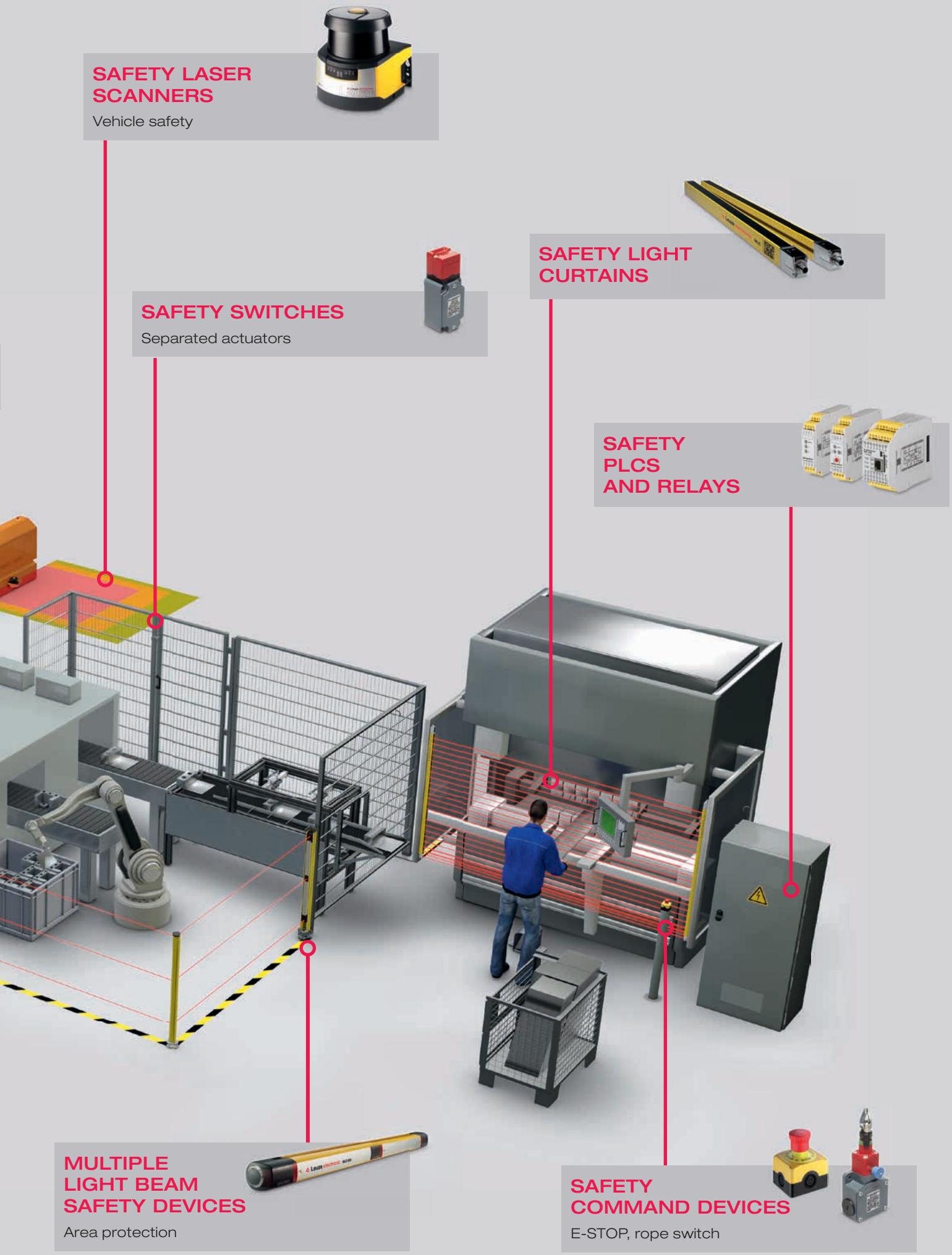
CONTACT EXTENSIONS, PERIODIC TESTING, MUTING

	MSI-SR-CM42R	MSI-SR-CM43/CM43DT03		MSI-CM52
Device type / function	Contact extension	Contact extension	Contact extension with time delay	Contact extension
Sensors / application	Extension for safety relays and safety PLCs	Extension for safety relays and safety PLCs		Extension for safety relays and safety PLCs
Special function	2 extensions in one device	–	Fixed delay 3 s	–
Cat./performance level (EN ISO 13849-1)	4 / PL e	3 / PL d		4 / PL e
Safety Integrity Level (IEC 61508/EN IEC 62061)	SIL 3 / SIL_{CL} 3	SIL 2 / SIL_{CL} 2		SIL 3 / SIL_{CL} 3
Number of release contacts (NO contact)	2 x 2	4		5
Number of signal contacts (NC contact)	2 x 1	3		2
Inputs / actuation	1- or 2-channel	1- or 2-channel		1- or 2-channel
Start, restart	Automatic	Automatic		Automatic
Contactor monitoring (EDM)	–	–		–
Function indicator	2 LEDs	2 LEDs		1 LED
Regression delay	15 ms	40 ms	3 s	20 ms
Max. continuous current per path	6 A	6 A		6 A
Mech. Life expectancy	1×10^7	1×10^7		1×10^7
Ambient temp., operation	–25 … +65 °C	–25 … +55 °C		–20 … +55 °C
Dimensions with screw terminals (W × H × D)	96.5 × 22.5 × 114 mm	96.5 × 22.5 × 114 mm		99.5 × 22.5 × 114.5 mm
Certifications	TÜV, $_{C}UL_{US}$	DGUV, $_{C}UL_{US}$		TÜV, $_{C}UL_{US}$
Functions overview				

MSI-TR1/2/S	MSI-TRM	MSI-MD-FB
Evaluation unit for periodic testing	Evaluation unit for periodic testing	Muting controller
Testable optoelectronic protective devices of type 2	Testable optoelectronic protective devices of type 4	Safety light barriers Safety multiple light beam devices additional muting sensors
TRS: fixed delay 0.6 s TR2: filter time 130 ms	–	–
2 / PL c	4 / PL e	4 / PL e
SIL 1 / SIL_{CL} 1	SIL 3 / SIL_{CL} 3	SIL 3 / SIL_{CL} 3
2	2	OSSD pair
2 (semiconductor)	2 (semiconductor)	–
1 or 2 input circuits, up to 3 sensors each	1 or 2 input circuits, up to 3 sensors each	Light barrier Muting sensors
Automatic, manual	Automatic, manual	Manual
X	X	–
4 LEDs	6 LEDs	7 segment, LEDs
20 ms	130 ms	–
2 A	3 A	–
1×10^7	1×10^7	–
–30 … +60 °C	–25 … +55 °C	–30 … +60 °C
99 × 22.5 × 111.5 mm	99 × 22.5 × 111.5 mm	225 × 60 × 37 mm
TÜV, $_{C}UL_{US}$	TÜV (in combination with SLS 46C)	TÜV
		 1 muting controller, 2 safety sensors, 3 muting sensors, 4 acknowledgment units, 5 muting indicators

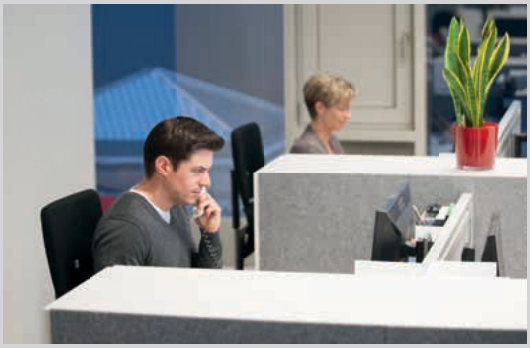
SAFETY FROM A SINGLE SOURCE




SAFETY LASER SCANNERS
Vehicle safety
SAFETY LIGHT CURTAINS
SAFETY SWITCHES
Separated actuators
SAFETY PLCS AND RELAYS
MULTIPLE LIGHT BEAM SAFETY DEVICES
Area protection
SAFETY COMMAND DEVICES
E-STOP, rope switch

ALWAYS THE RIGHT SERVICE FOR YOUR PROCESS

Legal security and efficient safety at work are successfully combined quickly and easily with our range of services.



For many people, complex planning or engineering tasks or the management of functional safety make the set of issues related to safety at work a closed book. In the area of legal security in particular, information gaps often exist. With our extensive, qualified offer on safety at work, you are on the safe side legally and can fulfill all legal guidelines easily.

We support your service department and, in the event of limited resources, make available the appropriately qualified team. We work with our experts to ensure the safety of your machines and systems. Your production and service team is free to perform its actual tasks. Our offerings are accompanied by an extensive range of training courses tailored to your needs.

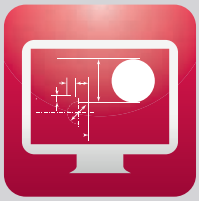
OUR SERVICE OFFERINGS INCLUDE

Status check Safety technology (MSSC)

Status check CE (MCSC)

Risk analysis / assessment (MRAS)

Conformity assess-ment of machines (MCMS)



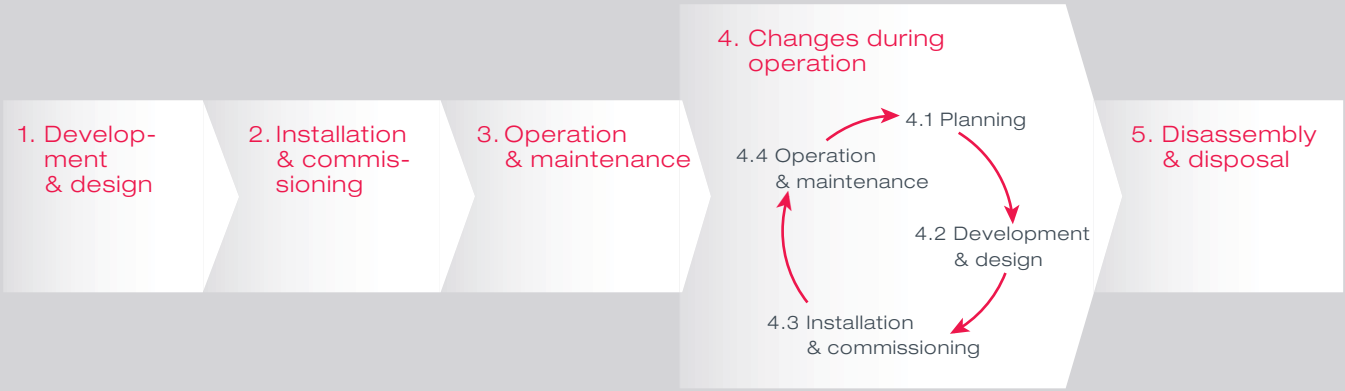
Development support for machine safety (MSEN)

Safety inspection (MSIN)

Functionality of protective devices (MSPT)

Validation and verification of safety functions (MSVV)

STAGES OF A MACHINE LIFE CYCLE



THE RIGHT SERVICES AT A GLANCE

Services	1. Development & design	2. Installation & commissioning	3. Operation & maintenance	4.1 Planning	4.2 Development & design	4.3 Installation & commissioning	4.4 Operation & maintenance	5. Disassembly & disposal
Status check Safety technology		●	●				●	
Status check CE	●		●		●	●	●	
Risk analysis / assessment	●		●	●	●		●	●
Conformity assessment of machines	●			●	●			
Development support Machine safety	●				●			
Safety inspections		●	●			●	●	
Functionality of protective devices		●	●			●	●	●
Validation and verification of safety functions		●				●		

YOUR PARTNER ABOVE AND BEYOND THE PRODUCT

Our sensor people offerings are made complete with our additional services and extensive support.

WE ARE YOUR SENSOR PEOPLE

It is not without reason that we are known in the industry as the sensor people. We have always known that a technically demanding business such as the sensor business, in particular, can only function if we are a reliable partner to our customers. It is a matter of much more than technical excellence in the products – it is a matter of a high level of knowledge about applications and technical relationships and the readiness to stand by our customers any time that they need us. Technically competent support is another element, such as the global presence of competent contacts and the 24/7 availability of our customer help desk.

TRAINING & SUPPORT

- Product and standards training
- Application consulting
- Safety consulting
- Safety engineering

AFTER SALES SERVICES

- 24h helpline (in selected countries)
- Inspection database
- Repairs and device replacement service
- On-site service

FIELD SERVICES

- Technical field service
- Start-up support
- Safety inspections
- Stopping time measurement

ONLINE SERVICES

- Web product selector
- Download services
- Webshop

OUR PROMISE TO YOU

SMARTER **PRODUCT USABILITY**

With regard to our product developments, we systematically place emphasis on the especially good usability of all devices. To this end, simple mounting and alignment are taken into account – just as the uncomplicated integrability of the sensors in existing field bus systems and easy configuration, e.g. via a web browser, are.

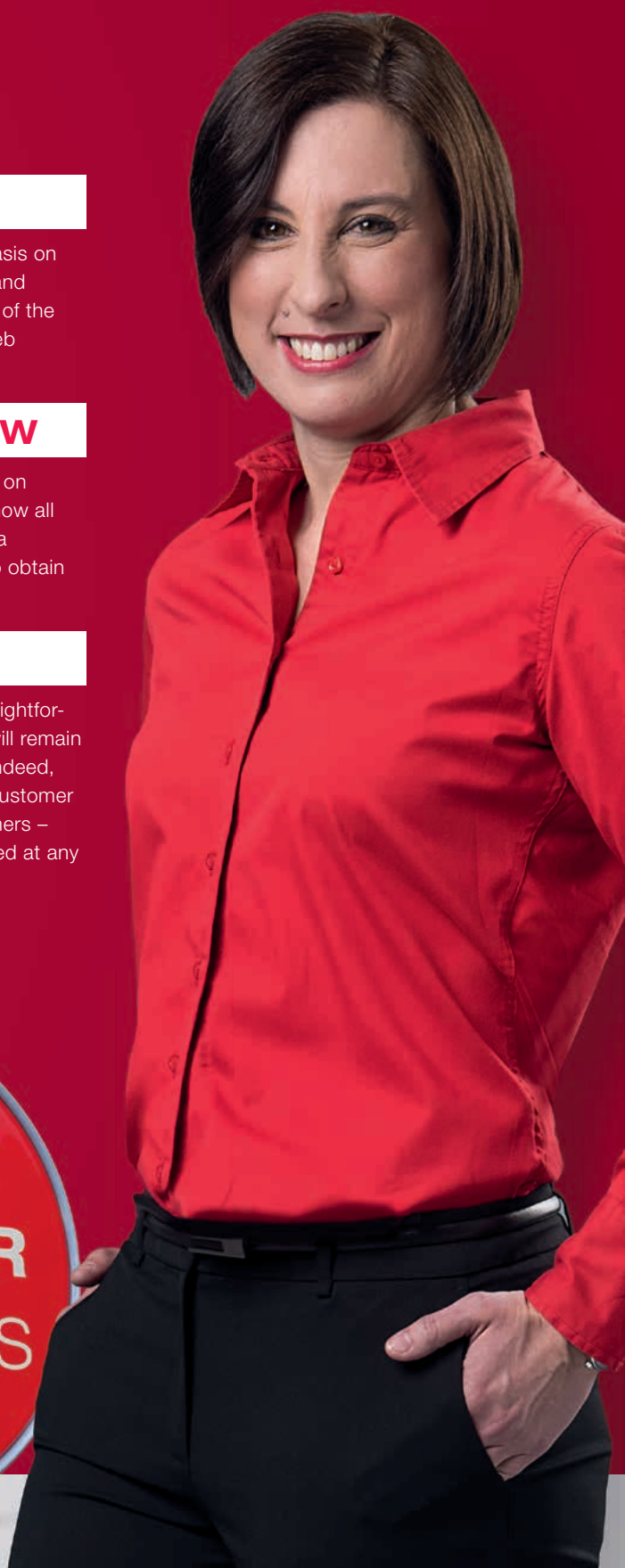
SMARTER **APPLICATION KNOW-HOW**

Whoever can do it all, can do nothing right. Which is why we concentrate on selected target sectors and applications. There, we are specialists and know all aspects inside out. For this purpose, we optimize our solutions and offer a comprehensive product range that makes it possible for our customers to obtain the absolute best solutions from a single source.

SMARTER **CUSTOMER SERVICE**

The technical and personal proximity to our customers, and a skilled, straightforward handling of queries and problems, are among our strengths – and will remain so. Consequently, we will continue to expand our service offerings and, indeed, also forge ahead in new directions to persistently redefine the utmost in customer service. Whether on the phone, on the Internet or on-site with our customers – regardless of when and where the expertise of the sensor people is needed at any time.

Info at: **www.leuze.com**



Martina Schili
Marketing
Communications Safety

Switching Sensors
Optical Sensors
Ultrasonic Sensors
Fiber Optic Sensors
Inductive Switches
Forked Sensors
Light Curtains
Special Sensors

Measuring Sensors
Distance Sensors
Sensors for Positioning
3D Sensors
Light Curtains
Forked Sensors

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Safe Control Components
Machine Safety Services

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Bar Code Identification
2D-Code Identification
RF Identification

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Data Transmission
Safe Control Components
Signaling Devices
Connection Technology and Passive Distribution Boxes

Industrial Image Processing
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Smart Camera

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