

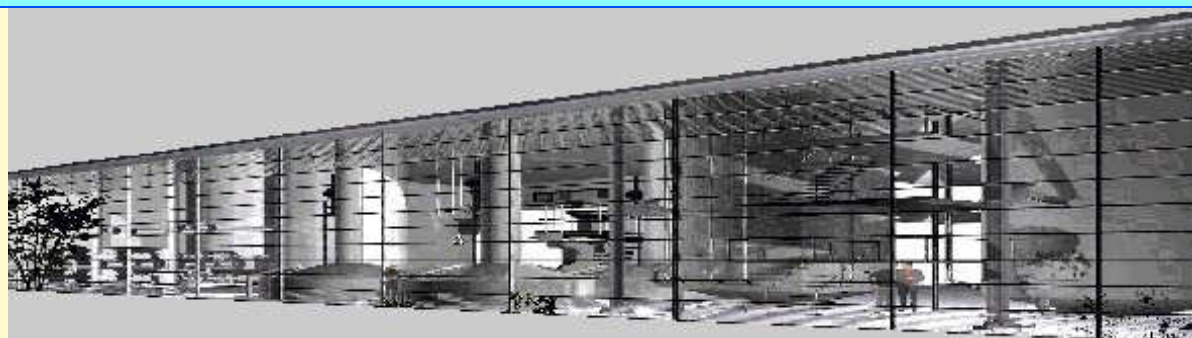
SIEMENS

BRAUMAT/SISTAR*Classic*

Competence in Process Technology

Version 5.3

Valid as of June 08, 2010



BRAUMAT / SISTAR - IOS

INFORMATION AND **O**PERATING **S**YSTEM

BRAUMAT / SISTAR - PCU

PROCESS **C**ONTROL **U**NIT

BRAUMAT / SISTAR

PERFORMANCE **P**ACKAGES

SIEMENS STANDARD TOOLS FOR THE AUTOMATION OF RECIPE-CONTROLLED PROCESSES



INTRODUCTION TO BRAUMAT / Sistar *Classic*

General

BRAUMAT/Sistar*Classic* is a powerful, technology-oriented process management and information system, optimized for the automation and supervision of processes in the batch processing industry.

BRAUMAT/Sistar*Classic* is the consistent further development of the established BRAUMAT/Sistar versions V4.x with considerably enhanced functionality.

Highlights are the recipe system according to ISA-S88 standard with integrated weighing control for batch processes and the powerful Route Control System with server redundancy.

It is made up of the BRAUMAT/Sistar*Classic* - PCU (**P**rocess **C**ontrol **U**nit) for the process control level and the BRAUMAT/Sistar*Classic* - IOS (**I**nformation and **O**peration **S**ystem) for process management. The system guarantees operational reliability as well as the protection of your investment.

The name BRAUMAT was retained for historical reasons for brewery applications. Sistar and BRAUMAT are identical, i.e. whatever is said below about BRAUMAT, applies equally to Sistar.

Operational reliability

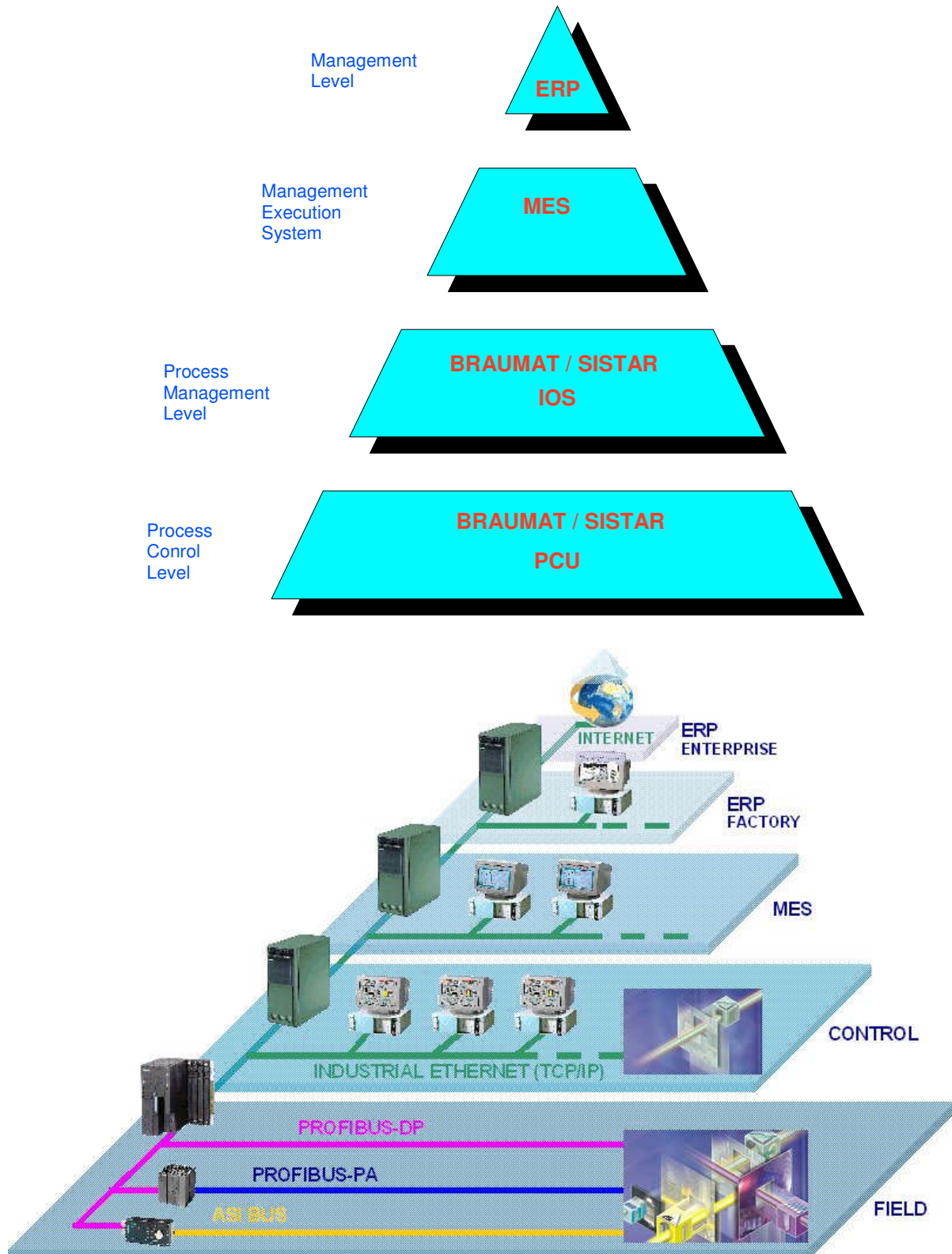
- Back-up strategy (recipes, archives, reports, configuration data... are stored redundantly on two IOSs)
- Log function
- Extensive on-line help system
- Password (levels 2 ... 255)
- Presentation close to reality via a high graphical solution
- Process-oriented

Protection of your investment

- Worldwide deployment of BRAUMAT/Sistar*Classic* systems
- Adaptable system scope
- Network-able, distributed system, possibility of modular expansion
- Use of international standard hardware (Intel-PC, Windows, TCP/IP, SIMATIC)
- Open system (WindowsTM)
- User-friendly recipe generation: The functions of the BRAUMAT/Sistar*Classic* Batch package are according to international IEC 61512-1 and ANSI/ISA-S88.01 standards.
- Modern user interface (Windows Standard)
- Integration of WindowsTM applications (WORD, EXCEL, ACCESS, ...)
- Use of standard graphic tools (CorelDRAW, DESIGNER, ...)
- C and Visual C++ Programming language
- Networking via TCP/IP and SoftCP or SIMATIC NET - Industrial Ethernet - H1
- Combination of SIMATIC S5 and SIMATIC S7 in one installation

The Automation Pyramid

A company has to handle diverse tasks of automation and organization. For these different tasks, different systems are used which are specially designed for the task in question. These systems can be represented in the automation pyramid by means of different levels and the corresponding BRAUMAT/SISTAR Classic systems:



System Architecture

Process management level BRAUMAT/SISTAR*Classic* - IOS

The process management level uses BRAUMAT/SISTAR*Classic* IOS systems for monitoring and archiving process data. The systems are based on standard components such as PC hardware and Windows™ operating systems completed with BRAUMAT/SISTAR*Classic* configuration software.

BRAUMAT/SISTAR*Classic* combines user-friendly, intuitive operator control and a wide range of functionality. On-line connection to other WINDOWS™ applications (MS-EXCEL, MS-ACCESS,...) is easily done.

Process control level BRAUMAT/SISTAR*Classic* - PCU

For process control, BRAUMAT/SISTAR*Classic* PCU systems are installed. They consist of the programmable controllers SIMATIC S7-400 (CPU 414-3, CPU 416-2, 416-3, 417-4) and the appropriate technological program modules. They are responsible for control and supervision of processes and acquisition and processing of measured values.

Communication systems

Communication between BRAUMAT/SISTAR*Classic* systems is done by using an efficient industry bus, based on SoftCP or SIMATIC NET - Industrial Ethernet - H1. Additionally, the PC-based BRAUMAT/SISTAR*Classic* IOSs can use all types of TCP/IP communication systems. This ensures a maximal open system that can be integrated into existing computer networks.

Back-up devices

The IOS back-up device strategy ensures that in the case of a failure of a critical device its function is automatically taken over by a back-up device:

- All process displays are kept redundantly on every IOS
- Message log, step logs and batch data are stored in IOSs
- The decentralized structure guarantees high reliability
- The process bus can be designed as a double bus

Configuration

BRAUMAT/SISTAR*Classic* is configurable and integrates an engineering tool to support the generation and documentation of application components.

For project engineers and operators, BRAUMAT/SISTAR*Classic* offers standardized process control objects for a clear and reproducible structuring of the system to the design engineer and the operator.

It is a uniform system throughout the plant with **technological** functions.

The configuration in BRAUMAT/SISTAR*Classic* of the communication between technological objects in IOS and PCU is completely independent (Plug and Play solution).

User interface

The user interface follows generally accepted guidelines for user interfaces on Windows. Operating elements provided by Windows, such as windows, menus and icons are used. Operations are made via keyboard and mouse, control panels and dialog boxes. This leads to a uniform user interface that makes learning and operating as easy as with other Windows programs.

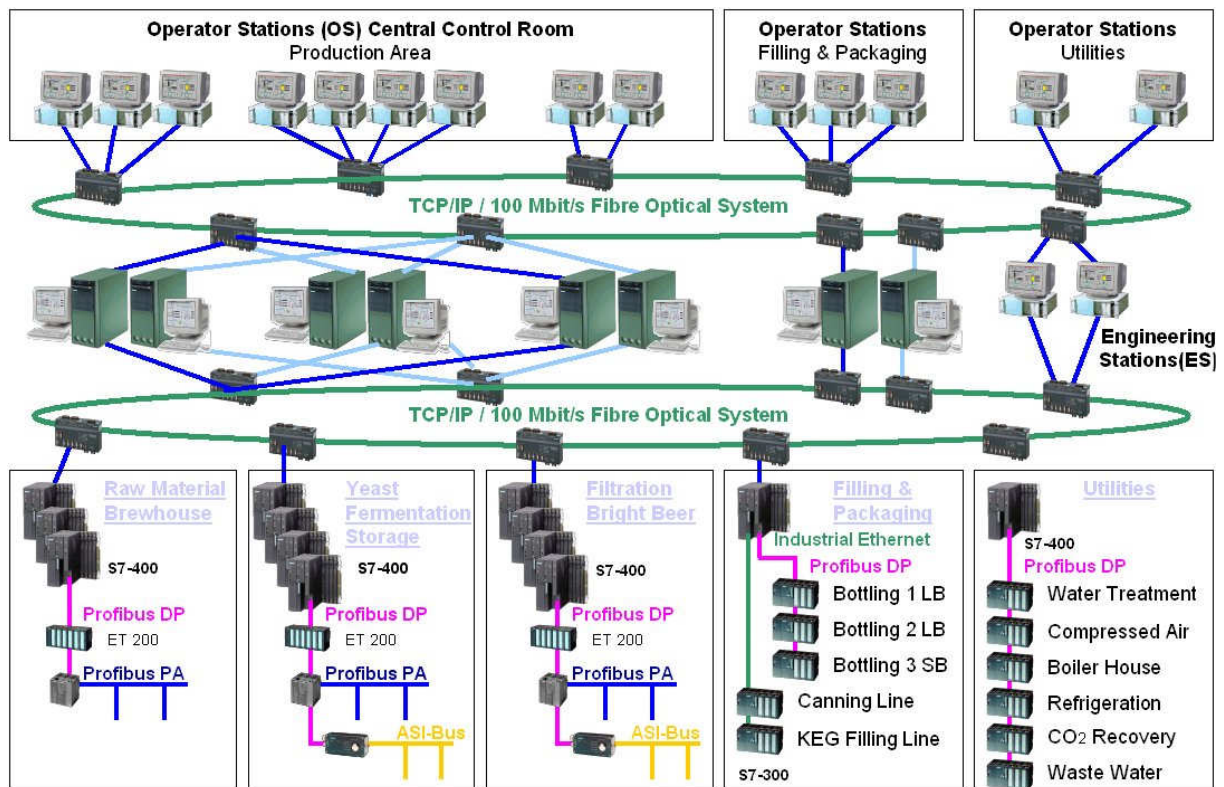
Important frequently used functions and acknowledgements are shown in the symbol bar and are also accessible via function keys.

Process displays

Full graphics and high-resolution display of process images make them appear very close to reality. Background images are designed by using any graphics tools that are compatible to Windows and that are able to create bitmap files. These background images are superimposed in the image construction with dynamic objects representing on-line process data and technological objects. Technological objects are operated via special dialog boxes.

System configuration

BRAUMAT/SISTAR*Classic* can be adapted to any size of installation - from a stand-alone solution (1 PC with MPI connection to S7-400) to a company wide extensive network system. The configuration can be changed and expanded. The BRAUMAT/SISTAR*Classic* - client/server structure allows an expansion by any amount of PCs and PLCs.



Function Modules

System Modules

Individual control modules (ICM) and closed-loop controllers

For ICMs, BRAUMAT/SISTAR*Classic* contains standard objects for control, interlocking and monitoring of actuators, valves, motors, slide valves, etc. The configuration of ICMs automatically generates the corresponding messages and a detailed display with the following functions:

- Status display of the ICM
- ON-OFF signal using manual mode
- Acknowledgement of faults/messages
- Note function
- Diagnosis of the corresponding operation interlocks via display of 'status'.
- Standard objects for controller are also available in BRAUMAT/SISTAR*Classic*. They are designed as PID or three-step software controllers with a suitable desktop. Here too, suitable display elements and operator input facilities; as well as short-term curves are made available.
- All technological objects are available in the form of Faceplates.

Process displays and their generation

The plant's on-line process data is displayed in full graphics.

- Operation of technological objects by using particular dialog boxes.
- For the selection of other process displays, buttons, objects or menus are used.
- Of course 'freezing' and printing of current process images are possible.
- Arbitrary Windows programs (exe-files) can be started out of process displays.
- Background images can be designed using all WINDOWS - compatible tools that create bitmap files (*.bmp).
- Symbols for actuators and binary displays are available in the extensive symbol library that can be freely extended by the user.

Integrated PCU-Engineering Tool

BRAUMAT/SISTAR*Classic* is **configurable** and includes an engineering tool to support generation and documentation of application components. For project engineers and operators, BRAUMAT/SISTAR*Classic* offers standardized process control objects for a clear and reproducible structuring of the system.

- Status display of all SIMATIC blocks (OB, FB, FC)
- SIMATIC blocks are stored on hard disk. The status information is continuously updated on-line by the PCU.
- Editing of any PCU data blocks (DB) throughout the network.
- Storing / loading of recipes or any SIMATIC blocks from IOS hard disk to PCU RAM or vice versa.

Event Processing and Trouble Shooting

Faults and process signals can be displayed and selected by types.
Comments can be added to faults.

Event Logs

Events are all faults and manual interventions by the operating staff. Messages and faults are stored in daily files and can be evaluated by different criteria.

Sequence Step Logs

Configurable data of current recipe processing in plant sections are automatically stored as Sequence Step Logs with job and recipe no. and can be printed out (list of basic operations with date, starting time, setpoint and actual values).

Message Log

All faults, events and manual interventions of each batch can be displayed and stored in daily files. The selection of messages from these files by different criteria is possible. These daily files can be used for any other evaluation purpose as well.

Maintenance Data

Preventive maintenance leads to increased operational reliability. The maintenance module offers:

- Registration and visualization of operating hours and switching cycles of all actuators
- Supervision of freely-configurable maintenance intervals with user-defined messages

Trending System

All measured values (related to batches or orders) can be stored in a curve archive. The curve archive offers the following functions:

- Process-oriented, trigger-able and batch-specific archiving of measured values in short-term (RAM) or long-term archives (files)
- Time-dependent storing of non-batch values
- Fade in of set-point curves to evaluate actual value curves
- Visualization and logging as full graphics curves with variable (manual) or automatic scaling of axes
- Selection of different analog/digital values per group to be displayed
- Integrated tools like a curve ruler for better readability
- Editing of set-point curves (graphical or via tables)

Order System

The order system offers:

- Easy specification of number and sequence of production orders and batches
- Entry of additional production parameters with automatic adjustment of recipes to the optimum batch size
- Changes to defined order-specific production and process parameters
- Display of batch sequence with order parameters
- Visualization of order status
- Display of batch tracking

Graphical Recipe System

The recipe system is based on the following major elements:

- By grouping diverse basic operations (what's to be done), the basic recipes define the processing steps of the production with their sequence and alternatives and synchronization (=interconnections between different plant sections).
- The component list describes the components of raw material (bill of material) that are used for productions according to a special recipe.
- The master recipe characterizes processing parameters (time, temperature, pressure, etc). These parameters can be entered dynamically (by orders, recipe types, manual input).
- Integration of user-friendly, extensive recipe generation and management systems. The recipe system is standardized according to IEC 61512-1 and ANSI/ISA-S88.01 standards. Operator control and visualization is done graphically and in list form.

Weighing and Proportioning

- Fully automated weighing of several components
- Reproducible accuracy
- Uniform operator control of different weighing systems (i.e. SIWAREX M, meter scale, cantilever scale)
- Free allocation of components to silos, weighing systems.
- Setting of weighing parameters (i.e. set-point: Coarse / fine dosing, tolerances, calibration...).
- Proportioning via volume and flow meter
- Integrated in the recipe system

Route Control System

Production plants often have numerous production routes. Similarly, cleaning programs must be safely controlled versus the production process. The Route Control module provides a technological configuration of the production and CIP routes, clear diagnostics for maintenance and operation, and the documentation of all routes by means of cross-reference lists.

- Tool for the engineering of complex product routes
- Runtime system to control the production and CIP routes
- Diagnostic and signaling tool for production and CIP routes
- Representation of complex production and CIP routes of large plants
- Effective configuration by arrangement into partial routes
- Uniform and transparent configuration of the routes

Basic Modules

Redundant Server Runtime Module

The Runtime Module is standard equipment of every IOS. It includes the following applications:

Basic menu, plant overview, process images, recipe system, standard order system, controller input, actuators, message logs, sequence step logs, free logs, maintenance data, special values, status, forcing, DB editor, block transfer, system settings, synchronization, archive manager and PCU server for the IOS - PCU communication.

All applications have an extensive on-line help system.

The module must be ordered twice for one redundant server pair!

6FD7680-0AA03

Single-Station Server Runtime Module

The Runtime Module is standard equipment of every IOS. It includes the following applications:

Basic menu, plant overview, process images, recipe system, standard order system, controller input, actuators, message logs, sequence step logs, free logs, maintenance data, special values, status, forcing, DB editor, block transfer, system settings, synchronization, archive manager and PCU server for the IOS - PCU communication.

All applications have an extensive on-line help system.

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Client Runtime Module

The Runtime Module is standard equipment of every IOS. It includes the following applications:

Basic menu, plant overview, process images, recipe system, standard order system, controller input, actuators, message logs, sequence step logs, free logs, maintenance data, special values, status, forcing, DB editor, block transfer, system settings, synchronization, archive manager and PCU server for the IOS - PCU communication.

All applications have an extensive on-line help system.

6FD7680-0AC03

Engineering Module

The Engineering Module is used to parameterize the technological objects and for the creation of process images.

It includes the following applications:

Image construction, graphical recipe editor, parameterization, text parameterization, curve input. All applications have an extensive on-line help system. Required once per system.

6FD7680-0AD03

PCU Library

The Basic Module is standard equipment of every PCU (SIMATIC S7-400 CPU 414/416/417). It includes the IOS - PCU communication, the PCU - PCU communication as well as all technological objects.

6FD7680-0AU03

Optional Modules

PCU Library Weighing and Dosing System

Fully integrated weighing and proportioning system in conjunction with the recipe system. The following scales can be connected:

- SIWAREX M
- FM350 meter scale - 1 channel
- Tilt scales

6FD7680-0AW03

Server Order System

Extended order system: Convenient handling of the number and sequence of production orders and batches. Input of additional production parameters with automatic adjustment of recipes to the optimum batch size. Display of batch sequence with order parameters. Visualization of order status, display of batch tracking, batch history.

6FD7680-0GA03

Client Order System

Extended order system: Convenient handling of the number and sequence of production orders and batches. Input of additional production parameters with automatic adjustment of recipes to the optimum batch size. Display of batch sequence with order parameters. Visualization of order status, display of batch tracking, batch history.

6FD7680-0GB03

Material Administration Server

The ingredients list specifies the materials required for dosing in the recipe procedure. Flexible allocation of the materials to silos and scales. This function is required in conjunction with the weighing and dosing system.

6FD7680-0GH03

Material Administration Client

The ingredients list specifies the materials required for dosing in the recipe procedure. Flexible allocation of the materials to silos and scales. This function is required in conjunction with the weighing and dosing system.

6FD7680-0GJ03

Batch Curve Server

Measured values (related to batches or orders) can be stored in a curve archive. The curve archive offers the following functions:

- Process-oriented, trigger-able and batch-specific archiving of measured values in short-term (RAM) or long-term archives.
- Time-dependent storing of non-batch values.
- Fade in of comparison curves to evaluate actual value curves

6FD7680-0GM03

Batch Curve Client

Measured values (related to batches or orders) can be stored in a curve archive. The curve archive offers the following functions:

- Process-oriented, trigger-able and batch-specific archiving of measured values in short-term (RAM) or long-term archives.
- Time-dependent storing of non-batch values.
- Fade in of comparison curves to evaluate actual value curves

6FD7680-0GN03

Optional Modules for Route Control System

Route Control System Engineering

Off-line engineering module to configure the routes.

The Route Control System module is only available in conjunction with SIMATIC S7-400.

Required once per system.

6FD7680-0GR03

Route Control System (RCS) Server

The RCS Server processes the route requirements of the AS. From the information on source/target/mode, used or free elements, the system compiles the route list and loads it to the AS(s).

6FD7680-0GP03

Route Control System (RCS) Client

The RCS Client enables the user to monitor and diagnose the status of the different routes/elements during runtime (faceplate). In addition, the user can request and start specific routes in manual mode.

6FD7680-0GQ03

AS Library Blocks Route Control System

AS (PCU) blocks for SIMATIC S7-400 CPU 417-4 AB, 8MB RAM.

With a CPU 416-3, up to 30 routes can be controlled simultaneously.

6FD7680-0GX03

Coupling Modules

SoftCP Driver

Industrial Ethernet, NIC driver, ISO Layer 4 Transport driver. Server connection to the process bus via Ethernet network card. Suitable for the simultaneous operation of SIMATIC S5 and S7 on a process bus.

6FD7680-0PD03

Update and Upgrade Modules

Update for Runtime System Software

Update of the versions V2.13 till V3.22 to V5.3 for one IOS. The update includes all the modules of the old version, except the Engineering Module and SoftCP. Communication is possible with the released PCUs (SIMATIC S5/S7).

6FD7680-0RA03

Update for Runtime System Software

Update of the versions V3.52 till V4.50 to V5.3 for one IOS. The update includes all the modules of the old version, except the Engineering Module and SoftCP. Communication is possible with the released PCUs (SIMATIC S5/S7). This package is needed if the connected PCU is not a released SIMATIC S7.

6FD7680-0RB03**Update for Runtime System Software**

Update of the versions V4.xx to V5.3 for one IOS. The update includes all the modules of the old version, except the Engineering Module and SoftCP. Communication is possible with the released PCUs (SIMATIC S5/S7). This package is needed if the connected PCU is a released SIMATIC S7.

6FD7680-0RC03**Update for Runtime System Software**

Update of the versions V4.6 auf V5.3 for one IOS. The update includes all the modules of the old version, except the Engineering Module and SoftCP. Communication is possible with the released PCUs (SIMATIC S5/S7). This package is needed if the connected PCU is a released SIMATIC S7.

6FD7680-0RD03**Update for Engineering Module System Software**

Update of the versions V2.13 till V3.22 to V5.3. The update includes the Engineering Module. Communication is possible with the released PCUs (SIMATIC S5/S7).

6FD7680-0RE03**Update for Engineering Module System Software**

Update of the versions V3.52 till V4.50 to V5.3. The update includes the Engineering Module. Communication is possible with the released PCUs (SIMATIC S5/S7). This package is needed if the connected PCU is not a released SIMATIC S7.

6FD7680-0RF03**Update for Engineering Module System Software**

Update of the versions V4.xx to V5.3. The update includes the Engineering Module. Communication is possible with the released PCUs (SIMATIC S5/S7). This package is needed if the connected PCU is a released SIMATIC S7.

6FD7680-0RG03**Update for Engineering Module System Software**

Update of the versions V4.6 to V5.3. The update includes the Engineering Module. Communication is possible with the released PCUs (SIMATIC S5/S7). This package is needed if the connected PCU is a released SIMATIC S7.

6FD7680-0RH03**Upgrade of the Compact System Software to a Full Version**

Upgrade for one IOS

6FD7680-0SA03**Upgrade of the Compact System Software to a Full Version**

Upgrade of the AS Library

6FD7680-0SD03

Compact Modules (introductory solution)

BRAUMAT / SISTAR Compact System Software for 1 IOS

6FD7680-0UA03

BRAUMAT/SISTAR Compact is a combined introductory solution for small systems with a fixed scope of performance. BRAUMAT/SISTAR Compact consists of one PCU (SIMATIC S7-400 with CPU 416-2DP, 5.6 MB (2.8MB code / 2.8MB data) RAM and a MPI link to not more than three IOSs. The system software included in BRAUMAT/SISTAR consists of the Runtime and the Engineering Module, the Basic Module for S7-400, incl. coupling and documentation. Networking of the IOSs is possible by means of TCP/IP.

Please note:

Except for the Batch Curve module, no other modules are available for BRAUMAT/SISTAR Compact.

BRAUMAT / SISTAR Compact System Software for 2 IOSs

6FD7680-0UB03

BRAUMAT/SISTAR Compact is a combined introductory solution for small systems with a fixed scope of performance. BRAUMAT/SISTAR Compact consists of one PCU (SIMATIC S7-400 with CPU 416-2DP, 5.6 MB (2.8MB code / 2.8MB data) RAM and a MPI link to not more than three IOSs. The system software included in BRAUMAT/SISTAR consists of the Runtime and the Engineering Module, the Basic Module for S7-400, incl. coupling and documentation. Networking of the IOSs is possible by means of TCP/IP.

Please note:

Except for the Batch Curve module, no other modules are available for BRAUMAT/SISTAR Compact.

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