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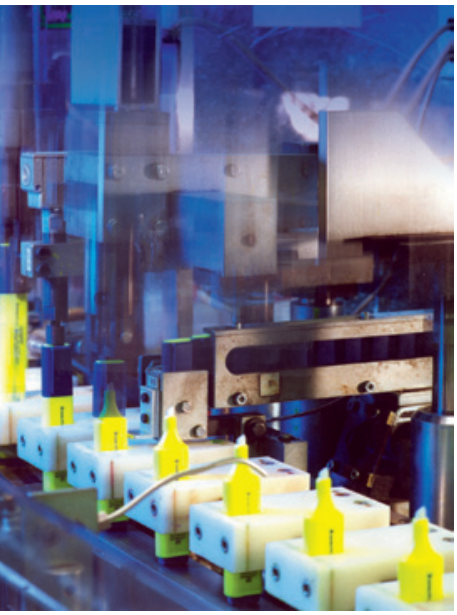
PROFIBUS

4



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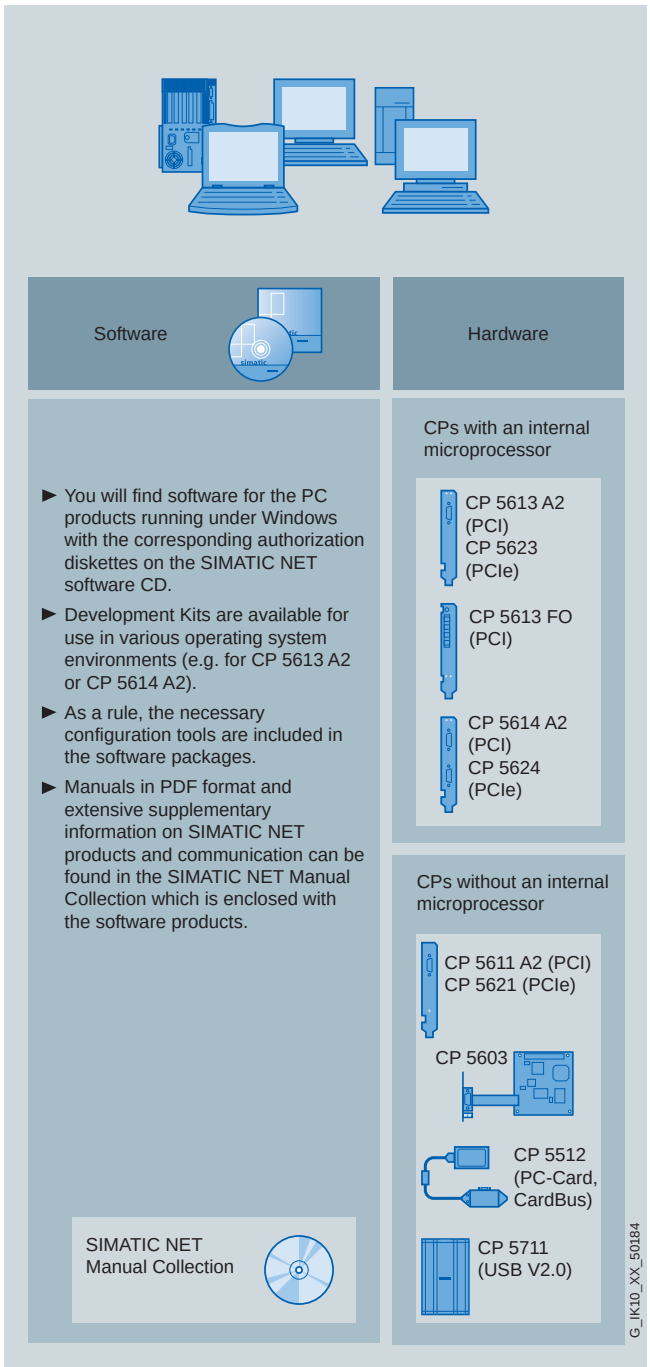
Overview

Communications processors for PG/PC



System connections for PG/PC

PC card with an internal microprocessor

Recommended solution for:

- PC-based control systems (Soft Control, PLC, Numeric Control, Robot Control)
- Process control systems
- Operator control and monitoring systems (HMI)
- PROFIBUS DP slave connection (CP 5614 A2)
- PROFIBUS plants with large quantity framework (more than 8 stations)
- Multi-protocol operation
- Use of several CPs in one system
- Designs with fiber-optic interface (FO)

PC card without an internal microprocessor

Recommended solution for:

- Configuring tools (e.g. STEP 7)
- PROFIBUS DP diagnostics station (e.g. with COM PROFIBUS or as DP master Class 2)
- PROFIBUS DP slave connection
- PROFIBUS plants with up to 8 stations
- Mono protocol mode

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Communication overview for PG/PC

Hardware	Software	Operation system (32 Bit)				OPC 6)	PROFIBUS DP			PROFIBUS FMS			PG/OP	S7 communication	Open communication 8)
		Windows XP Pro	Windows 2003 Server / 2003 R2 Server	Windows Vista Business / Ultimate	other operating systems		DP MasterClass 1	DP MasterClass 2	DP slave	Read	Write	Info/Report			
CP 5603 (PCI-104) CP 5613 A2 CP 5613 FO CP 5614 A2 (PCI 32 Bit) CP 5623 CP 5624 (PCIe x1)	CP with DP-Base 1) 4)	•	•	•		•	•	•	• 6)				•		•
	DP-5613 4)	•	•	•		•	•	•					•		•
	S7-5613	•	•	•		•							•	•	•
	FMS-5613	•	•	•		•				•	•	•	•		•
	DK-5613	• 7)	• 7)	• 7)	• 7)		•		• 6)						
CP 5611 A2 (PCI 32 Bit)	SOFTNET-DP	•	•	•		•	• 2)3)	• 2)3)							•
CP 5621 (PCIe x1)	SOFTNET-DP Slave	•	•	•		•			• 2)						
CP 5512 (CardBus 32 Bit)	SOFTNET-S7	•	•	•		•							•	•	•
CP 5711 (USB V2.0)	STEP 7	•	•	•									•		

You can find more information on the Internet
http://www.siemens.com.simatic-net/ik-info
If you have questions on LINUX projects
please contact I&S
E-mail: it4industry@siemens.com

1) Included in scope of supply of the CP 5613/A2/CP 5613FO/CP 5614 A2
2) DP master and DP slaves cannot be operated simultaneously
3) Master Class 1 and Master Class 2 cannot be operated simultaneously on one CP
4) DP-Base and DP-5613 cannot be operated simultaneously
5) Only with CP 5614
6) Incl. XML DA interface for data access
7) With porting via DK-5613
8) SEND/RECEIVE based on the FDL interface

on SIMATIC NET-CD Edition 2008

• suitable

not applicable

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Communication overwiew for PG/PC

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Overview

Communication overview for SIMATIC PCs

The operating systems listed in the table refer exclusively to the communication products specified!

Please refer to the description of the relevant IPC for the operating system that is available and has been released for that IPC.

														Embedded Systems					
Communication hardware	Communication hardware	Operating system environment of the communication software					SIMATIC Industrial PC/ Field PG							Op. sys.	SIMATIC Industrial PCs [4]				
		Windows XP Pro + SP2/3	Windows Server 2003 R2 / SP2	Windows Server 2008	Vista Business / Ultimate + SP1	other operating systems	Field PG M	Rack PC 847B	Rack PC 647B	Rack PC 547B / 547C, Panel PC 577B / 577C	Box PC 627B	Box PC 827B	Microbox 427B / 427C (with CP 5603)	Windows XPembedded + SP1/SP2/FP 2007 (with CP 5603)	Microbox 427B / 427C (with CP 5603)	Panel PC 477B / 477C (with CP 5603)	Panel PC 677B / 677C [4]	Box PC 627B	SIMATIC S7 modular Embedded Controller
CPs and software for Industrial Ethernet																			
CP 5603 (PCI-104)	CP with DP-Base	●	–	–	–	–	–	–	–	–	–	–	●	●	●	●	–	–	–
	DK-5613 [1] (DP-base)	○	–	–	–	○	–	–	–	–	–	–	○	○	○	○	–	–	○
	DP-5613	●	–	–	–	–	–	–	–	–	–	–	●	●	●	●	–	–	–
	S7-5613	●	–	–	–	–	–	–	–	–	–	–	●	●	●	●	–	–	–
CP 5613 A2 CP 5613 FO CP 5614 A2 (PCI 32 Bit)	CP with DP-Base	●	●	●	●	–	–	●	●	●	●	●	–	–	–	–	●	●	–
	DK-5613 [1] (DP-base)	○	○	○	○	○	–	○	○	○	○	○	–	○	–	–	○	○	–
	DP-5613	●	●	●	●	–	–	●	○	●	●	●	–	–	–	–	●	●	–
	S7-5613	●	●	●	●	–	–	●	○	●	●	●	–	–	–	–	●	●	–
	FMS-5613	●	●	●	●	–	–	●	○	●	●	●	–	–	–	–	●	●	–
CP 5623 CP 5624 (PCIe x1)	CP with DP-Base	●	●	●	●	–	–	○[5]	●	●	○[5]	○[5]	–	–	–	–	○[5]	○[5]	–
	DK-5613 [1] (DP-base)	○	○	○	○	○	–	○[5]	○	○	○[5]	○[5]	–	○	–	–	○[5]	○[5]	–
	DP-5613	●	●	●	●	–	–	○[5]	●	●	○[5]	○[5]	–	–	–	–	○[5]	○[5]	–
	S7-5613	●	●	●	●	–	–	○[5]	●	●	○[5]	○[5]	–	–	–	–	○[5]	○[5]	–
CP 5611 A2 (PCI 32 Bit)	SOFTNET-DP	●	●	●	●	–	–	●	●	●	●	●	–	–	–	–	●	●	–
	SOFTNET-DP Slave	●	●	●	●	–	–	●	●	●	●	●	–	–	–	–	●	●	–
	SOFTNET-S7	●	●	●	●	–	–	●	●	●	●	●	–	–	–	–	●	●	–
CP 5621 (PCIe x1)	SOFTNET-DP	●	●	●	●	–	●	○[5]	●	●	○[5]	○[5]	–	–	–	–	○[5]	○[5]	–
	SOFTNET-DP Slave	●	●	●	●	–	●	○[5]	●	●	○[5]	○[5]	–	–	–	–	○[5]	○[5]	–
	SOFTNET-S7	●	●	●	●	–	●	○[5]	●	●	○[5]	○[5]	–	–	–	–	○[5]	○[5]	–
CP 5512 (Cardbus 32 Bit)	SOFTNET-DP	●	●	●	●	–	●	–	–	–	–	–	–	–	–	–	–	–	–
	SOFTNET-DP Slave	●	●	●	●	–	●	–	–	–	–	–	–	–	–	–	–	–	–
	SOFTNET-S7	●	●	●	●	–	●	–	–	–	–	–	–	–	–	–	–	–	–
CP 5711 (USB V2.0)	SOFTNET-DP	●	●	●	●	–	●	●	●	●	●	●	●	●	●	●	●	●	–
	SOFTNET-DP Slave	●	●	●	●	–	●	●	●	●	●	●	●	●	●	●	●	●	–
	SOFTNET-S7	●	●	●	●	–	●	●	●	●	●	●	●	●	●	●	●	●	–
SIMATIC PG/PC with integral PROFIBUS interface	SOFTNET-DP	●	●	–	●	–	●	–	–	–	●	●	○[4]	●	○[4]	●	●	●	–
	SOFTNET-DP Slave	●	●	–	●	–	●	–	–	–	●	●	○[4]	●	○[4]	●	●	●	–
	SOFTNET-S7	●	●	–	●	–	●	–	–	–	●	●	○[4]	●	○[5]	●	●	●	–

1) Use of these CPs in other operating system environments requires porting of the DK-5613 Development Kit to the relevant operating system environment. You can order the DK-5613 in the Internet under www.siemens.com/simatic-net/dk5613.
2) Integrated PROFIBUS interface is optional
3) Possible with restrictions, if necessary, depending on memory expansion and processor capacity.
4) Not possible for 677B/677C in version with 1x PCI or 1x PCIe slot
5) Depending on the slots of the selected PC version
6) EM-PCI 104 expansion module required

Notes
- Please always note the supplementary conditions for the specified SIMATIC NET products that you can view in the Internet pages shown below.
- for further details on XP embedded, see http://support.automation.siemens.com/WW/view/de/21661049
- further details on system requirements and operating environments can be found in the Readme file of the communication products on the SIMATIC NET PC Software CD, 2008 SP2 Edition or under http://support.automation.siemens.com/WW/view/de/26610954
- Updates and supplements to the catalog entries, as well as the above tables can be viewed under http://www.siemens.com/simatic-net/ik-info

● suitable
– not suitable
○ suitable under certain conditions
on SIMATIC NET CD 2008 SP2 Edition

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Options for connecting PROFIBUS CPs to PG/PC

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Overview

DP-M	DP-S	FMS	OPC	PG/OP	S7/S5
●	●	●	●	●	●

- PCI-104 interface card with own microprocessor for connecting embedded systems with PCI-104 interface to PROFIBUS at up to 12 Mbit/s
- Function compatible with CP 5613 A2
- Communication services:
  - PROFIBUS DP Master Class 1 and 2 or DP slave according to IEC 61158/61784
  - PG/OP communication with STEP 5 and STEP 7
  - S7 communication with S7-5613 software package
  - Open communication (SEND/RECEIVE) based on the FDL interface
  - PROFIBUS FMS according to IEC 61158/61784 with FMS-5613 software package
- Extensive diagnostics options for installation, commissioning and operation of the module
- Event and filter mechanism for reducing the load on the host CPU
- Multiprotocol operation and parallel operation of up to three CPs
- The appropriate OPC server and configuration tools are included in the scope of delivery of the respective communication software
- Linux-based development kit with driver sources for integration into "non-Windows" environments

Note:
FMS-5613 supports up to two
CP 5603/CP 5613 A2/5614 A2/CP 5623/CP 5624 processors.

Benefits

get Designed for Industry

- Fast process data exchange;
  access to process data by means of direct access to the dual port RAM of the hardware
- High computing performance in the PG/PC;
  reduces workload of host CPU by preprocessing the communication on the hardware
- Use of different operating system environments;
  driver as source code for porting to different operating system environments
- Use also in motion control applications;
  real-time capable data exchange through constant bus cycle time

Application

The CP 5603 allows the connection of embedded systems with a PC/104 Plus interface to PROFIBUS.

The CP 5603 also provides high-performance support to control tasks on the embedded system (PC-based Control, Numeric Control, Robot Control).

Function

PROFIBUS DP

Access to process data with DP-Base

The CP 5603 is operated as PROFIBUS DP master module that keeps the process image (input/output and diagnostics data) in the dual port RAM (memory area on the CP). The hardware of the CP 5603 independently executes the high-performance exchange of data with the PROFIBUS slaves. The user accesses the Dual Port RAM directly.
The process data of the slaves is always consistent, i.e. the user receives the data of a slave from one and the same DP cycle.

The DP-5613 and DP-Base software cannot be operated in parallel

Event filter mechanism

The user receives up-to-date data over two access mechanisms:

- Cyclic polling of the DP slaves (higher loading for host CPU)
- Notification by innovative event/filter mode when changing the input data of a slave (minimum loading for host CPU)

The two alternatives can also be combined. This allows users to optimize the PC to their applications.

The event/filter mechanism can be used additionally for

- Notification by means of an interrupt of the diagnostic messages from slaves
- In equidistance mode, signaling by means of interrupt:
  - Start DP cycle
  - End of cyclic data exchange with the DP slaves

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Function (continued)

FastLogic

FastLogic means that the CP 5603 can react autonomously to as many as 4 plant statuses. This results in a short response time and independence from the host application, e.g. fast shutdown of devices.

DP programming interface

The DP programming interface (DP-Base) of the CP 5603 has the following functionality:

- DP-Master Class 1 including acyclic DP expansions
- DP-Master Class 2 including acyclic DP expansions
- DP slave

The process data is accessed directly via the dual port RAM. The DP RAM interface not only offers fast access as DP master or DP slave, but it is also a basis for porting to other operating system environments (e.g. VXWorks, QNX, RMOS, RTX).

Administrative function calls (initialization and management services, as well as diagnostic functions) are provided through a library (DP_BASE.DLL or DPS_BASE.DLL).

Development Kit DK-5613

The Development Kit DK-5613 offers access to the functions of DP-Master Class 1 including acyclic DP expansions.

The software development kit DK-5613 enables the communications processor CP 5603 to be integrated into any operating system environments. The kit contains the necessary source code, including the descriptions in PDF format, and can be downloaded free of charge from the Internet.

Access to process data with DP-5613

DP-Master Class 1

The CP 5603 operates as a DP-Master Class 1 according to IEC 61158/61784 and processes the data transfer with the distributed stations (DP slaves) completely autonomously. The central controller exchanges information with the DP slaves (e.g. ET 200S) in a specified, constantly repeating message cycle. The DP programming interface (DPLib.DLL) provides the PC programmer with function calls for data exchange. The DP interface also provides the SYNC and FREEZE functions as well as activation and deactivation of slaves.

The DP function expansions relating to Master Class 1 make it possible to perform acyclic read and write functions (DS_READ, DS_WRITE) as well as acknowledgement of alarms (ALARM_ACK) at the same time as processing cyclic data communication. Data that is to be transferred acyclically (e.g. parameterization data) is only rarely changed in comparison to the cyclic measured values, and is transferred at lower priority in parallel with the cyclic high-speed user data transfer. The alarm acknowledgment at the Master safeguards the transmission of the alarms from DP slaves.

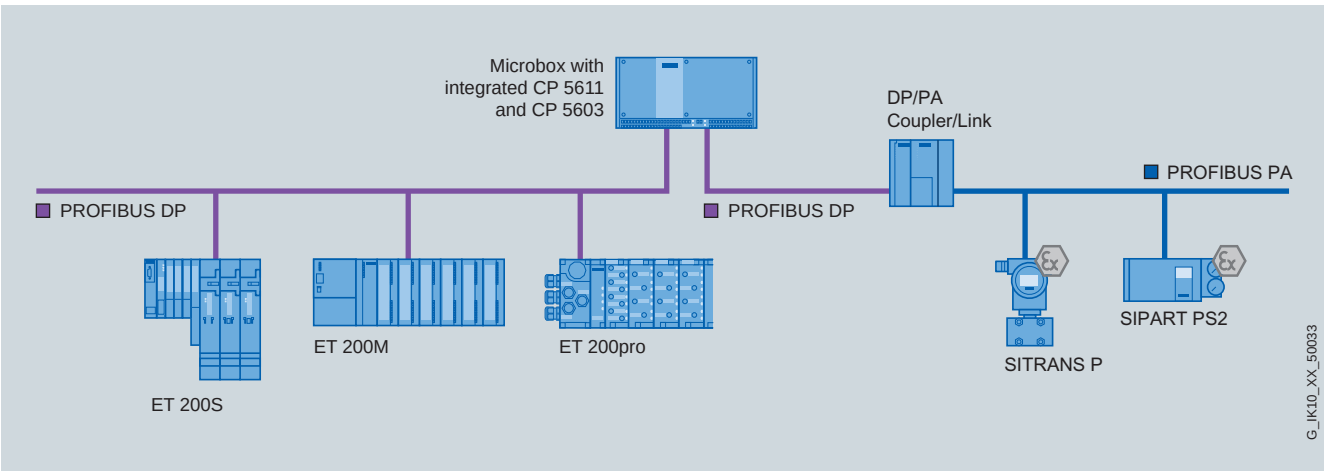
The DP-5613 and DP-Base software cannot be operated in parallel.

DP-Master Class 2

In addition to the DP-Master Class 1 services, the CP 5603 (in combination with the DP programming interface) also offers DP-Master Class 2 services according to IEC 61158/61784. Devices of this type (programming devices, configuring devices, or operator panels) are used during the commissioning and for configuring the DP system, or for operating the system while it is running (diagnostics). The DP programming interface provides the following services:

- Master diagnosis
- Slave diagnosis
- Reading the input/output of a slave
- Reading configuration data
- Changing slave address

These extended DP functions include acyclic access to the parameters and measured values of a slave (e.g. field devices of process automation and intelligent HMI devices). This type of slave must be supplied with extensive parameter data during start-up and during normal operation (DS_READ, DS_WRITE).



PROFIBUS DP connection with embedded PC SIMATIC Microbox

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Function (continued)

Software for PG/OP communication

This software allows the programming of SIMATIC S5/S7 controllers (except for SIMATIC S5-95U) via PROFIBUS in combination with STEP 5/STEP 7. The PG/OP communication for the CP 5603 is already available after installation of the CP 5603 (DP base). No additional software package is necessary.

Open communication (SEND/RECEIVE based on the FDL interface)

SEND/RECEIVE (FDL interface) is already available following installation of the CP 5603 (DP-Base) and provides services for data transfer, diagnostics and management. No additional software package is necessary.

Software for S7 communication (S7-5613)

SIMATIC S7 system components communicate with each other using S7 communication functions. The S7 programming interface provides PG/PC user programs with access to SIMATIC S7 system components. This provides easy, flexible access to the data of the SIMATIC S7.

The S7 communication provides the following services:

Administrative services

- Connection management
- Mini-database
- Trace

Data transfer services

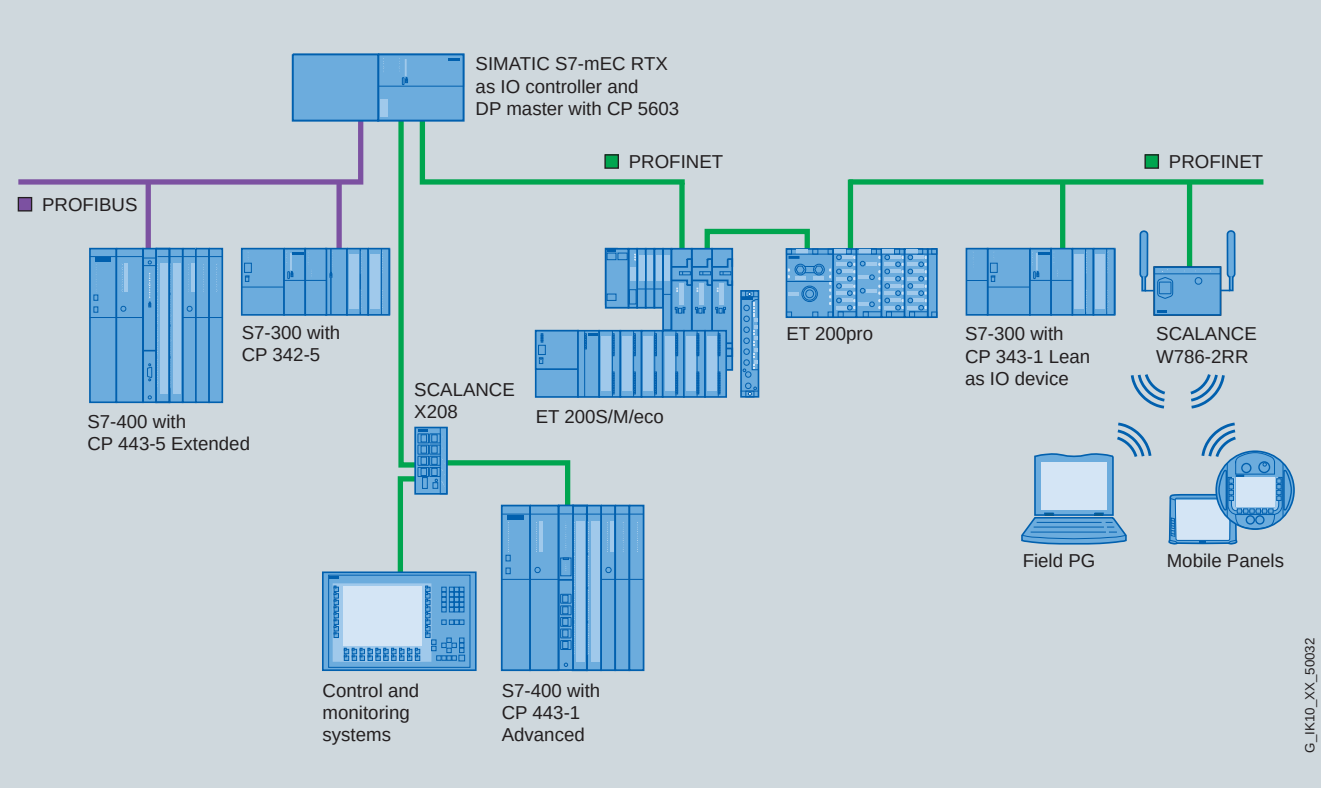
- Read/write variables
- BSEND/BRECEIVE (up to 64 KB per task)

Software for PROFIBUS FMS (FMS-5613)

Using the FMS programming interface, PG/PCs can exchange data with FMS-capable controllers (e.g. S5 and S7) and field devices from different manufacturers. Open communication is assured by using the FMS interface.

The FMS interface offers the following services:

- Administrative services
- CRL management services
- FMS connection management services
- Object directory management services for clients and server
- Variable services for clients and servers (Read, Write, Information Report)
- Server functionality
- VFD (Virtual Field Device) services for clients and servers
- Bus access information services (live list)
- Trace and mini-database



Connecting the SIMATIC to the S7 modular embedded controller via PROFIBUS

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Function (continued)

User interfaces

OPC interface

The OPC server included in the respective software package can be used as the standard programming interface for the PROFIBUS DP, open communication, S7 communication and PROFIBUS FMS for linking automation technology applications to OPC-capable Windows applications (Office, HMI systems, etc.).

Programming interface via C-Library

The programming interfaces for existing applications are implemented as Dynamic Link Libraries (DLL). The released compilers can be found in the readme file of the SIMATIC NET CD products at http://www.siemens.com/automation/csi/net.

For Borland programming interfaces (e.g. DELPHI), partner solutions from the company SoftwareOption are offered.

For solutions relating to other operating systems, see Development Kit DK-5613.

Configuration

- The S7 communication protocol, open communication protocol, DP protocol (DP-V0/DP-V1/DP-V2) and FMS protocol are configured in STEP 7 or NCM PC V5.1 +SP2.
- The configuration tool NCM PC is included in the PROFIBUS software packages.

Diagnostics

Comprehensive diagnostic tools are available (for installation, start-up and operation) for the module itself and for the PROFIBUS DP network. These tools can be used for quick and easy start-up of a PROFIBUS network with a CP 5603.

4

Technical specifications

Order No.	6GK1 560-3AA00
Product type designation	**CP 5603**
Data transmission rate	
Transmission rate at interface 1 in accordance with PROFIBUS	9.6 Kbit/s ... 12 Mbit/s
Interfaces	
Number of electrical connections at interface 1 in accordance with PROFIBUS	1
Design of electrical connection	
• at interface 1 in accordance with PROFIBUS	9-pin D-sub female connector (RS485)
• of the backplane bus	PCI-104 (32 bit)
Supply voltage, current consumption, power loss	
Type of power supply	DC
Supply voltage 1 from backplane bus	5 V
Relative symmetric tolerance at 5 V DC	5 %
Current consumption 1 from backplane bus with DC, maximum	0.66 A
Effective power loss	3.3 W
Permissible ambient conditions	
Ambient temperature	
• During operating phase	0 … 70 °C
• During storage	-40 … +70 °C
• During transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating phase, maximum	85 %
IP degree of protection	IP00

Order No.	6GK1 560-3AA00
Product type designation	**CP 5603**
Design, dimensions and weights	
Module format	PCI-104
Width	90 mm
Height	21 mm
Depth	96 mm
Net weight	80 g
Type of mounting	Screw mounting
Product properties, functions, components, general	
Number of plug-in cards of same design which can be inserted per PC station	3
Number of modules - Note	FMS-5613 supports up to two CP 5603/CP 5613 A2/ CP 5614 A2/CP 5623/CP 5624
Performance data	
Performance data Open communication	
Software required for open communication by means of SEND/RECEIVE	FDL driver included in scope of delivery of CP
Number of possible connections for open communication by means of SEND/RECEIVE, maximum	80
Performance data for PROFIBUS DP master	
Software required for DP master function	No
Service as DP master	
• DPV0	Yes
• DPV1	Yes
• DPV2	Yes

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Technical specifications (continued)

Order No.	6GK1 560-3AA00
Product type designation	**CP 5603**
Number of DP slaves operable on DP master	124
Data volume	
• of address area of inputs as DP master, total	30 256 byte
• of address area of outputs as DP master, total	30 256 byte
• of address area of inputs per DP slave	244 byte
• of address area of outputs per DP slave	244 byte
• of address area of diagnostics data per DP slave	244 byte
Performance data for PROFIBUS DP slave	
Software required for DP slave function	No
Service as DP slave	
• DPV0	Yes
• DPV1	Yes
Data volume	
• of address area of inputs as DP slave, total	244 byte
• of address area of outputs as DP slave, total	244 byte
Performance data FMS functions	
Software required for FMS communication	Yes, HARDNET-FMS (FMS-5613)
Number of possible connections with FMS connection, maximum	40

Order No.	6GK1 560-3AA00
Product type designation	**CP 5603**
Performance data S7 communication	
Software required for S7 communication	Yes, HARDNET-S7 (S7-5613)
Number of possible connections for S7/PG communication, maximum	50
Performance data Multiprotocol operation	
Number of active connections for multiprotocol operation	50
Number of configurable connections per PC station	207
Product functions Management, configuration, programming	
Configuration software required	NCM PC included in scope of delivery
Product functions Diagnostics	
Product function: Port diagnostics	Yes
Standards, specifications, approvals	
Standard	
• For EMC	2004/108/EC
• For CSA and UL safety	CAN/CSA C22.2 & UL 60950-1, UL 508
• For emitted interference	EN 61000-6-3, EN 61000-6-4
• For noise immunity	EN 61000-6-1, EN 61000-6-2
Certificate of suitability	
• CE mark	Yes
• C-Tick	Yes
Accessories	
Accessories	Optional: Expansion frame for SIMATIC Microbox and withdrawable drawer for SIMATIC S7 modular embedded controller

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CP 5603

Ordering data	Order No.
CP 5603 communications processor PCI104 card for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master or DP slave, incl. PG and FDL protocol; single license for 1 installation, runtime software, software and electronic manual on CD-ROM, Class A, operating system sopport see SIMATIC NET software; German/English	**6GK1 560-3AA00**
CP 5603 Microbox Package for use of CP 5603 in Microbox 420/427B; consisting of CP 5603 module and Microbox expansion rack	**6GK1 560-3AU00**
CP 5603 expansion rack for use in Microbox 420/427B with mounting material	**6GK1 560-3AA00-0AU0**
CP 5603 mEC Package for use of CP 5603 in SIMATIC S7-MEC; consisting of CP 5603 and insert plate for CP 5603 for use in EM PCI-104 expansion module of the SIMATIC S7-MEC	**6GK1 560-3AE00**
CP 5603 insert plate Metal plate with RS485 cutout for inserting for the S7 modular embedded controller	**6GK1 560-3AA00-0AE0**
Development Kit DK-5613 Software development kit for CP 5603, CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5623, CP 5624 for integration into other operating system environments on systems with an PCI slot	See http://www.siemens.com/simatic-net/dk5613
DP-5613 Edition 2008 Software for DP, including PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/ Ultimate SP1; Windows 2008 Server; for CP 5603, CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5623, CP 5624; German/English	
• Single license for 1 installation	**6GK1 713-5DB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version	**6GK1 713-5DB00-3AL0**
• Upgrade DP-5613 Edition 2006 or 2007 to DP-5613 Edition 2008	**6GK1 713-5DB00-3AE0**
• Upgrade DP-5613 V6.0, V6.1, V6.2 or V6.3 to DP-5613 Edition 2008	**6GK1 713-5DB00-3AE1**
S7-5613 Edition 2008 Software for S7-communication, including PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/ Ultimate SP1; Windows 2008 Server; for CP 5603, CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5623, CP 5624; German/English	
• Single license for 1 installation	**6GK1 713-5CB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version	**6GK1 713-5CB00-3AL0**
• Upgrade S7-5613 Edition 2006 or 2007 to S7-5613 Edition 2008	**6GK1 713-5CB00-3AE0**
• Upgrade S7-5613 V6.0, V6.1, V6.2 or V6.3 to S7-5613 Edition 2008	**6GK1 713-5CB00-3AE1**
FMS-5613 Edition 2008 Software for FMS protocol, including PG/OP communication, FDL, FMS-OPC server and NCM PC; runtime software, software and electronic manual on USB flash drive, Class A for 32-bit Windows XP Professional SP2/3, Windows 2003 Server R2, SP2, Windows Vista Business/ Ultimate SP1; Windows 2008 Server; for CP 5603, CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5623, CP 5624; German/English	
• Single license for 1 installation	**6GK1 713-5FB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version	**6GK1 713-5FB00-3AL0**
• Upgrade FMS-5613 Edition 2006 or 2007 to FMS-5613 Edition 2008	**6GK1 713-5FB00-3AE0**
• Upgrade FMS-5613 V6.0, V6.1, V6.2 or V6.3 to FMS-5613 Edition 2008	**6GK1 713-5FB00-3AE1**
PROFIBUS FastConnect bus connector RS485 Plug 180 With 180° cable outlet	**6GK1 500-0FC10**
PROFIBUS bus terminal 12M Bus terminal for connection of PROFIBUS stations for up to 12 Mbit/s with plug-in cable	**6GK1 500-0AA10**

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Overview

DP-M	DP-S	FMS	OPC	PG/OP	S7/S5
●	●	●	●	●	●

- PCI Express card (PCIe x1) with own microprocessor for connecting PCs and SIMATIC PG/PC to PROFIBUS at up to 12 Mbit/s
- Communication services:
  - PROFIBUS DP Master Class 1 and 2 or DP slave according to IEC 61158/61784
  - PG/OP communication with STEP 5 and STEP 7
  - S7 communication with S7-5613 software package
  - Open communication (SEND/RECEIVE) based on the FDL interface
  - PROFIBUS FMS according to IEC 61158/61784 with FMS-5613 software package
- Extensive diagnostics options for installation, commissioning and operation of the module
- Event and filter mechanism for reducing the load on the host CPU
- Multiprotocol operation and parallel operation of up to four CPs
- The appropriate OPC servers and configuration tools are included in the scope of supply of the respective communication software

Benefits

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- Fast access to process data by means of direct access to the dual port RAM of the hardware
- High computing performance in the PG/PC; reduces workload of host CPU by preprocessing the communication on the hardware
- Use of different operating system environments; driver as source code for porting to different operating system environments
- Preventive maintenance measures; deriving of measures by evaluating system runtime and ambient temperature
- Use also in motion control applications; real-time capable data exchange through constant bus cycle time

Application

The CP 5623 supports the connection of SIMATIC PG/PC and PCs with PCI Express slot to PROFIBUS.

The CP 5623 provides high-performance support for control tasks on the PC (PC based Control, Numeric Control, Robot Control).

Design

- Short PCI Express card
- Can also be operated in PCI Express x4, x8 or x16 slots
- 9-pin Sub-D socket for the interface to PROFIBUS
- Diagnostic LEDs
- Parallel operation of as many as four CPs[1)]

The module is installed by means of PCI standard mechanisms (Plug&Play).

Connection to the electrical PROFIBUS via

- bus connector and PROFIBUS bus cable or
- bus terminal (e.g. PROFIBUS bus terminal 12M) and PROFIBUS bus cable.

Connection to the optical PROFIBUS with OLM via

- bus cable with two bus connectors or
- PROFIBUS 830-1T connecting cable

Connection to the optical PROFIBUS with OBT and integral interface via

- bus cable with 2 bus connectors or
- PROFIBUS 830-1T connecting cable

when using CP 5623 A2 as DP master or in a PG/OP on a PROFIBUS DP.

1) FMS-5613 supports up to two CP 5603/CP 5613 A2/5614 A2/CP 5623/CP 5624 processors.

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4

Function

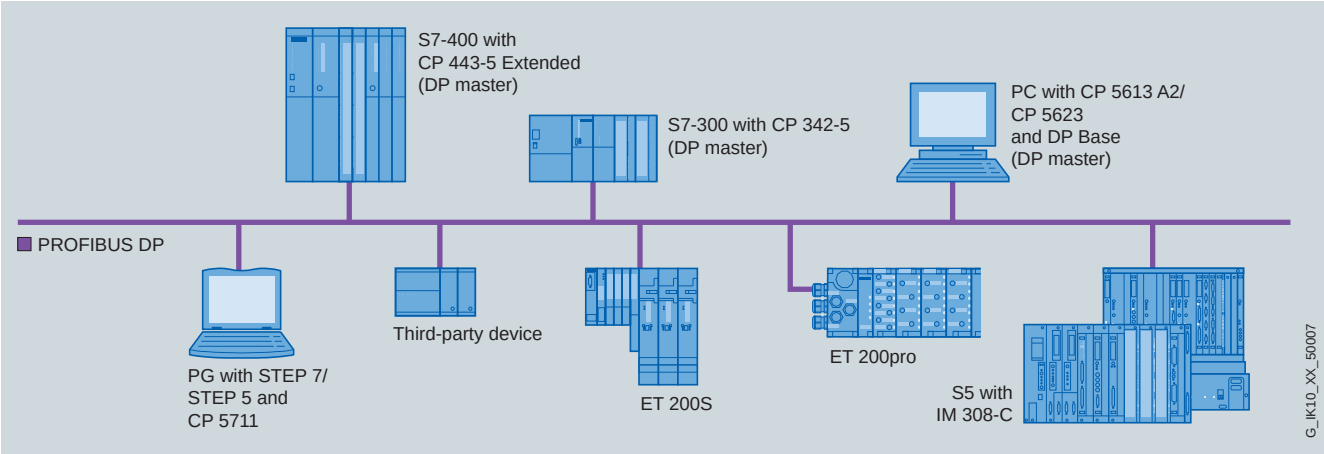
PROFIBUS DP

Access to process data with DP-Base

The CP 5623 is operated as PROFIBUS DP master module that keeps the process image (input/output and diagnostics data) in the dual port RAM (memory area on the CP). The hardware of the CP 5623 independently executes the high-performance exchange of data with the PROFIBUS slaves. The user accesses the dual-port RAM directly.

The process data of the slaves is always consistent, i.e. the user receives the data of a slave from one and the same DP cycle.

Parallel operation of the DP-5613 and DP-Base software is not possible.



Example configuration of PROFIBUS DP for SIMATIC S5/S7 and PG/PC

Event filter mechanism

The user receives up-to-date data over two access mechanisms:

- Cyclic polling of the DP slaves (higher loading for host CPU)
- Notification by means of event/filter mode when changing the input data of a slave (minimal loading for host CPU)

Both alternatives can be combined. This allows users to optimize use of the PC for their applications.

The event/filter mechanism can be used additionally for

- Notification by means of an interrupt of the diagnostic messages from slaves
- During operation with constant bus cycle time, signaling by means of interrupt:
  - Start DP cycle
  - End of cyclic data exchange with DP slaves

FastLogic

FastLogic means that the CP 5623 can react autonomously to as many as four plant statuses. This results in a short response time and independence from the host application, e.g. fast shutdown of devices.

DP programming interface

The DP programming interface (DP-Base) of the CP 5623 has the following functionality:

- DP Master Class 1 including acyclic DP expansions
- DP Master Class 2 including acyclic DP expansions
- DP slave

The process data is accessed directly through the dual-port RAM. The DP RAM interface not only offers fast access as DP master/slave but also a basis for porting to other operating system environments (e.g. VXWorks, QNX, RMOS, RTX).

Administrative function calls (initialization and management services, as well as diagnostic functions) are provided through a library (DP_BASE.DLL or DPS_BASE.DLL).

Development Kit DK-5613

The Development Kit DK-5613 provides access to the functions DP Master Class 1 including acyclic DP expansions

The software development kit DK-5613 enables the communications processor CP 5623 to be integrated into any operating system environments. The kit contains the necessary source code, including the descriptions in PDF format, and can be downloaded free of charge from the Internet.

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Function (continued)

Access to process data with DP-5613

- DP Master Class 1

The CP 5623 operates as a DP Master Class 1 according to IEC 61158/61784 and processes data communication with the distributed stations (DP slaves) completely autonomously.
The central controller exchanges information with the DP slaves (e.g. ET 200S) in a specified, constantly repeating message cycle. The DP programming interface (DPLib.DLL) provides the PC programmer with function calls for data transfer.
The DP interface also provides the SYNC and FREEZE functions as well as activation and deactivation of slaves.

The DP function expansions for Master Class 1 make it possible to perform acyclic read and write functions (DS_READ, DS_WRITE) as well as acknowledgement of alarms (ALARM_ACK) at the same time as processing cyclic data communication. Data that are to be transferred in non-isochronous mode (e.g. parameterization data) are only rarely changed, in comparison to the cyclic measured values, and are transferred at lower priority in parallel with the cyclic high-speed useful data transfer. Alarm acknowledgement by the master ensures reliable transfer of the alarms from DP slaves.

Parallel operation of the DP-Base and DP-5613 software is not possible.

- DP Master Class 2

Apart from the DP Master Class 1 services, the CP 5623 also offers DP Master Class 2 services to IEC 61158/61784 in conjunction with the DP programming interface. Devices of this type (programming, configuration or operating devices) are used during start-up, for configuring the DP system or for operating the system during normal operation (diagnostics).
The DP programming interface provides the following services:

- Master diagnostics
- Slave diagnostics
- Reading the inputs/outputs of a slave
- Reading configuration data
- Changing slave addresses

The extended DP functions comprise acyclic access to the parameters and measured values of a slave (e.g. field devices of process automation and intelligent HMI devices). This type of slave must be supplied with extensive parameter data during start-up and during normal operation (DS_READ, DS_WRITE).

Software for PG/OP communication

This software supports programming of the SIMATIC S5/S7 controllers (with the exception of SIMATIC S5-95U) over PROFIBUS in combination with STEP 5/STEP 7. The PG/OP communication for the CP 5623 is already available following installation of the CP 5623 (DP-Base). No additional software packages are required.

Open communication (SEND/RECEIVE on the basis of the FDL interface)

SEND/RECEIVE (FDL interface) is already available following installation of the CP 5623 (DP-Base) and provides services for data transfer, diagnostics and management. No additional software packages are required.

Software for S7 communication (S7-5613)

SIMATIC S7 system components communicate with each other using S7 communication functions. The S7 programming interface provides programming device/PC user programs with access to SIMATIC S7 system components. This makes for easy and flexible access to SIMATIC S7 data.

The following services are available with S7 communication:

Administrative services

- Connection management
- Mini-database
- Trace

Data transfer services

- Read/write variables
- BSEND/BRECEIVE (up to 64 KB per task)

Software for PROFIBUS FMS (FMS-5613)

With the FMS programming interface, PG/PCs can exchange different manufacturer data with FMS-capable controllers (e.g. S5 and S7) and field devices. Open communication is assured by using the FMS interface.

The FMS interface offers the following services:

- Administrative services
- CRL management services
- FMS connection management services
- Object directory management services for clients and server
- Variable services for clients and servers (Read, Write, Information Report)
- Server functionality
- VFD services (Virtual Field Device) for clients and servers
- Bus access information services (live list)
- Trace and mini-database

User interfaces

- OPC interface

The OPC server included in the respective software package can be used as the standard programming interface for the PROFIBUS DP, open communication, S7 communication and PROFIBUS FMS in order to connect automation technology applications to OPC-compatible Windows applications (Office, HMI systems, etc.)

- Programming interface via C-library

The programming interfaces for existing applications are implemented as Dynamic Link Libraries (DLL). The released compilers can be found in the readme file of the SIMATIC NET CD products at http://www.siemens.com/automation/csi/net.

For Borland programming interfaces (e.g. DELPHI), partner solutions from the company SoftwareOption are offered.

For solutions for other operating systems, see Development Kit DK-5613.

Configuration

- The S7 communication protocol, open communication protocol, DP protocol (DP-V0/DP-V1/DP-V2), and FMS protocol are configured in STEP 7 or NCM PC V5.1 +SP2.
- The NCM PC configuration tool is included in the scope of delivery of the PROFIBUS software packages.

Diagnostics

Comprehensive diagnostic tools are available (for installation, start-up and operation) for the module itself and for the PROFIBUS DP network. These tools can be used for quick and easy start-up of a PROFIBUS network with a CP 5623.

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CP 5623

Technical specifications

Order No.	6GK1 562-3AA00
Product type designation	**CP 5623**
Data transmission rate	
Transmission rate at interface 1 in accordance with PROFIBUS	9.6 Kbit/s ... 12 Mbit/s
Interfaces	
Number of electrical connections at interface 1 in accordance with PROFIBUS	1
Design of electrical connection	
• at interface 1 in accordance with PROFIBUS	9-pin D-sub female connector (RS485)
• of the backplane bus	PCI Express x1
Supply voltage, current consumption, power loss	
Type of power supply	DC
Power supply	
• 1 from backplane bus	3.3 V
• 2 from backplane bus	12 V
Relative symmetrical tolerance	
• At 3.3 V with DC	9 %
• At 12 V with DC	8 %
Current consumed	
• Maximum 1 from backplane bus with DC	0.72 A
• Maximum 2 from backplane bus with DC	0.25 A
Effective power loss	3 W
Permissible ambient conditions	
Ambient temperature	
• During operating phase	+5 ... +60 °C
• During storage	-20 … +60 °C
• During transport	-20 … +60 °C
Relative humidity at 25 °C without condensation during operating phase, maximum	85 %
IP degree of protection	IP00
Design, dimensions and weights	
Module format	PCI Express x1
Width	18 mm
Height	107 mm
Depth	168 mm
Net weight	102 g
Product properties, functions, components, general	
Number of plug-in cards of same design which can be inserted per PC station	4
Number of modules - Note	FMS-5613 supports up to two CP 5603/CP 5613 A2/5614 A2/ CP 5623/CP 5624

Order No.	6GK1 562-3AA00
Product type designation	**CP 5623**
Performance data	
Performance data Open communication	
Software required for open communication by means of SEND/RECEIVE	FDL driver included in scope of delivery of CP
Number of possible connections for open communication by means of SEND/RECEIVE, maximum	80
Performance data for PROFIBUS DP master	
Software required for DP master function	No
Service as DP master	
• DPV0	Yes
• DPV1	Yes
• DPV2	Yes
Number of DP slaves operable on DP master	124
Data volume	
• of address area of inputs as DP master, total	30 256 byte
• of address area of outputs as DP master, total	30 256 byte
• of address area of inputs per DP slave	244 byte
• of address area of outputs per DP slave	244 byte
• of address area of diagnostics data per DP slave	244 byte
Performance data for PROFIBUS DP slave	
Software required for DP slave function	No
Service as DP slave	
• DPV0	Yes
• DPV1	Yes
Data volume	
• of address area of inputs as DP slave, total	244 byte
• of address area of outputs as DP slave, total	244 byte
Performance data FMS functions	
Software required for FMS communication	Yes, HARDNET-FMS (FMS-5613)
Number of possible connections with FMS connection, maximum	40
Performance data S7 communication	
Software required for S7 communication	Yes, HARDNET-S7 (S7-5613)
Number of possible connections for S7/PG communication, maximum	50
Performance data Multiprotocol operation	
Number of active connections for multiprotocol operation	50
Number of configurable connections per PC station	207

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Technical specifications (continued)

Order No.	6GK1 562-3AA00
Product type designation	**CP 5623**
Product functions Management, configuration, programming	
Configuration software required	NCM PC included in scope of delivery
Product functions Port diagnostics	
Product functions: Diagnostics	Yes

Order No.	6GK1 562-3AA00
Product type designation	**CP 5623**
Standards, specifications, approvals	
Standard	
• For EMC	2004/108/EC
• For CSA and UL safety	CAN/CSA C22.2 & UL 60950-1
• For emitted interference	EN 61000-6-3, EN 61000-6-4
• For noise immunity	EN 61000-6-1, EN 61000-6-2
Certificate of suitability	
• CE mark	Yes
• C-Tick	Yes

Ordering data

	Order No.
CP 5623 communications processor PCI Express x1 card (32 bit) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master or DP slave, incl. PG and FDL protocol; single license for 1 installation, runtime software, software and electronic manual on CD-ROM, Class A, operating system sopport see SIMATIC NET software; German/English	**6GK1 562-3AA00**
Development Kit DK-5613 Software development kit for CP 5603, CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5623, CP 5624; for integration into other operating system environments on systems with PCI or PCI Express slot	See http://www.siemens.com/simatic-net/dk5613

	Order No.
DP-5613 Edition 2008 Software for DP, incl. PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; for CP 5603, CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5623, CP 5624; German/English	
• Single license for 1 installation	**6GK1 713-5DB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 713-5DB00-3AL0**
• Upgrade from DP-5613 Edition 2006 or 2007 to DP-5613 Edition 2008	**6GK1 713-5DB00-3AE0**
• Upgrade from DP-5613 V6.0, V6.1, V6.2 or V6.3 to DP-5613 Edition 2008	**6GK1 713-5DB00-3AE1**

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CP 5623

Ordering data

Ordering data	Order No.
S7-5613 Edition 2008 Software for S7-communication, incl. PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on USB stick, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; for CP 5603, CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5623, CP 5624; German/English	
• Single license for 1 installation	**6GK1 713-5CB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 713-5CB00-3AL0**
• Upgrade from S7-5613 Edition 2006 or 2007 to S7-5613 Edition 2008	**6GK1 713-5CB00-3AE0**
• Upgrade from S7-5613 V6.0, V6.1, V6.2 or V6.3 to S7-5613 Edition 2008	**6GK1 713-5CB00-3AE1**
FMS-5613 Edition 2008 Software for FMS protocol, incl. PG/OP communication; FDL, FMS-OPC server and NCM PC; runtime software, software and electronic manual on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; for CP 5603, CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5623, CP 5624; German/English	
• Single license for 1 installation	**6GK1 713-5FB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 713-5FB00-3AL0**
• Upgrade from FMS-5613 Edition 2006 or 2007 to FMS-5613 Edition 2008	**6GK1 713-5FB00-3AE0**
• Upgrade FMS-5613 V6.0, V6.1, V6.2 or V6.3 to FMS-5613 Edition 2008	**6GK1 713-5FB00-3AE1**
PROFIBUS FastConnect bus connector RS485 Plug 180 with 180° cable outlet	**6GK1 500-0FC10**
PROFIBUS bus terminal 12M Bus terminal for connection of PROFIBUS nodes at up to 12 Mbit/s with connecting cable	**6GK1 500-0AA10**

More information

The CP 5623 module can also be used under LINUX and UNIX operating systems. Find out more about the available LINUX distributors and UNIX operating systems from:

Siemens AG

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CP 5624

Overview

DP-M	DP-S	FMS	OPC	PG/OP	S7/S5
●	●	●	●	●	●

- PCI Express card (PCIe x1) with own microprocessor for connecting PCs and SIMATIC PG/PC to PROFIBUS at up to 12 Mbit/s
- 2 x 9-pin Sub-D socket for the parallel operation as DP master and DP slave
- Communication services:
  - PROFIBUS DP master and slave interface according to IEC 61158/61784 on one PCI card
  - PG/OP communication with STEP 5 and STEP 7
  - S7 communication with S7-5613 software package
  - Open communication (SEND/RECEIVE) based on the FDL interface
  - PROFIBUS FMS according to IEC 61158/61784 with FMS-5613 software package
- Extensive diagnostics options for installation, commissioning and operation of the module
- Event and filter mechanism for reducing the load on the host CPU
- Multiprotocol operation and parallel operation of up to four CPs
- The appropriate OPC servers and configuration tools are included in the scope of supply of the respective communication software

Benefits

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- Fast access to process data by means of direct access to the dual port RAM of the hardware
- High computing performance in the PG/PC; reduces workload of host CPU by preprocessing the communication on the hardware
- Use of different operating system environments; driver as source code for porting to different operating system environments
- Reduction of slots thanks to the parallel operation as DP master and DP slave
- Preventive maintenance measures; deriving of measures by evaluating system runtime and ambient temperature
- Use also in motion control applications; real-time capable data exchange through constant bus cycle time

Application

OPC FOUNDATION MEMBER

Compliance OPC Tested FOUNDATION

The CP 5624 supports the connection of SIMATIC PG/PC and PCs with PCI Express slot to PROFIBUS. It can be both DP master and DP slave.

This enables two different PROFIBUS networks to be connected in a hierarchical structure to a PC and to exchange data using one PROFIBUS card.

The CP 5624 provides high-performance support for control tasks on the PC (PC based Control, Numeric Control, Robot Control).

Design

- Short PCI Express card
- Can also be operated in PCI Express x4, x8 or x16 slots
- 2 x 9-pin Sub-D socket for the interface to PROFIBUS
- Diagnostic LEDs
- Parallel operation of as many as four CPs[1)]

The module is installed by means of PCI standard mechanisms (Plug&Play).

Connection to the electrical PROFIBUS via

- bus connector and PROFIBUS bus cable or
- bus terminal (e.g. bus terminal 12M) and PROFIBUS bus cable

Connection to the optical PROFIBUS with OLM via

- bus cable with two bus connectors or
- PROFIBUS 830-1 connecting cable

Connection to the optical PROFIBUS with OBT and integral interface via

- bus cable with two bus connectors or
- PROFIBUS 830-1T connecting cable

when using CP 5624 as a DP master, DP slave, or in a PG/OP on a PROFIBUS DP.

[1)] FMS-5613 supports up to two CP 5603/CP 5613 A2/5614 A2/CP 5623/CP 5624 processors.

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CP 5624

Function

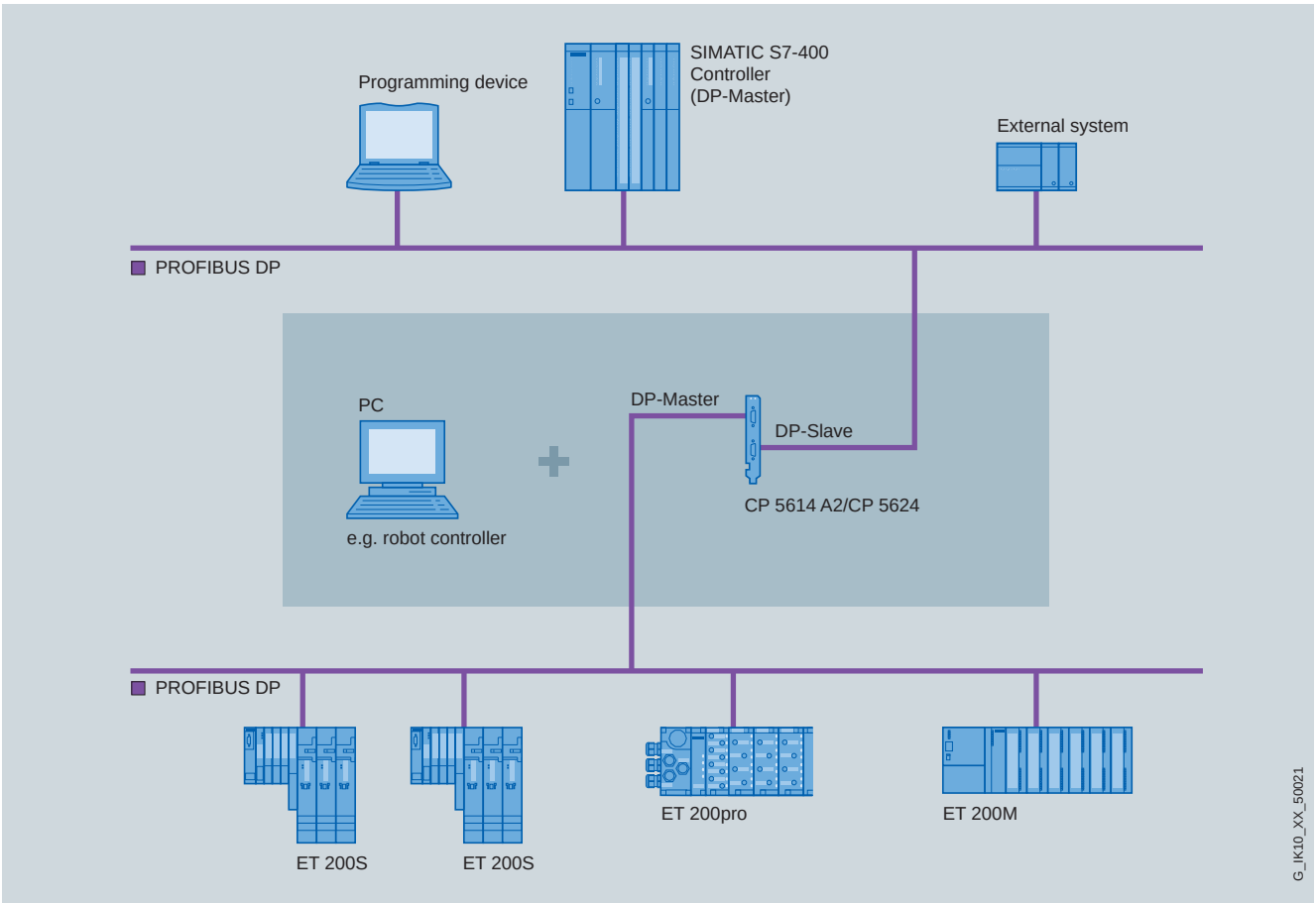
PROFIBUS DP

Access to process data

The CP 5624 is operated as PROFIBUS DP master and DP slave module that keeps the process image (input/output and diagnostics data) in the dual port RAM. The hardware of the CP 5624 independently executes the high-performance exchange of data with the PROFIBUS slaves. The user accesses the dual-port RAM directly.

The process data of the slaves are always consistent, i.e. the user receives the data of a slave from one and the same DP cycle.

Parallel operation of the DP-5613 (DP master) and DP-Base (DP master, DP slave) software is not possible.



Example configuration of CP 5624 as DP master and DP slave

Event filter mechanism

The user receives up-to-date data over two access mechanisms:

- Cyclic polling of the DP slaves (high loading for host CPU)
- Notification through a new type of event/filter mode on changing the input data of a slave (minimal loading for host CPU)

Both alternatives can be combined. This allows users to optimize use of the PC for their applications.

The event/filter mechanism can be used additionally for

- Notification by means of an interrupt of the diagnostic messages from slaves
- During operation with constant bus cycle time, signaling by means of interrupt:
  - Start DP cycle
  - End cyclic data communication with DP slaves

FastLogic

FastLogic means that the CP 5624 can react autonomously to as many as 4 plant statuses. This results in a short response time and independence from the host application, e.g. fast shutdown of devices.

DP programming interface

The DP programming interface of the CP 5624 has the following functionality:

- DP slave
- DP Master Class 1 including acyclic DP expansions
- DP Master Class 2 including acyclic DP expansions

The process data is accessed directly through the dual-port RAM. The DP RAM interface not only offers fast access as DP master/slave but also a basis for porting to other operating system environments (e.g. VXWorks, QNX, RMOS, RTX).

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Function (continued)

Administrative function calls (initialization and management services as well as diagnostic functions) are provided through a DP master and DP slave library (DP_BASE.DLL and DPS_BASE.DLL).

A transfer mechanism (PC application) can be activated in the software as a linking component for data transfer between the master and slave interface.

Defined I/O data can be transferred in this manner between the master interface and the slave interface.

The two connected PROFIBUS networks can be operated with different PROFIBUS bus parameters because they are independent of each other.

Development Kit DK-5613

The Development Kit DK-5613 provides access to the functions DP Master Class 1 and DP slave (incl. acyclic DP expansions)

The software development kit DK-5613 enables the CP 5624 communications processor to be integrated into any operating system environments. The kit contains the necessary source code, including the descriptions in PDF format, and can be downloaded free of charge via the Internet.

Access to process data with DP-5613

- DP Master Class 1

The CP 5624 operates as a DP Master Class 1 according to IEC 61158/61784 and processes data communication with the distributed stations (DP slaves) completely autonomously. The central controller exchanges information with the DP slaves (e.g. ET 200S) in a specified, constantly repeating message cycle. The DP programming interface (DPLib.DLL) provides the PC programmer with function calls for data transfer. The DP interface also provides the SYNC and FREEZE functions as well as activation and deactivation of slaves.

The DP function expansions for Master Class 1 make it possible to perform acyclic read and write functions (DS_READ, DS_WRITE) as well as acknowledgement of alarms (ALARM_ACK) at the same time as processing cyclic data communication. Data to be transferred in acyclic mode (e.g. parameterization data) is only rarely changed, in comparison to the cyclic measured values, and is transferred at lower priority in parallel with the cyclic high-speed useful data transfer. Alarm acknowledgement by the master ensures reliable transfer of the alarms from DP slaves (DS_READ, DS_WRITE).

Parallel operation of the DP-Base and DP-5613 software is not possible.

- DP Master Class 2

Apart from the DP Master Class 1 services, the CP 5624 also offers DP Master Class 2 services to IEC 61158/61784 in conjunction with the DP programming interface. Devices of this type (programming, configuration or operating devices) are used during start-up, for configuring the DP system or for operating the system during normal operation (diagnostics). The DP programming interface provides the following services:

- Master diagnostics
- Slave diagnostics
- Reading the inputs/outputs of a slave
- Reading configuration data
- Changing slave addresses

The extended DP functions comprise acyclic access to the parameters and measured values of a slave (e.g. field devices of process automation and intelligent HMI devices). This type of slave must be supplied with extensive parameter data during start-up and during normal operation. (DS_READ, DS_WRITE).

Software for PG/OP communication

This software supports programming of the SIMATIC S5/S7 controllers (with the exception of SIMATIC S5-95U) over PROFIBUS in combination with STEP 5/STEP 7. The PG/OP communication for the CP 5624 is already available following installation of the CP 5624 (DP-Base). No additional software packages are required.

Open communication (SEND/RECEIVE on the basis of the FDL interface)

SEND/RECEIVE (FDL interface) is already available following installation of the CP 5624 (DP-Base) and provides services for data transfer, diagnostics and management. No additional software packages are required.

Software for S7 communication (S7-5613)

SIMATIC S7 system components communicate with each other using S7 communication functions. The S7 programming interface provides programming device/PC user programs with access to SIMATIC S7 system components. This makes for easy and flexible access to SIMATIC S7 data.

The following services are available with S7 communication:

Administrative services

- Connection management
- Mini-database
- Trace

Data transfer services

- Read/write variables
- BSEND/BRECEIVE (up to 64 KB per task)

Software for PROFIBUS FMS (FMS-5613)

With the FMS programming interface, PG/PCs can exchange different manufacturer data with FMS-capable controllers (e.g. S5 and S7) and field devices. Open communication is assured by using the FMS interface.

The FMS interface offers the following services:

- Administrative services
- CRL management services
- FMS connection management services
- Object directory management services for clients and server
- Variable services for clients and servers (Read, Write, Information Report)
- Server functionality
- VFD services (Virtual Field Device) for clients and servers
- Bus access information services (live list)
- Trace and mini-database

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Function (continued)

User interfaces

- OPC interface

The OPC server included in the respective software package can be used as the standard programming interface for the PROFIBUS DP (DP master and DP slave), open communication, S7 communication and PROFIBUS FMS in order to connect automation technology applications to OPC-compatible Windows applications (Office, HMI systems, etc.).

- *Programming interface via C-library*

The programming interfaces for existing applications are implemented as Dynamic Link Libraries (DLL). The released compilers can be found in the readme file of the SIMATIC NET CD products at http://www.siemens.com/automation/csi/net.

For Borland programming interfaces (e.g. DELPHI), partner solutions from the company SoftwareOption are offered.

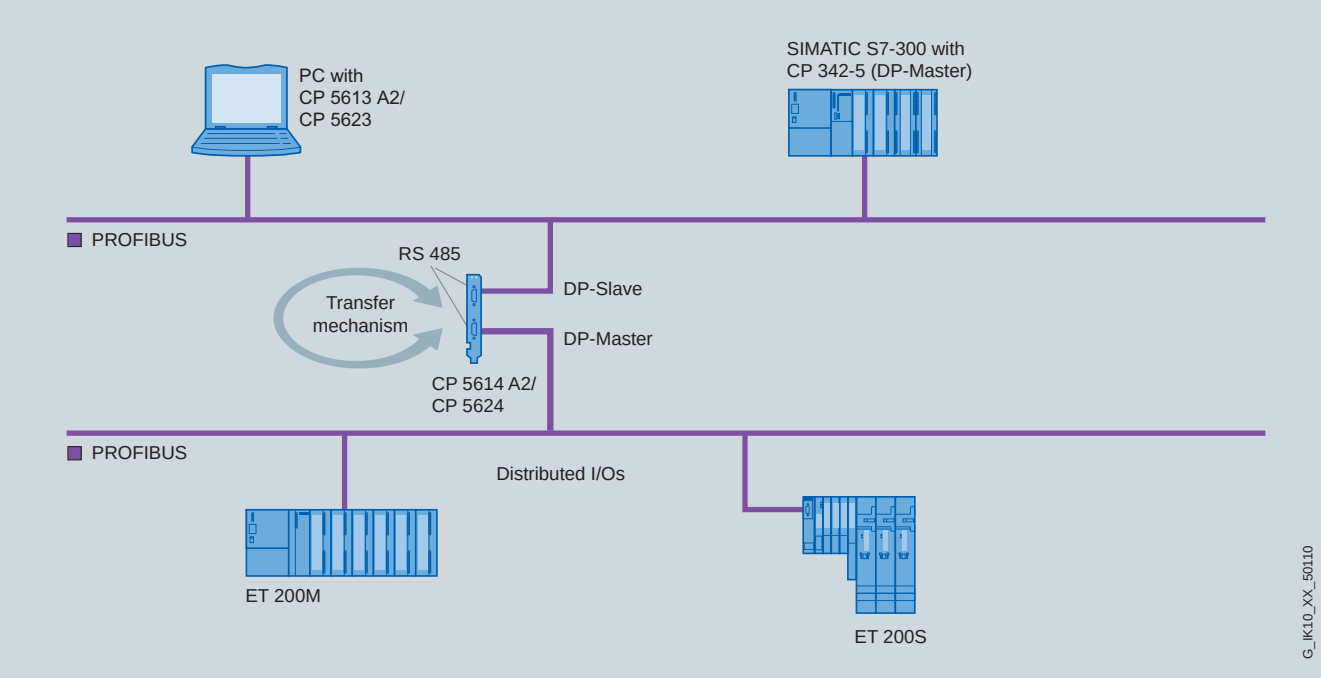
For solutions for other operating systems, see Development Kit DK-5613.

Configuration

- The S7 communication protocol, open communication protocol, DP protocol (DP-V0/DP-V1/DP-V2) and FMS protocol are configured in STEP 7 or NCM PC version V5.1 +SP2 or higher.
- The NCM PC configuration tool is included in the scope of delivery of the PROFIBUS software packages.

Diagnostics

Comprehensive diagnostic tools are available (for installation, start-up and operation) for the module itself and for the PROFIBUS DP network. These tools can be used for quick and easy start-up of a PROFIBUS DP network with a CP 5624.



Configuration example for CP 5624

Technical specifications

Order No.	6GK1 562-4AA00
Product type designation	**CP 5624**
Data transmission rate	
Data transmission rate	
• at interface 1 in accordance with PROFIBUS	9.6 Kbit/s ... 12 Mbit/s
• at interface 2 in accordance with PROFIBUS	9.6 Kbit/s ... 12 Mbit/s

Order No.	6GK1 562-4AA00
Product type designation	**CP 5624**
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with PROFIBUS	1
• at interface 2 in accordance with PROFIBUS	1
Design of electrical connection	
• at interface 1 in accordance with PROFIBUS	9-pin D-sub female connector (RS485)
• at interface 2 in accordance with PROFIBUS	9-pin D-sub female connector (RS485)
• of the backplane bus	PCI Express x1

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Technical specifications (continued)

Order No.	6GK1 562-4AA00
Product type designation	**CP 5624**
Supply voltage, current consumption, power loss	
Type of power supply	DC
Power supply	
• 1 from backplane bus	3.3 V
• 2 from backplane bus	12 V
Relative symmetrical tolerance	
• At 3.3 V with DC	9 %
• At 12 V with DC	8 %
Current consumed	
• Maximum 1 from backplane bus with DC	0.75 A
• Maximum 2 from backplane bus with DC	0.3 A
Effective power loss	3.6 W
Permissible ambient conditions	
Ambient temperature	
• During operating phase	+5 … 60 °C
• During storage	-20 … +60 °C
• During transport	-20 … +60 °C
Relative humidity at 25 °C without condensation during operating phase, maximum	85 %
IP degree of protection	IP00
Design, dimensions and weights	
Module format	PCI Express x1
Width	18 mm
Height	107 mm
Depth	168 mm
Net weight	117 g
Product properties, functions, components, general	
Number of plug-in cards of same design which can be inserted per PC station	4
Number of modules - Note	FMS-5613 supports up to two CP 5603/CP 5613 A2/5614 A2/ CP 5623/CP 5624
Performance data	
Performance data Open communication	
Software required for open communication by means of SEND/RECEIVE	FDL driver included in scope of delivery of CP
Number of possible connections for open communication by means of SEND/RECEIVE, maximum	80
Performance data for PROFIBUS DP master	
Software required for DP master function	No
Service as DP master	
• DPV0	Yes
• DPV1	Yes
• DPV2	Yes
Number of DP slaves operable on DP master	124

Order No.	6GK1 562-4AA00
Product type designation	**CP 5624**
Data volume	
• of address area of inputs as DP master, total	30 256 byte
• of address area of outputs as DP master, total	30 256 byte
• of address area of inputs per DP slave	244 byte
• of address area of outputs per DP slave	244 byte
• of address area of diagnostics data per DP slave	244 byte
Performance data for PROFIBUS DP slave	
Software required for DP slave function	No
Service as DP slave	
• DPV0	Yes
• DPV1	Yes
Data volume	
• of address area of inputs as DP slave, total	244 byte
• of address area of outputs as DP slave, total	244 byte
Performance data FMS functions	
Software required for FMS communication	Yes, HARDNET-FMS (FMS-5613)
Number of possible connections with FMS connection, maximum	40
Performance data S7 communication	
Software required for S7 communication	Yes, HARDNET-S7 (S7-5613)
Number of possible connections for S7/PG communication, maximum	50
Performance data Multiprotocol operation	
Number of active connections for multiprotocol operation	50
Number of configurable connections per PC station	207
Product functions Management, configuration, programming	
Configuration software required	NCM PC included in scope of delivery
Product functions Diagnostics	
Product function: Port diagnostics	Yes
Standards, specifications, approvals	
Standard	
• For EMC	2004/108/EC
• For CSA and UL safety	CAN/CSA C22.2 & UL 60950-1
• For emitted interference	EN 61000-6-3, EN 61000-6-4
• For noise immunity	EN 61000-6-1, EN 61000-6-2
Certificate of suitability	
• CE mark	Yes
• C-Tick	Yes

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CP 5624

Ordering data

	Order No.
CP 5614 A2 communications processor PCI Express x1 card (32 bit) master and slave connection to PROFIBUS incl. DP-base software with NCM PC; DP-RAM interface for DP master, incl. PG and FDL protocol; single license for 1 installation, runtime software, software and electronic manual on CD-ROM, Class A, operating system sopport see SIMATIC NET software; German/English	**6GK1 562-4AA00**
Development Kit DK-5613 Software development kit for CP 5603, CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5623, CP 5624; for integration into other operating system environments on systems with PCI or PCI Express slot	See http://www.siemens.com/simatic-net/dk5613
DP-5613, 2008 Edition Software for DP, incl. PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; for CP 5603, CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5623, CP 5624; German/English	
• Single license for 1 installation	**6GK1 713-5DB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 713-5DB00-3AL0**
• Upgrade from DP-5613 Edition 2006 or 2007 to DP-5613 Edition 2008	**6GK1 713-5DB00-3AE0**
• Upgrade from DP-5613 V6.0, V6.1, V6.2 or V6.3 to DP-5613 Edition 2008	**6GK1 713-5DB00-3AE1**
S7-5613 Edition 2008 Software for S7-communication, incl. PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; for CP 5603, CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5623, CP 5624; German/English	
• Single license for 1 installation	**6GK1 713-5CB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 713-5CB00-3AL0**
• Upgrade from S7-5613 Edition 2006 or 2007 to S7-5613 Edition 2008	**6GK1 713-5CB00-3AE0**
• Upgrade from S7-5613 V6.0, V6.1, V6.2 or V6.3 to S7-5613 Edition 2008	**6GK1 713-5CB00-3AE1**
FMS-5613 Edition 2008 Software for FMS protocol, incl. PG/OP communication; FDL, FMS-OPC server and NCM PC; runtime software, software and electronic manual on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; for CP 5603, CP 5613, CP 5613 A2, CP 5613 FO, CP 5614, CP 5614 A2, CP 5623, CP 5624; German/English	
• Single license for 1 installation	**6GK1 713-5FB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version	**6GK1 713-5FB00-3AL0**
• Upgrade from FMS-5613 Edition 2006 or 2007 to FMS-5613 Edition 2008	**6GK1 713-5FB00-3AE0**
• Upgrade FMS-5613 V6.0, V6.1, V6.2 or V6.3 to FMS-5613 Edition 2008	**6GK1 713-5FB00-3AE1**
PROFIBUS FastConnect bus connector RS485 Plug 180 with 180° cable outlet	**6GK1 500-0FC10**
PROFIBUS bus terminal 12M Bus terminal for connection of PROFIBUS nodes at up to 12 Mbit/s with connecting cable	**6GK1 500-0AA10**

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Overview

DP-M	DP-S	FMS	OPC	PG/OP	S7/S5
●	●		●	●	●

- USB adapter for the connection of PCs and SIMATIC PG/PC to PROFIBUS DP or MPI via USB 2.0
- Operation in extended temperature range of -20 °C to +60 °C
- Active PROFIBUS termination to supply the PROFIBUS network as end station of a segment
- Rugged USB connection due to mechanical locking of the USB connector to the CP 5711 enclosure
- Communication services:
  - PROFIBUS DP Master Class 1 and 2 according to IEC 61158/61784 with SOFTNET-DP software package
  - PROFIBUS DP slave with SOFTNET-DP Slave software package
  - PG/OP communication with STEP 5 or STEP 7 software package
  - S7 communication with SOFTNET-S7 software package
  - Open communication (SEND/RECEIVE on basis of the FDL interface) with SOFTNET-DP or SOFTNET-S7 software package
- PROFIBUS connection with up to 12 Mbit/s
- Can be used with:
  - STEP 7, STEP 7 Micro/WIN, WinCC/WinCC flexible, NCM PC, SIMATIC PDM (for PG/OP communication)
  - SOFTNET-S7 (for S7 communication)
  - SOFTNET-DP, SOFTNET-DP slave (for DP)
- The appropriate OPC servers and configuration tools are included in the scope of supply of the respective communication software

Benefits

get Designed for Industry

- Portability and flexibility:
  Connection for portable PCs, e.g. for diagnostics and commissioning
- Low-cost PROFIBUS controller and device solutions for embedded PCs (without PCI or PC104 bus)
- Fault-free connection to the PROFIBUS diagnosis at all times due to permanent installation on PROFIBUS and connection via USB in the event of maintenance and diagnosis
- Easy installation and commissioning due to plug & play technology

Application

OPC FOUNDATION MEMBER

Compliance OPC Tested FOUNDATION

The CP 5711 enables the connection of SIMATIC PG/PC and PCs with USB interface to PROFIBUS and to the multi-point interface (MPI) of SIMATIC S7.

Design

- USB V2.0 connection
- Adapter with 9-pin sub-D socket for connection to PROFIBUS

Function

The CP 5711 is a USB V2.0 adapter that can be used on either a USB V2.0 port (bandwidth 480 Mbit/s) or a USB V1.1 port (1.5 Mbit/s). It can be used with various software packages and offers users the ability to perform functions of the programming devices and PCs/OPs via PROFIBUS and the multi-point interface (MPI).

The CP 5711 is powered directly via the USB interface of the PC system. Regardless of whether the USB cable is plugged in or unplugged, the active power supply of the PROFIBUS network is drawn from the external 24 V DC power supply unit.

Optional for the use of the CP 5711 in control cabinets or in the vicinity of SIMATIC S7 controllers, a mounting adapter (DIN rail) is available to attach the CP to the 35 mm DIN rail.

Only one CP per PG/PC/OP can be operated. Likewise, only one protocol (PROFIBUS DP, S7 communication, or FDL) can be used per CP.

The following software packages support the CP 5711:

- STEP 7 from V5.4 SP5;
  drivers for the CP 5711 are included with STEP 7.
- SOFTNET-S7 from V7.1;
  the S7 programming interface can be used with this package.
- SOFTNET-DP from V7.1;
  with this, the CP 5711 can be used as PROFIBUS DP master Class 1 or 2.
- SOFTNET-DP slave from V7.1;
  for operating the CP 5711 as PROFIBUS DP slave
- STEP 7-Micro/WIN;
  drivers for the CP 5711 are included with STEP 7-Micro/WIN.
- WinCC/WinCC flexible;
  the CP 5711 can be used as a hardware basis for the configuration tool for SIMATIC Operator Panels, Touch Panels, and Text Displays.
- NCM PC;
  under Windows XP Professional
- SIMATIC PDM;
  drivers for the CP 5711 are included with SIMATIC PDM.

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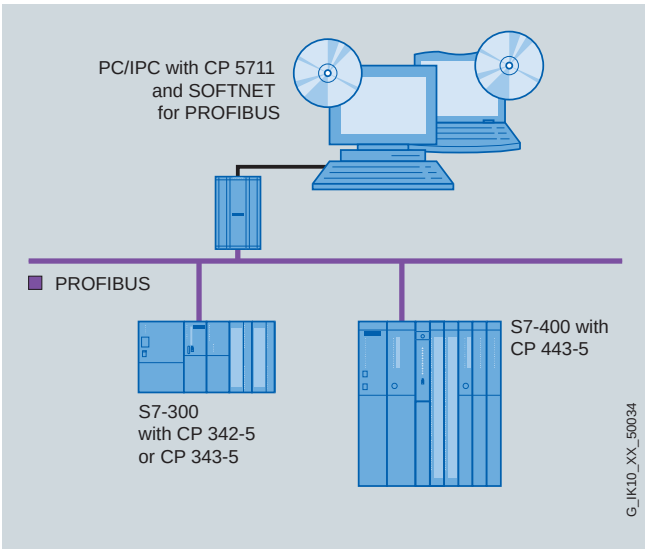
CP 5711

Function (continued)



Diagnostics

Numerous diagnostic tools are available for the CP 5711. For support, the module also includes comprehensive LED diagnostics. Operating and signal states can be recognized quickly via five LEDs.

Configuration

- The S7 communication and open communication protocols can be configured in STEP 7 or NCM PC.

The NCM PC configuration tool is included with the software packages SOFTNET-S7 and SOFTNET-DP for PROFIBUS.

4

Technical specifications

Order No.	6GK1 571-1AA00	6GK1 571-1AM00
Product type designation	**CP 5711**	**CP 5711 MPI**
Data transmission rate		
Data transmission rate at interface 1 in accordance with ROFIBUS	9.6 kbit/s … 12 Mbit/s	9.6 kbit/s … 12 Mbit/s
Interfaces		
Number of electrical connections at interface 1 in accordance with ROFIBUS	1	1
Number of interfaces in accordance with USB	1	1
Number of electrical connections for supply voltage	1	1
Design of electrical connections		
• at interface 1 in accordance with ROFIBUS	9-pin D-sub female connector (RS485)	9-pin D-sub female connector (RS485)
• for supply voltage	2-pin terminal block	2-pin terminal block
• of USB interface	standard B socket	standard B socket
Standard for USB 2.0 interface	Yes	Yes
Supply voltage, current consumption, power loss		
Type of power supply	DC	DC
Type of power supply optional external supply	Yes	Yes
Power supply		
• from USB	5 V	5 V
• external	24 V	24 V
- minimum	18 V	18 V
- maximum	30 V	30 V

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Technical specifications (continued)

Order No.	6GK1 571-1AA00	6GK1 571-1AM00
Product type designation	**CP 5711**	**CP 5711 MPI**
Power supply note	Power supply directly from USB if provided sufficiently by PC / external supply possible as alternative	Power supply directly from USB if provided sufficiently by PC / external supply possible as alternative
Relative symmetric tolerance		
• at 5 V DC	5 %	5 %
• at 24 V DC	5 %	5 %
Current consumption		
• from USB	0.5 A	0.5 A
• from external power supply at 24 V DC maximum	0.3 A	0.3 A
Effective power loss	2.5 W	2.5 W
Permissible ambient conditions		
Ambient temperature		
• During operating phase	+5 … +60 °C	+5 … +60 °C
• During storage	-20 … +60 °C	-20 … +60 °C
• During transport	-20 … +60 °C	-20 … +60 °C
Relative humidity at 25 °C without condensation during operating phase, maximum	85 %	85 %
IP degree of protection	IP20	IP20
Design, dimensions and weights		
Module format	USB V2.0 Adapter	USB V2.0 Adapter
Width	85 mm	85 mm
Height	137 mm	137 mm
Depth	35 mm	35 mm
Net weight	300 g	500 g
Mounting type mounting onto 35 mm standard DIN rail	Yes	Yes
Mounting type	Mounting on DIN rail with optional rail support	Mounting on DIN rail with optional rail support
Product properties, functions, components, general		
Number of plug-in cards of same design which can be inserted per PC station	1	1
Number of modules - Note	-	-
Performance data		
Performance data Open communication		
Software required for open communication by means of SEND/RECEIVE	Yes, SOFTNET-DP / SOFTNET-DP Slave / SOFTNET-S7	Yes, SOFTNET-DP / SOFTNET-DP Slave / SOFTNET-S7
Number of possible connections for open communication by means of SEND/RECEIVE, maximum	50	50
Performance data for PROFIBUS DP master		
Software required for DP master function	Yes, SOFTNET-DP	Yes, SOFTNET-DP
Service as DP master		
• DPV0	Yes	Yes
• DPV1	No	No
• DPV2	No	No

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Technical specifications (continued)

Order No.	6GK1 571-1AA00	6GK1 571-1AM00
Product type designation	**CP 5711**	**CP 5711 MPI**
Number of DP slaves operable on DP master	64	64
Data volume		
• of address area of inputs as DP master, total	15 616 byte	15 616 byte
• of address area of outputs as DP master, total	15 616 byte	15 616 byte
• of address area of inputs per DP slave	244 byte	244 byte
• of address area of outputs per DP slave	244 byte	244 byte
• of address area of diagnostics data per DP slave	244 byte	244 byte
Performance data for PROFIBUS DP slave		
Software required for DP slave function	Yes, SOFTNET-DP Slave	Yes, SOFTNET-DP Slave
Service as DP slave		
• DPV0	Yes	Yes
• DPV1	No	No
Data volume		
• of address area of inputs as DP slave, total	122 byte	122 byte
• of address area of outputs as DP slave, total	122 byte	122 byte
Performance data S7 communication		
Software required for S7 communication	Yes, SOFTNET-S7	Yes, SOFTNET-S7
Number of possible connections for S7/PG communication, maximum	8	8
Performance data Multiprotocol operation		
Number of configurable connections per PC station	207	207
Product functions Management, configuration, programming		
Configuration software required	NCM PC included in scope of delivery of the required software product	NCM PC included in scope of delivery of the required software product
Product functions Diagnostics		
Product function: Port diagnostics	Yes	Yes
Standards, specifications, approvals		
Standard		
• For EMC	2004/108/EG	2004/108/EG
• For CSA and UL safety	CAN/CSA C22.2 & UL 60950-1	CAN/CSA C22.2 & UL 60950-1
• For emitted interference	EN 61000-6-3, EN 61000-6-4	EN 61000-6-3, EN 61000-6-4
• For noise immunity	EN 61000-6-1, EN 61000-6-2	EN 61000-6-1, EN 61000-6-2
Certificate of suitability		
• CE mark	Yes	Yes
• C-Tick	Yes	Yes
Accessories		
Accessories	optional: MPI cable, DIN rail holder	included in scope of delivery: MPI cable / optional: DIN rail holder

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Ordering data	Order No.
CP 5711 communications processor for connection of a programming device or notebook to PROFIBUS or MPI, under 32 bit in connection with PROFIBUS SOFTNET software or STEP 7; German/English	
• USB V2.0 adapter	**6GK1 571-1AA00**
• USB V2.0 adapter CP 5711 and MPI cable, 5 m	**6GK1 571-1AM00**
Mounting rail support for CP 5711 Compartment for CP 5711 enclosure; fastened mechanically to 35 mm DIN rail	**6GK1 571-1AA00-0AH0**
SOFTNET-S7 Edition 2008 Software for S7 communication, including FDL protocol with OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A, for 32 bit Windows XP Professional SP2/3, Windows 2003 Server R2, SP2, Windows Vista Business/Ultimate SP1; Windows 2008 Server, for CP 5512, CP 5611, CP 5611 A2, CP 5621, CP 5711; German/English	
• Single license for 1 installation	**6GK1 704-5CW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version	**6GK1 704-5CW00-3AL0**
• Upgrade of SOFTNET-S7 Edition 2006 or 2007 to SOFTNET-S7 Edition 2008	**6GK1 704-5CW00-3AE0**
• Upgrade of SOFTNET-S7 V6.0, V6.1, V6.2 or V6.3 to SOFTNET-S7 Edition 2008	**6GK1 704-5CW00-3AE1**
SOFTNET-DP Edition 2008 Software for DP protocol (Master Class 1 and 2) including FDL protocol with OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A, for 32 bit, Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server, for CP 5512, CP 5611, CP 5611 A2, CP 5621, CP 5711; German/English	
• Single license for 1 installation	**6GK1 704-5DW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version	**6GK1 704-5DW00-3AL0**
• Upgrade of SOFTNET-DP Edition 2006 or 2007 to SOFTNET-DP Edition 2008	**6GK1 704-5DW00-3AE0**
• Upgrade of SOFTNET-DP V6.0, V6.1, V6.2 or V6.3 to SOFTNET-DP Edition 2008	**6GK1 704-5DW00-3AE1**
SOFTNET-DP Slave Edition 2008 Software for DP slave, with DP-OPC server and NCM PC; single license for 1 installation, runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A for 32 bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; for CP 5512, CP 5611, CP 5611 A2, CP 5621, CP 5711; German/English	
• Single license for 1 installation	**6GK1 704-5SW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: Current software version	**6GK1 704-5SW00-3AL0**
• Upgrade of SOFTNET-DP Slave Edition 2006 or 2007 to SOFTNET-DP Slave Edition 2008	**6GK1704-5SW00-3AE0**
• Upgrade of SOFTNET-DP Slave V6.0, V6.1, V6.2 or V6.3 to SOFTNET-DP Slave Edition 2008	**6GK1704-5SW00-3AE1**
PROFIBUS FastConnect bus connector RS485 Plug 180 with 180° cable outlet	**6GK1 500-0FC10**

4

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Motor starters for operation in the field, high degree of protection

SIRIUS M200D motor starters
M200D motor starters for PROFIBUS / PROFINET

Overview

The intelligent, highly flexible M200D PROFIBUS / PROFINET motor starters are the most functional motor starters of the SIRIUS motor starter family in the high degree of protection IP65 for PROFIBUS / PROFINET communication.

They start and protect motors and loads up to 5.5 kW. Direct or reversing starter versions are available in mechanical and solid-state versions with soft start function.

The particularly robust M200D PROFIBUS / PROFINET motor starters are characterized by numerous functions which can be flexibly parameterized. Their modular design comprises a motor starter module and a communication module.

The M200D PROFINET motor starters enable TIA-integrated parameterization through PROFINET from STEP 7 – in familiar, user-friendly manner with the same look-and-feel as PROFIBUS.

Functionality

- For basic functionality see M200D motor starters, general data in the chapter AS-Interface
- Electronic version also with soft start function
- Robust and widely used M12 connection method for the digital inputs and outputs and the PROFIBUS/PROFINET bus connection
- All four digital inputs and two digital outputs exist in the cyclic process image. This provides complete transparency of the process on the control level.
- Full TIA integration: All digital inputs and outputs exist in the cyclic process image and are visible through the bus, providing maximum flexibility and best adaptability to the application
- Flexible assignment of the digital inputs and outputs with all available assignable input actions
- Extensive diagnostics concept using LEDs and through the bus with the TIA-conform mechanisms.
- Expanded diagnostics using data records
- Complete plant monitoring using statistics data record and current value monitoring by means of data records
- Parameterization through PROFIBUS / PROFINET bus with the help of data records from the user program
- Control of the motor starter using a command data record from the user program
- Removable modular control unit – quicker device replacement and therefore lower costs when device outages occur – since existing wiring is on the control unit and only one device needs to be replaced
- Parameterization in Step7 HW Config using Motor Starter ES (ordering option for start-up software)
- Start-up and diagnostics with the help of Motor Starter ES (ordering option for start-up software)
- Trace function through Motor Starter ES for optimized start-up and tracking of process and device values

Only with PROFINET IO:

- Just one bus system from the MES level to the devices – no routers
- More stations on the bus and possible configuration of flexible bus structures
- Automatic re-parameterization in case of device replacement thanks to proximity detection
- Wireless integration of plant segments in difficult environments using WLAN
- Easier expansion of the system thanks to a higher number of stations on the bus and elimination of terminating resistors

M200D motor starter module for PROFIBUS/PROFINET (without communication module)

M200D communication modules for PROFIBUS

M200D communication modules for PROFINET

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Overview (continued)

Mounting and installation

The M200D PROFIBUS / PROFINET motor starter consists of a communication module and a motor starter module. Only the motor starter module has to be replaced therefore when replacing devices. This saves time and money. The communication module remains as an active station on the bus and all other system components continue running. This prevents downtimes.

The integrated plug-in technology enables far lower wiring outlay: Connecting cables can be plugged directly onto the motor starter module. The PROFINET bus is connected cost-effectively using an M12 connection on the device. All versions have identical enclosure dimensions for easier system design and conversion.

Parameterization and configuration

All motor protection functions, limit values and reactions can be defined by parameterization.

The user has several user-friendly options for the parameterization. In addition to parameterization directly from STEP 7, which also permits automatic re-parameterization in case of device replacement, it is possible to use the user-friendly Motor Starter ES start-up software. By connecting a programming device directly to PROFIBUS / PROFINET and the Motor Starter ES start-up software, the devices can also be conveniently programmed from a central point through the bus. Also, parameters can be changed during operation from the user program using the data record mechanism so that the function of the motor starter is adapted to the process when required. With the help of a PC and the Motor Starter ES software it is also possible to perform the parameterization through the local point-to-point interface on-site.

Functions can be flexibly assigned to the digital inputs and outputs, adapting them to all possible conveyor applications. All digital inputs and outputs exist in the cyclic process image. All limit values for monitoring functions and their reactions are parameterizable and therefore adaptable to the application. Consistency with other products of the SIRIUS M200D motor starter range and with the frequency converter and ET 200pro peripherals system is assured.

Only with the M200D PROFINET motor starter

Thanks to the integrated proximity detection, the device name does not need to be issued manually when a device is replaced. The name is issued automatically by the neighboring devices which note the "names" of the devices in their proximity. No additional start-up measures are required therefore when replacing a device.

The new motor starter generation is characterized by high functionality, maximum flexibility and the highest level of automation. The PROFINET is recommended in particular for expansive and highly automated system components because the possibility of monitoring devices and systems with data records (statistical data, measured values and device diagnostics) guarantees an in-depth view of the plant from the control room and therefore increases plant availability.

Operation

The motor starters record the actual current flow. Evaluating the current of the parameterizable solid-state overload protection increases the availability of the drives, as do reliable messages concerning the overranging or underranging of setpoint values.

Diagnostics and maintenance

Diagnostics is provided through numerous mechanisms – and can be used as the customer prefers.

The motor starter is TIA-diagnostics compatible, which means that when a fault is identified, a diagnostics alarm is distributed, which invokes the diagnostics-OB with a SIMATIC control. The fault can be evaluated as usual in the user program.

The M200D motor starter offers a large variety of diagnostics data through data records. Its functionality is without equal on the market. There are extensive options for reading out data from the motor starter for monitoring devices, systems or processes.

The motor starter is equipped internally with 3 logbooks for device faults, motor starter trips and events, which are issued with a time stamp. These logbooks can be read out of the motor starter at any time in the form of data records and provide the plant operator with plenty of information about the state of his plant and process which he can use to carry out improvements.

With the slave pointer and statistical data functions it is possible to read out, for example, the maximum internal current values or the number of motor starter connection operations for plant monitoring purposes. This enables process deviations to be monitored or commissioning to be optimized. The user can draw conclusions about the actual load conditions of the devices in his process and on this basis can optimize his plant maintenance intervals.

The device diagnostics data record contains details of all the states of the motor starter, the device configuration and the communication as a basis for central device and plant monitoring.

With installation and maintenance functions (I&M), information (I&M) on modules employed is stored in the motor starter on the one hand, and on the other, data (I&M), which can be specified by the user during configuration, such as location designations. I&M functions serve for troubleshooting faults and localizing changes in hardware at a plant or checking the system configuration. Reordering a device is particularly easy as the result.

The integrated maintenance timer can be used to implement preventative maintenance and avoid plant downtimes through look-ahead servicing.

Another new feature is the integrated TRACE function with the Motor Starter ES software. It can be used to record measured values as a function of time following a trigger event. This enables process flows to be recorded and their timing optimized.

Local control of a drive is possible using the ordering option with integrated manual operation. This is yet another new development which distinguishes the M200D PROFIBUS / PROFINET motor starter from the rest of the market and adds innovative technology, maximum availability and transparency to the system.

See from page 5/7 for the Motor Starter ES software.

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Overview (continued)

	 SIRIUS M200D PROFIBUS	 SIRIUS M200D PROFINET
Device functions (software features)		
Slave on the bus		
Fieldbus	✔ PROFIBUS to M12	✔ PROFINET to M12
Adjustable number of stations	✔ 1 125	✔ 1 ... 128 with CPU 315, 317 1 ... 256 with CPU 319
Parameterization		
DIP switches	✔ For address setting and terminating resistor	--
ES Motor Starter	✔ Through bus, optical interface	
PROFIBUS / PROFINET data records	✔	
From STEP 7 / HW config	✔	
Diagnostics		
Acyclic through data records	✔	
Support of diagnostics alarm	✔	
Process image		
Process image	✔ 2Byte PAE/ 2Byte PAA	
Data channels		
Local optical interface (manual on-site)	✔	
Through Motor Starter ES local interface	✔	
Using Motor Starter ES through bus	✔	
Data records (acyclic)		
Parameterization	✔ Using DS 131 (DS = data record)	
Diagnostics	✔ Device-specific DS 92	
Measured values	✔ Measured values DS 94	
Statistics	✔ Statistical data DS 95	
Commands	✔ Using DS 93	
Slave pointer	✔ Slave pointer DS 96	
Logbook	✔ Using Motor Starter ES and data records: Device faults DS 72, tripping operation DS 73, events DS 75	
Device identification	✔ Using DS 100	
I&M data	✔ Using DS 231 ... 234	✔ Using data records 0xAFF0 ... 0xAFF3
Inputs		
Qty	✔ 4	
• Of these in the process image	✔ 4	
Input action	✔ Parameterizable: Flexibly assignable action (see manual)	
Quick-Stop	✔ Parameterizable: Latching, non-latching	
Outputs		
Qty	✔ 2	
• Of these in the process image	✔ 2	
Output action	✔ Parameterizable: Flexibly assignable action (see manual)	
Brake output		
180 V DC / 230/400 V AC / none	✔	
Motor protection		
Overload protection	✔ Electronic, wide range 1:10	
Short-circuit protection	✔	
Full motor protection	✔	
Temperature sensor	✔ Parameterizable using ES Motor Starter, data record: PTC or Thermoclick or deactivated	

✔ Function is available; -- Function is not available.

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Overview (continued)

	 SIRIUS M200D PROFIBUS	 SIRIUS M200D PROFINET
Device functions (software features)		
Device functions		
Repair switch	✔	
Current limit monitoring bottom	✔ Parameterizable	
Current limit monitoring top	✔ Parameterizable	
Zero current detection	✔ Parameterizable: tripping, warning	
Blocking current	✔ Parameterizable	
Unbalance	✔ Parameterizable	
Load type	✔ Parameterizable: single- and three-phase	
Shutdown class	✔ Parameterizable using ES Motor Starter, data record: Class 5, 10, 15, 20	
Protection against voltage failure	✔ Parameterizable: Activated/deactivated	
Soft starter control function		
Soft start function	✔	
Bypass function	✔ Only electronic version	

✔ Function is available; -- Function is not available.

Application

The M200D PROFIBUS / PROFINET motor starters are particularly suitable for fully TIA-integrated, highly automated conveyor applications which meet all needs with regard to the monitoring of devices and systems and preventative maintenance. Adaptability of the motor starter functions and maximum flexibility of the device enable a broad range of application without any limits. The PROFINET-specific expansions are the best assurance of a future-proof investment.

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Motor starters for operation in the field, high degree of protection

M200D motor starters for PROFIBUS / PROFINET
Communication modules, motor starter modules

Selection and ordering data

M200D PROFIBUS / PROFINET
without communication module

M200D PROFIBUS

M200D PROFINET

Version	Order No.						
M200D communication modules for PROFIBUS							
Communication modules for PROFIBUS M12 termination 7/8 inch	**3RK1 305-0AS01-0AA0**						
M200D communication modules for PROFINET							
Communication modules for PROFINET M12 termination 7/8 inch	**3RK1 335-0AS01-0AA0**						
Electromechanical starters (with integrated protection)	**3RK1 395-6**	■	**S41-**	■	**AD**	■	
Setting range for rated operational current / A							
• 0,15 ... 2		**K**					
• 1,5 ... 12		**L**					
Direct-on-line starters/ reversing starters							
• Direct-on-line starters				**0**			
• Reversing starter				**1**			
• Direct-on-line starters with manual local operation				**2**			
• Reversing starters with manual local operation				**3**			
Brake control							
• Without brake control						**0**	
• Brake control (400 V AC)						**3**	
• Brake control (180 V DC)						**5**	

Version	Order No.						
Electronic starters (with thyristors)	**3RK1 395-6**	■	**S71-**	■	**AD**	■	
Setting range for rated operational current / A							
• 0,15 ... 2		**K**					
• 1,5 ... 12		**L**					
Direct-on-line starters/ reversing starters							
• Direct-on-line starters				**0**			
• Reversing starter				**1**			
• Direct-on-line starters with manual local operation				**2**			
• Reversing starters with manual local operation				**3**			
Brake control							
• Without brake control						**0**	
• Brake control (230/400 V AC)						**3**	
• Brake control (180 V DC)						**5**	

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Overview

The 3RK3 modular safety system (MSS) is a freely parameterizable modular safety relay. Depending on the external circuit version, safety-oriented applications up to Category 4 according to EN 954-1, Performance Level e according to ISO 13849-1 or SIL3 according to IEC 62061 can be realized.

The modular safety relay permits several safety applications to be interconnected. The safety functions are easily created on the PC using a graphic parameterizing tool. For example, disconnection ranges can be set and other dependencies defined.

With additional safety-oriented expansion modules, the system is flexibly adapted to the required safety applications.

The MSS comprises the following system components:

- Central module
- Expansion modules
- Interface modules
- Diagnostics modules
- Parameterization software
- Accessories

The comprehensive error and status diagnostics provides the possibility of finding errors in the system and localizing signals from sensors. Plant downtimes can be reduced as the result.

Optional interface modules send the diagnostics data to higher-level bus systems (e.g. PROFIBUS DP). These data are then available for further processing in the automation system.

Benefits

- More functionality and flexibility through freely configurable safety logic
- For all safety applications thanks to compliance with the highest safety standards (Category 4 according to EN 954-1, Performance Level e according to ISO 13849-1 or SIL3 according to IEC 62061)
- Suitable for use all over the world through compliance with all globally established certifications
- Modular hardware configuration
- Parameterization by means of software instead of wiring
- Removable terminals for greater plant availability

Communication

The 3RK3 modular safety system can be connected to PROFIBUS through the DP interface and exchange data with higher-level control systems.

The MSS supports among other things:

- Baud rates up to 12 Mbit/s
- Automatic baud rate detection
- Cyclic services (DPV0) and acyclic services (DPV1)
- Exchange of 32-bit cyclic data
- Diagnostics using data record invocations

For MSS with communication function, see from page 4/35 onwards.

For accessories, see page 4/36 onwards.

For additional information, see catalog LV 1 SIRIUS Low-Voltage Controls and Distribution • SENTRON • SIVACON and Industry Mall under Low-Voltage Controls and Distribution --> SIRIUS Industrial Controls --> Monitoring and Control Devices.

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General data

Application

The 3RK3 modular safety system can be used for all safety-oriented requirements in the manufacturing industry and offers the following safety functions:

- EMERGENCY-STOP:
  With this function, signals from EMERGENCY-STOP devices with positive-opening contacts are evaluated.
- Protective door monitoring:
  Signals from protective doors or protective flaps with positive opening contacts or an NC-NO combination are evaluated.
- Non-contact protective devices (BWS):
  Signals from e.g. light curtains and laser scanners are evaluated.
- Switching mats:
  Signals from switching mats with NC contacts or crossover monitoring are evaluated.
- Two-hand operator controls:
  With this function, signals from a two-hand operator control device are evaluated.
- OK buttons:
  Signals from OK buttons with NO contact are evaluated.
- Operating mode selector switches:
  With this function, signals from an operating mode selector switch with NO contacts are evaluated. Up to 5 operating modes can be defined. The operating mode to be implemented can be freely configured in the downstream logic.
- Logic operation functions:
  AND, OR, XOR, NAND, NOR, negation (NEG), flip-flop (FF-RS)
- Counter functions:
  - The safety relay supports the counting function "counter 0 -> 1". The count value is changed only when there is a positive edge at the count inputs. The current count value can be counted forwards or backwards through one own count input each.
  - The safety relay supports the counting function "For negative edge 1 -> 0". The count value is changed only when there is a negative edge. The current count value can be counted forwards or backwards through one own count input each.
  - The safety relay supports the counting function "For both edges". The count value is changed both when there is a positive edge and when there is a negative edge. The current count value can be counted forwards or backwards through one own count input each.
- Time functions:
  ON delay, On delay (trigger), passing make contact, passing make contact (trigger), OFF delay, OFF delay (trigger), clock-pulsing.
- Start functions:
  Manual and automatic start
- Output functions:
  Standard outputs and fail-safe outputs can be actuated.

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Selection and ordering data


3RK3 111-1AA10


3RK3 211-1AA10
3RK3 221-1AA10
3RK3 231-1AA10
3RK3 242-1AA10


3RK3 251-1AA10


3RK3 311-1AA10
3RK3 321-1AA10


3RK3 511-1BA10


3RK3 611-3AA00

Version	Screw terminals Order No.	Version	Spring-type terminals Order No.
Central modules		***Central modules***	
3RK3 Basic Central module with safety-oriented inputs and outputs • 8 inputs • 1 two-channel relay output • 1 two-channel solid-state output Max. 7 expansion modules can be connected, including 3RK3 931-0AA00 memory module	**3RK3 111-1AA10**	**3RK3 Basic** Central module with safety-oriented inputs and outputs • 8 inputs • 1 two-channel relay output • 1 two-channel solid-state output Max. 7 expansion modules can be connected, including 3RK3 931-0AA00 memory module	**3RK3 111-2AA10**
Expansion modules		***Expansion modules***	
4/8 F-DI Safety-orientated expansion module • 8 inputs	**3RK3 211-1AA10**	**4/8 F-DI** Safety-orientated expansion module • 8 inputs	**3RK3 211-2AA10**
2/4 F-DI 1/2 F-RO Safety-orientated mixed expansion module • 4 inputs • 2 single-channel relay outputs	**3RK3 221-1AA10**	**2/4 F-DI 1/2 F-RO** Safety-orientated mixed expansion module • 4 inputs • 2 single-channel relay outputs	**3RK3 221-2AA10**
2/4 F-DI 2F-DO Safety-orientated mixed expansion module • 4 inputs • 2 two-channel solid-state outputs	**3RK3 231-1AA10**	**2/4 F-DI 2F-DO** Safety-orientated mixed expansion module • 4 inputs • 2 two-channel solid-state outputs	**3RK3 231-2AA10**
4/8 F-RO Safety-oriented output modules • 8 relay outputs	**3RK3 251-1AA10** NEW	**4/8 F-RO** Safety-oriented output modules • 8 relay outputs	**3RK3 251-2AA10** NEW
4 F-DO Safety-oriented output modules • 4 two-channel solid-state outputs	**3RK3 242-1AA10** NEW	**4 F-DO** Safety-oriented output modules • 4 two-channel solid-state outputs	**3RK3 242-2AA10** NEW
8 DI Standard input modules • 8 inputs	**3RK3 321-1AA10** NEW	**8 DI** Standard input modules • 8 inputs	**3RK3 321-2AA10** NEW
8 DO Standard output module • 8 solid-state outputs	**3RK3 311-1AA10**	**8 DO** Standard output module • 8 solid-state outputs	**3RK3 311-2AA10**
Interface modules		***Interface modules***	
DP interface PROFIBUS DP interface, 12 Mbit/s, RS485	**3RK3 511-1BA10**	**DP interface** PROFIBUS DP interface, 12 Mbit/s, RS485	**3RK3 511-2BA10**
Operating and monitoring modules		***Operating and monitoring modules***	
Diagnostics modules	**3RK3 611-3AA00** NEW	**Diagnostics modules**	--

To connect the central module to expansion modules or interface module, you need the 3UF7 930-0AA00-0 connection cable. See page 4/36.

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Selection and ordering data

	Version	Order No.
Connection cables (essential accessory)		
	Connection cables For connecting the central module, expansion modules and the interface module	
	• Length 0.025 m (flat)	**3UF7 930-0AA00-0**
PC cables and adapters		
 3UF7 940-0AA00-0	**PC cable for PC/PG communication with 3RK3 modular safety system** Through the system interface, for connecting to the serial interface of the PC/PG	**3UF7 940-0AA00-0**
	USB/serial adapters To connect an RS232 PC cable to the USB port of a PC, recommended for use in conjunction with 3RK3	**3UF7 946-0AA00-0**
Interface covers		
 3UF7 950-0AA00-0	**For system interface**	**3UF7 950-0AA00-0**
Memory modules		
 3RK3 931-0AA00	**For parameterizing the 3RK3 modular safety system without a PC/PG through the system interface**	**3RK3 931-0AA00**
Door adapters		
 3UF7 920-0AA00-0	**For external connection of the system interface, e.g. outside a control cabinet**	**3UF7 920-0AA00-0**
Push-in lugs		
 3RP19 03	**For screw mounting** e.g. on mounting plate, 2 units required per device	
	• Can be used for 3RK3	**3RP19 03**
Modular Safety System ES 2008 Basic		
 3ZS1 314-4CC10-0YA5	**Parameterization, start-up and diagnostics software for the 3RK3** Runs under Win XP PROF/Win VISTA: Business32, Ultimate32; without PC cable	
	Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through the system interface	
	• License key on USB stick, Class A	**3ZS1 314-4CC10-0YA5**
	• License key download, Class A	**3ZS1 314-4CE10-0YB5**
Modular Safety System ES 2008 Standard		
 3ZS1 314-5CC10-0YA5	**Floating license for one user** E-SW, software and documentation on CD, 3 languages (German/English/French), communication through the system interface	
	• License key on USB stick, Class A	**3ZS1 314-5CC10-0YA5**
	• License key download, Class A	**3ZS1 314-5CE10-0YB5**
	Powerpack Floating license for one user, E-SW, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	**3ZS1 314-5CC10-0YD5** NEW
	Software Update Service For 1 year with automatic extension, assuming the current software version is in use, E-SW, software and documentation on CD, communication through the system interface	**3ZS1 314-5CC10-0YL5**

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Overview

Modular Safety System ES: the uniform software for the modular safety system

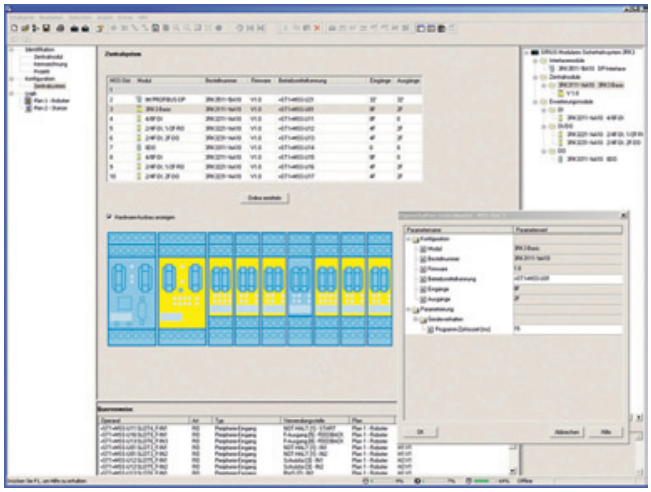
Modular Safety System ES is the engineering software for the configuration, start-up and diagnostics of the 3RK3 modular safety system. The software combines the configuring of the hardware, the programming of the safety functions, and the testing and diagnostics of the safety system.

Hardware configuration

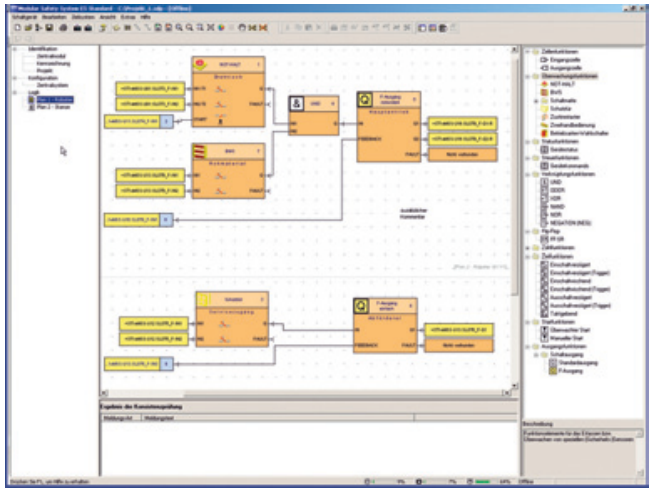
The configuration defines the system's hardware layout. It lays down which modules are used in the system: A central module as a safe control system including onboard peripherals, expansion modules with inputs and outputs, an interface module for connecting to PROFIBUS. For better clarity, the layout is shown in a graphic presentation. For each module, it is optionally possible to issue an equipment ID which is shown in the logic diagram for identification of the inputs and outputs.

The safety logic can be divided into several diagrams in order to enable structured processing of the entire plant. The user can freely position the functions on a quasi infinitely large drawing board, whereby the connecting lines are drawn automatically. If there is not enough space, more pages are automatically added to the diagram in horizontal or vertical direction. Connecting lines extending over several pages are automatically issued with cross-references during print-out. If required in the interest of clarity, the user can divide a connecting line manually into two segments, whereby the mutual reference is marked by reference arrows. For further documentation, freely compilable comment texts can be placed at any point in the diagram. Every point in the logic diagram can be processed with ease by dragging and zooming.

Every project can be saved as a file and be password-protected from unauthorized access.



Definition of the hardware layout



Processing the safety functions with the graphics editor

Graphic parameterizing of the safety logic by Drag & Drop

The functionality of the safety logic is laid down with a graphics editor designed for intuitive operation. Safe monitoring functions (EMERGENCY-STOP, non-contact protective devices/light arrays, protective doors, etc.), output functions and logic functions (AND/OR operations, counting function, time functions, etc.), non-safety-orientated input/output functions, device status functions and control functions can be dragged from the extensive functions catalog onto the work interface by Drag&Drop. Depending on the version, each function has several input and output connecting points through which the functions can be interconnected by simple mouse clicks. Double-clicking on a function symbol opens the related features dialog window in which all the parameters can be displayed and configured: Scope of the function's inputs and outputs, configuring the channel type (one-channel/two-channel, NC contact/NO contact), activating the crossover monitoring, defining start options, assigning the hardware inputs and outputs, etc. Of course each function can be issued with an individual name so that e.g. the position of a safety switch in the plant can be documented.

User prompting during start-up and maintenance

To start up the 3RK3 modular safety system, the created project file is loaded into the device. This requires the serial interface (COM) of the PC to be connected with a special connection cable to the device. Access to the device can be password-protected.

After the project is loaded, the user switches the device by means of the software from configuring mode to test mode in which the safety functions are tested.

Activating the diagnostics shows the status of the individual functions in the graphic logic diagram by means of different colors and symbols. In addition, the signal status of each input and output can be manually overwritten ("forcing").

If the test is completed successfully, the user releases the configuration and switches the device to protection mode, in which case "forcing" is automatically deactivated.

Service personnel can activate the graphic diagnostics in protection mode as well. The I&M (Identification & Maintenance) data saved in the device facilitate maintenance.

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Overview (continued)

Modular Safety System ES	Basic	Standard
Access through the local interface on the device	✔	✔
Parameter assignment	✔	✔
Operating	✔	✔
Diagnostics	✔	✔
Test	✔	✔
Integrated graphics editor	✔	✔
Importing/exporting parameters		✔
Comparison functions		✔
Comfort functions		✔
Terminal designator		✔
Work on sub-diagrams		✔
Standards-conform printout according to EN ISO 7200	✔	✔

✓ Function available

-- Function not available

More functions

- The program interface language can be switched during use between German, English and French.
- A context-sensitive help function provides useful assistance with questions concerning the use of the program.
- A consistency check informs clearly about function assignment errors; checks are carried out automatically when a project is saved and during the configuration test, but they can also be initially manually.
- Lists of symbols and cross-references can be issued output for effective processing of the project file.
- Standards-conform printouts:
  The programs of the SIRIUS ES software family make machine documentation far easier. They enable parameterization printouts according to EN ISO 7200. The elements to be printed are easy to select and group as required.

Types of delivery and license

Modular Safety System ES 2008 is available as follows:

- Floating license
  - Package contains the software on CD and a floating license on a USB stick.
  - The software can be installed on any number of PCs.
  - The floating license enables the software to be used by 1 user; after use, it can be transferred from the one PC to another.
  - The CD also contains a trial license for test and evaluation purposes (free use of all program functions on any PC for a period of 14 days).

Following delivery versions are available in addition for Modular Safety System ES 2008:

- Powerpack
  Special pack for switching within the same software version to a more powerful version with more functionality, e.g. Powerpack Modular Safety System ES 2008 for switching from Basic to Standard.
- Software Update Service
  To keep you up to date at all times, we offer a special service which supplies you automatically with all service packs and upgrades (floating license not included in delivery).
- License Download
  User-friendly license key download from our Mall (currently only for customers from Germany) as an easy and quick way for you to receive additional licenses for your software.

The software can be downloaded free from the Internet (without floating license) at:
support.automation.siemens.com/WW/view/en/25801078/133100

The download file also contains a trial license for test and evaluation purposes, which allows free use of all program functions on any PC for a period of 14 days. A floating license is needed to use the software after the 14 days.

System requirements

Modular Safety System ES 2008 parameterization, start-up and diagnostics software for the 3RK3 modular safety system	
Operating system	Windows XP Professional (Service Pack 2), Windows Vista Ultimate 32/Business 32
Processor	≥ Pentium 800 MHz/≥ 1 GHz (Windows Vista)
RAM	≥ 512 MB/≥ 1 GB (Windows Vista)
Monitor resolution	≥ 1024 x 768
Free space on hard disk	≥ 280 MB
CD-ROM/DVD drive	Yes (only when installing from CD)
Serial interface (COM)	Yes
PC cables for PC/PG communication	Yes

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Ordering data

Order No.

Parameterization, start-up and diagnostics software for the 3RK3 modular safety system

- Runs under WIN XP PROF/ Windows Vista: Ultimate 32/Business 32
- Without PC cable

Modular Safety System ES 2008 Basic

	Order No.
Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface	
• License key on USB stick, Class A, including CD	**3ZS1 314-4CC10-0YA5**
• License key download, Class A, no CD	**3ZS1 314-4CE10-0YB5**

Modular Safety System ES 2008 Standard

	Order No.
Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface	
• License key on USB stick, Class A, including CD	**3ZS1 314-5CC10-0YA5**
• License key download, Class A, no CD	**3ZS1 314-5CE10-0YB5**
Powerpack For Modular Safety System ES 2008 Basic Floating license for one user, E-SW, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	**3ZS1 314-5CC10-0YD5**
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, E-SW, software and documentation on CD, communication through the system interface	**3ZS1 314-5CC10-0YL5**

Accessories

	Order No.
PC cables for PC/PG communication Through the system interface on the device, for connecting to the serial interface on the PC/PG	**3UF7 940-0AA00-0**
USB/serial adapters To connect a serial PC cable (for connection to the serial PC interface / RS 232), we recommend using modular safety system 3RK3, soft starter 3RW44, ET 200S/ECOFAST/ET 200pro motor starter, AS-i safety monitor and AS-i analyzer in conjunction with SIMOCODE pro 3UF7	**3UF7 946-0AA00-0**

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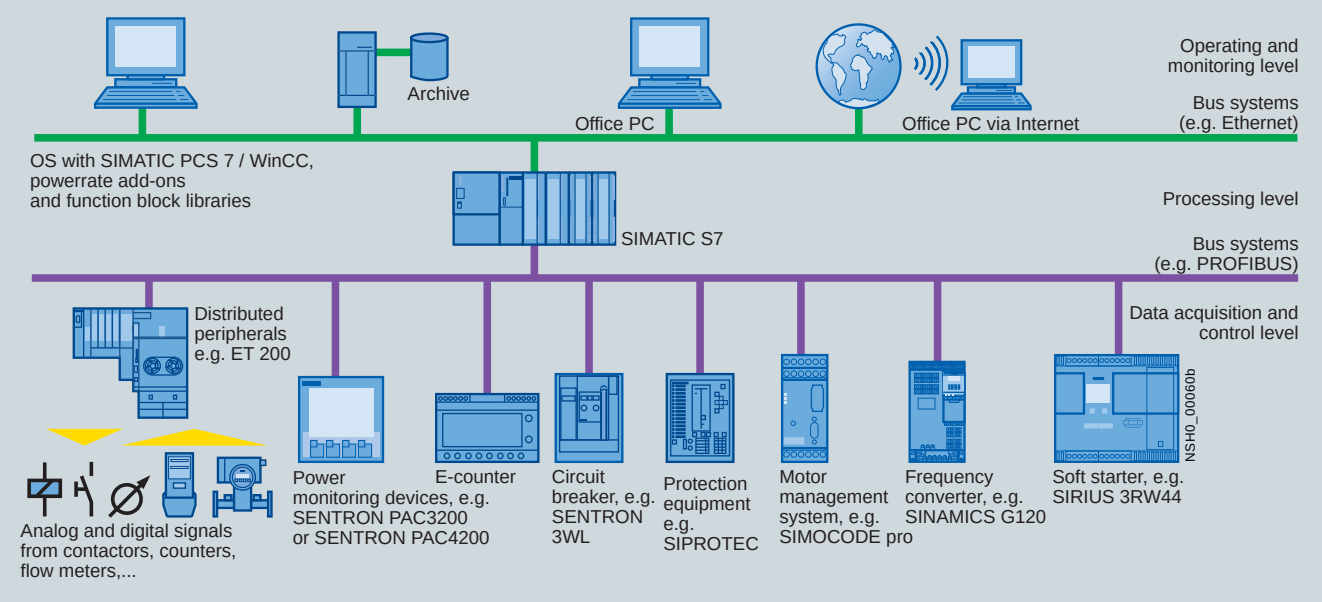
System overview

Overview



Power Management System: Configuration and makeup of all participating components

The continuous increase in energy prices is leading to higher operating costs and can pose a threat to a company's competitiveness.

The goal of our Power Management System is to optimize operating costs and increase plant availability.

As part of TIA and TIP, it is fully integrated in the industrial technologies of production and process automation (SIMATIC PCS 7 and SIMATIC WinCC) from Siemens. This means lower costs of implementation and all the following benefits:

- Consistent product design
- Standard components
- Open interfaces
- Uniform operating philosophy
- System-tested, certified products
- Global availability in high Siemens quality
- Optimum support from Siemens hotline

In other words: With Power Management, you can make full use of all the potential for optimization provided by a consistent power management solution.

The power management system comprises both hardware components and software components.

Hardware components

The hardware components are:

- Communication-capable measuring devices such as
- SENTRON PAC3200 and SENTRON PAC4200
- Switching and protection devices (3VL / 3WL)
- The SIMOCODE pro motor management system
- E-counters
- Protection equipment such as SIPROTEC
- And diverse other communication-capable devices

Software components

The software components are:

- SIMATIC PCS 7 powerrate/SIMATIC WinCC powerrate as add-ons to SIMATIC PCS 7 or SIMATIC WinCC
- SIMATIC PCS 7 Library PAC3200 as driver / faceplate for SIMATIC PCS 7
- Switch ES Power

SIMATIC PCS 7 powerrate/SIMATIC WinCC powerrate

SIMATIC PCS 7 and WinCC powerrate are extensions to PCS 7 and WinCC respectively and throw light on power consumption from the infeed to the load.

- Identification of power-intensive consumer devices and processes in order to introduce measures for improving power efficiency
- Comparison of consumption profiles for greater efficiency of process design, charge-related load recording
- Optimizing the company according to energy parameters based on an assessment of consumption and costs
- Complying with the contractually agreed power limit, thus preventing higher power supply costs or penalty payments.

SIMATIC PCS 7 Library PAC3200 and PAC3200 function block library for SIMATIC WinCC

The SIMATIC PCS 7 and WinCC function block libraries for PAC3200 enable optimum integration of the SENTRON PAC3200 multifunction measuring instrument in SIMATIC PCS 7 and WinCC respectively.

More information

Hardware components of the Power Management System and its software components are dealt with in this chapter.

You can find more information on the Internet at:
www.siemens.com/powermanagementsystem

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Overview

Instrument variants	SENTRON	PAC3100 NEW	PAC3200	PAC4200 NEW
				
Functional overview				
Basic measurement variables				
Voltage, current		✓	✓	✓
Neutral conductor current		✓	--	✓
Apparent power, active power, reactive power, power factor		✓	✓	✓
Power factor of the fundamental wave		--	--	✓
Frequency	Of the reference phase	✓	✓	✓
Min/max values	Slave pointer function | with date & time	✓ | --	✓ | --	✓ | ✓
Power measurement				
Apparent energy		--	✓	✓
Active energy, reactive energy	Input | Output | Balance	✓ | ✓ | ✓	✓ | ✓ | --	✓ | ✓ | --
Number of tariffs	Apparent, active and reactive energy	1	2	2
Daily energy values for 365 days	Apparent, active and reactive energy	--	--	✓
Consumption recording of a sub-process or manufacturing process	Apparent, active and reactive energy	--	--	✓
Power averages of the last measurement period	Active and reactive power average with min / max value	✓	✓	✓
Load profile record		--	--	✓ max. 3840 entries[1]
E-counter for S_0 signal at a digital input	Electrical energy | any energy	-- | --	✓ | --	✓ | ✓
Accuracy class for active energy	According to IEC 62053-21 / 62053-22	Class 1	Class 0.5S	Class 0.2S
Accuracy class for reactive energy	According to IEC 62053-23	Class 3	Class 2	Class 2
Monitoring of state of the plant and quality of the network				
Configurable displays	For presenting up to 4 measured quantities	--	--	4
Operating hours counter	Operating hours of loads	--	✓	✓
Sliding mean values	*U, I, S, P, Q, LF*	--	--	✓
THD voltage, current		--	THD-R	THD
Distortion current strength		--	--	✓
Phase angle, phase displacement angle		--	--	✓
Unbalance	Voltage | current	--	U_{nba} | I_{nba}[2]	U_{nb} | I_{nb}[3]
Harmonics in voltage, current		--	--	3. to 31st
Limit value monitoring	Max. number of limit values	--	6	12
Boolean logic	For limit values | inputs	--| --	✓ | --	✓ | ✓
Event memory for operation, control and system-related events	Including time stamp	--	--	✓ (> 4000 events)
Battery backup for min / max values		--	--	✓

1) This corresponds for example to a duration of 40 days with a measurement period length of 15 minutes.

2) U_{nba}, I_{nba} – Unbalance with regard to amplitude

3) U_{nba}, I_{nba} – Unbalance with regard to amplitude and phase

✓ Available, -- Not available

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Overview (continued)

Instrument variants		SENTRON PAC3100 NEW	PAC3200	PAC4200 NEW
Functional overview				
System integration and communication				
Ethernet (integrated)		--	10 Mbit/s	10/100 Mbit/s
• Protocol	Modbus TCP	--	✓	✓
• Gateway	Ethernet <--> RS485 (Modbus)	--	--	✓[1]
PROFIBUS DP (V1)		--	Expansion module optional	
RS485		Integrated	Expansion module optional	
• Protocol	Modbus RTU	✓	✓	✓
4DI/2DO expansion module	Expansion to max. 10 DI / 6 DO	--	--	✓ (max. 2 modules)
Number of expansion modules	Max.	--	1	2
Integrated digital inputs (DI)	Number | multifunctional	2 | --	1 | ✓	2 | ✓
Integrated digital outputs (DO)	Number | multifunctional	2 | ✓	1 | ✓	2 | ✓
Installation plan				
Dimensions (L x W x D)	In mm	96 x 96 x 56	96 x 96 x 56	96 x 96 x 82
Mounting depth	PAC | PAC with expansion module (in mm)	51 | --	51 | 73	77 | 99
Panel cut-out (L x W)	In mm	92 x 92	92 x 92	92 x 92
Standards and Approvals				
CE / cULus / C-Tick / GOST		✓	✓	✓
IEC 61557-12		✓	--	✓

[1] In conjunction with SENTRON PAC RS485 expansion module

✓ Available, -- Not available

Measuring precisely with SENTRON PAC3100/3200/4200 – New dimensions with the multifunction measuring instruments

The SENTRON PAC multifunction measuring instruments: PAC3200 (left), PAC3100 (center) and PAC4200 (right)

The multifunction measuring instruments of the SENTRON PAC series are used to measure and indicate all relevant network parameters in low-voltage power distribution. They can be used for single-phase measurements as well as for multiphase easurements in 3 and 4-conductor networks (TN, TT, IT).

Power values for main distribution boards, electrical feeders or individual loads are recorded precisely and reliably, and important measured values are supplied in addition for assessing the state of the plant and the quality of the network.

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Benefits

SENTRON PAC General

Performance characteristics of all multifunction measuring instruments in the SENTRON PAC series:

- Simple mounting and commissioning
- High IP65 degree of protection (front side, when installed) permits usage in extremely dusty and wet environments
- Intuitive operation using 4 function buttons and multilingual plain text displays
- Easy adaptation to different systems using integrated and optional
  - Digital inputs and outputs
  - Communications interface
- Worldwide use
  - Min. 8 languages
  - International approvals
  - Developed and tested to European and international standards
- Low mounting depth

SENTRON PAC3200 and SENTRON PAC4200

Additional performance characteristics of the SENTRON PAC3200 and SENTRON PAC4200:

- Precise energy recording
- Versatile system integration
  - Integrated Ethernet interface
  - Optional communication modules available
  - Multifunctional digital inputs and outputs
  - Limit value monitoring
- Can be connected directly to power supply networks up to 690V AC (UL-L) , CATIII without voltage transformers.
- Easy-to-use configuration software included as standard

SENTRON PAC4200

Additional performance characteristics of the SENTRON PAC4200:

- Monitoring the plant status and the system quality
  - Basic information for evaluating network quality
  - Logging of plant operations through operational, operating and system events
- Recording of the power range through power averaging (load profile)
- Daily energy meters for apparent, active and reactive energy across 365 days for cut-off date assessment
- Detection of gas, water, compressed air or other energy sources via pulse counter to the digital inputs
- Can be expanded using modules to up to 10 digital inputs and 6 digital outputs
- Meters for apparent, active and reactive energy for the precise detection of the power consumption of a partial process or manufacturing process
- 10/100 Mbit/s Ethernet interface with gateway function for the easy connection of devices with serial RS485 interface via expansion module PAC RS485 to an Ethernet network
- Comprehensive convenience indicators, such as user-defined displays, bar and status indicators, phase diagram and list and histogram graphics
- Satisfies the accuracy requirements of class 0.2S high-precision meters used by power supply companies according to IEC 62053-22, which are normally reserved for exacting industrial applications

Application

Three-phase multifunction measuring instruments are used to measure and indicate all relevant network parameters of an electrical installation and they monitor these parameters permanently.

Applications

Wherever power has to be distributed, be it in industrial or infrastructural buildings, the SENTRON PAC supplies important information to the building services system or the power controlling system.

The many different communication options offered by the SENTRON PAC make it an indispensable supplier of data for power management systems and for plant and building automation.

Industries

Power distribution systems for the power supply are needed in all sectors of industry. SENTRON PAC is used accordingly in all sectors where power consumption and electrical parameters are to be measured.

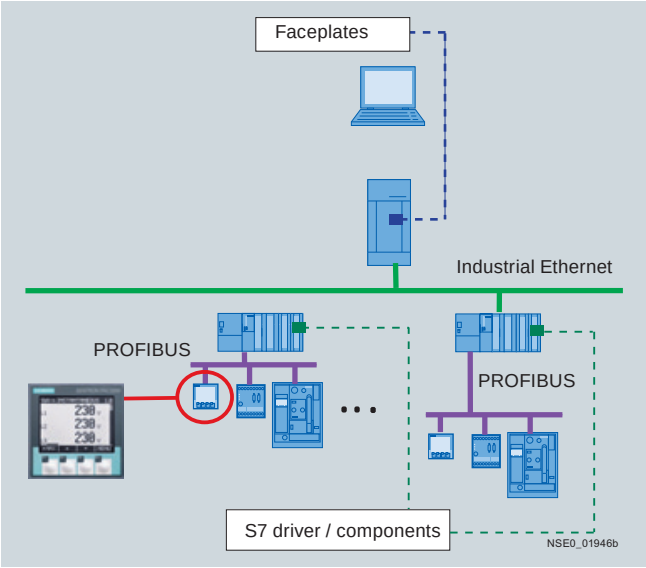
Integration of PAC3200 and PAC4200

When the SENTRON PAC3200 and PAC4200 are fully integrated in a power management system, they monitor the power consumption and help to monitor the operating state of the plant. Measured values, limit value violations, operating hours of a connected load or power flows are supplied by the instruments quickly and reliably.

Using the optionally available interface modules, it is possible to integrate both instruments in every I&C system or every SIMATIC S7 environment.

System integration using function block libraries

Optionally available function block libraries make it easy to integrate the multifunction measuring instruments in the SIMATIC PCS 7 process control system and the SCADA-System SIMATIC WinCC. Together with the faceplates as user interface for SENTRON PAC3200, the driver blocks and diagnostics blocks in the control system enable the operating and monitoring of technologically important values and functions of the measuring devices in the respective target system.



Integration of the SENTRON PAC3200 in SIMATIC PCS 7/WinCC

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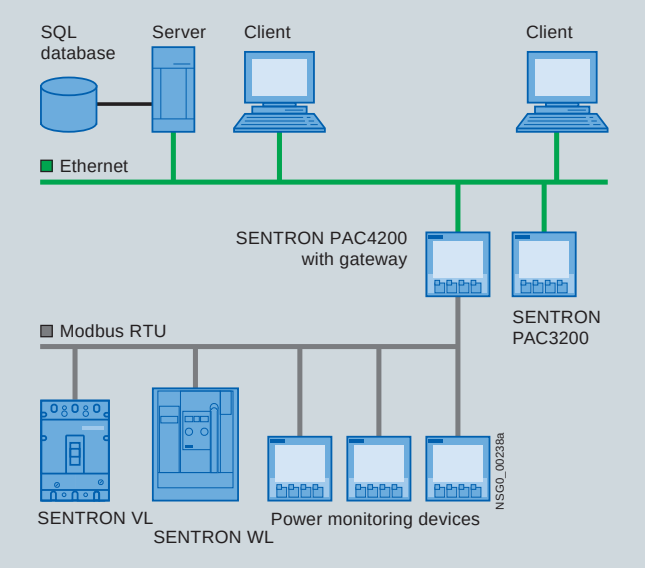
Application (continued)

System integration of RS485 field bus devices through Ethernet

A special feature is the integrated gateway function of the SENTRON PAC4200. It enables a cost-effective and simple connection of devices with an RS485 interface to an Ethernet network.

Everything required is provided by the SENTRON PAC RS485 expansion module, to which a maximum of 31 lower-level devices can be connected without a repeater and as many as 247 with a repeater.

The gateway function of the SENTRON PAC4200 supports the Modbus protocol and can be parameterized using SENTRON powerconfig.



Connecting Modbus-RTU devices to a power management system through PAC4200

More information

More information is available on the Internet at www.siemens.com/powermanagementsystem

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Selection and ordering data

	Version	Order No.
  7KM3 133-0BA00-3AA0	**SENTRON PAC3100** NEW Control panel instrument 96 mm x 96 mm Screw terminals for connecting current and voltage AC/DC power supply unit with wide voltage range U_{AUX}: 100 … 240 V AC ±10 %, 50/60 Hz 110 … 250 V DC ±10 % Measuring inputs U_e: max. 3 AC 480/277 V, 50/60 Hz I_e: /5 A	**Screw terminals** **7KM3 133-0BA00-3AA0**

Accessories

	Version	Order No.
 7KM9 900-0YA00-0AA0	**SENTRON PAC TMP** Adapter for mounting on standard mounting rail	**7KM9 900-0YA00-0AA0**

More information

Suitable current transformers can be found

- in the Catalog LV 1, Chapter 16
- in the Industry Mall, Section
  "Low-Voltage Controls and Distribution"
  --> "Low-Voltage Power Distribution"
  --> "Switching and Protection Devices for Power Distribution"
  --> "Molded Case Circuit Breakers"
  -->"3VL Molded Case Circuit Breakers up to 1600 A"
  --> "Accessories and spare parts"

For more information about the software components of the Power Management System, see the catalog LV 1, Chapter 18 and on the Internet at
www.siemens.com/powermanagementsystem

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Selection and ordering data

	Version	Order No.
  7KM2 112-0BA00-3AA0	**SENTRON PAC3200** Control panel instrument 96 mm x 96 mm Screw terminals for connecting current and voltage AC/DC power supply unit with wide voltage range U_{AUX}: 95 … 240 V AC ±10 %, 50/60 Hz 110 … 340 V DC ±10 % Measuring inputs U_e: max. 3 AC 690/400 V, 50/60 Hz I_e: /1 A or /5 A	**Screw terminals** **7KM2 112-0BA00-3AA0**
  7KM2 111-1BA00-3AA0	**SENTRON PAC3200** Control panel instrument 96 mm x 96 mm Screw terminals for connecting current and voltage DC power supply unit with extra-low voltage U_{AUX}: 22…65 V DC ±10 % Measuring inputs U_e: max. 3 AC 500/289 V, 50/60 Hz I_e: /1 A or /5 A	**Screw terminals** **7KM2 111-1BA00-3AA0**
  7KM2 112-0BA00-2AA0	**SENTRON PAC3200** Control panel instrument 96 mm x 96 mm Cable lug terminals for connecting current and voltage AC/DC power supply unit with wide voltage range U_{AUX}: 95 … 240 V AC ± 10 %, 50/60 Hz 110 … 340 V DC ± 10 % Measuring inputs U_e: max. 3 AC 690/400 V, 50/60 Hz I_e: /1 A or /5 A	**Cable lug terminals** **7KM2 112-0BA00-2AA0**

Accessories

	Version	Order No.
 7KM9 900-0YA00-0AA0	**SENTRON PAC TMP** Adapter for mounting on standard mounting rail	**7KM9 900-0YA00-0AA0**
	SIMATIC PCS 7 Library PAC3200 Software for integration of the SENTRON PAC3200 in SIMATIC PCS 7	
	• Engineering + Runtime license	**3ZS2 781-1CC10-0YG0**
	• Runtime license	**3ZS2 781-1CC10-6YH0**
	PAC3200 function block library for SIMATIC WinCC Software for integration of the SENTRON PAC3200 in SIMATIC WinCC	
	• Engineering + Runtime license	**3ZS2 791-1CC10-0YG0**
	• Runtime license	**3ZS2 791-1CC10-6YH0**

More information

Suitable current transformers can be found
- in the Catalog LV 1, Chapter 16
- in the Industry Mall, Section "Low-Voltage Controls and Distribution" --> "Low-Voltage Power Distribution" --> "Switching and Protection Devices for Power Distribution" --> "Molded Case Circuit Breakers" --> "3VL Molded Case Circuit Breakers up to 1600 A" --> "Accessories and Spare Parts"

For more information about the software components of the Power Management System, see the catalog LV 1, Chapter 18 or www.siemens.com/powermanagementsystem

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Selection and ordering data

	Version	Order No.
  7KM4 112-0BA00-3AA0	**SENTRON PAC4200** NEW Control panel instrument 96 mm x 96 mm Screw terminals for connecting current and voltage AC/DC power supply unit with wide voltage range U_{AUX}: 95 … 240 V AC ±10 %, 50/60 Hz 110 … 340 V DC ±10 % Measuring inputs U_e: max. 3 AC 690/400 V, 50/60 Hz I_e: /1 A or /5 A	**Screw terminals** **7KM4 212-0BA00-3AA0**
  7KM4 112-0BA00-2AA0	**SENTRON PAC4200** NEW Control panel instrument 96 mm x 96 mm Cable lug terminals for connecting current and voltage AC/DC power supply unit with wide voltage range U_{AUX}: 95 … 240 V AC ± 10 %, 50/60 Hz 110 … 340 V DC ± 10 % Measuring inputs U_e: max. 3 AC 690/400 V, 50/60 Hz I_e: /1 A or /5 A	**Cable lug terminals** **7KM4 212-0BA00-2AA0**

Accessories

	Version	Order No.
 7KM9 900-0YA00-0AA0	**SENTRON PAC TMP** Adapter for mounting on standard mounting rail	**7KM9 900-0YA00-0AA0**

More information

Suitable current transformers can be found

- in the Catalog LV 1, Chapter 16
- in the Industry Mall, Section
  "Low-Voltage Controls and Distribution"
  --> "Low-Voltage Power Distribution"
  --> "Switching and Protection Devices for Power Distribution"
  --> "Molded Case Circuit Breakers"
  -->"3VL Molded Case Circuit Breakers up to 1600 A"
  --> "Accessories and spare parts"

For more information about the software components of the Power Management System, see the catalog LV 1, Chapter 18 or
www.siemens.com/powermanagementsystem

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SENTRON multifunction measuring Instruments
PAC PROFIBUS DP expansion modules

Overview

SENTRON PAC PROFIBUS DP expansion module

The PAC PROFIBUS DP expansion module has the following features:

- Pluggable PROFIBUS DP communication modules for SENTRON PAC3200 and PAC4200 multifunction measuring instruments
- Parameterizable from the front of the device or using parameterization software
- Using PROFIBUS DPV1, data can be transferred in both cyclic and acyclic modes
- Easy integration using GSD file, with free choice of the measurement variables to be transmitted
- Plug and play
- All baud rates from 9.6 Kbit/s to 12 Mbit/s are supported
- Connection through 9-pole Sub-D connector according to IEC 61158
- No external auxiliary power necessary
- Additional display via the device display and via LEDs on the module

Application

The SENTRON PAC PROFIBUS DP communication module is plugged onto the rear of the multifunction measuring instrument. The device identifies the module automatically and presents the parameters of relevance for this module for selection in the parameterization menu.

All individual measurement variables supplied by the SENTRON PAC multifunction measuring instruments are selected and cyclically transmitted by means of the GSD file. This permits the optimum use of the PROFIBUS Master process image.

Selection and ordering data

	Version	Order No.
 7KM9 300-0AB00-0AA0	**PAC PROFIBUS DP** Expansion module for SENTRON PAC3200 and PAC4200 (PROFIBUS DP V1)	**7KM9 300-0AB00-0AA0**

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Overview

SENTRON PAC RS485 expansion module

The SENTRON PAC RS485 expansion module has the following features:

- Pluggable PAC RS485 communication modules for SENTRON PAC485 and PAC3200 multifunction measuring instruments
- Parameterizable from the front of the device or using parameterization software
- Support for the Modbus RTU protocol
- Plug and play
- Baud rates of 4.8 / 9.6 / 19.2 and 38.4 kBd are supported
- Connection by means of 6-pole screw terminals
- No external auxiliary power necessary
- Status indication by LED on the module

Application

The SENTRON PAC RS485 communication module is plugged onto the rear of the PAC multifunction measuring instrument. The device identifies the module automatically and presents the parameters of relevance for this module for selection in the parameterization menu. The state of the module is indicated by the integrated LED.

In connection with the SENTRON PAC multifunction measuring instrument, the Modbus RTU protocols are supported with baud rates of 4.8/9.6/19.2 and 38.4 kBd.

The SENTRON PAC RS485 expansion module is essential for the gateway function of the PAC4200 to access simple devices with an RS485 interface, for example, the PAC3100 via Ethernet (Modbus TCP).

Selection and ordering data

	Version	Order No.
 7KM9 300-0AM00-0AA0	**PAC RS485** Expansion module for SENTRON PAC3200 and PAC4200 (Modbus RTU)	**7KM9 300-0AM00-0AA0**

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SENTRON multifunction measuring instruments PAC 4DI/2DO expansion modules for PAC4200

Overview

SENTRON PAC 4DI/2DO expansion module NEW

The SENTRON PAC 4DI/2DO expansion module is used to expand the SENTRON PAC4200 multifunction measuring instrument to up to 10 digital inputs and 6 digital outputs.
It offers the following features:

- Up to two 4DI/2DO modules can be plugged onto a PAC4200.
- The 4DI/2DO modules mean that the internal digital inputs and outputs can be expanded by up to 8 inputs and 4 outputs.
- The 4DI/2DO expansion modules can be parameterized via the front of the device or via the SENTRON powerconfig configuration software.
- The commissioning is carried out via plug and play.
- All functions of the integrated multifunctional inputs/outputs on the PAC4200 are also available in the 4DI/2DO expansion module.
- Inputs and outputs can be used as an S0 interface conforming to IEC 62053-31.
- The connection is made via a 9-pole screw terminal.
- No external auxiliary power supply is required.

Application

There are many possible uses for the SENTRON PAC 4DI/2DO expansion module. including, among other things:

- Connection of up to any 10 power meters with pulse output (S0) for detecting gas, water, compressed air consumption or for consumption recording of other power sources.
- Integration of other media into energy management system
- Monitoring of multiple, single switches with auxiliary contacts via PAC4200
- Use of the digital outputs as pulse output for active and reactive energy
- Use of the digital outputs as outputs for switching operations and/or for time synchronization.

Benefits

Advantages of the digital inputs

Consumption recording and evaluation

- More cost-effective media meters can be used instead of communication-capable power meters.
- It is not necessary to replace meters as the basic power meters with pulse output already installed can be used.
- Other media can be easily integrated into a power management system.
- Increases the transparency of the power flows, since, for example, the power consumption of a sub-process or the product-related power consumption can be recorded and assessed.
- Pulse counters can be easily assigned using user-definable displays.

Status monitoring

The digital inputs reduce the wiring outlay thanks to the effective integration of basic protection equipment and switchgear.

Advantages of the digital outputs

The digital outputs offer a high degree of flexibility as they can be used as follows:

- for status display
  - for a limit value violation
  - for a direction of rotation
  - for an operating state on the PAC4200
- as remote-controlled switching outputs
- for synchronization of the periods load profile detection in other devices
- for signaling power measurement
  - related active energy
  - supplied active energy
  - related reactive energy
  - supplied reactive energy

Selection and ordering data

	Version	Order No.
 7KM9 200-0AB00-0AA0 (two modules connected on PAC4200 from the rear)	**PAC 4DI/2DO** NEW Expansion module for SENTRON PAC4200	**7KM9 200-0AB00-0AA0**

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Overview

SIMATIC PCS 7 powerrate

SIMATIC PCS 7 is an add-on to PCS 7 which throws light on power consumption from the infeed to the load. Power data are continuously collected, archived and processed further. With an exact knowledge of the consumption profile, it is possible to identify savings potential, optimize your power supply conditions and hence, lower your power costs. Monitoring the contractually agreed power limit helps on the one hand to prevent unnecessarily high power prices or penalties and on the other hand to make full use of the fixed power limit.

Batch-related consumption recording enables the exact recording and evaluation of power consumption per batch.

The integration of switches through digital inputs/outputs enables the monitoring or indication of switch status and, with suitable authorization, remote switching. With integration through DPV1, selected measured values and signals of the SENTRON PAC3200 and SENTRON PAC4200 multifunction measuring instruments can be indicated online.

Data recorded and archived by SIMATIC PCS 7 powerrate can be exported to Excel, and they can also be presented in different reports.

Full integration in PCS 7 enables the easy use of standard interfaces or standard functionalities from PCS 7.

Components

SIMATIC PCS 7 powerrate is made up of the following components:

- Modules for the acquisition and processing of power data
- Faceplates for the presentation and processing of power data
- Components for implementing load management (calculating trends, monitoring limits, enabling/disabling loads)
- Components for batch-related consumption recording
- Components for the integration of measuring devices and switches
- Other components, for example, for time synchronization, data buffering or data exchange with archives
- Faceplates for presenting results and for entering values (e.g. for configuration or from manual measured values)
- Excel-based reports for allocating power data to cost centers, for batch-related evaluations and for determining and presenting the duration curve
- Exporting data to Excel

Benefits

- Identification of power-intensive consumer devices and processes in order to introduce measures for improving power efficiency
- Comparison of consumption profiles for greater efficiency of process design
- Optimizing the company according to energy parameters based on an assessment of consumption and costs
- Complying with the contractually agreed power limit, thus preventing higher power supply costs or penalty payments
- Integration of the SENTRON PAC3200 and SENTRON PAC4200 measuring devices, with a quick overview of selected measured values and signals
- Integration of switches, with an overview of switch status and switching possibilities
- Exact assignment and comparison of the consumption data of certain work processes through batch-related consumption recording

Application

SIMATIC PCS 7 powerrate is used in all areas in which PCS 7 is used and energy efficiency considerations play a major role. Full integration in PCS 7 means that there is no need for a special system environment. Predefined modules and symbols give you the assurance of building on tested and certified product components, with interfaces which enable customized expandability.

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SIMATIC PCS 7 powerrate

Ordering data

	Order No.
SIMATIC PCS 7 V 6.1 SP1, V 6.1 SP2 and V 7.0 SP1	
SIMATIC PCS 7 powerrate V 3.0	
• **Trial license** Engineering license limited to 30 days	**3ZS2 785-1CC30-0YG7**
• **Engineering license and unlimited runtime license** for operation on one PCS 7 OS (single workstation system or server) and any number of automation systems (AS). When using additional PCS 7 OS devices, you need an engineering license for each PCS 7 OS. The PAC3200 function block libraries for SIMATIC PCS 7 (order no. 3ZS2 781-1CC10-0YG0) and 3WL/3VL for SIMATIC PCS 7 (order no. 3ZS2 782-1CC10-0YG0) are included at no charge with the license.	**3ZS2 785-1CC30-0YG0**
Upgrade from SIMATIC PCS 7 powerrate V 2.0 to V 3.0	
• **Engineering license and unlimited runtime license** for operation on one PCS 7 OS (single workstation system or server) and any number of automation systems (AS). When using additional PCS 7 OS devices, you need an engineering license for each PCS 7 OS. The PAC3200 function block libraries for SIMATIC PCS 7 (order no. 3ZS2 781-1CC10-0YG0) and 3WL/3VL for SIMATIC PCS 7 (order no. 3ZS2 782-1CC10-0YG0) are included at no charge with the license.	**3ZS2 785-1CC30-0YE0**

More information

You can find further general information on the Internet at:
www.siemens.com/powermanagementsystem

You can find information on using SIMATIC PCS 7 powerrate at:
support.automation.siemens.com/WW/view/en/38823708

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Overview

SIMATIC WinCC powerrate

SIMATIC WinCC powerrate is an add-on to WinCC which throws light on power consumption from the infeed to the load. Power data are continuously collected, archived and processed further. With an exact knowledge of the consumption profile, it is possible to identify savings potential, optimize your power supply conditions and hence, lower your power costs. Monitoring the contractually agreed power limit helps on the one hand to prevent unnecessarily high power prices or penalties and on the other hand to make full use of the fixed power limit.

Batch-related consumption recording enables the exact recording and evaluation of power consumption per batch.

The integration of switches through digital inputs/outputs enables the monitoring or indication of switch status and, with suitable authorization, remote switching. With integration through DPV1, selected measured values and signals of the SENTRON PAC3200 and SENTRON PAC4200 multifunction measuring instruments can be indicated online.

Data recorded and archived by SIMATIC WinCC powerrate can be exported to Excel, and they can also be presented in different reports.

Full integration in WinCC enables the easy use of standard interfaces or standard functionalities from WinCC.

Components

SIMATIC Win CC powerrate is made up of the following components:

- Modules for the acquisition and processing of power data
- Faceplates for the presentation and processing of power data
- Components for implementing load management (calculating trends, monitoring limits, enabling/disabling loads)
- Components for batch-related consumption recording
- Components for the integration of measuring devices and switches
- Other components, for example, for time synchronization, data buffering or data exchange with archives
- Faceplates for presenting results and for entering values (e.g. for configuration or from manual measured values)
- Excel-based reports for allocating power data to cost centers, for batch-related evaluations and for determining and presenting the duration curve
- Exporting data to Excel

Benefits

- Identification of power-intensive consumer devices and processes in order to introduce measures for improving power efficiency
- Comparison of consumption profiles for greater efficiency of process design
- Optimizing the company according to energy parameters based on an assessment of consumption and costs
- Complying with the contractually agreed power limit, thus preventing higher power supply costs or penalty payments
- Integration of the SENTRON PAC3200 and SENTRON 4200 measuring devices, with a quick overview of selected measured values and signals
- Integration of switches, with an overview of switch status and switching possibilities
- Exact assignment and comparison of the consumption data of certain work processes through batch-related consumption recording

Application

SIMATIC WinCC powerrate is used in all areas in which WinCC is used and energy efficiency considerations play a major role. Full integration in WinCC means that there is no need for a special system environment. Predefined modules and symbols give you the assurance of building on tested product components, with interfaces which enable customized expandability.
SIMATIC WinCC powerrate V 3.0 can be used with SIMATIC S7-317 and higher.

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SIMATIC WinCC powerrate

Ordering data

	Order No.
SIMATIC WinCC V 6.2 SP2 and V 7.0	
SIMATIC WinCC powerrate V 3.0	
• **Trial license** Engineering license limited to 30 days	**3ZS2 795-1CC30-0YG7**
• **Engineering license and unlimited runtime license** for operation on one WinCC OS (single workstation system or server) and any number of automation systems (AS). When using additional WinCC OS devices, you need an engineering license for each WinCC OS. The PAC3200 function block libraries for SIMATIC WinCC (order no. 3ZS2 791-1CC10-0YG0) are included at no charge with the license.	**3ZS2 795-1CC30-0YG0**
Upgrade from SIMATIC WinCC powerrate V 2.0 to V 3.0	
• **Engineering license and unlimited runtime license** for operation on one WinCC OS (single workstation system or server) and any number of automation systems (AS). When using additional WinCC OS devices, you need an engineering license for each WinCC OS. The PAC3200 function block libraries for SIMATIC WinCC (order no. 3ZS2 791-1CC10-0YG0) are included at no charge with the license.	**3ZS2 795-1CC30-0YE0**

More information

You can find further general information on the Internet at:
www.siemens.com/powermanagementsystem

You can find information on using SIMATIC PCS 7 powerrate at:
support.automation.siemens.com/WW/view/en/38823708

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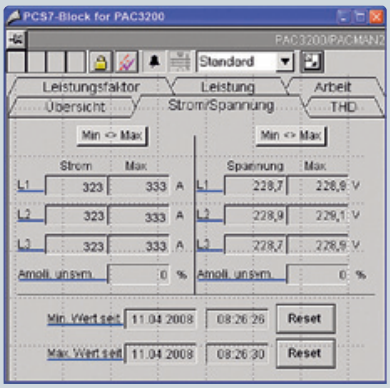
Overview

SIMATIC PCS 7 Library PAC3200



The PCS 7 function block library – SIMATIC PCS 7 Library PAC3200 – for the SENTRON PAC3200 multifunction measuring instrument enables the seamless integration of the multifunction instrument in the PCS 7 process world.

It comprises one driver block, one diagnostics block and the faceplates. The blocks in the SIMATIC S7 supply energy data to the faceplates in the user interface of the process control system, generate signals and guarantee connection to the maintenance system of PCS 7.

Faceplates

Faceplates serve as a user interface for operating and monitoring and enable technologically important values and functions of the SENTRON PAC3200 to be displayed and performed as a PCS 7 object.

Between the faceplates and the modules as well as between the modules and the SENTRON PAC3200 there exist on the system side bidirectional communication connections not only for displaying values in the faceplates, but also for forwarding input data to the device.

This makes the SENTRON PAC3200 power monitoring device an integral component of PCS 7.

The operating systems supported are the same as those for the SIMATIC PCS 7.

Benefits

- Full integration of SENTRON PAC3200 in the PCS 7 process control system through PROFIBUS DPV1 using a certified PCS 7 add-on module
- Reading out and displaying device data
- Inputting limit values for monitoring through the driver block
- Resetting values on the device (min/max values)

Application

SIMATIC PCS 7 Library PAC3200 is used in all areas in which PCS 7 is used. Full integration in PCS 7 means that there is no need for a special system environment. Predefined modules and symbols give you the assurance of building on tested and certified product components.

Ordering data

	Order No.
SIMATIC PCS 7 V 6.1 SP1, PCS 7 V 7.0 SP1 and PCS 7 V 7.1	
SIMATIC PCS 7 Library PAC3200	
• **Engineering license** for operation on one PCS 7 OS (single workstation system or server) and an automation system (AS). When using additional PCS 7 OS devices, you need an engineering license for each PCS 7 OS.	**3ZS2 781-1CC10-0YG0**
• **Runtime license** for operation on an additional AS	**3ZS2 781-1CC10-6YH0**

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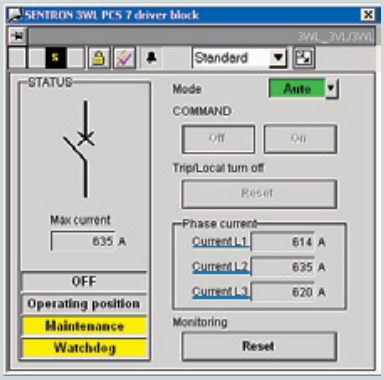
3WL/3VL function block library for SIMATIC PCS 7

Overview

3WL/3VL function block library for SIMATIC PCS 7



The 3WL/3VL PCS 7 function block library for SENTRON circuit breaker allows for the simple and quick integration of the SENTRON circuit breaker into the PCS 7 process world.

It comprises one driver block, one diagnostics block and the faceplates. The blocks in the SIMATIC S7 supply current, power and energy data to the faceplates in the user interface of the process control system, generate signals and guarantee connection to the maintenance system of PCS 7.

Faceplates

Faceplates serve as a user interface for operating and monitoring and enable the SENTRON circuit breaker to be displayed and performed simply as a PCS 7 object.

The 3WL/3VL function block library for SIMATIC PCS 7 provides for continual plant transparency. Critical plant states are recognized quickly and costs owing to outages avoided. System availability is permanently increased

This transforms the SENTRON circuit breaker into an integral component of PCS 7.

The operating systems supported are the same as those for the SIMATIC PCS 7.

Benefits

- Full integration of SENTRON circuit breaker in the PCS 7 process control system through PROFIBUS DPV1 using a certified PCS 7 add-on module
- Remote switching and monitoring
- Reading out of maintenance information
- Automatic information in case of overload, short-circuit and faults
- Reading out and displaying device data
- Limit monitoring through the driver block
- Resetting values on the device (min/max values)

Application

The 3WL/3VL function block for SIMATIC PCS 7 is used in all areas in which PCS 7 is used. Full integration in PCS 7 means that there is no need for a special system environment. Predefined modules and symbols give you the assurance of building on tested and certified product components.

Ordering data

	Order No.
SIMATIC PCS 7 V 6.1 SP1 and PCS 7 V 7.0 SP1	
3WL/3VL function block library for SIMATIC PCS 7	
• **Engineering license** for operation on one PCS 7 OS (single workstation system or server) and an automation system (AS). When using additional PCS 7 OS devices, you need an engineering license for each PCS 7 OS.	**3ZS2 782-1CC10-0YG0**
• **Runtime license** for operation on an additional AS	**3ZS2 782-1CC10-6YH0**

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Overview

SENTRON PAC3200 function block library for SIMATIC WinCC

The SENTRON PAC3200 function block library for SIMATIC WinCC enables the seamless integration of the SENTRON PAC3200 multifunction measuring instrument in WinCC.

It comprises one driver block, one diagnostics block and the faceplates. The blocks in the SIMATIC S7 supply energy data to the faceplates in the user interface of WinCC, generate signals and guarantee connection to the maintenance system of WinCC.

Faceplates

Faceplates serve as a user interface for operating and monitoring and enable technologically important values and functions of the SENTRON PAC3200 to be displayed and performed in WinCC.

Between the faceplates and the modules as well as between the modules and the SENTRON PAC3200 there exist on the system side bidirectional communication connections not only for displaying values in the faceplates, but also for forwarding input data to the device.

This makes the SENTRON PAC3200 multifunction measuring instrument an integral component of WinCC.

System requirements

The SENTRON PAC3200 function block library for SIMATIC WinCC is released for

- WinCC V 6.2 SP2
- WinCC V 7.0 and
- WinCC V 7.0 SP1

WinCC options AS-OS Engineering and Basic Process Control must be installed. The function block library is available for both S7-300 and S7-400.
At least one S7 CPU317-2DP is required for use in the S7-300 area. At least one S7 CPU414-2 is required for use in the S7-400 area.

Supported operating systems are the same as for SIMATIC WinCC.

Benefits

- Full integration of the SENTRON PAC3200 in SIMATIC WinCC through PROFIBUS DPV1 The function block library is a certified WinCC add-on module
- Reading out and displaying device data
- Inputting limit values for monitoring through the driver block
- Resetting values on the device (min/max values)

Application

The SENTRON PAC3200 function block library for SIMATIC WinCC is used in all areas in which WinCC is used. Full integration in WinCC means that there is no need for a special system environment. Predefined modules and symbols give you the assurance of building on tested and certified product components.

Ordering data

	Order No.
SIMATIC WinCC V 6.2 SP2, WinCC V 7.0 and WinCC V 7.0 SP1	
SENTRON PAC3200 function block library for SIMATIC WinCC	
• **Engineering license** for operation on one WinCC OS (single workstation system or server) and an automation system (AS). When using additional WinCC OS devices, you need an engineering license for each WinCC OS.	**3ZS2 791-1CC10-0YG0**
• **Runtime license** for operation on an additional AS	**3ZS2 791-1CC10-6YH0**

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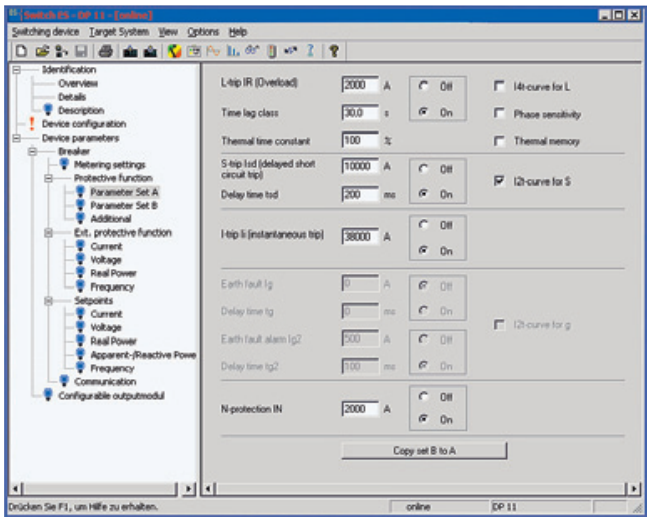
Switch ES Power

Overview

Switch ES Power



Adjustment of parameter set A with Switch ES Power

Switch ES Power is the shared software platform for communication-capable SENTRON circuit breakers. This has the advantage that all device-specific setting options are identical in terms of appearance and handling.

Switch ES Power can be used to configure, document, operate and monitor the SENTRON 3WL and SENTRON 3VL circuit breakers through PROFIBUS DP.

More information can be found on the Internet at:
www.siemens.com/sentron

Benefits

- Parameterization, documentation, operation and monitoring in one software
- Documentation of measured values and settings
- Clear representation of all available parameters
- All the available status information and measured values are clearly displayed in dialog boxes
- Software for SENTRON 3WL and SENTRON 3VL
- Easy connection build-up through acyclic PROFIBUS DPV1 data traffic
- Identical storage format for parameters with the Breaker Data Adapter (BDA)
- Easy-to-operate Windows interface
- No programming knowhow is required for operation

Object manager of Switch ES Power

- Uniform data management for circuit breaker parameters
- Automatic parameterization if components are replaced

Ordering data

Ordering data	Order No.
Switch ES Power Calibration, documentation, operation and monitoring of SENTRON 3WL/3VL circuit breakers through PROFIBUS DP; runs under Windows 95/98/NT/2000/XP Professional, including online help, the language can be switched between German and English; including Object Manager (OM) for Switch ES Power for integration in STEP7 System requirements: PROFIBUS card: CP 5512, CP 5611, CP 5613 or CP 5614 and MPI interface on PG7xx and its driver software, see interactive Catalog CA01, CD-ROM drive System requirements for OM Switch ES Power: SIMATIC: S7, M7, C7, PCS 7 STEP 7: version 5.2 or higher CD-ROM drive	**3ZS2 311-0CC10-0YA0**

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Overview

The laser scanner is an optical distance sensor for flexible monitoring of hazardous areas in horizontal applications, for access control in vertical applications, and for motion monitoring.

They provide perfect all-round protection up to Category 3 according to EN 954-1, SIL 2 according to IEC 61508, and PL d according to ISO 13849-1.

SIMATIC FS600 laser scanners work in an operating field of 190° and over a distance of up to 6.25 m. In this range the laser scanner reliably senses every object and every person.

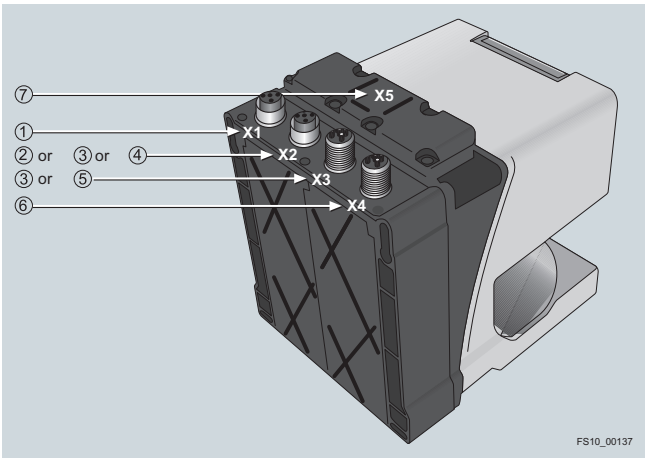
And it works so simply: The distance sensor emits light pulses at regular intervals. If they hit an obstruction, the sensor receives the reflected light and evaluates it. If this is evaluated as the predefined area to be protected, a Stop function is triggered.

With up to 8 programmable protective fields that can be selected during operation, our laser scanners can be optimally adapted to any application – on machines, production robots, conveyor systems, or vehicles.

Different variants support optimal integration in the automation system: Whether conventionally in the safety circuit, over PROFIBUS with PROFIsafe or over AS-Interface with ASIsafe.

4

Integration



Terminal	Description	Item	Connectable accessories	Order No.
X1	M12 connector for connecting a restart button (optional)	1	M12 connector with terminal housing, 5-pin	3RX8 000-0CD55
X2	M12 socket for PROFIBUS output cable	2	Terminating resistor for PROFIBUS DP	6GK1 905-0EC00
		3	PROFIBUS M12 connecting cable, with plug and socket, 2-pin	6XV1 830-3DE50(0.5 m) 6XV1 830-3DH15 (1.5 m) 6XV1 830-3DH30 (3 m) 6XV1 830-3DH50 (5 m) 6XV1 830-3DN10 (10 m) 6XV1 830-3DN15 (15 m)
		4	PROFIBUS M12 connecting plug with male insert	6GK1 905-0EA00
X3	M12 plug for PROFIBUS input cable	3	PROFIBUS M12 connecting cable, with plug and socket, 2-pin	6XV1 830-3DE50 (0.5 m) 6XV1 830-3DH15 (1.5 m) 6XV1 830-3DH30 (3 m) 6XV1 830-3DH50 (5 m) 6XV1 830-3DN10 (10 m) 6XV1 830-3DN15 (15 m)
		5	PROFIBUS M12 connecting plug with female insert	6GK1 905-0EB00
X4	M12 plug for 24 V DC power supply	6	M12 cable socket with terminal housing, 5-pin	3RX8 000-0CB55
X5	Optical PC interface	7	PC connecting cable for laser scanner with optical interface, 9-pin	3RG78 38-1DC

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PROFIsafe laser scanner

Technical specifications

Type	PROFIsafe laser scanner
Protective field	
Protective field	2.15 m, 4 m, 6.25 m
Degree of remission	min. 1.8 %
Resolutions	Resolutions: 30, 40, 50, 70, 150 mm
Response time	
• 2-fold evaluation (2 scans)	80 ms (laser scanner only, without PROFIBUS system times)
• Adjustable up to 16 scans	640 ms (laser scanner only, without PROFIBUS system times)
Number	4 (selectable via PROFIBUS)
Safety category acc. to IEC 61508	SIL 2
Output	PROFIBUS (PROFIsafe profile)
Start-up	Start-up test and start-up disable can be set separately
Warm restart	160 ms to 10 s (settable or manually)
Protective field additional distance	
• with dust suppression deactivated	83 mm
• with dust suppression activated	
- for protective fields < 3.5 mm	83 mm
- for protective fields > 3.5 mm	100 mm
• Additional distance for retro-reflectors or strongly reflective surfaces (such as certain metals or ceramics in the scan plane)	
- over 1.2 m behind the protective field line	0 mm
- in the protective field or up to 1.2 m behind the protective field line	110 mm
Warning zone	
Detection zone	0 ... 15 m
Degree of remission	min. 20%
Object size	150 × 150 mm
Response time	
• 2-fold evaluation (2 scans)	80 ms (laser scanner only, without PROFIBUS system times)
• Adjustable up to 16 scans	640 ms (laser scanner only, without PROFIBUS system times)
Number of warning zones	4 / 8 (selectable via PROFIBUS)
Output	PROFIBUS

Type	PROFIsafe laser scanner
Contour measurement	
Detection zone	0 ... 50 m
Degree of remission	min. 20%
Output	RS232 serial interface via infrared interface
Radial resolution	5 mm
Lateral resolution	0.36 °
Supply voltage	
• via external supply	24 V DC (+20 % / -30 %)
• Note	The power supply unit for the external power supply must feature safe isolation from the supply according to IEC 60742 and bridge temporary power failures of up to 20 ms.
Overcurrent protection	Fuse 1.25 A, slow acting
Current consumption	typ. 350 mA
Inputs	
Restart/Reset	Connection of a command device for operating mode "With restart inhibit" and/or device reset, dynamically monitored
Signal definition	
• High (logic 1)	16 ... 30 V
• Low (logic 0)	< 3 V
Control cable	
• Length	max. 50 m (with 0.5 mm^2 conductor cross-section, shielded)
Field pair switchover	Field pair switchover over PROFIBUS (PROFIsafe profile)
RS232 interfaces by means of infrared interface	For device parameterization and field function
Optical system	
Range of angle	190 °
Angle resolution	0.36 °
Lateral tolerance	
• without mounting system (with reference to rear of enclosure)	± 0.18 °
• with mounting system (with reference to the mounting surface)	± 0.22 °
Scan rate	25 scans/s or 40 ms/scan
Laser protection class	
- according to standard	EN 60825-1, Class 1 (safe for eyes)
Wave length	905 nm
Beam divergence	2 mrad
Time basis	100 s

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Technical specifications (continued)

Type	PROFIsafe laser scanner
Environment and material	
Degree of protection	IP65
Ambient temperature	
• Operation	0 ... +50 °C
• Storage	-20 ... +60 °C
Housing insulation class	Type of protection 2
Humidity	according to DIN 40040, Table 10, identification letter E (fairly dry)
Dimensions (W × H × D) in mm	141 × 167 × 168

Type	PROFIsafe laser scanner
Emitter	Infrared laser diode (λ = 905 nm)
Housing	Cast aluminum, plastic, steel connection plate
Vibratory load over three axes according to IEC 60068, Part 2-6	10 ... 150 Hz, max. 5 g
Continuous shock over three axes according to IEC 60068, Part 2-29	10 g, 16 ms
Rotating mirror drive	Brushless DC motor
Rotating mirror bearings	Maintenance-free ball bearings

"Safety of machinery" for PROFIsafe laser scanners

	IEC/EN 61496	IEC/EN 61508	PL 13849-1	Category ISO 13849-1	Cat. 954-1	PFHD	TM p.a.
Laser scanner	Type 3	SIL 2	d	3	3	1.5 10^{-7}	20

Ordering data

	Order No.
PROFIsafe laser scanner for protection in a horizontal plane, including LS4soft software	
SIMATIC FS620I • Maximum size of protective field: 4 m • 4 protective field/warning field pairs • Resolutions: 70, 150 mm	**3SF78 34-6PB00**
PROFIsafe laser scanner for protection in a horizontal and vertical plane, including LS4soft software	
SIMATIC FS660I • Maximum size of protective field: 4 m • 8 protective field/warning field pairs • Resolutions: 30, 40, 50, 70, 150 mm	**3SF78 34-6PE00**
SIMATIC FS660 LR • Maximum size of protective field: 6.25 m • 8 protective field/warning field pairs • Resolutions: 30, 40, 50, 70, 150 mm	**3SF78 34-8LE00** NEW
ASIsafe laser scanner for protection in a horizontal and vertical plane and motion monitoring, including LS4soft software	
SIMATIC FS670 • Maximum size of protective field: 4 m • 8 protective field/warning field pairs • Resolutions: 30, 40, 50, 70, 150 mm	**3SF78 34-8DM00** NEW
SIMATIC FS670 LR • Maximum size of protective field: 6.25 m • 8 protective field/warning field pairs • Resolutions: 30, 40, 50, 70, 150 mm	**3SF78 34-8LM00** NEW

	Order No.
Accessories	
Assembly system Swivel-mounted, for easy alignment	**3RG7 838-1AA**
Adapter plate for PLS mounting support	**3RG7 838-1AB**
Cleaning set Includes cleaning fluid (1000 ml), cloths (100 units)	**3RG7 838-7RS**
Connectors and cables	
PC connection cable for AS-Interface and PROFIBUS laser scanners, including plug (9-pin), and optical interface	**3RG7 838-1DC**
PROFIBUS M12 terminating connector For PROFIBUS DP 1 packet = 5 items	**6GK1 905-0EC00**
PROFIBUS M12 connectors 1 pack = 5 units	
• Male insert	**6GK1 905-0EA00**
• Socket insert	**6GK1 905-0EB00**
PROFIBUS M12 plug-in cables 2-core (inverted coding) preassembled, with M12 connectors, in different lengths:	
• 0.5 m	**6XV1 830-3DE50**
• 1.5 m	**6XV1 830-3DH15**
• 3.0 m	**6XV1 830-3DH30**
• 5.0 m	**6XV1 830-3DH50**
• 10.0 m	**6XV1 830-3DN10**
• 15.0 m	**6XV1 830-3DN15**

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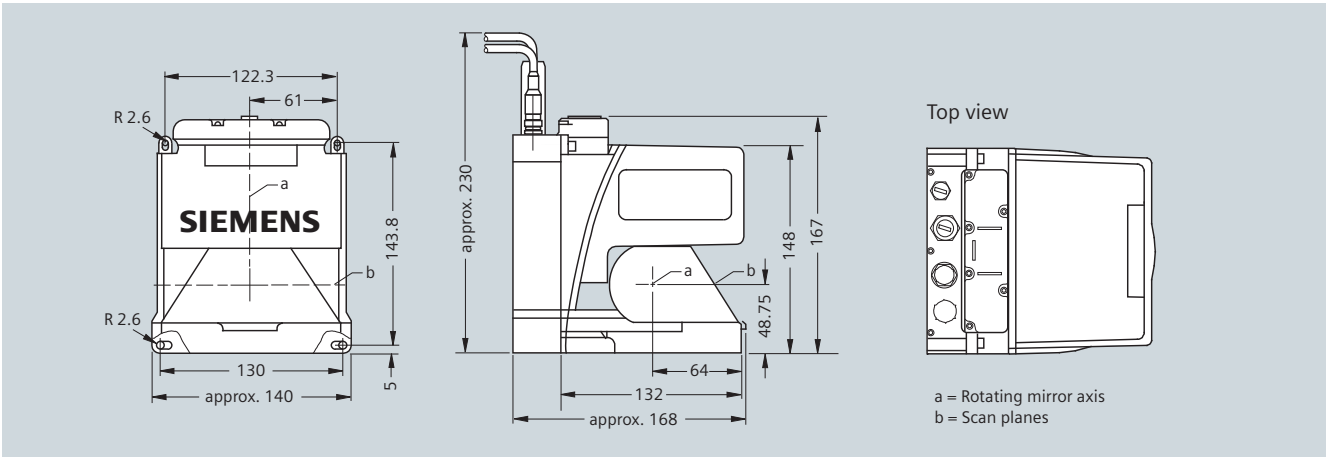
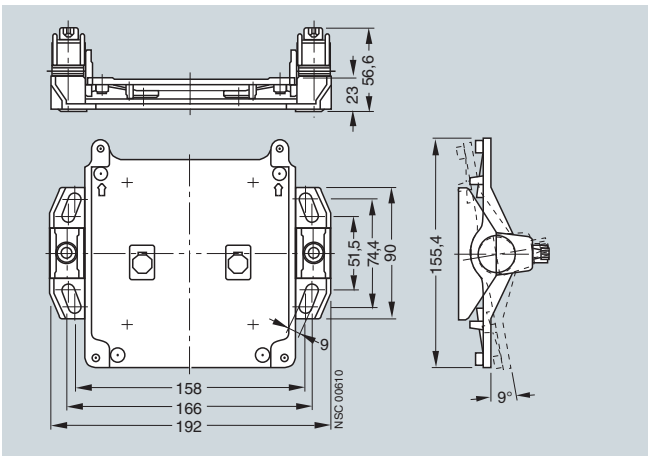
PROFIsafe laser scanner

Dimensions

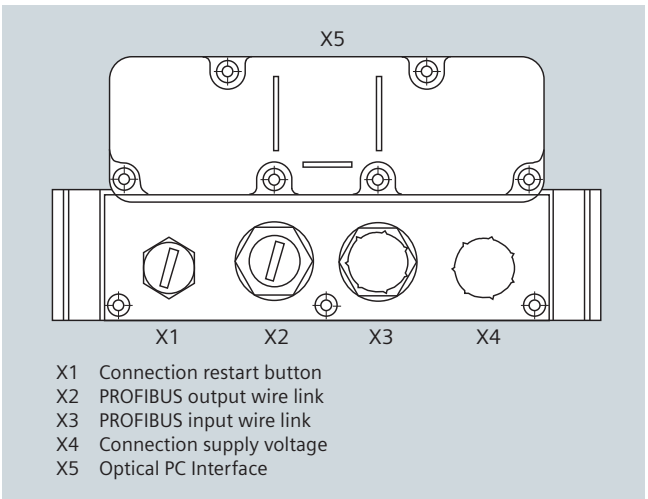


PROFIsafe laser scanner



Assembly system 3RG7 838-1AA

Schematics



X1 Connection restart button
X2 PROFIBUS output wire link
X3 PROFIBUS input wire link
X4 Connection supply voltage
X5 Optical PC Interface