Main Catalog 2012/2013

for specialists in automation and control technology

www.vipa.com

VIPA

Welcome to VIPA

This is VIPA

- Specialists in automation and control systems.
- Developer in some to the most advanced products in the PLC field.
- Developer of some of the world‘s fastest hard PLCs of their class.
- Developer of technologies that are now the industry standard.
- Global Player with branches in 60 countries.
- Extremely customer oriented and flexible.

Preamble | VIPA

Wolfgang Seel | CEO

VIPA has traditionally been amongst the most innovative suppliers of memory-programmable controllers (PLCs) in the market and is growing worldwide, with double-digit growth rates. Therefore, VIPA belongs to the still young, but also exceptionally successful companies in the Automation market.

Our success is based on five pillars:

- High rate of innovation and quick decision making
- Various unique features
- A convincing cost-performance ratio
- Commitment and competence of our employees
- Cooperation with powerful partners

Our aspiration:

- Constantly continue to improve existing technologies, but also to introduce new and innovative trends in the market.
- Continuous flexible adaptation of our products to current market needs and to further increase our market acceptance.
- Continue to develop our personnel resources in sales, development, quality assurance and service in accordance with our revenue growth.
- Enter into cooperation agreements with powerful partners and to increase our market share through joint market cultivation.

To meet this aspiration, we consider it as our aim, also in the future, to improve what is established, to question, revise or develop completely from new.

Furthermore we want to make available to our partners and customers also in the future through continuous innovation and smart system maintenance unique technological features with which together we can gain new and satisfied system users.

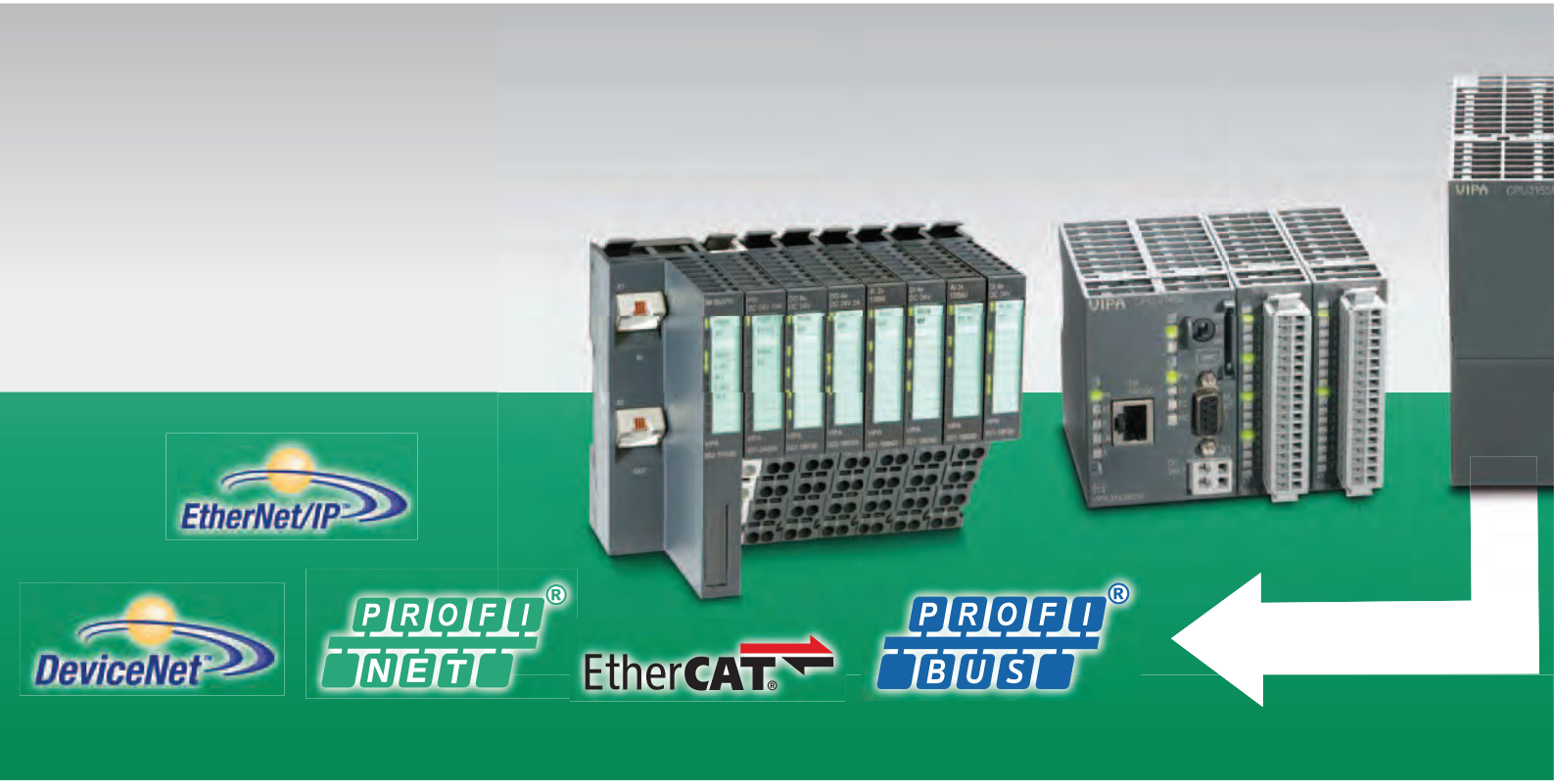
With our highly motivated employees, we're working hard on improving our quality, service and the satisfaction of our customers and partners. Convince yourself of the possibilities that our automation solutions and systems offer, and discover how with us you can sustainable increase your competitiveness.

Strengthened by above-average growth, we are determined to continue our successful path in the future.

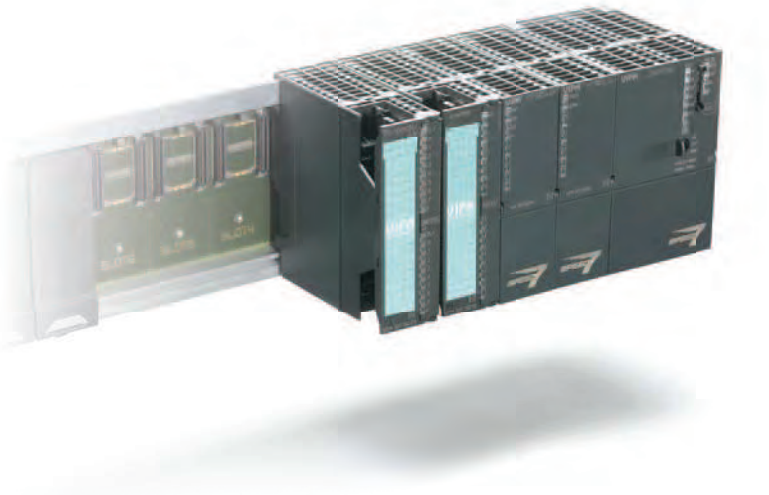
We look forward to cooperating with you!

Wolfgang Seel
CEO

We speak your language …



SPEED7 ensures your lead

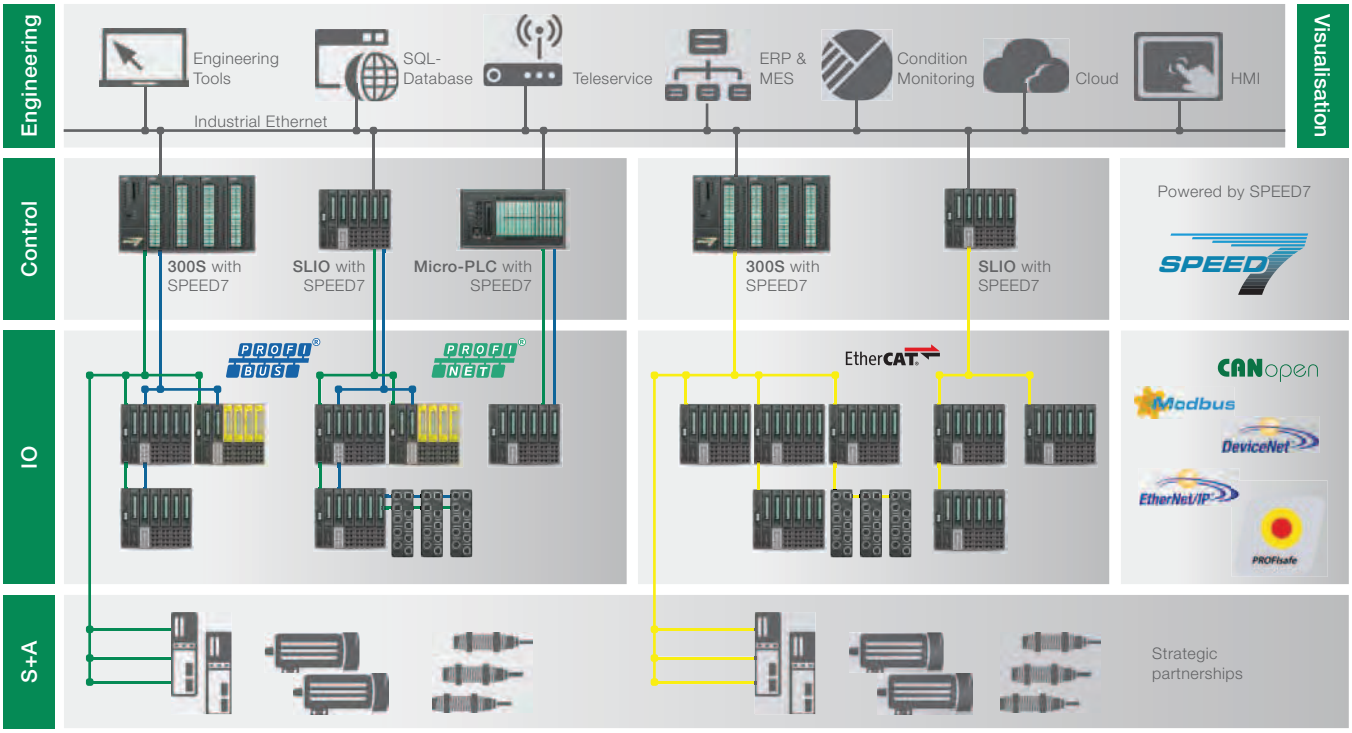


- a flexible automation platform
- and one of the fastest STEP7 PLC processors in the world!

SPEED7 technology offers developers a modular building block, with which a high-performance automation system can be developed in the shortest time on an open STEP7 architecture.

- SPEED7 ensures maximum speed with all applications and, for example, the highest clock rates.
- SPEED7 upgrades also older systems to a modern standard.
- SPEED7 processes vast amounts of data in real time.

… and in future also that of almost all systems



System solutions

Professional benefits for professional applications

- **Consistent standardization**
  All systems are programmable with VIPA WinPLC7 programming tool and/or with STEP7 from Siemens and in the future with the new "VIPA Suite".
- **Increase of productivity**
  Significant reduction in cycle times of user programs by SPEED7 technology with reduced power dissipation.
- **High efficiency**
  Above average basic features of the systems, integrated RJ45 Ethernet interface for PG/OP communication, optional integrated SPEED-Bus.
- **Absolute flexibility**
  Mixed operation for example with VIPA CPUs and Siemens assemblies possible.
- **Open communication possibilities**
  Supports internationally established communication standards like Ethernet, PROFIBUS, CANopen, EtherCAT, Modbus, EtherNet/IP, DeviceNet, Interbus, PROFINET and ASi.

Automotive:

An industry that needs solutions like on an assembly line. Ever increasing range of models, more and more complex technology, ever faster product cycles. Whoever wants to survive here, must be able to refine, expand, and accelerate his technology.

Renewable energy:

In principle every installation of a VIPA control system has its own energy policy - on starting up the efficiency increases right away, often the consumption of raw materials sinks and his conscience is eased.

Building automation:

Low energy is the goal, high performance is our way… Here our control systems are more intelligent than some specifications.

Food & Beverage:

Multi-purpose demands: Flash-freezing and autoclaving, vaccum packing and pressurized filling go on here. The whole thing under the toughest hygene conditions and always under time pressure.

Handling and storage technology:

In order that the delivery rate never stands still, not only are tailor-made PLC systems designed at VIPA, but also precise, effective time schedules for their installation.

Environment:

Regardless of whether it‘s a question of renewable energy or water/sewage: The very strict requirements in terms of robustness, compact design and of energy consumption of the controllers can be excellently implemented with our automation technology.

Packaging:

The most important factor in this industry: Speed. Because many commodities are perishable, deliveries must arrive just in time and demand simply fluctuates.

Water/Sewage:

That a manufacturer of control engineering knows how a sewage plant works seems unusual. But this is typical VIPA. At VIPA no one turns his nose up when it comes to dealing with anaerobic digestion tanks, activated sludge and denitrification.

„If you don't know the destination, then you have no route.“ (Christian Morgenstern)

500S PC control system for complex tasks.
And also one of the fastest control systems
programmable with STEP7

100V Control system for cost-sensitive
and small applications

300S One of the fastest
control systems programmable
with STEP7

200V Modular control system
for central and decentral
applications

1985

VIPA

profichip®
automation in silicon

Foundation of **VIPA GmbH**
by Wolfgang Seel

Foundation of
profichip GmbH

Move to the **new headquarter**
of VIPA and profichip in
Herzogenaurach

SLIO One of the most effecient and most modern decentral I/O systems in the world

Winner of the innovation prize **„Initiative Mittelstand 2007“** for the SPEED7 technology

Operating / monitoring devices
From two-line displays to touch panels

Winner of the industry prize **„Industrie Preis 2008“** for the SPEED7 technology

Software for convenient programming and parameterization

awarded with the **Jobstar** of Metropolitan Region Nuremberg

Accessories
enhanceing, linking, optimizing

Honoured as top innovator by **Top100**

2012

At a glance

300S

the High-Speed control system

System description 300S

Structure and Concept

300S is both a compact and a modular expandable system.

300S is designed for centralized and decentralized automation tasks in the manufacturing and process industry up to the highest power range.

With a central extension of up to 32 modules directly to the CPU and up to 126 fieldbus slave modules, it is deployable almost anywhere. The module size allows use in almost any automation environment.

The assembly is extremely simple. First, the backplane bus connectors for communication between the modules and the CPU are entered from behind and then the modules are individually placed and secured on the rail and screwed down.

The backplane bus connectors are supplied with the I/O modules. In the SPEED-Bus, the bus connection takes place via a SPEED-Bus terminal strip (PCB) integrated in the profile rail. The SPEED-Bus modules are mounted on the left of the CPU - depending on bus length 2, 6 or 10 SPEED-Bus modules can be deployed.

Performance and Application

300S is designed for centralized and decentralized automation tasks. The integrated SPEED7 ASIC system 300S is among the world's fastest automation systems. A wide range of CPU options makes the system universally deployable. The selection ranges from C-class CPUs with integrated I/O peripherals for smaller applications up to CPU versions with built-in Ethernet, fieldbus master interfaces, and High-Speed-Bus.

The CPU versions with integrated SPEED-Bus have been especially developed for automation tasks with very high demands on performance. Furthermore special high-speed modules for communication and for digital as well as analog signal processing are available.

Programming

300S is programmed with VIPA WinPLC7 or with Siemens STEP7 in LAD, FBD and STL.

Memory

The CPUs in 300S have the work and load memory already integrated. Depending on the CPU variant different work memory are available for the user. The work and load memory can be adapted to the needs of memory card by plugging in an MCC memory expansion card. To back up program and data standard MMC cards are also supported.

Functions

For the connection of sensors and actuators, a variety of signal modules are available for recording digital and analog signals into and out of the process is available - also as high-speed modules for SPEED-Bus.

Measurements and the control of pressures, temperatures, flow rates and levels are realized at the highest level with the measurement and control modules.

Communication

An Ethernet programming interface is integrated on all CPUs in system 300S. Ethernet communication processors link 300S horizontally and vertically into network structures. Therefore, all relevant data are made available to the connected host systems.

300S offers fieldbus master and slave modules with different fieldbus protocols and can act as a master controller or as a subordinate fieldbus slave unit.

Multi-master applications with very high performance of communication can be implemented via the fieldbus master module for SPEED-Bus.

CPUs

CPUs-Central Modules

Central Processing Units (CPU) control and regulate processes in plant and machinery. The CPUs are selected according to application with the appropriate performance and work memory and can be extended with signal and function modules, as well as communication processors.

The System 300S CPUs are designed command compatible to Siemens STEP7 and for medium and large applications.

The CPUs are based on the SPEED7 technology. Here, the CPU is supported by co-processors. The integrated SPEED7 ASIC system is among the world's fastest automation systems.

A wide range of CPU options makes the system universally deployable: From C-class CPUs with integrated I/O peripherals for smaller applications up to CPU versions with integrated Ethernet, fieldbus master interfaces, and high-speed bus.

The CPUs of System 300S make possible short machine cycle times due to their high processing speed, and are therefore particularly suitable for complex control and automation tasks in the manufacturing and process industries. The compact CPUs with integrated I/Os are designed especially for cost-sensitive applications.

Characteristics

- High-speed control system
- Programmable with WinPLC7 or Siemens STEP7
- Integrated work memory, operation without a memory card
- Integrated accumulator-backed RAM memory
- Flexible work memory extension through MCC memory extension card
- Support of MMC cards for saving of program and data
- SPEED-Bus for extension with high-speed signal modules and communication processors (CPU 314ST, 317SE, 317SN ans 317PN)
- Ethernet, PROFIBUS-DP and MPI interfaces on board
- PROFIBUS-DP master/DP slave or PtP (switchable)
- Centralized and decentralized use and modular extendable
- Integrated real-time clock and front-integrated status LEDs
- 24 month warranty

Overview

Order no.	Name/Description	Page
CPUs STEP7 programmable, standard		
314-2AG12	**CPU 314SB/DPM - SPEED7 technology** › SPEED7 technology › 256 kB work memory › Memory extension (max. 512 kB) › PROFIBUS-DP master / PtP (switchable)	**371**
314-2AG13	**CPU 314SB/DPM - SPEED7 technology** › SPEED7 technology › 256 kB work memory › Memory extension (max. 512 kB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	**371**
314-2BG03	**CPU 314SE/DPS - SPEED7 technology** › SPEED7 technology › 128 kB work memory › Memory extension (max. 512 kB) › PROFIBUS-DP slave / PtP (switchable) › Configurable via TIA-Portal	**371**
315-2AG12	**CPU 315SB/DPM - SPEED7 technology** › SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable)	**371**
315-2AG13	**CPU 315SB/DPM - SPEED7 technology** › SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	**378**
317-2AJ12	**CPU 317SE/DPM - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable)	**378**
317-2AJ13	**CPU 317SE/DPM - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	**378**
CPUs STEP7 programmable, NET-CPUs		
315-4NE12	**CPU 315SN/NET - SPEED7 technology** › SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated	**385**
315-4NE13	**CPU 315SN/NET - SPEED7 technology** › SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated › Configurable via TIA-Portal	**385**
317-4NE12	**CPU 317SN/NET - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated	**385**
317-4NE13	**CPU 317SN/NET - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated › Configurable via TIA-Portal	**385**

Overview

Order no.	Name/Description	Page
CPUs STEP7 programmable, PROFINET		
315-4PN12	**CPU 315SN/NET - SPEED7 technology** › SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › PROFINET controller integrated › Configurable via TIA-Portal	**393**
315-4PN33	**CPU 315SN/NET ECO - SPEED7 technology** › SPEED7 technology › 512 KB work memory › PtP › PROFINET controller integrated › Configurable via TIA-Portal › Available at Q4/2012	**393**
317-4PN12	**CPU 317SN/NET - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › PROFINET Controller integrated › Configurable via TIA-Portal	**393**
CPUs STEP7 programmable, class C		
312-5BE13	**CPU 312SC - SPEED7 technology** › SPEED7 technology › 16 x DI, 8 x DO › 64 kB work memory › Memory extension (max. 512 kB) › PtP interface › Configurable via TIA-Portal	**401**
313-5BF13	**CPU 313SC - SPEED7 technology** › SPEED7 technology › 24 x DI, 16 x DO, 4 x AI, 2 x AO, 1xAI Pt100 › 128 kB work memory › Memory extension (max. 512 kB) › PtP interface › Configurable via TIA-Portal	**401**
313-6CF13	**CPU 313SC/DPM - SPEED7 technology** › SPEED7 technology › 16 x DI, 16 x DO › 128 kB work memory › Memory extension (max 512 kB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	**401**
314-6CF02	**CPU 314ST/DPM - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 8 x DI, 8 x DO, 4 x AI, 2 x AO, 1xAI Pt100 › 512 kB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable)	**401**
314-6CF03	**CPU 314ST/DPM - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 8 x DI, 8 x DO, 4 x AI, 2 x AO, 1xAI Pt100 › 512 kB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	**412**
314-6CG13	**CPU 314SC/DPM - SPEED7 technology** › SPEED7 technology › 24 x DI, 16 x DO, 8 x DIO, 4 x AI, 1 x AI Pt100, 2xAO › 256 kB work memory › Memory extension (max. 1 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	**412**

CPUs STEP7 programmable, standard

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	314-2AG12	314-2AG13	314-2BG03	315-2AG12
Figure				
Type	CPU 314SB/DPM	CPU 314SB/DPM	CPU 314SE/DPS	CPU 315SB/DPM
General information				
Note	-	-	-	-
Features	› SPEED7 technology › 256 kB work memory › Memory extension (max. 512 kB) › PROFIBUS-DP master / PtP (switchable)	› SPEED7 technology › 256 kB work memory › Memory extension (max. 512 kB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	› SPEED7 technology › 128 kB work memory › Memory extension (max. 512 kB) › PROFIBUS-DP slave / PtP (switchable) › Configurable via TIA-Portal	› SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable)
SPEED-Bus	-	-	-	-
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	200 mA	200 mA	180 mA	200 mA
Current consumption (rated value)	1 A	1 A	900 mA	1 A
Inrush current	5 A	5 A	8 A	5 A
I^2t	0.5 A^2s	0.5 A^2s	0.7 A^2s	0.5 A^2s
Max. current drain at backplane bus	2.5 A	2.5 A	3 A	2.5 A
Power loss	6 W	6 W	6 W	6 W
Load and working memory				
Load memory, integrated	512 KB	512 KB	512 KB	2 MB
Load memory, maximum	512 KB	512 KB	512 KB	2 MB
Work memory, integrated	256 KB	256 KB	128 KB	1 MB
Work memory, maximal	512 KB	512 KB	512 KB	2 MB
Memory divided in 50% program / 50% data	✓	✓	✓	✓
Memory card slot	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB
Hardware configuration				
Racks, max.	4	4	4	4
Modules per rack, max.	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration
Number of integrated DP master	1	1	-	1
Number of DP master via CP	4	4	4	4
Operable function modules	8	8	8	8
Operable communication modules PtP	8	8	8	8
Operable communication modules LAN	8	8	8	8
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	314-2AG12	314-2AG13	314-2BG03	315-2AG12
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Command processing times				
Bit instructions, min.	0.01 µs	0.01 µs	0.02 µs	0.01 µs
Word instruction, min.	0.01 µs	0.01 µs	0.02 µs	0.01 µs
Double integer arithmetic, min.	0.01 µs	0.01 µs	0.02 µs	0.01 µs
Floating-point arithmetic, min.	0.06 µs	0.06 µs	0.12 µs	0.06 µs
Timers/Counters and their retentive characteristics				
Number of S7 counters	512	512	512	512
Number of S7 times	512	512	512	512
Data range and retentive characteristic				
Number of flags	8192 Byte	8192 Byte	8192 Byte	8192 Byte
Number of data blocks	4095	4095	4095	4095
Max. data blocks size	64 KB	64 KB	64 KB	64 KB
Max. local data size per execution level	510 Byte	1024 Byte	510 Byte	510 Byte
Blocks				
Number of OBs	24	24	15	24
Number of FBs	2048	2048	2048	2048
Number of FCs	2048	2048	2048	2048
Maximum nesting depth per priority class	8	8	8	8
Maximum nesting depth additional within an error OB	4	4	4	4
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	6 W	6 W	6 W	6 W
Accuracy (max. deviation per day)	10 s	10 s	10 s	10 s
Number of operating hours counter	8	8	8	8
Clock synchronization	✓	✓	✓	✓
Synchronization via MPI	Master/Slave	Master/Slave	Master/Slave	Master/Slave
Synchronization via Ethernet (NTP)	no	no	no	no
Address areas (I/O)				
Input I/O address area	8192 Byte	8192 Byte	2048 Byte	8192 Byte
Output I/O address area	8192 Byte	8192 Byte	2048 Byte	8192 Byte
Input process image maximal	2048 Byte	2048 Byte	128 Byte	2048 Byte
Output process image maximal	2048 Byte	2048 Byte	128 Byte	2048 Byte
Digital inputs	65536	65536	16384	65536
Digital outputs	65536	65536	16385	65536
Digital inputs central	1024	1024	1024	1024
Digital outputs central	1024	1024	1024	1024
Integrated digital inputs	-	-	-	-
Integrated digital outputs	-	-	-	-
Analog inputs	4096	4096	1024	4096
Analog outputs	4096	4096	1024	4096
Analog inputs, central	256	256	256	256
Analog outputs, central	256	256	256	256

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	314-2AG12	314-2AG13	314-2BG03	315-2AG12
Integrated analog inputs	-	-	-	-
Integrated analog outputs	-	-	-	-
Communication functions				
PG/OP channel	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
Number of GD circuits, max.	8	8	8	8
Size of GD packets, max.	54 Byte	54 Byte	22 Byte	54 Byte
S7 basic communication	✓	✓	✓	✓
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	76 Byte
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	160 Byte
Number of connections, max.	32	32	32	32
Functionality Sub-D interfaces				
Type	X2	X2	X2	X2
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	✓	✓	-	✓
MPI	✓	✓	✓	✓
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	-	-
Type	X3	X3	X3	X3
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	✓	✓	✓	✓
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	✓	✓	-	✓
DP slave	✓	✓	✓	✓
Point-to-point interface	✓	✓	✓	✓
CAN	-	-	-	-
Functionality MPI				
Number of connections, max.	32	32	32	32
PG/OP channel	✓	✓	✓	✓
Routing	✓	✓	-	✓
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	314-2AG12	314-2AG13	314-2BG03	315-2AG12
Transmission speed, max.	12 Mbit/s	12 Mbit/s	187.5 kbit/s	12 Mbit/s
Functionality PROFIBUS master				
PG/OP channel	✓	✓	-	✓
Routing	✓	✓	-	✓
S7 basic communication	✓	✓	-	✓
S7 communication	✓	✓	-	✓
S7 communication as server	✓	✓	-	✓
S7 communication as client	-	-	-	-
Equidistance support	-	-	-	-
Isochronous mode	-	-	-	-
SYNC/FREEZE	✓	✓	-	✓
Activation/deactivation of DP slaves	✓	✓	-	✓
Direct data exchange (slave-to-slave communication)	-	-	-	-
DPV1	✓	✓	-	✓
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	-	9.6 kbit/s
Transmission speed, max.	12 Mbit/s	12 Mbit/s	-	12 Mbit/s
Number of DP slaves, max.	124	124	-	124
Address range inputs, max.	8 KB	8 KB	-	8 KB
Address range outputs, max.	8 KB	8 KB	-	8 KB
User data inputs per slave, max.	244 Byte	244 Byte	-	244 Byte
User data outputs per slave, max.	244 Byte	244 Byte	-	244 Byte
Functionality PROFIBUS slave				
PG/OP channel	✓	✓	-	✓
Routing	✓	✓	-	✓
S7 communication	✓	✓	-	✓
S7 communication as server	✓	✓	-	✓
S7 communication as client	-	-	-	-
Direct data exchange (slave-to-slave communication)	-	-	-	-
DPV1	✓	✓	✓	✓
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
Automatic detection of transmission speed	-	-	-	-
Transfer memory inputs, max.	244 Byte	244 Byte	244 Byte	244 Byte
Transfer memory outputs, max.	244 Byte	244 Byte	244 Byte	244 Byte
Address areas, max.	32	32	32	32
User data per address area, max.	32 Byte	32 Byte	32 Byte	32 Byte
Point-to-point communication				
PtP communication	✓	✓	✓	✓
Interface isolated	✓	✓	✓	✓
RS232 interface	-	-	-	-
RS422 interface	-	-	-	-
RS485 interface	✓	✓	✓	✓
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	150 bit/s

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	314-2AG12	314-2AG13	314-2BG03	315-2AG12
Transmission speed, max.	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s
Cable length, max.	500 m	500 m	500 m	500 m
Point-to-point protocol				
ASCII protocol	✓	✓	✓	✓
STX/ETX protocol	✓	✓	✓	✓
3964(R) protocol	✓	✓	✓	✓
RK512 protocol	-	-	-	-
USS master protocol	✓	✓	✓	✓
Modbus master protocol	✓	✓	✓	✓
Modbus slave protocol	-	-	-	-
Special protocols	-	-	-	-
Functionality RJ45 interfaces				
Type	X4	X4	X4	X4
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit
Connector	RJ45	RJ45	RJ45	RJ45
Electrically isolated	✓	✓	✓	✓
PG/OP channel	✓	✓	✓	✓
Productive connections	-	-	-	-
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	Rail System 300	Rail System 300	Rail System 300
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	290 g	290 g	235 g	290 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	in preparation	in preparation	yes	yes

Connections, Interfaces

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

314-2AG12

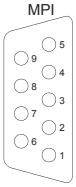
X1

① + DC 24 V
② 0 V

X4

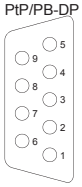
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① shield
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

314-2AG13

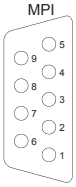
X1

① + DC 24 V
② 0 V

X4

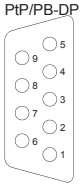
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① shield
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

314-2BG03

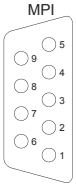
X1

+ ① + DC 24 V
- ② 0 V

X4

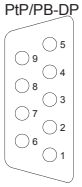
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

315-2AG12

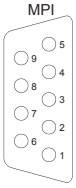
X1

+ ① + DC 24 V
- ② 0 V

X4

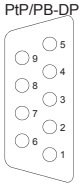
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

CPUs STEP7 programmable, standard

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	315-2AG13	317-2AJ12	317-2AJ13	
Figure				
Type	CPU 315SB/DPM	CPU 317SE/DPM	CPU 317SE/DPM	
General information				
Note	-	-	-	
Features	› SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	› SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable)	› SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	
SPEED-Bus	-	✓	✓	
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	
Reverse polarity protection	✓	✓	✓	
Current consumption (no-load operation)	200 mA	200 mA	200 mA	
Current consumption (rated value)	1 A	1.5 A	1.5 A	
Inrush current	5 A	5 A	5 A	
I^2t	0.5 A^2s	0.5 A^2s	0.5 A^2s	
Max. current drain at backplane bus	2.5 A	4 A	4 A	
Power loss	6 W	6.5 W	6.5 W	
Load and working memory				
Load memory, integrated	2 MB	8 MB	8 MB	
Load memory, maximum	2 MB	8 MB	8 MB	
Work memory, integrated	1 MB	2 MB	2 MB	
Work memory, maximal	2 MB	8 MB	8 MB	
Memory divided in 50% program / 50% data	✓	✓	✓	
Memory card slot	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	
Hardware configuration				
Racks, max.	4	4	4	
Modules per rack, max.	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	
Number of integrated DP master	1	1	1	
Number of DP master via CP	4	4	4	
Operable function modules	8	8	8	
Operable communication modules PtP	8	16	16	
Operable communication modules LAN	8	8	8	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	no	no	no	

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	315-2AG13	317-2AJ12	317-2AJ13	
Process alarm	no	no	no	
Diagnostic interrupt	no	no	no	
Command processing times				
Bit instructions, min.	0.01 µs	0.01 µs	0.01 µs	
Word instruction, min.	0.01 µs	0.01 µs	0.01 µs	
Double integer arithmetic, min.	0.01 µs	0.01 µs	0.01 µs	
Floating-point arithmetic, min.	0.06 µs	0.06 µs	0.06 µs	
Timers/Counters and their retentive characteristics				
Number of S7 counters	512	2048	2048	
Number of S7 times	512	2048	2048	
Data range and retentive characteristic				
Number of flags	8192 Byte	16384 Byte	16384 Byte	
Number of data blocks	4095	8190	8190	
Max. data blocks size	64 KB	64 KB	64 KB	
Max. local data size per execution level	1024 Byte	510 Byte	1024 Byte	
Blocks				
Number of OBs	24	24	24	
Number of FBs	2048	8192	8192	
Number of FCs	2048	8192	8192	
Maximum nesting depth per priority class	8	16	16	
Maximum nesting depth additional within an error OB	4	4	4	
Time				
Real-time clock buffered	✓	✓	✓	
Clock buffered period (min.)	6 W	6 W	6 W	
Accuracy (max. deviation per day)	10 s	10 s	10 s	
Number of operating hours counter	8	8	8	
Clock synchronization	✓	✓	✓	
Synchronization via MPI	Master/Slave	Master/Slave	Master/Slave	
Synchronization via Ethernet (NTP)	no	no	no	
Address areas (I/O)				
Input I/O address area	8192 Byte	8192 Byte	8192 Byte	
Output I/O address area	8192 Byte	8192 Byte	8192 Byte	
Input process image maximal	2048 Byte	2048 Byte	2048 Byte	
Output process image maximal	2048 Byte	2048 Byte	2048 Byte	
Digital inputs	65536	65536	65536	
Digital outputs	65536	65536	65536	
Digital inputs central	1024	1024	1024	
Digital outputs central	1024	1024	1024	
Integrated digital inputs	-	-	-	
Integrated digital outputs	-	-	-	
Analog inputs	4096	4096	4096	
Analog outputs	4096	4096	4096	
Analog inputs, central	256	256	256	
Analog outputs, central	256	256	256	

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	315-2AG13	317-2AJ12	317-2AJ13	
Integrated analog inputs	-	-	-	
Integrated analog outputs	-	-	-	
Communication functions				
PG/OP channel	✓	✓	✓	
Global data communication	✓	✓	✓	
Number of GD circuits, max.	8	8	8	
Size of GD packets, max.	54 Byte	54 Byte	54 Byte	
S7 basic communication	✓	✓	✓	
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	
Number of connections, max.	32	32	32	
Functionality Sub-D interfaces				
Type	X2	X2	X2	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	✓	✓	✓	
MPI	✓	✓	✓	
MP²I (MPI/RS232)	-	-	-	
DP master	-	-	-	
DP slave	-	-	-	
Point-to-point interface	-	-	-	
Type	X3	X3	X3	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	✓	✓	✓	
MPI	-	-	-	
MP²I (MPI/RS232)	-	-	-	
DP master	✓	✓	✓	
DP slave	✓	✓	✓	
Point-to-point interface	✓	✓	✓	
CAN	-	-	-	
Functionality MPI				
Number of connections, max.	32	32	32	
PG/OP channel	✓	✓	✓	
Routing	✓	✓	✓	
Global data communication	✓	✓	✓	
S7 basic communication	✓	✓	✓	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	315-2AG13	317-2AJ12	317-2AJ13	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	
Functionality PROFIBUS master				
PG/OP channel	✓	✓	✓	
Routing	✓	✓	✓	
S7 basic communication	✓	✓	✓	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Equidistance support	-	-	-	
Isochronous mode	-	-	-	
SYNC/FREEZE	✓	✓	✓	
Activation/deactivation of DP slaves	✓	✓	✓	
Direct data exchange (slave-to-slave communication)	-	-	-	
DPV1	✓	✓	✓	
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	
Number of DP slaves, max.	124	124	124	
Address range inputs, max.	8 KB	8 KB	8 KB	
Address range outputs, max.	8 KB	8 KB	8 KB	
User data inputs per slave, max.	244 Byte	244 Byte	244 Byte	
User data outputs per slave, max.	244 Byte	244 Byte	244 Byte	
Functionality PROFIBUS slave				
PG/OP channel	✓	✓	✓	
Routing	✓	✓	✓	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Direct data exchange (slave-to-slave communication)	-	-	-	
DPV1	✓	✓	✓	
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	
Automatic detection of transmission speed	-	-	-	
Transfer memory inputs, max.	244 Byte	244 Byte	244 Byte	
Transfer memory outputs, max.	244 Byte	244 Byte	244 Byte	
Address areas, max.	32	32	32	
User data per address area, max.	32 Byte	32 Byte	32 Byte	
Point-to-point communication				
PtP communication	✓	✓	✓	
Interface isolated	✓	✓	✓	
RS232 interface	-	-	-	
RS422 interface	-	-	-	
RS485 interface	✓	✓	✓	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	315-2AG13	317-2AJ12	317-2AJ13	
Transmission speed, max.	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s	
Cable length, max.	500 m	500 m	500 m	
Point-to-point protocol				
ASCII protocol	✓	✓	✓	
STX/ETX protocol	✓	✓	✓	
3964(R) protocol	✓	✓	✓	
RK512 protocol	-	-	-	
USS master protocol	✓	✓	✓	
Modbus master protocol	✓	✓	✓	
Modbus slave protocol	-	-	-	
Special protocols	-	-	-	
Functionality RJ45 interfaces				
Type	X4	X5	X5	
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	
Connector	RJ45	RJ45	RJ45	
Electrically isolated	✓	✓	✓	
PG/OP channel	✓	✓	✓	
Productive connections	-	-	-	
Housing				
Material	PPE	PPE	PPE	
Mounting	Rail System 300	Rail System 300	Rail System 300	
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	
Weight	290 g	420 g	420 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	in preparation	yes	in preparation	

Connections, Interfaces

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

315-2AG13

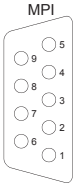
X1

+ ① + DC 24 V
- ② 0 V

X4

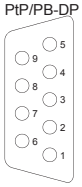
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

317-2AJ12

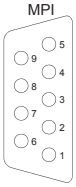
X1

+ ① + DC 24 V
- ② 0 V

X5

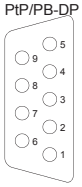
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

317-2AJ13

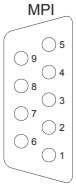
X1

+ ① + DC 24 V
- ② 0 V

X5

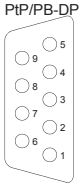
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

CPUs STEP7 programmable, NET-CPUs

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

Order number	315-4NE12	315-4NE13	317-4NE12	317-4NE13
Figure				
Type	CPU 315SN/NET	CPU 315SN/NET	CPU 317SN/NET	CPU 317SN/NET
General information				
Note	-	-	-	-
Features	› SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated	› SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated › Configurable via TIA-Portal	› SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated	› SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated › Configurable via TIA-Portal
SPEED-Bus	-	-	✓	✓
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	270 mA	270 mA	270 mA	270 mA
Current consumption (rated value)	1 A	1 A	1.5 A	1.5 A
Inrush current	5 A	5 A	5 A	5 A
I^2t	0.5 A^2s	0.5 A^2s	0.5 A^2s	0.5 A^2s
Max. current drain at backplane bus	2.5 A	2.5 A	4 A	4 A
Power loss	8.5 W	8.5 W	10 W	10 W
Load and working memory				
Load memory, integrated	2 MB	2 MB	8 MB	8 MB
Load memory, maximum	2 MB	2 MB	8 MB	8 MB
Work memory, integrated	1 MB	1 MB	2 MB	2 MB
Work memory, maximal	2 MB	2 MB	8 MB	8 MB
Memory divided in 50% program / 50% data	✓	✓	✓	✓
Memory card slot	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB
Hardware configuration				
Racks, max.	4	4	4	4
Modules per rack, max.	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration
Number of integrated DP master	1	1	1	1
Number of DP master via CP	4	4	4	4
Operable function modules	8	8	8	8
Operable communication modules PtP	8	8	16	16
Operable communication modules LAN	8	8	8	8

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

Order number	315-4NE12	315-4NE13	317-4NE12	317-4NE13
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Command processing times				
Bit instructions, min.	0.01 µs	0.01 µs	0.01 µs	0.01 µs
Word instruction, min.	0.01 µs	0.01 µs	0.01 µs	0.01 µs
Double integer arithmetic, min.	0.01 µs	0.01 µs	0.01 µs	0.01 µs
Floating-point arithmetic, min.	0.06 µs	0.06 µs	0.06 µs	0.06 µs
Timers/Counters and their retentive characteristics				
Number of S7 counters	512	512	2048	2048
Number of S7 times	512	512	2048	2048
Data range and retentive characteristic				
Number of flags	8192 Byte	8192 Byte	16384 Byte	16384 Byte
Number of data blocks	4095	4095	8190	8190
Max. data blocks size	64 KB	64 KB	64 KB	64 KB
Max. local data size per execution level	510 Byte	1024 Byte	510 Byte	1024 Byte
Blocks				
Number of OBs	24	24	24	24
Number of FBs	2048	2048	8191	8191
Number of FCs	2048	2048	8191	8191
Maximum nesting depth per priority class	8	8	16	16
Maximum nesting depth additional within an error OB	4	4	4	4
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	6 W	6 W	6 W	6 W
Accuracy (max. deviation per day)	10 s	10 s	10 s	10 s
Number of operating hours counter	8	8	8	8
Clock synchronization	✓	✓	✓	✓
Synchronization via MPI	Master/Slave	Master/Slave	Master/Slave	Master/Slave
Synchronization via Ethernet (NTP)	Slave	Slave	Slave	Slave
Address areas (I/O)				
Input I/O address area	8192 Byte	8192 Byte	8192 Byte	8192 Byte
Output I/O address area	8192 Byte	8192 Byte	8192 Byte	8192 Byte
Input process image maximal	2048 Byte	2048 Byte	8192 Byte	8192 Byte
Output process image maximal	2048 Byte	2048 Byte	8192 Byte	8192 Byte
Digital inputs	65536	65536	65536	65536
Digital outputs	65536	65536	65536	65536
Digital inputs central	1024	1024	1024	1024
Digital outputs central	1024	1024	1024	1024
Integrated digital inputs	-	-	-	-
Integrated digital outputs	-	-	-	-
Analog inputs	4096	4096	4096	4096

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

Order number	315-4NE12	315-4NE13	317-4NE12	317-4NE13
Analog outputs	4096	4096	4096	4096
Analog inputs, central	256	256	256	256
Analog outputs, central	256	256	256	256
Integrated analog inputs	-	-	-	-
Integrated analog outputs	-	-	-	-
Communication functions				
PG/OP channel	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
Number of GD circuits, max.	8	8	8	8
Size of GD packets, max.	54 Byte	54 Byte	54 Byte	54 Byte
S7 basic communication	✓	✓	✓	✓
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	76 Byte
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	160 Byte
Number of connections, max.	32	32	32	32
Functionality Sub-D interfaces				
Type	X2	X2	X2	X2
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	✓	✓	✓	✓
MPI	✓	✓	✓	✓
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	-	-
Type	X3	X3	X3	X3
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	✓	✓	✓	✓
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	✓	✓	✓	✓
DP slave	✓	✓	✓	✓
Point-to-point interface	✓	✓	✓	✓
CAN	-	-	-	-
Functionality MPI				
Number of connections, max.	32	32	32	32
PG/OP channel	✓	✓	✓	✓
Routing	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

Order number	315-4NE12	315-4NE13	317-4NE12	317-4NE13
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
Functionality PROFIBUS master				
PG/OP channel	✓	✓	✓	✓
Routing	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Equidistance support	-	-	-	-
Isochronous mode	-	-	-	-
SYNC/FREEZE	✓	✓	✓	✓
Activation/deactivation of DP slaves	✓	✓	✓	✓
Direct data exchange (slave-to-slave communication)	-	-	-	-
DPV1	✓	✓	✓	✓
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
Number of DP slaves, max.	124	124	124	124
Address range inputs, max.	8 KB	8 KB	8 KB	8 KB
Address range outputs, max.	8 KB	8 KB	8 KB	8 KB
User data inputs per slave, max.	244 Byte	244 Byte	244 Byte	244 Byte
User data outputs per slave, max.	244 Byte	244 Byte	244 Byte	244 Byte
Functionality PROFIBUS slave				
PG/OP channel	✓	✓	✓	✓
Routing	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Direct data exchange (slave-to-slave communication)	-	-	-	-
DPV1	✓	✓	✓	✓
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
Automatic detection of transmission speed	-	-	-	-
Transfer memory inputs, max.	244 Byte	244 Byte	244 Byte	244 Byte
Transfer memory outputs, max.	244 Byte	244 Byte	244 Byte	244 Byte
Address areas, max.	32	32	32	32
User data per address area, max.	32 Byte	32 Byte	32 Byte	32 Byte
Point-to-point communication				
PtP communication	✓	✓	✓	✓
Interface isolated	✓	✓	✓	✓
RS232 interface	-	-	-	-
RS422 interface	-	-	-	-

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

Order number	315-4NE12	315-4NE13	317-4NE12	317-4NE13
RS485 interface	✓	✓	✓	✓
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	150 bit/s
Transmission speed, max.	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s
Cable length, max.	500 m	500 m	500 m	500 m
Point-to-point protocol				
ASCII protocol	✓	✓	✓	✓
STX/ETX protocol	✓	✓	✓	✓
3964(R) protocol	✓	✓	✓	✓
RK512 protocol	-	-	-	-
USS master protocol	✓	✓	✓	✓
Modbus master protocol	✓	✓	✓	✓
Modbus slave protocol	-	-	-	-
Special protocols	-	-	-	-
Functionality RJ45 interfaces				
Type	X5	X5	X5	X5
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit
Connector	RJ45	RJ45	RJ45	RJ45
Electrically isolated	✓	✓	✓	✓
PG/OP channel	✓	✓	✓	✓
Productive connections	-	-	-	-
Type	X8	X8	X8	X8
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit
Connector	RJ45	RJ45	RJ45	RJ45
Electrically isolated	✓	✓	✓	✓
PG/OP channel	✓	✓	✓	✓
Productive connections	-	-	-	-
Ethernet communication CP				
Number of productive connections, max.	8	8	64	64
Number of productive connections by Siemens NetPro, max.	8	8	16	16
S7 connections	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling
User data per S7 connection, max.	32 KB	32 KB	32 KB	32 KB
TCP-connections	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling
User data per TCP connection, max.	64 KB	64 KB	64 KB	64 KB
ISO-connections	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling
User data per ISO connection, max.	8 KB	8 KB	8 KB	8 KB

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

Order number	315-4NE12	315-4NE13	317-4NE12	317-4NE13
ISO on TCP connections (RFC 1006)	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling
User data per ISO on TCP connection, max.	32 KB	32 KB	32 KB	32 KB
UDP-connections	TUSEND, TURCV	TUSEND, TURCV	TUSEND, TURCV	TUSEND, TURCV
User data per UDP connection, max.	2 KB	2 KB	2 KB	2 KB
UDP-multicast-connections	SEND and RECEIVE (max. 8 Multicast groups)	SEND and RECEIVE (max. 8 Multicast groups)	SEND and RECEIVE (max. 16 Multicast groups)	SEND and RECEIVE (max. 16 Multicast groups)
UDP-broadcast-connections	SEND	SEND	SEND	SEND
Ethernet open communication				
Number of connections, max.	8	8	8	8
User data per ISO on TCP connection, max.	8 KB	8 KB	8 KB	8 KB
User data per native TCP connection, max.	8 KB	8 KB	8 KB	8 KB
User data per ad hoc TCP connection, max.	1460 Byte	1460 Byte	1460 Byte	1460 Byte
User data per UDP connection, max.	1472 Byte	1472 Byte	1472 Byte	1472 Byte
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	Rail System 300	Rail System 300	Rail System 300
Mechanical data				
Dimensions (WxHxD)	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm
Weight	430 g	430 g	440 g	440 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	in preparation	yes	in preparation

Connections, Interfaces

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

315-4NE12

X1

+	1	+ DC 24 V
-	2	0 V

X2
MPI

1	n. c.
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

X3
PtP/PB-DP

1	n. c.
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

X5

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-

X8

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-

315-4NE13

X1

+	1	+ DC 24 V
-	2	0 V

X2
MPI

1	n. c.
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

X3
PtP/PB-DP

1	n. c.
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

X5

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-

X8

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-

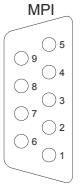
CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

317-4NE12

X1

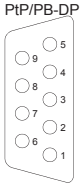
+ ① + DC 24 V
- ② 0 V

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X5

① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X8

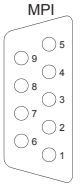
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

317-4NE13

X1

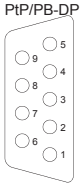
+ ① + DC 24 V
- ② 0 V

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X5

① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X8

① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

CPUs STEP7 programmable, PROFINET

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

Order number	315-4PN12	315-4PN33	317-4PN12	
Figure				
Type	CPU 315SN/PN	CPU 315SN/PN	CPU 317SN/PN	
General information				
Note	Update of PROFINET and Shared-Device functions in Q4/2012	Update of PROFINET and Shared-Device functions in Q4/2012	Update of PROFINET and Shared-Device functions in Q4/2012	
Features	› SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › PROFINET controller integrated › Configurable via TIA-Portal	› SPEED7 technology › 512 KB work memory › PtP › PROFINET controller integrated › Configurable via TIA-Portal › Available at Q4/2012	› SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › PROFINET Controller integrated › Configurable via TIA-Portal	
SPEED-Bus	-	-	✓	
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	
Reverse polarity protection	✓	✓	✓	
Current consumption (no-load operation)	270 mA	270 mA	270 mA	
Current consumption (rated value)	1.1 A	1.1 A	1.5 A	
Inrush current	6 A	6 A	6 A	
I^2t	0.28 A^2s	0.28 A^2s	0.28 A^2s	
Max. current drain at backplane bus	2.5 A	2.5 A	4 A	
Power loss	8.5 W	8.5 W	10 W	
Load and working memory				
Load memory, integrated	2 MB	512 KB	8 MB	
Load memory, maximum	2 MB	512 KB	8 MB	
Work memory, integrated	1 MB	512 KB	2 MB	
Work memory, maximal	2 MB	512 KB	8 MB	
Memory divided in 50% program / 50% data	✓	✓	✓	
Memory card slot	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	
Hardware configuration				
Racks, max.	4	4	4	
Modules per rack, max.	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	
Number of integrated DP master	1	0	1	
Number of DP master via CP	4	4	4	
Operable function modules	8	8	8	
Operable communication modules PtP	8	8	16	
Operable communication modules LAN	8	8	8	

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

Order number	315-4PN12	315-4PN33	317-4PN12	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	no	no	no	
Process alarm	no	no	no	
Diagnostic interrupt	no	no	no	
Command processing times				
Bit instructions, min.	0.01 µs	0.01 µs	0.01 µs	
Word instruction, min.	0.01 µs	0.01 µs	0.01 µs	
Double integer arithmetic, min.	0.01 µs	0.01 µs	0.01 µs	
Floating-point arithmetic, min.	0.06 µs	0.06 µs	0.06 µs	
Timers/Counters and their retentive characteristics				
Number of S7 counters	512	512	2048	
Number of S7 times	512	512	2048	
Data range and retentive characteristic				
Number of flags	8192 Byte	8192 Byte	16384 Byte	
Number of data blocks	4095	4095	8189	
Max. data blocks size	64 KB	64 KB	64 KB	
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	
Blocks				
Number of OBs	24	24	24	
Number of FBs	2048	2048	8191	
Number of FCs	2048	2048	8191	
Maximum nesting depth per priority class	8	8	16	
Maximum nesting depth additional within an error OB	4	4	4	
Time				
Real-time clock buffered	✓	✓	✓	
Clock buffered period (min.)	6 W	6 W	6 W	
Accuracy (max. deviation per day)	10 s	10 s	10 s	
Number of operating hours counter	8	8	8	
Clock synchronization	✓	✓	✓	
Synchronization via MPI	Master/Slave	Master/Slave	Master/Slave	
Synchronization via Ethernet (NTP)	Slave	Slave	Slave	
Address areas (I/O)				
Input I/O address area	2048 Byte	2048 Byte	8192 Byte	
Output I/O address area	2048 Byte	2048 Byte	8192 Byte	
Input process image maximal	2048 Byte	2048 Byte	8192 Byte	
Output process image maximal	2048 Byte	2048 Byte	8192 Byte	
Digital inputs	16384	16384	65536	
Digital outputs	16384	16384	65536	
Digital inputs central	1024	1024	1024	
Digital outputs central	1024	1024	1024	
Integrated digital inputs	-	-	-	
Integrated digital outputs	-	-	-	
Analog inputs	1024	1024	4096	

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

Order number	315-4PN12	315-4PN33	317-4PN12	
Analog outputs	1024	1024	4096	
Analog inputs, central	256	256	256	
Analog outputs, central	256	256	256	
Integrated analog inputs	-	-	-	
Integrated analog outputs	-	-	-	
Communication functions				
PG/OP channel	✓	✓	✓	
Global data communication	✓	✓	✓	
Number of GD circuits, max.	8	8	8	
Size of GD packets, max.	22 Byte	22 Byte	22 Byte	
S7 basic communication	✓	✓	✓	
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	
Number of connections, max.	32	32	32	
Functionality Sub-D interfaces				
Type	X2	X2	X2	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	✓	✓	✓	
MPI	✓	✓	✓	
MP²I (MPI/RS232)	-	-	-	
DP master	-	-	-	
DP slave	-	-	-	
Point-to-point interface	-	-	-	
Type	X3	X3	X3	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	✓	✓	✓	
MPI	-	-	-	
MP²I (MPI/RS232)	-	-	-	
DP master	✓	-	✓	
DP slave	✓	-	✓	
Point-to-point interface	✓	✓	✓	
CAN	-	-	-	
Functionality MPI				
Number of connections, max.	32	32	32	
PG/OP channel	✓	✓	✓	
Routing	✓	✓	✓	
Global data communication	✓	✓	✓	
S7 basic communication	✓	✓	✓	
S7 communication	✓	✓	✓	

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

Order number	315-4PN12	315-4PN33	317-4PN12	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	
Functionality PROFIBUS master				
PG/OP channel	✓	-	✓	
Routing	✓	-	✓	
S7 basic communication	✓	-	✓	
S7 communication	✓	-	✓	
S7 communication as server	✓	-	✓	
S7 communication as client	-	-	-	
Equidistance support	-	-	-	
Isochronous mode	-	-	-	
SYNC/FREEZE	✓	-	✓	
Activation/deactivation of DP slaves	✓	-	✓	
Direct data exchange (slave-to-slave communication)	-	-	-	
DPV1	✓	-	✓	
Transmission speed, min.	9.6 kbit/s	-	9.6 kbit/s	
Transmission speed, max.	12 Mbit/s	-	12 Mbit/s	
Number of DP slaves, max.	124	-	124	
Address range inputs, max.	8 KB	-	8 KB	
Address range outputs, max.	8 KB	-	8 KB	
User data inputs per slave, max.	244 Byte	-	244 Byte	
User data outputs per slave, max.	244 Byte	-	244 Byte	
Functionality PROFIBUS slave				
PG/OP channel	✓	-	✓	
Routing	✓	-	✓	
S7 communication	✓	-	✓	
S7 communication as server	✓	-	✓	
S7 communication as client	-	-	-	
Direct data exchange (slave-to-slave communication)	-	-	-	
DPV1	✓	-	✓	
Transmission speed, min.	9.6 kbit/s	-	9.6 kbit/s	
Transmission speed, max.	12 Mbit/s	-	12 Mbit/s	
Automatic detection of transmission speed	-	-	-	
Transfer memory inputs, max.	244 Byte	-	244 Byte	
Transfer memory outputs, max.	244 Byte	-	244 Byte	
Address areas, max.	32	-	32	
User data per address area, max.	32 Byte	-	32 Byte	
Functionality PROFINET I/O controller				
Realtime Class	-	-	-	
Conformance Class	PROFINET IO	PROFINET IO	PROFINET IO	
Number of PN IO devices	32	32	32	
IRT support	-	-	-	

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

Order number	315-4PN12	315-4PN33	317-4PN12	
Prioritized start-up	-	-	-	
Number of PN IO lines	1	1	1	
Address range inputs, max.	2 KB	2 KB	4 KB	
Address range outputs, max.	2 KB	2 KB	4 KB	
Transmiting clock	1 ms	1 ms	1 ms	
Update time	1 ms .. 512 ms	1 ms .. 512 ms	1 ms .. 512 ms	
Point-to-point communication				
PtP communication	✓	✓	✓	
Interface isolated	✓	✓	✓	
RS232 interface	-	-	-	
RS422 interface	-	-	-	
RS485 interface	✓	✓	✓	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	
Transmission speed, max.	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s	
Cable length, max.	500 m	500 m	500 m	
Point-to-point protocol				
ASCII protocol	✓	✓	✓	
STX/ETX protocol	✓	✓	✓	
3964(R) protocol	✓	✓	✓	
RK512 protocol	-	-	-	
USS master protocol	✓	✓	✓	
Modbus master protocol	✓	✓	✓	
Modbus slave protocol	-	-	-	
Special protocols	-	-	-	
Functionality RJ45 interfaces				
Type	X5	X5	X5	
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	
Connector	RJ45	RJ45	RJ45	
Electrically isolated	✓	✓	✓	
PG/OP channel	✓	✓	✓	
Productive connections	-	-	-	
Type	X8	X8	X8	
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	
Connector	RJ45	RJ45	RJ45	
Electrically isolated	✓	✓	✓	
PG/OP channel	✓	✓	✓	
Productive connections	-	-	-	
Ethernet communication CP				
Number of productive connections, max.	8	8	24	
Number of productive connections by Siemens NetPro, max.	8	8	16	
S7 connections	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling	

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

Order number	315-4PN12	315-4PN33	317-4PN12	
User data per S7 connection, max.	32 KB	32 KB	32 KB	
TCP-connections	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	
User data per TCP connection, max.	64 KB	64 KB	64 KB	
ISO-connections	-	-	-	
User data per ISO connection, max.	-	-	-	
ISO on TCP connections (RFC 1006)	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	
User data per ISO on TCP connection, max.	32 KB	32 KB	32 KB	
UDP-connections	TUSEND, TURCV	TUSEND, TURCV	TUSEND, TURCV	
User data per UDP connection, max.	-	-	-	
UDP-multicast-connections	-	-	-	
UDP-broadcast-connections	-	-	-	
Ethernet open communication				
Number of connections, max.	8	8	24	
User data per ISO on TCP connection, max.	8 KB	8 KB	8 KB	
User data per native TCP connection, max.	8 KB	8 KB	8 KB	
User data per ad hoc TCP connection, max.	1460 Byte	1460 Byte	1460 Byte	
User data per UDP connection, max.	1472 Byte	1472 Byte	1472 Byte	
Housing				
Material	PPE	PPE	PPE	
Mounting	Rail System 300	Rail System 300	Rail System 300	
Mechanical data				
Dimensions (WxHxD)	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	
Weight	430 g	430 g	440 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	in preparation	in preparation	in preparation	

Connections, Interfaces

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

315-4PN12

X1

+	1	+ DC 24 V
-	2	0 V

X2 MPI

1	n. c.
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

X3 PtP/PB-DP

1	shield
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

X5

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-

X8

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-

315-4PN33

X1

+	1	+ DC 24 V
-	2	0 V

X2 MPI

1	n. c.
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

X3 PtP

1	shield
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

X5

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-

X8

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-

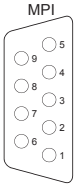
CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

317-4PN12

X1

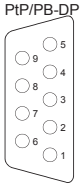
+ ① + DC 24 V
- ② 0 V

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① shield
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X5

① Transmit +
② Transmit -
③ Receive +
④ n. c.
⑤ n. c.
⑥ Receive -
⑦ n. c.
⑧ n. c.

X8

① Transmit +
② Transmit -
③ Receive +
④ n. c.
⑤ n. c.
⑥ Receive -
⑦ n. c.
⑧ n. c.

CPUs STEP7 programmable, class C

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Figure				
Type	CPU 312SC	CPU 313SC	CPU 313SC/DPM	CPU 314ST/DPM
General information				
Note	-	-	-	-
Features	› SPEED7 technology › 16 x DI, 8 x DO › 64 kB work memory › Memory extension (max. 512 kB) › PtP interface › Configurable via TIA-Portal	› SPEED7 technology › 24 x DI, 16 x DO, 4 x AI, 2 x AO, 1xAI Pt100 › 128 kB work memory › Memory extension (max. 512 kB) › PtP interface › Configurable via TIA-Portal	› SPEED7 technology › 16 x DI, 16 x DO › 128 kB work memory › Memory extension (max 512 kB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	› SPEED7 technology, SPEED-Bus › 8 x DI, 8 x DO, 4 x AI, 2 x AO, 1xAI Pt100 › 512 kB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable)
SPEED-Bus	-	-	-	✓
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	135 mA	240 mA	200 mA	300 mA
Current consumption (rated value)	500 mA	700 mA	900 mA	1 A
Inrush current	11 A	11 A	11 A	5 A
I^2t	0.7 A^2s	0.7 A^2s	0.7 A^2s	0.5 A^2s
Max. current drain at backplane bus	3 A	3 A	3 A	2.5 A
Power loss	8 W	14 W	14 W	14 W
Technical data digital inputs				
Number of inputs	16	24	16	8
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	✓	✓	✓	✓
Current consumption from load voltage L+ (without load)	70 mA	70 mA	70 mA	70 mA
Rated value	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	6 mA	6 mA	6 mA	6 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	0.1 / 0.35 ms	0.1 / 0.35 ms	0.1 / 0.35 ms	parameterizable 2.56µs - 40ms

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Input delay of "1" to "0"	0.1 / 0.35 ms	0.1 / 0.35 ms	0.1 / 0.35 ms	parameterizable 2.56µs - 40ms
Number of simultaneously utilizable inputs horizontal configuration	16	24	16	8
Number of simultaneously utilizable inputs vertical configuration	16	24	16	8
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1
Initial data size	2 Byte	3 Byte	2 Byte	34 Byte
Technical data digital outputs				
Number of outputs	8	16	16	8
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	100 mA	100 mA	100 mA	30 mA
Total current per group, horizontal configuration, 40°C	3 A	3 A	3 A	4 A
Total current per group, horizontal configuration, 60°C	2 A	2 A	2 A	3 A
Total current per group, vertical configuration	2 A	2 A	2 A	3 A
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output voltage signal "1" at max. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output current at signal "1", rated value	0.5 A	0.5 A	0.5 A	0.5 A
Output current, permitted range to 40°C	5 mA to 0.6 A	5 mA to 0.6 A	5 mA to 0.6 A	5 mA to 0.6 A
Output current, permitted range to 60°C	5 mA to 0.6 A	5 mA to 0.6 A	5 mA to 0.6 A	5 mA to 0.6 A
Output current at signal "0" max. (residual current)	0.5 mA	0.5 mA	0.5 mA	100 µA
Output delay of "0" to "1"	100 µs	100 µs	100 µs	100 µs
Output delay of "1" to "0"	100 µs	100 µs	100 µs	100 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
Parallel switching of outputs for redundant control of a load	possible	possible	possible	possible
Parallel switching of outputs for increased power	not possible	not possible	not possible	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 2.5 kHz	max. 2.5 kHz	max. 2.5 kHz	max. 2.5 kHz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 2.5 kHz	max. 2.5 kHz	max. 2.5 kHz	max. 2.5 kHz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1 A	1 A	1 A	1 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Output data size	1 Byte	2 Byte	2 Byte	18 Byte
Technical data analog inputs				
Number of inputs	-	5	-	5
Cable length, shielded	-	200 m	-	200 m
Rated load voltage	-	DC 24 V	-	DC 24 V
Reverse polarity protection of rated load voltage	-	✓	-	✓
Current consumption from load voltage L+ (without load)	-	-	-	85 mA
Voltage inputs	-	✓	-	✓
Min. input resistance (voltage range)	-	100 kΩ	-	120 kΩ
Input voltage ranges	-	0 V ... +10 V -10 V ... +10 V	-	-10 V ... +10 V 0 V ... +10 V
Operational limit of voltage ranges	-	+/-0.3%	-	+/-0.3%
Basic error limit voltage ranges with SFU	-	+/-0.2%	-	+/-0.3%
Current inputs	-	✓	-	✓
Min. input resistance (current range)	-	100 Ω	-	85 Ω
Input current ranges	-	0 mA ... +20 mA -20 mA ... +20 mA +4 mA ... +20 mA	-	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA
Operational limit of current ranges	-	+/-0.3%	-	+/-0.3%
Basic error limit current ranges with SFU	-	+/-0.2%	-	+/-0.2%
Resistance inputs	-	✓	-	✓
Resistance ranges	-	0 ... 600 Ohm	-	0 ... 600 Ohm
Operational limit of resistor ranges	-	+/-0.4%	-	+/-0.4%
Basic error limit	-	+/-0.2%	-	+/-0.2%
Resistance thermometer inputs	-	✓	-	✓
Resistance thermometer ranges	-	Pt100	-	Pt100 Pt1000 Ni100 Ni1000
Operational limit of resistance thermometer ranges	-	+/-0.6%	-	+/-0.6%
Basic error limit thermoresistor ranges	-	+/-0.4%	-	+/-0.4%
Thermocouple inputs	-	-	-	-
Thermocouple ranges	-	-	-	-
Operational limit of thermocouple ranges	-	-	-	-
Basic error limit thermoelement ranges	-	-	-	-
Programmable temperature compensation	-	-	-	-
External temperature compensation	-	-	-	-
Internal temperature compensation	-	-	-	-
Resolution in bit	-	12	-	12
Measurement principle	-	successive approximation	-	Sigma-Delta
Basic conversion time	-	1 ms	-	6 ms
Noise suppression for frequency	-	80 dB	-	80 dB
Initial data size	-	10 Byte	-	10 Byte

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Technical data analog outputs				
Number of outputs	-	2	-	2
Cable length, shielded	-	200 m	-	200 m
Rated load voltage	-	-	-	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	✓
Current consumption from load voltage L+ (without load)	-	-	-	-
Voltage output short-circuit protection	-	✓	-	-
Voltage outputs	-	✓	-	✓
Min. load resistance (voltage range)	-	1 kΩ	-	1 kΩ
Max. capacitive load (current range)	-	1 µF	-	1 µF
Output voltage ranges	-	-10 V ... +10 V 0 V ... +10 V	-	-10 V ... +10 V 0 V ... +10 V
Operational limit of voltage ranges	-	+/-0.2%	-	+/-0.4%
Basic error limit voltage ranges with SFU	-	+/-0.1%	-	+/-0.3%
Current outputs	-	✓	-	✓
Max. in load resistance (current range)	-	500 Ω	-	500 Ω
Max. inductive load (current range)	-	100 µH	-	10 mH
Output current ranges	-	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA
Operational limit of current ranges	-	+/-0.3%	-	+/-0.4%
Basic error limit current ranges with SFU	-	+/-0.2%	-	+/-0.3%
Settling time for ohmic load	-	0.5 ms	-	0.2 ms
Settling time for capacitive load	-	0.5 ms	-	0.5 ms
Settling time for inductive load	-	0.5 ms	-	0.2 ms
Resolution in bit	-	12	-	12
Conversion time	-	1 ms	-	1 ms
Substitute value can be applied	-	no	-	yes
Output data size	-	4 Byte	-	4 Byte
Technical data counters				
Number of counters	2	3	3	4
Counter width	32 Bit	32 Bit	32 Bit	32 Bit
Maximum input frequency	10 kHz	30 kHz	30 kHz	100 kHz
Maximum count frequency	10 kHz	30 kHz	30 kHz	100 kHz
Mode incremental encoder	✓	✓	✓	✓
Mode pulse / direction	✓	✓	✓	✓
Mode pulse	✓	✓	✓	✓
Mode frequency counter	-	-	-	-
Mode period measurement	-	-	-	-
Gate input available	✓	✓	✓	✓
Latch input available	✓	✓	✓	✓
Reset input available	-	-	-	✓
Counter output available	✓	✓	✓	✓

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Load and working memory				
Load memory, integrated	512 KB	512 KB	512 KB	2 MB
Load memory, maximum	512 KB	512 KB	512 KB	2 MB
Work memory, integrated	64 KB	128 KB	128 KB	512 KB
Work memory, maximal	512 KB	512 KB	512 KB	2 MB
Memory divided in 50% program / 50% data	✓	✓	✓	✓
Memory card slot	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB
Hardware configuration				
Racks, max.	1	4	4	4
Modules per rack, max.	8	8	8	8 in multiple-, 32 in a single-rack configuration
Number of integrated DP master	0	0	1	1
Number of DP master via CP	4	4	4	4
Operable function modules	8	8	8	8
Operable communication modules PtP	8	8	8	8
Operable communication modules LAN	8	8	8	8
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes	yes	yes	yes
Process alarm	yes	yes	yes	no
Diagnostic interrupt	yes	yes	yes	yes, parameterizable
Diagnostic functions	no	no	no	yes
Diagnostics information read-out	possible	possible	possible	possible
Supply voltage display	green LED	green LED	green LED	green LED
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	red LED per group	red LED per group	red LED per group	red LED per group
Command processing times				
Bit instructions, min.	0.02 µs	0.02 µs	0.02 µs	0.01 µs
Word instruction, min.	0.02 µs	0.02 µs	0.02 µs	0.01 µs
Double integer arithmetic, min.	0.02 µs	0.02 µs	0.02 µs	0.01 µs
Floating-point arithmetic, min.	0.12 µs	0.12 µs	0.12 µs	0.06 µs
Timers/Counters and their retentive characteristics				
Number of S7 counters	512	512	512	512
Number of S7 times	512	512	512	512
Data range and retentive characteristic				
Number of flags	8192 Byte	8192 Byte	8192 Byte	8192 Byte
Number of data blocks	4095	4095	4095	4095
Max. data blocks size	64 KB	64 KB	64 KB	64 KB
Max. local data size per execution level	510 Byte	510 Byte	510 Byte	510 Byte
Blocks				
Number of OBs	15	15	15	24
Number of FBs	2048	2048	2048	2048
Number of FCs	2048	2048	2048	2048
Maximum nesting depth per priority class	8	8	8	8

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Maximum nesting depth additional within an error OB	4	4	4	4
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	6 W	6 W	6 W	6 W
Accuracy (max. deviation per day)	10 s	10 s	10 s	10 s
Number of operating hours counter	8	8	8	8
Clock synchronization	✓	✓	✓	✓
Synchronization via MPI	Master/Slave	Master/Slave	Master/Slave	Master/Slave
Synchronization via Ethernet (NTP)	no	no	no	no
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	8192 Byte
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	8192 Byte
Input process image maximal	128 Byte	128 Byte	128 Byte	2048 Byte
Output process image maximal	128 Byte	128 Byte	128 Byte	2048 Byte
Digital inputs	272	1016	8064	65536
Digital outputs	264	1008	8064	65536
Digital inputs central	272	1016	1008	1032
Digital outputs central	264	1008	1008	1032
Integrated digital inputs	16	24	16	8
Integrated digital outputs	8	16	16	8
Analog inputs	64	253	503	1024
Analog outputs	64	250	503	1024
Analog inputs, central	64	253	248	261
Analog outputs, central	64	250	248	258
Integrated analog inputs	0	5	0	5
Integrated analog outputs	0	2	0	2
Communication functions				
PG/OP channel	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
Number of GD circuits, max.	4	4	4	4
Size of GD packets, max.	22 Byte	22 Byte	22 Byte	22 Byte
S7 basic communication	✓	✓	✓	✓
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	76 Byte
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	160 Byte
Number of connections, max.	32	32	32	32
Functionality Sub-D interfaces				
Type	X2	X2	X2	X2
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	-	-	-	✓
MPI	✓	✓	✓	✓

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	-	-
Type	X3	X3	X3	X3
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	✓	✓	✓	✓
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	✓	✓
DP slave	-	-	✓	✓
Point-to-point interface	✓	✓	✓	✓
CAN	-	-	-	-
Functionality MPI				
Number of connections, max.	32	32	32	32
PG/OP channel	✓	✓	✓	✓
Routing	-	-	✓	✓
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	12 Mbit/s
Functionality PROFIBUS master				
PG/OP channel	-	-	✓	✓
Routing	-	-	✓	✓
S7 basic communication	-	-	✓	✓
S7 communication	-	-	✓	✓
S7 communication as server	-	-	✓	✓
S7 communication as client	-	-	-	-
Equidistance support	-	-	-	-
Isochronous mode	-	-	-	-
SYNC/FREEZE	-	-	✓	✓
Activation/deactivation of DP slaves	-	-	✓	✓
Direct data exchange (slave-to-slave communication)	-	-	-	-
DPV1	-	-	✓	✓
Transmission speed, min.	-	-	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	-	-	12 Mbit/s	12 Mbit/s
Number of DP slaves, max.	-	-	32	124
Address range inputs, max.	-	-	1 KB	1 KB
Address range outputs, max.	-	-	1 KB	1 KB
User data inputs per slave, max.	-	-	244 Byte	244 Byte

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
User data outputs per slave, max.	-	-	244 Byte	244 Byte
Functionality PROFIBUS slave				
PG/OP channel	-	-	✓	✓
Routing	-	-	✓	✓
S7 communication	-	-	✓	✓
S7 communication as server	-	-	✓	✓
S7 communication as client	-	-	-	-
Direct data exchange (slave-to-slave communication)	-	-	-	-
DPV1	-	-	✓	✓
Transmission speed, min.	-	-	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	-	-	12 Mbit/s	12 Mbit/s
Automatic detection of transmission speed	-	-	-	-
Transfer memory inputs, max.	-	-	244 Byte	244 Byte
Transfer memory outputs, max.	-	-	244 Byte	244 Byte
Address areas, max.	-	-	32	32
User data per address area, max.	-	-	32 Byte	32 Byte
Point-to-point communication				
PtP communication	✓	✓	✓	✓
Interface isolated	✓	✓	✓	✓
RS232 interface	-	-	-	-
RS422 interface	-	-	-	-
RS485 interface	✓	✓	✓	✓
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	150 bit/s
Transmission speed, max.	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s
Cable length, max.	500 m	500 m	500 m	500 m
Point-to-point protocol				
ASCII protocol	✓	✓	✓	✓
STX/ETX protocol	✓	✓	✓	✓
3964(R) protocol	✓	✓	✓	✓
RK512 protocol	-	-	-	-
USS master protocol	✓	✓	✓	✓
Modbus master protocol	✓	✓	✓	✓
Modbus slave protocol	-	-	-	-
Special protocols	-	-	-	-
Functionality RJ45 interfaces				
Type	X5	X5	X5	X5
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit
Connector	RJ45	RJ45	RJ45	RJ45
Electrically isolated	✓	✓	✓	✓
PG/OP channel	✓	✓	✓	✓
Productive connections	-	-	-	-

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	Rail System 300	Rail System 300	Rail System 300
Mechanical data				
Dimensions (WxHxD)	80 mm x 125 mm x 120 mm	120 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm
Weight	410 g	590 g	420 g	480 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	in preparation	in preparation	in preparation	yes

Connections, Interfaces

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

312-5BE13

X1

+	1	+ DC 24 V
-	2	0 V

X2 MPI

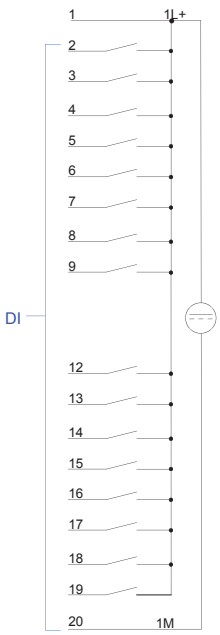
1	n. c.
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

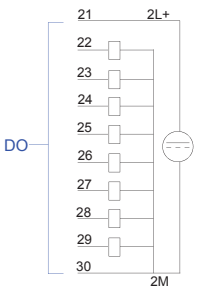
X3 PtP

1	n. c.
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

X5

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-





313-5BF13

X1

+	1	+ DC 24 V
-	2	0 V

X2 MPI

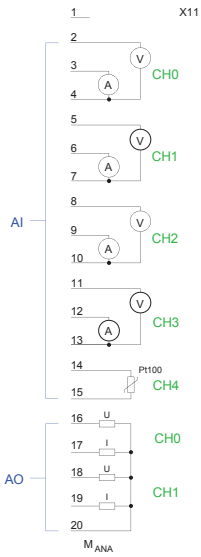
1	n. c.
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

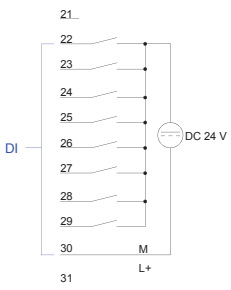
X3 PtP

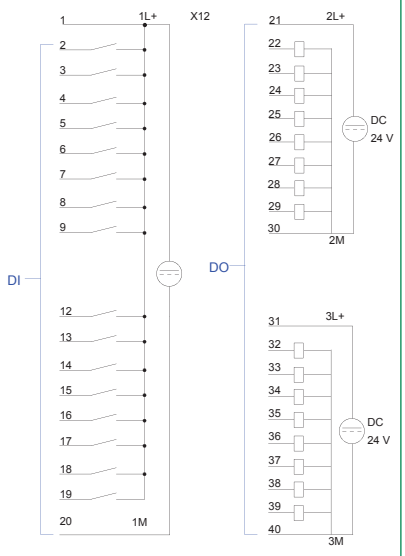
1	shield
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

X5

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-







CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

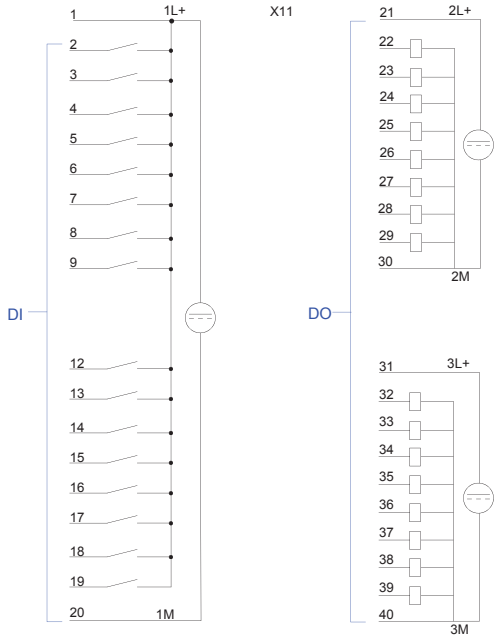
313-6CF13

X1
+ ① + DC 24 V
- ② 0 V

X2
MPI
① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP
① n.c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X5
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -



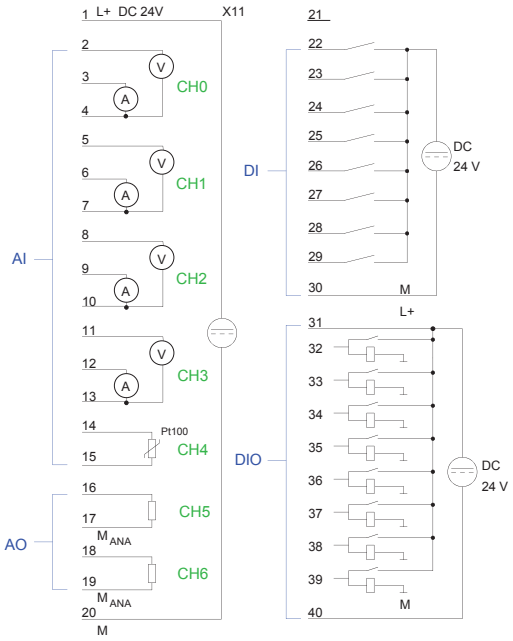
314-6CF02

X1
+ ① + DC 24 V
- ② 0 V

X2
MPI
① n.c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP
① shield
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X5
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -



CPUs STEP7 programmable, class C

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
Figure				
Type	CPU 314ST/DPM	CPU 314SC/DPM		
General information				
Note	-	-		
Features	› SPEED7 technology, SPEED-Bus › 8 x DI, 8 x DO, 4 x AI, 2 x AO, 1xAI Pt100 › 512 kB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	› SPEED7 technology › 24 x DI, 16 x DO, 8 x DIO, 4 x AI, 1 x AI Pt100, 2xAO › 256 kB work memory › Memory extension (max. 1 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal		
SPEED-Bus	✓	-		
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V		
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection	✓	✓		
Current consumption (no-load operation)	300 mA	350 mA		
Current consumption (rated value)	1 A	1 A		
Inrush current	5 A	11 A		
I^2t	0.5 A^2s	0.7 A^2s		
Max. current drain at backplane bus	2.5 A	3 A		
Power loss	14 W	14 W		
Technical data digital inputs				
Number of inputs	8	24		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	✓	✓		
Current consumption from load voltage L+ (without load)	70 mA	70 mA		
Rated value	DC 24 V	DC 24 V		
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V		
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V		
Input voltage hysteresis	-	-		
Frequency range	-	-		
Input resistance	-	-		
Input current for signal "1"	6 mA	6 mA		
Connection of Two-Wire-BEROs possible	✓	✓		
Max. permissible BERO quiescent current	1.5 mA	1.5 mA		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
Input delay of "0" to "1"	parameterizable 2.56µs - 40ms	0.1 / 0.35 ms		
Input delay of "1" to "0"	parameterizable 2.56µs - 40ms	0.1 / 0.35 ms		
Number of simultaneously utilizable inputs horizontal configuration	8	24		
Number of simultaneously utilizable inputs vertical configuration	8	24		
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1		
Initial data size	34 Byte	3 Byte		
Technical data digital outputs				
Number of outputs	8	16		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	-	-		
Current consumption from load voltage L+ (without load)	30 mA	100 mA		
Total current per group, horizontal configuration, 40°C	4 A	3 A		
Total current per group, horizontal configuration, 60°C	3 A	2 A		
Total current per group, vertical configuration	3 A	2 A		
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)		
Output voltage signal "1" at max. current	L+ (-0.8 V)	L+ (-0.8 V)		
Output current at signal "1", rated value	0.5 A	0.5 A		
Output current, permitted range to 40°C	5 mA to 0.6 A	5 mA to 0.6 A		
Output current, permitted range to 60°C	5 mA to 0.6 A	5 mA to 0.6 A		
Output current at signal "0" max. (residual current)	100 µA	0.5 mA		
Output delay of "0" to "1"	100 µs	100 µs		
Output delay of "1" to "0"	100 µs	100 µs		
Minimum load current	-	-		
Lamp load	5 W	5 W		
Parallel switching of outputs for redundant control of a load	possible	possible		
Parallel switching of outputs for increased power	not possible	not possible		
Actuation of digital input	✓	✓		
Switching frequency with resistive load	max. 2.5 kHz	max. 2.5 kHz		
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz		
Switching frequency on lamp load	max. 2.5 kHz	max. 2.5 kHz		
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)		
Short-circuit protection of output	yes, electronic	yes, electronic		
Trigger level	1 A	1 A		
Number of operating cycle of relay outputs	-	-		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
Switching capacity of contacts	-	-		
Output data size	18 Byte	2 Byte		
Technical data analog inputs				
Number of inputs	5	5		
Cable length, shielded	200 m	200 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	✓	✓		
Current consumption from load voltage L+ (without load)	85 mA	-		
Voltage inputs	✓	✓		
Min. input resistance (voltage range)	120 kΩ	-		
Input voltage ranges	-10 V ... +10 V 0 V ... +10 V	-10 V ... +10 V 0 V ... +10 V		
Operational limit of voltage ranges	+/-0.3%	+/-0.3%		
Basic error limit voltage ranges with SFU	+/-0.3%	+/-0.2%		
Current inputs	✓	✓		
Min. input resistance (current range)	85 Ω	100 Ω		
Input current ranges	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA		
Operational limit of current ranges	+/-0.3%	+/-0.3%		
Basic error limit current ranges with SFU	+/-0.2%	+/-0.2%		
Resistance inputs	✓	✓		
Resistance ranges	0 ... 600 Ohm	0 ... 600 Ohm		
Operational limit of resistor ranges	+/-0.4%	+/-0.4%		
Basic error limit	+/-0.2%	+/-0.2%		
Resistance thermometer inputs	✓	-		
Resistance thermometer ranges	Pt100 Pt1000 Ni100 Ni1000	Pt100		
Operational limit of resistance thermometer ranges	+/-0.6%	+/-0.6%		
Basic error limit thermoresistor ranges	+/-0.4%	+/-0.4%		
Thermocouple inputs	-	-		
Thermocouple ranges	-	-		
Operational limit of thermocouple ranges	-	-		
Basic error limit thermoelement ranges	-	-		
Programmable temperature compensation	-	-		
External temperature compensation	-	-		
Internal temperature compensation	-	-		
Resolution in bit	12	12		
Measurement principle	Sigma-Delta	successive approximation		
Basic conversion time	6 ms	0.5 ms		
Noise suppression for frequency	80 dB	80 dB		
Initial data size	10 Byte	10 Byte		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
Technical data analog outputs				
Number of outputs	2	2		
Cable length, shielded	200 m	200 m		
Rated load voltage	DC 24 V	-		
Reverse polarity protection of rated load voltage	✓	-		
Current consumption from load voltage L+ (without load)	-	-		
Voltage output short-circuit protection	-	✓		
Voltage outputs	✓	✓		
Min. load resistance (voltage range)	1 kΩ	1 kΩ		
Max. capacitive load (current range)	1 µF	1 µF		
Output voltage ranges	-10 V ... +10 V 0 V ... +10 V	-10 V ... +10 V 0 V ... +10 V		
Operational limit of voltage ranges	+/-0.4%	+/-0.2%		
Basic error limit voltage ranges with SFU	+/-0.3%	+/-0.1%		
Current outputs	✓	✓		
Max. in load resistance (current range)	500 Ω	500 Ω		
Max. inductive load (current range)	10 mH	10 mH		
Output current ranges	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA		
Operational limit of current ranges	+/-0.4%	+/-0.3%		
Basic error limit current ranges with SFU	+/-0.3%	+/-0.2%		
Settling time for ohmic load	0.2 ms	0.5 ms		
Settling time for capacitive load	0.5 ms	0.5 ms		
Settling time for inductive load	0.2 ms	0.5 ms		
Resolution in bit	12	12		
Conversion time	1 ms	1 ms		
Substitute value can be applied	yes	no		
Output data size	4 Byte	4 Byte		
Technical data counters				
Number of counters	4	4		
Counter width	32 Bit	32 Bit		
Maximum input frequency	100 kHz	60 kHz		
Maximum count frequency	100 kHz	60 kHz		
Mode incremental encoder	✓	✓		
Mode pulse / direction	✓	✓		
Mode pulse	✓	✓		
Mode frequency counter	-	-		
Mode period measurement	-	-		
Gate input available	✓	✓		
Latch input available	✓	✓		
Reset input available	✓	-		
Counter output available	✓	✓		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
Load and working memory				
Load memory, integrated	2 MB	1 MB		
Load memory, maximum	2 MB	1 MB		
Work memory, integrated	512 KB	256 KB		
Work memory, maximal	2 MB	1 MB		
Memory divided in 50% program / 50% data	✓	✓		
Memory card slot	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB		
Hardware configuration				
Racks, max.	4	4		
Modules per rack, max.	8 in multiple-, 32 in a single-rack configuration	8		
Number of integrated DP master	1	1		
Number of DP master via CP	4	4		
Operable function modules	8	8		
Operable communication modules PtP	8	8		
Operable communication modules LAN	8	8		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	yes	yes		
Process alarm	no	yes		
Diagnostic interrupt	yes, parameterizable	yes		
Diagnostic functions	yes	no		
Diagnostics information read-out	possible	possible		
Supply voltage display	green LED	green LED		
Group error display	red SF LED	red SF LED		
Channel error display	red LED per group	red LED per group		
Command processing times				
Bit instructions, min.	0.01 µs	0.01 µs		
Word instruction, min.	0.01 µs	0.01 µs		
Double integer arithmetic, min.	0.01 µs	0.01 µs		
Floating-point arithmetic, min.	0.06 µs	0.06 µs		
Timers/Counters and their retentive characteristics				
Number of S7 counters	512	512		
Number of S7 times	512	512		
Data range and retentive characteristic				
Number of flags	8192 Byte	8192 Byte		
Number of data blocks	4095	4095		
Max. data blocks size	64 KB	64 KB		
Max. local data size per execution level	1024 Byte	510 Byte		
Blocks				
Number of OBs	24	15		
Number of FBs	2048	2048		
Number of FCs	2048	2048		
Maximum nesting depth per priority class	8	8		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
Maximum nesting depth additional within an error OB	4	4		
Time				
Real-time clock buffered	✓	✓		
Clock buffered period (min.)	6 W	6 W		
Accuracy (max. deviation per day)	10 s	10 s		
Number of operating hours counter	8	8		
Clock synchronization	✓	✓		
Synchronization via MPI	Master/Slave	Master/Slave		
Synchronization via Ethernet (NTP)	no	no		
Address areas (I/O)				
Input I/O address area	8192 Byte	1024 Byte		
Output I/O address area	8192 Byte	1024 Byte		
Input process image maximal	2048 Byte	128 Byte		
Output process image maximal	2048 Byte	128 Byte		
Digital inputs	65536	7856		
Digital outputs	65536	7904		
Digital inputs central	1032	979		
Digital outputs central	1032	986		
Integrated digital inputs	8	24 32		
Integrated digital outputs	8	16 24		
Analog inputs	1024	494		
Analog outputs	1024	495		
Analog inputs, central	261	253		
Analog outputs, central	258	250		
Integrated analog inputs	5	5		
Integrated analog outputs	2	2		
Communication functions				
PG/OP channel	✓	✓		
Global data communication	✓	✓		
Number of GD circuits, max.	4	4		
Size of GD packets, max.	22 Byte	22 Byte		
S7 basic communication	✓	✓		
S7 basic communication, user data per job	76 Byte	76 Byte		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
S7 communication, user data per job	160 Byte	160 Byte		
Number of connections, max.	32	32		
Functionality Sub-D interfaces				
Type	X2	X2		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	✓	-		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
MPI	✓	✓		
MP²I (MPI/RS232)	-	-		
DP master	-	✓		
DP slave	-	✓		
Point-to-point interface	-	✓		
Type	X3	X3		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	✓	✓		
MPI	-	-		
MP²I (MPI/RS232)	-	-		
DP master	✓	✓		
DP slave	✓	✓		
Point-to-point interface	✓	✓		
CAN	-	-		
Functionality MPI				
Number of connections, max.	32	32		
PG/OP channel	✓	✓		
Routing	✓	✓		
Global data communication	✓	✓		
S7 basic communication	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s		
Transmission speed, max.	12 Mbit/s	187.5 kbit/s		
Functionality PROFIBUS master				
PG/OP channel	✓	✓		
Routing	✓	✓		
S7 basic communication	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Equidistance support	-	-		
Isochronous mode	-	-		
SYNC/FREEZE	✓	✓		
Activation/deactivation of DP slaves	✓	✓		
Direct data exchange (slave-to-slave communication)	-	-		
DPV1	✓	✓		
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s		
Transmission speed, max.	12 Mbit/s	12 Mbit/s		
Number of DP slaves, max.	124	32		
Address range inputs, max.	1 KB	1 KB		
Address range outputs, max.	1 KB	1 KB		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
User data inputs per slave, max.	244 Byte	244 Byte		
User data outputs per slave, max.	244 Byte	244 Byte		
Functionality PROFIBUS slave				
PG/OP channel	✓	✓		
Routing	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Direct data exchange (slave-to-slave communication)	-	-		
DPV1	✓	✓		
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s		
Transmission speed, max.	12 Mbit/s	12 Mbit/s		
Automatic detection of transmission speed	-	-		
Transfer memory inputs, max.	244 Byte	244 Byte		
Transfer memory outputs, max.	244 Byte	244 Byte		
Address areas, max.	32	32		
User data per address area, max.	32 Byte	32 Byte		
Point-to-point communication				
PtP communication	✓	✓		
Interface isolated	✓	✓		
RS232 interface	-	-		
RS422 interface	-	-		
RS485 interface	✓	✓		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Transmission speed, min.	150 bit/s	150 bit/s		
Transmission speed, max.	115.5 kbit/s	115.5 kbit/s		
Cable length, max.	500 m	500 m		
Point-to-point protocol				
ASCII protocol	✓	✓		
STX/ETX protocol	✓	✓		
3964(R) protocol	✓	✓		
RK512 protocol	-	-		
USS master protocol	✓	✓		
Modbus master protocol	✓	✓		
Modbus slave protocol	-	-		
Special protocols	-	-		
Functionality RJ45 interfaces				
Type	X5	X5		
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit		
Connector	RJ45	RJ45		
Electrically isolated	✓	✓		
PG/OP channel	✓	✓		
Productive connections	-	-		

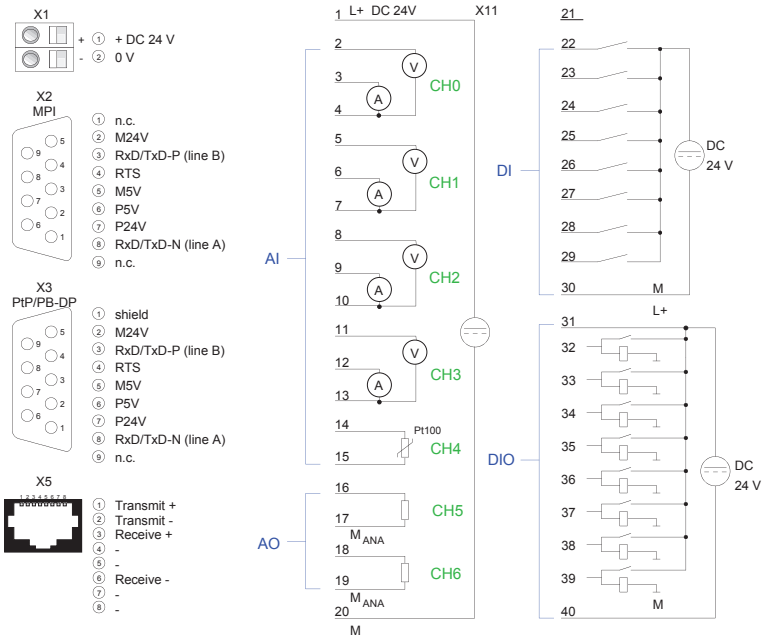
CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
Housing				
Material	PPE	PPE		
Mounting	Rail System 300	Rail System 300		
Mechanical data				
Dimensions (WxHxD)	80 mm x 125 mm x 120 mm	120 mm x 125 mm x 120 mm		
Weight	480 g	610 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	in preparation	in preparation		

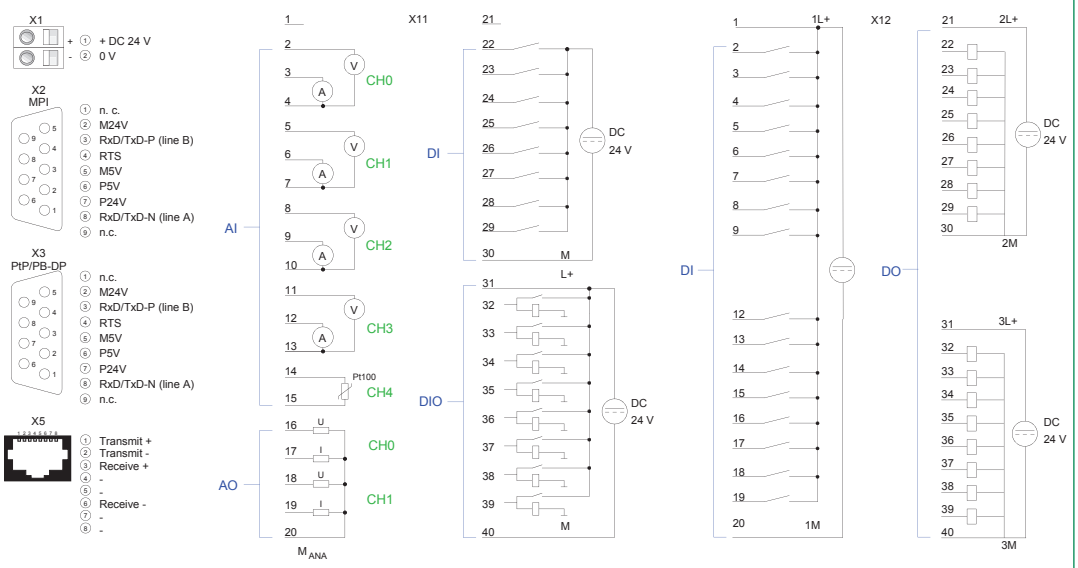
Connections, Interfaces

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

314-6CF03



314-6CG13



Power supply

Structure and Function

Power supply modules are used to supply the system as well as the sensors and actuators with direct current. They convert the mains AC voltage into a DC voltage of 24 V.

Power supply modules can be mounted on the mounting surface, together with 300S components using a profile rail.

The power supplies have no connection to the backplane bus.

Characteristics

- Depending on the model Automatic Wide Range Input detection (AC 100 V - 240 V) or manual switching AC 120/230 V
- Connection to a single phase AC voltage network
- Nominal input voltage AC 120/230 V, 50/60 Hz
- Nominal output voltage DC 24 V
- Safe electrical isolation according to EN 60 950
- Can be used as load power supply
- Front integrated status LEDs for fault diagnosis
- Protection against short circuit, overload and open circuit
- IP 20 protection
- Compact design
- 24 month warranty

Characteristics SPEED-Bus power supply

- Power supply for the CPU 317S
- Automatic start-up with the power of the CPU 317S
- Output current 5.5 A, total output current max. 10 A
- Defined power-down in the case of a power supply failure
- Protection against short circuit and overload
- Overheat protection
- 24 month warranty

Overview

Order no.	Name/Description	Page
Power supply		
307-1BA00	**PS 307 - Power supply** › Output current 2.5 A › Output voltage DC 24 V › AC 100...240 V without manual switch	**424**
307-1EA00	**PS 307 - Power supply** › Output current 5 A › Output voltage DC 24 V › AC 120/230 V, 60/50 Hz switchable	**424**
307-1FB70	**PS 307S - Power supply - SPEED-Bus** › Only for CPU 317S › Output current 5.5 A extends the maximum total value at the back plane bus to 10 A	**424**
307-1KA00	**PS 307 - Power supply** › Output current 10 A › Output voltage DC 24 V › AC 120/230 V, 60/50 Hz switchable	**424**

Power supply

Power supply | Power supply						
307-1BA00 307-1EA00 307-1FB70 307-1KA00						

Order number	307-1BA00	307-1EA00	307-1FB70	307-1KA00
Figure				
Type	PS 307	PS 307	PS 307S - SPEED-Bus	PS 307
General information				
Note	-	-	-	-
Features	› Output current 2.5 A › Output voltage DC 24 V › AC 100...240 V without manual switch	› Output current 5 A › Output voltage DC 24 V › AC 120/230 V, 60/50 Hz switchable	› Only for CPU 317S › Output current 5.5 A extends the maximum total value at the back plane bus to 10 A	› Output current 10 A › Output voltage DC 24 V › AC 120/230 V, 60/50 Hz switchable
SPEED-Bus	-	-	-	-
Technical data power supply				
Input voltage (rated value)	AC 100...240 V	AC 120/230 V	DC 24 V	AC 120/230 V
Input voltage (permitted range)	AC 100...240 V	AC 90...132/180...264 V	DC 20.4...28.8 V	AC 90...132/180...264 V
Mains frequency (rated value)	50...60 Hz	50...60 Hz	-	50...60 Hz
Mains frequency (permitted range)	47...63 Hz	47...63 Hz	-	47...63 Hz
Input voltage (at 120 V)	0.58 A	2.2 A	-	4.1 A
Input voltage (at 230 V)	0.29 A	1.3 A	-	2.1 A
Inrush current (at 25 °C)	30 A	45 A	5 A	55 A
I^2t	1 A^2s	1.2 A^2s	0.5 A^2s	9 A^2s
Power consumption typ.	67 W	138 W	36 W	275 W
Output voltage (rated value)	24 V	24 V	5.2 V	24 V
Output current (rated value)	2.5 A	5 A	5.5 A	10 A
Power supply parallel switchable	-	-	-	-
Protect type	short circuits, overload, vacancy, over temperature (IP20)	short circuits (electr.) non-latching, overload, vacancy	short circuit (electr.), overload, over temperature (IP20)	short circuits (electr.) non-latching, overload, vacancy
Ripple of output voltage (max.), BW=20 MHz	150 mV	150 mV	150 mV	150 mV
Efficiency typ.	90 %	87 %	90 %	87 %
Power loss typ.	6 W	18 W	6 W	35 W
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	none	none	green LED	none
Group error display	none	none	red LED	none
Channel error display	none	none	none	none

Power supply | Power supply						
307-1BA00 307-1EA00 307-1FB70 307-1KA00						

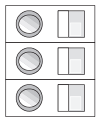
Order number	307-1BA00	307-1EA00	307-1FB70	307-1KA00
Housing				
Material	PPE	PPE	PPE / PA 6.6	PPE
Mounting	Rail System 300	Rail System 300	-	Rail System 300
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	120 mm x 125 mm x 120 mm
Weight	310 g	610 g	210 g	1110 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	-	-	-	-

Connections, Interfaces

Power supply | Power supply						
307-1BA00 307-1EA00 307-1FB70 307-1KA00						

307-1BA00

X2



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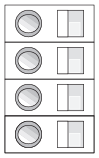

307-1EA00

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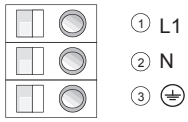

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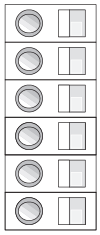

Power supply | Power supply						
307-1BA00 307-1EA00 307-1FB70 307-1KA00						

307-1FB70

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307-1KA00

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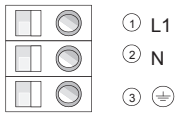

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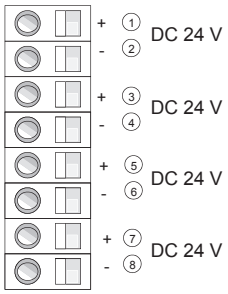
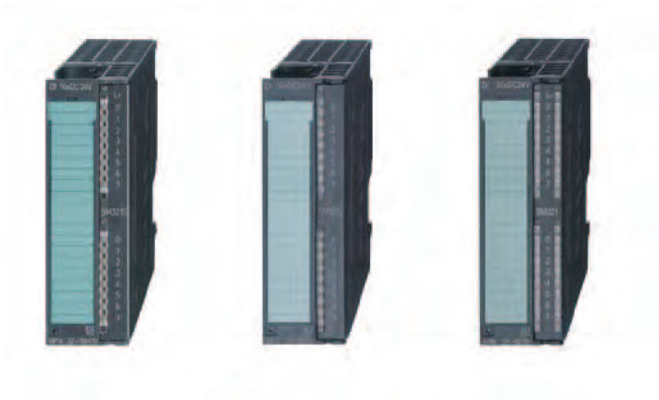


Signal modules digital



Structure and Function

Digital modules for the connection of sensors and actuators are the interface of the PLC to the process. Digital input modules acquire the binary control signals from the process level and transform them into interpretable signals for the control. Digital output modules convert the internal binary control signals into signals suitable for the process level.

Characteristics

- Large selection. Modules are available for all popular applications
- High-Speed DI-module for the SPEED-Bus (parameters 2.56 µs ... 40 ms)
- High-Speed DO-module for the SPEED-Bus (100 kHz)
- Compact design
- LED-status indicator
- Electrically isolated to the backplane bus
- Selectable connection method - screw terminals or cage clamps
- Label strips included and easily visible on the front
- 24 month warranty

Overview

Order no.	Name/Description	Page
Digital input modules		
321-1BH01	**SM 321 - Digital input** › 16 inputs	**430**
321-1BH70	**SM 321S - FAST Digital input - SPEED-Bus** › SPEED-Bus › 16 fast inputs › Parameterizable as alarm/ETS	**430**
321-1BL00	**SM 321 - Digital input** › 32 inputs	**430**
321-1FH00	**SM 321 - Digital input** › 16 inputs, in groups of 4 › AC 120/230 V	**430**
Digital output modules		
322-1BF01	**SM 322 - Digital output** › 8 outputs, in groups of 4 › Output current 2 A	**434**
322-1BH01	**SM 322 - Digital output** › 16 outputs, in groups of 8 › Output current 1 A	**434**
322-1BH41	**SM 322 - Digital output** › 16 outputs, in groups of 8 › DC 24 V › Output current 2 A	**434**
322-1BH60	**SM 322 - Digital output** › 16 outputs › 1 input (activation for outputs) › 16 switches (automatic, manual 0/1) › Output current 0.5 A	**434**
322-1BH70	**SM 322S - FAST Digital output - SPEED-Bus** › SPEED-Bus › 16 fast outputs › Output current 0.5 A	**438**
322-1BL00	**SM 322 - Digital output** › 32 outputs, in groups of 8 › DC 24 V › Output current 1 A	**438**
322-1HH00	**SM 322 - Digital output** › 16 relay outputs, in groups of 8 › AC 230 V/ DC 30 V › Contact rating per channel 5 A	**438**
322-5FF00	**SM 322 - Digital output** › 8 outputs, in groups of 1 › AC 120/230 V › Output current 2 A › Substitute value output (programmable)	**438**
Digital in/output modules		
323-1BH00	**SM 323 - Digital in-/output** › 16 channels (as inputs or outputs) › Diagnostic function › Output current 1 A	**442**
323-1BH01	**SM 323 - Digital in-/output** › 8 inputs/ 8 outputs › Output current 1 A	**442**
323-1BH70	**SM 323S - FAST Digital in-/output - SPEED-Bus** › SPEED-Bus › 16 fast inputs/outputs › Output current 0.5 A	**442**
323-1BL00	**SM 323 - Digital in-/output** › 16 inputs/ 16 outputs › Output current 1 A	**442**

Digital input modules

Signal modules digital | Digital input modules						
321-1BH01 321-1BH70 321-1BL00 321-1FH00						

Order number	321-1BH01	321-1BH70	321-1BL00	321-1FH00
Figure				
Type	SM 321	SM 321S - SPEED-Bus	SM 321	SM 321
General information				
Note	-	-	-	-
Features	› 16 inputs	› SPEED-Bus › 16 fast inputs › Parameterizable as alarm/ETS	› 32 inputs	› 16 inputs, in groups of 4 › AC 120/230 V
SPEED-Bus	-	✓	-	-
Current consumption/power loss				
Current consumption from backplane bus	25 mA	390 mA	35 mA	35 mA
Power loss	3.5 W	5 W	6.5 W	5 W
Technical data digital inputs				
Number of inputs	16	16	32	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	-	DC 20.4...28.8 V	-	AC 120/230 V
Current consumption from load voltage L+ (without load)	-	15 mA	-	-
Rated value	DC 20.4...28.8 V	DC 24 V	DC 20.4...28.8 V	AC 120/230 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	AC 0...40 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	AC 79...264 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	47...63 Hz
Input resistance	-	-	-	-
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	parameterizable 2.56µs - 40ms	3 ms	25 ms
Input delay of "1" to "0"	3 ms	parameterizable 2.56µs - 40ms	3 ms	25 ms
Number of simultaneously utilizable inputs horizontal configuration	16	16	32	16
Number of simultaneously utilizable inputs vertical configuration	16	16	32	16
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	-
Initial data size	2 Byte	2 Byte	4 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	yes	no	no
Process alarm	no	yes, parameterizable	no	no
Diagnostic interrupt	no	yes, parameterizable	no	no

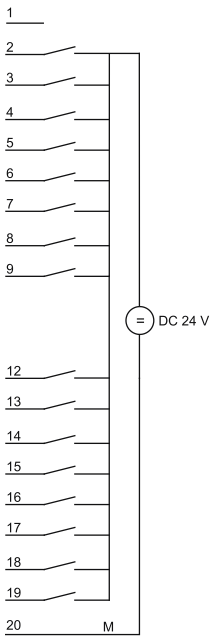
Signal modules digital | Digital input modules						
321-1BH01 321-1BH70 321-1BL00 321-1FH00						

Order number	321-1BH01	321-1BH70	321-1BL00	321-1FH00
Diagnostic functions	no	yes	no	no
Diagnostics information read-out	none	possible	none	none
Supply voltage display	none	green LED	none	none
Group error display	none	none	none	none
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	✓
Between channels of groups to	16	16	16	4
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 4000 V
Datasizes				
Input bytes	2	2 / 48	4	2
Output bytes	0	0	0	0
Parameter bytes	0	0 / 66	0	0
Diagnostic bytes	0	16	0	0
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	-	Rail System 300	Rail System 300
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	220 g	220 g	240 g	240 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

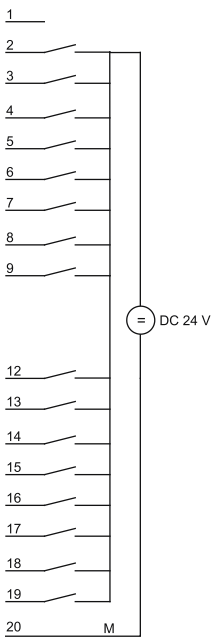
Connections, Interfaces

Signal modules digital | Digital input modules						
321-1BH01 321-1BH70 321-1BL00 321-1FH00						

321-1BH01

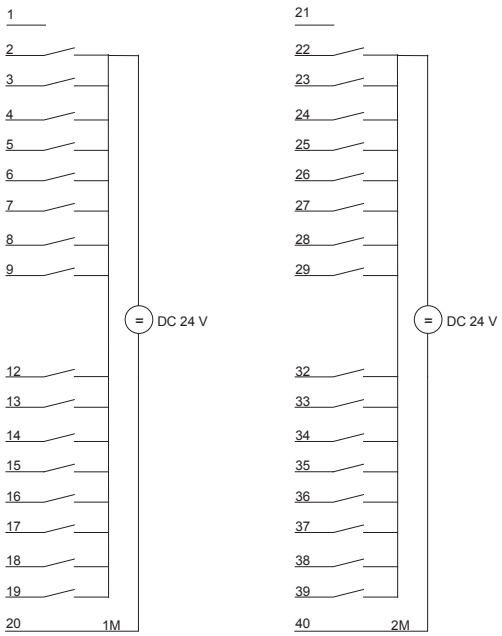


321-1BH70

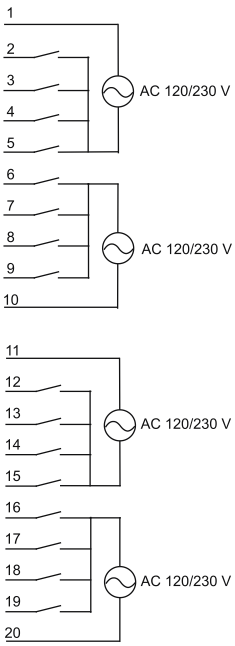


Signal modules digital | Digital input modules						
321-1BH01 321-1BH70 321-1BL00 321-1FH00						

321-1BL00



321-1FH00



Digital output modules

Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

Order number	322-1BF01	322-1BH01	322-1BH41	322-1BH60
Figure				
Type	SM 322	SM 322	SM 322	SM 322
General information				
Note	-	-	-	-
Features	› 8 outputs, in groups of 4 › Output current 2 A	› 16 outputs, in groups of 8 › Output current 1 A	› 16 outputs, in groups of 8 › DC 24 V › Output current 2 A	› 16 outputs › 1 input (activation for outputs) › 16 switches (automatic, manual 0/1) › Output current 0.5 A
SPEED-Bus	-	-	-	-
Current consumption/power loss				
Current consumption from backplane bus	65 mA	110 mA	110 mA	100 mA
Power loss	7.5 W	4 W	4 W	6 W
Technical data digital outputs				
Number of outputs	8	16	16	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Current consumption from load voltage L+ (without load)	68 mA	30 mA	30 mA	140 mA
Total current per group, horizontal configuration, 40°C	8 A	4 A	8 A	8 A
Total current per group, horizontal configuration, 60°C	8 A	4 A	8 A	8 A
Total current per group, vertical configuration	8 A	4 A	8 A	8 A
Output current at signal "1", rated value	2 A	1 A	2 A	0.5 A
Output delay of "0" to "1"	150 µs	150 µs	150 µs	max. 100 µs
Output delay of "1" to "0"	100 µs	100 µs	100 µs	max. 500 µs
Minimum load current	-	-	-	-
Lamp load	10 W	5 W	10 W	5 W
Parallel switching of outputs for redundant control of a load	possible (only outputs group)	possible (only outputs group)	possible (only outputs group)	not possible
Parallel switching of outputs for increased power	possible (only outputs group)	possible (only outputs group)	possible (only outputs group)	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	max. 10 Hz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	3 A	1.5 A	3 A	1 A

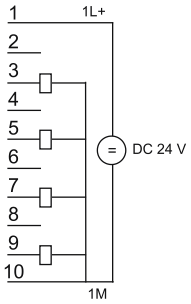
Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

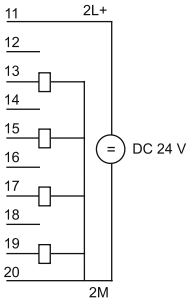
Order number	322-1BF01	322-1BH01	322-1BH41	322-1BH60
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	1 Byte	2 Byte	2 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	green LED per group	green LED per group	green LED per group	green LED per group
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	✓	✓	✓	-
Between channels of groups to	4	8	8	16
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	0	0	0	0
Output bytes	1	2	2	2
Parameter bytes	0	0	0	0
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	Rail System 300	Rail System 300	Rail System 300
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	240 g	230 g	230 g	230 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

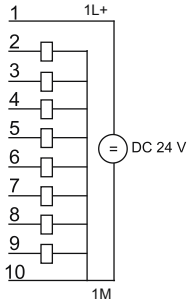
Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

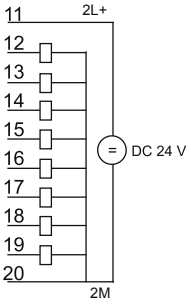
322-1BF01





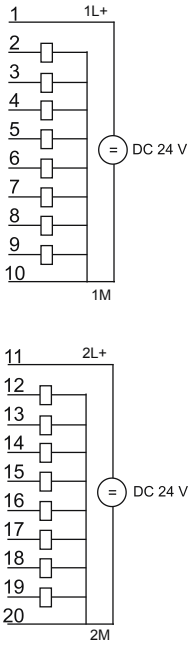
322-1BH01



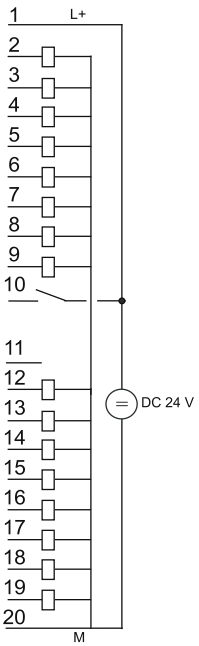


Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

322-1BH41



322-1BH60



Digital output modules

Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

Order number	322-1BH70	322-1BL00	322-1HH00	322-5FF00
Figure				
Type	SM 322S - SPEED-Bus	SM 322	SM 322	SM 322
General information				
Note	-	-	-	-
Features	› SPEED-Bus › 16 fast outputs › Output current 0.5 A	› 32 outputs, in groups of 8 › DC 24 V › Output current 1 A	› 16 relay outputs, in groups of 8 › AC 230 V/ DC 30 V › Contact rating per channel 5 A	› 8 outputs, in groups of 1 › AC 120/230 V › Output current 2 A › Substitute value output (programmable)
SPEED-Bus	✓	-	-	-
Current consumption/power loss				
Current consumption from backplane bus	390 mA	200 mA	80 mA	100 mA
Power loss	5 W	6 W	4 W	8.6 W
Technical data digital outputs				
Number of outputs	16	32	16	8
Cable length, shielded	1000 m	1000 m	-	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 30 V/ AC 230 V	AC 120/230 V
Current consumption from load voltage L+ (without load)	30 mA	30 mA	-	2 mA
Total current per group, horizontal configuration, 40°C	4 A	2.5 A	-	8 A
Total current per group, horizontal configuration, 60°C	4 A	2.5 A	-	4 A
Total current per group, vertical configuration	4 A	2.5 A	-	4 A
Output current at signal "1", rated value	0.5 A	1 A	5 A	2 A
Output delay of "0" to "1"	6.12 µs	150 µs	-	-
Output delay of "1" to "0"	6.12 µs	100 µs	-	-
Minimum load current	-	-	-	-
Lamp load	5 W	6 W	6 W	50 W
Parallel switching of outputs for redundant control of a load	not possible	possible (only outputs group)	possible (only outputs group)	possible
Parallel switching of outputs for increased power	not possible	not possible	not possible	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 100 kHz	max. 1000 Hz	max. 10 Hz	max. 10 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 1 Hz	max. 1 Hz	max. 1 Hz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	-	-
Short-circuit protection of output	yes, electronic	yes, electronic	-	Fuse 3.15 A /250 V, quick response

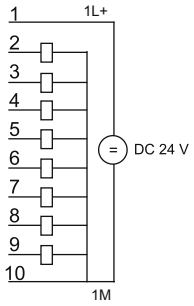
Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

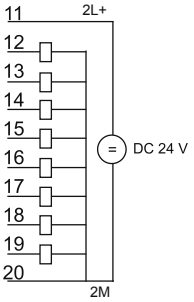
Order number	322-1BH70	322-1BL00	322-1HH00	322-5FF00
Trigger level	1 A	1.5 A	-	3.15 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	5 A	-
Output data size	2 Byte	4 Byte	2 Byte	1 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	green LED per group	green LED per group	none	none
Group error display	red SF LED	red SF LED	none	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	✓	✓	✓	✓
Between channels of groups to	8	8	8	1
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	AC 1500 V	AC 1500 V
Datasizes				
Input bytes	0	0	0	0
Output bytes	2	4	2	1
Parameter bytes	0	0	0	21
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	-	Rail System 300	Rail System 300	Rail System 300
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	250 g	260 g	290 g	330 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

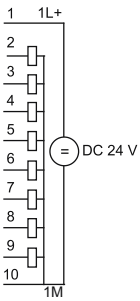
Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

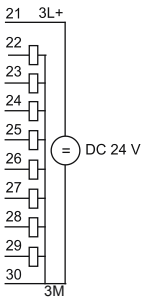
322-1BH70

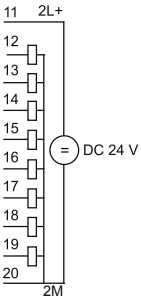


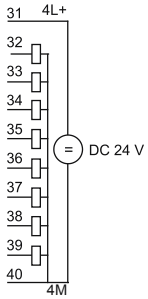


322-1BL00



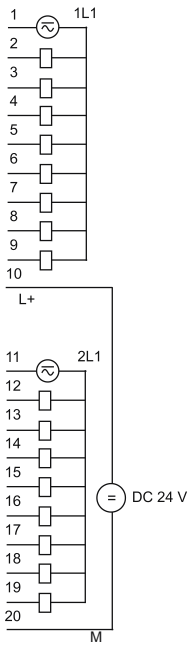




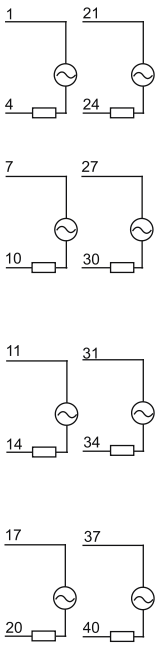


Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

322-1HH00



322-5FF00



Digital in/output modules

Signal modules digital | Digital in/output modules						
323-1BH00 323-1BH01 323-1BH70 323-1BL00						

Order number	323-1BH00	323-1BH01	323-1BH70	323-1BL00
Figure				
Type	SM 323	SM 323	SM 323S - SPEED-Bus	SM 323
General information				
Note	-	-	-	-
Features	› 16 channels (as inputs or outputs) › Diagnostic function › Output current 1 A	› 8 inputs/ 8 outputs › Output current 1 A	› SPEED-Bus › 16 fast inputs/outputs › Output current 0.5 A	› 16 inputs/ 16 outputs › Output current 1 A
SPEED-Bus	-	-	✓	-
Current consumption/power loss				
Current consumption from backplane bus	130 mA	70 mA	390 mA	130 mA
Power loss	4 W	4 W	5 W	5.8 W
Technical data digital inputs				
Number of inputs	16	8	16	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Current consumption from load voltage L+ (without load)	30 mA	15 mA	-	30 mA
Rated value	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	3 ms	parameterizable 2.56µs - 40ms	3 ms
Input delay of "1" to "0"	3 ms	3 ms	parameterizable 2.56µs - 40ms	3 ms
Number of simultaneously utilizable inputs horizontal configuration	16	8	16	16
Number of simultaneously utilizable inputs vertical configuration	16	8	16	16
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1
Initial data size	2 Byte	1 Byte	2 Byte	2 Byte
Technical data digital outputs				
Number of outputs	16	8	16	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V

Signal modules digital | Digital in/output modules						
323-1BH00 323-1BH01 323-1BH70 323-1BL00						

Order number	323-1BH00	323-1BH01	323-1BH70	323-1BL00
Reverse polarity protection of rated load voltage	✓	✓	✓	✓
Current consumption from load voltage L+ (without load)	30 mA	15 mA	50 mA	30 mA
Output current at signal "1", rated value	1 A	1 A	0.5 A	1 A
Output delay of "0" to "1"	150 µs	150 µs	6.12 µs	150 µs
Output delay of "1" to "0"	100 µs	100 µs	6.12 µs	100 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
Parallel switching of outputs for redundant control of a load	possible (only outputs group)	possible (only outputs group)	not possible	possible (only outputs group)
Parallel switching of outputs for increased power	not possible	not possible	not possible	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 100 kHz	max. 1000 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	max. 10 Hz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1.5 A	1.5 A	1 A	1.5 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	2 Byte	1 Byte	2 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	green LED per group	green LED per group	green LED per group	green LED per group
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	✓	✓	✓	✓
Between channels of groups to	8	8	8	8
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	2	1	2 / 48	2
Output bytes	2	1	2	2
Parameter bytes	0	0	0 / 66	0
Diagnostic bytes	0	0	16	0

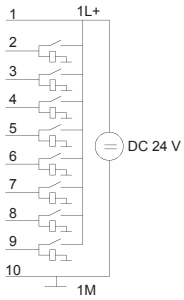
Signal modules digital | Digital in/output modules						
323-1BH00 323-1BH01 323-1BH70 323-1BL00						

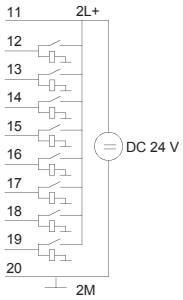
Order number	323-1BH00	323-1BH01	323-1BH70	323-1BL00
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	Rail System 300	-	Rail System 300
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	230 g	240 g	240 g	260 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

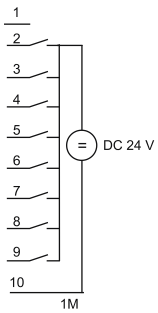
Signal modules digital | Digital in/output modules						
323-1BH00 323-1BH01 323-1BH70 323-1BL00						

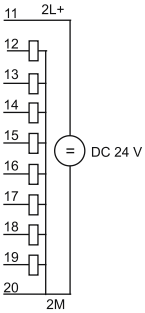
323-1BH00





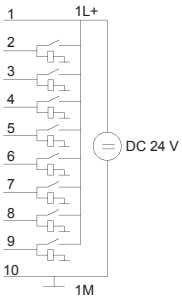
323-1BH01

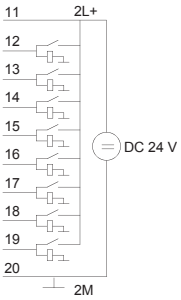




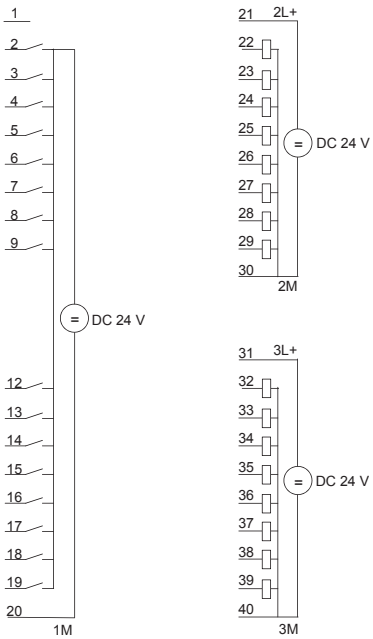
Signal modules digital | Digital in/output modules						
323-1BH00 323-1BH01 323-1BH70 323-1BL00						

323-1BH70





323-1BL00



Signal modules analog

Structure and Function

Analog modules for the connection of sensors and actuators are the interface of the PLC to the process. Analog input modules acquire the analog control signals from the process level and transform them into interpretable signals for the control. Analog output modules convert the internal control signals into signals suitable for the process level.

Characteristics

- Large selection. Modules are available for all popular applications
- High speed AI-module for the SPEED-Bus (parameterization capable with integrated cache memory)
- Compact design
- LED-status indicator
- Electrically isolated to the backplane bus
- Selectable connection method - screw terminals or cage clamps
- Label strips included and easily visible on the front
- 24 month warranty

Overview

Order no.	Name/Description	Page
Analog input modules		
331-1KF01	**SM 331 - Analog input** › 8 inputs 13 bit › Voltage, current › Resistance › Resistance thermometer	**450**
331-7KF01	**SM 331 - Analog input** › 8 inputs, in 4 groups › Voltage, current › Resistance › Resitance thermometer › Thermocouples	**450**
331-7KB01	**SM 331 - Analog input** › 2 inputs, in 1 group › Voltage, current › Resistance › Resistance thermometer › Thermocouples	**450**
331-7AF70	**SM 331S - Analog input FAST - SPEED-Bus** › 8 inputs › Current ±20 mA › Oscilloscope-/FIFO function › Interrupt parameterizable	**450**
331-7BF70	**SM 331S - Analog input FAST - SPEED-Bus** › 8 inputs › Voltage ±10 V › Oscilloscope-/FIFO-Function › Interrupt parameterizable	**455**
Analog output modules		
332-5HB01	**SM 332 - Analog output** › 2 outputs › Configurable › Voltage, current, deactivated	**459**
332-5HD01	**SM 332 - Analog output** › 4 outputs › Configurable › Voltage, current, deactivated	**459**
Analog in/output modules		
334-0KE00	**SM 334 - Analog in-/output** › 4 inputs, 2 outputs › Configurable › Resistance › Voltage 0...10 V, deactivated	**462**

Analog input modules

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

Order number	331-1KF01	331-7KF01	331-7KB01	331-7AF70
Figure				
Type	SM 331	SM 331	SM 331	SM 331S - SPEED-Bus
General information				
Note	-	-	-	-
Features	› 8 inputs 13 bit › Voltage, current › Resistance › Resistance thermo-meter	› 8 inputs, in 4 groups › Voltage, current › Resistance › Resitance thermo-meter › Thermocouples	› 2 inputs, in 1 group › Voltage, current › Resistance › Resistance thermo-meter › Thermocouples	› 8 inputs › Current ±20 mA › Oscilloscope-/FIFO function › Interrupt paramete-rizable
SPEED-Bus	-	-	-	✓
Current consumption/power loss				
Current consumption from backplane bus	255 mA	95 mA	95 mA	530 mA
Power loss	1.3 W	3 W	3 W	4 W
Technical data analog inputs				
Number of inputs	8	8	2	8
Cable length, shielded	50 m	50 m	50 m	50 m
Rated load voltage	-	DC 24 V	DC 24 V	DC 24 V
Current consumption from load voltage L+ (without load)	-	100 mA	100 mA	62 mA
Voltage inputs	✓	✓	✓	-
Min. input resistance (voltage range)	100 kΩ	100 kΩ	100 kΩ	-
Input voltage ranges	-50 mV ... +50 mV -500 mV ... +500 mV -1 V ... +1 V -5 V ... +5 V 0 V ... +10 V -10 V ... +10 V +1 V ... +5 V	-80 mV ... +80 mV -250 mV ... +250 mV -500 mV ... +500 mV -1 V ... +1 V -2.5 V ... +2.5 V -5 V ... +5 V +1 V ... +5 V -10 V ... +10 V	-80 mV ... +80 mV -250 mV ... +250 mV -500 mV ... +500 mV -1 V ... +1 V -2.5 V ... +2.5 V -5 V ... +5 V +1 V ... +5 V -10 V ... +10 V	-
Operational limit of voltage ranges	+/-0.5% ... +/-0.6%	+/-0.6% ... +/-1.0%	+/-0.6% ... +/-1.0%	-
Basic error limit voltage ranges with SFU	+/-0.3% ... +/-0.4%	+/-0.4% ... +/-0.7%	+/-0.4% ... +/-0.7%	-
Current inputs	✓	✓	✓	✓
Min. input resistance (current range)	100 Ω	85 Ω	85 Ω	100 Ω
Input current ranges	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-3.2 mA ... +3.2 mA -10 mA ... +10 mA -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-3.2 mA ... +3.2 mA -10 mA ... +10 mA -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-20 mA ... +20 mA
Operational limit of current ranges	+/-0.5%	+/-0.7%	+/-0.7%	+/-0.6%
Basic error limit current ranges with SFU	+/-0.3%	+/-0.5%	+/-0.5%	+/-0.4%
Resistance inputs	✓	✓	✓	-
Resistance ranges	0 ... 600 Ohm 0 ... 6000 Ohm	0 ... 150 Ohm 0 ... 300 Ohm 0 ... 600 Ohm	0 ... 150 Ohm 0 ... 300 Ohm 0 ... 600 Ohm	-
Operational limit of resistor ranges	+/-0.5%	+/-0.7%	+/-0.7%	-
Basic error limit	+/-0.3%	+/-0.5%	+/-0.5%	-

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

Order number	331-1KF01	331-7KF01	331-7KB01	331-7AF70
Resistance thermometer inputs	✓	✓	✓	-
Resistance thermometer ranges	Pt100 Ni100 Ni1000	Pt100 Ni100	Pt100 Ni100	-
Operational limit of resistance thermometer ranges	+/-1K ... +/-1.2K	+/-0.7% ... +/-0.8%	+/-0.7% ... +/-0.8%	-
Basic error limit thermoresistor ranges	+/-0.8K	+/-0.5% ... +/-0.6%	+/-0.5% ... +/-0.6%	-
Thermocouple inputs	-	✓	✓	-
Thermocouple ranges	-	type J type R type K type N type L type E type T type S type B type C	type J type R type K type N type L type E type T type S type B type C	-
Operational limit of thermocouple ranges	-	+/-1.3% ... +/-2.0%	+/-1.3% ... +/-2.0%	-
Basic error limit thermoelement ranges	-	+/-0.7% ... +/-1.0%	+/-0.7% ... +/-1.0%	-
Programmable temperature compensation	-	✓	✓	-
External temperature compensation	-	✓	✓	-
Internal temperature compensation	-	✓	✓	-
Resolution in bit	13	14	14	16
Measurement principle	Sigma-Delta	Sigma-Delta	Sigma-Delta	successive approximation
Basic conversion time	61 ms/51 ms / channel	4 ms/18 ms/22 ms/68 ms / channel	4 ms/18 ms/22 ms/68 ms / channel	25 µs all channels
Noise suppression for frequency	50 Hz/60 Hz	1300 Hz/190 Hz/150 Hz/50 Hz + 60 Hz	1300 Hz/190 Hz/150 Hz/50 Hz + 60 Hz	-
Initial data size	16 Byte	16 Byte	4 Byte	16 Byte
Status information, alarms, diagnostics				
Status display	none	none	none	none
Interrupts	no	yes	yes	yes
Process alarm	no	yes, parameterizable	yes, parameterizable	yes, parameterizable
Diagnostic interrupt	no	yes, parameterizable	yes, parameterizable	yes, parameterizable
Diagnostic functions	no	yes	yes	yes
Diagnostics information read-out	none	possible	possible	possible
Supply voltage display	none	none	none	none
Group error display	none	red SF LED	red SF LED	red SF LED
Channel error display	none	red LED per channel	red LED per channel	none
Isolation				
Between channels	-	-	-	✓
Between channels of groups to	-	-	-	1
Between channels and backplane bus	✓	✓	✓	✓
Between channels and power supply	-	✓	✓	✓
Max. potential difference between circuits	-	-	-	-
Max. potential difference between inputs (Ucm)	DC 2 V	DC 3 V	DC 3 V	DC 30 V
Max. potential difference between Mana and Mintern (Uiso)	-	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	-

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

Order number	331-1KF01	331-7KF01	331-7KB01	331-7AF70
Max. potential difference between inputs and Mana (Ucm)	-	DC 3 V	DC 3 V	-
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V	-	-	DC 75 V/ AC 60 V
Max. potential difference between Mintern and outputs	-	-	-	-
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	16	16	4	16
Output bytes	0	0	0	0
Parameter bytes	21	21	21	41
Diagnostic bytes	0	16	16	16
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	Rail System 300	Rail System 300	-
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	260 g	240 g	220 g	235 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

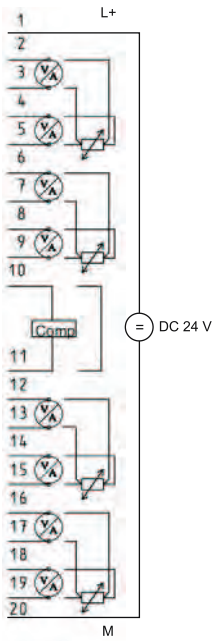
Connections, Interfaces

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

331-1KF01

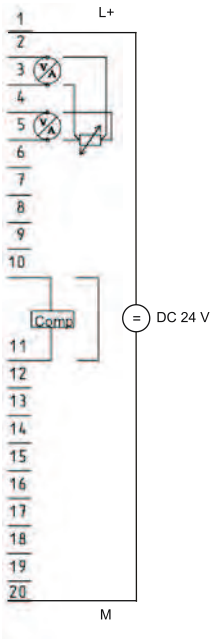
	1	U+		21	U+
	2	I+		22	I+
CH 0	3	S-	CH 4	23	S-
	4	M+		24	M+
	5	M-		25	M-
	6	U+		26	U+
	7	I+		27	I+
CH 1	8	S-	CH 5	28	S-
	9	M+		29	M+
	10	M-		30	M-
	11	U+		31	U+
	12	I+		32	I+
CH 2	13	S-	CH 6	33	S-
	14	M+		34	M+
	15	M-		35	M-
	16	U+		36	U+
	17	I+		37	I+
CH 3	18	S-	CH 7	38	S-
	19	M+		39	M+
	20	M-		40	M-

331-7KF01

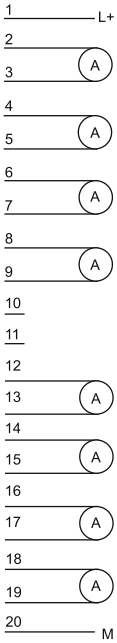


Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

331-7KB01



331-7AF70



Analog input modules

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

Order number	331-7BF70			
Figure				
Type	SM 331S - SPEED-Bus			
General information				
Note	-			
Features	› 8 inputs › Voltage ±10 V › Oscilloscope-/FIFO-Function › Interrupt parameterizable			
SPEED-Bus	✓			
Current consumption/power loss				
Current consumption from backplane bus	530 mA			
Power loss	4 W			
Technical data analog inputs				
Number of inputs	8			
Cable length, shielded	50 m			
Rated load voltage	DC 24 V			
Current consumption from load voltage L+ (without load)	62 mA			
Voltage inputs	✓			
Min. input resistance (voltage range)	120 kΩ			
Input voltage ranges	-10 V ... +10 V			
Operational limit of voltage ranges	+/-0.6%			
Basic error limit voltage ranges with SFU	+/-0.4%			
Current inputs	-			
Min. input resistance (current range)	-			
Input current ranges	-			
Operational limit of current ranges	-			
Basic error limit current ranges with SFU	-			
Resistance inputs	-			
Resistance ranges	-			
Operational limit of resistor ranges	-			
Basic error limit	-			
Resistance thermometer inputs	-			
Resistance thermometer ranges	-			
Operational limit of resistance thermometer ranges	-			
Basic error limit thermoresistor ranges	-			
Thermocouple inputs	-			
Thermocouple ranges	-			
Operational limit of thermocouple ranges	-			
Basic error limit thermoelement ranges	-			

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

Order number	331-7BF70			
Programmable temperature compensation	-			
External temperature compensation	-			
Internal temperature compensation	-			
Resolution in bit	16			
Measurement principle	successive approxi-mation			
Basic conversion time	25 µs all channels			
Noise suppression for frequency	-			
Initial data size	16 Byte			
Status information, alarms, diagnostics				
Status display	none			
Interrupts	yes			
Process alarm	yes, parameterizable			
Diagnostic interrupt	yes, parameterizable			
Diagnostic functions	yes			
Diagnostics information read-out	possible			
Supply voltage display	none			
Group error display	red SF LED			
Channel error display	none			
Isolation				
Between channels	✓			
Between channels of groups to	1			
Between channels and backplane bus	✓			
Between channels and power supply	✓			
Max. potential difference between circuits	-			
Max. potential difference between inputs (Ucm)	DC 30 V			
Max. potential difference between Mana and Mintern (Uiso)	-			
Max. potential difference between inputs and Mana (Ucm)	-			
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V			
Max. potential difference between Mintern and outputs	-			
Insulation tested with	DC 500 V			
Datasizes				
Input bytes	16			
Output bytes	0			
Parameter bytes	41			
Diagnostic bytes	16			
Housing				
Material	PPE			
Mounting	-			
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm			
Weight	235 g			

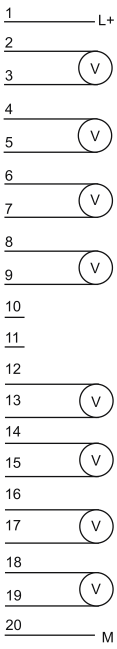
Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

Order number	331-7BF70			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

331-7BF70



Analog output modules

Signal modules analog | Analog output modules						
332-5HB01 332-5HD01						

Order number	332-5HB01	332-5HD01		
Figure				
Type	SM 332	SM 332		
General information				
Note	-	-		
Features	› 2 outputs › Configurable › Voltage, current, deactivated	› 4 outputs › Configurable › Voltage, current, deactivated		
SPEED-Bus	-	-		
Current consumption/power loss				
Current consumption from backplane bus	100 mA	125 mA		
Power loss	2.5 W	3.5 W		
Technical data analog outputs				
Number of outputs	2	4		
Cable length, shielded	-	-		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	-	-		
Current consumption from load voltage L+ (without load)	70 mA	115 mA		
Voltage output short-circuit protection	✓	✓		
Voltage outputs	✓	✓		
Min. load resistance (voltage range)	1 kΩ	1 kΩ		
Max. capacitive load (current range)	1 µF	1 µF		
Output voltage ranges	-10 V ... +10 V 0 V ... +10 V +1 V ... +5 V	-10 V ... +10 V 0 V ... +10 V +1 V ... +5 V		
Operational limit of voltage ranges	+/-0.2% ... +/-0.8%	+/-0.2% ... +/-0.8%		
Basic error limit voltage ranges with SFU	+/-0.1% ... +/-0.5%	+/-0.1% ... +/-0.5%		
Current outputs	✓	✓		
Max. in load resistance (current range)	500 Ω	500 Ω		
Max. inductive load (current range)	10 mH	10 mH		
Output current ranges	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA		
Operational limit of current ranges	+/-0.3% ... +/-0.8%	+/-0.3% ... +/-0.8%		
Basic error limit current ranges with SFU	+/-0.2% ... +/-0.5%	+/-0.2% ... +/-0.5%		
Settling time for ohmic load	0.2 ms	0.2 ms		
Settling time for capacitive load	1 ms	1 ms		
Settling time for inductive load	1 ms	1 ms		
Resolution in bit	13	13		
Conversion time	0.5 ms all channels	1 ms all channels		
Substitute value can be applied	yes	yes		
Output data size	4 Byte	8 Byte		

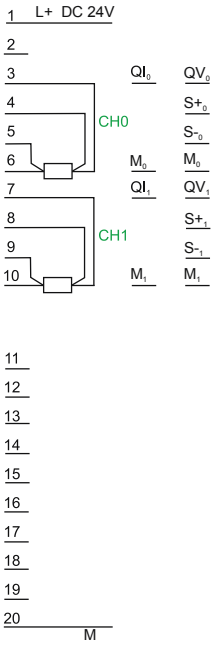
Signal modules analog | Analog output modules						
332-5HB01 332-5HD01						

Order number	332-5HB01	332-5HD01		
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel		
Interrupts	yes	yes		
Process alarm	no	no		
Diagnostic interrupt	yes, parameterizable	yes, parameterizable		
Diagnostic functions	yes	yes		
Diagnostics information read-out	possible	possible		
Supply voltage display	none	none		
Group error display	red SF LED	red SF LED		
Channel error display	red LED per channel	red LED per channel		
Isolation				
Between channels	-	-		
Between channels of groups to	-	-		
Between channels and backplane bus	✓	✓		
Between channels and power supply	✓	✓		
Max. potential difference between circuits	-	-		
Max. potential difference between inputs (Ucm)	-	-		
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V		
Max. potential difference between inputs and Mana (Ucm)	-	-		
Max. potential difference between inputs and Mintern (Uiso)	-	-		
Max. potential difference between Mintern and outputs	-	-		
Insulation tested with	DC 500 V	DC 500 V		
Datasizes				
Input bytes	0	0		
Output bytes	4	8		
Parameter bytes	21	21		
Diagnostic bytes	16	16		
Housing				
Material	PPE	PPE		
Mounting	Rail System 300	Rail System 300		
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm		
Weight	230 g	230 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

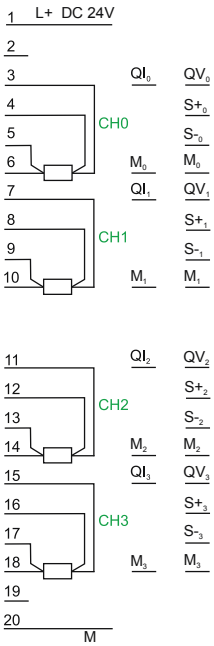
Connections, Interfaces

Signal modules analog | Analog output modules						
332-5HB01 332-5HD01						

332-5HB01



332-5HD01



Analog in/output modules

Signal modules analog | Analog in/output modules						
334-0KE00						

Order number	334-0KE00			
Figure				
Type	SM 334			
General information				
Note	-			
Features	› 4 inputs, 2 outputs › Configurable › Resistance › Voltage 0...10 V, deactivated			
SPEED-Bus	-			
Current consumption/power loss				
Current consumption from backplane bus	95 mA			
Power loss	2 W			
Technical data analog inputs				
Number of inputs	4			
Cable length, shielded	100 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	-			
Current consumption from load voltage L+ (without load)	40 mA			
Voltage inputs	✓			
Min. input resistance (voltage range)	100 kΩ			
Input voltage ranges	0 V ... +10 V			
Operational limit of voltage ranges	+/-0.7%			
Basic error limit voltage ranges with SFU	+/-0.5%			
Current inputs	-			
Min. input resistance (current range)	-			
Input current ranges	-			
Operational limit of current ranges	-			
Basic error limit current ranges with SFU	-			
Resistance inputs	✓			
Resistance ranges	10000 Ohm			
Operational limit of resistor ranges	+/-3.5%			
Basic error limit	+/-2.8%			
Resistance thermometer inputs	✓			
Resistance thermometer ranges	Pt100			
Operational limit of resistance thermometer ranges	+/-0.1%			
Basic error limit thermoresistor ranges	+/-0.8%			
Thermocouple inputs	-			
Thermocouple ranges	-			
Operational limit of thermocouple ranges	-			

Signal modules analog | Analog in/output modules						
334-0KE00						

Order number	334-0KE00			
Basic error limit thermoelement ranges	-			
Programmable temperature compensation	-			
External temperature compensation	-			
Internal temperature compensation	-			
Resolution in bit	12			
Measurement principle	Sigma-Delta			
Basic conversion time	350 ms			
Noise suppression for frequency	50 Hz/60 Hz			
Initial data size	8 Byte			
Technical data analog outputs				
Number of outputs	2			
Cable length, shielded	100 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	40 mA			
Voltage output short-circuit protection	✓			
Voltage outputs	✓			
Min. load resistance (voltage range)	1 kΩ			
Max. capacitive load (current range)	1 µF			
Output voltage ranges	0 V ... +10 V			
Operational limit of voltage ranges	+/-1%			
Basic error limit voltage ranges with SFU	+/-0.8%			
Current outputs	-			
Max. in load resistance (current range)	-			
Max. inductive load (current range)	-			
Output current ranges	-			
Operational limit of current ranges	-			
Basic error limit current ranges with SFU	-			
Settling time for ohmic load	0.8 ms			
Settling time for capacitive load	0.8 ms			
Settling time for inductive load	0.3 ms			
Resolution in bit	12			
Conversion time	0.5 ms per channel			
Substitute value can be applied	-			
Output data size	4 Byte			
Status information, alarms, diagnostics				
Status display	none			
Interrupts	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	none			
Supply voltage display	none			
Group error display	none			

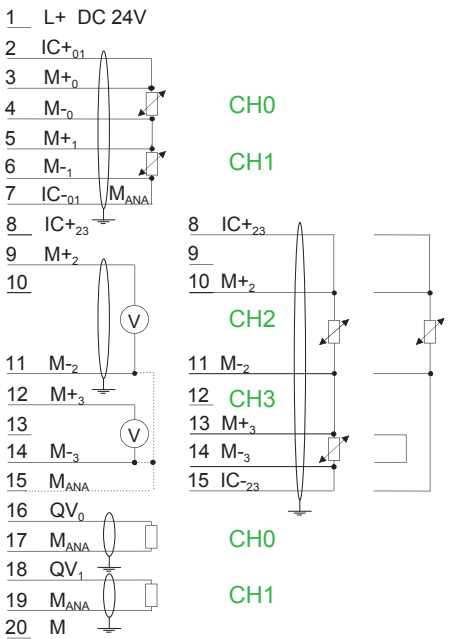
Signal modules analog | Analog in/output modules						
334-0KE00						

Order number	334-0KE00			
Channel error display	none			
Isolation				
Between channels	-			
Between channels of groups to	-			
Between channels and backplane bus	✓			
Between channels and power supply	✓			
Max. potential difference between circuits	-			
Max. potential difference between inputs (Ucm)	DC 1 V			
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V			
Max. potential difference between inputs and Mana (Ucm)	DC 1 V			
Max. potential difference between inputs and Mintern (Uiso)	-			
Max. potential difference between Mintern and outputs	-			
Insulation tested with	DC 500 V			
Datasizes				
Input bytes	8			
Output bytes	4			
Parameter bytes	21			
Diagnostic bytes	0			
Housing				
Material	PPE			
Mounting	Rail System 300			
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm			
Weight	210 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Signal modules analog | Analog in/output modules						
334-0KE00						

334-0KE00



Communication processors

Structure and Function

Communication processors for the connection of different target and source systems, such as via Ethernet to higher-level MES and ERP systems or serially to underlying scanners, printers and other peripherals.

Characteristics

- High performance
- Simple parameterization
- Support for common protocols
- Compact design
- LED-status indicator
- Electrically isolated to the backplane bus
- 24 month warranty

Overview

Order no.	Name/Description	Page
RS232/422/485 and other CPs		
341-1AH01	**CP 341 - Communication processor** › RS232, isolated › Function compatibility to Siemens CP 341 › Parameterization via the Siemens parameterization package › Data transfer rate up to 76.8 kbit/s › Power supply via backplane bus	**468**
341-1CH01	**CP 341 - Communication processor** › RS422/485, isolated › Function compatibility to Siemens CP 341 › Parameterization via the Siemens parameterization package › Data transfer rate up to 76.8 kbit/s › Power supply via backplane bus	**468**
341-2CH71	**CP 341S - Communication processor - SPEED-Bus** › 2x RS422/485, isolated › SPEED-Bus › Data transfer rate up to 115.2 kbit/s › Integrated diagnostics buffer	**468**
Fieldbus master modules		
342-1CA70	**CP 342S CAN - CANopen master - SPEED-Bus** › CANopen master, SPEED-Bus › 125 CAN slaves connectable › 40 Transmit PDOs, 40 Receive PDOs › 1 SDO (Server), 127 SDO (Client) › Project engineering: VIPA WinCoCT	**472**
342-1DA70	**CP 342S DP - PROFIBUS-DP master - SPEED-Bus** › PROFIBUS-DP master (Class 1), SPEED-Bus › RS485 › 124 DP slaves connectable › Project engineering: Siemens SIMATIC Manager › Diagnostic facilities	**472**
342-1IA70	**CP 342S IBS - INTERBUS master - SPEED-Bus** › INTERBUS master, SPEED-Bus › RS422 › Diagnostics via LEDs, RS232, Mini-DIN, Dual Port Master › Up to 512 slaves connectable	**472**
342-2IA71	**CP 342S IBS - INTERBUS master - SPEED-Bus** › Dual INTERBUS master, SPEED-Bus › 2x RS422 › Diagnostics via LEDs, diagnostics device (2x RJ45), Dual Port Master › Up to 512 slaves connectable	**472**
Actor/sensor interfaces		
343-2AH10	**CP 343-2P ASI - AS-i master** › Up to 62 slaves connectable › Corresponding to AS-i specification 3.0 (master profile M3) › Support of analog slaves concerning profile 7.3 resp. 7.4 › Automatic address programming possible (address 0)	**476**
Ethernet-CPs		
343-1EX71	**CP 343S TCP/IP - Ethernet-CP 343 - SPEED-Bus** › Ethernet CP 343S-NET, SPEED-Bus › RJ45 › 16 connections via Siemens NetPro › 64 connections via user program › 32 PG/OP connections	**479**

RS232/422/485 and other CPs

Communication processors | RS232/422/485 and other CPs						
341-1AH01 341-1CH01 341-2CH71						

Order number	341-1AH01	341-1CH01	341-2CH71	
Figure				
Type	CP 341	CP 341	CP 341	
General information				
Note	-	-	-	
Features	› RS232, isolated › Function compatibility to Siemens CP 341 › Parameterization via the Siemens parameterization package › Data transfer rate up to 76.8 kbit/s › Power supply via backplane bus	› RS422/485, isolated › Function compatibility to Siemens CP 341 › Parameterization via the Siemens parameterization package › Data transfer rate up to 76.8 kbit/s › Power supply via backplane bus	› 2x RS422/485, isolated › SPEED-Bus › Data transfer rate up to 115.2 kbit/s › Integrated diagnostics buffer	
SPEED-Bus	-	-	✓	
Current consumption/power loss				
Current consumption from backplane bus	160 mA	160 mA	750 mA	
Power loss	0.8 W	0.8 W	3.75 W	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	no	no	no	
Process alarm	no	no	no	
Diagnostic interrupt	yes, parameterizable	yes, parameterizable	no	
Diagnostic functions	no	no	yes, parameterizable	
Diagnostics information read-out	possible	possible	possible	
Supply voltage display	yes	yes	none	
Group error display	red SF LED	red SF LED	yes	
Channel error display	none	none	red LED per channel	
Functionality Sub-D interfaces				
Type	X2	X2	X2	
Type of interface	RS232	RS422/485	RS422/485	
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	✓	✓	✓	
MPI	-	-	-	
MP²I (MPI/RS232)	-	-	-	
DP master	-	-	-	
DP slave	-	-	-	
Point-to-point interface	✓	✓	✓	
Type	-	-	X3	
Type of interface	-	-	RS422/485	
Connector	-	-	Sub-D, 9-pin, female	
Electrically isolated	-	-	✓	
MPI	-	-	-	

Communication processors | RS232/422/485 and other CPs						
341-1AH01 341-1CH01 341-2CH71						

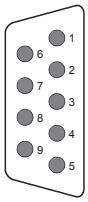
Order number	341-1AH01	341-1CH01	341-2CH71	
MP²I (MPI/RS232)	-	-	-	
DP master	-	-	-	
DP slave	-	-	-	
Point-to-point interface	-	-	✓	
CAN	-	-	-	
Point-to-point communication				
PtP communication	✓	✓	✓	
Interface isolated	✓	✓	✓	
RS232 interface	✓	-	-	
RS422 interface	-	✓	✓	
RS485 interface	-	✓	✓	
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Transmission speed, min.	-	150 bit/s	150 bit/s	
Transmission speed, max.	76.8 kbit/s	76.8 kbit/s	115.2 kbit/s	
Cable length, max.	15 m	1200 m	1200 m	
Point-to-point protocol				
ASCII protocol	✓	✓	✓	
STX/ETX protocol	✓	✓	✓	
3964(R) protocol	✓	✓	-	
RK512 protocol	-	-	-	
USS master protocol	-	-	-	
Modbus master protocol	✓	✓	-	
Modbus slave protocol	✓	✓	-	
Special protocols	-	-	-	
Datasizes				
Input bytes	16	16	32	
Output bytes	16	16	32	
Parameter bytes	(16 + 106)	(16 + 106)	75	
Diagnostic bytes	4	4	0	
Housing				
Material	PPE	PPE	PPE	
Mounting	Rail System 300	Rail System 300	-	
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	
Weight	170 g	170 g	185 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	yes	yes	yes	

Connections, Interfaces

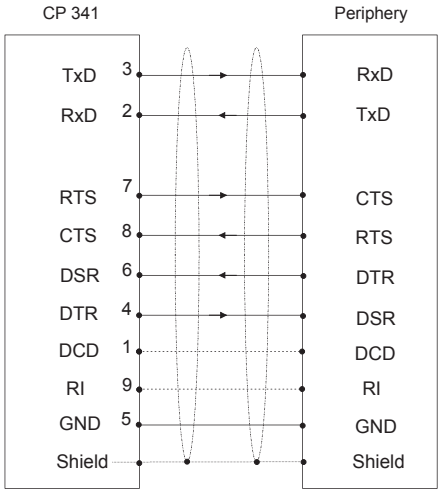
Communication processors | RS232/422/485 and other CPs						
341-1AH01 341-1CH01 341-2CH71						

341-1AH01

RS232
X2

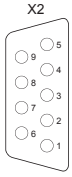


① DCD
② RxD
③ TxD
④ DTR
⑤ GND
⑥ DSR
⑦ RTS
⑧ CTS
⑨ RI

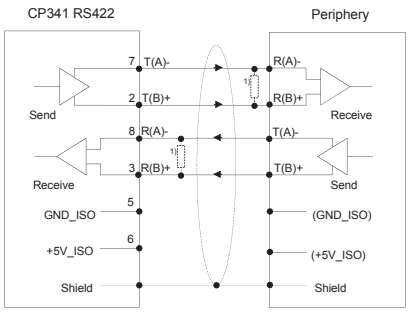


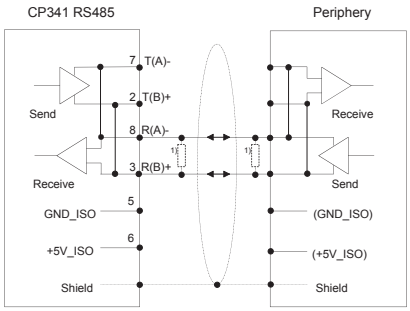
341-1CH01

RS422/485
X2



① n. c.
② T(B)+
③ R(B)+
R(B)+/T(B)+
④ RTS
⑤ M5V (GND_ISO)
⑥ P5V (+5V_ISO)
⑦ T(A)-
⑧ R(A)-
R(A)-/T(A)-
⑨ n.c.

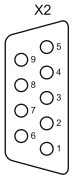




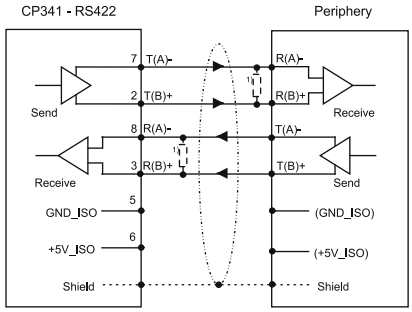
Communication processors | RS232/422/485 and other CPs						
341-1AH01 341-1CH01 341-2CH71						

341-2CH71

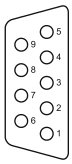
RS422/485
X2



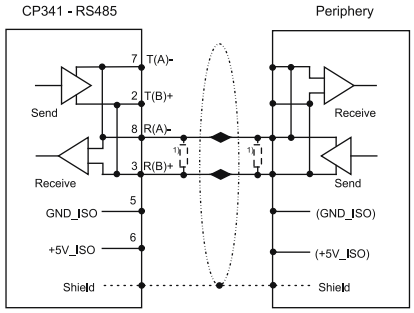
① n. c.
② T(B)+
③ R(B)+
R(B)+/T(B)+
④ RTS
⑤ M5V (GND_ISO)
⑥ P5V (+5V_ISO)
⑦ T(A)-
⑧ R(A)-
R(A)-/T(A)-
⑨ n.c.



RS422/485
X3



① n. c.
② T(B)+
③ R(B)+
R(B)+/T(B)+
④ RTS
⑤ M5V (GND_ISO)
⑥ P5V (+5V_ISO)
⑦ T(A)-
⑧ R(A)-
R(A)-/T(A)-
⑨ n.c.



Fieldbus master modules

Communication processors | Fieldbus master modules						
342-1CA70 342-1DA70 342-1IA70 342-2IA71						

Order number	342-1CA70	342-1DA70	342-1IA70	342-2IA71
Figure				
Type	CP 342S CAN, CANopen master SPEED-Bus	CP 342S DP, PROFIBUS-DP master SPEED-Bus	CP 342S IBS, INTERBUS master SPEED-Bus	CP 342S IBS, dual INTERBUS master SPEED-Bus
General information				
Note	-	-	-	-
Features	› CANopen master, SPEED-Bus › 125 CAN slaves connectable › 40 Transmit PDOs, 40 Receive PDOs › 1 SDO (Server), 127 SDO (Client) › Project engineering: VIPA WinCoCT	› PROFIBUS-DP master (Class 1), SPEED-Bus › RS485 › 124 DP slaves connectable › Project engineering: Siemens SIMATIC Manager › Diagnostic facilities	› INTERBUS master, SPEED-Bus › RS422 › Diagnostics via LEDs, RS232, Mini-DIN, Dual Port Master › Up to 512 slaves connectable	› Dual INTERBUS master, SPEED-Bus › 2x RS422 › Diagnostics via LEDs, diagnostics device (2x RJ45), Dual Port Master › Up to 512 slaves connectable
SPEED-Bus	✓	✓	✓	✓
Current consumption/power loss				
Current consumption from backplane bus	550 mA	560 mA	600 mA	1 A
Power loss	2.75 W	2.8 W	3 W	4.5 W
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	possible	none	none
Supply voltage display	none	none	green LED	yes
Group error display	yes	yes	yes	yes
Channel error display	none	none	none	none
Functionality Sub-D interfaces				
Type	CAN	DP	IBS	X2
Type of interface	CAN	RS485	RS422	RS422
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	✓	✓	✓	✓
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	✓	-	-
DP slave	-	✓	-	-
Point-to-point interface	-	-	-	-
Type	-	-	DIAG 1	X3
Type of interface	-	-	RS232	RS422
Connector	-	-	Sub-D, 9-pin, male	Sub-D, 9-pin, female
Electrically isolated	-	-	✓	✓

Communication processors | Fieldbus master modules						
342-1CA70 342-1DA70 342-1IA70 342-2IA71						

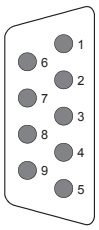
Order number	342-1CA70	342-1DA70	342-1IA70	342-2IA71
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	✓	-
CAN	-	-	-	-
Functionality RJ45 interfaces				
Type	-	-	-	DIAG 1
Type of interface	-	-	-	-
Connector	-	-	-	RJ45
Electrically isolated	-	-	-	-
PG/OP channel	-	-	-	-
Productive connections	-	-	-	-
Type	-	-	-	DIAG 2
Type of interface	-	-	-	-
Connector	-	-	-	RJ45
Electrically isolated	-	-	-	-
PG/OP channel	-	-	-	-
Productive connections	-	-	-	-
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	-	-	-	-
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	210 g	210 g	260 g	260 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	-

Connections, Interfaces

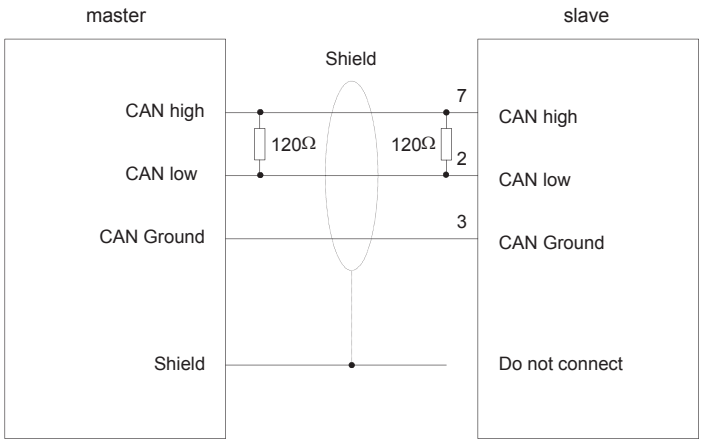
Communication processors | Fieldbus master modules						
342-1CA70 342-1DA70 342-1IA70 342-2IA71						

342-1CA70

CANopen master
X2

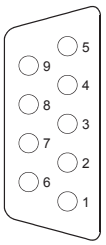


① n. c.
② CAN low
③ CAN Ground
④ n. c.
⑤ shield
⑥ optional Ground
⑦ CAN high
⑧ n. c.
⑨ n. c.

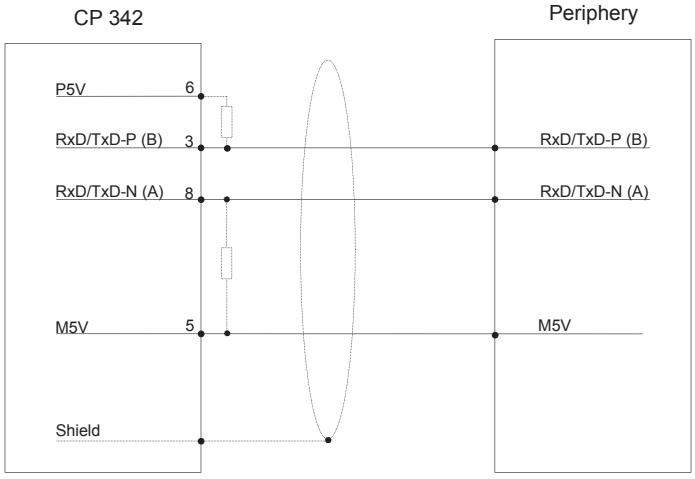


342-1DA70

DP master
X2



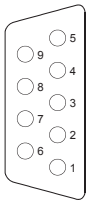
① shield
② n. c.
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ n. c.
⑧ RxD/TxD-N (line A)
⑨ n.c.



Communication processors | Fieldbus master modules						
342-1CA70 342-1DA70 342-1IA70 342-2IA71						

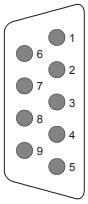
342-1IA70

Interbus
RS422
X2



① DOH
② DIH
③ GND-ISO
④ GND
⑤ +5V
⑥ DOL
⑦ DIL
⑧ +5V
⑨ reserved

RS232
diagnostics
X3

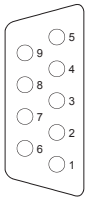


① reserved
② TxD
③ RxD
④ reserved
⑤ GND
⑥ reserved
⑦ RTS
⑧ CTS
⑨ reserved

Mini-DIN slot
diagnostics
X4

342-2IA71

IBS1/IBS2
RS422
X2/X3



① DOH
② DIH
③ GND (ISO)
④ GND
⑤ +5V (ISO)
⑥ DOL
⑦ DIL
⑧ +5V
⑨ reserved

2x RJ45
Diagnostic device
VIPA-342-0IA01

① GND
② PCS3
③ MISO
④ MOSI
⑤ SCK
⑥ PCS2
⑦ VCC
⑧ n. c.

Actor/sensor interfaces

Communication processors | Actor/sensor interfaces						
343-2AH10						

Order number	343-2AH10			
Figure				
Type	CP 343-2P ASI, AS-i master			
General information				
Note	-			
Features	› Up to 62 slaves connectable › Corresponding to AS-i specification 3.0 (master profile M3) › Support of analog slaves concerning profile 7.3 resp. 7.4 › Automatic address programming possible (address 0)			
SPEED-Bus	-			
Current consumption/power loss				
Current consumption from backplane bus	200 mA			
Power loss	2.5 W			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	yes			
Process alarm	-			
Diagnostic interrupt	yes			
Diagnostic functions	yes			
Diagnostics information read-out	possible			
Supply voltage display	yes			
Group error display	red SF LED			
Channel error display	none			
Functionality interfaces				
Type of interface	AS-Interface			
Connector	20-pin front connector			
Electrically isolated	-			
Housing				
Material	PPE			
Mounting	Rail System 300			
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm			
Weight	250 g			

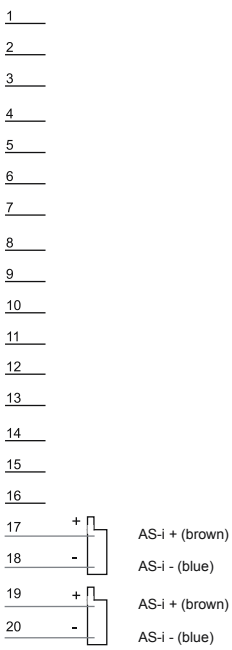
Communication processors | Actor/sensor interfaces						
343-2AH10						

Order number	343-2AH10			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Communication processors | Actor/sensor interfaces						
343-2AH10						

343-2AH10



Ethernet-CPs

Communication processors | Ethernet-CPs						
343-1EX71						

Order number	343-1EX71			
Figure				
Type	CP 343S TCP/IP, Ethernet-CP 343 SPEED-Bus			
General information				
Note	-			
Features	› Ethernet CP 343S-NET, SPEED-Bus › RJ45 › 16 connections via Siemens NetPro › 64 connections via user program › 32 PG/OP connections			
SPEED-Bus	✓			
Current consumption/power loss				
Current consumption from backplane bus	550 mA			
Power loss	2.75 W			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	possible			
Supply voltage display	green LED			
Group error display	red SF LED			
Channel error display	none			
Ethernet communication CP				
Number of productive connections, max.	64			
Number of productive connections by Siemens NetPro, max.	16			
S7 connections	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling			
User data per S7 connection, max.	32 KB			
TCP-connections	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling			
User data per TCP connection, max.	64 KB			

Communication processors | Ethernet-CPs						
343-1EX71						

Order number	343-1EX71			
ISO-connections	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling			
User data per ISO connection, max.	8 KB			
ISO on TCP connections (RFC 1006)	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling			
User data per ISO on TCP connection, max.	32 KB			
UDP-connections	-			
User data per UDP connection, max.	2 KB			
UDP-multicast-connections	SEND and RECEIVE (max. 16 Multicast groups)			
UDP-broadcast-connections	SEND			
Functionality RJ45 interfaces				
Type	X1			
Type of interface	Ethernet 10/100 MBit			
Connector	RJ45			
Electrically isolated	✓			
PG/OP channel	✓			
Productive connections	✓			
Housing				
Material	PPE			
Mounting	-			
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm			
Weight	210 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

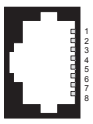
Connections, Interfaces

Communication processors | Ethernet-CPs						
343-1EX71						

343-1EX71

RJ45

X1



① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

Interface modules

Structure and Function

Fieldbus slave modules for the expansion of decentralized control systems with up to 99 fieldbus slave modules, plus I/O modules.

Characteristics

- For the leading PROFIBUS-DP fieldbus system
- Cross manufacturer deployable
- Cross manufacturer mixed operation possible
- Compact design
- LED-status indicator
- Advanced diagnostics
- Electrically isolated to the backplane bus
- Profile rail construction
- 24 month warranty

Overview

Order no.	Name/Description	Page
Fieldbus slave modules w/o I/Os		
353-1DP01	**IM 353DP - PROFIBUS-DP slave** › PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 29 peripheral modules (16 analog) › 244 Byte input and 244 Byte output data › Integrated DC 24 V power supply	**484**

Fieldbus slave modules w/o I/Os

Interface modules | Fieldbus slave modules w/o I/Os						
353-1DP01						

Order number	353-1DP01			
Figure				
Type	IM 353DP			
General information				
Note	-			
Features	› PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 29 peripheral modules (16 analog) › 244 Byte input and 244 Byte output data › Integrated DC 24 V power supply			
SPEED-Bus	-			
Technical data power supply				
Power supply (rated value)	DC 24 V			
Power supply (permitted range)	DC 20.4...28.8 V			
Reverse polarity protection	✓			
Current consumption (no-load operation)	70 mA			
Current consumption (rated value)	1 A			
Inrush current	60 A			
I^2t	0.45 A^2s			
Max. current drain at backplane bus	3.5 A			
Max. current drain load supply	-			
Power loss	2.5 W			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	yes, parameterizable			
Process alarm	yes, parameterizable			
Diagnostic interrupt	yes, parameterizable			
Diagnostic functions	yes, parameterizable			
Diagnostics information read-out	possible			
Supply voltage display	green LED			
Service Indicator	-			
Group error display	red LED			
Channel error display	none			
Hardware configuration				
Racks, max.	1			
Modules per rack, max.	29			
Number of digital modules, max.	29			
Number of analog modules, max.	16			

Interface modules | Fieldbus slave modules w/o I/Os						
353-1DP01						

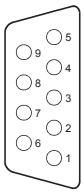
Order number	353-1DP01			
Communication				
Fieldbus	PROFIBUS-DP to EN 50170			
Type of interface	RS485			
Connector	Sub-D, 9-pin, female			
Topology	Linear bus with bus termination at both ends			
Electrically isolated	✓			
Number of participants, max.	125			
Node addresses	1 - 99			
Transmission speed, min.	9.6 kbit/s			
Transmission speed, max.	12 Mbit/s			
Address range inputs, max.	244 Byte			
Address range outputs, max.	244 Byte			
Number of TxPDOs, max.	-			
Number of RxPDOs, max.	-			
Housing				
Material	PPE			
Mounting	Rail System 300			
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm			
Weight	170 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Interface modules | Fieldbus slave modules w/o I/Os						
353-1DP01						

353-1DP01

PB DP
X2

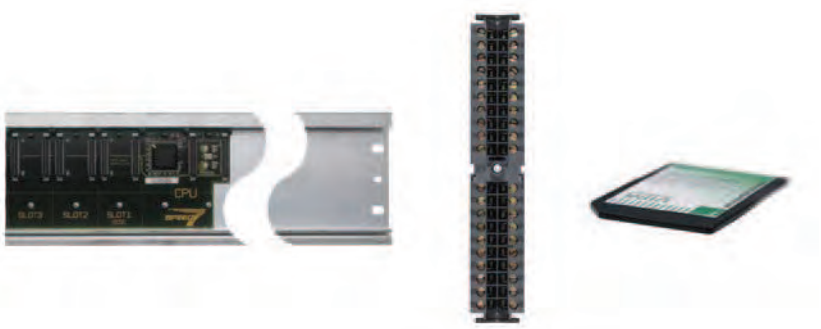


① n. c.
② n. c.
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ n. c.
⑧ RxD/TxD-N (line A)
⑨ n.c.

X1

\+ ① + DC 24 V
\- ② 0 V

300S accessories



Structure and Function

System accessories expand the use of the system and facilitate starting.

Note: Front connectors and label strips are supplied with the modules.

Memory Extension

MMC cards can be used to store program and data. By inserting a VIPA MCC card the work memory can be expanded without exchanging the CPU.

Each CPU has an integrated memory. During the program flow, 50% of the work memory is used for the program code and 50% for data.

Profile Rail with integrated High-SPEED Backplane Bus

Various SPEED7 CPUs are equipped with a parallel SPEED-Bus, which enables the additional connection of up to 10 modules from the SPEED-Bus peripheral. While, the standard I/O modules are plugged right of the CPU and connected via single-bus connector, the connection of the SPEED-Bus I/O modules takes place via the SPEED-Bus connector strip integrated in the profile rail left of the CPU.

Front Connectors

For signal modules and CPUs with integrated peripherals appropriate front connector with spring clamp or screw terminals are available.

Manuals

The technical documentation of the respective modules encompasses various manuals with the necessary hardware and programming information, detailed descriptions of each module, and instructions for structure and assembly.

SPEED7 starterKIT

Order number	Type	Description	Note
800-7DK11	CPU 312SC - SPEED7 technology	Immediately ready for use by enclosed accessories and software. SPEED7 technology for highest performance: DC 24 V, 64 kB work memory expandable up to 512 kB (50% program/50% data each), MPI, MMC slot, real time clock, PtP RS485, isolated, ASCII, STX/ETX, 3964R, Modbus master, USS master, Ethernet interface for PU/OP communication, DI 16xDC 24 V (with interrupt capability), counter 2x32 Bit (AB), up to 10 kHz, DO 8xDC 24 V, 0.5 A. Accessories included: WinPLC7 programming software, user friendly full software version, project simulation tool for testing and diagnostics, practical case, front connector (40pin), Ethernet cable for programming, Manual & More CD, manual.	
800-7DK21	CPU 313SC - SPEED7 technology	Immediately ready for use by enclosed accessories and software. SPEED7 technology for highest performance: DC 24 V, 128 kB work memory expandable up to 512 kB (50% program/50% data each), MPI, MMC slot, real time clock, PtP RS485, isolated, ASCII, STX/ETX, 3964R, Modbus master, USS master, Ethernet interface for PU/OP communication, DI 16xDC 24 V (with interrupt capability), counter 3x32 Bit (AB), up to 30 kHz, DO 16xDC 24 V, 0.5 A, AI 4x12 Bit, U, I, 1x12 Bit, RTD, AO 2x12 Bit, U, I. Accessories included: WinPLC7 programming software, user friendly full software version, project simulation tool for testing and diagnostics, practical case, front connector (40pin), Ethernet cable for programming, Manual & More CD, manual.	
800-7DK31	CPU 313SC/DPM - SPEED7 technology	Immediately ready for use by enclosed accessories and software. SPEED7 technology for highest performance: DC 24 V, 128 kB work memory expandable up to 512 kB (50% program/50% data each), MPI, MMC slot, real time clock, Profibus-DP master, 12 Mbit/s, up to 124 slaves/PtP RS485, isolated, ASCII, STX/ETX, 3964R, Modbus master, USS master, Ethernet interface for PU/OP communication, DI 16xDC 24 V (with interrupt capability), counter 3x32 Bit (AB), up to 30 kHz, DO 16xDC 24 V, 0.5 A. Accessories included: WinPLC7 programming software, user friendly full software version, project simulation tool for testing and diagnostics, practical case, front connector (40pin), Ethernet cable for programming, Manual & More CD, manual.	

Memory extensions

Order number	Type	Description	Note
953-0KX10	MMC - MultiMediaCard	Extension memory for VIPA CPUs 11x, 21x, 24x, 31x, 51x, and 208-1DP01, CC 03 (for load memory not necessary)	
953-1LE00	Memory Configuration Card (MCC) 32kByte	for SPEED7 CPUs, 16kByte program/16kByte data	
953-1LF00	Memory Configuration Card (MCC) 64kByte	for SPEED7 CPUs, 32kByte program/32kByte data	
953-1LG00	Memory Configuration Card (MCC) 128kByte	for SPEED7 CPUs, 64kByte program/64kByte data	
953-1LH00	Memory Configuration Card (MCC) 256kByte	for SPEED7 CPUs, 128kByte program/128kByte data	
953-1LJ00	Memory Configuration Card (MCC) 512kByte	for SPEED7 CPUs, 256kByte program/256kByte data	
953-1LK00	Memory Configuration Card (MCC) 1MByte	for SPEED7 CPUs, 512kByte program/512kByte data	
953-1LL00	Memory Configuration Card (MCC) 2MByte	for SPEED7 CPUs, 1MByte program/1MByte data	
953-1LM00	Memory Configuration Card (MCC) 4MByte	for SPEED7 CPUs, 2MByte program/2MByte data	
953-1LP00	Memory Configuration Card (MCC) 8MByte	for SPEED7 CPUs, 4MByte program/4MByte data	

Configuration and diagnosis modules

Order number	Type	Description	Note
342-0IA01	CP 342 IBS - Configuration/diagnosis module	LC display, 7 buttons, cable 0.5 m, RJ45 plug, for 342-1IA71	

Profile rail

Order number	Type	Description	Note
391-1AF10	BP 391 - SPEED-Bus	Profile rail, 530 mm with integrated High-SPEED rear panel bus for 2 expansion slots	
391-1AF30	BP 391 - SPEED-Bus	Profile rail, 530 mm with integrated High-SPEED rear panel bus for 6 expansion slots	
391-1AF50	BP 391 - SPEED-Bus	Profile rail, 530 mm with integrated High-SPEED rear panel bus for 10 expansion slots	
391-1AJ10	BP 391 - SPEED-Bus	Profile rail, 830 mm with integrated High-SPEED rear panel bus for 2 expansion slots, left justified	
391-1AJ30	BP 391 - SPEED-Bus	Profile rail, 830 mm with integrated High-SPEED rear panel bus for 6 expansion slots, left justified	
391-1AJ50	BP 391 - SPEED-Bus	Profile rail, 830 mm with integrated High-SPEED rear panel bus for 10 expansion slots, left justified	
390-1AB60	Profile rail	Length: 160 mm	
390-1AE80	Profile rail	Length: 482 mm	
390-1AF30	Profile rail	Length: 530 mm	
390-1AJ30	Profile rail	Length: 830 mm	
390-9AB60	Profile rail	Length: 160 mm, ECO pack: 100 pieces	
390-9AE80	Profile rail	Length: 482 mm, ECO pack: 32 pieces	
390-9AF30	Profile rail	Length: 530 mm, ECO pack: 32 pieces	
390-9AJ30	Profile rail	Length: 830 mm, ECO pack: 20 pieces	
390-9BC00	Profile rail	Length: 2000 mm, ECO pack: 10 pieces	

Front connector

Order number	Type	Description	Note
392-1BJ00	Front connector	20pole with cage clamps	
392-1AJ00	Front connector	20pole with screw contact	
392-9AJ00	Front connector	20pole with screw contact, ECO pack: 100 pieces	
392-1BM01	Front connector	40pole with cage clamps	
392-1AM00	Front connector	40pole with screw contact	
392-9AM00	Front connector	40pole with screw contact, ECO pack: 100 pieces	

Manuals and operating instructions

Order number	Title	Contents	Language
HB130D	Manual System 300V, German	HB130D_PS, HB130D_CP, HB130D_FM, HB130D_IM	DE
HB130E	Manual System 300V, English	HB130E_PS, HB130E_CP, HB130E_FM, HB130E_IM	EN
HB130D_CP	Manual System 300V - CP	CP 34x Communication processors	DE
HB130E_CP	Manual System 300V - CP	CP 34x Communication processors	EN
HB130D_IM	Manual System 300V - IM	IM - Interface modules	DE
HB130E_IM	Manual System 300V - IM	IM - Interface modules	EN
HB130D_PS	Manual System 300V - PS	PS - Power supply	DE
HB130E_PS	Manual System 300V - PS	PS - Power supply	EN
HB140D	Manual System 300S, German	HB140D_PS, HB140D_SM-AIO, HB140D_SM-DIO, HB140D_CP	DE
HB140E	Manual System 300S, English	HB140E_PS, HB140E_SM-AIO, HB140E_SM-DIO, HB140E_CP	EN
HB140D_CP	Manual System 300S - CP	CP 34x SPEED bus communication processors	DE
HB140E_CP	Manual System 300S - CP	CP 34x SPEED-Bus communication processors	EN
HB140D_CPU	Manual System 300S - CPU	CPU 31xS, incl. operations list	DE
HB140E_CPU	Manual System 300S - CPU	CPU 31xS, incl. operations list	EN
HB140D_CPU_SC	Manual System 300S - CPU-SC	CPU 31xSC, incl. operations list	DE
HB140E_CPU_SC	Manual System 300S - CPU-SC	CPU 31xSC, incl. operations list	EN
HB140D_PS	Manual System 300S - PS	PS - SPEED-Bus power supply	DE
HB140E_PS	Manual System 300S - PS	PS - SPEED-Bus power supply	EN
HB140D_SM-AIO	Manual System 300S - SM-AIO	SM-AIO - SPEED-Bus analog signal modules	DE
HB140E_SM-AIO	Manual System 300S - SM-AIO	SM-AIO - SPEED-Bus analog signal modules	EN
HB140D_SM-DIO	Manual System 300S - SM-DIO	SM-DIO - SPEED bus digital Signal modules	DE
HB140E_SM-DIO	Manual System 300S - SM-DIO	SM-DIO - SPEED bus digital Signal modules	EN
HB144D_IBS-DIAG	Technical documents IBS Diagnostics Device	Manual CP 342 IBS-DIAG for configuration / diagnosis module 342-0IA00 or 342-0IA01	DE
HB144E_IBS-DIAG	Technical documents IBS Diagnostics Device	Manual CP 342 IBS-DIAG for configuration / diagnosis module 342-0IA00 or 342-0IA01	EN