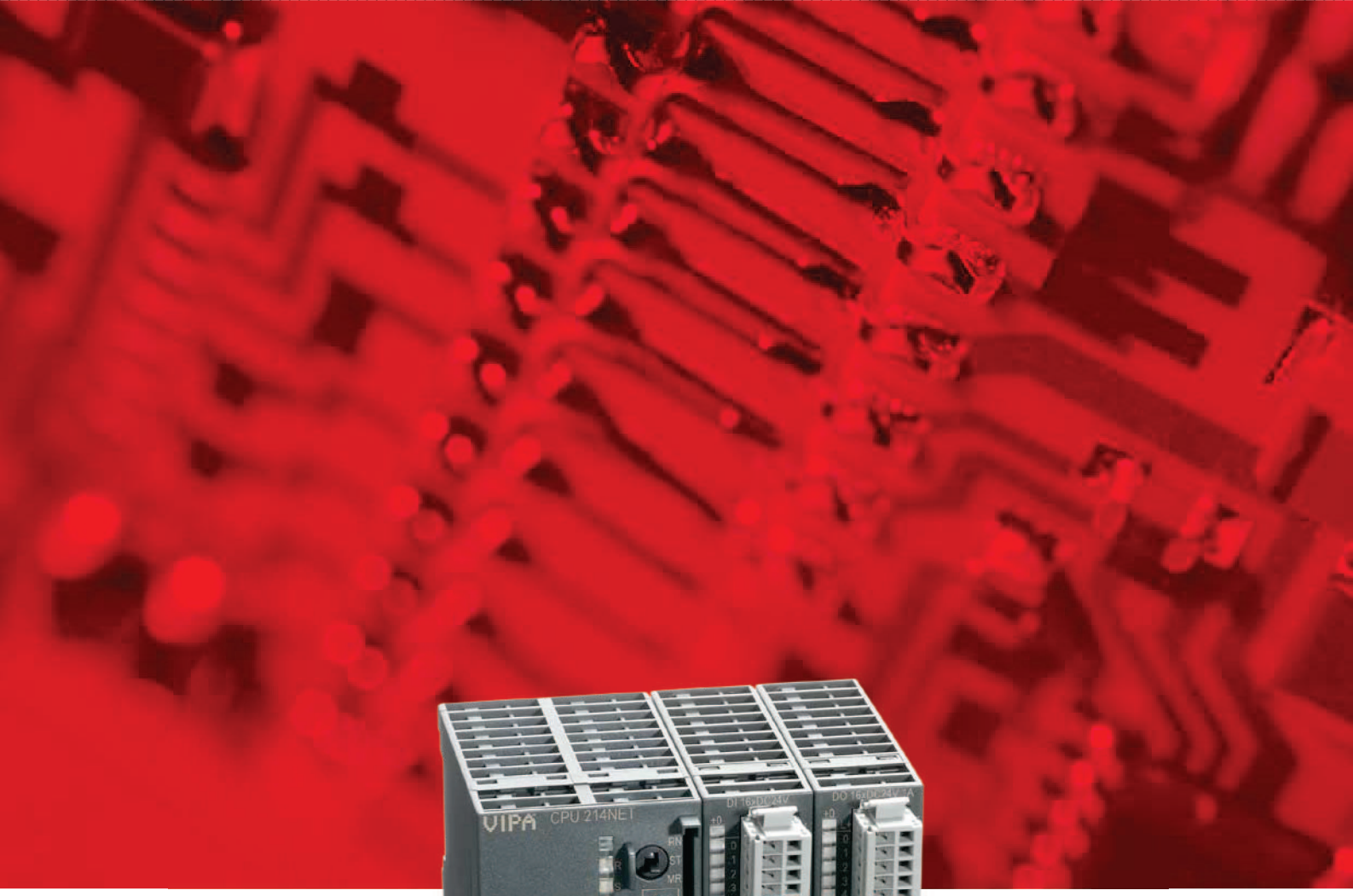


System 200V

the modular control system

System description 200V

Structure and Concept

The system 200V is a highly compact and modular expandable system.

The system is designed for centralized and decentralized automation tasks.

With a central extension of a maximum of 32 modules directly to the CPU and up to 126 fieldbus slave modules with a further maximum of 32 modules per fieldbus slave module, the system 200V is highly flexible. The module size allows use in almost any automation environment.

The assembly is extremely simple. The bus connector for communication between the modules and the CPU can be easily inserted into a 35 mm standard rail, and then the system 200V modules are snapped on – finished.

Included with the supply of the signal and function modules are front connectors and labeling strips.

Performance and Application

The system 200V is designed for centralized and decentralized automation tasks in the manufacturing and process industry up to medium power range.

Programming

The system 200V is programmed with WinPLC7 or with Siemens STEP7 in LAD, FBD and STL.

Memory

The CPUs in the system 200V have the work and load memory already integrated. Depending on the CPU version, users can choose from 32 kByte to 128 kByte work memory. In addition, MMC cards for storing program and data are supported.

Functions

For the connection of sensors and actuators, a variety of signaling modules are available for acquiring digital and analog signals in and out of the process.

For positioning tasks and path measurement various SSI, servo and stepper modules can be chosen.

The counter modules in the system 200V also support complex and fast counting tasks in the manufacturing and process industry to calculate the comparative features and the connection of sensors, such as photoelectric barriers.

Communication

For the connection of serial devices, e.g. scanner or printer, and for the integration of systems from other manufacturers, the system offers a full complement of serial communication processors.

Ethernet communication processors incorporates the system 200V horizontally and vertically into the existing network structures, and thus make all relevant data connected to the MES and ERP systems available.

The system 200V possesses fieldbus master and slave modules with various fieldbus protocols and can therefore function, manufacturer-independent, as master control as well as subordinate fieldbus slave unit.

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 200V CPUs are designed for small and medium-sized applications and represent as universal automation systems an ideal solution for applications in centralized and decentralized structures.

For the construction of the control a wide CPU-range in various performance classes are available. The various CPUs differ in work memory, address range, number of connections and processing time.

The CPUs of the system 200V are particularly suitable for industrial use and for general control and automation tasks in the medium performance range.

Characteristics

- Programmable with WinPLC7 or Siemens STEP7
- Integrated work memory, operation without additional memory card
- Integrated flash ROM memory for continuous saving of program and data
- Integrated accumulator-backed RAM memory
- Support of standard MMC cards for saving of program and data
- Suitable for centralized and decentralized applications
- Modular expandable, up to 32 modules can be used
- Integrated real time clock as well as MPI interface on board
- Front integrated status LEDs
- Assembly with 35 mm profile rail
- 24 months warranty

Overview

Order no.	Name/Description	Page
CPUs STEP7 programmable, standard		
214-1BA02	**CPU 214 - PLC CPU** › 48 kB work memory › 80 kB load memory	**207**
214-1BC02	**CPU 214 - PLC CPU** › 32 kB work memory › 40 kB load memory	**207**
215-1BA02	**CPU 215 - PLC CPU** › 96 kB work memory › 144 kB load memory	**207**
216-1BA02	**CPU 216 - PLC CPU** › 128 kB work memory › 192 kB load memory	**207**
CPUs STEP7 programmable, Net-CPUs		
214-2BT10	**CPU 214NET - PLC CPU** › Ethernet CP 243 › Twisted pair Ethernet via RJ45 › 48 kB work memory › 80 kB load memory	**211**
215-2BT10	**CPU 215NET - PLC CPU** › Ethernet CP 243 › Twisted pair Ethernet via RJ45 › 96 kB work memory › 144 kB load memory	**211**
216-2BT10	**CPU 216NET - PLC CPU** › Ethernet CP 243 › Twisted pair Ethernet via RJ45 › 128 kB work memory › 192 kB load memory	**211**
CPUs STEP7 programmable, PtP		
214-2BS02	**CPU 214SER - PLC CPU** › Serial communication via 2x RS232 › 48 kB work memory › 80 kB load memory	**216**
214-2BS12	**CPU 214SER - PLC CPU** › Serial communication via RS232 › 48 kB work memory › 80 kB load memory	**216**
214-2BS32	**CPU 214SER - PLC CPU** › Serial communication via RS485 › 48 kB work memory › 80 kB load memory	**216**
215-2BS02	**CPU 215SER - PLC CPU** › Serial communication via 2x RS232 › 96 kB work memory › 144 kB load memory	**216**
215-2BS12	**CPU 215SER - PLC CPU** › Serial communication via RS232 › 96 kB work memory › 144 kB load memory	**222**
215-2BS32	**CPU 215SER - PLC CPU** › Serial communication via RS485 › 96 kB work memory › 144 kB load memory	**222**
216-2BS02	**CPU 216SER - PLC CPU** › Serial communication via 2x RS232 › 128 kB work memory › 192 kB load memory	**222**
216-2BS12	**CPU 216SER - PLC CPU** › Serial communication via RS232 › 128 kB work memory › 192 kB load memory	**222**
216-2BS32	**CPU 216SER - PLC CPU** › Serial communication via RS485 › 128 kB work memory › 192 kB load memory	**228**
CPUs STEP7 programmable, DP master		

Overview

Order no.	Name/Description	Page
214-2BM02	**CPU 214DPM - PLC CPU** › PROFIBUS-DP master › 48 kB work memory › 80 kB load memory	**234**
215-2BM02	**CPU 215DPM - PLC CPU** › PROFIBUS-DP master › 96 kB work memory › 144 kB load memory	**234**
216-2BM02	**CPU 216DPM - PLC CPU** › PROFIBUS-DP master › 128 kB work memory › 192 kB load memory	**234**
CPUs STEP7 programmable, DP slave		
214-2BP02	**CPU 214DP - PLC CPU** › PROFIBUS-DP slave › 48 kB work memory › 80 kB load memory	**239**
215-2BP02	**CPU 215DP - PLC CPU** › PROFIBUS-DP slave › 96 kB work memory › 144 kB load memory	**239**
216-2BP02	**CPU 216DP - PLC CPU** › PROFIBUS-DP slave › 128 kB work memory › 192 kB load memory	**239**
CPUs STEP7 programmable, CAN master		
214-2CM02	**CPU 214CAN - PLC CPU** › CANopen master › 48 kB work memory › 80 kB load memory	**244**
215-2CM02	**CPU 215CAN - PLC CPU** › CANopen master › 96 kB work memory › 144 kB load memory	**244**
216-2CM02	**CPU 216CAN - PLC CPU** › CANopen master › 128 kB work memory › 192 kB load memory	**244**

CPUs STEP7 programmable, standard

CPUs | CPUs STEP7 programmable, standard						
214-1BA02 214-1BC02 215-1BA02 216-1BA02						

Order number	214-1BA02	214-1BC02	215-1BA02	216-1BA02
Figure				
Type	CPU 214	CPU 214C	CPU 215	CPU 216
General information				
Note	-	-	-	-
Features	› 48 kB work memory › 80 kB load memory	› 32 kB work memory › 40 kB load memory	› 96 kB work memory › 144 kB load memory	› 128 kB work memory › 192 kB load memory
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)	-	-	-	-
Current consumption (rated value)	1.5 A	1.5 A	1.5 A	1.5 A
Inrush current	-	-	-	-
Max. current drain at backplane bus	3 A	3 A	3 A	3 A
Load and working memory				
Load memory, integrated	80 KB	40 KB	144 KB	192 KB
Load memory, maximum	-	-	-	-
Work memory, integrated	48 KB	32 KB	96 KB	128 KB
Work memory, maximal	-	-	-	-
Memory divided in 50% program / 50% data	-	-	-	-
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB
Hardware configuration				
Racks, max.	4	4	4	4
Modules per rack, max.	total max. 32	total max. 32	total max. 32	total max. 32
Number of integrated DP master	-	-	-	-
Number of DP master via CP	8	8	8	8
Operable function modules	32	32	32	32
Operable communication modules PtP	32	32	32	32
Operable communication modules LAN	-	-	-	-
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

CPUs | CPUs STEP7 programmable, standard						
214-1BA02 214-1BC02 215-1BA02 216-1BA02						

Order number	214-1BA02	214-1BC02	215-1BA02	216-1BA02
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs	0.18 µs	0.18 µs
Word instruction, min.	0.78 µs	0.78 µs	0.78 µs	0.78 µs
Double integer arithmetic, min.	-	-	-	-
Floating-point arithmetic, min.	-	-	-	-
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	256
Number of S7 times	256	256	256	256
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	8192 Bit
Number of data blocks	2047	2047	2047	2047
Max. data blocks size	16 KB	16 KB	16 KB	16 KB
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Blocks				
Number of OBs	14	14	14	14
Number of FBs	1024	1024	1024	1024
Number of FCs	1024	1024	1024	1024
Maximum nesting depth per priority class	8	8	8	8
Maximum nesting depth additional within an error OB	1	1	1	1
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	30 d	30 d	30 d	30 d
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	-	-	-	-
Synchronization via Ethernet (NTP)	-	-	-	-
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Input process image maximal	128 Byte	128 Byte	128 Byte	128 Byte
Output process image maximal	128 Byte	128 Byte	128 Byte	128 Byte
Digital inputs	8192	8192	8192	8192
Digital outputs	8192	8192	8192	8192
Digital inputs central	512	512	512	512
Digital outputs central	512	512	512	512
Integrated digital inputs	-	-	-	-

CPUs | CPUs STEP7 programmable, standard						
214-1BA02 214-1BC02 215-1BA02 216-1BA02						

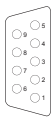
Order number	214-1BA02	214-1BC02	215-1BA02	216-1BA02
Integrated digital outputs	-	-	-	-
Analog inputs	512	512	512	512
Analog outputs	512	512	512	512
Analog inputs, central	128	128	128	128
Analog outputs, central	128	128	128	128
Integrated analog inputs	-	-	-	-
Integrated analog outputs	-	-	-	-
Communication 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.	16	16	16	16
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	MP²I
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	-	-	-	-
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 80 mm	25.4 mm x 76 mm x 80 mm	25.4 mm x 76 mm x 80 mm	25.4 mm x 76 mm x 80 mm
Weight	100 g	100 g	100 g	100 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

CPUs | CPUs STEP7 programmable, standard						
214-1BA02 214-1BC02 215-1BA02 216-1BA02						

214-1BA02

MP²I



① reserved
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.

X1

+ ① + DC 24 V
- ② 0 V

214-1BC02

MP²I

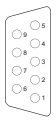
① reserved
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X1

+ ① + DC 24 V
- ② 0 V

215-1BA02

MP²I



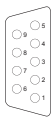
① reserved
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X1

+ ① + DC 24 V
- ② 0 V

216-1BA02

MP²I



① reserved
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.

X1

+ ① + DC 24 V
- ② 0 V

CPUs STEP7 programmable, Net-CPUs

CPUs | CPUs STEP7 programmable, Net-CPUs						
214-2BT10 215-2BT10 216-2BT10						

Order number	214-2BT10	215-2BT10	216-2BT10	
Figure				
Type	CPU 214NET	CPU 215NET	CPU 216NET	
General information				
Note	-	-	-	
Features	› Ethernet CP 243 › Twisted pair Ethernet via RJ45 › 48 kB work memory › 80 kB load memory	› Ethernet CP 243 › Twisted pair Ethernet via RJ45 › 96 kB work memory › 144 kB load memory	› Ethernet CP 243 › Twisted pair Ethernet via RJ45 › 128 kB work memory › 192 kB load memory	
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)	-	-	-	
Current consumption (rated value)	1.5 A	1.5 A	1.5 A	
Inrush current	-	-	-	
Max. current drain at backplane bus	3 A	3 A	3 A	
Load and working memory				
Load memory, integrated	80 KB	144 KB	192 KB	
Load memory, maximum	-	-	-	
Work memory, integrated	48 KB	96 KB	128 KB	
Work memory, maximal	-	-	-	
Memory divided in 50% program / 50% data	-	-	-	
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	
Hardware configuration				
Racks, max.	4	4	4	
Modules per rack, max.	total max. 32	total max. 32	total max. 32	
Number of integrated DP master	-	-	-	
Number of DP master via CP	8	8	8	
Operable function modules	32	32	32	
Operable communication modules PtP	32	32	32	
Operable communication modules LAN	-	-	-	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	no	no	no	

CPUs | CPUs STEP7 programmable, Net-CPUs						
214-2BT10 215-2BT10 216-2BT10						

Order number	214-2BT10	215-2BT10	216-2BT10	
Process alarm	no	no	no	
Diagnostic interrupt	no	no	no	
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs	0.18 µs	
Word instruction, min.	0.78 µs	0.78 µs	0.78 µs	
Double integer arithmetic, min.	-	-	-	
Floating-point arithmetic, min.	-	-	-	
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	
Number of S7 times	256	256	256	
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	
Number of data blocks	2047	2047	2047	
Max. data blocks size	16 KB	16 KB	16 KB	
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	
Blocks				
Number of OBs	14	14	14	
Number of FBs	1024	1024	1024	
Number of FCs	1024	1024	1024	
Maximum nesting depth per priority class	8	8	8	
Maximum nesting depth additional within an error OB	1	1	1	
Time				
Real-time clock buffered	✓	✓	✓	
Clock buffered period (min.)	30 d	30 d	30 d	
Accuracy (max. deviation per day)	10 s	10 s	10 s	
Number of operating hours counter	8	8	8	
Clock synchronization	-	-	-	
Synchronization via MPI	-	-	-	
Synchronization via Ethernet (NTP)	-	-	-	
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	
Input process image maximal	128 Byte	128 Byte	128 Byte	
Output process image maximal	128 Byte	128 Byte	128 Byte	
Digital inputs	8192	8192	8192	
Digital outputs	8192	8192	8192	
Digital inputs central	512	512	512	

CPUs | CPUs STEP7 programmable, Net-CPUs						
214-2BT10 215-2BT10 216-2BT10						

Order number	214-2BT10	215-2BT10	216-2BT10	
Digital outputs central	512	512	512	
Integrated digital inputs	-	-	-	
Integrated digital outputs	-	-	-	
Analog inputs	512	512	512	
Analog outputs	512	512	512	
Analog inputs, central	128	128	128	
Analog outputs, central	128	128	128	
Integrated analog inputs	-	-	-	
Integrated analog outputs	-	-	-	
Communication functions				
PG/OP channel	✓	✓	✓	
Global data communication	✓	✓	✓	
Number of GD circuits, max.	4	4	4	
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.	16	16	16	
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	
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	-	-	-	
Functionality RJ45 interfaces				
Type	TP	TP	TP	
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	✓	✓	✓	

CPUs | CPUs STEP7 programmable, Net-CPUs						
214-2BT10 215-2BT10 216-2BT10						

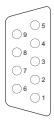
Order number	214-2BT10	215-2BT10	216-2BT10	
Ethernet communication CP				
Number of productive connections, max.	16	16	16	
Number of productive connections by Siemens NetPro, max.	16	16	16	
User data per S7 connection, max.	-	-	-	
User data per TCP connection, max.	64 KB	64 KB	64 KB	
User data per ISO connection, max.	8 KB	8 KB	8 KB	
User data per ISO on TCP connection, max.	32 KB	32 KB	32 KB	
User data per UDP connection, max.	2 KB	2 KB	2 KB	
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	
Weight	150 g	150 g	300 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

CPUs | CPUs STEP7 programmable, Net-CPUs						
214-2BT10 215-2BT10 216-2BT10						

214-2BT10

MP²I



① reserved
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.

RJ45

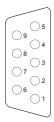
① Transmit +
② Transmit -
③ Receive +
④ n. c.
⑤ n. c.
⑥ Receive -
⑦ n. c.
⑧ n. c.

X1

+ ① + DC 24 V
- ② 0 V

215-2BT10

MP²I



① reserved
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.

RJ45

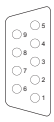
① Transmit +
② Transmit -
③ Receive +
④ n. c.
⑤ n. c.
⑥ Receive -
⑦ n. c.
⑧ n. c.

X1

+ ① + DC 24 V
- ② 0 V

216-2BT10

MP²I



① reserved
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.

RJ45

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

X1

+ ① + DC 24 V
- ② 0 V

CPUs STEP7 programmable, PtP

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	214-2BS02	214-2BS12	214-2BS32	215-2BS02
Figure				
Type	CPU 214SER	CPU 214SER	CPU 214SER	CPU 215SER
General information				
Note	-	-	-	-
Features	› Serial communication via 2x RS232 › 48 kB work memory › 80 kB load memory	› Serial communication via RS232 › 48 kB work memory › 80 kB load memory	› Serial communication via RS485 › 48 kB work memory › 80 kB load memory	› Serial communication via 2x RS232 › 96 kB work memory › 144 kB load memory
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)	-	-	-	-
Current consumption (rated value)	1.5 A	1.5 A	1.5 A	1.5 A
Inrush current	-	-	-	-
Max. current drain at backplane bus	3 A	3 A	3 A	3 A
Load and working memory				
Load memory, integrated	80 KB	80 KB	80 KB	144 KB
Load memory, maximum	-	-	-	-
Work memory, integrated	48 KB	48 KB	48 KB	96 KB
Work memory, maximal	-	-	-	-
Memory divided in 50% program / 50% data	-	-	-	-
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB
Hardware configuration				
Racks, max.	4	4	4	4
Modules per rack, max.	total max. 32	total max. 32	total max. 32	total max. 32
Number of integrated DP master	-	-	-	-
Number of DP master via CP	8	8	8	8
Operable function modules	32	32	32	32
Operable communication modules PtP	32	32	32	32
Operable communication modules LAN	-	-	-	-
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	no	no	no	no

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	214-2BS02	214-2BS12	214-2BS32	215-2BS02
Diagnostic interrupt	no	no	no	no
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs	0.18 µs	0.18 µs
Word instruction, min.	0.78 µs	0.78 µs	0.78 µs	0.78 µs
Double integer arithmetic, min.	-	-	-	-
Floating-point arithmetic, min.	-	-	-	-
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	256
Number of S7 times	256	256	256	256
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	8192 Bit
Number of data blocks	2047	2047	2047	2047
Max. data blocks size	16 KB	16 KB	16 KB	16 KB
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Blocks				
Number of OBs	14	14	14	14
Number of FBs	1024	1024	1024	1024
Number of FCs	1024	1024	1024	1024
Maximum nesting depth per priority class	8	8	8	8
Maximum nesting depth additional within an error OB	1	1	1	1
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	30 d	30 d	30 d	30 d
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	-	-	-	-
Synchronization via Ethernet (NTP)	-	-	-	-
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Input process image maximal	128 Byte	128 Byte	128 Byte	128 Byte
Output process image maximal	128 Byte	128 Byte	128 Byte	128 Byte
Digital inputs	8192	8192	8192	8192
Digital outputs	8192	8192	8192	8192
Digital inputs central	512	512	512	512
Digital outputs central	512	512	512	512

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	214-2BS02	214-2BS12	214-2BS32	215-2BS02
Integrated digital inputs	-	-	-	-
Integrated digital outputs	-	-	-	-
Analog inputs	512	512	512	512
Analog outputs	512	512	512	512
Analog inputs, central	128	128	128	128
Analog outputs, central	128	128	128	128
Integrated analog inputs	-	-	-	-
Integrated analog outputs	-	-	-	-
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.	16	16	16	16
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	MP²I
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	COM1	COM	COM	COM1
Type of interface	RS232	RS232	RS485	RS232
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, male
Electrically isolated	-	-	✓	-
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	214-2BS02	214-2BS12	214-2BS32	215-2BS02
DP slave	-	-	-	-
Point-to-point interface	✓	✓	✓	✓
CAN	-	-	-	-
Type	COM2	-	-	COM2
Type of interface	RS232	-	-	RS232
Connector	Sub-D, 9-pin, male	-	-	Sub-D, 9-pin, male
Electrically isolated	-	-	-	-
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	✓	-	-	✓
Point-to-point communication				
PtP communication	✓	✓	✓	✓
Interface isolated	-	-	✓	-
RS232 interface	✓	✓	-	✓
RS422 interface	-	-	-	-
RS485 interface	-	-	✓	-
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, male
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	150 bit/s
Transmission speed, max.	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s
Cable length, max.	15 m	15 m	500 m	15 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	-	-	-	-
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm
Weight	150 g	150 g	150 g	150 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

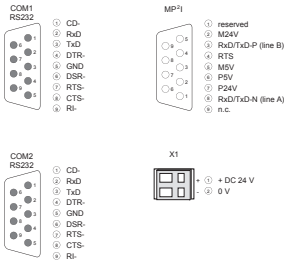
CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	214-2BS02	214-2BS12	214-2BS32	215-2BS02
Certifications				
UL508 certification	yes	yes	yes	yes

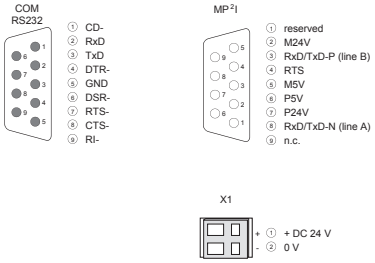
Connections, Interfaces

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

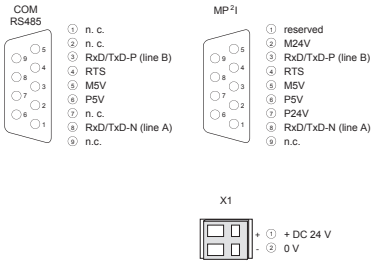
214-2BS02



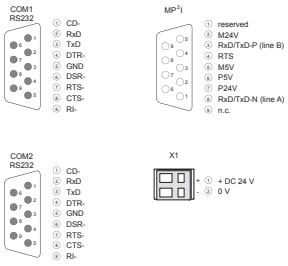
214-2BS12



214-2BS32



215-2BS02



CPUs STEP7 programmable, PtP

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	215-2BS12	215-2BS32	216-2BS02	216-2BS12
Figure				
Type	CPU 215SER	CPU 215SER	CPU 216SER	CPU 216SER
General information				
Note	-	-	-	-
Features	› Serial communication via RS232 › 96 kB work memory › 144 kB load memory	› Serial communication via RS485 › 96 kB work memory › 144 kB load memory	› Serial communication via 2x RS232 › 128 kB work memory › 192 kB load memory	› Serial communication via RS232 › 128 kB work memory › 192 kB load memory
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)	-	-	-	-
Current consumption (rated value)	1.5 A	1.5 A	1.5 A	1.5 A
Inrush current	-	-	-	-
Max. current drain at backplane bus	3 A	3 A	3 A	3 A
Load and working memory				
Load memory, integrated	144 KB	144 KB	192 KB	192 KB
Load memory, maximum	-	-	-	-
Work memory, integrated	96 KB	96 KB	128 KB	128 KB
Work memory, maximal	-	-	-	-
Memory divided in 50% program / 50% data	-	-	-	-
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB
Hardware configuration				
Racks, max.	4	4	4	4
Modules per rack, max.	total max. 32	total max. 32	total max. 32	total max. 32
Number of integrated DP master	-	-	-	-
Number of DP master via CP	8	8	8	8
Operable function modules	32	32	32	32
Operable communication modules PtP	32	32	32	32
Operable communication modules LAN	-	-	-	-
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	no	no	no	no

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	215-2BS12	215-2BS32	216-2BS02	216-2BS12
Diagnostic interrupt	no	no	no	no
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs	0.18 µs	0.18 µs
Word instruction, min.	0.78 µs	0.78 µs	0.78 µs	0.78 µs
Double integer arithmetic, min.	-	-	-	-
Floating-point arithmetic, min.	-	-	-	-
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	256
Number of S7 times	256	256	256	256
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	8192 Bit
Number of data blocks	2047	2047	2047	2047
Max. data blocks size	16 KB	16 KB	16 KB	16 KB
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Blocks				
Number of OBs	14	14	14	14
Number of FBs	1024	1024	1024	1024
Number of FCs	1024	1024	1024	1024
Maximum nesting depth per priority class	8	8	8	8
Maximum nesting depth additional within an error OB	1	1	1	1
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	30 d	30 d	30 d	30 d
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	-	-	-	-
Synchronization via Ethernet (NTP)	-	-	-	-
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Input process image maximal	128 Byte	128 Byte	128 Byte	128 Byte
Output process image maximal	128 Byte	128 Byte	128 Byte	128 Byte
Digital inputs	8192	8192	8192	8192
Digital outputs	8192	8192	8192	8192
Digital inputs central	512	512	512	512
Digital outputs central	512	512	512	512

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	215-2BS12	215-2BS32	216-2BS02	216-2BS12
Integrated digital inputs	-	-	-	-
Integrated digital outputs	-	-	-	-
Analog inputs	512	512	512	512
Analog outputs	512	512	512	512
Analog inputs, central	128	128	128	128
Analog outputs, central	128	128	128	128
Integrated analog inputs	-	-	-	-
Integrated analog outputs	-	-	-	-
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.	16	16	16	16
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	MP²I
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	COM	COM	COM1	COM
Type of interface	RS232	RS485	RS232	RS232
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, male	Sub-D, 9-pin, male
Electrically isolated	-	✓	-	-
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	215-2BS12	215-2BS32	216-2BS02	216-2BS12
DP slave	-	-	-	-
Point-to-point interface	✓	✓	✓	✓
CAN	-	-	-	-
Type	-	-	COM2	-
Type of interface	-	-	RS232	-
Connector	-	-	Sub-D, 9-pin, male	-
Electrically isolated	-	-	-	-
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	✓	-
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, male	Sub-D, 9-pin, male
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	150 bit/s
Transmission speed, max.	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s
Cable length, max.	15 m	500 m	15 m	15 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	-	-	-	-
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm
Weight	150 g	150 g	150 g	150 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

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	215-2BS12	215-2BS32	216-2BS02	216-2BS12
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

215-2BS12

COM
RS232

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

MP²I

①	reserved
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.

X1

+	①	+ DC 24 V
-	②	0 V

215-2BS32

COM
RS485

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.

MP²I

①	reserved
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.

X1

+	①	+ DC 24 V
-	②	0 V

216-2BS02

COM1
RS232

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

COM2
RS232

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

MP²I

①	reserved
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.

X1

+	①	+ DC 24 V
-	②	0 V

216-2BS12

COM
RS232

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

MP²I

①	reserved
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.

X1

+	①	+ DC 24 V
-	②	0 V

CPUs STEP7 programmable, PtP

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	216-2BS32			
Figure				
Type	CPU 216SER			
General information				
Note	-			
Features	› Serial communication via RS485 › 128 kB work memory › 192 kB load memory			
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)	-			
Current consumption (rated value)	1.5 A			
Inrush current	-			
Max. current drain at backplane bus	3 A			
Load and working memory				
Load memory, integrated	192 KB			
Load memory, maximum	-			
Work memory, integrated	128 KB			
Work memory, maximal	-			
Memory divided in 50% program / 50% data	-			
Memory card slot	MMC-Card with max. 512 MB			
Hardware configuration				
Racks, max.	4			
Modules per rack, max.	total max. 32			
Number of integrated DP master	-			
Number of DP master via CP	8			
Operable function modules	32			
Operable communication modules PtP	32			
Operable communication modules LAN	-			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	no			
Process alarm	no			

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	216-2BS32			
Diagnostic interrupt	no			
Command processing times				
Bit instructions, min.	0.18 µs			
Word instruction, min.	0.78 µs			
Double integer arithmetic, min.	-			
Floating-point arithmetic, min.	-			
Timers/Counters and their retentive characteristics				
Number of S7 counters	256			
Number of S7 times	256			
Data range and retentive characteristic				
Number of flags	8192 Bit			
Number of data blocks	2047			
Max. data blocks size	16 KB			
Max. local data size per execution level	1024 Byte			
Blocks				
Number of OBs	14			
Number of FBs	1024			
Number of FCs	1024			
Maximum nesting depth per priority class	8			
Maximum nesting depth additional within an error OB	1			
Time				
Real-time clock buffered	✓			
Clock buffered period (min.)	30 d			
Accuracy (max. deviation per day)	10 s			
Number of operating hours counter	8			
Clock synchronization	-			
Synchronization via MPI	-			
Synchronization via Ethernet (NTP)	-			
Address areas (I/O)				
Input I/O address area	1024 Byte			
Output I/O address area	1024 Byte			
Input process image maximal	128 Byte			
Output process image maximal	128 Byte			
Digital inputs	8192			
Digital outputs	8192			
Digital inputs central	512			
Digital outputs central	512			

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	216-2BS32			
Integrated digital inputs	-			
Integrated digital outputs	-			
Analog inputs	512			
Analog outputs	512			
Analog inputs, central	128			
Analog outputs, central	128			
Integrated analog inputs	-			
Integrated analog outputs	-			
Communication functions				
PG/OP channel	✓			
Global data communication	✓			
Number of GD circuits, max.	4			
Size of GD packets, max.	22 Byte			
S7 basic communication	✓			
S7 basic communication, user data per job	76 Byte			
S7 communication	✓			
S7 communication as server	✓			
S7 communication as client	-			
S7 communication, user data per job	160 Byte			
Number of connections, max.	16			
Functionality Sub-D interfaces				
Type	MP²I			
Type of interface	RS485			
Connector	Sub-D, 9-pin, female			
Electrically isolated	-			
MPI	✓			
MP²I (MPI/RS232)	✓			
DP master	-			
DP slave	-			
Point-to-point interface	-			
Type	COM			
Type of interface	RS485			
Connector	Sub-D, 9-pin, female			
Electrically isolated	✓			
MPI	-			
MP²I (MPI/RS232)	-			
DP master	-			

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

Order number	216-2BS32			
DP slave	-			
Point-to-point interface	✓			
CAN	-			
Type	-			
Type of interface	-			
Connector	-			
Electrically isolated	-			
MPI	-			
MP²I (MPI/RS232)	-			
DP master	-			
DP slave	-			
Point-to-point interface	-			
Point-to-point communication				
PtP communication	✓			
Interface isolated	✓			
RS232 interface	-			
RS422 interface	-			
RS485 interface	✓			
Connector	Sub-D, 9-pin, female			
Transmission speed, min.	150 bit/s			
Transmission speed, max.	115.2 kbit/s			
Cable length, max.	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	-			
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 80 mm			
Weight	150 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

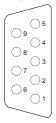
Order number	216-2BS32			
Certifications				
UL508 certification	yes			

Connections, Interfaces

CPUs | CPUs STEP7 programmable, PtP						
214-2BS02 214-2BS12 214-2BS32 215-2BS02	215-2BS12 215-2BS32 216-2BS02 216-2BS12	216-2BS32				

216-2BS32

COM
RS485



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.

MP²I

① reserved
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.

X1

\+ ① + DC 24 V
\- ② 0 V

CPUs STEP7 programmable, DP master

CPUs | CPUs STEP7 programmable, DP master						
214-2BM02 215-2BM02 216-2BM02						

Order number	214-2BM02	215-2BM02	216-2BM02	
Figure				
Type	CPU 214DPM	CPU 215DPM	CPU 216DPM	
General information				
Note	-	-	-	
Features	› PROFIBUS-DP master › 48 kB work memory › 80 kB load memory	› PROFIBUS-DP master › 96 kB work memory › 144 kB load memory	› PROFIBUS-DP master › 128 kB work memory › 192 kB load memory	
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)	-	-	-	
Current consumption (rated value)	1.5 A	1.5 A	1.5 A	
Inrush current	-	-	-	
Max. current drain at backplane bus	3 A	3 A	3 A	
Load and working memory				
Load memory, integrated	80 KB	144 KB	192 KB	
Load memory, maximum	-	-	-	
Work memory, integrated	48 KB	96 KB	128 KB	
Work memory, maximal	-	-	-	
Memory divided in 50% program / 50% data	-	-	-	
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	
Hardware configuration				
Racks, max.	4	4	4	
Modules per rack, max.	total max. 32	total max. 32	total max. 32	
Number of integrated DP master	1	1	1	
Number of DP master via CP	8	8	8	
Operable function modules	32	32	32	
Operable communication modules PtP	32	32	32	
Operable communication modules LAN	-	-	-	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	no	no	no	
Process alarm	no	no	no	

CPUs | CPUs STEP7 programmable, DP master						
214-2BM02 215-2BM02 216-2BM02						

Order number	214-2BM02	215-2BM02	216-2BM02	
Diagnostic interrupt	no	no	no	
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs	0.18 µs	
Word instruction, min.	0.78 µs	0.78 µs	0.78 µs	
Double integer arithmetic, min.	-	-	-	
Floating-point arithmetic, min.	-	-	-	
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	
Number of S7 times	256	256	256	
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	
Number of data blocks	2047	2047	2047	
Max. data blocks size	16 KB	16 KB	16 KB	
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	
Blocks				
Number of OBs	14	14	14	
Number of FBs	1024	1024	1024	
Number of FCs	1024	1024	1024	
Maximum nesting depth per priority class	8	8	8	
Maximum nesting depth additional within an error OB	1	1	1	
Time				
Real-time clock buffered	✓	✓	✓	
Clock buffered period (min.)	30 d	30 d	30 d	
Accuracy (max. deviation per day)	10 s	10 s	10 s	
Number of operating hours counter	8	8	8	
Clock synchronization	-	-	-	
Synchronization via MPI	-	-	-	
Synchronization via Ethernet (NTP)	-	-	-	
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	
Input process image maximal	128 Byte	128 Byte	128 Byte	
Output process image maximal	128 Byte	128 Byte	128 Byte	
Digital inputs	8192	8192	8192	
Digital outputs	8192	8192	8192	
Digital inputs central	512	512	512	
Digital outputs central	512	512	512	

CPUs | CPUs STEP7 programmable, DP master						
214-2BM02 215-2BM02 216-2BM02						

Order number	214-2BM02	215-2BM02	216-2BM02	
Integrated digital inputs	-	-	-	
Integrated digital outputs	-	-	-	
Analog inputs	512	512	512	
Analog outputs	512	512	512	
Analog inputs, central	128	128	128	
Analog outputs, central	128	128	128	
Integrated analog inputs	-	-	-	
Integrated analog outputs	-	-	-	
Communication functions				
PG/OP channel	✓	✓	✓	
Global data communication	✓	✓	✓	
Number of GD circuits, max.	4	4	4	
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.	16	16	16	
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	
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	DP	DP	DP	
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	✓	✓	✓	

CPUs | CPUs STEP7 programmable, DP master						
214-2BM02 215-2BM02 216-2BM02						

Order number	214-2BM02	215-2BM02	216-2BM02	
DP slave	-	-	-	
Point-to-point interface	-	-	-	
CAN	-	-	-	
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.	64	64	64	
Address range inputs, max.	1 KB	1 KB	1 KB	
Address range outputs, max.	1 KB	1 KB	1 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	
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	
Weight	150 g	150 g	150 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

CPUs | CPUs STEP7 programmable, DP master						
214-2BM02 215-2BM02 216-2BM02						

214-2BM02

DP master

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.

MP²I

①	reserved
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.

X1

+	①	+ DC 24 V
-	②	0 V

215-2BM02

DP master

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.

MP²I

①	reserved
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.

X1

+	①	+ DC 24 V
-	②	0 V

216-2BM02

DP master

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.

MP²I

①	reserved
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.

X1

+	①	+ DC 24 V
-	②	0 V

CPUs STEP7 programmable, DP slave

CPUs | CPUs STEP7 programmable, DP slave						
214-2BP02 215-2BP02 216-2BP02						

Order number	214-2BP02	215-2BP02	216-2BP02	
Figure				
Type	CPU 214DP	CPU 215DP	CPU 216DP	
General information				
Note	-	-	-	
Features	› PROFIBUS-DP slave › 48 kB work memory › 80 kB load memory	› PROFIBUS-DP slave › 96 kB work memory › 144 kB load memory	› PROFIBUS-DP slave › 128 kB work memory › 192 kB load memory	
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)	-	-	-	
Current consumption (rated value)	1.5 A	1.5 A	1.5 A	
Inrush current	-	-	-	
Max. current drain at backplane bus	3 A	3 A	3 A	
Load and working memory				
Load memory, integrated	80 KB	144 KB	192 KB	
Load memory, maximum	-	-	-	
Work memory, integrated	48 KB	96 KB	128 KB	
Work memory, maximal	-	-	-	
Memory divided in 50% program / 50% data	-	-	-	
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	
Hardware configuration				
Racks, max.	4	4	4	
Modules per rack, max.	total max. 32	total max. 32	total max. 32	
Number of integrated DP master	-	-	-	
Number of DP master via CP	8	8	8	
Operable function modules	32	32	32	
Operable communication modules PtP	32	32	32	
Operable communication modules LAN	-	-	-	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	no	no	no	
Process alarm	no	no	no	

CPUs | CPUs STEP7 programmable, DP slave						
214-2BP02 215-2BP02 216-2BP02						

Order number	214-2BP02	215-2BP02	216-2BP02	
Diagnostic interrupt	no	no	no	
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs	0.18 µs	
Word instruction, min.	0.78 µs	0.78 µs	0.78 µs	
Double integer arithmetic, min.	-	-	-	
Floating-point arithmetic, min.	-	-	-	
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	
Number of S7 times	256	256	256	
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	
Number of data blocks	2047	2047	2047	
Max. data blocks size	16 KB	16 KB	16 KB	
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	
Blocks				
Number of OBs	14	14	14	
Number of FBs	1024	1024	1024	
Number of FCs	1024	1024	1024	
Maximum nesting depth per priority class	8	8	8	
Maximum nesting depth additional within an error OB	1	1	1	
Time				
Real-time clock buffered	✓	✓	✓	
Clock buffered period (min.)	30 d	30 d	30 d	
Accuracy (max. deviation per day)	10 s	10 s	10 s	
Number of operating hours counter	8	8	8	
Clock synchronization	-	-	-	
Synchronization via MPI	-	-	-	
Synchronization via Ethernet (NTP)	-	-	-	
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	
Input process image maximal	128 Byte	128 Byte	128 Byte	
Output process image maximal	128 Byte	128 Byte	128 Byte	
Digital inputs	8192	8192	8192	
Digital outputs	8192	8192	8192	
Digital inputs central	512	512	512	
Digital outputs central	512	512	512	

CPUs | CPUs STEP7 programmable, DP slave						
214-2BP02 215-2BP02 216-2BP02						

Order number	214-2BP02	215-2BP02	216-2BP02	
Integrated digital inputs	-	-	-	
Integrated digital outputs	-	-	-	
Analog inputs	512	512	512	
Analog outputs	512	512	512	
Analog inputs, central	128	128	128	
Analog outputs, central	128	128	128	
Integrated analog inputs	-	-	-	
Integrated analog outputs	-	-	-	
Communication functions				
PG/OP channel	✓	✓	✓	
Global data communication	✓	✓	✓	
Number of GD circuits, max.	4	4	4	
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.	16	16	16	
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	
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	DP	DP	DP	
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	-	-	-	

CPUs | CPUs STEP7 programmable, DP slave						
214-2BP02 215-2BP02 216-2BP02						

Order number	214-2BP02	215-2BP02	216-2BP02	
DP slave	✓	✓	✓	
Point-to-point interface	-	-	-	
CAN	-	-	-	
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.	64 Byte	64 Byte	64 Byte	
Transfer memory outputs, max.	64 Byte	64 Byte	64 Byte	
Address areas, max.	1	1	1	
User data per address area, max.	64 Byte	64 Byte	64 Byte	
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	
Weight	150 g	150 g	150 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

CPUs | CPUs STEP7 programmable, DP slave						
214-2BP02 215-2BP02 216-2BP02						

214-2BP02

DP slave

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.

MP²I

①	reserved
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.

X1

+	①	+ DC 24 V
-	②	0 V

215-2BP02

DP slave

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.

MP²I

①	reserved
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.

X1

+	①	+ DC 24 V
-	②	0 V

216-2BP02

DP slave

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.

MP²I

①	reserved
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.

X1

+	①	+ DC 24 V
-	②	0 V

CPUs STEP7 programmable, CAN master

CPUs | CPUs STEP7 programmable, CAN master						
214-2CM02 215-2CM02 216-2CM02						

Order number	214-2CM02	215-2CM02	216-2CM02	
Figure				
Type	CPU 214CAN	CPU 215CAN	CPU 216CAN	
General information				
Note	-	-	-	
Features	› CANopen master › 48 kB work memory › 80 kB load memory	› CANopen master › 96 kB work memory › 144 kB load memory	› CANopen master › 128 kB work memory › 192 kB load memory	
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)	-	-	-	
Current consumption (rated value)	1.5 A	1.5 A	1.5 A	
Inrush current	-	-	-	
Max. current drain at backplane bus	3 A	3 A	3 A	
Load and working memory				
Load memory, integrated	80 KB	144 KB	192 KB	
Load memory, maximum	-	-	-	
Work memory, integrated	48 KB	96 KB	128 KB	
Work memory, maximal	-	-	-	
Memory divided in 50% program / 50% data	-	-	-	
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	
Hardware configuration				
Racks, max.	4	4	4	
Modules per rack, max.	total max. 32	total max. 32	total max. 32	
Number of integrated DP master	-	-	-	
Number of DP master via CP	8	8	8	
Operable function modules	32	32	32	
Operable communication modules PtP	32	32	32	
Operable communication modules LAN	-	-	-	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	no	no	no	
Process alarm	no	no	no	

CPUs | CPUs STEP7 programmable, CAN master						
214-2CM02 215-2CM02 216-2CM02						

Order number	214-2CM02	215-2CM02	216-2CM02	
Diagnostic interrupt	no	no	no	
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs	0.18 µs	
Word instruction, min.	0.78 µs	0.78 µs	0.78 µs	
Double integer arithmetic, min.	-	-	-	
Floating-point arithmetic, min.	-	-	-	
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	
Number of S7 times	256	256	256	
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	
Number of data blocks	2047	2047	2047	
Max. data blocks size	16 KB	16 KB	16 KB	
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	
Blocks				
Number of OBs	14	14	14	
Number of FBs	1024	1024	1024	
Number of FCs	1024	1024	1024	
Maximum nesting depth per priority class	8	8	8	
Maximum nesting depth additional within an error OB	1	1	1	
Time				
Real-time clock buffered	✓	✓	✓	
Clock buffered period (min.)	30 d	30 d	30 d	
Accuracy (max. deviation per day)	10 s	10 s	10 s	
Number of operating hours counter	8	8	8	
Clock synchronization	-	-	-	
Synchronization via MPI	-	-	-	
Synchronization via Ethernet (NTP)	-	-	-	
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	
Input process image maximal	128 Byte	128 Byte	128 Byte	
Output process image maximal	128 Byte	128 Byte	128 Byte	
Digital inputs	8192	8192	8192	
Digital outputs	8192	8192	8192	
Digital inputs central	512	512	512	
Digital outputs central	512	512	512	

CPUs | CPUs STEP7 programmable, CAN master						
214-2CM02 215-2CM02 216-2CM02						

Order number	214-2CM02	215-2CM02	216-2CM02	
Integrated digital inputs	-	-	-	
Integrated digital outputs	-	-	-	
Analog inputs	512	512	512	
Analog outputs	512	512	512	
Analog inputs, central	128	128	128	
Analog outputs, central	128	128	128	
Integrated analog inputs	-	-	-	
Integrated analog outputs	-	-	-	
Communication functions				
PG/OP channel	✓	✓	✓	
Global data communication	✓	✓	✓	
Number of GD circuits, max.	4	4	4	
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.	16	16	16	
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	
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	CAN	CAN	CAN	
Type of interface	CAN	CAN	CAN	
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, male	
Electrically isolated	✓	✓	✓	
MPI	-	-	-	
MP²I (MPI/RS232)	-	-	-	
DP master	-	-	-	

CPUs | CPUs STEP7 programmable, CAN master						
214-2CM02 215-2CM02 216-2CM02						

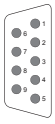
Order number	214-2CM02	215-2CM02	216-2CM02	
DP slave	-	-	-	
Point-to-point interface	-	-	-	
CAN	✓	✓	✓	
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	
Weight	150 g	150 g	150 g	
Environmental conditions				
Operating temperature	0 °C to 60 °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

CPUs | CPUs STEP7 programmable, CAN master						
214-2CM02 215-2CM02 216-2CM02						

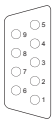
214-2CM02

CAN



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

MP²I



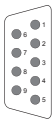
① reserved
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X1

+ ① + DC 24 V
- ② 0 V

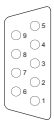
215-2CM02

CAN



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

MP²I



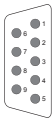
① reserved
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X1

+ ① + DC 24 V
- ② 0 V

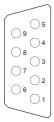
216-2CM02

CAN



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

MP²I



① reserved
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.

X1

+ ① + DC 24 V
- ② 0 V

Clamp modules

Structure and Function

Clamp modules are passive modules for 2- or 3-wire installations, the contacts are electrically connected internally vertically. They offer various connectivity options for signals, mass and plus potentials.

By the use of clamp modules distributors for a power supply can be realized in a simple way and thus offer the possibility for connection of active supplied sensors such as proximity switches. Wiring is carried out by means of time saving and secure cage clamp technology.

Passive terminal modules have no connection to the backplane bus. Therefore during the assembly of the terminal modules the signal passage to post-positioned assemblies via backplane bus connectors must be ensured. The terminal modules are attached to the mounting surface using a 35 mm profile rail.

Characteristics

- Maintenance-free cage clamp technology
- Color-coded terminals
- Maximum terminal current 10 A
- Compact design
- Assembly with 35 mm profile rail
- 24 months warranty

Overview

Order no.	Name/Description	Page
Clamp modules		
201-1AA00	**CM 201 - Double clamps module** › Dual terminals › 2x11 clamps, gray/gray › passive	**252**
201-1AA10	**CM 201 - Double clamps module** › Dual terminals › 2x11 clamps, green-yellow/gray › passive	**252**
201-1AA20	**CM 201 - Double clamps module** › Dual terminals › 2x11 clamps, red/blue › passive	**252**
201-1AA40	**CM 201 - 4-tier clamps module** › Quad terminals › 2x5 clamps gray/gray › 2x6 clamps red/blue › Passive	**252**

Clamp modules

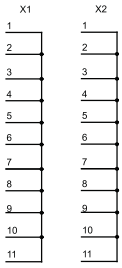
Clamp modules | Clamp modules						
201-1AA00 201-1AA10 201-1AA20 201-1AA40						

Order number	201-1AA00	201-1AA10	201-1AA20	201-1AA40
Figure				
Type	CM 201	CM 201	CM 201	CM 201
General information				
Note	-	-	-	-
Features	› Dual terminals › 2x11 clamps, gray/gray › passive	› Dual terminals › 2x11 clamps, green-yellow/gray › passive	› Dual terminals › 2x11 clamps, red/blue › passive	› Quad terminals › 2x5 clamps gray/gray › 2x6 clamps red/blue › Passive
Clamp parameter				
Terminal voltage max.	DC 60 V	DC 60 V	DC 60 V	DC 60 V
Terminal current max.	10 A	10 A	10 A	10 A
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 80 mm	25.4 mm x 76 mm x 80 mm	25.4 mm x 76 mm x 80 mm	25.4 mm x 76 mm x 80 mm
Weight	90 g	90 g	90 g	90 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

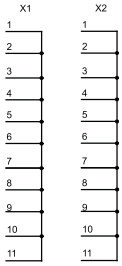
Connections, Interfaces

Clamp modules | Clamp modules						
201-1AA00 201-1AA10 201-1AA20 201-1AA40						

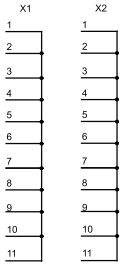
201-1AA00



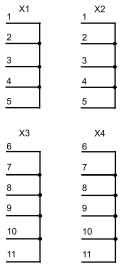
201-1AA10



201-1AA20



201-1AA40



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 fixed on a 35 mm profile rail either combined with system 200V components or as "stand-alone" modules.

The power supply has no connection to the backplane bus.

Characteristics

- Automatic wide range input detection (AC 100 V - 240 V)
- Connection to single phase AC mains
- Output current 2 A
- Nominal output voltage DC 24 V
- Front integrated status LEDs for fault diagnosis
- Protection against short circuit, overload and open circuit
- IP 20 protection
- Compact design
- Assembly with 35 mm profile rail
- 24 month warranty

Overview

Order no.	Name/Description	Page
Power supply		
207-1BA00	**PS 207 - Power supply** › AC 100...240 V w/o manual intervention › Output voltage DC 24 V	**256**
207-2BA20	**PS 207 - Power supply** › AC 100...240 V w/o manual intervention › Output voltage DC 24V › Terminal module with 2x11 clamps	**256**

Power supply

Power supply | Power supply						
207-1BA00 207-2BA20						

Order number	207-1BA00	207-2BA20		
Figure				
Type	PS 207	PS 207		
General information				
Note	-	-		
Features	› AC 100...240 V w/o manual intervention › Output voltage DC 24 V	› AC 100...240 V w/o manual intervention › Output voltage DC 24V › Terminal module with 2x11 clamps		
Technical data power supply				
Input voltage (rated value)	AC 100...240 V	AC 100...240 V		
Input voltage (permitted range)	AC 100...240 V	AC 100...240 V		
Mains frequency (rated value)	50...60 Hz	50...60 Hz		
Mains frequency (permitted range)	47...63 Hz	47...63 Hz		
Input voltage (at 120 V)	0.53 A	0.53 A		
Input voltage (at 230 V)	0.24 A	0.24 A		
Inrush current (at 25 °C)	30 A	30 A		
Power consumption typ.	53 W	53 W		
Output voltage (rated value)	24 V	24 V		
Output current (rated value)	2 A	2 A		
Power supply parallel switchable	✓	✓		
Protect type	Short circuit, overload, over temperature	Short circuit, overload, over temperature		
Ripple of output voltage (max.), BW=20 MHz	100 mV	100 mV		
Efficiency typ.	90 %	90 %		
Power loss typ.	5 W	5 W		
Clamp parameter				
Terminal voltage max.	-	DC 60 V		
Terminal current max.	-	10 A		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		
Diagnostic functions	no	no		
Diagnostics information read-out	none	none		

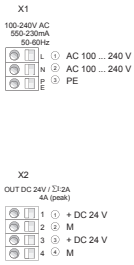
Power supply | Power supply						
207-1BA00 207-2BA20						

Order number	207-1BA00	207-2BA20		
Supply voltage display	none	none		
Group error display	none	none		
Channel error display	none	none		
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	50.8 mm x 76 mm x 78 mm		
Weight	150 g	210 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		

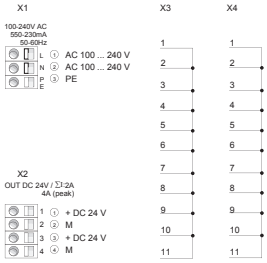
Connections, Interfaces

Power supply | Power supply						
207-1BA00 207-2BA20						

207-1BA00



207-2BA20



Signal modules digital

Structure and Function

Digital modules for 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. There are digital modules with 4 to 32 channels available.

Characteristics

- Large selection, modules are available for all popular applications
- Compact design
- LED status indicator
- Electrically isolated to the backplane bus
- Maintenance-free cage-clamp technology
- Label cards included
- Front connector included
- Assembly with 35 mm profile rail
- 24 month warranty

Overview

Order no.	Name/Description	Page
Digital input modules		
221-1BF00	**SM 221 - Digital input** › 8 inputs	**264**
221-1BF10	**SM 221 - Digital input** › 8 inputs, › Delay time 0.2 ms	**264**
221-1BF21	**SM 221 - Digital input** › 8 alarm inputs › Delay time 0.2 ms	**264**
221-1BF30	**SM 221 - Digital input ECO** › 8 inputs	**264**
221-1BF40	**SM 221 - Digital input** › 8 inputs › for fast, short signals (pulse)	**267**
221-1BF50	**SM 221 - Digital input** › 8 inputs › Active low input	**267**
221-1BH00	**SM 221 - Digital input** › 16 inputs › LED status display on the conversion module UB4x	**267**
221-1BH10	**SM 221 - Digital input** › 16 inputs	**267**
221-1BH30	**SM 221 - Digital input ECO** › 16 inputs	**270**
221-1BH50	**SM 221 - Digital input** › 16 inputs › Active low input › LED status display on conversion module UB4x	**270**
221-1BH51	**SM 221 - Digital input** › 16 inputs › Active low input	**270**
221-1FD00	**SM 221 - Digital input** › 4 inputs › AC/DC 90...230 V › Isolation per channel	**270**
221-1FF20	**SM 221 - Digital input** › 8 inputs › AC/DC 60...230 V	**273**
221-1FF30	**SM 221 - Digital input** › 8 inputs › AC/DC 24...48 V	**273**
221-1FF40	**SM 221 - Digital input** › 8 inputs › AC 230 V › Hysteresis	**273**
221-1FF50	**SM 221 - Digital input** › 8 inputs › AC 180...265 V	**273**
221-2BL10	**SM 221 - Digital input** › 32 inputs	**276**
KSD221-1BH00	**SM 221 Set - Digital input** › 16 inputs › LED status display on conversion module UB48D	**276**
KS221-1BH00	**SM 221 Set - Digital input** › 16 inputs › LED status display on conversion module UB48	**276**
Digital input with counter		
221-1BH20	**SM 221 - Digital input** › 16 inputs › 2 inputs are configurable as counter › LED status display	**279**
Digital output modules		
222-1BF00	**SM 222 - Digital output** › 8 outputs › Output current 1A	**283**
222-1BF10	**SM 222 - Digital output** › 8 outputs › Output current 2 A	**283**

Overview

Order no.	Name/Description	Page
222-1BF20	**SM 222 - Digital output** › 8 outputs, › Isolation in 4 groups per 2 outputs › Output current 2 A	**283**
222-1BF30	**SM 222 - Digital output ECO** › 8 outputs › Output current 0.5 A	**283**
222-1BF50	**SM 222 - Digital output** › 8 Low-Side outputs › Output current 0.5 A	**286**
222-1BH00	**SM 222 - Digital output** › 16 outputs › Output current 0.5 A › LED status display on conversion module UB4x	**286**
222-1BH10	**SM 222 - Digital output** › 16 outputs › Output current 1 A	**286**
222-1BH20	**SM 222 - Digital output** › 16 outputs › Output current 2 A	**286**
222-1BH30	**SM 222 - Digital output ECO** › 16 outputs › Output current 0.5 A	**289**
222-1BH50	**SM 222 - Digital output** › 16 Low-Side outputs › Output current 0.5 A	**289**
222-1BH51	**SM 222 - Digital output** › 16 Low-Side outputs › Output current 0.5A	**289**
222-1DB00	**SM 222 - Digital output** › 2 outputs › AC 100...240 V › Output current 2 A › Software dimmer for resistive, inductive or capacitive load › Frequency range 47...63 Hz	**289**
222-1FD10	**SM 222 - Digital output** › 8 isolated solid-state outputs › AC 230 V/ DC 400 V › Output current 0.5 A	**292**
222-1FF00	**SM 222 - Digital output** › 8 solide-state outputs › AC 230 V/ DC 400 V › Output current 0.5 A	**292**
222-1HD10	**SM 222 - Digital output** › 4 isolated relay outputs › AC 230 V/ DC 30 V › Output current 5 A	**292**
222-1HD20	**SM 222 - Digital output** › 4 isolated relay outputs › AC 230 V/ DC 30 V › Output current 16 A	**292**
222-1HF00	**SM 222 - Digital output** › 8 relay outputs › AC 230 V/ DC 30 V › Output current 5 A	**295**
222-2BL10	**SM 222 - Digital output** › 32 outputs › Output current 1 A	**295**
KSD222-1BH00	**SM 222 Set - Digital output** › 16 outputs › LED status display on conversion module UB48D › Output current 0.5 A	**295**
KS222-1BH00	**SM 222 Set - Digital output** › 16 outputs › LED status display on conversion module UB48 › Output current 0.5 A	**295**
Digital in/output modules		
223-1BF00	**SM 223 - Digital in-/output** › 8 channels (as input or output) › Output current 1 A › Diagnostics function	**298**

Overview

Order no.	Name/Description	Page
223-2BL10	**SM 223 - Digital in-/output** › 16 inputs/ 16 outputs › DC 24 V › Output current 1 A	**298**

Digital input modules

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1BF00	221-1BF10	221-1BF21	221-1BF30
Figure				
Type	SM 221	SM 221	SM 221	SM 221
General information				
Note	-	-	-	-
Features	› 8 inputs	› 8 inputs, › Delay time 0.2 ms	› 8 alarm inputs › Delay time 0.2 ms	› 8 inputs
Current consumption/power loss				
Current consumption from backplane bus	25 mA	25 mA	25 mA	25 mA
Power loss	-	-	-	-
Technical data digital inputs				
Number of inputs	8	8	8	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	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
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 hysterese	-	-	-	-
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	0.2 ms	0.2 ms	3 ms
Input delay of "1" to "0"	3 ms	0.2 ms	0.2 ms	3 ms
Number of simultaneously utilizable inputs horizontal configuration	8	8	8	8
Number of simultaneously utilizable inputs vertical configuration	8	8	8	8
Input characteristic curve	IEC 61131, type 1	-	-	-
Initial data size	1 Byte	1 Byte	1 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

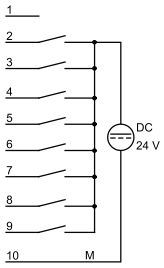
Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1BF00	221-1BF10	221-1BF21	221-1BF30
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	none	none
Group error display	none	none	none	none
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
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	60 g	90 g	90 g	90 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

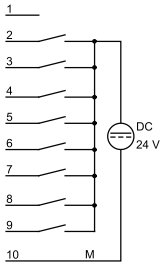
Connections, Interfaces

Signal modules digital | Digital input modules						
221-1BF00	221-1BF40	221-1BH30	221-1FF20	221-2BL10		
221-1BF10	221-1BF50	221-1BH50	221-1FF30	KSD221-1BH00		
221-1BF21	221-1BH00	221-1BH51	221-1FF40	KS221-1BH00		
221-1BF30	221-1BH10	221-1FD00	221-1FF50			

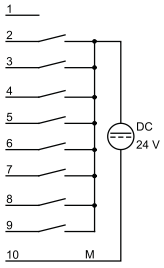
221-1BF00



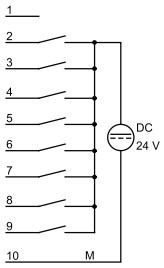
221-1BF10



221-1BF21



221-1BF30



Digital input modules

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1BF40	221-1BF50	221-1BH00	221-1BH10
Figure				
Type	SM 221	SM 221	SM 221	SM 221
General information				
Note	-	-	-	-
Features	› 8 inputs › for fast, short signals (pulse)	› 8 inputs › Active low input	› 16 inputs › LED status display on the conversion module UB4x	› 16 inputs
Current consumption/power loss				
Current consumption from backplane bus	25 mA	10 mA	35 mA	40 mA
Power loss	-	-	-	3.5 W
Technical data digital inputs				
Number of inputs	8	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	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
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 15...28.8 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 0...5 V	DC 15...28.8 V	DC 15...28.8 V
Input voltage hysterese	-	-	-	-
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"	0.2 ms	3 ms	3 ms	3 ms
Input delay of "1" to "0"	0.2 ms	3 ms	3 ms	3 ms
Number of simultaneously utilizable inputs horizontal configuration	8	8	16	16
Number of simultaneously utilizable inputs vertical configuration	8	8	16	16
Input characteristic curve	IEC 61131, type 1	-	IEC 61131, type 1	IEC 61131, type 1
Initial data size	1 Byte	1 Byte	2 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	none	green LED per channel

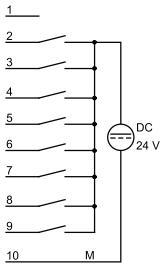
Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1BF40	221-1BF50	221-1BH00	221-1BH10
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	none	none
Group error display	none	none	none	none
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	8	8	16	16
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	90 g	100 g	70 g	90 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

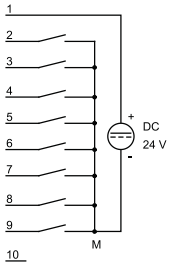
Connections, Interfaces

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

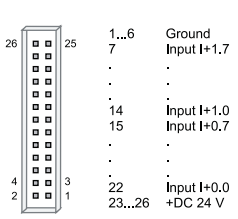
221-1BF40

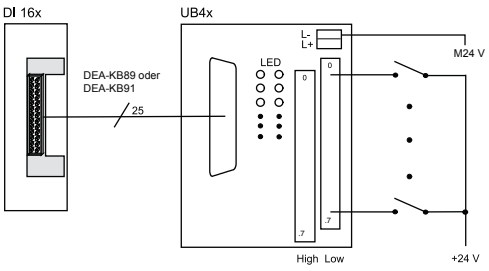


221-1BF50

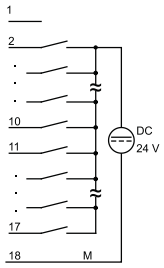


221-1BH00





221-1BH10



Digital input modules

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1BH30	221-1BH50	221-1BH51	221-1FD00
Figure				
Type	SM 221	SM 221	SM 221	SM 221
General information				
Note	-	-	-	-
Features	› 16 inputs	› 16 inputs › Active low input › LED status display on conversion module UB4x	› 16 inputs › Active low input	› 4 inputs › AC/DC 90...230 V › Isolation per channel
Current consumption/power loss				
Current consumption from backplane bus	45 mA	40 mA	20 mA	40 mA
Power loss	-	-	-	-
Technical data digital inputs				
Number of inputs	16	16	16	4
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	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	AC/DC 90...230 V
Input voltage for signal "0"	DC 0...5 V	DC 15...28.8 V	DC 15...28.8 V	AC/DC 0...35 V
Input voltage for signal "1"	DC 15...28.8 V	DC 0...5 V	DC 0...5 V	AC/DC 90...230 V
Input voltage hysterese	-	-	-	-
Frequency range	-	-	-	50...60 Hz
Input resistance	-	-	-	136 kΩ
Input current for signal "1"	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	-
Input delay of "0" to "1"	3 ms	3 ms	3 ms	25 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	25 ms
Number of simultaneously utilizable inputs horizontal configuration	16	16	16	4
Number of simultaneously utilizable inputs vertical configuration	16	16	16	4
Input characteristic curve	IEC 61131, type 1	-	-	-
Initial data size	2 Byte	2 Byte	2 Byte	1 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	none	green LED per channel	green LED per channel

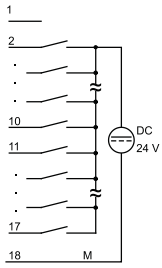
Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1BH30	221-1BH50	221-1BH51	221-1FD00
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	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	-
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	-
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	90 g	70 g	90 g	90 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

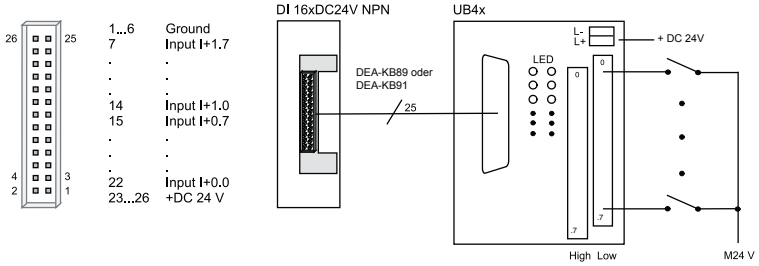
Connections, Interfaces

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

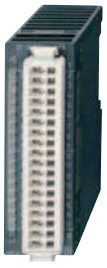
221-1BH30

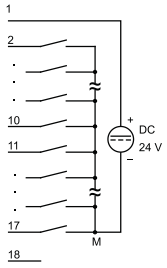


221-1BH50

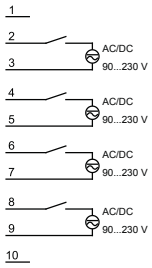


221-1BH51





221-1FD00



Digital input modules

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1FF20	221-1FF30	221-1FF40	221-1FF50
Figure				
Type	SM 221	SM 221	SM 221	SM 221
General information				
Note	-	-	-	-
Features	› 8 inputs › AC/DC 60...230 V	› 8 inputs › AC/DC 24...48 V	› 8 inputs › AC 230 V › Hysteresis	› 8 inputs › AC 180...265 V
Current consumption/power loss				
Current consumption from backplane bus	60 mA	60 mA	60 mA	80 mA
Power loss	-	-	-	-
Technical data digital inputs				
Number of inputs	8	8	8	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	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	AC/DC 60...230 V	AC/DC 24...48 V	AC 230 V	AC/DC 180...265 V
Input voltage for signal "0"	AC/DC 0...35 V	AC/DC 0...8 V	AC 0...70 V	AC/DC 0...150 V
Input voltage for signal "1"	AC/DC 60...230 V	AC/DC 18...48 V	AC 190...260 V	AC/DC 180...265 V
Input voltage hysterese	-	-	AC 90...160 V	-
Frequency range	50...60 Hz	50...60 Hz	50 Hz	50...60 Hz
Input resistance	136 kΩ	16.4 kΩ	136 kΩ	136 kΩ
Input current for signal "1"	-	-	-	-
Connection of Two-Wire-BEROs possible	-	-	-	-
Max. permissible BERO quiescent current	-	-	-	-
Input delay of "0" to "1"	25 ms	25 ms	25 ms	25 ms
Input delay of "1" to "0"	25 ms	25 ms	25 ms	25 ms
Number of simultaneously utilizable inputs horizontal configuration	8	8	8	8
Number of simultaneously utilizable inputs vertical configuration	8	8	8	8
Input characteristic curve	-	-	-	-
Initial data size	1 Byte	1 Byte	1 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

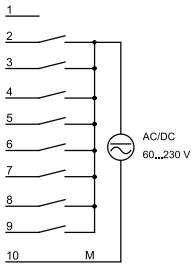
Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1FF20	221-1FF30	221-1FF40	221-1FF50
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	none	none
Group error display	none	none	none	none
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	-	-	-	-
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	100 g	90 g	100 g	90 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

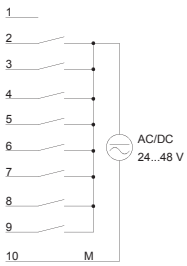
Connections, Interfaces

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

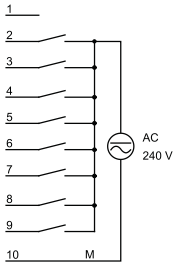
221-1FF20



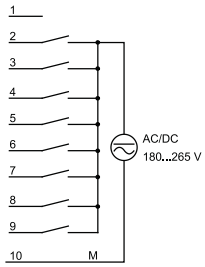
221-1FF30



221-1FF40

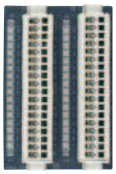


221-1FF50



Digital input modules

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-2BL10	KSD221-1BH00	KS221-1BH00	
Figure				
Type	SM 221	SM 221, Set	SM 221, Set	
General information				
Note	-	-	-	
Features	› 32 inputs	› 16 inputs › LED status display on conversion module UB48D	› 16 inputs › LED status display on conversion module UB48	
Current consumption/power loss				
Current consumption from backplane bus	40 mA	35 mA	35 mA	
Power loss	-	-	-	
Technical data digital inputs				
Number of inputs	32	16	16	
Cable length, shielded	1000 m	1000 m	1000 m	
Cable length, unshielded	600 m	600 m	600 m	
Rated load voltage	-	-	-	
Current consumption from load voltage L+ (without load)	-	-	-	
Rated value	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	
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	
Input voltage hysterese	-	-	-	
Frequency range	-	-	-	
Input resistance	-	-	-	
Input current for signal "1"	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	
Input delay of "0" to "1"	3 ms	3 ms	3 ms	
Input delay of "1" to "0"	3 ms	3 ms	3 ms	
Number of simultaneously utilizable inputs horizontal configuration	16	16	16	
Number of simultaneously utilizable inputs vertical configuration	16	16	16	
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	
Initial data size	4 Byte	2 Byte	2 Byte	
Status information, alarms, diagnostics				
Status display	green LED per channel	none	none	

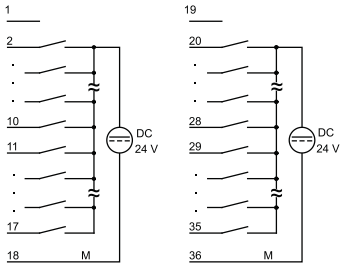
Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-2BL10	KSD221-1BH00	KS221-1BH00	
Interrupts	no	no	no	
Process alarm	no	no	no	
Diagnostic interrupt	no	no	no	
Diagnostic functions	no	no	no	
Diagnostics information read-out	none	none	none	
Supply voltage display	none	none	none	
Group error display	none	none	none	
Channel error display	none	none	none	
Isolation				
Between channels	-	-	-	
Between channels of groups to	16	16	16	
Between channels and backplane bus	✓	✓	✓	
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	
Weight	140 g	70 g	70 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	

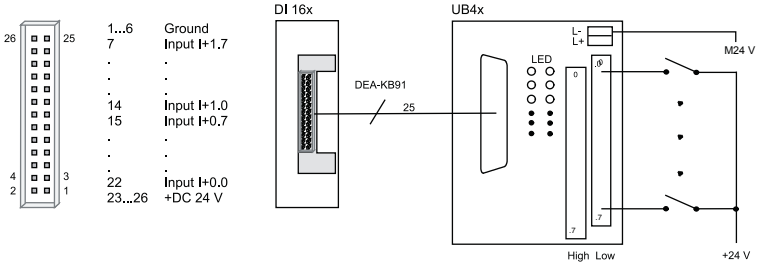
Connections, Interfaces

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

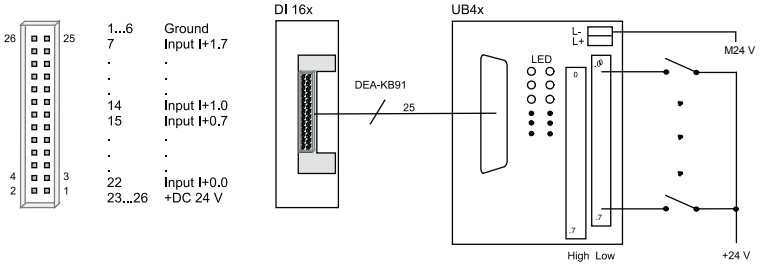
221-2BL10



KSD221-1BH00



KS221-1BH00



Digital input with counter

Signal modules digital | Digital input with counter						
221-1BH20						

Order number	221-1BH20			
Figure				
Type	SM 221			
General information				
Note	-			
Features	› 16 inputs › 2 inputs are configurable as counter › LED status display			
Current consumption/power loss				
Current consumption from backplane bus	85 mA			
Power loss	-			
Technical data digital inputs				
Number of inputs	16			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	-			
Reverse polarity protection of rated load voltage	-			
Current consumption from load voltage L+ (without load)	-			
Rated value	DC 20.4...28.8 V			
Input voltage for signal "0"	DC 0...5 V			
Input voltage for signal "1"	DC 15...28.8 V			
Input voltage hysterese	-			
Frequency range	-			
Input resistance	-			
Input current for signal "1"	7 mA			
Connection of Two-Wire-BEROs possible	✓			
Max. permissible BERO quiescent current	1.5 mA			
Input delay of "0" to "1"	3 ms			
Input delay of "1" to "0"	3 ms			
Number of simultaneously utilizable inputs horizontal configuration	16			
Number of simultaneously utilizable inputs vertical configuration	16			
Input characteristic curve	IEC 61131, type 1			
Initial data size	6 Byte			
Technical data counters				

Signal modules digital | Digital input with counter						
221-1BH20						

Order number	221-1BH20			
Number of counters	1			
Counterwidth	32 Bit			
Maximum input frequency	100 kHz			
Maximum count frequency	400 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	-			
Status information, alarms, diagnostics				
Status display	green LED per channel			
Interrupts	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	none			
Supply voltage display	none			
Group error display	none			
Channel error display	none			
Isolation				
Between channels	-			
Between channels of groups to	16			
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)	-			
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			
Mechanical data				

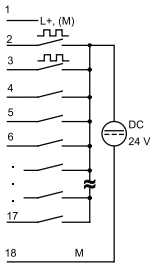
Signal modules digital | Digital input with counter						
221-1BH20						

Order number	221-1BH20			
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm			
Weight	90 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 digital | Digital input with counter						
221-1BH20						

221-1BH20



Digital output modules

Signal modules digital | Digital output modules						
222-1BF00	222-1BF50	222-1BH30	222-1FD10	222-1HF00		
222-1BF10	222-1BH00	222-1BH50	222-1FF00	222-2BL10		
222-1BF20	222-1BH10	222-1BH51	222-1HD10	KSD222-1BH00		
222-1BF30	222-1BH20	222-1DB00	222-1HD20	KS222-1BH00		

Order number	222-1BF00	222-1BF10	222-1BF20	222-1BF30
Figure				
Type	SM 222	SM 222	SM 222	SM 222, ECO
General information				
Note	-	-	-	-
Features	› 8 outputs › Output current 1A	› 8 outputs › Output current 2 A	› 8 outputs, › Isolation in 4 groups per 2 outputs › Output current 2 A	› 8 outputs › Output current 0.5 A
Current consumption/power loss				
Current consumption from backplane bus	70 mA	70 mA	70 mA	70 mA
Power loss	-	-	-	-
Technical data digital outputs				
Number of outputs	8	8	8	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 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Current consumption from load voltage L+ (without load)	10 mA	10 mA	10 mA	10 mA
Output current at signal "1", rated value	1 A	2 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. 350 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
Parallel switching of outputs for redundant control of a load	not possible	not possible	not possible	not 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. 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	1.5 A	3 A	3 A	1 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	1 Byte	1 Byte	1 Byte	1 Byte

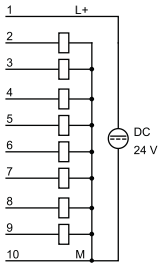
Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1BF00	222-1BF10	222-1BF20	222-1BF30
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 LED per group	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	8	8	2	8
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	100 g	100 g	90 g	90 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

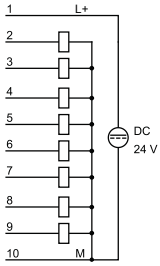
Connections, Interfaces

Signal modules digital | Digital output modules						
222-1BF00	222-1BF50	222-1BH30	222-1FD10	222-1HF00		
222-1BF10	222-1BH00	222-1BH50	222-1FF00	222-2BL10		
222-1BF20	222-1BH10	222-1BH51	222-1HD10	KSD222-1BH00		
222-1BF30	222-1BH20	222-1DB00	222-1HD20	KS222-1BH00		

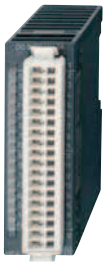
222-1BF00

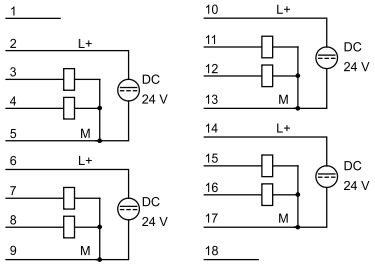


222-1BF10

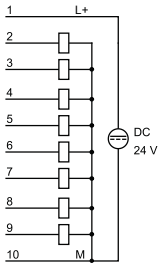


222-1BF20





222-1BF30



Digital output modules

Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1BF50	222-1BH00	222-1BH10	222-1BH20
Figure				
Type	SM 222	SM 222	SM 222	SM 222
General information				
Note	-	-	-	-
Features	› 8 Low-Side outputs › Output current 0.5 A	› 16 outputs › Output current 0.5 A › LED status display on conversion module UB4x	› 16 outputs › Output current 1 A	› 16 outputs › Output current 2 A
Current consumption/power loss				
Current consumption from backplane bus	50 mA	120 mA	120 mA	120 mA
Power loss	1.5 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 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Current consumption from load voltage L+ (without load)	15 mA	10 mA	10 mA	10 mA
Output current at signal "1", rated value	0.5 A	0.5 A	1 A	2 A
Output delay of "0" to "1"	30 µs	150 µs	150 µs	150 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	not possible	not possible	not possible	not 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. 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	+45 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	1.7 A	1.5 A	1.5 A	3 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-

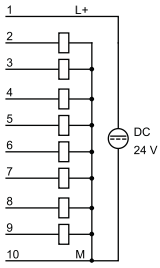
Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1BF50	222-1BH00	222-1BH10	222-1BH20
Output data size	1 Byte	2 Byte	2 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	none	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	none	green LED per group	green LED per group
Group error display	red SF LED	none	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	8	16	16	16
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	90 g	80 g	90 g	100 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

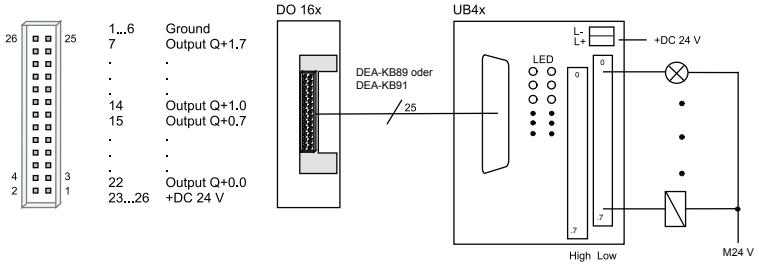
Connections, Interfaces

Signal modules digital | Digital output modules						
222-1BF00	222-1BF50	222-1BH30	222-1FD10	222-1HF00		
222-1BF10	222-1BH00	222-1BH50	222-1FF00	222-2BL10		
222-1BF20	222-1BH10	222-1BH51	222-1HD10	KSD222-1BH00		
222-1BF30	222-1BH20	222-1DB00	222-1HD20	KS222-1BH00		

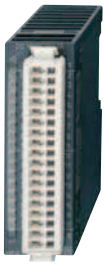
222-1BF50

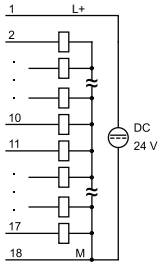


222-1BH00

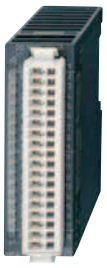


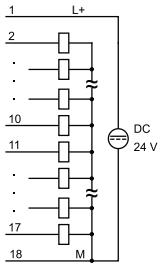
222-1BH10





222-1BH20





Digital output modules

Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1BH30	222-1BH50	222-1BH51	222-1DB00
Figure				
Type	SM 222, ECO	SM 222	SM 222	SM 222
General information				
Note	-	-	-	-
Features	› 16 outputs › Output current 0.5 A	› 16 Low-Side outputs › Output current 0.5 A	› 16 Low-Side outputs › Output current 0.5A	› 2 outputs › AC 100...240 V › Output current 2 A › Software dimmer for resistive, inductive or capacitive load › Frequency range 47...63 Hz
Current consumption/power loss				
Current consumption from backplane bus	120 mA	120 mA	90 mA	190 mA
Power loss	-	-	2.5 W	6 W
Technical data digital outputs				
Number of outputs	16	16	16	2
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	DC 20.4...28.8 V	DC 20.4...28.8 V	AC 100...240 V
Current consumption from load voltage L+ (without load)	10 mA	10 mA	25 mA	15 mA
Output current at signal "1", rated value	0.5 A	0.5 A	0.5 A	2 A
Output delay of "0" to "1"	max. 100 µs	100 µs	30 µs	max. 1 AC cycle
Output delay of "1" to "0"	max. 350 µs	150 µs	100 µs	max. 1 AC cycle
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	460 W
Parallel switching of outputs for redundant control of a load	not possible	not possible	possible (only outputs group)	not 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. 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	-
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	-
Internal limitation of inductive shut-off voltage	L+ (-52 V)	+45 V	+45 V	-
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1 A	1.5 A	1.7 A	4 A

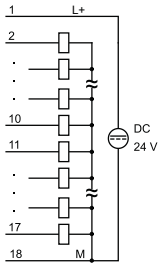
Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1BH30	222-1BH50	222-1BH51	222-1DB00
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	2 Byte	2 Byte	2 Byte	4 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	none	green LED per channel	none
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	yes, parameterizable
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	possible
Supply voltage display	green LED per group	none	green LED per group	green LED per group
Group error display	red SF LED	none	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	16	16	16	-
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 4000 V
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	90 g	80 g	90 g	70 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	-

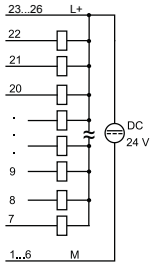
Connections, Interfaces

Signal modules digital | Digital output modules						
222-1BF00	222-1BF50	222-1BH30	222-1FD10	222-1HF00		
222-1BF10	222-1BH00	222-1BH50	222-1FF00	222-2BL10		
222-1BF20	222-1BH10	222-1BH51	222-1HD10	KSD222-1BH00		
222-1BF30	222-1BH20	222-1DB00	222-1HD20	KS222-1BH00		

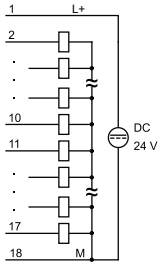
222-1BH30



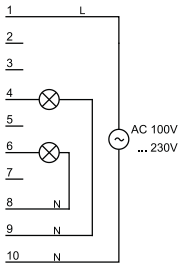
222-1BH50



222-1BH51



222-1DB00



Digital output modules

Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1FD10	222-1FF00	222-1HD10	222-1HD20
Figure				
Type	SM 222	SM 222	SM 222	SM 222
General information				
Note	-	-	-	-
Features	› 8 isolated solid-state outputs › AC 230 V/ DC 400 V › Output current 0.5 A	› 8 solide-state outputs › AC 230 V/ DC 400 V › Output current 0.5 A	› 4 isolated relay outputs › AC 230 V/ DC 30 V › Output current 5 A	› 4 isolated relay outputs › AC 230 V/ DC 30 V › Output current 16 A
Current consumption/power loss				
Current consumption from backplane bus	100 mA	150 mA	160 mA	200 mA
Power loss	-	-	-	-
Technical data digital outputs				
Number of outputs	4	8	4	4
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	AC 230 V	AC 230 V	AC 230 V	AC 230 V
Current consumption from load voltage L+ (without load)	-	-	-	-
Output current at signal "1", rated value	0.5 A	0.5 A	5 A	16 A
Output delay of "0" to "1"	-	-	10 ms	-
Output delay of "1" to "0"	-	-	5 ms	-
Minimum load current	-	-	-	-
Lamp load	-	-	-	-
Parallel switching of outputs for redundant control of a load	not possible	not possible	-	-
Parallel switching of outputs for increased power	not possible	not possible	-	-
Actuation of digital input	-	-	-	-
Switching frequency with resistive load	max. 100 Hz	max. 10 Hz	max. 10 Hz	max. 100 Hz
Switching frequency with inductive load	-	-	-	-
Switching frequency on lamp load	-	-	-	-
Internal limitation of inductive shut-off voltage	-	-	-	-
Short-circuit protection of output	-	-	-	-
Trigger level	-	-	-	-
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	1 Byte	1 Byte	1 Byte	1 Byte

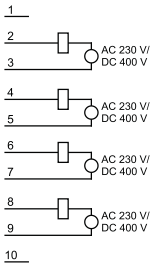
Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1FD10	222-1FF00	222-1HD10	222-1HD20
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	none
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	none	none
Group error display	none	none	none	none
Channel error display	none	none	none	none
Isolation				
Between channels	✓	-	✓	✓
Between channels of groups to	-	-	-	-
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	100 g	100 g	100 g	120 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

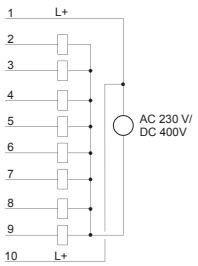
Connections, Interfaces

Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

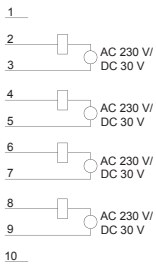
222-1FD10



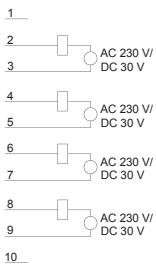
222-1FF00



222-1HD10

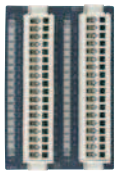


222-1HD20



Digital output modules

Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1HF00	222-2BL10	KSD222-1BH00	KS222-1BH00
Figure				
Type	SM 222	SM 222	SM 222, Set	SM 222, Set
General information				
Note	-	-	-	-
Features	› 8 relay outputs › AC 230 V/ DC 30 V › Output current 5 A	› 32 outputs › Output current 1 A	› 16 outputs › LED status display on conversion module UB48D › Output current 0.5 A	› 16 outputs › LED status display on conversion module UB48 › Output current 0.5 A
Current consumption/power loss				
Current consumption from backplane bus	300 mA	180 mA	120 mA	120 mA
Power loss	-	-	-	-
Technical data digital outputs				
Number of outputs	8	32	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 30 V/ AC 230 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Current consumption from load voltage L+ (without load)	-	15 mA	10 mA	10 mA
Output current at signal "1", rated value	5 A	1 A	0.5 A	0.5 A
Output delay of "0" to "1"	10 ms	150 µs	150 µs	150 µs
Output delay of "1" to "0"	5 ms	100 µs	100 µs	100 µs
Minimum load current	-	-	-	-
Lamp load	-	-	-	-
Parallel switching of outputs for redundant control of a load	-	not possible	not possible	not possible
Parallel switching of outputs for increased power	-	not possible	not possible	not possible
Actuation of digital input	-	✓	✓	✓
Switching frequency with resistive load	max. 10 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
Switching frequency on lamp load	-	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)
Short-circuit protection of output	-	yes, electronic	yes, electronic	yes, electronic
Trigger level	-	1.5 A	1.5 A	1.5 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-

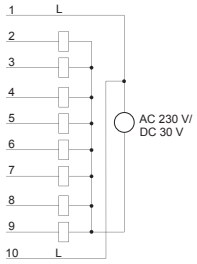
Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1HF00	222-2BL10	KSD222-1BH00	KS222-1BH00
Output data size	1 Byte	4 Byte	2 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	none	none
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	green LED per group	none	none
Group error display	none	red SF LED	none	none
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	16	16	16
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	50.8 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	110 g	150 g	80 g	80 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

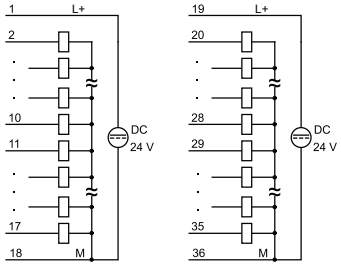
Connections, Interfaces

Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

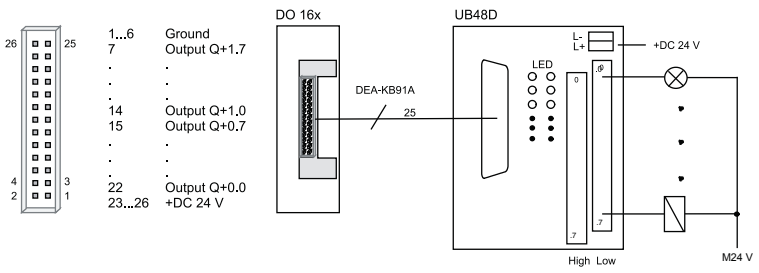
222-1HF00



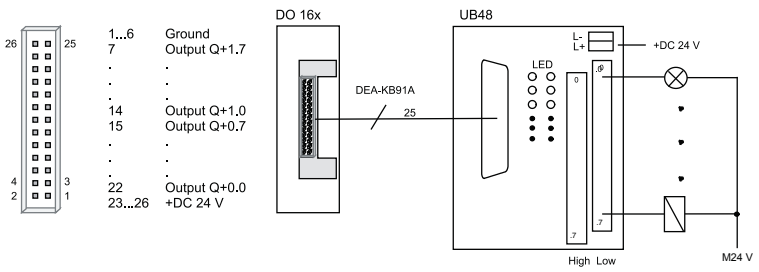
222-2BL10



KSD222-1BH00

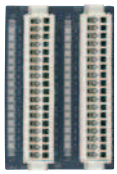


KS222-1BH00



Digital in/output modules

Signal modules digital | Digital in/output modules						
223-1BF00 223-2BL10						

Order number	223-1BF00	223-2BL10		
Figure				
Type	SM 223	SM 223		
General information				
Note	-	-		
Features	› 8 channels (as input or output) › Output current 1 A › Diagnostics function	› 16 inputs/ 16 outputs › DC 24 V › Output current 1 A		
Current consumption/power loss				
Current consumption from backplane bus	65 mA	120 mA		
Power loss	-	-		
Technical data digital inputs				
Number of inputs	8	16		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	-	-		
Current consumption from load voltage L+ (without load)	-	-		
Rated value	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		
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V		
Input voltage hysterese	-	-		
Frequency range	-	-		
Input resistance	-	-		
Input current for signal "1"	7 mA	7 mA		
Connection of Two-Wire-BEROs possible	✓	✓		
Max. permissible BERO quiescent current	1.5 mA	1.5 mA		
Input delay of "0" to "1"	3 ms	3 ms		
Input delay of "1" to "0"	3 ms	3 ms		
Number of simultaneously utilizable inputs horizontal configuration	8	8		
Number of simultaneously utilizable inputs vertical configuration	8	8		
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1		
Initial data size	1 Byte	2 Byte		
Technical data digital outputs				
Number of outputs	8	16		

Signal modules digital | Digital in/output modules						
223-1BF00 223-2BL10						

Order number	223-1BF00	223-2BL10		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection of rated load voltage	-	-		
Current consumption from load voltage L+ (without load)	10 mA	10 mA		
Output current at signal "1", rated value	1 A	1 A		
Output delay of "0" to "1"	150 µs	150 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	not possible	not possible		
Parallel switching of outputs for increased power	not possible	not possible		
Actuation of digital input	✓	✓		
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz		
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz		
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz		
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)		
Short-circuit protection of output	yes, electronic	yes, electronic		
Trigger level	1.7 A	1.7 A		
Number of operating cycle of relay outputs	-	-		
Switching capacity of contacts	-	-		
Output data size	1 Byte	2 Byte		
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		
Diagnostic functions	no	no		
Diagnostics information read-out	none	none		
Supply voltage display	green LED	green LED		
Group error display	red SF LED	red SF LED		
Channel error display	none	none		
Isolation				
Between channels	-	-		
Between channels of groups to	8	16		
Between channels and backplane bus	✓	✓		

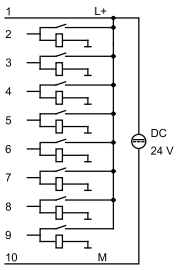
Signal modules digital | Digital in/output modules						
223-1BF00 223-2BL10						

Order number	223-1BF00	223-2BL10		
Insulation tested with	DC 500 V	DC 500 V		
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm		
Weight	100 g	150 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		

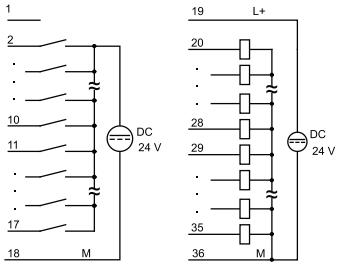
Connections, Interfaces

Signal modules digital | Digital in/output modules						
223-1BF00 223-2BL10						

223-1BF00



223-2BL10



Signal modules analog

Structure and Function

Analog modules for 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. There are analog modules with 4 to 8 channels available.

Characteristics

- Large selection, 4 and 8 channel, available for various measurement encoders (U, I, TC, R)
- Electrically isolated to the backplane bus
- Compact design
- LED Status Indicator
- Maintenance-free cage-clamp technology
- Label cards included
- Front connector included
- Assembly with 35 mm profile rail
- 24 month warranty

Overview

Order no.	Name/Description	Page
Analog input modules		
231-1BD30	**SM 231 - Analog input ECO** › 4 inputs › Configurable › Voltage +/-10 V	**304**
231-1BD40	**SM 231 - Analog input ECO** › 4 inputs › Configurable › Current 4...20 mA, +/-20 mA	**304**
231-1BD53	**SM 231 - Analog input** › 4 inputs › Configurable › Voltage, current › Resistance › Resistance thermometer, thermocouple	**304**
231-1BD60	**SM 231 - Analog input** › 4 inputs › Current 4...20 mA	**304**
231-1BD70	**SM 231 - Analog input** › 4 inputs › Voltage +/-10 V	**308**
231-1BF00	**SM 231 - Analog input** › 8 inputs › Configurable › Voltage 0...60 mV › Resistance thermometer, thermocouple	**308**
231-1FD00	**SM 231 - Analog input FAST** › 4 fast inputs › Configurable › Voltage, current › Cycle time 0.8 ms	**308**
Analog output modules		
232-1BD30	**SM 232 - Analog output ECO** › 4 outputs › Configurable › Voltage +/-10 V, 0..10 V	**312**
232-1BD40	**SM 232 - Analog output ECO** › 4 outputs › Configurable › Current 0(4)...20mA	**312**
232-1BD51	**SM 232 - Analog output** › 4 outputs › Configurable › Voltage, current	**312**
Analog in/output modules		
234-1BD50	**SM 234 - Analog in-/output** › 2 inputs/2 outputs › Configurable › Voltage, current	**315**
234-1BD60	**SM 234 - Analog in-/output** › 4 inputs/2 outputs › Configurable › Voltage, current › Resistance, resistance thermometer	**315**
Combination modules		
238-2BC00	**SM 238C - Digital in-/output, counter, analog in-/output** › 16 (12) digital inputs › 0 (4) digital outputs › max. 3 counter › 4 analog inputs › 2 analog outputs	**320**

Analog input modules

Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

Order number	231-1BD30	231-1BD40	231-1BD53	231-1BD60
Figure				
Type	SM 231, ECO	SM 231, ECO	SM 231	SM 231
General information				
Note	-	-	-	-
Features	› 4 inputs › Configurable › Voltage +/-10 V	› 4 inputs › Configurable › Current 4...20 mA, +/-20 mA	› 4 inputs › Configurable › Voltage, current › Resistance › Resistance thermo-meter, thermocouple	› 4 inputs › Current 4...20 mA
Current consumption/power loss				
Current consumption from backplane bus	120 mA	120 mA	280 mA	280 mA
Power loss	0.6 W	0.6 W	1.4 W	1.4 W
Technical data analog inputs				
Number of inputs	4	4	4	4
Cable length, shielded	-	-	-	-
Rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Voltage inputs	✓	-	✓	-
Min. input resistance (voltage range)	100 kΩ	-	20 MΩ	-
Input voltage ranges	-10 V ... +10 V	-	-50 mV ... +50 mV -400 mV ... +400 mV -4 V ... +4 V -10 V ... +10 V	-
Operational limit of voltage ranges	+/-0.2%	-	+/-0.3% ... +/-0.6%	-
Basic error limit voltage ranges with SFU	+/-0.1%	-	+/-0.2% ... +/-0.4%	-
Current inputs	-	✓	✓	✓
Min. input resistance (current range)	-	110 Ω	85 Ω	20 Ω
Input current ranges	-	-20 mA ... +20 mA +4 mA ... +20 mA	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	+4 mA ... +20 mA
Operational limit of current ranges	-	+/-0.2% ... +/-0.5%	+/-0.3% ... +/-0.8%	-
Basic error limit current ranges with SFU	-	+/-0.1% ... +/-0.2%	+/-0.2% ... +/-0.5%	-
Resistance inputs	-	-	✓	-
Resistance ranges	-	-	0 ... 60 Ohm 0 ... 600 Ohm 0 ... 3000 Ohm 0 ... 6000 Ohm	-
Operational limit of resistor ranges	-	-	+/-0.4% ... +/-0.8%	-

Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

Order number	231-1BD30	231-1BD40	231-1BD53	231-1BD60
Basic error limit	-	-	+/-0.2% ... +/-0.4%	-
Resistance thermometer inputs	-	-	✓	-
Resistance thermometer ranges	-	-	Pt100, Pt1000 KTY81-152 Ni100, Ni1000 Cu50 KTY81-110 KTY81-120 KTY81-121 KTY81-122 KTY81-150 KTY81-151	-
Operational limit of resistance thermometer ranges	-	-	+/-0.4% ... +/-1.4%	-
Basic error limit thermoresistor ranges	-	-	+/-0.2% ... +/-0.7%	-
Thermocouple inputs	-	-	✓	-
Thermocouple ranges	-	-	type J type K type N type R type S type E type T	-
Operational limit of thermocouple ranges	-	-	+/-1.5%	-
Basic error limit thermoelement ranges	-	-	+/-1.0%	-
Programmable temperature compensation	-	-	✓	-
External temperature compensation	-	-	✓	-
Internal temperature compensation	-	-	✓	-
Resolution in bit	13	13	16	12
Measurement principle	successive approximation	successive approximation	Sigma-Delta	successive approximation
Basic conversion time	2 ms / channel	2 ms / channel	7 ms ... 272 ms	-
Noise suppression for frequency	f=50 Hz...400 Hz	f=50 Hz...400 Hz	none	f=50 Hz / 60 Hz
Initial data size	8 Byte	8 Byte	8 Byte	8 Byte
Status information, alarms, diagnostics				
Status display	none	none	none	none
Interrupts	no	no	yes	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	yes, parameterizable	no
Diagnostic functions	no	no	yes	no
Diagnostics information read-out	none	none	possible	none
Supply voltage display	none	none	none	none
Group error display	red SF LED	red SF LED	none	none
Channel error display	none	none	red LED per channel	red LED per channel

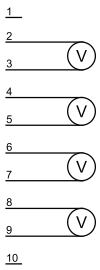
Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

Order number	231-1BD30	231-1BD40	231-1BD53	231-1BD60
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 2 V	DC 2 V	DC 4 V	DC 500 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	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
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	90 g	90 g	100 g	100 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

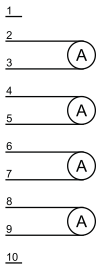
Connections, Interfaces

Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

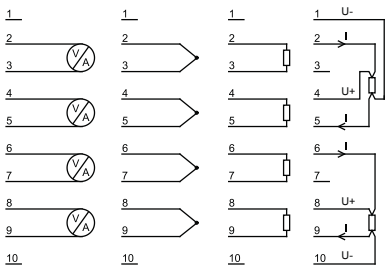
231-1BD30



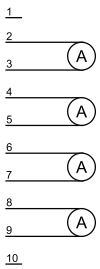
231-1BD40



231-1BD53



231-1BD60



Analog input modules

Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

Order number	231-1BD70	231-1BF00	231-1FD00	
Figure				
Type	SM 231	SM 231	SM 231	
General information				
Note	-	-	-	
Features	› 4 inputs › Voltage +/-10 V	› 8 inputs › Configurable › Voltage 0...60 mV › Resistance thermo-meter, thermocouple	› 4 fast inputs › Configurable › Voltage, current › Cycle time 0.8 ms	
Current consumption/power loss				
Current consumption from backplane bus	280 mA	280 mA	300 mA	
Power loss	1.4 W	1.4 W	1.5 W	
Technical data analog inputs				
Number of inputs	4	8	4	
Cable length, shielded	-	-	-	
Rated load voltage	-	-	-	
Current consumption from load voltage L+ (without load)	-	-	-	
Voltage inputs	✓	✓	✓	
Min. input resistance (voltage range)	83 kΩ	2 MΩ	10 MΩ	
Input voltage ranges	-10 V ... +10 V	0 mV ... +60 mV	-400 mV ... +400 mV -4 V ... +4 V -10 V ... +10 V	
Operational limit of voltage ranges	-	-	+/-0.2% ... +/-0.4%	
Basic error limit voltage ranges with SFU	-	+/-0.1%	+/-0.1% ... +/-0.3%	
Current inputs	-	-	✓	
Min. input resistance (current range)	-	-	57 Ω	
Input current ranges	-	-	+4 mA ... +20 mA -20 mA ... +20 mA	
Operational limit of current ranges	-	-	+/-0.2% ... +/-0.5%	
Basic error limit current ranges with SFU	-	-	+/-0.1% ... +/-0.3%	
Resistance inputs	-	-	-	
Resistance ranges	-	-	-	
Operational limit of resistor ranges	-	-	-	
Basic error limit	-	-	-	
Resistance thermometer inputs	-	✓	-	
Resistance thermometer ranges	-	Pt100	-	

Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

Order number	231-1BD70	231-1BF00	231-1FD00	
Operational limit of resistance thermometer ranges	-	-	-	
Basic error limit thermoresistor ranges	-	±0.15% (2-wire) ±0.15% (4-wire)	-	
Thermocouple inputs	-	✓	-	
Thermocouple ranges	-	type J type K type T	-	
Operational limit of thermocouple ranges	-	-	-	
Basic error limit thermoelement ranges	-	±0.1% (Compensation external) ±1.0% (internal)	-	
Programmable temperature compensation	-	✓	-	
External temperature compensation	-	✓	-	
Internal temperature compensation	-	✓	-	
Resolution in bit	12	16	16	
Measurement principle	successive approximation	Sigma-Delta	successive approximation	
Basic conversion time	-	6.75 ms ... 268 ms	0.2 ms/channel	
Noise suppression for frequency	-	50 Hz and 60 Hz	-	
Initial data size	8 Byte	16 Byte	8 Byte	
Status information, alarms, diagnostics				
Status display	none	none	none	
Interrupts	no	yes	yes	
Process alarm	no	no	yes, parameterizable	
Diagnostic interrupt	no	yes, parameterizable	yes, parameterizable	
Diagnostic functions	no	yes	yes	
Diagnostics information read-out	-	possible	possible	
Supply voltage display	none	none	none	
Group error display	none	red SF LED	none	
Channel error display	none	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)	DC 500 V	-	DC 2 V	
Max. potential difference between Mana and Mintern (Uiso)	-	-	-	
Max. potential difference between inputs and Mana (Ucm)	-	-	-	

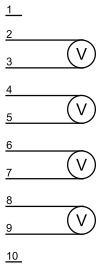
Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

Order number	231-1BD70	231-1BF00	231-1FD00	
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	DC 500 V	DC 500 V	
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	
Weight	100 g	90 g	90 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	

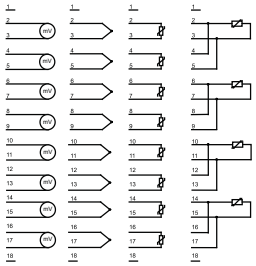
Connections, Interfaces

Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

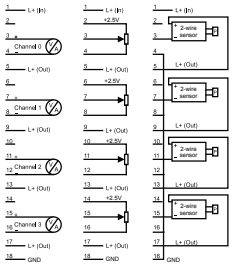
231-1BD70



231-1BF00



231-1FD00



Analog output modules

Signal modules analog | Analog output modules						
232-1BD30 232-1BD40 232-1BD51						

Order number	232-1BD30	232-1BD40	232-1BD51	
Figure				
Type	SM 232, ECO	SM 232, ECO	SM 232	
General information				
Note	-	-	-	
Features	› 4 outputs › Configurable › Voltage +/-10 V, 0..10 V	› 4 outputs › Configurable › Current 0(4)...20mA	› 4 outputs › Configurable › Voltage, current	
Current consumption/power loss				
Current consumption from backplane bus	60 mA	60 mA	75 mA	
Power loss	2.7 W	1.5 W	1.8 W	
Technical data analog outputs				
Number of outputs	4	4	4	
Cable length, shielded	-	-	-	
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	
Current consumption from load voltage L+ (without load)	100 mA	50 mA	60 mA	
Voltage output short-circuit protection	✓	-	✓	
Voltage outputs	✓	-	✓	
Min. load resistance (voltage range)	5 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 +1 V ... +5 V 0 V ... +10 V	
Operational limit of voltage ranges	+/-0.4%	-	+/-0.4% ... +/-0.8%	
Basic error limit voltage ranges with SFU	+/-0.2%	-	+/-0.2% ... +/-0.4%	
Current outputs	-	✓	✓	
Max. in load resistance (current range)	-	350 Ω	500 Ω	
Max. inductive load (current range)	-	10 mH	10 mH	
Output current ranges	-	0 mA ... +20 mA +4 mA ... +20 mA	0 mA ... +20 mA +4 mA ... +20 mA -20 mA ... +20 mA	
Operational limit of current ranges	-	+/-0.4%	+/-0.3% ... +/-0.8%	
Basic error limit current ranges with SFU	-	+/-0.2%	+/-0.2% ... +/-0.5%	
Settling time for ohmic load	1.5 ms	0.03 ms	0.05 ms	
Settling time for capacitive load	3 ms	-	0.5 ms	
Settling time for inductive load	-	1.5 ms	0.1 ms	
Resolution in bit	12	12	12	

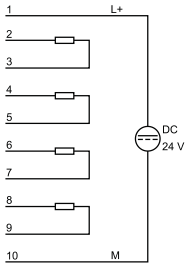
Signal modules analog | Analog output modules						
232-1BD30 232-1BD40 232-1BD51						

Order number	232-1BD30	232-1BD40	232-1BD51	
Conversion time	0.7 ms / all channels	0.7 ms / all channels	0.45 ms / channel	
Substitute value can be applied	no	no	no	
Output data size	8 Byte	8 Byte	8 Byte	
Status information, alarms, diagnostics				
Status display	none	none	none	
Interrupts	no	no	yes	
Process alarm	no	no	no	
Diagnostic interrupt	no	no	yes, parameterizable	
Diagnostic functions	no	no	yes	
Diagnostics information read-out	none	none	possible	
Supply voltage display	green LED	green LED	none	
Group error display	none	none	red SF LED	
Channel error display	none	none	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)	-	-	-	
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V	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	DC 500 V	
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	
Weight	80 g	80 g	100 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	

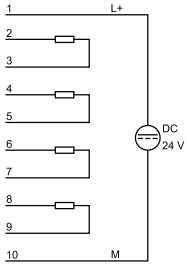
Connections, Interfaces

Signal modules analog | Analog output modules						
232-1BD30 232-1BD40 232-1BD51						

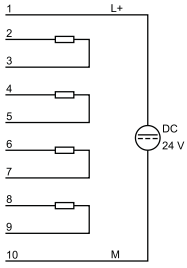
232-1BD30



232-1BD40



232-1BD51



Analog in/output modules

Signal modules analog | Analog in/output modules						
234-1BD50 234-1BD60						

Order number	234-1BD50	234-1BD60		
Figure				
Type	SM 234	SM 234		
General information				
Note	-	-		
Features	› 2 inputs/2 outputs › Configurable › Voltage, current	› 4 inputs/2 outputs › Configurable › Voltage, current › Resistance, resistance thermometer		
Current consumption/power loss				
Current consumption from backplane bus	100 mA	100 mA		
Power loss	2.9 W	2 W		
Technical data analog inputs				
Number of inputs	2	4		
Cable length, shielded	-	-		
Rated load voltage	DC 24 V	DC 24 V		
Current consumption from load voltage L+ (without load)	100 mA	60 mA		
Voltage inputs	✓	✓		
Min. input resistance (voltage range)	100 kΩ	120 kΩ		
Input voltage ranges	+1 V ... +5 V 0 V ... +10 V -10 V ... +10 V	+1 V ... +5 V 0 V ... +10 V -10 V ... +10 V -400 mV ... +400 mV -4 V ... +4 V		
Operational limit of voltage ranges	-	+/-0.3% ... +/-0.7%		
Basic error limit voltage ranges with SFU	+/-0.2% ... +/-0.6%	+/-0.2% ... +/-0.5%		
Current inputs	✓	✓		
Min. input resistance (current range)	50 Ω	90 Ω		
Input current ranges	+4 mA ... +20 mA 0 mA ... +20 mA -20 mA ... +20 mA	+4 mA ... +20 mA 0 mA ... +20 mA -20 mA ... +20 mA		
Operational limit of current ranges	-	+/-0.3% ... +/-0.8%		
Basic error limit current ranges with SFU	+/-0.3% ... +/-0.8%	+/-0.2% ... +/-0.5%		
Resistance inputs	-	✓		
Resistance ranges	-	0 ... 600 Ohm 0 ... 3000 Ohm		
Operational limit of resistor ranges	-	+/-0.4%		
Basic error limit	-	+/-0.2%		

Signal modules analog | Analog in/output modules						
234-1BD50 234-1BD60						

Order number	234-1BD50	234-1BD60		
Resistance thermometer inputs	-	✓		
Resistance thermometer ranges	-	Pt100 Pt1000 Ni100 Ni1000		
Operational limit of resistance thermometer ranges	-	+/-0.4% ... +/-1.0%		
Basic error limit thermoresistor ranges	-	+/-0.2% ... +/-0.5%		
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	16	16		
Measurement principle	Sigma-Delta	Sigma-Delta		
Basic conversion time	6.75 ms - 268 ms	7 ms - 272 ms		
Noise suppression for frequency	50 Hz and 60 Hz	50 Hz and 60 Hz		
Initial data size	4 Byte	4 Byte		
Technical data analog outputs				
Number of outputs	2	2		
Cable length, shielded	-	-		
Rated load voltage	-	-		
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 +1 V ... +5 V 0 V ... +10 V	-10 V ... +10 V +1 V ... +5 V 0 V ... +10 V		
Operational limit of voltage ranges	-	+/-0.4% ... +/-0.8%		
Basic error limit voltage ranges with SFU	+/-0.2% ... +/-0.6%	+/-0.2% ... +/-0.4%		
Current outputs	✓	✓		
Max. in load resistance (current range)	500 Ω	500 Ω		
Max. inductive load (current range)	10 mH	10 mH		

Signal modules analog | Analog in/output modules						
234-1BD50 234-1BD60						

Order number	234-1BD50	234-1BD60		
Output current ranges	-20 mA ... +20 mA +4 mA ... +20 mA 0 mA ... +20 mA	-20 mA ... +20 mA +4 mA ... +20 mA 0 mA ... +20 mA		
Operational limit of current ranges	-	+/-0.3% ... +/-0.8%		
Basic error limit current ranges with SFU	+/-0.3% ... +/-0.8%	+/-0.2% ... +/-0.5%		
Settling time for ohmic load	0.05 ms	0.3 ms		
Settling time for capacitive load	0.5 ms	1 ms		
Settling time for inductive load	0.1 ms	0.5 ms		
Resolution in bit	12	12		
Conversion time	2.5 ms/all channels	1.5 ms/channel		
Substitute value can be applied	yes	yes		
Output data size	4 Byte	4 Byte		
Status information, alarms, diagnostics				
Status display	none	none		
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	green LED	none		
Group error display	red SF LED	red SF LED		
Channel error display	none	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 4 V		
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V	-		
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	DC 500 V		
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm		

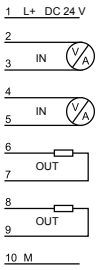
Signal modules analog | Analog in/output modules						
234-1BD50 234-1BD60						

Order number	234-1BD50	234-1BD60		
Weight	110 g	100 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		

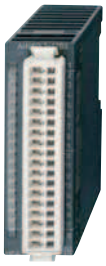
Connections, Interfaces

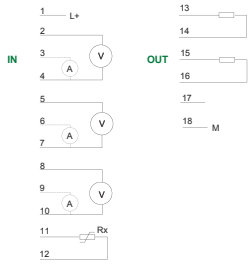
Signal modules analog | Analog in/output modules						
234-1BD50 234-1BD60						

234-1BD50



234-1BD60





Combination modules

Signal modules analog | Combination modules						
238-2BC00						

Order number	238-2BC00			
Figure				
Type	SM 238C, Digital In-/ Output, Counter, Analog In-/Output			
General information				
Note	-			
Features	› 16 (12) digital inputs › 0 (4) digital outputs › max. 3 counter › 4 analog inputs › 2 analog outputs			
Current consumption/power loss				
Current consumption from backplane bus	280 mA			
Power loss	2 W			
Technical data digital inputs				
Number of inputs	16			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	-			
Current consumption from load voltage L+ (without load)	-			
Rated value	DC 20.4...28.8 V			
Input voltage for signal "0"	DC 0...5 V			
Input voltage for signal "1"	DC 15...28.8 V			
Input voltage hysterese	-			
Frequency range	-			
Input resistance	-			
Input current for signal "1"	7 mA			
Connection of Two-Wire-BEROs possible	✓			
Max. permissible BERO quiescent current	1.5 mA			
Input delay of "0" to "1"	3 ms			
Input delay of "1" to "0"	3 ms			
Number of simultaneously utilizable inputs horizontal configuration	-			
Number of simultaneously utilizable inputs vertical configuration	-			
Input characteristic curve	IEC 61131, type 1			
Initial data size	16 Byte			

Signal modules analog | Combination modules						
238-2BC00						

Order number	238-2BC00			
Technical data digital outputs				
Number of outputs	4			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	DC 20.4...28.8 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	5 mA			
Total current per group, horizontal configuration, 40°C	-			
Total current per group, horizontal configuration, 60°C	-			
Total current per group, vertical configuration	-			
Output voltage signal "1" at min. current	-			
Output voltage signal "1" at max. current	L+ (-0.8 V)			
Output current at signal "1", rated value	1 A			
Output current, permitted range to 40°C	-			
Output current, permitted range to 60°C	-			
Output current at signal "0" max. (residual current)	-			
Output delay of "0" to "1"	150 µs			
Output delay of "1" to "0"	100 µs			
Minimum load current	-			
Lamp load	5 W			
Parallel switching of outputs for redundant control of a load	not possible			
Parallel switching of outputs for increased power	not possible			
Actuation of digital input	✓			
Switching frequency with resistive load	max. 1000 Hz			
Switching frequency with inductive load	max. 0.5 Hz			
Switching frequency on lamp load	max. 10 Hz			
Internal limitation of inductive shut-off voltage	L+ (-52 V)			
Short-circuit protection of output	yes, electronic			
Trigger level	1.5 A			
Number of operating cycle of relay outputs	-			
Switching capacity of contacts	-			
Output data size	16 Byte			
Technical data analog inputs				
Number of inputs	4			

Signal modules analog | Combination modules						
238-2BC00						

Order number	238-2BC00			
Cable length, shielded	200 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	-			
Current consumption from load voltage L+ (without load)	60 mA			
Voltage inputs	✓			
Min. input resistance (voltage range)	120 kΩ			
Input voltage ranges	+1 V ... +5 V 0 V ... +10 V -10 V ... +10 V -400 mV ... +400 mV -4 V ... +4 V			
Operational limit of voltage ranges	+/-0.3% ... +/-0.7%			
Basic error limit voltage ranges with SFU	+/-0.2% ... +/-0.5%			
Current inputs	✓			
Min. input resistance (current range)	90 Ω			
Input current ranges	+4 mA ... +20 mA 0 mA ... +20 mA -20 mA ... +20 mA			
Operational limit of current ranges	+/-0.3% ... +/-0.8%			
Basic error limit current ranges with SFU	+/-0.2% ... +/-0.5%			
Resistance inputs	✓			
Resistance ranges	0 ... 600 Ohm 0 ... 3000 Ohm			
Operational limit of resistor ranges	+/-0.4%			
Basic error limit	+/-0.2%			
Resistance thermometer inputs	✓			
Resistance thermometer ranges	Pt100 Pt1000 Ni100 Ni1000			
Operational limit of resistance thermometer ranges	+/-0.4% ... +/-1.0%			
Basic error limit thermoresistor ranges	+/-0.2% ... +/-0.5%			
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	16			
Measurement principle	Sigma-Delta			

Signal modules analog | Combination modules						
238-2BC00						

Order number	238-2BC00			
Basic conversion time	7 ms - 272 ms			
Noise suppression for frequency	50 Hz and 60 Hz			
Initial data size	8 Byte			
Technical data analog outputs				
Number of outputs	2			
Cable length, shielded	200 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	60 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	-10 V ... +10 V +1 V ... +5 V 0 V ... +10 V			
Operational limit of voltage ranges	+/-0.4% ... +/-0.8%			
Basic error limit voltage ranges with SFU	+/-0.2% ... +/-0.4%			
Current outputs	✓			
Max. in load resistance (current range)	500 Ω			
Max. inductive load (current range)	10 mH			
Output current ranges	-20 mA ... +20 mA 0 mA ... +20 mA 0 mA ... +20 mA			
Operational limit of current ranges	+/-0.3% ... +/-0.8%			
Basic error limit current ranges with SFU	+/-0.2% ... +/-0.5%			
Settling time for ohmic load	0.3 ms			
Settling time for capacitive load	1 ms			
Settling time for inductive load	0.5 ms			
Resolution in bit	12			
Conversion time	1.50 ms			
Substitute value can be applied	yes			
Output data size	4 Byte			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	yes			
Process alarm	yes, parameterizable			
Diagnostic interrupt	yes, parameterizable			
Diagnostic functions	yes			

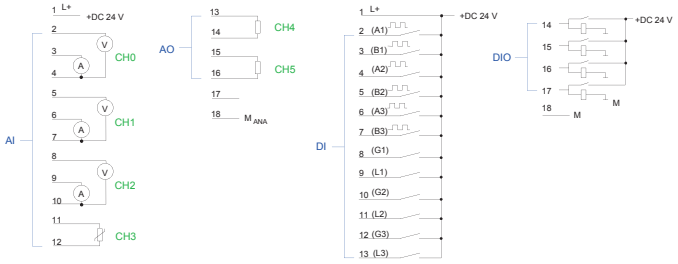
Signal modules analog | Combination modules						
238-2BC00						

Order number	238-2BC00			
Diagnostics information read-out	possible			
Supply voltage display	green LED per group			
Group error display	red SF LED			
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 4 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			
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 88 mm			
Weight	150 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 | Combination modules						
238-2BC00						

238-2BC00



Communication processors

Structure and Function

Communications processors are used to connect different target and source systems, e.g. via Ethernet to higher-level ERP systems or serially to scanners, printers and other peripherals.

CP 240 - serial

The communication processors CP 240 serial enable the serial process coupling to different target and source systems. Depending on the module they have a RS232 and/or a RS485 interface.

CP 240 - EnOcean

The CP 240 EnOcean enables process coupling on the basis of the EnOcean wireless communication. EnOcean is a battery-free radio system that, due to the short signal duration of 0.5 ms and 10 mW transmitting power, has an energy requirement of only 50 µWs. Here, the system uses the energy from the smallest changes in pressure or temperature to power the sensors.

CP 240 - M-Bus

In the case of the CP 240 M-Bus, the process coupling takes place on the basis of the M-Bus communication. The M-Bus System (Metering Bus) is a European-standardized 2-wire fieldbus for acquiring consumption data. Here, the data is transmitted serially via a reverse polarity protected 2-wire line from slave systems (meters) to a master system.

CP 240 - CAN-Clock

The CAN-Clock provides the CAN master time, date and the internally measured temperature via the CAN bus. Setting the date and time can be can take place either via a serial connectable GPS timer or via PDOs or SDOs.

Characteristics

- Support for all standard protocols (ASCII, STX/ETX, 3964(R), RK512 and Modbus (master, slave)
- Internal communication via VIPA FCs
- Compact design
- LED status indicator
- Electrically isolated to the backplane bus
- Assembly with 35 mm profile rail
- 24 month warranty

Overview

Order no.	Name/Description	Page
RS232/422/485- and other CPs		
240-1DA10	**CM 240 - Mini-switch** › 4 Ports for 10/100 MBit/s › "plug and play" through Auto-MDI/MDIX-crossover for 100BASE-TX and 10BASE-T › LEDs for activity, speed and collision	328
240-1BA20	**CP 240 - Communication processor** › RS232 interface	328
240-1CA20	**CP 240 - Communication processor** › RS485 interface	328
240-1CA21	**CP 240 - Communication processor** › RS422/485 interface	328
240-1EA20	**CP 240 - Communication processor** › 16 Byte parameter data › The transceiver module works at 868.3 MHz	331
240-1FA20	**CP 240 - Communication processor** › Standardized bus system acc. DIN 1434-3 › 6 slaves connectable	331
Fieldbus master modules		
208-1CA00	**IM 208CAN - CANopen master** › CANopen master › 125 CAN slaves connectable › Project engineering under VIPA WinCoCT › 40 Transmit PDOs, 40 Receive PDOs	334
208-1DP01	**IM 208DP - PROFIBUS-DP master** › PROFIBUS-DP master › 125 DP slaves connectable	334
208-1DP11	**IM 208DPO - PROFIBUS-DP master** › PROFIBUS-DP master › 16 DP slaves connectable › FO interface	334

RS232/422/485- and other CPs

Communication processors | RS232/422/485- and other CPs						
240-1DA10 240-1BA20 240-1CA20 240-1CA21	240-1EA20 240-1FA20					

Order number	240-1DA10	240-1BA20	240-1CA20	240-1CA21
Figure				
Type	CM 240, 4port Mini-Switch	CP 240, PtP RS232	CP 240, RS485	CP 240, RS422/485
General information				
Note	-	-	-	-
Features	› 4 Ports for 10/100 MBit/s › "plug and play" through Auto-MDI/MDIX-crossover for 100BASE-TX and 10BASE-T › LEDs for activity, speed and collision	› RS232 interface	› RS485 interface	› RS422/485 interface
Current consumption/power loss				
Current consumption from backplane bus	450 mA	150 mA	150 mA	150 mA
Power loss	2 W	0.75 W	0.75 W	0.75 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	possible	possible	possible
Supply voltage display	none	yes	yes	yes
Group error display	none	red LED	red LED	red LED
Channel error display	none	none	none	none
Functionality Sub-D interfaces				
Type	-	-	-	-
Type of interface	-	RS232	RS485	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	-	✓	✓	✓
Point-to-point communication				

Communication processors | RS232/422/485- and other CPs						
240-1DA10 240-1BA20 240-1CA20 240-1CA21	240-1EA20 240-1FA20					

Order number	240-1DA10	240-1BA20	240-1CA20	240-1CA21
PtP communication	-	✓	✓	✓
Interface isolated	✓	✓	✓	✓
RS232 interface	-	✓	-	-
RS422 interface	-	-	-	✓
RS485 interface	-	-	✓	✓
Connector	RJ45	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Transmission speed, min.	10 Mbit/s	150 bit/s	150 bit/s	150 bit/s
Transmission speed, max.	100 Mbit/s	115.2 kbit/s	115.2 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	-	-	-	-
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm
Weight	50 g	80 g	80 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 | RS232/422/485- and other CPs						
240-1DA10 240-1BA20 240-1CA20 240-1CA21	240-1EA20 240-1FA20					

240-1DA10

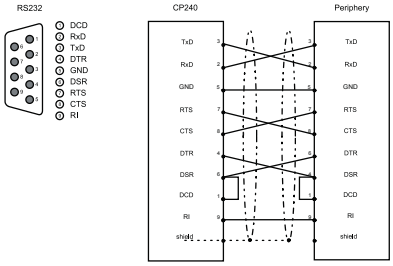
4 x RJ45

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

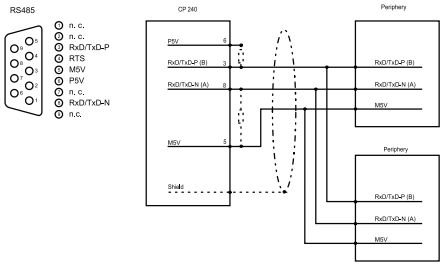
DC 5 ... 24 V

1. Ground
2. 0 V
3. + DC 24 V

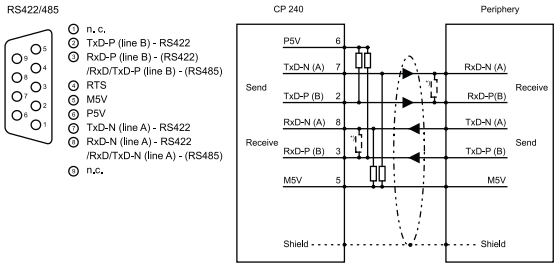
240-1BA20



240-1CA20



240-1CA21



RS232/422/485- and other CPs

Communication processors | RS232/422/485- and other CPs						
240-1DA10 240-1BA20 240-1CA20 240-1CA21	240-1EA20 240-1FA20					

Order number	240-1EA20	240-1FA20		
Figure				
Type	CP 240, EnOcean	CP 240, M-Bus		
General information				
Note	-	-		
Features	› 16 Byte parameter data › The transceiver module works at 868.3 MHz	› Standardized bus system acc. DIN 1434-3 › 6 slaves connectable		
Current consumption/power loss				
Current consumption from backplane bus	120 mA	300 mA		
Power loss	0.75 W	1.5 W		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		
Diagnostic functions	no	no		
Diagnostics information read-out	none	none		
Supply voltage display	yes	yes		
Group error display	red LED	red LED		
Channel error display	none	none		
Functionality Sub-D interfaces				
Type	-	-		
Type of interface	-	-		
Connector	-	-		
Electrically isolated	-	-		
MPI	-	-		
MP²I (MPI/RS232)	-	-		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	-	-		
Point-to-point communication				
PtP communication	-	-		
Interface isolated	-	✓		
RS232 interface	-	-		
RS422 interface	-	-		

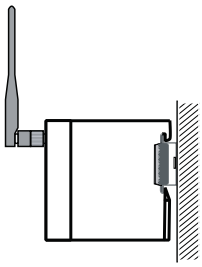
Communication processors | RS232/422/485- and other CPs						
240-1DA10 240-1BA20 240-1CA20 240-1CA21	240-1EA20 240-1FA20					

Order number	240-1EA20	240-1FA20		
RS485 interface	-	-		
Connector	SMA antenna socket	-		
Transmission speed, min.	-	300 bit/s		
Transmission speed, max.	9.6 kbit/s	9.6 kbit/s		
Cable length, max.	-	-		
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	EnOcean	M-Bus master		
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm		
Weight	80 g	80 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		

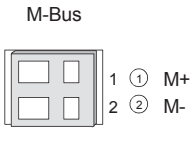
Connections, Interfaces

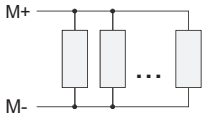
Communication processors | RS232/422/485- and other CPs						
240-1DA10 240-1BA20 240-1CA20 240-1CA21	240-1EA20 240-1FA20					

240-1EA20



240-1FA20





Fieldbus master modules

Communication processors | Fieldbus master modules						
208-1CA00 208-1DP01 208-1DP11						

Order number	208-1CA00	208-1DP01	208-1DP11	
Figure				
Type	IM 208CAN, CANopen master	IM 208DP, PROFIBUS-DP master	IM 208DPO, PROFIBUS-DP master FO interface	
General information				
Note	-	-	-	
Features	› CANopen master › 125 CAN slaves connectable › Project engineering under VIPA WinCoCT › 40 Transmit PDOs, 40 Receive PDOs	› PROFIBUS-DP master › 125 DP slaves connectable	› PROFIBUS-DP master › 16 DP slaves connectable › FO interface	
Current consumption/power loss				
Current consumption from backplane bus	300 mA	450 mA	450 mA	
Power loss	1.5 W	2 W	2 W	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	yes, parameterizable	yes, parameterizable	yes, parameterizable	
Process alarm	no	yes, parameterizable	yes, parameterizable	
Diagnostic interrupt	yes, parameterizable	yes, parameterizable	yes, parameterizable	
Diagnostic functions	yes	yes	yes	
Diagnostics information read-out	possible	possible	possible	
Supply voltage display	none	none	none	
Group error display	red LED	red LED	red LED	
Channel error display	none	none	none	
Functionality Sub-D interfaces				
Type	-	-	-	
Type of interface	CAN	RS485	FOC	
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, female	2-pin FOC POF/HCS	
Electrically isolated	✓	✓	✓	
MPI	-	-	-	
MP²I (MPI/RS232)	-	-	-	
DP master	-	✓	✓	
DP slave	-	✓	✓	
Point-to-point interface	-	-	-	
Mechanical data				

Communication processors | Fieldbus master modules						
208-1CA00 208-1DP01 208-1DP11						

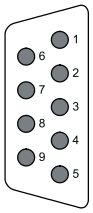
Order number	208-1CA00	208-1DP01	208-1DP11	
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	
Weight	80 g	90 g	100 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	yes	yes	yes	

Connections, Interfaces

Communication processors | Fieldbus master modules						
208-1CA00 208-1DP01 208-1DP11						

208-1CA00

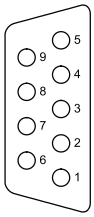
CAN



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.

208-1DP01

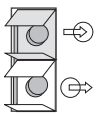
DP
RS485



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.

208-1DP11

LWL



① Rx
② Tx

Function modules

Structure and Function

Function modules are intelligent modules, the technological tasks such as position determination, counting and positioning, and other complex functions in the automation run autonomously.

FM 250 - SSI Modules

The SSI module enables the connection of absolute coded reading recorders with an SSI interface. The module converts the serial information of the reading recorder into parallel information and makes this available to the controller. There is a possibility to transmit the data in gray or binary code. In addition to the SSI signals clock, data and encoder supply there are two additional outputs that can be set or reset when crossing.

FM 250 - Counter

The counter counts the pulses of the connected sensor and processes these stimuli according to the selected module. The module has 2 or 4 channels at a width of 32 bit or 16 bit respectively, with 20 counter modes and two DC 24 V outputs, which are controlled depending on the mode.

FM 253/254 – Positioning Modules

Positioning modules can be used for point-to-point positioning and for complex travel profiles with the highest standards of accuracy, dynamism and speed. The FM 253 is a Positioning module for controlling a stepper motor. Stepper motors are used when maximum torque at low speeds is required and the target position is to be achieved and maintained without overshooting. The FM 254 is a positioning module for controlling a servo drive. The module operates independently and is controlled by a corresponding application program from the CPU. The module has 3 inputs for connecting limit switches and can control 2 outputs.

Characteristics

- Compact design
- LED status indicator
- Electrically isolated to the backplane bus
- Assembly with 35 mm profile rail
- 24 month warranty

Overview

Order no.	Name/Description	Page
Counter modules		
250-1BA00	**FM 250 - Counter module** › 2/4 channels with 32/16 Bit › DC 24 V or via backplane bus › Free configurable DC 24 V outputs (1 A) › Up to 1 MHz	**340**
SSI modules		
250-1BS00	**FM 250S - SSI module** › 1 SSI channel › Direct power supply to the SSI transducer › Baudrate: 100/300/600 kBit/s (default: 300 kBit/s) › 2 configurable digital outputs, one may be used as hold input	**345**
Positioning modules		
253-1BA00	**FM 253 - Positioning module** › Positioning module for 1axis drive with stepper › 3 inputs for connecting end switches and 2 outputs	**349**
254-1BA00	**FM 254 - Positioning module** › Positioning module for 1axis drive with servo › For drives with an analog set point interface (+/-10 V control voltage) › 3 inputs for connecting end switches and 2 outputs	**349**

Counter modules

Function modules | Counter modules						
250-1BA00						

Order number	250-1BA00			
Figure				
Type	FM 250			
General information				
Note	-			
Features	› 2/4 channels with 32/16 Bit › DC 24 V or via backplane bus › Free configurable DC 24 V outputs (1 A) › Up to 1 MHz			
Current consumption/power loss				
Current consumption from backplane bus	80 mA			
Power loss	2.5 W			
Technical data digital inputs				
Number of inputs	6			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	-			
Rated value	-			
Input voltage for signal "0"	DC 0...5 V			
Input voltage for signal "1"	DC 15...28.8 V			
Input voltage hysterese	-			
Frequency range	-			
Input resistance	2 kΩ			
Input current for signal "1"	14 mA			
Connection of Two-Wire-BEROs possible	-			
Max. permissible BERO quiescent current	-			
Input delay of "0" to "1"	0,8 µs			
Input delay of "1" to "0"	0,8 µs			
Number of simultaneously utilizable inputs horizontal configuration	6			
Number of simultaneously utilizable inputs vertical configuration	6			
Input characteristic curve	-			

Function modules | Counter modules						
250-1BA00						

Order number	250-1BA00			
Initial data size	10 Byte			
Technical data digital outputs				
Number of outputs	2			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	10 mA			
Total current per group, horizontal configuration, 40°C	-			
Total current per group, horizontal configuration, 60°C	-			
Total current per group, vertical configuration	-			
Output voltage signal "1" at min. current	L+ (-0.8 V)			
Output voltage signal "1" at max. current	-			
Output current at signal "1", rated value	2 A			
Output current, permitted range to 40°C	-			
Output current, permitted range to 60°C	-			
Output current at signal "0" max. (residual current)	-			
Output delay of "0" to "1"	max. 100 µs			
Output delay of "1" to "0"	max. 500 µs			
Minimum load current	-			
Lamp load	10 W			
Parallel switching of outputs for redundant control of a load	-			
Parallel switching of outputs for increased power	-			
Actuation of digital input	-			
Switching frequency with resistive load	max. 1000 Hz			
Switching frequency with inductive load	max. 0.5 Hz			
Switching frequency on lamp load	max. 10 Hz			
Internal limitation of inductive shut-off voltage	L+ (-52 V)			
Short-circuit protection of output	yes, electronic			
Trigger level	3 A			
Number of operating cycle of relay outputs	-			
Switching capacity of contacts	-			
Output data size	10 Byte			
Technical data counters				

Function modules | Counter modules						
250-1BA00						

Order number	250-1BA00			
Number of counters	2			
Counterwidth	1x32 Bit / 2x16 Bit			
Maximum input frequency	1 MHz			
Maximum count frequency	1 MHz			
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	✓			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	none			
Supply voltage display	yes			
Group error display	red LED			
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)	-			
Max. potential difference between Mana and Mintern (Uiso)	-			
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			
Mechanical data				

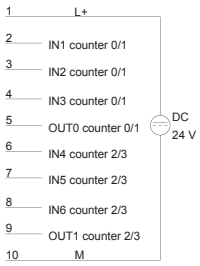
Function modules | Counter modules						
250-1BA00						

Order number	250-1BA00			
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm			
Weight	230 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Function modules | Counter modules						
250-1BA00						

250-1BA00



SSI modules

Function modules | SSI modules						
250-1BS00						

Order number	250-1BS00			
Figure				
Type	FM 250S			
General information				
Note	-			
Features	› 1 SSI channel › Direct power supply to the SSI transducer › Baudrate: 100/300/600 kBit/s (default: 300 kBit/s) › 2 configurable digital outputs, one may be used as hold input			
Current consumption/power loss				
Current consumption from backplane bus	120 mA			
Power loss	1 W			
Technical data digital inputs				
Number of inputs	2			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	-			
Rated value	-			
Input voltage for signal "0"	-			
Input voltage for signal "1"	-			
Input voltage hysterese	-			
Frequency range	-			
Input resistance	-			
Input current for signal "1"	-			
Connection of Two-Wire-BEROs possible	-			
Max. permissible BERO quiescent current	-			
Input delay of "0" to "1"	-			
Input delay of "1" to "0"	-			
Number of simultaneously utilizable inputs horizontal configuration	-			
Number of simultaneously utilizable inputs vertical configuration	-			

Function modules | SSI modules						
250-1BS00						

Order number	250-1BS00			
Input characteristic curve	-			
Initial data size	4 Byte			
Technical data digital outputs				
Number of outputs	2			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	5 mA			
Total current per group, horizontal configuration, 40°C	2 A			
Total current per group, horizontal configuration, 60°C	-			
Total current per group, vertical configuration	-			
Output voltage signal "1" at min. current	-			
Output voltage signal "1" at max. current	L+ (-0.8 V)			
Output current at signal "1", rated value	1 A			
Output current, permitted range to 40°C	-			
Output current, permitted range to 60°C	-			
Output current at signal "0" max. (residual current)	-			
Output delay of "0" to "1"	max. 100 µs			
Output delay of "1" to "0"	max. 350 µs			
Minimum load current	-			
Lamp load	5 W			
Parallel switching of outputs for redundant control of a load	-			
Parallel switching of outputs for increased power	-			
Actuation of digital input	-			
Switching frequency with resistive load	max. 1000 Hz			
Switching frequency with inductive load	max. 0.5 Hz			
Switching frequency on lamp load	max. 10 Hz			
Internal limitation of inductive shut-off voltage	L+ (-52 V)			
Short-circuit protection of output	yes, electronic			
Trigger level	1.8 A			
Number of operating cycle of relay outputs	-			
Switching capacity of contacts	-			
Output data size	4 Byte			

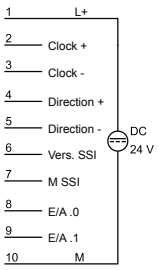
Function modules | SSI modules						
250-1BS00						

Order number	250-1BS00			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	none			
Supply voltage display	yes			
Group error display	yes			
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)	-			
Max. potential difference between Mana and Mintern (Uiso)	-			
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			
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm			
Weight	100 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Function modules | SSI modules						
250-1BS00						

250-1BS00



Positioning modules

Function modules | Positioning modules						
253-1BA00 254-1BA00						

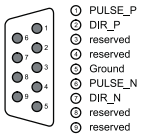
Order number	253-1BA00	254-1BA00		
Figure				
Type	FM 253	FM 254		
General information				
Note	-	-		
Features	› Positioning module for 1axis drive with stepper › 3 inputs for connecting end switches and 2 outputs	› Positioning module for 1axis drive with servo › For drives with an analog set point interface (+/-10 V control voltage) › 3 inputs for connecting end switches and 2 outputs		
Current consumption/power loss				
Current consumption from backplane bus	500 mA	200 mA		
Power loss	-	-		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		
Diagnostic functions	no	no		
Diagnostics information read-out	none	none		
Supply voltage display	yes	yes		
Group error display	red LED	red LED		
Channel error display	none	none		
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm		
Weight	90 g	130 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		

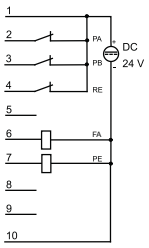
Connections, Interfaces

Function modules | Positioning modules						
253-1BA00 254-1BA00						

253-1BA00

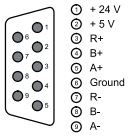
Stepper

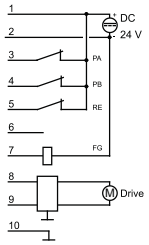




254-1BA00

ENCODER





Interface modules

Structure and Function

Interface modules extend deployed control systems with up to three peripheral lines (central max. 32 modules).

Fieldbus slave modules are used for the decentralized expansion of control systems (with a fieldbus master interface in or on the CPU) with up to 128 fieldbus slave modules, plus peripheral modules.

Characteristics (Fieldbus slave modules)

- Available for PROFIBUS, CANopen, INTERBUS, DeviceNet, Ethernet
- Cross manufacturer mixed operation is possible
- Depending on the version also with fiber-optic interface
- Advanced diagnostics
- Electrically isolated to the backplane bus
- LED status indicator
- Compact design
- Assembly with 35 mm profile rail
- 24 month warranty

Overview

Order no.	Name/Description	Page
Row interface connection		
260-1AA00	**IM 260 - Interface module** › Only be used in conjunction with the PC 288 or a CPU	**354**
261-1CA00	**IM 261 - Interface module** › Only be used in conjunction with the PC 288 or a CPU	**354**
Fieldbus slave modules w/o I/Os		
253-1CA01	**IM 253CAN - CANopen slave** › CANopen slave › 10 Rx und 10 Tx PDO › 2 SDOs › PDO linking › PDO mapping	**357**
253-1CA30	**IM 253CAN - CANopen slave ECO** › CANopen slave › 10 Rx and 10 Tx PDO › 2 SDOs › PDO linking › PDO mapping	**357**
253-1DN00	**IM 253DN - DeviceNet slave** › Group 2 only Device - employs predefined connection set › Baud rates: 125, 250, 500 kBit/s › For max. 32 pheripheral modules (8 analog)	**357**
253-1DP01	**IM 253DP - PROFIBUS-DP slave** › PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 32 peripheral modules (16 analog) › 244 Byte input and 244 Byte output data	**357**
253-1DP11	**IM 253DPO - PROFIBUS-DP slave** › PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 32 peripheral modules (16 analog) › 244 Byte input und 244 Byte output data	**360**
253-1DP31	**IM 253DP - PROFIBUS-DP slave ECO** › PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 8 peripheral modules › 244 Byte input and 244 Byte output data	**360**
253-2DP50	**IM 253DPR - PROFIBUS-DP slave** › PROFIBUS-DP slave › 2 redundant channels › For max. 32 peripheral modules (16 analog) › 152 Byte input and 152 Byte output data	**360**
253-1IB00	**IM 253IBS - INTERBUS slave** › INTERBUS slave › For 16 input and 16 output modules	**360**
253-1NE00	**IM 253NET - Ethernet slave** › Ethernet coupler with ModbusTCP and Siemens S5 Header protocol › For max. 32 peripheral modules › Max. 256 Byte I/O data › RJ45 jack 100BaseTX, 10BaseT	**363**

Row interface connection

Interface modules | Row interface connection						
260-1AA00 261-1CA00						

Order number	260-1AA00	261-1CA00		
Figure				
Type	IM 260, Basic interface	IM 261, Row interface		
General information				
Note	-	-		
Features	› Only be used in conjunction with the PC 288 or a CPU	› Only be used in conjunction with the PC 288 or a CPU		
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)	50 mA	-		
Current consumption (rated value)	1.9 A	-		
Inrush current	-	-		
Max. current drain at backplane bus	4 A	1.5 A		
Max. current drain load supply	-	-		
Power loss	2 W	1 W		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		
Diagnostic functions	no	no		
Diagnostics information read-out	none	none		
Supply voltage display	yes	yes		
Group error display	none	none		
Channel error display	none	none		
Hardware configuration				
Racks, max.	4	1		
Modules per rack, max.	16	16		
Number of digital modules, max.	16	16		
Number of analog modules, max.	16	16		
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm		
Weight	100 g	90 g		

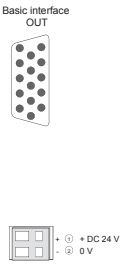
Interface modules | Row interface connection						
260-1AA00 261-1CA00						

Order number	260-1AA00	261-1CA00		
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		

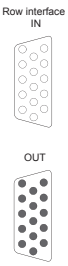
Connections, Interfaces

Interface modules | Row interface connection						
260-1AA00 261-1CA00						

260-1AA00



261-1CA00



Fieldbus slave modules w/o I/Os

Interface modules | Fieldbus slave modules w/o I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

Order number	253-1CA01	253-1CA30	253-1DN00	253-1DP01
Figure				
Type	IM 253CAN, CANopen slave	IM 253CAN, CANopen slave	IM 253DN, DeviceNET slave	IM 253DP, PROFIBUS-DP slave
General information				
Note	-	-	-	-
Features	› CANopen slave › 10 Rx und 10 Tx PDO › 2 SDOs › PDO linking › PDO mapping	› CANopen slave › 10 Rx and 10 Tx PDO › 2 SDOs › PDO linking › PDO mapping	› Group 2 only Device - employs predefined connection set › Baud rates: 125, 250, 500 kBit/s › For max. 32 pheripheral modules (8 analog)	› PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 32 peripheral modules (16 analog) › 244 Byte input and 244 Byte output data
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)	50 mA	50 mA	50 mA	70 mA
Current consumption (rated value)	800 mA	300 mA	800 mA	1 A
Inrush current	-	-	-	-
I^2t	-	-	-	-
Max. current drain at backplane bus	3.5 A	0.8 A	3.5 A	3.5 A
Max. current drain load supply	-	-	-	-
Power loss	2 W	1.5 W	2 W	2.5 W
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes, parameterizable	yes, parameterizable	no	yes, parameterizable
Process alarm	no	no	no	yes, parameterizable
Diagnostic interrupt	yes, parameterizable	yes, parameterizable	no	yes, parameterizable
Diagnostic functions	yes, parameterizable	yes, parameterizable	yes	yes, parameterizable
Diagnostics information read-out	possible	possible	none	possible
Supply voltage display	yes	yes	yes	green LED
Service Indicator	-	-	-	-
Group error display	yes	yes	yes	yes
Channel error display	none	none	none	none
Hardware configuration				
Racks, max.	1	1	1	1
Modules per rack, max.	32	8	32	32

Interface modules | Fieldbus slave modules w/o I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

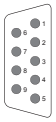
Order number	253-1CA01	253-1CA30	253-1DN00	253-1DP01
Number of digital modules, max.	32	8	32	32
Number of analog modules, max.	16	8	8	16
Communication				
Fieldbus	CANopen	CANopen	DeviceNet	PROFIBUS-DP to EN 50170
Type of interface	CAN	CAN	-	RS485
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	5-pin Open Style Connector	Sub-D, 9-pin, female
Topology	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends
Electrically isolated	✓	✓	✓	✓
Number of participants, max.	127	127	64	125
Node addresses	1 - 99	1 - 99	0 - 63	1 - 99
Transmission speed, min.	10 kbit/s	10 kbit/s	125 kbit/s	9.6 kbit/s
Transmission speed, max.	1 Mbit/s	1 Mbit/s	500 kbit/s	12 Mbit/s
Address range inputs, max.	80 Byte	80 Byte	256 Byte	244 Byte
Address range outputs, max.	80 Byte	80 Byte	256 Byte	244 Byte
Number of TxPDOs, max.	10	10	-	-
Number of RxPDOs, max.	10	10	-	-
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm
Weight	100 g	90 g	90 g	100 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

Interface modules | Fieldbus slave modules w/o I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

253-1CA01

CAN



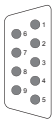
① n. c.
② CAN low
③ CAN Ground
④ n. c.
⑤ shield
⑥ optional Ground
⑦ CAN high
⑧ n. c.
⑨ n. c.

X1

+ ① + DC 24 V
- ② 0 V

253-1CA30

CAN



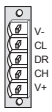
① n. c.
② CAN low
③ CAN Ground
④ n. c.
⑤ shield
⑥ optional Ground
⑦ CAN high
⑧ n. c.
⑨ n. c.

X1

+ ① + DC 24 V
- ② 0 V

253-1DN00

DeviceNet



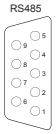
V- ③ GND
CL ④ CAN low
DR ⑤ Drain
CH ⑥ CAN high
V+ ⑦ DC 24 V

X1

+ ① + DC 24 V
- ② 0 V

253-1DP01

DP
RS485



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.

X1

+ ① + DC 24 V
- ② 0 V

Fieldbus slave modules w/o I/Os

Interface modules | Fieldbus slave modules w/o I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

Order number	253-1DP11	253-1DP31	253-2DP50	253-1IB00
Figure				
Type	IM 253DPO, PROFIBUS-DP slave	IM 253DP, PROFIBUS-DP slave	IM 253DPR, PROFIBUS-DP slave	IM 253IBS, INTERBUS slave
General information				
Note	-	-	-	-
Features	› PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 32 peripheral modules (16 analog) › 244 Byte input und 244 Byte output data	› PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 8 peripheral modules › 244 Byte input and 244 Byte output data	› PROFIBUS-DP slave › 2 redundant channels › For max. 32 peripheral modules (16 analog) › 152 Byte input and 152 Byte output data	› INTERBUS slave › For 16 input and 16 output modules
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)	50 mA	50 mA	50 mA	50 mA
Current consumption (rated value)	1 A	300 mA	1 A	800 mA
Inrush current	-	-	-	-
I^2t	-	-	-	-
Max. current drain at backplane bus	3.5 A	0.8 A	3.5 A	3.5 A
Max. current drain load supply	-	-	-	-
Power loss	2.5 W	1.5 W	2.5 W	2 W
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes, parameterizable	yes, parameterizable	yes, parameterizable	no
Process alarm	yes, parameterizable	yes, parameterizable	yes, parameterizable	no
Diagnostic interrupt	yes, parameterizable	yes, parameterizable	yes, parameterizable	no
Diagnostic functions	yes, parameterizable	yes, parameterizable	yes, parameterizable	no
Diagnostics information read-out	possible	possible	none	none
Supply voltage display	green LED	green LED	green LED	green LED
Service Indicator	-	-	-	-
Group error display	red SF LED	red SF LED	yes	red LED
Channel error display	none	none	none	none
Hardware configuration				
Racks, max.	1	1	1	1
Modules per rack, max.	32	8	32	16
Number of digital modules, max.	32	8	32	16

Interface modules | Fieldbus slave modules w/o I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

Order number	253-1DP11	253-1DP31	253-2DP50	253-1IB00
Number of analog modules, max.	16	8	16	4
Communication				
Fieldbus	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	INTERBUS-S to DIN 19258
Type of interface	FOC	RS485	RS485	RS422
Connector	2-pin FOC POF/HCS	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, male (in) and female (out)
Topology	Line structure with two-wire FOC	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Ring with integrated return line
Electrically isolated	✓	✓	✓	✓
Number of participants, max.	125	125	125	256
Node addresses	1 - 99	1 - 125	1 - 125	-
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	500 kbit/s
Address range inputs, max.	244 Byte	244 Byte	152 Byte	20 Byte
Address range outputs, max.	244 Byte	244 Byte	152 Byte	20 Byte
Number of TxPDOs, max.	-	-	-	-
Number of RxPDOs, max.	-	-	-	-
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	50.8 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm
Weight	110 g	90 g	90 g	100 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

Interface modules | Fieldbus slave modules w/o I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

253-1DP11

LWL

IN
① Send
② Receive

OUT
③ Send
④ Receive

X1

+ ① + DC 24 V
- ② 0 V

253-1DP31

DP slave
RS485

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.

X1

+ ① + DC 24 V
- ② 0 V

253-2DP50

DP1 / DP2
RS485

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.

X1

+ ① + DC 24 V
- ② 0 V

253-1IB00

IBS
Inbound bus line

① DO
② DI
③ GND1
④ GND
⑤ n. c.
⑥ /DO
⑦ /DI
⑧ +5V
⑨ reserved

DC 24 V
1 +
2 -

IBS
Outbound bus line

① DO
② DI
③ GND1
④ GND
⑤ n. c.
⑥ /DO
⑦ /DI
⑧ +5V
⑨ reserved

Fieldbus slave modules w/o I/Os

Interface modules | Fieldbus slave modules w/o I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

Order number	253-1NE00			
Figure				
Type	IM 253NET, Ethernet slave			
General information				
Note	-			
Features	› Ethernet coupler with ModbusTCP and Siemens S5 Header protocol › For max. 32 peripheral modules › Max. 256 Byte I/O data › RJ45 jack 100BaseTX, 10BaseT			
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)	80 mA			
Current consumption (rated value)	1 A			
Inrush current	-			
I^2t	-			
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	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	possible			
Supply voltage display	yes			
Service Indicator	-			
Group error display	red LED			
Channel error display	none			
Hardware configuration				
Racks, max.	1			

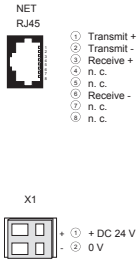
Interface modules | Fieldbus slave modules w/o I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

Order number	253-1NE00			
Modules per rack, max.	32			
Number of digital modules, max.	32			
Number of analog modules, max.	16			
Communication				
Fieldbus	Ethernet MODBUS/ TCP and Siemens S5 Header			
Type of interface	Ethernet 10/100 MBit			
Connector	RJ45			
Topology	Star topology			
Electrically isolated	✓			
Number of participants, max.	8			
Node addresses	IP V4 address			
Transmission speed, min.	10 Mbit/s			
Transmission speed, max.	100 Mbit/s			
Address range inputs, max.	256 Byte			
Address range outputs, max.	256 Byte			
Number of TxPDOs, max.	-			
Number of RxPDOs, max.	-			
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm			
Weight	90 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						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

253-1NE00



System 200V 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

Standard MMC cards can be used to store program and data.

Bus Connectors

By using backplane bus connectors, communication between the modules is realized. The backplane bus connectors are insulated and available in various designs (1, 2, 4 or 8 times width).

35 mm Profile Rail

With the help of 35 mm profile rails, the respective modules can be mounted directly on the mounting surface. The profile rail is can be ordered in various lengths.

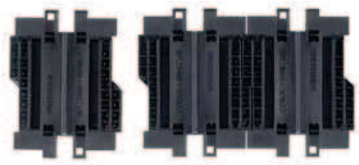
Front Connectors

The front connectors are supplied with the CPU and signal modules, but can also be ordered separately as spare parts.

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.

Bus connectors



Order number	Type	Description	Note
290-0AA10	Bus connector	1-tier	
290-0AA20	Bus connector	2-tier	
290-0AA40	Bus connector	4-tier	
290-0AA80	Bus connector	8-tier	

35 mm profile rail

Order number	Type	Description	Note
290-1AF00	35 mm profile rail	lenght 2000 mm	
290-1AF30	35 mm profile rail	lenght 530 mm	

Front connector

Order number	Type	Description	Note
292-1AF00	Front connector	10 pin with cage clamps (included in the scope of delivery of signal modules)	
292-1AH00	Front connector	18 pin with cage clamps (included in the scope of delivery of signal modules)	

Cables

Order number	Type	Description	Note
260-1XY05	Connection cable	Connection cable for interface modules, lenght 0.5 m	
260-1XY10	Connection cable	Connection cable for interface modules, lenght 1.0 m	
260-1XY15	Connection cable	Connection cable for interface modules, lenght 1.5 m	
260-1XY20	Connection cable	Connection cable for interface modules, lenght 2.0 m	
260-1XY25	Connection cable	Connection cable for interface modules, lenght 2.5 m	

Antennas, connectors etc.

Order number	Type	Description	Note
970-0CM00	CM 240 - Jack	For communication processor CM 240 - mini switch, external DC 24 V power supply	
240-0EA00	CP 240 - Portable Antenna	EnOcean Antenna portable, incl. SMA connector	
240-0EA10	CP 240 - Magnetic base antenna	EnOcean Antenna magnetic base, incl. 150 cm cable and SMA connector	

MMC memory

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)	

Labeling

Order number	Type	Description	Note
292-1XY10	Labelling cards	I/O labelling, perforated, 10 sheets each 8 cards	

Order number	Type	Description	Note
292-1XY20	Clip-on cards	Module labelling, perforated, 10 sheets each 108 cards	
292-1XY00	Labelling cards	I/O labelling, with transparent cover foil, 10 pieces	

Manuals and operating instructions

Order number	Title	Contents	Language
HB97D	Manual System 200V, German	HB97D_PS-CM, HB97D_SM, HB97D_CP, HB97D_IM, HB97D_FM	DE
HB97D_CP	Manual System 200V - CP	CP 240 Communication processors	DE
HB97D_CPU	Manual System 200V - CPU	CPU 21x, incl. operations list	DE
HB99D_CPU	Manual CPU 24x, German	CPU 24x, incl. operations list	DE
HB97D_FM	Manual System 200V - FM	FM - Function modules	DE
HB97D_IM	Manual System 200V - IM	IM - Interface modules	DE
HB97D_PS-CM	Manual System 200V - PS-CM	PS-CM - Power supply / Expansion modules	DE
HB97D_SM	Manual System 200V - SM	SM - Signal modules	DE
HB97E	Manual System 200V, English	HB97E_PS-CM, HB97E_SM, HB97E_CP, HB97E_IM, HB97E_FM	EN
HB97E_CP	Manual System 200V - CP	CP 240 Communication prozessors	EN
HB97E_CPU	Manual System 200V - CPU	CPU 21x, incl. operations list	EN
HB99E_CPU	Manual CPU 24x, English	CPU 24x, incl. operations list	EN
HB97E_FM	Manual System 200V - FM	FM - Function modules	EN
HB97E_IM	Manual System 200V - IM	IM - Interface modules	EN
HB97E_PS-CM	Manual System 200V - PS-CM	PS-CM - Power supply / Expansion modules	EN
HB97E_SM	Manual System 200V - SM	SM - Signal modules	EN