
VIPA
CPU 115DP
DI 16(20)xDC24V
DO 16(12)xDC24V 0.5A
RUN
STOP
MRST
PW
SF
FC
MC
MMC
DC24V
DP
X1
L+
M
PE
VIPA 115-6BL22
DI 8xDC24V
DI 8xDC24V
DIO 4/DO 4xDC24V
DO 8xDC24V

100V

System description 100V

Structure and Function

100V is a very compact control system.

The system is designed for centralized and decentralized automation tasks.

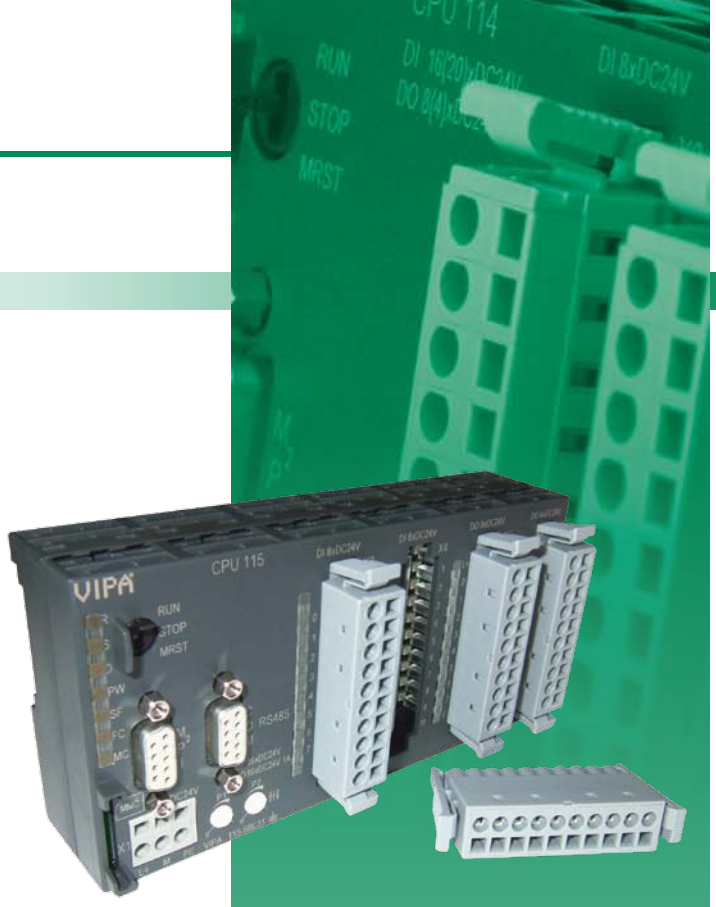
The compact CPUs unify interfaces for communication and digital I/O peripherals in a casing.

By the use of up to four expansion modules the CPUs can be extended by up to 160 analog and digital I/O points.

With its space-saving assembly size it fits into almost any automation environment.

100V is immediately usable central and decentral without further components. The installation of the system and the enlargement of the periphery is extremely simple. The CPU is clipped onto a standard 35 mm profile rail. If the CPU needs to be expanded bus connectors are used for communication between the CPU and expansion modules on the profile rail in advance, after that the CPU and the 100V/200V expansion modules are snapped on - finished.

The scope of supply includes front connectors, labeling strips and, in 100V expansion modules, also bus connectors.



Performance and Application

100V is designed for centralized and decentralized automation tasks in the manufacturing and process industries for the lower performance range.

Programming

100V is programmed with VIPA WinPLC7 or with Siemens STEP7 in LAD, FBD and STL.

Memory

The CPUs in the system 100V have the work and load memory already integrated. Depending on the CPU version, users can choose from 8 kByte to 32 kByte work memory. In addition, MMC cards for storing program and data are supported.

Functions

For the connection of sensors and actuators are a variety of signaling modules in 100V, and 200V for acquiring digital and analog signals in and out of the process is available. Most of the signal modules from 200V are bus and functionally compatible to 100V.

Depending on the CPU, variant counter inputs and PWM outputs are integrated. Due to the counter inputs, complex and fast counting tasks in the manufacturing and process industries will be economically realized. The adjustable PWM outputs via potentiometer allow, for example, CCFLs to be "dimmed" or the speed of appropriate electric motors and fans to be regulated via impulses.

Communication

For the connection of serial devices, e.g. scanner or printer, and for the integration of systems from other manufacturers, different CPU variants are available with integrated interfaces. 100V provides fieldbus slave modules for PROFIBUS-DP and CANopen, with which the system also serves as manufacturer-independent, central, but also as subordinate decentralized fieldbus slave unit.

The fieldbus slave modules are integrated via the device master files into existing fieldbus infrastructure.

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 memory and can be extended with signal and function modules, as well as communication processors.

The 100V compact CPUs (micro-PLC) have already integrated the inputs and outputs and are designed for small to medium applications.

Furthermore, each CPU has a front slot for a memory module as well as an MP²I interface. The CPU11x supports the standard MPI protocol, serial point-to-point communications. Thereby, in connection with the "Green Cable" from VIPA, a direct and cost-effective programming is possible.

The CPU of the system 100V is ideal for use in control systems with a limited number of inputs and outputs, where previously the use of a PLC was dispensed with. Moreover, this CPU series offers the expansion capability with I/O modules of the system 200V.

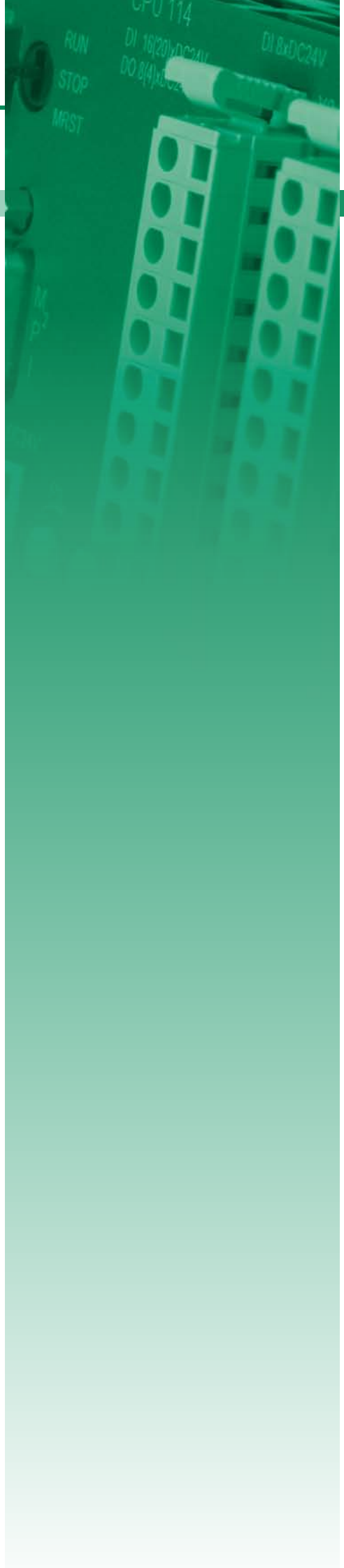
Characteristics

- Programmable with WinPLC7 or Siemens STEP7 (WinPLC7 lite included)
- 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
- MPI-Interface on board
- Suitable for centralized and decentralized applications
- Front integrated status LEDs
- Expandable with up to four signal and function modules
- Integrated real time clock
- Compact design and modular construction
- Maintenance-free cage-clamp technology
- Front connector included
- Assembly with 35 mm profile rail
- 24 months warranty

Overview

Order no.	Name/Description	Page
CPUs STEP7 programmable		
112-4BH02	**CPU 112 - Micro PLC** › 8 (12) inputs › 8 (4) outputs › 8 kB work memory, 16 kB load memory	**147**
114-6BJ02	**CPU 114 - Micro PLC** › 16 (20) inputs › 8 (4) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory	**147**
114-6BJ03	**CPU 114 - Micro PLC** › 16 (20) inputs › 8 (4) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory	**147**
114-6BJ04	**CPU 114 - Micro PLC** › 16 (20) inputs › 8 (4) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory	**147**
114-6BJ52	**CPU 114R - Micro PLC** › 16 inputs › 8 relay outputs › AC 230 V/ DC 30 V › 16 kB work memory, 24 kB load memory	**154**
114-6BJ53	**CPU 114R - Micro PLC** › 16 inputs › 8 relay outputs › AC 230 V/ DC 30 V › 24 kB work memory, 32 kB load memory	**154**
114-6BJ54	**CPU 114R - Micro PLC** › 16 inputs › 8 relay outputs › AC 230 V/ DC 30 V › 32 kB work memory, 40 kB load memory	**154**
115-6BL02	**CPU 115 - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory	**154**
115-6BL03	**CPU 115 - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory	**161**
115-6BL04	**CPU 115 - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory	**161**
CPUs STEP7 programmable, PtP		
115-6BL12	**CPU 115SER - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory › RS232 interface	**168**
115-6BL13	**CPU 115SER - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory › RS232 interface	**168**
115-6BL14	**CPU 115SER - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory › RS232 interface	**168**

Overview



Order no.	Name/Description	Page
115-6BL32	**CPU 115SER - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory › RS485 interface	**168**
115-6BL33	**CPU 115SER - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory › RS485 interface	**175**
115-6BL34	**CPU 115SER - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory › RS485 interface	**175**
CPUs STEP7 programmable, DP slave		
115-6BL22	**CPU 115DP - Micro PLC** › 16 (20) inputs › 16 (12) outputs › 16 kB work memory, 24 kB load memory › PROFIBUS-DP slave interface	**182**
115-6BL23	**CPU 115DP - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory › PROFIBUS-DP slave interface	**182**
115-6BL24	**CPU 115DP - Micro PLC** › 16 (20) inputs › 16 (12) outputs › 32 kB work memory, 40 kB load memory › PROFIBUS-DP slave interface	**182**

CPUs STEP7 programmable

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	112-4BH02	114-6BJ02	114-6BJ03	114-6BJ04
Figure				
Type	CPU 112	CPU 114	CPU 114	CPU 114
General information				
Note	-	-	-	-
Features	› 8 (12) inputs › 8 (4) outputs › 8 kB work memory, 16 kB load memory	› 16 (20) inputs › 8 (4) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory	› 16 (20) inputs › 8 (4) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory	› 16 (20) inputs › 8 (4) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 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)	50 mA	80 mA	80 mA	80 mA
Current consumption (rated value)	1 A	1 A	1 A	1 A
Inrush current	58 A	58 A	58 A	58 A
I^2t	0.38 A^2s	0.38 A^2s	0.38 A^2s	0.38 A^2s
Max. current drain at backplane bus	-	0.8 A	0.8 A	0.8 A
Power loss	5 W	7 W	7 W	7 W
Reverse polarity protection	✓	✓	✓	✓
Technical data digital inputs				
Number of inputs	8 (12)	16 (20)	16 (20)	16 (20)
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	✓	✓	✓	✓
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	3 ms	3 ms	3 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	3 ms
Input characteristic curve	IEC 61131-2, type 1	IEC 61131-2, type 1	IEC 61131-2, type 1	IEC 61131-2, type 1
Initial data size	3 Byte	3 Byte	3 Byte	3 Byte

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	112-4BH02	114-6BJ02	114-6BJ03	114-6BJ04
Technical data digital outputs				
Number of outputs	8 (4)	8 (4)	8 (4)	8 (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	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	50 mA	50 mA	50 mA	50 mA
Total current per group, horizontal configuration, 40°C	4 A	4 A	4 A	4 A
Total current per group, horizontal configuration, 60°C	4 A	4 A	4 A	4 A
Total current per group, vertical configuration	4 A	4 A	4 A	4 A
Output voltage signal "1" at min. current	L+ (-125 mV)	L+ (-125 mV)	L+ (-125 mV)	L+ (-125 mV)
Output voltage signal "1" at max. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output current at signal "1", rated value	0.5 A	0.5 A	0.5 A	0.5 A
Output delay of "0" to "1"	max. 100 µs	max. 100 µs	max. 100 µs	max. 100 µs
Output delay of "1" to "0"	max. 350 µs	max. 350 µs	max. 350 µs	max. 350 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
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 A	1 A	1 A	1 A
Output data size	3 Byte	3 Byte	3 Byte	3 Byte
Technical data counters				
Number of counters	-	4	4	4
Counter width	-	32 Bit	32 Bit	32 Bit
Maximum input frequency	-	30 kHz	30 kHz	30 kHz
Maximum count frequency	-	30 kHz	30 kHz	30 kHz
Mode incremental encoder	-	✓	✓	✓
Mode pulse / direction	-	✓	✓	✓
Mode pulse	-	✓	✓	✓
Mode frequency counter	-	-	-	-
Mode period measurement	-	-	-	-
Gate input available	-	✓	✓	✓
Latch input available	-	-	-	-
Reset input available	-	-	-	-
Counter output available	-	-	-	-

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	112-4BH02	114-6BJ02	114-6BJ03	114-6BJ04
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes	yes	yes	yes
Process alarm	yes	yes	yes	yes
Diagnostic interrupt	yes	yes	yes	yes
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	possible	possible	possible
Supply voltage display	green LED	green LED	green LED	green LED
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
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
PWM data				
PWM channels	-	2	2	2
PWM time basis	-	-	-	-
Period length	-	-	-	-
Minimum pulse width	-	-	-	-
PtP communication	-	-	-	-
Load and working memory				
Load memory, integrated	16 KB	24 KB	32 KB	40 KB
Load memory, maximum	16 KB	24 KB	32 KB	40 KB
Work memory, integrated	8 KB	16 KB	24 KB	32 KB
Work memory, maximal	8 KB	16 KB	24 KB	32 KB
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.	-	1	1	1
Modules per rack, max.	-	4	4	4
Number of integrated DP master	-	-	-	-
Number of DP master via CP	-	4	4	4
Operable function modules	-	4	4	4
Operable communication modules PtP	-	4	4	4
Operable communication modules LAN	-	-	-	-

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	112-4BH02	114-6BJ02	114-6BJ03	114-6BJ04
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs	0.25 µs	0.25 µs
Word instruction, min.	1.2 µs	1.2 µs	1.2 µs	1.2 µs
Double integer arithmetic, min.	2.6 µs	2.6 µs	2.6 µs	2.6 µs
Floating-point arithmetic, min.	50 µs	50 µs	50 µs	50 µs
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	256
S7 counter remanence	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64
S7 counter remanence adjustable	C0 .. C7	C0 .. C7	C0 .. C7	C0 .. C7
Number of S7 times	256	256	256	256
S7 times remanence	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128
S7 times remanence adjustable	not retentive	not retentive	not retentive	not retentive
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	8192 Bit
Bit memories retentive characteristic adjustable	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256
Bit memories retentive characteristic preset	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15
Number of data blocks	2047	2047	2047	2047
Max. data blocks size	16 KB	16 KB	16 KB	16 KB
Number range DBs	1 ... 2047	1 ... 2047	1 ... 2047	1 ... 2047
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Max. local data size per block	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Blocks				
Number of OBs	14	14	14	14
Maximum OB size	16 KB	16 KB	16 KB	16 KB
Totalnumber DBs, FBs, FCs	-	-	-	-
Number of FBs	1024	1024	1024	1024
Maximum FB size	16 KB	16 KB	16 KB	16 KB
Number range FBs	0 ... 1023	0 ... 1023	0 ... 1023	0 ... 1023
Number of FCs	1024	1024	1024	1024
Maximum FC size	16 KB	16 KB	16 KB	16 KB
Number range FC2	0 ... 1023	0 ... 1023	0 ... 1023	0 ... 1023
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
Type ofbuffering	-	-	-	-
Load time for 50% buffering period	20 h	20 h	20 h	20 h
Load time for 100% buffering period	48 h	48 h	48 h	48 h
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	-	-	-	-

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	112-4BH02	114-6BJ02	114-6BJ03	114-6BJ04
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
Process image adjustable	-	-	-	-
Input process image preset	128 Byte	128 Byte	128 Byte	128 Byte
Output process image preset	128 Byte	128 Byte	128 Byte	128 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	12	8192	8192	8192
Digital outputs	8	8192	8192	8192
Digital inputs central	12	148	148	148
Digital outputs central	8	136	136	136
Integrated digital inputs	8 (12)	16 (20)	16 (20)	16 (20)
Integrated digital outputs	8 (4)	8 (4)	8 (4)	8 (4)
Analog inputs	-	512	512	512
Analog outputs	-	512	512	512
Analog inputs, central	-	32	32	32
Analog outputs, central	-	16	16	16
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)	✓	✓	✓	✓
Point-to-point interface	-	-	-	-

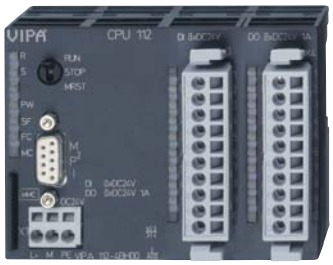
CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

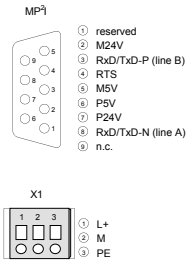
Order number	112-4BH02	114-6BJ02	114-6BJ03	114-6BJ04
Functionality MPI				
Number of connections, max.	16	16	16	16
PG/OP channel	✓	✓	✓	✓
Routing	-	-	-	-
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm
Weight	219 g	266 g	266 g	266 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

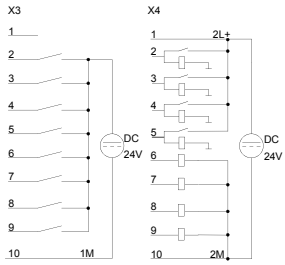
Connections, Interfaces

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

112-4BH02







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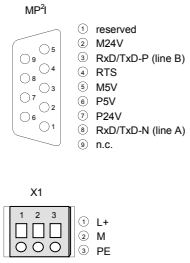
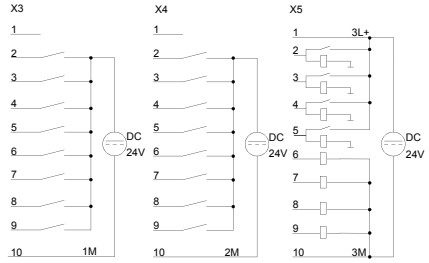
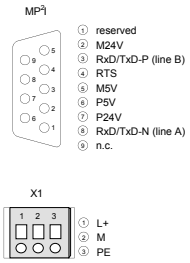
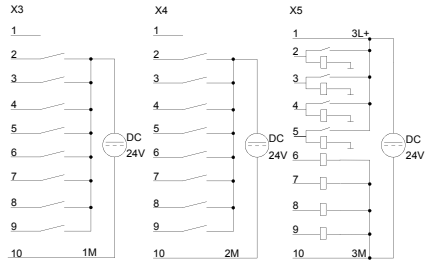


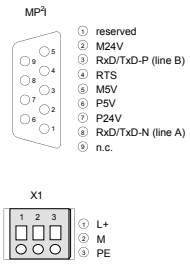


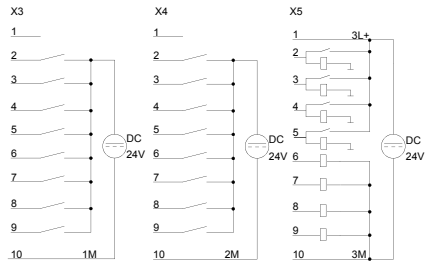
114-6BJ03





114-6BJ04





CPUs STEP7 programmable

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	114-6BJ52	114-6BJ53	114-6BJ54	115-6BL02
Figure				
Type	CPU 114R	CPU 114R	CPU 114R	CPU 115
General information				
Note	-	-	-	-
Features	› 16 inputs › 8 relay outputs › AC 230 V/ DC 30 V › 16 kB work memory, 24 kB load memory	› 16 inputs › 8 relay outputs › AC 230 V/ DC 30 V › 24 kB work memory, 32 kB load memory	› 16 inputs › 8 relay outputs › AC 230 V/ DC 30 V › 32 kB work memory, 40 kB load memory	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 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)	150 mA	150 mA	150 mA	90 mA
Current consumption (rated value)	1 A	1 A	1 A	1 A
Inrush current	58 A	58 A	58 A	58 A
I^2t	0.38 A^2s	0.38 A^2s	0.38 A^2s	0.38 A^2s
Max. current drain at backplane bus	0.8 µA	0.8 µA	0.8 µA	0.8 A
Power loss	7 W	7 W	7 W	8.5 W
Reverse polarity protection	✓	✓	✓	✓
Technical data digital inputs				
Number of inputs	16	16	16	16 (20)
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	✓	✓	✓	✓
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	3 ms	3 ms	3 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	3 ms
Input characteristic curve	IEC 61131-2, type 1	IEC 61131-2, type 1	IEC 61131-2, type 1	IEC 61131-2, type 1
Initial data size	3 Byte	3 Byte	3 Byte	3 Byte

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	114-6BJ52	114-6BJ53	114-6BJ54	115-6BL02
Technical data digital outputs				
Number of outputs	8	8	8	16 (12)
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 30 V/ AC 230 V	DC 30 V/ AC 230 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	50 mA
Total current per group, horizontal configuration, 40°C	8 A	8 A	8 A	4 A
Total current per group, horizontal configuration, 60°C	8 A	8 A	8 A	4 A
Total current per group, vertical configuration	8 A	8 A	8 A	4 A
Output voltage signal "1" at min. current	-	-	-	L+ (-125 mV)
Output voltage signal "1" at max. current	-	-	-	L+ (-0.8 V)
Output current at signal "1", rated value	5 A	5 A	5 A	0.5 A
Output delay of "0" to "1"	10 ms	10 ms	10 ms	max. 100 µs
Output delay of "1" to "0"	5 ms	5 ms	5 ms	max. 350 µs
Minimum load current	-	-	-	-
Lamp load	-	-	-	5 W
Switching frequency with resistive load	max. 10 Hz	max. 10 Hz	max. 10 Hz	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 A
Output data size	3 Byte	3 Byte	3 Byte	3 Byte
Technical data counters				
Number of counters	4	4	4	4
Counter width	32 Bit	32 Bit	32 Bit	32 Bit
Maximum input frequency	30 kHz	30 kHz	30 kHz	30 kHz
Maximum count frequency	30 kHz	30 kHz	30 kHz	30 kHz
Mode incremental encoder	✓	✓	✓	✓
Mode pulse / direction	✓	✓	✓	✓
Mode pulse	✓	✓	✓	✓
Mode frequency counter	-	-	-	-
Mode period measurement	-	-	-	-
Gate input available	✓	✓	✓	✓
Latch input available	-	-	-	-
Reset input available	-	-	-	-
Counter output available	-	-	-	-

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	114-6BJ52	114-6BJ53	114-6BJ54	115-6BL02
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes	yes	yes	yes
Process alarm	yes	yes	yes	yes
Diagnostic interrupt	yes	yes	yes	yes
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	possible	possible	possible
Supply voltage display	green LED	green LED	green LED	green LED
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
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
PWM data				
PWM channels	-	-	-	2
PWM time basis	-	-	-	-
Period length	-	-	-	-
Minimum pulse width	-	-	-	-
PtP communication	-	-	-	-
Load and working memory				
Load memory, integrated	24 KB	32 KB	40 KB	24 KB
Load memory, maximum	24 KB	32 KB	40 KB	24 KB
Work memory, integrated	16 KB	24 KB	32 KB	16 KB
Work memory, maximal	16 KB	24 KB	32 KB	16 KB
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.	1	1	1	1
Modules per rack, max.	4	4	4	4
Number of integrated DP master	-	-	-	-
Number of DP master via CP	4	4	4	4
Operable function modules	4	4	4	4
Operable communication modules PtP	4	4	4	4
Operable communication modules LAN	-	-	-	-
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs	0.25 µs	0.25 µs
Word instruction, min.	1.2 µs	1.2 µs	1.2 µs	1.2 µs
Double integer arithmetic, min.	2.6 µs	2.6 µs	2.6 µs	2.6 µs
Floating-point arithmetic, min.	50 µs	50 µs	50 µs	50 µs

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	114-6BJ52	114-6BJ53	114-6BJ54	115-6BL02
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	256
S7 counter remanence	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64
S7 counter remanence adjustable	C0 .. C7	C0 .. C7	C0 .. C7	C0 .. C7
Number of S7 times	256	256	256	256
S7 times remanence	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128
S7 times remanence adjustable	not retentive	not retentive	not retentive	not retentive
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	8192 Bit
Bit memories retentive characteristic adjustable	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256
Bit memories retentive characteristic preset	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15
Number of data blocks	2047	2047	2047	2047
Max. data blocks size	16 KB	16 KB	16 KB	16 KB
Number range DBs	1 ... 2047	1 ... 2047	1 ... 2047	1 ... 2047
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Max. local data size per block	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Blocks				
Number of OBs	14	14	14	14
Maximum OB size	16 KB	16 KB	16 KB	16 KB
Totalnumber DBs, FBs, FCs	-	-	-	-
Number of FBs	1024	1024	1024	1024
Maximum FB size	16 KB	16 KB	16 KB	16 KB
Number range FBs	0 ... 1023	0 ... 1023	0 ... 1023	0 ... 1023
Number of FCs	1024	1024	1024	1024
Maximum FC size	16 KB	16 KB	16 KB	16 KB
Number range FC2	0 ... 1023	0 ... 1023	0 ... 1023	0 ... 1023
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
Type ofbuffering	-	-	-	-
Load time for 50% buffering period	20 h	20 h	20 h	20 h
Load time for 100% buffering period	48 h	48 h	48 h	48 h
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)	-	-	-	-

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	114-6BJ52	114-6BJ53	114-6BJ54	115-6BL02
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
Process image adjustable	-	-	-	-
Input process image preset	128 Byte	128 Byte	128 Byte	128 Byte
Output process image preset	128 Byte	128 Byte	128 Byte	128 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	144	144	144	148
Digital outputs central	136	136	136	144
Integrated digital inputs	16	16	16	16 (20)
Integrated digital outputs	8	8	8	16 (12)
Analog inputs	512	512	512	512
Analog outputs	512	512	512	512
Analog inputs, central	32	32	32	32
Analog outputs, central	16	16	16	16
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)	✓	✓	✓	✓
Point-to-point interface	-	-	-	-

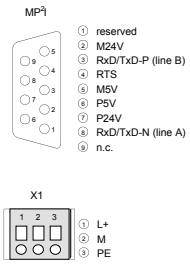
CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

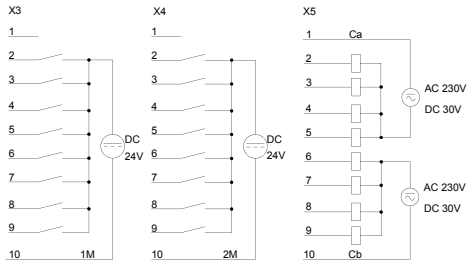
Order number	114-6BJ52	114-6BJ53	114-6BJ54	115-6BL02
Functionality MPI				
Number of connections, max.	16	16	16	16
PG/OP channel	✓	✓	✓	✓
Routing	-	-	-	-
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm
Weight	280 g	280 g	280 g	292 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

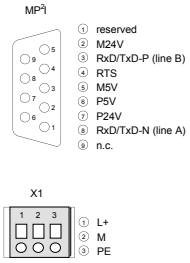
CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

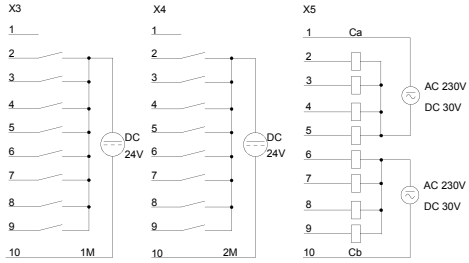
114-6BJ52



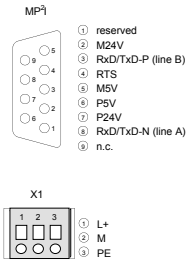


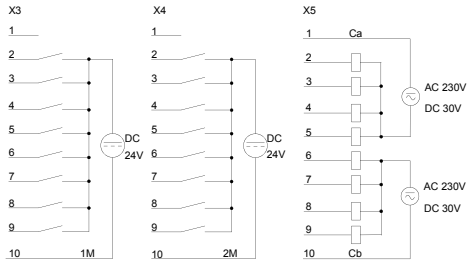
114-6BJ53



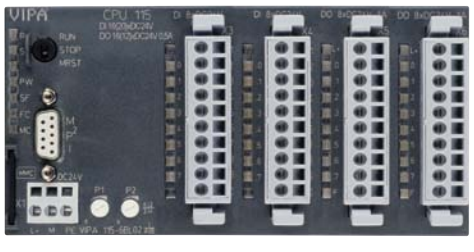


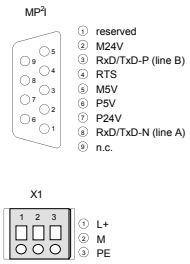
114-6BJ54

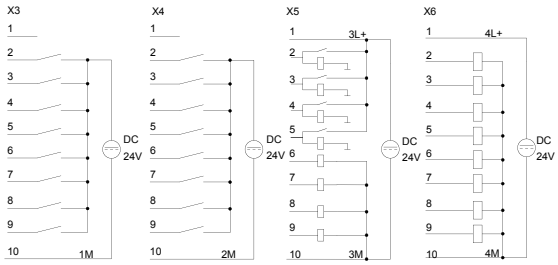




115-6BL02







CPUs STEP7 programmable

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	115-6BL03	115-6BL04		
Figure				
Type	CPU 115	CPU 115		
General information				
Note	-	-		
Features	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory		
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V		
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection	✓	✓		
Current consumption (no-load operation)	90 mA	90 mA		
Current consumption (rated value)	1 A	1 A		
Inrush current	58 A	58 A		
I^2t	0.38 A^2s	0.38 A^2s		
Max. current drain at backplane bus	0.8 A	0.8 A		
Power loss	8.5 W	8.5 W		
Reverse polarity protection	✓	✓		
Technical data digital inputs				
Number of inputs	16 (20)	16 (20)		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	✓	✓		
Current consumption from load voltage L+ (without load)	-	-		
Rated value	DC 24 V	DC 24 V		
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V		
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V		
Input 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		
Input characteristic curve	IEC 61131-2, type 1	IEC 61131-2, type 1		
Initial data size	3 Byte	3 Byte		

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	115-6BL03	115-6BL04		
Technical data digital outputs				
Number of outputs	16 (12)	16 (12)		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	-	-		
Current consumption from load voltage L+ (without load)	50 mA	50 mA		
Total current per group, horizontal configuration, 40°C	4 A	4 A		
Total current per group, horizontal configuration, 60°C	4 A	4 A		
Total current per group, vertical configuration	4 A	4 A		
Output voltage signal "1" at min. current	L+ (-125 mV)	L+ (-125 mV)		
Output voltage signal "1" at max. current	L+ (-0.8 V)	L+ (-0.8 V)		
Output current at signal "1", rated value	0.5 A	0.5 A		
Output delay of "0" to "1"	max. 100 µs	max. 100 µs		
Output delay of "1" to "0"	max. 350 µs	max. 350 µs		
Minimum load current	-	-		
Lamp load	5 W	5 W		
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 A	1 A		
Output data size	3 Byte	3 Byte		
Technical data counters				
Number of counters	4	4		
Counter width	32 Bit	32 Bit		
Maximum input frequency	30 kHz	30 kHz		
Maximum count frequency	30 kHz	30 kHz		
Mode incremental encoder	✓	✓		
Mode pulse / direction	✓	✓		
Mode pulse	✓	✓		
Mode frequency counter	-	-		
Mode period measurement	-	-		
Gate input available	✓	✓		
Latch input available	-	-		
Reset input available	-	-		
Counter output available	-	-		

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	115-6BL03	115-6BL04		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	yes	yes		
Process alarm	yes	yes		
Diagnostic interrupt	yes	yes		
Diagnostic functions	no	no		
Diagnostics information read-out	possible	possible		
Supply voltage display	green LED	green LED		
Group error display	red SF LED	red SF LED		
Channel error display	none	none		
Isolation				
Between channels of groups to	8	8		
Between channels and backplane bus	✓	✓		
Insulation tested with	DC 500 V	DC 500 V		
PWM data				
PWM channels	2	2		
PWM time basis	-	-		
Period length	-	-		
Minimum pulse width	-	-		
PtP communication	-	-		
Load and working memory				
Load memory, integrated	32 KB	40 KB		
Load memory, maximum	32 KB	40 KB		
Work memory, integrated	24 KB	32 KB		
Work memory, maximal	24 KB	32 KB		
Memory divided in 50% program / 50% data	-	-		
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB		
Hardware configuration				
Racks, max.	1	1		
Modules per rack, max.	4	4		
Number of integrated DP master	-	-		
Number of DP master via CP	4	4		
Operable function modules	4	4		
Operable communication modules PtP	4	4		
Operable communication modules LAN	-	-		
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs		
Word instruction, min.	1.2 µs	1.2 µs		
Double integer arithmetic, min.	2.6 µs	2.6 µs		
Floating-point arithmetic, min.	50 µs	50 µs		

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	115-6BL03	115-6BL04		
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256		
S7 counter remanence	adjustable 0 up to 64	adjustable 0 up to 64		
S7 counter remanence adjustable	C0 .. C7	C0 .. C7		
Number of S7 times	256	256		
S7 times remanence	adjustable 0 up to 128	adjustable 0 up to 128		
S7 times remanence adjustable	not retentive	not retentive		
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit		
Bit memories retentive characteristic adjustable	adjustable 0 up to 256	adjustable 0 up to 256		
Bit memories retentive characteristic preset	MB0 .. MB15	MB0 .. MB15		
Number of data blocks	2047	2047		
Max. data blocks size	16 KB	16 KB		
Number range DBs	1 ... 2047	1 ... 2047		
Max. local data size per execution level	1024 Byte	1024 Byte		
Max. local data size per block	1024 Byte	1024 Byte		
Blocks				
Number of OBs	14	14		
Maximum OB size	16 KB	16 KB		
Totalnumber DBs, FBs, FCs	-	-		
Number of FBs	1024	1024		
Maximum FB size	16 KB	16 KB		
Number range FBs	0 ... 1023	0 ... 1023		
Number of FCs	1024	1024		
Maximum FC size	16 KB	16 KB		
Number range FC2	0 ... 1023	0 ... 1023		
Maximum nesting depth per priority class	8	8		
Maximum nesting depth additional within an error OB	1	1		
Time				
Real-time clock buffered	✓	✓		
Clock buffered period (min.)	30 d	30 d		
Type ofbuffering	-	-		
Load time for 50% buffering period	20 h	20 h		
Load time for 100% buffering period	48 h	48 h		
Accuracy (max. deviation per day)	10 s	10 s		
Number of operating hours counter	8	8		
Clock synchronization	-	-		
Synchronization via MPI	-	-		
Synchronization via Ethernet (NTP)	-	-		

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	115-6BL03	115-6BL04		
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte		
Output I/O address area	1024 Byte	1024 Byte		
Process image adjustable	-	-		
Input process image preset	128 Byte	128 Byte		
Output process image preset	128 Byte	128 Byte		
Input process image maximal	128 Byte	128 Byte		
Output process image maximal	128 Byte	128 Byte		
Digital inputs	8192	8192		
Digital outputs	8192	8192		
Digital inputs central	148	148		
Digital outputs central	144	144		
Integrated digital inputs	16 (20)	16 (20)		
Integrated digital outputs	16 (12)	16 (12)		
Analog inputs	512	512		
Analog outputs	512	512		
Analog inputs, central	32	32		
Analog outputs, central	16	16		
Integrated analog inputs	-	-		
Integrated analog outputs	-	-		
Communication functions				
PG/OP channel	✓	✓		
Global data communication	✓	✓		
Number of GD circuits, max.	4	4		
Size of GD packets, max.	22 Byte	22 Byte		
S7 basic communication	✓	✓		
S7 basic communication, user data per job	76 Byte	76 Byte		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
S7 communication, user data per job	160 Byte	160 Byte		
Number of connections, max.	16	16		
Functionality Sub-D interfaces				
Type	MP²I	MP²I		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	-	-		
MPI	✓	✓		
MP²I (MPI/RS232)	✓	✓		
Point-to-point interface	-	-		

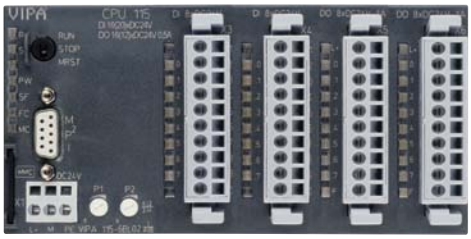
CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

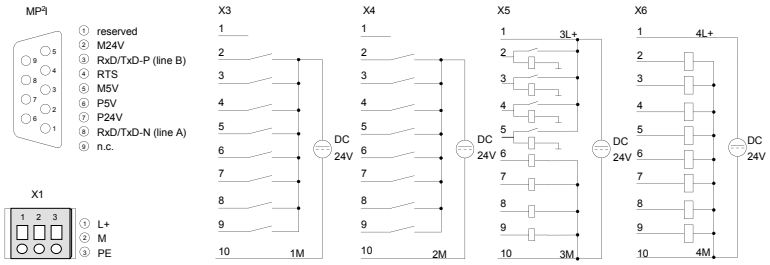
Order number	115-6BL03	115-6BL04		
Functionality MPI				
Number of connections, max.	16	16		
PG/OP channel	✓	✓		
Routing	-	-		
Global data communication	✓	✓		
S7 basic communication	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s		
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s		
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm		
Weight	292 g	292 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

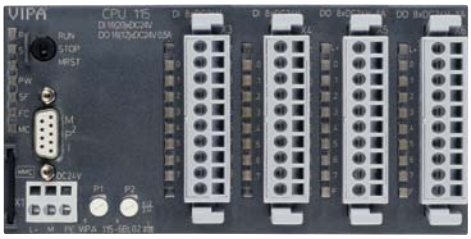
CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

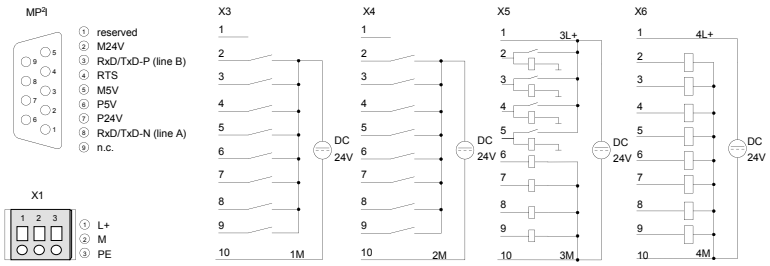
115-6BL03





115-6BL04





CPUs STEP7 programmable, PtP

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL12	115-6BL13	115-6BL14	115-6BL32
Figure				
Type	CPU 115SER	CPU 115SER	CPU 115SER	CPU 115SER
General information				
Note	-	-	-	-
Features	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory › RS232 interface	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory › RS232 interface	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory › RS232 interface	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory › RS485 interface
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)	100 mA	100 mA	100 mA	110 mA
Current consumption (rated value)	1 A	1 A	1 A	1 A
Inrush current	58 A	58 A	58 A	58 A
I^2t	0.38 A^2s	0.38 A^2s	0.38 A^2s	0.38 A^2s
Max. current drain at backplane bus	0.8 A	0.8 A	0.8 A	0.8 A
Power loss	9 W	9 W	9 W	9 W
Reverse polarity protection	✓	✓	✓	✓
Technical data digital inputs				
Number of inputs	16 (20)	16 (20)	16 (20)	16 (20)
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	✓	✓	✓	✓
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	3 ms	3 ms	3 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	3 ms
Input characteristic curve	IEC 61131-2, type 1	IEC 61131-2, type 1	IEC 61131-2, type 1	IEC 61131-2, type 1
Initial data size	3 Byte	3 Byte	3 Byte	3 Byte

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL12	115-6BL13	115-6BL14	115-6BL32
Technical data digital outputs				
Number of outputs	16 (12)	16 (12)	16 (12)	16 (12)
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	50 mA	50 mA	50 mA	50 mA
Total current per group, horizontal configuration, 40°C	4 A	4 A	4 A	4 A
Total current per group, horizontal configuration, 60°C	4 A	4 A	4 A	4 A
Total current per group, vertical configuration	4 A	4 A	4 A	4 A
Output voltage signal "1" at min. current	L+ (-125 mV)	L+ (-125 mV)	L+ (-125 mV)	L+ (-125 mV)
Output voltage signal "1" at max. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output current at signal "1", rated value	0.5 A	0.5 A	0.5 A	0.5 A
Output delay of "0" to "1"	max. 100 µs	max. 100 µs	max. 100 µs	max. 100 µs
Output delay of "1" to "0"	max. 350 µs	max. 350 µs	max. 350 µs	max. 350 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
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 A	1 A	1 A	1 A
Output data size	3 Byte	3 Byte	3 Byte	3 Byte
Technical data counters				
Number of counters	4	4	4	4
Counter width	32 Bit	32 Bit	32 Bit	32 Bit
Maximum input frequency	30 kHz	30 kHz	30 kHz	30 kHz
Maximum count frequency	30 kHz	30 kHz	30 kHz	30 kHz
Mode incremental encoder	✓	✓	✓	✓
Mode pulse / direction	✓	✓	✓	✓
Mode pulse	✓	✓	✓	✓
Mode frequency counter	-	-	-	-
Mode period measurement	-	-	-	-
Gate input available	✓	✓	✓	✓
Latch input available	-	-	-	-
Reset input available	-	-	-	-
Counter output available	-	-	-	-

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL12	115-6BL13	115-6BL14	115-6BL32
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes	yes	yes	yes
Process alarm	yes	yes	yes	yes
Diagnostic interrupt	yes	yes	yes	yes
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	possible	possible	possible
Supply voltage display	green LED	green LED	green LED	green LED
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
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
PWM data				
PWM channels	2	2	2	2
PWM time basis	-	-	-	-
Period length	-	-	-	-
Minimum pulse width	-	-	-	-
PtP communication	-	-	-	-
Load and working memory				
Load memory, integrated	24 KB	32 KB	40 KB	24 KB
Load memory, maximum	24 KB	32 KB	40 KB	24 KB
Work memory, integrated	16 KB	24 KB	32 KB	16 KB
Work memory, maximal	16 KB	24 KB	32 KB	16 KB
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.	1	1	1	1
Modules per rack, max.	4	4	4	4
Number of integrated DP master	-	-	-	-
Number of DP master via CP	4	4	4	4
Operable function modules	4	4	4	4
Operable communication modules PtP	4	4	4	4
Operable communication modules LAN	-	-	-	-
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs	0.25 µs	0.25 µs
Word instruction, min.	1.2 µs	1.2 µs	1.2 µs	1.2 µs
Double integer arithmetic, min.	2.6 µs	2.6 µs	2.6 µs	2.6 µs
Floating-point arithmetic, min.	50 µs	50 µs	50 µs	50 µs

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL12	115-6BL13	115-6BL14	115-6BL32
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	256
S7 counter remanence	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64
S7 counter remanence adjustable	C0 .. C7	C0 .. C7	C0 .. C7	C0 .. C7
Number of S7 times	256	256	256	256
S7 times remanence	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128
S7 times remanence adjustable	not retentive	not retentive	not retentive	not retentive
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	8192 Bit
Bit memories retentive characteristic adjustable	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256
Bit memories retentive characteristic preset	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15
Number of data blocks	2047	2047	2047	2047
Max. data blocks size	16 KB	16 KB	16 KB	16 KB
Number range DBs	1 ... 2047	1 ... 2047	1 ... 2047	1 ... 2047
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Max. local data size per block	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Blocks				
Number of OBs	14	14	14	14
Maximum OB size	16 KB	16 KB	16 KB	16 KB
Totalnumber DBs, FBs, FCs	-	-	-	-
Number of FBs	1024	1024	1024	1024
Maximum FB size	16 KB	16 KB	16 KB	16 KB
Number range FBs	0 ... 1023	0 ... 1023	0 ... 1023	0 ... 1023
Number of FCs	1024	1024	1024	1024
Maximum FC size	16 KB	16 KB	16 KB	16 KB
Number range FC2	0 ... 1023	0 ... 1023	0 ... 1023	0 ... 1023
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
Type ofbuffering	-	-	-	-
Load time for 50% buffering period	20 h	20 h	20 h	20 h
Load time for 100% buffering period	48 h	48 h	48 h	48 h
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
Process image adjustable	-	-	-	-

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL12	115-6BL13	115-6BL14	115-6BL32
Input process image preset	128 Byte	128 Byte	128 Byte	128 Byte
Output process image preset	128 Byte	128 Byte	128 Byte	128 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	148	148	148	148
Digital outputs central	144	144	144	144
Integrated digital inputs	16 (20)	16 (20)	16 (20)	16 (20)
Integrated digital outputs	16 (12)	16 (12)	16 (12)	16 (12)
Analog inputs	512	512	512	512
Analog outputs	512	512	512	512
Analog inputs, central	32	32	32	32
Analog outputs, central	16	16	16	16
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	COM	COM
Type of interface	RS232	RS232	RS232	RS485
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, female
Electrically isolated	-	-	-	✓
MPI	-	-	-	-

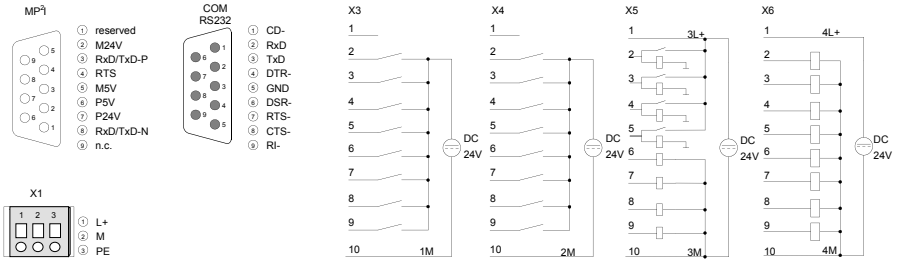
CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL12	115-6BL13	115-6BL14	115-6BL32
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	✓	✓	✓	✓
Functionality MPI				
Number of connections, max.	16	16	16	16
PG/OP channel	✓	✓	✓	✓
Routing	-	-	-	-
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s
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, male	Sub-D, 9-pin, female
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	15 m	500 m
Point-to-point protocol				
ASCII protocol	✓	✓	✓	✓
STX/ETX protocol	✓	✓	✓	✓
3964(R) protocol	✓	✓	✓	✓
RK512 protocol	-	-	-	-
USS master protocol	✓	✓	✓	✓
Modbus master protocol	✓	✓	✓	✓
Modbus slave protocol	✓	✓	✓	✓
Special protocols	-	-	-	-
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm
Weight	302 g	302 g	302 g	302 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

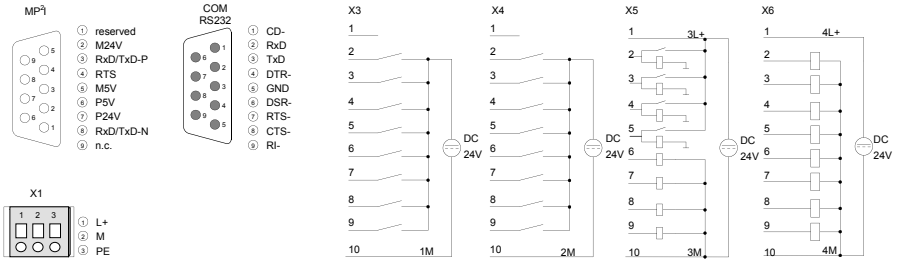
Connections, Interfaces

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

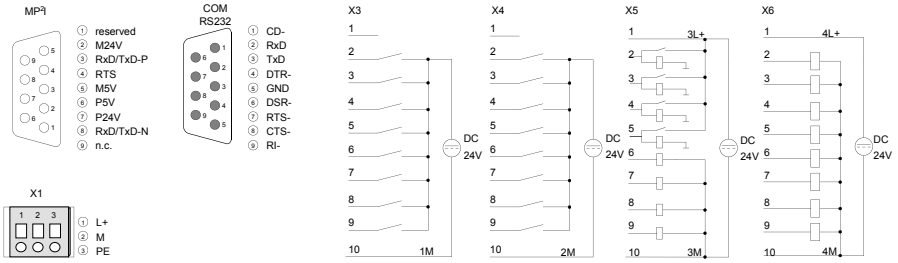
115-6BL12



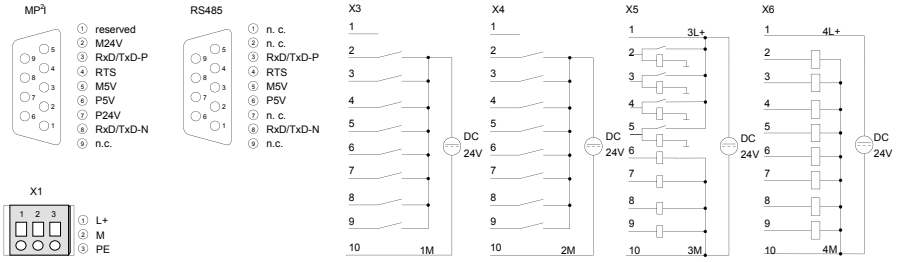
115-6BL13



115-6BL14



115-6BL32



CPUs STEP7 programmable, PtP

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL33	115-6BL34		
Figure				
Type	CPU 115SER	CPU 115SER		
General information				
Note	-	-		
Features	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory › RS485 interface	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory › RS485 interface		
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V		
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection	✓	✓		
Current consumption (no-load operation)	110 mA	110 mA		
Current consumption (rated value)	1 A	1 A		
Inrush current	58 A	58 A		
I^2t	0.38 A^2s	0.38 A^2s		
Max. current drain at backplane bus	0.8 A	0.8 A		
Power loss	9 W	9 W		
Reverse polarity protection	✓	✓		
Technical data digital inputs				
Number of inputs	16 (20)	16 (20)		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	✓	✓		
Current consumption from load voltage L+ (without load)	-	-		
Rated value	DC 24 V	DC 24 V		
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V		
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V		
Input 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		
Input characteristic curve	IEC 61131-2, type 1	IEC 61131-2, type 1		
Initial data size	3 Byte	3 Byte		

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL33	115-6BL34		
Technical data digital outputs				
Number of outputs	16 (12)	16 (12)		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	-	-		
Current consumption from load voltage L+ (without load)	50 mA	50 mA		
Total current per group, horizontal configuration, 40°C	4 A	4 A		
Total current per group, horizontal configuration, 60°C	4 A	4 A		
Total current per group, vertical configuration	4 A	4 A		
Output voltage signal "1" at min. current	L+ (-125 mV)	L+ (-125 mV)		
Output voltage signal "1" at max. current	L+ (-0.8 V)	L+ (-0.8 V)		
Output current at signal "1", rated value	0.5 A	0.5 A		
Output delay of "0" to "1"	max. 100 µs	max. 100 µs		
Output delay of "1" to "0"	max. 350 µs	max. 350 µs		
Minimum load current	-	-		
Lamp load	5 W	5 W		
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 A	1 A		
Output data size	3 Byte	3 Byte		
Technical data counters				
Number of counters	4	4		
Counter width	32 Bit	32 Bit		
Maximum input frequency	30 kHz	30 kHz		
Maximum count frequency	30 kHz	30 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	yes	yes		
Interrupts	yes	yes		

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL33	115-6BL34		
Process alarm	yes	yes		
Diagnostic interrupt	yes	yes		
Diagnostic functions	no	no		
Diagnostics information read-out	possible	possible		
Supply voltage display	green LED	green LED		
Group error display	red SF LED	red SF LED		
Channel error display	none	none		
Isolation				
Between channels of groups to	8	8		
Between channels and backplane bus	✓	✓		
Insulation tested with	DC 500 V	DC 500 V		
PWM data				
PWM channels	2	2		
PWM time basis	-	-		
Period length	-	-		
Minimum pulse width	-	-		
PtP communication	-	-		
Load and working memory				
Load memory, integrated	32 KB	40 KB		
Load memory, maximum	32 KB	40 KB		
Work memory, integrated	24 KB	32 KB		
Work memory, maximal	24 KB	32 KB		
Memory divided in 50% program / 50% data	-	-		
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB		
Hardware configuration				
Racks, max.	1	1		
Modules per rack, max.	4	4		
Number of integrated DP master	-	-		
Number of DP master via CP	4	4		
Operable function modules	4	4		
Operable communication modules PtP	4	4		
Operable communication modules LAN	-	-		
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs		
Word instruction, min.	1.2 µs	1.2 µs		
Double integer arithmetic, min.	2.6 µs	2.6 µs		
Floating-point arithmetic, min.	50 µs	50 µs		
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256		
S7 counter remanence	adjustable 0 up to 64	adjustable 0 up to 64		
S7 counter remanence adjustable	C0 .. C7	C0 .. C7		
Number of S7 times	256	256		
S7 times remanence	adjustable 0 up to 128	adjustable 0 up to 128		
S7 times remanence adjustable	not retentive	not retentive		

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL33	115-6BL34		
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit		
Bit memories retentive characteristic adjustable	adjustable 0 up to 256	adjustable 0 up to 256		
Bit memories retentive characteristic preset	MB0 .. MB15	MB0 .. MB15		
Number of data blocks	2047	2047		
Max. data blocks size	16 KB	16 KB		
Number range DBs	1 ... 2047	1 ... 2047		
Max. local data size per execution level	1024 Byte	1024 Byte		
Max. local data size per block	1024 Byte	1024 Byte		
Blocks				
Number of OBs	14	14		
Maximum OB size	16 KB	16 KB		
Totalnumber DBs, FBs, FCs	-	-		
Number of FBs	1024	1024		
Maximum FB size	16 KB	16 KB		
Number range FBs	0 ... 1023	0 ... 1023		
Number of FCs	1024	1024		
Maximum FC size	16 KB	16 KB		
Number range FC2	0 ... 1023	0 ... 1023		
Maximum nesting depth per priority class	8	8		
Maximum nesting depth additional within an error OB	1	1		
Time				
Real-time clock buffered	✓	✓		
Clock buffered period (min.)	30 d	30 d		
Type ofbuffering	-	-		
Load time for 50% buffering period	20 h	20 h		
Load time for 100% buffering period	48 h	48 h		
Accuracy (max. deviation per day)	10 s	10 s		
Number of operating hours counter	8	8		
Clock synchronization	-	-		
Synchronization via MPI	-	-		
Synchronization via Ethernet (NTP)	-	-		
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte		
Output I/O address area	1024 Byte	1024 Byte		
Process image adjustable	-	-		
Input process image preset	128 Byte	128 Byte		
Output process image preset	128 Byte	128 Byte		
Input process image maximal	128 Byte	128 Byte		
Output process image maximal	128 Byte	128 Byte		
Digital inputs	8192	8192		
Digital outputs	8192	8192		
Digital inputs central	148	148		

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL33	115-6BL34		
Digital outputs central	144	144		
Integrated digital inputs	16 (20)	16 (20)		
Integrated digital outputs	16 (12)	16 (12)		
Analog inputs	512	512		
Analog outputs	512	512		
Analog inputs, central	32	32		
Analog outputs, central	16	16		
Integrated analog inputs	-	-		
Integrated analog outputs	-	-		
Communication functions				
PG/OP channel	✓	✓		
Global data communication	✓	✓		
Number of GD circuits, max.	4	4		
Size of GD packets, max.	22 Byte	22 Byte		
S7 basic communication	✓	✓		
S7 basic communication, user data per job	76 Byte	76 Byte		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
S7 communication, user data per job	160 Byte	160 Byte		
Number of connections, max.	16	16		
Functionality Sub-D interfaces				
Type	MP²I	MP²I		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	-	-		
MPI	✓	✓		
MP²I (MPI/RS232)	✓	✓		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	-	-		
Type	COM	COM		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	✓	✓		
MPI	-	-		
MP²I (MPI/RS232)	-	-		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	✓	✓		
Functionality MPI				
Number of connections, max.	16	16		
PG/OP channel	✓	✓		
Routing	-	-		

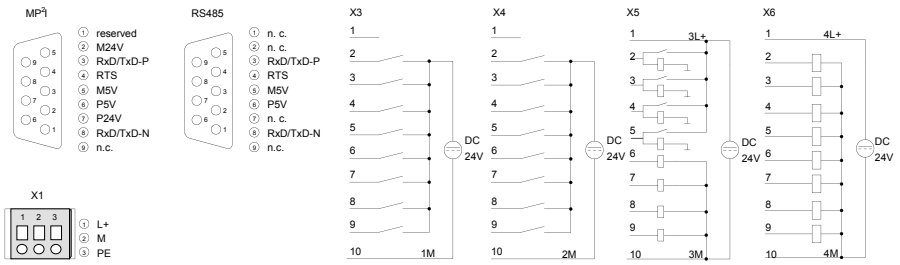
CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL33	115-6BL34		
Global data communication	✓	✓		
S7 basic communication	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s		
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s		
Point-to-point communication				
PtP communication	✓	✓		
Interface isolated	✓	✓		
RS232 interface	-	-		
RS422 interface	-	-		
RS485 interface	✓	✓		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Transmission speed, min.	150 bit/s	150 bit/s		
Transmission speed, max.	115.2 kbit/s	115.2 kbit/s		
Cable length, max.	500 m	500 m		
Point-to-point protocol				
ASCII protocol	✓	✓		
STX/ETX protocol	✓	✓		
3964(R) protocol	✓	✓		
RK512 protocol	-	-		
USS master protocol	✓	✓		
Modbus master protocol	✓	✓		
Modbus slave protocol	✓	✓		
Special protocols	-	-		
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm		
Weight	302 g	302 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		

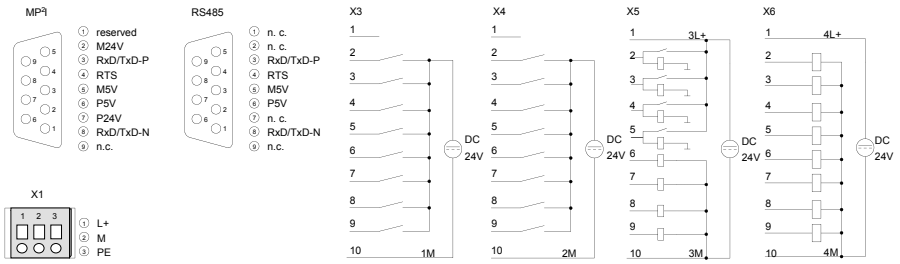
Connections, Interfaces

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

115-6BL33



115-6BL34



CPUs STEP7 programmable, DP slave

CPUs | CPUs STEP7 programmable, DP slave						
115-6BL22 115-6BL23 115-6BL24						

Order number	115-6BL22	115-6BL23	115-6BL24	
Figure				
Type	CPU 115DP	CPU 115DP	CPU 115DP	
General information				
Note	-	-	-	
Features	› 16 (20) inputs › 16 (12) outputs › 16 kB work memory, 24 kB load memory › PROFIBUS-DP slave interface	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory › PROFIBUS-DP slave interface	› 16 (20) inputs › 16 (12) outputs › 32 kB work memory, 40 kB load memory › PROFIBUS-DP slave interface	
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)	160 mA	160 mA	160 mA	
Current consumption (rated value)	1 A	1 A	1 A	
Inrush current	58 A	58 A	58 A	
I^2t	0.38 A^2s	0.38 A^2s	0.38 A^2s	
Max. current drain at backplane bus	0.8 A	0.8 A	0.8 A	
Power loss	9 W	9 W	9 W	
Reverse polarity protection	✓	✓	✓	
Technical data digital inputs				
Number of inputs	16 (20)	16 (20)	16 (20)	
Cable length, shielded	1000 m	1000 m	1000 m	
Cable length, unshielded	600 m	600 m	600 m	
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	
Reverse polarity protection of rated load voltage	✓	✓	✓	
Current consumption from load voltage L+ (without load)	-	-	-	
Rated value	DC 24 V	DC 24 V	DC 24 V	
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	
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	
Input characteristic curve	IEC 61131-2, type 1	IEC 61131-2, type 1	IEC 61131-2, type 1	
Initial data size	3 Byte	3 Byte	3 Byte	

CPUs | CPUs STEP7 programmable, DP slave						
115-6BL22 115-6BL23 115-6BL24						

Order number	115-6BL22	115-6BL23	115-6BL24	
Technical data digital outputs				
Number of outputs	16 (12)	16 (12)	16 (12)	
Cable length, shielded	1000 m	1000 m	1000 m	
Cable length, unshielded	600 m	600 m	600 m	
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	
Reverse polarity protection of rated load voltage	-	-	-	
Current consumption from load voltage L+ (without load)	50 mA	50 mA	50 mA	
Total current per group, horizontal configuration, 40°C	4 A	4 A	4 A	
Total current per group, horizontal configuration, 60°C	4 A	4 A	4 A	
Total current per group, vertical configuration	4 A	4 A	4 A	
Output voltage signal "1" at min. current	L+ (-125 mV)	L+ (-125 mV)	L+ (-125 mV)	
Output voltage signal "1" at max. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	
Output current at signal "1", rated value	0.5 A	0.5 A	0.5 A	
Output delay of "0" to "1"	max. 100 µs	max. 100 µs	max. 100 µs	
Output delay of "1" to "0"	max. 350 µs	max. 350 µs	max. 350 µs	
Minimum load current	-	-	-	
Lamp load	5 W	5 W	5 W	
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)	L+ (-52 V)	L+ (-52 V)	
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	
Trigger level	1 A	1 A	1 A	
Output data size	3 Byte	3 Byte	3 Byte	
Technical data counters				
Number of counters	4	4	4	
Counter width	32 Bit	32 Bit	32 Bit	
Maximum input frequency	30 kHz	30 kHz	30 kHz	
Maximum count frequency	30 kHz	30 kHz	30 kHz	
Mode incremental encoder	✓	✓	✓	
Mode pulse / direction	✓	✓	✓	
Mode pulse	✓	✓	✓	
Mode frequency counter	-	-	-	
Mode period measurement	-	-	-	
Gate input available	✓	✓	✓	
Latch input available	-	-	-	
Reset input available	-	-	-	
Counter output available	-	-	-	

CPUs | CPUs STEP7 programmable, DP slave						
115-6BL22 115-6BL23 115-6BL24						

Order number	115-6BL22	115-6BL23	115-6BL24	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	yes	yes	yes	
Process alarm	yes	yes	yes	
Diagnostic interrupt	yes	yes	yes	
Diagnostic functions	no	no	no	
Diagnostics information read-out	possible	possible	possible	
Supply voltage display	green LED	green LED	green LED	
Group error display	red SF LED	red SF LED	red SF LED	
Channel error display	none	none	none	
Isolation				
Between channels of groups to	8	8	8	
Between channels and backplane bus	✓	✓	✓	
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	
PWM data				
PWM channels	2	2	2	
PWM time basis	-	-	-	
Period length	-	-	-	
Minimum pulse width	-	-	-	
PtP communication	-	-	-	
Load and working memory				
Load memory, integrated	24 KB	32 KB	40 KB	
Load memory, maximum	24 KB	32 KB	40 KB	
Work memory, integrated	16 KB	24 KB	32 KB	
Work memory, maximal	16 KB	24 KB	32 KB	
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.	1	1	1	
Modules per rack, max.	4	4	4	
Number of integrated DP master	-	-	-	
Number of DP master via CP	4	4	4	
Operable function modules	4	4	4	
Operable communication modules PtP	4	4	4	
Operable communication modules LAN	-	-	-	
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs	0.25 µs	
Word instruction, min.	1.2 µs	1.2 µs	1.2 µs	
Double integer arithmetic, min.	2.6 µs	2.6 µs	2.6 µs	
Floating-point arithmetic, min.	50 µs	50 µs	50 µs	
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	
S7 counter remanence	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64	
S7 counter remanence adjustable	C0 .. C7	C0 .. C7	C0 .. C7	

CPUs | CPUs STEP7 programmable, DP slave						
115-6BL22 115-6BL23 115-6BL24						

Order number	115-6BL22	115-6BL23	115-6BL24	
Number of S7 times	256	256	256	
S7 times remanence	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128	
S7 times remanence adjustable	not retentive	not retentive	not retentive	
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	
Bit memories retentive characteristic adjustable	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256	
Bit memories retentive characteristic preset	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15	
Number of data blocks	2047	2047	2047	
Max. data blocks size	16 KB	16 KB	16 KB	
Number range DBs	1 ... 2047	1 ... 2047	1 ... 2047	
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	
Max. local data size per block	1024 Byte	1024 Byte	1024 Byte	
Blocks				
Number of OBs	14	14	14	
Maximum OB size	16 KB	16 KB	16 KB	
Totalnumber DBs, FBs, FCs	-	-	-	
Number of FBs	1024	1024	1024	
Maximum FB size	16 KB	16 KB	16 KB	
Number range FBs	0 ... 1023	0 ... 1023	0 ... 1023	
Number of FCs	1024	1024	1024	
Maximum FC size	16 KB	16 KB	16 KB	
Number range FC2	0 ... 1023	0 ... 1023	0 ... 1023	
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	
Type ofbuffering	-	-	-	
Load time for 50% buffering period	20 h	20 h	20 h	
Load time for 100% buffering period	48 h	48 h	48 h	
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	
Process image adjustable	-	-	-	
Input process image preset	128 Byte	128 Byte	128 Byte	
Output process image preset	128 Byte	128 Byte	128 Byte	
Input process image maximal	128 Byte	128 Byte	128 Byte	
Output process image maximal	128 Byte	128 Byte	128 Byte	

CPUs | CPUs STEP7 programmable, DP slave						
115-6BL22 115-6BL23 115-6BL24						

Order number	115-6BL22	115-6BL23	115-6BL24	
Digital inputs	8192	8192	8192	
Digital outputs	8192	8192	8192	
Digital inputs central	148	148	148	
Digital outputs central	144	144	144	
Integrated digital inputs	16 (20)	16 (20)	16 (20)	
Integrated digital outputs	16 (12)	16 (12)	16 (12)	
Analog inputs	512	512	512	
Analog outputs	512	512	512	
Analog inputs, central	32	32	32	
Analog outputs, central	16	16	16	
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	-	-	-	
DP slave	yes	yes	yes	
Point-to-point interface	-	-	-	

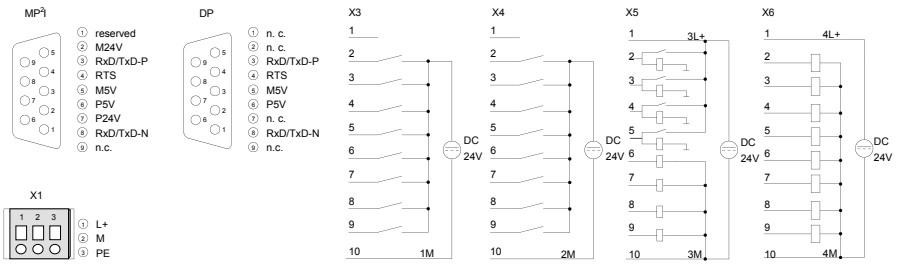
CPUs | CPUs STEP7 programmable, DP slave						
115-6BL22 115-6BL23 115-6BL24						

Order number	115-6BL22	115-6BL23	115-6BL24	
Functionality MPI				
Number of connections, max.	16	16	16	
PG/OP channel	✓	✓	✓	
Routing	-	-	-	
Global data communication	✓	✓	✓	
S7 basic communication	✓	✓	✓	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	
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	
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	
Weight	330 g	330 g	330 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	

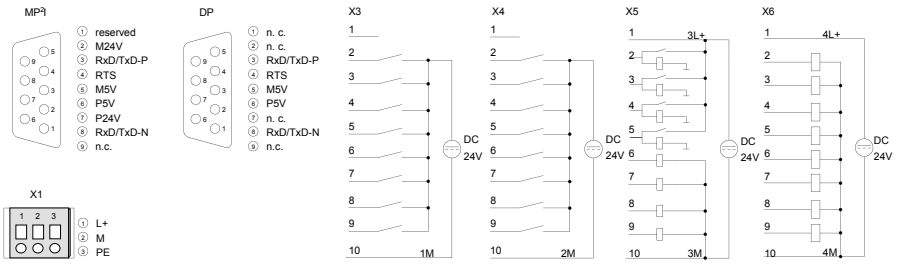
Connections, Interfaces

CPUs | CPUs STEP7 programmable, DP slave						
115-6BL22 115-6BL23 115-6BL24						

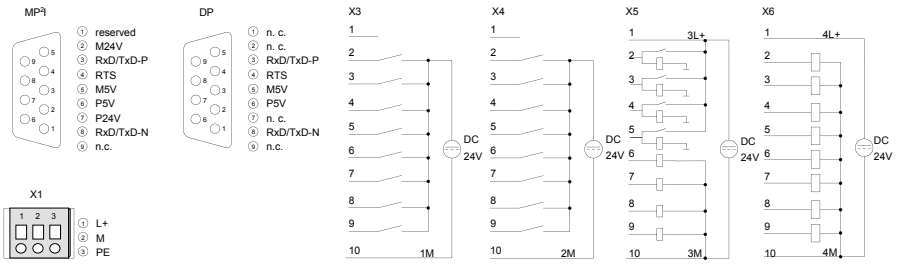
115-6BL22



115-6BL23



115-6BL24



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. The wiring is carried out using time-saving and secure cage clamp technology

Passive clamp modules have no connection to the backplane bus.

The terminal modules are attached to the mounting surface using a 35 mm profile rail.

Characteristics

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

Overview

Order no.	Name/Description	Page
Clamp modules		
101-4FH50	**CM 101 - Clamp modules** › 8x11 clamps › passive	**192**

Clamp modules

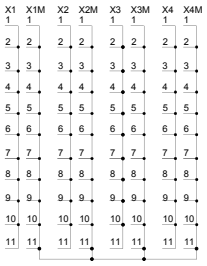
Clamp modules | Clamp modules						
101-4FH50						

Order number	101-4FH50			
Figure				
Type	CM 101			
General information				
Note	-			
Features	› 8x11 clamps › passive			
Clamp parameter				
Terminal voltage max.	DC 60 V			
Terminal current max.	10 A			
Isolated group				
Number of clamps	11-11-11-11-4*11			
Color of clamps	grey-grey-grey-grey-grey			
Binding of potential	unbound-unbound-unbound-unbound-unbound			
Potential group current, max.	10 A-10 A-10 A-10 A-10 A			
Housing				
Material	PPE / PA 6.6			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm			
Weight	212 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Clamp modules | Clamp modules						
101-4FH50						

101-4FH50



Signal modules digital

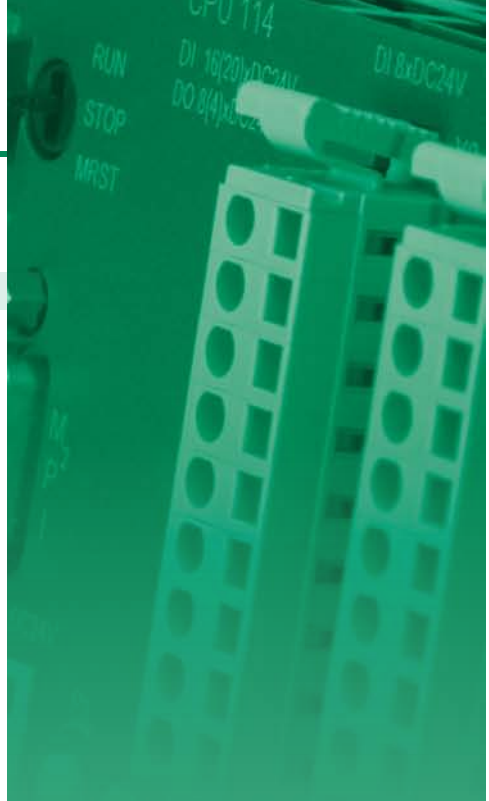
Structure and Function

Digital input and output modules acquire the binary control signals from the process level and transform them into interpretable signals for controlling. They convert the internal binary control signals into signals suitable for the process level. With the expansion modules EM 123, the number of inputs/outputs of the CPU 114/115 is expanded. The connection is made to the CPU via 1tier bus connectors supplied with the module.

Characteristics

- Up to 32 digital inputs and outputs on an expansion module
- Combinable with signal modules from the System 200V
- LED status indicator
- Maintenance-free cage clamp technology
- Front connector included
- Bus connector included
- Assembly with 35 mm profile rail
- 24 months warranty

Overview



Order no.	Name/Description	Page
Digital in/output modules		
123-4EH01	**EM 123 - Expansion module, digital** › 8 inputs/ 8 outputs › DC 24 V	**196**
123-4EJ01	**EM 123 - Expansion module, digital** › 16 inputs/ 8 outputs › DC 24 V	**196**
123-4EJ11	**EM 123 - Expansion module, digital** › 16 inputs › 8 relay outputs	**196**
123-4EJ20	**EM 123 - Expansion module, digital** › 16 inputs › AC/DC 60...230 V › 8 relay outputs	**196**
123-4EL01	**EM 123 - Expansion module, digital** › 16 inputs/ 16 outputs › Isolated	**200**

Digital in/output modules

Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

Order number	123-4EH01	123-4EJ01	123-4EJ11	123-4EJ20
Figure				
Type	EM 123	EM 123	EM 123	EM 123
General information				
Note	-	-	-	-
Features	› 8 inputs/ 8 outputs › DC 24 V	› 16 inputs/ 8 outputs › DC 24 V	› 16 inputs › 8 relay outputs	› 16 inputs › AC/DC 60...230 V › 8 relay outputs
Current consumption/power loss				
Current consumption from backplane bus	60 mA	70 mA	300 mA	320 mA
Power loss	3 W	4.5 W	4.5 W	4.6 W
Technical data digital inputs				
Number of inputs	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	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 24 V	DC 24 V	DC 24 V	AC/DC 60...230 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	AC/DC 0...35 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	AC/DC 60...230 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	7 mA	7 mA	7 mA	2 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	8	16	16	16
Number of simultaneously utilizable inputs vertical configuration	8	16	16	16
Input characteristic curve	IEC 61131-2, type 1	IEC 61131-2, type 1	IEC 61131-2, type 1	-
Initial data size	1 Byte	2 Byte	2 Byte	2 Byte
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 24 V	DC 24 V	DC 30 V/ AC 230 V	DC 30 V/ AC 230 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	20 mA	20 mA	-	-

Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

Order number	123-4EH01	123-4EJ01	123-4EJ11	123-4EJ20
Output current at signal "1", rated value	0.5 A	0.5 A	5 A	5 A
Output delay of "0" to "1"	max. 100 µs	max. 100 µs	10 ms	6 ms
Output delay of "1" to "0"	max. 350 µs	max. 350 µs	5 ms	3 ms
Minimum load current	-	-	-	-
Lamp load	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. 10 Hz	max. 10 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 A	1 A	-	-
Number of operating cycle of relay outputs	-	-	10^7	10^7
Switching capacity of contacts	-	-	-	-
Output 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
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
Datasizes				
Input bytes	2	2	2	2
Output bytes	2	2	2	2
Parameter bytes	0	0	0	0
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm

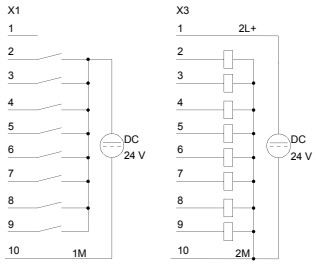
Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

Order number	123-4EH01	123-4EJ01	123-4EJ11	123-4EJ20
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm	101.6 mm x 76 mm x 48 mm	101.6 mm x 76 mm x 48 mm	101.6 mm x 76 mm x 48 mm
Weight	222 g	226 g	250 g	244 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

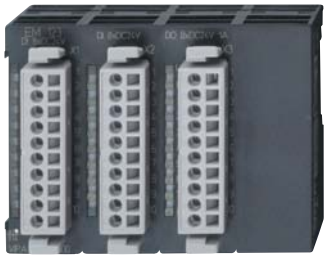
Connections, Interfaces

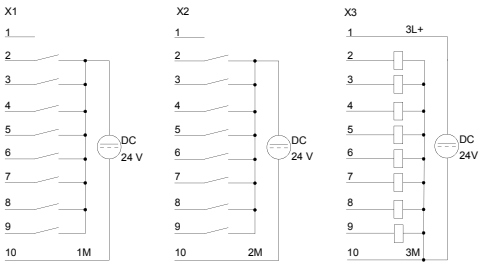
Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

123-4EH01

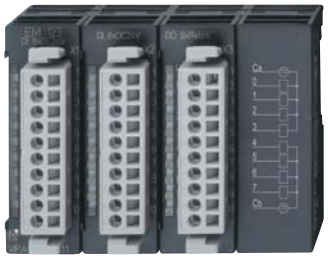


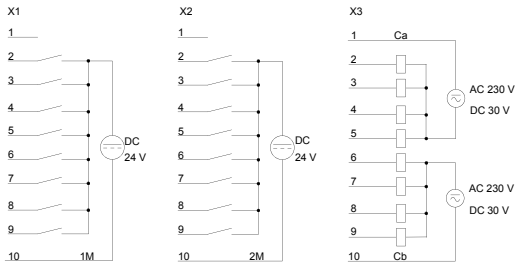
123-4EJ01



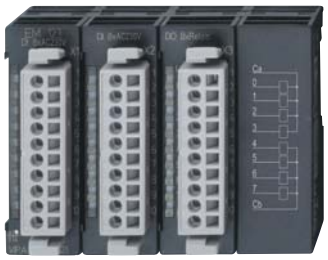


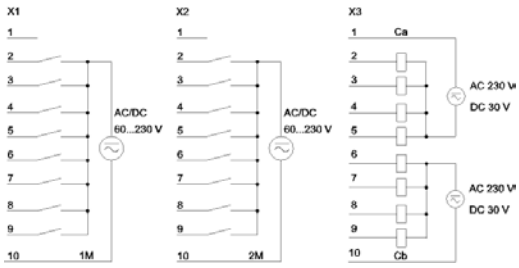
123-4EJ11





123-4EJ20





Digital in/output modules

Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

Order number	123-4EL01			
Figure				
Type	EM 123			
General information				
Note	-			
Features	› 16 inputs/ 16 outputs › Isolated			
Current consumption/power loss				
Current consumption from backplane bus	110 mA			
Power loss	6 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 24 V			
Input voltage for signal "0"	DC 0...5 V			
Input voltage for signal "1"	DC 15...28.8 V			
Input voltage hysteresis	-			
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 61131-2, type 1			
Initial data size	2 Byte			
Technical data digital outputs				
Number of outputs	16			
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)	30 mA			

Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

Order number	123-4EL01			
Output current at signal "1", rated value	0.5 A			
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	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 A			
Number of operating cycle of relay outputs	-			
Switching capacity of contacts	-			
Output data size	2 Byte			
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	8			
Between channels and backplane bus	✓			
Insulation tested with	DC 500 V			
Datasizes				
Input bytes	2			
Output bytes	2			
Parameter bytes	0			
Diagnostic bytes	0			
Housing				
Material	PPE / PA 6.6			
Mounting	Profile rail 35 mm			

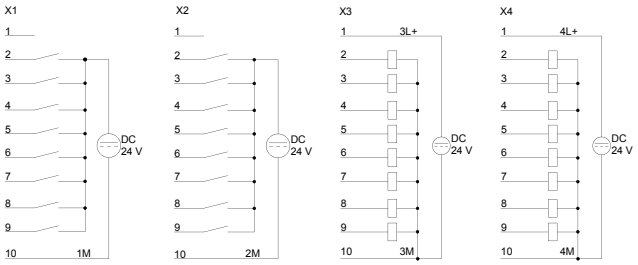
Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

Order number	123-4EL01			
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm			
Weight	271 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

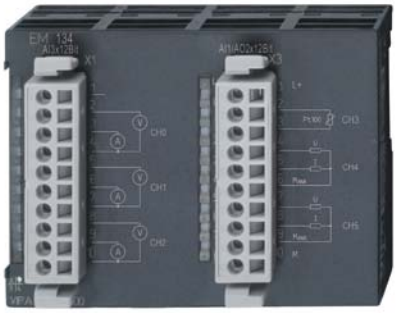
Connections, Interfaces

Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

123-4EL01



Signal modules analog



Structure and Function

Analog input/output modules acquire the analog control signals out of the process level and transform them into interpretable signals for controlling. They convert the internal control signals into signals suitable for the process level. With the expansion modules EM 123, the number of inputs/outputs of the CPU 114/115 is expanded. The connection is made to the CPU via 1tier bus connectors supplied with the module.

Characteristics

- Up to 6 analog inputs and outputs on an expansion module
- Combinable with signal modules from the system 200V
- LED status indicator
- Maintenance-free cage clamp technology
- Front connector included
- Bus connector included
- Assembly with 35 mm profile rail
- 24 months warranty

Overview

Order no.	Name/Description	Page
Analog in/output modules		
134-4EE00	**EM 134 - Expansion module, analog** › 3 inputs U/I › 1 input Pt, Ni, R › 2 outputs U/I › Configurable	**206**

Analog in/output modules

Signal modules analog | Analog in/output modules						
134-4EE00						

Order number	134-4EE00			
Figure				
Type	EM 134			
General information				
Note	-			
Features	› 3 inputs U/I › 1 input Pt, Ni, R › 2 outputs U/I › Configurable			
Current consumption/power loss				
Current consumption from backplane bus	70 mA			
Power loss	2 W			
Technical data analog inputs				
Number of inputs	4			
Cable length, shielded	-			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	55 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			
Operational limit of voltage ranges	+/-0.3% ... +/-0.7%			
Operational limit of voltage ranges with SFU	-			
Basic error limit voltage ranges	+/-0.2% ... +/-0.5%			
Basic error limit voltage ranges with SFU	-			
Destruction limit current	-			
Current inputs	✓			
Max. input resistance (current range)	110 Ω			
Input current ranges	+4 mA ... +20 mA -20 mA ... +20 mA 0 mA ... +20 mA			
Operational limit of current ranges	+/-0.3% ... +/-0.8%			
Operational limit of current ranges with SFU	-			
Basic error limit current ranges	+/-0.2% ... +/-0.5%			
Radical error limit current ranges with SFU	-			
Destruction limit current inputs (electrical current)	-			
Destruction limit current inputs (voltage)	-			
Resistance inputs	✓			

Signal modules analog | Analog in/output modules						
134-4EE00						

Order number	134-4EE00			
Resistance ranges	0 ... 600 Ohm 0 ... 3000 Ohm			
Operational limit of resistor ranges	+/-0.4%			
Operational limit of resistor ranges with SFU	-			
Basic error limit	+/-0.2%			
Basic error limit with SFU	-			
Destruction limit resistance inputs	-			
Resistance thermometer inputs	✓			
Resistance thermometer ranges	Pt100 Pt1000 Ni100 Ni1000			
Operational limit of resistance thermometer ranges	+/-0.6% ... +/-1.0%			
Operational limit of resistance thermometer ranges with SFU	-			
Basic error limit thermoresistor ranges	+/-0.4% ... +/-0.5%			
Basic error limit thermoresistor ranges with SFU	-			
Destruction limit resistance thermometer inputs	-			
Thermocouple inputs	-			
Thermocouple ranges	-			
Operational limit of thermocouple ranges	-			
Operational limit of thermocouple ranges with SFU	-			
Basic error limit thermoelement ranges	-			
Basic error limit thermoelement ranges with SFU	-			
Destruction limit thermocouple inputs	-			
Programmable temperature compensation	-			
External temperature compensation	-			
Internal temperature compensation	-			
Internal temperature compensation	-			
Technical unit of temperature measurement	-			
Resolution in bit	12			
Measurement principle	successive approximation			
Basic conversion time	3.2 ms / channel			
Noise suppression for frequency	50 Hz, 60 Hz, 400 Hz			
Initial data size	8 Byte			
Technical data analog outputs				
Number of outputs	2			
Cable length, shielded	-			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			

Signal modules analog | Analog in/output modules						
134-4EE00						

Order number	134-4EE00			
Current consumption from load voltage L+ (without load)	55 mA			
Voltage output short-circuit protection	✓			
Voltage outputs	✓			
Min. load resistance (voltage range)	1 kΩ			
Max. capacitive load (current range)	1 µF			
Max. inductive load (current range)	30 mA			
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	+/-0.2% ... +/-0.4%			
Destruction limit against external applied voltage	-			
Current outputs	✓			
Max. in load resistance (current range)	500 Ω			
Max. inductive load (current range)	10 mH			
Max. inductive load (current range)	15 V			
Output current ranges	0 mA ... +20 mA +4 mA ... +20 mA -20 mA ... +20 mA			
Operational limit of current ranges	+/-0.3% ... +/-0.8%			
Basic error limit current ranges	+/-0.2% ... +/-0.5%			
Destruction limit against external applied voltage	-			
Settling time for ohmic load	0.5 ms			
Settling time for capacitive load	1 ms			
Settling time for inductive load	1 ms			
Resolution in bit	12			
Conversion time	1.2 ms / channel			
Substitute value can be applied	yes			
Output data size	4 Byte			
Status information, alarms, diagnostics				
Status display	none			
Interrupts	yes			
Process alarm	no			
Diagnostic interrupt	yes, parameterizable			
Diagnostic functions	yes			
Diagnostics information read-out	possible			
Supply voltage display	green LED			
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	-			

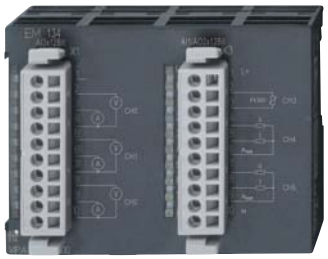
Signal modules analog | Analog in/output modules						
134-4EE00						

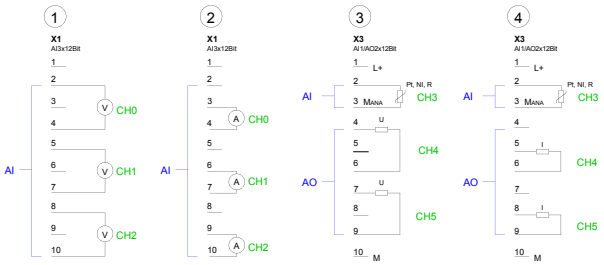
Order number	134-4EE00			
Max. potential difference between inputs (Ucm)	DC 11 V			
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V			
Max. potential difference between inputs and Mana (Ucm)	DC 11 V			
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V			
Max. potential difference between Mintern and outputs	-			
Insulation tested with	DC 500 V			
Datasizes				
Input bytes	8			
Output bytes	4			
Parameter bytes	18			
Diagnostic bytes	12			
Housing				
Material	PPE / PA 6.6			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 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

Signal modules analog | Analog in/output modules						
134-4EE00						

134-4EE00





Interface modules

Structure and Function

Fieldbus slave modules for the decentralized expansion of control systems with integrated digital inputs/outputs. The fieldbus slave modules are available in various designs.

Characteristics

- For PROFIBUS-DP and CANopen
- Up to 125 DP slaves to a DP master
- LED status indicator
- Maintenance-free cage clamp technology
- Front connector included
- Bus connector included
- Assembly with 35 mm profile rail
- 24 months warranty

Overview

Order no.	Name/Description	Page
Fieldbus slave modules with I/Os, DI		
151-4PH00	**SM 151 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 16 inputs	**214**
151-6PH00	**SM 151 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 16 inputs › 4x11 clamps	**214**
151-6PL00	**SM 151 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 32 inputs	**214**
Fieldbus slave modules with I/Os, DO		
152-4PH00	**SM 152 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 16 outputs	**218**
152-6PH00	**SM 152 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 16 outputs › 4x11 clamps	**218**
152-6PH50	**SM 152 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 16 relay outputs	**218**
152-6PL00	**SM 152 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 32 outputs	**218**
Fieldbus slave modules with I/Os, DIO		
153-4CF00	**SM 153 - CANopen slave, digital** › CAN slave › 8 channels as inputs or outputs › 2x11 clamps	**222**
153-4CH00	**SM 153 - CANopen slave, digital** › CAN slave › 8 (12) inputs › 4 (8) outputs	**222**
153-4PF00	**SM 153 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 8 channels as inputs or outputs › 2x11 clamps	**222**
153-4PH00	**SM 153 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 8 inputs › 8 outputs	**222**
153-6CH00	**SM 153 - CANopen slave, digital** › CAN slave › 8 (12) inputs › 4 (8) outputs › 4x11 clamps	**227**
153-6CL10	**SM 153 - CANopen slave, digital** › CAN slave › 24 inputs › 8 outputs	**227**
153-6PH00	**SM 153 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 8 inputs › 8 outputs › 4x11 clamps	**227**
153-6PL00	**SM 153 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 16 inputs › 16 outputs	**227**
153-6PL10	**SM 153 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 24 inputs › 8 outputs	**232**

Fieldbus slave modules with I/Os, DI

Interface modules | Fieldbus slave modules with I/Os, DI						
151-4PH00 151-6PH00 151-6PL00						

Order number	151-4PH00	151-6PH00	151-6PL00	
Figure				
Type	SM 151	SM 151	SM 151	
General information				
Note	-	-	-	
Features	› PROFIBUS-DP slave › 16 inputs	› PROFIBUS-DP slave › 16 inputs › 4x11 clamps	› PROFIBUS-DP slave › 32 inputs	
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)	55 mA	55 mA	55 mA	
Inrush current	40 A	40 A	40 A	
I^2t	0.15 A^2s	0.15 A^2s	0.15 A^2s	
Technical data digital inputs				
Number of inputs	16	16	32	
Cable length, shielded	1000 m	1000 m	1000 m	
Cable length, unshielded	600 m	600 m	600 m	
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	
Reverse polarity protection of rated load voltage	-	-	-	
Current consumption from load voltage L+ (without load)	-	-	-	
Rated value	DC 24 V	DC 24 V	DC 24 V	
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	
Input voltage hysteresis	-	-	-	
Frequency range	-	-	-	
Input resistance	-	-	-	
Input current for signal "1"	7 mA	7 mA	7 mA	
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	32	
Number of simultaneously utilizable inputs vertical configuration	16	16	32	
Input characteristic curve	IEC 61131-2, type 1	IEC 61131-2, type 1	IEC 61131-2, type 1	
Initial data size	2 Byte	2 Byte	4 Byte	

Interface modules | Fieldbus slave modules with I/Os, DI						
151-4PH00 151-6PH00 151-6PL00						

Order number	151-4PH00	151-6PH00	151-6PL00	
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	
Interrupts	no	no	no	
Process alarm	no	no	no	
Diagnostic interrupt	no	no	no	
Diagnostic functions	no	no	no	
Diagnostics information read-out	possible	possible	possible	
Supply voltage display	yes	yes	yes	
Group error display	red SF LED	red SF LED	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)	-	-	-	
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	
Hardware configuration				
Racks, max.	-	-	-	
Modules per rack, max.	-	-	-	
Number of digital modules, max.	-	-	-	
Number of analog modules, max.	-	-	-	
Communication				
Fieldbus	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	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	
Electrically isolated	✓	✓	✓	
Number of participants, max.	125	125	125	
Node addresses	1 - 99	1 - 99	1 - 99	
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	
Address range inputs, max.	2 Byte	2 Byte	4 Byte	
Address range outputs, max.	0 Byte	0 Byte	0 Byte	
Number of TxPDOs, max.	-	-	-	
Number of RxPDOs, max.	-	-	-	

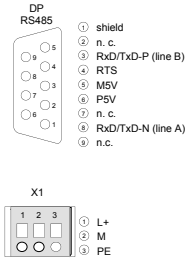
Interface modules | Fieldbus slave modules with I/Os, DI						
151-4PH00 151-6PH00 151-6PL00						

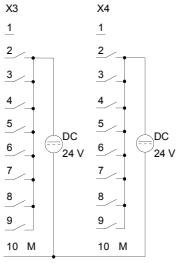
Order number	151-4PH00	151-6PH00	151-6PL00	
Datasizes				
Input bytes	1	2	4	
Output bytes	0	0	0	
Parameter bytes	7 + 5	7 + 5	7 + 5	
Diagnostic bytes	0	0	0	
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	
Weight	217 g	288 g	260 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

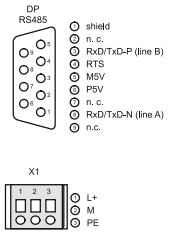
Interface modules | Fieldbus slave modules with I/Os, DI						
151-4PH00 151-6PH00 151-6PL00						

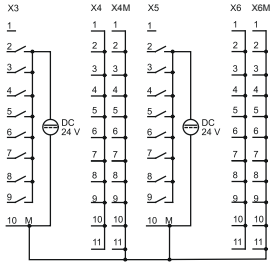
151-4PH00



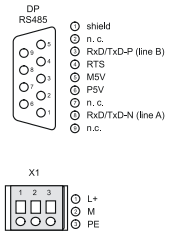


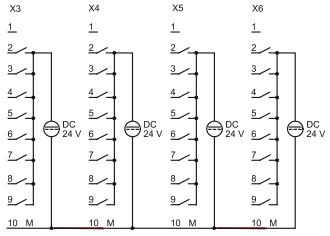
151-6PH00





151-6PL00





Fieldbus slave modules with I/Os, DO

Interface modules | Fieldbus slave modules with I/Os, DO						
152-4PH00 152-6PH00 152-6PH50 152-6PL00						

Order number	152-4PH00	152-6PH00	152-6PH50	152-6PL00
Figure				
Type	SM 152	SM 152	SM 152	SM 152
General information				
Note	-	-	-	-
Features	› PROFIBUS-DP slave › 16 outputs	› PROFIBUS-DP slave › 16 outputs › 4x11 clamps	› PROFIBUS-DP slave › 16 relay outputs	› PROFIBUS-DP slave › 32 outputs
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)	55 mA	55 mA	200 mA	55 mA
Technical data digital outputs				
Number of outputs	16	16	16	32
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 30 V/ AC 230 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	50 mA	50 mA	-	50 mA
Total current per group, horizontal configuration, 40°C	4 A	4 A	8 A	4 A
Total current per group, horizontal configuration, 60°C	2 A	2 A	8 A	2 A
Total current per group, vertical configuration	2 A	2 A	8 A	2 A
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)	-	L+ (-0.8 V)
Output voltage signal "1" at max. current	L+ (-1.5 V)	L+ (-1.5 V)	-	L+ (-1.5 V)
Output current at signal "1", rated value	1 A	1 A	5 A	1 A
Output delay of "0" to "1"	150 µs	150 µs	-	150 µs
Output delay of "1" to "0"	100 µs	100 µs	-	100 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	-	5 W
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. 1000 Hz	max. 1000 Hz	max. 100 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

Interface modules | Fieldbus slave modules with I/Os, DO						
152-4PH00 152-6PH00 152-6PH50 152-6PL00						

Order number	152-4PH00	152-6PH00	152-6PH50	152-6PL00
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	-	-	-	-
Output data size	2 Byte	2 Byte	2 Byte	4 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	yes	yes	yes	yes
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	8	-
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	DC 500 V	DC 500 V	DC 500 V
Hardware configuration				
Racks, max.	-	-	-	-
Modules per rack, max.	-	-	-	-
Number of digital modules, max.	-	-	-	-
Number of analog modules, max.	-	-	-	-
Communication				
Fieldbus	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170
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
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.	125	125	125	125

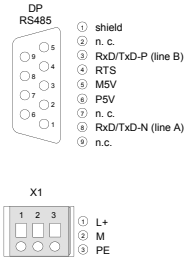
Interface modules | Fieldbus slave modules with I/Os, DO						
152-4PH00 152-6PH00 152-6PH50 152-6PL00						

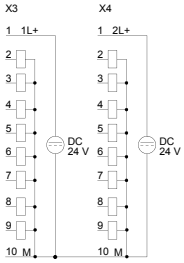
Order number	152-4PH00	152-6PH00	152-6PH50	152-6PL00
Node addresses	1 - 99	1 - 99	1 - 99	1 - 99
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
Address range inputs, max.	0 Byte	0 Byte	0 Byte	0 Byte
Address range outputs, max.	2 Byte	2 Byte	2 Byte	4 Byte
Number of TxPDOs, max.	-	-	-	-
Number of RxPDOs, max.	-	-	-	-
Datasizes				
Input bytes	0	0	0	0
Output bytes	2	2	2	4
Parameter bytes	7 + 5	7 + 5	7 + 5	7 + 5
Diagnostic bytes	13	13	13	13
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm
Weight	206 g	268 g	310 g	299 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

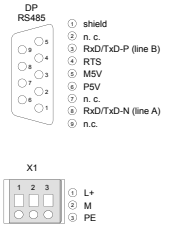
Interface modules | Fieldbus slave modules with I/Os, DO						
152-4PH00 152-6PH00 152-6PH50 152-6PL00						

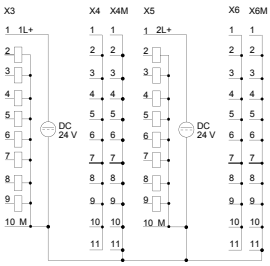
152-4PH00



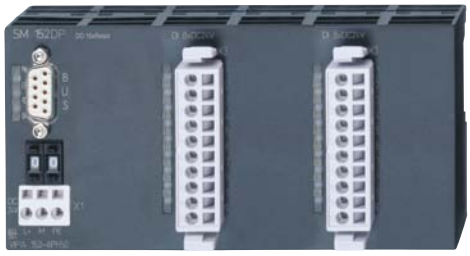


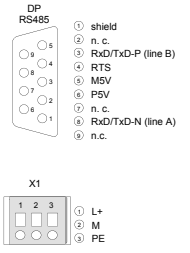
152-6PH00

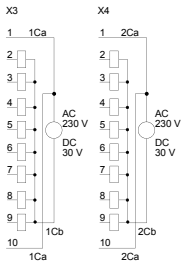




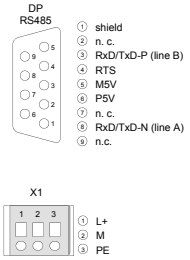
152-6PH50

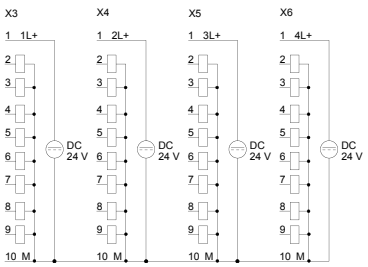






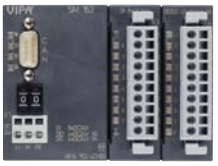
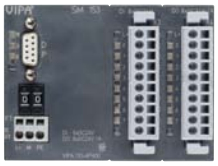
152-6PL00





Fieldbus slave modules with I/Os, DIO

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-4CF00	153-4CH00	153-4PF00	153-4PH00
Figure				
Type	SM 153, CANopen slave	SM 153, CANopen slave	SM 153, PB-DP slave	SM 153, PB-DP slave
General information				
Note	-	-	-	-
Features	› CAN slave › 8 channels as inputs or outputs › 2x11 clamps	› CAN slave › 8 (12) inputs › 4 (8) outputs	› PROFIBUS-DP slave › 8 channels as inputs or outputs › 2x11 clamps	› PROFIBUS-DP slave › 8 inputs › 8 outputs
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)	55 mA	55 mA	55 mA	55 mA
Technical data digital inputs				
Number of inputs	0 (8)	8 (12)	0 (8)	8 (16)
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	3 ms	3 ms	3 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	3 ms
Number of simultaneously utilizable inputs horizontal configuration	8	12	8	8
Number of simultaneously utilizable inputs vertical configuration	8	12	8	8
Input characteristic curve	IEC 61131-2, type 1	IEC 61131-2, type 1	IEC 61131-2, type 1	IEC 61131-2, type 1
Initial data size	1 Byte	2 Byte	1 Byte	1 Byte

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-4CF00	153-4CH00	153-4PF00	153-4PH00
Technical data digital outputs				
Number of outputs	8 (0)	8 (4)	8 (0)	8 (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	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	50 mA	50 mA	50 mA	50 mA
Total current per group, horizontal configuration, 40°C	4 A	4 A	4 A	4 A
Total current per group, horizontal configuration, 60°C	2 A	2 A	2 A	2 A
Total current per group, vertical configuration	2 A	2 A	2 A	2 A
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output voltage signal "1" at max. current	L+ (-1.5 V)	L+ (-1.5 V)	L+ (-1.5 V)	L+ (-1.5 V)
Output current at signal "1", rated value	1 A	1 A	1 A	1 A
Output delay of "0" to "1"	150 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	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1.5 A	1.5 A	1.5 A	1.5 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output 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
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	possible	possible	possible
Supply voltage display	yes	yes	yes	yes
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-4CF00	153-4CH00	153-4PF00	153-4PH00
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	DC 500 V	DC 500 V	DC 500 V
Hardware configuration				
Racks, max.	-	-	-	-
Modules per rack, max.	-	-	-	-
Number of digital modules, max.	-	-	-	-
Number of analog modules, max.	-	-	-	-
Communication				
Fieldbus	CANopen	CANopen	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170
Type of interface	CAN	CAN	RS485	RS485
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, female	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.	126	126	125	125
Node addresses	1 - 99	1 - 99	1 - 99	1 - 99
Transmission speed, min.	10 kbit/s	10 kbit/s	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	1 Mbit/s	1 Mbit/s	12 Mbit/s	12 Mbit/s
Address range inputs, max.	1 Byte	2 Byte	1 Byte	1 Byte
Address range outputs, max.	1 Byte	1 Byte	1 Byte	1 Byte
Number of TxPDOs, max.	1	1	-	-
Number of RxPDOs, max.	1	1	-	-
Datasizes				
Input bytes	1	2	1	1
Output bytes	1	1	1	1
Parameter bytes	-	-	7 + 5	7 + 5
Diagnostic bytes	-	-	13	13

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-4CF00	153-4CH00	153-4PF00	153-4PH00
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm	101.6 mm x 76 mm x 48 mm	101.6 mm x 76 mm x 48 mm	101.6 mm x 76 mm x 48 mm
Weight	219 g	216 g	221 g	220 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 with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

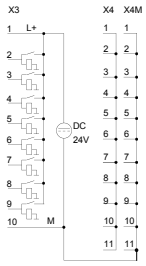
153-4CF00

CAN

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

X1

① L+
② M
③ PE



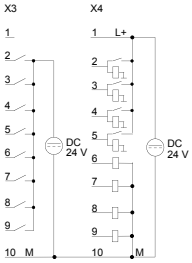
153-4CH00

CAN

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

X1

① L+
② M
③ PE



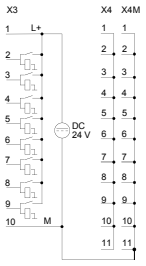
153-4PF00

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.

X1

① L+
② M
③ PE



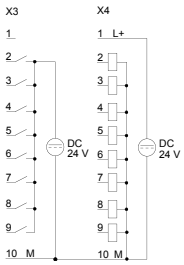
153-4PH00

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.

X1

① L+
② M
③ PE



Fieldbus slave modules with I/Os, DIO

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-6CH00	153-6CL10	153-6PH00	153-6PL00
Figure				
Type	SM 153, CANopen slave	SM 153, CANopen slave	SM 153, PB-DP slave	SM 153, PB-DP slave
General information				
Note	-	-	-	-
Features	› CAN slave › 8 (12) inputs › 4 (8) outputs › 4x11 clamps	› CAN slave › 24 inputs › 8 outputs	› PROFIBUS-DP slave › 8 inputs › 8 outputs › 4x11 clamps	› PROFIBUS-DP slave › 16 inputs › 16 outputs
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)	55 mA	55 mA	55 mA	55 mA
Technical data digital inputs				
Number of inputs	8 (12)	24	8	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	3 ms	3 ms	3 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	3 ms
Number of simultaneously utilizable inputs horizontal configuration	12	24	8	16
Number of simultaneously utilizable inputs vertical configuration	12	24	8	16
Input characteristic curve	IEC 61131-2, type 1	IEC 61131-2, type 1	IEC 61131-2, type 1	IEC 61131-2, type 1
Initial data size	2 Byte	3 Byte	1 Byte	2 Byte

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-6CH00	153-6CL10	153-6PH00	153-6PL00
Technical data digital outputs				
Number of outputs	8 (4)	8	8	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	55 mA	55 mA	55 mA	55 mA
Total current per group, horizontal configuration, 40°C	4 A	4 A	4 A	4 A
Total current per group, horizontal configuration, 60°C	2 A	2 A	2 A	2 A
Total current per group, vertical configuration	2 A	2 A	2 A	2 A
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output voltage signal "1" at max. current	L+ (-1.5 V)	L+ (-1.5 V)	L+ (-1.5 V)	L+ (-1.5 V)
Output current at signal "1", rated value	1 A	1 A	1 A	1 A
Output delay of "0" to "1"	150 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	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1.5 A	1.5 A	1.5 A	1.5 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	1 Byte	1 Byte	1 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	possible	possible	possible
Supply voltage display	yes	yes	yes	yes
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-6CH00	153-6CL10	153-6PH00	153-6PL00
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	DC 500 V	DC 500 V	DC 500 V
Hardware configuration				
Racks, max.	-	-	-	-
Modules per rack, max.	-	-	-	-
Number of digital modules, max.	-	-	-	-
Number of analog modules, max.	-	-	-	-
Communication				
Fieldbus	CANopen	CANopen	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170
Type of interface	CAN	CAN	RS485	RS485
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, female	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.	126	126	125	125
Node addresses	1 - 99	1 - 99	1 - 99	1 - 99
Transmission speed, min.	10 kbit/s	10 kbit/s	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	1 Mbit/s	1 Mbit/s	12 Mbit/s	12 Mbit/s
Address range inputs, max.	2 Byte	3 Byte	1 Byte	2 Byte
Address range outputs, max.	1 Byte	1 Byte	1 Byte	2 Byte
Number of TxPDOs, max.	1	1	-	-
Number of RxPDOs, max.	1	1	-	-
Datasizes				
Input bytes	2	3	1	2
Output bytes	1	1	1	2
Parameter bytes	-	-	7 + 5	7 + 5
Diagnostic bytes	-	-	13	13

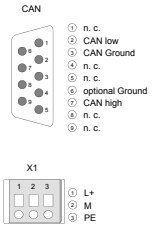
Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

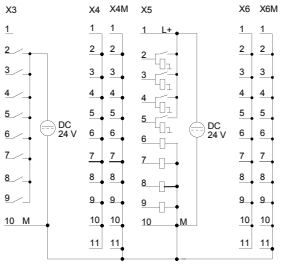
Order number	153-6CH00	153-6CL10	153-6PH00	153-6PL00
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm
Weight	266 g	311 g	268 g	264 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

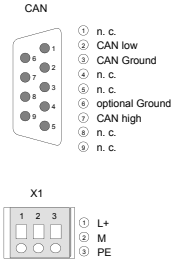
Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

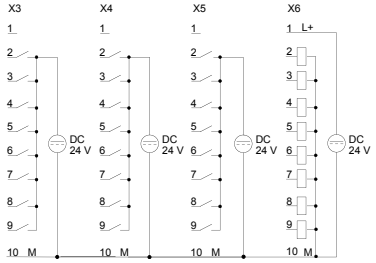
153-6CH00



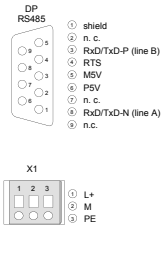


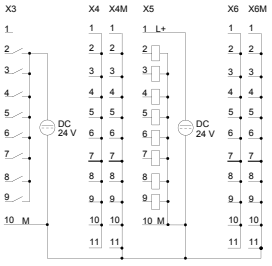
153-6CL10



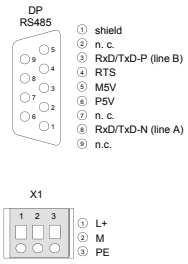


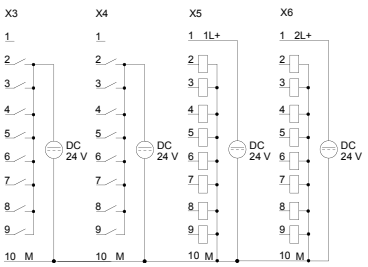
153-6PH00





153-6PL00





Fieldbus slave modules with I/Os, DIO

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-6PL10			
Figure				
Type	SM 153, PB-DP slave			
General information				
Note	-			
Features	› PROFIBUS-DP slave › 24 inputs › 8 outputs			
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)	55 mA			
Technical data digital inputs				
Number of inputs	24			
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	DC 24 V			
Input voltage for signal "0"	DC 0...5 V			
Input voltage for signal "1"	DC 15...28.8 V			
Input voltage hysteresis	-			
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	24			
Number of simultaneously utilizable inputs vertical configuration	24			
Input characteristic curve	IEC 61131-2, type 1			
Initial data size	3 Byte			

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-6PL10			
Technical data digital outputs				
Number of outputs	8			
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)	50 mA			
Total current per group, horizontal configuration, 40°C	4 A			
Total current per group, horizontal configuration, 60°C	2 A			
Total current per group, vertical configuration	2 A			
Output voltage signal "1" at min. current	L+ (-0.8 V)			
Output voltage signal "1" at max. current	L+ (-1.5 V)			
Output current at signal "1", rated value	1 A			
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	1 Byte			
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	possible			
Supply voltage display	yes			
Group error display	red SF LED			
Channel error display	none			

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-6PL10			
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			
Hardware configuration				
Racks, max.	-			
Modules per rack, max.	-			
Number of digital modules, max.	-			
Number of analog modules, max.	-			
Communication				
Fieldbus	PROFIBUS-DP to EN 50170			
Type of interface	RS485			
Connector	Sub-D, 9-pin, female			
Topology	Linear bus with bus termination at both ends			
Electrically isolated	✓			
Number of participants, max.	125			
Node addresses	1 - 99			
Transmission speed, min.	9.6 kbit/s			
Transmission speed, max.	12 Mbit/s			
Address range inputs, max.	3 Byte			
Address range outputs, max.	1 Byte			
Number of TxPDOs, max.	-			
Number of RxPDOs, max.	-			
Datasizes				
Input bytes	3			
Output bytes	1			
Parameter bytes	7 + 5			
Diagnostic bytes	13			

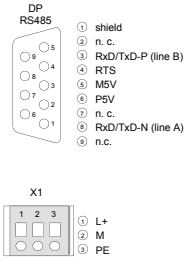
Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

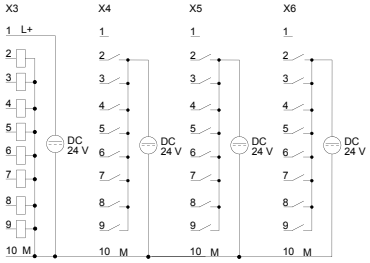
Order number	**153-6PL10**			
Housing				
Material	PPE / PA 6.6			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm			
Weight	264 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

153-6PL10





100V accessories

Structure and Function

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

Note: Bus connector, front connector and label strips are supplied with the modules.

Memory Expansion

MMC cards can be used to store program and data.

Bus Connectors

By using backplane bus connectors, communication between the modules is realized.

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 can be ordered in various lengths.

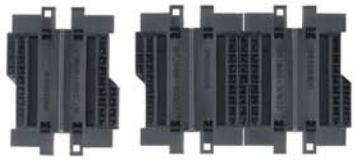
Front Connectors

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

Manuals

The technical documentation of the respective assemblies comprises 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	

35 mm profile rail

Order number	Type	Description	Note
290-1AF00	35 mm profile rail	length 2000 mm	
290-1AF30	35 mm profile rail	length 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)	

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)	

Manuals and operating instructions

Order number	Title	Contents	Language
HB100D	Manual System 100V - Compendium, German	HB100D_CM, HB100D_EM, HB100D_SM-PB, HB100D_SM-CAN	DE
HB100E	Manual System 100V - Compendium, English	HB100E_CM, HB100E_EM, HB100E_SM-PB, HB100E_SM-CAN	EN
HB100D_CM	Manual System 100V - German	CM - Clamps modules	DE
HB100E_CM	Manual System 100V - English	CM - Clamps modules	EN
HB100D_CPU	Manual System 100V - German	CPU 11x, incl. operations list	DE
HB100E_CPU	Manual System 100V - English	CPU 11x, incl. operations list	EN
HB100D_EM	Manual System 100V - German	EM - Expansion modules	DE
HB100E_EM	Manual System 100V - English	EM - Expansion modules	EN
HB100D_SM-CAN	Manual System 100V - German	SM-CAN - Block I/O CAN	DE
HB100E_SM-CAN	Manual System 100V - English	SM-CAN - Block I/O CAN	EN
HB100D_SM-PB	Manual System 100V - German	SM-PB - Block I/O PROFIBUS	DE
HB100E_SM-PB	Manual System 100V - English	SM-PB - Block I/O PROFIBUS	EN