

At a glance

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| Signal modules analog | 446 |
| Communication processors | 464 |
| Interface modules | 480 |
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System 300S

the High-Speed control system

System description 300S

Structure and Concept

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

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

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

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

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



Performance and Application

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

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

Programming

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

Memory

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

Functions

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

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

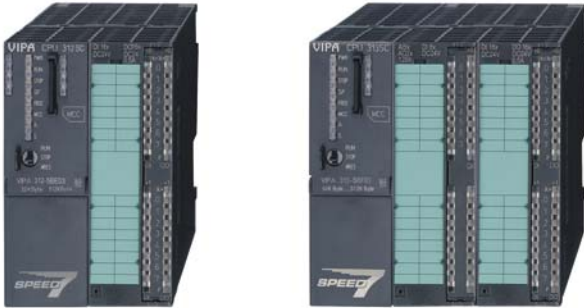
Communication

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

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

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

CPUs



CPUs-Central Modules

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

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

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

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

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

Characteristics

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

Overview

| Order no. | Name/Description | Page |
|-----------------------------------|---|------|
| CPUs STEP7 programmable, standard | | |
| 314-2AG12 | CPU 314SB/DPM - SPEED7 technology <ul style="list-style-type: none"> ‣ SPEED7 technology ‣ 256 kB work memory ‣ Memory extension (max. 512 kB) ‣ PROFIBUS-DP master / PtP (switchable) | 377 |
| 314-2BG03 | CPU 314SE/DPS - SPEED7 technology <ul style="list-style-type: none"> ‣ SPEED7 technology ‣ 128 kB work memory ‣ Memory extension (max. 512 kB) ‣ PROFIBUS-DP slave / PtP (switchable) | 377 |
| 315-2AG12 | CPU 315SB/DPM - SPEED7 technology <ul style="list-style-type: none"> ‣ SPEED7 technology ‣ 1 MB work memory, ‣ Memory extension (max. 2 MB) ‣ PROFIBUS-DP master / PtP (switchable) | 377 |
| 317-2AJ12 | CPU 317SE/DPM - SPEED7 technology <ul style="list-style-type: none"> ‣ SPEED7 technology, SPEED-Bus ‣ 2 MB work memory ‣ Memory extension (max. 8 MB) ‣ PROFIBUS-DP master / PtP (switchable) | 377 |
| CPUs STEP7 programmable, NET-CPUs | | |
| 315-4NE12 | CPU 315SN/NET - SPEED7 technology <ul style="list-style-type: none"> ‣ SPEED7 technology ‣ 1 MB work memory ‣ Memory extension (max. 2 MB) ‣ PROFIBUS-DP master / PtP (switchable) ‣ CP 343 integrated | 385 |
| 317-4NE12 | CPU 317SN/NET - SPEED7 technology <ul style="list-style-type: none"> ‣ SPEED7 technology, SPEED-Bus ‣ 2 MB work memory ‣ Memory extension (max. 8 MB) ‣ PROFIBUS-DP master / PtP (switchable) ‣ CP 343 integrated | 385 |
| CPUs STEP7 programmable, PROFINET | | |
| 315-4PN12 | CPU 315SN/NET - SPEED7 technology <ul style="list-style-type: none"> ‣ SPEED7 technology ‣ 1 MB work memory ‣ Memory extension (max. 2 MB) ‣ PROFIBUS-DP master / PtP (switchable) ‣ PROFINET Lean CP 343 integrated | 392 |
| 317-4PN12 | CPU 317SN/NET - SPEED7 technology <ul style="list-style-type: none"> ‣ SPEED7 technology, SPEED-Bus ‣ 2 MB work memory ‣ Memory extension (max. 8 MB) ‣ PROFIBUS-DP master / PtP (switchable) ‣ PROFINET CP 343 integrated | 392 |
| CPUs STEP7 programmable, class C | | |
| 312-5BE13 | CPU 312SC - SPEED7 technology <ul style="list-style-type: none"> ‣ SPEED7 technology ‣ 16 x DI, 8 x DO ‣ 64 kB work memory ‣ Memory extension (max. 512 kB) ‣ PtP interface | 399 |
| 313-5BF13 | CPU 313SC - SPEED7 technology <ul style="list-style-type: none"> ‣ SPEED7 technology ‣ 24 x DI, 16 x DO, 4 x AI, 2 x AO, 1xAI Pt100 ‣ 128 kB work memory ‣ Memory extension (max. 512 kB) ‣ PtP interface | 399 |
| 313-6CF13 | CPU 313SC/DPM - SPEED7 technology <ul style="list-style-type: none"> ‣ SPEED7 technology ‣ 16 x DI, 16 x DO ‣ 128 kB work memory ‣ Memory extension (max 512 kB) ‣ PROFIBUS-DP master / PtP (switchable) | 399 |
| 314-6CF02 | CPU 314ST/DPM - SPEED7 technology <ul style="list-style-type: none"> ‣ SPEED7 technology, SPEED-Bus ‣ 8 x DI, 8 x DO, 4 x AI, 2 x AO, 1xAI Pt100 ‣ 512 kB work memory ‣ Memory extension (max. 2 MB) ‣ PROFIBUS-DP master / PtP (switchable) | 399 |





Overview

| Order no. | Name/Description | Page |
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| 314-6CG13 | CPU 314SC/DPM - SPEED7 technology <ul style="list-style-type: none">› SPEED7 technology› 24 x DI, 16 x DO, 8 x DIO, 4 x AI, 1 x AI Pt100, 2xAO› 256 kB work memory› Memory extension (max. 1 MB)› PROFIBUS-DP master / PtP (switchable) | 410 |

CPU STEP7 programmable, standard

CPUs | CPUs STEP7 programmable, standard

| | | | | | |
|--|--|--|--|--|--|
| 314-2AG12 314-2BG03 315-2AG12 317-2AJ12 | | | | | |
|--|--|--|--|--|--|

| Order number | 314-2AG12 | 314-2BG03 | 315-2AG12 | 317-2AJ12 |
|--|--|---|---|---|
| Figure |  |  |  |  |
| Type | CPU 314SB/DPM | CPU 314SE/DPS | CPU 315SB/DPM | CPU 317SE/DPM |
| General information | | | | |
| Note | - | - | - | - |
| Features | <ul style="list-style-type: none"> ▸ SPEED7 technology ▸ 256 kB work memory ▸ Memory extension (max. 512 kB) ▸ PROFIBUS-DP master / PtP (switchable) | <ul style="list-style-type: none"> ▸ SPEED7 technology ▸ 128 kB work memory ▸ Memory extension (max. 512 kB) ▸ PROFIBUS-DP slave / PtP (switchable) | <ul style="list-style-type: none"> ▸ SPEED7 technology ▸ 1 MB work memory, ▸ Memory extension (max. 2 MB) ▸ PROFIBUS-DP master / PtP (switchable) | <ul style="list-style-type: none"> ▸ SPEED7 technology, SPEED-Bus ▸ 2 MB work memory ▸ Memory extension (max. 8 MB) ▸ PROFIBUS-DP master / PtP (switchable) |
| SPEED-Bus | - | - | - | ✓ |
| Technical data power supply | | | | |
| Power supply (rated value) | DC 24 V | DC 24 V | DC 24 V | DC 24 V |
| Power supply (permitted range) | DC 20.4...28.8 V | DC 20.4...28.8 V | DC 20.4...28.8 V | DC 20.4...28.8 V |
| Reverse polarity protection | ✓ | ✓ | ✓ | ✓ |
| Current consumption (no-load operation) | 200 mA | 180 mA | 200 mA | 200 mA |
| Current consumption (rated value) | 1 A | 900 mA | 1 A | 1.5 A |
| Inrush current | 5 A | 8 A | 5 A | 5 A |
| Max. current drain at backplane bus | 2.5 A | 3 A | 2.5 A | 4 A |
| Load and working memory | | | | |
| Load memory, integrated | 512 KB | 512 KB | 2 MB | 8 MB |
| Load memory, maximum | 512 KB | 512 KB | 2 MB | 8 MB |
| Work memory, integrated | 256 KB | 128 KB | 1 MB | 2 MB |
| Work memory, maximal | 512 KB | 512 KB | 2 MB | 8 MB |
| Memory divided in 50% program / 50% data | ✓ | ✓ | ✓ | ✓ |
| Memory card slot | MMC-Card with max. 1 GB | MMC-Card with max. 1 GB | MMC-Card with max. 1 GB | MMC-Card with max. 1 GB |
| Hardware configuration | | | | |
| Racks, max. | 4 | 4 | 4 | 4 |
| Modules per rack, max. | 8 in multiple-, 32 in a single-rack configuration | 8 in multiple-, 32 in a single-rack configuration | 8 in multiple-, 32 in a single-rack configuration | 8 in multiple-, 32 in a single-rack configuration |
| Number of integrated DP master | 1 | - | 1 | 1 |
| Number of DP master via CP | 4 | 4 | 4 | 4 |
| Operable function modules | 8 | 8 | 8 | 8 |
| Operable communication modules PtP | 8 | 8 | 8 | 16 |
| Operable communication modules LAN | 8 | 8 | 8 | 8 |

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

| Order number | 314-2AG12 | 314-2BG03 | 315-2AG12 | 317-2AJ12 |
|--|--------------|--------------|--------------|--------------|
| Status information, alarms, diagnostics | | | | |
| Status display | yes | yes | yes | yes |
| Interrupts | no | no | no | no |
| Process alarm | no | no | no | no |
| Diagnostic interrupt | no | no | no | no |
| Command processing times | | | | |
| Bit instructions, min. | 0.01 µs | 0.02 µs | 0.01 µs | 0.01 µs |
| Word instruction, min. | 0.01 µs | 0.02 µs | 0.01 µs | 0.01 µs |
| Double integer arithmetic, min. | 0.01 µs | 0.02 µs | 0.01 µs | 0.01 µs |
| Floating-point arithmetic, min. | 0.06 µs | 0.12 µs | 0.06 µs | 0.06 µs |
| Timers/Counters and their retentive characteristics | | | | |
| Number of S7 counters | 512 | 512 | 512 | 2048 |
| Number of S7 times | 512 | 512 | 512 | 2048 |
| Data range and retentive characteristic | | | | |
| Number of flags | 8192 Byte | 8192 Byte | 8192 Byte | 16384 Byte |
| Number of data blocks | 4095 | 4095 | 4095 | 8190 |
| Max. data blocks size | 64 KB | 64 KB | 64 KB | 64 KB |
| Max. local data size per execution level | 510 Byte | 510 Byte | 510 Byte | 510 Byte |
| Blocks | | | | |
| Number of OBs | 24 | 15 | 24 | 24 |
| Number of FBs | 2048 | 2048 | 2048 | 8192 |
| Number of FCs | 2048 | 2048 | 2048 | 8192 |
| Maximum nesting depth per priority class | 8 | 8 | 8 | 8 |
| Maximum nesting depth additional within an error OB | 4 | 4 | 4 | 4 |
| Time | | | | |
| Real-time clock buffered | ✓ | ✓ | ✓ | ✓ |
| Clock buffered period (min.) | 6 W | 6 W | 6 W | 6 W |
| Accuracy (max. deviation per day) | 10 s | 10 s | 10 s | 10 s |
| Number of operating hours counter | 8 | 8 | 8 | 8 |
| Clock synchronization | ✓ | ✓ | ✓ | ✓ |
| Synchronization via MPI | Master/Slave | Master/Slave | Master/Slave | Master/Slave |
| Synchronization via Ethernet (NTP) | no | no | no | no |
| Address areas (I/O) | | | | |
| Input I/O address area | 8192 Byte | 2048 Byte | 8192 Byte | 8192 Byte |
| Output I/O address area | 8192 Byte | 2048 Byte | 8192 Byte | 8192 Byte |
| Input process image maximal | 2048 Byte | 128 Byte | 2048 Byte | 2048 Byte |
| Output process image maximal | 2048 Byte | 128 Byte | 2048 Byte | 2048 Byte |

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

| Order number | 314-2AG12 | 314-2BG03 | 315-2AG12 | 317-2AJ12 |
|---|----------------------|----------------------|----------------------|----------------------|
| Digital inputs | 65536 | 16384 | 65536 | 65536 |
| Digital outputs | 65536 | 16385 | 65536 | 65536 |
| Digital inputs central | 1024 | 1024 | 1024 | 1024 |
| Digital outputs central | 1024 | 1024 | 1024 | 1024 |
| Integrated digital inputs | - | - | - | - |
| Integrated digital outputs | - | - | - | - |
| Analog inputs | 4096 | 1024 | 4096 | 4096 |
| Analog outputs | 4096 | 1024 | 4096 | 4096 |
| Analog inputs, central | 256 | 256 | 256 | 256 |
| Analog outputs, central | 256 | 256 | 256 | 256 |
| Integrated analog inputs | - | - | - | - |
| Integrated analog outputs | - | - | - | - |
| Communication functions | | | | |
| PG/OP channel | ✓ | ✓ | ✓ | ✓ |
| Global data communication | ✓ | ✓ | ✓ | ✓ |
| Number of GD circuits, max. | 8 | 8 | 8 | 8 |
| Size of GD packets, max. | 54 Byte | 22 Byte | 54 Byte | 54 Byte |
| S7 basic communication | ✓ | ✓ | ✓ | ✓ |
| S7 basic communication, user data per job | 76 Byte | 76 Byte | 76 Byte | 76 Byte |
| S7 communication | ✓ | ✓ | ✓ | ✓ |
| S7 communication as server | ✓ | ✓ | ✓ | ✓ |
| S7 communication as client | - | - | - | - |
| S7 communication, user data per job | 160 Byte | 160 Byte | 160 Byte | 160 Byte |
| Number of connections, max. | 32 | 32 | 32 | 32 |
| Functionality Sub-D interfaces | | | | |
| Type | X2 | X2 | X2 | X2 |
| Type of interface | RS485 | RS485 | RS485 | RS485 |
| Connector | Sub-D, 9-pin, female | Sub-D, 9-pin, female | Sub-D, 9-pin, female | Sub-D, 9-pin, female |
| Electrically isolated | ✓ | - | ✓ | ✓ |
| MPI | ✓ | ✓ | ✓ | ✓ |
| MP ² I (MPI/RS232) | - | - | - | - |
| DP master | - | - | - | - |
| DP slave | - | - | - | - |
| Point-to-point interface | - | - | - | - |
| Functionality Sub-D interfaces | | | | |
| Type | X3 | X3 | X3 | X3 |
| Type of interface | RS485 | RS485 | RS485 | RS485 |
| Connector | Sub-D, 9-pin, female | Sub-D, 9-pin, female | Sub-D, 9-pin, female | Sub-D, 9-pin, female |

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

| Order number | 314-2AG12 | 314-2BG03 | 315-2AG12 | 317-2AJ12 |
|---|------------|------------|------------|------------|
| Electrically isolated | ✓ | ✓ | ✓ | ✓ |
| MPI | - | - | - | - |
| MP ² I (MPI/RS232) | - | - | - | - |
| DP master | ✓ | - | ✓ | ✓ |
| DP slave | ✓ | ✓ | ✓ | ✓ |
| Point-to-point interface | ✓ | ✓ | ✓ | ✓ |
| CAN | - | - | - | - |
| Functionality PROFIBUS master | | | | |
| PG/OP channel | ✓ | - | ✓ | ✓ |
| Routing | ✓ | - | ✓ | ✓ |
| S7 basic communication | ✓ | - | ✓ | ✓ |
| S7 communication | ✓ | - | ✓ | ✓ |
| S7 communication as server | ✓ | - | ✓ | ✓ |
| S7 communication as client | - | - | - | - |
| Equidistance support | - | - | - | - |
| Isochronous mode | - | - | - | - |
| SYNC/FREEZE | ✓ | - | ✓ | ✓ |
| Activation/deactivation of DP slaves | ✓ | - | ✓ | ✓ |
| Direct data exchange (slave-to-slave communication) | - | - | - | - |
| DPV1 | - | - | - | - |
| Transmission speed, min. | 9.6 kbit/s | - | 9.6 kbit/s | 9.6 kbit/s |
| Transmission speed, max. | 12 Mbit/s | - | 12 Mbit/s | 12 Mbit/s |
| Number of DP slaves, max. | 124 | - | 124 | 124 |
| Address range inputs, max. | 8 KB | - | 8 KB | 8 KB |
| Address range outputs, max. | 8 KB | - | 8 KB | 8 KB |
| User data inputs per slave, max. | 244 Byte | - | 244 Byte | 244 Byte |
| User data outputs per slave, max. | 244 Byte | - | 244 Byte | 244 Byte |
| Functionality PROFIBUS slave | | | | |
| PG/OP channel | ✓ | - | ✓ | ✓ |
| Routing | ✓ | - | ✓ | ✓ |
| S7 communication | ✓ | - | ✓ | ✓ |
| S7 communication as server | ✓ | - | ✓ | ✓ |
| S7 communication as client | - | - | - | - |
| Direct data exchange (slave-to-slave communication) | - | - | - | - |
| DPV1 | - | - | - | - |
| Transmission speed, min. | 9.6 kbit/s | 9.6 kbit/s | 9.6 kbit/s | 9.6 kbit/s |
| Transmission speed, max. | 12 Mbit/s | 12 Mbit/s | 12 Mbit/s | 12 Mbit/s |

CPU | CPU STEP7 programmable, standard

| | | | | | |
|--|--|--|--|--|--|
| 314-2AG12 314-2BG03 315-2AG12 317-2AJ12 | | | | | |
|--|--|--|--|--|--|

| Order number | 314-2AG12 | 314-2BG03 | 315-2AG12 | 317-2AJ12 |
|---|-------------------------|-------------------------|-------------------------|-------------------------|
| Automatic detection of transmission speed | - | - | - | - |
| Transfer memory inputs, max. | 244 Byte | 244 Byte | 244 Byte | 244 Byte |
| Transfer memory outputs, max. | 244 Byte | 244 Byte | 244 Byte | 244 Byte |
| Address areas, max. | 32 | 32 | 32 | 32 |
| User data per address area, max. | 32 Byte | 32 Byte | 32 Byte | 32 Byte |
| Point-to-point communication | | | | |
| PtP communication | ✓ | ✓ | ✓ | ✓ |
| Interface isolated | ✓ | ✓ | ✓ | ✓ |
| RS232 interface | - | - | - | - |
| RS422 interface | - | - | - | - |
| RS485 interface | ✓ | ✓ | ✓ | ✓ |
| Connector | Sub-D, 9-pin, female | Sub-D, 9-pin, female | Sub-D, 9-pin, female | Sub-D, 9-pin, female |
| Transmission speed, min. | 150 bit/s | 150 bit/s | 150 bit/s | 150 bit/s |
| Transmission speed, max. | 115.5 kbit/s | 115.5 kbit/s | 115.5 kbit/s | 115.5 kbit/s |
| Cable length, max. | 500 m | 500 m | 500 m | 500 m |
| Point-to-point protocol | | | | |
| ASCII protocol | ✓ | ✓ | ✓ | ✓ |
| STX/ETX protocol | ✓ | ✓ | ✓ | ✓ |
| 3964(R) protocol | ✓ | ✓ | ✓ | ✓ |
| RK512 protocol | - | - | - | - |
| USS master protocol | ✓ | ✓ | ✓ | ✓ |
| Modbus master protocol | ✓ | ✓ | ✓ | ✓ |
| Modbus slave protocol | - | - | - | - |
| Special protocols | - | - | - | - |
| Functionality RJ45 interfaces | | | | |
| Type | X4 | X4 | X4 | X5 |
| Type of interface | Ethernet 10/100 MBit | Ethernet 10/100 MBit | Ethernet 10/100 MBit | Ethernet 10/100 MBit |
| Connector | RJ45 | RJ45 | RJ45 | RJ45 |
| Electrically isolated | ✓ | ✓ | ✓ | ✓ |
| PG/OP channel | ✓ | ✓ | ✓ | ✓ |
| Productive connections | - | - | - | - |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | 80 mm x 125 mm x 120 mm |
| Weight | 290 g | 235 g | 290 g | 420 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 | | | | |



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

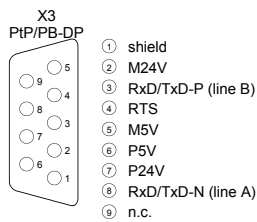
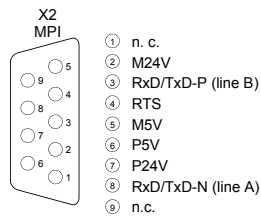
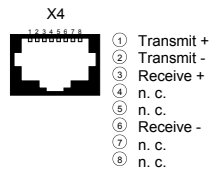
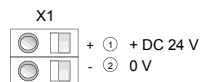
| Order number | 314-2AG12 | 314-2BG03 | 315-2AG12 | 317-2AJ12 |
|---------------------|----------------|----------------|-----------|-----------|
| UL508 certification | in preparation | in preparation | yes | yes |

Connections, Interfaces

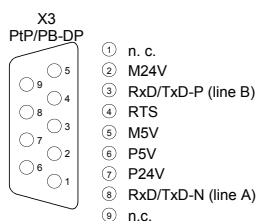
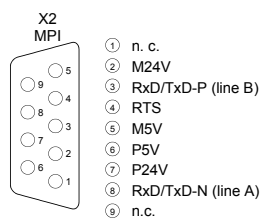
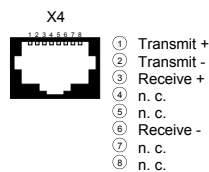
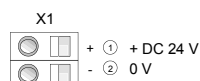
CPUs | CPUs STEP7 programmable, standard

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314-2AG12



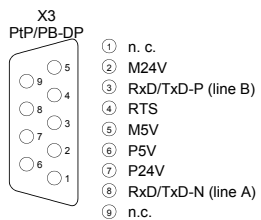
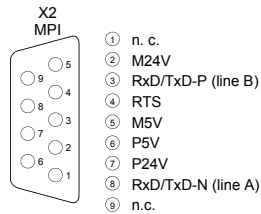
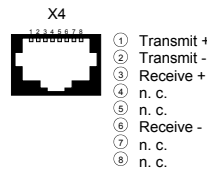
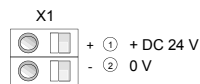
314-2BG03



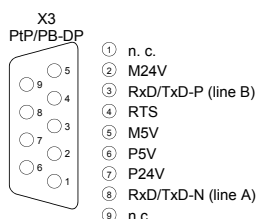
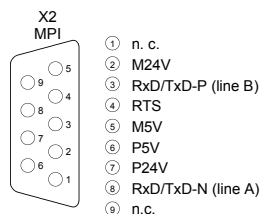
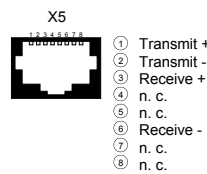
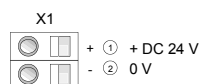
CPU | CPUs STEP7 programmable, standard

| | | | | | | |
|-----------|--|--|--|--|--|--|
| 314-2AG12 | | | | | | |
| 314-2BG03 | | | | | | |
| 315-2AG12 | | | | | | |
| 317-2AJ12 | | | | | | |

315-2AG12





317-2AJ12



CPUs STEP7 programmable, NET-CPUs

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

| Order number | 315-4NE12 | 317-4NE12 | | |
|--|---|--|--|--|
| Figure |  |  | | |
| Type | CPU 315SN/NET | CPU 317SN/NET | | |
| General information | | | | |
| Note | - | - | | |
| Features | <ul style="list-style-type: none"> ▶ SPEED7 technology ▶ 1 MB work memory ▶ Memory extension (max. 2 MB) ▶ PROFIBUS-DP master / PtP (switchable) ▶ CP 343 integrated | <ul style="list-style-type: none"> ▶ SPEED7 technology, SPEED-Bus ▶ 2 MB work memory ▶ Memory extension (max. 8 MB) ▶ PROFIBUS-DP master / PtP (switchable) ▶ CP 343 integrated | | |
| SPEED-Bus | - | ✓ | | |
| Technical data power supply | | | | |
| Power supply (rated value) | DC 24 V | DC 24 V | | |
| Power supply (permitted range) | DC 20.4...28.8 V | DC 20.4...28.8 V | | |
| Reverse polarity protection | ✓ | ✓ | | |
| Current consumption (no-load operation) | 270 mA | 270 mA | | |
| Current consumption (rated value) | 1 A | 1.5 A | | |
| Inrush current | 5 A | 5 A | | |
| Max. current drain at backplane bus | 2.5 A | 4 A | | |
| Load and working memory | | | | |
| Load memory, integrated | 2 MB | 8 MB | | |
| Load memory, maximum | 2 MB | 8 MB | | |
| Work memory, integrated | 1 MB | 2 MB | | |
| Work memory, maximal | 2 MB | 8 MB | | |
| Memory divided in 50% program / 50% data | ✓ | ✓ | | |
| Memory card slot | MMC-Card with max. 1 GB | MMC-Card with max. 1 GB | | |
| Hardware configuration | | | | |
| Racks, max. | 4 | 4 | | |
| Modules per rack, max. | 8 in multiple-, 32 in a single-rack configuration | 8 in multiple-, 32 in a single-rack configuration | | |
| Number of integrated DP master | 1 | 1 | | |
| Number of DP master via CP | 4 | 4 | | |
| Operable function modules | 8 | 8 | | |
| Operable communication modules PtP | 8 | 16 | | |

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

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

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

| Order number | 315-4NE12 | 317-4NE12 | | |
|---|----------------------|----------------------|--|--|
| Output process image maximal | 2048 Byte | 8192 Byte | | |
| Digital inputs | 65536 | 65536 | | |
| Digital outputs | 65536 | 65536 | | |
| Digital inputs central | 1024 | 1024 | | |
| Digital outputs central | 1024 | 1024 | | |
| Integrated digital inputs | - | - | | |
| Integrated digital outputs | - | - | | |
| Analog inputs | 4096 | 4096 | | |
| Analog outputs | 4096 | 4096 | | |
| Analog inputs, central | 256 | 256 | | |
| Analog outputs, central | 256 | 256 | | |
| Integrated analog inputs | - | - | | |
| Integrated analog outputs | - | - | | |
| Communication functions | | | | |
| PG/OP channel | ✓ | ✓ | | |
| Global data communication | ✓ | ✓ | | |
| Number of GD circuits, max. | 8 | 8 | | |
| Size of GD packets, max. | 54 Byte | 54 Byte | | |
| S7 basic communication | ✓ | ✓ | | |
| S7 basic communication, user data per job | 76 Byte | 76 Byte | | |
| S7 communication | ✓ | ✓ | | |
| S7 communication as server | ✓ | ✓ | | |
| S7 communication as client | - | - | | |
| S7 communication, user data per job | 160 Byte | 160 Byte | | |
| Number of connections, max. | 32 | 32 | | |
| Functionality Sub-D interfaces | | | | |
| Type | X2 | X2 | | |
| Type of interface | RS485 | RS485 | | |
| Connector | Sub-D, 9-pin, female | Sub-D, 9-pin, female | | |
| Electrically isolated | ✓ | ✓ | | |
| MPI | ✓ | ✓ | | |
| MP ² I (MPI/RS232) | - | - | | |
| DP master | - | - | | |
| DP slave | - | - | | |
| Point-to-point interface | - | - | | |
| | | | | |
| Type | X3 | X3 | | |
| Type of interface | RS485 | RS485 | | |

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

| Order number | 315-4NE12 | 317-4NE12 | | |
|---|----------------------|----------------------|--|--|
| Connector | Sub-D, 9-pin, female | Sub-D, 9-pin, female | | |
| Electrically isolated | ✓ | ✓ | | |
| MPI | - | - | | |
| MP ² (MPI/RS232) | - | - | | |
| DP master | ✓ | ✓ | | |
| DP slave | ✓ | ✓ | | |
| Point-to-point interface | ✓ | ✓ | | |
| CAN | - | - | | |
| Functionality PROFIBUS master | | | | |
| PG/OP channel | ✓ | ✓ | | |
| Routing | ✓ | ✓ | | |
| S7 basic communication | ✓ | ✓ | | |
| S7 communication | ✓ | ✓ | | |
| S7 communication as server | ✓ | ✓ | | |
| S7 communication as client | - | - | | |
| Equidistance support | - | - | | |
| Isochronous mode | - | - | | |
| SYNC/FREEZE | ✓ | ✓ | | |
| Activation/deactivation of DP slaves | ✓ | ✓ | | |
| Direct data exchange (slave-to-slave communication) | - | - | | |
| DPV1 | - | - | | |
| Transmission speed, min. | 9.6 kbit/s | 9.6 kbit/s | | |
| Transmission speed, max. | 12 Mbit/s | 12 Mbit/s | | |
| Number of DP slaves, max. | 124 | 124 | | |
| Address range inputs, max. | 8 KB | 8 KB | | |
| Address range outputs, max. | 8 KB | 8 KB | | |
| User data inputs per slave, max. | 244 Byte | 244 Byte | | |
| User data outputs per slave, max. | 244 Byte | 244 Byte | | |
| Functionality PROFIBUS slave | | | | |
| PG/OP channel | ✓ | ✓ | | |
| Routing | ✓ | ✓ | | |
| S7 communication | ✓ | ✓ | | |
| S7 communication as server | ✓ | ✓ | | |
| S7 communication as client | - | - | | |
| Direct data exchange (slave-to-slave communication) | - | - | | |
| DPV1 | - | - | | |
| Transmission speed, min. | 9.6 kbit/s | 9.6 kbit/s | | |

| CPU CPU STEP7 programmable, NET-CPU | | | | | |
|---------------------------------------|--|--|--|--|--|
| 315-4NE12 | | | | | |
| 317-4NE12 | | | | | |

| Order number | 315-4NE12 | 317-4NE12 | | |
|---|----------------------|----------------------|--|--|
| Transmission speed, max. | 12 Mbit/s | 12 Mbit/s | | |
| Automatic detection of transmission speed | - | - | | |
| Transfer memory inputs, max. | 244 Byte | 244 Byte | | |
| Transfer memory outputs, max. | 244 Byte | 244 Byte | | |
| Address areas, max. | 32 | 32 | | |
| User data per address area, max. | 32 Byte | 32 Byte | | |
| Point-to-point communication | | | | |
| PtP communication | ✓ | ✓ | | |
| Interface isolated | ✓ | ✓ | | |
| RS232 interface | - | - | | |
| RS422 interface | - | - | | |
| RS485 interface | ✓ | ✓ | | |
| Connector | Sub-D, 9-pin, female | Sub-D, 9-pin, female | | |
| Transmission speed, min. | 150 bit/s | 150 bit/s | | |
| Transmission speed, max. | 115.5 kbit/s | 115.5 kbit/s | | |
| Cable length, max. | 500 m | 500 m | | |
| Point-to-point protocol | | | | |
| ASCII protocol | ✓ | ✓ | | |
| STX/ETX protocol | ✓ | ✓ | | |
| 3964(R) protocol | ✓ | ✓ | | |
| RK512 protocol | - | - | | |
| USS master protocol | ✓ | ✓ | | |
| Modbus master protocol | ✓ | ✓ | | |
| Modbus slave protocol | - | - | | |
| Special protocols | - | - | | |
| Functionality RJ45 interfaces | | | | |
| Type | X5 | X5 | | |
| Type of interface | Ethernet 10/100 MBit | Ethernet 10/100 MBit | | |
| Connector | RJ45 | RJ45 | | |
| Electrically isolated | ✓ | ✓ | | |
| PG/OP channel | ✓ | ✓ | | |
| Productive connections | - | - | | |
| Functionality RJ45 interfaces | | | | |
| Type | X8 | X8 | | |
| Type of interface | Ethernet 10/100 MBit | Ethernet 10/100 MBit | | |
| Connector | RJ45 | RJ45 | | |
| Electrically isolated | ✓ | ✓ | | |
| PG/OP channel | ✓ | ✓ | | |

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

| Order number | 315-4NE12 | 317-4NE12 | | |
|--|-------------------------|-------------------------|--|--|
| Productive connections | - | - | | |
| Ethernet communication CP | | | | |
| Number of productive connections, max. | 8 | 64 | | |
| Number of productive connections by Siemens NetPro, max. | 8 | 16 | | |
| User data per S7 connection, max. | 32 KB | 32 KB | | |
| User data per TCP connection, max. | 64 KB | 64 KB | | |
| User data per ISO connection, max. | 8 KB | 8 KB | | |
| User data per ISO on TCP connection, max. | 32 KB | 32 KB | | |
| User data per UDP connection, max. | 2 KB | 2 KB | | |
| Ethernet open communication | | | | |
| Number of connections, max. | 8 | 8 | | |
| User data per ISO on TCP connection, max. | 8 KB | 8 KB | | |
| User data per native TCP connection, max. | 8 KB | 8 KB | | |
| User data per ad hoc TCP connection, max. | 1460 Byte | 1460 Byte | | |
| User data per UDP connection, max. | 1472 Byte | 1472 Byte | | |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 80 mm x 125 mm x 120 mm | 80 mm x 125 mm x 120 mm | | |
| Weight | 430 g | 440 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, NET-CPUs

315-4NE12
317-4NE12

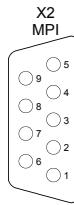
315-4NE12



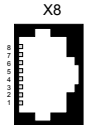
- + ① + DC 24 V
- ② 0 V



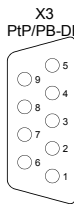
- ① Transmit +
- ② Transmit -
- ③ Receive +
- ④ n. c.
- ⑤ n. c.
- ⑥ Receive -
- ⑦ n. c.
- ⑧ n. c.



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



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



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

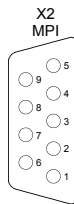
317-4NE12



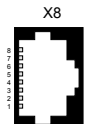
- + ① + DC 24 V
- ② 0 V



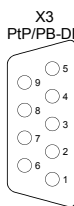
- ① Transmit +
- ② Transmit -
- ③ Receive +
- ④ n. c.
- ⑤ n. c.
- ⑥ Receive -
- ⑦ n. c.
- ⑧ n. c.



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





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



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

CPUs STEP7 programmable, PROFINET

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

| Order number | 315-4PN12 | 317-4PN12 | | |
|--|---|---|--|--|
| Figure |  |  | | |
| Type | CPU 315SN/PN | CPU 317SN/PN | | |
| General information | | | | |
| Note | - | - | | |
| Features | <ul style="list-style-type: none"> ▶ SPEED7 technology ▶ 1 MB work memory ▶ Memory extension (max. 2 MB) ▶ PROFIBUS-DP master / PtP (switchable) ▶ PROFINET Lean CP 343 integrated | <ul style="list-style-type: none"> ▶ SPEED7 technology, SPEED-Bus ▶ 2 MB work memory ▶ Memory extension (max. 8 MB) ▶ PROFIBUS-DP master / PtP (switchable) ▶ PROFINET CP 343 integrated | | |
| SPEED-Bus | - | ✓ | | |
| Technical data power supply | | | | |
| Power supply (rated value) | DC 24 V | DC 24 V | | |
| Power supply (permitted range) | DC 20.4...28.8 V | DC 20.4...28.8 V | | |
| Reverse polarity protection | ✓ | ✓ | | |
| Current consumption (no-load operation) | 270 mA | 270 mA | | |
| Current consumption (rated value) | 1 A | 1.5 A | | |
| Inrush current | 5 A | 5 A | | |
| Max. current drain at backplane bus | 2.5 A | 4 A | | |
| Load and working memory | | | | |
| Load memory, integrated | 2 MB | 8 MB | | |
| Load memory, maximum | 2 MB | 8 MB | | |
| Work memory, integrated | 1 MB | 2 MB | | |
| Work memory, maximal | 2 MB | 8 MB | | |
| Memory divided in 50% program / 50% data | ✓ | ✓ | | |
| Memory card slot | MMC-Card with max. 1 GB | MMC-Card with max. 1 GB | | |
| Hardware configuration | | | | |
| Racks, max. | 4 | 4 | | |
| Modules per rack, max. | 8 in multiple-, 32 in a single-rack configuration | 8 in multiple-, 32 in a single-rack configuration | | |
| Number of integrated DP master | 1 | 1 | | |
| Number of DP master via CP | 4 | 4 | | |
| Operable function modules | 8 | 8 | | |
| Operable communication modules PtP | 8 | 16 | | |

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

| Order number | 315-4PN12 | 317-4PN12 | | |
|--|--------------|--------------|--|--|
| Operable communication modules LAN | 8 | 8 | | |
| Status information, alarms, diagnostics | | | | |
| Status display | yes | yes | | |
| Interrupts | no | no | | |
| Process alarm | no | no | | |
| Diagnostic interrupt | no | no | | |
| Command processing times | | | | |
| Bit instructions, min. | 0.01 µs | 0.01 µs | | |
| Word instruction, min. | 0.01 µs | 0.01 µs | | |
| Double integer arithmetic, min. | 0.01 µs | 0.01 µs | | |
| Floating-point arithmetic, min. | 0.06 µs | 0.06 µs | | |
| Timers/Counters and their retentive characteristics | | | | |
| Number of S7 counters | 512 | 2048 | | |
| Number of S7 times | 512 | 2048 | | |
| Data range and retentive characteristic | | | | |
| Number of flags | 8192 Byte | 16384 Byte | | |
| Number of data blocks | 4095 | 8190 | | |
| Max. data blocks size | 64 KB | 64 KB | | |
| Max. local data size per execution level | 510 Byte | 510 Byte | | |
| Blocks | | | | |
| Number of OBs | 24 | 24 | | |
| Number of FBs | 2048 | 8191 | | |
| Number of FCs | 2048 | 8191 | | |
| Maximum nesting depth per priority class | 8 | 8 | | |
| Maximum nesting depth additional within an error OB | 4 | 4 | | |
| Time | | | | |
| Real-time clock buffered | ✓ | ✓ | | |
| Clock buffered period (min.) | 6 W | 6 W | | |
| Accuracy (max. deviation per day) | 10 s | 10 s | | |
| Number of operating hours counter | 8 | 8 | | |
| Clock synchronization | ✓ | ✓ | | |
| Synchronization via MPI | Master/Slave | Master/Slave | | |
| Synchronization via Ethernet (NTP) | Slave | Slave | | |
| Address areas (I/O) | | | | |
| Input I/O address area | 8192 Byte | 8192 Byte | | |
| Output I/O address area | 8192 Byte | 8192 Byte | | |
| Input process image maximal | 2048 Byte | 8192 Byte | | |

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

| Order number | 315-4PN12 | 317-4PN12 | | |
|---|----------------------|----------------------|--|--|
| Output process image maximal | 2048 Byte | 8192 Byte | | |
| Digital inputs | 65536 | 65536 | | |
| Digital outputs | 65536 | 65536 | | |
| Digital inputs central | 1024 | 1024 | | |
| Digital outputs central | 1024 | 1024 | | |
| Integrated digital inputs | - | - | | |
| Integrated digital outputs | - | - | | |
| Analog inputs | 4096 | 4096 | | |
| Analog outputs | 4096 | 4096 | | |
| Analog inputs, central | 256 | 256 | | |
| Analog outputs, central | 256 | 256 | | |
| Integrated analog inputs | - | - | | |
| Integrated analog outputs | - | - | | |
| Communication functions | | | | |
| PG/OP channel | ✓ | ✓ | | |
| Global data communication | ✓ | ✓ | | |
| Number of GD circuits, max. | 8 | 8 | | |
| Size of GD packets, max. | 54 Byte | 54 Byte | | |
| S7 basic communication | ✓ | ✓ | | |
| S7 basic communication, user data per job | 76 Byte | 76 Byte | | |
| S7 communication | ✓ | ✓ | | |
| S7 communication as server | ✓ | ✓ | | |
| S7 communication as client | - | - | | |
| S7 communication, user data per job | 160 Byte | 160 Byte | | |
| Number of connections, max. | 32 | 32 | | |
| Functionality Sub-D interfaces | | | | |
| Type | X2 | X2 | | |
| Type of interface | RS485 | RS485 | | |
| Connector | Sub-D, 9-pin, female | Sub-D, 9-pin, female | | |
| Electrically isolated | ✓ | ✓ | | |
| MPI | ✓ | ✓ | | |
| MP ² I (MPI/RS232) | - | - | | |
| DP master | - | - | | |
| DP slave | - | - | | |
| Point-to-point interface | - | - | | |
| | | | | |
| Type | X3 | X3 | | |
| Type of interface | RS485 | RS485 | | |

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

| Order number | 315-4PN12 | 317-4PN12 | | |
|---|----------------------|----------------------|--|--|
| Connector | Sub-D, 9-pin, female | Sub-D, 9-pin, female | | |
| Electrically isolated | ✓ | ✓ | | |
| MPI | - | - | | |
| MP2 ¹ (MPI/RS232) | - | - | | |
| DP master | ✓ | ✓ | | |
| DP slave | ✓ | ✓ | | |
| Point-to-point interface | ✓ | ✓ | | |
| CAN | - | - | | |
| Functionality PROFIBUS master | | | | |
| PG/OP channel | ✓ | ✓ | | |
| Routing | ✓ | ✓ | | |
| S7 basic communication | ✓ | ✓ | | |
| S7 communication | ✓ | ✓ | | |
| S7 communication as server | ✓ | ✓ | | |
| S7 communication as client | - | - | | |
| Equidistance support | - | - | | |
| Isochronous mode | - | - | | |
| SYNC/FREEZE | ✓ | ✓ | | |
| Activation/deactivation of DP slaves | ✓ | ✓ | | |
| Direct data exchange (slave-to-slave communication) | - | - | | |
| DPV1 | - | - | | |
| Transmission speed, min. | 9.6 kbit/s | 9.6 kbit/s | | |
| Transmission speed, max. | 12 Mbit/s | 12 Mbit/s | | |
| Number of DP slaves, max. | 124 | 124 | | |
| Address range inputs, max. | 8 KB | 8 KB | | |
| Address range outputs, max. | 8 KB | 8 KB | | |
| User data inputs per slave, max. | 244 Byte | 244 Byte | | |
| User data outputs per slave, max. | 244 Byte | 244 Byte | | |
| Functionality PROFIBUS slave | | | | |
| PG/OP channel | ✓ | ✓ | | |
| Routing | ✓ | ✓ | | |
| S7 communication | ✓ | ✓ | | |
| S7 communication as server | ✓ | ✓ | | |
| S7 communication as client | - | - | | |
| Direct data exchange (slave-to-slave communication) | - | - | | |
| DPV1 | - | - | | |
| Transmission speed, min. | 9.6 kbit/s | 9.6 kbit/s | | |

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

| Order number | 315-4PN12 | 317-4PN12 | | |
|--|----------------------|----------------------|--|--|
| Transmission speed, max. | 12 Mbit/s | 12 Mbit/s | | |
| Automatic detection of transmission speed | - | - | | |
| Transfer memory inputs, max. | 244 Byte | 244 Byte | | |
| Transfer memory outputs, max. | 244 Byte | 244 Byte | | |
| Address areas, max. | 32 | 32 | | |
| User data per address area, max. | 32 Byte | 32 Byte | | |
| Functionality PROFINET I/O controller | | | | |
| Realtime Class | - | - | | |
| Conformance Class | PROFINET IO | PROFINET IO | | |
| Number of PN IO devices | 32 | 32 | | |
| IRT support | - | - | | |
| Priorized start-up | - | - | | |
| Number of PN IO lines | 1 | 1 | | |
| Address range inputs, max. | 2 KB | 4 KB | | |
| Address range outputs, max. | 2 KB | 4 KB | | |
| Transmitting clock | 1 ms | 1 ms | | |
| Update time | 1 ms .. 512 ms | 1 ms .. 512 ms | | |
| Point-to-point communication | | | | |
| PtP communication | ✓ | ✓ | | |
| Interface isolated | ✓ | ✓ | | |
| RS232 interface | - | - | | |
| RS422 interface | - | - | | |
| RS485 interface | ✓ | ✓ | | |
| Connector | Sub-D, 9-pin, female | Sub-D, 9-pin, female | | |
| Transmission speed, min. | 150 bit/s | 150 bit/s | | |
| Transmission speed, max. | 115.5 kbit/s | 115.5 kbit/s | | |
| Cable length, max. | 500 m | 500 m | | |
| Point-to-point protocol | | | | |
| ASCII protocol | ✓ | ✓ | | |
| STX/ETX protocol | ✓ | ✓ | | |
| 3964(R) protocol | ✓ | ✓ | | |
| RK512 protocol | - | - | | |
| USS master protocol | ✓ | ✓ | | |
| Modbus master protocol | ✓ | ✓ | | |
| Modbus slave protocol | - | - | | |
| Special protocols | - | - | | |
| Functionality RJ45 interfaces | | | | |
| Type | X5 | X5 | | |

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

| Order number | 315-4PN12 | 317-4PN12 | | |
|--|-------------------------|-------------------------|--|--|
| Type of interface | Ethernet 10/100 MBit | Ethernet 10/100 MBit | | |
| Connector | RJ45 | RJ45 | | |
| Electrically isolated | ✓ | ✓ | | |
| PG/OP channel | ✓ | ✓ | | |
| Productive connections | - | - | | |
| Ethernet communication CP | | | | |
| Type | X8 | X8 | | |
| Type of interface | Ethernet 10/100 MBit | Ethernet 10/100 MBit | | |
| Connector | RJ45 | RJ45 | | |
| Electrically isolated | ✓ | ✓ | | |
| PG/OP channel | ✓ | ✓ | | |
| Productive connections | - | - | | |
| Number of productive connections, max. | 8 | 24 | | |
| Number of productive connections by Siemens NetPro, max. | 8 | 16 | | |
| User data per S7 connection, max. | 32 KB | 32 KB | | |
| User data per TCP connection, max. | 64 KB | 64 KB | | |
| User data per ISO connection, max. | - | - | | |
| User data per ISO on TCP connection, max. | 32 KB | 32 KB | | |
| User data per UDP connection, max. | - | - | | |
| Ethernet open communication | | | | |
| Number of connections, max. | 8 | 24 | | |
| User data per ISO on TCP connection, max. | 8 KB | 8 KB | | |
| User data per native TCP connection, max. | 8 KB | 8 KB | | |
| User data per ad hoc TCP connection, max. | 1460 Byte | 1460 Byte | | |
| User data per UDP connection, max. | 1472 Byte | 1472 Byte | | |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 80 mm x 125 mm x 120 mm | 80 mm x 125 mm x 120 mm | | |
| Weight | 430 g | 440 g | | |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | 0 °C to 60 °C | | |
| Storage temperature | -25 °C to 70 °C | -25 °C to 70 °C | | |
| Certifications | | | | |
| UL508 certification | in preparation | in preparation | | |

Connections, Interfaces

CPU | CPUs STEP7 programmable, PROFINET

315-4PN12
317-4PN12

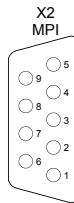
315-4PN12



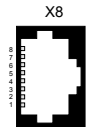
- + ① + DC 24 V
- ② 0 V



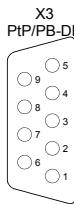
- ① Transmit +
- ② Transmit -
- ③ Receive +
- ④ n. c.
- ⑤ n. c.
- ⑥ Receive -
- ⑦ n. c.
- ⑧ n. c.



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



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



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

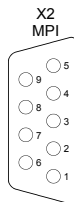
317-4PN12



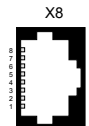
- + ① + DC 24 V
- ② 0 V



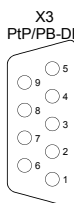
- ① Transmit +
- ② Transmit -
- ③ Receive +
- ④ n. c.
- ⑤ n. c.
- ⑥ Receive -
- ⑦ n. c.
- ⑧ n. c.



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



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


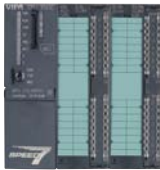




- ① shield
- ② M24V
- ③ RxD/TxD-P (line B)
- ④ RTS
- ⑤ M5V
- ⑥ P5V
- ⑦ P24V
- ⑧ RxD/TxD-N (line A)
- ⑨ n.c.

CPUs STEP7 programmable, class C

CPUs | CPUs STEP7 programmable, class C

| | | | | | |
|--|-----------|--|--|--|--|
| 312-5BE13 313-5BF13 313-6CF13 314-6CF02 | 314-6CG13 | | | | |
|--|-----------|--|--|--|--|

| Order number | 312-5BE13 | 313-5BF13 | 313-6CF13 | 314-6CF02 |
|---|--|--|---|---|
| Figure |  |  |  |  |
| Type | CPU 312SC | CPU 313SC | CPU 313SC/DPM | CPU 314ST/DPM |
| General information | | | | |
| Note | - | - | - | - |
| Features | <ul style="list-style-type: none"> ▶ SPEED7 technology ▶ 16 x DI, 8 x DO ▶ 64 kB work memory ▶ Memory extension (max. 512 kB) ▶ PtP interface | <ul style="list-style-type: none"> ▶ SPEED7 technology ▶ 24 x DI, 16 x DO, 4 x AI, 2 x AO, 1xAI Pt100 ▶ 128 kB work memory ▶ Memory extension (max. 512 kB) ▶ PtP interface | <ul style="list-style-type: none"> ▶ SPEED7 technology ▶ 16 x DI, 16 x DO ▶ 128 kB work memory ▶ Memory extension (max 512 kB) ▶ PROFIBUS-DP master / PtP (switchable) | <ul style="list-style-type: none"> ▶ SPEED7 technology, SPEED-Bus ▶ 8 x DI, 8 x DO, 4 x AI, 2 x AO, 1xAI Pt100 ▶ 512 kB work memory ▶ Memory extension (max. 2 MB) ▶ PROFIBUS-DP master / PtP (switchable) |
| SPEED-Bus | - | - | - | ✓ |
| Technical data power supply | | | | |
| Power supply (rated value) | DC 24 V | DC 24 V | DC 24 V | DC 24 V |
| Power supply (permitted range) | DC 20.4...28.8 V | DC 20.4...28.8 V | DC 20.4...28.8 V | DC 20.4...28.8 V |
| Reverse polarity protection | ✓ | ✓ | ✓ | ✓ |
| Current consumption (no-load operation) | 135 mA | 240 mA | 200 mA | - |
| Current consumption (rated value) | 500 mA | 700 mA | 900 mA | 1 A |
| Inrush current | 11 A | 11 A | 11 A | 5 A |
| Technical data digital inputs | | | | |
| Number of inputs | 16 | 24 | 16 | 8 |
| Cable length, shielded | 1000 m | 1000 m | 1000 m | 1000 m |
| Cable length, unshielded | 600 m | 600 m | 600 m | 600 m |
| Rated load voltage | DC 24 V | DC 24 V | DC 24 V | DC 24 V |
| Reverse polarity protection of rated load voltage | ✓ | ✓ | ✓ | ✓ |
| Current consumption from load voltage L+ (without load) | 70 mA | 70 mA | 70 mA | 70 mA |
| Rated value | DC 24 V | DC 24 V | DC 24 V | DC 24 V |
| Input voltage for signal "0" | DC 0...5 V | DC 0...5 V | DC 0...5 V | DC 0...5 V |
| Input voltage for signal "1" | DC 15...28.8 V | DC 15...28.8 V | DC 15...28.8 V | DC 15...28.8 V |
| Input voltage hysteresis | - | - | - | - |
| Frequency range | - | - | - | - |
| Input resistance | - | - | - | - |
| Input current for signal "1" | 6 mA | 6 mA | 6 mA | 6 mA |
| Connection of Two-Wire-BEROs possible | ✓ | ✓ | ✓ | ✓ |
| Max. permissible BERO quiescent current | 1.5 mA | 1.5 mA | 1.5 mA | 1.5 mA |

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

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

CPUs | CPUs STEP7 programmable, class C

| | | | | | |
|--|-----------|--|--|--|--|
| 312-5BE13 313-5BF13 313-6CF13 314-6CF02 | 314-6CG13 | | | | |
|--|-----------|--|--|--|--|

| Order number | 312-5BE13 | 313-5BF13 | 313-6CF13 | 314-6CF02 |
|---|-----------------|--|-----------------|--|
| Internal limitation of inductive shut-off voltage | L+ (-52 V) | L+ (-52 V) | L+ (-52 V) | L+ (-52 V) |
| Short-circuit protection of output | yes, electronic | yes, electronic | yes, electronic | yes, electronic |
| Trigger level | 1 A | 1 A | 1 A | 1 A |
| Number of operating cycle of relay outputs | - | - | - | - |
| Switching capacity of contacts | - | - | - | - |
| Output data size | 1 Byte | 2 Byte | 2 Byte | 18 Byte |
| Technical data analog inputs | | | | |
| Number of inputs | - | 5 | - | 5 |
| Cable length, shielded | - | 200 m | - | 200 m |
| Rated load voltage | - | DC 24 V | - | DC 24 V |
| Reverse polarity protection of rated load voltage | - | ✓ | - | ✓ |
| Current consumption from load voltage L+ (without load) | - | - | - | 85 mA |
| Voltage inputs | - | ✓ | - | ✓ |
| Min. input resistance (voltage range) | - | 100 kΩ | - | 120 kΩ |
| Input voltage ranges | - | 0 V ... +10 V -10 V ... +10 V | - | -10 V ... +10 V 0 V ... +10 V |
| Operational limit of voltage ranges | - | +/-0.3% | - | +/-0.3% |
| Basic error limit voltage ranges with SFU | - | +/-0.2% | - | +/-0.3% |
| Current inputs | - | ✓ | - | ✓ |
| Min. input resistance (current range) | - | 100 Ω | - | 33 Ω |
| Input current ranges | - | 0 mA ... +20 mA -20 mA ... +20 mA +4 mA ... +20 mA | - | -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA |
| Operational limit of current ranges | - | +/-0.3% | - | +/-0.3% |
| Basic error limit current ranges with SFU | - | +/-0.2% | - | +/-0.2% |
| Resistance inputs | - | ✓ | - | ✓ |
| Resistance ranges | - | 0 ... 600 Ohm | - | 0 ... 600 Ohm |
| Operational limit of resistor ranges | - | +/-0.4% | - | +/-0.4% |
| Basic error limit | - | +/-0.2% | - | +/-0.2% |
| Resistance thermometer inputs | - | ✓ | - | ✓ |
| Resistance thermometer ranges | - | Pt100 | - | Pt100 Pt1000 Ni100 Ni1000 |
| Operational limit of resistance thermometer ranges | - | +/-0.6% | - | +/-0.6% |
| Basic error limit thermoresistor ranges | - | +/-0.4% | - | +/-0.4% |
| Thermocouple inputs | - | - | - | - |
| Thermocouple ranges | - | - | - | - |
| Operational limit of thermocouple ranges | - | - | - | - |

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

| Order number | 312-5BE13 | 313-5BF13 | 313-6CF13 | 314-6CF02 |
|---|-----------|--|-----------|--|
| Basic error limit thermoelement ranges | - | - | - | - |
| Programmable temperature compensation | - | - | - | - |
| External temperature compensation | - | - | - | - |
| Internal temperature compensation | - | - | - | - |
| Resolution in bit | - | 12 | - | 12 |
| Measurement principle | - | successive approximation | - | Sigma-Delta |
| Basic conversion time | - | 1 ms | - | 1 ms |
| Noise suppression for frequency | - | 80 dB | - | 80 dB |
| Initial data size | - | 10 Byte | - | 10 Byte |
| Technical data analog outputs | | | | |
| Number of outputs | - | 2 | - | 2 |
| Cable length, shielded | - | 200 m | - | 200 m |
| Rated load voltage | - | - | - | DC 24 V |
| Reverse polarity protection of rated load voltage | - | - | - | ✓ |
| Current consumption from load voltage L+ (without load) | - | - | - | - |
| Voltage output short-circuit protection | - | ✓ | - | - |
| Voltage outputs | - | ✓ | - | ✓ |
| Min. load resistance (voltage range) | - | 1 kΩ | - | 1 kΩ |
| Max. capacitive load (current range) | - | 1 μF | - | 1 μF |
| Output voltage ranges | - | -10 V ... +10 V 0 V ... +10 V | - | -10 V ... +10 V 0 V ... +10 V |
| Operational limit of voltage ranges | - | +/-0.2% | - | +/-0.4% |
| Basic error limit voltage ranges with SFU | - | +/-0.1% | - | +/-0.3% |
| Current outputs | - | ✓ | - | ✓ |
| Max. in load resistance (current range) | - | 500 Ω | - | 500 Ω |
| Max. inductive load (current range) | - | 100 μH | - | 10 mH |
| Output current ranges | - | -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA | - | -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA |
| Operational limit of current ranges | - | +/-0.3% | - | +/-0.4% |
| Basic error limit current ranges with SFU | - | +/-0.2% | - | +/-0.3% |
| Settling time for ohmic load | - | 0.5 ms | - | 0.2 ms |
| Settling time for capacitive load | - | 0.5 ms | - | 0.5 ms |
| Settling time for inductive load | - | 0.5 ms | - | 0.2 ms |
| Resolution in bit | - | 12 | - | 12 |
| Conversion time | - | 1 ms | - | 1 |
| Substitute value can be applied | - | no | - | yes |
| Output data size | - | 4 Byte | - | 4 Byte |

CPUs | CPUs STEP7 programmable, class C

| | | | | | |
|--|-----------|--|--|--|--|
| 312-5BE13 313-5BF13 313-6CF13 314-6CF02 | 314-6CG13 | | | | |
|--|-----------|--|--|--|--|

| Order number | 312-5BE13 | 313-5BF13 | 313-6CF13 | 314-6CF02 |
|--|-------------------------|-------------------------|-------------------------|---|
| Technical data counters | | | | |
| Number of counters | 2 | 3 | 3 | 4 |
| Counterwidth | 32 Bit | 32 Bit | 32 Bit | 32 Bit |
| Maximum input frequency | 10 kHz | 30 kHz | 30 kHz | 100 kHz |
| Maximum count frequency | 10 kHz | 30 kHz | 30 kHz | 100 kHz |
| Mode incremental encoder | ✓ | ✓ | ✓ | ✓ |
| Mode pulse / direction | ✓ | ✓ | ✓ | ✓ |
| Mode pulse | ✓ | ✓ | ✓ | ✓ |
| Mode frequency counter | - | - | - | - |
| Mode period measurement | - | - | - | - |
| Gate input available | ✓ | ✓ | ✓ | ✓ |
| Latch input available | ✓ | ✓ | ✓ | ✓ |
| Reset input available | - | - | - | ✓ |
| Counter output available | ✓ | ✓ | ✓ | ✓ |
| Load and working memory | | | | |
| Load memory, integrated | 512 KB | 512 KB | 512 KB | 2 MB |
| Load memory, maximum | 512 KB | 512 KB | 512 KB | 2 MB |
| Work memory, integrated | 64 KB | 128 KB | 128 KB | 512 KB |
| Work memory, maximal | 512 KB | 512 KB | 512 KB | 2 MB |
| Memory divided in 50% program / 50% data | ✓ | ✓ | ✓ | ✓ |
| Memory card slot | MMC-Card with max. 1 GB | MMC-Card with max. 1 GB | MMC-Card with max. 1 GB | MMC-Card with max. 1 GB |
| Hardware configuration | | | | |
| Racks, max. | 1 | 4 | 4 | 4 |
| Modules per rack, max. | 8 | 8 | 8 | 8 in multiple-, 32 in a single-rack configuration |
| Number of integrated DP master | 0 | 0 | 1 | 1 |
| Number of DP master via CP | 4 | 4 | 4 | 4 |
| Operable function modules | 8 | 8 | 8 | 8 |
| Operable communication modules PtP | 8 | 8 | 8 | 8 |
| Operable communication modules LAN | 8 | 8 | 8 | 8 |
| Status information, alarms, diagnostics | | | | |
| Status display | yes | yes | yes | yes |
| Interrupts | yes | yes | yes | yes |
| Process alarm | yes | yes | yes | no |
| Diagnostic interrupt | yes | yes | yes | yes, parameterizable |
| Diagnostic functions | no | no | no | yes |
| Diagnostics information read-out | possible | possible | possible | possible |

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

| Order number | 312-5BE13 | 313-5BF13 | 313-6CF13 | 314-6CF02 |
|--|-------------------|-------------------|-------------------|-------------------|
| Supply voltage display | green LED | green LED | green LED | green LED |
| Group error display | red SF LED | red SF LED | red SF LED | red SF LED |
| Channel error display | red LED per group | red LED per group | red LED per group | red LED per group |
| Command processing times | | | | |
| Bit instructions, min. | 0.02 µs | 0.02 µs | 0.02 µs | 0.01 µs |
| Word instruction, min. | 0.02 µs | 0.02 µs | 0.02 µs | 0.01 µs |
| Double integer arithmetic, min. | 0.02 µs | 0.02 µs | 0.02 µs | 0.01 µs |
| Floating-point arithmetic, min. | 0.12 µs | 0.12 µs | 0.12 µs | 0.06 µs |
| Timers/Counters and their retentive characteristics | | | | |
| Number of S7 counters | 512 | 512 | 512 | 512 |
| Number of S7 times | 512 | 512 | 512 | 512 |
| Data range and retentive characteristic | | | | |
| Number of flags | 8192 Byte | 8192 Byte | 8192 Byte | 8192 Byte |
| Number of data blocks | 4095 | 4095 | 4095 | 4095 |
| Max. data blocks size | 64 KB | 64 KB | 64 KB | 64 KB |
| Max. local data size per execution level | 510 Byte | 510 Byte | 510 Byte | 510 Byte |
| Blocks | | | | |
| Number of OBs | 15 | 15 | 15 | 24 |
| Number of FBs | 2048 | 2048 | 2048 | 2048 |
| Number of FCs | 2048 | 2048 | 2048 | 2048 |
| Maximum nesting depth per priority class | 8 | 8 | 8 | 8 |
| Maximum nesting depth additional within an error OB | 4 | 4 | 4 | 4 |
| Time | | | | |
| Real-time clock buffered | ✓ | ✓ | ✓ | ✓ |
| Clock buffered period (min.) | 6 W | 6 W | 6 W | 6 W |
| Accuracy (max. deviation per day) | 10 s | 10 s | 10 s | 10 s |
| Number of operating hours counter | 8 | 8 | 8 | 8 |
| Clock synchronization | ✓ | ✓ | ✓ | ✓ |
| Synchronization via MPI | Master/Slave | Master/Slave | Master/Slave | Master/Slave |
| Synchronization via Ethernet (NTP) | no | no | no | no |
| Address areas (I/O) | | | | |
| Input I/O address area | 1024 Byte | 1024 Byte | 1024 Byte | 8192 Byte |
| Output I/O address area | 1024 Byte | 1024 Byte | 1024 Byte | 8192 Byte |
| Input process image maximal | 128 Byte | 128 Byte | 128 Byte | 2048 Byte |
| Output process image maximal | 128 Byte | 128 Byte | 128 Byte | 2048 Byte |
| Digital inputs | 272 | 1016 | 8064 | 65536 |
| Digital outputs | 264 | 1008 | 8064 | 65536 |

CPUs | CPUs STEP7 programmable, class C

| | | | | | |
|--|-----------|--|--|--|--|
| 312-5BE13 313-5BF13 313-6CF13 314-6CF02 | 314-6CG13 | | | | |
|--|-----------|--|--|--|--|

| Order number | 312-5BE13 | 313-5BF13 | 313-6CF13 | 314-6CF02 |
|---|----------------------|----------------------|----------------------|----------------------|
| Digital inputs central | 272 | 1016 | 1008 | 1032 |
| Digital outputs central | 264 | 1008 | 1008 | 1032 |
| Integrated digital inputs | 16 | 24 | 16 | 8 |
| Integrated digital outputs | 8 | 16 | 16 | 8 |
| Analog inputs | 64 | 253 | 503 | 1024 |
| Analog outputs | 64 | 250 | 503 | 1024 |
| Analog inputs, central | 64 | 253 | 248 | 261 |
| Analog outputs, central | 64 | 250 | 248 | 258 |
| Integrated analog inputs | 0 | 5 | 0 | 5 |
| Integrated analog outputs | 0 | 2 | 0 | 2 |
| Communication functions | | | | |
| PG/OP channel | ✓ | ✓ | ✓ | ✓ |
| Global data communication | ✓ | ✓ | ✓ | ✓ |
| Number of GD circuits, max. | 4 | 4 | 4 | 4 |
| Size of GD packets, max. | 22 Byte | 22 Byte | 22 Byte | 22 Byte |
| S7 basic communication | ✓ | ✓ | ✓ | ✓ |
| S7 basic communication, user data per job | 76 Byte | 76 Byte | 76 Byte | 76 Byte |
| S7 communication | ✓ | ✓ | ✓ | ✓ |
| S7 communication as server | ✓ | ✓ | ✓ | ✓ |
| S7 communication as client | - | - | - | - |
| S7 communication, user data per job | 160 Byte | 160 Byte | 160 Byte | 160 Byte |
| Number of connections, max. | 32 | 32 | 32 | 32 |
| Functionality Sub-D interfaces | | | | |
| Type | X2 | X2 | X2 | X2 |
| Type of interface | RS485 | RS485 | RS485 | RS485 |
| Connector | Sub-D, 9-pin, female | Sub-D, 9-pin, female | Sub-D, 9-pin, female | Sub-D, 9-pin, female |
| Electrically isolated | - | - | - | ✓ |
| MPI | ✓ | ✓ | ✓ | ✓ |
| MP ² I (MPI/RS232) | - | - | - | - |
| DP master | - | - | - | - |
| DP slave | - | - | - | - |
| Point-to-point interface | - | - | - | - |
| | | | | |
| Type | X3 | X3 | X3 | X3 |
| Type of interface | RS485 | RS485 | RS485 | RS485 |
| Connector | Sub-D, 9-pin, female | Sub-D, 9-pin, female | Sub-D, 9-pin, female | Sub-D, 9-pin, female |
| Electrically isolated | ✓ | ✓ | ✓ | ✓ |
| MPI | - | - | - | - |

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

| Order number | 312-5BE13 | 313-5BF13 | 313-6CF13 | 314-6CF02 |
|---|-----------|-----------|------------|------------|
| MP2 ¹ (MPI/RS232) | - | - | - | - |
| DP master | - | - | ✓ | ✓ |
| DP slave | - | - | ✓ | ✓ |
| Point-to-point interface | ✓ | ✓ | ✓ | ✓ |
| CAN | - | - | - | - |
| Functionality PROFIBUS master | | | | |
| PG/OP channel | - | - | ✓ | ✓ |
| Routing | - | - | ✓ | ✓ |
| S7 basic communication | - | - | ✓ | ✓ |
| S7 communication | - | - | ✓ | ✓ |
| S7 communication as server | - | - | ✓ | ✓ |
| S7 communication as client | - | - | - | - |
| Equidistance support | - | - | - | - |
| Isochronous mode | - | - | - | - |
| SYNC/FREEZE | - | - | ✓ | ✓ |
| Activation/deactivation of DP slaves | - | - | ✓ | ✓ |
| Direct data exchange (slave-to-slave communication) | - | - | - | - |
| DPV1 | - | - | - | - |
| Transmission speed, min. | - | - | 9.6 kbit/s | 9.6 kbit/s |
| Transmission speed, max. | - | - | 12 Mbit/s | 12 Mbit/s |
| Number of DP slaves, max. | - | - | 32 | 124 |
| Address range inputs, max. | - | - | 1 KB | 1 KB |
| Address range outputs, max. | - | - | 1 KB | 1 KB |
| User data inputs per slave, max. | - | - | 244 Byte | 244 Byte |
| User data outputs per slave, max. | - | - | 244 Byte | 244 Byte |
| Functionality PROFIBUS slave | | | | |
| PG/OP channel | - | - | ✓ | ✓ |
| Routing | - | - | ✓ | ✓ |
| S7 communication | - | - | ✓ | ✓ |
| S7 communication as server | - | - | ✓ | ✓ |
| S7 communication as client | - | - | - | - |
| Direct data exchange (slave-to-slave communication) | - | - | - | - |
| DPV1 | - | - | - | - |
| Transmission speed, min. | - | - | 9.6 kbit/s | 9.6 kbit/s |
| Transmission speed, max. | - | - | 12 Mbit/s | 12 Mbit/s |
| Automatic detection of transmission speed | - | - | - | - |
| Transfer memory inputs, max. | - | - | 244 Byte | 244 Byte |

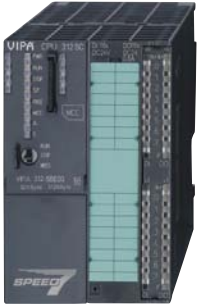
| CPUs CPUs STEP7 programmable, class C | | | | | |
|---|-----------|--|--|--|--|
| 312-5BE13 | 314-6CG13 | | | | |
| 313-5BF13 | | | | | |
| 313-6CF13 | | | | | |
| 314-6CF02 | | | | | |

| Order number | 312-5BE13 | 313-5BF13 | 313-6CF13 | 314-6CF02 |
|--------------------------------------|-------------------------|--------------------------|-------------------------|-------------------------|
| Transfer memory outputs, max. | - | - | 244 Byte | 244 Byte |
| Address areas, max. | - | - | 32 | 32 |
| User data per address area, max. | - | - | 32 Byte | 32 Byte |
| Point-to-point communication | | | | |
| PtP communication | ✓ | ✓ | ✓ | ✓ |
| Interface isolated | ✓ | ✓ | ✓ | ✓ |
| RS232 interface | - | - | - | - |
| RS422 interface | - | - | - | - |
| RS485 interface | ✓ | ✓ | ✓ | ✓ |
| Connector | Sub-D, 9-pin, female | Sub-D, 9-pin, female | Sub-D, 9-pin, female | Sub-D, 9-pin, female |
| Transmission speed, min. | 150 bit/s | 150 bit/s | 150 bit/s | 150 bit/s |
| Transmission speed, max. | 115.5 kbit/s | 115.5 kbit/s | 115.5 kbit/s | 115.5 kbit/s |
| Cable length, max. | 500 m | 500 m | 500 m | 500 m |
| Point-to-point protocol | | | | |
| ASCII protocol | ✓ | ✓ | ✓ | ✓ |
| STX/ETX protocol | ✓ | ✓ | ✓ | ✓ |
| 3964(R) protocol | ✓ | ✓ | ✓ | ✓ |
| RK512 protocol | - | - | - | - |
| USS master protocol | ✓ | ✓ | ✓ | ✓ |
| Modbus master protocol | ✓ | ✓ | ✓ | ✓ |
| Modbus slave protocol | - | - | - | - |
| Special protocols | - | - | - | - |
| Functionality RJ45 interfaces | | | | |
| Type | X5 | X5 | X5 | X5 |
| Type of interface | Ethernet 10/100 MBit | Ethernet 10/100 MBit | Ethernet 10/100 MBit | Ethernet 10/100 MBit |
| Connector | RJ45 | RJ45 | RJ45 | RJ45 |
| Electrically isolated | ✓ | ✓ | ✓ | ✓ |
| PG/OP channel | ✓ | ✓ | ✓ | ✓ |
| Productive connections | - | - | - | - |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 80 mm x 125 mm x 120 mm | 120 mm x 125 mm x 120 mm | 80 mm x 125 mm x 120 mm | 80 mm x 125 mm x 120 mm |
| Weight | 410 g | 590 g | 420 g | 480 g |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | 0 °C to 60 °C | 0 °C to 60 °C | 0 °C to 60 °C |
| Storage temperature | -25 °C to 70 °C | -25 °C to 70 °C | -25 °C to 70 °C | -25 °C to 70 °C |
| Certifications | | | | |
| UL508 certification | in preparation | in preparation | in preparation | yes |

Connections, Interfaces

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

312-5BE13



X1

- ① + DC 24 V
- ② 0 V

X2 MPI

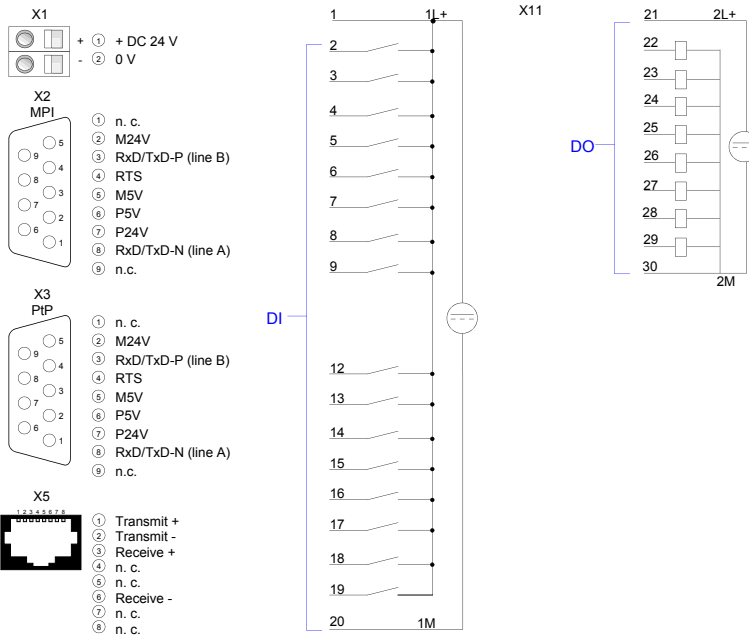
- ① n. c.
- ② M24V
- ③ RxD/TxD-P (line B)
- ④ RTS
- ⑤ M5V
- ⑥ P5V
- ⑦ P24V
- ⑧ RxD/TxD-N (line A)
- ⑨ n. c.

X3 PiP

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

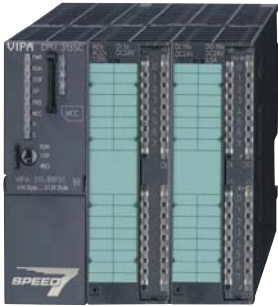
X5

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



The diagram shows terminal block connections for the 312-5BE13 CPU. It includes connections for digital inputs (DI) at terminals 1-19, digital outputs (DO) at terminals 21-30, and analog outputs (AO) at terminals 16-19. Power supply terminals 1 (+DC 24V) and 2 (0V) are also shown. The diagram includes a legend for the terminal types: 1L+, 2M, 1M, 2L+, and 3M.

313-5BF13



X1

- ① + DC 24 V
- ② 0 V

X2 MPI

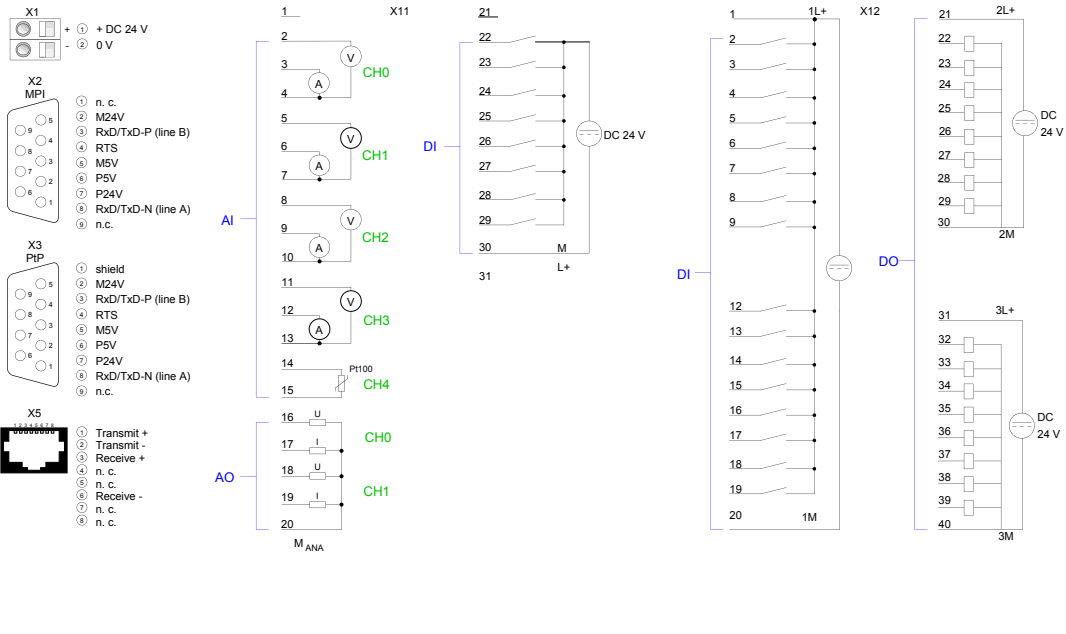
- ① n. c.
- ② M24V
- ③ RxD/TxD-P (line B)
- ④ RTS
- ⑤ M5V
- ⑥ P5V
- ⑦ P24V
- ⑧ RxD/TxD-N (line A)
- ⑨ n. c.

X3 PiP

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

X5

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

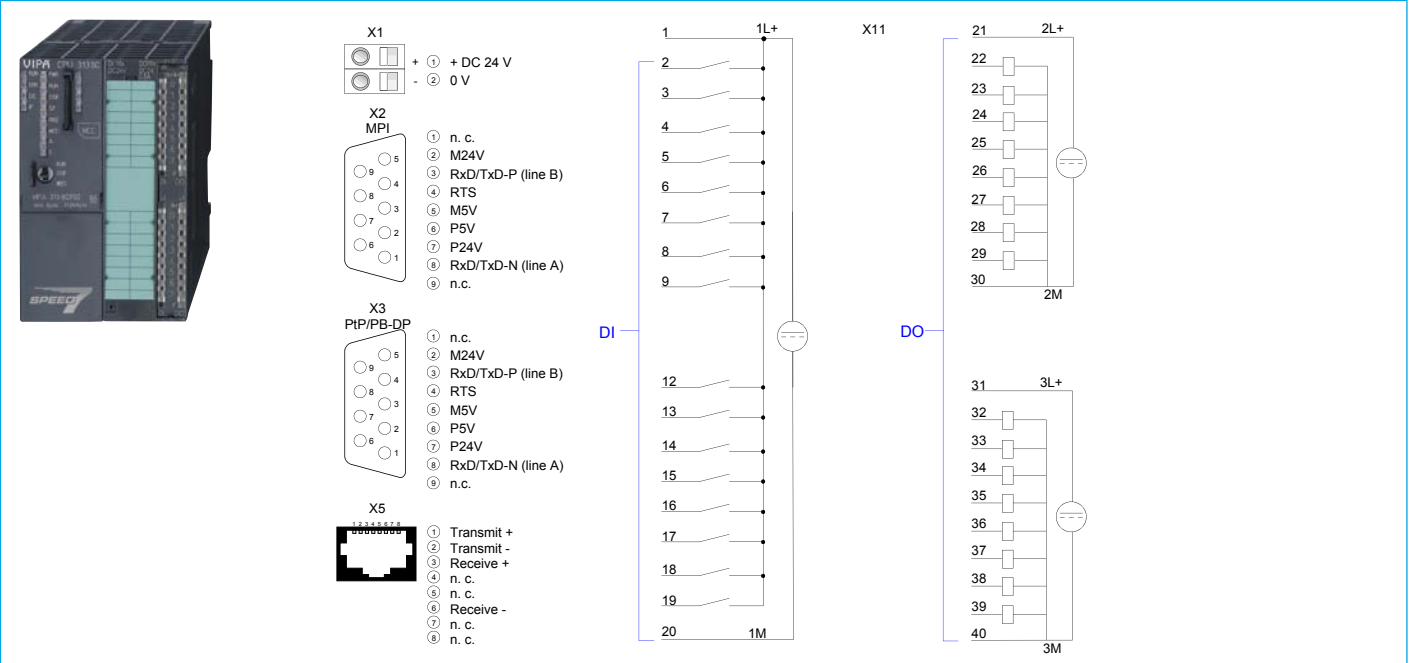


The diagram shows terminal block connections for the 313-5BF13 CPU. It includes connections for analog inputs (AI) at terminals 3-11, analog outputs (AO) at terminals 16-19, digital inputs (DI) at terminals 1-19, and digital outputs (DO) at terminals 21-30. Power supply terminals 1 (+DC 24V) and 2 (0V) are also shown. The diagram includes a legend for the terminal types: 1L+, 2M, 1M, 2L+, and 3M. Channel indicators (CH0, CH1, CH2, CH3) are shown for the AI and AO connections.

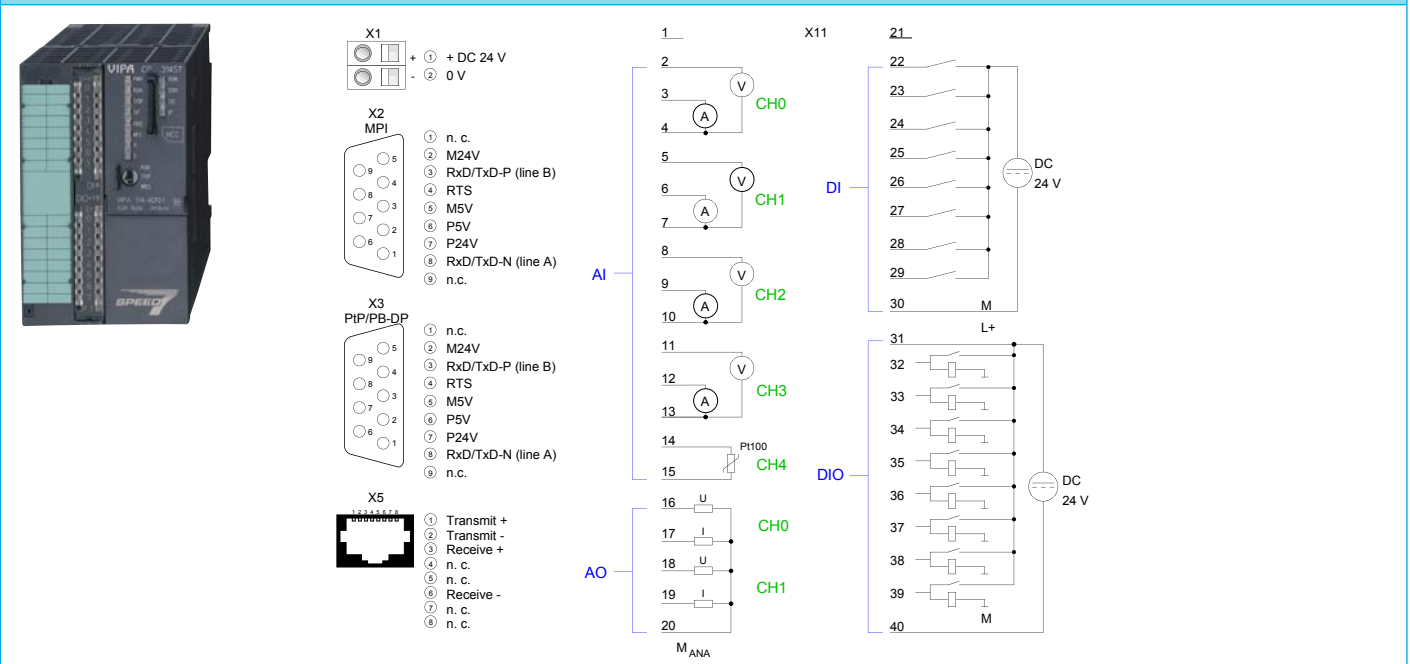
CPUs | CPUs STEP7 programmable, class C

| | | | | | |
|-----------|-----------|--|--|--|--|
| 312-5BE13 | 314-6CG13 | | | | |
| 313-5BF13 | | | | | |
| 313-6CF13 | | | | | |
| 314-6CF02 | | | | | |

313-6CF13



314-6CF02



System SLIO

System 100V

System 200V

System 300S

System 500S

HMI


Software

Accessories

Appendix

CPUs STEP7 programmable, class C

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

| Order number | 314-6CG13 | | | |
|---|---|--|--|--|
| Figure |  | | | |
| Type | CPU 314SC/DPM | | | |
| General information | | | | |
| Note | - | | | |
| Features | <ul style="list-style-type: none"> ▸ SPEED7 technology ▸ 24 x DI, 16 x DO, 8 x DIO, 4 x AI, 1 x AI Pt100, 2xAO ▸ 256 kB work memory ▸ Memory extension (max. 1 MB) ▸ PROFIBUS-DP master / PtP (switchable) | | | |
| SPEED-Bus | - | | | |
| Technical data power supply | | | | |
| Power supply (rated value) | DC 24 V | | | |
| Power supply (permitted range) | DC 20.4...28.8 V | | | |
| Reverse polarity protection | ✓ | | | |
| Current consumption (no-load operation) | 350 mA | | | |
| Current consumption (rated value) | 1 A | | | |
| Inrush current | 11 A | | | |
| 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) | 70 mA | | | |
| 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" | 6 mA | | | |
| Connection of Two-Wire-BERs possible | ✓ | | | |
| Max. permissible BERO quiescent current | 1.5 mA | | | |

CPUs | CPUs STEP7 programmable, class C

| | | | | | |
|--|-----------|--|--|--|--|
| 312-5BE13 313-5BF13 313-6CF13 314-6CF02 | 314-6CG13 | | | | |
|--|-----------|--|--|--|--|

| Order number | 314-6CG13 | | | |
|---|-------------------|--|--|--|
| Input delay of "0" to "1" | 0.1 / 0.35 ms | | | |
| Input delay of "1" to "0" | 0.1 / 0.35 ms | | | |
| Number of simultaneously utilizable inputs horizontal configuration | - | | | |
| Number of simultaneously utilizable inputs vertical configuration | - | | | |
| Input characteristic curve | IEC 61131, type 1 | | | |
| Initial data size | 3 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) | 100 mA | | | |
| Total current per group, horizontal configuration, 40°C | 3 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 | - | | | |
| Output current at signal "1", rated value | 0.5 A | | | |
| Output current, permitted range to 40°C | 5 mA to 0.6 A | | | |
| Output current, permitted range to 60°C | 5 mA to 0.6 A | | | |
| Output current at signal "0" max. (residual current) | 0.5 mA | | | |
| Output delay of "0" to "1" | - | | | |
| Output delay of "1" to "0" | - | | | |
| Minimum load current | - | | | |
| Lamp load | 5 W | | | |
| Parallel switching of outputs for redundant control of a load | possible | | | |
| Parallel switching of outputs for increased power | not possible | | | |
| Actuation of digital input | ✓ | | | |
| Switching frequency with resistive load | max. 2.5 kHz | | | |
| Switching frequency with inductive load | max. 0.5 Hz | | | |
| Switching frequency on lamp load | max. 2.5 kHz | | | |
| Internal limitation of inductive shut-off voltage | L+ (-52 V) | | | |

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

| Order number | 314-6CG13 | | | |
|---|--|--|--|--|
| 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 | | | |
| Technical data analog inputs | | | | |
| Number of inputs | 5 | | | |
| Cable length, shielded | 200 m | | | |
| Rated load voltage | DC 24 V | | | |
| Reverse polarity protection of rated load voltage | ✓ | | | |
| Current consumption from load voltage L+ (without load) | - | | | |
| Voltage inputs | ✓ | | | |
| Min. input resistance (voltage range) | - | | | |
| Input voltage ranges | -10 V ... +10 V 0 V ... +10 V | | | |
| Operational limit of voltage ranges | ±0.3% | | | |
| Basic error limit voltage ranges with SFU | - | | | |
| Current inputs | ✓ | | | |
| Min. input resistance (current range) | 100 Ω | | | |
| Input current ranges | -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA | | | |
| Operational limit of current ranges | ±0.3% | | | |
| Basic error limit current ranges with SFU | ±0.2% | | | |
| Resistance inputs | ✓ | | | |
| Resistance ranges | 0 ... 600 Ohm | | | |
| Operational limit of resistor ranges | ±0.4% | | | |
| Basic error limit | ±0.2% | | | |
| Resistance thermometer inputs | - | | | |
| Resistance thermometer ranges | Pt100 | | | |
| Operational limit of resistance thermometer ranges | +/-0.6% | | | |
| Basic error limit thermoresistor ranges | +/-0.4% | | | |
| Thermocouple inputs | - | | | |
| Thermocouple ranges | - | | | |
| Operational limit of thermocouple ranges | - | | | |
| Basic error limit thermoelement ranges | - | | | |
| Programmable temperature compensation | - | | | |
| External temperature compensation | - | | | |

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

| Order number | 314-6CG13 | | | |
|---|--|--|--|--|
| Internal temperature compensation | - | | | |
| Resolution in bit | 12 | | | |
| Measurement principle | successive approximation | | | |
| Basic conversion time | 0.5 ms | | | |
| Noise suppression for frequency | 80 dB | | | |
| Initial data size | 10 Byte | | | |
| Technical data analog outputs | | | | |
| Number of outputs | 2 | | | |
| Cable length, shielded | 200 m | | | |
| Rated load voltage | - | | | |
| Reverse polarity protection of rated load voltage | - | | | |
| Current consumption from load voltage L+ (without load) | - | | | |
| Voltage output short-circuit protection | ✓ | | | |
| Voltage outputs | ✓ | | | |
| Min. load resistance (voltage range) | 1 kΩ | | | |
| Max. capacitive load (current range) | 1 μF | | | |
| Output voltage ranges | -10 V ... +10 V 0 V ... +10 V | | | |
| Operational limit of voltage ranges | - | | | |
| Basic error limit voltage ranges with SFU | - | | | |
| Current outputs | ✓ | | | |
| Max. in load resistance (current range) | 500 Ω | | | |
| Max. inductive load (current range) | 10 mH | | | |
| Output current ranges | -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA | | | |
| Operational limit of current ranges | - | | | |
| Basic error limit current ranges with SFU | - | | | |
| Settling time for ohmic load | 0.5 ms | | | |
| Settling time for capacitive load | 0.5 ms | | | |
| Settling time for inductive load | 0.5 ms | | | |
| Resolution in bit | 12 | | | |
| Conversion time | 1 ms | | | |
| Substitute value can be applied | no | | | |
| Output data size | 4 Byte | | | |
| Technical data counters | | | | |
| Number of counters | 4 | | | |
| Counterwidth | 32 Bit | | | |

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

| Order number | 314-6CG13 | | | |
|--|-------------------------|--|--|--|
| Maximum input frequency | 60 kHz | | | |
| Maximum count frequency | 60 kHz | | | |
| Mode incremental encoder | ✓ | | | |
| Mode pulse / direction | ✓ | | | |
| Mode pulse | ✓ | | | |
| Mode frequency counter | - | | | |
| Mode period measurement | - | | | |
| Gate input available | ✓ | | | |
| Latch input available | ✓ | | | |
| Reset input available | - | | | |
| Counter output available | ✓ | | | |
| Load and working memory | | | | |
| Load memory, integrated | 1 MB | | | |
| Load memory, maximum | 1 MB | | | |
| Work memory, integrated | 256 KB | | | |
| Work memory, maximal | 1 MB | | | |
| Memory divided in 50% program / 50% data | ✓ | | | |
| Memory card slot | MMC-Card with max. 1 GB | | | |
| Hardware configuration | | | | |
| Racks, max. | 4 | | | |
| Modules per rack, max. | 8 | | | |
| Number of integrated DP master | 1 | | | |
| Number of DP master via CP | 4 | | | |
| Operable function modules | 8 | | | |
| Operable communication modules PtP | 8 | | | |
| Operable communication modules LAN | 8 | | | |
| Status information, alarms, diagnostics | | | | |
| Status display | yes | | | |
| Interrupts | yes | | | |
| Process alarm | yes | | | |
| Diagnostic interrupt | yes | | | |
| Diagnostic functions | no | | | |
| Diagnostics information read-out | possible | | | |
| Supply voltage display | green LED | | | |
| Group error display | red SF LED | | | |
| Channel error display | red LED per group | | | |
| Command processing times | | | | |

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

| Order number | 314-6CG13 | | | |
|--|--------------|--|--|--|
| Bit instructions, min. | 0.01 µs | | | |
| Word instruction, min. | 0.01 µs | | | |
| Double integer arithmetic, min. | 0.01 µs | | | |
| Floating-point arithmetic, min. | 0.06 µs | | | |
| Timers/Counters and their retentive characteristics | | | | |
| Number of S7 counters | 512 | | | |
| Number of S7 times | 512 | | | |
| Data range and retentive characteristic | | | | |
| Number of flags | 8192 Byte | | | |
| Number of data blocks | 4095 | | | |
| Max. data blocks size | 64 KB | | | |
| Max. local data size per execution level | 510 Byte | | | |
| Blocks | | | | |
| Number of OBs | 15 | | | |
| Number of FBs | 2048 | | | |
| Number of FCs | 2048 | | | |
| Maximum nesting depth per priority class | 8 | | | |
| Maximum nesting depth additional within an error OB | 4 | | | |
| Time | | | | |
| Real-time clock buffered | ✓ | | | |
| Clock buffered period (min.) | 6 W | | | |
| Accuracy (max. deviation per day) | 10 s | | | |
| Number of operating hours counter | 8 | | | |
| Clock synchronization | ✓ | | | |
| Synchronization via MPI | Master/Slave | | | |
| Synchronization via Ethernet (NTP) | no | | | |
| Address areas (I/O) | | | | |
| Input I/O address area | 1024 Byte | | | |
| Output I/O address area | 1024 Byte | | | |
| Input process image maximal | 128 Byte | | | |
| Output process image maximal | 128 Byte | | | |
| Digital inputs | 7856 | | | |
| Digital outputs | 7904 | | | |
| Digital inputs central | 979 | | | |
| Digital outputs central | 986 | | | |
| Integrated digital inputs | 24 | | | |
| | 32 | | | |

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

| Order number | 314-6CG13 | | | |
|---|----------------------|--|--|--|
| Integrated digital outputs | 16 24 | | | |
| Analog inputs | 494 | | | |
| Analog outputs | 495 | | | |
| Analog inputs, central | 253 | | | |
| Analog outputs, central | 250 | | | |
| Integrated analog inputs | 5 | | | |
| Integrated analog outputs | 2 | | | |
| Communication functions | | | | |
| PG/OP channel | ✓ | | | |
| Global data communication | ✓ | | | |
| Number of GD circuits, max. | 4 | | | |
| Size of GD packets, max. | 22 Byte | | | |
| S7 basic communication | ✓ | | | |
| S7 basic communication, user data per job | 76 Byte | | | |
| S7 communication | ✓ | | | |
| S7 communication as server | ✓ | | | |
| S7 communication as client | - | | | |
| S7 communication, user data per job | 160 Byte | | | |
| Number of connections, max. | 32 | | | |
| Functionality Sub-D interfaces | | | | |
| Type | X2 | | | |
| Type of interface | RS485 | | | |
| Connector | Sub-D, 9-pin, female | | | |
| Electrically isolated | - | | | |
| MPI | ✓ | | | |
| MP ² I (MPI/RS232) | - | | | |
| DP master | ✓ | | | |
| DP slave | ✓ | | | |
| Point-to-point interface | ✓ | | | |
| Functionality Sub-D interfaces | | | | |
| Type | X3 | | | |
| Type of interface | RS485 | | | |
| Connector | Sub-D, 9-pin, female | | | |
| Electrically isolated | ✓ | | | |
| MPI | - | | | |
| MP ² I (MPI/RS232) | - | | | |
| DP master | ✓ | | | |

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

| Order number | 314-6CG13 | | | |
|---|------------|--|--|--|
| DP slave | ✓ | | | |
| Point-to-point interface | ✓ | | | |
| CAN | - | | | |
| Functionality PROFIBUS master | | | | |
| PG/OP channel | ✓ | | | |
| Routing | ✓ | | | |
| S7 basic communication | ✓ | | | |
| S7 communication | ✓ | | | |
| S7 communication as server | ✓ | | | |
| S7 communication as client | - | | | |
| Equidistance support | - | | | |
| Isochronous mode | - | | | |
| SYNC/FREEZE | ✓ | | | |
| Activation/deactivation of DP slaves | ✓ | | | |
| Direct data exchange (slave-to-slave communication) | - | | | |
| DPV1 | - | | | |
| Transmission speed, min. | 9.6 kbit/s | | | |
| Transmission speed, max. | 12 Mbit/s | | | |
| Number of DP slaves, max. | 32 | | | |
| Address range inputs, max. | 1 KB | | | |
| Address range outputs, max. | 1 KB | | | |
| User data inputs per slave, max. | 244 Byte | | | |
| User data outputs per slave, max. | 244 Byte | | | |
| Functionality PROFIBUS slave | | | | |
| PG/OP channel | ✓ | | | |
| Routing | ✓ | | | |
| S7 communication | ✓ | | | |
| S7 communication as server | ✓ | | | |
| S7 communication as client | - | | | |
| Direct data exchange (slave-to-slave communication) | - | | | |
| DPV1 | - | | | |
| Transmission speed, min. | 9.6 kbit/s | | | |
| Transmission speed, max. | 12 Mbit/s | | | |
| Automatic detection of transmission speed | - | | | |
| Transfer memory inputs, max. | 244 Byte | | | |
| Transfer memory outputs, max. | 244 Byte | | | |
| Address areas, max. | 32 | | | |

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

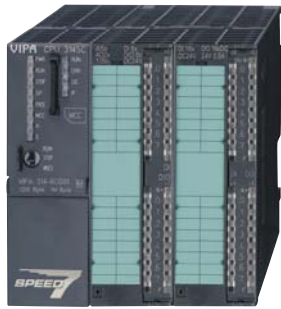
| Order number | 314-6CG13 | | | |
|--------------------------------------|--------------------------|--|--|--|
| User data per address area, max. | 32 Byte | | | |
| Point-to-point communication | | | | |
| PtP communication | ✓ | | | |
| Interface isolated | ✓ | | | |
| RS232 interface | - | | | |
| RS422 interface | - | | | |
| RS485 interface | ✓ | | | |
| Connector | Sub-D, 9-pin, female | | | |
| Transmission speed, min. | 150 bit/s | | | |
| Transmission speed, max. | 115.5 kbit/s | | | |
| Cable length, max. | 500 m | | | |
| Point-to-point protocol | | | | |
| ASCII protocol | ✓ | | | |
| STX/ETX protocol | ✓ | | | |
| 3964(R) protocol | ✓ | | | |
| RK512 protocol | - | | | |
| USS master protocol | ✓ | | | |
| Modbus master protocol | ✓ | | | |
| Modbus slave protocol | - | | | |
| Special protocols | - | | | |
| Functionality RJ45 interfaces | | | | |
| Type | X5 | | | |
| Type of interface | Ethernet 10/100 MBit | | | |
| Connector | RJ45 | | | |
| Electrically isolated | ✓ | | | |
| PG/OP channel | ✓ | | | |
| Productive connections | - | | | |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 120 mm x 125 mm x 120 mm | | | |
| Weight | 610 g | | | |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | | | |
| Storage temperature | -25 °C to 70 °C | | | |
| Certifications | | | | |
| UL508 certification | in preparation | | | |

Connections, Interfaces

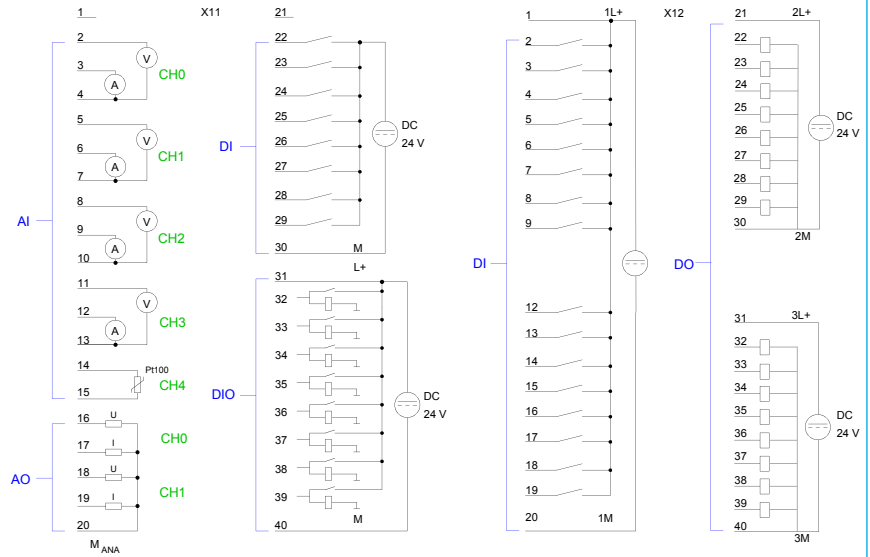
CPUs | CPUs STEP7 programmable, class C

| | | | | | |
|-----------|-----------|--|--|--|--|
| 312-5BE13 | 314-6CG13 | | | | |
| 313-5BF13 | | | | | |
| 313-6CF13 | | | | | |
| 314-6CF02 | | | | | |

314-6CG13



- X1**
- ① + DC 24 V
 - ② 0 V
- X2** MPI
- ① n. c.
 - ② M24V
 - ③ RxD/TxD-P (line B)
 - ④ RTS
 - ⑤ M5V
 - ⑥ P5V
 - ⑦ P24V
 - ⑧ RxD/TxD-N (line A)
 - ⑨ n. c.
- X3** PIP/PB-DP
- ① n. c.
 - ② M24V
 - ③ RxD/TxD-P (line B)
 - ④ RTS
 - ⑤ M5V
 - ⑥ P5V
 - ⑦ P24V
 - ⑧ RxD/TxD-N (line A)
 - ⑨ n. c.
- X5**
- ① Transmit +
 - ② Transmit -
 - ③ Receive +
 - ④ n. c.
 - ⑤ n. c.
 - ⑥ Receive -
 - ⑦ n. c.
 - ⑧ n. c.



Power supply



Structure and Function

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

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

The power supplies have no connection to the backplane bus.

Characteristics

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

Characteristics SPEED-Bus power supply





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

Overview

| Order no. | Name/Description | Page |
|--------------|--|------|
| Power supply | | |
| 307-1BA00 | PS 307 - Power supply ▶ Output current 2.5 A ▶ Output voltage DC 24 V ▶ AC 100...240 V without manual switch | 422 |
| 307-1EA00 | PS 307 - Power supply ▶ Output current 5 A ▶ Output voltage DC 24 V ▶ AC 120/230 V, 60/50 Hz switchable | 422 |
| 307-1FB70 | PS 307S - Power supply - SPEED bus ▶ Only for CPU 317S ▶ Output current 5.5 A extends the maximum total value at the back plane bus to 10 A | 422 |
| 307-1KA00 | PS 307 - Power supply ▶ Output current 10 A ▶ Output voltage DC 24 V ▶ AC 120/230 V, 60/50 Hz switchable | 422 |

Power supply

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

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


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

| Order number | 307-1BA00 | 307-1EA00 | 307-1FB70 | 307-1KA00 |
|---------------------------------|-------------------------|-------------------------|-------------------------|--------------------------|
| Supply voltage display | none | none | green LED | none |
| Group error display | none | none | red LED | none |
| Channel error display | none | none | none | none |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | 80 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | 120 mm x 125 mm x 120 mm |
| Weight | 310 g | 610 g | 210 g | 1110 g |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | 0 °C to 60 °C | 0 °C to 60 °C | 0 °C to 60 °C |
| Storage temperature | -25 °C to 70 °C | -25 °C to 70 °C | -25 °C to 70 °C | -25 °C to 70 °C |
| Certifications | | | | |
| UL508 certification | - | - | - | - |







Connections, Interfaces

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

307-1BA00




X2

| | | |
|---|---|------|
|  |  | ① L |
|  |  | ② N |
|  |  | ③ PE |








X1

| | | |
|--|--|-------------|
| | | + ① DC 24 V |
| | | - ② DC 24 V |
| | | + ③ DC 24 V |
| | | - ④ DC 24 V |

307-1EA00



X2

| | | |
|---|---|---|
|  |  | ① L1 |
|  |  | ② N |
|  |  | ③  |

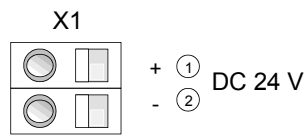
X1

| | | |
|--|--|-------------|
| | | + ① DC 24 V |
| | | - ② DC 24 V |
| | | + ③ DC 24 V |
| | | - ④ DC 24 V |
| | | + ⑤ DC 24 V |
| | | - ⑥ DC 24 V |

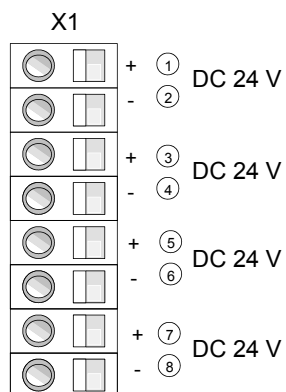
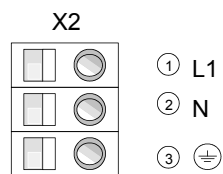
Power supply | Power supply

307-1BA00
 307-1EA00
 307-1FB70
 307-1KA00

307-1FB70



307-1KA00



Signal modules digital



Structure and Function

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

Characteristics





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

Overview

| Order no. | Name/Description | Page |
|---------------------------|---|------|
| Digital input modules | | |
| 321-1BH01 | SM 321 - Digital input ‣ 16 inputs | 428 |
| 321-1BH70 | SM 321S - FAST Digital input - SPEED-Bus ‣ SPEED-Bus ‣ 16 fast inputs ‣ Parameterizable as Alarm/ETS | 428 |
| 321-1BL00 | SM 321 - Digital input ‣ 32 inputs | 428 |
| 321-1FH00 | SM 321 - Digital input ‣ 16 inputs, in groups of 4 ‣ AC 120/230 V | 428 |
| Digital output modules | | |
| 322-1BF01 | SM 322 - Digital output ‣ 8 outputs, in groups of 4 ‣ Output current 2 A | 432 |
| 322-1BH01 | SM 322 - Digital output ‣ 16 outputs, in groups of 8 ‣ Output current 1 A | 432 |
| 322-1BH41 | SM 322 - Digital output ‣ 16 outputs, in groups of 8, ‣ DC 24 V, ‣ Output current 2 A | 432 |
| 322-1BH60 | SM 322 - Digital output ‣ 16 outputs ‣ 1 input (activation for outputs) ‣ 16 switches (automatic, manual 0/1) ‣ Output current 0.5 A | 432 |
| 322-1BH70 | SM 322S - FAST Digital output - SPEED-Bus ‣ SPEED bus ‣ 16 fast outputs ‣ Output current 0.5 A | 436 |
| 322-1BL00 | SM 322 - Digital output ‣ 32 outputs, in groups of 8 ‣ DC 24 V ‣ Output current 1 A | 436 |
| 322-1HH00 | SM 322 - Digital output ‣ 16 relay outputs, in groups of 8 ‣ AC 230 V/ DC 30 V ‣ Contact rating per channel 5 A | 436 |
| 322-5FF00 | SM 322 - Digital output ‣ 8 outputs, in groups of 1 ‣ AC 120/230 V ‣ Output current 2 A ‣ Substitute value output (programmable) | 436 |
| Digital in/output modules | | |
| 323-1BH00 | SM 323 - Digital in-/output ‣ 16 channels (as inputs or outputs) ‣ Diagnostic function ‣ Output current 1 A | 440 |
| 323-1BH01 | SM 323 - Digital in-/output ‣ 8 inputs/ 8 outputs ‣ Output current 1 A | 440 |
| 323-1BH70 | SM 323S - FAST Digital in-/output - SPEED-Bus ‣ SPEED-Bus ‣ 16 fast inputs/outputs ‣ Output current 0.5 A | 440 |
| 323-1BL00 | SM 323 - Digital in-/output ‣ 16 inputs/ 16 outputs ‣ Output current 1 A | 440 |

Digital input modules

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

| Order number | 321-1BH01 | 321-1BH70 | 321-1BL00 | 321-1FH00 |
|---|---|---|---|---|
| Figure |  |  |  |  |
| Type | SM 321 | SM 321S - SPEED-Bus | SM 321 | SM 321 |
| General information | | | | |
| Note | - | - | - | - |
| Features | <ul style="list-style-type: none"> ▶ 16 inputs | <ul style="list-style-type: none"> ▶ SPEED-Bus ▶ 16 fast inputs ▶ Parameterizable as Alarm/ETS | <ul style="list-style-type: none"> ▶ 32 inputs | <ul style="list-style-type: none"> ▶ 16 inputs, in groups of 4 ▶ AC 120/230 V |
| SPEED-Bus | - | ✓ | - | - |
| Current consumption/power loss | | | | |
| Current consumption from backplane bus | 25 mA | 25 mA | 35 mA | 35 mA |
| Power loss | 3.5 W | 3.5 W | 5.5 W | 5 W |
| Technical data digital inputs | | | | |
| Number of inputs | 16 | 16 | 32 | 16 |
| Cable length, shielded | 1000 m | 1000 m | 1000 m | 1000 m |
| Cable length, unshielded | 600 m | 600 m | 600 m | 600 m |
| Rated load voltage | - | DC 20.4...28.8 V | - | AC 120/230 V |
| Current consumption from load voltage L+ (without load) | - | 15 mA | - | - |
| Rated value | DC 20.4...28.8 V | DC 24 V | DC 20.4...28.8 V | AC 120/230 V |
| Input voltage for signal "0" | DC 0...5 V | DC 0...5 V | DC 0...5 V | AC 0...40 V |
| Input voltage for signal "1" | DC 15...28.8 V | DC 15...28.8 V | DC 15...28.8 V | AC 79...264 V |
| Input voltage hysteresis | - | - | - | - |
| Frequency range | - | - | - | 47...63 Hz |
| Input resistance | - | - | - | - |
| Input current for signal "1" | 7 mA | 7 mA | 7 mA | 7 mA |
| Connection of Two-Wire-BEROs possible | ✓ | ✓ | ✓ | ✓ |
| Max. permissible BERO quiescent current | 1.5 mA | 1.5 mA | 1.5 mA | 1.5 mA |
| Input delay of "0" to "1" | 3 ms | parameterizable 2.56µs - 40ms | 3 ms | 25 ms |
| Input delay of "1" to "0" | 3 ms | parameterizable 2.56µs - 40ms | 3 ms | 25 ms |
| Number of simultaneously utilizable inputs horizontal configuration | 16 | 16 | 32 | 16 |
| Number of simultaneously utilizable inputs vertical configuration | 16 | 16 | 32 | 16 |
| Input characteristic curve | IEC 61131, type 1 | IEC 61131, type 1 | IEC 61131, type 1 | - |
| Initial data size | 2 Byte | 2 Byte | 4 Byte | 2 Byte |

Signal modules digital | Digital input modules

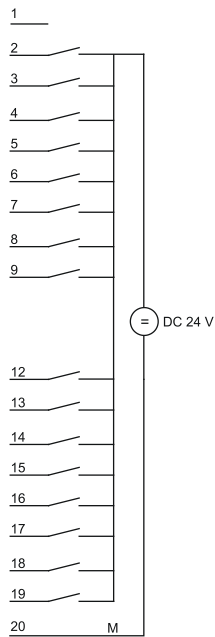
| | | | | | |
|-----------|--|--|--|--|--|
| 321-1BH01 | | | | | |
| 321-1BH70 | | | | | |
| 321-1BL00 | | | | | |
| 321-1FH00 | | | | | |

| Order number | 321-1BH01 | 321-1BH70 | 321-1BL00 | 321-1FH00 |
|--|-------------------------|-------------------------|-------------------------|-------------------------|
| Status information, alarms, diagnostics | | | | |
| Status display | green LED per channel | green LED per channel | green LED per channel | green LED per channel |
| Interrupts | no | yes | no | no |
| Process alarm | no | yes, parameterizable | no | no |
| Diagnostic interrupt | no | yes, parameterizable | no | no |
| Diagnostic functions | no | yes | no | no |
| Diagnostics information read-out | none | possible | none | none |
| Supply voltage display | none | green LED | none | none |
| Group error display | none | none | none | none |
| Channel error display | none | none | none | none |
| Isolation | | | | |
| Between channels | - | - | - | - |
| Between channels of groups to | 16 | 16 | 16 | 4 |
| Between channels and backplane bus | ✓ | ✓ | ✓ | ✓ |
| Insulation tested with | DC 500 V | DC 500 V | DC 500 V | DC 4000 V |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm |
| Weight | 220 g | 220 g | 240 g | 240 g |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | 0 °C to 60 °C | 0 °C to 60 °C | 0 °C to 60 °C |
| Storage temperature | -25 °C to 70 °C | -25 °C to 70 °C | -25 °C to 70 °C | -25 °C to 70 °C |
| Certifications | | | | |
| UL508 certification | yes | yes | yes | yes |

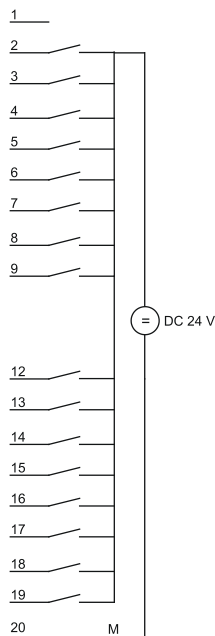
Connections, Interfaces

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

321-1BH01



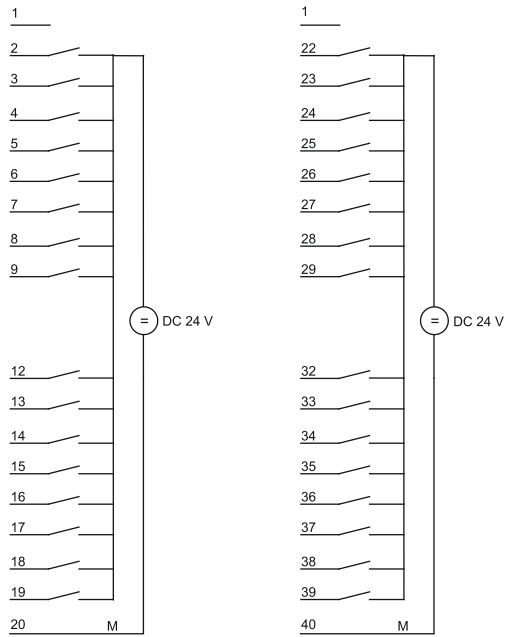
321-1BH70



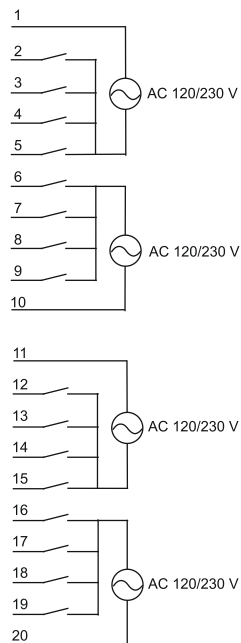
Signal modules digital | Digital input modules

321-1BH01
 321-1BH70
 321-1BL00
 321-1FH00

321-1BL00



321-1FH00



System SLIO

System 100V

System 200V

System 300S

System 500S

HMI





Software

Accessories

Appendix

Digital output modules

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

| Order number | 322-1BF01 | 322-1BH01 | 322-1BH41 | 322-1BH60 |
|---|---|--|---|---|
| Figure |  |  |  |  |
| Type | SM 322 | SM 322 | SM 322 | SM 322 |
| General information | | | | |
| Note | - | - | - | - |
| Features | <ul style="list-style-type: none"> ▶ 8 outputs, in groups of 4 ▶ Output current 2 A | <ul style="list-style-type: none"> ▶ 16 outputs, in groups of 8 ▶ Output current 1 A | <ul style="list-style-type: none"> ▶ 16 outputs, in groups of 8, ▶ DC 24 V, ▶ Output current 2 A | <ul style="list-style-type: none"> ▶ 16 outputs ▶ 1 input (activation for outputs) ▶ 16 switches (automatic, manual 0/1) ▶ Output current 0.5 A |
| SPEED-Bus | - | - | - | - |
| Current consumption/power loss | | | | |
| Current consumption from backplane bus | 65 mA | 110 mA | 110 mA | 100 mA |
| Power loss | 7.5 W | 4 W | 4 W | 6 W |
| Technical data digital outputs | | | | |
| Number of outputs | 8 | 16 | 16 | 16 |
| Cable length, shielded | 1000 m | 1000 m | 1000 m | - |
| Cable length, unshielded | 600 m | 600 m | 600 m | 600 m |
| Rated load voltage | DC 24 V | DC 24 V | DC 24 V | DC 24 V |
| Current consumption from load voltage L+ (without load) | 68 mA | 30 mA | 30 mA | 140 mA |
| Output current at signal "1", rated value | 2 A | 1 A | 2 A | 0.5 A |
| Output delay of "0" to "1" | 150 µs | 150 µs | 150 µs | max. 100 µs |
| Output delay of "1" to "0" | 100 µs | 100 µs | 100 µs | max. 500 µs |
| Minimum load current | - | - | - | - |
| Lamp load | 10 W | 5 W | 10 W | 5 W |
| Parallel switching of outputs for redundant control of a load | possible (only outputs group) | possible (only outputs group) | possible (only outputs group) | not possible |
| Parallel switching of outputs for increased power | possible (only outputs group) | possible (only outputs group) | possible (only outputs group) | not possible |
| Actuation of digital input | ✓ | ✓ | ✓ | ✓ |
| Switching frequency with resistive load | max. 1000 Hz | max. 1000 Hz | max. 1000 Hz | max. 1000 Hz |
| Switching frequency with inductive load | max. 0.5 Hz | max. 0.5 Hz | max. 0.5 Hz | max. 0.5 Hz |
| Switching frequency on lamp load | max. 1 Hz | max. 1 Hz | max. 1 Hz | max. 10 Hz |
| Internal limitation of inductive shut-off voltage | L+ (-52 V) | L+ (-52 V) | L+ (-52 V) | L+ (-52 V) |
| Short-circuit protection of output | yes, electronic | yes, electronic | yes, electronic | yes, electronic |
| Trigger level | 3 A | 1.5 A | 3 A | 1 A |
| Number of operating cycle of relay outputs | - | - | - | - |

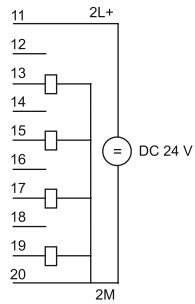
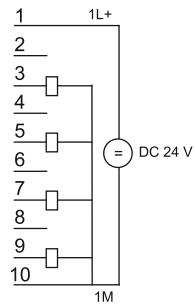
| Signal modules digital Digital output modules | | | | | |
|---|-----------|--|--|--|--|
| 322-1BF01 | 322-1BH70 | | | | |
| 322-1BH01 | 322-1BL00 | | | | |
| 322-1BH41 | 322-1HH00 | | | | |
| 322-1BH60 | 322-5FF00 | | | | |

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

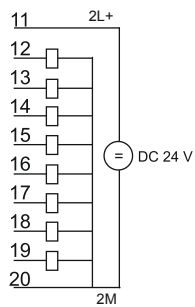
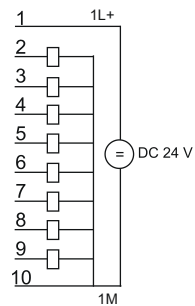
Connections, Interfaces

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

322-1BF01



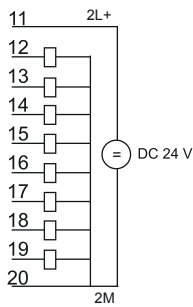
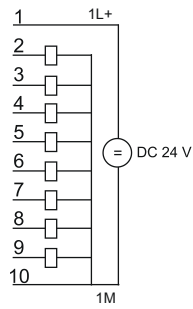
322-1BH01



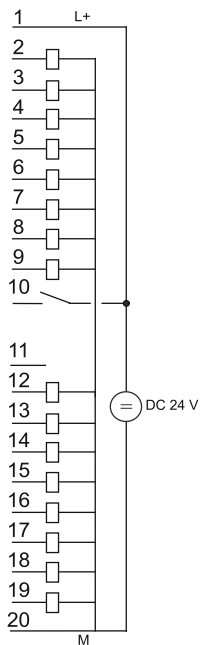
Signal modules digital | Digital output modules

| | | | | | |
|-----------|-----------|--|--|--|--|
| 322-1BF01 | 322-1BH70 | | | | |
| 322-1BH01 | 322-1BL00 | | | | |
| 322-1BH41 | 322-1HH00 | | | | |
| 322-1BH60 | 322-5FF00 | | | | |

322-1BH41







322-1BH60



Digital output modules

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

| Order number | 322-1BH70 | 322-1BL00 | 322-1HH00 | 322-5FF00 |
|---|--|---|---|---|
| Figure |  |  |  |  |
| Type | SM 322S - SPEED-Bus | SM 322 | SM 322 | SM 322 |
| General information | | | | |
| Note | - | - | - | - |
| Features | <ul style="list-style-type: none"> ▸ SPEED bus ▸ 16 fast outputs ▸ Output current 0.5 A | <ul style="list-style-type: none"> ▸ 32 outputs, in groups of 8 ▸ DC 24 V ▸ Output current 1 A | <ul style="list-style-type: none"> ▸ 16 relay outputs, in groups of 8 ▸ AC 230 V/ DC 30 V ▸ Contact rating per channel 5 A | <ul style="list-style-type: none"> ▸ 8 outputs, in groups of 1 ▸ AC 120/230 V ▸ Output current 2 A ▸ Substitute value output (programmable) |
| SPEED-Bus | ✓ | - | - | - |
| Current consumption/power loss | | | | |
| Current consumption from backplane bus | 390 mA | 200 mA | 80 mA | 100 mA |
| Power loss | 4 W | 5 W | 4 W | 8.6 W |
| Technical data digital outputs | | | | |
| Number of outputs | 16 | 32 | 16 | 8 |
| Cable length, shielded | 1000 m | - | - | 1000 m |
| Cable length, unshielded | 600 m | 600 m | 600 m | 600 m |
| Rated load voltage | DC 24 V | DC 24 V | DC 30 V/ AC 230 V | AC 120/230 V |
| Current consumption from load voltage L+ (without load) | 30 mA | 30 mA | - | 2 mA |
| Output current at signal "1", rated value | 0.5 A | 1 A | 4 A | 2 A |
| Output delay of "0" to "1" | 6.12 µs | 150 µs | - | - |
| Output delay of "1" to "0" | 6.12 µs | 100 µs | - | - |
| Minimum load current | - | - | - | - |
| Lamp load | 5 W | 6 W | 6 W | 50 W |
| Parallel switching of outputs for redundant control of a load | not possible | possible (only outputs group) | possible (only outputs group) | possible |
| Parallel switching of outputs for increased power | not possible | not possible | not possible | not possible |
| Actuation of digital input | ✓ | ✓ | ✓ | ✓ |
| Switching frequency with resistive load | max. 100 kHz | max. 1000 Hz | - | max. 10 Hz |
| 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. 1 Hz | - | max. 1 Hz |
| Internal limitation of inductive shut-off voltage | L+ (-52 V) | L+ (-52 V) | - | - |
| Short-circuit protection of output | yes, electronic | yes, electronic | - | Fuse 3.15 A /250 V, quick response |
| Trigger level | 1 A | 1.5 A | - | 3.15 A |

Signal modules digital | Digital output modules

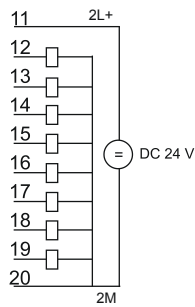
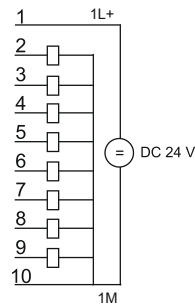
| | | | | | |
|-----------|-----------|--|--|--|--|
| 322-1BF01 | 322-1BH70 | | | | |
| 322-1BH01 | 322-1BL00 | | | | |
| 322-1BH41 | 322-1HH00 | | | | |
| 322-1BH60 | 322-5FF00 | | | | |

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

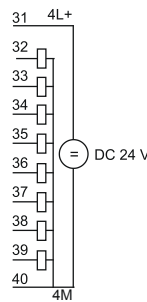
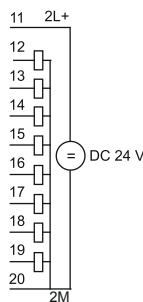
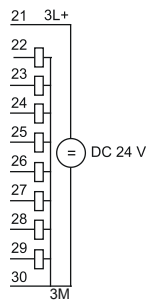
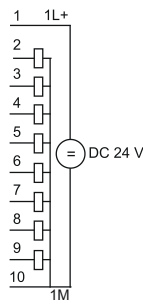
Connections, Interfaces

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

322-1BH70



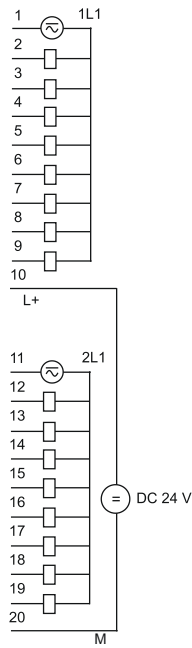
322-1BL00



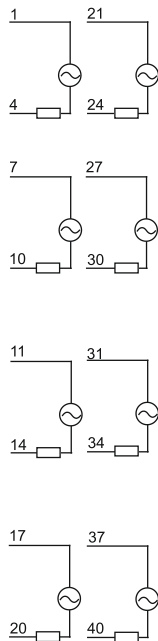
Signal modules digital | Digital output modules

| | | | | | |
|-----------|-----------|--|--|--|--|
| 322-1BF01 | 322-1BH70 | | | | |
| 322-1BH01 | 322-1BL00 | | | | |
| 322-1BH41 | 322-1HH00 | | | | |
| 322-1BH60 | 322-5FF00 | | | | |

322-1HH00







322-5FF00



Digital in/output modules

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

| Order number | 323-1BH00 | 323-1BH01 | 323-1BH70 | 323-1BL00 |
|---|---|---|---|---|
| Figure |  |  |  |  |
| Type | SM 323 | SM 323 | SM 323S - SPEED-Bus | SM 323 |
| General information | | | | |
| Note | - | - | - | - |
| Features | <ul style="list-style-type: none"> ▶ 16 channels (as inputs or outputs) ▶ Diagnostic function ▶ Output current 1 A | <ul style="list-style-type: none"> ▶ 8 inputs/ 8 outputs ▶ Output current 1 A | <ul style="list-style-type: none"> ▶ SPEED-Bus ▶ 16 fast inputs/outputs ▶ Output current 0.5 A | <ul style="list-style-type: none"> ▶ 16 inputs/ 16 outputs ▶ Output current 1 A |
| SPEED-Bus | - | - | ✓ | - |
| Current consumption/power loss | | | | |
| Current consumption from backplane bus | 130 mA | 70 mA | 390 mA | 130 mA |
| Power loss | 4 W | 4 W | 4 W | 5.8 W |
| Technical data digital inputs | | | | |
| Number of inputs | 16 | 8 | 16 | 16 |
| Cable length, shielded | 1000 m | 1000 m | 1000 m | 1000 m |
| Cable length, unshielded | 600 m | 600 m | 600 m | 600 m |
| Rated load voltage | DC 24 V | DC 24 V | DC 24 V | DC 24 V |
| Current consumption from load voltage L+ (without load) | 30 mA | 15 mA | - | 30 mA |
| Rated value | DC 20.4...28.8 V | DC 20.4...28.8 V | DC 20.4...28.8 V | DC 20.4...28.8 V |
| Input voltage for signal "0" | DC 0...5 V | DC 0...5 V | DC 0...5 V | DC 0...5 V |
| Input voltage for signal "1" | DC 15...28.8 V | DC 15...28.8 V | DC 15...28.8 V | DC 15...28.8 V |
| Input voltage hysteresis | - | - | - | - |
| Frequency range | - | - | - | - |
| Input resistance | - | - | - | - |
| Input current for signal "1" | 7 mA | 7 mA | 7 mA | 7 mA |
| Connection of Two-Wire-BEROs possible | ✓ | ✓ | ✓ | ✓ |
| Max. permissible BERO quiescent current | 1.5 mA | 1.5 mA | 1.5 mA | 1.5 mA |
| Input delay of "0" to "1" | 3 ms | 3 ms | parameterizable 2.56µs - 40ms | 3 ms |
| Input delay of "1" to "0" | 3 ms | 3 ms | parameterizable 2.56µs - 40ms | 3 ms |
| Number of simultaneously utilizable inputs horizontal configuration | 16 | 8 | 16 | 16 |
| Number of simultaneously utilizable inputs vertical configuration | 16 | 8 | 16 | 16 |
| Input characteristic curve | IEC 61131, type 1 | IEC 61131, type 1 | IEC 61131, type 1 | IEC 61131, type 1 |
| Initial data size | 2 Byte | 1 Byte | 2 Byte | 2 Byte |

Signal modules digital | Digital in/output modules

| | | | | | |
|-----------|--|--|--|--|--|
| 323-1BH00 | | | | | |
| 323-1BH01 | | | | | |
| 323-1BH70 | | | | | |
| 323-1BL00 | | | | | |

| Order number | 323-1BH00 | 323-1BH01 | 323-1BH70 | 323-1BL00 |
|---|-------------------------------|-------------------------------|-----------------------|-------------------------------|
| Technical data digital outputs | | | | |
| Number of outputs | 16 | 8 | 16 | 16 |
| Cable length, shielded | 1000 m | 1000 m | 1000 m | 1000 m |
| Cable length, unshielded | 600 m | 600 m | 600 m | 600 m |
| Rated load voltage | DC 24 V | DC 24 V | DC 24 V | DC 24 V |
| Reverse polarity protection of rated load voltage | ✓ | ✓ | ✓ | ✓ |
| Current consumption from load voltage L+ (without load) | 30 mA | 15 mA | 50 mA | 30 mA |
| Output current at signal "1", rated value | 1 A | 1 A | 0.5 A | 1 A |
| Output delay of "0" to "1" | 150 µs | 150 µs | 6.12 µs | 150 µs |
| Output delay of "1" to "0" | 100 µs | 100 µs | 6.12 µs | 100 µs |
| Minimum load current | - | - | - | - |
| Lamp load | 5 W | 5 W | 5 W | 5 W |
| Parallel switching of outputs for redundant control of a load | possible (only outputs group) | possible (only outputs group) | not possible | possible (only outputs group) |
| Parallel switching of outputs for increased power | not possible | not possible | not possible | not possible |
| Actuation of digital input | ✓ | ✓ | ✓ | ✓ |
| Switching frequency with resistive load | max. 1000 Hz | max. 1000 Hz | max. 100 kHz | max. 1000 Hz |
| Switching frequency with inductive load | max. 0.5 Hz | max. 0.5 Hz | max. 0.5 Hz | max. 0.5 Hz |
| Switching frequency on lamp load | max. 10 Hz | max. 10 Hz | max. 10 Hz | max. 10 Hz |
| Internal limitation of inductive shut-off voltage | L+ (-52 V) | L+ (-52 V) | L+ (-52 V) | L+ (-52 V) |
| Short-circuit protection of output | yes, electronic | yes, electronic | yes, electronic | yes, electronic |
| Trigger level | - | - | 1 A | - |
| Number of operating cycle of relay outputs | - | - | - | - |
| Switching capacity of contacts | - | - | - | - |
| Output data size | 2 Byte | 1 Byte | 2 Byte | 2 Byte |
| Status information, alarms, diagnostics | | | | |
| Status display | green LED per channel | green LED per channel | green LED per channel | green LED per channel |
| Interrupts | no | no | no | no |
| Process alarm | no | no | no | no |
| Diagnostic interrupt | no | no | no | no |
| Diagnostic functions | no | no | no | no |
| Diagnostics information read-out | none | none | none | none |
| Supply voltage display | green LED per group | green LED per group | green LED per group | green LED per group |
| Group error display | red SF LED | red SF LED | red SF LED | red SF LED |
| Channel error display | none | none | none | none |
| Isolation | | | | |
| Between channels | - | ✓ | ✓ | ✓ |

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

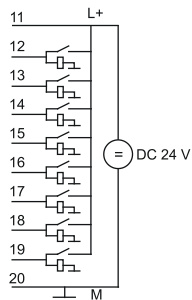
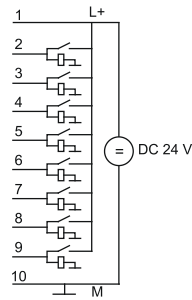
| Order number | 323-1BH00 | 323-1BH01 | 323-1BH70 | 323-1BL00 |
|------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Between channels of groups to | - | 8 | 8 | 8 |
| Between channels and backplane bus | ✓ | ✓ | ✓ | ✓ |
| Insulation tested with | DC 500 V | DC 500 V | DC 500 V | DC 500 V |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm |
| Weight | 230 g | 240 g | 240 g | 260 g |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | 0 °C to 60 °C | 0 °C to 60 °C | 0 °C to 60 °C |
| Storage temperature | -25 °C to 70 °C | -25 °C to 70 °C | -25 °C to 70 °C | -25 °C to 70 °C |
| Certifications | | | | |
| UL508 certification | yes | yes | yes | yes |

Connections, Interfaces

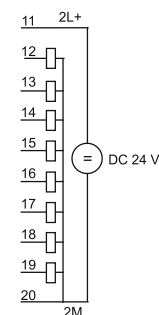
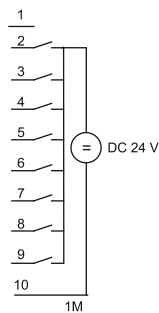
Signal modules digital | Digital in/output modules

323-1BH00
323-1BH01
323-1BH70
323-1BL00

323-1BH00



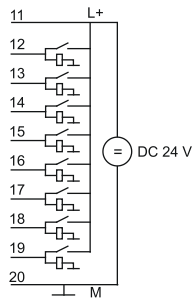
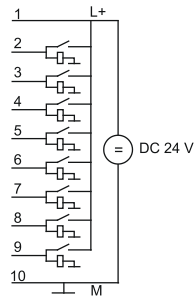
323-1BH01



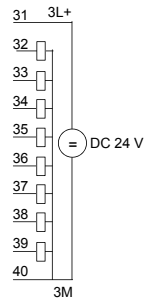
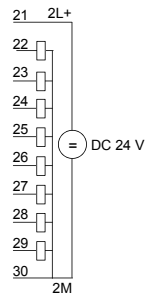
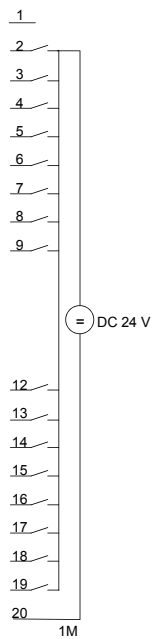
Signal modules digital | Digital in/output modules

323-1BH00
 323-1BH01
 323-1BH70
 323-1BL00

323-1BH70



323-1BL00





System SLIO

System 100V

System 200V

System 300S

System 500S

HMI

Software

Accessories

Appendix

Signal modules analog



Structure and Function

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

Characteristics

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

Overview





| Order no. | Name/Description | Page |
|--------------------------|---|------|
| Analog input modules | | |
| 331-1KF01 | SM 331 - Analog input ▶ 8 inputs ▶ Voltage, current ▶ Resistance ▶ Resistance thermometer | 448 |
| 331-7KF01 | SM 331 - Analog input ▶ 8 inputs in 4 groups, ▶ Voltage, current ▶ Resistance ▶ Resistance thermometer ▶ Thermocouples | 448 |
| 331-7KB01 | SM 331 - Analog input ▶ 2 inputs in 1 group ▶ Voltage, current ▶ Resistance ▶ Resistance thermometer ▶ Thermocouples | 448 |
| 331-7AF70 | SM 331S - FAST Analog input - SPEED-Bus ▶ 8 inputs ▶ Current ± 20 mA ▶ Oscilloscope-/FIFO-Function ▶ Interrupt parameterizable | 448 |
| 331-7BF70 | SM 331S - Analoge input FAST - SPEED-Bus ▶ 8 inputs ▶ Voltage ± 10 V ▶ Oscilloscope-/FIFO-Function ▶ Interrupt parameterizable | 453 |
| Analog output modules | | |
| 332-5HB01 | SM 332 - Analog output ▶ 2 outputs ▶ Configurable ▶ Voltage, current, deactivated | 457 |
| 332-5HD01 | SM 332 - Analog output ▶ 4 outputs ▶ Configurable ▶ Voltage, current, deactivated | 457 |
| Analog in/output modules | | |
| 334-0KE00 | SM 334 - Analog in-/output ▶ 4 inputs, 2 outputs ▶ configurable ▶ Resistance ▶ Voltage 0...10 V, deactivated | 460 |

Analog input modules

Signal modules analog | Analog input modules

331-1KF01
331-7KF01
331-7KB01
331-7AF70

331-7BF70

| Order number | 331-1KF01 | 331-7KF01 | 331-7KB01 | 331-7AF70 |
|---|--|--|--|--|
| Figure |  |  |  |  |
| Type | SM 331 | SM 331 | SM 331 | SM 331S - SPEED-Bus |
| General information | | | | |
| Note | - | - | - | - |
| Features | <ul style="list-style-type: none"> ▶ 8 inputs ▶ Voltage, current ▶ Resistance ▶ Resistance thermometer | <ul style="list-style-type: none"> ▶ 8 inputs in 4 groups, ▶ Voltage, current ▶ Resistance ▶ Resistance thermometer ▶ Thermocouples | <ul style="list-style-type: none"> ▶ 2 inputs in 1 group ▶ Voltage, current ▶ Resistance ▶ Resistance thermometer ▶ Thermocouples | <ul style="list-style-type: none"> ▶ 8 inputs ▶ Current ± 20 mA ▶ Oscilloscope-/FIFO-Function ▶ Interrupt parameterizable |
| SPEED-Bus | - | - | - | ✓ |
| Current consumption/power loss | | | | |
| Current consumption from backplane bus | 255 mA | 95 mA | 95 mA | 530 mA |
| Power loss | 1.3 W | 3 W | 3 W | 4 W |
| Technical data analog inputs | | | | |
| Number of inputs | 8 | 8 | 2 | 8 |
| Cable length, shielded | - | - | - | - |
| Rated load voltage | - | DC 24 V | DC 24 V | DC 24 V |
| Current consumption from load voltage L+ (without load) | - | 100 mA | 100 mA | 62 mA |
| Voltage inputs | ✓ | ✓ | ✓ | - |
| Min. input resistance (voltage range) | 100 k Ω | 100 k Ω | 100 k Ω | - |
| Input voltage ranges | -50 mV ... +50 mV -500 mV ... +500 mV -1 V ... +1 V -5 V ... +5 V 0 V ... +10 V -10 V ... +10 V +1 V ... +5 V | -80 mV ... +80 mV -250 mV ... +250 mV -500 mV ... +500 mV -1 V ... +1 V -2.5 V ... +2.5 V -5 V ... +5 V +1 V ... +5 V -10 V ... +10 V | -80 mV ... +80 mV -250 mV ... +250 mV -500 mV ... +500 mV -1 V ... +1 V -2.5 V ... +2.5 V -5 V ... +5 V +1 V ... +5 V -10 V ... +10 V | - |
| Operational limit of voltage ranges | +/-0.5% ... +/-0.6% | +/-0.6% ... +/-1.0% | +/-0.6% ... +/-1.0% | - |
| Basic error limit voltage ranges with SFU | +/-0.3% ... +/-0.4% | +/-0.4% ... +/-0.7% | +/-0.4% ... +/-0.7% | - |
| Current inputs | ✓ | ✓ | ✓ | ✓ |
| Min. input resistance (current range) | 100 Ω | 85 Ω | 85 Ω | 100 Ω |
| Input current ranges | -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA | -3.2 mA ... +3.2 mA -10 mA ... +10 mA -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA | -3.2 mA ... +3.2 mA -10 mA ... +10 mA -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA | -20 mA ... +20 mA |
| Operational limit of current ranges | +/-0.5% | +/-0.7% | +/-0.7% | +/-0.6% |
| Basic error limit current ranges with SFU | +/-0.3% | +/-0.5% | +/-0.5% | +/-0.4% |

Signal modules analog | Analog input modules

| | | | | | |
|--|-----------|--|--|--|--|
| 331-1KF01 331-7KF01 331-7KB01 331-7AF70 | 331-7BF70 | | | | |
|--|-----------|--|--|--|--|

| Order number | 331-1KF01 | 331-7KF01 | 331-7KB01 | 331-7AF70 |
|--|---------------------------------|--|--|--------------------------|
| Resistance inputs | ✓ | ✓ | ✓ | - |
| Resistance ranges | 0 ... 600 Ohm 0 ... 6000 Ohm | 0 ... 150 Ohm 0 ... 300 Ohm 0 ... 600 Ohm | 0 ... 150 Ohm 0 ... 300 Ohm 0 ... 600 Ohm | - |
| Operational limit of resistor ranges | +/-0.5% | +/-0.7% | +/-0.7% | - |
| Basic error limit | +/-0.3% | +/-0.5% | +/-0.5% | - |
| Resistance thermometer inputs | ✓ | ✓ | ✓ | - |
| Resistance thermometer ranges | Pt100 Ni100 Ni1000 | Pt100 Ni100 | Pt100 Ni100 | - |
| Operational limit of resistance thermometer ranges | +/-1K ... +/-1.2K | +/-0.7% ... +/-0.8% | +/-0.7% ... +/-0.8% | - |
| Basic error limit thermoresistor ranges | +/-0.8K | +/-0.5% ... +/-0.6% | +/-0.5% ... +/-0.6% | - |
| Thermocouple inputs | - | ✓ | ✓ | - |
| Thermocouple ranges | - | type J type R type K type N type L type E type T type S type B type C | type J type R type K type N type L type E type T type S type B type C | - |
| Operational limit of thermocouple ranges | - | +/-1.3% ... +/-2.0% | +/-1.3% ... +/-2.0% | - |
| Basic error limit thermoelement ranges | - | +/-0.7% ... +/-1.0% | +/-0.7% ... +/-1.0% | - |
| Programmable temperature compensation | - | - | - | - |
| External temperature compensation | - | - | - | - |
| Internal temperature compensation | - | - | - | - |
| Resolution in bit | 13 | 14 | 14 | 16 |
| Measurement principle | Sigma-Delta | Sigma-Delta | Sigma-Delta | successive approximation |
| Basic conversion time | 61 ms/51 ms / channel | 4ms...68ms / channel | 4 ms/18 ms/22 ms/68 ms / channel | 25 µs all channels |
| Noise suppression for frequency | 50 Hz/60 Hz | 10 Hz/400 Hz | 10 Hz/400 Hz | - |
| Initial data size | 16 Byte | 16 Byte | 4 Byte | 16 Byte |
| Status information, alarms, diagnostics | | | | |
| Status display | none | none | none | none |
| Interrupts | no | yes | yes | yes |
| Process alarm | no | yes, parameterizable | yes, parameterizable | yes, parameterizable |
| Diagnostic interrupt | no | yes, parameterizable | yes, parameterizable | yes, parameterizable |
| Diagnostic functions | no | yes | yes | yes |
| Diagnostics information read-out | none | possible | possible | possible |
| Supply voltage display | none | none | none | none |

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

| Order number | 331-1KF01 | 331-7KF01 | 331-7KB01 | 331-7AF70 |
|---|-------------------------|-------------------------|-------------------------|-------------------------|
| Group error display | none | red SF LED | red SF LED | red SF LED |
| Channel error display | none | red LED per channel | red LED per channel | none |
| Isolation | | | | |
| Between channels | - | - | - | ✓ |
| Between channels of groups to | - | - | - | - |
| Between channels and backplane bus | ✓ | ✓ | ✓ | ✓ |
| Between channels and power supply | - | ✓ | ✓ | ✓ |
| Max. potential difference between circuits | - | - | - | - |
| Max. potential difference between inputs (Ucm) | DC 2 V | DC 3 V | DC 3 V | DC 30 V |
| Max. potential difference between Mana and Mintern (Uiso) | - | DC 75 V/ AC 60 V | DC 75 V/ AC 60 V | - |
| Max. potential difference between inputs and Mana (Ucm) | - | DC 3 V | DC 3 V | - |
| Max. potential difference between inputs and Mintern (Uiso) | DC 75 V/ AC 60 V | - | - | DC 75 V/ AC 60 V |
| Max. potential difference between Mintern and outputs | - | - | - | - |
| Insulation tested with | DC 500 V | DC 500 V | DC 500 V | DC 500 V |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm |
| Weight | 260 g | 240 g | 220 g | 235 g |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | 0 °C to 60 °C | 0 °C to 60 °C | 0 °C to 60 °C |
| Storage temperature | -25 °C to 70 °C | -25 °C to 70 °C | -25 °C to 70 °C | -25 °C to 70 °C |
| Certifications | | | | |
| UL508 certification | yes | yes | yes | yes |

Connections, Interfaces

Signal modules analog | Analog input modules

331-1KF01
331-7KF01
331-7KB01
331-7AF70

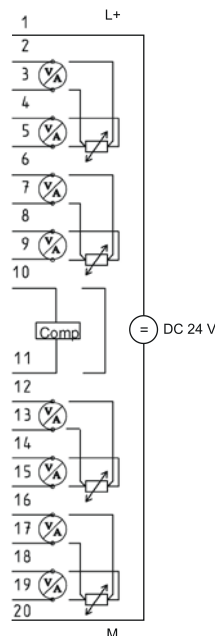
331-7BF70

331-1KF01



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

331-7KF01



System SLIO

System 100V

System 200V

System 300S

System 500S

HMI

Software

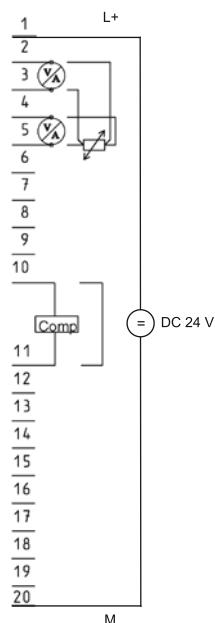
Accessories

Appendix

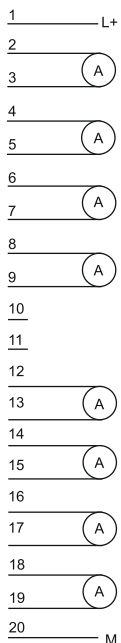
Signal modules analog | Analog input modules

| | | | | | | |
|--|-----------|--|--|--|--|--|
| 331-1KF01 331-7KF01 331-7KB01 331-7AF70 | 331-7BF70 | | | | | |
|--|-----------|--|--|--|--|--|

331-7KB01




331-7AF70



Analog input modules

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

| Order number | 331-7BF70 | | | |
|---|---|--|--|--|
| Figure |  | | | |
| Type | SM 331S - SPEED-Bus | | | |
| General information | | | | |
| Note | - | | | |
| Features | <ul style="list-style-type: none"> ▸ 8 inputs ▸ Voltage ±10 V ▸ Oscilloscope-/FIFO-Function ▸ Interrupt parameterizable | | | |
| SPEED-Bus | ✓ | | | |
| Current consumption/power loss | | | | |
| Current consumption from backplane bus | 530 mA | | | |
| Power loss | 4 W | | | |
| Technical data analog inputs | | | | |
| Number of inputs | 8 | | | |
| Cable length, shielded | - | | | |
| Rated load voltage | DC 24 V | | | |
| Current consumption from load voltage L+ (without load) | 62 mA | | | |
| Voltage inputs | ✓ | | | |
| Min. input resistance (voltage range) | 120 kΩ | | | |
| Input voltage ranges | -10 V ... +10 V | | | |
| Operational limit of voltage ranges | +/-0.6% | | | |
| Basic error limit voltage ranges with SFU | +/-0.4% | | | |
| Current inputs | - | | | |
| Min. input resistance (current range) | - | | | |
| Input current ranges | - | | | |
| Operational limit of current ranges | - | | | |
| Basic error limit current ranges with SFU | - | | | |
| Resistance inputs | - | | | |
| Resistance ranges | - | | | |
| Operational limit of resistor ranges | - | | | |
| Basic error limit | - | | | |
| Resistance thermometer inputs | - | | | |
| Resistance thermometer ranges | - | | | |

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

| Order number | 331-7BF70 | | | |
|---|--------------------------|--|--|--|
| Operational limit of resistance thermometer ranges | - | | | |
| Basic error limit thermoresistor ranges | - | | | |
| Thermocouple inputs | - | | | |
| Thermocouple ranges | - | | | |
| Operational limit of thermocouple ranges | - | | | |
| Basic error limit thermoelement ranges | - | | | |
| Programmable temperature compensation | - | | | |
| External temperature compensation | - | | | |
| Internal temperature compensation | - | | | |
| Resolution in bit | 16 | | | |
| Measurement principle | successive approximation | | | |
| Basic conversion time | 25 µs all channels | | | |
| Noise suppression for frequency | - | | | |
| Initial data size | 16 Byte | | | |
| Status information, alarms, diagnostics | | | | |
| Status display | none | | | |
| Interrupts | yes | | | |
| Process alarm | yes, parameterizable | | | |
| Diagnostic interrupt | yes, parameterizable | | | |
| Diagnostic functions | yes | | | |
| Diagnostics information read-out | possible | | | |
| Supply voltage display | none | | | |
| Group error display | red SF LED | | | |
| Channel error display | none | | | |
| Isolation | | | | |
| Between channels | ✓ | | | |
| Between channels of groups to | - | | | |
| Between channels and backplane bus | ✓ | | | |
| Between channels and power supply | ✓ | | | |
| Max. potential difference between circuits | - | | | |
| Max. potential difference between inputs (Ucm) | DC 30 V | | | |
| Max. potential difference between Mana and Mintern (Uiso) | - | | | |
| Max. potential difference between inputs and Mana (Ucm) | - | | | |
| Max. potential difference between inputs and Mintern (Uiso) | DC 75 V/ AC 60 V | | | |
| Max. potential difference between Mintern and outputs | - | | | |

Signal modules analog | Analog input modules

| | | | | | | |
|--|-----------|--|--|--|--|--|
| 331-1KF01 331-7KF01 331-7KB01 331-7AF70 | 331-7BF70 | | | | | |
|--|-----------|--|--|--|--|--|

| | | | | |
|---------------------------------|-------------------------|--|--|--|
| Order number | 331-7BF70 | | | |
| Insulation tested with | DC 500 V | | | |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | | | |
| Weight | 235 g | | | |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | | | |
| Storage temperature | -25 °C to 70 °C | | | |
| Certifications | | | | |
| UL508 certification | yes | | | |

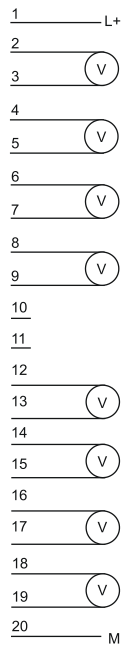
Connections, Interfaces

Signal modules analog | Analog input modules

331-1KF01
331-7KF01
331-7KB01
331-7AF70

331-7BF70



331-7BF70



Analog output modules

Signal modules analog | Analog output modules

| | | | | | |
|------------------------|--|--|--|--|--|
| 332-5HB01 332-5HD01 | | | | | |
|------------------------|--|--|--|--|--|

| Order number | 332-5HB01 | 332-5HD01 | | |
|---|--|--|--|--|
| Figure |  |  | | |
| Type | SM 332 | SM 332 | | |
| General information | | | | |
| Note | - | - | | |
| Features | <ul style="list-style-type: none"> ▸ 2 outputs ▸ Configurable ▸ Voltage, current, deactivated | <ul style="list-style-type: none"> ▸ 4 outputs ▸ Configurable ▸ Voltage, current, deactivated | | |
| SPEED-Bus | - | - | | |
| Current consumption/power loss | | | | |
| Current consumption from backplane bus | 100 mA | 125 mA | | |
| Power loss | 2.5 W | 3.5 W | | |
| Technical data analog outputs | | | | |
| Number of outputs | 2 | 4 | | |
| Cable length, shielded | - | - | | |
| Rated load voltage | DC 24 V | DC 24 V | | |
| Current consumption from load voltage L+ (without load) | 70 mA | 115 mA | | |
| Voltage output short-circuit protection | ✓ | ✓ | | |
| Voltage outputs | ✓ | ✓ | | |
| Min. load resistance (voltage range) | 1 kΩ | 1 kΩ | | |
| Max. capacitive load (current range) | 1 μF | 1 μF | | |
| Output voltage ranges | -10 V ... +10 V 0 V ... +10 V +1 V ... +5 V | -10 V ... +10 V 0 V ... +10 V +1 V ... +5 V | | |
| Operational limit of voltage ranges | +/-0.2% ... +/-0.8% | +/-0.2% ... +/-0.8% | | |
| Basic error limit voltage ranges with SFU | +/-0.1% ... +/-0.5% | +/-0.1% ... +/-0.5% | | |
| Current outputs | ✓ | ✓ | | |
| Max. in load resistance (current range) | 500 Ω | 500 Ω | | |
| Max. inductive load (current range) | 10 mH | 10 mH | | |
| Output current ranges | -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA | -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA | | |
| Operational limit of current ranges | +/-0.3% ... +/-0.8% | +/-0.3% ... +/-0.8% | | |
| Basic error limit current ranges with SFU | +/-0.2% ... +/-0.5% | +/-0.2% ... +/-0.5% | | |
| Settling time for ohmic load | 0.2 ms | 0.2 ms | | |
| Settling time for capacitive load | 1 ms | 1 ms | | |
| Settling time for inductive load | 1 ms | 1 ms | | |

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

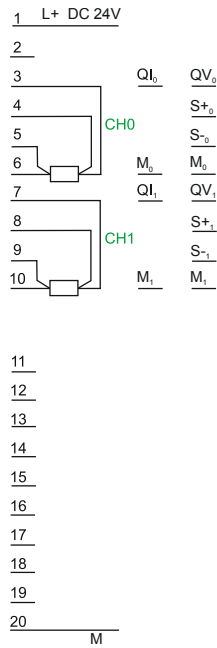
| Order number | 332-5HB01 | 332-5HD01 | | |
|---|-------------------------|-------------------------|--|--|
| Resolution in bit | 13 | 13 | | |
| Conversion time | 0.5 ms all channels | 1 ms all channels | | |
| Substitute value can be applied | yes | yes | | |
| Output data size | 4 Byte | 8 Byte | | |
| Status information, alarms, diagnostics | | | | |
| Status display | green LED per channel | green LED per channel | | |
| Interrupts | - | - | | |
| Process alarm | no | no | | |
| Diagnostic interrupt | yes, parameterizable | yes, parameterizable | | |
| Diagnostic functions | yes | yes | | |
| Diagnostics information read-out | possible | possible | | |
| Supply voltage display | none | none | | |
| Group error display | red SF LED | red SF LED | | |
| Channel error display | red LED per channel | red LED per channel | | |
| Isolation | | | | |
| Between channels | - | - | | |
| Between channels of groups to | - | - | | |
| Between channels and backplane bus | ✓ | ✓ | | |
| Between channels and power supply | ✓ | ✓ | | |
| Max. potential difference between circuits | - | - | | |
| Max. potential difference between inputs (Ucm) | - | - | | |
| Max. potential difference between Mana and Mintern (Uiso) | DC 75 V/ AC 60 V | DC 75 V/ AC 60 V | | |
| Max. potential difference between inputs and Mana (Ucm) | - | - | | |
| Max. potential difference between inputs and Mintern (Uiso) | - | - | | |
| Max. potential difference between Mintern and outputs | - | - | | |
| Insulation tested with | DC 500 V | DC 500 V | | |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | | |
| Weight | 230 g | 230 g | | |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | 0 °C to 60 °C | | |
| Storage temperature | -25 °C to 70 °C | -25 °C to 70 °C | | |
| Certifications | | | | |
| UL508 certification | yes | yes | | |

Connections, Interfaces

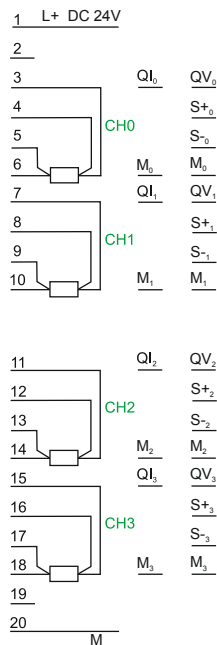
Signal modules analog | Analog output modules

332-5HB01
332-5HD01

332-5HB01




332-5HD01



Analog in/output modules

Signal modules analog | Analog in/output modules

334-0KE00

| Order number | 334-0KE00 | | | |
|---|--|--|--|--|
| Figure |  | | | |
| Type | SM 334 | | | |
| General information | | | | |
| Note | - | | | |
| Features | <ul style="list-style-type: none"> ▶ 4 inputs, 2 outputs ▶ configurable ▶ Resistance ▶ Voltage 0...10 V, deactivated | | | |
| SPEED-Bus | - | | | |
| Current consumption/power loss | | | | |
| Current consumption from backplane bus | 95 mA | | | |
| Power loss | 2 W | | | |
| Technical data analog inputs | | | | |
| Number of inputs | 4 | | | |
| Cable length, shielded | - | | | |
| Rated load voltage | DC 24 V | | | |
| Current consumption from load voltage L+ (without load) | 40 mA | | | |
| Voltage inputs | ✓ | | | |
| Min. input resistance (voltage range) | 100 kΩ | | | |
| Input voltage ranges | 0 V ... +10 V | | | |
| Operational limit of voltage ranges | +/-0,7% | | | |
| Basic error limit voltage ranges with SFU | +/-0.5% | | | |
| Current inputs | - | | | |
| Min. input resistance (current range) | - | | | |
| Input current ranges | - | | | |
| Operational limit of current ranges | - | | | |
| Basic error limit current ranges with SFU | - | | | |
| Resistance inputs | ✓ | | | |
| Resistance ranges | 10000 Ohm | | | |
| Operational limit of resistor ranges | +/-3.5% | | | |
| Basic error limit | +/-2.8% | | | |
| Resistance thermometer inputs | ✓ | | | |
| Resistance thermometer ranges | Pt100 | | | |
| Operational limit of resistance thermometer ranges | +/-0.1% | | | |

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

| Order number | 334-0KE00 | | | |
|---|--------------------|--|--|--|
| Basic error limit thermoresistor ranges | +/-0.8% | | | |
| Thermocouple inputs | - | | | |
| Thermocouple ranges | - | | | |
| Operational limit of thermocouple ranges | - | | | |
| Basic error limit thermoelement ranges | - | | | |
| Programmable temperature compensation | - | | | |
| External temperature compensation | - | | | |
| Internal temperature compensation | - | | | |
| Resolution in bit | 12 | | | |
| Measurement principle | Sigma-Delta | | | |
| Basic conversion time | 350 ms | | | |
| Noise suppression for frequency | 50 Hz/60 Hz | | | |
| Initial data size | 8 Byte | | | |
| Technical data analog outputs | | | | |
| Number of outputs | 2 | | | |
| Cable length, shielded | 200 m | | | |
| Rated load voltage | DC 24 V | | | |
| Reverse polarity protection of rated load voltage | ✓ | | | |
| Current consumption from load voltage L+ (without load) | 40 mA | | | |
| Voltage output short-circuit protection | ✓ | | | |
| Voltage outputs | ✓ | | | |
| Min. load resistance (voltage range) | 1 kΩ | | | |
| Max. capacitive load (current range) | 1 μF | | | |
| Output voltage ranges | 0 V ... +10 V | | | |
| Operational limit of voltage ranges | +/-1% | | | |
| Basic error limit voltage ranges with SFU | +/-0.8% | | | |
| Current outputs | - | | | |
| Max. in load resistance (current range) | - | | | |
| Max. inductive load (current range) | - | | | |
| Output current ranges | - | | | |
| Operational limit of current ranges | - | | | |
| Basic error limit current ranges with SFU | - | | | |
| Settling time for ohmic load | 0.8 ms | | | |
| Settling time for capacitive load | 0.8 ms | | | |
| Settling time for inductive load | 0.3 ms | | | |
| Resolution in bit | 12 | | | |
| Conversion time | 0.5 ms per channel | | | |

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

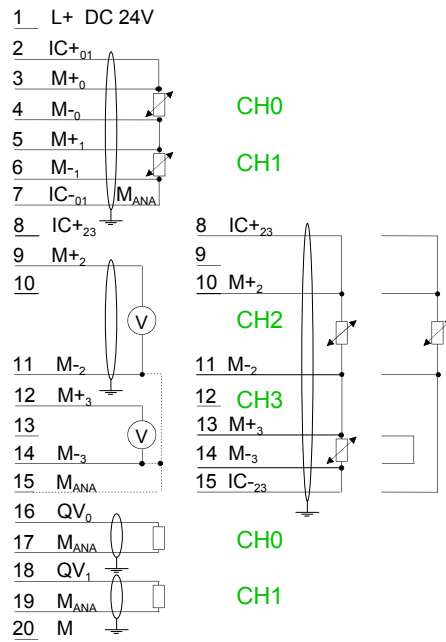
| | | | | |
|---|-------------------------|--|--|--|
| Order number | 334-0KE00 | | | |
| Substitute value can be applied | - | | | |
| Output data size | 4 Byte | | | |
| Status information, alarms, diagnostics | | | | |
| Status display | none | | | |
| Interrupts | no | | | |
| Process alarm | no | | | |
| Diagnostic interrupt | no | | | |
| Diagnostic functions | no | | | |
| Diagnostics information read-out | none | | | |
| Supply voltage display | none | | | |
| Group error display | none | | | |
| Channel error display | none | | | |
| Isolation | | | | |
| Between channels | - | | | |
| Between channels of groups to | - | | | |
| Between channels and backplane bus | ✓ | | | |
| Between channels and power supply | ✓ | | | |
| Max. potential difference between circuits | - | | | |
| Max. potential difference between inputs (Ucm) | DC 1 V | | | |
| Max. potential difference between Mana and Mintern (Uiso) | DC 75 V/ AC 60 V | | | |
| Max. potential difference between inputs and Mana (Ucm) | DC 1 V | | | |
| Max. potential difference between inputs and Mintern (Uiso) | - | | | |
| Max. potential difference between Mintern and outputs | - | | | |
| Insulation tested with | DC 500 V | | | |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | | | |
| Weight | 210 g | | | |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | | | |
| Storage temperature | -25 °C to 70 °C | | | |
| Certifications | | | | |
| UL508 certification | - | | | |

Connections, Interfaces

Signal modules analog | Analog in/output modules

| | | | | | |
|-----------|--|--|--|--|--|
| 334-0KE00 | | | | | |
|-----------|--|--|--|--|--|

334-0KE00



Communication processors



Structure and Function

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

Characteristics




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

Overview

| Order no. | Name/Description | Page |
|------------------------------|---|------|
| RS232/422/485- and other CPs | | |
| 341-1AH01 | CP 341 - Communication processor † RS232, isolated † Function compatibility to Siemens CP 341 † Parameterization via the Siemens parameterization package † Data transfer rate up to 76.8 kbit/s † Power supply via backplane bus | 466 |
| 341-1CH01 | CP 341 - Communication processor † RS422/485, isolated † Function compatibility to Siemens CP 341 † Parameterization via the Siemens parameterization package † Data transfer rate up to 76.8 kbit/s † Power supply via backplane bus | 466 |
| 341-2CH71 | CP 341S - Communication processor - SPEED-Bus † 2x RS422/485, isolated † SPEED-Bus † Data transfer rate up to 115.2 kbit/s † Integrated diagnostics buffer | 466 |
| Fieldbus master modules | | |
| 342-1CA70 | CP 342S CAN - CANopen master - SPEED-Bus † CANopen master, SPEED-Bus † 125 CAN slaves connectable † 40 Transmit PDOs, 40 Receive PDOs † 1 SDO (Server), 127 SDO (Client) † Project engineering: VIPA WinCoCT | 470 |
| 342-1DA70 | CP 342S DP - PROFIBUS-DP master - SPEED-Bus † PROFIBUS-DP master (Class 1), SPEED-Bus † RS485 † 124 DP slaves connectable † Project engineering: Siemens SIMATIC Manager † Diagnostic facilities | 470 |
| 342-1IA70 | CP 342S IBS - INTERBUS master - SPEED-Bus † INTERBUS master, SPEED-Bus † RS422 † Diagnostics via LEDs, RS232, Mini-DIN, Dual Port Master † Up to 512 slaves connectable | 470 |
| 342-2IA71 | CP 342S IBS - INTERBUS master - SPEED-Bus † Dual INTERBUS master, SPEED-Bus † 2x RS422 † Diagnostics via LEDs, diagnostics device (2x RJ45), Dual Port Master † Up to 512 slaves connectable | 470 |
| Actor/sensor interfaces | | |
| 343-2AH10 | CP 343-2P ASI - AS-i master † Up to 62 slaves connectable † Corresponding to AS-i specification 3.0 (master profile M3) † Support of analog slaves concerning profile 7.3 resp. 7.4 † Automatic address programming possible (address 0) | 474 |
| Ethernet-CPs | | |
| 343-1EX71 | CP 343S TCP/IP - Ethernet-CP 343 - SPEED-Bus † Ethernet CP 343S-NET, SPEED-Bus † RJ45 † 16 connections via Siemens NetPro † 64 connections via user program † 32 PG/OP connections | 477 |

RS232/422/485- and other CPs

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

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

Communication processors | RS232/422/485- and other CPs


341-1AH01
341-1CH01
341-2CH71

| Order number | 341-1AH01 | 341-1CH01 | 341-2CH71 | |
|-------------------------------------|-------------------------|-------------------------|-------------------------|--|
| Type | - | - | X3 | |
| Type of interface | - | - | RS422/485 | |
| Connector | - | - | Sub-D, 9-pin, female | |
| Electrically isolated | - | - | ✓ | |
| MPI | - | - | - | |
| MP ² (MPI/RS232) | - | - | - | |
| DP master | - | - | - | |
| DP slave | - | - | - | |
| Point-to-point interface | - | - | ✓ | |
| CAN | - | - | - | |
| Point-to-point communication | | | | |
| PTP communication | ✓ | ✓ | ✓ | |
| Interface isolated | ✓ | ✓ | ✓ | |
| RS232 interface | ✓ | - | - | |
| RS422 interface | - | ✓ | ✓ | |
| RS485 interface | - | ✓ | ✓ | |
| Connector | Sub-D, 9-pin, male | Sub-D, 9-pin, female | Sub-D, 9-pin, female | |
| Transmission speed, min. | - | 150 bit/s | 150 bit/s | |
| Transmission speed, max. | 76.8 kbit/s | 76.8 kbit/s | 115.2 kbit/s | |
| Cable length, max. | 15 m | 1200 m | 1200 m | |
| Point-to-point protocol | | | | |
| ASCII protocol | ✓ | ✓ | ✓ | |
| STX/ETX protocol | ✓ | ✓ | ✓ | |
| 3964(R) protocol | ✓ | ✓ | - | |
| RK512 protocol | - | - | - | |
| USS master protocol | - | - | - | |
| Modbus master protocol | ✓ | ✓ | - | |
| Modbus slave protocol | ✓ | ✓ | - | |
| Special protocols | - | - | - | |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | |
| Weight | 170 g | 170 g | 185 g | |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | 0 °C to 60 °C | 0 °C to 60 °C | |
| Storage temperature | -25 °C to 70 °C | -25 °C to 70 °C | -25 °C to 70 °C | |
| Certifications | | | | |
| UL508 certification | yes | yes | - | |

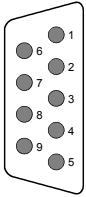
Connections, Interfaces

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

341-1AH01




RS232 X2



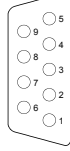
- ① DCD
- ② RxD
- ③ TxD
- ④ DTR
- ⑤ GND
- ⑥ DSR
- ⑦ RTS
- ⑧ CTS
- ⑨ RI

| CP 341 | Periphery |
|--------|-----------|
| TxD 3 | RxD |
| RxD 2 | TxD |
| RTS 7 | CTS |
| CTS 8 | RTS |
| DSR 6 | DTR |
| DTR 4 | DSR |
| DCD 1 | DCD |
| RI 9 | RI |
| GND 5 | GND |
| Shield | Shield |

341-1CH01



RS422/485 X2



- ① n.c.
- ② T(B)+
- ③ R(B)+
- ④ R(B)+/T(B)+
- ⑤ RTS
- ⑥ M5V (GND_ISO)
- ⑦ P5V (+5V_ISO)
- ⑧ T(A)-
- ⑨ R(A)-
- ⑩ R(A)-/T(A)-
- ⑪ n.c.

| CP341 RS422 | Periphery |
|-----------------|-----------|
| Send 7 T(A)- | R(A)- |
| Receive 2 T(B)+ | R(B)+ |
| Receive 8 R(A)- | T(A)- |
| Send 3 R(B)+ | T(B)+ |
| GND_ISO 5 | (GND_ISO) |
| +5V_ISO 6 | (+5V_ISO) |
| Shield | Shield |

| CP341 RS485 | Periphery |
|-----------------|-----------|
| Send 7 T(A)- | Receive |
| Receive 2 T(B)+ | Send |
| Receive 8 R(A)- | Receive |
| Send 3 R(B)+ | Send |
| GND_ISO 5 | (GND_ISO) |
| +5V_ISO 6 | (+5V_ISO) |
| Shield | Shield |

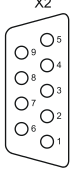
Communication processors | RS232/422/485- and other CPs

341-1AH01
341-1CH01
341-2CH71

341-2CH71

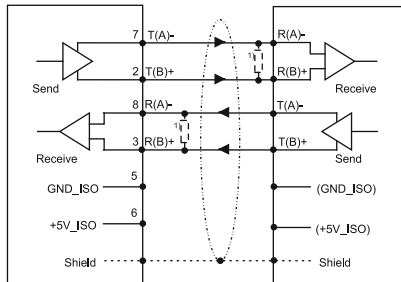


RS422/485 X2

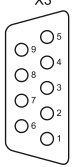


- ① n.c.
- ② T(B)+
- ③ R(B)+
- ④ R(B)+/T(B)+
- ⑤ RTS
- ⑥ M5V (GND_ISO)
- ⑦ P5V (+5V_ISO)
- ⑧ T(A)-
- ⑨ R(A)-
- ⑩ R(A)-/T(A)-
- ⑪ n.c.

CP341 - RS422

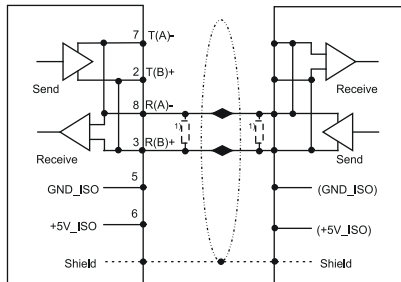


RS422/485 X3







- ① n.c.
- ② T(B)+
- ③ R(B)+
- ④ R(B)+/T(B)+
- ⑤ RTS
- ⑥ M5V (GND_ISO)
- ⑦ P5V (+5V_ISO)
- ⑧ T(A)-
- ⑨ R(A)-
- ⑩ R(A)-/T(A)-
- ⑪ n.c.

CP341 - RS485



Fieldbus master modules

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

| Order number | 342-1CA70 | 342-1DA70 | 342-1IA70 | 342-2IA71 |
|--|---|--|--|---|
| Figure |  |  |  |  |
| Type | CP 342S CAN, CANopen master SPEED-Bus | CP 342S DP, PROFIBUS-DP master SPEED-Bus | CP 342S IBS, INTERBUS master SPEED-Bus | CP 342S IBS, dual INTERBUS master SPEED-Bus |
| General information | | | | |
| Note | - | - | - | - |
| Features | <ul style="list-style-type: none"> ▸ CANopen master, SPEED-Bus ▸ 125 CAN slaves connectable ▸ 40 Transmit PDOs, 40 Receive PDOs ▸ 1 SDO (Server), 127 SDO (Client) ▸ Project engineering: VIPA WinCoCT | <ul style="list-style-type: none"> ▸ PROFIBUS-DP master (Class 1), SPEED-Bus ▸ RS485 ▸ 124 DP slaves connectable ▸ Project engineering: Siemens SIMATIC Manager ▸ Diagnostic facilities | <ul style="list-style-type: none"> ▸ INTERBUS master, SPEED-Bus ▸ RS422 ▸ Diagnostics via LEDs, RS232, Mini-DIN, Dual Port Master ▸ Up to 512 slaves connectable | <ul style="list-style-type: none"> ▸ Dual INTERBUS master, SPEED-Bus ▸ 2x RS422 ▸ Diagnostics via LEDs, diagnostics device (2x RJ45), Dual Port Master ▸ Up to 512 slaves connectable |
| SPEED-Bus | ✓ | ✓ | ✓ | ✓ |
| Current consumption/power loss | | | | |
| Current consumption from backplane bus | 550 mA | 560 mA | 600 mA | 1 A |
| Power loss | 2.75 W | 2.8 W | 3 W | 4.5 W |
| Status information, alarms, diagnostics | | | | |
| Status display | yes | yes | yes | yes |
| Interrupts | no | no | no | no |
| Process alarm | no | no | no | no |
| Diagnostic interrupt | no | no | no | no |
| Diagnostic functions | no | no | no | no |
| Diagnostics information read-out | possible | possible | none | none |
| Supply voltage display | none | none | green LED | yes |
| Group error display | yes | yes | yes | yes |
| Channel error display | none | none | none | none |
| Functionality Sub-D interfaces | | | | |
| Type | CAN | DP | IBS | X2 |
| Type of interface | CAN | RS485 | RS422 | RS422 |
| Connector | Sub-D, 9-pin, male | Sub-D, 9-pin, female | Sub-D, 9-pin, female | Sub-D, 9-pin, female |
| Electrically isolated | ✓ | ✓ | ✓ | ✓ |
| MPI | - | - | - | - |
| MP2 ¹ (MPI/RS232) | - | - | - | - |
| DP master | - | ✓ | - | - |
| DP slave | - | ✓ | - | - |

Communication processors | Fieldbus master modules


| | | | | | |
|-----------|--|--|--|--|--|
| 342-1CA70 | | | | | |
| 342-1DA70 | | | | | |
| 342-1IA70 | | | | | |
| 342-2IA71 | | | | | |

| Order number | 342-1CA70 | 342-1DA70 | 342-1IA70 | 342-2IA71 |
|--------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Point-to-point interface | - | - | - | - |
| Type | - | - | DIAG 1 | X3 |
| Type of interface | - | - | RS232 | RS422 |
| Connector | - | - | Sub-D, 9-pin, male | Sub-D, 9-pin, female |
| Electrically isolated | - | - | ✓ | ✓ |
| MPI | - | - | - | - |
| MP ² I (MPI/RS232) | - | - | - | - |
| DP master | - | - | - | - |
| DP slave | - | - | - | - |
| Point-to-point interface | - | - | ✓ | - |
| CAN | - | - | - | - |
| Functionality RJ45 interfaces | | | | |
| Type | - | - | - | DIAG 1 |
| Type of interface | - | - | - | - |
| Connector | - | - | - | RJ45 |
| Electrically isolated | - | - | - | - |
| PG/OP channel | - | - | - | - |
| Productive connections | - | - | - | - |
| Type | - | - | - | DIAG 2 |
| Type of interface | - | - | - | - |
| Connector | - | - | - | RJ45 |
| Electrically isolated | - | - | - | - |
| PG/OP channel | - | - | - | - |
| Productive connections | - | - | - | - |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm | 40 mm x 125 mm x 120 mm |
| Weight | 210 g | 210 g | 260 g | 260 g |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | 0 °C to 60 °C | 0 °C to 60 °C | 0 °C to 60 °C |
| Storage temperature | -25 °C to 70 °C | -25 °C to 70 °C | -25 °C to 70 °C | -25 °C to 70 °C |
| Certifications | | | | |
| UL508 certification | yes | yes | yes | - |

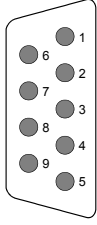
Connections, Interfaces

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

342-1CA70

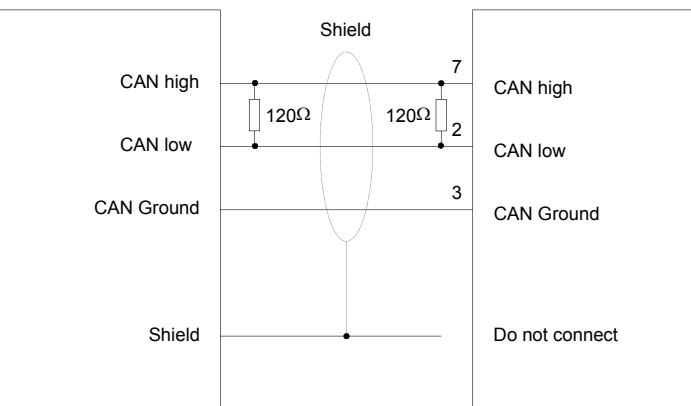


CANopen master X2




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

master

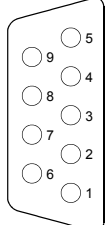


slave

342-1DA70

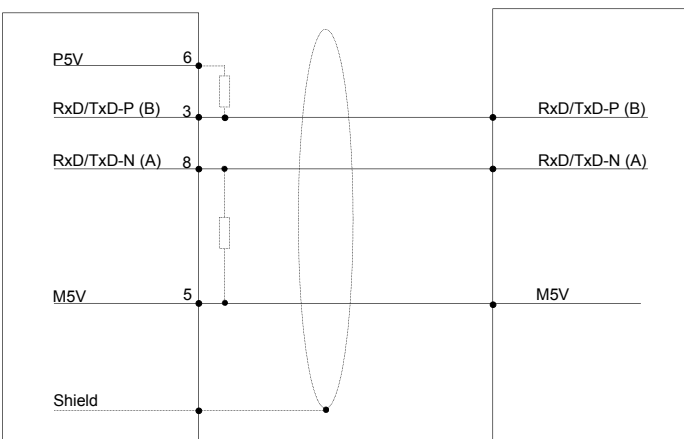


DP master X2



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

CP 342



Periphery

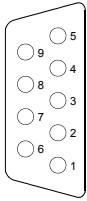
Communication processors | Fieldbus master modules

| | | | | | | |
|-----------|--|--|--|--|--|--|
| 342-1CA70 | | | | | | |
| 342-1DA70 | | | | | | |
| 342-1IA70 | | | | | | |
| 342-2IA71 | | | | | | |

342-1IA70

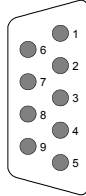


Interbus
RS422
X2



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

RS232
diagnostics
X3



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

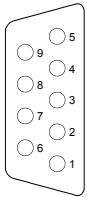
Mini-DIN slot
diagnostics
X4



342-2IA71



IBS1/IBS2
RS422
X2/X3



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


2x RJ45
Diagnostic device
VIPA-342-0IA01



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

Actor/sensor interfaces

| Communication processors Actor/sensor interfaces | | | | | | |
|--|--|--|--|--|--|--|
| 343-2AH10 | | | | | | |

| | | | | |
|--|---|--|--|--|
| Order number | 343-2AH10 | | | |
| Figure |  | | | |
| Type | CP 343-2P ASI, AS-i master | | | |
| General information | | | | |
| Note | - | | | |
| Features | <ul style="list-style-type: none"> ▸ Up to 62 slaves connectable ▸ Corresponding to AS-i specification 3.0 (master profile M3) ▸ Support of analog slaves concerning profile 7.3 resp. 7.4 ▸ Automatic address programming possible (address 0) | | | |
| SPEED-Bus | - | | | |
| Current consumption/power loss | | | | |
| Current consumption from backplane bus | 200 mA | | | |
| Power loss | 2.5 W | | | |
| Status information, alarms, diagnostics | | | | |
| Status display | yes | | | |
| Interrupts | yes | | | |
| Process alarm | - | | | |
| Diagnostic interrupt | yes | | | |
| Diagnostic functions | yes | | | |
| Diagnostics information read-out | possible | | | |
| Supply voltage display | yes | | | |
| Group error display | red SF LED | | | |
| Channel error display | none | | | |
| Functionality interfaces | | | | |
| Type of interface | AS-Interface | | | |
| Connector | 20-pin front connector | | | |
| Electrically isolated | - | | | |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | | | |
| Weight | 250 g | | | |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | | | |


| Communication processors Actor/sensor interfaces | | | | | | |
|--|--|--|--|--|--|--|
| 343-2AH10 | | | | | | |





| | | | | |
|-----------------------|------------------|--|--|--|
| Order number | 343-2AH10 | | | |
| Storage temperature | -25 °C to 70 °C | | | |
| Certifications | | | | |
| UL508 certification | yes | | | |

Connections, Interfaces

| Communication processors Actor/sensor interfaces | | | | | | |
|--|--|--|--|--|--|--|
| 343-2AH10 | | | | | | |


343-2AH10



1 _____
 2 _____
 3 _____
 4 _____
 5 _____
 6 _____
 7 _____
 8 _____
 9 _____
 10 _____
 11 _____
 12 _____
 13 _____
 14 _____
 15 _____
 16 _____
 17 +  AS-i + (brown)
 18 -  AS-i - (blue)
 19 +  AS-i + (brown)
 20 -  AS-i - (blue)

Ethernet-CPs

| Communication processors Ethernet-CPs | | | | | | |
|---|--|--|--|--|--|--|
| 343-1EX71 | | | | | | |

| Order number | 343-1EX71 | | | |
|--|---|--|--|--|
| Figure |  | | | |
| Type | CP 343S TCP/IP, Ethernet-CP 343 SPEED-Bus | | | |
| General information | | | | |
| Note | - | | | |
| Features | <ul style="list-style-type: none"> ▸ Ethernet CP 343S-NET, SPEED-Bus ▸ RJ45 ▸ 16 connections via Siemens NetPro ▸ 64 connections via user program ▸ 32 PG/OP connections | | | |
| SPEED-Bus | ✓ | | | |
| Current consumption/power loss | | | | |
| Current consumption from backplane bus | 550 mA | | | |
| Power loss | 2.75 W | | | |
| Status information, alarms, diagnostics | | | | |
| Status display | yes | | | |
| Interrupts | no | | | |
| Process alarm | no | | | |
| Diagnostic interrupt | no | | | |
| Diagnostic functions | no | | | |
| Diagnostics information read-out | possible | | | |
| Supply voltage display | green LED | | | |
| Group error display | red SF LED | | | |
| Channel error display | none | | | |
| Ethernet communication CP | | | | |
| Number of productive connections, max. | 64 | | | |
| Number of productive connections by Siemens NetPro, max. | 16 | | | |
| User data per S7 connection, max. | 32 KB | | | |
| User data per TCP connection, max. | 64 KB | | | |
| User data per ISO connection, max. | 8 KB | | | |
| User data per ISO on TCP connection, max. | 32 KB | | | |
| User data per UDP connection, max. | 2 KB | | | |
| Functionality RJ45 interfaces | | | | |

| Communication processors Ethernet-CPs | | | | | | |
|---|--|--|--|--|--|--|
| 343-1EX71 | | | | | | |

| | | | | |
|---------------------------------|-------------------------|--|--|--|
| Order number | 343-1EX71 | | | |
| Type | - | | | |
| Type of interface | Ethernet 10/100 MBit | | | |
| Connector | RJ45 | | | |
| Electrically isolated | ✓ | | | |
| PG/OP channel | ✓ | | | |
| Productive connections | ✓ | | | |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | | | |
| Weight | 210 g | | | |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | | | |
| Storage temperature | -25 °C to 70 °C | | | |
| Certifications | | | | |
| UL508 certification | yes | | | |

Connections, Interfaces

Communication processors | Ethernet-CPs

| | | | | | | |
|-----------|--|--|--|--|--|--|
| 343-1EX71 | | | | | | |
|-----------|--|--|--|--|--|--|

343-1EX71



RJ45
X1



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

Interface modules



Structure and Function

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

Characteristics


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

Overview

| Order no. | Name/Description | Page |
|---------------------------------|---|------|
| Fieldbus slave modules w/o I/Os | | |
| 353-1DP01 | IM 353DP - PROFIBUS-DP slave ▶ PROFIBUS-DP slave (DP-V0, DP-V1) ▶ For max. 32 peripheral modules (16 analog) ▶ 244 Byte input und 244 Byte output data ▶ Integrated DC 24 V power supply | 482 |

Fieldbus slave modules w/o I/Os

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

| Order number | 353-1DP01 | | | |
|--|--|--|--|--|
| Figure |  | | | |
| Type | IM 353DP | | | |
| General information | | | | |
| Note | - | | | |
| Features | <ul style="list-style-type: none"> ▸ PROFIBUS-DP slave (DP-V0, DP-V1) ▸ For max. 32 peripheral modules (16 analog) ▸ 244 Byte input und 244 Byte output data ▸ Integrated DC 24 V power supply | | | |
| SPEED-Bus | - | | | |
| Technical data power supply | | | | |
| Power supply (rated value) | DC 24 V | | | |
| Power supply (permitted range) | DC 20.4...28.8 V | | | |
| Reverse polarity protection | ✓ | | | |
| Current consumption (no-load operation) | 70 mA | | | |
| Current consumption (rated value) | 1 A | | | |
| Inrush current | - | | | |
| I _{∆t} | - | | | |
| Max. current drain at backplane bus | 3.5 A | | | |
| Max. current drain load supply | - | | | |
| Power loss | 2.5 W | | | |
| Status information, alarms, diagnostics | | | | |
| Status display | yes | | | |
| Interrupts | yes, parameterizable | | | |
| Process alarm | yes, parameterizable | | | |
| Diagnostic interrupt | yes, parameterizable | | | |
| Diagnostic functions | yes, parameterizable | | | |
| Diagnostics information read-out | possible | | | |
| Supply voltage display | green LED | | | |
| Service Indicator | - | | | |
| Group error display | red LED | | | |
| Channel error display | none | | | |
| Hardware configuration | | | | |
| Racks, max. | 1 | | | |
| Modules per rack, max. | 32 | | | |


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

| | | | | |
|---------------------------------|--|--|--|--|
| Order number | 353-1DP01 | | | |
| Number of digital modules, max. | 32 | | | |
| Number of analog modules, max. | 16 | | | |
| Communication | | | | |
| Fieldbus | PROFIBUS-DP to EN 50170 | | | |
| Type of interface | RS485 | | | |
| Connector | Sub-D, 9-pin, female | | | |
| Topology | Linear bus with bus termination at both ends | | | |
| Electrically isolated | ✓ | | | |
| Number of participants, max. | 125 | | | |
| Node addresses | 1 - 99 | | | |
| Transmission speed, min. | 9.6 kbit/s | | | |
| Transmission speed, max. | 12 Mbit/s | | | |
| Address range inputs, max. | 244 Byte | | | |
| Address range outputs, max. | 244 Byte | | | |
| Number of TxPDOs, max. | - | | | |
| Number of RxPDOs, max. | - | | | |
| Mechanical data | | | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | | | |
| Weight | 170 g | | | |
| Environmental conditions | | | | |
| Operating temperature | 0 °C to 60 °C | | | |
| Storage temperature | -25 °C to 70 °C | | | |
| Certifications | | | | |
| UL508 certification | yes | | | |

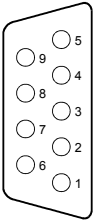
Connections, Interfaces

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

353-1DP01




PB DP X2



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

X1



- + ① + DC 24 V
- ② 0 V



System SLIO

System 100V

System 200V

System 300S

System 500S

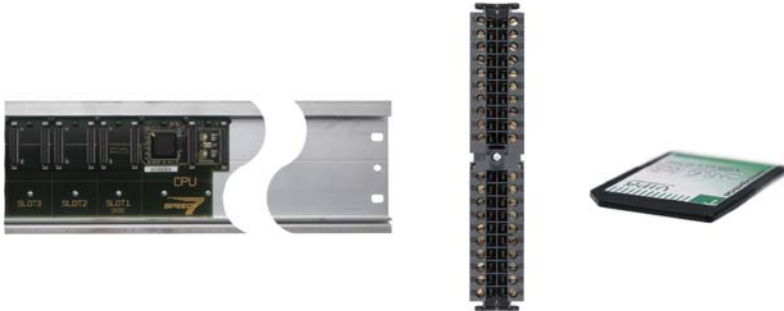
HMI

Software

Accessories

Appendix

System 300S accessories



Structure and Function

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

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

Memory Extension

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

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

Profile Rail with integrated High-SPEED Backplane Bus

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

Front Connectors

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

Manuals

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

SPEED7 starterKIT



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

Memory extensions



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

Configuration- and diagnosis modules

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

Profile rail



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

Front connector



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

Manuals and operating instructions



| Order number | Title | Contents | Language |
|-----------------|--|--|----------|
| HB140D | Manual System 300S, German | HB140D_PS, HB140D_SM, HB140D_CP | DE |
| HB140D_CP | Manual System 300S - CP | CP 34x SPEED bus communication processors | DE |
| HB140D_CPU | Manual System 300S - CPU | CPU 31xS, incl. operations list | DE |
| HB140D_CPU_SC | Manual System 300S - CPU-SC | CPU 31xSC, incl. operations list | DE |
| HB140D_PS | Manual System 300S - PS | PS - SPEED bus power supply | DE |
| HB140D_SM | Manual System 300S - SM | SM - SPEED bus signal modules | DE |
| HB140E | Manual System 300S, English | HB140D_PS, HB140D_SM, HB140D_CP | EN |
| HB140E_CP | Manual System 300S - CP | CP 34x SPEED bus communication processors | EN |
| HB140E_CPU | Manual System 300S - CPU | CPU 31xS, incl. operations list | EN |
| HB140E_CPU_SC | Manual System 300S - CPU-SC | CPU 31xSC, incl. operations list | EN |
| HB140E_PS | Manual System 300S - PS | PS - SPEED bus power supply | EN |
| HB140E_SM | Manual System 300S - SM | SM - SPEED bus signal modules | EN |
| HB130D | Manual System 300V, German | HB130D_PS, HB130D_SM, HB130D_CP, HB130D_FM, HB130D_IM | DE |
| HB130D_CP | Manual System 300V - CP | CP 34x Communication processors | DE |
| HB130D_CPU | Manual System 300V - CPU | CPU 31x, incl. operations list | DE |
| HB130D_FM | Manual System 300V - FM | FM 355 - Temperature control modules | DE |
| HB130D_IM | Manual System 300V - IM | IM - Interface modules | DE |
| HB130D_PS | Manual System 300V - PS | PS - Power supply | DE |
| HB130D_SM | Manual System 300V - SM | SM - Signal modules | DE |
| HB130E | Manual System 300V, English | HB130E_PS, HB130E_SM, HB130E_CP, HB130E_FM, HB130E_IM | EN |
| HB130E_CP | Manual System 300V - CP | CP 34x Communication processors | EN |
| HB130E_CPU | Manual System 300V - CPU | CPU 31x, incl. operations list | EN |
| HB130E_FM | Manual System 300V - FM | FM 355 - Temperature control modules | EN |
| HB130E_IM | Manual System 300V - IM | IM - Interface modules | EN |
| HB130E_PS | Manual System 300V - PS | PS - Power supply | EN |
| HB130E_SM | Manual System 300V - SM | SM - Signal modules | EN |
| HB144D_IBS-DIAG | Technical documents IBS Diagnostics Device | Manual CP 342 IBS-DIAG for configuration / diagnosis module 342-01A00 or 342-01A01 | DE |
| HB144E_IBS-DIAG | Technical documents IBS Diagnostics Device | Manual CP 342 IBS-DIAG for configuration / diagnosis module 342-01A00 or 342-01A01 | EN |