



CPS0212/E, CPS0212, CPS0415, CPS0419 Processor modules

The CPS100 CPUs combine maximum processing performance with outstanding robustness and compact dimensions. Scalable processors with up to 4 physical processor cores and clock frequencies of up to 1.9 GHz enable the implementation of a wide range of applications and provide a generous reserve for future expansion.

Thanks to multicore technology and symmetrical multiprocessing for real-time systems, the CPUs are suitable for very demanding applications; such as high volume requirements and short cycle times.

Parallel processing from the multicore units enables a more responsive machine control, complex motion control, and demanding communication tasks. The multicore options also offer various IT security benefits, such as stronger algorithms and longer keys. Data centric applications, such as process diagnostics, machine learning and predictive maintenance are easily implemented thanks to the large working memory.

The generous thermal design and special coating processes enable fanless use in extreme operating conditions from -30 to +70 °C.

| Part type designation | Part number |
|-----------------------|-------------|
| CPS0212/E | 00046110-00 |
| CPS0212/E EC | On request |
| CPS0212 | 00046109-00 |
| CPS0212 EC | On request |
| CPS0415 | 00046111-00 |
| CPS0415 EC | On request |
| CPS0419 | 00046112-00 |
| CPS0419 EC | On request |





Features

- Industrial processor at up to 1.9 GHz
- Dual- or quad-core CPU
- Realtime symmetrical multi processing
- Up to 8 GB LPDDR4 working memory
- Up to 1 MB remanent memory (retain)
- Up to 32 GB internal storage medium
- microSD card slot for removable media
- Up to 4x Ethernet 100/1000 Mbit/s with IEEE 1588
- Trusted platform module
- Minimum cycle time: 100 µs
- Diagnostics and status LEDs




| Common properties | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------------|-------------|
| Basic function | Central Processing Unit Standard | | | |
| | Dual-core processor | | Quad-core processor | |
| | 2x RJ45 interfaces 100/1000 Mbit/s | 4x RJ45 interfaces | 100/1000 Mbit/s | |
| | 1x USB-A 2.0 interface 1x USB-C (service interface) 2x rotary switch | | | |
| System | Bachmann system M100 | | | |
| Processor and memory | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| Processor | x86 / Intel Atom | | | |
| Cores | 2 | | 4 | |
| Base clock frequency | 1200 MHz | 1200 MHz | 1500 MHz | 1900 MHz |
| RAM | 2 GB LPDDR4 | 4 GB LPDDR4 | 4 GB LPDDR4 | 8 GB LPDDR4 |
| Mass storage | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| Internal Storage | 16 GB pSLC | 32 GB pSLC | | |
| Removable Storage | microSD ¹⁾ | | | |
| Retentive data storage | 128 kB NVRAM | 512 kB NVRAM | 1024 kB NVRAM | |
| Persistent data storage | 1024 kB (eMMC) | | | |
| ¹⁾ Storage medium not included if not mentioned explicitly in order text. | | | | |
| Module bus interface | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| System | M100 | | | |
| Slot type | 0/C | | | |
| Interfaces | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| Ethernet | 2x 100/1000 Mbit (RJ45) | 4x 100/1000 Mbit (RJ45) | | |
| USB | 1x USB-A 2.0 | | | |
| Synchronization/clocks | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| Real time clock | RTC (battery-backed) | | | |
| Synchronization | PTP, SNTP, NTP | | | |
| Diagnostics | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| Electronic type plate | Yes (application interface and in the engineering tool) | | | |
| Machine readable type plate | Yes (application interface and in the engineering tool) | | | |
| Environmental conditions sensor | Integrated temperature sensor | | | |
| Diagnostics interface | USB-C socket | | | |
| Operational indications | LED "MOD" (red/green) module status LED "COM" (red/green) communication status LED "APP" (red/green) application-controlled indication LED "SAF" (red/green) safety status indication | | | |
| Energy supply | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| Supply voltage, nominal | 12 V DC internal via power supply module(s) PSI135 | | | |
| Power consumption, continuous, max. | TBD | TBD | TBD | TBD |
| Power dissipation | TBD | TBD | TBD | TBD |
| Power consumption from backplane | TBD | TBD | TBD | TBD |
| Product safety | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| Galvanic isolation | 850 V AC | | | |
| Degree of protection acc. IEC 60529 | IP40, terminal block IP30 | | | |

| Product safety | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|---------|
| Protection class acc. IEC 61010-1, IEC 61010-2-201 | III | | | |
| Overvoltage category acc. IEC 61010-1 | II | | | |
| Environmental conditions | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| Temperature, operating | Standard: -30 °C to +60 °C Extended Climate: -30 °C to +70 °C | | | |
| Temperature, transport and storage | -40 °C to +85 °C | | | |
| Installation altitude, max. | Up to 2000 m without temperature derating 2000 m to 4500 m: Reduction of the max. ambient temperature by 0.1 °C per 100 m elevation | | | |
| Air pressure | 106 kPa to 58 kPa (0 m to 4500 m) | | | |
| Relative humidity, operation | Standard: 0 % to 100 % noncondensing Extended Climate: 0 % to 100 % with temporary condensation | | | |
| Pollution degree acc. IEC 61010-1 | Standard: 2, noncondensing Extended Climate: 2 | | | |
| Vibration | With BPS1nn: <ul style="list-style-type: none"> • 4 g (11.5 Hz to 500 Hz) • 7.5 mm amplitude (2 Hz to 14.1 Hz) • Test duration: 15 h With BPR1nn: <ul style="list-style-type: none"> • 4 g (IACS E10, IEC 61131-2) | | | |
| Shock | 45 g max. (test scope 18 shocks) 20 g permanently (test scope 6000 shocks) | | | |
| Approvals/certificates | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| Product safety | CE, UKCA: in preparation cULus (NRAQ, NRAQ7): in preparation | | | |
| Hazard area operation | ATEX: Ex II 3G Ex ec IIC Gc: in preparation | | | |
| Maritime | ABS, BV, DNV, KR, LR, NK, RINA: in preparation | | | |
| Hazardous substances and waste treatment | RoHS, RoHS China, REACH, WEEE | | | |
| Quality management | ISO 9001 for development and production | | | |
| Engineering | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| Configuration tool | SolutionCenter (≥ V2.95) | | | |
| Firmware package update | Yes | | | |
| Secure boot / root-of-trust | Yes | | | |
| Software | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| Software | Linux Embedded (Debian) | | | |
| Mounting/installation | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| Mounting type | Inserting and screwing onto the backplane with integrated M4 screw | | | |
| Number of fixings | 1 | | | |
| Dimensions | CPS0212/E | CPS0212 | CPS0415 | CPS0419 |
| Number of slots | 1 | | | |
| Size unpacked W × H × D | 46.6 mm x 152.5 mm x 95.7 mm | | | |
| Mass unpacked | 519 g | 534 g | 534 g | 534 g |

Order data

| Part type designation | Part number | Description |
|-----------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| CPS0212/E | 00046110-00 | CPU module for M100 system, 1200 MHz dual-core 2 GB LPDDR4; 128 kB nvRAM; 16 GB pSLC file flash; 2x Eth100/1000; 1x USB 2.0; TPM; microSD slot |
| CPS0212/E EC | On request | Like CPS0212/E; Extended Climate Range  |
| CPS0212 | 00046109-00 | CPU module for M100 system, 1200 MHz dual-core 4 GB LPDDR4; 512 kB nvRAM; 32 GB pSLC file flash; 4x Eth100/1000; 1x USB 2.0; TPM; microSD slot |
| CPS0212 EC | On request | Like CPS0212; Extended Climate Range  |
| CPS0415 | 00046111-00 | CPU module for M100 system, 1500 MHz quad-core 4 GB LPDDR4; 1024 kB nvRAM; 32 GB pSLC file flash; 4x Eth100/1000; 1x USB 2.0; TPM; microSD slot |
| CPS0415 EC | On request | Like CPS0415; Extended Climate Range  |
| CPS0419 | 00046112-00 | CPU module for M100 system, 1900 MHz quad-core 8 GB LPDDR4; 1024 kB nvRAM; 32 GB pSLC file flash; 4x Eth100/1000; 1x USB 2.0; TPM; microSD slot |
| CPS0419 EC | On request | Like CPS0419; Extended Climate Range  |

Accessories

| Part type designation | Part number | Description |
|-----------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BPR1nn | 00039235-nn | Backplane for DIN-rail mounting Active backplane system M100: BPR1nn with nn = 04 to 16 slots in increments of 1, as well as 20, 24, 28, 32 slots, for DIN-rail mounting; delivery without backplane slot covers and without mounting rail |
| BPR1nn EC | 00039236-nn | Like BPR1nn; Extended Climate Range  |
| BPS1nn | 00039237-nn | Backplane for direct screw mounting Active backplane system M100: BPS1nn with nn = 04 to 16 slots in increments of 1, as well as 20, 24, 28, 32 slots, for direct screw mounting; delivery without backplane slot covers and without screws |
| BPS1nn EC | 00039238-nn | Like BPS1nn; Extended Climate Range  |
| PSI135 | 00028967-00 | Power supply module for backplane / M100 system modules Power supply module 35 W, galvanically isolated, multiply plugable for extended power or availability, outage buffering PS2 acc. IEC 61131-2, extended diagnostics, without terminal block |
| PSI135 EC | 00040514-00 | Like PSI135 with Extended Climate Range  |
| uSD200/4GB | 00035615-00 | Removable Storage microSD card 4GB (SLC) |