



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

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.

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 0.5 °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: 4 g (11.5 Hz to 500 Hz) 7.5 mm amplitude (2 Hz to 14.1 Hz) - Test duration: 15 h With BPR1nn: 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			
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			
Engineering	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	95.7 mm x 152.5 mm x 46.6 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 / I/Os 35 W, galvanically isolated; multiply pluggable 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)