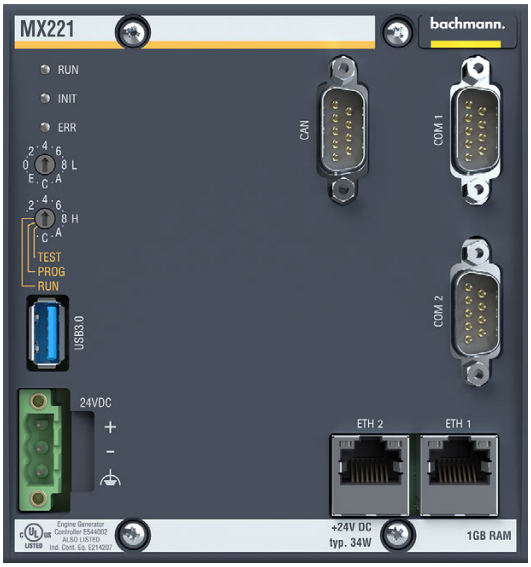

Part type designation	Part number
MX208	00039193-00
MX214	00039194-00
MX214 CC	00039199-00
MX215	00039195-00
MX221	00039196-00
MX221 CC	00039206-00

MX200 Processor modules

Processor modules of the MX200 series combine outstanding environmental robustness with very compact dimensions.

Thanks to an integrated power supply unit, which can also provide the I/O module power supply, and integrated communication interfaces, complete basic system can be implemented on only 2 module widths. The industrial processors used with scalable clock frequencies offer sufficient CPU performance for small to medium-sized applications.

Machine control, simple motion control, a wide range of communication tasks or condition monitoring can be implemented easily and cost efficiently with this platform. Different programs can be executed priority-controlled and virtually in parallel thanks to the real time multi-tasking. If the CPU performance has to be increased, applications can be transferred easily to more powerful CPU models thanks to the standard programming model.

The generous thermal design and special coating processes enable fanless use in extreme operating conditions from -30 °C to +60 °C.

Features

- Industrial processor
- Priority-controlled multitasking
- Up to 1 GB working memory
- 512 kB remanent memory (retain)
- Up to 4 GB internal storage medium
- microSD card slot for removable media (except MX208)
- USB 3.0 interface
- Up to 3x Ethernet 10/100/1000 Mbit/s
- 1x RS232, 1x RS232/RS422/RS485
- Up to 2x CAN/CANopen interfaces
- Integrated power supply for I/Os
- Trusted platform module

MX200 series

Processor	MX208	MX214	MX215	MX221
Architecture	x86 / Intel Atom			
CPU	Industrial low voltage			
Effective clock frequency	320 MHz	320 MHz	320 MHz	400 MHz
Processor cores	1			
Multitasking	Yes			

Memory	MX208	MX214	MX215	MX221
Working memory	512 MB RAM LPDDR4			1 GB RAM LPDDR4
Retentive data memory (retain)	512 kB NVRAM			
Mass storage integrated	1 GB eMMC pSLC	2 GB eMMC pSLC	4 GB eMMC pSLC	
Mass storage removable	No	microSD [1)] Secure Digital High Capacity SDHC (SD 2.0) to 32 GB Secure Digital eXtended Capacity SDXC (SD 3.0) to 2 TB		

[1)] *Storage medium not included if not mentioned explicitely in order text.*

Interfaces	MX208	MX214	MX215	MX221
I/O Subsystem	Bachmann M200 backplane interface Process image controller integrated Cyclic and on-event single channel access Synchronization pulse for I/O and fieldbuses			
Ethernet	1x 10/100/1000 Base-T (RJ45)	2x 10/100/1000 Base-T (RJ45)	3x 10/100/1000 Base-T (RJ45)	2x 10/100/1000 Base-T (RJ45)
	AutoNegotiation, AutoCrossing, IEEE 1588			
Serial interfaces / COM	–	1x RS-232 (D-sub-9 m)		
	1x RS-232/RS-422/RS-485 (D-sub-9 m)			
USB	1x USB 3.0 (Type A) [1)]			
CAN interface	1x CAN / CANopen / J1939 (D-sub-9 m) galvanically isolated; up to 1 Mbit/s			
	–	–	1x CAN / CANopen / J1939 (D-sub-9 m) galvanically isolated; up to 1 Mbit/s	–
CAN operating modes	CAN master, CAN I/O device			

[1)] *Current is limited to 0.5 A.*

Indications and operation	MX208	MX214	MX215	MX221
Status indications	3x LED for CPU status (RUN/INIT/ERR) 2x LED for status and speed per ETH socket			
Operating elements	2x 16-position rotary switch (Hex-switch) for operation mode, programming, boot mode, address setting etc.			

Programming	MX208	MX214	MX215	MX221
Generic build target	Yes, across all model families			
Languages	IEC 61131-3, C/C++, MATLAB®/Simulink®			
Function modules	Yes (Motion Control, Camming, CNC, adaptive temperature controller, etc.)			

Monitoring	MX208	MX214	MX215	MX221
Processor temperature	Yes			
Processor load	Yes			
Runtime behavior	Yes, cycle monitoring and watchdog			
Network load	Yes			
Memory protection	Yes, per partition			

Monitoring	MX208	MX214	MX215	MX221
Power supply	Yes, with interrupt signal			
Subsystems	**MX208**	**MX214**	**MX215**	**MX221**
Real time clock	Yes (battery-backed RTC for time/date), sync capability over IEEE 1588, SNTP			
Trusted platform module	Yes (TPM 2.0)			
Energy supply	**MX208**	**MX214**	**MX215**	**MX221**
Supply voltage	24 V DC (18 V to 34 V)			
Power dissipation, typ.	12.0 W / 5.7 W [1)]	12.8 W / 7.1 W [1)]	13.8 W / 7.7 W [1)]	13.1 W / 7.0 W [1)]
Power dissipation, max.	14.0 W / 7.7 W [1)]	14.8 W / 9.1 W [1)]	15.8 W / 9.7 W [1)]	15.1 W / 9.0 W [1)]
Reverse polarity protection	Yes			
Galvanic isolation supply	Yes (500 V)			
Voltage interruptions immunity (IEC 61131-2)	PS2			
Nominal power consumption without I/O	12.9 W (+5 V / 1220 mA)	13.8 W (+5 V / 1540 mA)	14.9 W (+5 V / 1680 mA)	14.2 W (+5 V / 1520 mA)
Nominal power consumption with I/O	33.6 W			
Nominal power output for I/O	18.25 W	16.75 W		
Maximum currents for I/O	+5 V / 2800 mA; +15 V / 250 mA; -15 V / 200 mA [2)]			

[1)] *With or without external module supply.*

[2)] *Total power max. according to "Nominal power output for I/O".*

Electrical safety	MX208	MX214	MX215	MX221
Protection class (DIN EN 61140)	III			
Degree of protection acc. to IEC 60529	IP20			
Environmental conditions	**MX208**	**MX214**	**MX215**	**MX221**
Operating temperature	-30 °C to +60 °C fanless			
Relative humidity, operation	Standard: 5 % to 95 % noncondensing ColdClimate: 5 % to 95 % with condensation			
Storage temperature	-40 °C to +85 °C			
Relative humidity, storage	Standard: 5 % to 95 % noncondensing ColdClimate: 5 % to 95 % with condensation			
Installation altitude	2000 m above sea level (with derating up to 4500 m)			
Pollution degree (IEC 60664-1)	Standard: 2 (noncondensing) ColdClimate: 2			
Approvals/Certificates	**MX208**	**MX214**	**MX215**	**MX221**
Product safety	cULus CE, UKCA: in preparation			
Maritime	ABS, BV, DNV, KR, LR, NK, RINA: in preparation			
Dimensions	**MX208**	**MX214**	**MX215**	**MX221**
Number of slots / module units	2			
Width × Height × Depth	110 mm × 119 mm × 61 mm			
Weight/Mass	Approx. 630 g	Approx. 640 g		
System requirements	**MX208**	**MX214**	**MX215**	**MX221**
Backplane	BS2xx, BS2xx/S, BS2xx/E			
Software	MxOS (VxWorks 7) and driver from M-Base V4.90 or higher (pre installed on internal memory device)			