



MX200 series (Compact)

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 at up to 433 MHz
- Priority-controlled multitasking
- 256 MB working memory
- 512 kB remanent memory (retain)
- 64 MB internal memory device ¹⁾
- CompactFlash card slot for removable media
- Front side PC card slot
- Up to 2x Ethernet 10/100 Mbit/s
- 1x RS232, 1x RS232/RS422/RS485, 1x USB 2.0
- CAN/CANopen
- Integrated power supply for I/Os

¹⁾ Hardware revision \leq KR15x.000: 16 MB internal memory device on MX213 and MX220

| Part type designation | Memorydevice | Part number |
|-----------------------|--------------|-------------|
| MX207 | | 00031492-00 |
| MX213 | | 00031491-00 |
| MX213 CC | | 00031494-00 |
| MX213 | CF 2GB | 00031491-02 |
| MX213 CC | CF 2GB | 00031494-02 |
| MX213 | CF 4GB | 00031491-03 |
| MX213 CC | CF 4GB | 00031494-03 |
| MX220 | | 00031490-00 |
| MX220 CC | | 00031493-00 |
| MX220 | CF 2GB | 00031490-02 |
| MX220 CC | CF 2GB | 00031493-02 |
| MX220 | CF 4GB | 00031490-03 |
| MX220 CC | CF 4GB | 00031493-03 |

MX200 series

| Processor | MX207 | MX213 | MX220 |
|---------------------------------|------------------------|---|---------|
| Architecture | x86 / AMD LX | | |
| CPU | Industrial low voltage | | |
| Clock frequency | 266 MHz | 266 MHz | 433 MHz |
| Processor cores | 1 | | |
| Hyper-Threading | - | | |
| Multitasking | Yes | | |
| Realtime-SMP / core reservation | - | | |
| Memory | MX207 | MX213 | MX220 |
| Working memory / partitions | 256 MB / Yes | | |
| Ramdisk | Yes | | |
| Retentive data memory (retain) | 512 kB NVRAM | | |
| Mass storage integrated | 64 MB ^{1) 2)} | | |
| Mass storage removable | - | Compact Flash ³⁾ (via side cover) | |
| | - | PC-Card front side (16/32/64 MB) ^{3) 4)} | |

¹⁾ Hardware revision \leq KR15x.000: 16 MB internal memory device on MX213 and MX220

²⁾ By default 13 MB used for system software at shipping

³⁾ Storage medium not included if not mentioned explicitly in order text

⁴⁾ Item No. 00039021-00 (MX220) and 00039022-00 (MX213): Design without PC-Card-Connector

| Interfaces | MX207 | MX213 | MX220 |
|-------------------------|--|--------------------------|-------|
| I/O Subsystem | Bachmann M200 backplane interface | | |
| | Process Image Controller integrated | | |
| | Cyclic and on-event single channel access | | |
| | Synchronisation pulse for I/O & field busses | | |
| Ethernet | 1x 10/100 Base-Tx (RJ45) | 2x 10/100 Base-Tx (RJ45) | |
| | AutoNegotiation, AutoCrossing | | |
| Serial interfaces / COM | - | 1x RS-232 (D-SUB-9 m) | |
| | 1x RS-232/RS-422/RS-485 (D-SUB-9 m) | | |
| USB | 1x USB 2.0 (Type-A f) | | |
| CAN | 1x CAN / CANopen / J1939 (D-SUB-9 m) galvanically isolated; up to 1 Mbit/s | | |
| Operation Modes | CAN Master, CAN IO Device | | |

Indications & operation

| | |
|--------------------|--|
| 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

| | |
|----------------------|--|
| Generic build target | Yes, across all model families |
| Languages | IEC 61131-3, C/C++, MATLAB®/Simulink® ¹⁾ |
| Function modules | Yes (Motion Control, Camming, CNC, adaptive temperature controller etc.) ¹⁾ |

¹⁾ May include additional costs

Monitoring

| | |
|-----------------------|----------------------------------|
| Processor temperature | Yes |
| Processor load | Yes |
| Runtime behaviour | Yes, cycle monitoring & watchdog |

| Monitoring | | | |
|--|---|---|-------|
| Network load | Yes | | |
| Memory protection | Yes, per partition | | |
| Power supply | Yes, with interrupt signal | | |
| Subsystems | | | |
| Real-time clock | Yes (battery-backed RTC for time/date), sync capability over IEEE 1588, SNTP | | |
| Energy supply | MX207 | MX213 | MX220 |
| Supply voltage | 24 V DC (18 V to 34 V) | | |
| Terminal block for socket | KZ 51/03 RM 5.08; 3-pol. | | |
| Reverse polarity protection | Yes | | |
| Galvanic isolation supply | Yes | | |
| Voltage interruptions immunity (IEC 61131-2) | PS2 | | |
| Nominal power consumption without I/O | 8 W (+5 V / 1400 mA, +15 V / 30 mA, -15 V / 30 mA) | 9.5 W (+5 V / 1700 mA, +15 V / 30 mA, -15 V / 30 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 ¹⁾ | | |
| ¹⁾ Total power max. according to "Nominal power output for I/O" | | | |
| Electrical safety | | | |
| Protection class (DIN EN 61140) | III | | |
| Degree of protection (IEC 60529) | IP20 | | |
| Environmental conditions | Standard | ColdClimate (❄️) | |
| Operating temperature | -30 °C to +60 °C fanless | | |
| Relative humidity, operation | 5 % to 95 % noncondensing | 5 % to 95 % with condensation | |
| Storage temperature | -40 °C to +85 °C | | |
| Relative humidity, storage | 5 % to 95 % noncondensing | 5 % to 95 % with condensation | |
| Installation altitude | 2000 m above sea level (with derating up to 4500 m) | | |
| Pollution degree (IEC 60664-1) | 2 (noncondensing) | 2 | |
| Approvals/Certificates | | | |
| Product safety | CE, UKCA, cULus | | |
| Maritime | ABS, BV, DNV, KR, LR, NK, RINA | | |
| Dimensions | | | |
| Number of slots / module units | 2 | | |
| Width × Height × Depth | 110 mm × 119 mm × 61 mm | | |
| Weight/Mass | Approx. 660 g | Approx. 675 g | |
| System requirements | | | |
| Backplane | BS2xx, BS2xx/S, BS2xx/E | | |
| Software | Minimum version MxCCore V3.80 (M-Base V3.80) from M-Base V3.80; recommended ¹⁾ MxCCore V4.30 | | |

¹⁾ Access to the 64 MB internal memory device is significantly slower with older versions than M-Base V4.30.

For details on shock and vibration robustness, EMC robustness and interference emission see **user manual M-Base**. If not stated differently provided technical data is valid for ≥ KR180.000.

Order data

| Part type designation | Part number | Description |
|-----------------------|-------------|---|
| MX207 | 00031492-00 | CPU module MX207 (266 MHz) SingleCore; 256 MB DRAM; 512 kB nvRAM; 64 MB File-Flash; 1x Eth100; 1x CAN/CANopen; 1x RS232/422/485; 1x USB 2.0; I/O-supply 18 W |
| MX213 | 00031491-00 | CPU module MX213 (266 MHz) SingleCore; 256 MB DRAM; 512 kB nvRAM; 64 MB File-Flash; 2x Eth100; 1x CAN/CANopen; 1x RS232; 1x RS232/422/485; 1x USB 2.0; I/O-supply 17 W; CF-Slot |
| MX213 CC | 00031494-00 | Like MX213; ColdClimate (❄) |
| MX213/CF 2GB | 00031491-02 | CPU module MX213 (266 MHz) SingleCore; 256 MB DRAM; 512 kB nvRAM; 64 MB File-Flash; 2x Eth100; 1x CAN/CANopen; 1x RS232; 1x RS232/422/485; 1x USB 2.0; I/O-supply 17 W; CF-Slot, 2 GB CF-Card |
| MX213/CF 2GB CC | 00031494-02 | Like MX213/CF 2 GB; ColdClimate (❄) |
| MX213/CF 4GB | 00031491-03 | CPU module MX213 (266 MHz) SingleCore; 256 MB DRAM; 512 kB nvRAM; 64 MB File-Flash; 2x Eth100; 1xRS232; 1x CAN/CANopen; 1x RS232/422/485; 1x USB 2.0; I/O-supply 17 W; CF-Slot, 4 GB CF-Card |
| MX213/CF 4GB CC | 00031494-03 | Like MX213/CF 4 GB; ColdClimate (❄) |
| MX220 | 00031490-00 | CPU module MX220 (433 MHz) SingleCore; 256 MB DRAM; 512 kB nvRAM; 64 MB File-Flash; 2x Eth100; 1x CAN/CANopen; 1x RS232; 1x RS232/422/485; 1x USB 2.0; I/O-supply 17 W; CF-Slot |
| MX220 CC | 00031493-00 | Like MX220; ColdClimate (❄) |
| MX220/CF 2GB | 00031490-02 | CPU module MX220 (433 MHz) SingleCore; 256 MB DRAM; 512 kB nvRAM; 64 MB File-Flash; 2x Eth100; 1 xRS232; 1x CAN/CANopen; 1x RS232/422/485; 1x USB 2.0; I/O-supply 17 W; CF-Slot, 2 GB CF-Card |
| MX220/CF 2GB CC | 00031493-02 | Like MX220/CF 2 GB; ColdClimate (❄) |
| MX220/CF 4GB | 00031490-03 | CPU module MX220 (433 MHz) SingleCore; 256 MB DRAM; 512 kB nvRAM; 64 MB File-Flash; 2x Eth100; 1x CAN/CANopen; 1x RS232; 1x RS232/422/485; 1x USB 2.0; I/O-supply 17 W; CF-Slot, 4 GB CF-Card |
| MX220/CF 4GB CC | 00031493-03 | Like MX220/CF 4 GB; ColdClimate (❄) |

Accessories

| Part type designation | Part number | Description | |
|-----------------------|-------------|---|-----------------------------|
| KZ 51/03 B | 00012052-00 | Supply terminal block: terminal 03-pins pitch 5.08; cage clamp terminal with labeling strips | |
| CF200/2GB | 00013163-00 | Compact flash card 2 GB UDMA | |
| CF200/4GB | 00016586-00 | Compact flash card 4 GB UDMA | |
| CF200/8GB | 00016587-00 | Compact flash card 8 GB UDMA | |
| K-CAN/xm | | Cabel CAN with x m length (x = user-defined below 30 m) male <> female, without terminating resistor | |
| | K-CAN/0.5m | 00008684-03 | Cable CAN with 0.5 m length |
| | K-CAN/1.0m | 00008684-08 | Cable CAN with 1.0 m length |
| | K-CAN/2.0m | 00008684-04 | Cable CAN with 2.0 m length |
| | K-CAN/5.0m | 00008684-06 | Cable CAN with 5.0 m length |
| S-CAN/1B | 00009383-00 | Connector CAN terminating resistor female | |