MC200 - Series (Advanced)

The MC200 Central Processing Units (CPUs) combine maximum processing performance with outstanding robustness and compact dimensions. Scalable processors with up to 4 physical processor cores and clock speeds of up to 1.6 GHz enable the implementation of a wide range of applications and provide a generous reserve for future expansion.

Thanks to multicore technology and symmetrical multi-processing 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 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 +60 °C.

- Industrial Processor at up to 1.6 GHz
- Single- / Dual- / Quad-Core
- Realtime Symmetrical Multi Processing
- Up to 2 GB DDR4 RAM
- Up to 1 MB remanent memory (Retain)
- Up to 4 GB internal memory device
- CFast card slot for removable media
- Up to 3x Ethernet 10/100/1000 Mbit/s
  with IEEE 1588
- 1x RS232, 1x RS232/RS422/RS485, 1x USB 3.0
- Trusted Platform Module

Item	Device	Item No.
MC206		00031730-00
MC206	4GB CFA	00031730-03
MC206 CC		00031735-00
MC206 CC	4GB CFA	00031735-03
MC212		00031731-00
MC212	4GB CFA	00031731-03
MC212 CC		00031736-00
MC212 CC	4GB CFA	00031736-03
MC220		00031732-00
MC220	4GB CFA	00031732-03
MC220 CC		00031737-00
MC220 CC	4GB CFA	00031737-03

MC200 Series	MC206	MC212	MC220
Processor			
Architecture	x86 / Intel Atom		
CPU	Industrial Low Voltage		
Clock frequency	600 MHz	1300 MHz	1600 MHz
Processor Cores	1	2	4
Hyper-Threading	–		
Multitasking	Yes		
Realtime-SMP / Core reservation	– / –	Yes / Yes	Yes / Yes
Memory			
Main memory / partitions	1 GB DDR4 / Yes	2 GB DDR4 / Yes	2 GB DDR4 / Yes
Ramdisk	Yes		
Retentive memory (Retain)	512 kB NVRAM	512 kB NVRAM	1 MB NVRAM
Mass storage integrated	2 GB pSLC Flash [1]	2 GB pSLC Flash [1]	4 GB pSLC Flash [1]
Mass storage removable	CFast Type I [2] (via side cover)		
Interfaces			
I/O Subsystem	Bachmann M1 Backplane Interface		
	Process Image Controller integrated		
	Cyclic and on-event single channel access		
	Synchronisation pulse for I/O & field busses		
Ethernet	2x 10/100/1000 Base-T (RJ45)	2x 10/100/1000 Base-T (RJ45)	3x 10/100/1000 Base-T (RJ45)
	AutoNegotiation, AutoCrossing, IEEE 1588		
Serial ports / COM	1x RS232 (D-SUB-9 m)		
	1x RS232/RS422/RS485 (D-SUB-9 m)		
USB	1x USB 3.0 (type-A f)		
Indication & Operation			
Status indications	3x LED for CPU status (RUN / INIT / ERR)		
	2x LED for status and link speed per ETH port		
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® [3]		
Functional modules	Yes (MotionControl, Camming, CNC, adaptive temperature control etc.)[3]		
Monitoring			
Processor temperature	Yes		
Processor load	Yes		
Runtime behaviour	Yes, cycle monitoring & watchdog		
Network load	Yes		
Memory protection	Yes, per partition		
Supply voltage	Yes, with interrupt signal		
Subsystems			
Real time clock	Yes (recharchable battery buffered RTC for time/date), sync capability over IEEE 1588, SNTP		
Trusted platform module	Yes (TPM 2.0)		

MC200 Series	MC206	MC212	MC220
Energy Supply			
Supply voltage	+5 VDC via M1 backplane		
Polarity reversal protection	Yes (with NT255)		
Voltage interruptions immunity (IEC 61131-2)	PS2 (with NT255)		
Rated power consumption	10.3 W (+5 V / 2060 mA)	11.1 W (+5 V / 2220 mA)	15.9 W (+5 V / 3180 mA)
Electrical Safety			
Protection class (DIN EN 61140)	III		
Protection type (IEC 60529)	IP20		
Environmental Conditions	**Standard**		**ColdClimate (❄)**
Operating temperature	-30 to +60 °C fanless		
Relative air humidity, operation	5 to 95 % without condensation		5 to 95 % with condensation
Storage temperature	-40 to +85 °C		
Relative air humidity, storage	5 to 95 % without condensation		5 to 95 % with condensation
Maximum operating altitude	2000 m above sea level (with derating up to 4500 m)		
Pollution degree (IEC 60664-1)	2 (without condensation)		2
Approvals/Certificates			
Product safety	CE, cULus, CCC		
Maritime	DNV, LR, ABS, BV, NK, KR, RINA		
Dimensions			
Number of slots / module units	2		
Width x Height x Depth	110 x 119 x 61 mm		
Weight / Mass	Approx. 500 g	Approx. 500 g	Approx. 520 g
System Requirements			
Backplane	BS2xx, BS2xx/S, BS2xx/E		
Voltage supply	NT255		
Software	McOS (VxWorks 7) and driver from M-Base V4.39 or higher (pre installed on internal memory device), for application development ToolChain from V4.30 or higher is recommended (to utilize MultiCore/SMP)		

1) By default 16 MB used for system software at shipping
2) Memory card not included if not mentioned explicitely in order text
   Maximum tested capacity 256 GB, theoretical limit 1.7 TB
3) May include additional costs

For details on shock and vibration robustness, EMC robustness and interference see User manual M-BASE

Order Codes		
Item	**Item No.**	**Description**
MC206	00031730-00	CPU module MC206 (600MHz) SingleCore; 1GB DDR4; 512kB nvRAM; 2GB pSLC File-Flash; 2x Eth100/1000; 1xRS232; 1xRS232/422/485; 1xUSB3.0; TPM; CFast-Slot
MC206 4GB CFA	00031730-03	CPU module MC206 (600MHz) SingleCore; 1GB DDR4; 512kB nvRAM; 2GB pSLC File-Flash; 2x Eth100/1000; 1xRS232; 1xRS232/422/485; 1xUSB3.0; TPM; CFast-Slot; 4GB CFast-Card
MC206 CC	00031735-00	Like MC206; ColdClimate (❄)
MC206 4GB CFA CC	00031735-03	Like MC206 4GB CFA; ColdClimate (❄)
MC212	00031731-00	CPU module MC212 (1,3GHz) DualCore; 2GB DDR4; 512kB nvRAM; 2GB pSLC File-Flash; 2x Eth100/1000; 1xRS232; 1xRS232/422/485; 1xUSB3.0; TPM; CFast-Slot
MC212 4GB CFA	00031731-03	CPU module MC212 (1,3GHz) DualCore; 2GB DDR4; 512kB nvRAM; 2GB pSLC File-Flash; 2x Eth100/1000; 1xRS232; 1xRS232/422/485; 1xUSB3.0; TPM; CFast-Slot; 4GB CFast-Card
MC212 CC	00031736-00	Like MC212; ColdClimate (❄)
MC212 4GB CFA CC	00031736-03	Like MC212 4GB CFA; ColdClimate (❄)
MC220	00031732-00	CPU module MC220 (1,6GHz) QuadCore; 2GB DDR4; 1MB nvRAM; 4GB pSLC File-Flash; 3x Eth100/1000; 1xRS232; 1xRS232/422/485; 1xUSB3.0; TPM; CFast-Slot
MC220 4GB CFA	00031732-03	CPU module MC220 (1,6GHz) QuadCore; 2GB DDR4; 1MB nvRAM; 4GB pSLC File-Flash; 3x Eth100/1000; 1xRS232; 1xRS232/422/485; 1xUSB3.0; TPM; CFast-Slot; 4GB CFast-Card
MC220 CC	00031737-00	Like MC220; ColdClimate (❄)
MC220 4GB CFA CC	00031737-03	Like MC220 4GB CFA; ColdClimate (❄)
Accessories		
CFA200/4GB	00017355-00	CFast Card 4GB
CFA200/8GB	00021781-00	CFast Card 8GB
CFA200/16GB	00019082-00	CFast Card 16GB