

CPU 133MHz 8/16MB
RIFLEX M1 CPU

Type: **RMMP213.Exx**
Order #: see below

The processor module is the heart of any M1 controller. It executes the manufacturer or customer developed programs. This software defines the reactions of the controller.

The "E" in MP2xx/E stands for the Ethernet capability of the processor module. The figure "13" stands for the clockrate of 133 MHz of the module's processor. The figure "26" in MP 226/E stands for the clockrate of 266 MHz and the "40" in MP 240/E stands for 400 MHz.



Features

Processor Module MP...	213/E-8		213/E-16
CPU	Pentium Class		
frequency	133 MHz		
2 nd - Level Cache	-	-	256 kBytes
SRAM data memory	256 Kbytes, with battery backup		
EEPROM	1 kBits for setup and versions of the firmware		
DRAM memory	8 MBytes	16 MBytes	
BIOS	in the 1 MByte Flash-EPROM (512kBytes x 16)		
MEMO program memory	one PC-Card slot for max. 64 Mbytes exchangeable memory		
interfaces	Ethernet	female RJ-45: <i>Ethernet 10baseT</i> (10 MBit/s, Twisted Pair)	
	COM 1	DSub9m: RS 232 C (9-pin) with full signal set	
	COM 2	DSub9m: RS 232 (reduced signal set), RS 422 or RS 485	
operating modes	two 16 position rotary switches <i>H/L</i> for the 224 selectable network addresses, whereas with the <i>H</i> switch the operating modes <i>RUN</i> ning, <i>TEST</i> ing and <i>PROG</i> ramming can be selected as well		
state indicating LEDs	<i>RUN</i> ning green, <i>INIT</i> ialization yellow and <i>ERR</i> or red LED		
synchronizing pulse	yes; through two 16 Bits timers		
realtime clock	yes; with accu		
ambient temperature	fanless operation up to 60 °C		
power supply	internal via backplane BS2xx		
power consumption via bus	2800 mA / + 5 V DC 100 mA / + 15 V DC 75 mA / - 15 V DC	2800 mA / + 5 V DC 100 mA / + 15 V DC 75 mA / - 15 V DC	3200 mA / + 5 V DC 100 mA / + 15 V DC 75 mA / - 15 V DC



warning: Only one processor module is allowed in each controller system. If more than one processor module is installed in one controller system the reactions of the digital and analog outputs are unpredictable, and serious damage may occur as a consequence.



attention: The printed circuit board of the processor module can be damaged when applying too much force onto the PC-Card. Therefore, for example, the PC-Card must be removed from the PC-Card slot when packaging the processor module for transport.



remark: There must be four bus connectors between the MP module and the power supply module. The MP-module uses the right connector of both card slots.

On stations with expansion backplane (i.e. the part which is connected to the main backplane via the backplane expansion cable), the processor module must be placed on the part of the back-

plane which holds the power supply. The module will not suffer any damage, but it will not work due to missing processor power supply lines.



remark: The backup battery of the NV-RAM prevents data from being lost for about 3 month. Hence processor modules can be stored without supplying power for a maximum of 3 month without losing data. Charging of a fully discharged battery takes about 48 hours. The customer must assume that the battery is discharged on the time of delivery by BE.

If the battery is low, the NV-Ram will be formatted at the next booting process. Time of the RTC will be lost. The red ERRORR LED and the error message `SYS_MAIN: MSys-Software booting abortet` will be shown at the console and will be listed in the logbook.

On the next booting the CPU starts to work as usual, but with empty NV-RAM. Remanent machine settings can be on the NV-RAM - depending on the application. These settings must be restored with a backup after formatting the NV-RAM or set to reasonable initial values. The adjustment of the booting parameters is described in the "Development Tools" manual, Register 1 "Concept" and Register 2 "M-Manager".



remark: Approximately 2 MByte are needed on the PC-card for the operating system and the driver.

Error messages

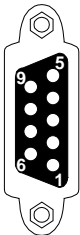
Error message	Meaning
Breakdown of the accu	On rebooting the NV-RAM will be deleted.
Processor overtemperature	Entry in the log
SW-Watchdog	re-start of the control (independent from any specific condition)

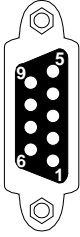
State Indicating LEDs

RUN	INIT	ERR	State
OFF	OFF	OFF	power off
OFF	ON	OFF	booting (about 10..15 s)
OFF	ON	ON	debug mode, waiting for instruction
ON	OFF	OFF	booting finished successfully and ready
OFF	OFF	ON	booting terminated because of failure (see console messages)

Pin Assignments

Connectors are shown as seen from the cable, not from the module side!

Connector	Pin	Signal	Description
COM 1 DSub9wL 	1	DCD	Data Carrier Detect
	2	RXD	Receive Data
	3	TXD	Transmit Data
	4	DTR	Data Terminal Ready
	5	GND	Ground
	6	DSR	Data Set Ready
	7	RTS	Request To Send
	8	CTS	Clear To Send
	9	RI	Ring Indicator

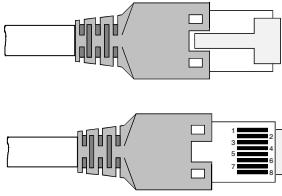
Connector	Pin	Signal	Description
COM 2 DSub9wL 	1	+TX	Transmit Data+ (RS 422)
	2	RXD	Receive Data (RS 232)
	3	TXD	Transmit Data (RS 232)
	4	-TX	Transmit Data- (RS 422)
	5	GND	Ground
	6	+RX	Receive Data+ (RS 422) / Data+ (RS 485)
	7	RTS	Request To Send (RS 232)
	8	CTS	Clear To Send (RS 232)
	9	-RX	Receive Data- (RS 422) / Data- (RS 485)



attention: No nullmodem cable may be connected to the serial interface COM2 as signals would be short-circuited which would damage the interface. Suitable cables are described in Index 4. Applicable cables are described in chapter 4.



remark: The processor modules contain a terminator for the RS 485 interface. Therefore the module must be placed at the end of an RS 485 network

Connector RJ45	Pin	Signal	Description
Ethernet 	1	TXD+	Transmit Data+
	2	TXD-	Transmit Data-
	3	RXD+	Receive Data+
	4	n.c.	not connected
	5	n.c.	not connected
	6	RXD-	Receive Data-
	7	n.c.	not connected
	8	n.c.	not connected

Order Codes for Module and Accessories

Order Code	Order #	Description
RMMP213.E08	0067504.001	CPU Pentium 133 MHz; 256 kB SRAM; 8 MB DRAM; RS 232 + RS 232/422/485; Ethernet 10baseT
RMMP213.E16	0067504.002	as MP213/E ,but with 16 MB DRAM

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