

17 MULTIPROCESSORS

17.1 GENERAL INFORMATION

Multiprocessors are used for decreasing the load on the CPU and increasing the computing power of the PCC system. Among other things, multiprocessors can take over the following tasks:

- Preprocessing data
- Data preparation
- Monitor functions for start-up and service
- Communication through the serial interfaces

The Multiprocessor communicates with the CPU through a common memory area (Dual Ported RAM). The multiprocessor also has a system bus interface through which it can actively access the system bus and therefore other system modules and the CPU as well as exchange data.

CPUs and multiprocessors are software compatible. That means all programs on the CPU (e.g. application tasks) can also be run on the multiprocessor. The multiprocessor can be programmed via the RS232 interface.

17.2 TECHNICAL DATA



Module ID	MP100
Model Number	2MP100.5
Description	2010 Multiprocessor, 64 + 256 KB SRAM, 1 RS232 interface, 1 electrically isolated RS485/RS422, RS485/RS422: network capable, Order application memory separately!
C-UL-US Listed	Yes
B&R ID Code	\$2D
Module Type	B&R 2010 system module
Base plate Module	BP101, BP110
Communication	RISC processor
Instruction Cycle Time	0.8 µsec
Dual Ported RAM (DPR)	64 KByte SRAM
System RAM	256 KByte SRAM
Application Memory(not incl.)	ME910, ME913 or ME915
Buffering RAM Lithium Battery (in APM) Gold Foil Capacitor (in APM)	At least 1 year ¹⁾ At least 5 min
Battery Monitoring	Yes
System Bus	Yes
Reset Button	Yes
Status Display	8 Status LEDs
Standard Communication Interfaces	
Application Interface (IF1) Electrical Isolation Connector Max. Distance Max. Baudrate	RS232 No 9 pin D-type plug 15 m / 19200 Baud 64kBaud

Module ID	MP100
Standard Communication Interfaces	
Application Interface (IF3)	RS485 / RS422 ²⁾
Electrical Isolation	Yes
Connector	9 pin D-type socket
Max. Distance	1200 m
Max. Baudrate	347 kBaud
Power Consumption (incl. APM)	Max. 12 W
Storage Temperature	APM inserted incl. lithium battery: -20 °C to +60 °C
Dimensions (H, W, D) [mm]	285, 80, 185

¹⁾ Buffering is handled by the lithium battery in the APM. Buffering only lasts 6 months since the RAM is buffered in the APM and in the MP100.

²⁾ The interface can be set using software.

17.3 STATUS DISPLAY

17.3.1 Status LEDs

ERROR This LED lights if the processor is in halt state or if the operating system is not running properly.

RUN The "RUN" LED lights if at least one application is running.

READY The multiprocessor is running properly.

BAT If this LED is lit, the voltage of the lithium battery in the application memory module is not enough to buffer the RAM if there is no power to the PCC. The APM, Dual Ported RAM and system RAM are buffered with the RAM buffering.

ACCESS This LED is lit if the multiprocessor accesses the CPU or other system modules over the system bus.

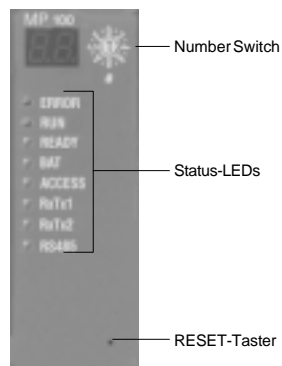
RxTx1 This LED lights if data is sent or received through IF1 (programming device interface).

RxTx2 This LED lights if data is sent or received through IF3 (application interface).

RS485 The configuration for IF3 (application interface) is indicated with this LED:

LED **lit**: IF3 is configured as RS485.

LED **dark**: IF3 is configured as RS422.



17.3.2 Number Switch

The number switch is used to set the module address at which the multiprocessor is found on the system bus. The address which is set with this switch is displayed immediately to its left on the 7 segment display. Make sure no other system module has the same module address.

System modules must be installed next to the CPU and no empty slots are allowed between system modules.



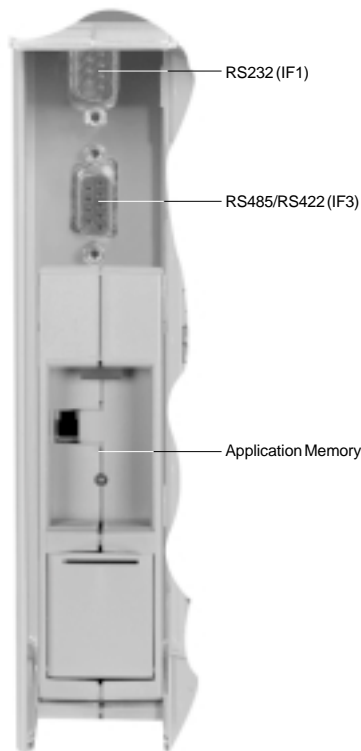
17.3.3 Reset Button

The reset button can be pressed with a small point object (e.g. a pen). Pressing this button causes a hardware reset on the multiprocessor (only the multiprocessor is reset). However, the multiprocessor can also be reset through the CPU with a Global Hardware Reset.

17.4 CONNECTION AREA

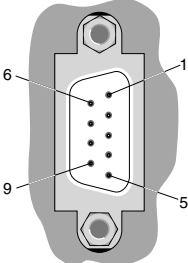
The area containing all connections is located behind the module door (interfaces and slot for application memory).

Both interfaces are freely available to the user. Communication with PG2000 is carried out via the application interface IF1 (RS232).



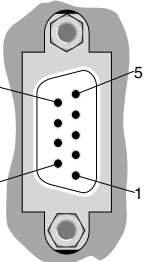
17.5 APPLICATION INTERFACE (IF1)

This interface is also suitable for the connection of fibre optics cable. The fibre optics cable is supplied through the short circuit protected 4.8 V supply voltage ($4.8\text{ V} \pm 6\%$, max. 200 mA) of Pin 4 on the D-type (M) connector.

Interface	Description	Pin-outs						
Application Interface RS232  9 Pin D-type Connector (M)	<p>The standard RS232 interface is used for connecting the programming device or a modem.</p> <p>For online connections with the programming device, a standard RS232 cable is used. This cable can be obtained through B&R:</p> <table border="1"><thead><tr><th>Description</th><th>Model Number</th></tr></thead><tbody><tr><td>RS232 cable</td><td>0G0001.00-090</td></tr></tbody></table>	Description	Model Number	RS232 cable	0G0001.00-090		RS232	
		Description	Model Number					
		RS232 cable	0G0001.00-090					
		1	DCD	Data Carrier Detect				
		2	RXD	Receive Signal				
		3	TXD	Transmit Signal				
		4	DTR	Data Terminal Ready (+4.8 V/150 mA)				
		5	GND	Ground				
		6	DSR	Data Set Ready				
		7	RTS	Request To Send				
8	CTS	Clear To Send						
9	RI	Ring Indicator						

17.6 APPLICATION INTERFACE (IF3)

The RS485/RS422 interface is also suitable for the connection of fibre optics cable. The fibre optics cable is supplied through the short circuit protected 5 V supply voltage ($5\text{ V} \pm 5\%$, max. 200 mA) of Pin 6 on the D-type (F) connector.

Interface	Description	Pin-outs		
<div>Application Interface RS485/RS422</div> <div></div> <div>9 Pin D-type Connector (F)</div>	<p>The electronically isolated application interface is free for any purpose that the user might have for it. Configuring the interface is done with software through the application program.</p> <p>The 5 V supply is electrically isolated and is used for connecting termination resistors (when networking more RS485 interfaces).</p> <p>Max. Baudrate: 347 kBaud Max. Cable Length:1200 m [3900']</p>		RS485	RS422
		1	NC	NC
		2	res.	TXD
		3	DATA	RXD
		4	NC	NC
		5	GND	GND
		6	+5 V / 200 mA	+5 V / 200 mA
		7	res.	TXD
		8	DATA	RXD
		9	NC	NC