COM102, COM104

Serial Interface Modules

The module for the backplane offers 2 resp. 4 serial interfaces. The standards RS-485, RS-422 and RS-232 can be selected as well as the baud rate and the handshake procedure. The interfaces can be used with the communication solutions for Modbus RTU/ASCII, IEC 60870-5-101 and -103 or DNP3. Customized protocols can be implemented in PLC and C/C++. Thanks to the native mapping of the COM ports in the operating system of the controller CPU, no fieldbus data points need to be considered in the application program. The LEDs on the module enable targeted diagnostics in the switch cabinet even without a PC.

Part type designation	Part number
COM102	00033475-00
COM102 EC	00040064-00
COM104	00040063-00
COM104 EC	00040065-00

Features

- Module for the M100 backplane
- 2 or 4 serial interfaces
- Protocols RS-232, RS-422 or RS-485 configurable for each port
- The ports are galvanically isolated against each other and against the ground (GND) of the backplane
- Integrated termination resistor, switchable via configuration
- Diagnostic LED for module status
- Status LED for each COM port:
  - Rx, Tx activity
  - Display of buffer overflow Error indication: Parity, Frame, Overflow, ... (configurable)
  - State of terminating resistor

Common properties	COM102	COM104
Basic function	2 serial interfaces	4 serial interfaces
	Protocols configurable for each port RS-232, RS-422, RS-485 The ports are galvanically isolated against each other and against the ground (GND) of the backplane Integrated switchable terminating resistors	
System	Bachmann system M100	

Module bus interface	COM102	COM104
Slot type	IO (1/E, 2, 3, 4, ...31)	
Module data rate	Typ.: 0 Mbit/s to 33.6 Mbit/s depending on the configuration	
Bus cycle time, min.	4.5 µs [1)]	

[1)] *Depending on the fieldbus used and the respective configuration, lower data rates and longer cycle times can be expected.*

Network interface / bus interface	COM102	COM104
Cable specification	RS-422, RS-485: Shielded twisted pair cable RS-232: Shielded untwisted cable	
Maximum cable length	RS-422, RS-485: up to 1 km at ≤ 115.2 kbit/s RS-232: depending on baud rate: • up to 30 m at ≤ 9.6 kbit/s • up to 15 m at ≤ 19.2 kbit/s • up to 5 m at ≤ 57.6 kbit/s • up to 2 m at ≤ 115.2 kbit/s	

Serial COM ports	COM102	COM104
Number of interfaces	2	4
Protocol standard	EIA RS-232, RS-422, RS-485 configurable for each port	
Baud rate	300, 1200, 2400, 4800, 9600, 19 200, 28 800, 38 400, 57 600, 76 800, 115 200, 250 000, 300 000, 375 000, 500 000, 750 000, 1 500 000, 2 500 000 bit/s	
Max. number of stations per line	Max. 32 participants in an RS-485 network, otherwise point-to-point	
Connector	Open terminal on M100 standard connector	
Integrated line terminators	Terminating resistor for RS-485, RS-422 switchable per port via configuration	
Hardware handshake (RTS, CTS)	For RS-232 configurable per port	
Software handshake (Xon, Xoff)	For RS-232 configurable per port	
API for C/C++	Mapped as a native COM port in the operating system of the Bachmann CPU. Offers file, iocontrol and select.	
API for PLC	Access via function blocks of the file library	
Use on 3rd party controllers	Access via fieldbus data points	
Works with protocol implementations	IEC 68070-5-101, -103, MODBUS RTU, MODBUS ASCII, DNP3 serial	

Diagnostics	COM102	COM104
Electronic type plate	Yes (application interface and in the engineering tool)	
Machine readable type plate	Yes (QR code with type and part information and internet link)	
Operational indications	Module LED according to M100 standard For each COM port: • Rx LED (green at incoming data) • Tx LED (green at outgoing data) • LT LED (green if line termination (= terminating resistor, Rx termination) is connected)	
Error indications	ER LED (red; error causes are configurable: buffer overflow, parity error, frame error, break, voltage dip)	

Energy supply	COM102	COM104
Power dissipation	1.1 W	1.1 W
Power consumption from backplane	1.1 W	1.6 W
Supply terminal block bridge	Yes, internal connection from 1+ to 2+, and 1- to 2-	
Product safety	**COM102**	**COM104**
Galvanic isolation	850 V AC	
Galvanic isolation between inputs	Yes (single channel isolation)	
Degree of protection acc. IEC 60529	IP40, terminal block IP30	
Overvoltage category acc. IEC 61010-1	II	
Keying of backplane slots	Mechanical keying slot 0/C versus slot 1 to nn	
Environmental conditions	**COM102**	**COM104**
Temperature, operating	-30 °C to +70 °C	
Temperature, transport and storage	-40 °C to +85 °C	
Installation altitude, max.	Up to 2000 m without temperature derating 2000 m to 4500 m: Reduction of the max. ambient temperature by 0.1 °C per 100 m elevation	
Air pressure	106 kPa to 58 kPa (0 m to 4500 m)	
Relative humidity, operation	Standard: 0 % to 100 % noncondensing Extended Climate: 0 % to 100 % with temporary condensation	
Pollution degree acc. IEC 61010-1	Standard: 2, noncondensing Extended Climate: 2	
Vibration	6 g (14.1 Hz to 500 Hz) 7.5 mm amplitude (2 Hz to 14.1 Hz) Test duration: 15 h	
Shock	45 g max. (test scope 18 shocks) 20 g permanently (test scope 6000 shocks)	
Approvals/certificates	**COM102**	**COM104**
Product safety	CE, UKCA cULus (NRAQ, NRAQ7)	
Hazard area operation	ATEX: Ex II 3G Ex ec IIC Gc	
Maritime	ABS, BV, DNV, KR, LR, NK, RINA: in preparation	
Hazardous substances and waste treatment	RoHS, RoHS China, REACH, WEEE	
Quality management	ISO 9001 for development and production	
Engineering	**COM102**	**COM104**
Configuration tool	SolutionCenter (≥ V2.80)	
Firmware package update	Yes (via SolutionCenter or console interface on the head module)	
Mounting/installation	**COM102**	**COM104**
Mounting type	Inserting and screwing onto the backplane with integrated M4 screw	
Number of fixings	1	
Ground connection for protection class I	No	
Dimensions	**COM102**	**COM104**
Number of slots	1	
Size unpacked W × H × D	23.3 mm × 152.5 mm × 95.7 mm	
Mass unpacked	264 g	267 g

Order data

Part type designation	Part number	Description
COM102	00033475-00	Module with 2 serial COM ports for the M100 system Serial interfaces for RS-232, RS-422, and RS-485 individually configurable; data rates up to 2.5 Mbit/s; terminating resistors switchable via software, hardware/software handshake; diagnostic LEDs; galvanic isolation between the interfaces and against the controller; connection to M100 standard terminal block; energy supply via backplane
COM102 EC	00040064-00	Like COM102; Extended Climate Range
COM104	00040063-00	Module with 4 serial COM ports for the M100 system Serial interfaces for RS-232, RS-422, and RS-485 individually configurable; data rates up to 2.5 Mbit/s; terminating resistors switchable via software, hardware/software handshake; diagnostic LEDs; galvanic isolation between the interfaces and against the controller; connection to M100 standard terminal block; energy supply via backplane
COM104 EC	00040065-00	Like COM104; Extended Climate Range

Accessories

Part type designation	Part number	Description
BPR1nn	00039235-nn	Backplane for DIN-rail mounting Active backplane system M100: BPR1nn with nn = 04 to 16 slots in increments of 1, as well as 20, 24, 28, 32 slots, for DIN-rail mounting; delivery without backplane slot covers and without mounting rail
BPR1nn EC	00039236-nn	Like BPR1nn; Extended Climate Range
BPS1nn	00039237-nn	Backplane for direct screw mounting Active backplane system M100: BPS1nn with nn = 04 to 16 slots in increments of 1, as well as 20, 24, 28, 32 slots, for direct screw mounting; delivery without backplane slot covers and without screws
BPS1nn EC	00039238-nn	Like BPS1nn; Extended Climate Range
TPI100_W24_P5.0_Cgy_L1to24		Signal terminal block Completely removable terminal block, push-in spring connector for system M100, 24-way/contacts, pitch 5.0 mm, female, conductors flexible 0.2 mm² to 2.5 mm² (24 to 14 AWG), solid 0.2 mm² to 1.5 mm² (24 to 16 AWG), with wire end ferrules 0.25 mm² to 1.5 mm² (24 to 16 AWG), stripping length: 10 mm, rating: 300 V / 8 A per contact, connector color: gray, push-release: yellow, labeling: 1 to 24
TPI100_W4_P5.0_Cgy_Lsup		Supply terminal block Completely removable terminal block, push-in spring connector for system M100, 4-way/contacts, pitch 5.0 mm, female, conductors flexible 0.2 mm² to 2.5 mm² (24 to 14 AWG), solid 0.2 mm² to 1.5 mm² (24 to 16 AWG), with wire end ferrules 0.25 mm² to 1.5 mm² (24 to 16 AWG), stripping length: 10 mm, rating: 300 V / 8 A per contact, connector color: gray, push-release: yellow, labeling: 1+/1-/2+/2-
TKP106		Keying element Keying element for signal terminal blocks and supply terminal blocks TPI100 for system M100, plastic ring with 6 keying elements
TPI100_W24_W4_Set [1)]	00042412-00	Terminal block set for M100 standard modules: • 1x TPI100_W24_P5.0_Cgy_L1to24 • 1x TPI100_W4_P5.0_Cgy_Lsup • 2x TKP106

[1)] *All components of the set are also available in bulk packages.*