

3.5.2 PROFIBUS - EPM-S120

The bus coupler module represents the interface between the process level (I/O level) and the higher-level fieldbus. The control signals on the process level are transmitted by the I/O compound modules via the internal backplane bus.

Features

- ▶ PROFIBUS-DP slave; supports PROFIBUS-DP-V1
- ▶ Up to 64 I/O compound modules can be connected to a PROFIBUS bus coupler module
- ▶ Integrated power supply unit for the internal voltage supply and the voltage supply of the connected I/O compound modules
 - Power supply unit is fed via an external DC voltage source
- ▶ Connection to the PROFIBUS via 9-pin Sub-D socket
- ▶ Coding switch for setting the PROFIBUS address
- ▶ LEDs for status display

Overview

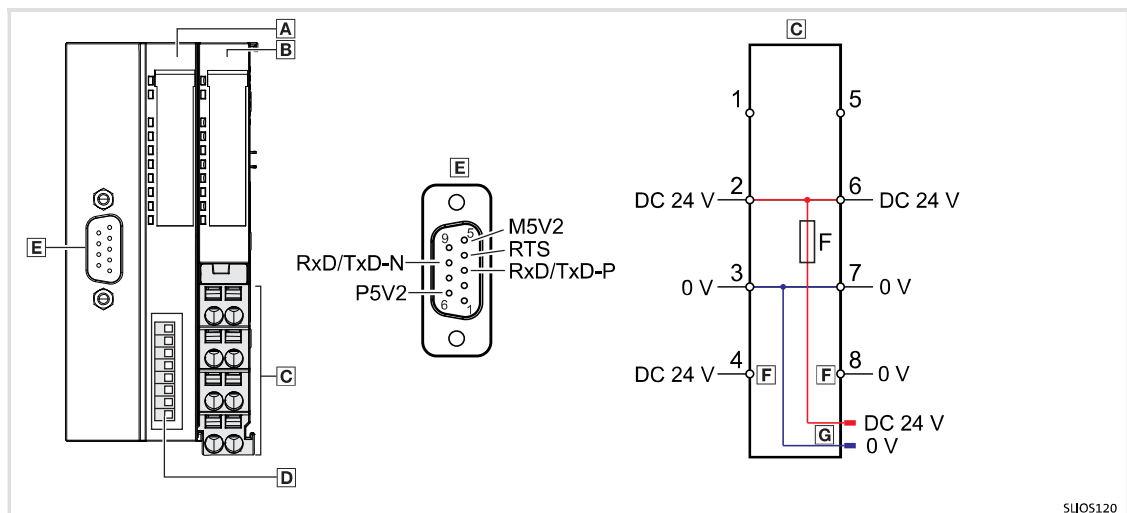



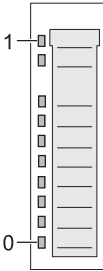
Fig. 3-10 Elements and circuit diagram of voltage supply


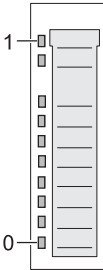
- A** Displays for station and fieldbus status
- B** Displays for electronics and I/O supply status
- C** Terminals for the voltage supply
- D** Coding switch for setting the PROFIBUS address
- E** Sub-D socket for connection to the fieldbus
- F** Electronic supply
- G** I/O supply

Product description


Bus coupler modules
PROFIBUS - EPM-S120


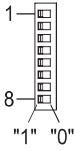


Status displays

Fieldbus status LEDs 					
View	Pos.	Designation	Colour	Explanation	
 S110001	1	PWR	Green	On: Bus coupler is supplied with voltage	
	2	SF	Red	On: Station error, station structure does not comply with configuration.	
	3	DE	Green	On: "Data Exchange" state Blinking: Bus coupler waiting for parameters	
	4	IF	Red	On: Internal error is pending	
	5				
	6				
	7				
	8	-	-		Not assigned
	9				
	10				


Module status LEDs 					
View	Pos.	Designation	Colour	Explanation	
 S110001	1	PWR IO	Green	On: I/O supply okay	
	2	PF IO	Red	On: Fuse for I/O supply is defective	
	3	PWR	Green	On: Electronic supply okay	
	4	PF	Red	On: Fuse for electronic supply defective	
	5				
	6				
	7				
	8	-	-		Not assigned
	9				
	10				

Control elements

Via coding switch  the PROFIBUS node address is set. The setting is permanently stored in EEPROM.

Coding switch - PROFIBUS address (addr.) 				
View	Pos.	Valency	Example	
			Switching status	Node address
 S110004	1	Not assigned	-	19 _{dec}   address: 19
	2	1	1	
	3	2	1	
	4	4	0	
	5	8	0	
	6	16	1	
	7	32	0	
	8	64	0	


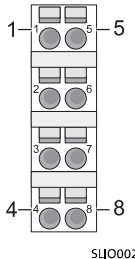
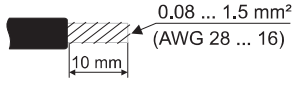
How to proceed:

1. Switch off the voltage supply for the I/O system.
2. Set the node address with the coding switch .
 - Permitted addresses: 1 ... 125
 - Each node address within a fieldbus system must be non-ambiguous.
3. Switch on the voltage supply for the I/O system.

Product description


Bus coupler modules
PROFIBUS - EPM-S120


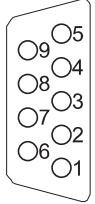
Terminals

Module terminals, spring terminals 			
View	Designation	Explanation	Terminal data
	1	Not assigned	
	2	I/O supply +24 V DC	
	3	I/O supply 0 V	
	4	Electronic supply +24 V DC	
	5	Not assigned	
	6	I/O supply +24 V DC	
	7	I/O supply 0 V	
	8	Electronic supply 0 V	



Note!

- ▶ Terminals 2 and 6 as well as 3 and 7 are bridged internally. Please note that the **max. permissible bridge current is 5 A**.
- ▶ Both the I/O supply and the electronic supply are protected against overload internally by a fuse. When the fuses have been tripped, the main supply of the bus coupler (EPM-S700) must be replaced ( 776).

Profibus, 9-pole Sub-D socket 			
View	Pin	Assignment	Explanation
	1	-	Not assigned
	2	-	Not assigned
	3	RxD/TxD-P	Data line B (received / transmitted data plus)
	4	RTS	Request To Send (received / transmitted data, no differential signal)
	5	M5V2	Data ground (ground at 5 V)
	6	P5V2	DC 5 V / 30 mA (bus termination)
	7	-	Not assigned
	8	RxD/TxD-N	Data line A (received / transmitted data minus)
	9	-	Not assigned



Stop!

Housing breakage in the case of a too high tightening torque of the securing screws

If the connector securing screws are tightened too firmly, the housing may break.

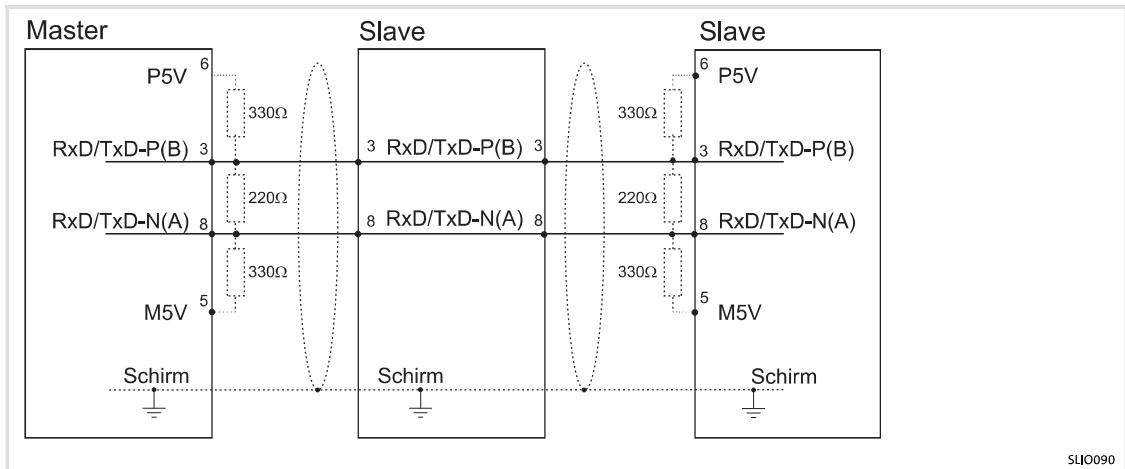
Possible consequences:

- ▶ The plug connection is no longer secured against tension.
- ▶ Enclosure IP20 of the module which is warranted can no longer be guaranteed.

Protective measures:

- ▶ Tighten securing screws without using force (max. 40 Nm).

Wiring



Note!

The PROFIBUS cable must be terminated with its surge impedance.



More information on the PROFIBUS can be found in the chapter "PROFIBUS communication" (410).

Technical data

EPM-S120: Rated data	
Electrical data	
Supply voltage	
Nominal value	DC 24 V
Permissible range	DC 20.4 ... 28.8 V
Current consumption	
Nominal value	0.95 A
In idle state	0.09 A
Starting current	3.9 A
I ² t	0.14 A ² s
Current output, max.	
At the backplane bus	3 A
Load supply	7 A (if no UL conformity is required: max. 10 A)
Polarity reversal protection	Yes
Power loss	3 W
Status, alarm, diagnostics	
Status display	Yes
Alarms	Yes, parameterisable
Process alarm	Yes, parameterisable
Diagnostic alarm	Yes, parameterisable
Diagnostic function	Yes, parameterisable
Diagnostic information can be read out	Possible
Supply voltage display	Green LED
Group error display	Red LED
Channel error display	None
System limits	
Mounting racks, max.	1
Modules per mounting rack	64

EPM-S120: Rated data

communication

Fieldbus	PROFIBUS-DP in accordance with EN 50170
Physics	RS485 insulated
Connection	9-pole Sub-D socket
Topology	Linear bus with bus termination at both ends
Electrical isolation	Yes
Station	
Number, max.	125
Address	1 ... 125
Transmission speed	9.6 kbps ... 12 Mbps
Process data for PROFIBUS-DP-V0	
Input data, max.	244 bytes
Output data, max.	244 bytes
Process data for PROFIBUS-DP-V1	
Input data, max.	240 bytes
Output data, max.	240 bytes
Parameter data, max. length *	224 bytes
the amount required by an I/O module with ...	
digital inputs or outputs (EPM-S200 ... EPM-S305)	0 bytes
2 analog inputs (EPM-S400/-S402)	6 bytes
4 analog inputs (EPM-S401/-S403)	8 bytes
2 analog outputs (EPM-S500/-S502)	8 bytes
4 analog outputs (EPM-S501/-S503)	10 bytes
4 analog inputs res. (EPM-S404)	34 bytes
2 analog inputs TE (EPM-S405)	22 bytes
1 counter 32 bits, 24 V DC (EPM-S600)	21 bytes
2 counters 32 bits, 24 V DC (EPM-S601)	42 bytes
1 counter 32 bits, 5 V DC (EPM-S602)	22 bytes
2 counters 32 bits, 24 V DC (EPM-S603)	8 bytes
SSI (EPM-S604)	33 bytes
2 dig. inputs, time stamp (EPM-S207)	6 bytes
2 dig. outputs, time stamp (EPM-S310)	2 bytes
2 dig. outputs, PWM (EPM-S620)	8 bytes
RS232 interface (EPM-S640)	8/20/60 bytes (parameterisable)

* Calculation example: 5 x EPM-S400 and 5 x EPM-S501 → (5 x 6 bytes) + (5 x 10 bytes) = 80 bytes; i.e. a reserve of 144 bytes