

4.3 EX250

4.3.1 General Information

A B&R SYSTEM 2005 is integrated into a remote I/O bus as slave station with the EX250 bus controller. A bus cable is used to connect the remote master station and up to 31 remote slave stations. Each B&R SYSTEM 2005 slave begins a new I/O bus which can be used to address a maximum of 13 modules.

The EX250 bus controller is operated in an expansion slot on power supply module PS465.

4.3.2 Order Data


Model Number	Short Description	Image
	Remote I/O Slave	
3EX250.60-1	2005 remote I/O slave controller, electrically isolated RS485 interface for connection to a remote I/O bus, power supply module insert	
	Accessories	
0G1000.00-090	Bus connector, RS485, for PROFIBUS networks, remote I/O	
0AC916.9	Bus termination, RS485, active, for PROFIBUS networks, remote I/O, standard mounting rail installation, supply voltage: 120 / 230 VAC	

Table 40: EX250 order data

4.3.3 Technical Data

Product ID	EX250
C-UL-US Listed	In preparation
Slot	Insert for power supply PS465
Power Consumption	
5 V	Max. 1.5 W
24 V	---
Total	Max. 1.5 W
Peripherals	
Diagnosis LEDs	Yes
Number Switch	Used to set the slave address
Standard Communication interface	
Serial Interface	RS485
Design	9-pin DSUB socket
Electrical Isolation	Yes
Baud Rates	Depends on the distance
100 kBit/s	Max. 1,200 m
181 kBit/s	Max. 1,000 m
500 kBit/s	Max. 400 m
1000 kBit/s	Max. 200 m
2000 kBit/s	Max. 100 m
Remote I/O Bus	
Access Procedure	Master-slave principle
Topology	Physical bus
Connection to the Bus	Direct
Transfer Media	Shielded, twisted pair
Terminating Resistance	External
Baud Rate	Automatic baud rate recognition

Table 41: EX250 technical data

4.3.4 Operational and Connection Elements

The module is equipped with status LEDs, two number switches for slave address settings and a connector for an RS485 interface.

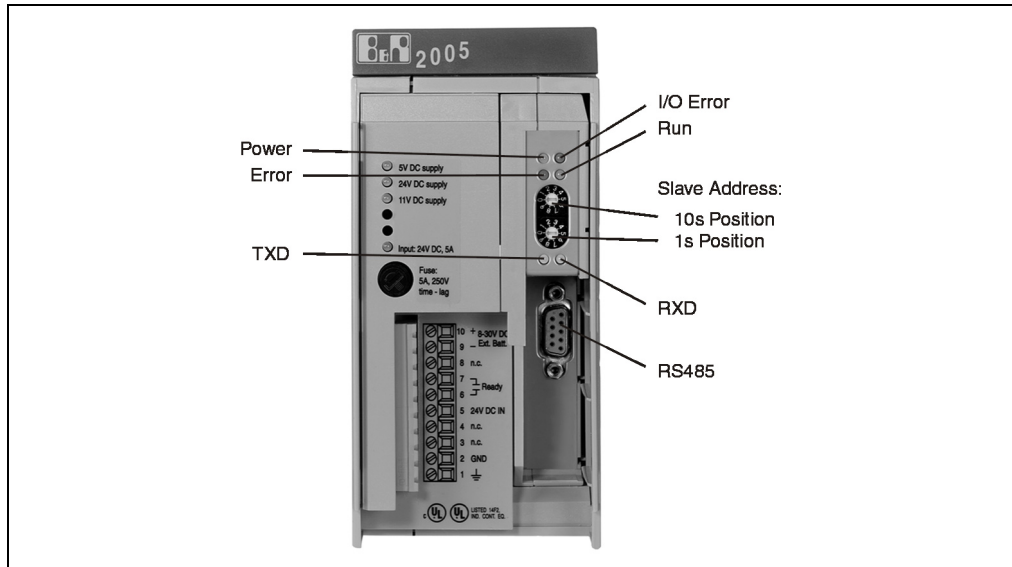


Table 42: EX250 operational and connection elements

4.3.5 Status LEDs

LED	Description
Power	Supplied by the power supply (5 V)
I/O Error	An I/O module on the expansion backplane can not be accessed. Cause: Incorrect, missing or defective I/O module. If the I/O Error and I/O Run LEDs are blinking alternately, the slave attempts to find out the baud rate of the master.
Error	Hardware error on the remote slave. In this case, please contact your technical advisor at B&R.
Run	I/O data transfer. If the I/O Error and I/O Run LEDs are blinking alternately, the slave attempts to find out the baud rate of the master.
TXD	Data is being sent
RXD	Data is being received

Table 43: EX250 status LEDs

4.3.6 Number Switch

The address of the remote slave station is set using number switches. Addresses in the range from 1 to 98 are allowed. However, a maximum of 31 remote slaves can be connected to a remote master (without repeater).

Dynamic addressing is activated using address 99. When this address is selected, the remote slave reads the address from the first I/O module (digital input module) of the remote station. The first eight digital inputs of the module are interpreted and set as a binary slave address.

4.3.7 RS485 Interface

The interface is electrically isolated. The status LEDs RXD and TXD light during data transfer via the RS485 interface.

Maximum Transfer Rate: 2 MBit/s

Max. Distance: 1,200 m

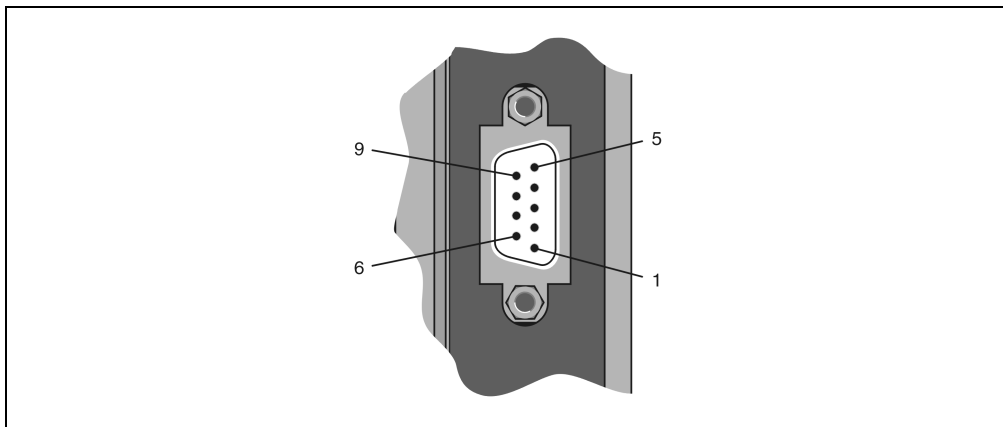


Figure 52: EX250 RS485 interface

Pin	Assignment	Function
1	Shield	
2		
3	DATA	Data
4	CTRL	Transmit enable
5	GND	Electrically isolated supply
6	5 V / 200 mA	Electrically isolated supply
7		
8	DATA\	Data\
9	CTRL\	Transmit Enable\

4.3.8 Automatic Baud Rate Recognition

The EX250 module is equipped with automatic baud rate recognition.

- If a remote slave is switched on (which is not connected to the remote bus), the I/O Run and I/O Error LEDs start to blink alternately. The slave indicates that it is attempting to define the baud rate of the master.
- If the slave is connected to the master via the bus cable, the Run and I/O Error LEDs go out as soon as the slave has recognized the baud rate of the master (to recognize the baud rate all telegrams on the remote bus are evaluated).
- If after approx. 15 seconds, the slave does not receive a directed telegram from the master, it switches automatically to baud rate recognition (responds after start-up).

4.3.9 Module Fastener

The EX250 module is equipped with a module fastener. The module fastener prevents the remote I/O bus controller from falling out of the power supply during transport.

A screwdriver is required to install the module. The screwdriver should be inserted between the power supply and EX250 at the same height as the sloped marking (see figure below). By simultaneously levering the screwdriver in the direction of the power supply and pulling the EX250, the I/O master controller is taken out from its bracing and can be removed from the power supply.

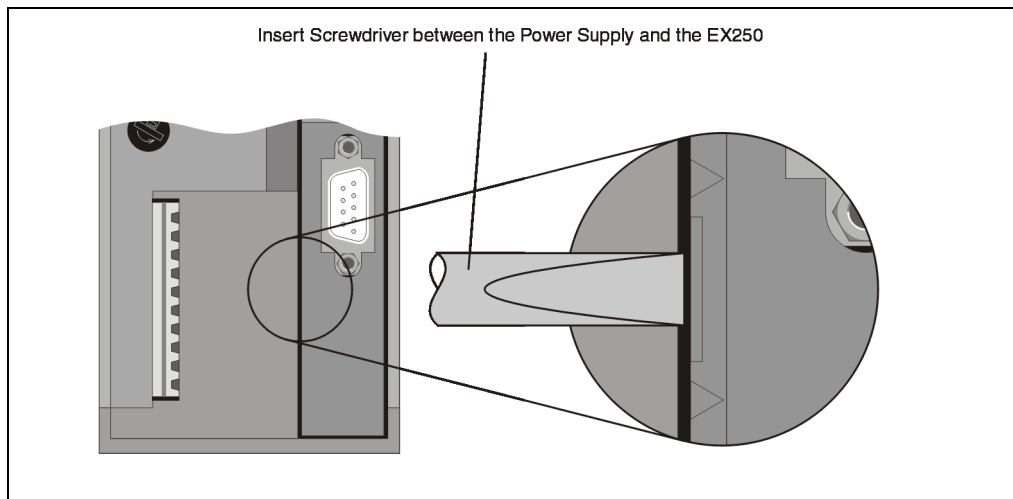


Figure 53: EX250 module fastener