3.5 EX470 / EX770

3.5.1 Technical Data

EX470

EX770

Module ID	EX470	EX770
General Information		
Model Number	7EX470.50-1	7EX770.50-1
Short Description	2003 CAN bus controller, 24 VDC, 14.5 W supply, 2 CAN interfaces electrical isolation, network capable	2003 CAN bus controller, 100-240 VAC, 14.5 W supply, 2 CAN interfaces, electrical isolation, network capable
C-UL-US Listed	Yes	
Module Type	B&R 2003 Controller	
Module width	B&R 2003 single width	
Module slot	1	
Environmental Temp. in Operation	0 - 60 °C [1) 2)]	
Peripheral		
Diagnosis LEDs	Yes	
I/O Bus Interface	9 pin D-type socket	
Number Switch	Used to set the node number and baudrate	
Standard Communication Interfaces		
Application Interface IF1 Electrical Isolation Connection Max. distance Max. baudrate	CAN Interface (left) Yes 9 pin D-type plug 1000 m 500 kBaud	
Application Interface IF2 Electrical Isolation Connection Max. Distance Max. baudrate	CAN/ID Interface (right) Yes 9 pin D-type socket 1000 m 500 kBaud	

Module ID	EX470	EX770
Power Supply		
Input Voltage Minimum Nominal Maximum	 18 VDC 24 VDC 30 VDC	 85 VAC 100 - 240 VAC 264 VAC
Input Voltage Frequency	—	47 - 63 Hz
Power Consumption	Max. 20 W	
Output Power for I/O Modules and Screw-in Modules	14.5 W [1) 2)]	

[1)] EX470 with revision 30.xx or higher

[2)] EX770 with revision 10.xx or higher

3.5.2 Status Display

LED	Meaning
STATUS (2 color)	
Red	Reset (Hold)
Green blinking during the boot phase	Boot phase (initialization and connection to the CAN network). If an error occurs during this phase, the green LED stops blinking. The error is indicated by periodic blinking of the red LED. In this case, a hardware reset (switch off/on) is required. The amount of pulses periodically output provides information about the cause of the error: 1 red pulse: Node switch set to 0 and configuration EEPROM is invalid 2 red pulses: Error initializing the CAN block
Green blinking with double pulse	Starting with rev. xx.24, the controller indicates when time monitoring responds and updates the digital and analog outputs. If a CAN object does not appear within the defined time (default: 640 ms), the effected outputs are reset and the green LED begins to blink (double pulse). After the first valid object arrives, the current values are immediately accepted. The green LED only returns to normal operation after a time delay of 30 s. The time delay is used to identify intermittent problems with the outputs. These problems are otherwise very difficult to recognize.
Green	Normal operation: data is being exchanged
Orange	Faulty outputs. However, the CAN bus controller is still in network operation.
Orange blinking [1)]	Voltage alarm on a module

[1)] No longer evaluated by all digital mixed modules starting with Rev. E0.

LED	Meaning
STATUS (2 color)	
Orange blinking with double pulse	The total power for the module exceeds the power supply on the bus controller. The basic load on the digital and analog modules is calculated once when booting. If a digital module is found which is not entered in the module list for the operating system, there is generally no power monitoring. If the power calculation was successful, the analog modules are continually monitored during operation. One screw-in module is tested per second.
Red blinking	Warning: The node number was changed during operation. The new node number setting is ignored; the node continues to function.
DC OK (orange)	
Lit	The internal power supply voltage is OK
Not lit	All outputs are reset and the entire bus node reinitialized

3.5.3 Power Supply

The CAN bus controller is available in two variants. The major difference between the two variants is the supply voltage. The power connecter pin assignments are printed on the modules:

EX470	EX770
Both + pins are connected and both – pins are connected internally	Both **N** pins are connected and both **L** pins are connected internally
	

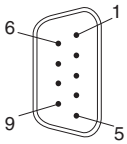
3.5.4 Interface Pin Assignments

The CAN bus controller has two interfaces:

IF1 IF2

IF1 - CAN

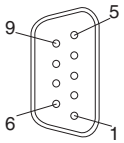
9 pin D-type plug



Pin	Assignment
1	n. c.
2	CAN_L
3	CAN_GND
4	n. c.
5	n. c.
6	res.
7	CAN_H
8	n. c.
9	n. c.

IF2 - CAN / ID

9 pin D-type socket



Pin	Assignment
1	res.
2	CAN_L
3	CAN_GND
4	res.
5	res.
6	res.
7	CAN_H
8	res.
9	res.

res. => These connections are reserved for a possible configuration memory.

Both interfaces are electrically isolated. The CAN assignment for both interfaces are identical. The individual CAN connections for both interfaces are connected with each other. Therefore both interfaces can be used to connect nodes in a CAN network.

However, it is recommended that you use the T-connector AC911 (see Chapter 7 "Accessories") for coupling to a CAN network. On one hand, this has the advantage that the CAN/ID interface remains free for expansion purposes (configuration memory area). On the other hand, a node can also be easily separated from the power supply, without interrupting the network. Also, a terminal resistance is integrated into the T-connector for the bus termination, which can be switched on or off.

3.5.5 Wiring

For more information on wiring CAN field bus systems, see chapter 2, "Project Planning and Installation", section "CAN Field Bus".

3.5.6 Node Number, Baudrate

The node number and baudrate are set with the two number switches on the CAN bus controller:

SW1	SW0	Node Number	Baudrate [kBit/s]
0	0	ME770	ME770
0	1 ... F	1 ... 15	250
1	0 ... F	16 ... 31	250
2	0 ... F	32 ... 47	250
3	0 ... F	48 ... 63	250
4	0	ME770	ME770
4	1 ... F	1 ... 15	125
5	0 ... F	16 ... 31	125
6	0 ... F	32 ... 47	125
7	0 ... F	48 ... 63	125
8	0	ME770	ME770
8	1 ... F	1 ... 15	20
9	0 ... F	16 ... 31	20
A	0 ... F	32 ... 47	20
B	0 ... F	48 ... 63	20
C	0	ME770	ME770
C	1 ... F	1 ... 15	500
D	0 ... F	16 ... 31	500
E	0 ... F	32 ... 47	500
F	0 ... F	48 ... 63	500

Special Function - Node Number 0 !

If node number 0 is selected using number switch, the CAN bus controller uses the operating parameters from the configuration memory ME770. If no configuration memory is available, the CAN bus controller remains inactive, i.e. it is not initialized.
The configuration memory is programmed using the CAN Library for PG2000 and the CAN Configurator. The operating parameters are explained in chapter 5, "CAN Bus Controller Functions", section "Operating Parameters".