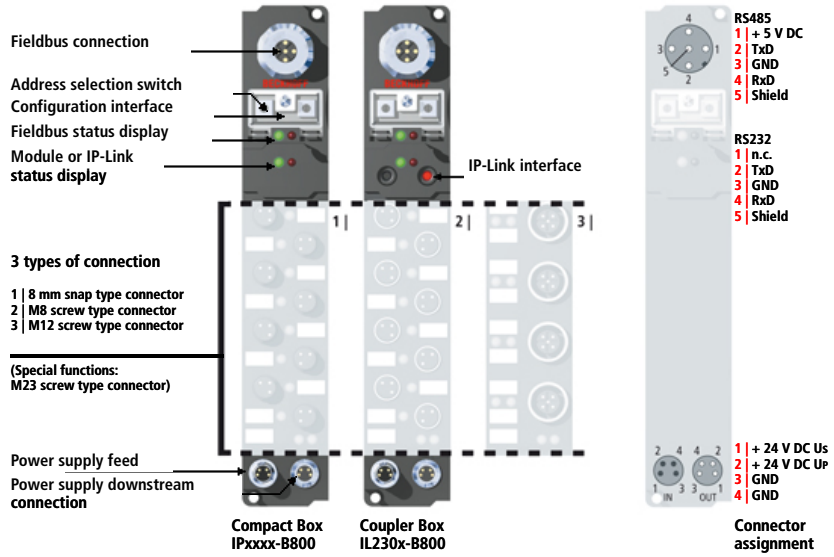

IPxxxx-, IL230x-B800 | Fieldbus Box modules for RS485

RS 232
RS 485

The RS485 input/output modules in the Fieldbus Box series use a simple, open serial communication protocol based on a master/slave architecture. It is quick and easy to implement for any serial interface, since only a few functions are required. Because of the low transmission rate, which has a maximum of 38.4 kbaud, this network is best employed in circumstances where low demands are placed on response time.

In an RS485 system, the bus consists of a master station and of a number of slave stations. The communication is controlled entirely by the master. The master requests the data from the slaves cyclically (polling). When data is exchanged with the bus nodes, the entire process image is always transmitted. In other words, the master sends all of the output data to the Fieldbus Box, after which it receives all of the input data in an answer telegram.

At 38.4 kbaud, 20 ms are needed to exchange 30 bytes of process data. The data is transmitted in a fixed format binary string secured by a checksum.

KS8000

The KS8000 communication library for Windows 2000/XP is available for communication with the Fieldbus Box modules. The library offers functions with which it is possible to establish a simple connection from PC applications via the serial PC interface to the Fieldbus Box modules. The OCX interface can be utilised within any programming language that works with the specifications of the Component Object Model (COM) from Microsoft (e.g. Visual Basic, Visual C, Delphi, Java, etc.). The KS8000 library also has a DLL interface for any other C/C++ programs. KS8000 LV also makes an interface available for the graphical programming system LabVIEW from National Instruments.

Multiplexer function

As an additional operating mode, autonomous master/slave communication can be established between two serial Fieldbus Box modules. The input data from one device are copied directly to the outputs of the other, without the aid of an additional master – and vice versa. This kind of communication does not require any extensive configuration – it is only necessary for the node addresses to be appropriately selected.

Configuration

The node address is set in the range from 1 to 69 using two decimally coded rotary switches. The transmission rate is set to 38,400 baud by default. Like the other system parameters, it can be altered if required using the KS2000 software tool through the serial configuration interface of the Fieldbus Box.

Diagnostics

A status byte is transmitted with each telegram, providing information about the node and communication states. The status of the network connection, the device status, the status of the inputs and outputs and of the power supply are displayed by LEDs.

Compact Box

Compact Box modules with serial interfaces are available for all relevant industrial signals. In addition to digital and analog input and output modules including thermocouple and RTD inputs, there are also incremental encoder interfaces available for displacement and angle measurement in addition to serial interfaces to solve a large number of communication tasks.

Coupler Box

The serial Coupler Box gathers the I/O data from the Extension Box modules over the interference-free IP-Link fibre optic cable. It detects the connected modules and automatically allocates the input and output data to the process image. Both data consistency and a clear separation of input and output data are ensured. The Coupler Box has four digital inputs and four digital outputs. Other kinds of signals are available in the Extension Box.

System data	RS485 | IPxxxx-B800, IL230x-B800
Number of I/O stations	69
Number of I/O points	depending on controller
Data transfer medium	shielded copper cable, 2 x 0.25 mm²
Cable length	max. 1,200 m (depending on baud rate)
Data transfer rates	9.6 kbaud, 19.2 kbaud, 38.4 kbaud (default)
Software tool	KS8000: provides ActiveX control, DLL and LabView interfaces for Windows NT/2000/XP

Technical data	IPxxxx-B800	IL230x-B800
Extension modules	–	max. 120 with max. 512 byte input and 512 byte output data
Digital peripheral signals	according to I/O type	max. 960 inputs and 960 outputs
Analog peripheral signals	according to I/O type	max. 252 inputs and 252 outputs
Protocol	open, documented protocol	
Configuration possibility	via KS2000	
Bus interface	1 x M12 socket, 5-pin, B-coded	
Power supply	control voltage: 24 V DC (-15 %/+20 %); load voltage: according to I/O type	
Power supply connection	feed: 1 x M8 male socket, 4-pin; downstream connection: 1 x M8 female socket, 4-pin	
Box supply current	45 mA + current consumption of sensors, max. 0.5 A	
Auxiliary power current	according to I/O type	
Electrical isolation	control voltage/fieldbus: yes, control voltage/inputs or outputs: according to I/O type	
Weight	approx. 210 g	
Operating/storage temperature	0…+55 °C/-25…+85 °C	
Vibration/shock resistance	conforms to EN 60068-2-6/EN 60068-2-27	
EMC immunity/emission	conforms to EN 61000-6-2/EN 61000-6-4	
Protect. class/installation pos.	IP 65/66/67 (conforms to EN 60529)/variable	
Approvals	CE, UL	

Accessories	
KS2000	configuration software for extended parameterisation
KS8000	Active-X control, DLL and LabView interface
Cordsets	cordsets and connectors

System	
RS485	For further RS485 products please see the system overview.

Compact Box

The Compact Box modules for RS485 offer a wide range of I/O functionality. All relevant industrial signals are supported. The digital inputs and outputs can be connected either with snap type 8 mm diameter plugs, screw type M8 connectors, or screw type M12 connectors. For analog signals the M12 version is used.

IPxxxx-B800	Compact Box for RS485 systems	Plug
Digital input		
IP1000-B800	Compact Box, 8 digital inputs 24 V DC, 3.0 ms filter	8 mm
IP1001-B800	Compact Box, 8 digital inputs 24 V DC, 3.0 ms filter	M8
IP1002-B800	Compact Box, 8 digital inputs 24 V DC, 3.0 ms filter	M12
IP1010-B800	Compact Box, 8 digital inputs 24 V DC, 0.2 ms filter	8 mm
IP1011-B800	Compact Box, 8 digital inputs 24 V DC, 0.2 ms filter	M8
IP1012-B800	Compact Box, 8 digital inputs 24 V DC, 0.2 ms filter	M12
IP1502-B800	Compact Box, 2 up/down counter, 24 V DC, 100 kHz	M12
Digital output		
IP2000-B800	Compact Box, 8 digital outputs 24 V DC, I_{MAX} = 0.5 A	8 mm
IP2001-B800	Compact Box, 8 digital outputs 24 V DC, I_{MAX} = 0.5 A	M8
IP2002-B800	Compact Box, 8 digital outputs 24 V DC, I_{MAX} = 0.5 A	M12
IP2020-B800	Compact Box, 8 digital outputs 24 V DC, I_{MAX} = 2 A ($\sum$ 4 A)	8 mm
IP2021-B800	Compact Box, 8 digital outputs 24 V DC, I_{MAX} = 2 A ($\sum$ 4 A)	M8
IP2022-B800	Compact Box, 8 digital outputs 24 V DC, I_{MAX} = 2 A ($\sum$ 4 A)	M12
IP2040-B800	Compact Box, 8 digital outputs 24 V DC, I_{MAX} = 2 A ($\sum$ 12 A)	8 mm
IP2041-B800	Compact Box, 8 digital outputs 24 V DC, I_{MAX} = 2 A ($\sum$ 12 A)	M8
IP2042-B800	Compact Box, 8 digital outputs 24 V DC, I_{MAX} = 2 A ($\sum$ 12 A)	M12
IP2512-B800	Compact Box, 2 digital pulse width outputs 24 V DC, I_{MAX} = 2.5 A	M12
Digital combi		
IP2300-B800	Compact Box, 4 digital inputs 24 V DC, 3 ms filter, 4 digital outputs 24 V DC, I_{MAX} = 0.5 A	8 mm
IP2301-B800	Compact Box, 4 digital inputs 24 V DC, 3 ms filter, 4 digital outputs 24 V DC, I_{MAX} = 0.5 A	M8
IP2302-B800	Compact Box, 4 digital inputs 24 V DC, 3 ms filter, 4 digital outputs 24 V DC, I_{MAX} = 0.5 A	M12
IP2310-B800	Compact Box, 4 digital inputs 24 V DC, 0.2 ms filter, 4 digital outputs 24 V DC, I_{MAX} = 0.5 A	8 mm
IP2311-B800	Compact Box, 4 digital inputs 24 V DC, 0.2 ms filter, 4 digital outputs 24 V DC, I_{MAX} = 0.5 A	M8
IP2312-B800	Compact Box, 4 digital inputs 24 V DC, 0.2 ms filter, 4 digital outputs 24 V DC, I_{MAX} = 0.5 A	M12
IP2320-B800	Compact Box, 4 digital inputs 24 V DC, 3 ms filter, 4 digital outputs 24 V DC, I_{MAX} = 2 A ($\sum$ 4 A)	8 mm
IP2321-B800	Compact Box, 4 digital inputs 24 V DC, 3 ms filter, 4 digital outputs 24 V DC, I_{MAX} = 2 A ($\sum$ 4 A)	M8
IP2322-B800	Compact Box, 4 digital inputs 24 V DC, 3 ms filter, 4 digital outputs 24 V DC, I_{MAX} = 2 A ($\sum$ 4 A)	M12
IP2330-B800	Compact Box, 4 digital inputs 24 V DC, 0.2 ms filter, 4 digital outputs 24 V DC, I_{MAX} = 2 A ($\sum$ 4 A)	8 mm
IP2331-B800	Compact Box, 4 digital inputs 24 V DC, 0.2 ms filter, 4 digital outputs 24 V DC, I_{MAX} = 2 A ($\sum$ 4 A)	M8
IP2332-B800	Compact Box, 4 digital inputs 24 V DC, 0.2 ms filter, 4 digital outputs 24 V DC, I_{MAX} = 2 A ($\sum$ 4 A)	M12
IP2400-B800	Compact Box, 16 digital combination inputs/outputs 24 V DC, 3 ms filter, I_{MAX} = 0.5 A	8 mm
IP2401-B800	Compact Box, 16 digital combination inputs/outputs 24 V DC, 3 ms filter, I_{MAX} = 0.5 A	M8
Analog input		
IP3102-B800	Compact Box, 4 differential analog inputs ±10 V, 16 bit	M12
IP3112-B800	Compact Box, 4 differential analog inputs 0/4…20 mA, 16 bit	M12
IP3202-B800	Compact Box, 4 analog inputs for resistance thermometer (RTD), PT100…1000, Ni100, 16 bit	M12
IP3312-B800	Compact Box, 4 analog inputs for thermocouple, types J, K, L, B, E, N, R, S, T, U, 16 bit	M12
Analog output		
IP4112-B800	Compact Box, 4 analog outputs 0/4…20 mA, 16 bit	M12
IP4132-B800	Compact Box, 4 analog outputs ±10 V, 16 bit	M12
Special functions		
IP5009-B800	Compact Box, 1 SSI encoder interface	M23
IP5109-B800	Compact Box, 1 incremental encoder interface with complementary inputs, 1 MHz	M23
IP5209-B800	Compact Box, 1 SinCos encoder interface, 1 V_{SS}	M23
IP6002-B800	Compact Box, 1 serial interface RS232C	M12
IP6012-B800	Compact Box, 1 serial interface, 0…20 mA (TTY)	M12
IP6022-B800	Compact Box, 1 serial interface, RS422, RS485	M12

Coupler Box

The Coupler Box for RS485 has four digital inputs and four digital outputs, optionally with snap type 8 mm diameter connectors, screw type M8 or screw type M12 connectors. Up to 120 Extension Box modules can be connected via the IP-Link communication facility.

IL230x-B800	Coupler Box for RS485 systems	Plug
Digital combi		
IL2300-B800	Coupler Box, 4 digital inputs 24 V, 3 ms filter, 4 digital outputs 24 V, 0.5 A	8 mm
IL2301-B800	Coupler Box, 4 digital inputs 24 V, 3 ms filter, 4 digital outputs 24 V, 0.5 A	M8
IL2302-B800	Coupler Box, 4 digital inputs 24 V, 3 ms filter, 4 digital outputs 24 V, 0.5 A	M12

System overview