

Manual

RS232<>RS422/RS485 Interface



Release
Type

1.0
86003

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RS232 <> RS422/RS485 Interface , #86003**Function**

The W&T Interface 86003 allows bi-directional connection of RS232 devices with components equipped with an RS422 or RS485 interface.

The Interface converts one data and one handshake line in each direction and features galvanic isolation between the RS232 and RS422/RS485 side.

The converter combines the functionality of the discontinued Interface models 86001 and 86002, each of which could only be used in RS422 and RS485 4-wire applications or RS485 2-wire applications.

In contrast to the two previous models, the RS485 mode in the 86003 Interface is fully configurable, while connector compatibility with the previous models remains fully intact. Note only that the DIL switch for configuring the Interface had to be changed due to the increased functionality.

Supply voltage

The supply voltage for the Interface is provided by an included AC adapter which outputs a regulated 5 volts. The supply voltage is brought in through the integrated jack near the 25-pin RS422/RS485 socket.

Isolation and ESD protection

Both ports of the device are isolated from each other with a dielectric strength of 500 volts. The signals are isolated by means of high-speed opto-couplers; energy is supplied to the RS232 driver and receiver elements by means of an isolated DC/DC converter. All signal lines are protected against electrostatic discharge of up to 15kV according to IEC 801-2, level 4.

Connectors

The two ports of the interface 86003 use DB25 connectors.

Whereas the RS422/RS485 socket is integrated into the Interface housing, the RS232 plug is located at the end of a 2m long serial cable. The pin configuration of the RS232 plug allows direct connection of the Interface to an RS232 DTE device.

The connector pin assignments are shown in the table below:

RS232 pinout:

Pin#	Function
2	data in
3	data out
5	handshake out
7	signal GND
20	handshake in

RS422/RS485 pinout:

Pin#	Function
10	data out A (-)
11	data in A (-)
14	signal GND
15	handshake out A (-)
16	handshake out B (+)
17	handshake in A (-)
18	handshake in B (+)
22	data out B (+)
23	data in B (+)

Opening the case

The RS422/RS485 mode for the Interface is set using DIL switches inside the unit. To open the case, pull apart the two side clips apart and then separate the halves of the case. Please note that one clip points up and the other down.

Operating modes

The RS422/RS485 port of the Interface uses DIL switches to set one of seven operating modes, which are described in brief below:

RS422, RS485 4-wire bus master application

One data and one handshake channel in each direction. The RS422/RS485 drivers and receivers are always active in this mode.

RS485 4-wire application, handshake control

One data channel in each direction is available. The RS485 output driver is activated with a positive RS232 handshake signal, while a negative signal forces the driver to high impedance state. The RS485 receiving channel is always active in this operating mode.

RS485 4-wire application, automatic control

One data channel in each direction is available. The RS485 output driver is activated automatically with each transmission of data, and goes to the high impedance state again after the end of transmission. The RS485 receiving channel is always active in this operating mode.

RS485 2-wire application with echo, handshake control

One data channel in each direction is available. The RS485 output driver is activated with a positive RS232 handshake signal, while a negative signal forces the driver to high impedance state. The RS485 receiving channel is always active in this operating mode.

RS485 2-wire application with echo, automatic control

One data channel in each direction is available. The RS485 output driver is activated automatically with each transmission of data, and goes to the high impedance state again after the end of transmission. The RS485 receiving channel is always active in this operating mode.

RS485 2-wire application w/o echo, handshake control

One data channel in each direction is available. The RS485 output driver is activated with a positive RS232 handshake signal, while a negative signal forces the driver to high impedance state. The RS485 receiving channel is deactivated when the driver is on, but is switched on when the driver is in the high impedance state.

RS485 2-wire application w/o echo, automatic control

One data channel in each direction is available. The RS485 output driver is activated automatically with each transmission of data, and goes to the high impedance state again after the end of transmission. The RS485 receiving channel is deactivated when the driver is on, but is switched on when the driver is in the high impedance state

Setting the operating modes

For the meaning of the DIL switch settings, see the following table:

Operating mode	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
RS422, RS485, 4-wire bus master	OFF	OFF	OFF	OFF	OFF	Termination	OFF	
RS485, 4-wire, handshake control	OFF	OFF	ON	OFF	OFF	Termination	OFF	
RS485, 4-wire, automatic control	OFF	ON	OFF	OFF	OFF	Termination	OFF	
RS485, 2-wire with echo handshake control	OFF	OFF	ON	ON	ON	Termination	OFF	
RS485, 2-wire with echo automatic control	OFF	ON	OFF	ON	ON	Termination	OFF	
RS485, 2-wire without echo handshake control	ON	OFF	ON	ON	ON	Termination	OFF	
RS485, 2-wire without echo automatic control	ON	ON	OFF	ON	ON	Termination	OFF	

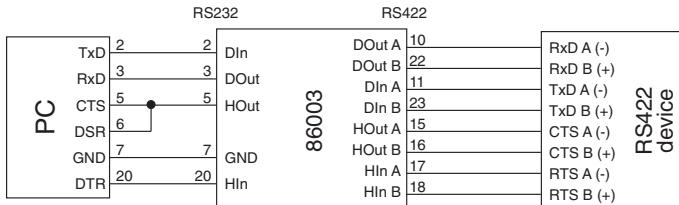
Termination

All RS485 modes require that the bus system be terminated with a terminating network, which ensures a defined idle state.

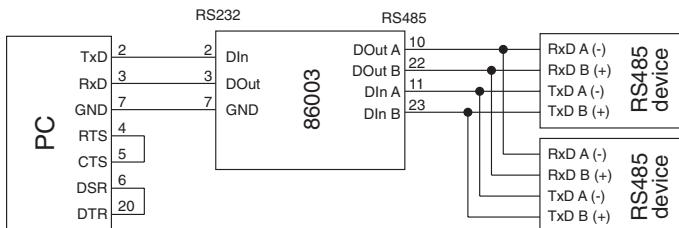
The bus system can be connected to a terminating network in the Interface by closing DIL switches 6 and 7 on the RS422/RS485 module.

Applications

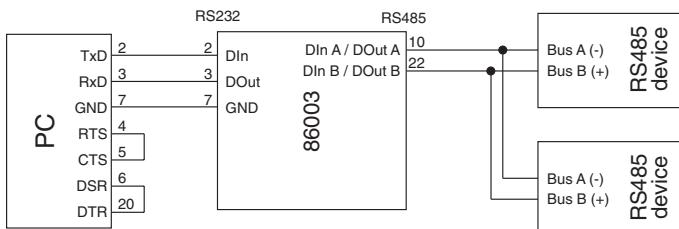
RS422 application with hardware handshake



RS485 4-wire application



RS485 2-wire application



Technical Data

Baud rate:	0..115,200 baud
Data format:	any format
Supported signals:	RxD, TxD, CTS, DTR
Operating modes:	RS422 RS485: 2/4 wire mode, with or without echo, handshake or automatic control
Termination:	Switchable termination network for RS485 operation
Electrical isolation:	both ports from each other with a dielectric strength of 500 volts
ESD immunity:	up to 15kV corresponding to IEC 801-2, Level 4
Power supply:	supplied power adapter 5V DC
Current consumption:	approx. 130mA
RS232 adapter:	25-pin male SUB-D adapter including 2m cable, DCE pinout
RS422/RS485 adapter:	25-pin female SUB-D adapter
Ambient temperature:	storage: -40..+70°C operation: 0..+60°C at
Housing / Dimensions:	Plastic housing, 124x74x21 mm
Weight:	approx. 500g incl. power adapter
Delivery:	RS232 <> RS422/RS485 Interface power adapter for application in office

