Manual
Interface modules

Model	18801, 18811
	18802, 18812
	18803, 18813
	18601, 18611
	18602, 18612
	18401, 18411
	18101, 18111
	18120, 18121
	18311

W&T

Version	1.2

The modular design of all W&T Com-Servers as well as most of the W&T PC cards allows them to be equipped with various serial interface types.

Modification of the standard units is accomplished by simply exchanging the existing interface modules with modules of the desired interface type.

The W&T interface module family is described on the following pages along with the corresponding technical data and including connection examples.

For up-to-date information on new developments, see our Internet site at http://www.wut.de or check the e-mail short notices at the W&T Interface Club, which you can also subscribe to from the W&T Homepage.

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RS232 DTE Interface Modules, #188x1

Function

The W&T Interface Modules 18801, 18811 and 18831 provide an RS232 DTE interface for devices equipped with a serial TTL port. The modules support all RS232 data and handshaking signals. Modules 18801 and 18811/18831 differ only in the arrangement of the post connector for the serial TTL port, and are in every other respect functionally identical.

Important installation note

When installing or replacing the Interface Modules, visually inspect to ensure that the module does not cause a short circuit with adjacent components.

To use the Interface Modules with W&T PC cards, remove the wire jumper between the SUB-D male connector housing and the module. Otherwise the galvanic isolation between the interface and the PC may be defeated.

Supply voltage

The Interface Modules require a regulated supply voltage of 5V DC ±5% (18801 and 18811) and 3,3V DC ±5% (18831) respectively. The no-load current draw of the modules is approx. 30mA (typ.); any additional current requirement from an external load must of course be taken into account when dimensioning the power supply.

Protection against static charges

All external signal lines use ESD-immune interface components to provide protection against static discharges of up to 15kV per IEC 801-2, Level 4.

Pin configuration

The RS232 connection for the modules is configured as a 9-pin male SUB-D connector, with the TTL interface formatted as 12-pin male post connector. Refer to the following table for connector pin assignments:

TTL interface   RS232 interface

pin#	signal	function
1	5V ±5%	Vcc
2	RI	output
3	RxD	output
4	TxD	input
5	n.c.	n.c.
6	CTS	output
7	DTR	input
8	DSR	output
9	RTS	input
10	DCD	output
11	12V ±10%	n.c.
12	GND	signal GND

pin#	signal	function
1	DCD	input
2	RxD	input
3	TxD	output
4	DTR	output
5	GND	GND
6	DSR	input
7	RTS	output
8	CTS	input
9	RI	input

Pin 1 of the TTL interface is indicated by a rectangular soldering pad.

Technical Data

Baud rate:	0..230 KBaud
Data format:	any
Supported signals:	RxD, TxD, RTS, CTS, DSR, DCD, DTR, RI
ESD immunity:	up to 15kV per IEC 801-2, Level 4 using ESD-immune interface components
Supply voltage:	5V DC ±5% (18801, 18811) 3,3V DC ±5% (18831)
Supply current:	approx. 30mA
TTL connector:	12-pin, 2mm post connector
RS232 connector:	9-pin male SUB-D connector
Dimensions:	43 x 31 mm
Weight:	approx. 10g
Packing list:	RS232 DTE Interface Module

RS232 DCE Interface Modules, #188x2

Function

The W&T Interface Modules 18802 and 18812 provide an RS232 DCE interface for devices equipped with a serial TTL port. The modules support all RS232 data and handshaking signals. Modules 18802 and 18812 differ only in the arrangement of the post connector for the serial TTL port, and are in every other respect functionally identical.

Important installation note

When installing or replacing the Interface Modules, visually inspect to ensure that the module does not cause a short circuit with adjacent components.

Supply voltage

The Interface Modules require a regulated supply voltage of 5V DC ±5%. The no-load current draw of the modules is approx. 30mA (typ.); any additional current requirement from an external load must of course be taken into account when dimensioning the power supply.

Protection against static charges

All external signal lines use ESD-immune interface components to provide protection against static discharges of up to 15kV per IEC 801-2, Level 4.

Pin configuration

The RS232 connection for the modules is configured as a
9-pin female SUB-D connector, with the TTL interface format-
ted as 12-pin male post connector. Refer to the following
table for connector pin assignments:

TTL interface   RS232 interface

pin#	signal	function
1	5V ±5%	Vcc
2	RI	input
3	TxD	output
4	RxD	input
5	n.c.	n.c.
6	DTR	output
7	CTS	input
8	DSR	input
9	RTS	output
10	DCD	input
11	12V ±10%	n.c.
12	GND	signal GND

pin#	signal	function
1	DCD	output
2	RxD	output
3	TxD	input
4	DTR	input
5	GND	GND
6	DSR	output
7	RTS	input
8	CTS	output
9	RI	output

Pin 1 of the TTL interface is indicated by a rectangular soldering pad.

Technical Data

Baud rate:	0..230 KBaud
Data format:	any
Supported signals:	RxD, TxD, RTS, CTS,
	DSR, DCD, DTR, RI
ESD immunity:	up to 15kV per IEC 801-2,
	Level 4 using ESD-immune
	interface components
Supply voltage:	5V DC ±5%
Supply current:	approx. 30mA
TTL connector:	12-pin, 2mm post connector
RS232 connector:	9-pin female SUB-D connector
Dimensions:	43 x 31 mm
Weight:	approx. 10g
Packing list:	RS232 DCE Interface Module

RS232/RS422/RS485 Interface Modules, #188x3

Function

The W&T Interface Modules 18803, 18813 and 18833 provide an RS232, RS422 or RS485 interface for devices equipped with a serial TTL port. The Interface Module is configurable for the various operating modes via an 8-position DIL switch. Modules 18803 and 18813/18833 differ only in the arrangement of the post connector for the serial TTL port, and are in every other respect functionally identical.

Important installation note

When installing or replacing the Interface Modules, visually inspect to ensure that the module does not cause a short circuit with adjacent components. To use the Interface Modules with W&T PC cards, remove the wire jumper between the SUB-D male connector housing and the module. Otherwise the galvanic isolation between the interface and the PC may be defeated.

Supply voltage

The Interface Modules require a regulated supply voltage of 5V DC ±5% (18803 and 18813) and 3,3V DC ±5% (18833) respectively. The no-load current draw of the modules is approx. 40mA (typ.); any additional current requirement from an external load must of course be taken into account when dimensioning the power supply.

Protection against static charges

All external signal lines use ESD-immune interface components to provide protection against static discharges of up to 15kV per IEC 801-2, Level 4.

Pin configuration

The RS232/RS422/RS485 connection for the modules is configured as a 9-pin male SUB-D connector, with the TTL interface formatted as 12-pin male post connector. Refer to the following table for connector pin assignments:

TTL interface

pin#	signal	RS232	RS422/485
1	5V ±5%	Vcc	Vcc
2	RI	output	"low" level
3	RxD	output	output
4	TxD	input	input
5	n.c.	n.c.	n.c.
6	CTS	output	output
7	DTR	input	input
8	DSR	output	"low" level
9	RTS	input	input
10	DCD	output	"low" level
11	12V ±10%	n.c.	n.c.
12	GND	signal GND	signal GND

Pin 1 of the TTL interface is indicated by a rectangular soldering pad.

RS232 interface

pin#	signal	function
1	DCD	input
2	RxD	input
3	TxD	output
4	DTR	output
5	GND	GND
6	DSR	input
7	RTS	output
8	CTS	input
9	RI	input

RS422/RS485 interface

pin#	signal	function
1	TXD A	output
2	RxD A	input
3	DTR A	output
4	CTS A	input
5	GND	GND
6	TXD B	output
7	RxD B	input
8	DTR B	output
9	CTS B	input

Operating modes

The Interface Modules are configurable for the following modes using DIL switches:

RS232

The Interface Module converts all available TTL data and handshake signals into RS232 signals. This mode provides one RxD and TxD channel each in the respective direction, along with six handshake channels (RTS, CTS, DSR, DCD, DTR and RI).

RS422

The Interface Module supports one data and one handshake channel each (selectable DTR or RTS handshake output). The RS422 sender/receivers are always active.

RS485

One data channel in each direction is always available in all RS485 modes. These modes differ only in how the RS485 transceivers are controlled.

RS485 4-wire bus master

In this mode the master uses a conductor pair to send requests to the slaves, which in turn send their replies to the master on an additional common conductor pair. The RS485 transceivers are always active in this mode, whereby the master can always send and is constantly listening for the slaves.

RS485 4-wire mode with handshake control

The RS485 driver chip is turned on with a TTL Low level on the „DTR" or „RTS" line, whereas a TTL High level on this line puts the driver in a high-impedance state. The receiving channel in this mode is always active.

RS485 2-wire mode with handshake control

The RS485 driver chip is turned on with a TTL Low level on the „DTR" or „RTS" line, whereas a TTL High level on this line puts the driver in a high-impedance state. The receiving channel is deactivated when the driver is on, and enabled when the driver is in the high-impedance state.

RS485 4-wire mode with automatic control

The RS485 driver chip is automatically activated whenever data are output and brought to the high-impedance state when data output is finished. The receiving channel in this mode is always active.

RS485 2-wire mode with automatic control

The RS485 driver chip is automatically activated when data are output and brought to the high-impedance state when data output is finished. The receiving channel is deactivated when the driver is turned on, and enabled when the driver is in the high-impedance state.

The DIL switch settings can be found in the following table:

Operating mode	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
RS232	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
RS422, RS485, 4-wire bus master DTR handshake	OFF	OFF	OFF	ON	OFF	*	*	OFF
RS422, RS485, 4-wire bus master RTS handshake	OFF	OFF	OFF	OFF	ON	*	*	OFF
RS485, 4-wire / 2-wire with echo DTR control	OFF	OFF	ON	ON	OFF	*	*	OFF
RS485, 2-wire without echo DTR control	ON	OFF	ON	ON	OFF	*	*	OFF
RS485, 4-wire / 2-wire with echo RTS control	OFF	OFF	ON	OFF	ON	*	*	OFF
RS485, 2-Draht without echo RTS control	ON	OFF	ON	OFF	ON	*	*	OFF
RS485, 4-wire / 2-wire with echo automatic control	OFF	ON	OFF	ON	OFF	*	*	OFF
RS485, 2-wire without echo automatic control	ON	ON	OFF	ON	OFF	*	*	OFF

*) Terminating the bus system when required.

Important Note

The terminating DIL switches SW6 and SW7 must never be in the ON position when using the module in RS232 mode. This will result in a significant increase in the current draw and may cause the RS232 driver to fail.

Termination

All RS485 modes require termination of the bus system with a termination network. The resistor combination integrated in the module performs two tasks in RS485 applications:

1. The connected line is terminated corresponding to its impedance, which prevents signal reflections at the cable end.

2. In the high-impedance phases of bus operation a defined quiescent state is ensured.

The bus system is allowed to be terminated with the termination network only in RS485 and RS422 modes, but not in RS232 mode.

Closing DIL switches 6 and 7 on the Interface Module connects the bus terminals to the following resistance network:
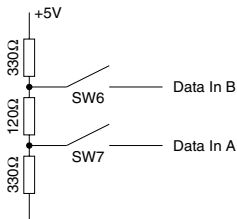
Connection examples

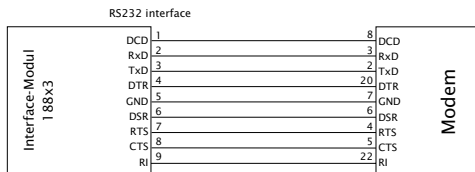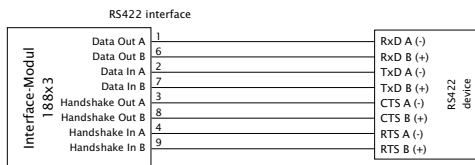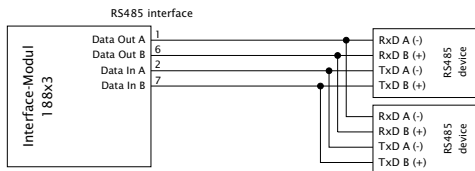### RS232 application with hardware handshake

RS232 interface

Interface-Modul 188x3				Modem
DCD	1	8	DCD	
RxD	2	3	RxD	
TxD	3	2	TxD	
DTR	4	20	DTR	
GND	5	7	GND	
DSR	6	6	DSR	
RTS	7	4	RTS	
CTS	8	5	CTS	
RI	9	22	RI	

RS422 application with hardware handshake

RS422 interface

Interface-Modul 188x3				RS422 device
Data Out A	1		RxD A (-)	
Data Out B	6		RxD B (+)	
Data In A	2		TxD A (-)	
Data In B	7		TxD B (+)	
Handshake Out A	3		CTS A (-)	
Handshake Out B	8		CTS B (+)	
Handshake In A	4		RTS A (-)	
Handshake In B	9		RTS B (+)	

RS485 4-wire bus master application

RS485 interface

Interface-Modul 188x3				RS485 device
Data Out A	1		RxD A (-)	
Data Out B	6		RxD B (+)	
Data In A	2		TxD A (-)	
Data In B	7		TxD B (+)	
			RxD A (-)	RS485 device
			RxD B (+)	
			TxD A (-)	
			TxD B (+)	

RS485 2-wire application

RS485 interface

Interface-Modul 188x3				RS485 device
Data Out A	1		Bus A (-)	
Data Out B	6		Bus B (+)	
Data In A	2			
Data In B	7			
			Bus A (-)	RS485 device
			Bus B (+)	

Technical Data

Operating modes:	RS232, RS422
	RS485 2- or 4-wire
Baud rate:	RS232: 0..230 KBaud
	RS422: 0..10 MBaud
	RS485: 0..5 MBaud
Data format:	any
Supported signals:	RS232: RxD, TxD, RTS, CTS
	DSR, DCD, DTR, RI
	RS422: RxD A/B, TxD A/B
	CTS A/B, DTR A/B
	RS485: RXD A/B, TxD A/B
ESD immunity:	up to 15kV per IEC 801-2,
	Level 4 using ESD-immune
	interface components
Supply voltage:	5V DC ±5% (18803, 18813)
	3,3V DC ±5% (18833)
Supply current:	approx. 40mA
TTL connector:	12-pin, 2mm post connector
RS232/422/485 connector:	9-pin male SUB-D connector
Dimensions:	43 x 31 mm
Weight:	approx. 10g
Packing list:	RS232/RS422/RS485
	Interface Module

RS422/RS485 Interface Modules, #186x1

Function

The W&T Interface Modules 18601, 18611 and 18631 provide an RS422 or RS485 interface for devices equipped with a serial TTL port. The Interface Module is configurable for the various operating modes via an 8-position DIL switch. Modules 18601 and 18611/18631 differ only in the arrangement of the post connector for the serial TTL port, and are in every other respect functionally identical.

Important installation note

When installing or replacing the Interface Modules, visually inspect to ensure that the module does not cause a short circuit with adjacent components.

To use the Interface Modules with W&T PC cards, remove the wire jumper between the SUB-D male connector housing and the module. Otherwise the galvanic isolation between the interface and the PC may be defeated.

Supply voltage

The Interface Modules require a regulated supply voltage of 5V DC ±5% (18601 and 18611) and 3,3V DC ±5% (18631) respectively. The no-load current draw of the modules is approx. 40mA (typ.); any additional current requirement from an external load must of course be taken into account when dimensioning the power supply.

Protection against static charges

All external signal lines use ESD-immune interface components to provide protection against static discharges of up to 15kV per IEC 801-2, Level 4.

Pin configuration

The RS422/RS2485 connection for the modules is configured as a 9-pin male SUB-D connector, with the TTL interface formatted as 12-pin male post connector. Refer to the following table for connector pin assignments:

TTL interface

pin#	signal	function
1	5V ±5%	Vcc
2	RI	"low" level
3	RxD	output
4	TxD	input
5	n.c.	n.c.
6	CTS	output
7	DTR	input
8	DSR	conn. to CTS
9	RTS	input
10	DCD	"low" level
11	12V ±10%	n.c.
12	GND	signal GND

RS422/RS485 interface

pin#	signal
1	TXD A
2	RxD A
3	DTR A
4	CTS A
5	GND
6	TXD B
7	RxD B
8	DTR B
9	CTS B

Pin 1 of the TTL interface is indicated by a rectangular soldering pad.

Operating modes

The Interface Modules are configurable for the following modes using DIL switches:

RS422

The Interface Module supports one data and one handshake channel each (selectable DTR or RTS handshake output). The RS422 sender/receivers are always active.

RS485

One data channel in each direction is always available in all RS485 modes. These modes differ only in how the RS485 transceivers are controlled.

RS485 4-wire bus master

In this mode the master uses a conductor pair to send requests to the slaves, which in turn send their replies to the master on an additional common conductor pair. The RS485 transceivers are always active in this mode, whereby the master can always send and is constantly listening for the slaves.

RS485 4-wire mode with handshake control

The RS485 driver chip is turned on with a TTL Low level on the „DTR" or „RTS" line, whereas a TTL High level on this line puts the driver in a high-impedance state. The receiving channel in this mode is always active.

RS485 2-wire mode with handshake control

The RS485 driver chip is turned on with a TTL Low level on the „DTR" or „RTS" line, whereas a TTL High level on this line puts the driver in a high-impedance state. The receiving channel is deactivated when the driver is on, and enabled when the driver is in the high-impedance state.

RS485 4-wire mode with automatic control

The RS485 driver chip is automatically activated whenever data are output and brought to the high-impedance state when data output is finished. The receiving channel in this mode is always active.

RS485 2-wire mode with automatic control

The RS485 driver chip is automatically activated when data are output and brought to the high-impedance state when data output is finished. The receiving channel is deactivated when the driver is turned on, and enabled when the driver is in the high-impedance state.

The DIL switch settings can be found in the following table:

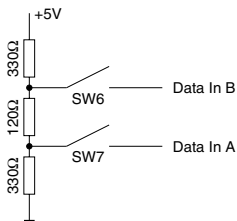| Operating mode	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
RS422, RS485, 4-wire bus master DTR handshake	OFF	OFF	OFF	ON	OFF	*	*	OFF
RS422, RS485, 4-wire bus master RTS handshake	OFF	OFF	OFF	OFF	ON	*	*	OFF
RS485, 4-wire / 2-wire with echo DTR control	OFF	OFF	ON	ON	OFF	*	*	OFF
RS485, 2-wire without echo DTR control	ON	OFF	ON	ON	OFF	*	*	OFF
RS485, 4-wire / 2-wire with echo RTS control	OFF	OFF	ON	OFF	ON	*	*	OFF
RS485, 2-Draht without echo RTS control	ON	OFF	ON	OFF	ON	*	*	OFF
RS485, 4-wire / 2-wire with echo automatic control	OFF	ON	OFF	ON	OFF	*	*	OFF
RS485, 2-wire without echo automatic control	ON	ON	OFF	ON	OFF	*	*	OFF

*) Terminating the bus system when required.

Termination

All RS485 modes require termination of the bus system with a termination network. The resistor combination integrated in the module performs two tasks in RS485 applications:
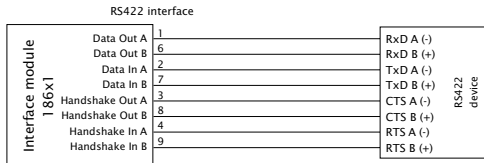
1. The connected line is terminated corresponding to its impedance, which prevents signal reflections at the cable end.

2. In the high-impedance phases of bus operation a defined quiescent state is ensured.

Closing DIL switches 6 and 7 on the Interface Module connects the bus terminals to the following resistance network:
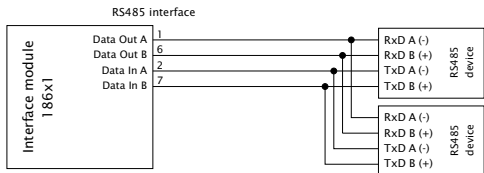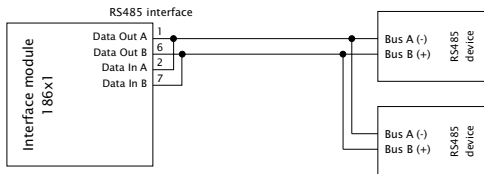
Connection examples

RS422 application with hardware handshake

RS422 interface

Interface module 186x1				RS422 device
	Data Out A	1	RxD A (-)	
	Data Out B	6	RxD B (+)	
	Data In A	2	TxD A (-)	
	Data In B	7	TxD B (+)	
	Handshake Out A	3	CTS A (-)	
	Handshake Out B	8	CTS B (+)	
	Handshake In A	4	RTS A (-)	
	Handshake In B	9	RTS B (+)	

RS485 4-wire bus master application

RS485 interface

Interface module 186x1				RS485 device
	Data Out A	1	RxD A (-)	
	Data Out B	6	RxD B (+)	
	Data In A	2	TxD A (-)	
	Data In B	7	TxD B (+)	

	RS485 device
RxD A (-)	
RxD B (+)	
TxD A (-)	
TxD B (+)	

RS485 2-wire application

RS485 interface

Interface module 186x1				RS485 device
	Data Out A	1	Bus A (-)	
	Data Out B	6	Bus B (+)	
	Data In A	2		
	Data In B	7		

	RS485 device
Bus A (-)	
Bus B (+)	

Technical Data

Operating modes:	RS422 RS485 2- or 4-wire
Baud rate:	RS422: 0..10 MBaud RS485: 0..5 MBaud
Data format:	any
Supported signals:	RS422: RxD A/B, TxD A/B CTS A/B, DTR A/B RS485: RXD A/B, TxD A/B
ESD immunity:	up to 15kV per IEC 801-2, Level 4 using ESD-immune interface components
Supply voltage:	5V DC ±5% (18601, 18611) 3,3V DC ±5% (18631)
Supply current:	approx. 40mA
TTL connector:	12-pin, 2mm post connector
RS422/485 connector:	9-pin male SUB-D connector
Dimensions:	43 x 31 mm
Weight:	approx. 10g
Packing list:	RS422/RS485 Interface Module

Profibus Interface Modules, #186x2

Function

The W&T Interface Modules 18602 and 18612 provide an RS485 2-wire-interface with Profibus pinout for devices equipped with a serial TTL port. Modules 18602 and 18612 differ only in the arrangement of the post connector for the serial TTL port, and are in every other respect functionally identical.

Important installation note

When installing or replacing the Interface Modules, visually inspect to ensure that the module does not cause a short circuit with adjacent components.

To use the Interface Modules with W&T PC cards, remove the wire jumper between the SUB-D male connector housing and the module. Otherwise the galvanic isolation between the interface and the PC may be defeated.

Supply voltage

The Interface Modules require a regulated supply voltage of 5V DC ±5%. The no-load current draw of the modules is approx. 40mA (typ.); any additional current requirement from an external load must of course be taken into account when dimensioning the power supply.

Protection against static charges

All external signal lines use ESD-immune interface components to provide protection against static discharges of up to 15kV per IEC 801-2, Level 4.

Pin configuration

The Profibus connection for the modules is configured as a 9-pin female SUB-D connector, with the TTL interface formatted as 12-pin male post connector. Refer to the following table for connector pin assignments:

TTL interface

pin#	signal	function
1	5V ±5%	Vcc
2	RI	"low" level
3	RxD	output
4	TxD	input
5	n.c.	n.c.
6	CTS	"low" level
7	DTR	n.c.
8	DSR	"low" level
9	RTS	n.c.
10	DCD	"low" level
11	12V ±10%	n.c.
12	GND	signal GND

Profibus interface

pin#	signal
1	Shield
2	n.c.
3	RxD/TxD-P
4	CNTR-P
5	DGND
6	VP
7	n.c.
8	RxD/TxD-N
9	CNTR-N

Pin 1 of the TTL interface is indicated by a rectangular soldering pad.

Operating modes

The RS485 interface module basically operates in RS485 2-wire mode with 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.

Technical Data

Operating mode:	RS485 2-wire mode without echo, automatic control
Baud rate:	0..10 MBaud
Data format:	any
Supported signals:	RxD/TxD-P , RxD/TxD-N
ESD immunity:	up to 15kV per IEC 801-2, Level 4 using ESD-immune interface components
Supply voltage:	5V DC ±5%
Supply current:	approx. 40mA
TTL connector:	12-pin, 2mm post connector
Profibus connector:	9-pin female SUB-D connector
Dimensions:	43 x 31 mm
Weight:	approx. 10g
Packing list:	Profibus Interface Module

20mA Interface Modules, #184x1

Function

The W&T Interface Modules 18401 and 18411 provide a 20mA interface for devices equipped with a serial TTL port. The modules support one data line in each direction and can be used as an active or passive 20mA component.

In the active mode the module supplies the current required by the respective 20mA loop, while in the passive mode the loop current must be supplied by the connected device.

Modules 18401 and 18411 differ only in the arrangement of the post connector for the serial TTL port, and are in every other respect functionally identical.

Important installation note

When installing or replacing the Interface Modules, visually inspect to ensure that the module does not cause a short circuit with adjacent components.

To use the Interface Modules with W&T PC cards, remove the wire jumper between the SUB-D male connector housing and the module. Otherwise the galvanic isolation between the interface and the PC may be defeated.

Supply voltage

The Interface Modules require a regulated supply voltage of 5V DC ±5%. The current draw of the modules is approx. 10mA (typ.). In active mode the modules require an additional unstabilized supply voltage of 12V DC.

Protection against static charges

All external signal lines use ESD-immune interface compo-
nents to provide protection against static discharges of up
to 15kV per IEC 801-2, Level 4.

Pin configuration

The 20mA connection for the modules is configured as a
9-pin male SUB-D connector, with the TTL interface format-
ted as 12-pin male post connector. Refer to the following
table for connector pin assignments:

TTL interface

pin#	signal	function
1	5V ±5%	Vcc
2	RI	"low" level
3	RxD	output
4	TxD	input
5	n.c.	n.c.
6	CTS	"low" level
7	DTR	n.c.
8	DSR	"low" level
9	RTS	n.c.
10	DCD	"low" level
11	12V ±10%	Vdd (20mA)
12	GND	signal GND

20mA interface

pin#	signal
1	Data Out 20mA
2	Data Out +
3	Data Out -
4	Data Out GND
5	Half Duplex Control
6	Data In 20mA
7	Data In +
8	Data In -
9	Data In GND

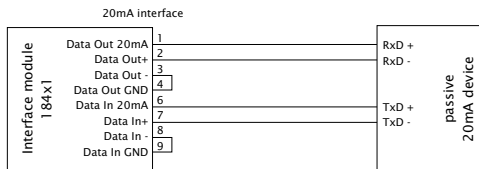*Pin 1 of the TTL interface is indicated by a rectangular soldering pad.*

Operating modes

A GND level signal on Pin 5 of the SUB-D connector will place
the module in half-duplex mode whereby an echo of the sent
signals is suppressed. The Interface Module can be used as
an active or passive 20mA component. The operating mode
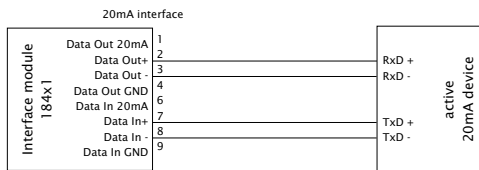can be selected for both loops seperately.

Connection examples

Examples of module switching into active/ passive mode are
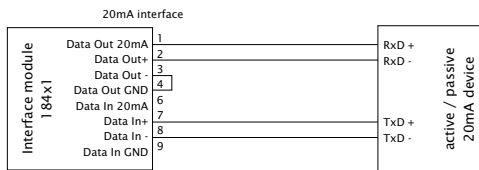shown on the following drawings:

Active Tx and active Rx current loop application

20mA interface

Interface module 184x1			passive 20mA device
Data Out 20mA	1	RxD +	
Data Out+	2	RxD -	
Data Out -	3		
Data Out GND	4		
Data In 20mA	6	TxD +	
Data In+	7	TxD -	
Data In -	8		
Data In GND	9		

Passive Tx and passive Rx current loop application

20mA interface

Interface module 184x1			active 20mA device
Data Out 20mA	1		
Data Out+	2	RxD +	
Data Out -	3	RxD -	
Data Out GND	4		
Data In 20mA	6		
Data In+	7	TxD +	
Data In -	8	TxD -	
Data In GND	9		

Active Tx and passive Rx current loop application

20mA interface

Interface module 184x1			active / passive 20mA device
Data Out 20mA	1	RxD +	
Data Out+	2	RxD -	
Data Out -	3		
Data Out GND	4		
Data In 20mA	6		
Data In+	7	TxD +	
Data In -	8	TxD -	
Data In GND	9		

Technical Data

Operating mode:	Active and passive mode
	Full and halfduplex mode
Baud rate:	0..19.200 Baud
Data format:	any
Supported signals:	RxD, TxD
ESD immunity:	up to 15kV per IEC 801-2,
	Level 4 using varistors
Supply voltage:	5V DC ±5%
	12V DC (in active mode only)
Supply current:	approx. 10mA @ 5V
	approx. 50mA @ 12V
TTL connector:	12-pin, 2mm post connector
20mA connector:	9-pin male SUB-D connector
Dimensions:	43 x 31 mm
Weight:	approx. 10g
Packing list:	20mA Interface Module

POF Interface Modules, #181x1

Function

The W&T Interface Modules 18101 and 18111 provide a plastic fiber optic interface for devices equipped with a serial TTL port. The modules support one data line in each direction and transmit data over a distance of max. 100 meters.

Modules 18101 and 18111 differ only in the arrangement of the post connector for the serial TTL port, and are in every other respect functionally identical.

The transmission medium is standard duplex plastic fiber optic cable, which is inexpensive and extremely easy to work with and install. The use of fiber optics as a transmission medium ensures perfect galvanic isolation between the connected devices and clean transmission even in noise-prone environments.
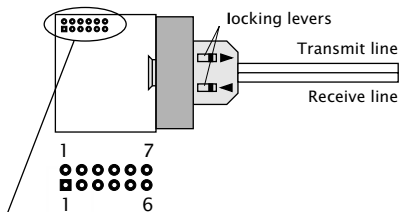
Important installation note

When installing or replacing the Interface Modules, visually inspect to ensure that the module does not cause a short circuit with adjacent components.

Supply voltage

The Interface Modules require a regulated supply voltage of 5V DC ±5%. The current draw of the modules is approx. 40mA (typ.).

Module diagram

Pin configuration

The fiber optic connection for the interface is configured as a self-locking coupling for duplex plastic fiber optics, with the TTL interface formatted as 12-pin male post connector. Refer to the following table for connector pin assignments:

TTL interface		
Pin#	signal	funktion
1	5V ±5%	Vcc
2	RI	n.c.
3	RxD	output
4	TxD	input
5	n.c.	n.c.
6	CTS	connected to RTS
7	DTR	connected to DSR
8	DSR	connected to DTR
9	RTS	connected to CTS
10	DCD	n.c.
11	+12V ±10%	n.c.
12	GND	signal GND

Pin 1 of the TTL interface is indicated by a rectangular soldering pad.

Assembly

Connecting the plastic fiber optic cable to the interface requires no special tools:

- Trim the fiber optic cable to the desired length using a sharp knife. Make your cut as close to a right angle to the longitudinal axis of the cable as possible. A simple cut is generally sufficient, with no reworking required.
- Separate the individual duplex conductors back from the cut point to a distance of around 2cm.
- Pull the locking levers on the fiber optic female connector back towards the module along the upper side of the coupling.
- At the same time insert the separated end of the fiber optic duplex line into the fiber optic coupling female.
- Releasing the locking levers locks the fiber optics into the coupling.
- To release, pull the two locking levers on the top of the coupling towards the module, and pull the fiber optic cable out of the female.

The arrows on the top side of the coupling clearly show the location of the emitter and receiver lines.

Please note that when connecting two fiber optic components, the emitter of the first must always be connected to the receiver channel of the second component. A visible red light beam is always sent along with data, so that the sending line can always be easily identified.

Technical Data

Baud rate:	0..115.200 Baud
Data format:	any
Supported signals:	RxD, TxD
Max. distance:	100m
Supply voltage:	5V DC ±5%
Supply current:	approx. 40mA
TTL connector:	12-pin, 2mm post connector
POF connector:	Integrated socket
	with automatic interlocking
	of the fiber-optic cable
POF medium:	Duplex plastic optical fiber cable
	2.2 x 4.4 mm, fiber diameter of
	980µm, core: PMMA, cladding: PE
Dimensions:	43 x 31 mm
Weight:	approx. 10g
Packing list:	POF Interface Module

Fiber Optic Interface Modules, #1812x

Function

The W&T Interface Modules 18120 and 18121 provide a fiber optic interface with ST connectors for devices equipped with a serial TTL port. Modules 18120 and 18121 differ only in the arrangement of the post connector for the serial TTL port, and are in every other respect functionally identical.

The light used for data transmission has a wavelength of 820 nm. Commonly available Multimode duplex glass fiber optic cable in 50/125µm or 62.5/125µm is used as the transmission medium, which due to its wide application in networking is easily available and cost-effective. This means that even already existing glass fiber optic lines intended for use in networks can easily be used for transmitting serial data. Depending on the attenuation of the glass fiber optic cable used, data can be transmitted over a distance of maximum 4000 meters.

Important installation note

When installing or replacing the Interface Modules, visually inspect to ensure that the module does not cause a short circuit with adjacent components.

Supply voltage

The Interface Modules require a regulated supply voltage of 5V DC ±5%. The current draw of the modules is approx. 60mA (typ.).
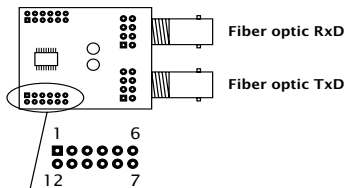
Pin configuration

The fiber optic connection for the modules is configured as a ST connector, with the TTL interface formatted as 12-pin male post connector. Refer to the following table for connector pin assignments:

TTL interface		
Pin#	signal	funktion
1	5V ±5%	Vcc
2	RI	n.c.
3	RxD	output
4	TxD	input
5	n.c.	n.c.
6	CTS	connected to RTS
7	DTR	connected to DSR
8	DSR	connected to DTR
9	RTS	connected to CTS
10	DCD	n.c.
11	+12V ±10%	n.c.
12	GND	signal GND

Pin 1 of the TTL interface is indicated by a rectangular soldering pad.

Module diagram

Technical Data

Baud rate:	0..1,5 MBaud
Data format:	any
Supported signals:	RxD, TxD
Fiber-optic medium:	Duplex multimode fiber-optic cable
Max. distance:	50/125µm:
	typ. 3500m, min. 2200m @3dB/km
	62.5/125µm:
	typ. 4000m, min. 3000m @3.5dB/km
	200µm PCS fiber:
	typ. 2700m, min. 2500m @8dB/km
Optical budget:	50/125µm:
	typically 10.5dB, min. 6.6dB
	62.5/125µm:
	typically 15dB, min. 10.5dB
	200µm PCS fiber:
	typically 21.5dB, min. 20dB
Supply voltage:	5V DC ±5%
Supply current:	approx. 60mA
TTL connector:	12-pin, 2mm post connector
FO cable connector:	ST plug adapter
	SMA plug adapter on request
Dimensions:	55 x 31 mm
Weight:	approx. 10g
Packing list:	Fiber Optic Interface Module

Interface Module USB, #18311

Function

The W&T Interface Module 18311 equips devices having a serial TTL interface with a USB slave interface.

The module uses an integrated serial EEPROM for non-volatile storage of Vendor ID, Product ID, Serial Number and a product description. The EEPROM is programmable on-board via USB.

Current drivers for all supported Windows versions are available via the Internet on the module data sheet page.

Supply voltage

The USB interface module requires a regulated DC voltage of 5V DC ±5% at typ. 30 mA.

Important installation notes

When installing or replacing the Interface Modules you must visual inspect to be sure that the module is not causing any short circuit to adjacent components.

Wiring configuration

The USB connection on the module is implemented as a USB female of type „B", and the TTL interface on the module as a 12-pole header connector. The connector pin configuration is shown in the following table.

pin#	signal	function
1	5V ±5%	Vcc
2	RI	input
3	TxD	output
4	RxD	input
5	n.c.	n.c.
6	DTR	output
7	CTS	input
8	DSR	input
9	RTS	output
10	DCD	input
11	12V ±10%	n.c.
12	GND	signal GND

Pin 1 of the TTL interface is indicated by a square solder eye.

Module drawing:
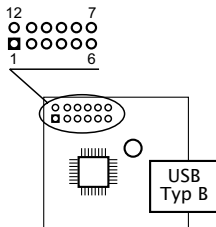
Technical Data

Baud rate:	300 baud..3 MBaud
	adjustable baud rates =
	3 MBaud/n, with n = 1..16383
Data bits:	7 or 8
Stop bits:	1 or 2
Parity:	no, even, odd, mark space
Supported signals:	RxD, TxD, RTS, CTS,
	DSR, DCD, DTR, RI
Integrated memory:	384-byte receive buffer
	128- byte send buffer
Supply voltage:	5V DC ±5%
Quiescent current:	approx. 25 mA
TTL connection:	12-pole 2mm header
USB connection:	USB female, Type B
Dimensions:	55 x 31 mm
Weight:	approx. 10g
Scope of delivery:	USB Interface Module