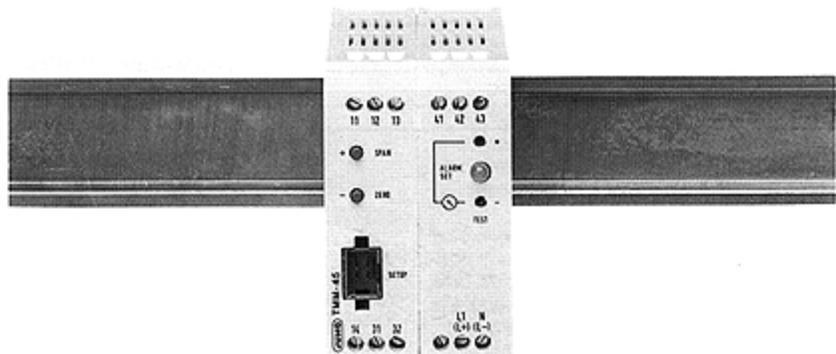


# Interface description TMM-45/... Smart Transmitter



**B 95.6510.2**

1.95/V 00311530

## Operating Instructions

**Introductory note:**

Please read these Operating Instructions before you start to use the interface. Keep the Operating Instructions in a place accessible to all users. Please assist us in incorporating improvements in these instructions. Your suggestions will be very welcome.

Technical Documentation GB II

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**Note:**

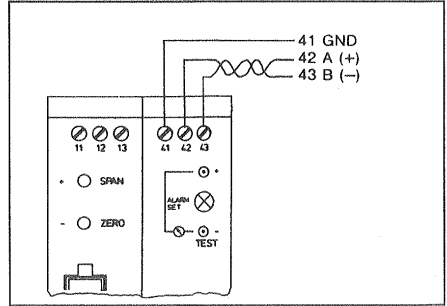
All commands which can be executed are described in these Operating Instructions. If any problems should arise during operation please contact the nearest office or the factory. You are also asked not to carry out any manipulations on the interface which are not permitted. You could endanger your rights under the warranty!

- Make sure that the interface is wired up correctly.
- Protect the interface against static electrical discharges and excessive signal levels.

# 1 BEFORE STARTING WORK

## 1.1 Wiring up the interface to the PC

The transmitter TMM-45/... incorporates an interface RS 485 which is available at the screw terminals 41, 42 and 43 for conductors up to 1.5 mm<sup>2</sup>.



## 1.2 Valid interface parameters

The interface parameters for the RS 485 are selected in the setup program.

The following can be set:

- device address
- baud rate
- parity
- data bits, and
- stop bits.

The protocol format consists of up to 20 ASCII characters in a string in which blank characters are permitted. This can be used to execute various functions e.g. read out the process value.

Configuration of the instrument is however possible only through the setup interface in conjunction with the corresponding interface module (accessory). If the interface module is connected up (blue plug), the setup interface has precedence over the RS 485 interface (at the screw terminals).

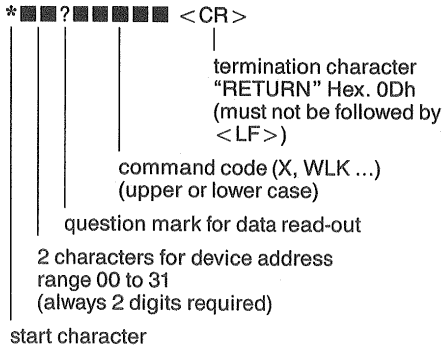
## 1.3. Important notes on installation

- The wires A(+) and B(-) must be twisted together or screened and must not be run in the neighbourhood of current-carrying cables.
- The screen must only be grounded at one end.
- Incorrect connection may result in permanent damage to the interface.

## 2 COMMUNICATION

### 2.1 Arrangement of the sending data

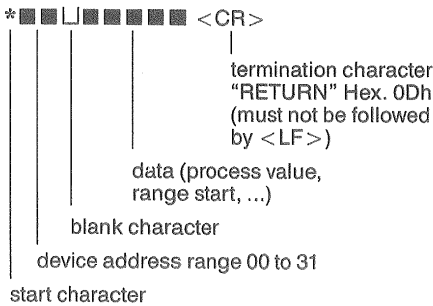
The sending data consist of a string of ASCII characters arranged as follows:



### Explanation of the codes:

- <CR> carriage return
- blank character
- ? question mark as symbol for data read-out
- characters which are explained

### 2.2 Arrangement of the received data



The response time is the time interval between sending the last sending data character and the receipt of the first receiving data character and is 100 msec max.

The transmitter can only respond to a data read-out.

If the computer sends to the transmitter a command with the appropriate device number the transmitter responds with the requested data or an error message.

### 3 DATA READ-OUT

Designation	Code	Sending data example	Received data example
3.1 Process value	X	*10 ? X <CR>	*10 LJ +0.123 <CR>
3.2 Start of range	XA	*10 ? XA <CR>	*10 LJ -200.00 <CR>
3.3 End of range	XE	*10 ? XE <CR>	*10 LJ +850.00 >CR>
3.4 Hardware and software version	VERS	*10 ? VERS <CR>	*10 LJ 064.■■■.■■■ <CR> <div style="margin-left: 20px;">                     hardware version ———┐                      software version ———┘                 </div>
3.5 User code 1	UNITW1	*10 ? UNITW1 <CR>	*10 LJ Meas1 <CH>
3.6 User code 2	UNITW2	*10 ? UNITW2 <CR>	*10 LJ M.K.JUMO <CR>

### 3 DATA READ-OUT

S.04

Designation	Code	Sending data example	Received data example
<b>3.7 Input</b>	TYP	*10 ? TYP <CR>	*10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <CR>
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Probe</p> <ul style="list-style-type: none"> <li>0...thermocouple</li> <li>1...resistance thermometer</li> <li>2...resistance transmitter</li> <li>3...potentiometer</li> <li>4...voltage</li> <li>5...current</li> </ul> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Linearisation table</p> <ul style="list-style-type: none"> <li>0...ThC L</li> <li>1...ThC J</li> <li>2...ThC U</li> <li>3...ThC T</li> <li>4...ThC K</li> <li>5...ThC E</li> <li>6...ThC N</li> <li>7...ThC MoRe</li> <li>8...ThC S</li> <li>9...ThC R</li> <li>A...ThC B</li> <li>B...Pt 100 DIN</li> <li>C...Pt 100 JIS</li> <li>D...Ni 100</li> <li>E...Pt 500 DIN</li> <li>F...Pt 1000 DIN</li> <li>G...linear</li> <li>H...customised</li> </ul> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Connection</p> <ul style="list-style-type: none"> <li>0...2-wire/3-wire circuit</li> <li>1...4-wire circuit</li> </ul> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Supply frequency</p> <ul style="list-style-type: none"> <li>1...50 Hz</li> <li>2...60 Hz</li> </ul> </div> <div style="border: 1px solid black; padding: 5px;"> <p>Temperature compensation (thermocouple only)</p> <ul style="list-style-type: none"> <li>0...internal Pt 100</li> <li>1...external Pt 100</li> <li>2...fixed value</li> </ul> </div>			

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### 3 DATA READ-OUT

S.03

Designation	Code	Sending data example	Received data example
<b>3.8 Output</b>  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 10px;">                     Type of signal                      0...4 - 20 mA                      1...0 - 20 mA                      2...0 - 10 V                 </div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;">                     Signal on probe break                      0...negative                      1...positive                 </div>	OUT	*10 ? OUT <CR>	*10 L  ■ 0 ■ <CR>

Designation	Code	Sending data example	Received data example
<b>3.9 Unit</b> (3 characters)	UNIT	*10 ? UNIT <CR>	*10 L  bar <CR>

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# 4 ERROR TREATMENT

---

## 4.1. Error message

If the device address is recognised but not the read-out command, the following message is received:

```
*10 LJ ? ERROR ■■ <CR>
  |           |
device       82 value for read-out only;
address      can not be programmed
00 - 31      83 command error
```

If a device address in the sending data is not received correctly by the transmitter, for example through an error in transfer, there is no response (no received data) since the transmitter assumes that another device is being addressed.

## 4.2 Resetting the transmitter

The transmitter can be reset, for example after sending a faulty message, by sending the control character "end of transmission" (EOT) Hex. 04h.

EOT is sent without address and carriage return and resets the device to a defined initial status. All data in the interface buffer are erased. A new read-out command can be sent. EOT can be sent at any time.