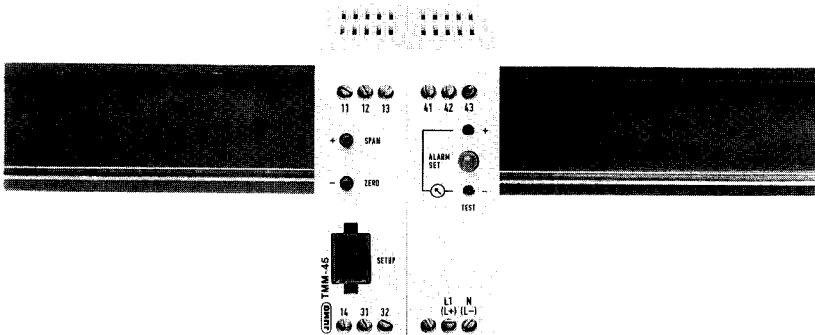


# Schnittstellenbeschreibung TMM-45/ ... Smart Transmitter



**B 95.6510.2** (D 93.835.2)  
4.94/V 00089709

## Betriebsanleitung

**Vorwort:**

Lesen Sie diese Betriebsanleitung, bevor Sie die Schnittstelle in Betrieb nehmen. Bewahren Sie die Betriebsanleitung an einem für alle Benutzer zugänglichen Platz auf. Bitte unterstützen Sie uns, diese Betriebsanleitung zu verbessern. Für Ihre Anregungen sind wir dankbar.

Technische Dokumentation GB II · Telefon (06 61) 60 03-6 25 · Telefax (06 61) 60 03-5 00

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## Hinweis:

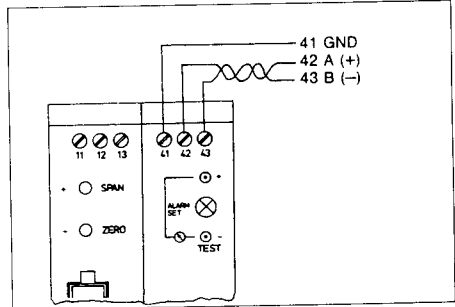
Alle ausführbaren Befehle sind in der vorliegenden Betriebsanleitung beschrieben. Sollten während des Betriebes trotzdem Probleme auftreten, setzen Sie sich bitte mit der nächsten Niederlassung oder mit dem Stammhaus in Verbindung. Wir bitten Sie auch keine unzulässigen Manipulationen an der Schnittstelle vorzunehmen. Sie könnten Ihren Garantieanspruch gefährden!

- Stellen Sie sicher, daß die Schnittstelle ordnungsgemäß verdrahtet wird.
- Schützen Sie die Schnittstelle vor statischen Entladungen und zu hohen Signalpegeln.

# VOR ARBEITSBEGINN

## 1.1 Verdrahtung der Schnittstelle mit dem PC

Im Meßumformer TMM-45/... ist eine Schnittstelle RS 485 eingebaut, die an den Schraubklemmen 41, 42 und 43 über Leitungen bis max. 1,5 mm<sup>2</sup> verfügbar ist.



## 1.2 Gültige Schnittstellenparameter

Die Schnittstellenparameter für die RS 485 werden im Setup-Programm eingestellt.

Einstellbar sind:

- Geräteadresse
- Baudrate
- Parität
- Datenbits und
- Stopbits

Das Protokollformat besteht aus bis zu 20 ASCII-Zeichen in einer Kette, in der Leerzeichen zulässig sind. Damit können verschiedene Funktionen, wie z. B. Istwert abrufen, ausgeführt werden.

Eine Konfiguration des Gerätes ist jedoch nur über die Setup-Schnittstelle in Verbindung mit dem zugehörigen Interface möglich (Zubehör). Ist das Interface angeschlossen (blauer Stecker), hat die Setup-Schnittstelle Vorrang vor der RS 485-Schnittstelle (an den Schraubklemmen).

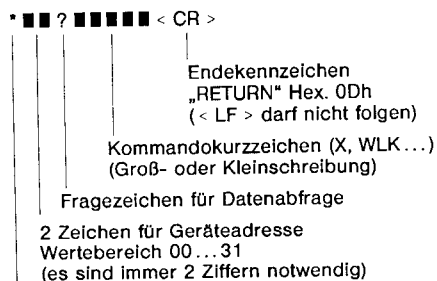
## 1.3 Wichtige Installationshinweise

- Die Leitungen A(+) und B(-) sollten verdreht oder abgeschirmt sein und nicht in der Nähe stromdurchflossener Leitungen liegen
- Die Schirmung sollte nur an einem Gerät geerdet werden
- Unsachgemäßer Anschluß kann zur Zerstörung der Schnittstelle führen

## 2 KOMMUNIKATION

### 2.1 Aufbau der Sendedaten

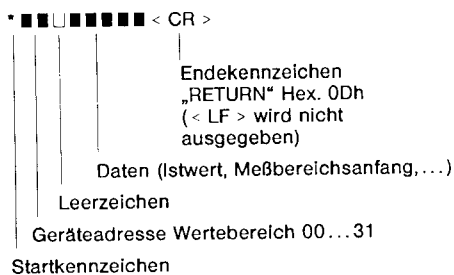
Die Sendedaten bestehen aus einer ASCII-Zeichenkette, die wie folgt aufgebaut ist:



#### Erklärung der Zeichen:

- < CR > Carriage Return (Wagenrücklauf)
- Leerzeichen
- ? Fragezeichen als Symbol für Datenabfrage
- Zeichen, die erklärt werden

### 2.2 Aufbau der Empfangsdaten



Die Antwortzeit ist die Zeit zwischen Aussendung des letzten Sendedatenzeichens und Empfang des ersten Empfangsdatenzeichens und beträgt max. 100 ms.

Der Meßumformer kann nur auf eine Datenabfrage antworten.

Sendet der Rechner ein Kommando mit entsprechender Gerätenummer zum Meßumformer, antwortet dieser mit den angeforderten Daten oder einer Fehlermeldung.

### 3 DATENABFRAGE

Begriff	Kurzzeichen	Sendedatenbeispiel	Empfangsdatenbeispiel
3.1 Istwert	X	*10 ? X < CR >	* 10 □ + 0.123 < CR >
3.2 Meßbereichsanfang	XA	*10 ? XA < CR >	* 10 □ - 200.00 < CR >
3.3 Meßbereichsende	XE	*10 ? XE < CR >	* 10 □ + 850.00 < CR >
3.4 Hard- und Softwareversion	VERS	*10 ? VERS < CR >	* 10 □ 064. ■■. ■■ < CR > <div style="margin-left: 20px;"> <span style="display: inline-block; width: 100px; border-bottom: 1px solid black;"></span> <span style="display: inline-block; width: 10px; border-bottom: 1px solid black;"></span> <span style="display: inline-block; width: 10px; border-bottom: 1px solid black;"></span> <span style="display: inline-block; width: 10px; border-bottom: 1px solid black;"></span> <span style="display: inline-block; width: 10px; border-bottom: 1px solid black;"></span> <span style="display: inline-block; width: 10px; border-bottom: 1px solid black;"></span> <span style="display: inline-block; width: 10px; border-bottom: 1px solid black;"></span> </div> <div style="margin-left: 20px;"> <span style="display: inline-block; width: 100px; border-bottom: 1px solid black;"></span> <span style="display: inline-block; width: 10px; border-bottom: 1px solid black;"></span> <span style="display: inline-block; width: 10px; border-bottom: 1px solid black;"></span> <span style="display: inline-block; 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### 3 DATENABFRAGE

Begriff	Kurzzeichen	Sendedaten-beispiel	Empfangsdaten-beispiel
3.7 Eingang	TYP	*10 ? TYP < CR >	* 10 □ ■■■■■■ < CR >
<p><b>Fühler</b>            0... Thermoelement            1... Widerstandsthermometer            2... Widerstandsferngeber            3... Potentiometer            4... Spannung            5... Strom</p>			
<p><b>Linearisierungstabelle</b>            0... Typ „L“            1... Typ „J“            2... Typ „U“            3... Typ „T“            4... Typ „K“            5... Typ „E“            6... Typ „N“            7... Typ MoRe            8... Typ „S“            9... Typ „R“            A... Typ „B“            B... Pt 100 DIN            C... Pt 100 JIS            D... Ni100            E... Pt 500 DIN            F... Pt 1000 DIN            G... linear            H... kundenspezifisch</p>			
<p><b>Anschlußart</b>            0... 2-Leiter-/3-Leiter-Schaltung            1... 4-Leiter-Schaltung</p>			
<p><b>Netzfrequenz</b>            0... 50 Hz            1... 60 Hz</p>			
<p><b>Temperaturkompensation</b>            (nur bei Thermoelement)            0... interner Pt 100            1... externer Pt 100            2... Festwert</p>			

### 3 DATENABFRAGE

Begriff	Kurzzeichen	Sendedatenbeispiel	Empfangsdatenbeispiel
<b>3.8 Ausgang</b>  <div style="border: 1px solid black; padding: 5px; width: fit-content;">                     Signalart                      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 bei Fühlerbruch                      0...negativ                      1...positiv                 </div>	OUT	*10 ? OUT < CR >	* 10 L 0 < CR >

Begriff	Kurzzeichen	Sendedatenbeispiel	Empfangsdatenbeispiel
<b>3.9 Einheit (3 Zeichen)</b>	UNIT	*10 ? UNIT < CR >	* 10 L bar < CR >

# 4 FEHLERBEHANDLUNG

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## 4.1 Fehlermeldung

Wird die Geräteadresse, nicht jedoch der Abfragebefehl erkannt, wird folgende Meldung empfangen:

\* 10 □ ? ERROR ■ ■ < CR >

Geräte- adresse 0...31	82 Wert nur zur Abfrage; nicht programmierbar 83 Fehlerhaftes Kommando
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Wird eine Geräteadresse in den Sendedaten beispielsweise durch Übertragungsfehler vom Meßumformer nicht richtig empfangen, erfolgt keine Antwort (keine Empfangsdaten), da er davon ausgeht, daß eine anderes Gerät angesprochen wird.

## 4.2 Rücksetzen des Meßumformers

Der Meßumformer kann z.B. nach fehlerhafter Datenübertragung zurückgesetzt werden, indem das Steuerzeichen „End of Transmission“ (EOT) Hex. 04h gesendet wird.

EOT wird ohne Adresse und Carriage Return gesendet und stellt einen definierten Anfangszustand her. Alle Daten im Schnittstellenbuffer werden gelöscht. Eine erneute Abfrage kann stattfinden. EOT kann jederzeit gesendet werden.