WIKA OBSOLETE

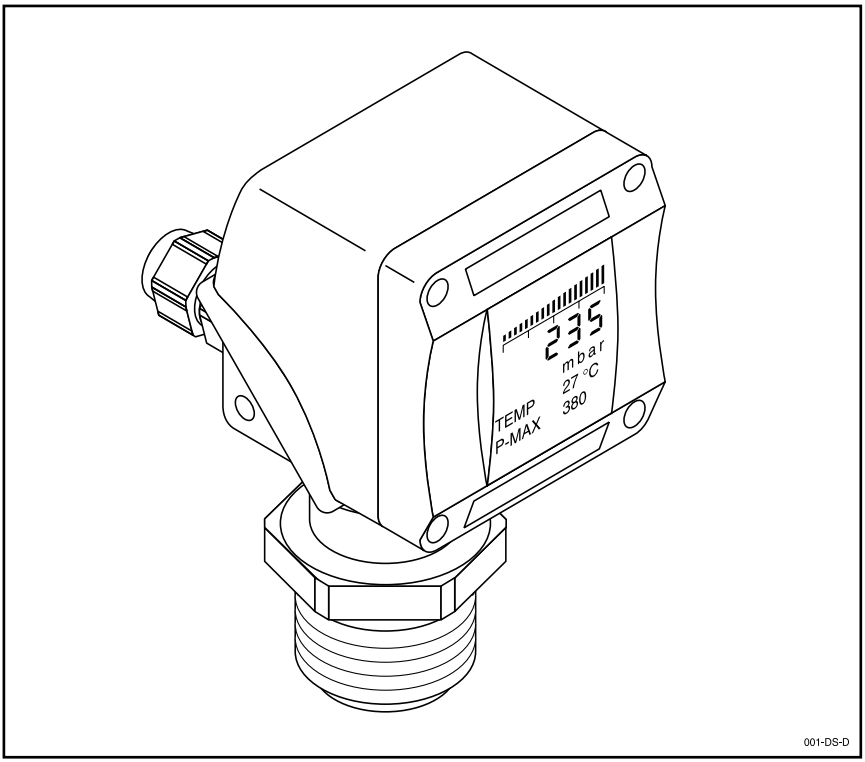
ISO9001

CE

Ex - UniTrans

PROFIBUS-PA

Betriebsanleitung / Manual



S-Nr. 2483586 D/GB 04/2003

- Universal-Drucktransmitter

IS Universal Pressure Transmitter

S-Nr. 2483586 D/GB 04/2003

Inhaltsverzeichnis

2483586 D/GB 4/2003

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

2483586 D/GB 4/2003

1 Allgemeine Sicherheitshinweise

Beachten Sie bei allen Arbeiten an dem Drucktransmitter die nationalen Sicherheits- und Unfallverhütungsvorschriften und die nachfolgenden Sicherheitshinweise in dieser Betriebsanleitung.

Ein anderer Betrieb als der in der folgenden Anleitung beschriebene ist bestimmungswidrig und muss deshalb ausgeschlossen werden.

Können Störungen nicht beseitigt werden, ist das Gerät ausser Betrieb zu setzen und gegen versehentliche Inbetriebnahme zu schützen.

Beachten Sie unbedingt vor Montage, Inbetriebnahme und Betrieb, dass das richtige Druckmessgerät hinsichtlich Messbereich, Ausführung und aufgrund der spezifischen Messbedingungen der geeignete messstoffberührte Werkstoff (Korrosion) ausgewählt wurde.

Bei Nichtbeachten entsprechender Vorschriften können schwere Körperverletzungen und/oder Sachschäden auftreten.

Bei gefährlichen Messstoffen wie z.B. Sauerstoff, Acetylen, brennbaren oder giftigen Stoffen, sowie bei Költeanlagen, Kompressoren etc. müssen über die gesamten allgemeinen Regeln hinaus die jeweils bestehenden einschlägigen Vorschriften beachtet werden.

Messstoffreste in ausgebauten Druckmessgeräten können zur Gefährdung von Menschen, Umwelt und Einrichtung führen. Ausreichende Vorsichtsmaßnahmen sind zu ergreifen.

Reparaturen dürfen nur vom Hersteller durchgeführt werden. Eingriffe und Änderungen am Gerät sind unzulässig.

Weitere wichtige Sicherheitshinweise befinden sich in den einzelnen Abschnitten dieser Anleitung.

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

2 EG-Konformitätserklärung

Wir erklären in alleiniger Verantwortung, daß die mit CE gekennzeichneten Produkte
Typ: **IUT-10 und IUT-11**
Beschreibung**: Eigensichere Universaldrucktransmitter**
gemäß gültigem Typenblatt: **PE 86.03**
die Anforderungen der EMV-Richtlinie **89/336/EWG** erfüllen.

Die Prüfung der Geräte wurde entsprechend der EMV-Norm
EN 61326 (1998)

durchgeführt.

Gemäß der Ex-Richtlinie **94/9/EG** werden die grundlegenden Sicherheits- und Gesundheitsanforderungen durch Übereinstimmung mit

EN 50014:1997	**Allgemeine Bestimmungen**
EN 50020:1994 (VDE 0170/0171 Teil 7/4.96)	**Eigensicherheit 'i'**
EN 50284:1999	**Gruppe II Kategorie 1 G**

erfüllt.

WIKA

Alexander Wiegand GmbH & Co. KG

Klingenberg, 14.4.03

Technische Leitung - Qualitätssicherung

Geschäftsbereich Tronic

i.V. Stefan Richter

i.A. Thomas Gerling

2483586 D/GB 4/2003

3 Baumusterprüfbescheinigungen

DMT

(1) **EG-Baumusterprüfbescheinigung**

(2) **- Richtlinie 94/9/EG -**
Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen

(3) **DMT 02 ATEX E 103**

(4) **Gerät:** **Drucktransmitter UniTrans Typ IUT-1*-5-***-**-***A**-****

(5) **Hersteller:** **WIKA Alexander Wiegand GmbH & Co. KG**

(6) **Anschrift:** **D 63911 Klingenberg/Main**

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

(8) Die Zertifizierungsstelle der Deutsche Montan Technologie GmbH, benannte Stelle Nr. 0158 gemäß Artikel 9 der Richtlinie 94/9/EG des Europäischen Parlaments und des Rates vom 23. März 1994, bescheinigt, dass das Gerät die grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie erfüllt.
Die Ergebnisse der Prüfung sind in dem Prüfprotokoll BVS PP 02.2051 EG niedergelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 50014:1997 + A1 – A2	Allgemeine Bestimmungen
EN 50020:1994	Eigensicherheit 'i'
EN 50284:1999	Gerätegruppe II Kategorie 1G

(10) Falls das Zeichen „X" hinter der Bescheinigungsnummer steht, wird in der Anlage zu dieser Bescheinigung auf besondere Bedingungen für die sichere Anwendung des Gerätes hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und die Baumusterprüfung des beschriebenen Gerätes in Übereinstimmung mit der Richtlinie 94/9/EG.
Für Herstellung und in Verkehr bringen des Gerätes sind weitere Anforderungen der Richtlinie zu erfüllen, die nicht durch diese Bescheinigung abgedeckt sind.

(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

II 1/2 G EEx ia IIC T4/T6

Deutsche Montan Technologie GmbH
Essen, den 31. Mai 2002

DMT-Zertifizierungsstelle

Fachbereichsleiter

Am Technologiepark 1, 45307 Essen, Telefon (0201)172-1416, Telefax (0201)172-1716

2483586 D/GB 4/2003

DMT

(13) Anlage zur

(14) # EG-Baumusterprüfbescheinigung

DMT 02 ATEX E 103

(15) 15.1 Gegenstand und Typ

Drucktransmitter UniTrans Typ IUT-1*-5-***-**-***A**-**

Anstelle der *** werden in der vollständigen Benennung Buchstaben und Ziffern eingefügt, die unterschiedliche Ausführungen wie Messbereich, Prozessanschluss, Gehäusewerkstoff kennzeichnen.

15.2 Beschreibung

Der Drucktransmitter dient zur kontinuierlichen hydrostatischen Füllstandsmessung und zur Umwandlung des Messwertes in ein proportionales elektrisches Signal; der Drucktransmitter kann an Stromkreise Profibus PA nach dem FISCO-Modell (PTB-Bericht Nr. PTB W-53) angeschlossen werden.
Der Druckaufnehmer besteht aus einem Kunststoffgehäuse (Oberflächenwiderstand $\leq 10^9\ \Omega$) oder einem Leichtmetallgehäuse und einem angebauten Sensor Typ TIS*** (DMT 99 ATEX E 069 U). In dem Gehäuse sind die Auswerteelektronik Typ EM*-**-P*-Ex (DMT 01 ATEX E 142 U), eine Tastatur und eine Anzeige-Baugruppe Typ A-IRU-1-*-* (DMT 99 ATEX E 091 U) gesichert befestigt.
Der Anschluss des eigensicheren Stromkreises erfolgt über eine Leitung oder über einen Steckverbinder.

15.3 Kenngrößen

15.3.1 Versorgungs- und Signalstromkreis (Klemmen + und - bzw. Stecker Anschl. 1 und 2)
zum Anschluss an einen eigensicheren Stromkreis mit den folgenden Höchstwerten:

Spannung	Ui	DC 24	V
Stromstärke	Ii	380	mA
Leistung	Pi	5,32	W
wirksame innere Kapazität	Ci	vernachlässigbar	
wirksame innere Induktivität	Li	vernachlässigbar	

15.3.2 Umgebungstemperaturbereich Ta
für Temperaturklasse T4: -40 °C ≤ Ta ≤ +80 °C
für Temperaturklasse T6: -40 °C ≤ Ta ≤ +45 °C

15.3.3 Medientemperatur
für Temperaturklasse T4: ≤ 105 °C
für Temperaturklasse T6: ≤ 60 °C

(16) Prüfprotokoll
BVS PP 02.2051 EG, Stand 31.05.02

(17) Besondere Bedingungen für die sichere Anwendung
Entfällt

2483586 D/GB 4/2003

DMT

(1) # EG-Baumusterprüfbescheinigung

(2) **- Richtlinie 94/9/EG -**
Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen

(3) **DMT 99 ATEX E 091 U**

(4) **Komponente:** **Anzeige Typ A-IRU-1-*-***

(5) **Hersteller:** **WIKA Alexander Wiegand GmbH & Co.**

(6) **Anschrift:** **63911 Klingenberg**

(7) Die Bauart dieser Komponente sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

(8) Die Zertifizierungsstelle der Deutsche Montan Technologie GmbH, benannte Stelle Nr. 0158 gemäß Artikel 9 der Richtlinie 94/9/EG des Europäischen Parlaments und des Rates vom 23. März 1994, bescheinigt, daß die Komponente den grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie erfüllt.
Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht Nr. BVS PP 99.2082 EG niedergelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 50014:1997	Allgemeine Bestimmungen
EN 50020:1994 (VDE 0170/0171 Teil 7/4.96)	Eigensicherheit 'i'

(10) Das Zeichen "U" hinter der Zertifikatsnummer gibt an, daß dieses Zertifikat nicht mit einem für ein Gerät oder Schutzsystem vorgesehenen Zertifikat verwechselt werden darf. Dieses Zertifikat darf nur als Basis für die Bescheinigung eines Gerätes oder Schutzsystems verwendet werden.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und den Bau der beschriebenen Komponente. Für Herstellung und Inverkehrbringen dieser Komponente sind weitere Anforderungen der Richtlinie 94/9/EG zu erfüllen.

(12) Die Kennzeichnung der Komponente muß die folgenden Angaben enthalten:

II 2G EEx ia IIC T4/T5/T6

Deutsche Montan Technologie GmbH
Essen, den 15.11.1999

DMT-Zertifizierungsstelle

Fachbereichsleiter

Seite 1 von 2 zu DMT 99 ATEX E 091 U
Dieses Zertifikat darf nur unverändert weiterverbreitet werden.
Am Technologiepark 1, 45307 Essen, Telefon (0201)172-1416, Telefax (0201)172-1716

2483586.DGB 4/2003

DMT

(13) Anlage zur

(14) # EG-Baumusterprüfbescheinigung

DMT 99 ATEX E 091 U

(15) 15.1 Typbezeichnung für Anzeige Typ A-IRU-1-*-*
Anstelle der ** werden in der vollständigen Benennung Buchstaben oder Ziffern eingefügt, die unterschiedliche Ausführungen kennzeichnen.

15.2 Beschreibung
Die Anzeige dient in eigensicheren elektrischen Betriebsmitteln zur Visualisierung von Prozeßdaten.
Die elektronischen Bauteile sind in einem Gehäuseteil aus Kunststoff (Oberflächenwiderstand $\leq 10^9\ \Omega$) eingebaut. Dieses Gehäuseteil dient als Deckel des späteren eigensicheren Betriebsmittels.

15.3 Elektrische, mechanische und thermische Kenngrößen
zum Anschluß an einen eigensicheren Stromkreis mit den folgenden Höchstwerten:

Spannung	U_i	DC 9,2	V
Stromstärke	I_i	115	mA
max. Leistung	P_i		
für Temperaturklasse T4		0,133	W
für Temperaturklasse T5		0,133	W
für Temperaturklasse T6		0,066	W
wirksame innere Induktivität	L_i	vernachlässigbar	
wirksame innere Kapazität	Ci	2	µF
Umgebungstemperaturbereich	Ta		
für Temperaturklasse T4		- 40 C° bis + 70 °C	
für Temperaturklasse T5 und T6		- 40 C° bis + 60 °C	

(16) Prüfbericht
Nr. BVS PP 99.2082 EG
3 Seiten

(17) Besondere Bedingungen für die sichere Anwendung
17.1 Die Anzeige ist zum Einsatz in den folgenden Umgebungstemperaturbereichen geeignet:

Temperaturklasse T4	- 40 C° bis + 70 °C
Temperaturklasse T5 und T6	- 40 C° bis + 60 °C

17.2 Der Anbau der Anzeige an ein eigensicheres elektrisches Betriebsmittel muß geprüft und bescheinigt werden; nach dem Anbau ist für das Gesamtbetriebsmittel die Schutzart IP 20 gemäß EN 60529 zu gewährleisten.

2483586 D/GB 4/2003

DMT

1. Nachtrag

(Ergänzung gemäß Richtlinie 94/9/EG Anhang III Ziffer 6)

zur EG-Baumusterprüfbescheinigung
DMT 99 ATEX E 091 U

Gerät:	**Anzeige Typ..A-IRU-1-*-***
Hersteller:	**WIKA Alexander Wiegand GmbH & Co.**
Anschrift:	**63911 Klingenberg**

Beschreibung

Die Anzeige kann auch nach den im zugehörigen Prüfbericht Nr. BVS PP 99.2082 EG / N1 aufgeführten Prüfungsunterlagen gefertigt werden.

Prüfbericht

Nr. BVS PP 99.2082 EG/ N1 vom 28.04.2000, 3 Seiten

Deutsche Montan Technologie GmbH
Essen, den 28. April 2000

DMT-Zertifizierungsstelle

Fachbereichsleiter

Seite 1 von 1 zum 1. Nachtrag zu DMT 99 ATEX E 091 U
Dieses Zertifikat darf nur unverändert weiterverbreitet werden
Am Technologiepark 1, 45307 Essen, Telefon (0201)172-1416, Telefax (0201)172-1716

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

DMT

2. Nachtrag

(Ergänzung gemäß Richtlinie 94/9/EG Anhang III Ziffer 6)

zur EG-Baumusterprüfbescheinigung
DMT 99 ATEX E 091 U

Gerät:	**Anzeige Typ..A-IRU-1-*-***
Hersteller:	**WIKA Alexander Wiegand GmbH & Co. KG**
Anschrift:	**D - 63911 Klingenberg/Main**

Beschreibung

Die Anzeige kann auch nach den im zugehörigen Prüfprotokoll aufgeführten Prüfungsunterlagen gefertigt werden.

Prüfprotokoll

BVS PP 99.2082 EG / N2, Stand 28.05.02

Deutsche Montan Technologie GmbH
Essen, den 28. Mai 2002

DMT-Zertifizierungsstelle

Fachbereichsleiter

Am Technologiepark 1, 45307 Essen, Telefon (0201)172-1416, Telefax (0201)172-1716

2483586 D/GB 4/2003

4 CSA-Prüfbescheinigung (Kanada)

siehe englische Version Kapitel 4 (liegt nur in englischer Sprache vor)

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

5 Besondere Ex-Schutz Hinweise

5.1 Schutz der Membran

Bei Beschädigung der Gerätemembran ist keinerlei Explosionsschutz mehr gewährleistet! Die Membran darf daher unter keinen Umständen mit abrasiven und Medien in Verbindung kommen! Die Membran muß gegen Schläge gesichert werden!

Angaben zu Korrosions- bzw. Diffusionsbeständigkeit der Gerätewerkstoffe entnehmen Sie bitte unserem WIKA-Handbuch zur Druck- und Temperaturmeßtechnik

(deutsch: ISBN 3-9804074-0-3, englisch: ISBN 3-9804074-1-1).

5.2 Besondere Massnahmen beim elektrischen Anschluß

Das Gehäuse muß immer gegen elektromagnetische Felder und elektrostatische Aufladungen geerdet werden. Beschädigung an Kabeln und Leitungen, sowie Verbindungsstellen müssen vermieden werden.
Bei Kabeln für den Einsatz in **Zone 1 und 2** muß die Prüfspannung Leiter/Erde, Leiter/Schirm, Schirm/Erde > 500 V Wechselspannung betragen.
Feindrähtige Leiterenden müssen mit Aderendhülsen versehen werden (Kabelkonfektionierung).
Die innere wirksame Kapazität und Induktivität müssen beachtet werden.
Leitende Schirme dürfen nur einseitig und außerhalb des Ex-Bereiches geerdet werden.

5.3 Anschluß an Zone 0

(**Zone 0** bedeutet allgemein, daß ein explosionsfähiges Gasgemisch mehr als 1000 Stunden pro Jahr am Gerät vorliegen muß.
Der Betrieb des Druckmeßumformers unter **Zone 0** Bedingungen ist nur zulässig, wenn der Druckmeßumformer von einem atmosphärischen Druck zwischen 0,8 und 1,1 bar umgeben ist.)
Die Stromkreise müssen vom Typ Ex ia sein.
Die Dichtigkeit der Installation ist entsprechend IP 67 nach IEC 529 auszuführen.

5.4 Vorkehrungen zum Einbau in Zone 0

Beachten Sie zum Einbau in **Zone 0** (Druckanschluß mit IP 67) unbedingt die IEC-Publikation 529!

Bei der Montage in nichtmetallische/n Behälter:

Alle in die **Zone 0** reichenden Metallteile müssen mit einem Potentialausgleich versehen werden.

Es muß eine galvanische Trennung zwischen dem eigensicheren und dem nichteigensicheren Stromkreis bestehen.

Bei einer Entfernung von weniger als 1m vom Eintritt in die **Zone 0** muß ein Überspannungsschutz integriert werden. Dies kann entweder im Gerät (Option Überspannungsschutz), oder außerhalb von Kundenseite erfolgen.

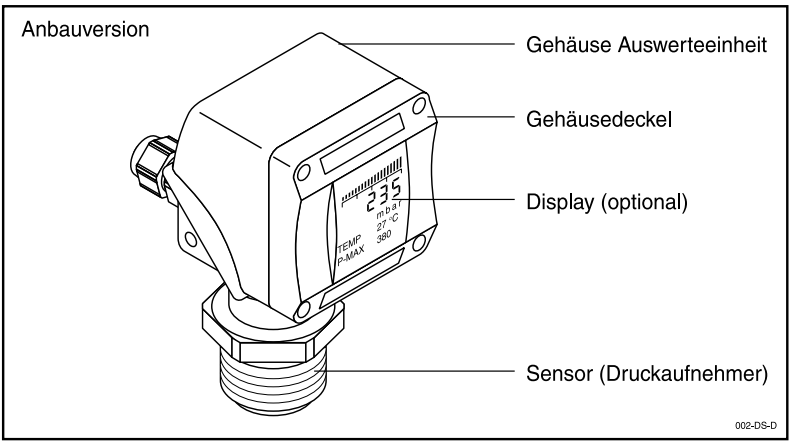
2483586 D/GB 4/2003

6 Produktbeschreibung

Der Drucktransmitter UniTrans kann sowohl in der Prozessdruckmessung als auch in der Füllstandmessung eingesetzt werden. Unterschiedliche Prozessanschlüsse, Messbereiche, Main-boards und die Displayoption bieten in ihren Kombinationen ein breites Anwendungsspektrum.

6.1 Aufbau

Der UniTrans besteht aus den Baugruppen Druckaufnehmer und Auswerteeinheit, sowie dem Gehäusedeckel mit optionalem Display. Die Baugruppen stehen in verschiedenen Varianten zur Verfügung. Durch deren Kombination entstehen verschiedene Geräteversionen (siehe “Typenschlüssel” auf Seite 40).



6.1.1 Druckaufnehmer

Der Druckaufnehmer beinhaltet je nach Druckbereich eine piezoresistive oder eine Dünnfilm-Messzelle (DMS). Die Messzellen sind temperaturkompensiert. Alle Messzellen sind voll verschweißt und Helium Leck geprüft. Interne Dichtungselemente sind nicht vorhanden.

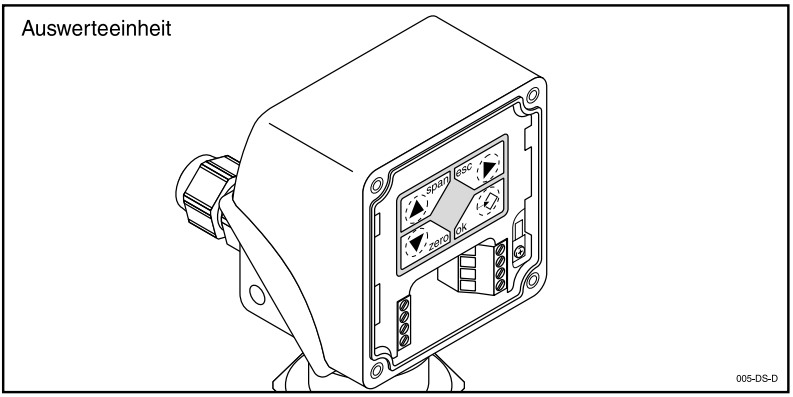
Weiterhin unterscheiden sich die Druckaufnehmer nach dem Messbereich und dem messstoffberührten Werkstoff. Für die unterschiedlichsten Anwendungsbedingungen stehen verschiedene Prozessanschlüsse zur Auswahl.

2483586 D/GB 4/2003

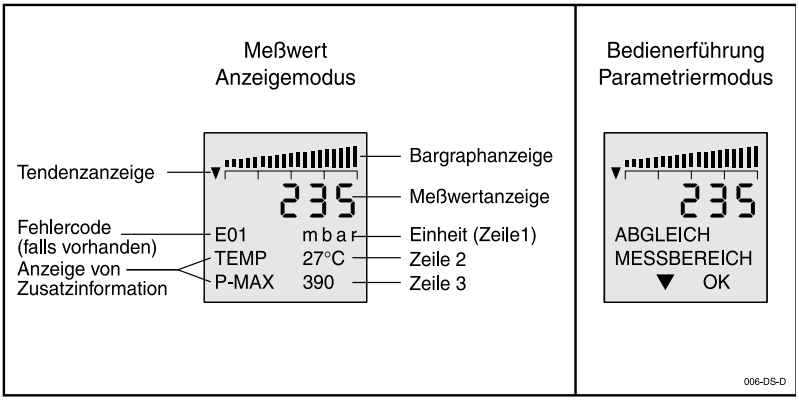
WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

6.1.2 Auswerteeinheit

Die im Gehäuse integrierte Auswerteeinheit enthält unter anderem die Tastatur, die zum Parametrieren des Gerätes dient. Die vier Drucktasten müssen dazu aktiviert (entsperrt) werden. Im Normalbetrieb ist die Tastatur zum Schutz der eingegebenen-Daten und Funktionen gesperrt. Die Sperrung erfolgt automatisch, wenn 10 Minuten lang keine Taste gedrückt wird. Die Auswerteeinheit wandelt das digitalisierte Messsignal der Messeinheit in ein digitales PROFIBUS-PA Signal um.



6.1.3 Anzeigeeinheit (Display)



Die Messwertanzeige verfügt über vier Stellen (7-Segment-Anzeige) + Vorzeichen. Darunter befindet sich die Zeile 1 (16-Segment-Anzeige) für Fehlercode und Einheit des Messsignals. Die Einheit kann vom Anwender selbst gewählt werden. Messwerte über 9999 können nicht korrekt angezeigt werden. Bitte beachten Sie dies bei der Wahl der Einheit (z.B. 9999 Pascal entspricht 0,09999 bar).In Anzeigezeile 2 und Zeile 3 können weitere Zusatzinformationen angezeigt werden (16-Segment-Anzeige). Im Parametriermodus erfolgt über die Anzeigeeinheit die Bedienerführung über eine

2483586 D/GB 4/2003

menügesteuerte Klartextanzeige.

Anzeigeeinheiten können problemlos nachgerüstet werden (siehe Kapitel 7.2).

6.2 Funktion

Die Funktionsweise der Signalumwandlung ist für alle Varianten gleich. Der Druckaufnehmer wandelt den anstehenden Druck in ein elektrisches Signal um. Die Mikroelektronik übernimmt die Weiterverarbeitung des Eingangssignals und gibt ein digitales PROFIBUS-PA Signal aus.

6.2.1 Funktionalitäten von Geräten mit Display, oder digitaler Befehlsführung

- Einheit d. Messwertes einstellb. (mbar, bar, psi, mA, %, m, mm WS ...) (s. 8.5.1)
- Anzeige von Temperatur und Min/Max-Werten im Display (siehe 8.5.1)
- Anzeige des Nenndruckbereichs der Messzelle im Display (siehe 8.5.1)
- Abgleich Nullpunkt und Spanne (mit/ohne Druck) (siehe 8.5.2)
- Einstellung der Dämpfung/Integration des Ausgangssignals 0 ... 40 s (siehe 8.5.3)
- Einstellung der Grenzen des Ausgangssignals (siehe 8.5.3)
- Lagekorrektur der Messzelle
- Resetfunktionen (siehe 8.5.6)
- Passwort-Aktivierung (siehe 8.5.6)
- Auswahl der Sprache der Display-Anzeige (siehe 8.5.5)

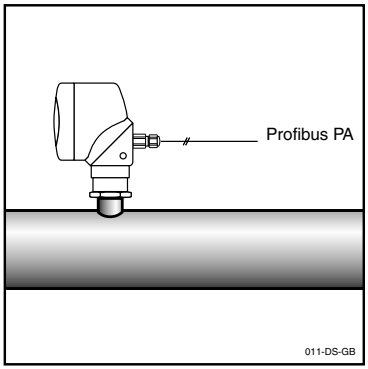
2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

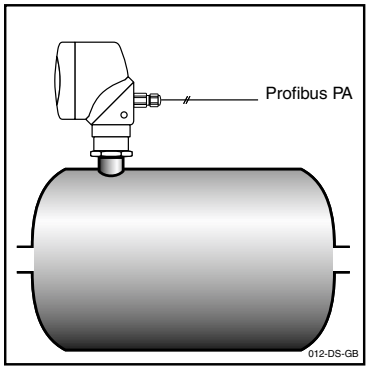
6.3 Einsatzbeispiele

Der UniTrans dient der Druckmessung in Rohren, Anlagen und Behältern. Der Druck kann je nach gewähltem Messbereich von 20 mbar bis 1000 bar gemessen werden. Je nach Messzelle wird der Druck absolut (gegen Vakuum) oder relativ (= gegen Atmosphärendruck bzw.Luftdruck) gemessen.

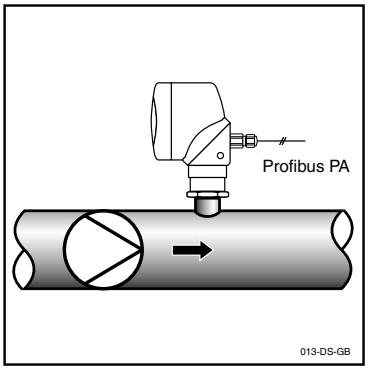
Darüber hinaus wird der UniTrans zur Erfassung des hydrostatischen Drucks in Behältern mit Flüssigkeiten (Füllstandmessung) eingesetzt.



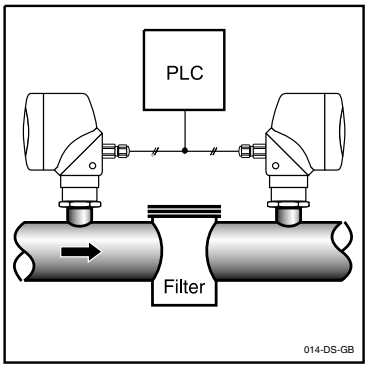
Prozessdruckmessung:
Messung von Drücken von Flüssigkeiten oder Gasen in Rohrleitungen



Prozessdruckmessung:
Behälterdruckmessung

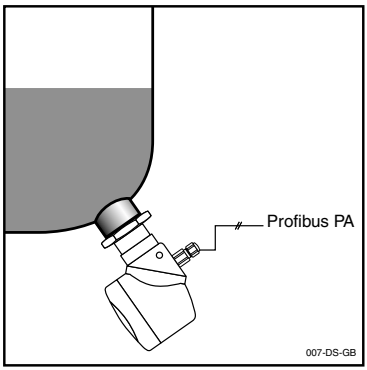


Prozessdruckmessung:
z.B. hinter Förderpumpen zur Prozesssteuerung oder Überwachung der Pumpenfunktion

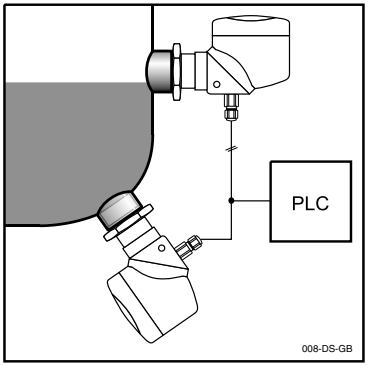


Prozessdruckmessung:
z.B. vor und nach Filter. Differenzdruckmessung zwecks Überwachung der Funktion bzw. des Verschmutzungsgrades der Filter. Die beiden Ausgangssignale werden auf einer SPS oder einem Nachschaltgerät verarbeitet.

2483586 D/GB 4/2003



Füllstandmessung:
Anbauversion (z.B. mit frontbündiger Membran)



Füllstandmessung:
Anbauversion, Gesamtdruckmessung und Messung des überlagerten Druckes über je einen Drucktransmitter. Die Auswertung und Differenzbildung der beiden Messsignale sind über SPS oder geeignetes Nachschaltgerät realisiert.

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

6 Technische Daten

6.1 Physikalische Eingangs-Kenngrößen

		/ Überlastgrenze	/ Berstdruck
Druckmessbereiche	0 ... 0,4 bar	2	2
(auch in Absolutdruck erhältlich)	0 ... 1,6 bar	10	10
	0 ... 6 bar	35	35
	0 ... 16 bar	80	80
	0 ... 40 bar	80	400
	0 ... 100 bar	200	800
	0 ... 250 bar	500	1200
	0 ... 600 bar	1200	2400
	0 ... 1.000 bar	1500	3000
	0 ... 1.600 bar	2000	4000
	0 ... 2.500 bar	3000	5000
	0 ... 4.000 bar	4400	7000
	-1 0*	2	2
	-1 ... +0,6*	10	10
	-1 ... +3*	35	35
	-1 ... +5*	35	35
	-1 ... +15*	80	80
	*nur Relativdruck		
	Max. Nenndruck nicht überschreiten!		

6.2 Physikalische Ausgangs-Kenngrößen

Ausgangssignal	PROFIBUS-PA gemäß Profile 3.0
Kennlinienabweichung KA [% d. Spanne] (Linearität, einschl.Hysterese u. Wiederholbarkeit)	≤ 0,10 bei Messbereichen ≤ 1000 bar ≤ 0,30 bei Messbereichen > 1000 bar
Gesamtfehler (bei +10 ... +40 °C)	≤ 0,15 % der Spanne (Grenzpunkteinstellung) < 0,60 % der Spanne bei Messbereichen > 1000 bar
Dämpfung	gemäß PROFIBUS PA Profile 3.0
Einstellbereich der Messspanne	gemäß PROFIBUS PA Profile 3.0
Integrierter Überspannungsschutz	optional
Nullpunktanhebung	0 ... 99 %

2483586 D/GB 4/2003

6.3 Konstruktiver Aufbau

Druckanschluss		
Typ IUT-10	G 1/2 B	nach DIN 16288 (1/2 NPT)
	M 16 x 1,5 innen mit Dichtkonus	ab 1600 bar
	1/4"-28 UNF LH außen M 250-C	ab 1600 bar
Typ IUT-11	G 1B	frontbündige Membrane mit O-Ring (Bereiche: 0 ... 0,4 bis 0 ... 1,6 bar)
	G 1/2 B	frontbündige Membrane mit O-Ring (Bereiche: 0 ... 6 bis 0 ... 600 bar)
	G 1 1/2	frontbündige Membrane mit O-Ring (Bereiche: 0 ... 0,4 bis 0 ... 16 bar)
Typ IUT-11 gem. EHEDG	G 1	frontbündige Membrane mit O-Ring (Bereiche: 0...0,4 bis 0...16 bar)
Werkstoffe		
Gehäuse		hochbeständiger, glasfaserverstärkter Kunststoff (PBT); optional Aluminium
Druckanschl./Membr (IUT-10)		CrNi-Stahl 1.4571 und 2.4711
Druckanschl./Membr. (IUT-11)		CrNi-Stahl 1.4571 und O-Ring: NBR {Viton oder EPDM}; {Hastelloy C4}
Druckanschl./Membr. (IUT-11 gem. EHEDG)		CrNi-Stahl 1.4435
interne Übertragungsflüssigkeit		Standard {Halocarbonöl für Sauerstoff-Ausführungen}; {FDA-zugelassen}
elektrischer Anschluss nach EN 60 529/ IEC529		Kabelverschraubung M 20 x 1,5 mit innenliegendem Klemmblock (siehe 7.4)
elektrische Schutzarten		Verpolungsschutz, Überspannungs-schutz, Kurzschlussschutz

6.4 Umgebungsbedingungen

Achtung	sicherheitstechnische Werte gemäß EG-Baumusterprüfbescheinigung beachten! (siehe Kapitel 3)

2483586.DGB 4/2003

Umgebungstemperatur Sicherheitstechn. Höchstwerte	– 40 °C ... + 85 °C (– 20 °C ... 70 °C mit Anzeige) EEx ia IIC T5/6: -40°C ... +45°C
Lagertemperatur	– 40 °C ... + 85 °C (– 35 °C ... 80 °C mit Anzeige)
Klimaklasse	D nach DIN IEC 654-1
Schutzart nach EN 60 529 / IEC 529	IP 65 (IP 67 immer mit Aluminium-Gehäuse) {IP 67 auf Anfrage}
elektromagnetische Verträglichkeit nach	EN 50 081-1,EN 50 081-2, EN 50 082-2, NAMUR NE 21

6.5 Prozessbedingungen

 Achtung	sicherheitstechnische Werte gemäß EG-Baumusterprüfbescheinigung beachten! (siehe Kapitel 3)
Medientemperaturen Sicherheitstechn. Höchstwerte	– 40 °C ... + 105 °C EEx ia IIC T5/6: -40°C ... +60°C

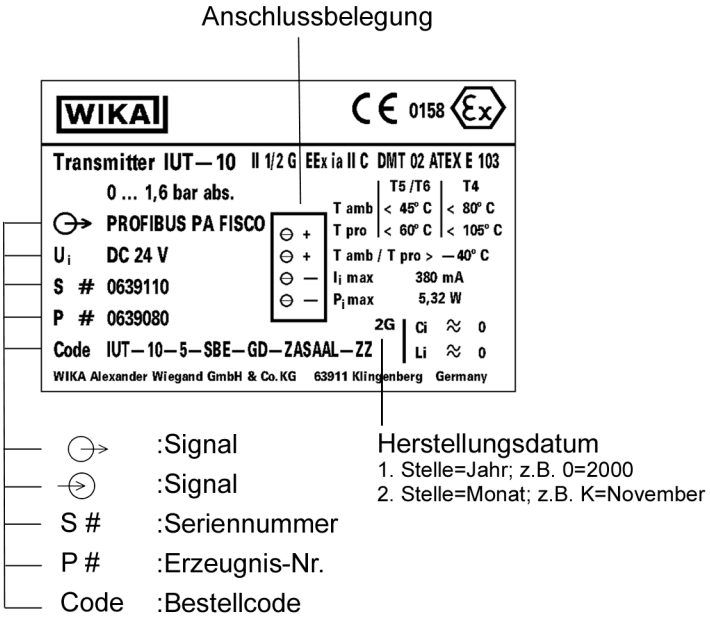
6.6 PROFIBUS-relevante technische Daten

Ausgangssignal	PROFIBUS PA gemäß Profil 3.0 IEC 61158-2 Übertragung gemäß MBP (Manchester Codierung, Bus Powered)
Adressen	von 1 bis 126, PNO-Default: 126
Übertragungsrate	31,25 kBit/s
Gerätetyp	
Busspannung	9 ... 32 V DC (sicherheitstechnische Werte gemäß EG-Baumusterprüfbescheinigung (siehe Kapitel 3)beachten!)
Max. Stromaufnahme	12,9 mA (Schaltpunkt Strombegrenzung FDE bei 17 mA)

2483586 D/GB 4/2003

Sicherheitstechn. Höchstwerte PROFI-BUS-PA nach FISCO-Modell von PTB	Versorgungsspannung U_i: ≤ 24 V DC Stromstärke I_i: ≤ 380 mA Leistung P_i: < 5,32 W C_i / L_i: Wirksame innere Kapazität und Induktivität vernachlässigbar klein

6.7 Typenschild (Beispiel)



2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

7 Montage

Für das Errichten/Betreiben sind die Vorschriften gemäß ATEX, ElexV und des Gerätesicherheitsgesetzes, sowie die allgemein anerkannten Regeln der Technik und diese Betriebsanleitung maßgebend.

7.1 Montage des Drucktransmitters

Die Membran des Drucktransmitters darf nicht mit harten oder spitzen Gegenständen berührt werden.

Montage mit Einschweißstutzen:

- Fügen Sie ein Passstück (Blindstopfen) in den Einschweißstutzen ein.
- Schweissen Sie den Einschweißstutzen in die Behälterwand/Rohrwand ein (Segmentschweissverfahren).
- Entfernen Sie das Passstück.
- Schrauben Sie den Drucktransmitter ein.

7.2 Nachrüsten der Anzeigeeinheit

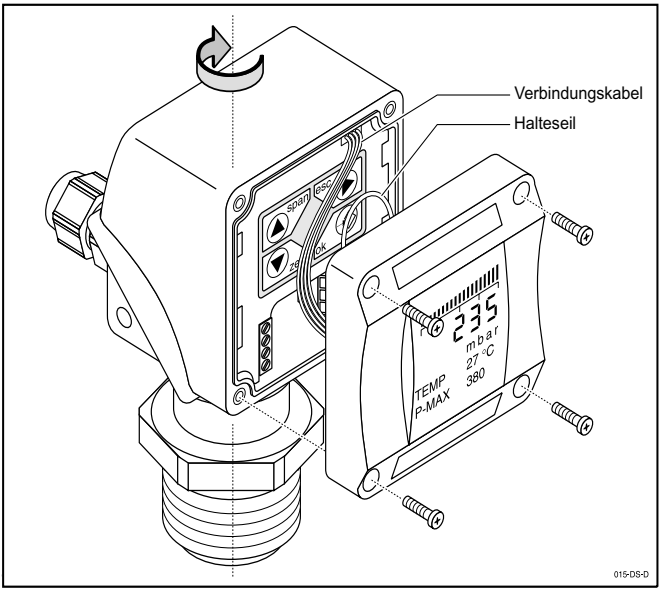
Das Nachrüsten der Anzeigeeinheit ist jederzeit problemlos durchführbar.

- Schrauben Sie den Gehäusedeckel und das zugehörige Halteseil ab.
- Montieren Sie das Halteseil der Anzeigeeinheit an gleicher Stelle.
- Stecken Sie den Stecker der Anzeigeeinheit in die zugehörige Buchse.

Achten Sie beim Aufsetzen der Anzeigeeinheit darauf, dass Versorgungskabel und Halteseil weder geknickt noch eingeklemmt werden.

- Die Anzeigeeinheit kann jeweils um 90° gedreht aufgeschraubt werden.
- Schrauben Sie die Anzeigeeinheit fest.

2483586 D/GB 4/2003



Danach ist die volle Funktionalität des Drucktransmitters mit Anzeigeeinheit parametrierbar. Nach Abnehmen der Anzeigeeinheit bleiben die eingestellten Parametrierungen erhalten.

Die Anzeigeeinheit ist um ca. 300° drehbar, so dass das Ablesen bei unterschiedlichen Einbaugegebenheiten möglich ist. Zum Parametrieren kann der Gehäusedeckel mit eingebautem Display versetzt am Gehäuse montiert werden.

7.3 Umbau des Gehäuses

Um bei waagerechtem Einbau des Drucktransmitters das Display auch von oben ablesen zu können, dreht man das Gehäuse der Anzeigeeinheit.

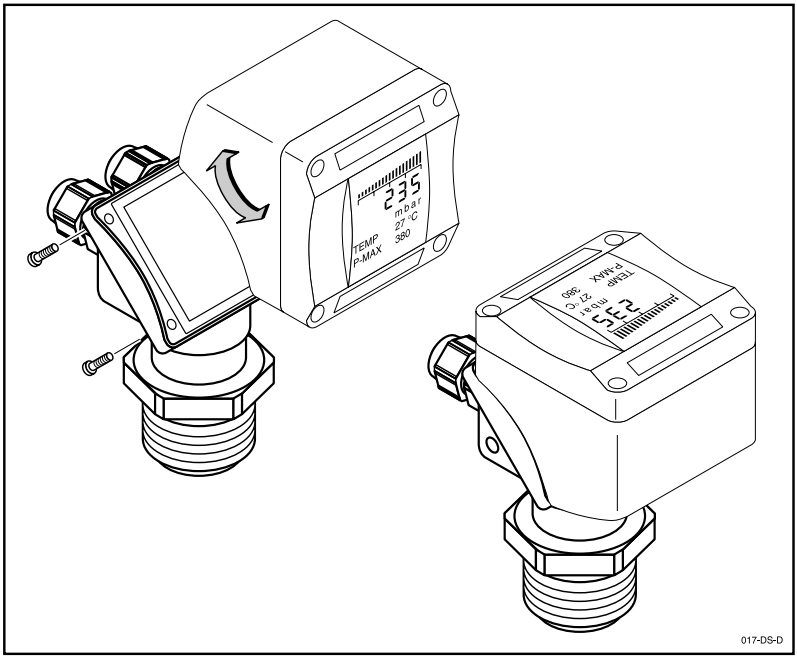
- Lösen Sie die 4 Innen-Sechskant-Schrauben.
- Heben Sie das Gehäuse mit der Anzeigeeinheit leicht an.
- Drehen Sie das Gehäuse vorsichtig um 180°.
- Befestigen Sie die Schrauben wieder.

Vorsicht

Achten Sie beim Festziehen der 4 Innensechskantschrauben auf ausreichend festen Sitz der Schrauben, damit die Dichtigkeit des Gerätes gewährleistet ist.

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de



7.4 Elektrischer Anschluss

Vorsicht

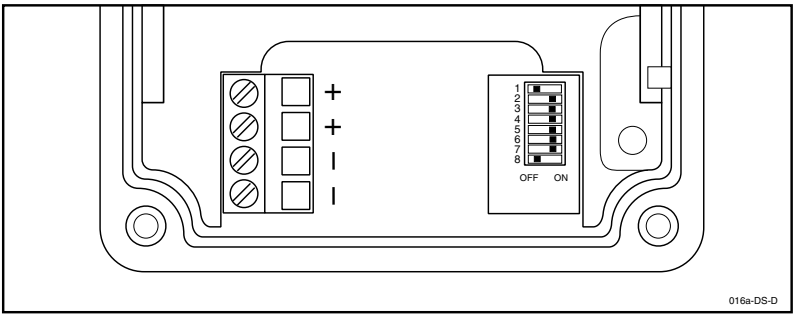
Beachten Sie die ATEX- und landesspezifischen Installationsvorschriften (Deutschland: VDE-Norm).
Die Klemmenspannung darf 24 V nicht überschreiten.

Die Stromversorgung erfolgt durch einen Segmentkoppler über das zweiadrige Buskabel (Kabelaußendurchmesser max. 12 mm, max. Adernquerschnitt 2,5 mm^2).

Die '+' und '-' Klemmen im Transmitter sind jeweils gebrückt.

2483586 D/GB 4/2003

Klemmenbelegung



z.B.

+ freier Eingang (gebrückt)
+ Eingang-Busanbindung
- Ausgang-Busanbindung
- freier Ausgang (gebrückt)

Belegung der Dipschalter

Über Schalter 1 bis 7 wird die Slave Adresse binär kodiert (hier 126).

Mit Schalter 8 wird der Schreibschutz des Transmitters aktiviert, bzw. inaktiviert.

7.5 Druckkompensation bei Anschluss eines Relativdrucksensors

Die Kompensation des atmosphärischen Drucks wird in Schutzart IP 65 über eine integrierte Goretex-Membran realisiert.

Für Schutzart IP 67 übernimmt ein Spezialkabel mit Kapillare zur Relativdruck-belüftung diese Aufgabe.

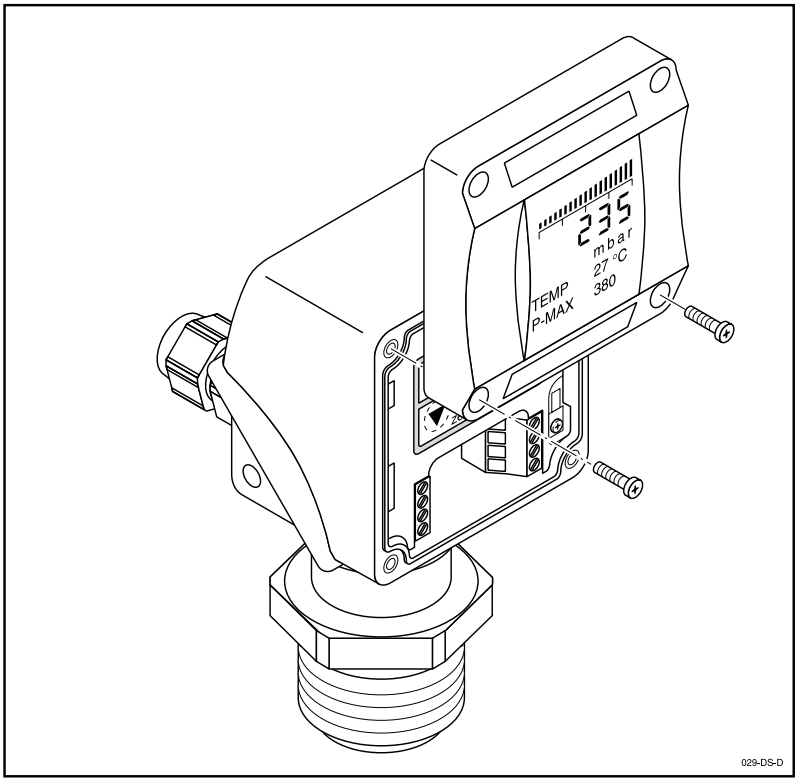
2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

8 Manuelle Inbetriebnahme vor Ort von Geräten mit Anzeige

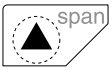
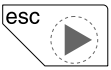
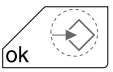
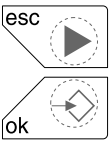
8.1 Die Anzeige (Display)

Zum Parametrieren (Programmieren) des Gerätes schrauben Sie mit einem Schraubendreher das Display ab und fixieren es, wie in der Abbildung dargestellt, wieder am Gehäusedeckel.



2483586 D/GB 4/2003

8.2 Die Tastatur und ihre Funktionen

Taste	Funktionen		
	Hauptmenü	**Untermenü**	**Editierebene**
	zurück zum vorangegangenen Menüpunkt	zurück zum vorangegangenen Menüpunkt	Wert erhöhen
	vor zum nächsten Menüpunkt	vor zum nächsten Menüpunkt	Wert verringern
	zurück zur Messwert-Anzeige ohne zu Speichern	zurück ins Hauptmenü ohne zu speichern	zurück ins Untermenü ohne zu speichern
	zum Untermenü	zur Editierebene	Wert speichern
	Tastatur aktivieren (gleichzeitig betätigen; 2 s)		

8.3 Der Parametriermodus

Das Gerät kann in ein- und ausgebautem Zustand parametriert werden.

Durch gleichzeitiges Drücken der Tasten „esc“ und „ok“ (2 s) wird die Tastatur aktiviert und das Parametrieren des Gerätes ermöglicht. Von der Messwertanzeige gelangt man so zu den Hauptmenüs. Jedes Hauptmenü hat ein oder mehrere Untermenüs, z. T. mit weiteren Untermenüs.

Wird 10 min. lang keine Taste bedient, wird die Tastatur inaktiv. Die Einstellungen fallen dann auf die zuletzt gespeicherten Werte zurück. Einstellungen, die nicht mit „ok“ bestätigt werden, sind nicht gespeichert.
Eine Veränderung des Messanfangs (Nullpunktes) hat keinen Einfluss auf die Messspanne. Ebenso hat eine Veränderung der Spanne keinen Einfluss auf den Messanfang.
Falls Nullpunkt oder Spanneneinstellung beim Abgleich unter Druckbeaufschlagung außerhalb des Nenndruckbereiches des Sensors liegen, erfolgt eine Fehlermeldung nach Bestätigung der Einstellung. Es werden keine Werte gespeichert.

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

8.4 Daten der Werkseinstellung

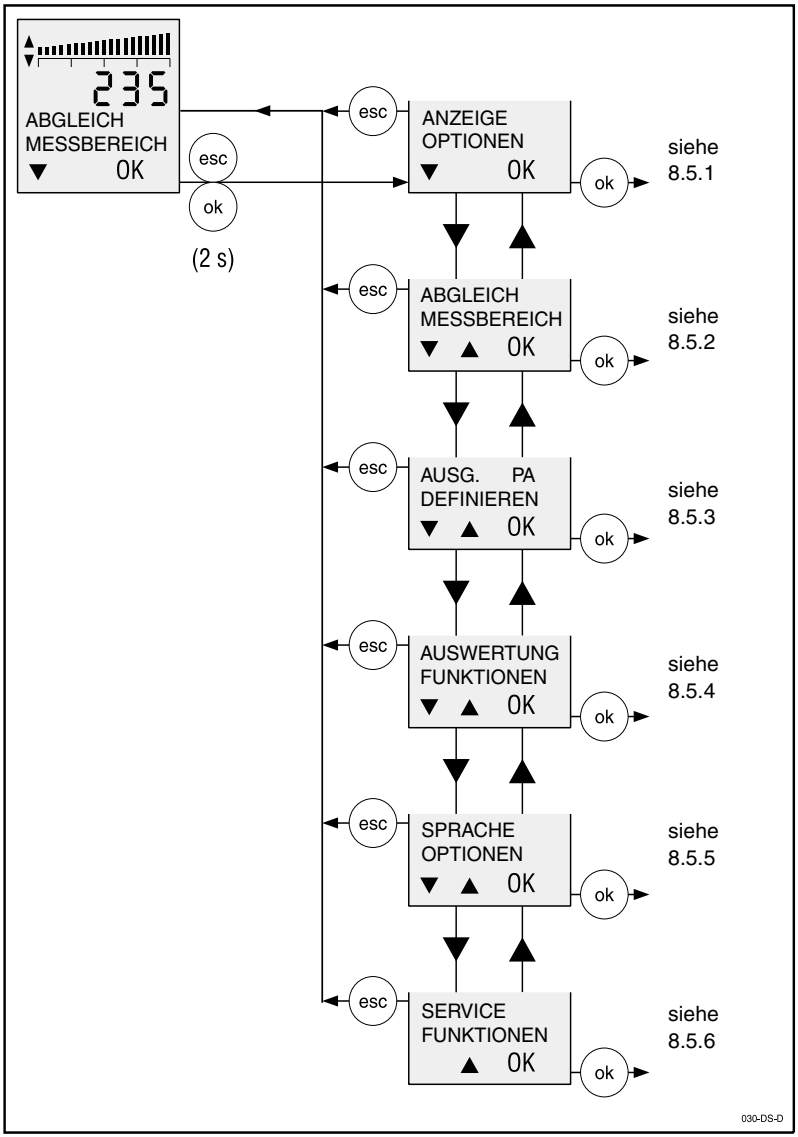
Funktion		Werkseinstellung
Anzeige	Einheit des Messwertes (Zeile 1) Zeile 2 Zeile 3	Druckanzeige (in bar) Temperaturanzeige (in °C) Nenndruckbereich des Sensors (in bar)
Ausgang	Dämpfung Invertierung	0 s nein
Service Passwort		kein Passwort aktiviert
Service Lagekorrektur		nicht aktiviert
Sprache		englisch
Auswertung	linear Dichte	ja 1 g/cm^3

Wichtig

Sondermessbereiche z.B. 4 bar bei einem 6 bar Transmitter werden durch einen werksseitig eingestellten Turn down erzielt. Bei Reset wird der entsprechende Grundbereich (im Bsp. 6 bar) wieder eingestellt. Die werksseitige Einstellung des Sondermessbereiches geht hierbei verloren.

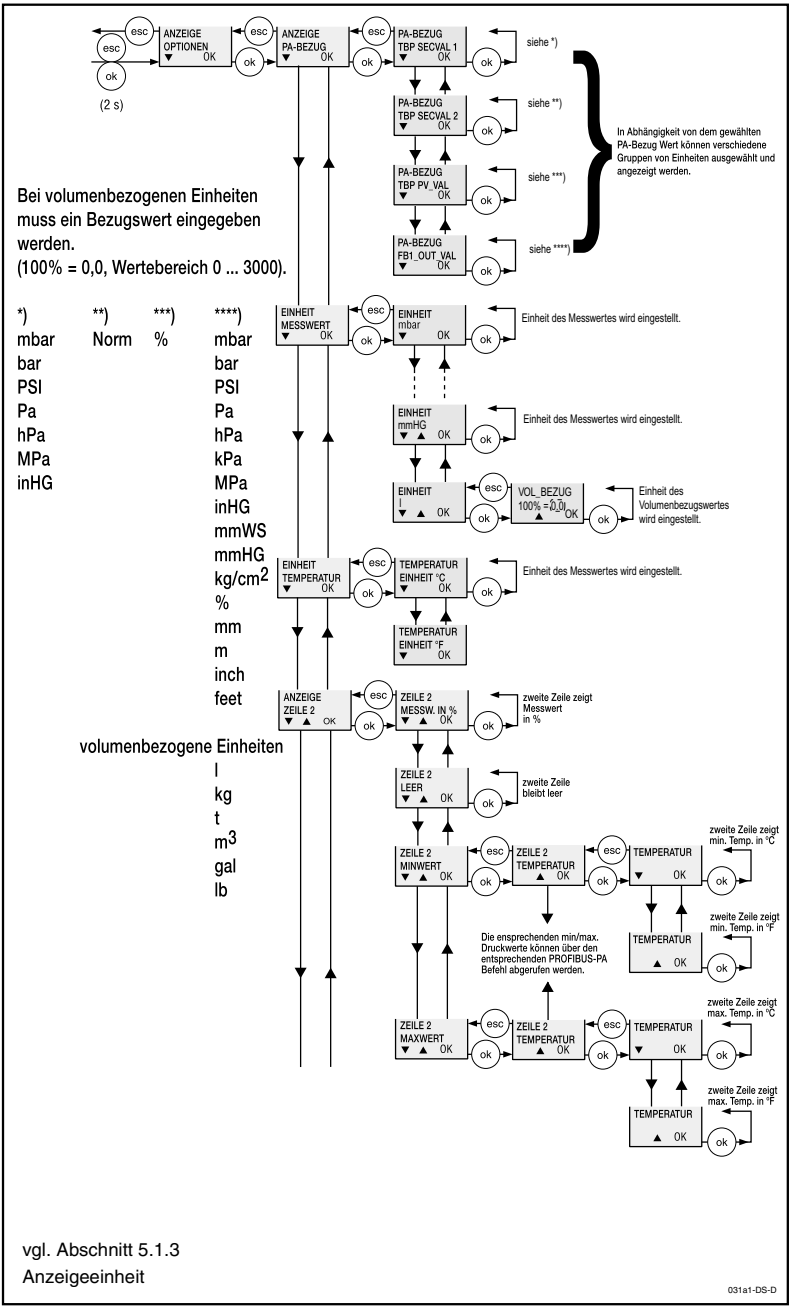
2483586 D/GB 4/2003

8.5 Hauptmenü



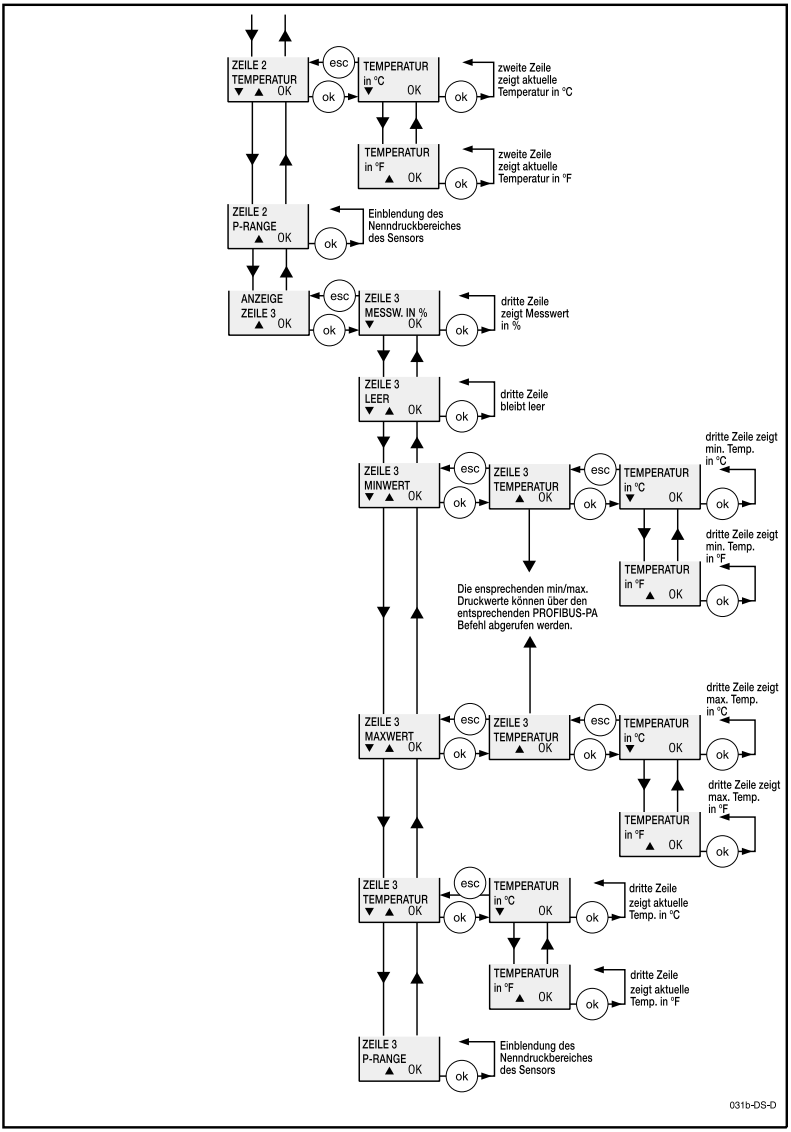
2483586 D/GB 4/2003

8.5.1 Hauptmenü: Anzeige



vgl. Abschnitt 5.1.3
Anzeigeeinheit

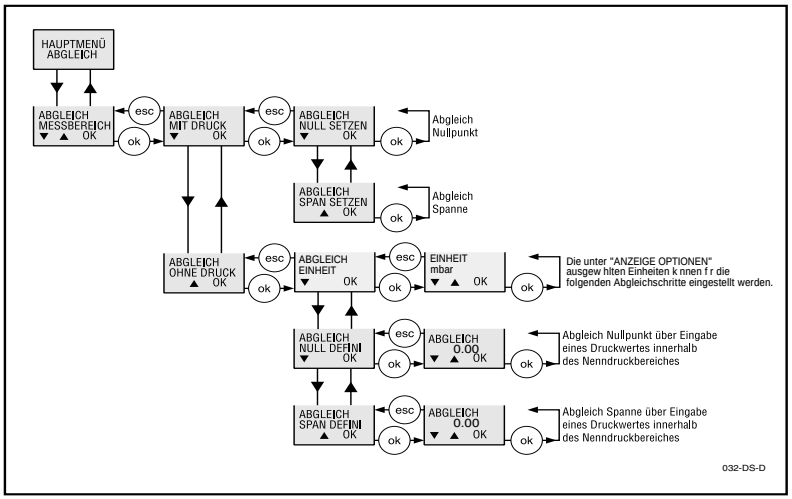
2483586 D/GB 4/2003



2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

8.5.2 Hauptmenü: Abgleich (Nullpunkt und Spanne)



Information

Beim Abgleich mit Druck wird für den Nullpunkt bzw. Spannenendpunkt jeweils ein Druckwert innerhalb des Nenndruckbereiches des Sensors eingestellt und dem zugehörigen Ausgangsstromsignal zugeordnet. Falls der anliegende Druck außerhalb des Nenndruckbereichs des Sensors liegt, erfolgt eine Fehlermeldung. Der Wert wird dann nicht gespeichert.

Wichtig

Beim Abgleich ohne Druck (Trockenabgleich) sollte vor oder nach dem Abgleich eine Lagekorrektur des Sensors durchgeführt werden (siehe 8.5.6). Der Sensor muss dazu in die Bezugslage für die Messung (Einbaulage) gebracht werden und drucklos sein.

Information

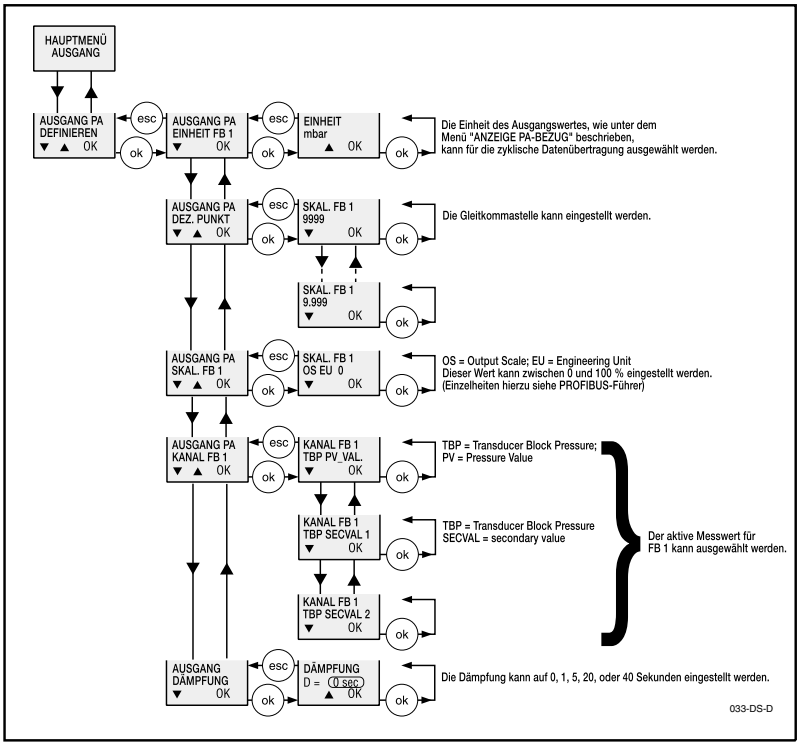
Beim Abgleich mit Druck (Nassabgleich) kann die Lagekorrektur entfallen, oder aber sie muss vor Abspeicherung von Nullpunkt und Spannenendpunkt erfolgen.

Wichtig

Um die optimale Genauigkeit zu erzielen, wird nach der Spanneneinstellung eine Nullpunktüberprüfung und evtl. eine Nullpunktkorrektur empfohlen.

2483586 D/GB 4/2003

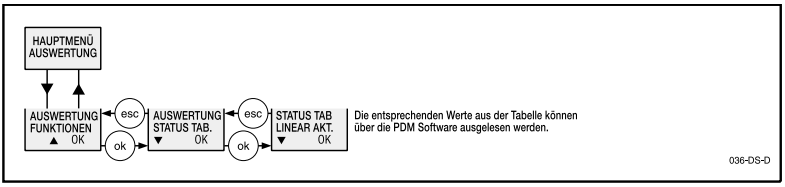
8.5.3 Hauptmenü: Ausgang



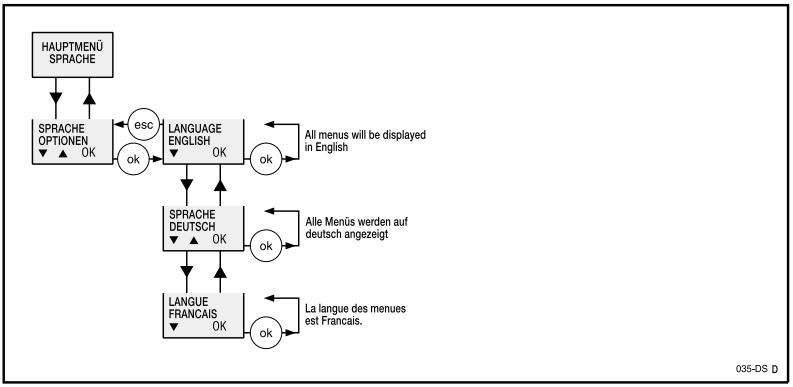
2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

8.5.4 Hauptmenü: Auswertung

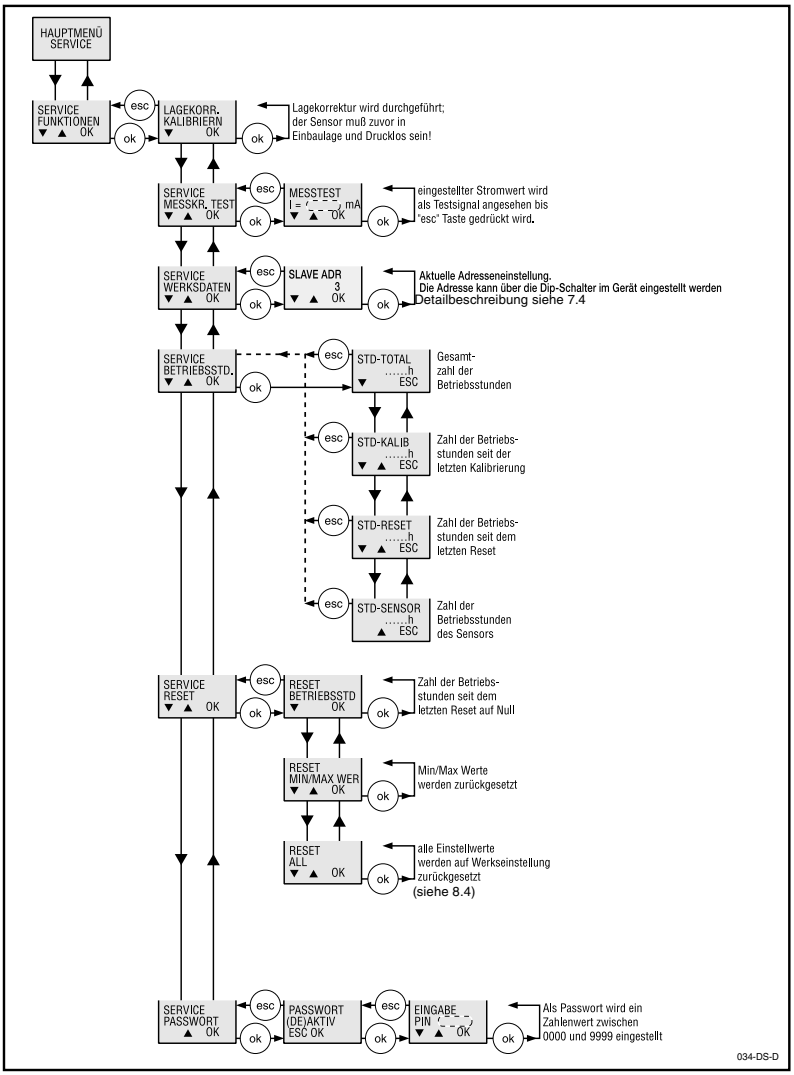


8.5.5 Hauptmenü: Sprache



2483586 D/GB 4/2003

8.5.6 Hauptmenü: Service



2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

9 Fehlersuche und Service

Können Störungen nicht beseitigt werden, ist das Gerät außer Betrieb zu setzen und gegen versehentliche Inbetriebnahme zu schützen. Reparaturen dürfen nur vom Hersteller durchgeführt werden. Eingriffe und Änderungen am Gerät sind unzulässig.

Auf Geräten mit Display können folgende Fehlermeldungen erscheinen (siehe Kapitel 5.1.3):

Fehlercode	**Fehlerart**	**Maßnahmen zur Fehlerbeseitigung**
E00	ROM-Fehler	Gerät zum Hersteller-Service
E01	Fehler Versorgungsspannung	Spannungsversorgung prüfen
E03	Kommunikationsfehler EEPROM	Versorgungsspannung abklemmen und wieder anklemmen
E04	Temperaturbereich Sensor überschritten	Sensortemperatur in Spezifikationsgrenzen zurückbringen
E06	Fehler Sensorerkennung	Versorgungsspannung abklemmen und wieder anklemmen
E07	allgemeiner Fehler Kommunikation zwischen Sensor und Auswerteeinheit	Steckverbindungen zwischen Sensor und Auswerteeinheit prüfen
E08	Fehler E^2PROM	Gerät zum Hersteller-Service

10 Entsorgung

Wichtig

Beachten Sie bei der Entsorgung ausgedienter Geräte die dann gültigen gesetzlichen und kommunalen Vorschriften.
Führen Sie recyclingfähige Teile der Wiederverwertung zu.

2483586 D/GB 4/2003

11 PROFIBUS-PA-Profil

Der PROFIBUS-PA (PA = Process Automation) ist eine Variante des in der Fertigungstechnik weit verbreiteten PROFIBUS DP (DP = Dezentrale Peripherie).
Der PROFIBUS (Process Field Bus) ist ein offenes Kommunikationssystem für die Automatisierungstechnik und wird weltweit tausendfach eingesetzt. Er ist in der europäischen Norm EN 50170 spezifiziert.

11.1 Übertragungstechnik

Der PROFIBUS-PA besitzt eine spezielle Übertragungstechnik und wird damit den Belangen der Prozessautomatisierung und Verfahrenstechnik gerecht. Diese Übertragungstechnik ist in der internationalen Norm IEC 61158-2 definiert.

11.2 Einführung

Die aktuelle Profibus-Implementierung orientiert sich an der Profildefinition für "Process Control Devices" in der Version V3.0 vom Oktober 1999.

Der Druck-Transmitter kommuniziert als Standard DP oder DPV1 Gerät. Zyklische und azyklische Verbindungen (master class 2) sind zulässig. Die folgenden Dienste werden unterstützt:

- initiate
- abort
- read
- write
- rw-data transport (über separaten Slot)

Aus Sicht der Profile gehört der UniTrans zu den class B-Geräten. Die Gerätefunktionen unterstützen alle Parameter der class B die mandatory sind und teilweise auch die optionalen. Das PROFIBUS-Geräte-Modell sieht vor:

1 Physical Block

2 Analog input functions block

1 Pressure transducer block

Damit lassen sich alle bisherigen Funktionen und erweiterte PROFIBUS-Funktionen nutzen.

11.3 Reference documents

Document Title	Rev.	Document Number
DIN-EN50170/2, Band 2/3 Profibus	-	DIN EN50170/2:1997-07
Technical Guideline, PROFIBUS-DP, Extensions to EN50170	2.0	PNO-Order No. 2.082
PROFIBUS-PA, Profile for Process Control Devices	Oktober, 1999	PNO-Order No. 3.042
PROFIBUS-DP, Manfred Popp, Hüthig Verlag	1. Auflage 98	ISBN 3 -7785-26 76-6

11.4 Expanded Device Type Code

Manufacturer's Identification Code:	WIKA	107

2483586 D/GB 4/2003

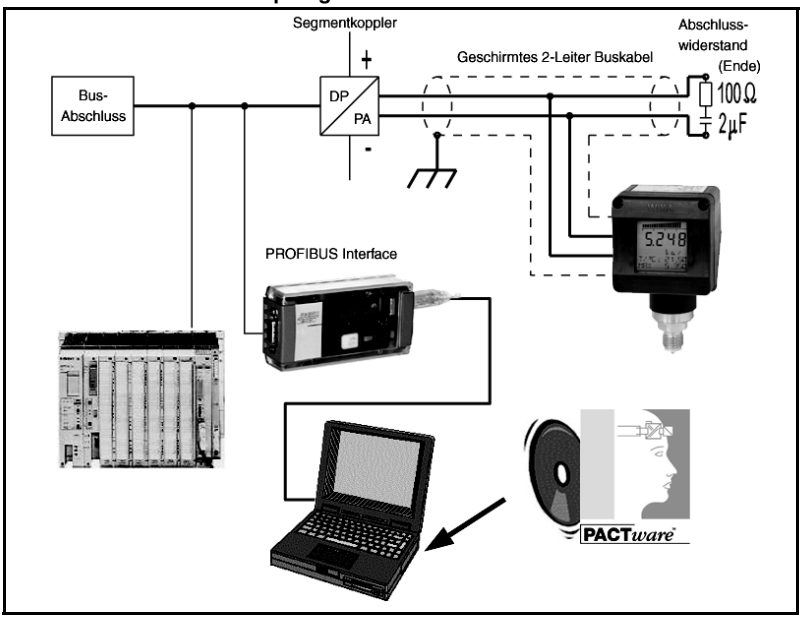
WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

12 Hardwarebeschreibung

Der Unitrans mit PROFIBUS-PA erfüllt als Feldbus-Gerät die Anforderungen der PROFIBUS-PA-Spezifikation für 31,25 Kbit/s (IEC 61158-2 bzw. DIN 19245 bzw. DIN EN 61158-2 Übertragung gemäß MBP (Manchester Codierung, Bus Powered)). Die Versorgung des Transmitters erfolgt über den PROFIBUS-PA (Bus-Speisung).

Das PROFIBUS-PA-Gerät enthält eine FDE (Fault Disconnection Electronic), die den Bus vor Überlastung bei einem internen Gerätefehler zuverlässig schützt.

12.1 PROFIBUS-PA Hardwaretopologie



Die Bustopologie kann weitgehend frei gewählt werden, somit sind Linien-, Stern-und Baumstrukturen sowie Mischformen möglich. An den PROFIBUS-PA können alle Arten von Feldgeräten, wie Messumformer, Aktoren, Analysegeräte, usw. angeschlossen werden.

Der wesentliche Nutzen liegt in:

- der Einsparung von Installationskosten
- der Möglichkeit der weitergehenden Diagnose mit Steigerung der Verfügbarkeit von Anlagenteilen
- der Möglichkeit der automatischen Nachführung der Anlagendokumentation
- der Möglichkeit der Anlagenoptimierung im laufenden Betrieb

In einem Automatisierungssystem sind in der Regel mehrere PROFIBUS-PA-Stränge über Koppeleinheiten mit dem schnellen PROFIBUS-DP verbunden. An diesem ist auch das Prozessleitsystem angeschlossen.

2483586 D/GB 4/2003

Beide Bussysteme nutzen eine einheitliche Protokollschicht. Damit ist der PROFIBUS- PA eine ”kommunikationskompatible” Verlängerung des PROFIBUS-DP ins Feld.

12.2 Elektrischer Anschluss

Für das Verlegen des Buskabels gilt allgemein:

- Nur geschirmtes, zweiadriges Kabel verwenden
- Nur empfohlene Kabeltypen verwenden
- Kabel getrennt von Kabel mit Spannungen > 60 V verlegen.
- Nähe von grossen elektrischen Anlagen vermeiden.
- Die Spezifikationen gelten nur für ordnungsgemäss ausgeführte Installationen.

Warnung

Die spezifizierte Störfestigkeit und Störaussendung sind nur dann sichergestellt, wenn die Busschirmung voll wirksam ist.
Dazu gehört das Verbinden der Schirme mit den metallischen Anschlüssen des UniTrans-PA, aber auch das Führen der Schirme zu den Klemmkästen, Verteilern, DP/PA-Kopplern oder zu DP/PA-Link.

Um Potentialdifferenzen zwischen den einzelnen Anlagenteilen und damit eine Gefährdung oder Funktionsbeeinträchtigung zu vermeiden, ist ein geeigneter Potentialausgleich vorzusehen.

Hinweise für Dimensionierung und Ausführung finden sich in DIN VDE 0100 Teil 410 und Teil 540. Beim Errichten elektrischer Anlagen in explosionsgefährdeten Bereichen ist die DIN VDE 0165 von 2/91 zu beachten.

12.3 Eigenschaften des PROFIBUS-PA

Der PROFIBUS-PA ermöglicht über eine geschirmte Zweidrahtleitung eine bidirektionale Kommunikation von einem Busmaster mit den Feldgeräten. Gleichzeitig erfolgt über die gleichen Leitungen die Hilfsenergieversorgung der Zweileiter-Feldgeräte.

Ergänzend zu der EN-Norm 50170 hat die PNO (PROFIBUS-Nutzerorganisation) die Funktionalität der einzelnen Feldgerätetypen in einer sogenannten Profilbeschreibung definiert. Dieses Profil legt funktionale Mindestanforderungen und optionale Erweiterungen fest.

Das geräteinterne "Device Management" liefert dem Konfigurationstool des Leitsystems alle notwendigen Basisinformationen zum Auffinden der Profilparameter. Damit kann ein Parametrierwerkzeug alle profilkonformen Geräte - gleich welchen Typs und Herstellers - bedienen.

Abhängig von der Anlagengrösse und damit der Anzahl der Feldgeräte und dem notwendigen Zeitverhalten, muss das System mit einem oder mehreren PROFIBUS-PA-Strängen realisiert werden.

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

12.3.1 Busanbindung

Die Steuerung erfolgt durch das zentrale Prozessleitsytem PLS oder bei geringen Anforderungen durch einen PC.

In der Regel sind die Funktionen Signalumsetzung DP-PA, Busspeisung und Busabschluss in einer Koppelbaugruppe vereinigt.

Abhängig von der Zahl der im Automatisierungssystem zu betreibenden PROFIBUS-PA-Feldgeräte und dem benötigten Zeitverhalten wird ein DP/PA-Koppler oder bei höheren Anforderungen ein leistungsfähigerer DP/PA-Link eingesetzt.

Aus übertragungstechnischen Gründen muss der Bus am entfernten Ende zusätzlich mit einem Abschlusswiderstand versehen werden. Bei Verwendung des empfohlenen Buskabels ist die theoretisch mögliche Leitungslänge (Summe aller Leitungsstücke) maximal 1900 m. Zusätzlich muss bei der Planung auch der Spannungsabfall über die die Feldgeräte speisenden Leitungen berücksichtigt werden.

Bei der Projektierung ist aber auch der Strombedarf der einzelnen Teilnehmer und der Spannungsabfall am Kabel zu berücksichtigen. Die einzelnen Feldgeräte FG können nahezu an beliebiger Stelle im Bussystem angeschlossen werden.

DP/PA-Koppler oder DP/PA-Link werden aus einem Netzteil mit Schutzkleinspannung (SELV safety extra-low voltage) versorgt. Zur Überbrückung kurzzeitiger Netzunterbrechungen muss dieses Netzteil ausreichende Reserven besitzen.

Die maximale Anzahl der an einen Busstrang anschliessbaren Geräte hängt von deren Stromaufnahme und den jeweiligen Einsatzbedingungen ab. Bei Betrieb im sicheren Bereich können die Koppler/Links bis zu 400 mA in den Bus einspeisen.

Aus der Summe der maximalen Stromaufnahmen der angeschlossenen Geräte und des zur Verfügung stehenden Stromes, lässt sich die Zahl der an einen Busstrang anschliessbaren Geräte ermitteln.

Aus Sicherheitsgründen sollte eine Stromreserve eingeplant werden, da sonst das Risiko besteht, dass ein defektes Gerät durch eine erhöhte Stromaufnahme den Bus überlastet und damit die Stromversorgung und Kommunikation mit allen ungestörten Teilnehmern zusammenbrechen könnte.

Die Höhe der vorzusehenden Reserve richtet sich nach der vom Gerätehersteller genannten Stromerhöhung im Fehlerfall.

2483586 D/GB 4/2003

13 Zyklische Datenkommunikation

Die Nutzdaten werden über den zyklischen Dienst des PROFIBUS laufend aktualisiert. Beim UniTrans-PA ist dies der Messwert. Je nach Konfiguration ist es ein Temperatur-, Widerstands oder Spannungswert. Der Messwert teilt sich auf in einen Fliesskommawert (4 Byte) und die zugehörige Qualitätsanzeige (1 Byte).

Das zyklische Datentelegramm hat die folgende Struktur:

Byte	Daten	Zugriff	Datenformat
0,1,2,3	FB 1, rel. Index 10 (OUT-value)	r	PV-Messwert 32-Bit, Gleitkomma (IEEE-754)
4	FB 1, rel. Index 10 (OUT-status)	r	Status Byte: 0x80 = ok
5,6,7,8	FB 2, rel. Index 10 (OUT-value)	r	Temp. Messwert 32-Bit, Gleitkomma (IEEE-754)
9	FB 2, rel. Index 10 (OUT-status)	r	Status Byte: 0x80 = ok

Der Status ist entsprechend der Spezifikation "PROFIBUS-PA Profile for Process Control Devices" codiert.

Die obige Tabelle stellt den maximalen Inhalt des zyklischen Datentelegramms dar. Dieses Telegramm kann den Anforderungen des Prozesses angepasst werden. Falls nicht alle Ausgangsgrössen angewendet werden, können beliebige Blöcke aus dem zyklischen Telegramm entfernt werden.

Um den korrekten Aufbau des zyklischen Telegramms zu erhalten, muss der PROFIBUS Master die Kennung **FREE PLACE** (0x00) für die nicht aktiven Blöcke senden.

Die Konfiguration ist in der GSD-Datei enthalten und wird ausgeführt, wenn der Master die Kommunikation mit dem Slave beginnt.

13.1 Geänderte GSD "PA_9701.GSD"

```
Filename:          P A _ 9 7 0 1  . G S D
Function:          GSD-File for Unitrans-PA (Profile specific)
Revision:          1.0
Manufacturer:      WIKA Alexander Wiegand GmbH & Co. KG
                   Tel: ++49 +9372 132 0
Copyright:         (C) WIKA, 2001 All Rights Reserved.
GSD-Revisons:      1.0   2001-02-09

#Profibus_DP
GSD_Revision       = 1
Vendor_Name        = "WIKA";
Model_Name         = "Unitrans-PA";
Ident_Number       = 0x9701
Revision           = "1.0"
Protocol_Ident     = 0
Station_Type       = 0
```

2483586.D/GB 4/2003

FMS_supp	= 0	
Hardware_Release	= "0.0"	
Software_Release	= "0.0"	
93.75_supp	= 1	especially for Pepperl & Fuchs segment coupler
31.25_supp	= 1	
45.45_supp	= 1	especially for Siemens
MaxTsdr_45.45	= 200	especially for Siemens
MaxTsdr_93.75	= 1000	especially for Pepperl & Fuchs segment coupler
MaxTsdr_31.25	= 100	minTsdr = 60
Repeater_Ctrl_Sig	= 0	
Implementation_Type	= "SPC41/ITEC"	

Bitmap_Device	= ""
Bitmap_Diag	= ""
Bitmap_SF	= ""

Slave specific data

Freeze_Mode_supp= 0	
Sync_Mode_supp= 0	
Auto_Baud_supp= 0	automatic Baudrate Search not supported
Set_Slave_Add_supp= 1	SetSlaveAdr supported
Min_Slave_Intervall= 100	in 100 µs

User specific parameterization data

User_Prm_Data_Len = 0

Modular Station

Modular_Station	= 0
Max_Module	= 3
Max_Input_Len	= 15
Max_Output_Len	= 0
Max_Data_Len	= 10
Max_Diag_Data_Len	= 16
Slave_Family	= 0
Module	= "Pressure" 0x42, 0x84, 0x08, 0x05, 0x00
EndModule	
Module	= "Temperature" 0x00, 0x42, 0x84, 0x08, 0x05
EndModule	
Module	= "Pressure+Temp." 0x42, 0x84, 0x08, 0x05, 0x42, 0x84, 0x08, 0x05
EndModule	

2483586 D/GB 4/2003

14 Azyklische Dienste

Mit Hilfe der azyklischen Dienste können Sie jeden lesbaren Parameter des PROFIBUS-Profils lesen bzw. mit der entsprechenden Zugriffsberechtigung auch jeden schreibbaren Parameter schreiben.

Die Parameter des PROFIBUS und ihre Attribute (lesen und/oder schreiben) sind in den folgenden Kapiteln aufgeführt.

15 Schlüsselwörter und verwendete Abkürzungen

Folgende Abkürzungen werden in der Profilbeschreibung verwendet:

Variable:	Variable (Name of a parameter)
Object Type:	Objekttyp (Variable class)
Data Type:	Datentyp (Type and structure of a variable (see Profibus standards for additional info). In some cases also the allowed selections are listed in that column.)

Storage class:

C	Konstante (Constant (Value is stored in ROM))
N	nicht flüchtiger Wert (Non-volatile (Value is stored in EEPROM, no influence on static revision counter))
D	dynamisch (Dynamic (Value will be calculated on runtime by the slave, the storage will be in the RAM))
S	statischer Wert (Static (Value is stored in EEPROM, static revision counter will be incremented,if write access is carried out to this parameter))
Size:	Speichergröße (Number or Bytes)
ACC:	erlaubter Zugriff (Access, allowed access)
r	lesen (read)
w	schreiben (write)
rw	lesen/schreiben (read/write)

Parameter usage:	Parameterverwendung C = intern (C will be used internally within the block) O = extern (O output to function block) I = Eingabe (I Input parameter (from another block))

Type of transport: Datenverkehr

a	azyklisch (acyclic, this parameter is only available in acyclic communication)
cyc	zyklisch (cyclic, this parameter is available through cyclic communication, only possible in the function block)
Default Values:	Default Werte (The parameter will be set to this value when a factory reset is carried out.)

Man/Opt.

m	zwingend erforderlich (mandatory (according to the Profil definition of the PNO))
o	optional (according to the Profil definition of the PNO)

Indication types:	Anzeige Modi
R	dauerhaft (Indication, remains active as long as the reason for the message exists.)
A	automatisch zurückstellend nach 10s. (Indication, will be automatically reset after 10s.)

Misc:	Sonstiges
ri	relative index
ai	absolute index

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

16 Device Management

Rel. Index	Variable	Object type	Data type	Store	Size	Acc.	Parameter usage-Type of transport	Default values	Man opt.
0	DIRECTORY_ OBJECT_HEADER	directory header	Array of unsigned 16	Cst	12	r	C/a	-	m
1	COMPOSITE_LIST_ DIRECTORY	Start_PB_Ref No_PB Start_TB_Ref No_TB Start_FB_Ref No_FB Slot/Index_PB No_PB_Param Slot/Index_TB No_TB_Param Slot/Index_FB1 No_FB1_Param Slot/Index_FB2 No_FB2_Param	Array of unsigned 16	Cst	28	r	C/a	-	m

16.1 Directory object header

E	Element Name	Data Type (Index)	Size	Values
1	Dir_ID	Unsigned 16-(6)	2	0; 0
2	Rev-Number	Unsigned 16-(6)	2	0; 1
3	Num_Dir_Obj	Unsigned 16-(6)	2	0; 1
4	Num_Dir_Entry	Unsigned 16-(6)	2	0; 7
5	First_Comp_List_Dir_Entry	Unsigned 16-(6)	2	0; 1
6	Num_Comp_List_Dir_Entry	Unsigned 16-(6)	2	0; 3

16.2 Composite list directory entry

E	Element Name	Data Type (Index)	Size	Values
1	Start_PB_Ref	Unsigned 16-(6)	2	1; 4
2	No_PB	Unsigned 16-(6)	2	0; 1
3	Start_TB_Ref	Unsigned 16-(6)	2	1; 5
4	No_TB	Unsigned 16-(6)	2	0; 1
5	Start_FB_Ref	Unsigned 16-(6)	2	1; 6
6	No_FB	Unsigned 16-(6)	2	0; 2
7	Slot/Index_PB			1; 140
8	No_PB_Param			0; 45
9	Slot/Index_TB			1; 70
10	No_TB_Param			0; 61
11	Slot/Index_FB1			1; 16
12	No_FB1_Param			0; 46
13	Slot/Index_FB2			2; 16
14	No_FB2_Param			0; 46

2483586 D/GB 4/2003

17 Standard parameters

17.1 Standard parameter description

Parameter	Description
ALARM_SUM	It contains the current states of the block alarms.
ALERT_KEY	It contains the identification number of the plant unit. It helps to identify the location of an event.
BATCH	This parameter is intended to be used in batch applications in line with IEC 61512 Part1. Only function blocks carry this parameter. There is no algorithm necessary within a function block. The batch parameter is necessary in a distributed fieldbus system to identify used and available channels, in addition to identify the current batch in case of alerts.
BLOCK_OBJECT	This object contains the characteristics of the blocks.
MODE_BLK	It contains the the current mode and the permitted and normal mode of the block.
ST_REV	A block has static parameters, that are not changed by the process. Values are assigned to this during the configuration or optimisation. The value of ST_REV must increase by 1 after every change of a static block parameter. This provides a check of the parameter revision.
STRATEGY	Grouping of function block. This can be used to group blocks.
TAG_DESC	Every block can be assigned a textual TAG description. The TAG_DESC is the address of the block. It must be unambiguous and unique in the fieldbus system.
TARGET_MODE	This parameter contains desired mode normally set by a control application or an operator.

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

17.2 Standard parameter attributes

Rel. Index	Variable	Object type	Data type	Store	Size	Acc.	Parameter usage/Type of transport	Default values	Man opt.
0	BLOCK OBJECT	Record	DS-32	Cst	20	r	C/a	-	m
1	ST_REV	Simple	unsigned 16	N	2	r	C/a	0	m
2	TAG_DESC	Simple	Octetstring	S	32	r,w	C/a	32 x **	m
3	STRATEGY	Simple	unsigned 16	S	2	r,w	C/a	0	m
4	ALERT_KEY	Simple	unsigned 8	S	1	r,w	C/a	0	m
5	TARGET MODE	Simple	unsigned 8	S	1	r,w	C/a	-	m
6	MODE_BLK actual permitted normal	Record	DS-37 unsigned 8 unsigned 8 unsigned 8	 D Cst Cst	3	r	C/a	 8 - auto 8 - auto 8 - auto	m
7	ALARM_SUM Current Unacknowledged Unreported Disabled	Record	DS_42 Bitstring (16 Bits) Bitstring (16 Bits) Bitstring (16 Bits) Bitstring (16 Bits)	D	8	r	C/a	 0, 0, 0, 0,	m
8	BATCH Batch_ID RUP Operation Phase	Structure	DS-67	S	10	r,w	C/a	 0, 0, 0, 0,	m

17.3 Standard parameter view object table

Relative Index	Parameter Mnemonic	VIEW_1	VIEW_2	VIEW_3	VIEW_4	VIEW_5
1	ST_REV	2				
2	TAG_DESC					
3	STRATEGY					
4	ALERT_KEY					
5	TARGET MODE					
6	MODE_BLK					
7	ALARM_SUM					
-	Overall sum of bytes in View object					

2483586 D/GB 4/2003

18 Physical block

18.1 Physical block parameter description

Parameter	Description
DEVICE_CERTIFICATION	Certifications of the field device, e.g. IS certificate.
DESCRIPTOR	User-definable text (a string) to describe the device within the application.
DEVICE_ID	Manufacturer specific identification of the device.
DEVICE_MAN_ID	Id-code of the manufacturer of the device
DEVICE_SER_NUM	Serial number of the device
DIAGNOSIS	Detailed information of the device, bitwise coded. If MSB og byte4 is set to 1, then more diagnosis information is available in the DIAGNOSIS_EXTENSION parameter.
DIAGNOSIS_EXTENSION	Additional manufactuer specific information of the device, bitwise coded.
DIAGNOSIS_MASK	Definition of supported DIAGNOSIS bits. 0 = not supp. 1 = supp.
DIAGNOSIS_MASK_EXT.	Definition of supported DIAGNOSIS_EXTENSION bits. (0 = not supp. / 1 = supp.)
FACTORY_RESET	Value = 1 is the command for resetting device to default values, if the device has bus address the setting of bus address remains unchanged. Value = 2506 is the command for a warm start of the device. All parametrisation remains unchanged. Value = 2712 resets the bus address only. The Ident_Number parameter is not affected by the Factory_Reset. Other manufacturing specific commands for other reset results are possible.
HARDWARE_REVISION	Revision number of the hardware of the device.
HW_WRITE_PROTECTION	Indicates the position of a hardware jumper which protects all acyclic write access to all writeable parameters of a device. 0 – Unprotected 1 – Protected (i.e. acyclic write service of all parameters is refused i.e. access is denied)
IDENT_NUMBER_SELECTOR	Each PROFIBUS-DP /EN50170/ device must have an Ident_Number provided by the PNO. The UniTrans makes use of the profile specific Ident_Number (SELECTOR=0)

2483586.D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

LOCAL_OP_ENABLE	Local operation enable. 0 = disabled, (Local operation not allowed, i.e. change of FB MODE from host device only) 1 = enabled, (Local operation is allowed) The operation of the host has higher priority than the local terminal one. If communication is interrupted longer than 30 sec. local operation will be enabled automatically. A communication failure is defined here as absence of cyclic and acyclic communication for the specified time period. If LOCAL_OP_ENA parameter is equal 0 (disabled) and the communication is working again then the device switches back to remote operation.
WRITE_LOCKING	Storage location for a password. This password may be read and written by a tool to perform a write protection strategy. 0 - acyclic write service of all parameters, except this WRITE_LOCKING one, are refused, i.e. access is denied 1 - 2456 reserved by PNO 2457 is the default value and means all writeable parameters of a device are writeable. 2458 - 65535 manufacturer specific
SOFTWARE_REVISION	Revision number of the software of the field device
DEVICE_INSTALL_DATE	Date of installation
DEVICE_MESSAGE	User definable text to describe the device within the application or in the plant

2483586 D/GB 4/2003

18.2 Physical block manufacturer specific parameter description

Parameter	Description
LANGUAGE	Language of the displayed text. 0 = english 1 = german 2 = french 3 = spanish 4 = italian
TOT_HRS_USED	Total count of the transmitters operating hours
TOT_HRS_CALIB	Total count of hours since last calibration. This parameter is set to 0 if one of the following parameters has changed.: FB1: PV_SCALE & OUT_SCALE, TPB: ZERO_OFFS_ADJUSTMENT.
TOT_HRS_RESET	Total count of hours since last reset.

18.3 Physical block parameter attributes

Rel. Index	Variable	Object type	Data type	Store	Size	Acc.	Parame-ter usage/ Type of transport	Default values	Man opt.	Slot	abs. Index
0-7	Standard Parameters								m	1	140-147
8	SOFTWARE_REVISION	Simple	Octetstring	Cst	16	r	C/a	-	m	1	148
9	HARDWARE_REVISION	Simple	Octetstring	Cst	!&	r	C/a	-	m	1	149
10	DEVICE_MAN_ID	Simple	unsigned 16	Cst	2	r	C/a	-	m	1	150
11	DEVICE_ID	Simple	Octetstring	Cst	16	r	C/a	-	m	1	151
12	DEVICE_SER_NUM	Simple	Octetstring	Cst	16	r	C/a	-	m	1	152
13	DIAGNOSIS	Simple	Octetstring	D	4	r	C/a	-	m	1	153
14	DIAGNOSIS_EXTENSION	Simple	Octetstring	D	6	r	C/a	-	o	1	154
15	DIAGNOSIS_MASK	Simple	Octetstring 0x10980000	Cst	4	r	C/a	-	m	1	155
16	DIAGNOSIS_MASK_EXT.	Simple	Octetstring 0x000000000000	Cst	6	r	C/a	-	o	1	156
17	DEVICE_CERTIFICATION	Simple	Octetstring	N	16	r,w	C/a	-	o	1	157
18	WRITE_LOCKING	Simple	Unsigned16	N	2	r,w	C/a	2457	o	1	158
19	FACTORY_RESET	Simple	Unsigned16	S	2	w	C/a	-	o	1	159
20	DESCRIPTOR	Simple	Octetstring	S	32	r,w	C/a	-	m	1	160
21	DEVICE_MESSAGE	Simple	Octetstring	S	32	r,w	C/a	-	m	1	161
22	DEVICE_INSTALL_DATE	Simple	Octetstring	S	16	r,w	C/a	-	m	1	162
23	LOCAL_OP_ENABLE	Simple	unsigned 8 1=enabled 0=disabled	N	1	r,w	C/a	1	m(B)	1	163
24	IDENT_NUMBER_SELECTOR	Simple	unsigned 8 0=Profile	S	1	r,w	C/a	0	m(B)	1	164
25	HARDW_WR_PROTECT	Simple	unsigned 8 0=unprotected 1=protected	D	1	r	C/a	-	o	1	165
26-32	reserved PNO									1	166-172

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

18.4 Physical block manufacturer specific parameter attributes

Rel. Index	Variable	Object type	Data type	Store	Size	Acc.	Parame-ter usage/ Type of transport	Default values	Man opt.	Slot	abs. Index
40	LANGUAGE	Simple	unsigned 8 0 = english 1 = german 2 = french 3 = spanish 4 = italian	N	1	r,w	C/a	-		1	180
41	TOT_HRS_USED	Simple	unsigned 32	D	4	r	C/a	-		1	181
42	TOT_HRS_CALIB	Simple	unsigned 32	N	4	r	C/a	-		1	182
43	TOT_HRS_RESET	Simple	unsigned 32	N	4	r,w	C/a	-		1	183

18.5 Physical block object

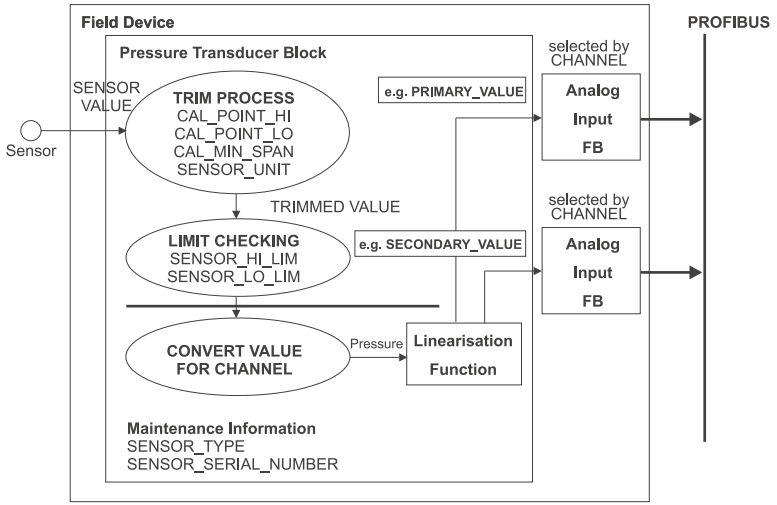
E	Element Name	Data Type (Index)	Size	Value	Notes
1	Reserved	Unsigned 8 - (5)	1	250	
2	Block type	Unsigned 8 - (5)	1	1	Physical block
3	Parent Class	Unsigned 8 - (5)	1	1	Transmitter
4	Class	Unsigned 8 - (5)	1	250	reserved
5	DD Reference	Unsigned 32 - (7)	4	0	for use in the future.
6	DD Revision	Unsigned 16 - (6)	2	0	for use in the future.
7	Profile	Unsigned 16 - (6)	2	64; 2	Number, Class B
8	Profile Revision	Unsigned 16 - (6)	2	3;0	
9	Execution Time	Unsigned 8 - (5)	1	0	
10	Number of Parameter	Unsigned 16 - (6)	2	0;45	incl. View_1
11	Index of VIEW_1	Unsigned 16 - (6)	2	01; 184	(Slot-Index)
12	Number of View List	Unsigned 8 - (5)	1	1	

18.6 Physical block view object table

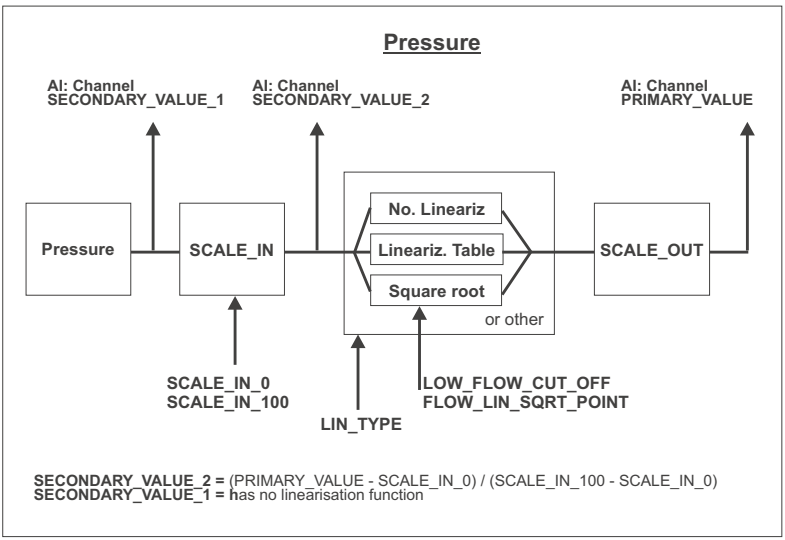
Relative Index	Parameter Mnemonic	VIEW_1	VIEW_2	VIEW_3	VIEW_4	VIEW_5
13	DIAGNOSIS	4				
-	Overall sum of bytes in View object (+13 standard parameter bytes)	4 + 13				

2483586 D/GB 4/2003

19 Transducer Block Pressure



Linearisation Functions



2483586.D/GB 4/2003

19.1 Pressure TB standard parameter description

siehe 17.1 standard parameter description

19.2 Pressure TB standard parameter attributes

siehe 17.2 standard parameter attributes

19.3 Pressure TB parameter description

Parameter	Description
CAL_MIN_SPAN	This parameter contains the minimum calibration span value allowed. This minimum span information is necessary to ensure that when calibration is done, the two calibrated points (high and low) are not too close together.
CAL_POINT_HI	This parameter contains the highest calibrated value. For calibration of the high limit point you give the low measurement value (pressure) to the sensor and transfer this point as HIGH to the transmitter.
CAL_POINT_LO	This parameter contains the lowest calibrated value. For calibration of the high limit point you give the low measurement value (pressure) to the sensor and transfer this point as LOW to the transmitter.
LIN_TYPE	See General Requirements
MAX_SENSOR_VALUE	Holds the maximum process SENSOR_VALUE. A write access to this parameter resets to the actual value. The unit is defined in SENSOR_UNIT.
MIN_SENSOR_VALUE	Holds the minimum process SENSOR_VALUE. A write access to this parameter resets to the actual value. The unit is defined in SENSOR_UNIT.
MAX_TEMPERATURE	Holds the maximum temperature. A write access to this parameter resets to the actual value.
MIN_TEMPERATURE	Holds the minimum temperature. A write access to this parameter resets to the actual value.
PRIMARY_VALUE	This parameter contains the measured value and status available to the function block.
PRIMARY_VALUE_TYPE	This parameter contains the application of the pressure device. 0: Pressure 1: Flow (not valid) 2: Level 3: Volume 4..127: reserved 128: manufacturer specific
PRIMARY_VALUE_UNIT	This parameter contains the engineering units index code for the primary value. The minimum set of unit codes for pressure is: kPa (1133), bar (1137), psi (1141), inHg (1155). If the device supports flow or level measurements the corresponding units have to be supported, too. The minimum set of unit codes for volume flow is: m^3/h (1349), L/s (1351), CFM - cubic feet per minute (1357), GMP - US gallon per minute (1363). The minimum set of unit codes for mass flow is: kg/s (1322), lb/s (1330). The minimum set of unit codes for level is: % (1342), m (1010), ft (1018). The coding is in accordance to the table of Units Codes given in the General Requirements.
PROCESS_CONNECTION_ MATERIAL	This parameter contains the index code for the material of the process connection. The coding is in accordance to the table of Material Codes given in the General Requirements.

2483586 D/GB 4/2003

SCALE_IN	This is the input conversion of the Pressure into SECONDARY_VALUE_2 using the high and low scale. The related unit is the SECONDARY_VALUE_1_UNIT.
SCALE_OUT	This is the output conversion of the linearized value using the high and low scale. The related unit is the PRIMARY_VALUE_UNIT. It is in accordance to the table of Units Codes given in the General Requirements.
SECONDARY_VALUE_1	This parameter contains the Pressure value and status available to the Function Block.
SECONDARY_VALUE_1_UNIT	This parameter contains the pressure units of the SECONDARY_VALUE_1. The minimum set of unit codes for pressure is: kPa (1133), bar (1137), psi (1141), inHg (1155). It is in accordance to the table of Units Codes given in the General Requirements.
SECONDARY_VALUE_2	This parameter contains the measured value after input scaling and status available to the Function Block. The related unit is the SECONDARY_VALUE_UNIT_2.
SECONDARY_VALUE_2_UNIT	This parameter contains the units of the SECONDARY_VALUE_2 defined by the manufacturer. It is in accordance to the table of Units Codes given in the General Requirements.
SENSOR_DIAPHRAGM_ MATERIAL	This parameter contains the index code for the material of the diaphragm, which comes in contact with the material. The index code is described in the table "Sensor_Diaphragm_Material".
SENSOR_FILL_FLUID	This parameter contains the index code for the filling fluid inside the sensor. The index code is described in the table "Sensor_Fill_Fluid".
SENSOR_HI_LIM	This parameter contains the sensor upper limit value.
SENSOR_LO_LIM	This parameter contains the sensor lower limit value.
SENSOR_MAX_STATIC_ PRESSURE	This parameter contains the maximum static pressure value for the sensor. Unit derives from SENSOR_UNIT.
SENSOR_O_RING_MATERIAL	This parameter contains the index code for the material of the o-ring between diaphragm and process connection. The index code is described in the table "Sensor_O_Ring_Material".
SENSOR_SERIAL_NUMBER	This parameter contains the sensor serial number.
SENSOR_TYPE	This parameter contains the index code for the sensor type described in the manufacturer's specific table.
SENSOR_UNIT	This parameter contains the engineering units index code for the calibration values. SENSOR_UNIT must be a subset of the interchangeable part of the pressure unit.
SENSOR_VALUE	This parameter contains the raw sensor value. The uncalibrated measurement value from the sensor.
TAB_ENTRY	The index parameter identifies which element of the table is in the X_VALUE and Y_VALUE parameter currently
TAB_X_Y_VALUE	The X_Y_VALUE parameter contains one value couple of the table
TAB_MIN_NUMBER	For device internal reasons (e.g. for calculation), sometimes it is necessary to use a certain number of table values in minimum. This number is provided in the TAB_MIN_NUMBER parameter.

2483586.D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

TAB_MAX_NUMBER	TAB_MAX_NUMBER is the maximum size (number of X_VALUE and Y_VALUE values) of the table in the device.
TAB_OP_CODE	The modification of a table in a device influences the measurement or actuation algorithms of the device. Therefore an indication of a starting and an end point is necessary. The TAP_OP_CODE controls the transaction of the table. 0: not initialised 1: new operation characteristic, first value (TAB_ENTRY=1), old curve cleared 2: reserved 3: last value, end of transmission, check table, swap the old curve with the new curve, actualise ACTUAL_NUMBER. 255: clear table(only if WRITE_LOCKING=9478)
TAB_STATUS	It is common to provide a plausibility check in the device. The result of this check is indicated in the TAB_STATUS parameter. 0: not initialised 1: good (new table is valid) 2: not monotonous increasing (old table is valid) 3: not monotonous decreasing (old table is valid) 4: not enough values transmitted (old table is valid) 5: too many values transmitted (old table is valid) 6: gradient of edge too high (old table is valid) 7: Values not excepted (old values are valid) 8 - 127 reserved > 128 manufacturer specific
TAB_ACTUAL_NUMBER	Contains the actual numbers of entries in the table. It shall be calculated after the transmission of the table is finished.
LIN_TYPE	Type of linearisation. 0 = no linearisation (mandatory) 1 = linearisation table (optional) 20 = cylindrical lying container (optional)
TEMPERATURE_UNIT	This parameter contains the units of the temperature. The minimum set of unit codes for volume flow is: K (1000), °C (1001), °F (1002). The coding is in accordance to the table of Units Codes given in the General Require-ments.
TRIMMED_VALUE	This parameter contains the sensor value after the trim processing. Unit derives from SENSOR_UNIT.

19.4 Pressure TB manufacturer specific parameter description

Parameter	Description
ZERO OFFSET_ ADJUSTMENT	Actual measurement value is the new zero. A write access to this parameter executes the adjustment.

2483586 D/GB 4/2003

19.5 Pressure TB parameter attributes

Rel. Index	Variable	Object type	Data type	Store	Size	Access	Parameter usage Type of transport	Default Values	Man opt.	Slot	abs. Index
0-7	Standard Parameters								m	1	70-77
8	SENSOR_VALUE	Simple	Float	D	4	r	C/a	0.0	m	1	78
9	SENSOR_HI_LIM	Simple	Float	N	4	r	C/a	-	m	1	79
10	SENSOR_LO_LIM	Simple	Float	N	4	r	C/a	-	m	1	80
11	CAL_POINT_HI	Simple	Float	N	4	r,w	C/a	SENS_HI_LIM	m	1	81
12	CAL_POINT_LO	Simple	Float	N	4	r,w	C/a	SENS_LO_LIM	m	1	82
13	CAL_MIN_SPAN	Simple	Float	N	4	r	C/a	0.05 x SENS_HI_LIM	m	1	83
14	SENSOR_UNIT	Simple	unsigned16 Pressure: 1137 = bar	N	2	r,w	C/a	1137 - bar	m	1	84
15	TRIMMED_VALUE	Record	DS-33 not used	D	5	r	C/a	-	m	1	85
16	SENSOR_TYPE	Simple	unsigned16 1 - relative 128 - abs. 250 -not used	N	2	r	C/a	250	m	1	86
17	SENSOR_SERIAL_ NUMBER	Simple	unsigned32	N	4	r	C/a	-	m	1	87
18	PRIMARY_VALUE	Record	DS-33	D	5	r	C/a	0.0	m	1	88
19	PRIMARY_VALUE_ UNIT	Simple	unsigned16 1342=%	N	2	r,w	C/a	1342 - %	m	1	89
20	PRIMARY_VALUE_ TYPE	Simple	unsigned16 3 = Volume	N	2	r	C/a	3 - Volume	m	1	90
21	SENSOR_ DIAPHRAGM _MATERIAL	Simple	unsigned16	S	2	r	C/a	-	o	1	91
22	SENSOR_FILL_ FLUID	Simple	unsigned16	S	2	r	C/a	-	o	1	92
23	SENSOR_MAX_ STATIC_ PRESSURE	Simple	Float	N	4	r	C/a	-	o	1	93
24	SENSOR_O_RING _MATERIAL	Simple	unsigned16	S	2	r	C/a	-	o	1	94
25	PROCESS_ CONNECTION _TYPE	Simple	unsigned16	S	2	r	C/a	-	o	1	95

2483586 D/GB 4/2003

26	PROCESS_ CONNECTION _MATERIAL	Simple	unsigned16	S	2	r	C/a	-	o	1	96
27	TEMPERATURE	simple	DS-33	D	5	r	C/a	0.0	o	1	97
28	TEMPERATURE_ UNIT	simple	unsigned16 1001 = °C 1002 = °F	S	2	r,w	C/a	1001 - °C	o	1	98
29	SECONDARY_ VALUE_1	Record	DS-33	D	5	r	C/a	0.0	o(B)	1	99
30	SECONDARY_ VALUE_1_UNIT	Simpel	Unsigned16 1137=bar 1138=mbar 1141=psi 1130=Pa 1136=HPA 1132=MPA 1155=InHg	N	2	r,w	C/a	1137 - bar	o(B)	1	100
31	SECONDARY_ VALUE_2	Record	DS-33	D	5	r	C/a	0.0	o(B)	1	101
32	SECONDARY_ VALUE_2_UNIT	Simple	Unsigned16 1997=none	N	2	r,w	C/a	1997 - none	o(B)	1	102
33	LIN_TYPE	Simple	Unsigned8 0 = no lin-earisation 1 = linearisa-tion table	S	1	r,w	C/a	0 - no. lin.	m(B)	1	103
34	SCALE_IN	Array	Float 100% - value 0% - value	S	8	r,w	C/a	-	o(B)	1	104
35	SCALE_OUT	Array	Float 100% - value 0% - value	S	8	r,w	C/a	-	o(B)	1	105
38	TAB_ACTUAL_ NUMBER	Simple	Unsigned8	N	1	r	C/a	-	o(B)	1	108
39	TAB_ENTRY	Simple	Unsigned8	D	1	r,w	C/a	1	o(B)	1	109
40	TAB_MAX_ NUMBER	Simple	Unsigned8 actual = 32	N	1	r	C/a	-	o(B)	1	110
41	TAB_MIN_ NUMBER	Simple	Unsigned8 actual = 2	N	1	r	C/a	-	o(B)	1	111
42	TAB_OP_CODE	Simple	Unsigned8	D	1	r,w	C/a	0	o(B)	1	112
43	TAB_STATUS	Simple	Unsigned8	D	1	r	C/a	0	o(B)	1	113
44	TAB_X_Y_VALUE	Array*	Float x-value y-value	D	8	r,w	C/a	-	o(B)	1	114
45	MAX_SENSOR_ VALUE	simple	float	N	4	r,w	C/a	-	o(B)	1	115
46	MIN_SENSOR_ VALUE	simple	float	N	4	r,w	C/a	-	o(B)	1	116

2483586 D/GB 4/2003

47	MAX_ TEMPERATURE	simple	float	N	4	r,w	C/a	-	o(B)	1	117
48	MIN_ TEMPERATURE	simple	float	N	4	r,w	C/a	-	o(B)	1	118
49-58	reserved PNO									1	119-128
59	ZERO_OFFSET_ ADJUSTEMENT	simple	float	N	4	r,w	C/a	0.0	ms	1	129

* first 4 bytes X_VALUE, second 4 bytes Y_VALUE

19.6 Pressure TB block object

E	Element Name	Data Type (Index)	Size	Value	Notes
1	Reserved	Unsigned 8 - (5)	1	250	
2	Block type	Unsigned 8 - (5)	1	3	Transducer block
3	Parent Class	Unsigned 8 - (5)	1	1	Pressure
4	Class	Unsigned 8 - (5)	1	5	Pressure+Level
5	DD Reference	Unsigned 32 - (7)	4	0	for use in the future.
6	DD Revision	Unsigned 16 - (6)	2	0	for use in the future.
7	Profile Class	Unsigned 16 - (6)	2	64; 2	Number, Class B
8	Profile Revision	Unsigned 16 - (6)	2	3;0	
9	Execution Time	Unsigned 8 - (5)	1	0	
10	Number of Parameter	Unsigned 16 - (6)	2	0; 60	incl. View_1
11	Index of VIEW_1	Unsigned 16 - (6)	2	1; 130	(Slot;Index)
12	Number of View List	Unsigned 8 - (5)	1	1	

19.7 Pressure TB view object

Relative Index	Parameter Mnemonic	VIEW_1	VIEW_2	VIEW_3	VIEW_4	VIEW_5
18	PRIMARY_VALUE	5				
-	Overall sum of bytes in View-Object (+13 Standard parameter bytes)	5 + 13				

2483586 D/GB 4/2003

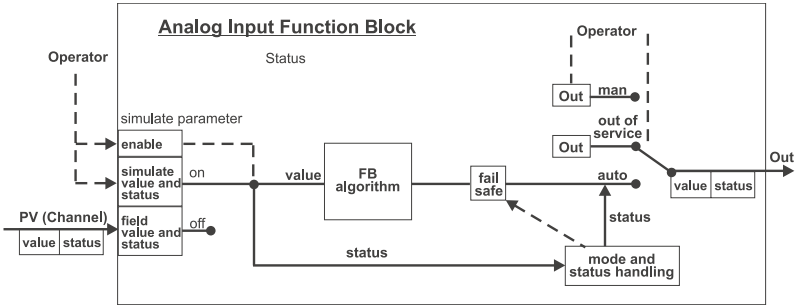
WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

19.8 Assignment of dynamic variables for pressure devices

Application	Transducer output			
PRIMARY_ VALUE_TYPE	**PRIMARY _VALUE**	**SECONDARY_VALUE_1**	**SECONDARY_VALUE_2**	**TEMPERATURE**
Pressure	Pressure	-	-	Temperature
Level	Level	Pressure	-	Temperature
Volume	Volume	Pressure	Level	Temperature

2483586 D/GB 4/2003

20 Analog input FB 1 (pressure)



20.1 Analog input FB 1 standard parameter description

siehe 17.1 "Standard parameter description".

20.1.1 Analog input FB 1 standard parameter attributes

siehe 17.2 "Standard parameter attributes".

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

20.2 Analog input FB 1 Process parameter

Parameter	Description
CHANNEL	Reference to the active transducer block which provides the measurement value to the function block.
FSAVE_TYPE	Defines reaction of device, if a fault is detected. The calculated ACTUAL MODE remains in AUTO respectively. 0 = value FSAVE_VALUE is used as OUT Status - Uncertain_Substitute Value, 1 = use of stored last valid OUT value Status - Uncertain_LastUsableValue if there is no valid value available, then UNCERTAIN-Inital_Value 2 = OUT has the wrong calculated value and status Status - BAD_* (* as calculated)
OUT	Process Variable
PV_SCALE	Conversion of the process variable into percent using the high and low scale values, engineering units code, and number of digits to the right of the decimal point.
OUT_SCALE	Scale of the process variable. It contains the values of the lower limit and upper limit effective range, engineering units code, and number of digits to the right of the decimal point.
PV_FTIME	Filter time of the process variable.

20.3 Analog input FB 1 Alarm parameter

Parameter	Description
ALARM_HYS	Hysteresis (effective to all limits).
HI_ALM	State of the upper limit of warnings. It contains the state of the upper limit of an alarm and the relating time stamp. Here time stamp is 1st January 1992.
HI_HI_ALM	State of the upper limit of alarms. It contains the state of the upper limit of an alarm and the relating time stamp. Here time stamp is 1st January 1992.
HI_HI_LIM	Value of upper limit of alarms. Upper limit value for alarms with engineering unit. If the measured value is equal to or higher than this value the state bit in the state byte of OUT and in the FP parameter ALARM_SUM have to change to 1.
HI_LIM	Value of upper limit of warnings. Upper limit value for warnings with engineering unit. If the measured value is equal to or higher than this value the state bit in the state byte of OUT and in the FP parameter ALARM_SUM have to change to 1.
LO_ALM	State of the lower limit of warnings. It contains the state of the lower limit of an alarm and the relating time stamp. Here time stamp is 1st January 1992.
LO_LIM	Value of lower limit of warnings. Lower limit value for warnings with engineering unit. If the measured value is equal to or lower than this value the state bit in the state byte of OUT and in the FP parameter ALARM_SUM have to change to 1.
LO_LO_ALM	State of the lower limit of alarms. It contains the state of the lower limit of an alarm and the relating time stamp. Here time stamp is 1st January 1992.
LO_LO_LIM	Value of lower limit of alarms. Lower limit value for alarms with engineering unit. If the measured value is equal to or lower than this value the state bit in the state byte of OUT and in the FP parameter ALARM_SUM have to change to 1.

2483586 D/GB 4/2003

SIMULATE	For comissioning and test purposes the input from the transducer block can be disconnected, and the input value and status can be set by the parameter Simulate.

20.4 Analog input FB 1 parameter attributes

Rel. Index	Variable	Object type	Data type	Store	Size	Access	Parameter usage- Type of transport	Default Values	Man opt.	Slot	abs. Index
0-8	Standard Parameters								m	1	16-24
10	OUT	record	DS-33	D	5	r	O/Cyc		m	1	26
11	PV_SCALE 100%-value 0%-value	array	float	S	8	r,w	C/a	 100% 0%	m	1	27
12	OUT_SCALE 100%-value 0%-value Unit Decimal Point	record	DS-36 float float unsigned16 unsigned8	S	11	r,w	C/a	 100% 0% 1342 - % 0	m		28
13	LIN_TYPE	simple	unsigned8 0 = no linearis.	S	1	r,w	C/a	0	m	1	29
14	CHANNEL	simple	unsigned16 Pressure: PV=0x01008 SV1=0x011D SV2=0x011F	S	2	r,w	C/a	0x0108	m	1	30
16	PV_FTIME	simple	float 0, 1, 5, 20, 40s	S	4	r,w	C/a	0s	m	1	32
17	FSAVE_TYPE	simple	unsigned8 1 - last out val.	S	1	r,w	c/a	1	o	1	33
19	ALARM-_HYS	simple	float	S	4	r,w	C/a	0,5% of range	m	1	35
21	HI_HI_LIM	simple	float	S	4	r,w	C/a	SEN_HI_LIM + 5%	m	1	37
23	HI_LIM	simple	float	S	4	r,w	C/a	SENS_HI_LIM	m	1	39
25	LO_LIM	simple	float	S	4	r,w	C/a	SENS_LO_LIM	m	1	41
27	LO_LO_LIM	simple	float	S	4	r,w	C/a	SENS_LO_LIM -2%	m	1	43
30	HI_HI_ALM Unacknowledge Alarm State Time_Stamp Subcode Value	record	DS-39 Unsigned8 Unsigned8 Date Unsigned16 Float	D	16	r	C/a	 0 0 0 0 0	o	1	46
31	HI_ALM	record	DS-39	D	16	r	C/a	0, 0, 0, 0, 0, 0	o	1	47
32	LO_ALM	record	DS-39	D	16	r	C/a	0, 0, 0, 0, 0, 0	o	1	48
33	LO_LO_ALM	record	DS-39	D	16	r	C/a	0, 0, 0, 0, 0, 0	o	1	49
34	SIMULATE Status Value En/Disable	record	DS-50 Unsigned8 float Unsigned8	S	6	r,w	C/a	 0 0 0 - disable	m	1	50

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

36-44	reserved PNO									1	52-60

20.5 Analog input FB 1 block object

E	Element Name	Data Type (Index)	Size	Value	Notes
1	Reserved	Unsigned 8 - (5)	1	250	
2	Block object	Unsigned 8 - (5)	1	2	Function block
3	Parent Class	Unsigned 8 - (5)	1	1	Input
4	Class	Unsigned 8 - (5)	1	1	Analog input
5	DD Reference	Unsigned 32 - (7)	4	0	for use in the future
6	DD Revision	Unsigned 16 - (6)	2	0	for use in the future
7	Profile	Unsigned 16 - (6)	2	64; 2	
8	Profile Revision	Unsigned 16 - (6)	2	3; 0	Number, Class B
9	Execution Time	Unsigned 8 - (5)	1	0	
10	Number_of_parameters	Unsigned 16 - (6)	2	0;45	incl. View_1
11	Adress of VIEW_1	Unsigned 16 - (6)	2	1; 61	(Slot-Index)
12	Number of Views	Unsigned 8 - (5)	1	1	

20.6 Analog input FB 1 view object

Relative Index	Parameter Mnemonic	VIEW_1	VIEW_2	VIEW_3	VIEW_4	VIEW_5
10	OUT	5				
-	Overall sum of bytes in View-Object (+13 Standard parameter bytes)	5 + 13				

2483586 D/GB 4/2003

21 Analog input FB 2 (Temperature)

Analog input function block standard parameter description
siehe 17.1 standard parameter description.

21.1 Analog input FB 2 standard parameter attributes

siehe 17.2 standard parameter attributes.

21.2 Analog input FB 2 Process parameter

siehe Kapitel 20.2

21.3 Analog input FB 2 Alarm parameter

siehe Kapitel 20.3

2483586.D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

21.4 Analog input FB 2 parameter attributes

Rel. Index	Variable	Object type	Data type	Store	Size	Access	Parameter usage- Type of transport	Default Values	Man opt.	Slot	abs. Index
0-8	Standard Parameters								m	2	16-24
10	OUT	record	DS-33	D	5	r	O/Cyc		m	2	26
11	PV_SCALE 100%-value 0%-value	array	float	S	8	r,w	C/a	 100% 0%	m	2	27
12	OUT_SCALE 100%-value 0%-value Unit Decimal Point	record	DS-36 float float unsigned16 unsigned8	S	11	r,w	C/a	 100% 0% 1001 - °C 0	m	2	28
13	LIN_TYPE	simple	unsigned8 0 = no linearis.	S	1	r,w	C/a	0	m	2	29
14	CHANNEL	simple	unsigned16 Temperature: 0x011B	S	2	r,w	C/a	0x011B	m	2	30
16	PV_FTIME	simple	float 0, 1, 5, 20, 40s	S	4	r,w	C/a	0s	m	2	32
17	FSAVE_TYPE	simple	unsigned8 1 - last out val.	S	1	r,w	c/a	1	o	2	33
19	ALARM-_HYS	simple	float	S	4	r,w	C/a	0,5% of range	m	2	35
21	HI_HI_LIM	simple	float	S	4	r,w	C/a	105	m	2	37
23	HI_LIM	simple	float	S	4	r,w	C/a	100	m	2	39
25	LO_LIM	simple	float	S	4	r,w	C/a	0	m	2	41
27	LO_LO_LIM	simple	float	S	4	r,w	C/a	-2	m	2	43
30	HI_HI_ALM Unacknowledge Alarm State Time_Stamp Subcode Value	record	DS-39 Unsigned8 Unsigned8 Date Unsigned16 Float	D	16	r	C/a	 0 0 0 0 0	o	2	46
31	HI_ALM	record	DS-39	D	16	r	C/a	0, 0, 0, 0, 0, 0	o	2	47
32	LO_ALM	record	DS-39	D	16	r	C/a	0, 0, 0, 0, 0, 0	o	2	48
33	LO_LO_ALM	record	DS-39	D	16	r	C/a	0, 0, 0, 0, 0, 0	o	2	49
34	SIMULATE Status Value En/Disable	record	DS-50 Unsigned8 float Unsigned8	S	6	r,w	C/a	 0 0 0 - disable	m	2	50
36-44	reserved PNO										52-60

* 1. Floatvalue: EU100%, 2. Floatvalue: EU0%

2483586 D/GB 4/2003

21.5 Analog input FB 2 block object

E	Element Name	Data Type (Index)	Size	Value	Notes
1	Reserved	Unsigned 8 - (5)	1	250	
2	Block object	Unsigned 8 - (5)	1	2	Function block
3	Parent Class	Unsigned 8 - (5)	1	1	Input
4	Class	Unsigned 8 - (5)	1	1	Analog input
5	DD Reference	Unsigned 32 - (7)	4	0	for use in the future
6	DD Revision	Unsigned 16 - (6)	2	0	for use in the future
7	Profile	Unsigned 16 - (6)	2	64; 2	
8	Profile Revision	Unsigned 16 - (6)	2	3; 0	Number, Class B
9	Execution Time	Unsigned 8 - (5)	1	0	
10	Number_of_parameters	Unsigned 16 - (6)	2	0;45	incl. View_1
11	Address of VIEW_1	Unsigned 16 - (6)	2	2; 61	(Slot-Index)
12	Number of Views	Unsigned 8 - (5)	1	1	

21.6 Analog input FB 2 view object

Relative Index	Parameter Mnemonic	VIEW_1	VIEW_2	VIEW_3	VIEW_4	VIEW_5
10	OUT	5				
-	Overall sum of bytes in View-Object (+13 Standard parameter bytes)	5 + 13				

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

22 Diagnosis parameter

Mit dem Bit EXT_DIAG = 1 signalisiert der Slave, dass anwenderspezifische Diagnosedaten vorliegen. Dadurch wird veranlasst dass ein Diagnosetelegramm zum PROFIBUS_Master gesendet wird. Ist die Diagnoseursache bereinigt, d.h. die entsprechende Bitkombination in den anwenderspezifischen Diagnosedaten ist 0, wird auch das EXT_DIAG-Bit zurückgesetzt.

22.1 Standard diagnosis parameter

Octet	Bit	Mnemonic	Description	Supp.	Ind.
1	0	DIA_HW_ELECTR	Hardware failure of electronic	-	-
	1	DIA_HW_MECH	Hardware failure of mechanic	-	-
	2	DIA_TEMP_MOTOR	Motor- temperature too high	-	-
	3	DIA_TEMP_ELECTR	Electronic temperature out of range	-	-
	4	DIA_MEM_CHECKSUM	Memory checksum error	yes	-
	5	DIA_MEASUREMENT	Failure in measurement	-	-
	6	DIA_NOT_INIT	Device not initialized (no selfcalibration)	-	-
	7	DIA_INIT_ERROR	Selfcalibration failed	-	-
2	0	DIA_ZERO_ERROR	Zero point error	-	-
	1	DIA_SUPPLY	Power supply failed	-	-
	2	DIA_CONF_INVALID	Configuration not valid	-	-
	3	DIA_WARMSTART	Restart up carried out	yes	A
	4	DIA_COLDSTART	New startup carried out	yes	A
	5	DIA_MAINTAINANCE	Maintenance required	-	-
	6	DIA_CHARACT	Characterisation invalid	-	-
	7	IDENT_NUMBER_Violation	Set to 1 if the ident number of the running cyclic data transfer and the value of the PB_IDENT_NUMBER parameter are different.	yes	
3	0..7	reserved	Reserved for use within the PNO		
4	0..6	reserved	Reserved for use within the PNO	-	-
7	7	EXTENSION_AVAILABLE	More diagnosis information is available	-	-

2483586 D/GB 4/2003

22.2 Extended diagnosis parameters

Über die Extended diagnosis parameter kann der Gerätestatus ermittelt werden.

Bit	Mnemonic	Description	Supp.	Ind.
0..48		not used	-	-

22.3 Coding of manufacturer specific error codes

Fehler bei der Parametrierung des Gerätes werden, wenn sie nicht durch die Fehlerklassen des Error_Codes_1 verifiziert sind, mit einem anwenderspezifischen Error-Code quittiert. Dieser wird im Error_Code_2 zurückgeliefert.
Nachfolgend die Kodierung der Fehlermeldungen:

Error_Code_2	Mnemonic	Meaning
01_H	-	not used
02_H	PARAMETER_TOO_LARGE	transmitted parameter > than maximum limit value
03_H	PARAMETER_TOO_SMALL	transmitted parameter < than minimum limit value
04_H	INVALID_SELECT	invalid selection out of a given list
05_H...$0F_H$	-	not used

2483586 D/GB 4/2003

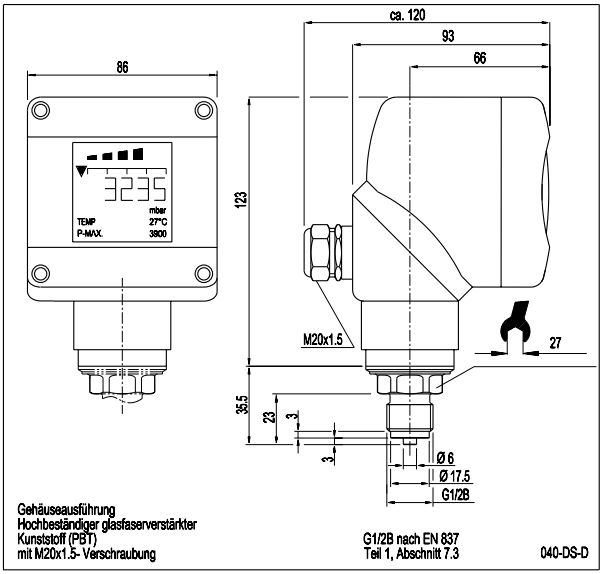
WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

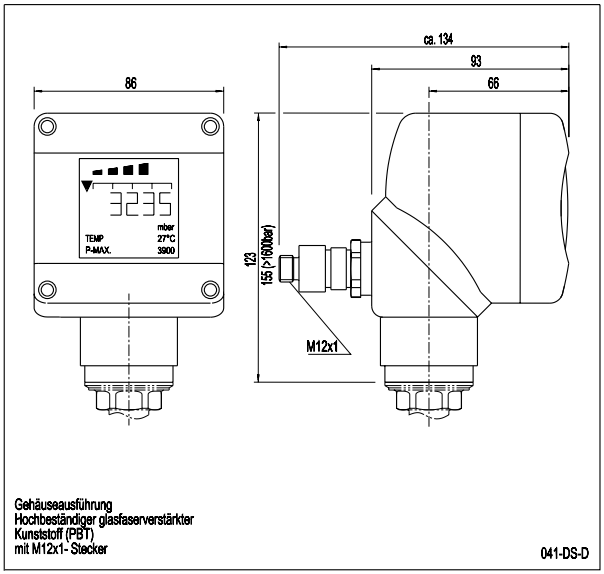
Notes:

2483586 D/GB 4/2003

23 Anhang

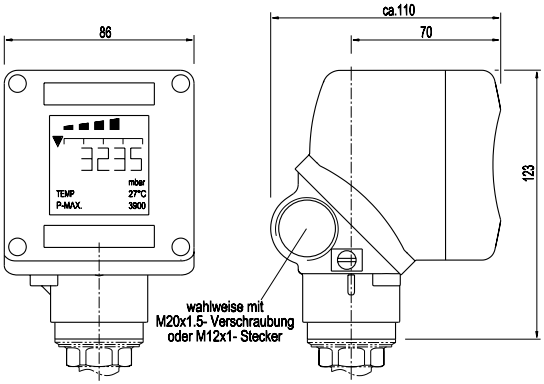
23.1 Maßbilder





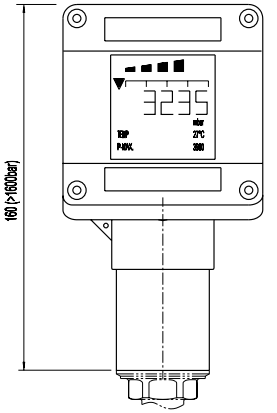
2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de



Gehäuseausführung
Aluminium

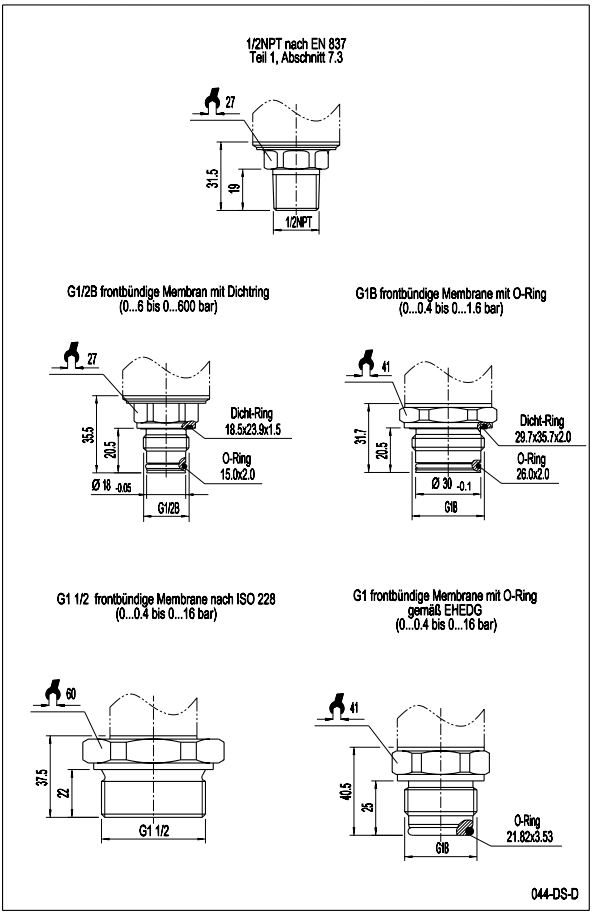
042-DS-D



Gehäuseausführung
Aluminium
> 1600 bar

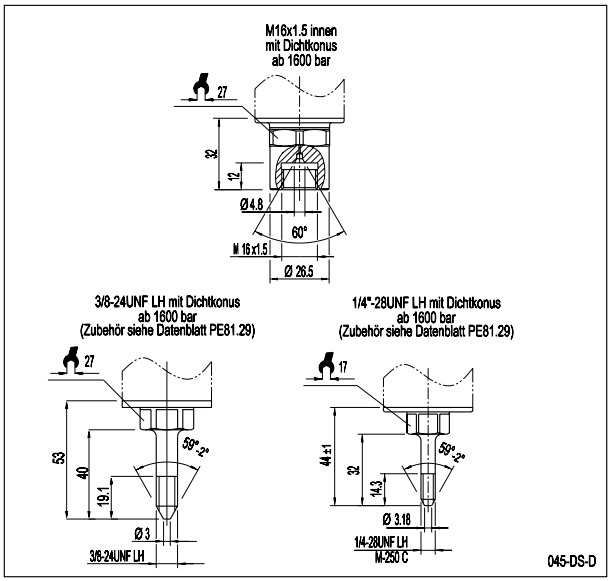
043-DS-D

2483586.D/GB 4/2003



2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de



2483586 D/GB 4/2003

23.2 Typenschlüssel, standard Ausführung

			Einheit			
		B	bar			
1		**S**	bar absolut			*bis 16 bar abs*
			Messbereich			
		CA	-1 bar ... 0 bar	**BM**	0 bar ... 40 bar	
		CD	-1 bar ... 0,6 bar	**BO**	0 bar ... 100 bar	
		CH	-1 bar ... 3 bar	**BQ**	0 bar ... 250 bar	
		CK	-1 bar ... 5 bar	**BT**	0 bar ... 600 bar	
		CP	-1 bar ... 15 bar	**BU**	0 bar ... 1000 bar	
		BB	0 bar ... 0,4 bar / bar absolut	**BV**	0 bar ... 1600 bar [1]	
		BE	0 bar ... 1,6 bar / bar absolut	**BX**	0 bar ... 2500 bar [1]	
		BH	0 bar ... 6 bar / bar absolut	**BZ**	0 bar ... 4000 bar [1]	
2		**BK**	0 bar ... 16 bar / bar absolut			
			Prozessanschluss			
		GD	G ½ B	**ML**	M16 x 1,5 innen, mit Dichtkonus [2] *ab 1600 bar*	
		ND	½ NPT	**VS**	3/8-25 UNF LH male	
3		**CS**	Druckmittler		*Preise und Ausführungen siehe Druckmittlerprogramm*	
			Besonderheit in der Ausführung			
		Z	ohne			
		E	öl- und fettfrei			
		A	Sauerstoff, öl- und fettfrei [3]			*bis 1600 bar abs*
		G	lebensmitteltaugliche Ausführung			
4		**O**	Überspannungsschutz nach IEC 801-5			
			Gehäusewerkstoff			
		M	Hochbeständiger glasfaserverstärkter Kunststoff (PBT)			
5		**A**	Aluminium			*Schutzart IP 67*
			Schutzart			
		S	Standard			*IP 65 bei Kunststoffgehäuse, IP 67 bei Aluminiumgehäuse*
6		**L**	IP 67			*für Kunststoffgehäuse, nur mit speziellem Kabel oder abs.-Messbereich*
			Elektrischer Anschluss			
		A	Kabelverschraubung M20x1,5 mit innenliegendem Klemmblock			
7		**M**	Rundsteckverbinder M12 x 1, 4-polig			
			Digitalanzeige			
		Z	ohne			
8		**A**	mit integrierter 4-stelliger LCD-Anzeige			
			Zulassungen			
		L	EEx ia IIC T4-T6 nach ATEX 100a			*II 1/2 G geeignet zum Anbau an Zone 0*
9		**C**	CSA			
		Zusätzliche Bestellangaben				
		JA	**NEIN**			
10		**1**	**Z**	Zeugnisse / Bescheinigungen		
11		**T**	**Z**	Zusatztext		

1) nur mit Kennlinienabweichung 0,5%; max. Turndown 2:1
2) maximale Messstofftemperatur 60 °C

Bestellcode:

	1	2		3		4	5	6	7	8	9		10	11
IUT-10 - **5** -			-		-							-		

2483586 D/GB 4/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

23.3 Typenschlüssel, frontbündige Ausführung

			Einheit			
		B	bar			
1		**S**	bar absolut			*bis 16 bar abs*
			Messbereich			
		CA	-1 bar ... 0 bar	**BH**	0 bar ... 6 bar / bar absolut	
		CD	-1 bar ... 0,6 bar	**BK**	0 bar ... 16 bar / bar absolut	
		CH	-1 bar ... 3 bar	**BM**	0 bar ... 40 bar	
		CK	-1 bar ... 5 bar	**BO**	0 bar ... 100 bar	
		CP	-1 bar ... 15 bar	**BQ**	0 bar ... 250 bar	
		BB	0 bar ... 0,4 bar / bar absolut	**BT**	0 bar ... 600 bar	
2		**BE**	0 bar ... 1,6 bar / bar absolut			
			Prozessanschluss			
		85	G 1 B frontbündig mit O-Ring			*bis 1,6 bar*
		86	G ½ B frontbündig mit O-Ring			*> 1,6 bar*
		G6	G 1 ½ B frontbündig			*bis 16 bar*
3		**83**	G 1 frontbündig gemäß EHEDG [2]			*bis 16 bar*
			Messstoffberührte Bauteile			
		1	CrNi-Stahl und O-Ring aus NBR			
		L	CrNi-Stahl und O-Ring aus Viton			
		B	CrNi-Stahl und O-Ring aus EPDM			
4		**S**	Hastelloy C4			
			Besonderheit in der Ausführung			
		Z	ohne			
		E	öl- und fettfrei			
		A	Sauerstoff, öl- und fettfrei [3]			*bis 100 bar*
5		**O**	Überspannungsschutz nach IEC 801-5			
			Gehäusewerkstoff			
		M	Hochbeständiger glasfaserverstärkter Kunststoff (PBT)			
6		**A**	Aluminium			*Schutzart IP 67*
			Schutzart			
		S	Standard			*IP 65 bei Kunststoffgehäuse, IP 67 bei Aluminiumgehäuse*
7		**L**	IP 67			*für Kunststoffgehäuse, nur mit speziellem Kabel oder abs.-Messbereich*
			Elektrischer Anschluss			
		A	Kabelverschraubung M20x1,5 mit innenliegendem Klemmblock			
8		**M**	Rundsteckverbinder M12 x 1, 4-polig			
			Digitalanzeige			
		Z	ohne			
9		**A**	mit integrierter 4-stelliger LCD-Anzeige			
			Zulassungen			
		L	EEx ia IIC T4-T6 nach ATEX 100a			*II 1/2 G geeignet zum Anbau an Zone 0*
10		**C**	CSA			
			Zusätzliche Bestellangaben			
		JA	**NEIN**			
11		**1**	**Z**	Zeugnisse / Bescheinigungen		
12		**T**	**Z**	Zusatztext		

1) nur mit Kennlinienabweichung 0,5%; max. Turndown 2:1
2) maximale Messstofftemperatur 60 °C

2483586 D/GB 4/2003

Bestellcode:

	1	2		3		4	5	6	7	8	9	10		11	12
IUT-11 - **5** -			-		-								-		

23.4 Garantiebedingungen

Die Garantiezeit für den Drucktransmitter beträgt 24 Monate gemäß den Allgemeinen Lieferbedingungen von WIKA.

Reparaturen dürfen nur vom Hersteller durchgeführt werden. Eingriffe und Änderungen am Gerät sind unzulässig. Sie führen zum Verlust jeglicher Garantie.

23.5 Glossar

Abgleich	Zuordnung des Signalausgangsbereiches (4 ... 20 mA) zum gewünschten Druckmessbereich bzw. Füllstandmessbereich
Integration	auch Dämpfung: zeitliche Mittelung des Messsignals; Einschwingzeit des Stromausgangssignals nach einem Signalsprung
Invertierung	Umstellung des Ausgangssignals von 4 ... 20 mA auf 20 ... 4 mA
Nenndruckbereich	Arbeitsdruckbereich, für den das jeweilige Sensorelement ausgelegt ist
Nullpunkt	Messanfang des Druckmessbereichs
Parametrieren	auch Konfigurieren, Programmieren: Eingeben der für die jeweilige Anwendung und Messstelle relevanten Parameter und Geräteeinstellungen
Spanne	eingestellter Druckmessbereich
Spannenendwert	oberer Druckwert der eingestellten Messspanne (Endpunkt der Spanne)
Tanklinearisierung	Festlegen von Näherungswerten für das Volumen-/Druckverhältnis bei nicht linearen Zusammenhängen aufgrund verschiedener Behälterformen. Bei z.B. kugelförmigen Behältern besteht ein nichtlinearer Zusammenhang zwischen Füllhöhe und Füllmenge. Bei der Linearisierung wird über eine Wertetabelle die nichtlineare Füllmenge dem 4 ... 20 mA - Ausgangssignal zugeordnet (Näherungsverfahren über bis zu 32 Stützpunkte).
Werkseinstellung	vom Hersteller vorprogrammierte Parameter des Messgerätes

23.6 Referenzliste der Druckeinheiten

1 atm (Atmosphäre)	= 760 mm Hg = 760 Torr
	= 1,033 kp/cm^2 = 0,1013 MPa
1 Torr	= 133,3 Pa
1 kp/mm^2	= 9,81 N/mm^2 = 9,81 MPa
1 bar	= 0,1 MPa
1 mbar	= 1 hPa (Hektopascal)
1 psi (pound per square inch)	= 6,895 · 10^3 Pa
1 Pa	= 1,000· 10^{-5} bar
1 mmHG	= 1,333 mbar

2483586.DGB 4/2003

Contents

2483586.04/2003

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

2483586 04/2003

1 General Safety Instructions

Observe the national regulations about safety and accident prevention , as well as the safety instructions in this operating manual when operating the pressure transmitter.

Any operation not described in the following instructions must not be carried out.

If a failure cannot be repaired, the transmitter must be switched off. The operator must then make sure that it is only switched on again after the failure has been repaired.

Prior to installing, starting and operating a pressure measuring instrument, the user must ensure that the appropriate instrument has been selected with regard to scale range and performance and that the wetted parts material is suitable for the specific measuring conditions of the respective application.

Serious injuries and/or damage can occur should the relevant regulations not be observed.

Dangerous pressure media such as oxygen, acetylene, flammable gases or liquids and toxic gases or liquids as well as instruments for refrigeration plants or compressors etc. require attention above the standard regulations. Here the specific safety codes or regulations must be considered.

Ramaining pressure medium contained in the pressure element may be hazardous or toxic. This should be considered when handling and storing the removed pressure measuring instrument.

Repairs should only be carried out by the manufacturer. All other repairs or modifications of the transmitter are unauthorized.

Other important safety guidelines can be found in the different sections of this instruction manual.

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

2 EC-Declaration of Conformity

We declare upon our sole responsibility the CE marked products
Model: **IUT-10-5** and **IUT-11-5**

Description: Intrinsically safe universal pressure transmitters
specified by the valid data sheet:
PE 86.03
fulfills the essential requirements of the directives
97/23/EC (PED), Annex I
89/336/EWG (EMC).

The instruments have been tested in compliance with the EMC-norm
EN 61326 (1998)

According to the IS-guideline **94/9/EG** the fundamental safety and health requirements are met in compliance with

EN 50014:1997+A1-A2	**General requirements**
EN 50020:1994	**Intrinsic safety 'i'**
EN 50284:1999	**Group II Category 1 G**

WIKA

Alexander Wiegand GmbH & Co. KG

Klingenberg, 14.04.03

Head of Technical Department - Quality assurance

Company Division Tronic

i.V. Stefan Richter

i.A. Thomas Gerling

2483586 D/GB 4/2003

3 EC-Type Test Certificate

DMT

Translation

(1) # EC-Type Examination Certificate

(2) **- Directive 94/9/EC -**
Equipment and protective systems intended for use in potentially explosive atmospheres

(3) **DMT 02 ATEX E 103**

(4) **Equipment:** **Drucktransmitter UniTrans Type IUT-1*-5-***-**-***A**-****

(5) **Manufacturer:** **WIKA Alexander Wiegand GmbH & Co. KG**

(6) **Address:** **D 63911 Klingenberg/Main**

(7) The design and construction of this equipment and any acceptable variation thereto are specified in the schedule to this type examination certificate.

(8) The certification body of Deutsche Montan Technologie GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in the test and assessment report BVS PP 02.2051 EG.

(9) The Essential Health and Safety Requirements are assured by compliance with:

EN 50014:1997+A1-A2	General requirements
EN 50020:1994	Intrinsic safety 'i'
EN 50284:1999	Equipment Group II Category 1G

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate

(12) The marking of the equipment shall include the following:

II 1/2G EEx ia IIC T4/T6

Deutsche Montan Technologie GmbH
Essen, dated 31. May 2002

Signed: Jockers
DMT-Certification body

Signed: Eickhoff
Head of special services unit

2483586 04/2003

DMT

(13) Appendix to

(14) # EC-Type Examination Certificate

DMT 02 ATEX E 103

(15) 15.1 Subject and type

Pressure transmitter type IUT-1*-5-***-**-***A**-**

Instead of the *** in the complete denomination letters and numerals will be inserted which characterise different variations as measuring range, process connection, enclosure material.

15.2 Description

The pressure transmitter is used for continuously measurement of hydrostatic filling level and for the transmittion of the measured value into a proportional electrical signal; the pressure transmitter can be connected to circuits Profibus PA in accordance with the FISCO model (PTB Report No. PTB-W53).
The pressure transmitter consists of a plastic enclosure (surface resistance $\leq 10^9\ \Omega$) or a light metal enclosure and a sensor type TIS*** (DMT 99 ATEX E 069 U). Inside the enclosure the components evaluating electronic (DMT 01 ATEX E 142 U), a key-board and a display type A-IRU-1-*-* (DMT 99 ATEX E 091 U) are securely fixed.
The connection of the intrinsically safe circuit is done by a cable or by a connector.

15.3 Parameters

15.3.1 power and signal circuit (terminals + and - or connector pin 1 and 2)
for the connection of an intrinsically safe circuit with the following maximum ratings:

voltage	Ui	DC	24	V
current	Ii		380	mA
power	Pi		5,32	W
effective internal capacitance	Ci	negligible		
effective internal inductance	Li	negligible		

15.3.2 ambient temperature range Ta

for temperature class T4	-40 °C ≤ Ta ≤ +80 °C
for temperature class T6	-40 °C ≤ Ta ≤ +45 °C

15.3.3 medium temperature

for temperature class T4	≤ 105 °C
for temperature class T6	≤ 60 °C

(16) Test and assessment report
BVS PP 02.2051 EG as of 31.05.02

2483586 04/2003

DMT

(17) Special conditions for safe use
None

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

45307 Essen, 31. May 2002
BVS-Schu/Ar A 20020170

Deutsche Montan Technologie GmbH

DMT Certification body

Head of special services unit

Translation by WIKA

[Ex] DMT

(1) **EC TYPE TEST CERTIFICATE**

(2) - Guideline 94/9/EG -
Instruments and Protective Systems for the Use in Hazardous Areas in Accordance with the Regulation

(3) DMT 99 ATEX E 091 U

(4) Component: Display model IRU-1*-*

(5) Manufacturer: WIKA Alexander Wiegand GmbH & Co.

(6) Address: D 63911 Klingenberg / Main

(7) The design of this component as well as the various approved versions are laid down in the appendix to this type test certificate.

(8) In accordance with the Article 9 of the Directives of the European Communities of March 23, 1994 (94/9/EG), the certification agency of the DMT Association for Research and Testing mbH (DMT Gesellschaft für Forschung und Prüfung mbH), designated agency No. 0158, certifies the conformity of the instrument with the fundamental safety and health requirements for the conception and the construction of instruments and protective systems for the use in hazardous areas in accordance with the regulations mentioned in appendix II of the guideline. The results of this test have been laid down in the confidential test report No. BVS PP 99.2082 EG.

(9) The fundamental safety and health requirements are complied with by conforming to:

EN 50014:1997	General regulations
EN 50020:1994 (VDE 0170/0171 part 7/4.96)	Intrinsic safety „i"

(10) The symbol „U" behind the certificate number determines that this certificate must not be taken for a certificate written for an instrument or a protective system. This certificate can only be used as a basis for the approval of an instrument or protective system.

(11) This EC type test certificate refers only to the conception and the construction of the component described. Further requirements of the guideline 94/9/EG have to be complied with for the production and distribution of the instrument.

(12) The instrument is to be provided with the following marks:

[Ex] II 2G EEx ia IIC T4/T5/T6

DMT Association for Research and Testing GmbH
DMT Gesellschaft für Forschung und Prüfung mbH
Essen, November 15, 1999

(Signature illegible)
DMT certification agency

(Signature illegible)
Head of department in charge

Am Technologiepark 1, 45307 Essen, Telephone ++49-201-172-1416, Telefax ++49-201-172-1716

2483586.04/2003

Translation by WIKA

DMT

(13) Annex to

(14) **EC TYPE TEST CERTIFICATE**

DMT 99 ATEX E 091 U

(15) 15.1 Model name for display model A-IRU-1-*-*

In the full designation letters and figures identifying the details of the instrument type will be inserted instead of the "**".

15.2 Description
The display is mounted to intrinsically safe instrument for the visualisation of process data. The electronic components are installed in a housing of plastic (surface resistance $\leq 10^9\ \Omega$). This housing is used as cover of the intrinsically safe instrument.

15.3 Electrical, mechanical and thermical data
for the connection to an intrinsically safe circuit with the following maximum values:

Voltage:	Ui DC	= 9.2 V
Current:	Ii	= 115 mA
max. Load		
for temperature class	T4 and T5	= 0.133 W
for temperature class	T6	= 0.066 W
effective internal capacity	Ci	= 2 nF
effective internal inductivity	Li	= very low

Ambient temperatures:

temperature class T4	-40 °C ... + 70 °C
temperature class T5 and T6	-40 °C ... + 60 °C

(16) Test report
No. BVS PP 99.2082 EG
3 Pages

(17) Special conditions for a safe operation
17.1 The display can be used under the following ambient temperatures:

temperature class T4	-40 °C ... + 70 °C
temperature class T5 and T6	-40 °C ... + 60 °C

17.2 When the display is mounted to an intrinsically safe instrument the result must be checked and approved. For the resulting complete instrument a minimum overall ingress protection of IP 20 according to EN 60529 must be guaranteed.

Franz-Fischer-Weg 61, 45307 Essen, Telephone (0201)172-1416, Telefax (0201)172-1716

2483586 04/2003

Translation by WIKA

DMT

1st Addendum

(addition according to Guideline 94/9/EG, appendix III, number 6)

to the EC TYPE TEST CERTIFICATE DMT 99 ATEX E 091 U

Component: Display model IRU-1*-*

Manufacturer: WIKA Alexander Wiegand GmbH & Co.

Address: D 63911 Klingenberg / Main

Description
The display can also be manufactured in compliance with the test documents mentioned in the related test certificate No. BVS PP 99.2082 EG / N1

Test report
No. BVS PP 99.2082 EG / N1, edition 04/28/2000, 3 Pages

DMT Deutsche Montan Technologie GmbH
DMT Association for Research and Testing GmbH
Essen, April 24, 2000

(Signature illegible)
DMT certification agency

(Signature illegible)
Head of department in charge

2483586.04/2003

Translation

DMT

2nd Supplement

(Supplement in accordance with Directive 94/9/EC Annex III number 6)

to the EC-Type Examination Certificate
DMT 99 ATEX E 091 U

Equipment: **Display type A-IRU-1-*-***

Manufacturer: **WIKA Alexander Wiegand GmbH & Co. KG**

Address: **D - 63911 Klingenberg/Main**

Description
The display can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report

Test and assessment report
BVS PP 99.2082 EG / N2 as of 28.05.02

Deutsche Montan Technologie GmbH
Essen, dated 28. May 2002

signed: Jockers
DMT-Certification body

signed: Eickhoff
Head of special services unit

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

45307 Essen, 28. May 2002
BVS-Schu/Ar A 20020238

Deutsche Montan Technologie GmbH

DMT-Certification body

Head of special services unit

Am Technologiepark 1, 45307 Essen, Telefon (0201)172-1416, Telefax (0201)172-1716

2483586 04/2003

4 CSA Certificate of Compliance

CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1360843 (LR 105000) **Master Contract:** 185180

Project: 1360843 **Date Issued:** Oct 25, 2002

Issued to: **WIKA Alexander Wiegand GmbH & Co.**
Alexander-Wiegand-Str 30
Klingenberg, 63911
GERMANY

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US'

C US

Issued by: Andrew Redeker, C.E.T.
Certification Specialist

Authorized by: Terry Nagy
Operations Manager

CLASS

2258 04 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity - For Hazardous Locations
2258 84 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity - For Hazardous Locations - To U.S. Requirements

PRODUCTS

Class I, Div. 1, Groups A, B, C and D

- Models IUT-10 and IUT-11 Pressure Transmitters with up to 10 alphanumeric suffixes denoting mechanical or electrical variations; T-Code T4, T5, T6 with maximum ambient temperatures of 60, 60, 70°C respectively, 0-4000 Bar MWP; Entity parameters are as follows: Vmax = 30 Vdc; Imax = 100 mA (T4), 93 mA (T5, T6); Pi = 750 mW (T4), 697 mW (T5, T6); Ci = 9 nF; Li = 0

The 'C' and 'US' indicators adjacent to the CSA Mark signify that the product has been evaluated to the applicable CSA and ANSI/UL Standards, for use in Canada and the U.S., respectively. This 'US' indicator includes products eligible to bear the 'NRTL' indicator. NRTL, i.e. National Recognized Testing Laboratory, is a designation granted by the U.S. Occupational Safety and Health Administration (OSHA) to laboratories which have been recognized to perform certification to U.S. Standards.

DQD 507WD 2002/04/30

CSA INTERNATIONAL

Certificate: 1360843 **Master Contract:** 185180
Project: 1360843 **Date:** Oct 25, 2002

APPLICABLE REQUIREMENTS

The product, as described in this Report, complies with:

C22.2 No 0 M1991	General Requirements - Canadian Electrical Code Part II.
C22.2 No 94 M1991	Special Purpose Enclosures.
C22.2 No 142 M1987	Process Control Equipment.
C22.2 No 157 M1992	Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations.
UL 50, Eleventh Edition	Enclosures for Electrical Equipment
UL 508, Seventeenth Edition	Industrial Control Equipment.
UL 913, Sixth Edition	Intrinsically Safe Apparatus and Associated Apparatus for use in Class I, II, III, Division 1, Hazardous (Classified) Locations.

DQD 507WD 2002/04/30

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

5 Special Intrinsic Safety Instructions

5.1 Protection of diaphragm

As soon as the diaphragm of an instrument becomes damaged absolutely no intrinsic safety can be guaranteed any longer! Therefore the diaphragm must not come into contact with abrasive substances! The diaphragm must be protected against pressure peaks and must not be touched by tools! Information about material consistency against corrosion and diffusion can be found in the WIKA-Handbook, 'Pressure and Temperature Measurement' (German: ISBN 3-9804074-0-3, English: ISBN 3-9804074-1-1).

5.2 Special wiring advice

The housing must always be grounded to protect the instrument against electromagnetic fields and electrostatic charges.
The cables and wires must not be damaged.
Cables for applications in **Zone 1 and 2** must be checked with a test voltage between conductor/ground, conductor/screen, screen/ground of more than 500 V (AC).
Flying leads with fine wires must be covered by an end splice (cable preparation).
Both the internal capacity and inductivity must be considered.
Conductive screens may only be grounded one-sided and outside the hazardous area.

5.3 Connection to Zone 0

(In general **Zone 0** is defined when the instrument is surrounded by a mixture of explosive gases more than 1.000 hours per year = continuous hazard. The transmitter may only be operated under **Zone 0** conditions, as long as an atmospherical pressure of 0.8 to 1.1 bar is guaranteed).
The circuits must be of type Ex ia.
The ingress protection must comply to IP 67 according to IEC 529.

5.4 Special precaution for installations in Zone 0

Make absolutely sure to follow the advice given in the IEC-publication 529 for installations in **Zone 0** for IP 67 pressure connections! For installations in **Zone 0** it is absolutely necessary to connect the cable screening with the grounding of the connected vessel.

Installation in non-metallic vessels:

All metallic parts reaching into **Zone 0** must be grounded.

The intrinsically safe circuit must be decoupled from the regular circuit.

If the mounting position is less than 1m away from the transition into **zone 0** an overvoltage protection must be integrated. This can either be done within the transmitter (option: overvoltage protection), or outside the transmitter by the customer himself.

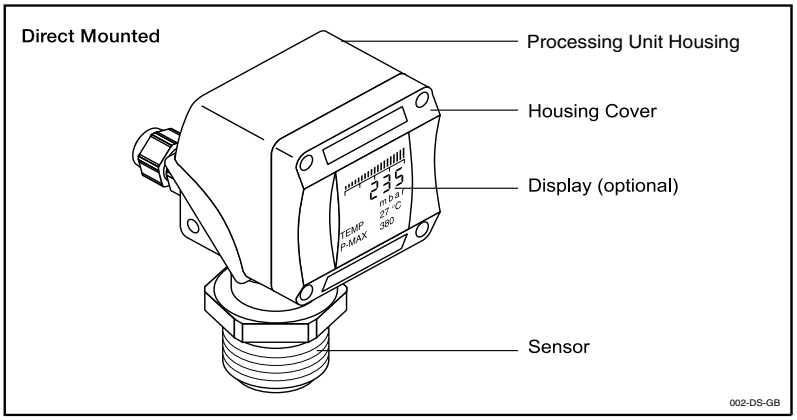
2483586.04/2003

6 Product Description

The UniTrans pressure transmitter can be used in level control applications as well as for pressure measurement applications in process industry. A variety of process connections, measurement ranges, main boards and display options result in a product for a wide range of applications.

6.1 Construction

The UniTrans consists of a pressure sensor, a control interface unit and a housing cover with optional display. Due to this modular design, different transmitter versions can be mounted (see chapter 23.2 "Model Key").



6.1.1 Pressure Transducer

The pressure transducer has a piezo-resistive or thinfilm measurement cell depending on the pressure range. The sensors are temperature compensated, and have a hermetically welded membrane which is "helium" leak-tested. The pressure transducers do not have internal sealing elements.

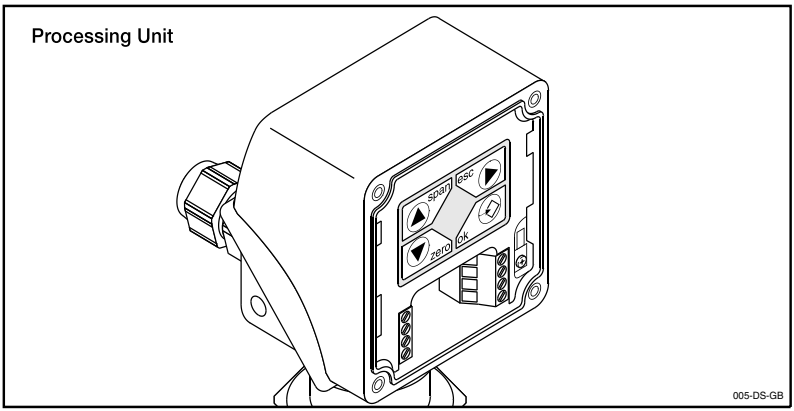
Pressure transducers further distinguish themselves from one another based on their pressure ranges and the different materials of wetted parts. Different process connections can be selected to serve a wide range of applications.

2483586 04/2003

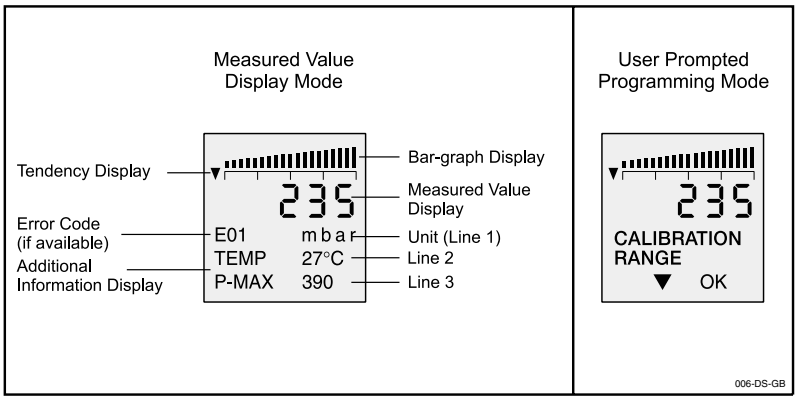
WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

6.1.2 Processing Unit

The processing unit, which is integrated in the housing contains the terminal compartment and the keypad used for programming the transmitter. The four keys must be activated (unlocked) before use. During normal operation the keypad is locked to protect data and functions previously entered. The keypad is automatically locked when no key is hit for 10 minutes. The processing unit converts the digitalized signal from the measuring unit into a digital PROFIBUS PA signal.



6.1.3 Display Unit



The measured-value indicator has four digits (in a 7-segment display) + symbols. Below it, is line 1 (16-segment display) used to display error codes and the signal's unit of measure. The unit of measure can be selected by the operator. Measurements over 9999 can not be correctly displayed. Please note this when choosing the unit (e.g. 9999 Pascal = 0.09999 bar). Additional information is displayed in lines 2 and 3 (16-segment display). The operator can enter commands in the programming mode on the display unit by means of menu guided, clear-text prompts.

2483586 04/2003

Display units can be easily upgraded (see chapter 7.2).

6.2 Function

The mode of operation for signal conversion works in the same way for all versions. The pressure transducer converts the existing pressure into an electrical signal. Microelectronics further process the input signal and produce a digital PROFIBUS PA signal.

6.2.1 Functions of Transmitters with Display or digital commands

- Settable units of measurement (mbar, bar, psi, mA, %, m, mm WS) (see 8.5.1)
- Temperature and Min/Max values shown in display (see 8.5.1)
- Nominal pressure range of the sensor shown in display (see 8.5.1)
- Zero and span calibration (with/without pressure) (see 8.5.2)
- Setting of damping / integration of output signal 0-40 s (see 8.5.3)
- Setting the limits of the output signal (see 8.5.3)
- Mounting correction of the sensor
- Reset functions (see 8.5.6)
- Password activation (see 8.5.6)
- Selecting the language of the display (see 8.5.5)

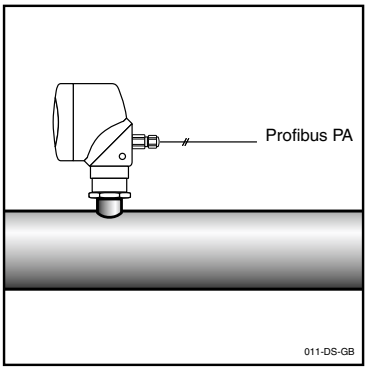
2483586.04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

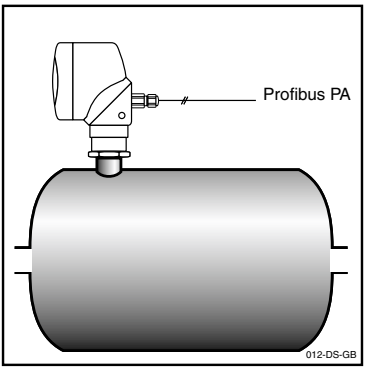
6.3 Installation Examples

The UniTrans is primarily used to monitor the pressure in pipes, technical equipment and tanks. Depending on the pressure range pressures between 20 mbar up to 1000 bar can be measured. The pressure is measured using absolute (against a vacuum) or relative (against external or air pressure) measurement depending on the type of sensor selected.

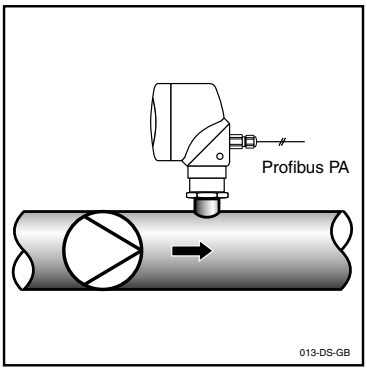
The UniTrans is also used for hydrostatic pressure measurement within liquid filled pipes and containers.



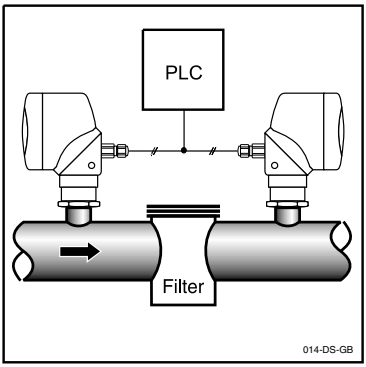
Process Pressure Measurement: Used to measure pressure of liquids or gases in pipelines.



Process Pressure Measurement: Used to measure container pressure.

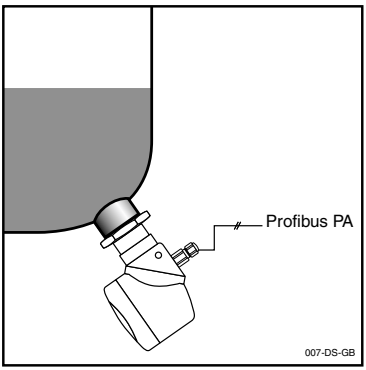


Process Pressure Measurement: Installed behind feed pumps for process control or monitoring of pump functions.

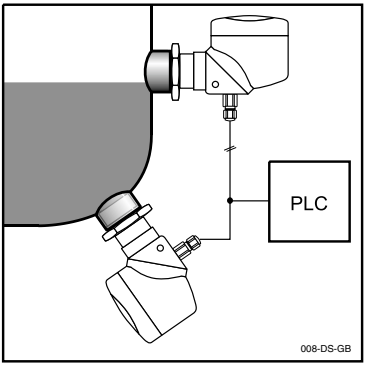


Process Pressure Measurement: Installed in front of and behind the filter. Uses the pressure differential for monitoring the function or accumulation of dirt in the filter. Both output signals are processed by a PLC or digital signal converter.

2483586 04/2003



Level Control:
Externally mounted
(with front flat diaphragm)



Level Control:
Combined pressure and head pressure are measured by two externally mounted pressure transducers. The two signals are analyzed and the differential is calculated by a PLC or suitable digital signal converter.

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

7 Technical Data

7.1 Input values

Pressure Ranges (Absolute pressure upon request)		/ overpressure limit	/ Burst pressure
	0 ... 0.4 bar	2	2
	0 ... 1.6 bar	10	10
	0 ... 6 bar	35	35
	0 ... 16 bar	80	80
	0 ... 40 bar	80	400
	0 ... 100 bar	200	800
	0 ... 250 bar	500	1200
	0 ... 600 bar	1200	2400
	0 ... 1,000 bar	1500	3000
	0 ... 1,600 bar	2000	4000
	0 ... 2,500 bar	3000	5000
	0 ... 4,000 bar	4400	7000
	-1 ... 0*	2	2
	-1 ... +0.6*	10	10
	-1 ... +3*	35	35
	-1 ... +5*	35	35
	-1 ... +15*	80	80
	*only relative pressure Do not exceed the nominal pressure!		

7.2 Output values

Signal output	PROFIBUS PA according to Profile 3.0
Accuracy [% of span] (linearity, hysteresis, repeatability)	< 0.10 at ranges of ≤ 1000 bar < 0.30 at ranges of > 1000 bar
Overall deviation (at +10 °C ... +40 °C)	≤ 0.15 % (limit point calibration) < 0.6 % for pressure ranges of > 1000 bar
Damping	According to PROFIBUS PA Profile 3.0
Adjustment of the span	According to PROFIBUS PA Profile 3.0
Integrated lightning protection	optional
Zero point adjustment	0 ... 99 %

2483586 04/2003

7.3 Construction

Process connections	
Model IUT-10	G 1/2 B per DIN 16288 (1/2 NPT) M 16 x 1,5 with sealing cone ≥ 1600 bar 1/4"-28 UNF LH M 250-C ≥ 1600 bar
Model IUT-11	G 1B flush diaphragm with o-ring (Ranges: 0 ... 0.4 up to 0 ... 1.6 bar) G 1/2 B flush diaphragm with o-ring (Ranges: 0 ... 6 bis 0 ... 600 bar) G 1 1/2 flush diaphragm with o-ring (Ranges:
Model IUT-11 EHEDG version	0 ... 0.4 bis 0 ... 16 bar) G 1 flush diaphragm with o-ring (Ranges: 0...0.4 bis 0...16 bar)
Materials	
Housing	highly resistive, fiberglass-enforced plastic (PBT); optionally aluminium
Wetted parts (IUT-10)	CrNi-steel 1.4571 and 2.4711
(IUT-11)	CrNi-steel 1.4571, o-ring: NBR {Viton or EPDM}; {Hastelloy C4}
Wetted parts (IUT-11 EHEDG version)	CrNi-steel 1.4435
Internal transmission fluid	Standard {Halocarbon oil for oxygen-applications}; {FDA-approved}
Electrical connection per EN 60 529/ IEC529	M 20 x 1.5 cable gland with internal terminal block (see chapter 7.4) 3/4" NPT female conduit (only with aluminum case) M12x 1 plug, 4-pin (Pin allocation: 1+ 3-)
Electric protection	Polarity crossing and short circuit protection {overvoltage protection}

7.4 Ambient Conditions

°F = (°C * 1.8) + 32

Attention

Please consider the safety related values according to EC-Type Test Certificate (see chapter 3)

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

Max. ambient temperature Safety-related max. value	– 40 °C ... + 80 °C (– 20 °C ... 70 °C with display) EEx ia IIC T5/6: -40°C ... +45°C
Storage temperature	– 40 °C ... + 85 °C (– 35 °C ... 80 °C with display)
Climate class	D per DIN IEC 654-1
Ingress protection per EN 60 529	IP 65 (IP 67 always with aluminum case) {IP67}
EMC per	EN 50 081-1, EN 50 081-2, EN 50 082-2, NAMUR NE 21

°F = (°C * 1.8) + 32

7.5 Process Conditions

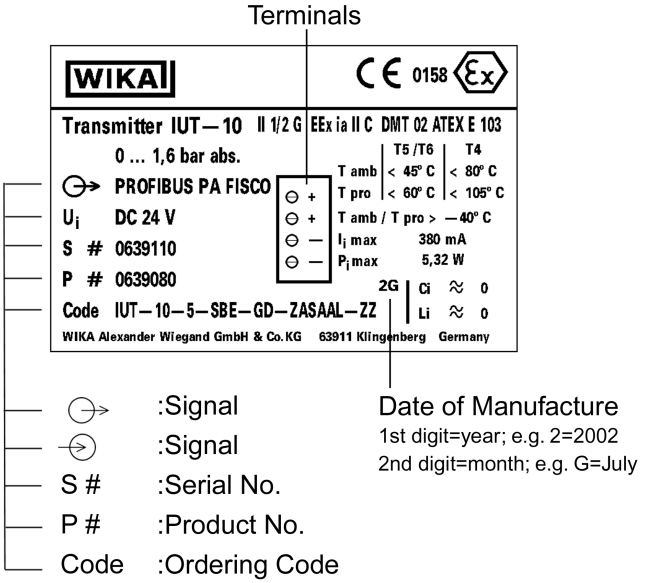
	Please consider the safety related values according to EC-Type Test Certificate (see chapter 3)
Max. medium temperatures Safety-related max. value	– 40 °C ... + 105 °C EEx ia IIC T5/6: -40°C ... +60°C

7.6 PROFIBUS related technical data

Signal output	PROFIBUS PA according to Profile 3.0 IEC 61158-2 transmission according to MBP (Manchester Coding, Bus Powered)
Addresses	from 1 to 126, PNO-Default: 126
Bit rate	31.25 kbit/s
Device Type	device supplied by bus with a constant current consumption
Bus voltage	9... 32 V DC (pleae consider the safety related values according to EC-type test certificate)
Max. current consumption	12.9 mA (switching points current limiting FDE to 17 mA)
Safety related max. values PROFIBUS-PA per FISCO model of PTB (physical-technical institute)	Voltage $U_i \leq 24$ V DC Current $I_i \leq 380$ mA Power $P_i \leq 5.32$ W Capacitance C_i negligible Inductance L_i negligible

2483586.04/2003

7.7 Product label (example)



2483586.04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

8 Installation

The device should be installed/operated in accordance with the regulations of ATEX, ElexV, the Device Safety Regulation, this operating manual and generally recognized industry standards.

8.1 Pressure Transmitter Installation

The pressure transmitter's diaphram should not come into contact with hard or sharp objects.

The pressure transmitter must not be operated beyond the nominal pressure range.

There is no explosion protection if the diaphragm is damaged.

The diaphragm must not come in contact with abrasive media.

Installation Using a Weld-on Adapter:

- Insert a filler piece (a pressure transmitter dummy) into the weld-on adapter.
- Weld the adapter into the container/pipe wall (section-weld process).
- Remove the filler piece.
- Install the pressure transmitter in the weld-on adapter.

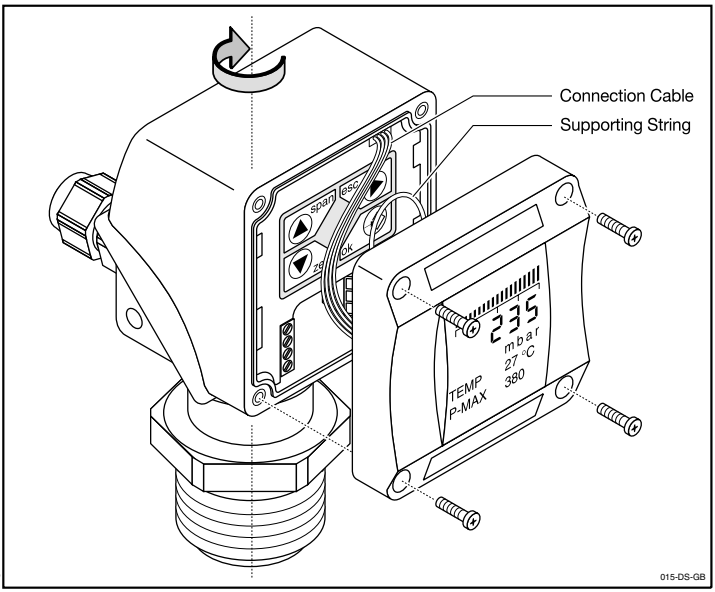
8.2 Display Unit Upgrades

The display unit can be easily upgraded at any time.

- Remove the housing cover and the supporting string.
- Attach the display unit's supporting string to the same place.
- Plug the display unit's connector into the appropriate jack.
  The display unit can be mounted at 90° angles.
- Fasten the display unit with screws.

When installing the display unit, make sure that the connection cable and the supporting string are not kinked or pinched.

2483586.04/2003



All functions are programmable once the pressure transmitter has been upgraded with a display unit. The adjusted parameters are stored after the display unit is removed.

The display unit can be rotated in 300°, so that it can be read under various installation conditions. The housing cover with built-in display can be fastened to the housing at all four side positions.

8.3 Housing Reconfiguration

Rotate the housing of the display unit in order to be able to read the display from above when the pressure transmitter is installed in an upright position.

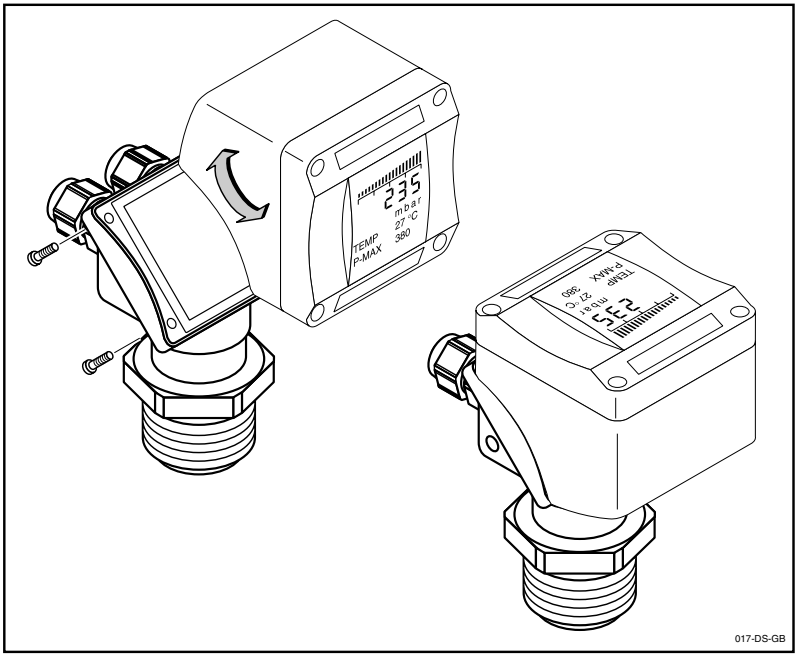
- Loosen the 4 internal hexagonal screws.
- Lightly lift off the housing with the display unit.
- Carefully turn the housing by 180°.
- Re-tighten the screws.

Attention

When tightening the 4 hollow screws, *make sure that they are adequately and securely seated in order to ensure that the transmitter is properly sealed.*

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de



8.4 Electrical Connection

Attention

Please observe ATEX and local installation regulations (Germany: VDE-Standard). The terminal voltage should not exceed 24 V in an intrinsic current loop.

Attention

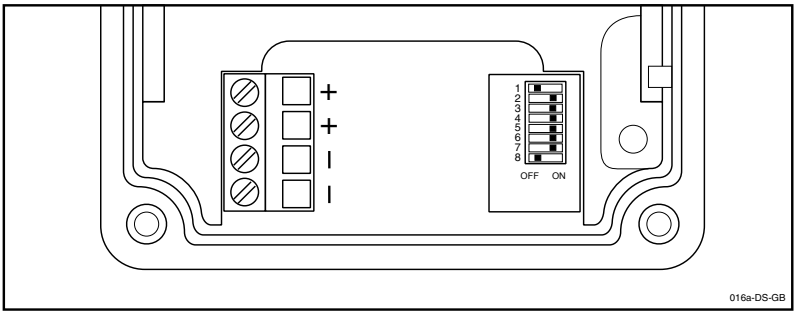
The electrical connection consists of the connection terminals L+ and L-. The current supply circuit must fulfill the conditions for intrinsic safety marking II 1/2 G EEx ia IIC T4/T6.

The power is supplied by a segment coupler and via the two-wire bus cable (max. 12 mm outer diameter, max. 14 AWG).

The '+' and '-' terminals of the transmitter are respectively connected via bridges.

2483586 04/2003

Terminal Configuration



e.g.:

+ open input terminal (bridge)
+ bus input signal
- bus output signal
- open output terminal (bridge)

Dip switch configuration

Switch 1 to 7 are needed for the binary coding of the slave address (here 126).

Switch 8 is for activating or inactivating the write protection of the transmitter.

8.5 Pressure Compensation when using a Relative Pressure Sensor

A Goretex diaphragm is used to compensate for the atmospheric pressure under the IP 65 Protection Method.

When the housing material is fiberglass-enforced plastic (PBT), a special cable with capillaries for relative pressurization is necessary for ingress protection IP 67. When the housing material is aluminum, ingress protection is IP 67. No special cable is necessary.

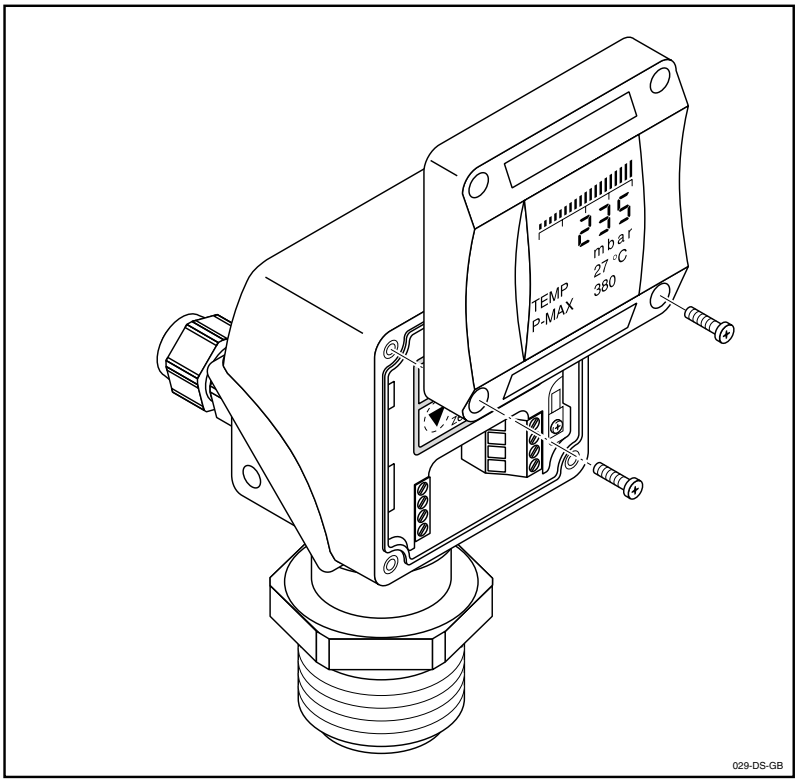
2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

9 Manual on-site Operation of Transmitters with Display

9.1 The Display

In order to program the transmitter, remove the display with a screwdriver and then attach it to the housing as shown in the figure below.

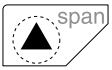
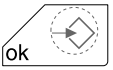
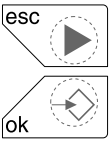


Important

The display may be attached and/or replaced by the user. Only displays which have been approved by Approval No. DMT 99 ATEX E 091 U. The material of the housing and display case must be the same.

2483586 04/2003

9.2 Key Functions

Button	Functions		
	Main Menu	**Sub-menu**	**Edit Functions**
	back to the previous menu option	back to the previous menu option	increase value
	forward to next menu option	forward to next menu option	decrease value
	back to value display without saving	back to main menu without saving	back to the sub-menu without saving
	to the sub-menu	to the edit functions	save value
	activate keypad (push simultaneously; 2 s)		

9.3 The Programming Mode

The transmitter can be programmed before or after installation.

The keypad is activated and the device can be programmed by simultaneously pressing the "esc" and "ok" keys (for 2 sec.). This method is used to access the main menus. Each main menu has one or more sub-menus and each sub-menu, may have its own sub-menus.

The keypad becomes inactive after 10 min. of disuse. All settings will default to previously stored values. Only settings that have been confirmed with the "OK" function are stored.
A change in the starting measurement (zero point) has no effect on the measurement span. Likewise, a change in the span has no effect on the starting measurement.
An error signal occurs when the zero point or span settings fall outside of the sensor's nominal pressure range during calibration with pressure. Nothing is saved.

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

9.4 Default Data (factory settings)

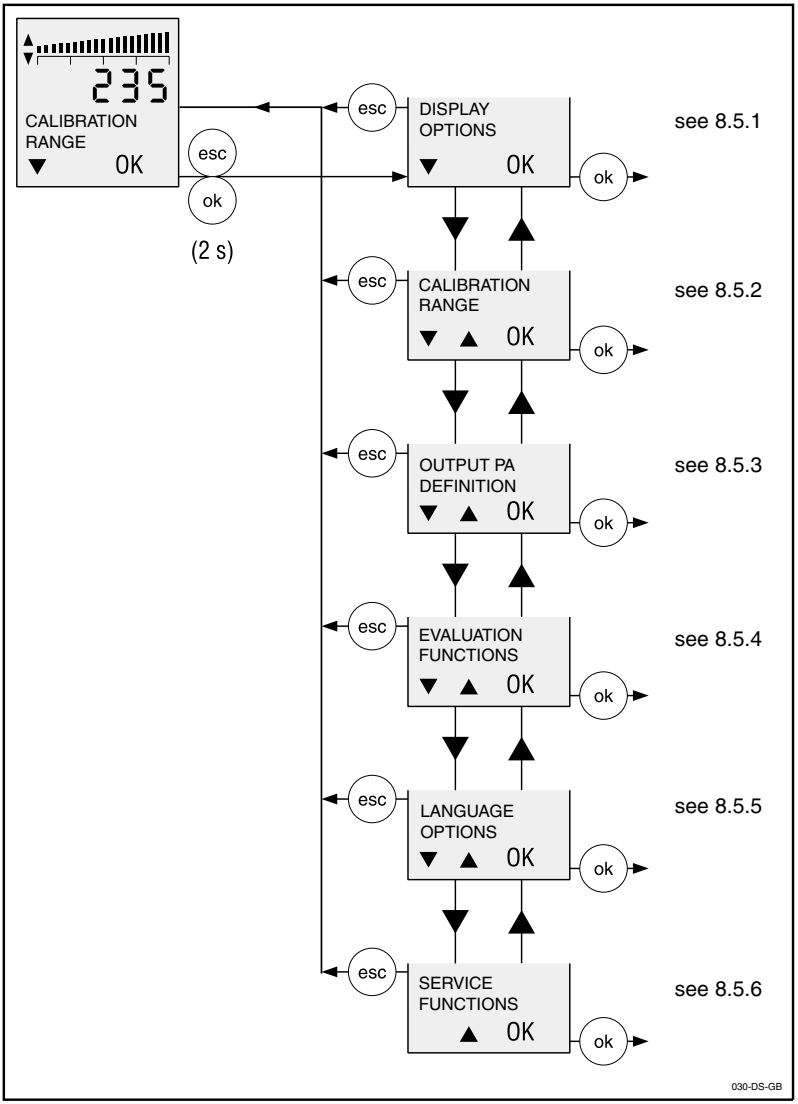
Function		Defaults
Display	Unit of measurement (Line 1) Line 2 Line 3	Pressure display (in bar) Temperature display (in °C) Sensor's nominal pressure range (in bar)
Output	Damping Inversion	0 s no
Service password		no active password
Service mounting correction		not activated
Language		English
Evaluation	linear density	yes 1 g/cm^3

Important

Calibrated special measurement ranges i. e. 4 bar on a 6 bar transmitter can be adjusted by factory pre-setting. A reset to default will reset the sensor back to its nominal range (i. e. 6 bar). The factory pre-setting gets lost.

2483586.04/2003

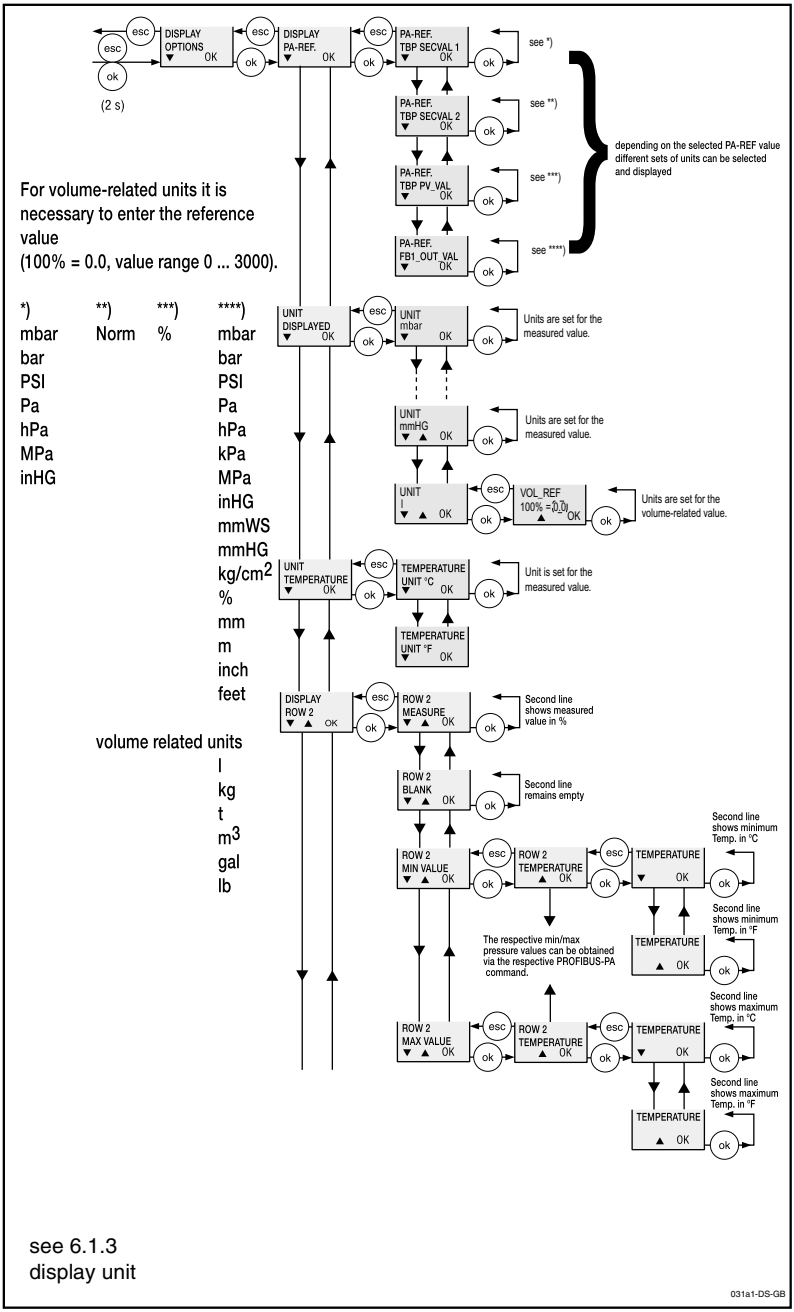
9.5 Main Menu



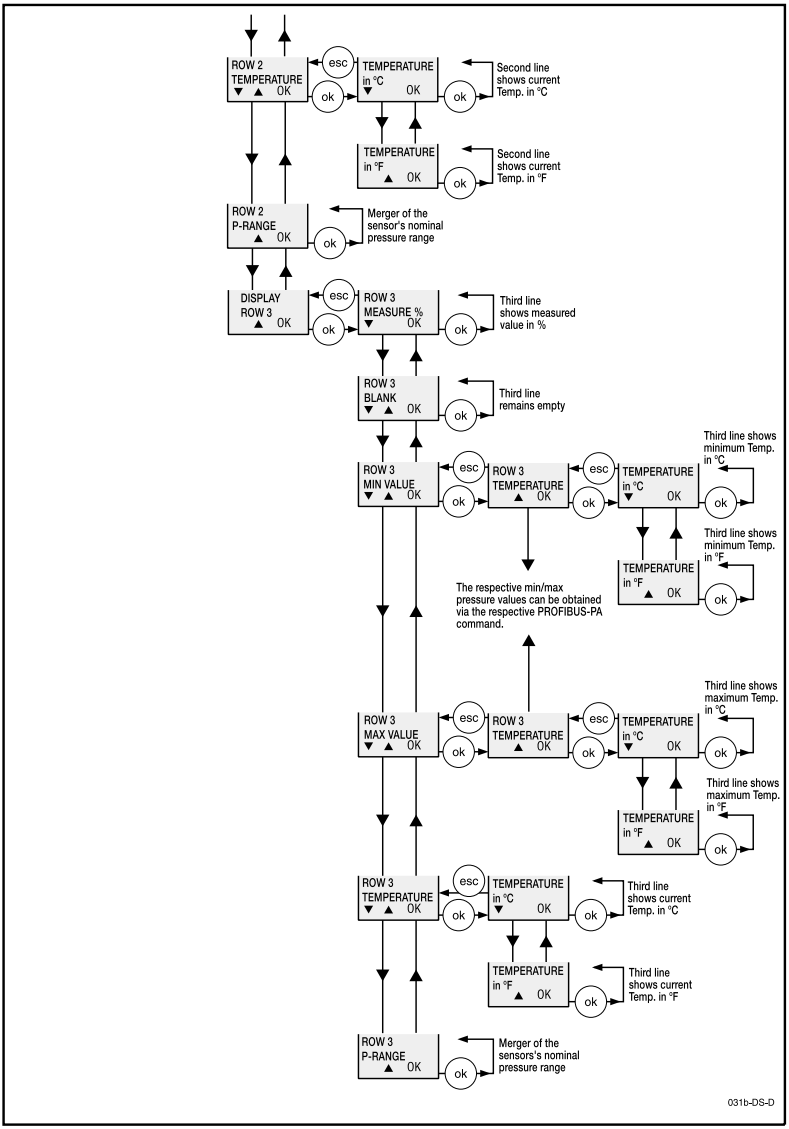
2483586.04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

9.5.1 Main Menu: Display

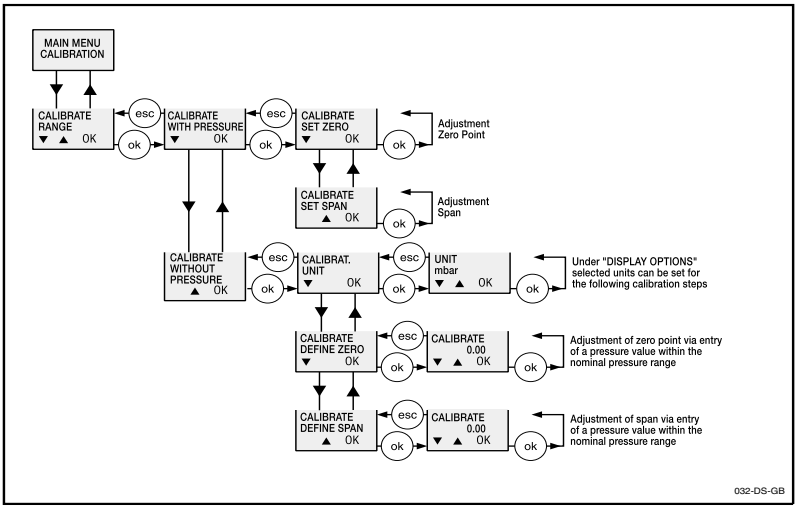


2483586 04/2003



2483586 04/2003

9.5.2 Main Menu: Calibration of zero and span



Information

A single pressure value is set for the zero point or the span end-point within the sensor's nominal pressure range, and assigned to the associated output current signal when making adjustments with existing pressure. An error signal occurs when the existing pressure lies beyond the sensor's nominal pressure range. The value is not saved in this case.

Important

A mounting correction should be carried out before or after making an adjustment without pressure (dry adjustment) (see 8.5.6). The sensor must therefore be placed in the reference position for the measurement (installation site) without pressure on the diaphragm.

Information

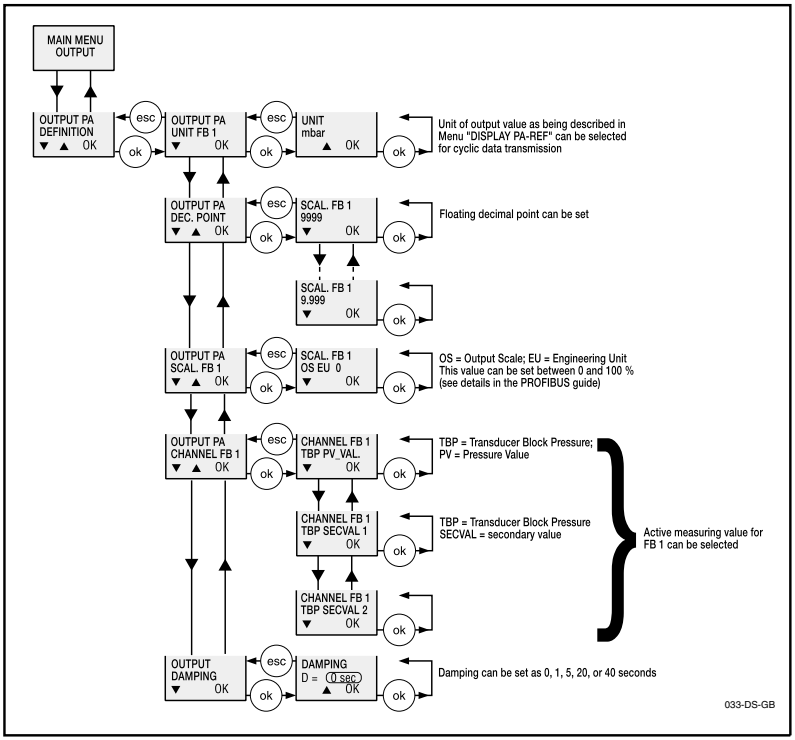
A mounting correction is unnecessary when making an adjustment with pressure (wet adjustment). Otherwise, the mounting correction must be performed before saving the zero point and span end- point.

Important

A test / correction of the zero point is suggested after adjusting the span in order to maintain optimum accuracy.

2483586 04/2003

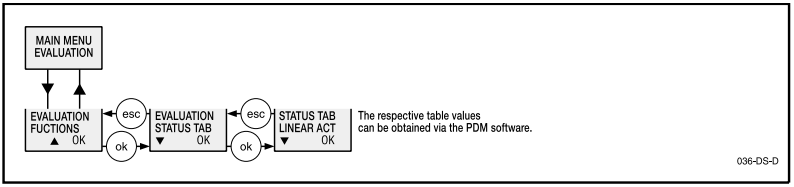
9.5.3 Main Menu: Output



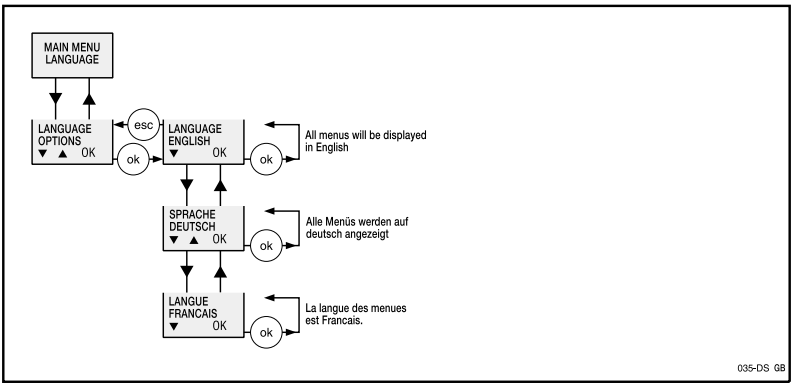
2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

9.5.4 Main Menu: Evaluation

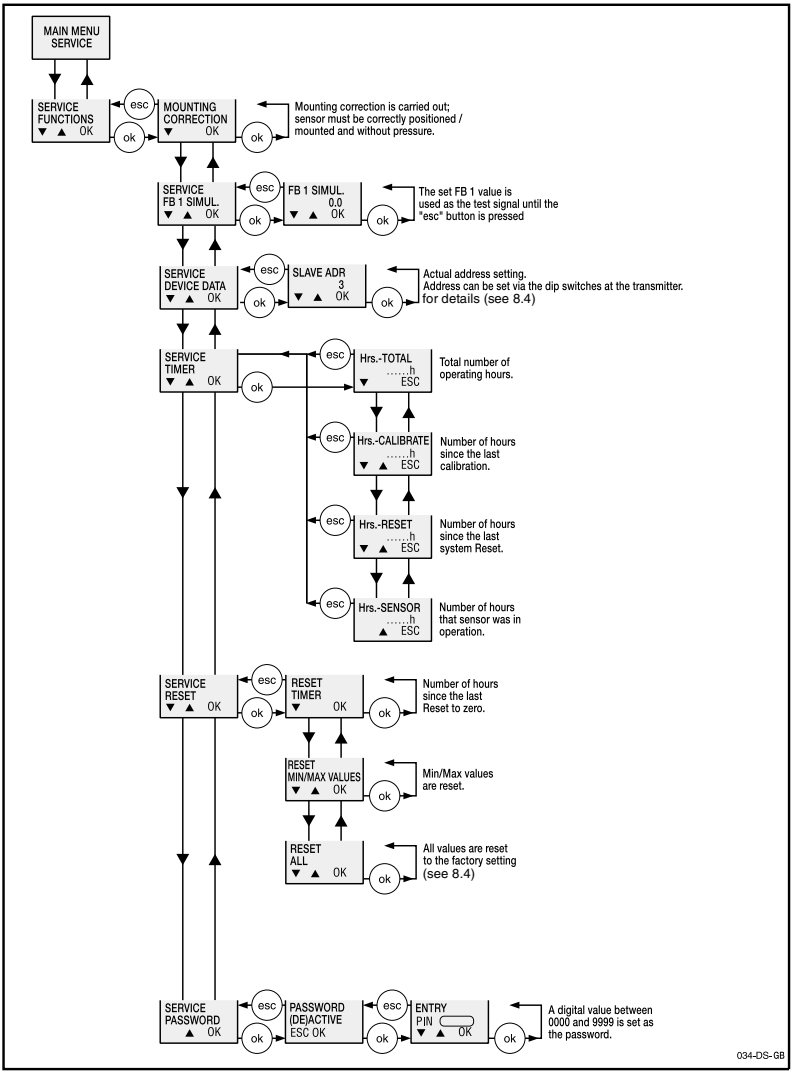


9.5.5 Main Menu: Language



2483586 04/2003

9.5.6 Main Menu: Service



2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

10 Diagnostics and Service

Attention

If a failure cannot be repaired, the transmitter must be switched off.The operator then must make sure, that it is only switched on again after the failure has been repaired.
Repairs should only be carried out by the manufacturer. All other repairs or modifications are unauthorized.

Important

The display may be attached and/or replaced by the user. Only displays which have been approved by Approval No. DMT 99 ATEX E 091 U. The material of the housing and display case must be the same. (see chapter 9.1)

The following error messages can appear on devices with displays (see chapter 6.1.3):

Error Code	Error	Error Correction Measures
E00	ROM-error	Return device to manufacturer
E01	Power supply error	Check power supply
E03	EEPROM communications error	Disconnect and reconnect power supply
E04	Sensor's temperature range was exceeded	Return sensor's temperature to specified limits
E06	Sensor recognition	Disconnect and reconnect power supply
E07	General communications error between the sensor and the control interface unit	Check the connection between the sensor and the control interface unit
E08	Error E^2PROM	send in transmitter for service

11 Disposal

Important

Please observe local guidlines and regulations when disposing of transmitters that are no longer serviceable.
Please turn any recycleable components in to the appropriate local organizations.

2483586 04/2003

12 PROFIBUS-PA-Profile

PROFIBUS-PA (PA = Process Automation) is a variant of the PROFIBUS DP (DP = Decentral Peripheral) which is widely used in manufacturing technology. PROFIBUS **(Pro**cess **F**ield **Bu**s) is an open communication system for automation industry and is used in its thousands all over the world. It is specified in the European standard EN 50170.

12.1 Transmission Technology

PROFIBUS PA has a special transmission technology and therefore complies with the requirements of process automation and manufacturing engineering. This transmission technology is defined in the international standard IEC 61158-2. The low transmission speed reduces the power loss in relation to the PROFIBUS-DP and therefore enables an intrinsically safe technique for use in hazardous areas.

12.2 Introduction

The actual PROFIBUS implementation for the IUT-1X is based on the profile definition for "Process Control Devices" in the version V3.0 of October 1999.
The pressure transmitter communicates as standard DP or DPV1 instrument. Cyclic as well as acyclic connections (master class 2) can be carried out. The following services are supported:

- initiate
- abort
- read
- write
- rw-data transport (via separate slot)

Profile-wise the Unitrans is a class B instrument. The device functions support all mandatory and some of the optional class B parameters. The PROFIBUS device model has the following configuration:

1 physical block

2 analog input functions block

1 pressure transducer block

With this configuration all standard and extended PROFIBUS-functions can be used

12.3 Reference Documents

Document Title	Rev.	Document Number
DIN-EN50170/2, Band 2/3 PROFIBUS	-	DIN EN50170/2:1997-07
Technical Guideline, PROFIBUS-DP, Extensions to EN50170	2.0	PNO-Order No. 2.082
PROFIBUS-PA, Profile for Process Control Devices	Oct., 1999	PNO-Order No. 3.042
PROFIBUS-DP, Manfred Popp, Hüthig Verlag	1. Auflage 98	ISBN 3 -7785-26 76-6

12.4 Expanded Device Type Code

Manufacturer's Identification Code:	WIKA	107

2483586 04/2003

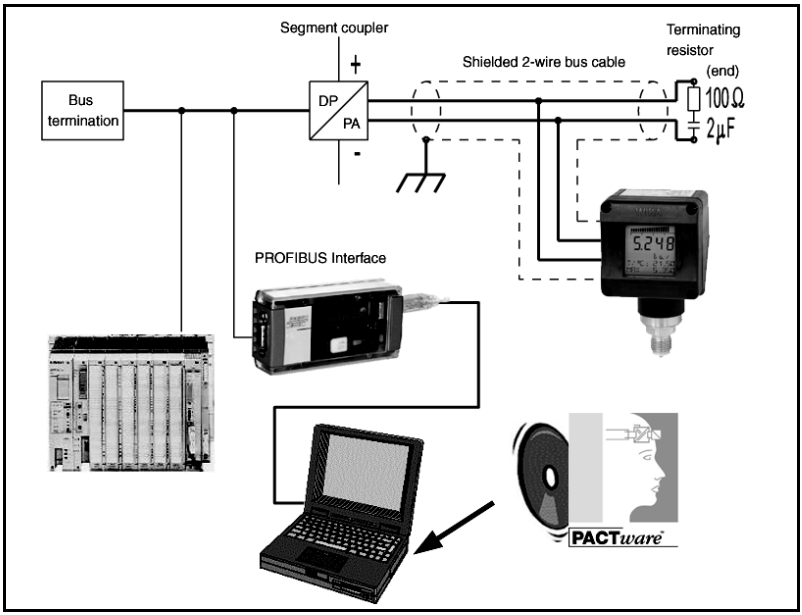
WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

13 Hardware Description

The Unitrans with PROFIBUS-PA is a fieldbus device which complies with the requirements of the PROFIBUS-PA specification for 31.25 Kbit/s (IEC 61158-2 or DIN 19245 or DIN EN 61158-2, transmission according to MBP (Manchester Coding, Bus Powered)). The power supply of the transmitter is provided via the PROFIBUS-PA (bus supply). The PROFIBUS-PA-transmitter has an FDE (Fault Disconnection Electronic), which guarantees an overload protection of the bus in case of an internal fault of the transmitter.

13.1 PROFIBUS-PA Hardware Topology

The bus topology can be carried out in many different ways so that line, star and delta structures as well as mixed forms are possible. All types of field devices such as measuring instruments, actuators, analyzers etc. can be connected.



The main advantages are:

- low installation costs
- further diagnostics functions with increased availability of system parts
- automatic actualisation of system documentation
- possible of system optimization during operation

Several PROFIBUS PA channels are usually connected with the fast PROFIBUS-DP by coupling units in an automation system. The process control system is also connected to this.
Both bus systems use a common protocol layer. The PROFIBUS-PA is therefore a

2483586 04/2003

"communication-compatible" expansion of the PROFIBUS-DP in the field.

13.2 Electrical Connection

The following must be considered when laying the bus cable:

- Use only shielded, two-wire cables
- Use only the recommended cable types
- Lay cable apart from cables with voltages higher than 60 V.
- Make sure to keep a possibly long distance to large electrical installations.
- The specifications only apply for properly executed installations.

Warning

Only approved bus terminations, branchers, cables etc. may be used in intrinsically safe circuits.

The specified interference immunity and spurious emission are only guaranteed as long as the bus shield is carried out properly.
This includes the connecting of shields with the metallic terminals of the UniTrans-PA but also the laying of shields to the terminal boxes, distributors, DP/PA couplers or DP/PA link.

A suitable potential equalizer must be provided to avoid potential differences between the individual system parts and thus endangering or affecting the function. Tips for dimensioning and mounting can be found in DIN VDE 0100 Part 410 and Part 540.

13.3 Properties of PROFIBUS-PA

PROFIBUS-PA enables bidirectional communication between a bus master and the field devices via a screened two-wire line. At the same time the power is supplied to the two-wire field devices on the same lines.

In addition to the EN standard 50170, the PNO (PROFIBUS User Organisation) has defined the functionality of the individual field device types in a so-called profile description. This profile defines minimum functional requirements and optional extensions. The device-internal ”Device Management” supplies the configuration tool of the control system with all the necessary basic information for finding the profile parameters. With this a parametering tool can operate all profile-conform devices no matter of what type and manufacturer.
Depending on the size of the system and thus the number of field devices the system must be implemented with one or more PROFIBUS-PA channels.

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

13.3.1 Bus Connection

Control is carried out via the central process supervisory control system or via a PC when the system is less complex.

In general the functionalities signal conversion DP-PA, bus supply and bus termination are combined in one coupling module. Depending on the number of PROFIBUS-PA field devices to be operated in the automation system and the required timing, a DP/PA coupler or a more powerful DP/PA link in the case of a more complex system is used.

For an optimal transmission an additional termination resistor must be connected at the remote end of the bus. When using the recommended bus cable, the theoretically possible maximum line length (sum of all line sections) is 1900 m. Also the voltage drop over the lines supplying the field devices must be considered during the planning.
Another point to consider is the current requirements of the individual users and voltage drop on the cable. The individual field devices can be connected at almost any point in the bus system.
DP/PA-couplers or DP/PA-Links are supplied by a power supply unit with SELV **(**Safety Extra Low Voltage). This power supply must have adequate reserve to be able to bridge temporary power cuts.

The maximum number of devices that can be connected to a bus channel depends on their current consumption and the respective application conditions.
When operating in the safe area, the couplers/links can feed up to 400 mA into the bus.

The number of devices which can be connected to a bus channel can be determined from the maximum current consumptions of the connected devices and the available current. A current reserve should be planned for safety reasons otherwise there is a risk that a defective device overloads the bus due to increased current consumption and the power supply and communication with all undisturbed users could break down.
The size of the reserves depends on the current increase in the event of an error specified by the manufacturer.

2483586 04/2003

14 Cyclic Data Communication

The cyclic data communication of PROFIBUS continuously updates the useful data (e.g. PLC-marker, measuring values). This can be a pressure or temperature value depending on the configuration. The measured value is divided into a floating point value (4 bytes) and the appropriate quality indicator (1 byte).

The cyclic data telegram has got the following structure:

Byte	Data	Access	Data Format
0,1,2,3	FB 1, rel. Index 10 (OUT-value)	r	PV-measuring value 32-Bit, floating decimal point (IEEE-754)
4	FB 1, rel. Index 10 (OUT-status)	r	Status byte: 0x80 = ok
5,6,7,8	FB 2, rel. Index 10 (OUT-value)	r	Temp. measuring value 32-Bit, floating decimal point (IEEE-754)
9	FB 2, rel. Index 10 (OUT-status)	r	Status byte: 0x80 = ok

The status is coded according to the specification "PROFIBUS-PA Profile for Process Control Devices".

The table above gives the maximum possible content of the cyclic data telegram. This telegram can be adapted to meet the requirements of the respective process. When not all the output values are needed the respective blocks can be removed from the cyclic telegram.

The PROFIBUS master must send the code **FREE PLACE** (0x00) for the non-active blocks to guarantee the correct structure of the cyclic telegram.

The configuration which is given in the following GSD-file is carried out when the master starts communicating with the slave.

14.1 Modified GSD-file "PA_9701.GSD"

```
Filename:          P A _ 9 7 0 1  . G S D
Function:          GSD-File for Unitrans-PA (Profile specific)
Revision:          1.0
Manufacturer:      WIKA Alexander Wiegand GmbH & Co. KG
                   Tel: ++49 +9372 132 0
Copyright:         (C) WIKA, 2001 All Rights Reserved.
GSD-Revisons:      1.0   2001-02-09

#Profibus_DP
GSD_Revision       = 1
Vendor_Name        = "WIKA";
Model_Name         = "Unitrans-PA";
Ident_Number       = 0x9701
Revision           = "1.0"
Protocol_Ident     = 0
Station_Type       = 0
FMS_supp           = 0
Hardware_Release   = "0.0"
Software_Release   = "0.0"
93.75_supp         = 1          especially for Pepperl & Fuchs segment coupler
```

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

31.25_supp	= 1	
45.45_supp	= 1	especially for Siemens
MaxTsdr_45.45	= 200	especially for Siemens
MaxTsdr_93.75	= 1000	especially for Pepperl & Fuchs segment coupler
MaxTsdr_31.25	= 100	minTsdr = 60
Repeater_Ctrl_Sig	= 0	
Implementation_Type	= "SPC41/ITEC"	
Bitmap_Device	= ""	
Bitmap_Diag	= ""	
Bitmap_SF	= ""	

Slave specific data

Freeze_Mode_supp	= 0	
Sync_Mode_supp	= 0	
Auto_Baud_supp	= 0	automatic Baudrate Search not supported
Set_Slave_Add_supp	= 1	SetSlaveAdr supported
Min_Slave_Intervall	= 100	in 100 µs

User specific parameterization data

User_Prm_Data_Len = 0

Modular Station

Modular_Station	= 0
Max_Module	= 3
Max_Input_Len	= 15
Max_Output_Len	= 0
Max_Data_Len	= 10
Max_Diag_Data_Len	= 16
Slave_Family	= 0
Module	= "Pressure" 0x42, 0x84, 0x08, 0x05, 0x00
EndModule	
Module	= "Temperature" 0x00, 0x42, 0x84, 0x08, 0x05
EndModule	
Module	= "Pressure+Temp." 0x42, 0x84, 0x08, 0x05, 0x42, 0x84, 0x08, 0x05
EndModule	

2483586.04/2003

15 Acyclic Services

Using the acyclic services you can read every readable parameter of the PROFIBUS profile or write every writable parameter with the appropriate access authorization. The parameters of the PROFIBUS and its attributes (read and/or write) are listed in the following chapters.

16 Key Words and Abbreviations

The following abbreviations are used in the profile description:

Variable:	Name of a parameter
Object Type:	Variable class
Data Type:	Type and structure of a variable (see PROFIBUS standards for additional info).In some cases also the allowed selections are listet in that column.
Storage class:	C Constant (Value is stored in ROM), N Non-volatile (Value is stored in EEPROM, no influence on static revision counter), D Dynamic (Value will be calculated on runtime by the slave, the storage will be in the RAM) S Static (Value is stored in EEPROM, static revision counter will be incremented, if writeaccess is carried out to this parameter)
Size:	Number or Bytes
ACC:	Access, allowed acces r read w write rw read/write
Parameter usage:	C will be used internally within the block
	O output to function block
	I Input parameter (from another block)
Type of transport:	a acyclic (this parameter is only available in acyclic communication) cyc cyclic (this parameter is available through cyclic communication, only possible in the function block)
Default Values:	The parameter will be set to this value when a factory reset is carried out.
Man/Opt.	m mandatory (according to the Profil definit ion of the PNO) o optional (according to the Profil definition of the PNO)
Indication types:	R Indication, remains active as long as the reason for the message exists.
	A Indication, will be automatically reset after 10s.
Misc:	ri relative index
	ai absolute index

2483586.04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

17 Device Management

Rel. Index	Variable	Object type	Data type	Store	Size	Acc.	Parameter usage-Type of transport	Default values	Man opt.
0	DIRECTORY_ OBJECT_HEADER	directory header	Array of unsigned 16	Cst	12	r	C/a	-	m
1	COMPOSITE_LIST_ DIRECTORY	Start_PB_Ref No_PB Start_TB_Ref No_TB Start_FB_Ref No_FB Slot/Index_PB No_PB_Param Slot/Index_TB No_TB_Param Slot/Index_FB1 No_FB1_Param Slot/Index_FB2 No_FB2_Param	Array of unsigned 16	Cst	28	r	C/a	-	m

17.1 Directory Object Header

E	Element Name	Data Type (Index)	Size	Values
1	Dir_ID	Unsigned 16-(6)	2	0; 0
2	Rev-Number	Unsigned 16-(6)	2	0; 1
3	Num_Dir_Obj	Unsigned 16-(6)	2	0; 1
4	Num_Dir_Entry	Unsigned 16-(6)	2	0; 7
5	First_Comp_List_Dir_Entry	Unsigned 16-(6)	2	0; 1
6	Num_Comp_List_Dir_Entry	Unsigned 16-(6)	2	0; 3

17.2 Composite List Directory Entry

E	Element Name	Data Type (Index)	Size	Values
1	Start_PB_Ref	Unsigned 16-(6)	2	1; 4
2	No_PB	Unsigned 16-(6)	2	0; 1
3	Start_TB_Ref	Unsigned 16-(6)	2	1; 5
4	No_TB	Unsigned 16-(6)	2	0; 1
5	Start_FB_Ref	Unsigned 16-(6)	2	1; 6
6	No_FB	Unsigned 16-(6)	2	0; 2
7	Slot/Index_PB			1; 140
8	No_PB_Param			0; 45
9	Slot/Index_TB			1; 70
10	No_TB_Param			0; 61
11	Slot/Index_FB1			1; 16
12	No_FB1_Param			0; 46
13	Slot/Index_FB2			2; 16
14	No_FB2_Param			0; 46

2483586 04/2003

18 Standard Parameters

18.1 Standard Parameter Description

Parameter	Description
ALARM_SUM	It contains the current states of the block alarms.
ALERT_KEY	It contains the identification number of the plant unit. It helps to identify the location of an event.
BATCH	This parameter is intended to be used in batch applications in line with IEC 61512 Part1. Only function blocks carry this parameter. There is no algorithm necessary within a function block. The batch parameter is necessary in a distributed fieldbus system to identify used and available channels, in addition to identify the current batch in case of alerts.
BLOCK_OBJECT	This object contains the characteristics of the blocks.
MODE_BLK	It contains the the current mode and the permitted and normal mode of the block.
ST_REV	A block has static parameters, that are not changed by the process. Values are assigned to this during the configuration or optimisation. The value of ST_REV must increase by 1 after every change of a static block parameter. This provides a check of the parameter revision.
STRATEGY	Grouping of function block. This can be used to group blocks.
TAG_DESC	Every block can be assigned a textual TAG description. The TAG_DESC is the address of the block. It must be unambiguous and unique in the fieldbus system.
TARGET_MODE	This parameter contains desired mode normally set by a control application or an operator.

2483586.04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

18.2 Standard Parameter Attributes

Rel. Index	Variable	Object type	Data type	Store	Size	Acc.	Parameter usage/Type of transport	Default values	Man opt.
0	BLOCK OBJECT	Record	DS-32	Cst	20	r	C/a	-	m
1	ST_REV	Simple	unsigned 16	N	2	r	C/a	0	m
2	TAG_DESC	Simple	Octetstring	S	32	r,w	C/a	32 x **	m
3	STRATEGY	Simple	unsigned 16	S	2	r,w	C/a	0	m
4	ALERT_KEY	Simple	unsigned 8	S	1	r,w	C/a	0	m
5	TARGET MODE	Simple	unsigned 8	S	1	r,w	C/a	-	m
6	MODE_BLK actual permitted normal	Record	DS-37 unsigned 8 unsigned 8 unsigned 8	 D Cst Cst	3	r	C/a	 8 - auto 8 - auto 8 - auto	m
7	ALARM_SUM Current Unacknowledged Unreported Disabled	Record	DS_42 Bitstring (16 Bits) Bitstring (16 Bits) Bitstring (16 Bits) Bitstring (16 Bits)	D	8	r	C/a	 0, 0, 0, 0,	m
8	BATCH Batch_ID RUP Operation Phase	Structure	DS-67	S	10	r,w	C/a	 0, 0, 0, 0,	m

18.3 Standard Parameter View Object Table

Relative Index	Parameter Mnemonic	VIEW_1	VIEW_2	VIEW_3	VIEW_4	VIEW_5
1	ST_REV	2				
2	TAG_DESC					
3	STRATEGY					
4	ALERT_KEY					
5	TARGET MODE					
6	MODE_BLK					
7	ALARM_SUM					
-	Overall sum of bytes in View object					

2483586 04/2003

19 Physical Block

Physical block parameter description

Parameter	Description
DEVICE_CERTIFICATION	Certifications of the field device, e.g. IS certificate.
DESCRIPTOR	User-definable text (a string) to describe the device within the application.
DEVICE_ID	Manufacturer specific identification of the device.
DEVICE_MAN_ID	Id-code of the manufacturer of the device
DEVICE_SER_NUM	Serial number of the device
DIAGNOSIS	Detailed information of the device, bitwise coded. If MSB og byte4 is set to 1, then more diagnosis information is available in the DIAGNOSIS_EXTENSION parameter.
DIAGNOSIS_EXTENSION	Additional manufactuer specific information of the device, bitwise coded.
DIAGNOSIS_MASK	Definition of supported DIAGNOSIS bits. 0 = not supp. 1 = supp.
DIAGNOSIS_MASK_EXT.	Definition of supported DIAGNOSIS_EXTENSION bits. (0 = not supp. / 1 = supp.)
FACTORY_RESET	Value = 1 is the command for resetting device to default values, if the device has bus address the setting of bus address remains unchanged. Value = 2506 is the command for a warm start of the device. All parametrisation remains unchanged. Value = 2712 resets the bus address only. The Ident_Number parameter is not affected by the Factory_Reset. Other manufacturing specific commands for other reset results are possible.
HARDWARE_REVISION	Revision number of the hardware of the device.
HW_WRITE_PROTECTION	Indicates the position of a hardware jumper which protects all acyclic write access to all writeable parameters of a device. 0 – Unprotected 1 – Protected (i.e. acyclic write service of all parameters is refused i.e. access is denied)
IDENT_NUMBER_SELECTOR	Each PROFIBUS-DP /EN50170/ device must have an Ident_Number provided by the PNO. The UniTrans makes use of the profile specific Ident_Number (SELECTOR=0)

2483586.04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

LOCAL_OP_ENABLE	Local operation enable. 0 = disabled, (Local operation not allowed, i.e. change of FB MODE from host device only) 1 = enabled, (Local operation is allowed) The operation of the host has higher priority than the local terminal one. If communication is interrupted longer than 30 sec. local operation will be enabled automatically. A communication failure is defined here as absence of cyclic and acyclic communication for the specified time period. If LOCAL_OP_ENA parameter is equal 0 (disabled) and the communication is working again then the device switches back to remote operation.
WRITE_LOCKING	Storage location for a password. This password may be read and written by a tool to perform a write protection strategy. 0 - acyclic write service of all parameters, except this WRITE_LOCKING one, are refused, i.e. access is denied 1 - 2456 reserved by PNO 2457 is the default value and means all writeable parameters of a device are writeable. 2458 - 65535 manufacturer specific
SOFTWARE_REVISION	Revision number of the software of the field device
DEVICE_INSTALL_DATE	Date of installation
DEVICE_MESSAGE	User definable text to describe the device within the application or in the plant

2483586 04/2003

19.1 Physical Block Manufacturer Specific Parameter Description

Parameter	Description
LANGUAGE	Language of the displayed text. 0 = english 1 = german 2 = french 3 = spanish 4 = italian
TOT_HRS_USED	Total count of the transmitters operating hours
TOT_HRS_CALIB	Total count of hours since last calibration. This parameter is set to 0 if one of the following parameters has changed.: FB1: PV_SCALE & OUT_SCALE, TPB: ZERO_OFFS_ADJUSTMENT.
TOT_HRS_RESET	Total count of hours since last reset.

19.2 Physical Block Parameter Attributes

Rel. Index	Variable	Object type	Data type	Store	Size	Acc.	Parame-ter usage/ Type of transport	Default values	Man opt.	Slot	abs. Index
0-7	Standard Parameters								m	1	140-147
8	SOFTWARE_REVISION	Simple	Octetstring	Cst	16	r	C/a	-	m	1	148
9	HARDWARE_REVISION	Simple	Octetstring	Cst	!&	r	C/a	-	m	1	149
10	DEVICE_MAN_ID	Simple	unsigned 16	Cst	2	r	C/a	-	m	1	150
11	DEVICE_ID	Simple	Octetstring	Cst	16	r	C/a	-	m	1	151
12	DEVICE_SER_NUM	Simple	Octetstring	Cst	16	r	C/a	-	m	1	152
13	DIAGNOSIS	Simple	Octetstring	D	4	r	C/a	-	m	1	153
14	DIAGNOSIS_EXTENSION	Simple	Octetstring	D	6	r	C/a	-	o	1	154
15	DIAGNOSIS_MASK	Simple	Octetstring 0x10980000	Cst	4	r	C/a	-	m	1	155
16	DIAGNOSIS_MASK_EXT.	Simple	Octetstring 0x000000000000	Cst	6	r	C/a	-	o	1	156
17	DEVICE_CERTIFICATION	Simple	Octetstring	N	16	r,w	C/a	-	o	1	157
18	WRITE_LOCKING	Simple	Unsigned16	N	2	r,w	C/a	2457	o	1	158
19	FACTORY_RESET	Simple	Unsigned16 35076: Factory reset 1: PNO default values 2506: Warm-start 2712: Reset Busadr.	S	2	w	C/a	-	o	1	159
20	DESCRIPTOR	Simple	Octetstring	S	32	r,w	C/a	-	m	1	160
21	DEVICE_MESSAGE	Simple	Octetstring	S	32	r,w	C/a	-	m	1	161
22	DEVICE_INSTALL_DATE	Simple	Octetstring	S	16	r,w	C/a	-	m	1	162
23	LOCAL_OP_ENABLE	Simple	unsigned 8 1=enabled 0=disabled	N	1	r,w	C/a	1	m(B)	1	163
24	IDENT_NUMBER_SELECTOR	Simple	unsigned 8 0=Profile	S	1	r,w	C/a	0	m(B)	1	164

2483586 04/2003

25	HARDW_WR_PROTECT	Simple	unsigned 8 0=unprotected 1=protected	D	1	r	C/a	-	o	1	165
26-32	reserved PNO									1	166-172

19.3 Physical Block Manufacturer Specific Parameter Attributes

Rel. Index	Variable	Object type	Data type	Store	Size	Acc.	Parameter usage/ Type of transport	Default values	Man opt.	Slot	abs. Index
40	LANGUAGE	Simple	unsigned 8 0 = english 1 = german 2 = french 3 = spanish 4 = italian	N	1	r,w	C/a	-		1	180
41	TOT_HRS_USED	Simple	unsigned 32	D	4	r	C/a	-		1	181
42	TOT_HRS_CALIB	Simple	unsigned 32	N	4	r	C/a	-		1	182
43	TOT_HRS_RESET	Simple	unsigned 32	N	4	r,w	C/a	-		1	183

19.4 Physical Block Object

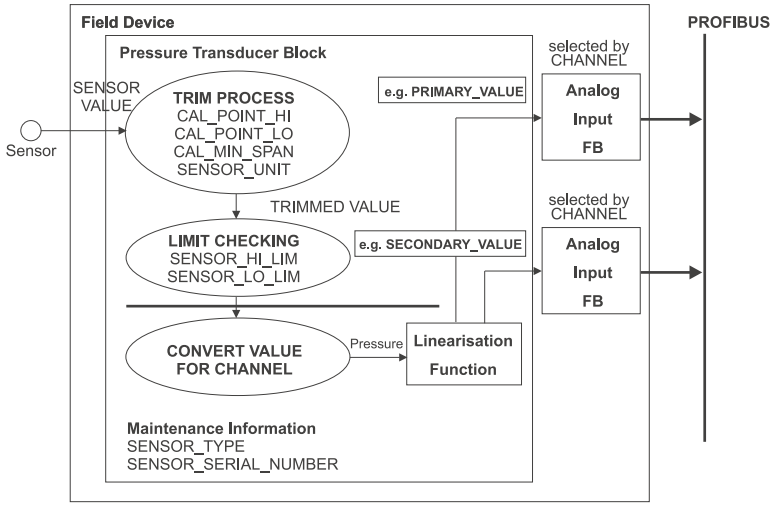
E	Element Name	Data Type (Index)	Size	Value	Notes
1	Reserved	Unsigned 8 - (5)	1	250	
2	Block type	Unsigned 8 - (5)	1	1	Physical block
3	Parent Class	Unsigned 8 - (5)	1	1	Transmitter
4	Class	Unsigned 8 - (5)	1	250	reserved
5	DD Reference	Unsigned 32 - (7)	4	0	for use in the future.
6	DD Revision	Unsigned 16 - (6)	2	0	for use in the future.
7	Profile	Unsigned 16 - (6)	2	64; 2	Number, Class B
8	Profile Revision	Unsigned 16 - (6)	2	3;0	
9	Execution Time	Unsigned 8 - (5)	1	0	
10	Number of Parameter	Unsigned 16 - (6)	2	0;45	incl. View_1
11	Index of VIEW_1	Unsigned 16 - (6)	2	01; 184	(Slot-Index)
12	Number of View List	Unsigned 8 - (5)	1	1	

19.5 Physical Block View Object Table

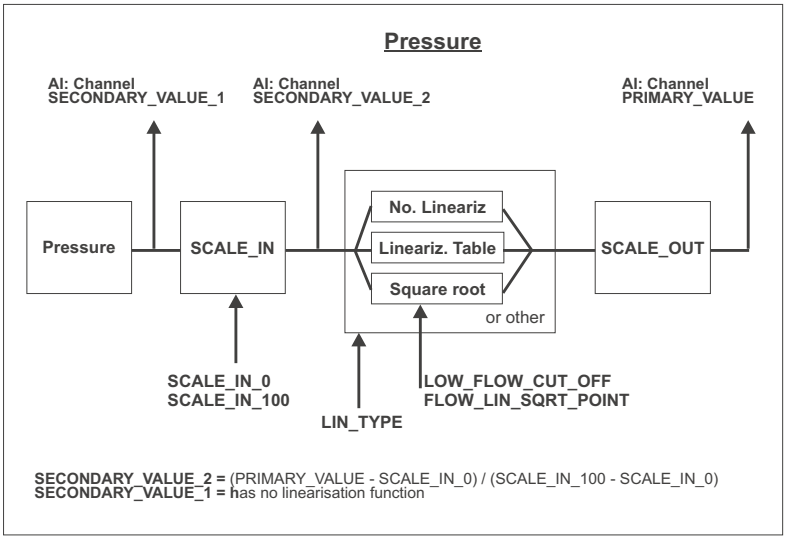
Relative Index	Parameter Mnemonic	VIEW_1	VIEW_2	VIEW_3	VIEW_4	VIEW_5
13	DIAGNOSIS	4				
-	Overall sum of bytes in View object (+13 standard parameter bytes)	4 + 13				

2483586 04/2003

20 Transducer Block Pressure



Linearisation Functions



2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

20.1 Pressure TB Standard Parameter Description

see 17.1 standard parameter description

20.2 Pressure TB Standard Parameter Attributes

see 17.2 standard parameter attributes

20.3 Pressure TB Parameter Description

Parameter	Description
CAL_MIN_SPAN	This parameter contains the minimum calibration span value allowed. This minimum span information is necessary to ensure that when calibration is done, the two calibrated points (high and low) are not too close together.
CAL_POINT_HI	This parameter contains the highest calibrated value. For calibration of the high limit point you give the low measurement value (pressure) to the sensor and transfer this point as HIGH to the transmitter.
CAL_POINT_LO	This parameter contains the lowest calibrated value. For calibration of the high limit point you give the low measurement value (pressure) to the sensor and transfer this point as LOW to the transmitter.
LIN_TYPE	See General Requirements
MAX_SENSOR_VALUE	Holds the maximum process SENSOR_VALUE. A write access to this parameter resets to the actual value. The unit is defined in SENSOR_UNIT.
MIN_SENSOR_VALUE	Holds the minimum process SENSOR_VALUE. A write access to this parameter resets to the actual value. The unit is defined in SENSOR_UNIT.
MAX_TEMPERATURE	Holds the maximum temperature. A write access to this parameter resets to the actual value.
MIN_TEMPERATURE	Holds the minimum temperature. A write access to this parameter resets to the actual value.
PRIMARY_VALUE	This parameter contains the measured value and status available to the function block.
PRIMARY_VALUE_TYPE	This parameter contains the application of the pressure device. 0: Pressure 1: Flow (not valid) 2: Level 3: Volume 4..127: reserved 128: manufacturer specific
PRIMARY_VALUE_UNIT	This parameter contains the engineering units index code for the primary value. The minimum set of unit codes for pressure is: kPa (1133), bar (1137), psi (1141), inHg (1155). If the device supports flow or level measurements the corresponding units have to be supported, too. The minimum set of unit codes for volume flow is: m^3/h (1349), L/s (1351), CFM - cubic feet per minute (1357), GMP - US gallon per minute (1363). The minimum set of unit codes for mass flow is: kg/s (1322), lb/s (1330). The minimum set of unit codes for level is: % (1342), m (1010), ft (1018). The coding is in accordance to the table of Units Codes given in the General Requirements.
PROCESS_CONNECTION_ MATERIAL	This parameter contains the index code for the material of the process connection. The coding is in accordance to the table of Material Codes given in the General Requirements.

2483586 04/2003

SCALE_IN	This is the input conversion of the Pressure into SECONDARY_VALUE_2 using the high and low scale. The related unit is the SECONDARY_VALUE_1_UNIT.
SCALE_OUT	This is the output conversion of the linearized value using the high and low scale. The related unit is the PRIMARY_VALUE_UNIT. It is in accordance to the table of Units Codes given in the General Requirements.
SECONDARY_VALUE_1	This parameter contains the Pressure value and status available to the Function Block.
SECONDARY_VALUE_1_UNIT	This parameter contains the pressure units of the SECONDARY_VALUE_1. The minimum set of unit codes for pressure is: kPa (1133), bar (1137), psi (1141), inHg (1155). It is in accordance to the table of Units Codes given in the General Requirements.
SECONDARY_VALUE_2	This parameter contains the measured value after input scaling and status available to the Function Block. The related unit is the SECONDARY_VALUE_UNIT_2.
SECONDARY_VALUE_2_UNIT	This parameter contains the units of the SECONDARY_VALUE_2 defined by the manufacturer. It is in accordance to the table of Units Codes given in the General Requirements.
SENSOR_DIAPHRAGM_ MATERIAL	This parameter contains the index code for the material of the diaphragm, which comes in contact with the material. The index code is described in the table "Sensor_Diaphragm_Material".
SENSOR_FILL_FLUID	This parameter contains the index code for the filling fluid inside the sensor. The index code is described in the table "Sensor_Fill_Fluid".
SENSOR_HI_LIM	This parameter contains the sensor upper limit value.
SENSOR_LO_LIM	This parameter contains the sensor lower limit value.
SENSOR_MAX_STATIC_ PRESSURE	This parameter contains the maximum static pressure value for the sensor. Unit derives from SENSOR_UNIT.
SENSOR_O_RING_MATERIAL	This parameter contains the index code for the material of the o-ring between diaphragm and process connection. The index code is described in the table "Sensor_O_Ring_Material".
SENSOR_SERIAL_NUMBER	This parameter contains the sensor serial number.
SENSOR_TYPE	This parameter contains the index code for the sensor type described in the manufacturer's specific table.
SENSOR_UNIT	This parameter contains the engineering units index code for the calibration values. SENSOR_UNIT must be a subset of the interchangeable part of the pressure unit.
SENSOR_VALUE	This parameter contains the raw sensor value. The uncalibrated measurement value from the sensor.
TAB_ENTRY	The index parameter identifies which element of the table is in the X_VALUE and Y_VALUE parameter currently
TAB_X_Y_VALUE	The X_Y_VALUE parameter contains one value couple of the table
TAB_MIN_NUMBER	For device internal reasons (e.g. for calculation), sometimes it is necessary to use a certain number of table values in minimum. This number is provided in the TAB_MIN_NUMBER parameter.

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

TAB_MAX_NUMBER	TAB_MAX_NUMBER is the maximum size (number of X_VALUE and Y_VALUE values) of the table in the device.
TAB_OP_CODE	The modification of a table in a device influences the measurement or actuation algorithms of the device. Therefore an indication of a starting and an end point is necessary. The TAP_OP_CODE controls the transaction of the table. 0: not initialised 1: new operation characteristic, first value (TAB_ENTRY=1), old curve cleared 2: reserved 3: last value, end of transmission, check table, swap the old curve with the new curve, actualise ACTUAL_NUMBER. 255: clear table(only if WRITE_LOCKING=9478)
TAB_STATUS	It is common to provide a plausibility check in the device. The result of this check is indicated in the TAB_STATUS parameter. 0: not initialised 1: good (new table is valid) 2: not monotonous increasing (old table is valid) 3: not monotonous decreasing (old table is valid) 4: not enough values transmitted (old table is valid) 5: too many values transmitted (old table is valid) 6: gradient of edge too high (old table is valid) 7: Values not excepted (old values are valid) 8 - 127 reserved > 128 manufacturer specific
TAB_ACTUAL_NUMBER	Contains the actual numbers of entries in the table. It shall be calculated after the transmission of the table is finished.
LIN_TYPE	Type of linearisation. 0 = no linearisation (mandatory) 1 = linearisation table (optional) 20 = cylindrical lying container (optional)
TEMPERATURE_UNIT	This parameter contains the units of the temperature. The minimum set of unit codes for volume flow is: K (1000), °C (1001), °F (1002). The coding is in accordance to the table of Units Codes given in the General Requirements.
TRIMMED_VALUE	This parameter contains the sensor value after the trim processing. Unit derives from SENSOR_UNIT.

2483586 04/2003

20.4 Pressure TB Manufacturer Specific Parameter Description

Parameter	Description
ZERO OFFSET_ ADJUSTMENT	Actual measurement value is the new zero. A write access to this parameter executes the adjustment.

20.5 Pressure TB Parameter Attributes

Rel. Index	Variable	Object type	Data type	Store	Size	Access	Parameter usage Type of transport	Default Values	Man opt.	Slot	abs. Index
0-7	Standard Parameters								m	1	70-77
8	SENSOR_VALUE	Simple	Float	D	4	r	C/a	0.0	m	1	78
9	SENSOR_HI_LIM	Simple	Float	N	4	r	C/a	-	m	1	79
10	SENSOR_LO_LIM	Simple	Float	N	4	r	C/a	-	m	1	80
11	CAL_POINT_HI	Simple	Float	N	4	r,w	C/a	SENS_HI_LIM	m	1	81
12	CAL_POINT_LO	Simple	Float	N	4	r,w	C/a	SENS_LO_LIM	m	1	82
13	CAL_MIN_SPAN	Simple	Float	N	4	r	C/a	0.05 x SENS_HI_LIM	m	1	83
14	SENSOR_UNIT	Simple	unsigned16 Pressure: 1137 = bar	N	2	r,w	C/a	1137 - bar	m	1	84
15	TRIMMED_VALUE	Record	DS-33 not used	D	5	r	C/a	-	m	1	85
16	SENSOR_TYPE	Simple	unsigned16 1 - relative 128 - abs. 250 -not used	N	2	r	C/a	250	m	1	86
17	SENSOR_SERIAL_ NUMBER	Simple	unsigned32	N	4	r	C/a	-	m	1	87
18	PRIMARY_VALUE	Record	DS-33	D	5	r	C/a	0.0	m	1	88
19	PRIMARY_VALUE_ UNIT	Simple	unsigned16 1342=%	N	2	r,w	C/a	1342 - %	m	1	89
20	PRIMARY_VALUE_ TYPE	Simple	unsigned16 3 = Volume	N	2	r	C/a	3 - Volume	m	1	90
21	SENSOR_ DIAPHRAGM _MATERIAL	Simple	unsigned16	S	2	r	C/a	-	o	1	91
22	SENSOR_FILL_ FLUID	Simple	unsigned16	S	2	r	C/a	-	o	1	92

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

23	SENSOR_MAX_ STATIC_ PRESSURE	Simple	Float	N	4	r	C/a	-	o	1	93
24	SENSOR_O_RING _MATERIAL	Simple	unsigned16	S	2	r	C/a	-	o	1	94
25	PROCESS_ CONNECTION _TYPE	Simple	unsigned16	S	2	r	C/a	-	o	1	95
26	PROCESS_ CONNECTION _MATERIAL	Simple	unsigned16	S	2	r	C/a	-	o	1	96
27	TEMPERATURE	simple	DS-33	D	5	r	C/a	0.0	o	1	97
28	TEMPERATURE_ UNIT	simple	unsigned16 1001 = °C 1002 = °F	S	2	r,w	C/a	1001 - °C	o	1	98
29	SECONDARY_ VALUE_1	Record	DS-33	D	5	r	C/a	0.0	o(B)	1	99
30	SECONDARY_ VALUE_1_UNIT	Simpel	Unsigned16 1137=bar 1138=mbar 1141=psi 1130=Pa 1136=HPA 1132=MPA 1155=InHg	N	2	r,w	C/a	1137 - bar	o(B)	1	100
31	SECONDARY_ VALUE_2	Record	DS-33	D	5	r	C/a	0.0	o(B)	1	101
32	SECONDARY_ VALUE_2_UNIT	Simple	Unsigned16 1997=none	N	2	r,w	C/a	1997 - none	o(B)	1	102
33	LIN_TYPE	Simple	Unsigned8 0 = no lin-earisation 1 = linearisa-tion table	S	1	r,w	C/a	0 - no. lin.	m(B)	1	103
34	SCALE_IN	Array	Float 100% - value 0% - value	S	8	r,w	C/a	-	o(B)	1	104
35	SCALE_OUT	Array	Float 100% - value 0% - value	S	8	r,w	C/a	-	o(B)	1	105
38	TAB_ACTUAL_ NUMBER	Simple	Unsigned8	N	1	r	C/a	-	o(B)	1	108
39	TAB_ENTRY	Simple	Unsigned8	D	1	r,w	C/a	1	o(B)	1	109
40	TAB_MAX_ NUMBER	Simple	Unsigned8 actual = 32	N	1	r	C/a	-	o(B)	1	110
41	TAB_MIN_ NUMBER	Simple	Unsigned8 actual = 2	N	1	r	C/a	-	o(B)	1	111
42	TAB_OP_CODE	Simple	Unsigned8	D	1	r,w	C/a	0	o(B)	1	112
43	TAB_STATUS	Simple	Unsigned8	D	1	r	C/a	0	o(B)	1	113

2483586 04/2003

44	TAB_X_Y_VALUE	Array*	Float x-value y-value	D	8	r,w	C/a	-	o(B)	1	114
45	MAX_SENSOR_ VALUE	simple	float	N	4	r,w	C/a	-	o(B)	1	115
46	MIN_SENSOR_ VALUE	simple	float	N	4	r,w	C/a	-	o(B)	1	116
47	MAX_ TEMPERATURE	simple	float	N	4	r,w	C/a	-	o(B)	1	117
48	MIN_ TEMPERATURE	simple	float	N	4	r,w	C/a	-	o(B)	1	118
49-58	reserved PNO									1	119-128
59	ZERO_OFFSET_ ADJUSTEMENT	simple	float	N	4	r,w	C/a	0.0	ms	1	129

* first 4 bytes X_VALUE, second 4 bytes Y_VALUE

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

20.6 Pressure TB Block Object

E	Element Name	Data Type (Index)	Size	Value	Notes
1	Reserved	Unsigned 8 - (5)	1	250	
2	Block type	Unsigned 8 - (5)	1	3	Transducer block
3	Parent Class	Unsigned 8 - (5)	1	1	Pressure
4	Class	Unsigned 8 - (5)	1	5	Pressure+Level
5	DD Reference	Unsigned 32 - (7)	4	0	for use in the future.
6	DD Revision	Unsigned 16 - (6)	2	0	for use in the future.
7	Profile Class	Unsigned 16 - (6)	2	64; 2	Number, Class B
8	Profile Revision	Unsigned 16 - (6)	2	3;0	
9	Execution Time	Unsigned 8 - (5)	1	0	
10	Number of Parameter	Unsigned 16 - (6)	2	0; 60	incl. View_1
11	Index of VIEW_1	Unsigned 16 - (6)	2	1; 130	(Slot;Index)
12	Number of View List	Unsigned 8 - (5)	1	1	

20.7 Pressure TB View Object

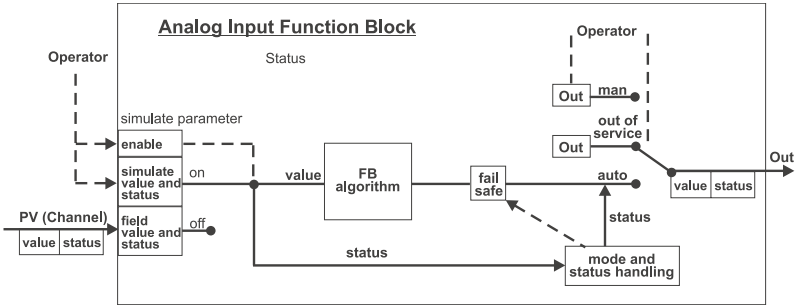
Relative Index	Parameter Mnemonic	VIEW_1	VIEW_2	VIEW_3	VIEW_4	VIEW_5
18	PRIMARY_VALUE	5				
-	Overall sum of bytes in View-Object (+13 Standard parameter bytes)	5 + 13				

20.8 Assignment of Dynamic Variables for Pressure Devices

Application	Transducer output			
PRIMARY_ VALUE_TYPE	PRIMARY _VALUE	SECONDARY_VALUE_1	SECONDARY_VALUE_2	TEMPERATURE
Pressure	Pressure	-	-	Temperature
Level	Level	Pressure	-	Temperature
Volume	Volume	Pressure	Level	Temperature

2483586 04/2003

21 Analog Input FB 1 (Pressure)



21.1 Analog Input FB 1 Standard Parameter Description

see 17.1 "Standard parameter description".

21.2 Analog Input FB 1 Standard Parameter Attributes

see 17.2 "Standard parameter attributes".

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

21.3 Analog Input FB 1 Process parameter

Parameter	Description
CHANNEL	Reference to the active transducer block which provides the measurement value to the function block.
FSAVE_TYPE	Defines reaction of device, if a fault is detected. The calculated ACTUAL MODE remains in AUTO respectively. 0 = value FSAVE_VALUE is used as OUT Status - Uncertain_Substitute Value, 1 = use of stored last valid OUT value Status - Uncertain_LastUsableValue if there is no valid value available, then UNCERTAIN-Inital_Value 2 = OUT has the wrong calculated value and status Status - BAD_* (* as calculated)
OUT	Process Variable
PV_SCALE	Conversion of the process variable into percent using the high and low scale values, engineering units code, and number of digits to the right of the decimal point.
OUT_SCALE	Scale of the process variable. It contains the values of the lower limit and upper limit effective range, engineering units code, and number of digits to the right of the decimal point.
PV_FTIME	Filter time of the process variable.

21.4 Analog Input FB 1 Alarm Parameter

Parameter	Description
ALARM_HYS	Hysteresis (effective to all limits).
HI_ALM	State of the upper limit of warnings. It contains the state of the upper limit of an alarm and the relating time stamp. Here time stamp is 1st January 1992.
HI_HI_ALM	State of the upper limit of alarms. It contains the state of the upper limit of an alarm and the relating time stamp. Here time stamp is 1st January 1992.
HI_HI_LIM	Value of upper limit of alarms. Upper limit value for alarms with engineering unit. If the measured value is equal to or higher than this value the state bit in the state byte of OUT and in the FP parameter ALARM_SUM have to change to 1.
HI_LIM	Value of upper limit of warnings. Upper limit value for warnings with engineering unit. If the measured value is equal to or higher than this value the state bit in the state byte of OUT and in the FP parameter ALARM_SUM have to change to 1.
LO_ALM	State of the lower limit of warnings. It contains the state of the lower limit of an alarm and the relating time stamp. Here time stamp is 1st January 1992.
LO_LIM	Value of lower limit of warnings. Lower limit value for warnings with engineering unit. If the measured value is equal to or lower than this value the state bit in the state byte of OUT and in the FP parameter ALARM_SUM have to change to 1.
LO_LO_ALM	State of the lower limit of alarms. It contains the state of the lower limit of an alarm and the relating time stamp. Here time stamp is 1st January 1992.
LO_LO_LIM	Value of lower limit of alarms. Lower limit value for alarms with engineering unit. If the measured value is equal to or lower than this value the state bit in the state byte of OUT and in the FP parameter ALARM_SUM have to change to 1.
SIMULATE	For comissioning and test purposes the input from the transducer block can be disconnected, and the input value and status can be set by the parameter Simulate.

2483586 04/2003

21.5 Analog Input FB 1 Parameter Attributes

Rel. Index	Variable	Object type	Data type	Store	Size	Access	Parameter usage- Type of transport	Default Values	Man opt.	Slot	abs. Index
0-8	Standard Parameters								m	1	16-24
10	OUT	record	DS-33	D	5	r	O/Cyc		m	1	26
11	PV_SCALE 100%-value 0%-value	array	float	S	8	r,w	C/a	 100% 0%	m	1	27
12	OUT_SCALE 100%-value 0%-value Unit Decimal Point	record	DS-36 float float unsigned16 unsigned8	S	11	r,w	C/a	 100% 0% 1342 - % 0	m		28
13	LIN_TYPE	simple	unsigned8 0 = no linearis.	S	1	r,w	C/a	0	m	1	29
14	CHANNEL	simple	unsigned16 Pressure: PV=0x0108 SV1=0x011D SV2=0x011F	S	2	r,w	C/a	0x0108	m	1	30
16	PV_FTIME	simple	float 0, 1, 5, 20, 40s	S	4	r,w	C/a	0s	m	1	32
17	FSAVE_TYPE	simple	unsigned8 1 - last out val.	S	1	r,w	c/a	1	o	1	33
19	ALARM-_HYS	simple	float	S	4	r,w	C/a	0,5% of range	m	1	35
21	HI_HI_LIM	simple	float	S	4	r,w	C/a	SEN_HI_LIM + 5%	m	1	37
23	HI_LIM	simple	float	S	4	r,w	C/a	SENS_HI_LIM	m	1	39
25	LO_LIM	simple	float	S	4	r,w	C/a	SENS_LO_LIM	m	1	41
27	LO_LO_LIM	simple	float	S	4	r,w	C/a	SENS_LO_LIM -2%	m	1	43
30	HI_HI_ALM Unacknowledge Alarm State Time_Stamp Subcode Value	record	DS-39 Unsigned8 Unsigned8 Date Unsigned16 Float	D	16	r	C/a	 0 0 0 0 0	o	1	46
31	HI_ALM	record	DS-39	D	16	r	C/a	0, 0, 0, 0, 0, 0	o	1	47
32	LO_ALM	record	DS-39	D	16	r	C/a	0, 0, 0, 0, 0, 0	o	1	48
33	LO_LO_ALM	record	DS-39	D	16	r	C/a	0, 0, 0, 0, 0, 0	o	1	49
34	SIMULATE Status Value En/Disable	record	DS-50 Unsigned8 float Unsigned8	S	6	r,w	C/a	 0 0 0 - disable	m	1	50
36-44	reserved PNO									1	52-60

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

21.6 Analog Input FB 1 Block Object

E	Element Name	Data Type (Index)	Size	Value	Notes
1	Reserved	Unsigned 8 - (5)	1	250	
2	Block object	Unsigned 8 - (5)	1	2	Function block
3	Parent Class	Unsigned 8 - (5)	1	1	Input
4	Class	Unsigned 8 - (5)	1	1	Analog input
5	DD Reference	Unsigned 32 - (7)	4	0	for use in the future
6	DD Revision	Unsigned 16 - (6)	2	0	for use in the future
7	Profile	Unsigned 16 - (6)	2	64; 2	
8	Profile Revision	Unsigned 16 - (6)	2	3; 0	Number, Class B
9	Execution Time	Unsigned 8 - (5)	1	0	
10	Number_of_parameters	Unsigned 16 - (6)	2	0;45	incl. View_1
11	Adress of VIEW_1	Unsigned 16 - (6)	2	1; 61	(Slot-Index)
12	Number of Views	Unsigned 8 - (5)	1	1	

21.7 Analog Input FB 1 View Object

Relative Index	Parameter Mnemonic	VIEW_1	VIEW_2	VIEW_3	VIEW_4	VIEW_5
10	OUT	5				
-	Overall sum of bytes in View-Object (+13 Standard parameter bytes)	5 + 13				

2483586 04/2003

22 Analog Input FB 2 (Temperature)

Analog input function block standard parameter description
see chapter 17.1 standard parameter description.

22.1 Analog Input FB 2 Standard Parameter Attributes

see chapter 17.2 standard parameter attributes.

22.2 Analog Input FB 2 Process Parameter

see chapter 20.3

22.3 Analog Input FB 2 Alarm Parameter

see chapter 20.4

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

22.4 Analog Input FB 2 Parameter Attributes

Rel. Index	Variable	Object type	Data type	Store	Size	Access	Parameter usage- Type of transport	Default Values	Man opt.	Slot	abs. Index
0-8	Standard Parameters								m	2	16-24
10	OUT	record	DS-33	D	5	r	O/Cyc		m	2	26
11	PV_SCALE 100%-value 0%-value	array	float	S	8	r,w	C/a	 100 0	m	2	27
12	OUT_SCALE 100%-value 0%-value Unit Decimal Point	record	DS-36 float float unsigned16 unsigned8	S	11	r,w	C/a	 100 0 1001 - °C 0	m	2	28
13	LIN_TYPE	simple	unsigned8 0 = no linearis.	S	1	r,w	C/a	0	m	2	29
14	CHANNEL	simple	unsigned16 Temperature: 0x011B	S	2	r,w	C/a	0x011B	m	2	30
16	PV_FTIME	simple	float 0, 1, 5, 20, 40s	S	4	r,w	C/a	0s	m	2	32
17	FSAVE_TYPE	simple	unsigned8 1 - last out val.	S	1	r,w	c/a	1	o	2	33
19	ALARM-_HYS	simple	float	S	4	r,w	C/a	0,5% of range	m	2	35
21	HI_HI_LIM	simple	float	S	4	r,w	C/a	105	m	2	37
23	HI_LIM	simple	float	S	4	r,w	C/a	100	m	2	39
25	LO_LIM	simple	float	S	4	r,w	C/a	0	m	2	41
27	LO_LO_LIM	simple	float	S	4	r,w	C/a	-2	m	2	43
30	HI_HI_ALM Unacknowledge Alarm State Time_Stamp Subcode Value	record	DS-39 Unsigned8 Unsigned8 Date Unsigned16 Float	D	16	r	C/a	 0 0 0 0 0	o	2	46
31	HI_ALM	record	DS-39	D	16	r	C/a	0, 0, 0, 0, 0, 0	o	2	47
32	LO_ALM	record	DS-39	D	16	r	C/a	0, 0, 0, 0, 0, 0	o	2	48
33	LO_LO_ALM	record	DS-39	D	16	r	C/a	0, 0, 0, 0, 0, 0	o	2	49
34	SIMULATE Status Value En/Disable	record	DS-50 Unsigned8 float Unsigned8	S	6	r,w	C/a	 0 0 0 - disable	m	2	50
36-44	reserved PNO										52-60

* 1. Floatvalue: EU100%, 2. Floatvalue: EU0%

2483586 04/2003

22.5 Analog Input FB 2 Block Object

E	Element Name	Data Type (Index)	Size	Value	Notes
1	Reserved	Unsigned 8 - (5)	1	250	
2	Block object	Unsigned 8 - (5)	1	2	Function block
3	Parent Class	Unsigned 8 - (5)	1	1	Input
4	Class	Unsigned 8 - (5)	1	1	Analog input
5	DD Reference	Unsigned 32 - (7)	4	0	for use in the future
6	DD Revision	Unsigned 16 - (6)	2	0	for use in the future
7	Profile	Unsigned 16 - (6)	2	64; 2	
8	Profile Revision	Unsigned 16 - (6)	2	3; 0	Number, Class B
9	Execution Time	Unsigned 8 - (5)	1	0	
10	Number_of_parameters	Unsigned 16 - (6)	2	0;45	incl. View_1
11	Address of VIEW_1	Unsigned 16 - (6)	2	2; 61	(Slot-Index)
12	Number of Views	Unsigned 8 - (5)	1	1	

22.6 Analog Input FB 2 View Object

Relative Index	Parameter Mnemonic	VIEW_1	VIEW_2	VIEW_3	VIEW_4	VIEW_5
10	OUT	5				
-	Overall sum of bytes in View-Object (+13 Standard parameter bytes)	5 + 13				

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

23 Diagnosis Parameter

Via the bit EXT_DIAG = 1 the slave signalises that it is transmitting customer specific data. As a consequence a diagnosis telegram is sent to the PROFIBUS_Master. When the reason for the diagnosis, i.e. the respective bit combination in the customer specific diagnosis data is 0, also the EXT_DIAG-Bit is reset.

23.1 Standard diagnosis parameter

Octet	Bit	Mnemonic	Description	Supp.	Ind.
1	0	DIA_HW_ELECTR	Hardware failure of electronic	-	-
	1	DIA_HW_MECH	Hardware failure of mechanic	-	-
	2	DIA_TEMP_MOTOR	Motor- temperature too high	-	-
	3	DIA_TEMP_ELECTR	Electronic temperature out of range	-	-
	4	DIA_MEM_CHECKSUM	Memory checksum error	yes	-
	5	DIA_MEASUREMENT	Failure in measurement	-	-
	6	DIA_NOT_INIT	Device not initialized (no self-calibration)	-	-
	7	DIA_INIT_ERROR	Self-calibration failed	-	-
2	0	DIA_ZERO_ERROR	Zero point error	-	-
	1	DIA_SUPPLY	Power supply failed	-	-
	2	DIA_CONF_INVALID	Configuration not valid	-	-
	3	DIA_WARMSTART	Restart up carried out	yes	A
	4	DIA_COLDSTART	New startup carried out	yes	A
	5	DIA_MAINTAINANCE	Maintenance required	-	-
	6	DIA_CHARACT	Characterisation invalid	-	-
	7	IDENT_NUMBER_Violation	Set to 1 if the ident number of the running cyclic data transfer and the value of the PB_IDENT_NUMBER parameter are different.	yes	
3	0..7	reserved	Reserved for use within the PNO		
4	0..6	reserved	Reserved for use within the PNO	-	-
7	7	EXTENSION_AVAILABLE	More diagnosis information is available	-	-

23.2 Extended Diagnosis Parameters

Via the extended diagnosis parameters the device status can be determined.

Bit	Mnemonic	Description	Supp.	Ind.
0..48		not used	-	-

2483586 04/2003

23.3 Coding of Manufacturer Specific Error Codes

Parameterisations errors of the device are coded by a customer specific error-code, if not verified by the error classes of Error_Codes_1. This code is then sent back via the Error_Code_2. The error coding is as follows:

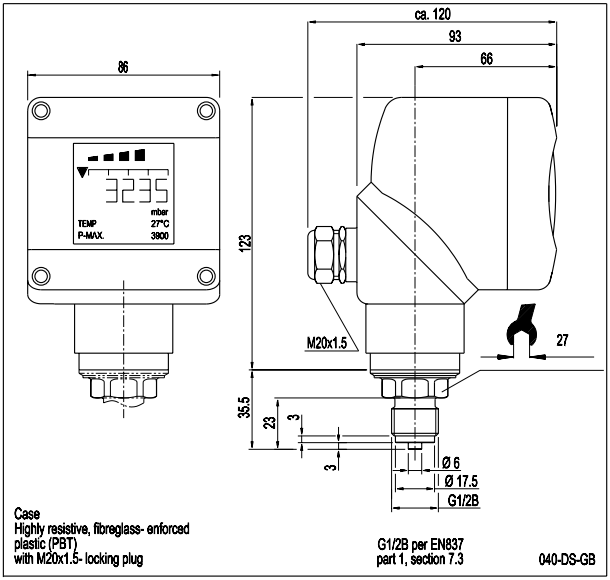
Error_Code_2	Mnemonic	Meaning
01_H	-	not used
02_H	PARAMETER_TOO_LARGE	transmitted parameter > than maximum limit value
03_H	PARAMETER_TOO_SMALL	transmitted parameter < than minimum limit value
04_H	INVALID_SELECT	invalid selection out of a given list
$05_H...0F_H$	-	not used

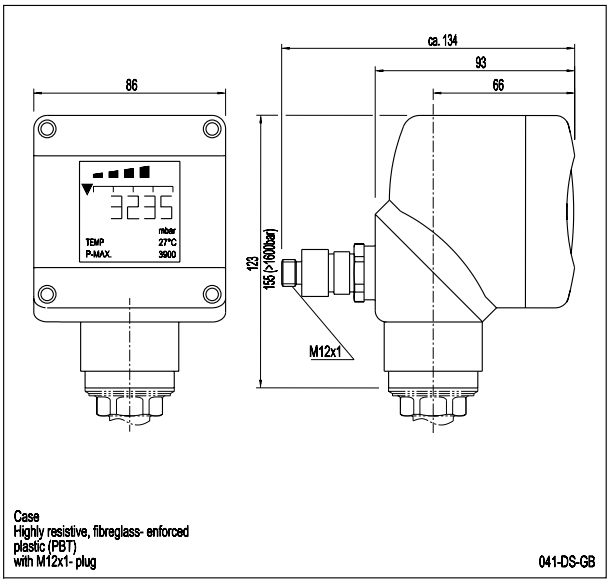
2483586.04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

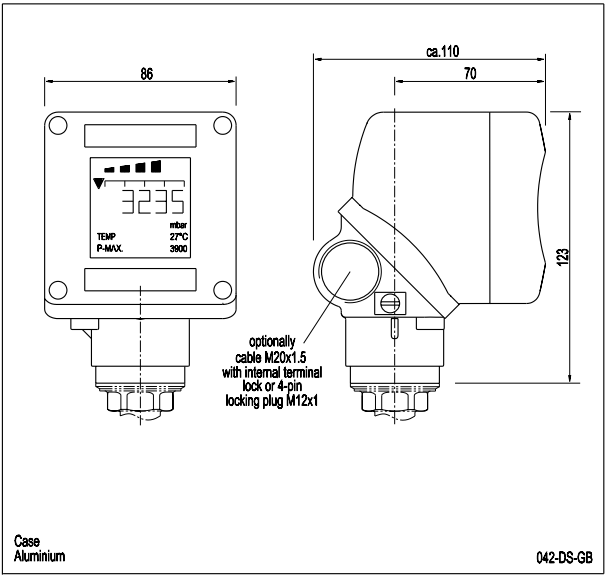
24 Appendix

24.1 Dimension Diagrams



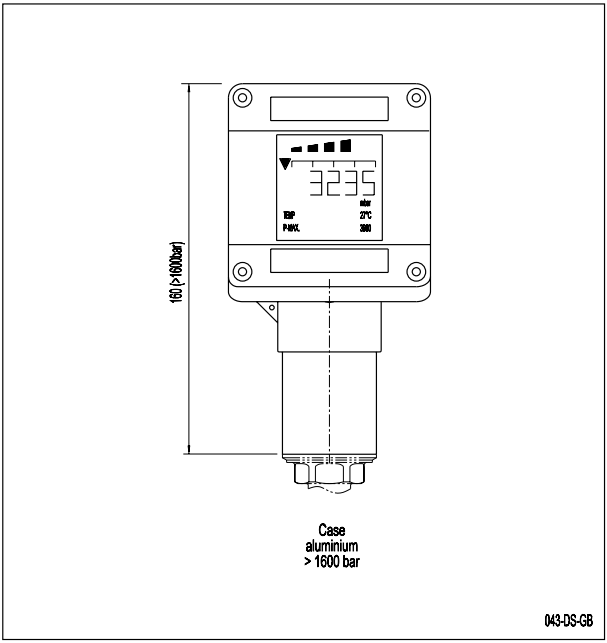


2483586 04/2003



Case
Aluminium

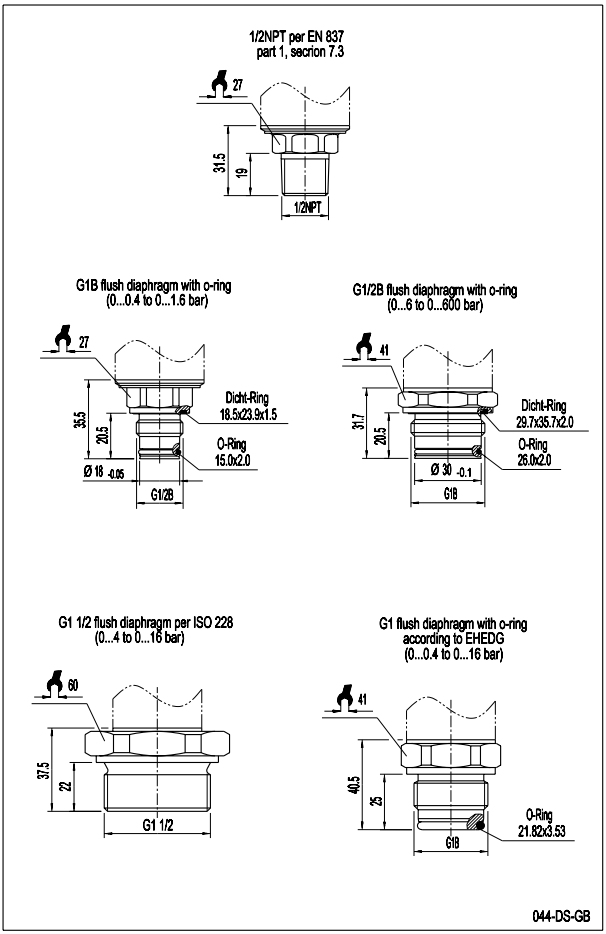
042-DS-GB



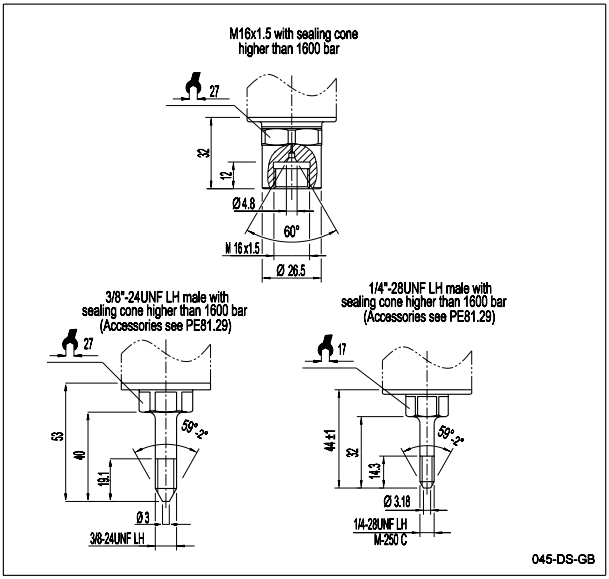
Case
aluminium
> 1600 bar

043-DS-GB

2483586.04/2003



2483586.04/2003



2483586.04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

24.2 Model Key, Standard version

			Unit			
		B	bar			
1		**S**	bar absolut			*up to 16 bar abs*
			Pressure range			
		CA	-1 bar ... 0 bar	**BM**	0 bar ... 40 bar	
		CD	-1 bar ... 0,6 bar	**BO**	0 bar ... 100 bar	
		CH	-1 bar ... 3 bar	**BQ**	0 bar ... 250 bar	
		CK	-1 bar ... 5 bar	**BT**	0 bar ... 600 bar	
		CP	-1 bar ... 15 bar	**BU**	0 bar ... 1000 bar	
		BB	0 bar ... 0,4 bar / bar absolute	**BV**	0 bar ... 1600 bar [1]	*only with aluminum case*
		BE	0 bar ... 1,6 bar / bar absolute	**BX**	0 bar ... 2500 bar [1]	*only with aluminum case*
		BH	0 bar ... 6 bar / bar absolute	**BZ**	0 bar ... 4000 bar [1]	*only with aluminum case*
2		**BK**	0 bar ... 16 bar / bar absolute			
			Process connection			
		GD	G ½ B	**ML**	M16x1,5 female, w. sealing cone [2]	*> 1600 bar*
		ND	½ NPT	**VS**	3/8-24 UNF LH male	
3		**CS**	chemical seal			*prices and designs according to chemical seals product range*
			Special design features			
		Z	without			
		E	oil and grease free			
		A	oxygen, oil and grease free			*up to 1600 bar abs, max. medium temperature 60°C*
		G	suitable for food			
4		**O**	overvoltage protection according to IEC 801-5			
			Case material			
		M	highly resistive, fiberglass-enforced plastic (PBT)			
5		**A**	Aluminium			*Ingress protection IP 67*
			Ingress protection			
		S	Standard			*IP 65 for plastic case, IP 67 for aluminium case*
6		**L**	IP 67			*for plastic case, only with special cable or abs. pressure range*
			Electrical connection			
		A	Cable gland M20x1.5 with internal terminal block			*standard*
7		**M**	4-pin locking plug, M12x1			
			Digital display			
		Z	without			
8		**A**	with integrated 4-digit LCD-display			
			Approvals			
		L	EEx ia IIC T4-T6 in compliance with ATEX 100a			
9		**C**	CSA			

		Additional order info		
		YES	**NO**	
10		**1**	**Z**	quality certificates
11		**T**	**Z**	additional text

1) Only with accuracy 0.5 %; max. Turn down 2:1
2) Maximum medium temperature of 60 °C (140 °F) must not be exceeded.

Order code:

2483586.04/2003

	1	2		3		4	5	6	7	8	9		10	11
IUT-10 - 5 -			-		-							-		

24.3 Model Key, Flush diaphragm version

		Unit				
	B	bar				
1	**S**	bar absolut				*up to 16 bar abs*
		Pressure range				
	CA	-1 bar ... 0 bar		**BH**	0 bar ... 6 bar / bar absolut	
	CD	-1 bar ... 0,6 bar		**BK**	0 bar ... 16 bar / bar absolut	
	CH	-1 bar ... 3 bar		**BM**	0 bar ... 40 bar	
	CK	-1 bar ... 5 bar		**BO**	0 bar ... 100 bar	
	CP	-1 bar ... 15 bar		**BQ**	0 bar ... 250 bar	
	BB	0 bar ... 0,4 bar / bar absolute		**BT**	0 bar ... 600 bar	
2	**BE**	0 bar ... 1,6 bar / bar absolute				
		Process connection				
	85	G 1 B, flush diaphragm with O-ring				*up to 1.6 bar*
	86	G ½ B flush diaphragm with O-Ring				*> 1.6 bar*
	G6	G 1 ½ B flush diaphragm				*up to 16 bar*
3	**83**	G 1 flush diaphragm according to EHEDG [1]				*up to 16 bar*
		Material of wetted parts				
	1	stainless steel and O-ring from NBR				*G 1 1/2 B without O-ring*
	L	stainless steel and O-ring from Viton				
	B	stainless steel and O-ring from EPDM				
4	**S**	Hastelloy C4				
		Special design features				
	Z	without				
	E	oil and grease free				
	A	oxygen, oil and grease free				*up to 1600 bar abs, max. medium temperature 60°C*
5	**O**	overvoltage protection according to IEC 801-5				
		Case material				
	M	highly resistive, fiberglass-enforced plastic (PBT)				
6	**A**	Aluminium				*Ingress protection IP 67*
		Ingress protection				
	S	Standard				*IP 65 for plastic case, IP 67 for aluminium case*
7	**L**	IP 67				*for plastic case, only with special cable or abs. pressure range*
		Electrical connection				
	A	Cable gland M20x1.5 with internal terminal block				*standard*
8	**M**	4-pin locking plug, M12x1				
		Digital display				
	Z	without				
9	**A**	with integrated 4-digit LCD-display				
		Approvals				
	L	EEx ia IIC T4-T6 in compliance with ATEX 100a				*II 1/2 G for connection to zone 0*
10	**C**	CSA				
	Additional order info					
	YES	**NO**				
11	**1**	**Z**	quality certificates			
12	**T**	**Z**	additional text			

1) not with ''Special design features'' Code A

Order code:

	1	2		3		4	5	6	7	8	9	10		11	12
IUT-11 - **5** -			-		-								-		

2483586 04/2003

WIKA Alexander Wiegand GmbH & Co. KG · Alexander-Wiegand-Str. · 63911 Klingenberg · ☎ (09372) 132 - 710 · Fax - 706 · E-mail: support-tronic@wika.de · www.wika.de

24.4 Warranty Conditions

The pressure transmitter has a 24 month warranty in accordance with the WIKA General Terms of Delivery.

Attention

Repairs may only be carried out by the manufacturer. All other repairs and device modifications are unauthorized and will void the warranty.

24.5 Glossary

Adjustment	Allocation of the output signal (PROFIBUS PA) to the desired pressure measurement range or level measurement range.
Integration	Also damping: timely communication of the measurement signal; rise time of the current output signal after a signal surge
Nom. pressure range	The operating pressure range for which the sensor was designed
Zero point	Start of the pressure measurement range
Parameterization	Also configuration: programming of the relevant parameters and the pressure measurement range specific to the application and measurement location.
Span	The programmed pressure measurement range
Span end point	The highest pressure value of the programmed measurement span (end-point of the span)
Tank linearization	Determination of approximate volume/pressure ratio values with non-linear correlations based on varying container designs For example, a non-linear correlation exists between the fill level and the volume in spherical containers. During linearization, the non-linear volume is assigned the output signal (PROFIBUS PA primary value) from a table of values (proximity process by means of up to 32 support points).
Defaults	The sensor parameters are pre-programmed by the manufacturer

24.6 Units of Pressure Measurement

1 atm (atmospheres)	= 760 mm Hg = 760 Torr
	= 1.033 kp/cm^2 = 0.1013 MPa
1 Torr	= 133.3 Pa
1 kp/mm^2	= 9.81 N/mm^2 = 9.81 MPa
1 bar	= 0.1 MPa
1 mbar	= 1 hPa (Hektopascal)
1 psi (pound per square inch)	= 6.895 · 10^3 Pa
1 bar	= 33.5 feet of water
1 PA	= 1.0 x 10^{-5} bar
1 mmHG	= 1.333 mbar

2483586.04/2003