

PRESSURE TRANSDUCER



Series 4000

INTRODUCTION

The Manotherm electronic transducer is especially designed for remote pressure readings.

An electronic device is coupled through a clevis pin on the extended shaft, of a standard pressure gauge. Any pressure gauge with a possibility to fit an extension shaft is acceptable. Therefore this transducer can be applied to high- and low pressure gauges as well as differential pressure gauges. The output signal is a standard signal 20 mA and the power supply is 24 volts D.C.

ELECTRONIC TRANSDUCER:

The transducer converts without mechanical links the angle deflection of the pressure shaft, in a proportional D.C. current. This output signal can be used for an indicator, recorder, controller etc. The output can also be loaded with more than one indicator or recorder, so far the output load of the transducer will not be exceeded (see specification). There are two types of electronic transducers, type 4010 and type 4020.

SPECIFICATION:

Type	4010		4020			
Power supply	: 24 volts D.C. + 10%-20%		12 volts to 36 volts D.C.			
Consumption	: 30 mA	45 mA	9 mA	14 mA	24 mA	20 mA
Output signal	: 0-5 mA	0-20 mA	0-5 mA	0-10 mA	0-20 mA	4-20 mA
Ext. resistance (ohms):	2500*	650*	3400*	1700*	850*	600*
Ambient temp. range	: -20° C to + 60° C		-30° C to + 80° C			
Zero correction	: ± 5% of range		± 5% of range			
Span adjustment	: ± 10% of range		± 10% of range			
Total accuracy	: ± 1%		± 1%			

* External resistance given by 24 V D.C. power supply.

SBE-4000
1976

ELECTRICAL CONNECTIONS

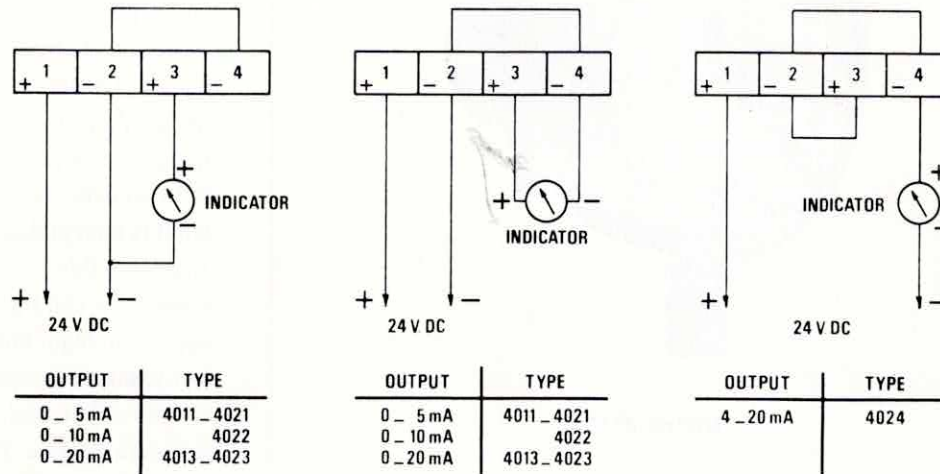
The connection terminals become accessible when removing the moulded cover on the housing.

The head of the bolt in the centre of the cover is turned 90° C with a screwdriver. The snap lock spring off and the cover can be removed.

In order to replace the cover, it is placed in position and the head of the bolt is pressed into the correct position (with the slit transverse to the cable socket) until the lock snaps definitely into place.

It should be noted that the supply and the output are electrically connected, with terminals 2 and 4 at the same potential.

The connections can therefore be made without detriment with 3 leads, as shown



WARNING

The coupling and mounting to the gauge is done by a driver pin inside the transmitter.

The clamping screws are securely adjusted in the workshop.

Do not loosen or turn the electrical housing separate from the gauge.

PRESSURE GAUGE:

Pressure connection : 1/2" BSP bottom connection

Case diameter : 160 mm

Scale length : 300 mm

Bourdontube material : phosphor bronze

Case material : cast iron

Bezel : black finish

Other materials on request.

Accuracy of reading : 1%

Standard ranges in Kp/cm² or Bars

0-1,6	0-2,5	0-4
0-6	0-10	0-16
0-25	0-40	0-63
0-100		

(other ranges on request).

OPTIONS:

Gauge support type PTA 160

Standard cable with junction box

Dampeners

Stop cock with test connection

Supply unit 110 or 220 volts AC to 24 volts DC

Indicators

Alarm units (only on type 4024)

1. Montage

Bei der Montage ist darauf zu achten, dass die Lage des elektrischen Nullpunktes (er ist gemäss Bild 1 durch eine Kerbe markiert) und die Nullstellung des Messobjektes übereinstimmen. Bei der Befestigung mit Spanklammern (Bild 2) kann der Winkeltransmitter nachträglich noch verdreht werden.

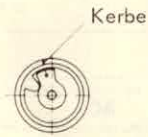
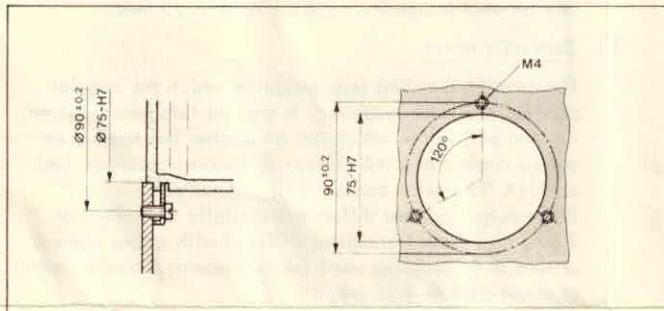
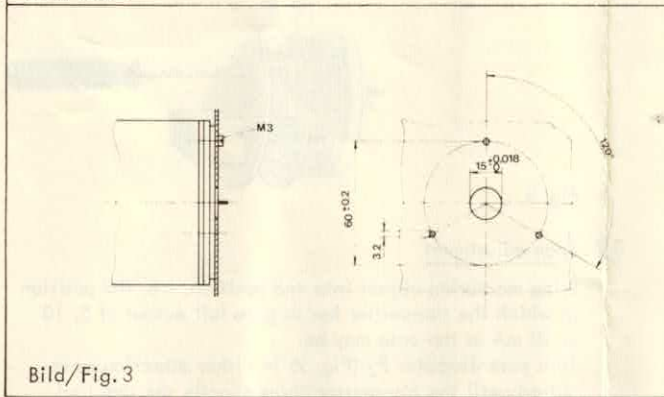


Bild 1

- 1.1 Befestigung mit Spanklammern (mit oder ohne Getriebe). Siehe Bild 2.
- 1.2 Befestigung mit Zylinderschrauben. Siehe Bild 3.
- 1.3 Anbau an Messgeräte mit drehbarer Zeigerwelle. Siehe Bild 4.
- 1.4 Befestigung mit Montagefuss (nur mit Getriebe möglich). Siehe Bild 5.



Bild/Fig.2



Bild/Fig.3

2. Elektrische Anschlüsse

- 2.1 Zweileiterschaltung (nur bei DC-Speisung ohne galvanische Trennung möglich)

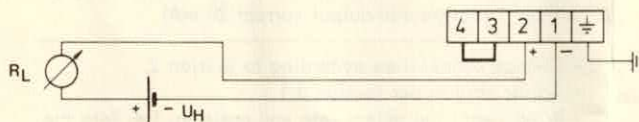


Bild 6

U_H = Speisespannung (12 ... 36 V DC / Ex max. 22 V DC)

R_L = Bürde

1. Mounting

The electrical zero position (marked with a groove as shown in fig. 1) must correspond with the mechanical zero position of the equipment to which the transmitter is being attached. When using spring clamps (fig. 2), the transmitter can be easily positioned before screws are fully fastened.

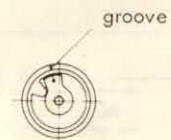
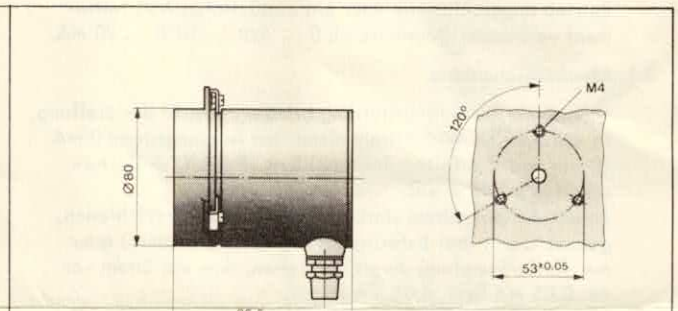
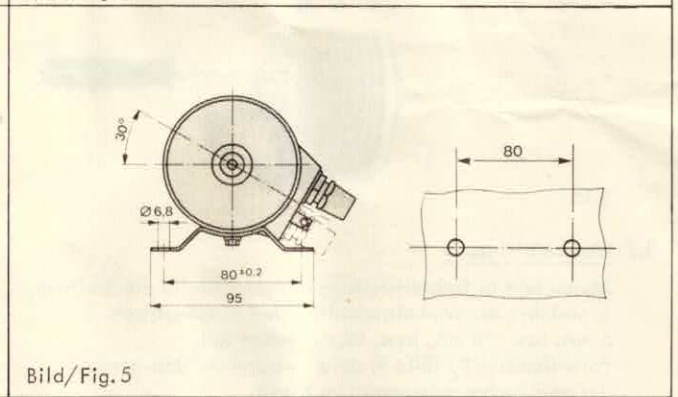


Fig. 1

- 1.1 Fixing with spring clamps (with or without gear). See fig. 2.
- 1.2 Fixing with cheesehead screws. See fig. 3.
- 1.3 Mounting onto measuring instruments with rotating pointer shaft. See fig. 4.
- 1.4 Fixing with mounting foot (model with gear only). See fig. 5.



Bild/Fig.4



Bild/Fig.5

2. Electrical connections

- 2.1 Two-wire connection (possible only with DC supply without isolation)

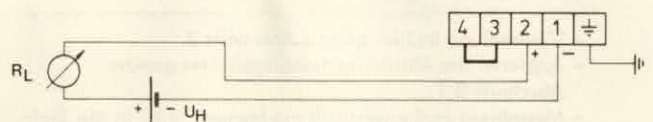


Fig. 6

U_H = Power supply voltage (12...36 V DC/Ex max. 22 V DC)

R_L = Output load

2.2 Dreileiterschaltung (nur bei DC-Speisung ohne galvanische Trennung möglich)

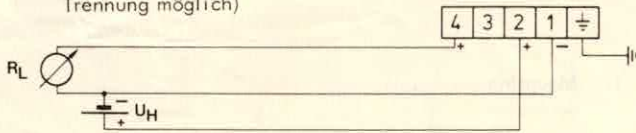
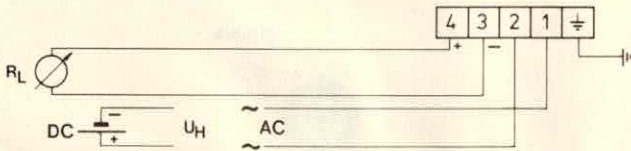


Bild 7

2.3 Vierleiterschaltung (nur bei AC-Speisung oder bei DC-Speisung mit galvanischer Trennung möglich)



(U_H) DC: 24, 48 oder 60V= AC: 24, 110 oder 220V~
Bild 8

3. Abgleichen von Messbereichanfangs- und Messbereichendwert

Gerät nach einem der obigen Anschluss Schemata anschließen.
Zur Messung des Ausgangsstromes wird das im normalen Betrieb angeschlossene oder ein zusätzliches Messinstrument verwendet (Messbereich 0 ... 5/0 ... 10/0 ... 20 mA).

3.1 Messbereichanfang

Messobjekt in Anfangsstellung bringen, d.h. in die Stellung, in welcher der Winkeltransmitter den Ausgangsstrom 0 mA (Drei- und Vierleiterschaltung) bzw. 4 mA (Zweileiterschaltung) haben soll.
Ist der Ausgangsstrom stark von 0 bzw. 4 mA verschieden, ganzes Gerät (bei Befestigung mit Spanklammern) oder nur Wellenkupplung derart verdrehen, dass ein Strom von ca. 0,05 mA bzw. 4,05 mA fließt.
Danach Potentiometer P₁ (Bild 9) nach links drehen, bis Ausgangsstrom genau 0 bzw. 4 mA ist.

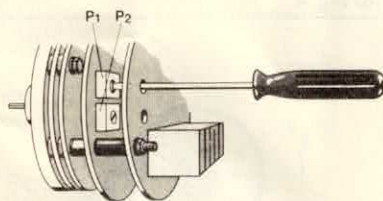


Bild 9

3.2 Messbereichsende

Messobjekt in Endwertstellung bringen, d.h. in die Stellung, in welcher der Winkeltransmitter den Ausgangsstrom 5 mA, bzw. 10 mA, bzw. 20 mA haben soll.
Potentiometer P₂ (Bild 9) derart verdrehen, dass genau der gewünschte Ausgangsstrom fließt.
Falls P₂ stark verdreht wird, ist es empfehlenswert, den Messbereichanfangswert nochmals zu kontrollieren nach 3.1.

4. Umeichen von 3-Leiterschaltung auf 2-Leiterschaltung bzw. umgekehrt (nur bei DC-Speisung ohne galvanische Trennung und Ausgangsstrom 20 mA möglich)

- Verdrahtung ändern gemäss Abschnitt 2.
- Justieren des Messbereichanfangswertes gemäss Abschnitt 3.1.
- Messobjekt in Endwertstellung bringen, d.h. in die Stellung, in welcher der Winkeltransmitter den Ausgangsstrom 20 mA haben soll.

Potentiometer P₂ (Bild 9) derart verdrehen, dass genau 20 mA Ausgangsstrom fließen.

2.2 Three-wire connection (possible only with DC supply without isolation)

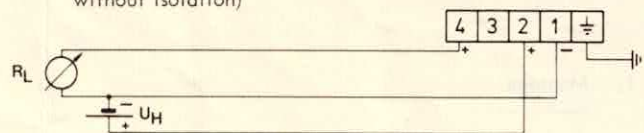
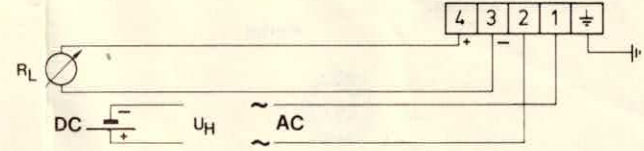


Fig. 7

2.3 Four-wire connection (possible only with AC supply or DC supply with isolation)



(U_H) DC: 24, 48 or 60V= AC: 24, 110 or 220V~
Fig. 8

3. Zero and span adjustment

Connect transmitter according to the appropriate connection diagram.
For checking the output current signal, the receiving instrument in the plant or a separate measuring instrument may be used (range 0 ... 5/0 ... 10/0 ... 20 mA).

3.1 Zero adjustment

The measuring object (equipment on which the angular position has to be measured) is brought into zero position, i.e. the position in which the transmitter has to give an output current of 0 mA (Three- or four-wire connection) or 4 mA (Two-wire connection), respectively.
If the output current differs substantially from the 0 or 4 mA, rotate the transmitter (if fixed with spring clamps) or turn shaft coupling until the instruments shows a current of about 0,05 or 4,05 mA.
Now turn potentiometer P₁ (Fig. 9) counterclockwise, until output is exactly 0 or 4 mA, respectively.

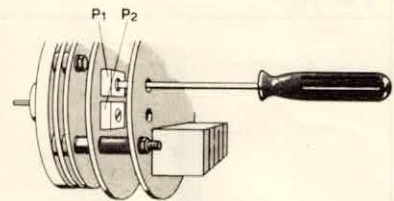


Fig. 9

3.2 Span adjustment

Bring measuring object into end position, i.e. the position in which the transmitter has to give full output of 5, 10 or 20 mA as the case may be.
Turn potentiometer P₂ (Fig. 9) in either direction as required until the transmitter gives exactly the required full output current.
If P₂ has to be displaced substantially, it is recommended to recheck the electrical zero according to 3.1.

4. Recalibration from three-wire connection into two-wire connection or vice versa (possible only with DC supply without isolation and output current 20 mA)

- Change connections according to section 2.
- Adjust zero as per section 3.1.
- Bring measuring object into end position, i.e. into the position in which the transmitter has to give 20 mA output.

Turn potentiometer P₂ (Fig. 9) until the output current signal has reached exactly 20 mA.