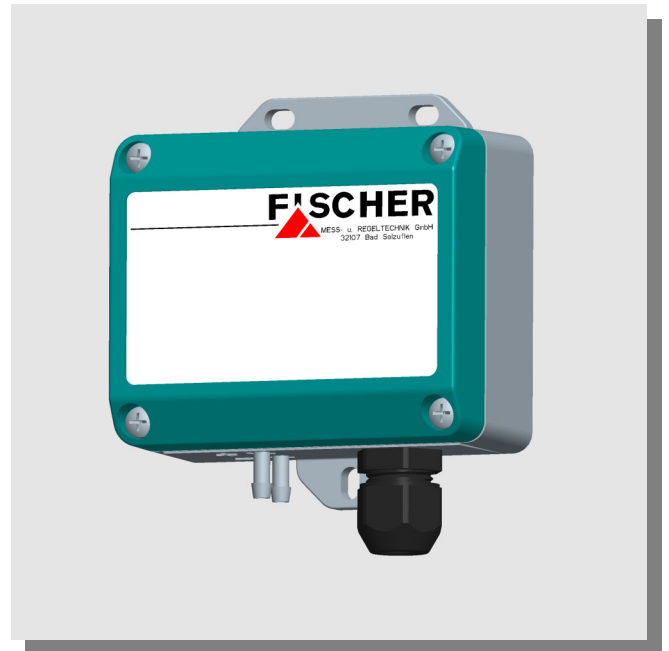


Instruction Manual

DE25 || Digital Differential Pressure Transmitter

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1. Safety Instructions

1.1. General



This manual contains detailed information about the product, and instructions for its installation, operation and maintenance. Operators and other technical personnel responsible for the equipment must read this thoroughly before attempting to install or operate this equipment. A copy of this manual must always be kept accessible at the place of work for reference by concerned personnel.

Chapter 1 (sections 1.2 through 1.7) contains general as well as specific safety instructions. Chapters 2 through 10, covering topics ranging from intended purpose of the equipment to its final disposal, also include important points relating to safety. Overlooking or ignoring any of these safety points can endanger humans and animals, and possibly cause damage to other equipment.

1.2. Personnel Qualification

Personnel responsible for installation, operation, maintenance and inspection of this product must have the qualifications, training and experience necessary to carry out such work on this type of equipment.

1.3. Risks of Disregarding Safety Instructions

Disregarding safety instructions, use of this product for purposes for which it is not intended, and/or operation of this product outside the limits specified for any of its technical parameters, can result in harm to persons, the environment, or the plant on which it is installed. Fischer Mess- und Regeltechnik GmbH will not be responsible for consequences in such circumstances.



1.4. Safety Instructions for Operators

Safety instructions for the proper use of this product must be followed. This information must be available at all times to by personnel responsible for installation, operation, maintenance and inspection of this product. Adequate steps must be taken to prevent the occurrence of hazardous conditions that can be caused by electric energy and the convertible energy of the process media. Such conditions can, for example, be the result of improper electrical or process connections. Detailed information is available in relevant published norms (DIN EN, UVV in Germany; and equivalents in other countries), industrial standards such as DVWG, Ex-, GL-, VDE guidelines, as well as regulations of the local authorities (e.g., EVU's in Germany).

1.5. Modifications Forbidden

Modification or other technical alteration of the product is not permissible. This also applies to the use of unauthorized spare parts for repair / maintenance of the product. Any modifications to this product, if and as necessary, should be done only by Fischer Mess- und Regeltechnik GmbH.

1.6. Operational Restrictions

The operational reliability of the product is guaranteed only when used for intended purposes. The product must be selected and configured for use specifically with defined process media. The limiting values of operating parameters, as given in the product specification sheet, must never be crossed.

1.7. Safety Considerations during Installation and Maintenance

The safety instructions given in this manual, existing national regulations relating to accident prevention, and the internal safety rules and procedures of the user organization regarding safety during installation, operation and servicing must all be followed meticulously.

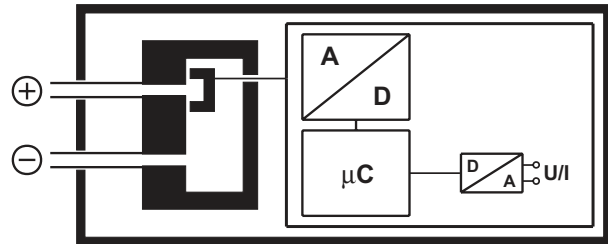
It is the responsibility of the users to ensure that only suitably qualified and experienced technical personnel are used for installation, operation and servicing of this equipment.

2. Intended Applications

The DE25 is suitable for accurate measurement of positive / negative gauge pressure or differential pressure of air and gases. The product may be used only for applications and under conditions specified by the manufacturer.

3. Product Description and Functions

3.1. Schematic Diagram



3.2. Principles of Operation

The instrument is based on a piezo-resistive sensor element and can measure positive gauge, negative gauge or differential pressure. The pressure is measured directly by a piezo-resistive resistance bridge that is formed on the surface of an integral silicon diaphragm in each sensor. Change of pressure results in change of resistance. The instrument's internal microcontroller transmits the measured value through a D/A converter as a voltage or current signal output.

4. Installation

The electronic module is mounted on a flat plate or panel, for which it has integral hole flanges. The pressure transmitters are calibrated at the factory while mounted upright, pressure ports downward and must be mounted this way.

IP65 protection for the housing is guaranteed only if suitable connecting cable is used.

If the instrument is intended for outdoor application, we highly recommend using an adequate protective housing (or at least a big enough shelter) as protection against UV-radiation on the membrane keyboard and against exposure of the instrument to rain or snow.

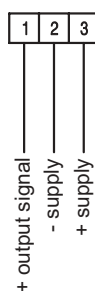
4.1. Process Connections

- Only qualified technicians authorized for this type of work should undertake installation.
- Ensure that process equipment and pressure lines are at atmospheric pressure before making pressure connections.
- The instrument should be provided with suitable protection against pressure surges (e.g., snubber or pulsation damper).
- Ensure that the mechanical configuration and materials of construction of the instrument are compatible with the process media.
- Ensure that process pressure is always less than the specified safe pressure rating.

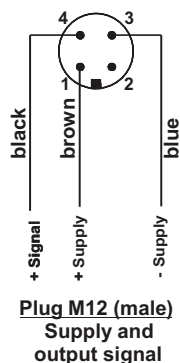
4.2. Electrical Connections

- Only qualified technicians authorized for this type of work should undertake installation.
- Electrical connections must comply with relevant international, national and local regulations and norms relating to electrical and instrumentation installations.
- Switch off electrical power to the plant before attempting electrical installation work of any kind.
- Make electrical connections to the transmitter through a suitable energy-limiting safety device.

4.2.1. Connection Scheme Inner Terminal Strip



4.2.2. Connection Scheme M12 Plug



5. Commissioning

- Power supply and signal cabling to the instrument must be correctly selected to meet operational requirements, and installed in a way that does not cause physical stress to the instrument.
- Pressure lines must have a downward gradient throughout, from the pressure instrument to the process vessel / pipe. This is to prevent formation of liquid plugs for air / gas applications. If this continuous downward gradient cannot be provided for any reason, then suitable water separation devices must be inserted in the pressure lines.
- Pressure lines must be kept as short as possible and must not have short bends to avoid measurement errors induced by pressure line delays.
- Carefully check the pressure-tightness of all pressure connections before start-up.

5.1. Pressure Connections

The instruments pressure ports are marked by + and – symbols. The pressure applications need to be installed according to the label.

Differential pressure measurement: + higher pressure
– lower pressure

Pressure measurement: + pressure port

Negative pressure measurement: – negative pressure port

5.2. Pulsation Damping

During pulsating pressure on the plant disturbances in functional capability may occur. To avoid this we recommend installing absorbers into the pressure lines.

5.3. Zero Point Adjustment

Usually adjustment of the instrument is not necessary for it is factory calibrated. The output signal can be adjusted with inbuilt zero point button.

Adjustment Sequence:

- Dismount cover.
- Connect current or voltage indicator (0-20 mA / 0-20 mA / 0-10 V DC) to output signal between terminals 1 and 2.
- Connect and switch on power supply.
- Measuring system depressurized: Output signal \neq 0 resp. (4) mA / 0 V DC. Push zero point button approx. 5s to correct offset. After approx. 5s the output signal is corrected to zero.
- Mount cover.

6. Maintenance

The instrument is inherently maintenance-free. However, to ensure reliable operation and maximize the operating life of the instrument, it is recommended that the instrument, its external electrical and process connections, and external connected devices be regularly inspected, e.g.:

- Check all pressure connections for leaks.
- Check the integrity of all electrical connections of the instruments.

Inspection and test schedules depend on operating and site conditions. The operating manuals of other equipment to which the differential pressure transmitter is connected must be read thoroughly to ensure that all of them work correctly when connected together.

7. Transport

The product must be protected against shock and vibration during transport. It must therefore be properly packed, preferably in the original factory packaging, whenever it is to be transported.

8. Service

Any defective devices or devices with missing parts should be returned to Fischer Mess- und Regeltechnik GmbH. For quick service contact our service department.



Remaining medium in and on dismantled measuring instruments may cause danger to persons, environment and equipment. Take reasonable precautions! Clean the instrument thoroughly if necessary.

9. Accessories

N.A.

10. Disposal



Protect your environment!

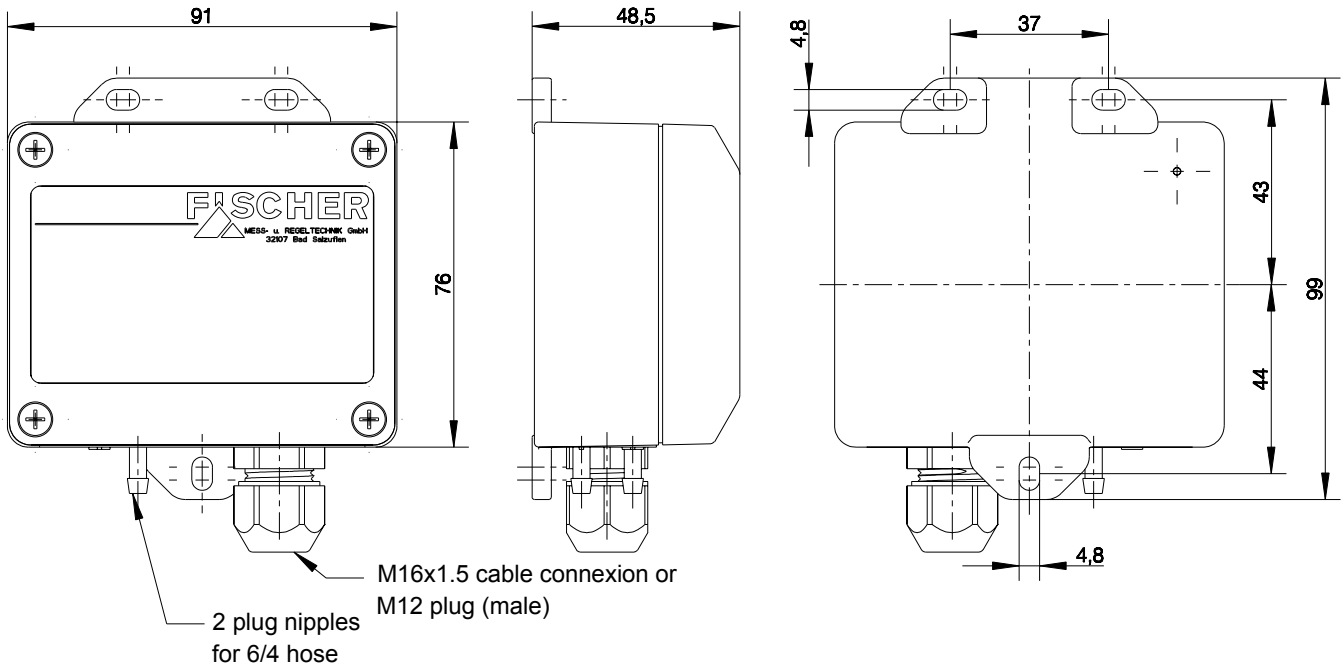
Use the product in accordance with relevant regulations. Please be aware of environmental consequences of disposal at the end of the product's life, and take care accordingly.

11. Specifications

General									
Ranges	0...2.5 mbar up to 0...100 mbar (see Ordering Code)								
Max. static operating pressure	see Ordering Code								
Burst pressure	1.5x max. static operating pressure								
Linearity	± 1% FS (typical 0.5%)								
Hysteresis	± 0.2% FS (typical 0.05%)								
Perm. ambient temperature	-10...+50°C								
Perm. medium temperature	-10...+50°C								
Tc zero point / span	Max. 1% FS / 10K								
Pressure connections	Threaded connections of Aluminium for hoses 6/4								
Electrical connection	Inner terminal strip, M12 plug connector								
Protection class	IP65 per EN 60529								
Electrical Data									
Output signal	<table border="0"> <tr> <td>0...20 mA</td> <td>4...20 mA</td> <td>0...10V</td> <td>0...5V</td> </tr> <tr> <td colspan="2">3-wire</td> <td colspan="2">3-wire</td> </tr> </table>	0...20 mA	4...20 mA	0...10V	0...5V	3-wire		3-wire	
0...20 mA	4...20 mA	0...10V	0...5V						
3-wire		3-wire							
Nominal voltage	24V DC/AC								
Max. operating voltage	12...32V DC/AC								
Load	$R_L \leq ((U_B - 10V) * 50 \Omega) + 300 \Omega$								
Current / voltage limit	<table border="0"> <tr> <td>approx. 23 mA</td> <td> $U_B = 12..15V \quad R_L \geq 100K\Omega$ $U_B \geq 15V \quad R_L \geq 2 K\Omega$ </td> </tr> <tr> <td></td> <td>approx. 13 V</td> </tr> </table>	approx. 23 mA	$U_B = 12..15V \quad R_L \geq 100K\Omega$ $U_B \geq 15V \quad R_L \geq 2 K\Omega$		approx. 13 V				
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	approx. 13 V								
Materials, Mounting									
Materials (media contact)	Silicon, glass reinforced polyester, aluminium, NBR								
Materials (housing)	Polyamide PA 6.6, polycarbonate PC								
Mounting	Integral rear mounting links								

The differential pressure transmitter is short circuit, overvoltage and reverse battery protected.

12. Dimensions (all units in mm unless stated otherwise)



13. Ordering Code

Digital Differential Pressure Transmitter DE 25

			0	4	5		K	0	0		W
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Range	Max. Static Pressure	↑	↑	↑	↑	↑	↑	↑
0 4 mbar	50 mbar.....>	5	2					
0 6 mbar	50 mbar.....>	5	3					
0 . . . 10 mbar	100 mbar.....>	5	4					
0 . . . 16 mbar	100 mbar.....>	5	5					
0 . . . 25 mbar	250 mbar.....>	5	6					
0 . . . 40 mbar	250 mbar.....>	5	7					
0 . . . 60 mbar	500 mbar.....>	5	8					
0 . . 100 mbar	500 mbar.....>	5	9					
- 2.5 . . 2.5 mbar	50 mbar.....>	A	6					
- 4 4 mbar	50 mbar.....>	A	7					
- 6 6 mbar	50 mbar.....>	A	8					
- 10 . . . 10 mbar	100 mbar.....>	A	9					
- 16 . . . 16 mbar	100 mbar.....>	B	1					
- 25 . . . 25 mbar	250 mbar.....>	B	2					
- 40 . . . 40 mbar	250 mbar.....>	C	5					
- 60 . . . 60 mbar	500 mbar.....>	B	3					
Accuracy								
Straight line error ≤ 2.5%		>	K					
Straight line error ≤ 1%		>	M					
Pressure Connection								
6/4 mm hose nipples.....>		4	5					
Electrical Output								
0 - 20 mA linear, 3-wire.....>		A						
0 - 10 V DC linear, 3-wire.....>		C						
4 - 20 mA linear, 3-wire.....>		P						
0 - 5 V DC linear, 3-wire.....>		U						
Operating Voltage								
24 V DC/AC (12-32 V DC/AC).....>		K						
Electrical Connection								
El. connection with inner terminal strip		>	E					
M12 plug connector		>	M					
Mounting								
Integral rear mounting links		>	W					

14. CE-Certificate



EG-Konformitätserklärung

EC Declaration of Conformity

Wir erklären in alleiniger Verantwortung, dass nachstehend genannte Produkte

We declare under our sole responsibility that the products mentioned below

Digitaler Differenzdrucktransmitter / Digital Differential Pressure Transmitter

DE25 #####

gemäß gültigem Datenblatt übereinstimmen mit den

specified by the actual data sheet complies with the

EG-Richtlinien

EC Directives

89/336/EWG (EMV)
92/31/EWG (EMV)
93/68/EWG (EMV)

89/336/EEC (EMC)
92/31/EEC (EMC)
93/68/EEC (EMC)

Die Produkte wurden entsprechend den folgenden Normen geprüft (Störfestigkeit für Industriebereich, Störausendung für Wohnbereich):

The instruments have been tested in compliance with the norms (Immunity for industrial environments, emission for residential environments)

DIN EN 61326-1:2004-05
DIN EN 61326-2-3
DIN EN 61010-1:2002-08

DIN EN 61326-1:2004-05
DIN EN 61326-2-3
DIN EN 61010-1:2002-08

Die Geräte werden gekennzeichnet mit:

The gauges are marked with:



Bad Salzuffen, 09.11.07
(Ort, Datum / place, date)

(rechtsverb. Unterschrift / authorized signature)

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Sitz: Bad Salzuffen
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Geschäftsführer:
Günter B. Gedde