



II 1/2G Ex ia IIC T4 Ga/Gb
II 2D Ex ia IIIC T80°C Db



RoHS II
COMPLIANT



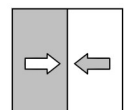
Datasheet

DE49 ## A

Digital differential pressure transmitter
with external sensor

for explosive areas
Dust explosion protection zone 21 and 22, dry dusts
Gas explosion protection zone 1 and 2, gases and vapors

09005914 • DB_EN_DE49_A • Rev. ST4-F • 07/22



1 Product and functional description

1.1 Performance features

Important features

- ATEX type testing
 - Zone 21 and 22
 - Zone 1 and 2
- Robust, resistant to overpressure and maintenance-free
- Wall mounting
- LC Measured value display
- Foil keypad
- Can be configured
- Analogue output signal with
 - Characteristic curve spread inversion
 - with any offset within the measuring range
- Casing protection class IP65

Typical applications

- Content measurement for tanker vehicles and storage tanks

1.2 Intended use

The differential pressure transmitter DE49##A###BH00MW allows the measurement of under-pressure, over-pressure and differential pressure in liquid and gaseous media.

Fields of application include


- Tankers
- Fuelling systems


Explosion hazard area classification

The differential pressure transmitter DE49##A###BH00MW is suitable as an electrical device for operation in potentially explosive areas.

- The unit must be installed in zone 1 or 2 or in zone 21 or 22 if the pressure connections are connected to zone 0.
- The power circuit must satisfy the ignition protection category "Intrinsic safety" category "ia".

Designation as per guideline 2014/34/EU.

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$-10\text{ °C} \leq T_a \leq +60\text{ °C}$

1.3 Equipment versions

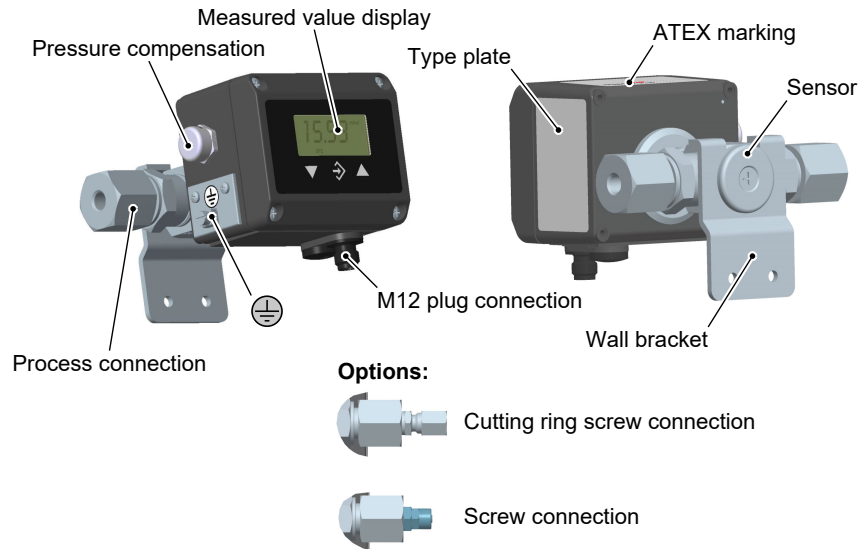


Fig. 1: Device model DE49 ## A

1.4 Function diagram

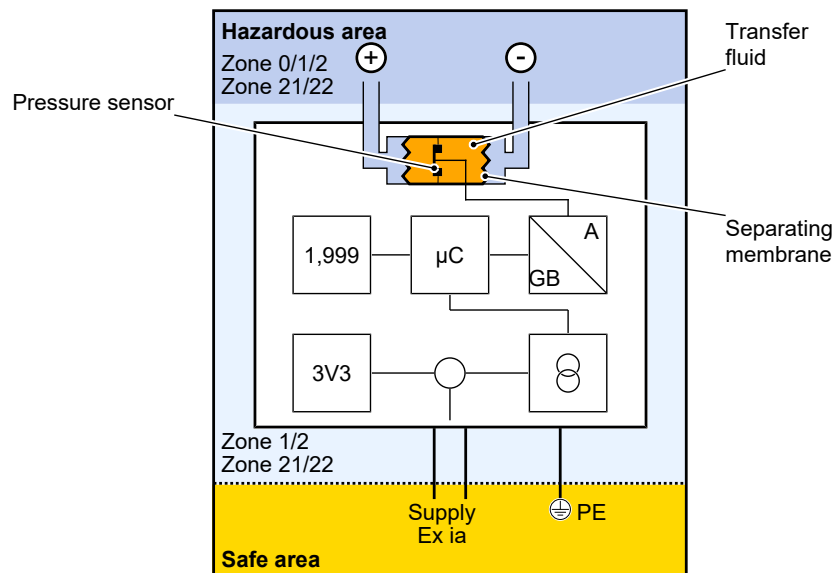


Fig. 2: Function diagram

1.5 Design and mode of operation

The multifunctional differential pressure transmitter with 2-conductor technology allows the measurement of under-pressure, over-pressure and differential pressure in liquid and gaseous media. The basis is a piezoresistive pressure sensor that is attached to a base with glass openings on the inside of a metal case.

The pressures that are to be compared are fed to the inner and outer side of the sensor membrane via a pressure transfer liquid. The separating membranes transfer the medium pressure to the pressure transfer liquid.

Piezo resistors are diffused into the silicone membrane. The force resulting from the differential pressure changes acts on the membrane and changes the resistance. This is measured and processed by the analysis electronics. The measured value is shown on the LC display and illustrated as an analogue 4-20 mA signal in the supply circuit.

2 Technical data

2.1 General

Please also observe the order code here.

2.2 Input variables

Measuring variable: Differential pressure for gaseous media

Measuring ranges	Stat. operating pressure max.	Bursting pressure
0 ... 250 mbar	max. 3 bar	> 25 bar
0...1 bar		

2.3 Output parameters

Outlet	Signal range	Apparent ohmic resistance
4...20 mA,	3.5...22.5 mA	$R_L \leq (U_b - 4 \text{ V})/0.02 \text{ A}$

2.4 Measurement accuracy

The information refers to a linear, non-spread characteristic curve at 25 °C and applies to all measuring ranges. FS (Full Scale) refers to the basic measuring range.

Characteristic curve deviation

(Non-linearity and hysteresis)

Maximum: 1.0 % FS

Typical: 0.5 % FS

Temperature coefficient (TK)

Zero point: max. 0.2 % FS / 10 K

Span: max. 0.2 % FS / 10 K

2.5 Display and control elements

Display

4-digit LC display stating the measuring unit

Keyboard

Foil keypad with 3 buttons

Programming

Damping	0.0 ... 100.0 s (jump response time 10 / 90 %) for signal input
Measuring range unit	mbar, bar, Pa, KPa, PSI and inWc
Start / end of measuring range	User-definable within the basic measuring range ⁽¹⁾
Output signal	Adjustable limit values within the signal range
Zero-point stabilising	Zero-point window max. 1/3 of the basic measuring range ⁽²⁾
Zero point correction	$\pm 1/3$ of the basic measuring range ⁽³⁾
Implementation of characteristic curve	Linear, rooted, max. 4:1 spread, inverted
Password	1 ... 999 (0 = no password protection)

(1) Max. effective spread 4:1

(2) measured values around zero are set to zero.

(3) Zero-point correction to compensate different installation positions.

2.6 Auxiliary energy

The unit power supply may only be an inherently safe power circuit of the ignition protection type 'Ex ia IIC'.

Rated Voltage	24v DC
Admissible operating voltage	12 ... 30 V
Current limitation	≤ 22.5 mA (can be programmed)

Supply and signal power circuit limit values

(Ignition protection type intrinsic safety Ex ia IIC)

	U_i	≤ 30 V
	I_i	≤ 100 mA
	P_i	≤ 750 mW
inner effective capacity	C_i	2.5 nF
effective inner inductivity	L_i	negligible

NOTICE! In contrast to the EMV-GND, the power connections have an inner capacity of max. 5 nF.

2.7 Application conditions

Increase ambient temperature	-10 ... +60 °C
Media temperature	-10 ... +60 °C
Storage temperature	-20 ... +70 °C
Enclosure protection class	IP65 as per EN 60529
EMC	EN 61326-1:2013 EN 61326-2-3:2013
RoHS	EN 50581:2012
ATEX	EN 60079-0:2012 + A11:2013 EN 60079-11:2012 EN 60079-26:2015

ATEX classification

Type testing	IBExU09ATEX1164
Zone 1 and 2	⊕ II 1/2G Ex ia IIC T4 Ga/Gb
Zone 21 and 22	⊕ II 2D Ex ia IIIC T80°C Db

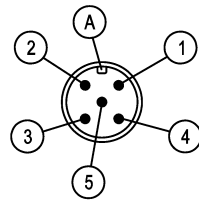
2.8 Construction design

Process connection

Aluminium hose screw connection for 6/4 or 8/6 mm hose
Cutting ring screw connection in brass for 6 or 8 mm pipe

Electrical connection

M12 round plug connector (5-pin) for supply and analogue output signal



Pin	Signal name	Cable colour
1	Supply (+U _b) / output (+Sig)	brown
2	n.c.	
3	Supply (-U _b) / output (-Sig)	blue
4	n.c.	
5	Functional earth (⏏)	green/yellow
A	Coding Type A	

Fig. 3: Pin assignment

Materials

Housing	Polyamide (PA) 6.6 , electrically conductive
Media-contacting material	Stainless steel 1.4404, 1.4571, aluminium

Assembly

Wall structure

2.8.1 Dimensional drawings

All dimensions in mm unless otherwise stated

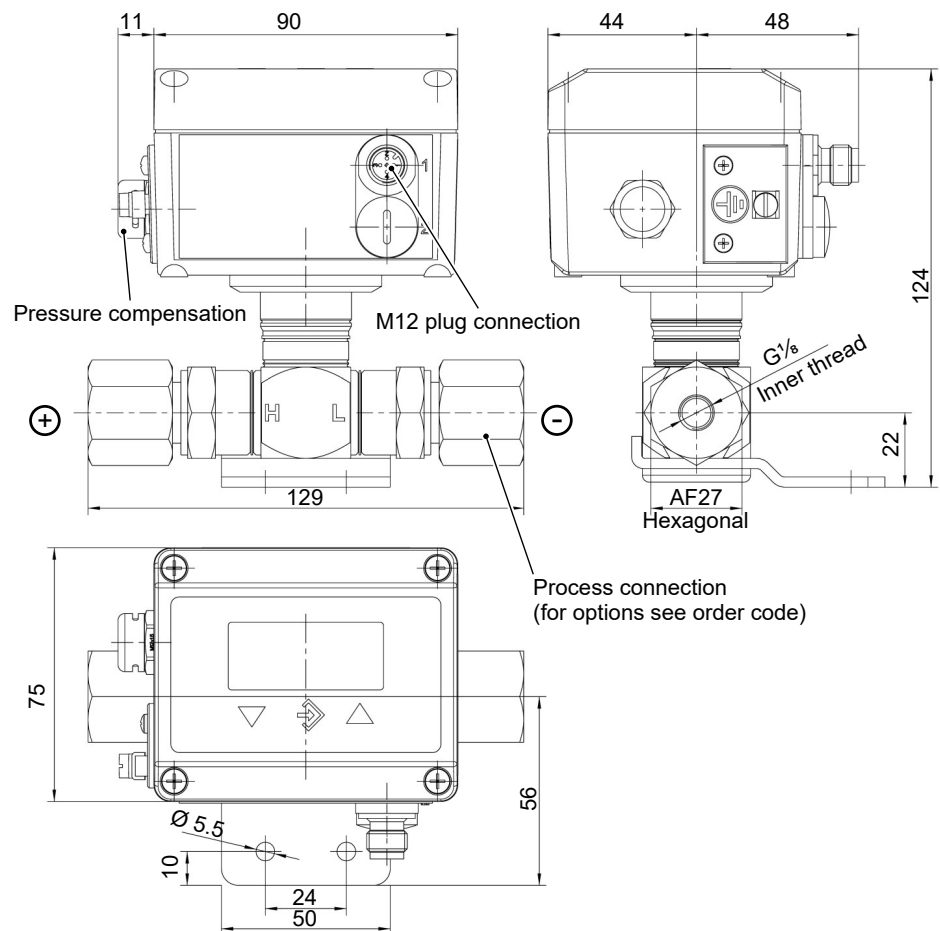
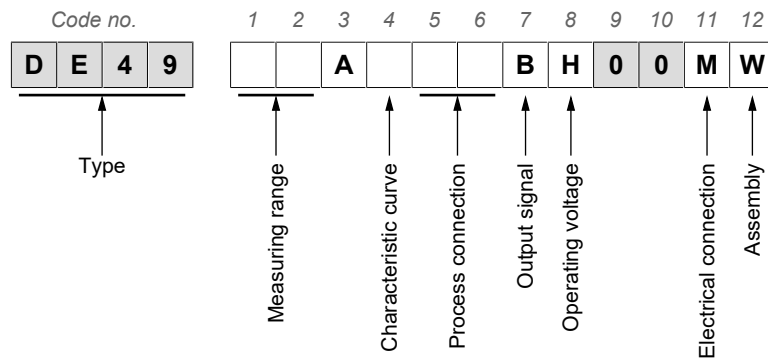


Fig. 4: Dimensional picture

3 Order Codes



[1.2] Measuring range	Static operating pressure
N6 0 ... 250 mbar	3 bar
N7 0...1 bar	3 bar

[3] EXECUTION
A Encapsulated sensor

[4] Characteristic curve
0 linear rising (standard)
R root extracted

[5.6] Process connection
00 Default
40 Aluminium screw connection for 6/4 mm hose
41 Aluminium screw connection for 8/6 mm hose
24 Cutting ring screw connection made of 1.4571 for 6 mm tube
25 Cutting ring screw connection made of 1.4571 for 8 mm tube

[7] Output signal
B 4 ... 20 mA 2-wire connection

[8] Operating voltage
H 24V DC (12 ... 30 V DC)

[11] Electrical connection
M M12 plug connection

[12] Assembly
W Wall mounting

3.1 Accessories

Order no.	Designation	No. of Poles	length
06401685	Connection cable with M12 connector	5 pin	2 m
06401686	Connection cable with M12 connector	5 pin	5 m
06401687	Connection cable with M12 connector	5 pin	7 m
06401688	Connection cable with M12 connector	5 pin	15 m

Order no.	Designation	Type
05003090	Galvanically isolated supply isolating amplifier for ATEX applications. <ul style="list-style-type: none"> • 24 V DC, 1 channel Input: 4 ... 20 mA Output: 4 ... 20 mA • The device can be mounted in Zone 2 / Cl.1, Div. 2 and can receive signals from Zones 0, 1 and 2, as well as 20, 21 and 22 including Mining / Class I/II/III, Div. 1, Size A-G. • SIL2/SIL3 according to IEC 61508 	9106B1A
05003093	Display / Programming front Communication interface for setting the operating parameters for supply isolating amplifiers and pulse isolators. <ul style="list-style-type: none"> • The device may only be used in safe areas. • Allows saving the configuration of a device type and loading it into other devices of the same type. • Display for process data and status visualization. 	4501

3.2 Information about the document

This document contains all technical data about the device. Great care was taken when compiling the texts and illustrations. nevertheless, errors cannot be ruled out.

Subject to technical amendments.