

Data Sheet

DE49 Digital Differential Pressure Transmitter for Explosion-Hazard Areas

DE49##0###BH00M#; Ⓜ II 1/2G Ex ia IIC T4 bzw. Ⓜ II 2D Ex iaD 21 T 80°C



Main Features

- Robust, pressure safety cut-off, maintenance-free
- Signal output can be used for characteristic curve spread and reversal with arbitrary offset within the measuring span
- Protection class IP65 casing

Typical Applications

- Ventilation engineering in explosion hazard areas (paint shops, pharmaceuticals, chemical industry)

Areas of Application

- Air-conditioning technology
- Ventilation technology
- Environmental technology



General

The DE49 differential pressure transmitter is an intrinsically safe device for use in explosion hazard areas. It is suitable for measuring positive, negative and differential pressures of dry, neutral, gaseous media.

The DE49 differential pressure transmitter is suitable as an 'electrical device for use in explosion hazard areas'.

Classification according to directive 94/9/EC.

Ⓜ II 1/2G Ex ia IIC T4 or

Ⓜ II 2D Ex iaD 21 T 80 °C

-10 °C ≤ Ta ≤ +60 °C

Design and Mode of Operation

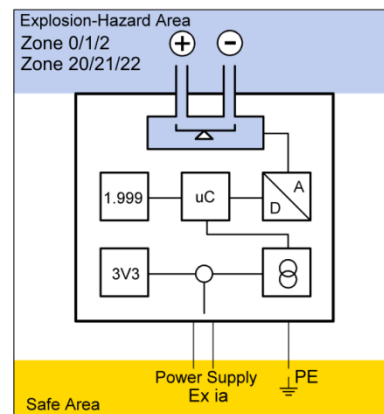
The basis of this transmitter is a piezoresistive sensor element suitable for measuring positive, negative and differential pressures.

Pressure acts on the silicon membrane of a semiconductor chip, deforming it. The specific resistance of the material alters according to this deformation.

The circuitry in the pressure transmitter casing converts this change in resistance into an electrical output signal, calculates the pressure value and displays it on the LC display.

This output can be attenuated, spread and inverted.

Function Diagram



Technical Specifications

Base Measuring Range		mbar	4	6	10	16	25	40	60	100	±2.5	±4	±6	±10	±16	±25	±40	±60	±100		
		Pa	400	600	1000	1600						±250									
		kPa			1	1.6	2.5	4	6	10					±1	±1.6	±2.5	±4	±6		
Max. Stat. Operating Pressure		mbar	50		100		250		500		50		100		250		500				
Burst Pressure		mbar	150		300		750		1500		150		300		750		1500				
Non-Conformity ^{*)}	Max.	%FS	1.0								1.0										
	Type	%FS	0.5								0.5										
TC Span ^{**)}	Max.	%FS/10K	1.0	0.3						1.0	0.5	0.3									
	Type	%FS/10K	0.3								0.3										
TC Zero Point ^{**)}	Max.	%FS/10K	1.0	0.4						1.0	0.5	0.4									
	Type	%FS/10K	0.2								0.2										

^{*)} : Characteristic curve deviance (non-linearity and hysteresis) at 25°C, base measuring range (linear characteristic curve, not spread)

^{**)} : Based on base measuring range (not spread), compensation range 0 ... 60 °C

Permissible ambient temperature -10 ... 60 °C
 Permissible medium temperature -10 ... 60 °C
 Permissible storage temperature -20 ... 70 °C
 Casing protection class IP 65 as per DIN EN 60529

Electrical Data

Operating voltage 24 VDC
 Range 12-30 VDC of the certified intrinsically safe circuit (Ex ia)

Supply and signal circuit limit values
 $U_i \leq 30V$
 $I_i \leq 100 \text{ mA}$
 $P_i \leq 750 \text{ mW}$

Internal effective capacitance $C_i = 2.5nF$

Internal capacitance of the supply connections against functional earth max. 5nF

Output signal 4 ... 20 mA

Electrical connections Two-conductor

Permissible load impedance $R_L \leq (U_B - 12V) / 0.02 \text{ A}$

Current limiting $\leq 22.5 \text{ mA}$, programmable

Measured value display 4-digit LCD with unit of measurement information

Connections, Materials, Assembly

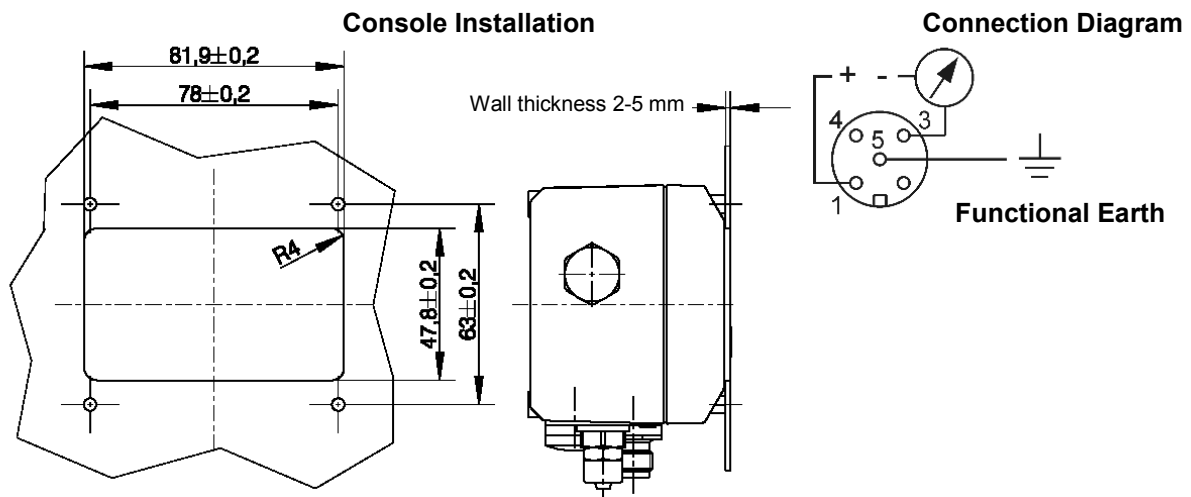
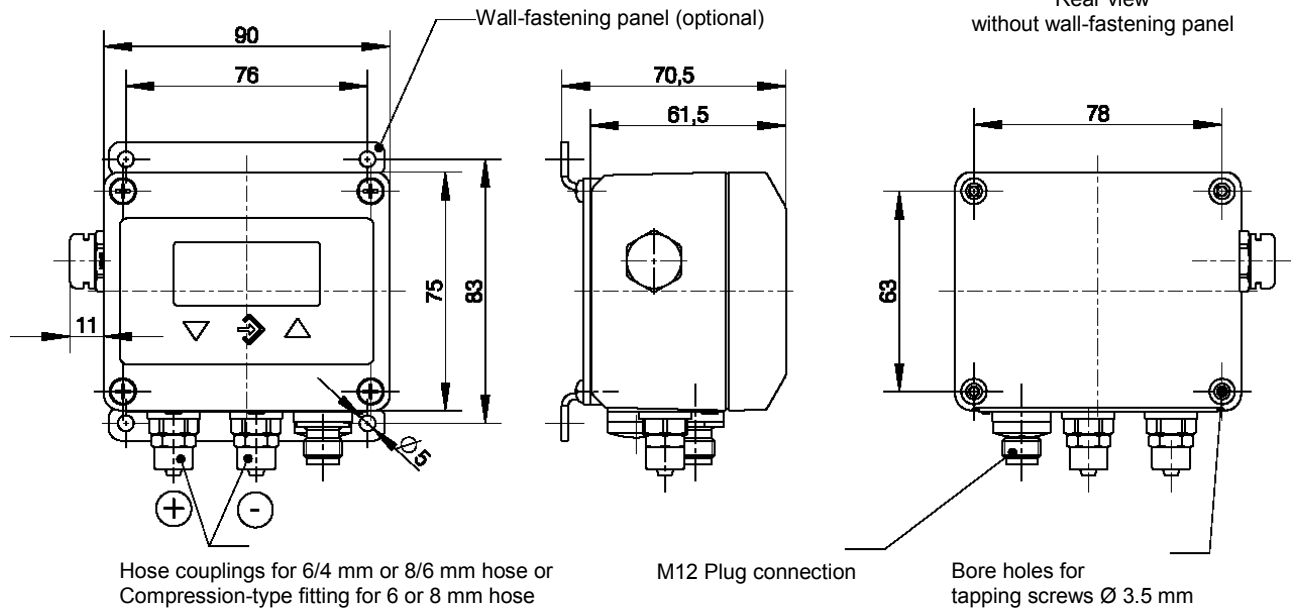
Electrical connection M12 pin terminal for supply and analog output signal (5-pole, male)

Pressure connections Aluminium hose coupling for 6/4 mm and 8/6 mm hose
 Bronze compression-type fitting for 6 mm and 8 mm conduit

Casing material Polyamide PA 6.6
 Material in contact with process media Silicon, PVC, aluminium, bronze

Assembly Mounting holes at rear, wall fastening,
 mounting rail assembly or console installation set

Dimensioned Drawings



Programming

Programmed using the membrane keypad on the device, can be secured by password.

	Settings
Damping	0.0 ... 100.0 s (skip response time 10/90 %)
Measuring range units	mbar / PA / kPA / PSI / in H ₂ O / % ¹
Zero-point stabilization	Zero-point window max. 1/3 of the base measuring range ²
Start / end of measuring range	Start / end of base measuring range ³
Zero offset	Max. \pm 1/3 of base measuring range ⁴
Characteristic curve conversion	Linear, max. 4:1 spread, inverted
Password	001...999 (000 = no password)

¹ The unit % refers to the measuring range defined by the measuring range start (= 0%) and end (= 100%).

² Measured values around zero will be set to zero (e.g. for suppression of creep quantities).

³ Maximum effective spread 4:1. Output signal only is affected. This also permits decreasing characteristic curves, if start of measuring range > end of measuring range. Measuring range unit % then refers to the thus defined range!

⁴ Zero offset to compensate for different installation positions.

Order Codes

Digital Differential Pressure Transmitter for Explosion Hazard Areas

DE49 0 B H 0 0 M

Measuring Range	Max. Stat. Operating 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					
-100 ... +100 mbar	500 mbar	>	B	4					
0 ... 400 Pa	50 mbar	>	D	7					
0 ... 600 Pa	50 mbar	>	D	8					
0 ... 1000 Pa	100 mbar	>	D	9					
0 ... 1600 Pa	100 mbar	>	E	1					
-250 ... +250 Pa	50 mbar	>	L	6					
0 ... 1 kPa	100 mbar	>	N	1					
0 ... 1.6 kPa	100 mbar	>	N	2					
0 ... 2.5 kPa	250 mbar	>	N	3					
0 ... 4 kPa	250 mbar	>	N	4					
0 ... 6 kPa	500 mbar	>	N	5					
0 ... 10 kPa	500 mbar	>	E	5					
-1 ... +1 kPa	100 mbar	>	L	8					
-1.6 ... +1.6 kPa	100 mbar	>	L	9					
-2.5 ... +2.5 kPa	250 mbar	>	M	6					
-4 ... +4 kPa	250 mbar	>	M	7					
-6 ... +6 kPa	500 mbar	>	M	8					
Nonstandard measuring range: (Tech. data refer to 0...600 Pa)									
0 ... 500 Pa	50 mbar	>	J	7					
Type	Standard	>	0						
Measuring Unit	Standard (increasing curve)	>	0						
	Extracted root	>	R						
Pressure Connection	Aluminium screw connection for 6/4 mm hose	>	4	0					
	Aluminium screw connection for 8/6 mm hose	>	4	1					
	Bronze compression-type fitting for 6 mm conduit	>	2	8					
	Bronze compression-type fitting for 8 mm conduit	>	2	9					
Electrical Output Signal	4...20 mA 2-conductor	>	B						
Operating Voltage	24 VDC (12...30 VDC)	>	H						
Electrical Connection	M12 Plug connection	>	M						
Assembly	Rear wall-fastening panel (standard)	>	0						
	Mounting rail assembly	>	S						
	Console installation set	>	T						
	Wall mounting	>	W						

Accessories

Order Number	Code	Number of Plug Poles	Usage	Length
06401685	Connection cable with M12 socket	5-pole	For supply/signal	2 m
06401686	Connection cable with M12 socket	5-pole	For supply/signal	5 m
06401687	Connection cable with M12 socket	5-pole	For supply/signal	7 m
06401688	Connection cable with M12 socket	5-pole	For supply/signal	15 m
MTL5041	Transducer power supply unit 4-20 mA		Operating voltage 24VDC	

Technische Änderungen vorbehalten • Subject to change without notice • Changements techniques sous réserve

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