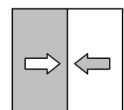




Datasheet

DE46

Digital differential pressure switch / transmitter
with colour-change LCD



1 Product and functional description

1.1 Use as intended

The DE46 is a multi-functional switching unit with an optional transmitter output. It is suitable for measuring overpressure, under-pressure and differential pressure in gaseous media. The device is to be exclusively used for the applications agreed between the manufacturer and the user.

Typical applications

- Filter equipment
- Precision air channel measurements
- Clean room pressure equalisation
- Burner under-pressure measurement
- Furnace circulating air control

Important features

- Long-term stable measurement of low pressure
- Robust, resistant to overpressure and maintenance-free
- Optional signal output with possibility of characteristic curve spread and reversal with any offset
- Characteristic curve implementation via table with max. 30 measuring points
- 4...6-digit LCD, full graphic, colour backlighting
- Complete adjustment of all parameters and measuring point protocol possible through optional PC adaptor EU03

1.2 Part designations

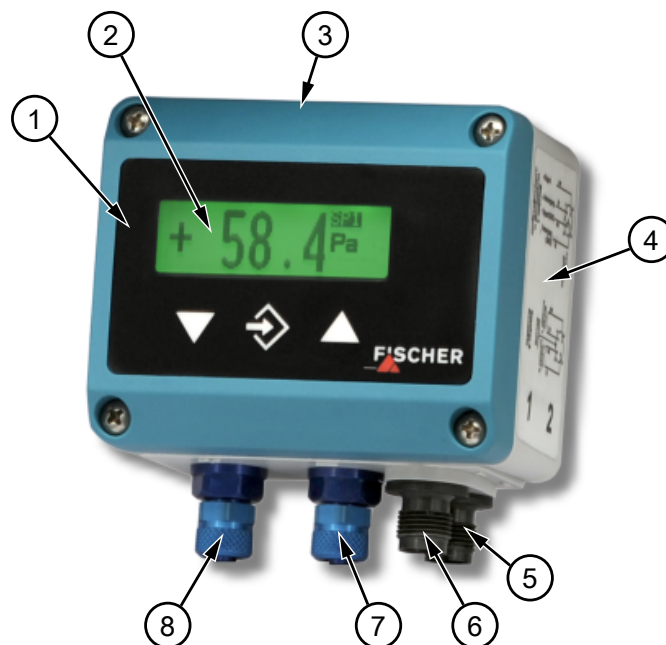


Illustration 1: DE46 with LCD

1	Membrane keyboard	2	LC display
3	Casing lid	4	Lower part of casing
5	M12 plug connector (connector 2)	6	M12 plug connector (connector 1)
7	Process connection (-)	8	Process connection (+)

1.3 Function diagram

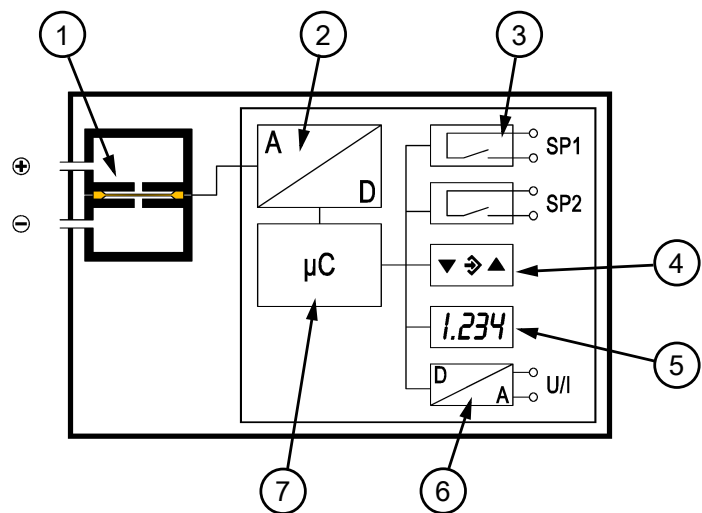


Illustration 2: Function diagram [DE46_LCD]

1	Sensor element	2	Signal processing
3	Switching outputs	4	Membrane keyboard
5	LC display	6	Analogue output
7	Microcontroller		

1.4 Design and mode of operation

This switching device is based on a capacitive sensor element that is suitable for measuring overpressure, underpressure and differential pressure.

The measured pressure acts on the sensor element with a micromechanically produced differential condenser in silicon-glass technology.

Changes in pressure generate changes in capacity, which is evaluated by the device's electronics and transformed into signals on the display, switch contacts and an output signal.

2 Technical data

Please also observe the order code here.

2.1 Input variables

Measuring variable

Differential pressure for gas-like media

Measurement range

Pa
0...25
0...50
0...100
0...250
0...500
0...1000
-25...+25
-50...+50
-20...+80
-100...+100

Static operating pressure Max. 100 kPa

Bursting pressure Max. 170 kPa

2.2 Output parameters

Output signal

0...20 mA
4...20 mA
0...10 V

Signal range

0.0...21.0 mA
0.0...11.0 V

Apparent ohmic resistance

0/4...20 mA
 $U_b \leq 26 \text{ V}: R_L \leq (U_b - 4 \text{ V}) / 0.02 \text{ A}$
 $U_b > 26 \text{ V}: R_L \leq 1100 \Omega$

0...10 V
 $R_L > 2000 \Omega$

Switching outputs

2 potential-free relay contacts
2 potential-free semiconductor switches (MOSFET)

	Relay	MOSFET
Progr. switching function	Open contact (NO) Break contact (NC)	One-pin activator (NO) One-pin deactivator (NC)
Max. switching voltage	32 V AC/DC	3...32 V AC/DC
Max. switching current	2 A	0.25 A
max. switching output	64 W / VA	8 W / VA $R_{ON} \leq 4 \Omega$

2.3 Measurement accuracy

FS (Full Scale) refers to the basic measuring range.
(Non-linearity and hysteresis)

Characteristic curve deviation*

Maximum	1.0 % FS
Typical	0.5 % FS
Reproducibility	0.1 % FS

The information refers to a linear, non-spread characteristic curve at 25 C and applies to all measuring ranges.

Temperature coefficient

max. 0.6 % FS / 10K
in zero-point and span with reference to the basic measuring range (not spread), compensation range 4...50 °C.

2.4 Auxiliary energy

Rated Voltage

24 V AC/DC

Admissible operating voltage

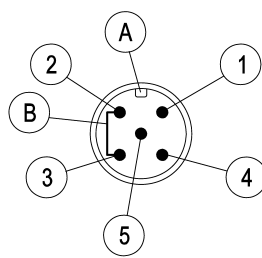
$U_b = 20...32$ V AC/DC

Power consumption

Typ. 2.2 W / Max. 3.5 W

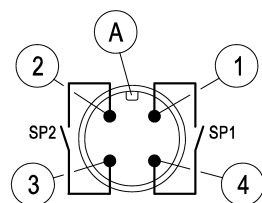
Electrical connection

2 x round plug connector M12



Connector 1 (Supply and output signal)

- A Coding
- B Bridge
- 1 Power supply (+Ub)
- 2 Output (- Sig)
- 3 Power supply (-Ub)
- 4 Output (+ Sig)
- 5 not connected



Connector 2 (Switching outputs)

- A Coding
- 1 Switch output 1
- 2 Switch output 2
- 3 Switch output 2
- 4 Switch output 1

Illustration 3: Electrical connection [DE46_LCD]

2.5 Application conditions

Increase ambient temperature	-10 ... +70 °C
Media temperature	-10 ... +70 °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

2.6 Construction design

Process connection

2x aluminium hose screw connection for 6/4 mm or 8/6 mm hose.
 2x pneumatic plug connector for 6/4 mm or 8/6 mm hose.

Materials

Housing	Polyamide (PA) 6.6
Media-contacting material	Silicon, PVC, aluminium, brass

Assembly

Attachment boreholes on the rear for attaching to level mounting plates.
 Wall mounting using the wall mounting plate.
 Panel installation using the panel mounting set.
 Assembly of the mounting rails using an adapter.

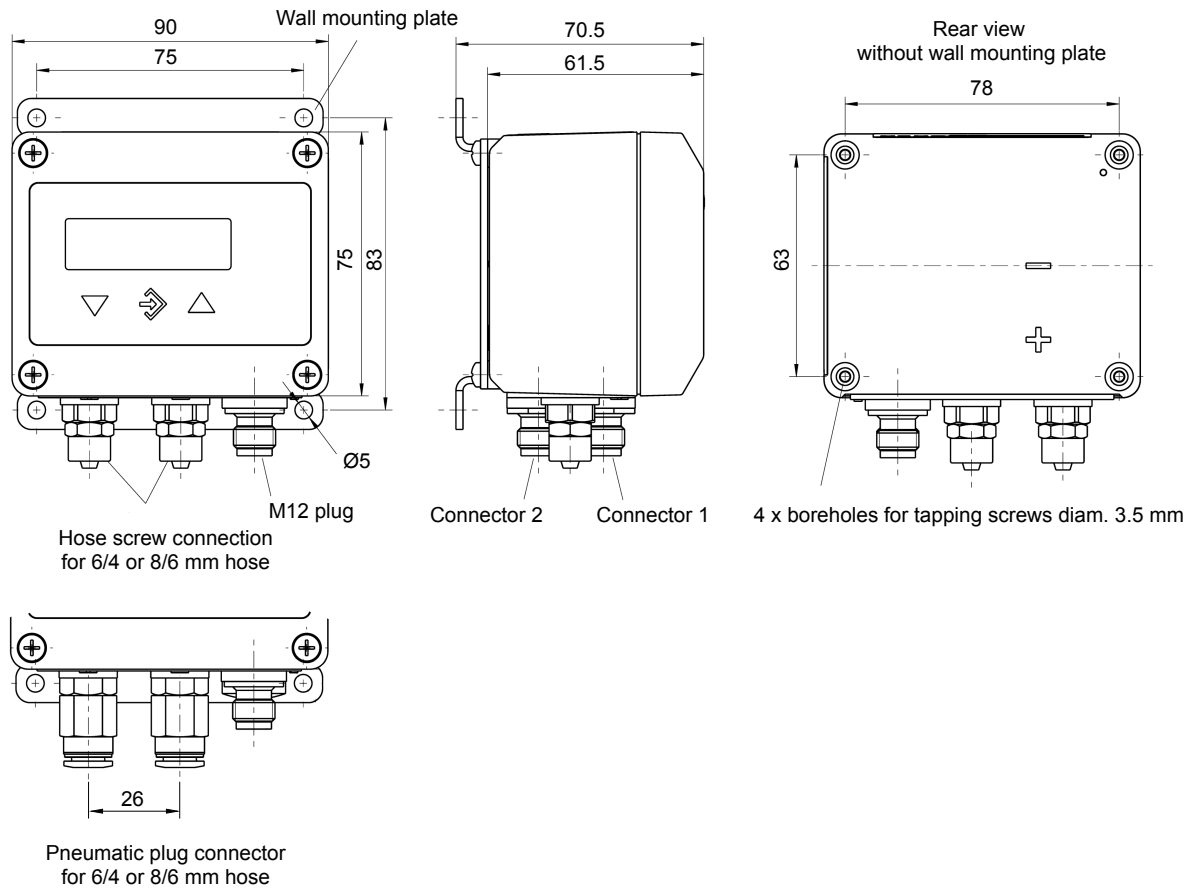


Illustration 4: Wall-mounting

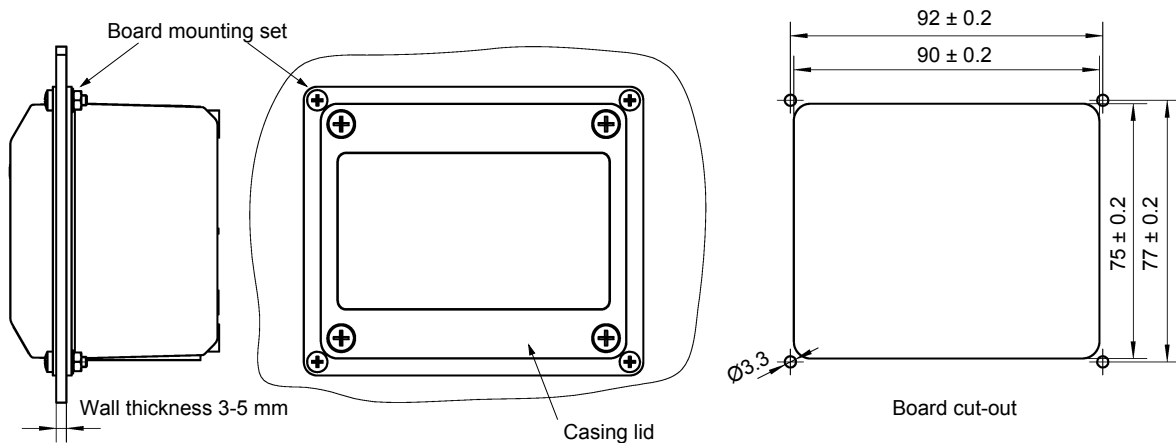


Illustration 5: Installation of front panel

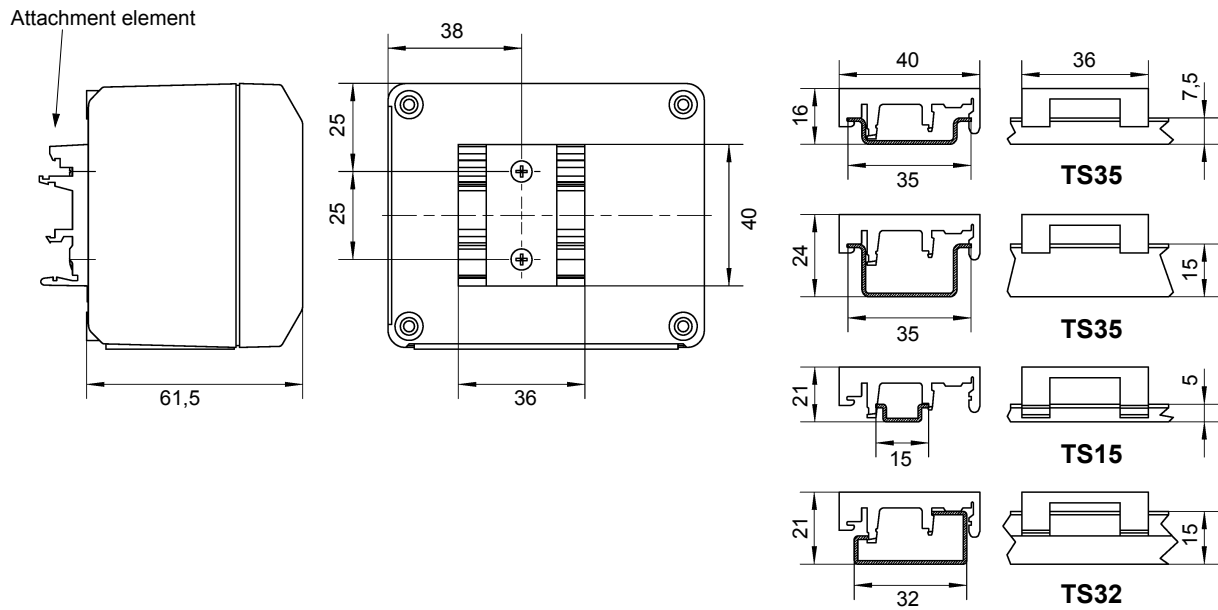


Illustration 6: Assembly of the mounting rails

Installation of the panel

The DE46 is suitable for the front flush-mounting into a FISCHER panel of the series RT. Installed ex works.

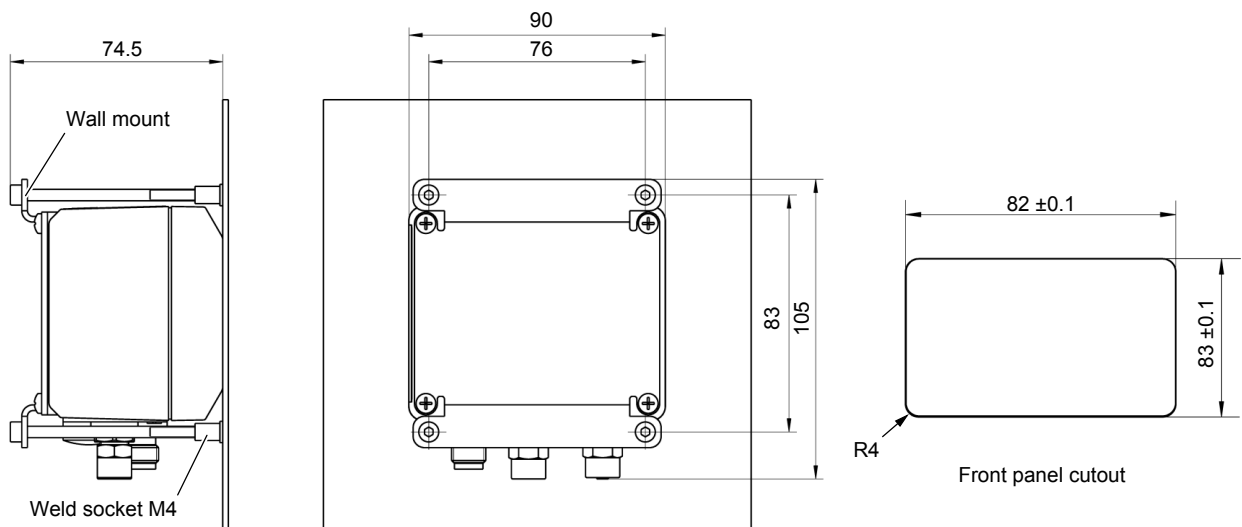


Illustration 7: Installation of the panel

Advertisement
Programming

2.7 Display and operating interface

4...6-digit LCD, full graphic, colour backlighting

Attenuation	0.0...100.0s (jump response 10/90%) Display, output signal and switching points
Switch output	Switch-off point, switch-on point, response time (0...1800s), function (NC / NO contact)
Measuring range unit	m / Pa / "free unit", starting value, end value and decimal point for "free unit"
Output signal	User-definable within the basic measuring range ⁽¹⁾
Zero-point stabilising	0... $\frac{1}{3}$ of the basic measuring range ⁽²⁾
Zero point correction	$\pm\frac{1}{3}$ of the basic measuring range ⁽³⁾
Implementation of characteristic curve	linear, square rooted, table with 3...30 support points
Password	001 ... 999 (000 = no password protection)

(1) Max. effective spread 4:1

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

(3) To compensate different installation positions.

3 Order Codes

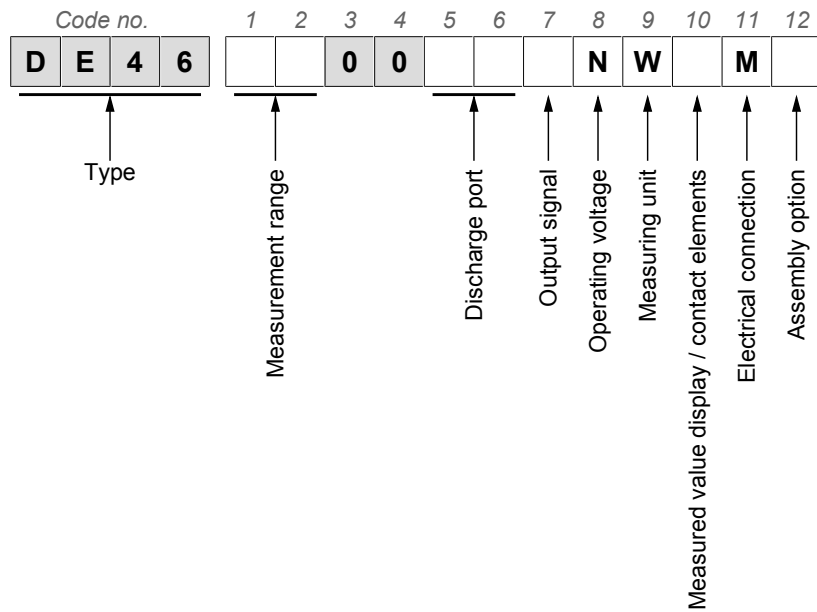


Illustration 8: Order code [DE46_LCD]

Measuring range

[1.2]	← Code no.
D1	0 ... 25 Pa
J6	0 ... 50 Pa
D4	0 ... 100 Pa
D6	0 ... 250 Pa
J7	0 ... 500 Pa
D9	0 ... 1000 Pa
L5	-25 ... +25 Pa
L2	-50 ... +50 Pa
L0	-20 ... +80 Pa
L7	-100 ... +100 Pa

Discharge port

[5.6]	← Code no.
40	Aluminium screw connection for 6 / 4 mm hose
41	Aluminium screw connection for 8 / 6 mm hose
P6	Pneumatic plug connector for 6/4 mm hose
P8	Pneumatic plug connector for 8/6 mm hose

Output signal

[7]	← Code no.
0	no analogue output signal
A	0... 20 mA (3-wire)
P	4... 20 mA (3-wire)
C	0 ... 10 V (3-wire)

Operating voltage

[8]	← Code no.
N	24 V AC/DC

Measuring unit

[9]	← Code no.
W	Selectable pressure units

Measured value display / contact elements**[10] ← Code no.**

- C** Colour change LCD - 2 relay contacts
- D** Colour change LCD - 2 semiconductor switches

Electrical connection**[11] ← Code no.**

- M** M12 plug connection

Assembly option**[12] ← Code no.**

- 0** Attachment boreholes on rear side (standard)
- P** Panel assembly (flush front-mounted into a FISCHER panel)
- S** Assembly of the mounting rails
- T** Panel mounting set
- W** Wall-mounting

3.1 Accessories

Order no.	Planned measures	No. of Poles	Length
06401993	M12 Connection cable for switching outputs	4-pin	2 m
06401994	M12 Connection cable for switching outputs	4-pin	5 m
06401563	M12 Connection cable for switching outputs	4-pin	7 m
06401572	M12 Connection cable for switching outputs	4-pin	10 m
06401995	M12 Connection cable for supply/signal	5-pin	2 m
06401996	M12 Connection cable for supply/signal	5-pin	5 m
06401564	M12 Connection cable for supply/signal	5-pin	7 m
06401573	M12 Connection cable for supply/signal	5-pin	10 m

Remote configuration**Order no.**

EU05 0000	Transmitter PC interface incl. PC software	without battery
EU05 0001	Transmitter PC interface incl. PC software	With battery

A data sheet is available on our website www.fischermesstechnik.de or on request.

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.

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