

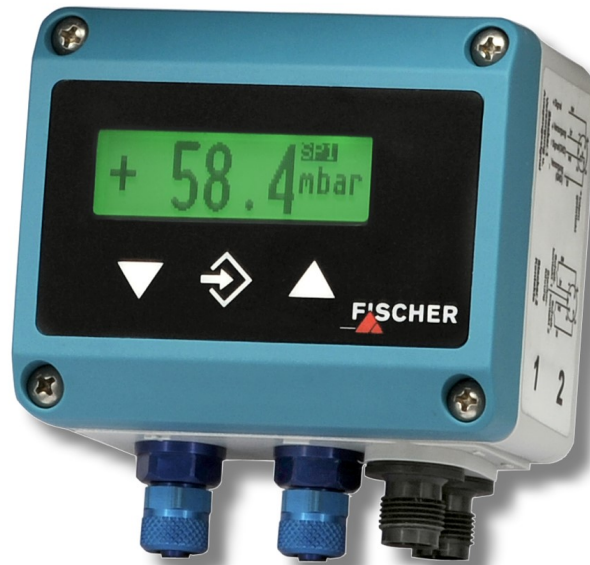


Ex II 3G Ex nA IIC T4 Gc

Ex II 3D Ex tc IIIB T125°C Dc



RoHS III  
COMPLIANT

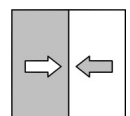


## Datasheet

### DE46

Digital differential pressure switch / transmitter  
with colour-change LCD

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



# 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.

The unit is suitable as an electrical device for operation in potentially explosive areas.

### 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.

### 1.1.1 Explosion hazard area classification

#### Dust explosion protection

Devices with the order code **DE46 ## 00 ### NWDL # S####** are suitable as 'Electrical equipment for use in areas with combustible dust', Zone 22 - dry dusts.

Designation as per Directive 2014/35/EU:

 II 3D Ex tc IIIB T125 °C Dc

$-10\text{ °C} \leq T_{\text{amb}} \leq 60\text{ °C}$



#### **WARNING**


#### Static electricity

The case must be equipped with an earth connection on the side to reduce the surface resistance.

#### Gas explosion protection

Devices with the order code **DE46 ## 00 ### NWDM # R####** are suitable as 'Electrical equipment for use in potentially explosive areas, Zone 2 - Gases and vapours.

Designation as per Directive 2014/34/EU:

 II 3G Ex nA IIC T4 Gc

$-10\text{ °C} \leq T_{\text{amb}} \leq 60\text{ °C}$

### 1.2 Part designations

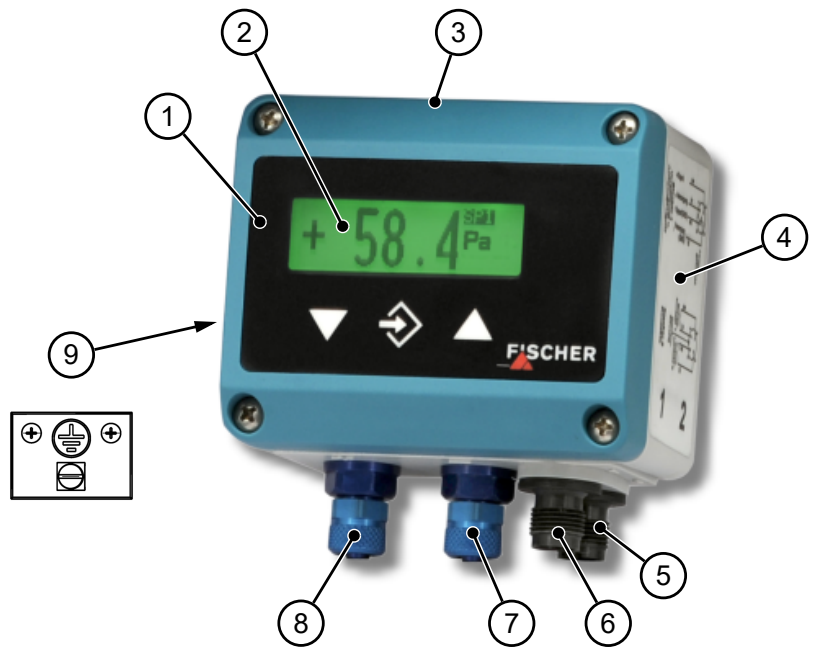


Fig. 1: DE46 with LCD ATEX

1 Foil keypad	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 (+)
9 Ground connection	

Model Zone 22

### 1.3 Function diagram

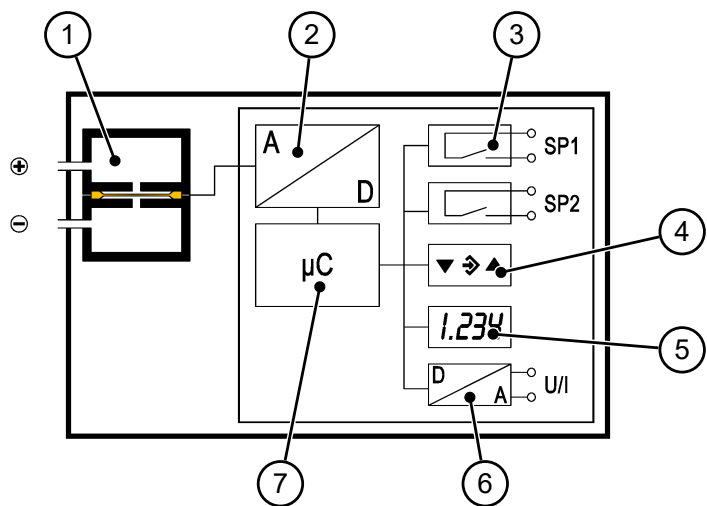


Fig. 2: Function diagram [DE46\_LCD]

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
Static operating pressure	: Max. 100 kPa
Bursting pressure	: Max. 170 kPa
Measurement range [Pa]	0...25
	0...50
	0...100
	0...250
	0...500
	0...1000
	-25...+25
	-50...+50
	-20...+80
	-100...+100

### 2.2 Output parameters

**Analogue output:**

Output signal	Signal range	Load
0...20 mA	0,0...21,0 mA	$U_b \leq 26 \text{ V} : R_L \leq (U_b - 4 \text{ V}) / 0,02 \text{ A}$
4...20 mA	0,0...21,0 mA	$U_b > 26 \text{ V} : R_L \leq 1100 \Omega$
0...10 V	0,0...11,0 V	$R_L \geq 2 \text{ k}\Omega$

**Switching outputs:**

2 potential-free semiconductor switches (MOSFET)

	MOSFET
Progr. switching function	Single-pole on switch (NO) Single-pole off switch (NO)
Max. switching voltage	3...32 V AC/DC
Max. switching current	0,25 A
Max. switching capacity	8 W / VA $R_{ON} \leq 4 \Omega$

### 2.3 Measurement accuracy

Characteristic curve deviation: (Non-linearity and hysteresis)	
Maximum	1,0 % FS
Typical	0,5 % FS
Reproducibility	0,1 % FS

FS (Full Scale) refers to the basic measuring range.

The specifications refer to a linear, non-spread characteristic curve at 25 °C and apply to all measuring ranges.

<b>Temperature coefficient:</b>	max. 0,6 % FS / 10K
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in zero and span referred to the basic measuring range (not spread), compensation range 4...50 °C.

## 2.4 Auxiliary energy



### **⚠ WARNING**

#### Supply circuit

A CE-conform mains adapter with a slow 200 mA fuse only may be used in the power supply circuit.

Rated Voltage	24 V AC/DC
Permissible operating voltage	$U_b = 20 \dots 32$ V AC/DC
Power consumption	Typ. 2.2 W / Max. 3.5 W

## 2.5 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	
ATEX	EN 60079-0:2012 + A11:2013	
	EN 60079-31:2014	Dust
	EN 60079-15:2010	Gases and vapours
RoHS	EN IEC 63000:2018	

## 2.6 Construction design

### Process connection

2x aluminium hose fitting for 6/4 mm or 8/6 mm hose.

2x pneumatic plug-in connection for 6/4 mm or 8/6 mm hose.

### Materials

Housing	Polyamide (PA) 6.6
Contact with the media	Silicon, PVC, aluminium, brass

### Assembly

Attachment boreholes on the rear for mounting on 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.

### 2.6.1 Dimensional drawings

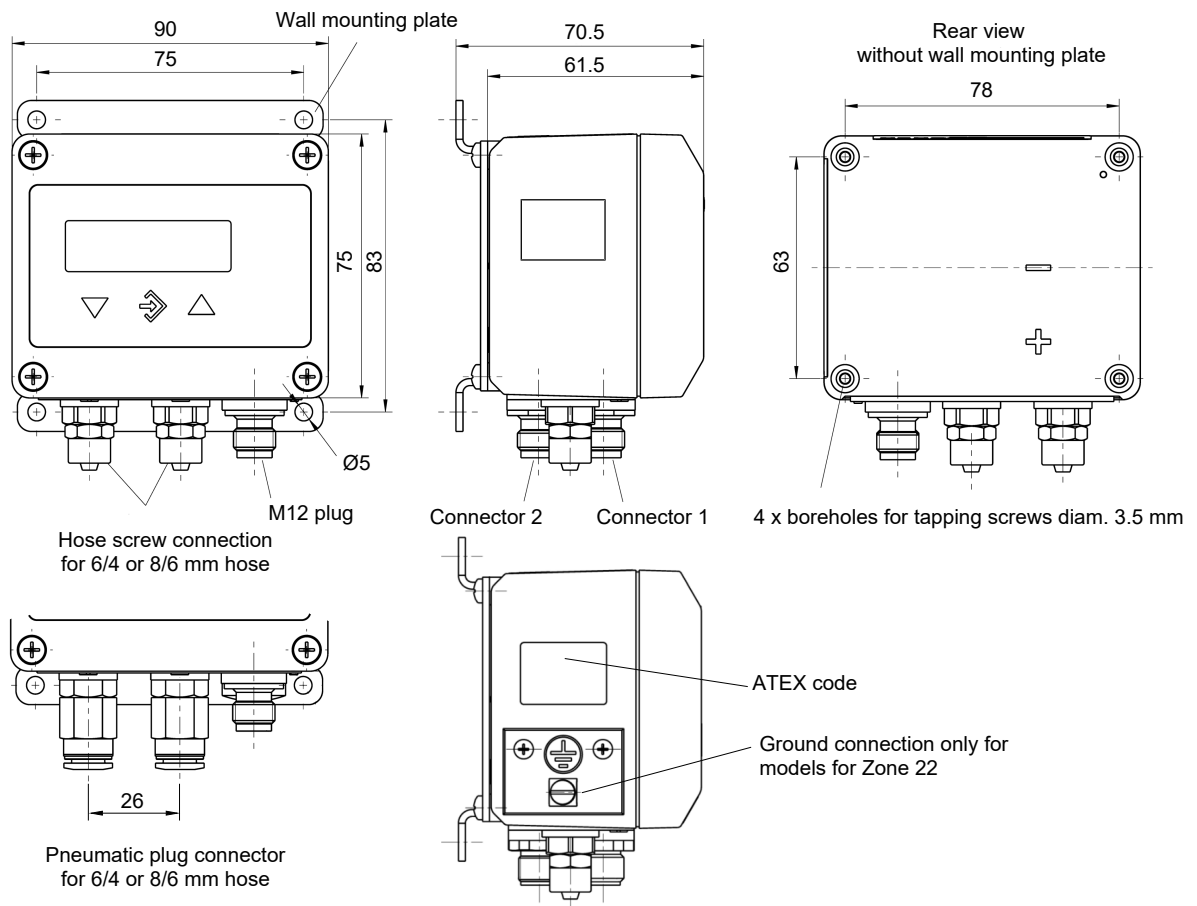


Fig. 3: Wall mounting

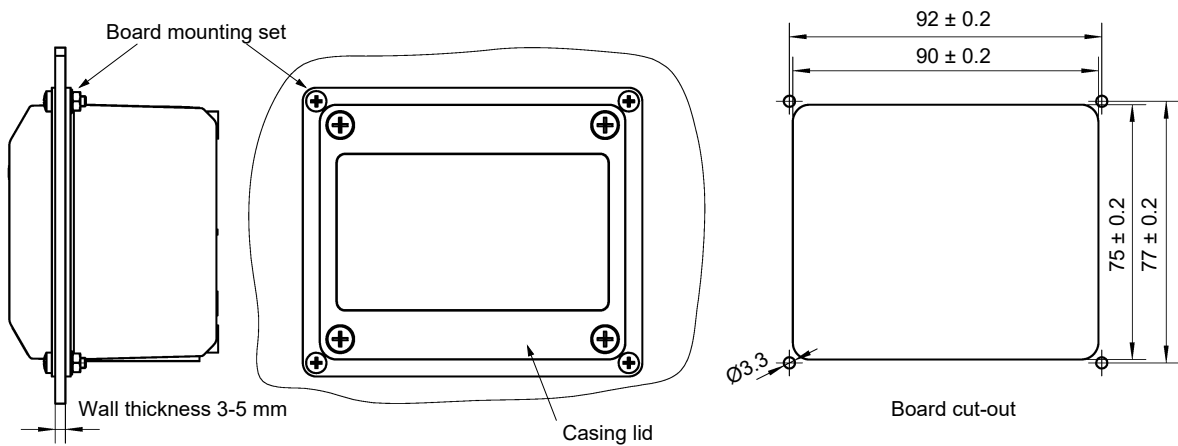
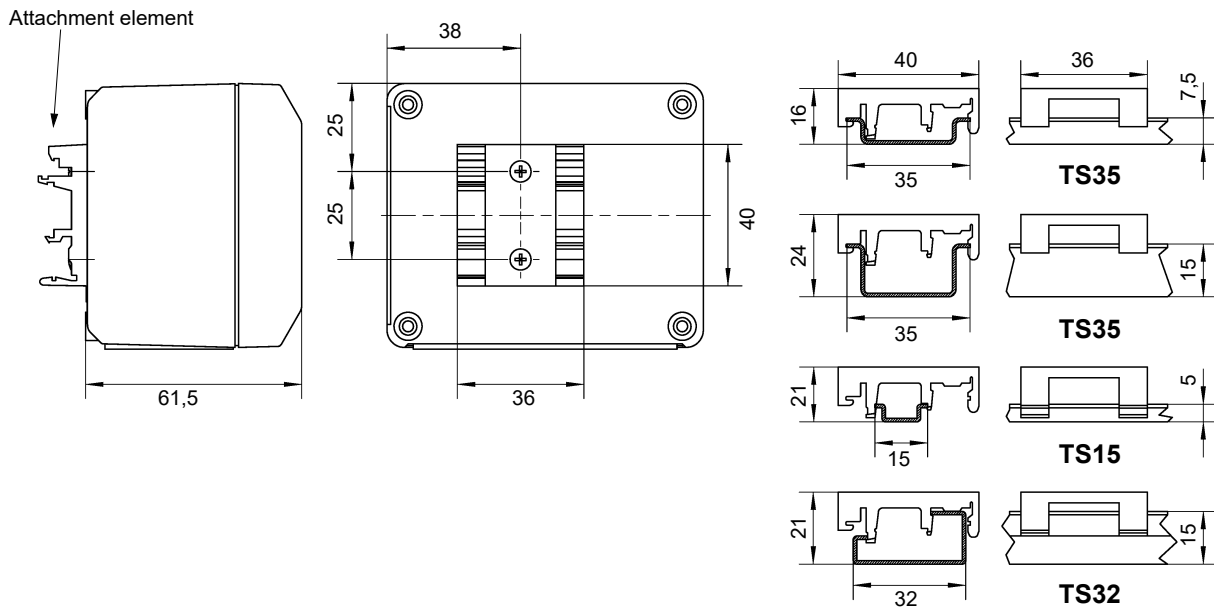


Fig. 4: Front panel mounting



### Panel installation

The DE46 is suitable for flush mounting in a FISCHER RT series panel. The installation is carried out ex works.

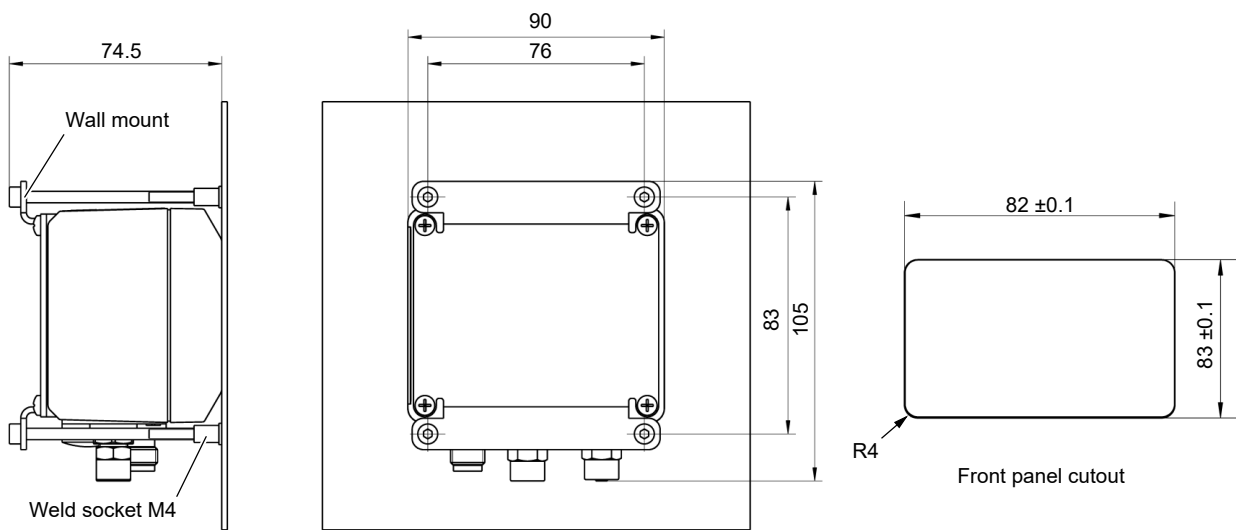


Fig. 5: Panel installation



## 2.7 Display and operating interface

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

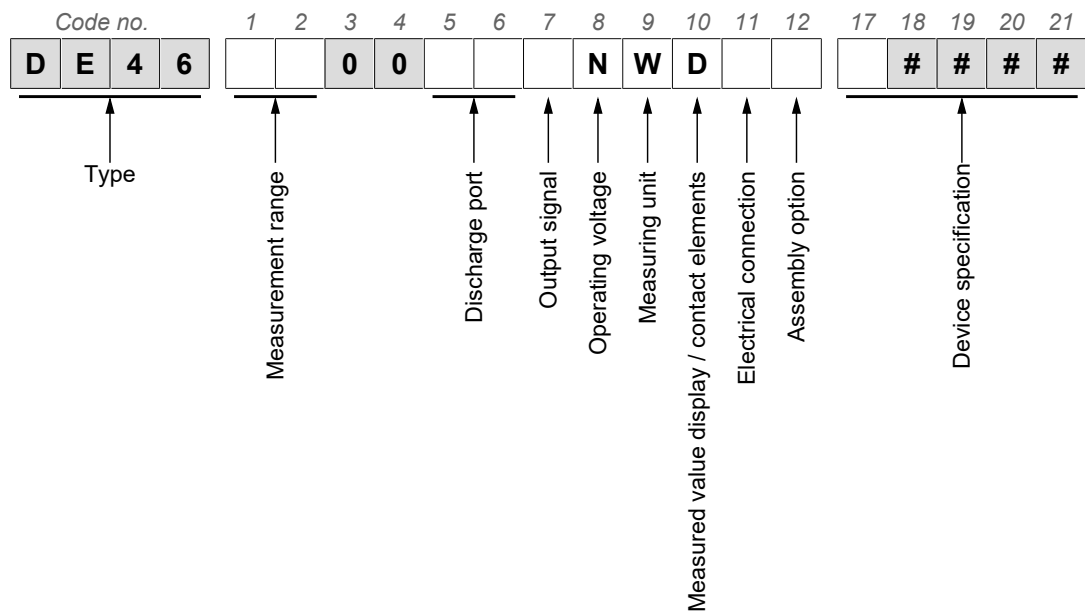
Programming	
Attenuation	0.0...100.0s (jump response 10/90%)
Switch output	Switch-off point, switch-on point, response time (0...1800s), function (NC / NO contact)
Measuring range unit	m / Pa / "free unit"È, starting value, end value and decimal point for "free unit"
Output signal	User-definable within the basic measuring range <sup>(1)</sup>
Zero-point stabilising	0...1/3 of the basic measuring range <sup>(2)</sup>
Zero point correction	±1/3 of the basic measuring range <sup>(3)</sup>
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



#### [1,2] Measuring range

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

#### [5,6] Pressure connection

40	Aluminium screw connection for 8/6 mm hose
41	Verschraubung aus Aluminium für 8/6 mm Schlauch
P6	Pneumatic plug connector for 6/4 mm hose
P8	Pneumatic plug connector for 8/6 mm hose

#### [7] Output signal

0	without analogue output signal
A	0 ... 20 mA (3-wire)
P	4 ... 20 mA (3-wire)
C	0 ... 10 V (3-wire)

#### [8] Operating voltage

N	24 V AC/DC
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#### [9] Measuring unit

W	Selectable pressure units
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<b>[10] Measured value display/contact elements</b>	
<b>D</b>	Colour change LCD - 2 semiconductor switches
<b>[11] Electrical connection</b>	
<b>M</b>	M12 plug connection, plastic (for ATEX devices zone 2)
<b>L</b>	M12 plug-in connection, nickel-plated brass (for ATEX devices zone 22)
<b>[12] Assembly option</b>	
<b>0</b>	Attachment boreholes on rear side (standard)
<b>P</b>	Panel assembly (flush front-mounted into a FISCHER panel)
<b>S</b>	Assembly on mounting rails
<b>T</b>	Panel mounting set
<b>W</b>	Wall-mounting
<b>[17] Device specification</b>	
<b>R</b>	Use in Zone 2 - Exposure to gases and vapours $\text{Ex}$ II 3G Ex nA IIC T4 Gc $-10\text{ °C} \leq T_{\text{amb}} \leq 60\text{ °C}$
<b>S</b>	Use in Zone 22 - Hazard due to dust $\text{Ex}$ II 3D Ex tc IIIB T125°C Dc $-10\text{ °C} \leq T_{\text{amb}} \leq 60\text{ °C}$

The labels with the numbers [18] to [21] specify the unit according to customer requirements in consultation with our sales department.

### 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](http://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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