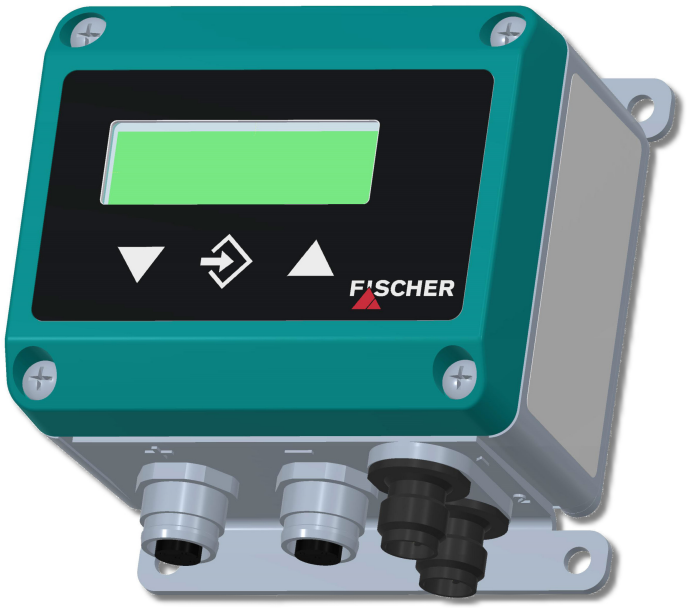
developing solutions

FISCHER
MESS- UND REGELTECHNIK

II 3G Ex nA IIC T4 Gc

CE

RoHS III COMPLIANT



Data sheet

EA14D ... R

Differential pressure evaluation unit
with colour change LCD

Version for potentially explosive areas
Gas explosion protection Zone 2, gases and vapours

09015118 • DB_EN_EA14D_LCD_ATEX • Rev. ST4-D • 05/23

1 Product and functional description

1.1 Performance characteristics

Typical applications

- Differential pressure measurements
- Filter monitoring
- Filling level measuring
- Pump control systems
- Pump, compressor monitoring

Important features

- Colour change display
- External pressure sensors
- Switchable pressure units
- 2 independent switch points
- Zero point correction
- Signal damping
- 2 optional analogues output signals with
  - Characteristic curve spread (max. 10:1)
  - Characteristic curve reversal
  - freely selectable offset
  - Characteristic curve implementation via table with up to 30 measuring points
- The individual pressures (primary, secondary) are displayed
- Remote configuration and measuring point records using the optionally available transmitter PC interface

1.2 Equipment versions

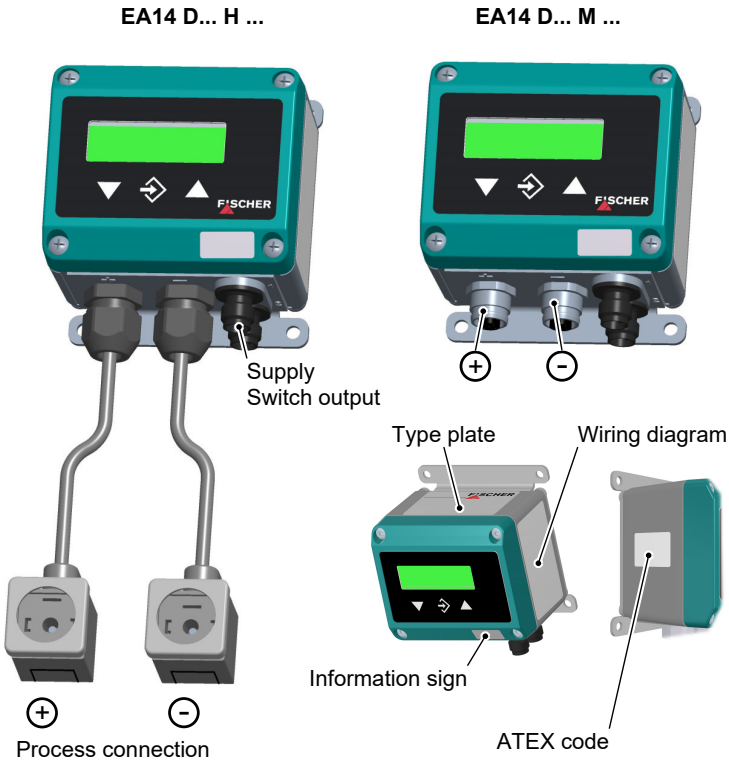


Fig. 1: Equipment versions

1.2.1 Assembly types

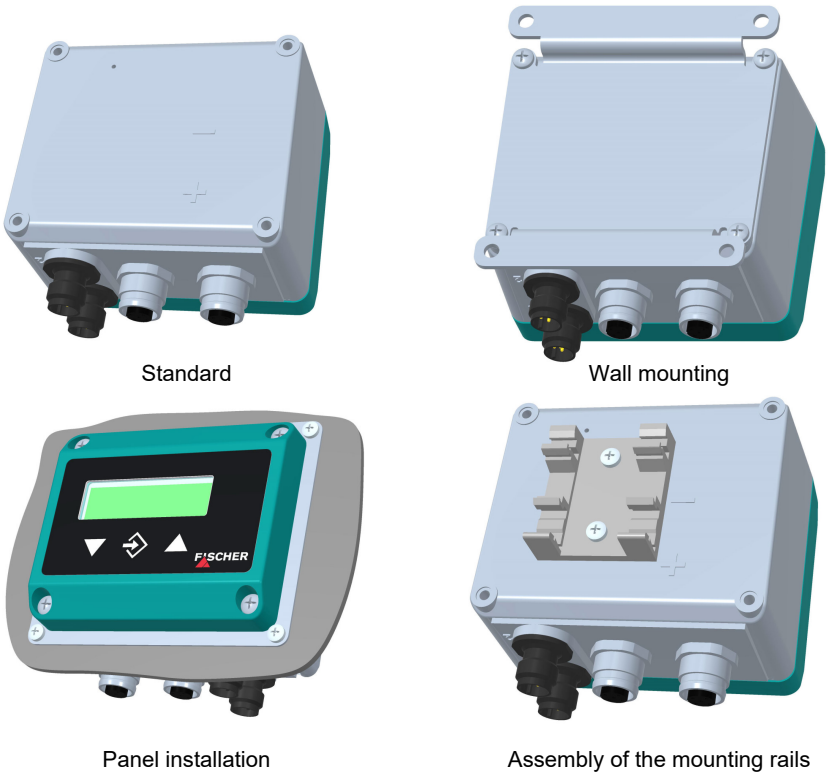


Fig. 2: Assembly types

1.3 Function diagram

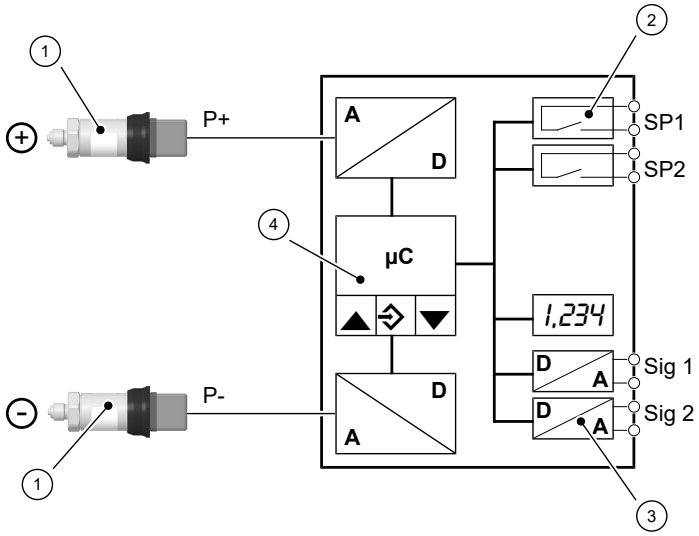


Fig. 3: Function diagram

1	External pressure sensor	2	Switch output
3	Optional analogue output	4	Micro-controller

1.4 Design and mode of operation

The device is based on an electronic evaluation circuit that analyses the measuring signals (P+, P-) of two external pressure transmitters. The main task is the calculation of the differential pressure that can be displayed and analysed. The signals of the external pressure transmitters can be shown separately for review. The evaluation unit allows two independent switching points to be set. Optionally two additional output signals can be made available.

The external pressure transmitters are connected to the differential pressure evaluation unit via flexible plug connection lines. Only the supplied pressure transmitters may be connected. The nominal pressures of the external sensors and the basic measuring range are set ex-works and stated on the type plate.

The unit works in two operating modes:

(a) Differential pressure

In this operating mode, both channels can be independently assigned to the input signals (P+) and (P-). In addition, the differential pressure (dP) or a function (Fct.) can also be assigned as desired. With the function, each output signal can be square rooted or a characteristic curve can be defined by means of a table.

(b) 2-channel

In this operating mode, the output (Sig1) is permanently assigned to the pressure (P+) and the output (Sig2) to the pressure (P-). The function is used to square root both output signals or to define a characteristic curve by means of a table.

1.5 Intended use

The device can be used as a display and switching unit in combination with two external service sensors (4…20 mA). The medium compatibility depends on the technical data of the sensors used.

1.5.1 Explosion hazard area classification

Gas explosion protection

Devices with the order code EA14 D0 ### B # KWDM R#### are suitable as “Electrical equipment for use in potentially explosive areas”, Zone 2 - Gases and vapours.

Designation as per Directive 2014/34/EU:

CE Ex II 3G Ex nA IIC T4 Gc

$-20°C \leq T_{amb} \leq 60°C$

2 Technical data

2.1 Generalities

The stated technical data only refer to the differential pressure evaluation unit EA14D and never take into account the properties of the connected pressure transmitter.

2.2 Input variables

Analogue input (Pressure transmitter signal)	Channel 1 and 2	Type of connection
Current signal in compliance with DIN IEC 60381-1	4 … 20 mA	2-Wire

Measuring range
0 … 2.5 bar
0 … 6 bar
0 … 10 bar
0 … 16 bar
0 … 25 bar
0 … 40 bar
0 … 60 bar
Other measuring ranges available on request

2.3 Output sizes

Switch output	MOSFET
Progr. switching function	One-pin activator (NO) One-pin deactivator (NC)
Max. switching voltage	3 … 32 V AC/DC
Max. switching current	0.25 A
Max. switching output	8 W(VA) R_{ON} ≤ 4 Ω

Optionally, the device can also be supplied with two analogue outputs.

Analogue output	0/4 … 20 mA	0 … 10 V
Type of connection	3-Wire	3-Wire
Apparent ohmic resistance	U_b ≤ 26 V: R_L ≤ (U_b – 4 V) / 0.02 A	R_L > 2 kΩ
	U_b > 26 V: R_L ≤ 1100 Ω	
Signal range	0.0 … 21.0 mA	0.0 … 11.0 V
Turn down	10:1	10:1

2.4 Measurement accuracy

		Maximal	Typical
Measurement deviation [+)]		0.1 % FS	<0.05 %
Temperature drift [x)]	Span	0.1 %FS/10K	<0.025 %FS/10K
	Zero point	0.1 %FS/10K	<0.025 %FS/10K

[+)] Characteristic curve deviation (non-linearity and hysteresis) at 25°C and rated voltage basic measuring range with linear characteristic curve, not spread

[x)] In relation to the basic measuring range with a linear, not spread, characteristic curve.

2.5 Auxiliary energy

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

Rated Voltage	24V AC/DC
Admissible operating voltage	12 … 32 V AC/DC
Absorbed power	Max. 2 W (VA)

2.6 Operating conditions

Ambient temperature range	-10 … +60 °C
Storage temperature range	-20 … +70 °C
Medium temperature range	see Pressure sensor data sheet
Protection class IP	IP65 acc. to DIN EN 60529
ATEX	EN 60079-0 EN 60079-15
EMC	EN 61326-1 EN 61326-2
RoHS	EN 50581

2.7 Display and operating interface

Annunciation, display, indication

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

Programming

Damping	0.0…100.0s (jump response 10/90%)
Switch output	Switch-off point, switch-on point, response time (0...1800s), function (NC / NO contact), channel assignment
Measuring range unit	bar, mbar, Pa, kPa, MPa, psi, InWc, mmWs, mmHg, 'free unit', starting value, end value and decimal point for 'free unit'
Output signal	User-definable within the basic measuring range (1)
Zero-point window	0…⅓ of the basic measuring range (2)
Offset correction	±⅓ 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)
Language (can be switched)	DE, EN, FR, ES, IT, PT, and HU

(1) Max. effective spread 10:1
(2) measured values around zero are set to zero.
(3) To compensate different installation positions.

2.8 Construction design

Process connection	2 x 5-pin round plugs M12 (female) for external pressure transmitters or 2 x 4-pin standard plug DIN EN 175 301-803-A (female) with 1 m cable
Electrical connection	2 x round plug connector M12 (male) 5-pin for supply and output signal 4-pin for switch contacts
Installation position	User-defined
Dimensions (LWH)	90 x 61.5 x 75 mm
Weight (without cables and pressure sensors)	300 g

2.8.1 Materials

Materials of the parts that come into contact with the medium
see Pressure sensor data sheet

Materials of the parts that come into contact with the surroundings	
Housing	Polyamide PA 6.6
Foil keypad	Polyester
Process connection	Nickel-plated brass
Electrical connection	Polyamid

2.8.2 Dimensional drawings

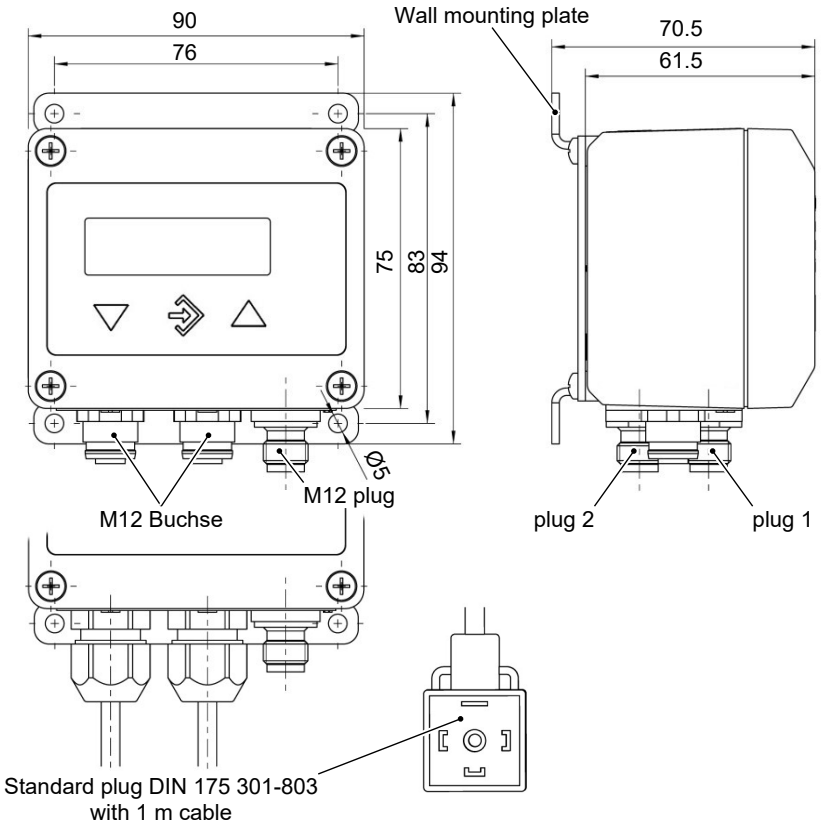


Fig. 4: Dimensional picture

2.8.3 Wall mounting

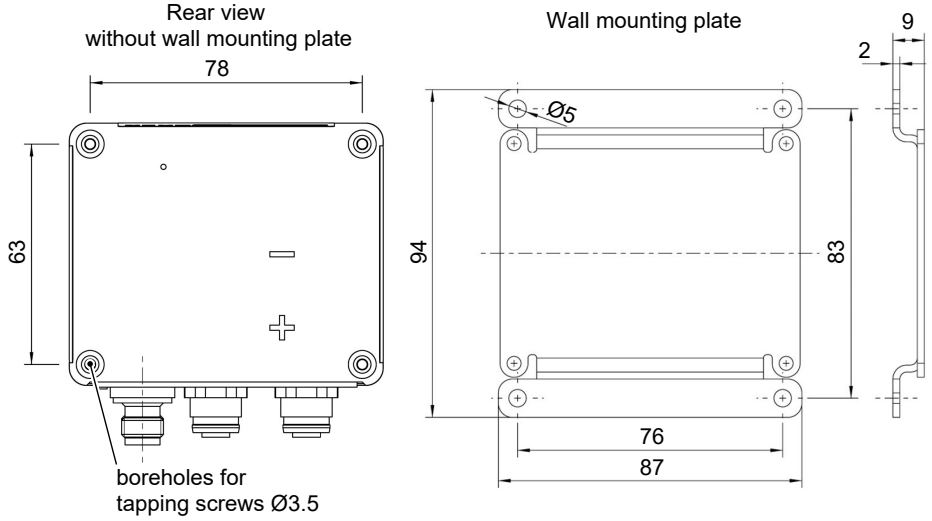


Fig. 5: Wall mounting

2.8.4 Assembly of the mounting rails

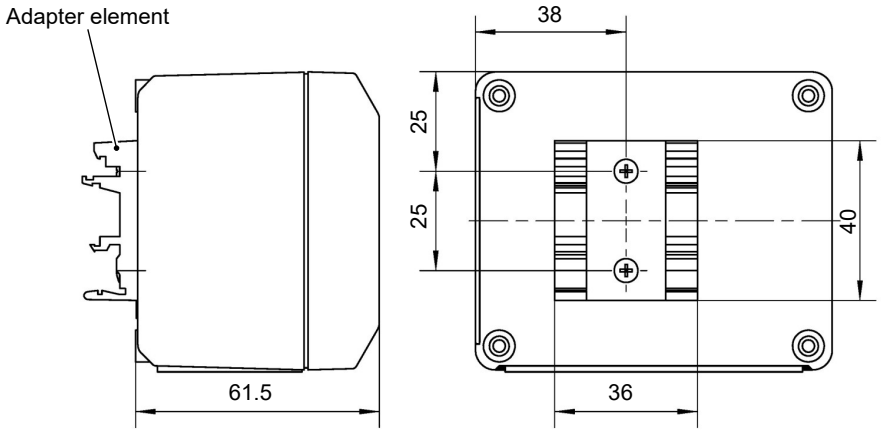


Fig. 6: Adapter element

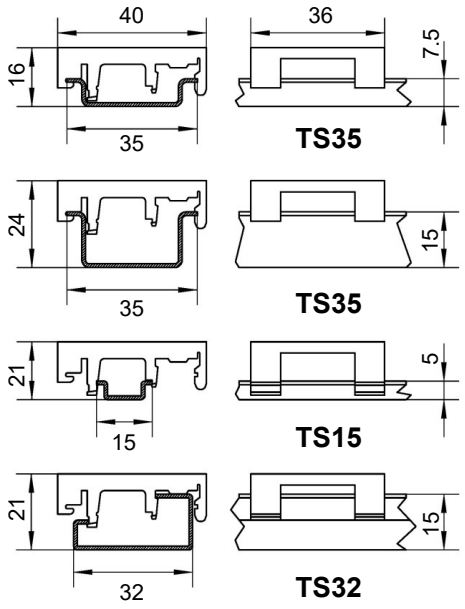


Fig. 7: Mounting rails options

2.8.5 Installation of front panel

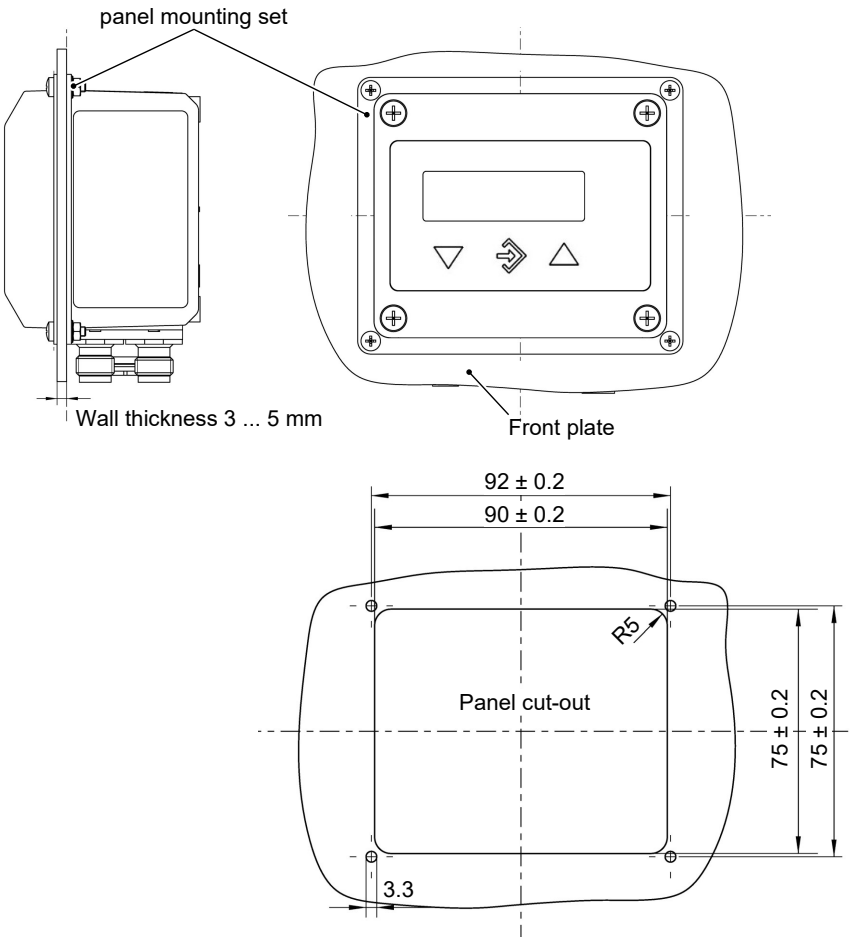
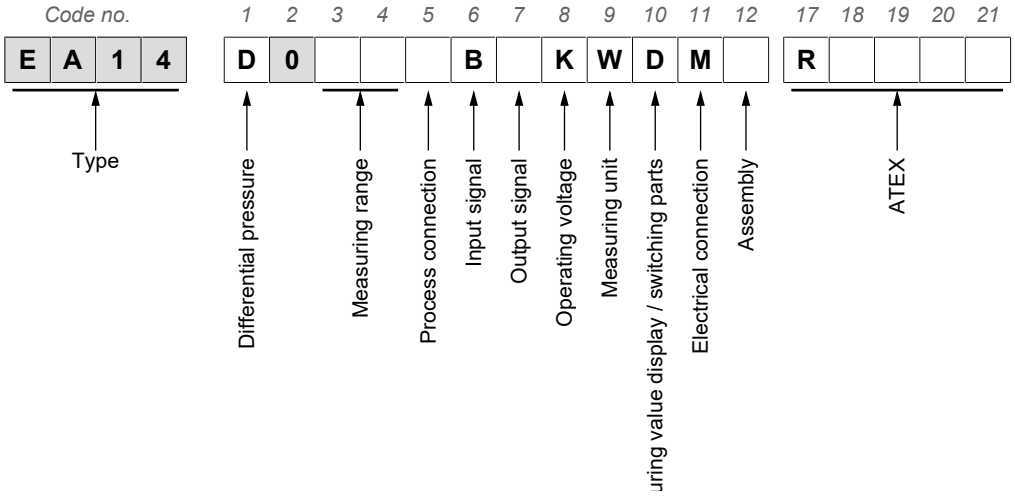


Fig. 8: Installation of front panel

3 Order codes



[3.4]	Measuring range (differential pressure)
04	0 … 2.5 bar
06	0 … 6 bar
07	0 … 10 bar
08	0 … 16 bar
09	0 … 25 bar
10	0 … 40 bar
11	0 … 60 bar
99	Other measuring ranges available on request

[5]	Process connection (pressure transmitter)
M	2 x M12 plug connection
H	2 x plug connector DIN EN 175301-803 A with 1m cable

[6]	Input signal (pressure transmitter)	Type of connection
B	4 … 20 mA	2-Wire

[7]	Output signal	Type of connection
0	Without analogue output signal	
4	0 … 20 mA	3-Wire
5	0 … 10 V	3-Wire
6	4 … 20 mA	3-Wire

[8]	Operating voltage
K	24 V AC/DC

[9]	Measuring unit
W	Selectable pressure units

[10]	Measured value display / contact elements:
D	4-digit colour change LCD / 2 semiconductor contacts

[11]	Electrical connection
M	2 x M12 plug connection

[12]	Assembly
0	Attachment boreholes on rear side (standard)
W	Wall mounting
T	Panel mounting set
S	Assembly of the mounting rails

[17]	ATEX model
R	Use in Zone 2 - Risk from gases and vapours CE Ex II 3G Ex nA IIC T4 Gc

[18-21]	ATEX model
####	Device specification

3.1 Accessories

Order no.	length
4-pin M12 Connection cable for switching outputs	
06401993	2m
06401994	5m
06401563	7m
06401572	10m
5-pin M12 connection cable for auxiliary energy and analogue outputs	
06401995	2m
06401996	5m
06401564	7m
06401573	10m

Remote configuration

Order no.		
EU05 0001	Transmitter PC interface incl. PC software	With battery
EU03 F300		

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.

Notes

Notes

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