


JUMO dTRANS p33

Pressure Transmitter and Level Probe for use in hazardous areas

-  II 1/2G Ex ia IIC T6 ... T4 Ga/Gb (without extra code 406 and 407)
II 1/2D Ex ia IIIC T60 °C ... T100 °C Da/Db (without extra code 406 and 407)
II 2G Ex ia IIC T6 ... T4 Gb (for extra code 406)
II 1G Ex ia IIB T6 ... T4 Ga (for extra code 407)

General application

The type 404753 pressure transmitter measures the pressure in both corrosive and non-corrosive gases, vapors, liquids and dusts. The transmitter operates on the piezoresistive measuring principle. The output signal is a DC current that is proportional to the input pressure.

The type 404753 pressure transmitter fulfills the following requirements for equipment group II:

- In Zone 1 and 2 areas with an explosion hazard arising from gas (**Gas**).
The pressure connection (process connection) may, however, also be mounted on to zone 0.
- In Zone 21 and 22 areas with an explosion hazard arising from dust (**Dust**).
The pressure connection (process connection) may, however, also be mounted on to zone 20.

The pressure transmitter can also be used as a level probe.

- Explosion group II, category 2 G with extra code 406
- Explosion group II, category 1 G with extra code 407

The EC type-examination certificate is designated: SEV 09 ATEX 0140 X.

Technical data

Reference conditions

To DIN 16086 and IEC 770/5.3

Measurement ranges

See order details

Overload limit

For ranges < 100 bar:

4× full scale

For ranges ≥ 100 bar:

2× full scale

Burst pressure

10× full scale, 2000 bar max.

Parts in contact with medium

Standard:

stainless steel 316 L, 316 Ti

For range ≥ 60 bar:

stainless steel 316 Ti, 630

With extra code 406:

cable material PE (polyethylene), standard

Output

4 to 20 mA, two-wire

Zero offset

≤ 0.3 % MSP (Measuring span)

Thermal hysteresis

For ranges ≤ 600 mbar:

≤ ±1 % MSP

For ranges > 600 mbar:

≤ ±0.5 % MSP

Ambient temperature error

For ranges 250 and 400 mbar:

Zero: ≤ 0.03 %/°C typical,

≤ 0.05 %/°C max.

Span: ≤ 0.02 %/°C typical,

≤ 0.04 %/°C max.

For ranges above 600 mbar:

Zero: ≤ 0.02 %/°C typical,

≤ 0.04 %/°C max.

Span: ≤ 0.02 %/°C typical,

≤ 0.04 %/°C max.

Deviation from characteristic

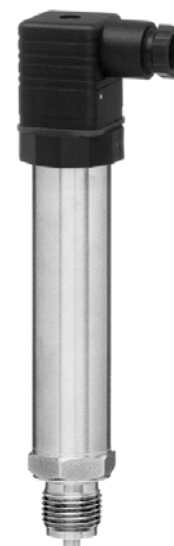
≤ 0.5 % MSP (limit setting)

Hysteresis

≤ 0.1 % MSP



Type 404753/000-xxx-405-658-20-12-1/406



Type 404753/000-xxx-405-504-20-61-1/000

Approvals/approval marks



Technical data

Stability per year

≤ 0.5 % MSP

Voltage supply

DC 11 to 28 V

(from intrinsically safe circuit)¹

$U_{max} \leq 28 \text{ V}$

$I_{K \text{ max}} \leq 120 \text{ mA}$

Ripple: The voltage peaks must not go above or below the limits specified for the voltage supply.

Max. current drawn ≤ 45 mA (at DC 24 V)

Voltage supply error

≤ 0.03 % per V

Permissible ambient temperature

-40 to +85 °C

Storage temperature

-40 to +85 °C

Permissible temperature of medium

Standard: -40 to +85 °C

For type 404753/004: -40 to +200 °C

With extra code 406: -40 to +70 °C

With extra code 407: -40 to +70 °C

Electromagnetic compatibility

EN 61326

Interference emission: class B

Interference immunity: industrial requirements

Mechanical shock

(to IEC 68-2-27)

100 g/1 msec

Mechanical vibration

(to IEC 68-2-6)

Max. 10 g at 15 to 2000 Hz

Protection type

With connector screwed on:

IP65 to EN 60529

With extra code 406 or 407:

IP68 to EN 60529

Housing

Stainless steel 304

Pressure connection

See order details;

other connections on request

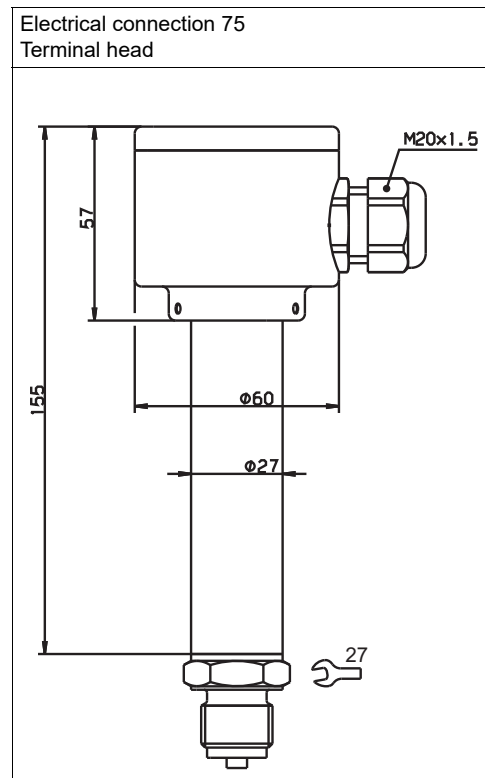
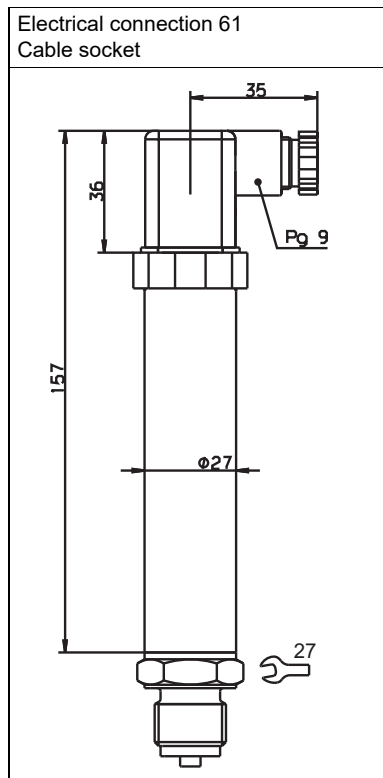
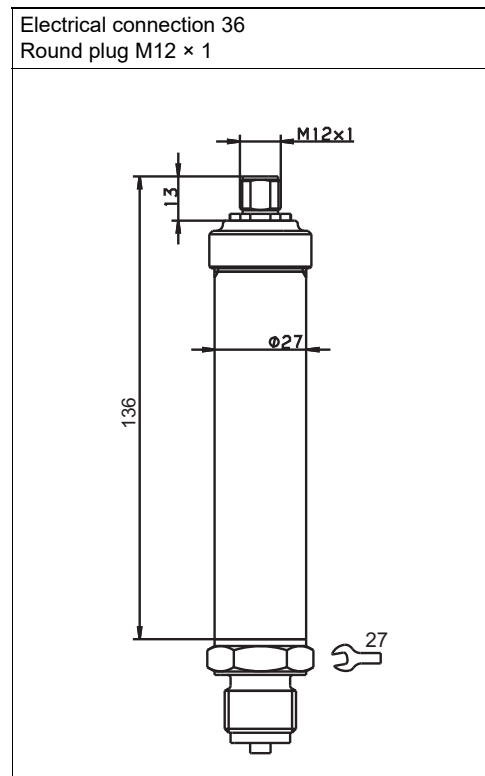
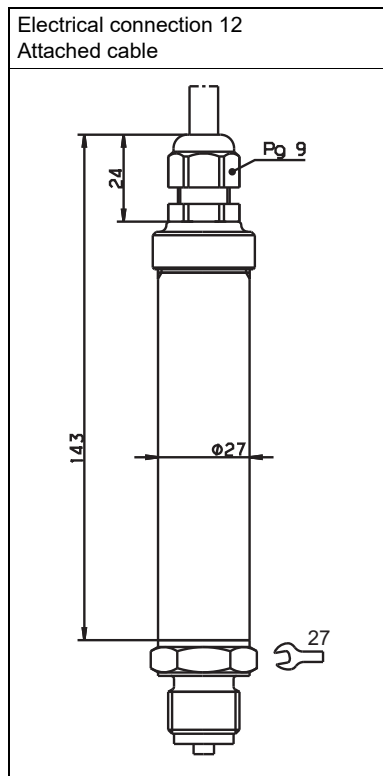
Nominal position

Unrestricted

Weight

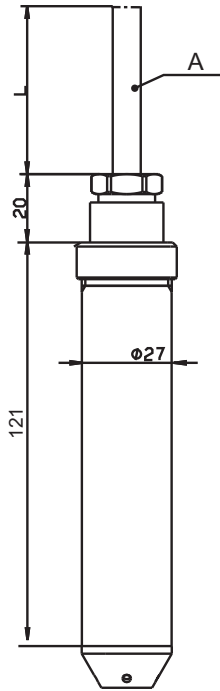
350 gm (with process connection G 1/2)

Dimensions

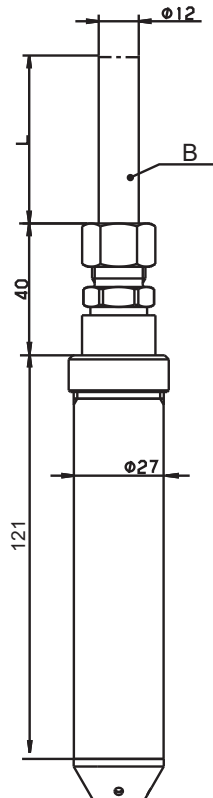


¹ Intrinsically safe circuit in conjunction with Ex-i Power supply/input isolating amplifier, type 707530

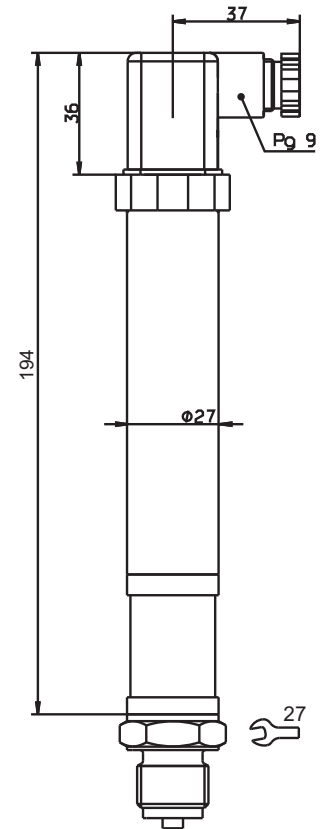
Extra code 406
Level probe: IP68 protection,
attached cable, class 2G, zone 1



Extra code 407
Level probe: IP68 protection,
attached cable, class 1G, zone 0



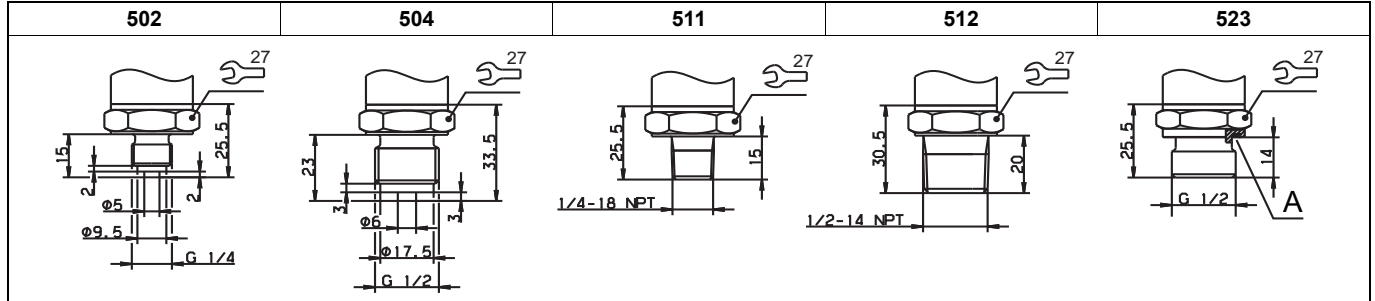
Basic type extension 004
for elevated temperature of medium



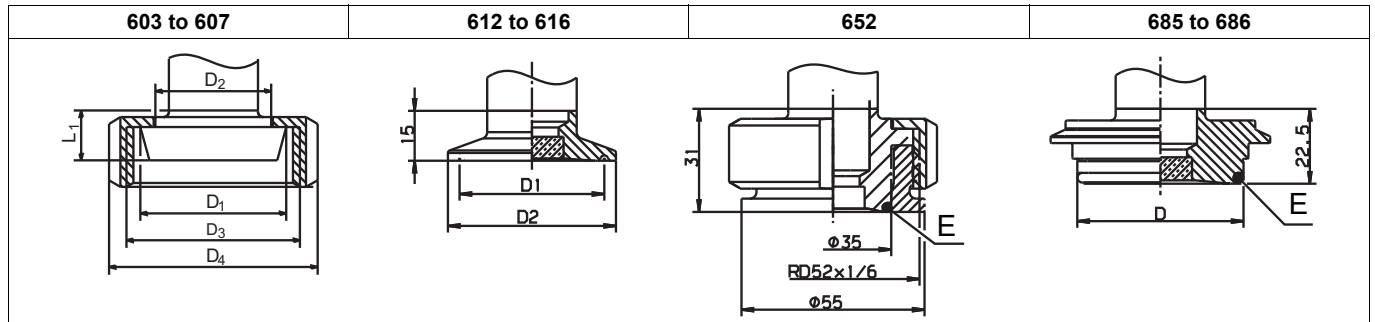
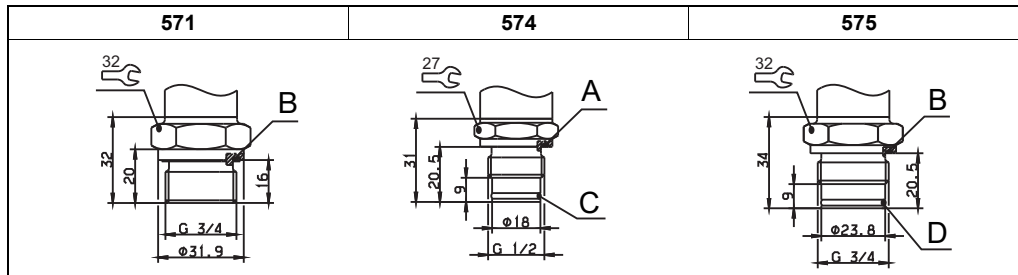
A Fixed connecting cable

B Customer-supplied protection tube, see Operating Instructions

Process connection (not front-flush)



Process connection (front-flush)

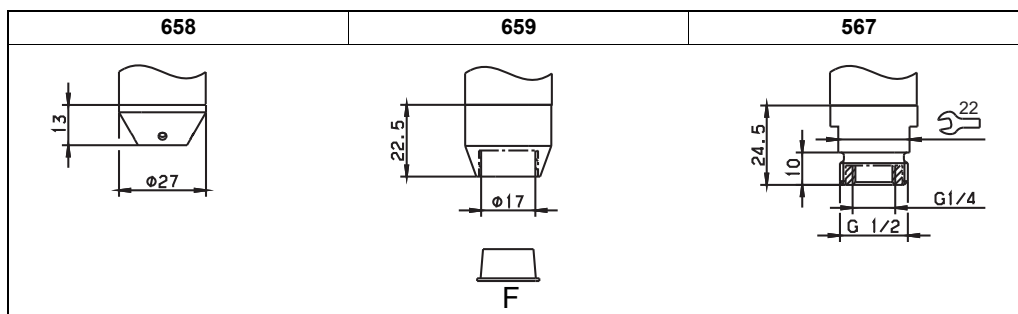


603 to 607						
Process connection	DN	Ø D ₁	Ø D ₂	Ø D ₃	Ø D ₄	L ₁
603	20	36.5	30	RD 44 × 1/6	54	13
604	25	44	35	RD 52 × 1/6	63	15
605	32	50	41	RD 58 × 1/6	70	15
606	40	56	48	RD 65 × 1/6	78	15
607	50	68.5	61	RD 78 × 1/6	92	16

612 to 616			
Process-connection	DN	Ø D ₁	Ø D ₂
612	20	27.5	34
613	25	43.5	50.5
615	40	43.5	50.5
616	50	56.5	64

685		
Process-connection	DN	Ø D
685	25 to 32	50

Process connection for level probes (extra code 406 and 407)



- A Profile seal DN G 1/2
- B Profile seal DN G 3/4
- C O-ring 14 × 1.78
- D O-ring 20.35 × 1.78
- E O-ring
- F Protective cap

Electrical connection

Connection		Terminals			
		12 Attached cable	36 Round plug M12 × 1	61 Cable socket	75 Terminal head
4 to 20 mA, two-wire (output 405)					
Voltage supply DC 11 bis 28 V intrinsically safe	U _B /S+ 0 V/S-	WH GY	1 BN 3 BU	1 2	1 2
Potential equilibration (FE)			2	^a 	3
Screen A shielded cable must be used for the connection! The shield must be grounded on both sides!		BK			

^a Symbol on cable socket

Color assignment:	1 BN	Brown
Connecting cable round plug M12 × 1	2 WH	White
	3 BU	Blue
	4 BK	Black
	5 GY	Grey
The color assignment only apply to A-coded standard cables!		



Order details

	(1) Basic type
404753	JUMO dTRANS p33 – Pressure transmitter and level probe for use in hazardous areas
	(2) Basic type extension
000	None
004	For elevated temperature of medium ^a
	(3) Nominal input range
451	0 to 250 mbar relative pressure
452	0 to 400 mbar relative pressure
453	0 to 600 mbar relative pressure
454	0 to 1 bar relative pressure
455	0 to 1.6 bar relative pressure
456	0 to 2.5 bar relative pressure
457	0 to 4 bar relative pressure
458	0 to 6 bar relative pressure
459	0 to 10 bar relative pressure
460	0 to 16 bar relative pressure
461	0 to 25 bar relative pressure
462	0 to 40 bar relative pressure
463	0 to 60 bar relative pressure
464	0 to 100 bar relative pressure
465	0 to 160 bar relative pressure
466	0 to 250 bar relative pressure
467	0 to 400 bar relative pressure
468	0 to 600 bar relative pressure
475	-0.25 to 0 bar relative pressure
476	-0.4 to 0 bar relative pressure
477	-0.6 to 0 bar relative pressure
478	-1 to 0 bar relative pressure
479	-1 to 0.6 bar relative pressure
480	-1 to 1.5 bar relative pressure
481	-1 to 3 bar relative pressure
482	-1 to 5 bar relative pressure
483	-1 to 9 bar relative pressure
487	0 to 0.6 bar absolute pressure
488	0 to 1 bar absolute pressure
489	0 to 1.6 bar absolute pressure
490	0 to 2.5 bar absolute pressure
491	0 to 4 bar absolute pressure
492	0 to 6 bar absolute pressure
493	0 to 10 bar absolute pressure
494	0 to 16 bar absolute pressure
495	0 to 25 bar absolute pressure
998	Special range absolute pressure
999	Special range relative pressure
	(4) Output
405	4 to 20 mA, two-wire
	(5) Process connection
502	G 1/4 to DIN EN 837
504	G 1/2 to DIN EN 837
511	1/4-18 NPT to DIN 837

512	1/2-14 NPT to DIN 837
523	G 1/2 to DIN 3852 T11
567	G 1/4 internal ^{b, c}
571	G 3/4 front-flush to DIN EN ISO 228-1 ^d
574	G 1/2 front-flush with 2× seal ^e
575	G 3/4 front-flush with 2× seal ^f
576	G 1 front-flush with 2× seal ^f
603	Taper socket with union nut to DIN11851, DN 20 (dairy pipe fitting) ^g
604	Taper socket with union nut to DIN11851, DN 25 (dairy pipe fitting) ^g
605	Taper socket with union nut to DIN11851, DN 32 (dairy pipe fitting) ^g
606	Taper socket with union nut to DIN11851, DN 40 (dairy pipe fitting) ^g
607	Taper socket with union nut to DIN11851, DN 50 (dairy pipe fitting) ^g
612	Clamping socket to DIN 32676, DN 10/15/20 ^g
613	Clamping socket to DIN 32676, DN 25/32/40 ^g
616	Clamping socket to DIN 32676, DN 50 ^g
652	Tank connection with union nut, DN 25 ^g
658	Level probe: connection closed underneath ^{b, h}
659	Level probe: connection open underneath ^{b, d, h}
685	Varivent DN 32/25 with EHEDG certification ^g
(6) Material of process connection	
20	CrNi (stainless steel)
(7) Electrical connection	
12	Attached cable, screened, 2 m (further length on request)
36	Round plug M12 × 1
61	Cable socket DIN EN 175301-803, form A
75	Terminal head
(8) Filling medium for measurement system	
0	None
1	Silicone oil
(9) Extra codes	
000	None
406	Level probe: IP68 protection, attached cable, class 2G, zone 1 ⁱ
407	Level probe: IP68 protection, attached cable, class 1G, zone 0 ^{i, j}
452	Parts in contact with the medium electro-polished, surface roughness Ra ≤ 0.8 μm

^a The basic type 404753/004 can not be supplied with nominal input range 451, 452, 453, 465, 466, 467, 468, 475, 476, 477, 487.

^b The process connections 567, 658 and 659 can be supplied only with nominal input range 451, 452, 453, 454, 455, 456, 457, 458 and 459.

^c The process connection 567 is not possible in conjunction with extra code 407.

^d The process connection 571 is not possible in conjunction nominal input range 465, 466, 467 and 468.

^e The process connection 574 is not possible in conjunction with nominal input range 451, 452, 453, 468, 475, 476, 477 and 487.

^f The process connections 575 and 576 can not be supplied with nominal input range 465, 466, 467 and 468.

^g The process connections 603, 604, 605, 606, 607, 612, 613, 616, 652 and 685 can not be supplied with nominal input range 462, 463, 464, 465, 466, 467, 468.





^h The process connections 658 and 659 can be supplied only with extra codes 406 or 407.

ⁱ Please clearly specify the cable length for extra codes 406 and 407. The standard material is PE. Select at electrical connection 12 "attached cable" for order code.


^j The operator must select an overall system that will ensure the correct zone isolation for the relevant application. This must be implemented by including a protection tube and screw connection as described in EN 60079-1. The applicable requirements are described in the operating instructions.

Order code (1) (2) (3) (4) (5) (6) (7) (8) (9)
 Order example 404753 / 000 - 451 - 405 - 504 - 20 - 61 - 1 / 000

Accessories

Item	Description	Part no.
<p>Cable clamp</p> 	<p>The cable clamp holds the probe in the liquid at a defined depth and provides strain relief. Use of the cable clamp ensures that the cable is not deformed in an unacceptable manner.</p> <p>The cable clamp is compatible with all JUMO level probes.</p> <p>The clamping range is 5.5 to 10.5 mm. The maximum tensile strength is 2.5 kN. The case is made of hot-dip galvanized steel sheet. The clamping jaws and guide clips are made of glass fiber reinforced polyamide. A stainless steel variant is also available upon request.</p>	00061389
<p>Sealing screw</p> 	<p>For closed containers or water wells with a well head, the cable should be guided through and fastened by a sealing screw.</p> <p>The sealing screw is made up of a G 1 1/2" thread and is used to route the cable.</p>	00333329
<p>Terminal box with pressure compensation element</p> 	<p>The terminal case, is used for secure installation of the level probe cable. The end of the pressure compensation tube is always protected from deposits and condensation (IP65). The remaining distribution can be performed with a standard cable without a pressure equalization hose.</p> <p>The terminal case should be mounted as close as possible to the medium surface while still outside the medium to ensure the system is implemented cost-effectively and in the best possible way.</p>	00061206
<p>Pressure compensation filter for cable</p>	<p>The pressure compensation filter is a breathable filter that ensures aeration and exhaust-air ventilation without moisture penetrating. It is fitted at the end of the special cable.</p>	00382632
<p>2-valve manifold, PN 420, DN 5, version 1/2-NPT/1/2-NPT</p> 	<p>Manifolds can be supplied in conjunction with pressure measuring devices. They serve to isolate and thus to zero adjustment of the pressure gauge.</p>	00561605
<p>2-valve manifold, PN 420, DN 5, version 1/2-NPT/G 1/2</p>		00550362



Item	Description	Part no.
<p>Ex-i supply/input isolating amplifier</p> 	<p>The Ex-i repeater power supply/input isolating amplifier is designed for operating intrinsically safe transmitters (Ex-i) and mA current sources installed in potentially explosive (Ex) areas.</p> <p>Two-wire transmitters are supplied with energy and analog 0/4 to 20 mA measured values are transmitted from the Ex-area to the non-Ex-area. The output of the module can be operated actively or passively. Further technical data and the relevant safety requirements are available in the operating manual B707530.0.</p>	<p>00577948</p>