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JUMO Instrument Co. Ltd.
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JUMO Process Control, Inc.
6733 Myers Road
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JUMO dTRANS p33

Pressure Transmitter and Level Probe for use in hazardous areas

- II 1/2 G Ex ia IIC T4 to T6 (without extra code 406 and 407)
- II 1/2 D Ex ia IIIC T100 °C to T60 °C IP65 (without extra code 406 and 407)
- II 2 G Ex ia IIC T4 to T6 (for extra code 406)
- II 1 G Ex ia IIB T4 to T6 (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:
4x full scale

for ranges ≥ 100 bar:
2x full scale

Bursting pressure
10x full scale, 2000 bar max.

Parts in contact with medium
standard:
stainless steel, mat. ref. 1.4435, 1.4571
for range ≥ 60 bar:
stainless steel, mat. ref. 1.4571, 1.4542
with extra code 406:
cable material PE (polyethylene)

Output
4 to 20 mA, 2-wire

Zero offset
≤ 0.3 % of full scale

Thermal hysteresis
for ranges ≤ 600 mbar:
≤ ±1 % of full scale
for ranges > 600 mbar:
≤ ±0.5 % of full scale

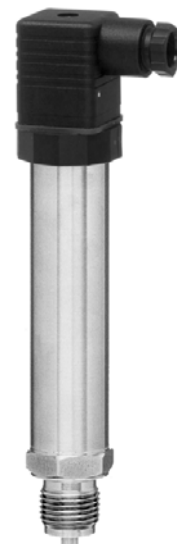
Ambient temperature error
for ranges 250 and 400 mbar:
zero: ≤ 0.03 %/°C typical,
≤ 0.05 %/°C max.
span: ≤ 0.02 %/°C typical,
≤ 0.04 %/°C max.
for ranges above 600 mbar:
zero: ≤ 0.02 %/°C typical,
≤ 0.04 %/°C max.
span: ≤ 0.02 %/°C typical,
≤ 0.04 %/°C max.

Deviation from characteristic
≤ 0.5 % of full scale (limit setting)

Hysteresis
≤ 0.1 % of full scale



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



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

Approvals/marks of conformity



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Technical data

Stability per year
 ≤ 0.5 % of full scale

Supply

DC 11 to 28 V
 (from intrinsically safe circuit)¹
 $U_{max} \leq 28$ V
 $I_{Kmax} \leq 120$ mA

Ripple: The voltage spikes must not go above or below the limits specified for the supply.
 max. current drawn ≤ 45 mA (at DC 24 V)

Supply voltage 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

Electrical connection

recommended: screened 5-core cable
 with extra code 406 or 407: PE cable
 with internal pressure equilibration tubing

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

Enclosure protection
 with connector screwed on:
 IP65 to EN 60529
 with extra code 406 or 407:
 IP68 to EN 60529

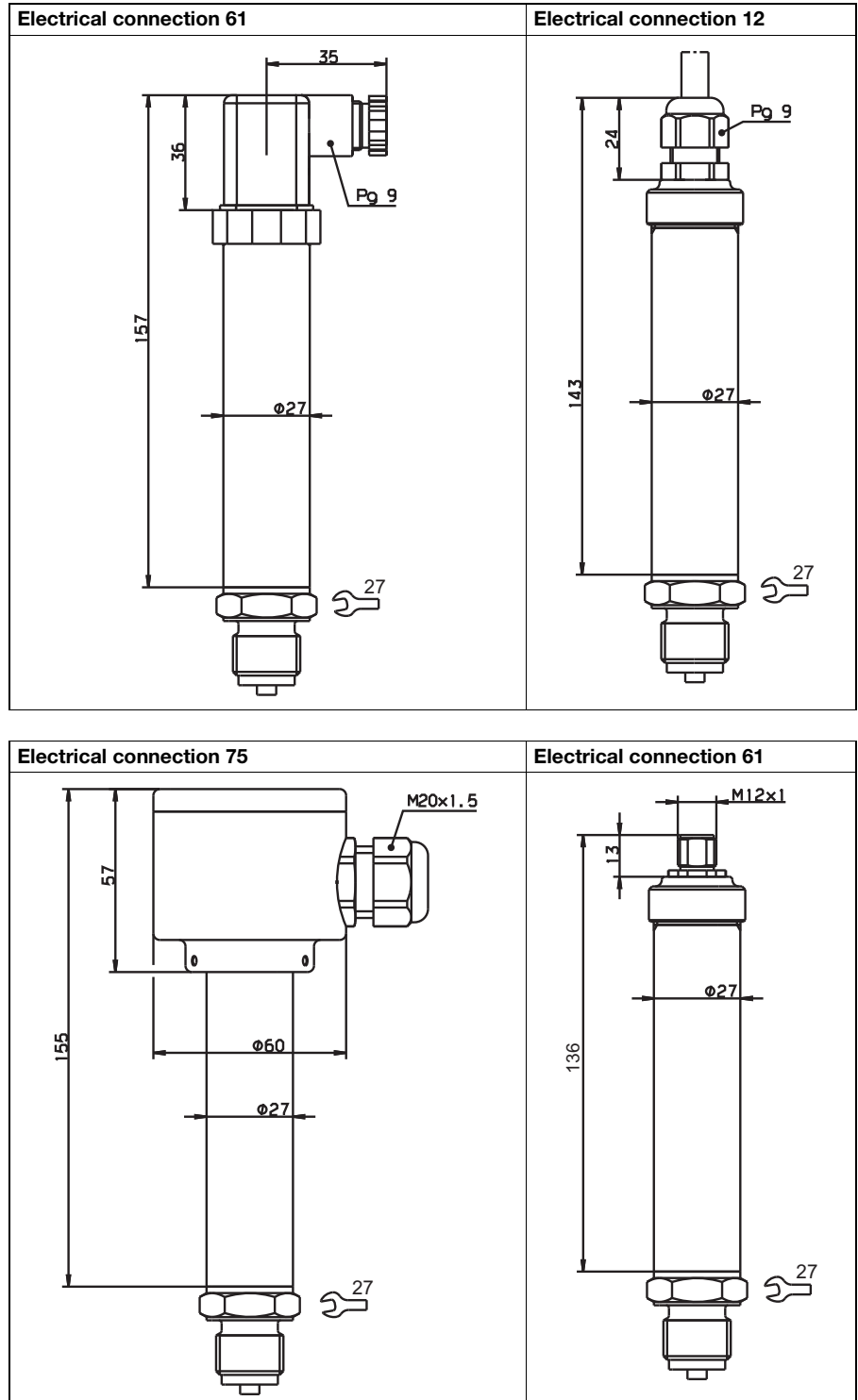
Housing
 stainless steel, mat. fef. 1.4301

Pressure connection
 see order details;
 other connections on request

Nominal position
 unrestricted

Weight
 350 gm (with G 1/2 pressure connection)

Dimensions

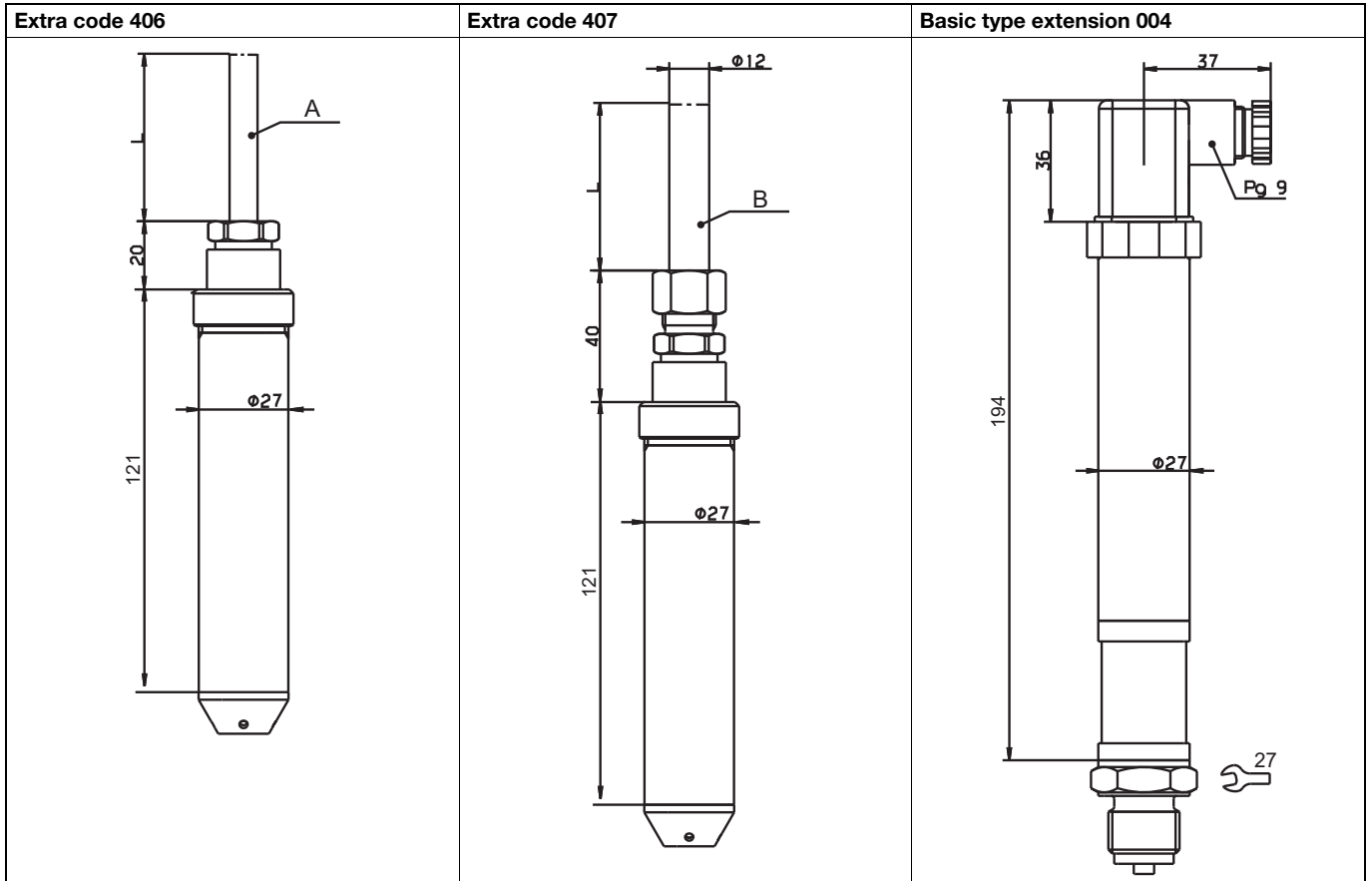


¹ Intrinsically safe circuit in conjunction with supply unit with isolating transformer, Type KFD2, Data Sheet 404757

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A = fixed connecting cable

B = customer-supplied protection tube, see Operating Instruction B404753.0

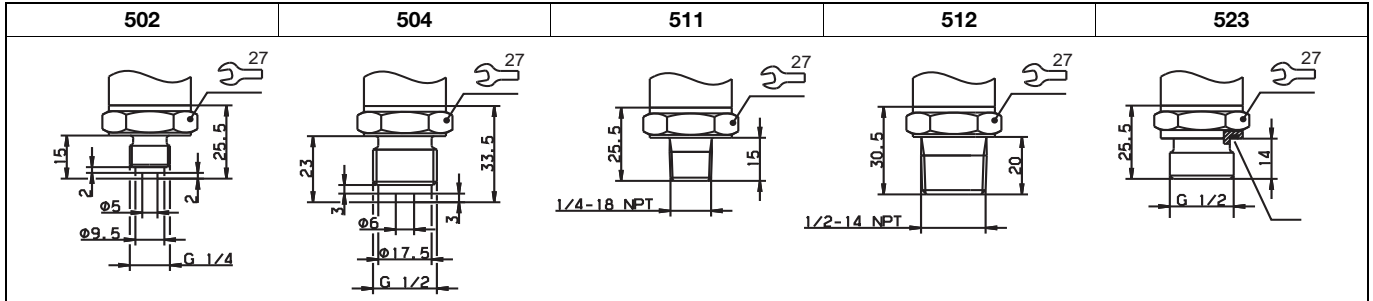
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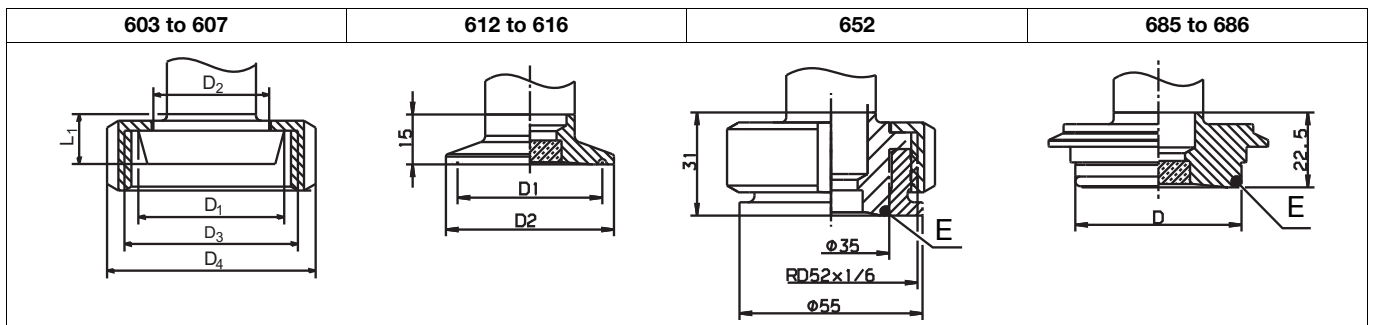
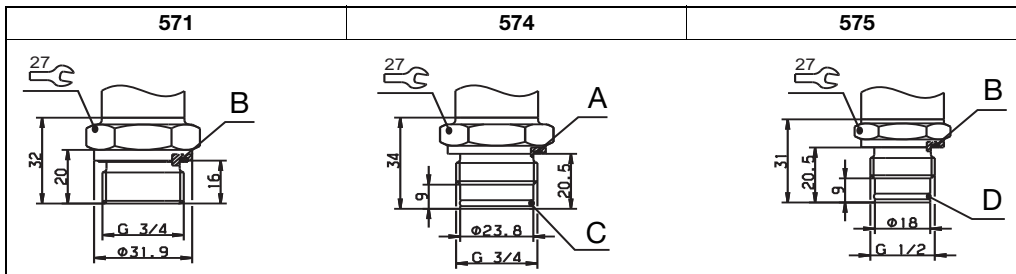
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Process connection (not front-flush)



Process connection (front-flush)

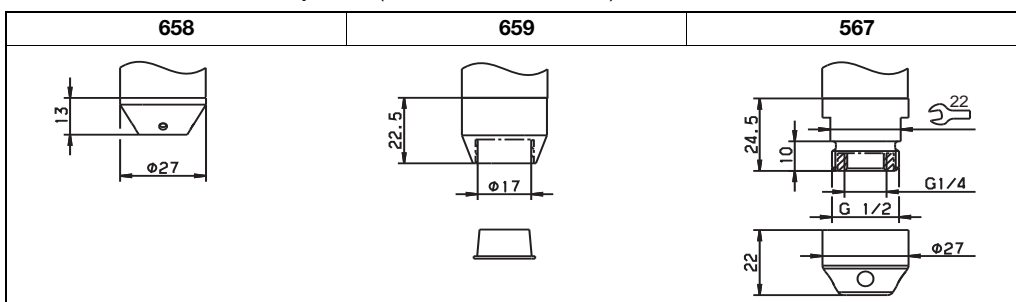


603 to 607						
Process connection	DN	Ø D ₁	Ø D ₂	Ø D ₃	Ø D ₄	L ₁
603	20	36.5	30	RD 44 × 1/6	54	13
604	25	44	35	RD 52 × 1/6	63	15
605	32	50	41	RD 58 × 1/6	70	15
606	40	56	48	RD 65 × 1/6	78	15
607	50	68.5	61	RD 78 × 1/6	92	16

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 to 686		
Process-connection	DN	Ø D
685	25 - 32	50
686	40 - 125	68

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 20.5 × 1.78
- E = O-ring

Protective cap




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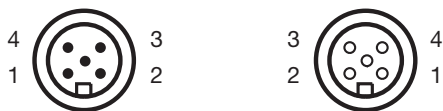
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Electrical connection

Connection	Terminals		
	Terminal box	Fixed cable	Round plug M12 × 1
Supply DC 11 to 28 V intrinsically safe 	1 L+ 2 L-	white gray	1 L+ 3 L-
Output 4 to 20 mA, 2-wire proportional current 4 to 20 mA in supply 	1 + 2 -	white gray	1 + 3 -
Potential equilibration			2
Screen A shielded cable must be used for the connection!		black	

Pin assignment (M12 × 1), 5-pole



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**Order details**

	(1) Basic type
404753/000	JUMO dTRANS p33 - Pressure transmitter and level probe for use in hazardous areas
404753/004	JUMO dTRANS p33 - Pressure transmitter and level probe for elevated temperature of medium ^a
	(2) Nominal input range
451	0 to 250 mbar gauge pressure
452	0 to 400 mbar gauge pressure
453	0 to 600 mbar gauge pressure
454	0 to 1 bar gauge pressure
455	0 to 1.6 bar gauge pressure
456	0 to 2.5 bar gauge pressure
457	0 to 4 bar gauge pressure
458	0 to 6 bar gauge pressure
459	0 to 10 bar gauge pressure
460	0 to 16 bar gauge pressure
461	0 to 25 bar gauge pressure
462	0 to 40 bar gauge pressure ^b
463	0 to 60 bar gauge pressure ^b
464	0 to 100 bar gauge pressure ^b
465	0 to 160 bar gauge pressure ^b
466	0 to 250 bar gauge pressure ^b
467	0 to 400 bar gauge pressure ^b
468	0 to 600 bar gauge pressure ^b
475	-0.25 to 0 bar gauge pressure
476	-0.4 to 0 bar gauge pressure
477	-0.6 to 0 bar gauge pressure
478	-1 to 0 bar gauge pressure
479	-1 to 0.6 bar gauge pressure
480	-1 to 1.5 bar gauge pressure
481	-1 to 3 bar gauge pressure
482	-1 to 5 bar gauge pressure
483	-1 to 9 bar gauge 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 gauge pressure
	(3) Output
405	4 to 20 mA, 2-wire
	(4) 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

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567	G 1/4 internal ^c
571	G 3/4 front-flush to DIN EN ISO 228-1 ^d
574	G 1/2 front-flush with 2× seal
575	G 3/4 front-flush with 2× seal ^d
603	Taper connection with slotted nut to DIN11851, DN 20 (milk pipe fitting) ^d
604	Taper connection with slotted nut to DIN11851, DN 25 (milk pipe fitting) ^d
605	Taper connection with slotted nut to DIN11851, DN 32 (milk pipe fitting) ^d
606	Taper connection with slotted nut to DIN11851, DN 40 (milk pipe fitting) ^d
607	Taper connection with slotted nut to DIN11851, DN 50 (milk pipe fitting) ^d
612	Clamp connection to DIN 32676, DN 10/15/20 ^d
613	Clamp connection to DIN 32676, DN 25/32/40 ^d
616	Clamp connection to DIN 32676, DN 50 ^d
652	Tank connection with slotted union nut, DN 25 ^d
658	Level measuring probe: connection closed underneath ^e
659	Level measuring probe: connection open underneath ^e
685	Varivent DN 31/25 with EHEDG certification
997	JUMO PEKA with EHEDG certification
999	To customer specification
(5) Material of process connection	
20	CrNi (stainless steel)
(6) Electrical connection	
12	Fixed connecting cable, screened, 2 m
36	Round plug M12 × 1
61	Terminal box DIN EN 175301-803, form A, ex DIN 43650
75	Terminal head
99	Special design
(7) Filling medium for measurement system	
0	No filling medium
1	Silicone oil
(8) Extra codes	
000	None
406	Level probe: IP68 protection, fixed cable, class 2 G, zone 1 ^f
407	Level probe: IP68 protection, fixed cable, class 1 G, zone 0 ^{f, g}

^a Measuring instruments for increased medium temperatures can only be supplied with measuring ranges from 1 to 25 bar.

^b These inputs (> 25 bar) can only be supplied in conjunction with process connections 502, 504, 511, 512, 523, 541, 571, 574 and 999. Process connection 574 can only be selected with inputs 463, 464, 465, 466 and 467 (from 0 to 60 bar up to 0 to 400 bar) and process connection 571 can only be selected with inputs 462 and 463 (from 0 to 40 bar up to 0 to 60 bar).

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

^d These process connections cannot be supplied with inputs 464, 465, 466, 467, 468, 469 and 505.

^e These process connections can only be supplied in conjunction with extra codes 406 or 407.

^f These extra codes can only be supplied in conjunction with electrical connection 12 (fixed connecting cable, shielded, 2 m). Please clearly specify one of the process connections, different cable lengths, and/or special requirements for the material of the cable sheath. The standard material is PE.

^g 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)
 Order example 404753/000 - 451 - 405 - 504 - 20 - 61 - 1 / 000

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**Accessories**

Article	Part no.
Terminal box with pressure compensation	00061206
Wire holder	00061389
Screw plug	00333329
Ex-i Power supply/input isolating amplifier	00577948
2-valve manifold PN 420, DN 5, version 1/2-NPT or 1/2-NPT	00561605
2-valve manifold PN 420, DN 5, version 1/2-NPT or G 1/2	00550362