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(Ex)

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Data Sheet 404753

Page 1/12

JUMO dTRANS p33

Pressure Transmitter or Level Probe for use in hazardous areas

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

Brief description

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

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

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

The device is certified according to EHEDG in the versions with process connections (clamp) DN 25, 32, 40 and 50 as well as VARIVENT.



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



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

Approvals and approval marks





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Data Sheet 404753

Page 2/12

Technical data

General Information

Reference conditions	According to DIN 16086 and DIN IEC 770/5.3
Rated position	Any

Measuring range and accuracy

Ambient temperature influence for measuring range 0.25 and 0.4 bar	
Zero point	≤ 0.03 %/K typical, ≤ 0.05 %/K max.
Measuring span (MSP)	≤ 0.02 %/K typical, ≤ 0.04 %/K max.
For measuring ranges from 0.6 bar	
Zero point	≤ 0.02 %/K typical, ≤ 0.04 %/K max.
Measuring span	≤ 0.02 %/K typical, ≤ 0.04 %/K max.
Deviation from characteristic line	≤ 0.5 % MSP (limit point setting)
Hysteresis	≤ 0.1 % MSP
Stability per year	≤ 0.5 % MSP
Zero signal offset	≤ 0.3 % MSP
Thermic hysteresis	
For measuring ranges ≤ 0.6 bar	≤±1 % MSP
For measuring ranges > 0.6 bar	≤ ±0.5 % MSP
Overload limit	
For measuring ranges < 100bar	4 times the measuring range end value
For measuring ranges ≥ 100 bar	2 times the measuring range end value
Burst pressure	10 times the measuring range end value, 2000 bar max.

Electrical data

Voltage supply	
Current	4 to 20 mA, two-wire
Voltage	DC 11 to 28 V (from intrinsically safe circuit) ^a
	$U_{max} \le 28 V$
	I _{K max} ≤ 120 mA
	Residual ripple: The voltage peaks must not go above or below the limits specified for the voltage supply.
Voltage supply influence	≤ 0.03 %/V
Max. current consumption	≤ 45 mA (at DC 24 V)

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

Mechanical features

Material	
Housing	Stainless steel 304
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
Weight	350 g with process connection G 1/2

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Data Sheet 404753

Page 3/12

Environmental influences

Ambient temperature	-40 to +85 °C	
Medium temperature		
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	
Storage temperature	-40 to +85 °C	
Vibration resistance		
Mechanical vibration	Max. 10 g at 15 to 2000 Hz according to DIN IEC 68-2-6	
Mechanical shock	100 g for 1 ms according to DIN IEC 68-2-27	
Protection type		
With connector screwed on	IP65 according to DIN EN 60529	
With extra code 406	IP68 according to DIN EN 60529	
With extra code 407	IP68 according to DIN EN 60529	
Electromagnetic compatibility (EC)	EN 61326	
Interference emission	Class B ^a	
Interference immunity	Industrial requirements	

The product is suitable for industrial use as well as for households and small businesses.

Approvals and approval marks

ATEX				
Testing agency	Eurofins Electrosuisse Product Testing AG			
Certificates/certification numbers	SEV 09 ATEX 0140 X			
Inspection basis	EN 60079-0, EN 60079-11, EN 60079-26			
Valid for	Туре 404753			
EHEDG				
Testing agency	Research Center Weihenstephan for Brewing and Food Quality			
Certificates/certification numbers	EL Class 1/EHEDG-C2000058			
Inspection basis	EHEDG design specifications (Doc. 8 – Hygienic Design Principles)			
	EHEDG tests for verifying ease of cleaning (Doc. 2, Third Edition, July 2004, updated June 2007)			
Valid for	Process connection 613 (clamp DN 25, 32, 40),			
	Process connection 616 (clamp DN 50),			
	Process connection 685 (VARIVENT connection DN 32/25)			
EAC Ex				
Testing agency	Sertium			
Certificates/certification numbers	RU C-DE.ME92.B.01073			
Inspection basis	TR TS 012/2011			
Valid for	Type 404753 with extra code 240			

NOTE!

The special conditions for use can be found in the type examination certificate, which is available for download on the Internet on the respective product page.

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Data Sheet 404753

Page 4/12

Extract from the type examination certificate

Permissible media

The device with extra code may be used in the following media:

Diesel (blue-colored)	Vegetable oil	Biodiesel
Diesel with 5 to 20 % Biodiesel admixture	Diesel	Heating oil extra light, light, extra medium
Low-sulfur heating oil	Unleaded gasoline	Heating oil with additives
Methyl alcohol (pure, for use with motors)	Super leaded	Low-sulfur diesel
Ethyl alcohol	Super unleaded	Aviation fuel AVGAS
E10 (Benzine95 with admixture of ethyl alcohol 5 to 20 %)	Super plus unleaded (98)	Leaded gasoline
E50 (Benzine95 with admixture of ethyl alcohol 21 to 74 %)	Kerosene	Two-cycle fuel
E85 (Benzine95 with admixture of ethyl alcohol 75 to 98 %)	Jet A1	

Permissible temperatures gas

For areas with a gas explosion hazard, please note:

The following table lists the maximum permissible supplied power (P_{su}) as a function of the maximum permissible ambient temperature (T_a) as well as the temperature class.

Temperature class	Ambient temperature T _a	Maximum permissible supplied power P _{su}
T4	+95 °C	0.8 W
T4	+80 °C	1.5 W
T4	+75 °C	1.8 W
Т5	+85 °C	0.8 W
T5	+75 °C	1.5 W
T5	+70 °C	1.8 W
Т6	+70 °C	0.8 W
Т6	+60 °C	1.5 W
Т6	+55 °C	1.8 W

Permissble temperatures dust

The following rule applies to areas with an explosion hazard with combustible dust:

The following table lists the maximum permissible supplied power (P_{su}) as a function of the maximum permissible ambient temperature (T_a) as well as the maximum surface temperature.

Maximum surface temperature	Ambient temperature T _a	Maximum permissible supplied power P _{su}
T100 °C	+95 °C	0.8 W
T85 °C	+80 °C	1.5 W
T80 °C	+75 °C	1.8 W
T90 °C	+85 °C	0.8 W
T80 °C	+75 °C	1.5 W
T75 °C	+70 °C	1.8 W
T75 °C	+70 °C	0.8 W
T65 °C	+60 °C	1.5 W
T60 °C	+55 °C	1.8 W

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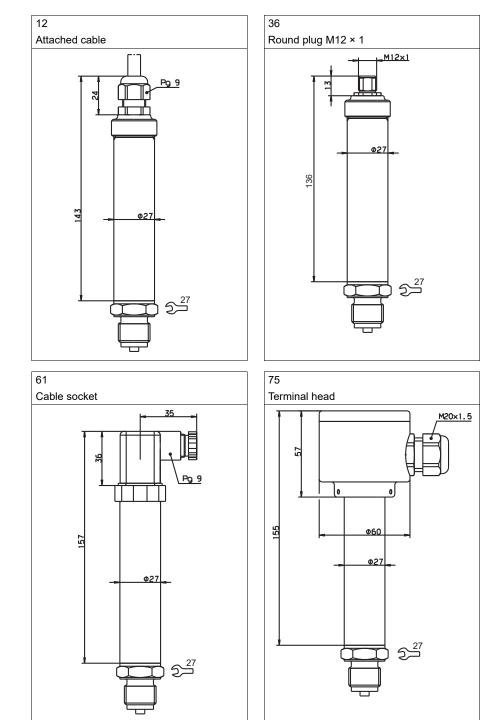


Data Sheet 404753

Page 5/12

Dimensions

Electrical connection



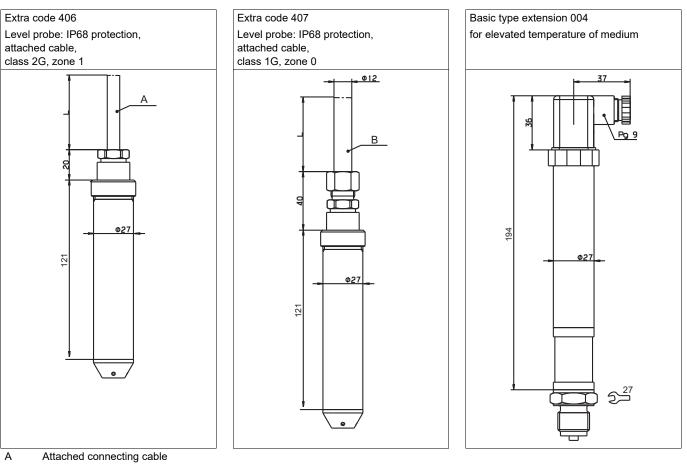
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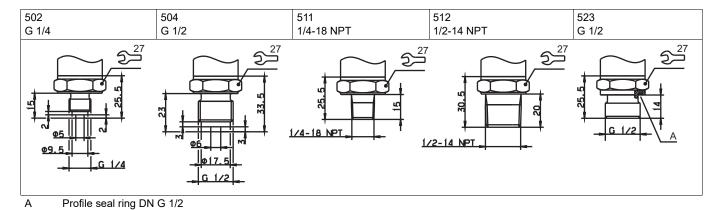
Data Sheet 404753

Page 6/12



B Customer-supplied protection tube, see Operating Instructions

Process connections, not front-flush



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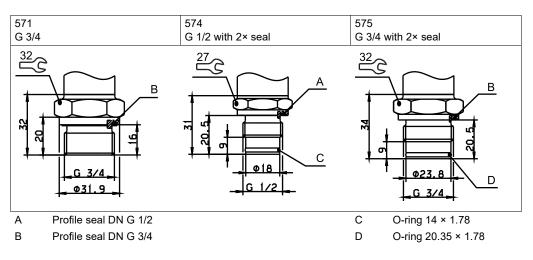
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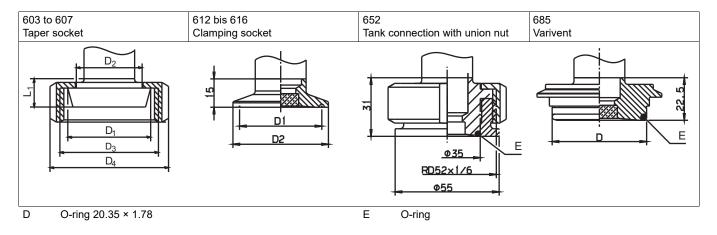


Data Sheet 404753

Page 7/12

Process connections, front-flush





603 to 607						
Taper socket						
Process connection	DN	ØD ₁	ØD2	ØD3	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				685		
Clamping socket				Varivent		
Process connection	DN	Ø D ₁	ØD2	Process conne	ction DN	ØD
612	20	27.5	34	685 ^a	25 to 30	50
613 ^a	25	43.5	50.5		L	
616 ^a	50	56.5	64			

^a certified according to EHEDG

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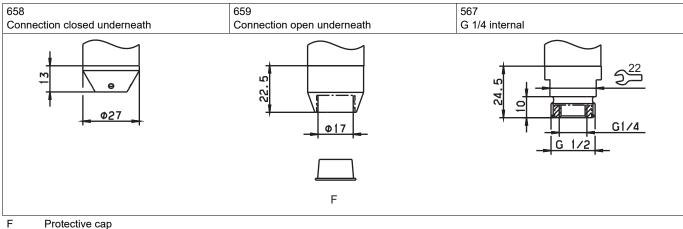


Data Sheet 404753

Page 8/12

Process connection for level probes

(extra codes 406, 407)



Protective cap

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Data Sheet 404753

Page 9/12

Connection diagram

The connection diagram in the data sheet provides preliminary information about the connection options. For the electrical connection, only use the installation instructions or the operating manual. The knowledge and the correct technical compliance with the safety information and warnings contained in these documents are mandatory for mounting, electrical connection, and startup as well as for safety during operation.

Connection		Terminals					
			4	3 2			
		12	36		61	75	
		Attached cable	Round plug M12 × 1)	Line socket	Terminal head	
4 to 20 mA, two-wire		·					
Voltage supply DC 11 to 28 V intrinsically safe	U _B /S+ 0 V/S-	WH GY	1 BN 3 BU		1 2	1 2	
Potential equilibration (FE)	Ē		2			³ <u>–</u>	
Screen A shielded cable must be used for the connection! The shield must be grounded on both sides!		ВК					
^a Symbol on cable socket		1	1		1		
Color coding: connecting cable round plu	g M12 × 1		1 BN	Brown			
	-		2 WH	White			
			3 BU	Blue			
			4 BK	Black			
			5 GY	Grey			
The color coding is only for A-coded standar	d cables!						

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Data Sheet 404753

Page 10/12

Order details

	(1)	Basic type
404753/000	. ,	JUMO dTRANS p33 – Pressure transmitter or level probe for use in hazardous areas
404753/004		JUMO dTRANS p33 – Pressure transmitter or level probe for use in hazardous areas,
		for elevated medium temperatures up to 200 °C
	(2)	Input
451		0 to 0.25 bar relative pressure
452		0 to 0.4 bar relative pressure
453		0 to 0.6 bar 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
	(3)	Output
405		4 to 20 mA, two-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 EN 837
512		1/2-14 NPT to DIN EN 837

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Data Sheet 404753

Page 11/12

Order code Order example		404753/000 - 451 - 405 - 504 - 20 - 61 - 1 - n / 000		
Order code		(1) (2) (3) (4) (5) (6) (7) (8) (9)		
954		Technical passport		
634		TAG number		
452		Parts in contact with the medium electro-polished		
407		Level probe: IP68 protection, attached cable, class 1G, zone 0		
406		Level probe: IP68 protection, attached cable, class 2G, zone 1		
240		EAC Ex approval		
000		None		
	(9)	Extra code		
n		None (standard)		
j		With		
	(8)	Calibration certificate		
1		Silicone oil		
0		None		
	(7)	Filling medium for measurement system		
75		Terminal head		
61		Cable socket to DIN EN 175301-803, form A		
36		Round plug M12 × 1		
12	(-)	Attached cable, screened		
	(6)	Electrical connection		
20	(0)	CrNi (stainless steel)		
000	(5)	Material of process connection		
685		VARIVENT connection, DN 32/25, certified according to EHEDG		
659		Level probe: connection open underneath		
658		Level probe: connection closed underneath		
652		Tank connection with union nut, DN 25		
616		Clamping socket to DIN 32676 (2" ISO 2852), DN 50, certified according to EHEDG		
612 613		Clamping socket to DIN 32676, DN 10/15/20 Clamping socket to DIN 32676, DN 25/32/40, certified according to EHEDG		
607		Taper socket with union nut to DIN 11851, DN 50 (dairy pipe fitting)		
606		Taper socket with union nut to DIN 11851, DN 40 (dairy pipe fitting)		
605		Taper socket with union nut to DIN 11851, DN 32 (dairy pipe fitting)		
604		Taper socket with union nut to DIN 11851, DN 25 (dairy pipe fitting)		
603		Taper socket with union nut to DIN 11851, DN 20 (dairy pipe fitting)		
576		G 1 front-flush with 2× seal		
575		G 3/4 front-flush with 2× seal		
574		G 1/2 front-flush with 2× seal		
571		G 3/4 front-flush to DIN EN ISO 228-1		
567		Level probe: G 1/4 internal		
523		G 1/2 to DIN 3852-11		

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Data Sheet 404753

Page 12/12

Accessories

Designation	Part no.
Line socket, 4-pole, M12 × 1, straight, 2 m	00404585
Line socket, 4-pole, M12 × 1, angled, 2 m	00409334
Terminal case with pressure compensation element	00061206
Cable holder	00061389
Pressure compensation filter for cable	00382632
Sealing screw	00333329
Ex-i supply/input isolating amplifier 707530/38	00577948