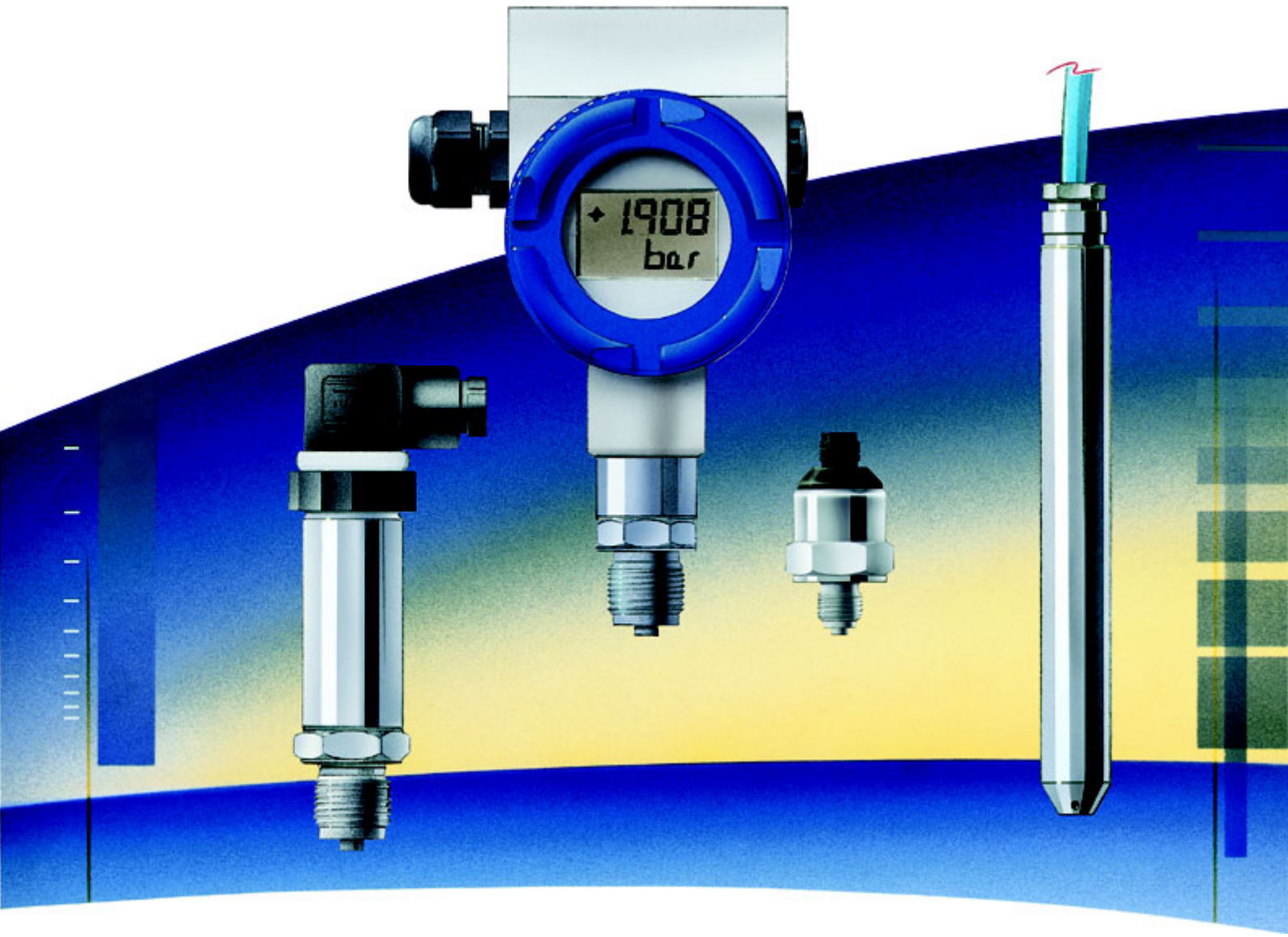
JUMO



Pressure Instruments

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Fax: +49 661 6003-607
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Contents:

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Pressure transducers, transmitters

Pressure instruments in Ex version

Accessories, pressure separators

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Pressure transmitter JUMO MIDAS

Type 401001

Type 401001/000-xxx-xxx-xx-xxx-61

Type 401001/000-xxx-xxx-xx-xxx-36

Brief description

Pressure transmitters are used for measuring the relative (gauge) pressure in liquids and gases. The pressure transmitter incorporates a thick-film strain gauge as a measuring device. The pressure sensor has an aluminium-oxide (Al_2O_3) ceramic base material. The pressure is converted into an electrical signal.

Technical data

Reference conditions
to DIN 16 086 and IEC 770/5.3

Ranges
see order details

Overload limits
for ranges
0 — 40 bar 3 x full scale
ranges
0 — 60 to 0 — 100 bar 2 x full scale

Bursting pressure
ranges 0 — 40 bar ≤ 5 x full scale
ranges
0 — 60 to 0 — 100 bar 3 x full scale

Parts in contact with medium
standard: st. steel, Mat. Ref. 1.4305, (Al_2O_3) 96%
seal: FPM or FFPM or CR

Output
4 — 20 mA
2-wire burden ≤ (U_B-10 V) / 0.02A
0.5 — 4.5 V burden ≥ 20 kΩ
1 — (5)6 V burden ≥ 10 kΩ
0 — 10 V burden ≥ 10 kΩ

Burden error
< 0.5% max.

Zero offset
≤ 0.3% of full scale

Thermal hysteresis
≤ ± 0.8% of full scale

Ambient temperature error
within range -20 to +85°C
(compensated temperature range)
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 point adjustment)

Hysteresis
≤ 0.2% of full scale

Repeatability
≤ 0.1% of full scale

Response time
≤ 3 msec max.

Stability per year
≤ 1% of full scale

Supply
10 — 30 V DC (for output 4 — 20 mA and 1 — (5)6 V)
5 V DC (for output 0.5 — 4.5 V)
11.5 — 30 V DC (for output 0 — 10 V)
Ripple: the voltage spikes must not go above or below the values specified for the supply
max. current drawn: approx. 25 mA

Supply voltage error
≤ 0.02% per V
(nominal supply voltage 24 V DC)
ratiometric with supply 5 V DC (±0.5 V)

Permissible ambient temperature
for version with plug:
-20 to +125°C
for version with attached cable:
-20 to +100°C

Storage temperature
-40 to +125°C
for version with attached cable
-20 to +100°C

Permissible temperature of medium
-30 to +125°C

Electromagnetic compatibility (EMC)
to EN 61 326

Mechanical shock
(to IEC 68-2-27)
100 g/1 msec

Mechanical vibration
(to IEC 68-2-6)
20 g max. at 15 — 2000 Hz

Protection
with terminal box
IP65 to EN 60 529
(diameter of connecting cable
5 mm min., 7 mm max.)
with connecting cable or
circular connector M 12 x 1
IP67 to EN 60 529

Housing
stainless steel, Mat. Ref. 1.4305
EPDM

Pressure connection
see order details;
other connections on request

Electrical connection
see order details
terminal box to DIN 43 650, style A,
conductor cross-section up to 1.5 mm^2
or
attached 4-core PVC cable, length 0.5 m,
other lengths on request
or
4-pole circular connector, M12x1

Nominal position
any

Weight
100 g

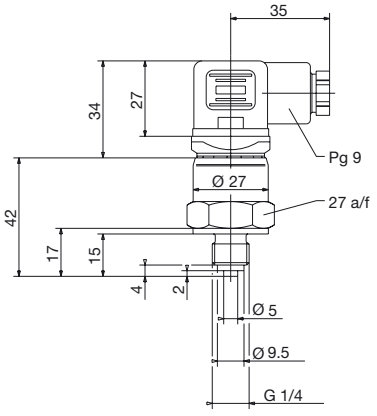
Electrical connection

Connection			Terminals		
			Terminal box	Cable	M12x1
Supply 10 — 30 V DC 11.5 — 30 V DC 5 V DC	(with output) (1 — (5)6 V) (0 — 10 V) (0.5 — 4.5 V)		1 L+ 2 L-	white brown	1+ 2-
Output 1 — (5)6 V 0 — 10 V 0.5 — 4.5 V			2 - 3 +	brown yellow	2- 3+
Supply 10 — 30 V DC	(with output) (4 — 20 mA, 2-wire)		1 L+ 2 L-	white brown	1+ 3-
Output 4 — 20 mA, 2-wire			1 + 2 -	white brown	1+ 3-
			proportional current 4 — 20 mA in supply		

Terminal assignment

Dimensions

401001/000-XXX-XXX-502-20-601-61



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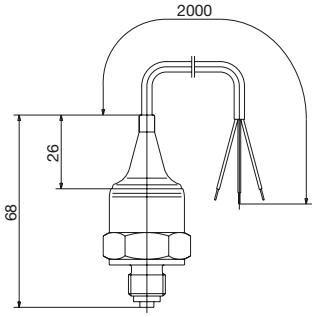

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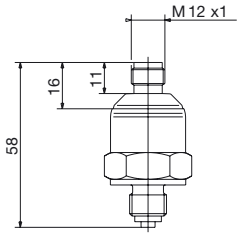
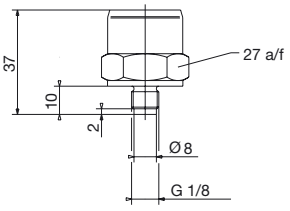


Process connections

501



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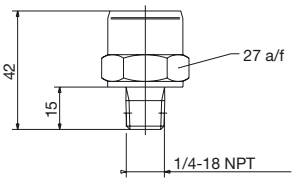

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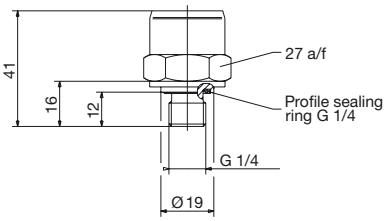

Process connections

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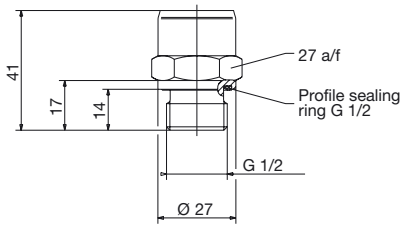

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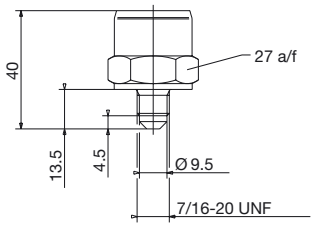

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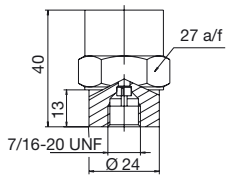

Order details

						Basic type
401001						Pressure transmitter JUMO MIDAS
I						**Basic type extensions**
I	/000					none
I	/999					special version
I	I					**Input**
I	I	455	0			1.6 bar gauge pressure
I	I	456	0			2.5 bar gauge pressure
I	I	457	0			4 bar gauge pressure
I	I	458	0			6 bar gauge pressure
I	I	459	0			10 bar gauge pressure
I	I	460	0			16 bar gauge pressure
I	I	461	0			25 bar gauge pressure
I	I	462	0			40 bar gauge pressure
I	I	463	0			60 bar gauge pressure
I	I	464	0			100 bar gauge pressure
I	I	479	-1			0.6 bar gauge pressure
I	I	480	-1			1.5 bar gauge pressure
I	I	481	-1			3 bar gauge pressure
I	I	482	-1			5 bar gauge pressure
I	I	483	-1			9 bar gauge pressure
I	I	484	-1			15 bar gauge pressure
I	I	485	-1			24 bar gauge pressure
I	I	999				special range
I	I	I				**Output**
I	I	I	405			4 — 20 mA 2-wire
I	I	I	412			0.5 — 4.5 V 3-wire
I	I	I	415			0 — 10 V 3-wire
I	I	I	418			1 — 5 V 3-wire
I	I	I	420			1 — 6 V 3-wire
I	I	I	I			**Process connection (not front-flush)**
I	I	I	I	501		G 1/8 to EN 837
I	I	I	I	502		G 1/4 to EN 837
I	I	I	I	511		1/4-18 NPT to EN 837
I	I	I	I	521		G 1/4 to DIN 3852 T11
I	I	I	I	523		G 1/2 to DIN 3852 T11
I	I	I	I	562		7/16 UNF
I	I	I	I	563		7/16 internal UNF, with valve seating
I	I	I	I	I		**Material of process connection**
I	I	I	I	I	20	stainless steel
I	I	I	I	I	46	brass (on request)

									Material for seal
						601			FPM
						602			CR
						604			FFPM (material properties are similar to PTFE)
						999			special material
									Electrical connection
							11		attached cable 2 m
							36		circular connector M 12 x 1
							61		terminal box
									Extra Codes
								000	none
								591	throttle in pressure duct
								624	free from oil and grease

401001 / [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] / 000 **Order code**

Accessories

Designation	**Sales No.**
4-pole straight socket M12x1 with 2 m PVC cable	40/00404585
4-pole angled socket M12x1, with 2m PVC cable	40/00409334

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Internet: www.JumoUSA.com

Pressure Transmitter JUMO MIDAS HP

Type 401005

Brief description

This pressure transmitter is used for measuring the relative (gauge) pressure in liquids and gases. The pressure transmitter incorporates the thin-film strain gauge measurement principle. The pressure is converted into an electrical signal.

Type 401005/000-xxx-xxx-xxx-xx-61/000

Type 401005/000-xxx-xxx-xxx-xx-61/000

Technical data

Reference conditions
to DIN 16 086 and IEC 770/5.3

Measurement ranges
see Order details

Overload limit
ranges
0 — 100 bar to 0 — 250 2 x full scale
ranges
0 — 400 to 0 — 600 bar 1.5 x full scale

Bursting pressure
ranges up to 160 — 250 bar 5 x full scale
range
0 — 600 bar 3 x full scale

Parts in contact with medium
standard: stainless steel Mat. Ref. 1.4571 and 1.4542

Output
4 — 20 mA
2-wire burden ≤ (U_B-10 V) / 0.02A
0.5 — 4.5 V burden ≥ 20 kΩ
1 — (5)6 V burden ≥ 10 kΩ
0 — 10 V burden ≥ 10 kΩ

Burden error
< 0.5% max.

Zero offset
≤ 0.3% of full scale

Thermal hysteresis
≤ ± 0.8% of full scale

Ambient temperature error
within range -20 to +85°C
(compensated temperature range)
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
≤ 0.2% of full scale

Repeatability
≤ 0.1% of full scale

Settling time
≤ 3 msec max.

Stability per year
≤ 1% of full scale

Supply
10 — 30 V DC (output 4 — 20 mA and 1 — (5)6 V)
5 V DC (output 0.5 — 4.5 V)
11.5 — 30 V DC (output 0 — 10 V)
Ripple: the voltage spikes must not go above or below the values specified for the supply
max. current drawn: approx. 25 mA

Supply voltage error
≤ 0.02% per V
(nominal supply voltage 24 V DC)
ratiometric with supply voltage
5 V DC (±0.5 V)

Permissible ambient temperature
for version with plug:
-20 to +125°C
for version with attached cable:
-20 to +100°C

Storage temperature
-40 to +125°C
for version with attached cable
-20 to +100°C

Permissible temperature of medium
-30 to +125°C

Electromagnetic compatibility (EMC)
to EN 61 326

Mechanical shock
(as per IEC 68-2-27)
100 g/1 msec

Mechanical vibration
(to IEC 68-2-6)
20 g max. at 15 — 2000 Hz

Enclosure protection
with terminal box
IP65 to EN 60 529
(diameter of connecting cable
5 mm min., 7 mm max.)
with connecting cable or
circular connector M12 x 1
IP67 to EN 60 529

Housing
stainless steel, Mat. Ref. 1.4571
PBT

Pressure connection
see Order details;
other connections on request

Electrical connection
see Order details
terminal box to DIN 43 650,
style A,
conductor cross-section up to 1.5 mm^2;
or
attached 4-core PVC cable, length 0.5 m
other lengths on request
or 4-pole circular connector M12 x 1

Nominal position
unrestricted

Weight
100 g

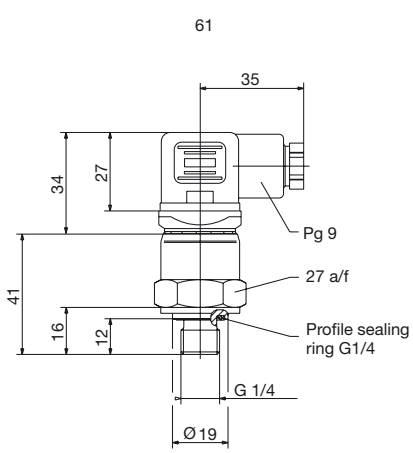
Electrical connection

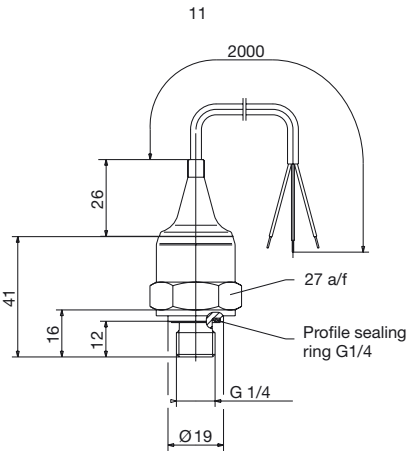
Connection			Terminals		
			Terminal box	Cable	M12x1
Supply 10 — 30 V DC 11.5 — 30 V DC 5 V DC	(for output) (1 — (5)6 V) (0 — 10 V) (0.5 — 4.5 V)		1 L+ 2 L-	white brown	1+ 2-
Output 1 — (5)6 V 0 — 10 V 0.5 — 4.5 V			2 - 3 +	brown yellow	2- 3+
Supply 10 — 30 V DC	(for output) (4 — 20 mA, 2-wire)		1 L+ 2 L-	white brown	1+ 3-
Output 4 — 20 mA, 2-wire			1 + 2 -	white brown	1+ 3-
			proportional current 4 to 20 mA in supply		

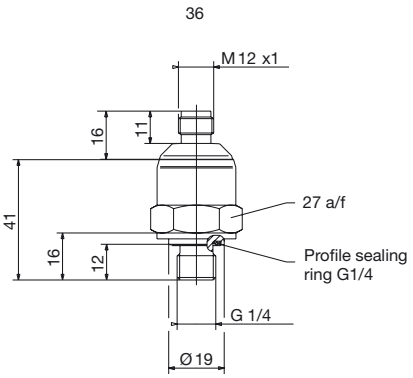
Pin assignment

Dimensions

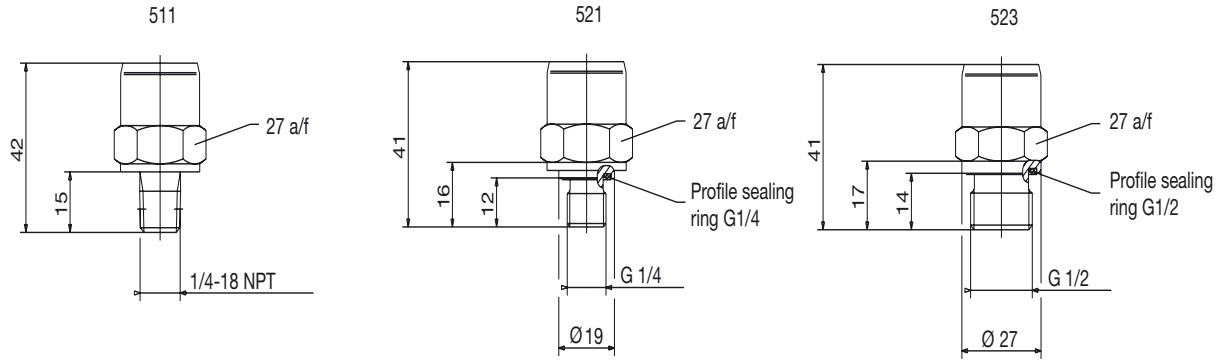
Electrical connection







Process connections



Order details

	Basic type								
401005	Pressure transmitter JUMO MIDAS								
I	**Basic type extension**								
I	/000	none							
I	/999	special version							
I	I	**Input**							
I	I	464	0 — 100 bar gauge pressure						
I	I	465	0 — 160 bar gauge pressure						
I	I	466	0 — 250 bar gauge pressure						
I	I	467	0 — 400 bar gauge pressure						
I	I	468	0 — 600 bar gauge pressure						
I	I	999	special range						
I	I	I	**Output**						
I	I	I	405	4 to 20 mA 2-wire					
I	I	I	412	0.5 to 4.5 V 3-wire					
I	I	I	415	0 to 10 V 3-wire					
I	I	I	418	1 to 5 V 3-wire					
I	I	I	420	1 to 6 V 3-wire					
I	I	I	I	**Process connection (not front-flush)**					
I	I	I	I	511	1/4-18 NPT to EN 837				
I	I	I	I	521	G 1/4 to DIN 3852 T11				
I	I	I	I	523	G 1/2 to DIN 3852 T11				
I	I	I	I		**Material of process connection**				
I	I	I	I	I	20	stainless steel			
I	I	I	I	I	I	**Electrical connection**			
I	I	I	I	I	I	11	attached cable 2 m		
I	I	I	I	I	I	36	circular connector M12 x 1		
I	I	I	I	I	I	61	terminal box		
I	I	I	I	I	I	I	**Extra Codes**		
I	I	I	I	I	I	I	000	none	
I	I	I	I	I	I	I	519	throttle in pressure duct	
I	I	I	I	I	I	I	I		

401005 / [ ] - [ ] - [ ] - [ ] - [ ] - [ ] / [ ] **Order code**

Accessories

Designation	**Sales No.**
4-pole straight socket M12x1 with 2m PVC cable	40/00404585
4-pole angled socket M12x1 with 2 m PVC cable	40/00409334

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Pressure Transmitter JUMO MIDAS SI

Type 401006

Brief description

This pressure transmitter can be used for measuring the relative (gauge) and absolute pressures in liquids and gases. The pressure transmitter operates on the piezoresistive measuring principle. The pressure is converted into an electrical signal.

Type 401006/000-xxx-xxx-xxx-20-61

Type 401006/000-xxx-xxx-xxx-20-36

Technical data

Reference conditions
to DIN 16 086 and IEC 770/5.3

Measurement ranges
see Order details

Overload limit
for ranges up to
0 — 25 bar 3 x full scale

Bursting pressure
for ranges up to
0 — 25 bar ≤ 4 x full scale

Parts in contact with medium
standard: stainless steel, Mat. Ref. 1.4571, 1.4435

Output
4 — 20 mA
2-wire burden ≤ (U_B-10 V) / 0.02A
0.5 — 4.5 V burden ≥ 20 kΩ
1 — (5)6 V burden ≥ 10 kΩ
0 — 10 V burden ≥ 10 kΩ

Burden error
< 0.5% max.

Zero signal deviation
≤ 0.3% of full scale

Thermal hysteresis
≤ ± 0.5% of full scale
(within compensated temperature range)
≤ ± 1% for ranges 0 — 250 mbar
0 — 400 mbar
0 — 600 mbar

Ambient temperature error
within range -20 to +85°C
(compensated temperature range)
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 point adjustment)

Hysteresis
≤ 0.1% of full scale

Repeatability
≤ 0.05% of full scale

Response time
≤ 3 msec max.

Stability over 1 year
≤ 1% of full scale

Supply
10 — 30 V DC (for output 4 — 20 mA and 1 — (5)6 V)
5 V DC (for output 0.5 — 4.5 V)
11.5 — 30 V DC (for output 0 — 10 V)
Ripple: the voltage spikes must not go outside the limits specified for the supply.
Max. current drawn: approx. 25 mA

Supply voltage error
≤ 0.02% per V
(nominal supply voltage 24 V DC)
ratiometric with supply 5 V DC (±0.5 V)

Permissible ambient temperature
for version with connector:
-20 to +125°C
for version with attached cable:
-20 to +100°C

Storage temperature
-40 to +125°C
for version with attached cable
-20 to +100°C

Permissible temperature of medium
-30 to +125°C

Electromagnetic compatibility (EMC)
to EN 61 326

Mechanical shock
(to IEC 68-2-27)
100 g/1 msec

Mechanical vibration
(to IEC 68-2-6)
20 g max. at 15 — 2000 Hz

Protection
with terminal box
IP65 to EN 60 529
(connection cable diameter:
5 mm min., 7 mm max.)
with connection cable or
with circular connector M 12 x 1
IP67 to EN 60 529

Housing
stainless steel, Mat. Ref. 1.4301
PBT

Pressure connection
see Order details;
other connections on request

Electrical connection
see Order details
terminal box to DIN 43 650,
Style A,
conductor cross-section up to 1.5 mm^2;
or
attached 4-core PVC cable, 0.5 m long,
other lengths on request
or 4-pole circular connector
M 12 x 1

Nominal position
unrestricted

Weight
120 gm

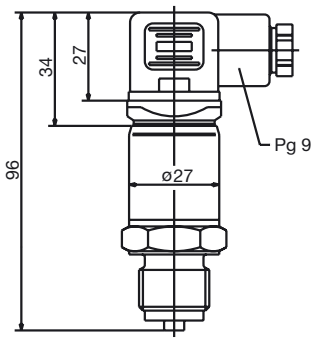
Electrical connection

Connection			Terminal assignment		
			Terminal box	Cable	M12x1
Supply 10 — 30 V DC 11.5 — 30 V DC 5 V DC	(for output) (1 — (5)6 V) (0 — 10 V) (0.5 — 4.5 V)		1 L+ 2 L-	white brown	1+ 2-
Output 1 — (5)6 V 0 — 10 V 0.5 — 4.5 V			2 - 3 +	brown yellow	2- 3+
Supply 10 — 30 V DC	(for output) (4 — 20 mA, 2-wire)		1 L+ 2 L-	white brown	1+ 3-
Output 4 — 20 mA, 2-wire			1 + 2 -	white brown	1+ 3-
			proportional 4 to 20 mA current in supply		

Pin assignment

Dimensions

401006/000-XXX-XXX-504-20-61



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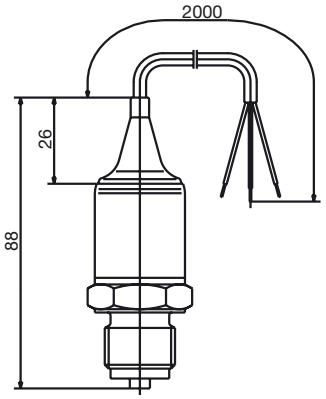

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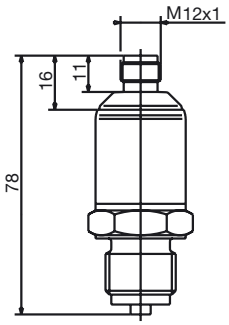
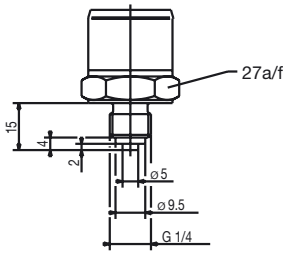


Process connections

502



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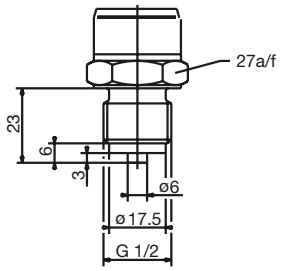

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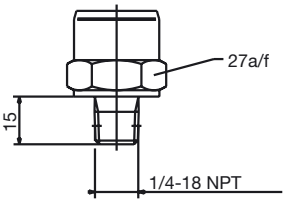

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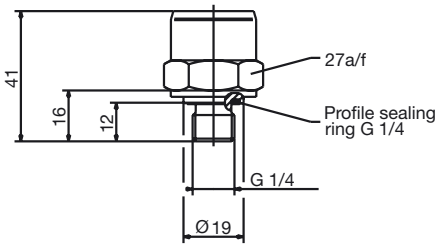

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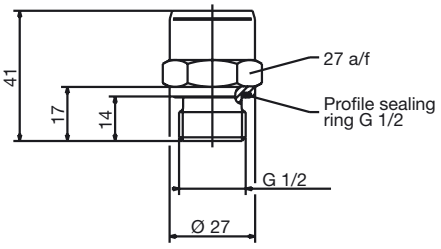

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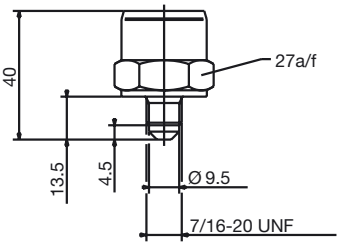

Order details

	Basic type	
401006	Pressure transmitter JUMO MIDAS SI	
	Basic type extension	
/000	none	
/999	special version	
	Input	
451	0	0.25 bar gauge pressure
452	0	0.4 bar gauge pressure
453	0	0.6 bar gauge pressure
454	0	1.0 bar gauge pressure
455	0	1.6 bar gauge pressure
478	-1	0 bar gauge pressure
479	-1	0.6 bar gauge pressure
487	0	0.6 bar absolute pressure
488	0	1.0 bar absolute pressure
489	0	1.6 bar absolute pressure
490	0	2.5 bar absolute pressure
491	0	4 bar absolute pressure
492	0	6 bar absolute pressure
493	0	10 bar absolute pressure
494	0	16 bar absolute pressure
495	0	25 bar absolute pressure
998	special absolute pressure range	
999	special gauge pressure range	
	Output	
405	4 to 20 mA 2-wire	
412	0.5 to 4.5 V 3-wire	
415	0 to 10 V 3-wire	
418	1 to 5 V 3-wire	
420	1 to 6 V 3-wire	
	Process connection (not front-flush)	
502	G 1/4 to EN 837	
504	G 1/2 to EN 837	
511	1/4-18 NPT to EN 837	
521	G 1/4 to DIN 3852 T11	
523	G 1/2 to DIN 3852 T11	
562	7/16 UNF	
	Material of process connection	
20	stainless steel	
	Electrical connection	
11	by attached cable 2 m	
36	by circular connector M 12 x 1	
61	by terminal box	
	Extra codes	
000	none	
591	Restrictor in pressure channel	

401006 / ___ - ___ - ___ - ___ - ___ - ___ / ___ **Order code**

Accessories

Designation	**Sales No.**
4-pole straight socket M12x1 with 2m PVC cable	40/00404585
4-pole angled socket M12x1 with 2 m PVC cable	40/00409334

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JUMO MIDAS DR
Pressure Transmitter for cabinet mounting

Type 401009/000

Brief description

This pressure transmitter can be used for measuring the relative (gauge) pressure in liquid or gaseous media. The transmitter operates on the thick-film strain gauge measurement principle. The pressure sensor features an aluminium-oxide ceramic (Al_2O_3) base material. The pressure is converted into an electrical signal.

Technical data

Unless further specified, all the following percentage value details refer to the measurement span.

Reference conditions
as per DIN 16 086 and EN 60770

Measuring ranges
see order details

Overload limit[1]
for the pressure transmitter
0 — 16 bar 3 x full scale

Bursting pressure[1]
for the pressure transmitter
0 — 16 bar ≤ 5 x full scale

Parts in contact with medium[2]
as standard: st. steel, Mat.Ref. 1.4305
Al_2O_3 96%
pluggable screwed gland brass (CuZn)
seal: FPM

Output
4 — 20 mA
2-wire burden ≤ (U_B-10 V) / 0.02A
0.5 — 4.5 V
ratiometric burden ≥ 20 kΩ
1 — (5)6 V burden ≥ 10 kΩ
0 — 10 V burden ≥ 10 kΩ

Overall error[3]
< 1.5% of full scale[4]

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

Burden error
< 0.5%

Zero offset
≤ 0.3%

Thermal hysteresis
(within compensated range -20 to +80°C)
≤ ± 0.8%

Step response
for current output ≤3 msec
for voltage output: ≤ 10 msec

Long-term stability per year
≤ 1%

Supply voltage
10 — 30 V DC (for outputs 4 — 20 mA and 1 — (5)6 V)
5 V DC ±0.5 V (for output 0.5 — 4.5 V)
11.5 — 30 V DC (for output 0 — 10 V)
Ripple: the voltage peaks must not go outside the limits specified for the supply.
max. current drawn: approx. 25 mA

Supply voltage error
≤ 0.02% per V
(nominal supply voltage 24 V DC)
ratiometric with output 0.5 — 4.5 V

Operating temperature
ambient: -20 to +80°C
medium: -15 to +60°C
storage: -40 to +80°C

Electromagnetic compatibility (EMC)
as per EN 61 326
interference emission: Class B
Interference immunity: to industrial requirements

Mechanical shock
as per EN 60068-2-27
100 g/1 msec

Mechanical vibration
as per EN 60068-2-6
≤ 20 g at 15 — 2000 Hz

Enclosure protection
IP40 as per EN 60 529

Housing
stainless steel, Mat. Ref. 1.4305

Process connection
see order details;
other connections on request

Electrical connection
4-pole terminal block, grid dim. 5 mm
conductor cross-section:
rigid 0.2 — 4 mm²
flexible 0.2 — 2.5 mm²
stripped length: 8mm
screw terminals

Operating position
unrestricted

Mounting
snaps onto DIN rail
35 mm to EN 60 715

Weight
100 gm

[1] Depending on the process connection and pressure line used by the customer, the overload limits or bursting pressure may deviate from the assured values.

[2] The customer must check the compatibility with the medium being measured.

[3] The overall error includes errors due to linearity, hysteresis, reproducibility and temperature drift within the range from -20 to +80°C.

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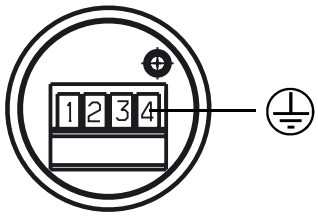
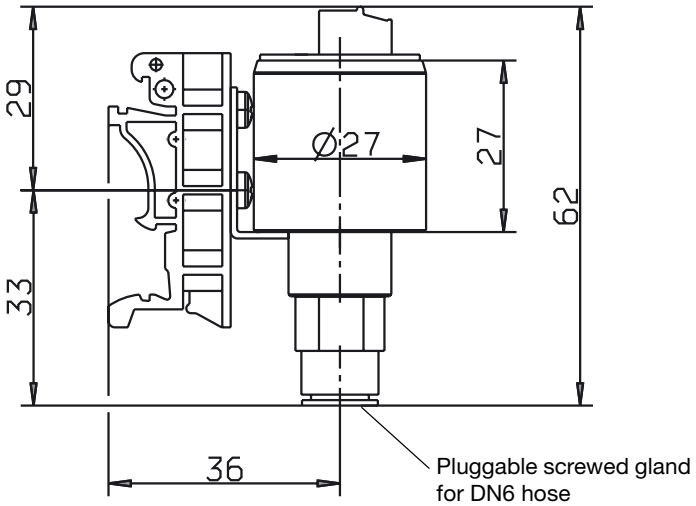
Electrical connection

Connection			Terminal assignment Terminal block
Supply 10 — 30 V DC 11.5 — 30 V DC 5 V DC	(with output) (1 — (5)6 V) (0 — 10 V) (0.5 — 4.5 V)		1 L+ 2 L-
Output 1 — (5)6 V 0 — 10 V 0.5 — 4.5 V			2 - 3 +
Supply 10 — 30 V DC	(with output) (4 — 20 mA, 2-wire)		1 L+ 2 L-
Output 4 — 20 mA, 2-wire			1 + 2 - Proportional 4 — 20 mA current in supply
PE (protective earth conductor)			4

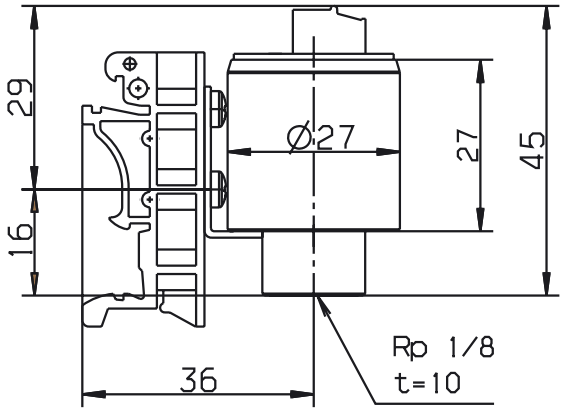


Dimensions

Process connection 383



Process connection 547



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Order details

	(1)	**Basic type**
401009		JUMO MIDAS DR Pressure transmitter
	(2)	**Basic type extensions**
/000		none
/999		special version
	(3)	**Input for gauge pressure**
455		0 to 1.6 bar
456		0 to 2.5 bar
457		0 to 4 bar
458		0 to 6 bar
459		0 to 10 bar
460		0 to 16 bar
479		-1 to 0.6 bar
480		-1 to 1.5 bar
481		-1 to 3 bar
482		-1 to 5 bar
483		-1 to 9 bar
484		-1 to 15 bar
999		special measuring range
	(4)	**Output**
405		4 to 20 mA, 2-wire
412		0.5 to 4.5 V, 3-wire
415		0 to 10 V, 3-wire
418		1 to 5 V, 3-wire
420		1 to 6 V, 3-wire
	(5)	**Process connection**
383		DN6 pluggable screwed gland for pipe/hose 6x4, DN6[1]
547		Rp 1/8 internal
	(6)	**Housing material**
20		stainless steel
	(7)	**Seal material**
601		FPM
999		special material
	(8)	**Electrical connection**
06		4-pole terminal block
	(9)	**Extra codes**
000		none

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)
Order code		/		-		-		-		-		-		-		/	
Order example	401009	/	000	-	459	-	405	-	383	-	20	-	601	-	06	/	000

[1] Only suitable for negative gauge pressure (partial vacuum) up to -0.95 bar.

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Differential Pressure Transmitter JUMO MIDAS DP10

Type 401050

Type 401050/000-xxx-xxx-xxx-xx-xxx-61

Brief description

This differential pressure transmitter measures the pressure in liquid and gaseous media. The difference between the two pressures is converted into an analog output signal. The piezo-resistive silicon sensor is built into a stainless steel housing.

Technical data

Unless further specified, all the following percentage values refer to the measurement span.

Reference conditions
as per DIN 16 086 and EN 60 770

Measuring ranges

Meas. range	Max. system pressure[2]	Max. overload on both sides[2]	Max. single-sided overload		Bursting pressure	Overall error[3] (% of full scale)	Long-term stability (per annum)
			+ side	- side			
0 to +0.4 bar	5 bar	7.5 bar	7.5 bar	5 bar	≥ 60 bar	≤ 2.5%[4]	≤ 0.6%
0 to +0.6 bar						≤ 2.5%[4]	
0 to +1 bar						≤ 2.3%[4]	
0 to +1.6 bar	10 bar	15 bar	15 bar	10 bar	≥ 60 bar	≤ 2.0%[4]	≤ 0.6%
0 to +2.5 bar						≤ 2.0%[4]	≤ 0.4%
0 to +4 bar	30 bar[1]	45 bar	15 bar	10 bar	≥ 60 bar	≤ 1.8%[4]	≤ 0.4%
0 to +6 bar			25 bar			≤ 1.8%[4]	
0 to +10 bar			30 bar			≤ 1.5%[4]	
0 to +16 bar			30 bar			≤ 1.5%[4]	

Parts in contact with medium[5]
stainless steel, Mat. Ref. 1.4571
stainless steel, Mat. Ref. 1.4435
stainless steel, Mat. Ref. 1.4305
plastic, PBT GF30 or
plastic, POM GF40
seal: FPM

Output
4 — 20 mA 2-wire
burden ≤ (U_B-10 V) / 0.02A
0.5 — 4.5 V ratiometric
burden ≥ 20 kΩ

Burden error
< 0.5 %

Zero offset
≤ 0.3 %

Thermal hysteresis
(within the compensated range -15 to +85°C)
for meas. ranges ≤ 0.6 bar: ≤ ± 1%
for meas. ranges > 0.6 bar: ≤ ± 0.5%

Step response
for current output ≤ 3 msec
for voltage output ≤ 10 msec

Supply voltage
10 — 30 V DC (for 4 — 20 mA output)
5 V DC ±0.5 V (for 0.5 — 4.5 V output)
Ripple: the voltage peaks must not go outside the limits specified for the supply.
Max. current drawn: 25 mA

Supply voltage error
≤ 0.02 % per V for 4 — 20 mA output
ratiometric for 0.5 — 4.5 V output

Operating temperature
ambient: -20 to +80°C
medium: -15 to +100°C[6]
storage: -50 to +100°C

Electromagnetic compatibility (EMC)
as per EN 61 326
interference emission: Class B
interference immunity: to industrial requirements

1 Maximum ambient temperature +60°C
2 For simultaneous pressure on both + and - sides
3 The total error includes errors due to linearity, hysteresis, reproducibility and temperature drift over the range from -15 to +85°C.
4 of full scale
5 The customer must test the compatibility with the medium being measured.
6 If the medium is water at temperatures above 50°C, then pipes or hoses must be used to separate the transmitter from the process. E. g. for water at 85°C, at least 200 mm long (depending on the ambient temperature).
® Bayer Material Science

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Mechanical shock
(to IEC 68-2-27)
100 g/1msec

Mechanical vibration
(to IEC 68-2-6)
≤ 20 g for 15 — 2000 Hz

Enclosure protection
(to EN 60 529)
with round connector M12 x 1: IP67
with bayonet to DIN 72585: IP67

Process connection
2 x G1/8 internal thread
adapters for pipes and hoses: see order details

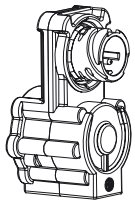
Electrical connection
round connector M12 x 1
for 4 — 20 mA output signal
bayonet connector DIN 72585
for 0.5 — 4.5 V output signal

Operating position
unrestricted
(deviations from the nominal operating position can cause an error of up to 2 mbar)

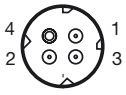
Weight
180 g
(approx. 220 g with mounting bracket)

Fixing options
- 3 holes on housing bottom
- mounting bracket (accessory)
- on measurement lines (e.g. 6 x 1 pipe)

Nominal position



Electrical connection



Bayonet connector

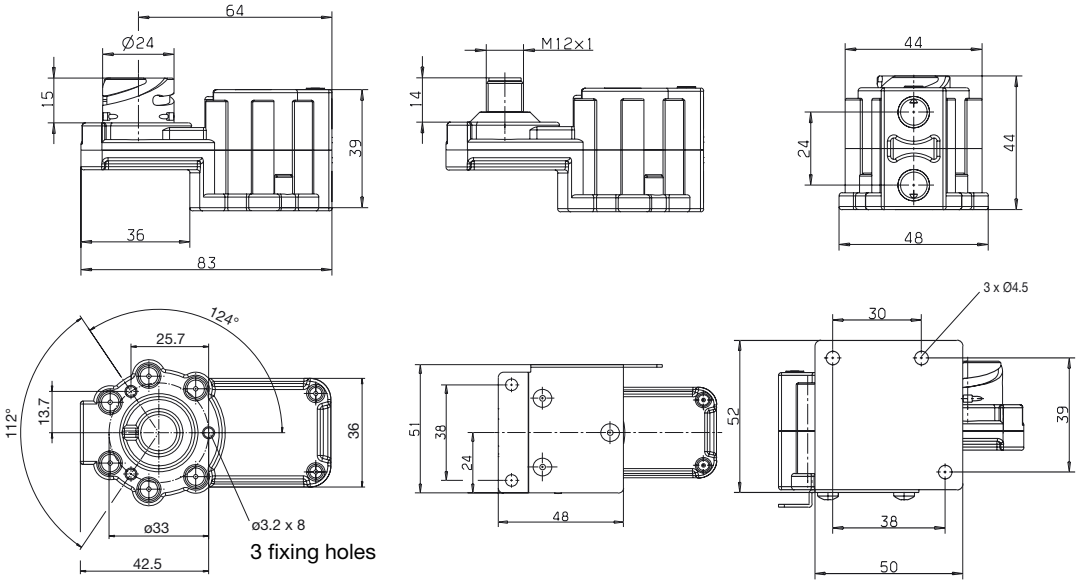
Round connector

		Bayonet connector	Round connector
Voltage output			
Supply voltage 5 V DC ±0.5 V	→	1 L+ 2 L-	
Output 0.5 — 4.5 V	→	2 - 3 +	
Current output			
Supply voltage 10 — 30 V DC	→		1 + 3 -
Output 4 — 20 mA (2-wire)	→		1 + 3 -

Accessories

Screws K40 x 8 for mounting the differential pressure transmitter

Dimensions



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Order details

	(1)	**Basic type**
401050		Differential pressure transmitter JUMO MIDAS DP 10
	(2)	**Basic type extensions**
/000		none
/999		special version
	(3)	**Input for differential pressure**
452		0 — 0.4 bar
453		0 — 0.6 bar
454		0 — 1.0 bar
455		0 — 1.6 bar
456		0 — 2.5 bar
457		0 — 4 bar
458		0 — 6 bar
459		0 — 10 bar
460		0 — 16 bar
999		special measuring range
	(4)	**Output**
405		4 to 20 mA 2-wire
412		0.5 to 4.5 V 3-wire
	(5)	**Process connection**
305		screwed pipe joint, 6mm dia., stainless steel 1.4571 / FPM
306		screwed pipe joint, 6mm dia., brass / PA
593		2 x G 1/8 to EN 837
	(6)	**Housing material**
68		PBT
69		POM
	(7)	**Seal material**
601		FPM
	(8)	**Electrical connection**
36		with round connector M 12 x 1[1]
53		bayonet connector to DIN 72585[2]
	(9)	**Extra codes**
000		none

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(8)
Order code		/		-		-		-		-		-		-		/	
Order example	401050	/	000	-	454	-	405	-	593	-	68	-	601	-	36	/	000

Accessories

Designation	**Sales No.**
Mounting bracket	40/00448193
4-pole straight connector M12 x 1 with 2m PVC cable	40/00404585
4-pole angled connector M12x1 with 2m PVC cable	40/00409334

[1] only with output 405

[2] only with output 412

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Internet: www.jumo.us

Multi-range pressure and differential pressure transmitter

Type 402004

General application

Type 402004 pressure and differential pressure transmitters are suitable for measuring overpressure, underpressure (partial vacuum) and differential pressure of non-corrosive gases.
Preferred areas of application are: HVAC, clean-room engineering and filter monitoring.

Technical data

Reference conditions
as per DIN 16 086 and IEC 770/5.3

Measuring ranges
Can be set by DIP switches
0 — 250 Pa
0 — 500 Pa
0 — 1500 Pa
0 — 3000 Pa

Overload limit
For relative (gauge) pressure measurement:
10 x end of scale
For range 0 — 3000 Pa:
5 x end of scale, at the

maximum system pressure
200 hP

Bursting pressure
300 hP

Parts in contact with medium
Al, Au, Ni, Ni-Co steel, glass, PEI, PU, silicone

Output
see order details

Burden error
For voltage output:
$R_L \geq 2\ k\Omega$
For current output:
$R_L \leq 500\ \Omega$

Ambient temperature error
within the range +10 to +50°C
(compensated temperature range)
Zero point: ≤ 0.12%/°C
Span: ≤ 0.12%/°C

Characteristic
As standard: linear

Deviation from characteristic
≤ ± 2% of full scale
(limit point setting)

Hysteresis
≤ ± 0.2% of full scale

Settling time / Filter time
adjustable 2 sec / 4 sec

Stability (per annum)
± 2%

Output signal
switchable through coding:
0(2) — 10 V or 0(4) — 20 mA

Supply voltage
19 — 31 V DC or
19 — 25 V AC

Residual ripple
≤ 60mV

Max. current drawn
≤ 20 mA (without load)

Supply voltage error
Within the range 19 — 31 V DC:
≤ 0.05%

Permissible ambient temperature
+10 to +50°C

Storage temperature
-10 to +70°C

Permissible temperature of medium
+10 to +50°C

Electromagnetic compatibility
EN 61 326-1
Interference emission: Class B
Interference immunity: to industrial requirements

Mechanical shock
10 g / 0.1 msec

Mechanical vibration
maximum 5 g at 15 — 2000 Hz

Enclosure protection
IP54 to EN 60 529

Housing
ABS

Process connection
6.6 mm dia. x 10 mm
(for 6 mm dia. flexible hoses)

Electrical connection
Internal screw terminals, for conductor cross-sections up to 1.5 mm^2

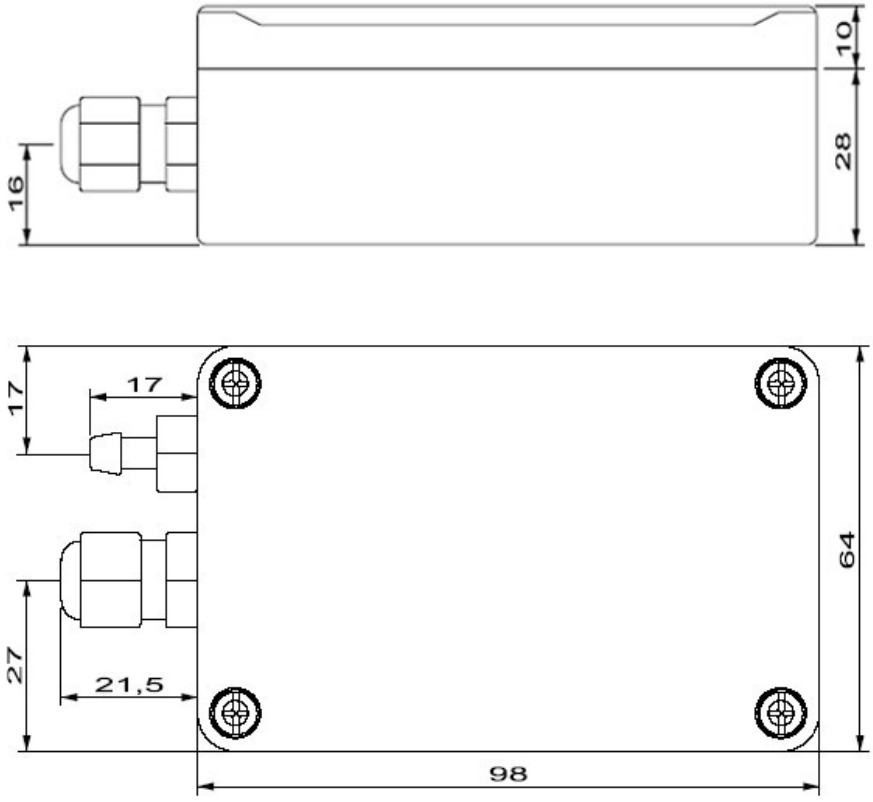
Nominal position
vertical ⊥

Weight
approx. 170 g

Electrical connection

Connection			Connection assignment on terminal block
Supply voltage 19 — 31 V DC		L - L +	1 2
Supply voltage 24 V AC		N L 1	1 2
Output 0(2) — 10 V or 0(4) — 20 mA, 3-wire		- +	3 4

Dimensions



Order details

	(1)	**Basic type**
402004		Multi-range pressure and differential pressure transmitter Type 402004
	(2)	**Basic type extensions**
000		none
	(3)	**Input for gauge pressure**
440		switchable: 0 — 250 Pa, 0 — 500 Pa, 0 — 1500 Pa or 0 — 3000 Pa
	(4)	**Output**
409		switchable: 0(2) — 10 V or 0(4) — 20 mA
	(5)	**Process connection**
298		6.6 mm dia. x 10 mm, for 6 mm dia. flexible hoses
	(6)	**Extra codes**
000		none

	(1)		(2)		(3)		(4)		(5)		(6)
Order code		/		-		-		-		/	
Order example	402004	/	000	-	440	-	409	-	298	/	000

Stock versions (shipment: 3 working days after receipt of order)

Type	**Sales No.**
402002/000-440-409-298/000	40/00491350

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Pressure transmitter for elevated media temperatures JUMO dTRANS p31

Type 402050

General application

Pressure transmitters are used for measuring the relative (gauge) and absolute pressures in liquids and gases. The pressure transmitter operates on the piezo-resistive measuring principle. The pressure is converted into an electrical signal.

Technical data

Reference conditions
to DIN 16 086 and IEC 770/5.3

Ranges
see order details

Overload limit
all ranges 3 x full scale

Bursting pressure
all ranges 4 x full scale

Parts in contact with medium
standard: stainless steel,
Mat. Ref. 1.4571 / 1.4435

Output
0 — 20 mA
3-wire burden ≤ (U_B-12 V) / 0.02A
4 — 20 mA
2-wire burden ≤ (U_B-10 V) / 0.02A
4 — 20 mA
3-wire burden ≤ (U_B-12 V) / 0.02A
0.5 — 4.5 V burden ≥ 50 kΩ
1 — 6 V burden ≥ 10 kΩ
0 — 10 V burden ≥ 10 kΩ

Burden error
< 0.5% max.

Zero offset
≤ 0.3% of full scale

Thermal hysteresis
≤ ± 0.5% of full scale
(within compensated temperature range)

Ambient temperature error
within range 0 to +100°C
(compensated temperature range)
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 point setting)
for basic type extension 023:
≤ 0.2% of full scale
(limit point setting)

Hysteresis
≤ 0.1% of full scale

Repeatability
≤ 0.05% of full scale

Response time
with current output
(output 402, 405 or 406):
3 msec max.
with voltage output
(output 412, 415, 418 or 420):
10 msec max.

Stability over 1 year
≤ 0.5% of full scale

Supply
10 — 30 V DC (output 4 — 20 mA and 1 — 6 V)
5 V DC (output 0.5 — 4.5 V)
11.5 — 30 V DC (output 0 — 10 V)
11.5 — 30 V DC (output 0(4) — 20 mA)
Ripple: the voltage spikes must not go above or below the values specified for the supply
max. current drawn: approx. 25 mA

Supply voltage error
≤ 0.02% per V
(nominal supply voltage 24 V DC)
ratiometric with supply voltage 5 V DC (±0.5 V)

Permissible ambient temperature
(max. housing temperature)
-20 to +125°C

Storage temperature
-40 to +125°C

Permissible temperature of medium
-30 to +200°C

Electromagnetic compatibility
EN 61 326
interference emission: Class B
immunity to interference: to industrial requirements

Mechanical shock
(to IEC 68-2-27)
100 g/1 msec

Mechanical vibration
(to IEC 68-2-6)
max. 20 g at 15—2000 Hz

Protection
with terminal box
IP65 to EN 60 529
(connecting cable diameter min. 5 mm, max. 7 mm).
with circular connector M12 x 1 or connecting cable
IP67 to EN 60 529

Housing
stainless steel, Mat. Ref. 1.4301
polycarbonate GF

Pressure connection
see order details;
other connections on request

Electrical connection
see order details
terminal box to EN 175301-803,
conductor cross-section up to max. 1.5 mm^2;
or
attached 4-core PVC cable, length 2 m
other lengths on request
or
circular connector M12 x 1, 4-pole

Nominal position
any

Weight
200 g

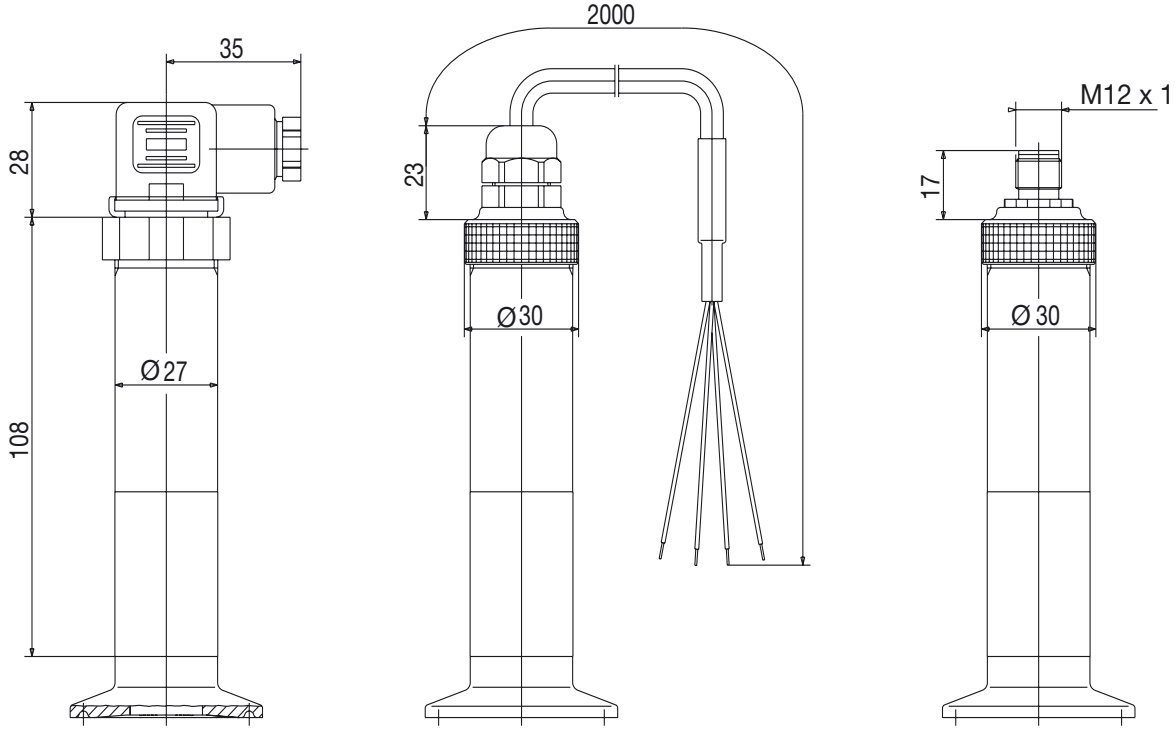
Electrical connection

Connection			Terminals		
				Cable	M12 x 1
Supply 10 — 30 V DC 11.5 — 30 V DC 5 V DC	(for output) (1 —(5) 6 V) (0 — 10 V) (0(4) — 20 mA, 3-wire) (0.5 — 4.5 V)		1L+ 2L-	white gray	1+ 3-
Supply 10 — 30 V DC	(for output) (4 — 20 mA, 2-wire)		1L+ 2L-	white gray	1+ 3-
Output 1 — 6 V 0 — 10 V 0.5 — 4.5 V 4 — 20 mA, 3-wire			2- 3+	gray yellow	3- 4+
Output 4 — 20 mA, 2-wire			1+ 2- proportional current 4 – 20 mA in supply	white gray	1+ 3-
Screen				black	2

Caution:
Earth instrument!
(pressure connection and / or ⏚ or screen

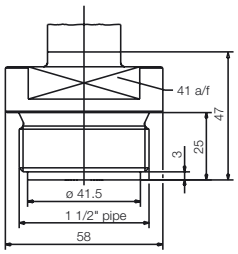
Connector assignment (M12 x 1)

Dimensions

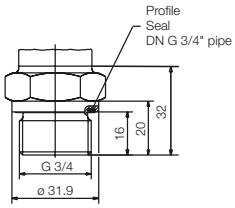


Front-flush connections

570



571



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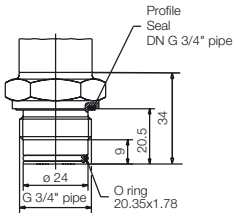

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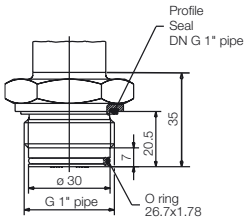
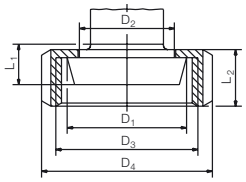


603-607

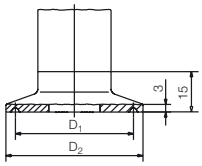
Cone nipple with slotted union nut to DIN 11 851



	DN	øD1	øD2	øD3	øD4	L1	L2
603	20	36.5	30	RD 44x1/6	54	13	21
604	25	44	35	RD 52x1/6	63	15	
605	32	50	41	RD 58x1/6	70		
606	40	56	48	RD 65x1/6	78		
607	50	68.5	61	RD 78x1/6	92	16	22

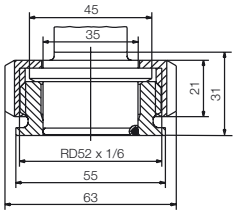
612-616

Clamp connection to DIN 32676



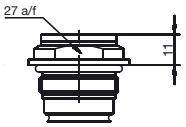
	DN DIN 32676	DN (Zoll)	Nominal Size ISO 2852	øD1	øD2
612	20 15		12 12.7 17.2 21.3	27.5	34
613	25 32 40	1" 1,5"	25 33.7 38	43.5	50.5
616	50	2"	40 51	56.5	64

652



997

Suitable for the JUMO PEKA adapter system, see data sheet 40.9711



Order details

	Basic type					
402050	Pressure transmitter JUMO dTRANS p31					
I		**Basic type extensions**				
I	/000	none				
I	/023	reduced deviation from characteristic[1]				
I	/999	special version				
I	I		**Input**			
I	I	454	0	1.0 bar gauge pressure		
I	I	455	0	1.6 bar gauge pressure		
I	I	456	0	2.5 bar gauge pressure		
I	I	457	0	4 bar gauge pressure		
I	I	458	0	6 bar gauge pressure		
I	I	459	0	10 bar gauge pressure		
I	I	460	0	16 bar gauge pressure		
I	I	461	0	25 bar gauge pressure		
I	I	462	0	40 bar gauge pressure		
I	I	463	0	60 bar gauge pressure		
I	I	478	-1	0 bar gauge pressure		
I	I	479	-1	0.6 bar gauge pressure		
I	I	480	-1	1.5 bar gauge pressure		
I	I	481	-1	3 bar gauge pressure		
I	I	482	-1	5 bar gauge pressure		
I	I	483	-1	9 bar gauge pressure		
I	I	484	-1	15 bar gauge pressure		
I	I	485	-1	24 bar gauge pressure		
I	I	488	0	1.0 bar absolute pressure		
I	I	489	0	1.6 bar absolute pressure		
I	I	490	0	2.5 bar absolute pressure		
I	I	491	0	4 bar absolute pressure		
I	I	492	0	6 bar absolute pressure		
I	I	493	0	10 bar absolute pressure		
I	I	494	0	16 bar absolute pressure		
I	I	495	0	25 bar absolute pressure		
I	I	999	special range			
I	I	I		**Output**		
I	I	I	402	0 to 20 mA 3-wire		
I	I	I	405	4 to 20 mA 2-wire		
I	I	I	406	4 to 20 mA 3-wire		
I	I	I	412	0.5 to 4.5 V 3-wire		
I	I	I	415	0 to10 V 3-wire		
I	I	I	418	1 to 5 V 3-wire		
I	I	I	420	1 to 6 V 3-wire		
I	I	I	I		**Process connection (front-flush)**	
I	I	I	I	550	aseptic to DIN 11 864-1A, DN20	
I	I	I	I	551	aseptic to DIN 11 864-1A, DN25	
I	I	I	I	552	aseptic to DIN 11 864-1A, DN32	
I	I	I	I	553	aseptic to DIN 11 864-1A, DN40	
I	I	I	I	554	aseptic to DIN 11 864-1A, DN50	
I	I	I	I	570	$G1^1/_2$	
I	I	I	I	571	$G^3/_4$	

I	I	I	I	575	$G^3/_4$ front seal
I	I	I	I	576	G1 front seal
I	I	I	I	584	SMS, DN1"
I	I	I	I	585	SMS, DN1 $^1/_2$"
I	I	I	I	586	SMS, DN2"
I	I	I	I	603	taper connection with slotted nut to DIN11851, DN20
I	I	I	I	604	taper connection with slotted nut to DIN11851, DN25
I	I	I	I	605	taper connection with slotted nut to DIN11851, DN32
I	I	I	I	606	taper connection with slotted nut to DIN11851, DN40
I	I	I	I	607	taper connection with slotted nut to DIN11851, DN50
I	I	I	I	612	clamp to DIN 32676, DN20
I	I	I	I	613	clamp to DIN 32676, DN25, DN32 and DN40
I	I	I	I	616	clamp to DIN 32676, DN50
I	I	I	I	623	small flange to DIN 28 403, DN25
I	I	I	I	652	tank connection with slotted union nut
I	I	I	I	661	clamping flange (DRD), 65 dia.
I	I	I	I	684	Varivent, DN15/10
I	I	I	I	685	Varivent, DN32/25
I	I	I	I	686	Varivent, DN50/40
I	I	I	I	997	JUMO-PEKA[2]
I	I	I	I		**Material of process connection**
I	I	I	I	I	20 stainless steel
I	I	I	I	I	I **Electrical connection**
I	I	I	I	I	I 12 with attached cable (cable length in plain text)
I	I	I	I	I	I 36 with circular connector M12 x 1
I	I	I	I	I	I 61 with terminal box
I	I	I	I	I	I I

402050 / [ ] - [ ] - [ ] - [ ] - [ ] - 20 - [ ] **Order code**

[1] only for output 4 to 20 mA 2-wire.
not for +/- ranges.

[2] suitable process connection adapter, see data sheet 40.9711

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Pressure Transmitter JUMO dTRANS p32

Type 402051

General application

Pressure transmitters are used for measuring relative (gauge) pressures in dry, non-corrosive and non-ionizing gaseous media. The transmitter operates on the piezoresistive measuring principle. The pressure is converted into an electrical signal.

Technical data

Reference conditions
to DIN 16 086 and IEC 770/5.3

Measurement ranges
see Order details

Overload limit
4 x full scale

Bursting pressure
8 x full scale

Parts in contact with medium
Si, borosilicate glass, silicone, Au, CrNi steel

Output

0 — 20 mA	
3-wire	burden ≤ (U_B-12 V) / 0.02A
4 — 20 mA	
2-wire	burden ≤ (U_B-10 V) / 0.02A
4 — 20 mA	
3-wire	burden ≤ (U_B-12 V) / 0.02A
0.5 — 4.5 V	burden ≥ 50 kΩ
1 — 6 V	burden ≥ 10 kΩ
0 — 10 V	burden ≥ 10 kΩ

Burden error
< 0.5% max.

Zero signal deviation
≤ 0.4% of full scale

Thermal hysteresis
(within compensated temperature range)
≤ ± 2%

Ambient temperature error
within range 0 to +100°C
(compensated temperature range)

zero:	≤ 0.03%/°C typical, ≤ 0.05%/°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

Repeatability
≤ 0.05% of full scale

Settling time
for current output (output 402, 405 or 406):
≤ 3 msec max.
for voltage output (output 412, 415, 418 or 420):
≤ 10 msec max.

Stability over 1 year
≤ 1% of full scale

Supply

10 — 30 V DC	(output 4 —20 mA and 1 — 6 V)
5 V DC	(output 0.5 — 4.5 V)
11.5 — 30 V DC	(output 0 — 10 V)
11.5 — 30 V DC	(output 0(4) — 20 mA)

Ripple:
The voltage spikes must not go outside the limits specified for the supply.
Max. current drawn: approx. 25 mA

Supply voltage error
≤ 0.02%per V
(nominal supply voltage 24 V DC)
ratiometric with supply voltage 5 V DC (±0.5 V)

Permissible ambient temperature
-20 to +100°C

Storage temperature
-40 to +125°C

Permissible temperature of medium
-30 to +120°C

Electromagnetic compatibility
EN 61 326
interference emission: Class B
interference immunity: to industrial requirements

Mechanical shock
(to IEC 68-2-27)
100 g/1 msec

Mechanical vibration
(to IEC 68-2-6)
20 g max. at 15 — 2000 Hz

Protection
with terminal box
IP65 to EN 60 529
(connection cable diameter:
5 mm min., 7 mm max.)
with connection cable
IP67 to EN 60 529

Housing
stainless steel, Mat. Ref. 1.4301
polycarbonate GF

Pressure connection
see Order details;
other connections on request

Electrical connection
see Order details
terminal box to DIN 43 650,
Style A,
conductor cross-section up to 1.5 mm^2;
or
attached 4-core PVC cable, 2 m long
other lengths on request

Nominal position
unrestricted

Weight
200 gm

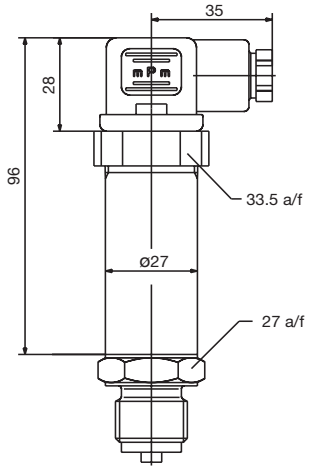
Electrical connection

Connection		Terminals	
		Connector	Cable
Supply 10 — 30 V DC 11.5 — 30 V DC 5 V DC		1 L+ 2 L-	white gray
Output 1 — 6 V 0 — 10 V 0.5 — 4.5 V		2 - 3 +	gray yellow
Output 4 — 20 mA, 2-wire		1 + 2 - proportional 4 to 20 mA current in supply	white gray
Output 0(4) — 20 mA, 3-wire		2 - 3 +	gray yellow
Protective earth conductor			
Screen			black

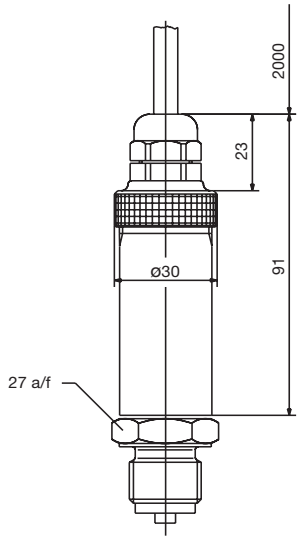
Caution:
Earth the instrument!
(pressure connection and / or ⏚ or screen

Dimensions

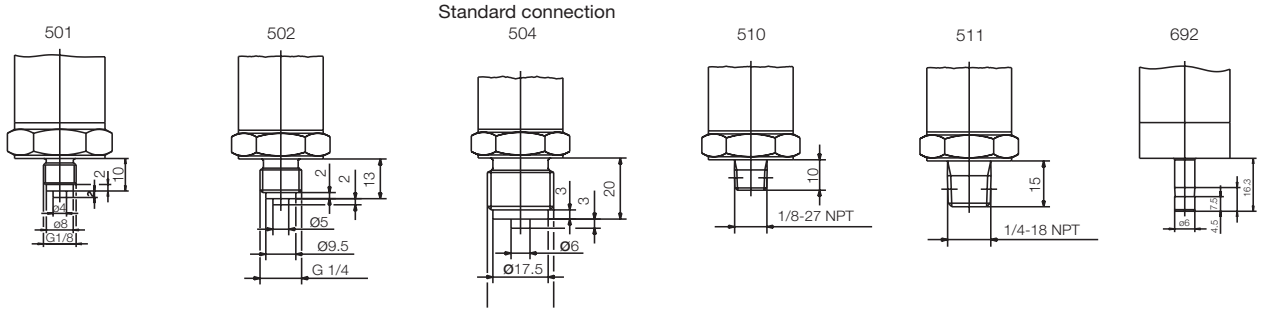
Electrical connection
by terminal box
(61)



Electrical connection
by attached cable
(12)



Connections, not front-flush



Order details

	Basic type								
402051	Pressure transmitter JUMO dTRANS p32								
I	**Basic type extension**								
I	/000	none							
I	/999	special version							
I	I	**Input**							
I	I	411	0	40 mbar gauge pressure					
I	I	413	0	60 mbar gauge pressure					
I	I	414	0	100 mbar gauge pressure					
I	I	415	0	160 mbar gauge pressure					
I	I	451	0	0.25 bar gauge pressure					
I	I	452	0	0.4 bar gauge pressure					
I	I	453	0	0.6 bar gauge pressure					
I	I	999	special gauge pressure range						
I	I	I	**Output**						
I	I	I	402	0 to 20 mA 3-wire					
I	I	I	405	4 to 20 mA 2-wire					
I	I	I	406	4 to 20 mA 3-wire					
I	I	I	412	0.5 to 4.5 V 3-wire					
I	I	I	415	0 to 10 V 3-wire					
I	I	I	418	1 to 5 V 3-wire					
I	I	I	420	1 to 6 V 3-wire					
I	I	I	I	**Process connection (not front-flush)**					
I	I	I	I	501	pressure connection G 1/8 to EN 837				
I	I	I	I	502	pressure connection G 1/4 to EN 837				
I	I	I	I	504	pressure connection G 1/2 to EN 837 (standard connection)				
I	I	I	I	510	pressure connection 1/8-27 NPT to DIN 837				
I	I	I	I	511	pressure connection 1/4-18 NPT to DIN 837				
I	I	I	I	692	6 mm hose connection				
I	I	I	I	**Material of process connection**					
I	I	I	I	I	20	stainless steel			
I	I	I	I	I	I	**Electrical connection**			
I	I	I	I	I	I	12	by attached cable (cable length in plain text)		
I	I	I	I	I	I	36	by circular connector M12 x 1		
I	I	I	I	I	I	61	by terminal box		
I	I	I	I	I	I	I			

402051 / [ ] - [ ] - [ ] - [ ] - 20 - [ ] **Order code**

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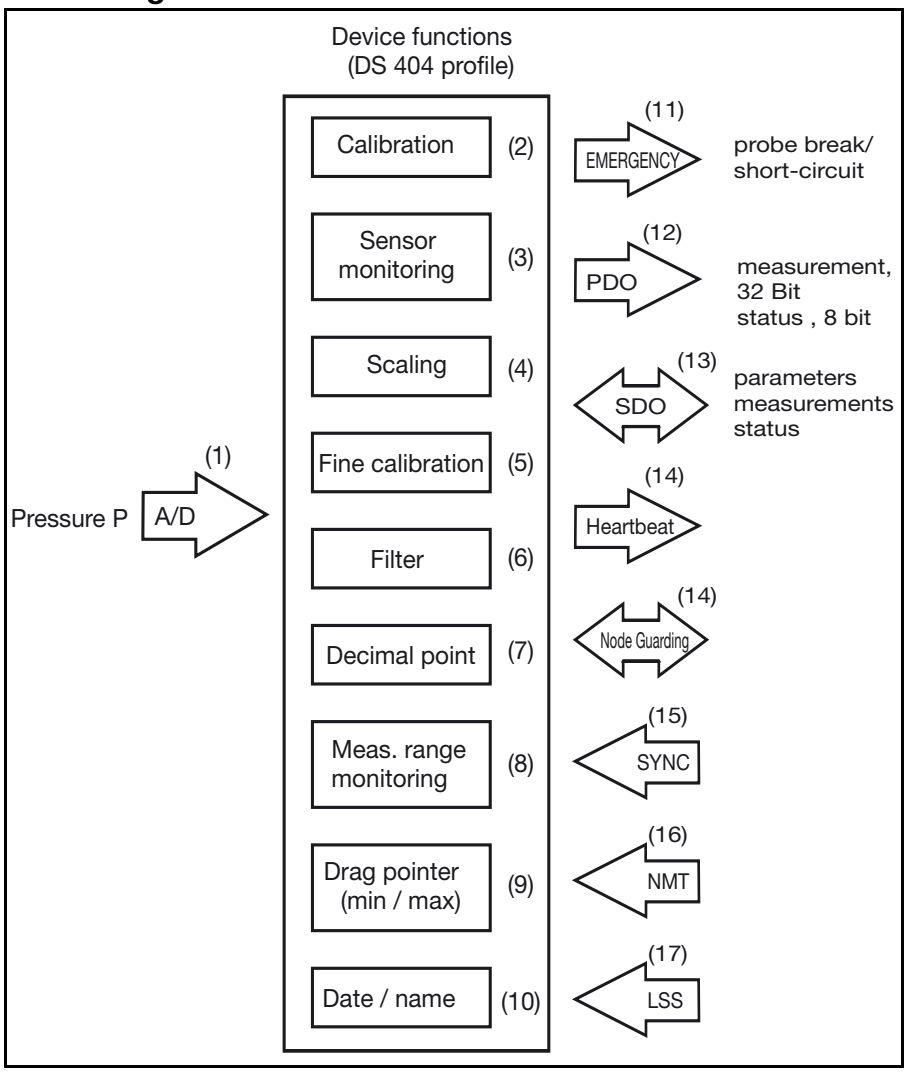
Pressure Transmitter with CANopen output JUMO CANtrans p Ceramic

Type 402055

General application

Pressure transmitters are used for measuring relative (gauge) and absolute pressures in liquids and gases. The pressure transmitter operates on the thick-film strain gauge measuring principle. An alumina ceramic (Al_2O_3) is used as the base material for the sensing element. The pressure measurement is digitized and made available for further processing via the CANopen serial bus protocol (CAN slave). Several useful extra functions have been implemented through the DS 404 device profile. All settings can be made using standard CANopen software tools.
Further transmitters with CANopen output: see Data Sheets 40.2056 (pressure), 40.2057 (pressure + temperature) and 90.2910 (temperature).

Block diagram



Operation

(1) The analog signal from the pressure cell is digitized with 12-bit resolution.
(2) The pressure signal is digitally calibrated at the factory.
(3) The sensor monitoring facility continuously checks the correct performance of the sensor signal and triggers high-priority emergency telegrams in the event of an error.
(4) The pressure measurement can be scaled to any dimensional unit (or in % of range).
(5) Fine calibration features an auto-zeroing function and a freely adjustable shift of the characteristic.
(6) Undesirable signal fluctuations can be suppressed through the (adjustable) filter constant.
(7) The measurement is output with a freely selectable decimal place.
(8) Range monitoring features freely selectable upper and lower limits. The result is output as a status byte with the measurement in the PDO telegram.
(9) The drag pointer function stores the minimum and maximum pressure measurements.
(10) Date and name of the last servicing action can be stored.
(11) An emergency telegram is triggered in the event of a sensor fault.
(12) The PDO telegram contains the 32-bit measurement and the 8-bit status. The measurement that is output can be controlled by means of different trigger conditions.
(13) Parameters can be set through SDO telegrams, and measurements and status can be requested.

(14) The heartbeat signal or Node Guarding can be used to additionally monitor the transmitter function.
(15) The transmission of measurements can additionally be controlled through the Sync command.
(16) NMT telegrams serve to control the operational state of the transmitter.
(17) The CAN module ID and CAN baud rate are set via LSS or SDO, according to choice.

Technical data

Reference conditions
to DIN 16 086 and IEC 770/5.3

Measurement ranges
see order details

Overload limit
on ranges
0 — 1.6 mbar to 0 — 40 bar
3 x full scale
on ranges
0 — 60 to 0 — 100 bar 2 x full scale

Bursting pressure
on ranges
0 — 1.6 mbar to 40 bar
4 x full scale
on ranges
0 — 60 to 0 — 100 bar 3 x full scale

Parts in contact with medium
standard: st. steel, Mat. Ref. 1.4305, (Al_2O_3) 96%
seal: FPM or FFPM

Output
CANopen as per CiA DS 301 V4.02
measurement resolution: 12 bit

Zero offset
≤ 0.3% of full scale

Thermal hysteresis
≤ ± 0.4% of full scale

Ambient temperature effect
within range -20 to +85°C
(compensated temperature range)
zero: ≤ 0.02%/°C typical, ≤ 0.04%/°C max.
span: ≤ 0.02%/ typical, ≤ 0.04%/°C max.

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

Hysteresis
≤ 0.2% of full scale

Repeatability
≤ 0.1% of full scale

Cycle time
1 msec
optionally 0.5 msec (11 bit)

Stability per year
≤ 1% of full scale

Supply
10 — 30 V DC
max. current drawn: approx. 45 mA

Supply voltage error
reference voltage 24 V DC
≤ 0.0005% per V

Permissible ambient temperature
-20 to +85°C

Storage temperature
-40 to +85°C

Permissible temperature of medium
-20 to +85°C

Electromagnetic compatibility
EN 61326
interference emission: Class B
immunity to interference: to industrial requirements

Electrical connection
M12
recommended: screened 5-wire cable

Mechanical shock
(to IEC 68-2-27)
100 g/5 msec

Mechanical vibration
(to IEC 68-2-6)
20 g max. at 15 — 2000 Hz

Enclosure protection
with connector screwed on:
IP67 to EN 60 529

Housing
stainless steel, Mat. Ref. 1.4305

Pressure connection
see order details;
other connections on request

Nominal position
unrestricted

Weight
95 gm (with pressure connection G 1/4)

CANbus

Protocol
CiA DS 301, V4.02, CANopen slave

Profile
CiA DS 404, V1.2
Measuring devices and closed-loop controllers

Baud rate
20 kbaud to 1 Mbaud
setting via LSS or SDO

Module (node) ID
1 — 127
setting via LSS or SDO

PDO
0 Rx, 1 Tx

SDO
1Rx, 1 Tx

Emergency
yes

Heartbeat
yes

Node Guarding
yes

LSS
yes

SYNC
yes

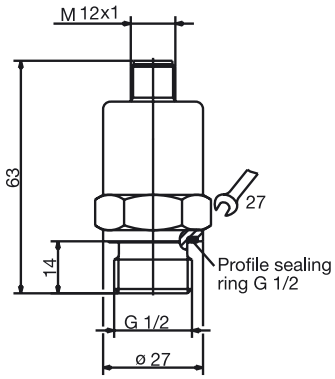
Operation and project design
All parameters are accessible via the CANopen object directory (EDS) and can be set using standard CANopen software tools.

EDS (electronic data sheet)
yes
available free of charge as a download file:
www.jumo.net -> Product information

Factory setting
see Operating Instructions B40.2055.0
available free of charge as a download file:
www.jumo.net -> Product information

Dimensions

(523)



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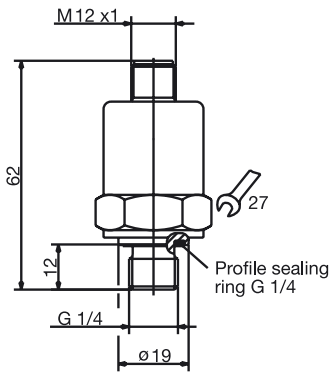

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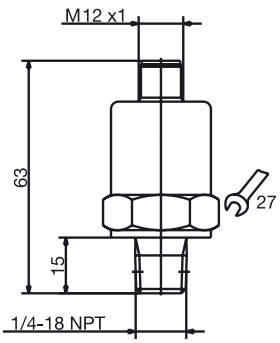

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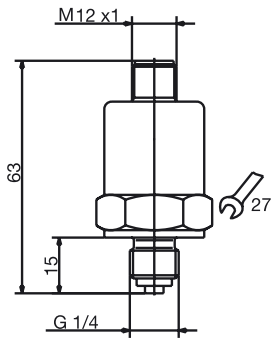


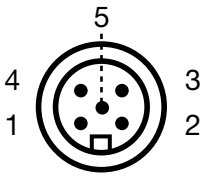
Electrical connection

Connection		Terminal assignment	
		M12 connector	Terminal box with moulded cable Mat. Ref. 40/00337625
Supply 10 — 30 V DC	V+	2	white
	V-	3	blue
Output CANopen	screen	1	brown
	CAN_H	4	black
	CAN_L	5	grey

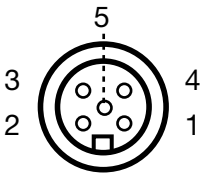
Circular connector

M12 x 1; 5-pole to IEC 60 947-5-2

Plug



Socket



Accessories

Designation	Sales No.
5-pole terminal box M 12x1, straight, with 5m moulded cable	40/00337625
5-pole terminal box M 12x1, angled, with 2m moulded cable	40/00375164
5-pole terminal box M 12x1, straight, no cable, assembly by customer	40/00419130
5-pole terminal box M 12x1, angled, no cable, assembly by customer	40/00419133
Tee	40/00419129
Termination resistor for CAN bus, with plug	40/00461591
Extension cable 2m, 5-pole, M 12x1	40/00461589
PC CAN interface USB	40/00449941
PC configuration software for CANopen	40/00449942
EDS file, for download (www.jumo.net -> Product information)	for download
Operating Instructions, for download (www.jumo.net -> Product information)	for download

Order details

	(1)	**Basic type**
402055		Pressure transmitter JUMO CANtrans p Ceramic
	(2)	**Basic type extensions**
000		none
999		special version
	(3)	**Input**
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
463		0 to 60 bar gauge pressure
464		0 to 100 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
484		-1 to 15 bar gauge pressure
485		-1 to 24 bar gauge pressure
999		special range: gauge pressure
	(4)	**Output**
450		CANopen
	(5)	**Process connection (not front-flush)**
502		G 1/4 to EN 837
511		1/4-18 NPT to DIN 837
521		G1/4 to DIN 3852 T11 (with soft seal located at rear)
523		G 1/2 to DIN 3852 T11 (with soft seal located at rear)
562		7/16-20 UNF
999		special process connection
	(6)	**Material of process connection**
20		stainless steel
	(7)	**Material of seal**
601		FPM
604		FFPM[1]
999		special material
	(8)	**Electrical connection**
36		circular connector M 12x1 / 5-pole
	(9)	**Extra codes**
000		none

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Order code	402055	/ 000	-	- 450	-	- 20	-	- 36	/ 000
Order example	402055	/ 000	- 462	- 450	- 502	- 20	- 601	- 36	/ 000

[1] Product characteristics similar to PTFE.

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Internet: www.jumo.us

Pressure Transmitter with CANopen output JUMO CANtrans p

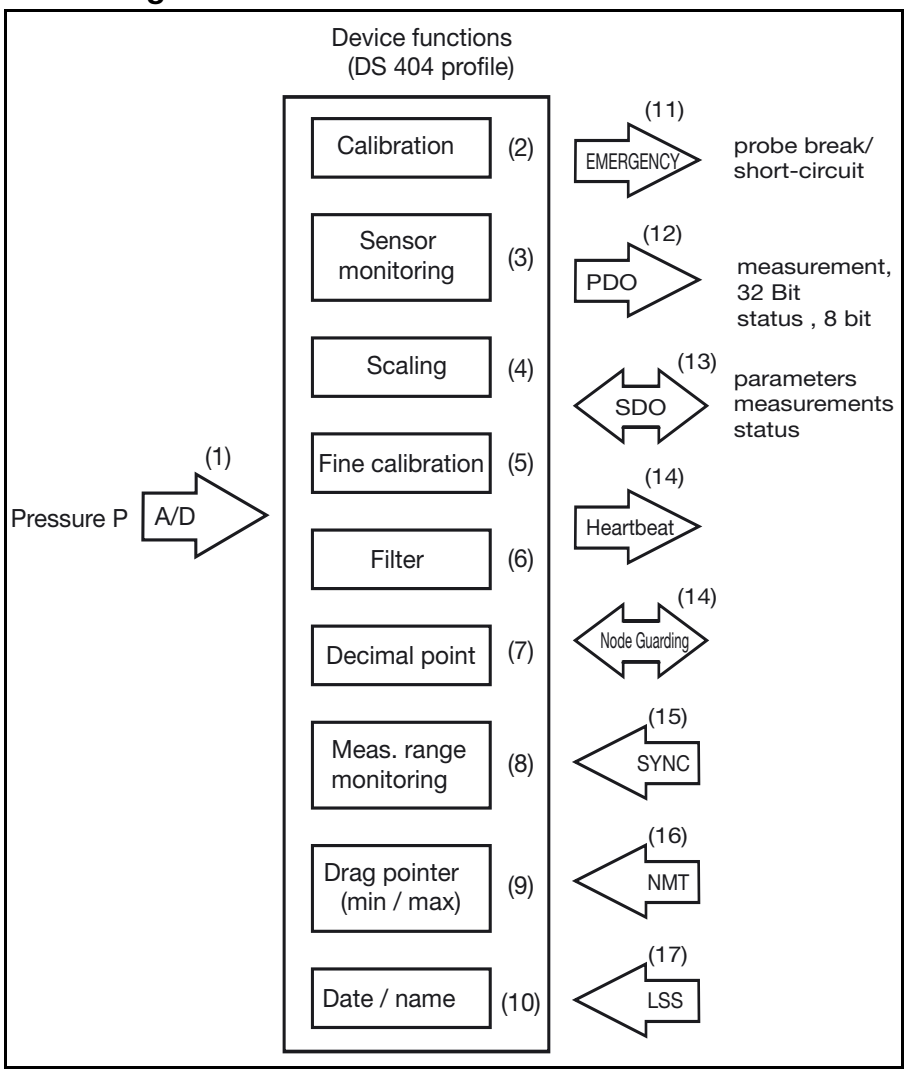
Type 402056

General application

Pressure transmitters are used for measuring relative (gauge) and absolute pressures in liquids and gases. The pressure transmitter operates on the piezoresistive or thin-film strain gauge measuring principle. The pressure measurement is digitized and made available for further processing via the CANopen serial bus protocol (CAN slave). Several useful extra functions are implemented through the DS 404 device profile. All settings can be made using standard CANopen software tools.

Additional transmitters with CANopen output: see Data Sheets 40.2055 (pressure), 40.2057 (pressure + temperature) and 90.2910 (temperature).

Block diagram



Operation

(1) The analog signal from the pressure cell is digitized with 12-bit resolution.
(2) The pressure signal is digitally calibrated at the factory.
(3) The sensor monitoring facility continuously checks the correct performance of the sensor signal and triggers high-priority emergency telegrams in the event of an error.
(4) The pressure measurement can be scaled to any dimensional unit (or in % of range).
(5) Fine calibration features an auto-zeroing function and a freely adjustable shift of the characteristic.
(6) Undesirable signal fluctuations can be suppressed through the (adjustable) filter constant.
(7) The measurement is output with a freely selectable decimal place.
(8) Range monitoring features freely selectable upper and lower limits. The result is output as a status byte with the measurement in the PDO telegram.
(9) The drag pointer function stores the minimum and maximum pressure measurements.
(10) Date and name of the last servicing action can be stored.
(11) An emergency telegram is triggered in the event of a sensor fault.
(12) The PDO telegram contains the 32-bit measurement and the 8-bit status. The measurement that is output can be controlled by means of different trigger conditions.
(13) Parameters can be set through SDO telegrams, and measurements and status can be requested.

(14) The heartbeat signal or Node Guarding can be used to additionally monitor the transmitter function.
(15) The transmission of measurements can additionally be controlled through the Sync command.
(16) NMT telegrams serve to control the operational state of the transmitter.
(17) The CAN module ID and CAN baud rate are set via LSS or SDO, as selected.

Technical data

Reference conditions
to DIN 16 086 and IEC 770/5.3

Measurement ranges
see order details

Overload limit
ranges
0 — 0.25 bar to 0 — 25 bar
3 x full scale
ranges
0 — 40 to 0 — 250 bar 2 x full scale
ranges
0 — 400 to 0 — 600 bar 1.5 x full scale

Bursting pressure
ranges
0 — 0.25 bar to 0 — 40 bar
≤4 x full scale
ranges
0 — 60 to 0 — 100 bar 8 x full scale
ranges
0 — 160 to 0 — 400 bar 5 x full scale
ranges
0 — 600 bar 3 x full scale

Parts in contact with medium
standard: stainless steel,
Mat. Ref. 1.4571 / 1.4435
for range ≥ 60 bar,
Mat. Ref. 1.4571 / 1.4542

Output
CANopen as per CiA DS 301 V4.02
measurement resolution: 12 bit

Zero offset
≤0.3% of full scale

Thermal hysteresis
≤±0.5% of full scale
(within compensated temperature range)
≤±1% for ranges 0 — 250 mbar
0 — 400 mbar
0 — 600 mbar

Ambient temperature effect
within range 0 to +100° C
(compensated temperature range)
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 point setting)

Hysteresis
≤0.1% of full scale

Repeatability
≤0.05% of full scale

Cycle time
1 msec
optionally 0.5 msec (11 bit)

Stability per year
≤0.5% of full scale

Supply
10 — 30 V DC
max. current drawn: approx. 45 mA

Supply voltage error
≤0.03% per V

Permissible ambient temperature
-20 to +85° C

Storage temperature
-40 to +85° C

Permissible temperature of medium
standard version:
-40 to +125° C
with basic type extension 004:
-40 to +200° C

Electromagnetic compatibility
EN 61 326
interference emission: Class B
immunity to interference: to industrial requirements

Electrical connection
M12
recommended: screened 5-wire cable

Mechanical shock
(to IEC 68-2-27)
100 g/5 msec

Mechanical vibration
(to IEC 68-2-6)
20 g max. at 15 — 2000 Hz

Enclosure protection
with connector screwed on:
IP67 to EN 60 529

Housing
stainless steel, Mat. Ref. 1.4305

Pressure connection
see order details;
other connections on request

Nominal position
unrestricted

Weight
95 gm (with pressure connection G 1/4)

CANbus

Protocol
CiA DS 301, V4.02, CANopen slave

Profile
CiA DS 404, V1.2
Measuring devices and closed-loop controllers

Baud rate
20 kbaud to 1 Mbaud
setting via LSS or SDO

Module (node) ID
1 — 127
setting via LSS or SDO

PDO
0 Rx, 1 Tx

SDO
1Rx, 1 Tx

Emergency
yes

Heartbeat
yes

Node Guarding
yes

LSS
yes

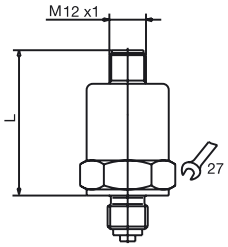
SYNC
yes

Operation and project design
All parameters are accessible via the CANopen object directory (EDS) and can be set using standard CANopen software tools.

EDS (electronic data sheet)
yes
available free of charge as a download file:
www.jumo.net -> Product information

Factory setting
see Operating Instructions B40.2055.0
available free of charge as a download file:
www.jumo.net -> Product information

Dimension

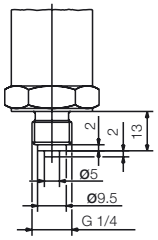


Basic type extension	Dim. "L"
000	48
004	xx
023	48
024	48

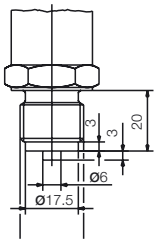
Connections, not front-flush

Standard connection

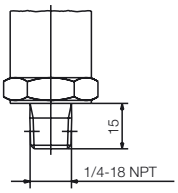
502



504



511



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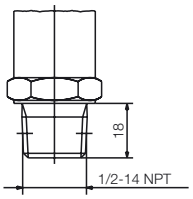
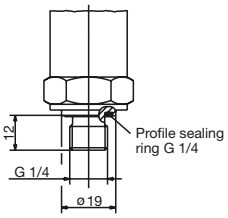


521



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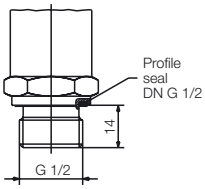
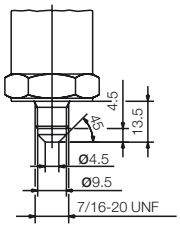
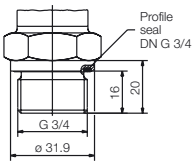


562

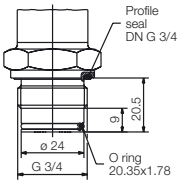


Connections, front-flush

571



575



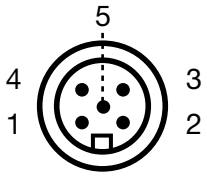
Electrical connection

Connection		Terminal assignment	
		M12 connector	Terminal box with moulded cable Sales No. 40/00337625
Supply 10 — 30 V DC	V+ V-	2 3	white blue
Output CANopen	screen CAN_H CAN_L	1 4 5	brown black grey

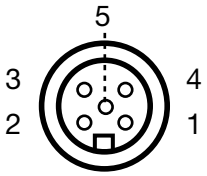
Circular connector

M12 x 1; 5-pole to IEC 60 947-5-2

Plug



Socket



Accessories

Designation	Sales No.
5-pole terminal box M 12x1, straight, with 5 m moulded cable	40/00337625
5-pole terminal box M 12x1, angled, with 2m moulded cable	40/00375164
5-pole terminal box M 12x1, straight, no cable, assembly by customer	40/00419130
5-pole cable box M 12x1, angled, no cable, assembly by customer	40/00419133
Tee	40/00419129
Termination resistor for CAN bus, with plug	40/00461591
Extension cable 2m, 5-pole, M 12x1	40/00461589
PC CAN interface USB	40/00449941
PC configuration software for CANopen	40/00449942
EDS file, for download (www.jumo.net -> Product information)	for download
Operating Instructions, for download (www.jumo.net -> Product information)	for download

Order details

	(1)	**Basic type**
402056		Pressure transmitter JUMO CANtrans p
	(2)	**Basic type extension**
000		none
004		for elevated media temperatures up to 200°C [1]
999		special version
	(3)	**Input**
451		0 to 0.25 bar gauge pressure
452		0 to 0.4 bar gauge pressure
453		0 to 0.6 bar gauge pressure
454		0 to 1.0 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
463		0 to 60 bar gauge pressure
464		0 to 100 bar gauge pressure
465		0 to 160 bar gauge pressure
466		0 to 250 bar gauge pressure
467		0 to 400 bar gauge pressure
468		0 to 600 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
484		-1 to 15 bar gauge pressure
485		-1 to 24 bar gauge pressure
487		0 to 0.6 bar absolute pressure
488		0 to 1.0 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
	(4)	**Output**
450		CANopen
	(5)	**Process connection (not front-flush)**
502		G 1/4 to EN 837
504		G 1/2 to EN 837 (standard connection)
511		1/4-18 NPT to DIN 837
512		1/2-14 NPT to DIN 837
523		G 1/2 to DIN 3852 T11 (with soft seal located at rear)
562		7/16-20 UNF
998		suitable for connection to chemical seals
	(5)	**Process connection (front-flush)**
571		$G^3/_4$ [2]
575		$G^3/_4$ front seal[2]
	(6)	**Material of process connection**
20		stainless steel
	(7)	**Electrical connection**
36		circular connector M 12x1 / 5-pole
	(8)	**Extra code**
000		none

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)
Order code		/		-		-		-		-		-		/	
Order example	402056	/	000	-	462	-	450	-	502	-	20	-	36	/	000

[1] only for ranges from 1 to 400 bar.

[2] only for ranges up to 25 bar.

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Pressure and Temperature Transmitter with CANopen output JUMO CANtrans pT

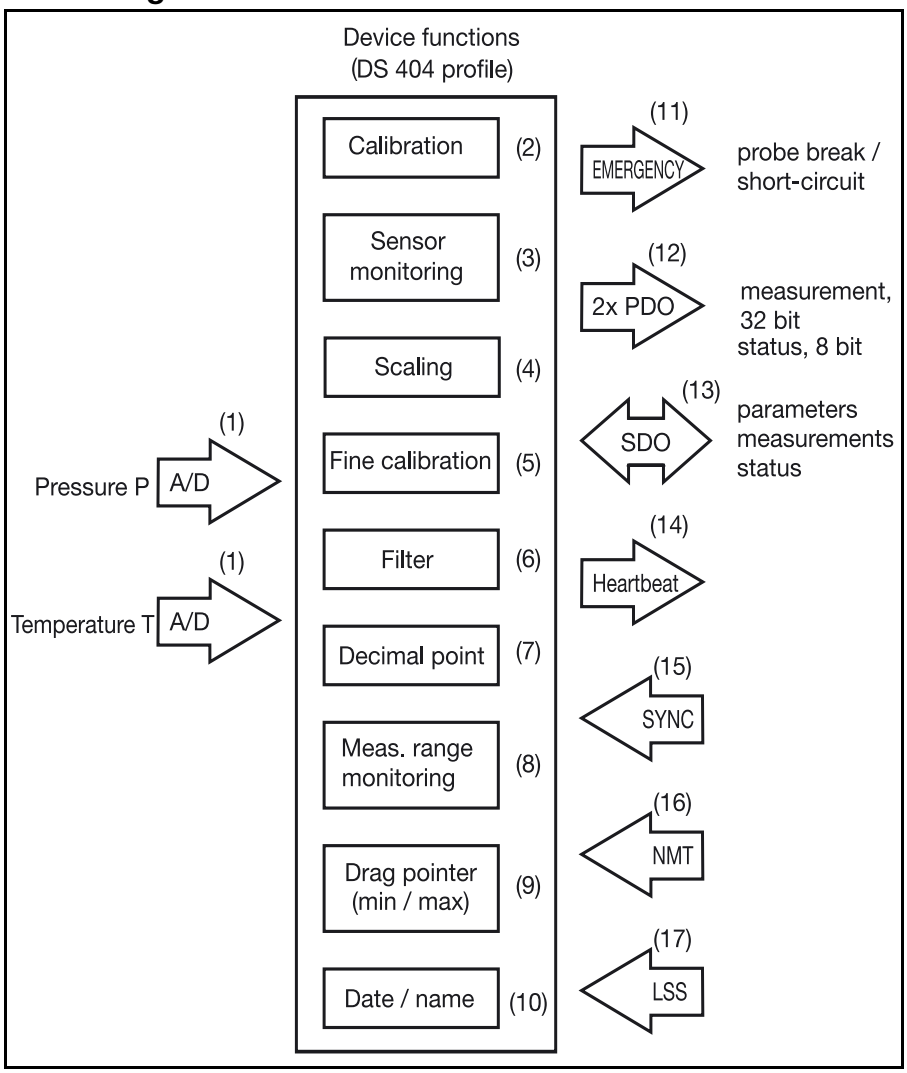
Type 402057

General application

This pressure and temperature transmitter is used for measuring relative (gauge) and absolute pressures in liquids and gases. In addition, the integrated temperature sensor measures the temperature of the medium directly at the pressure diaphragm.
The pressure transmitter operates on the piezoresistive or thin-film strain gauge measuring principle. The temperature transmitter obtains the measurements from a Pt1000 sensor. The pressure and temperature measurements are digitized and made available for further processing via the CANopen serial bus protocol (CAN slave). Several useful extra functions are implemented through the DS 404 device profile. All setting can be made using standard CANopen software tools.

Further transmitters with CANopen output: see Data Sheets 40.2055 (pressure), 40.2056 (pressure) and 90.2910 (temperature).

Block diagram



Operation

(1) The analog signals from the pressure cell and the temperature sensor are digitized.
(2) The pressure and temperature signals are digitally calibrated at the factory.
(3) The sensor monitoring facility continuously checks the correct performance of the sensor signal and triggers high-priority emergency telegrams in the event of an error.
(4) The pressure measurement can be scaled to any dimensional unit (or in % of range).
The temperature can be switched from °C to °F.
(5) Fine calibration features an auto-zeroing function and a freely adjustable shift of the characteristic.
(6) Undesirable signal fluctuations can be suppressed through the (adjustable) filter constant.
(7) The measurements are output with a freely selectable decimal place.
(8) Range monitoring features freely selectable upper and lower limits. The result is output as a status byte with the measurement in the PDO telegram.
(9) The drag pointer function stores the minimum and maximum pressure and temperature measurements.
(10) Date and name of the last servicing action can be stored.
(11) An emergency telegram is triggered in the event of a sensor fault.
(12) The two PDO telegrams contain the 32-bit measurement and the 8-bit status for pressure and temperature respectively. The measurement that is output can be controlled by means of different trigger conditions.

(13) Parameters can be set through SDO telegrams, and measurements and status can be requested.
(14) The heartbeat signal can be used to additionally monitor the transmitter function.
(15) The transmission of measurements can additionally be controlled through the Sync command.
(16) NMT telegrams serve to control the operational state of the transmitter.
(17) The CAN module ID and CAN baud rate are set via LSS or SDO, as selected.

Technical data, pressure

Reference conditions
to DIN 16 086 and IEC 770/5.3

Measurement ranges
see order details

Overload limit
ranges
0 — 0.25 bar to 0 — 25 bar
3 x full scale
ranges
0 — 40 to 0 — 250 bar 2 x full scale
ranges
0 — 400 to 0 — 600 bar 1.5 x full scale

Bursting pressure
ranges
0 — 0.25 bar to 0 — 40 bar
≤ 4 x full scale
ranges
0 — 60 to 0 — 100 bar 8 x full scale
ranges
0 — 160 to 0 — 400 bar 5 x full scale

Parts in contact with medium
standard: stainless steel,
Mat. Ref. 1.4571 / 1.4435
for range ≥ 60 bar,
Mat. Ref. 1.4571 / 1.4542

Output
CANopen as per CiA DS 301 V4.02
measurement resolution: 12 bit
can be switched to any dimensional unit and %

Zero offset
≤ 0.3% of full scale

Thermal hysteresis
≤ ± 0.5% of full scale
(within compensated temperature range)
≤ ± 1% for ranges 0 — 250 mbar
0 — 400 mbar
0 — 600 mbar

Ambient temperature effect
within range 0 to +100°C
(compensated temperature range)
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 point setting)

Hysteresis
≤ 0.1% of full scale

Repeatability
≤ 0.05% of full scale

Cycle time
1 msec
optionally 0.5 msec (11 bit)

Stability per year
≤ 0.5% of full scale

Technical data, temperature

Temperature sensor
Pt1000, EN 60 751

Range limits
-50 to +125°C

Cycle time
250 msec

Accuracy
Class B to EN 60 751
±0.2% of full scale

Output
CANopen as per CiA DS 301 V4.02
linear with temperature, in °C,
can be switched over to °F or K

Technical data, general

Permissible ambient temperature
-20 to +85°C

Storage temperature
-40 to +85°C

Permissible temperature of medium
standard version:
-40 to +125°C

Electromagnetic compatibility
EN 61 326
interference emission: Class B
immunity to interference: to industrial requirements

Electrical connection
5-pole terminal box M 12x1
recommended connecting cable:
screened 5-wire cable

Supply
10 — 30 V DC
max. current drawn: approx. 45 mA

Supply voltage error
≤ 0.03% per V

Mechanical shock
(to IEC 68-2-27)
100 g/5 msec

Mechanical vibration
(to IEC 68-2-6)
max. 20 g at 15 — 2000 Hz

Enclosure protection
with connector screwed on:
IP67 to EN 60 529

Housing
stainless steel, Mat. Ref. 1.4305

Process connection
see order details;
other connections on request

Nominal position
unrestricted

Weight
approx. 120 gm
(with pressure connection G 3/4)

CANbus

Protocol
CiA DS 301, V4.02, CANopen slave

Profile
CiA DS 404, V1.2
Measuring devices and closed-loop controllers

Baud rate
20 kbaud to 1 Mbaud
setting via LSS or SDO

Module (node) ID
1 — 127
setting via LSS or SDO

PDO
0 Rx, 2 Tx

SDO
1Rx, 1 Tx

Emergency
yes

Heartbeat
yes

LSS
yes

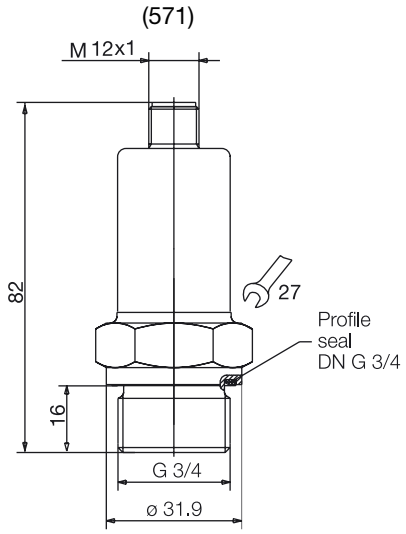
SYNC
yes

Operation and project design
All parameters are accessible via the CANopen object directory (EDS) and can be set using standard CANopen software tools.

EDS (electronic data sheet)
yes
available free of charge as a download file:
www.jumo.net -> Product information

Factory setting
see Operating Instructions B40.2055.0
available free of charge as a download file:
www.jumo.net -> Product information

Dimensions



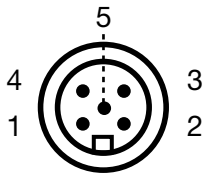
Electrical connection

Connection		Terminal assignment	
		M12 connector	Terminal box with moulded cable Sales No. 40/00337625
Supply 10 — 30 V DC	V+ V-	2 3	white blue
Output CANopen	screen CAN_H CAN_L	1 4 5	brown black grey

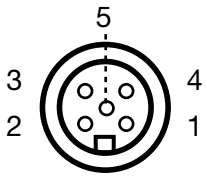
Circular connector

M12 x 1; 5-pole to IEC 60 947-5-2

Plug



Socket



Accessories

Designation	Sales No.
5-pole terminal box M 12x1, straight, with 5 m moulded cable	40/00337625
5-pole terminal box M 12x1, angled, with 2m moulded cable	40/00375164
5-pole terminal box M 12x1, straight, no cable, assembly by customer	40/00419130
5-pole terminal box M 12x1, angled, no cable, assembly by customer	40/00419133
Tee	40/00419129
Termination resistor for CAN bus, with plug	40/00461591
Extension cable 2m, 5-pole, M 12x1	40/00461589
PC CAN interface USB	40/00449941
PC configuration software for CANopen	40/00449942
EDS file, for download (www.jumo.net -> Product information)	for download
Operating Instructions, for download (www.jumo.net -> Product information)	for download

Order details

	(1)	**Basic type**
402057		Pressure and temperature transmitter JUMO CANtrans pT
	(2)	**Basic type extension**
000		none
	(3)	**Input, pressure**
451		0 to 0.25 bar gauge pressure
452		0 to 0.4 bar gauge pressure
453		0 to 0.6 bar gauge pressure
454		0 to 1.0 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
463		0 to 60 bar gauge pressure
464		0 to 100 bar gauge pressure
465		0 to 160 bar gauge pressure
466		0 to 250 bar gauge pressure
467		0 to 400 bar gauge pressure
478		-1 to 0 bar gauge pressure
479		-1 to 0.6 bar gauge pressure
480		-1 to 1.6 bar gauge pressure
481		-1 to 3 bar gauge pressure
482		-1 to 5 bar gauge pressure
483		-1 to 9 bar gauge pressure
484		-1 to 15 bar gauge pressure
485		-1 to 24 bar gauge pressure
487		0 to 0.6 bar absolute pressure
488		0 to 1.0 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
	(4)	**Input, temperature**
999		-50 to +125°C (can be switched to °F or K)
	(5)	**Output**
450		CANopen
	(6)	**Process connection (front-flush)**
571		$G^3/_4$
999		special connection (only front-flush)
	(7)	**Material of process connection**
20		stainless steel
	(8)	**Electrical connection**
36		circular connector M 12x1 / 5-pole
	(9)	**Extra code**
000		none

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)
Order code	402057	/	000	-		-	999	-	450	-	571	-	20	-	36	/	000
Order example	402057	/	000	-	462	-	999	-	450	-	571	-	20	-	36	/	000

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Level probe
JUMO dTRANS p90
Type 402090

General application

The level probe type dTRANS p90 is used to measure hydrostatic levels in liquids. It is suitable for very simple applications that do not make any demands on overvoltage protection (lightning protection). Applications include level measurement in wells, boreholes, wastewater plants, vessels, watercourses, ponds and lakes.

Technical data

Reference conditions
to DIN 16 086 and IEC 770/5.3

Ranges
see order details

Overload limit
ranges
0 — 6 bar 3 x full scale

Bursting pressure
ranges 0 — 6 bar ≤ 4 x full scale

Wetted components
normally: stainless steel,
Mat. Ref. 1.4571 /1.4435

Output
0 — 20 mA
3-wire burden ≤ (U_B-12 V) / 0.02A
4 — 20 mA
2-wire burden ≤ (U_B-10 V) / 0.02A
4 — 20 mA
3-wire burden ≤ (U_B-12 V) / 0.02A
0.5 — 4.5 V burden ≥ 50 kΩ
1 — 6 V burden ≥ 10 kΩ
0 — 10 V burden ≥ 10 kΩ

Burden error
< 0.5% max.

Zero offset
≤ 0.3% of full scale

Thermal hysteresis
≤ ± 0.5% of full scale
(within compensated temperature range)
≤ ± 1% for the ranges 0 — 250 mbar
0 — 400 mbar
0 — 600 mbar

Ambient temperature error
within the range 0 to +50°C
(compensated temperature range)
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 from 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

Repeatability
≤ 0.05% of full scale

Response time
with current output (output 402, 405 or 406):
≤ 3 msec max.
with voltage output (output 412, 415, 418 or 420):
≤ 10 msec max.

Stability per year
≤ 0.5% of full scale

Supply voltage
10 — 30 V DC (output 4 — 20 mA and 1 — 6 V)
5 V DC (output 0.5 — 4.5 V)
11.5 — 30 V DC (output 0 — 10 V)
11.5 — 30 V DC (output 0(4) — 20 mA)
Ripple: the voltage peaks must not go above or below the values specified for the supply
max. current consumption approx. 25 mA

Supply voltage error
≤ 0.02% per V
(nominal supply voltage 24 V DC)
ratiometric with supply voltage
5 V DC (±0.5 V)

Permissible ambient temperature
0 — 50°C

Storage temperature
-20 to +80°C

Permissible temperature of medium
0 — 50°C

Electromagnetic compatibility
EN 61 326
emitted interference: Class B
immunity to interference: to industrial requirements

Mechanical shock
(to IEC 68-2-27)
100 g/1 msec

Mechanical vibration
(to IEC 68-2-6)
max. 20 g at 15-2000 Hz

Protection
immersible up to 60 m
IP68 to EN 60 529

Housing
st. steel, Mat. Ref. 1.4301

Pressure connection
see order details

Electrical connection
6-core screened cable, with internal pressure equilibration tubing. Core diameter 0.25 mm^2. Minimum bending radius of cable: 120 mm (fixed installation). Can be used to 250 m depth without additional strain relief.

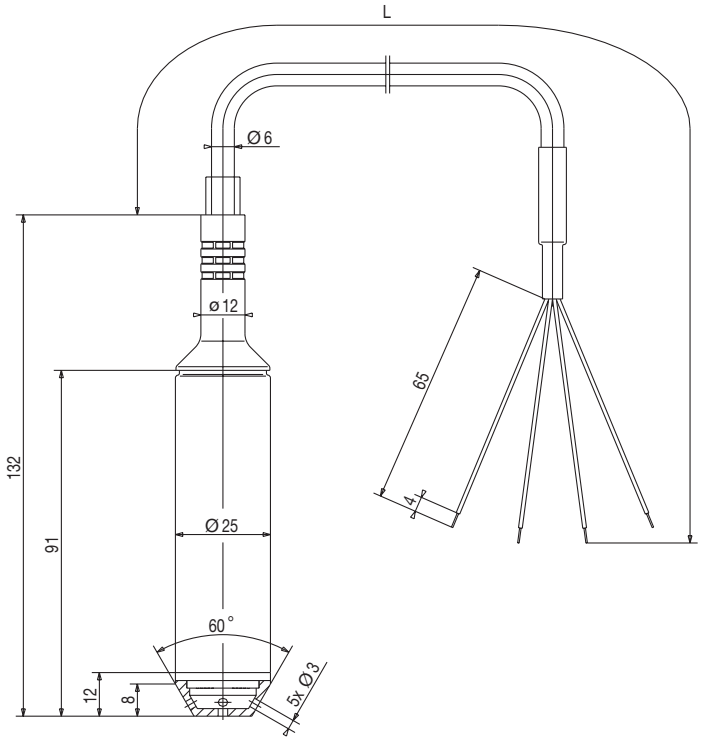
Nominal position
any

Weight
200 g (without cable)

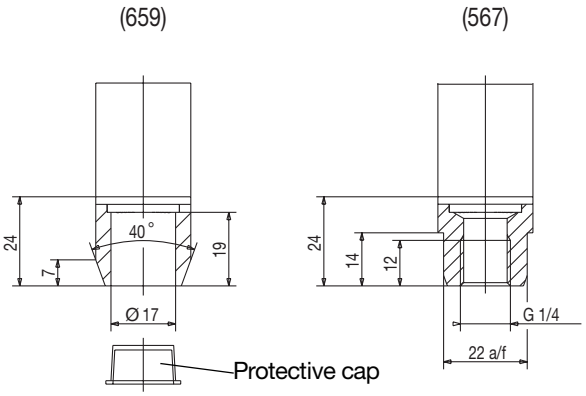
Electrical connection

Connection		Terminal assignment	Cable
Supply 10 — 30 V DC		L+ L-	white gray
Output 4 — 20 mA 2-wire		+ -	white gray
Output 1 — 10 V 3-wire		+ -	yellow gray
Output 1 — 5(6) V Output 0.5 — 4.5 V 3-wire		+ -	yellow gray
Output 0(4) — 20 mA 3-wire		+ -	yellow gray
Screen			black

Dimensions



402090/000-XXX-XXX-658-20-15



Order details

	Basic type								
402090	Level probe JUMO dTRANS p90								
I	**Basic type extensions**								
I	/000	none							
I	/999	special version							
I	I	**Input**							
I	I	451	0 — 0.25 bar gauge pressure						
I	I	452	0 — 0.4 bar gauge pressure						
I	I	453	0 — 0.6 bar gauge pressure						
I	I	454	0 — 1.0 bar gauge pressure						
I	I	455	0 — 1.6 bar gauge pressure						
I	I	456	0 — 2.5 bar gauge pressure						
I	I	457	0 — 4 bar gauge pressure						
I	I	458	0 — 6 bar gauge pressure						
I	I	999	special range						
I	I	I	**Output**						
I	I	I	402	0 — 20 mA 3-wire					
I	I	I	405	4 — 20 mA 2-wire					
I	I	I	406	4 — 20 mA 3-wire					
I	I	I	412	0.5 — 4.5 V 3-wire					
I	I	I	415	0 — 10 V 3-wire					
I	I	I	418	1 — 5 V 3-wire					
I	I	I	420	1 — 6 V 3-wire					
I	I	I	I	**Process connection (not front-flush)**					
I	I	I	I	567	G 1/4 internal				
I	I	I	I	658	connection closed at bottom				
I	I	I	I	659	connection open at bottom				
I	I	I	I	**Material of process connection**					
I	I	I	I	I	20	stainless steel			
I	I	I	I	I	I	**Electrical connection**			
I	I	I	I	I	I	15	PE-LD standard cable (normally) suitable for use in water (drinking water, lake water, waste water and similar)		
I	I	I	I	I	I	I	**Cable length "L"**		
I	I	I	I	I	I	I	005	5 m cable	
I	I	I	I	I	I	I	010	10 m cable	
I	I	I	I	I	I	I	020	20 m cable	
I	I	I	I	I	I	I	030	30 m cable	
I	I	I	I	I	I	I	040	40 m cable	
I	I	I	I	I	I	I	050	50 m cable	
I	I	I	I	I	I	I	060	60 m cable	
I	I	I	I	I	I	I	070	70 m cable	
I	I	I	I	I	I	I	I		

402090	/		-		-		-		-	20	-	15	-		**Order code**

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Internet: www.jumo.us

Pressure gauges for flush panel mounting Types 4 EA-.. and 4 QA-..

Type 4 EA-80

Type 4 QA-80

General description

Jumo pressure gauges for flush panel mounting are used for pressure measurement in liquids and gases which are not highly viscous, do not crystallize out, and which do not attack copper alloys.

Applications include:
machinery and mechanical equipment, pneumatics plant, compressor plant and pumping equipment.

Type designation

4 EA-60

4	Product Group pressure measurement
E	flush-mounting case with round bezel
Q	flush-mounting case with square bezel
A	indicator
-60	case dia. 60 mm
-80	case dia. 80 mm
-10	case dia. 100 mm
-72	bezel 72 x 72 mm
-96	bezel 96 x 96 mm

Extra Codes

/01	restrictor in pressure connection
/07	chrome-plated brass ring for front mounting
/18	matt black bezel (round or square)
/60	red marking on dial

Accessory

Adaptor for ½ " pipe
(see Data Sheet 48.000)

Ordering example

Pressure gauge, flush-mounting

Type 4 EA-60/60
range 0 to 4 bar,
red mark at 1.5 bar

Type 4 QA-72
range –1 to 0 bar,
adaptor for ½ " pipe

Operation

The pressure of the medium acts directly on the built-in Bourdon tube. The free end of this tube rotates the pointer through a mechanical linkage.

Technical data

Case
steel, zinc plated

Round case

with a round bezel in stainless steel, Mat. Ref. 1.4301, polished
(optional: black, Code /18)

Square case

with a narrow bezel in brass, chrome-plated
(optional: black, Code /18)

Mounting

by retaining bracket at the back, or mounting flange for front-mounting
(Code /07, for round case only)

Dial

white with black figuring to DIN 16 109 (other styles available on request)

Window

flat instrument glass, 2 mm thick

Pressure connection

concentric rear entry for ¼ " pipe, brass, to DIN 16 288

Measuring element

bronze Bourdon tube, soft soldered

Mechanism

in brass

Ranges

–1 to 0 bar	0 to 1 bar
–1 to 0 bar to 0.6 bar	0 to 1.6 bar
–1 to 0 bar to 1.5 bar	0 to 2.5 bar
–1 to 0 bar to 3 bar	0 to 4 bar
–1 to 0 bar to 5 bar	0 to 6 bar
–1 to 0 bar to 9 bar	0 to 10 bar
–1 to 0 bar to 15 bar	0 to 16 bar
	0 to 25 bar

Accuracy

DIN 16 005, Class 1.6
for sizes 80, 100 mm dia. and 96 x 96 mm

DIN 16 005, Class 2.5
for sizes 60 mm dia. and 72 x 72 mm

Loading

to DIN 16 005:
steady pressure:
up to ¾ of full scale

fluctuating pressure:
up to ⅔ of full scale

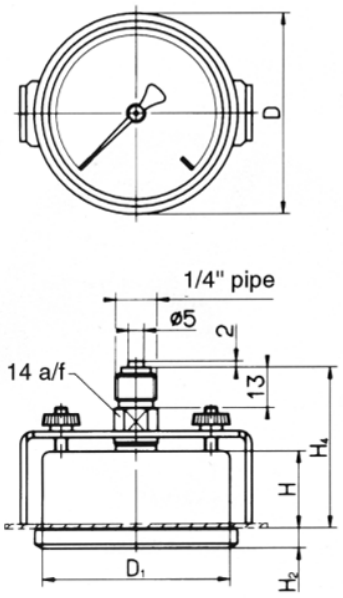
Permissible ambient and medium temperature

–20 to + 50 °C

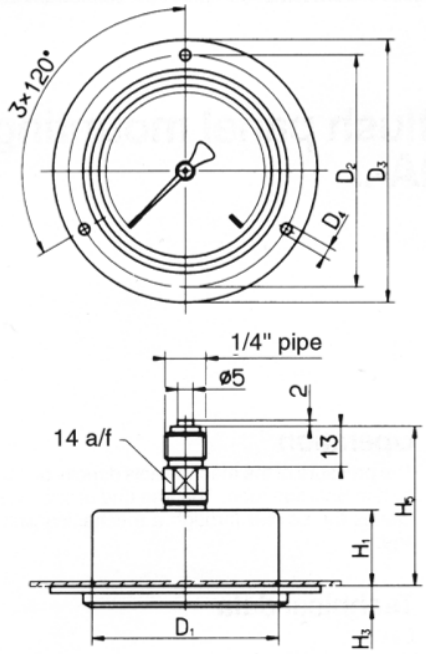
Operating position

dial in vertical position,
normal position 90 ° ± 5 ° to the horizontal
= NL 90 to DIN 16 257

Dimensions

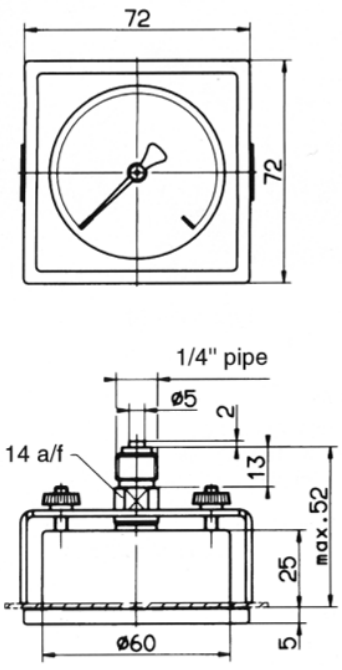


Type 4 EA-60, (-80, -10)

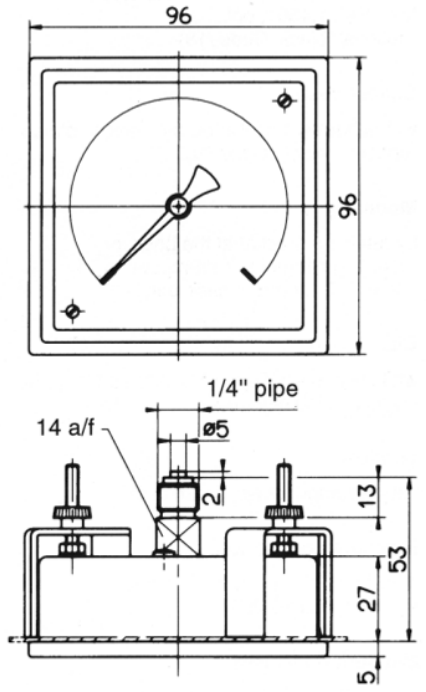


Type 4 EA-60, (-80, -10), Code / 07

mm	inch
2	0.08
3.6	0.14
4.8	0.19
5	0.20
6.4	0.25
6.7	0.26
7	0.28
7.5	0.30
7.6	0.30
9	0.35
13	0.51
25	0.98
27	1.06
30.5	1.20
52	2.05
53	2.09
60	2.36
65	2.56
72	2.83
75	2.95
80	3.15
85	3.35
95	3.74
96	3.78
100	3.94
105.5	4.15
110	4.33
116	4.57
132	5.20



Type 4 QA-72



Type 4 QA-96

Table of dimensions for case dia. 60, 80 and 100 mm with retaining bracket and mounting flange

Ø	H	H_1	H_2	H_3	H_4	H_5	D	D_1	D_2	D_3	D_4
60	25	25	6.4	7	52	52	65	60	75	85	3.6
80	25	25	6.7	7.6	52	52	85	80	95	110	4.8
100	30.5	30.5	7.5	9	53	53	105.5	100	116	132	4.8

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JUMO manic

Pressure gauges in sheet steel case

NG 100, 160
Class 1.0; Protection IP 53
Pressure ranges -1 bar to +600 bar

General application

JUMO-manic pressure gauges are used for measuring pressures in liquid and gaseous media which are not highly viscous and do not crystallize out.

Functional description

The pressure in the medium to be measured acts directly on the Bourdon tube, the free end of which rotates the pointer by a mechanical linkage.

Technical data

Housing
Steel, painted black, with front flange or bayonet ring (only for types 410 and 411).

Window
3 mm flat instrument glass
for types 407 and 408

Dial
white, black lettering to DIN 16109

Mechanism
Copper alloy

Measuring element
up to 40 bar
C-spring in CuSn8, soft-soldered
from 60 bar
coil spring in stainless steel,
Mat.Ref. 1.4571, brazed.

Pressure connection
½" pipe thread to DIN 16 288,
in copper alloy.

Indication accuracy
Class 1.0 to DIN 16 005

Loading
to DIN 16 005
with steady pressure
$^3/_4$ of full scale

with fluctuating pressure
$^2/_3$ of full scale

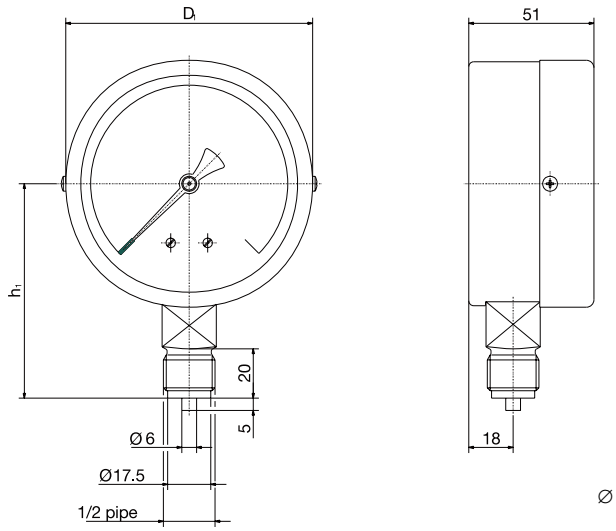
Premitted medium and ambient temperature
-20 to +50 °C for ranges up to 40 bar
-20 to +100 °C for ranges from 60 bar,
and for extra code /76

Scale range

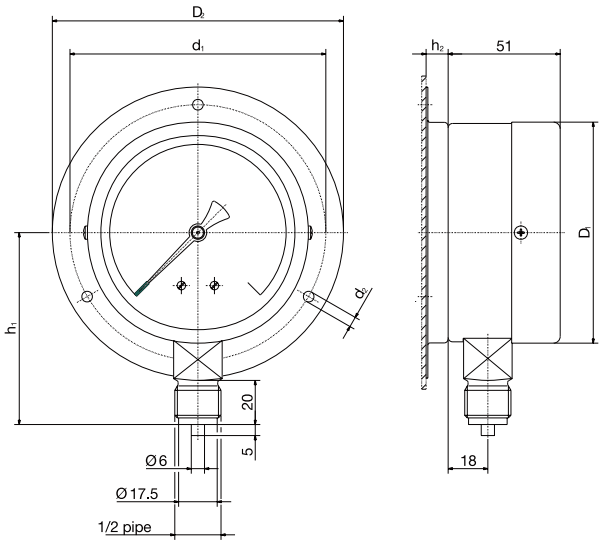
- 1	to	0	bar
- 1	to	0.6	bar
- 1	to	1.5	bar
- 1	to	3	bar
- 1	to	5	bar
- 1	to	9	bar
- 1	to	15	bar
0	to	0.6	bar
0	to	1	bar
0	to	1.6	bar
0	to	2.5	bar
0	to	4	bar
0	to	6	bar
0	to	10	bar
0	to	16	bar
0	to	25	bar
0	to	40	bar
0	to	60	bar
0	to	100	bar
0	to	160	bar
0	to	250	bar
0	to	400	bar
0	to	600	bar

Dimensions

Type 407, 408



Type 407/61, 408/61



∅ = diameter

Type	D_1	D_2	d_1	d_2	h_1	h_2
407	100	132	116	4.8	87	10
408	160	196	178	5.8	118	6

Ordering details

(1) Basic type

404010 Jumo-manic pressure gauge in steel case

(2) Pressure connection (∅ = diameter)

407 ∅ 100 mm, concentric, bottom entry, ½" pipe thread
408 ∅ 160 mm, concentric, bottom entry, ½" pipe thread

(3) Extra codes[1]

00 no extra code (standard)
01 restrictor in pressure connection
07 flange for front fixing (only with ∅ 100)
60 red mark on dial (define position when ordering)
61 rear fixing flange, black
76 parts in contact with medium in stainless steel, Mat.Ref. 1.4571 (only with pressure connection 407)

(4) Measurement range[2]

-1 to 0 bar
-1 to 0.6 bar
-1 to 1.5 bar
-1 to 3 bar
-1 to 5 bar
-1 to 9 bar
-1 to 15 bar
0 to 0.6 bar
0 to 1 bar
0 to 1.6 bar
0 to 2.5 bar
0 to 4 bar
0 to 6 bar
0 to 10 bar
0 to 16 bar
0 to 25 bar
0 to 40 bar
0 to 60 bar
0 to 100 bar
0 to 160 bar
0 to 250 bar
0 to 400 bar
0 to 600 bar

	(1)	(2)	(3)[1]		(4)[2]
Ordering code				,	
Ordering example	404010	- 407	/ 60	,	0 to 1.6 bar

[1] If more than one extra code is required, please write them one after another, separated by a comma (,).

[2] Please specify the range in plain text.

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JUMO manic

Contact pressure gauges

NG 100, 160
Class 1.0 (1.6); Protection IP51
Ranges -1 bar to +600 bar

General application

JUMO-manic pressure gauges are used for monitoring pressure in liquid and gaseous media which are not highly viscous, do not crystallize out and do not attack copper alloys. Applications include machinery and plant engineering, hydraulic or pneumatic plant, pumps, compressors, etc.

Description of function

The pressure of the medium to be measured acts directly on the Bourdon tube, the free end of which rotates the pointer via a mechanical linkage.
Contact opening or closing occurs with the movement of the actual-value pointer. In the case of a normally-open function, the rising actual-value pointer takes the contact arm with it, thus closing the circuit when the setpoint is exceeded.
In the case of a normally-closed function, the rising actual-value pointer takes the contact arm with it, thus interrupting the circuit when the setpoint is exceeded.

Technical data

Case
sheet steel, painted black with front flange

Window
plastic (polycarbonate) with integral setpoint adjustment

Dial
white, black lettering to DIN 16 109

Mechanism
copper alloy

Measuring element
up to 40 bar:
C-spring in CuSN8, soft-soldered
above 60 bar:
coil spring in stainless steel,
Mat. Ref. 1.4571, brazed

Pressure connection
½" pipe thread to DIN 16 288, copper alloy.

Setpoint adjustment
by means of removable key

Loading
to DIN 16 005
with steady pressure: $^3/_4$ of full scale

with fluctuating pressure: $^2/_3$ of full scale

Indication range and accuracy
Indication accuracy to DIN 16 005

			Class 1.0	Class 1.6
-1 to	0	bar		X
-1 to	0.6	bar		X
-1 to	1.5	bar	X	
-1 to	3	bar	X	
-1 to	5	bar	X	
-1 to	9	bar	X	
-1 to	15	bar	X	
0 to	1	bar		X
0 to	1.6	bar		X
0 to	2.5	bar	X	
0 to	4	bar	X	
0 to	6	bar	X	
0 to	10	bar	X	
0 to	16	bar	X	
0 to	25	bar	X	
0 to	40	bar	X	
0 to	60	bar	X	
0 to	100	bar	X	
0 to	160	bar	X	
0 to	250	bar	X	
0 to	400	bar	X	
0 to	600	bar	X	

Switching differential
1 % of scale span with contact type 3 and 7
approx. 3-6 % of scale span with contact type 6

Switching point accuracy
± 0.5 % of scale span with contact type 6

Max. contact rating
contact type 3 (Y) slow-break contact
voltage: 250 V max.
rating: 18 W (DC),
30 VA (AC)
50 mA max., p.f. = 1

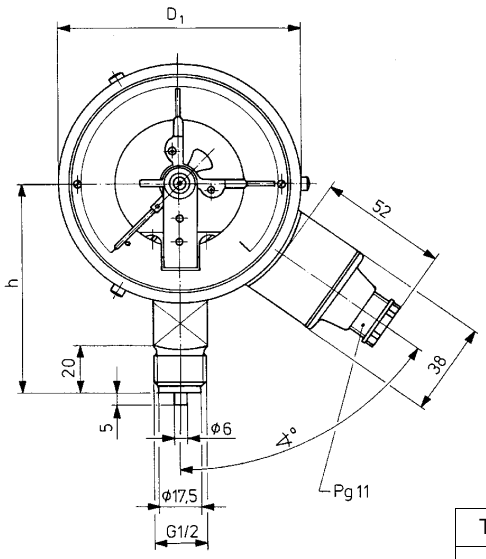
contact type 6 (Z) magnetic snap action
voltage: 250 V max.
rating: 30 W (DC),
50 VA (AC)
250 mA max., p.f. = 1

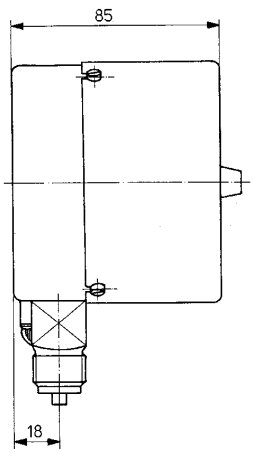
contact type 7 (I) Inductive contact
to NAMUR or DIN 19 234

Permissible medium and ambient temperatures
-20 to +50 °C soft-soldered
-20 to +70 °C extra code /76

Dimensions

Type 407, 408

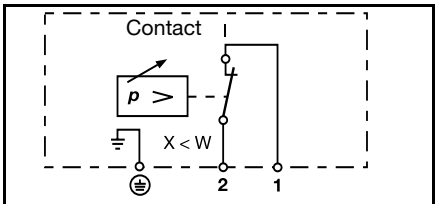




Type	D_1	h	Angle
407	100	87	55°
408	160	118	30°

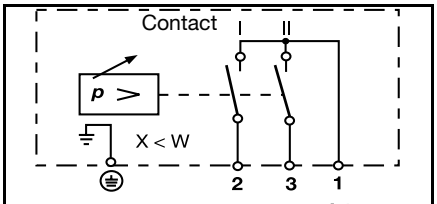
G1/2 = 1/2" pipe thread
∅ = diameter

Contact action



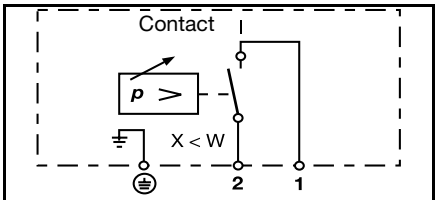
Switching sequence: contact I opening when pressure rises

Contact action: 01



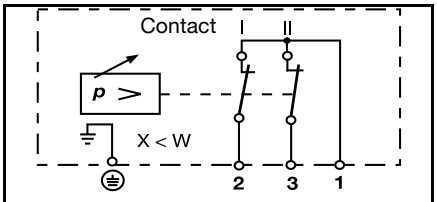
Switching sequence: contact I closing
contact II closing
when pressure rises

Contact action: 04



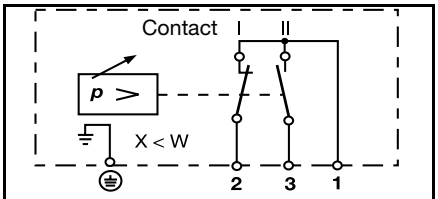
Switching sequence: contact I closing when pressure rises

Contact action: 02



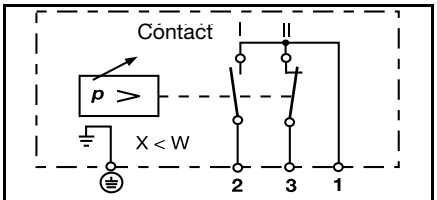
Switching sequence: contact I opening
contact II opening
when pressure rises

Contact action: 05



Switching sequence: contact I opening
contact II closing
when pressure rises

Contact action: 03



Switching sequence: contact I closing
contact II opening
when pressure rises

Contact action: 13

Order details

	(1)	**Basic type**
404020		Jumo-manic contact pressure gauge
	(2)	**Case / pressure connection**
407		∅ 100 mm, concentric, bottom entry, $^1/_2$" pipe thread
408		∅ 160 mm, concentric, bottom entry, $^1/_2$" pipe thread
	(3)	**Contact action**
01		1 contact opening with rising pressure
02		1 contact closing with rising pressure
03		1 contact opening with rising pressure 1 contact closing with rising pressure
04		2 contacts closing with rising pressure
05		2 contacts opening with rising pressure
13		1 contact closing with rising pressure 1 contact opening with rising pressure
	(4)	**Contact type**
3		electromechanical slow-break contact with single-pole closing contact
6		electromechanical slow-break contact with single-pole closing contact, magnetic snap-action
7		contactless inductive pointer sensing
	(5)	**Extra codes**[1]
00		no extra code (standard)
01		restrictor in pressure connection
07		flange for front fixing (only with ∅ 100)
60		red mark on dial (specify position when ordering)
61		rear fixing flange painted black
76		parts in contact with medium in stainless steel Mat. Ref. 1.4571; only for Type 407
	(6)	**Range**[2]
		-1 to 0 bar
		-1 to 0.6 bar
		-1 to 1.5 bar
		-1 to 3 bar
		-1 to 5 bar
		-1 to 9 bar
		-1 to 15 bar
		0 to 1 bar
		0 to 1.6 bar
		0 to 2.5 bar
		0 to 4 bar
		0 to 6 bar
		0 to 10 bar
		0 to 16 bar
		0 to 25 bar
		0 to 40 bar
		0 to 60 bar
		0 to 100 bar
		0 to 160 bar
		0 to 250 bar
		0 to 400 bar
		0 to 600 bar
		-1 to 0 bar

	(1)		(2)		(3)		(4)		(5)[1]		(6)[2]
Order code		-		-		-		/		,	
Order example	404020	-	407	-	02	-	3	/	60	,	0 to 1.6 bar

Note:

In order to ensure maximum switching reliability, we recommend a minimum voltage of 24V and a minimum current of 20mA for the standard version or contact type -6 (electromagnetic slow-break contact).

Contact-operated relays

With regard to electromechanical limit contacts, we recommend the use of *multi-functional relays* in the MSR series from *Wiebrock Mess- und Regeltechnik GmbH, Herford.* These switching amplifiers increase the switching reliability and capability of slow-break and magnetic snap-action contacts, and reduce their contact load.

Undesirable switching actions of the limit contacts due to vibration are greatly reduced by a drop-out delay.

Multi-function relays are strictly recommended when using limit contacts in oil.

In the case of inductive limit contacts, transistor relays type WE77/Ex.. from Pepperl & Fuchs can be used. The intrinsic safety EEx ia II C T6 is only ensured in conjunction with the transistor relays mentioned above.

[1] If more than one code is required, please write them one after another, separated by a comma (,).

[2] Please specify range in plain text.

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JUMO manox

Stainless steel pressure gauge NG 100 Type 420

Description

Pressure gauges are used for measuring pressures in liquids and gases provided these are not highly viscous or crystallising.

Applications include:

chemical plants, machinery and mechanical equipment, hydraulic or pneumatic plant, pumps, compressors, etc.

Operation

The pressure of the medium acts directly on the Bourdon tube whose free end rotates the pointer through a mechanical linkage.

Type designation

420	100 mm dia., bottom entry, male ½" pipe thread, case with bayonet ring
421	as Type 420, but filled with glycerine

Ranges

– 1 bar to	0 bar
– 1 bar to	0.6 bar
– 1 bar to	1.5 bar
– 1 bar to	3 bar
– 1 bar to	5 bar
– 1 bar to	9 bar
– 1 bar to	15 bar
0 bar to	0.6 bar
0 bar to	1 bar
0 bar to	1.6 bar
0 bar to	2.5 bar
0 bar to	4 bar
0 bar to	6 bar
0 bar to	10 bar
0 bar to	16 bar
0 bar to	25 bar
0 bar to	40 bar
0 bar to	60 bar
0 bar to	100 bar
0 bar to	160 bar
0 bar to	250 bar
0 bar to	400 bar
0 bar to	600 bar

Extra Codes

/01 restrictor in pressure connection
/39 polished case with polished bayonet ring
/57 front bezel stainless steel, Mat. Ref. 1.4301
/58 rear mounting stainless steel, Mat. Ref. 1.4301
/59 micro pointer
/60 red mark on dial
/62 knife pointer

Technical data

Case
bayonet ring case, stainless steel, Mat. Ref. 1.4301

Window
laminated safety glass, 4 mm thick

Dial
white, black figuring to DIN 16 109

Pressure connection
male thread 1/2" pipe to DIN 16 288 stainless steel, Mat. Ref. 1.4571; 1/2" NPT to special order

Mechanism
stainless steel

Measuring device
up to 40 bar Bourdon tube; from 60 bar coiled tube, stainless steel, Mat. Ref. 1.4571

Indication accuracy
to DIN 16 005, Class 1.0

Pressure limit
to DIN 16 005,
steady pressure: full scale
fluctuating pressure: 90% full scale

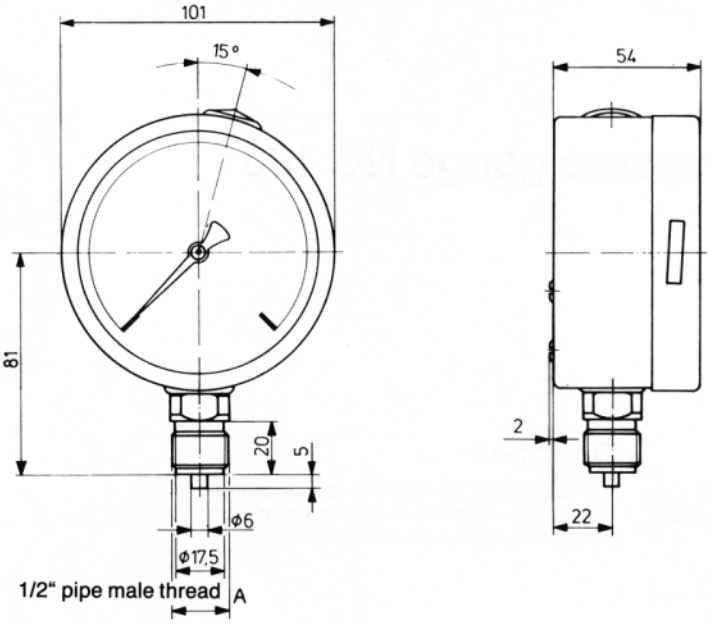
Permitted medium and ambient temperature
100°C max.

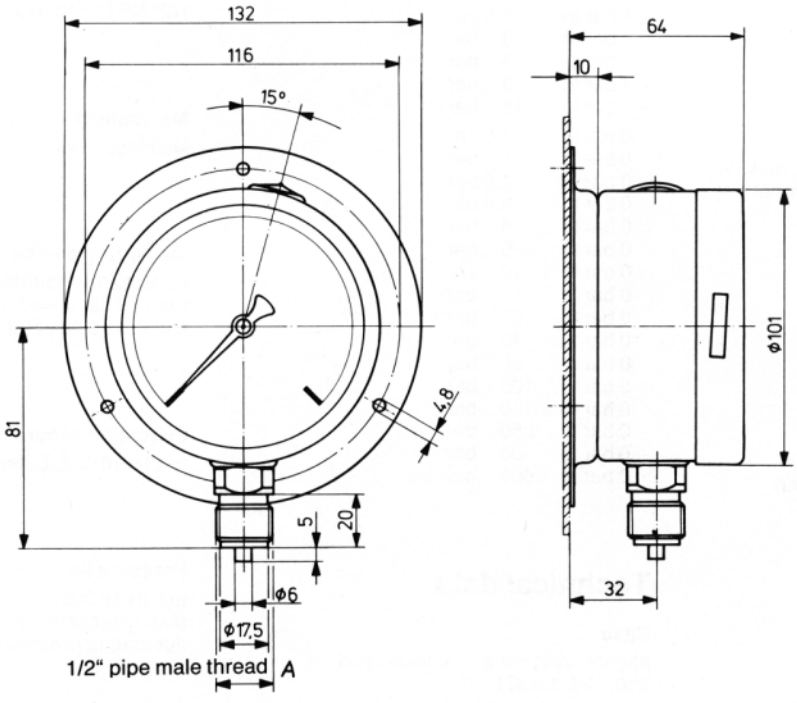
Case with damping liquid (Type 421)
The case is filled with glycerine to dampen the mechanism in case of vibrations and pressure fluctuations.

Ordering example

JUMO manox pressure gauge
Type 420
Range 0 to 10 bar

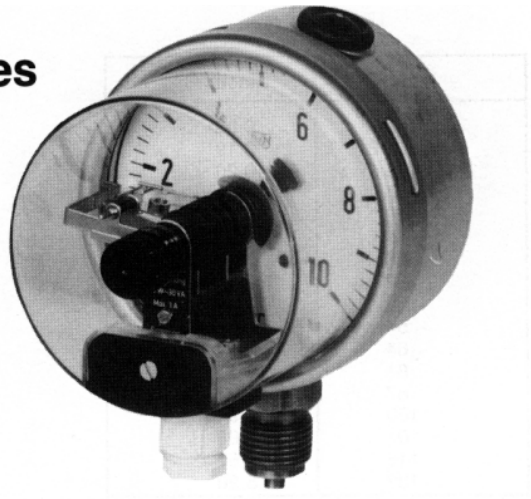
Dimensions





with Code /58

Contact types, contact actions, transmitter for Manox pressure gauges Type 420



Type designation

420 / 01 – 3

420 100 mm dia., bottom entry, male 1/2" pipe thread, case with bayonet ring

Contact action

– 01 1 contact opening on pressure rise

– 02 1 contact closing on pressure rise

– 03 1 contact opening on pressure rise, 1 contact closing on pressure rise

– 04 2 contacts closing on pressure rise

– 05 2 contacts opening on pressure rise

Contact type

– 3 electro-mechanical slow-break contact as single-pole closing contact (only in conjunction with contact protection relay to Data Sheet 61.020)

– 6 electro-mechanical slow-break contact as single-pole closing contact with magnetic snap-action (only in conjunction with contact protection relay to Data Sheet 61.020)

– 7 non-contacting inductive pointer sensor (Kontex system), protection Ex IG 5 (only when used in conjunction with miniature transistor relay, see Data Sheet 99.041)

Switch rating

Contact 3: slow-break
Voltage: 250 V max.
Rating: 18 W (d.c.), 30 VA (a.c.) 50 mA, p.f. = 1

Contact 6: magnetic snap action
Voltage: 250 V max.
Rating: 30 W (d.c.), 50 VA (a.c.) 250 mA, p.f. = 1

Contact 7: inductive contact to NAMUR and DIN 19 234

Switching differential

1% of span with contacts 3 and 7: approx. 3 – 6% of span with contact 6

Switching point accuracy

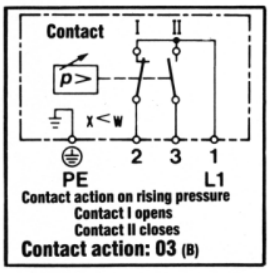
± 0.5% os span referred to switch-off point on rising pressure

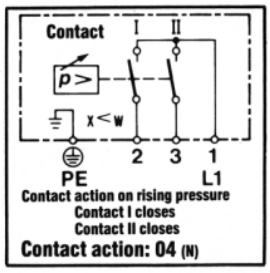
Indication accuracy

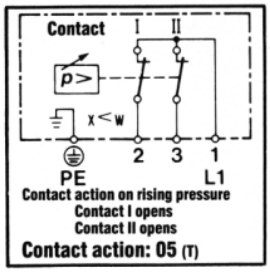
Class 1.6 on ranges up to 1 bar
Class 1.0 on ranges from 2.5 bar

Ordering example

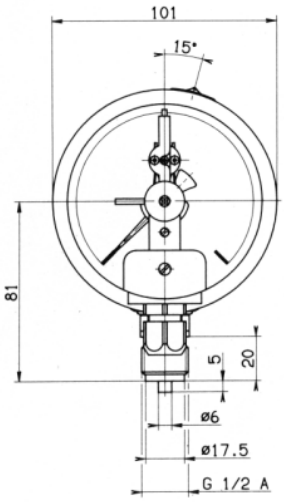
JUMO manox pressure gauge Type 420/01 – 03

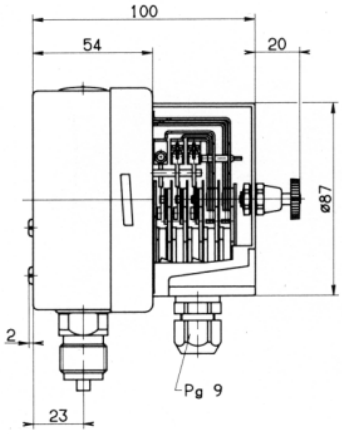






Dimensions





mm	inch
2	0.08
4.8	0.19
5	0.20
6	0.24
10	0.39
17.5	0.69
20	0.79
22	0.87
32	1.26
54	2.13
64	2.52
81	3.19
87	3.43
100	3.94
101	3.98
116	4.57
132	5.20

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Pressure and differential pressure switch for air, smoke and flue gases

Adjustment range from 0.4 to 150 mbar

Brief description

Pressure and differential pressure switches Type 4 ADS are used to measure vacuum, pressure or differential pressure in HVAC and filter technology, for example.
Pressure and differential pressure switches consist essentially of base, diaphragm, intermediate disc, case and protective cover. When used as pressure or vacuum switch, the base and diaphragm with disc form the pressure chamber.
When used as a differential pressure switch, the base and a second diaphragm with intermediate disc form the two pressure chambers.
A pressure change in the pressure chamber causes an axial displacement of a pin linked to the diaphragm. When the selected switching point is reached, a spring-loaded contact is activated.

Type 4 ADS-82

Technical data

Case
polycarbonate

Parts in contact with medium
polycarbonate

Diaphragm
NBR

Pressure connection
2x tubing nipple 4.6 mm dia.

Cable entry
Pg 11

Electrical connection
screw terminals for up to 2.5 mm^2 conductor cross-section

Type of contact
single-pole as changeover switch
fine silver (Ag)

Protection
IP 54

Adjustment ranges, differential

Adjustment range mbar	Differential Δp in mbar
0.4 to 3	≤0.3
1 to 10	≤0.5
2.5 to 50	≤1
30 to 150	≤3

Max. operating pressure
0 — 500 mbar

Switching point accuracy
The setpoint indicated on the scale conforms to the actual value with a tolerance of ± 15 %.

Rating
6 A, 250 V AC, 50 — 60 Hz p.f. = 1
3 A, 250 V AC, 50 — 60 Hz, p.f. = 0.6

Permissible ambient temperature and temperature of medium
-15 to +60 °C

Switching function with rising pressure
1 n.c. opening, 2 n.o. closing

Switching function with falling pressure
1 n.c. closing , 2 n.o. opening

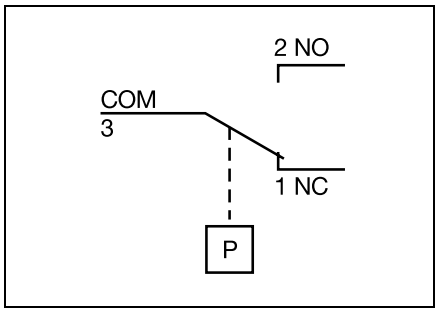
Operating position

The standard operating position is with the diaphragm standing vertically; with horizontal face-up mounting, the pressure monitor switches when the pressure is about 0.5 mbar higher.
With horizontal face-down mounting, the pressure monitor switches when the pressure is about 0.5 mbar lower.
In an intermediate position, the pressure monitor will switch at a pressure that deviates by a maximum of ± 0.5 mbar from the selected setpoint.

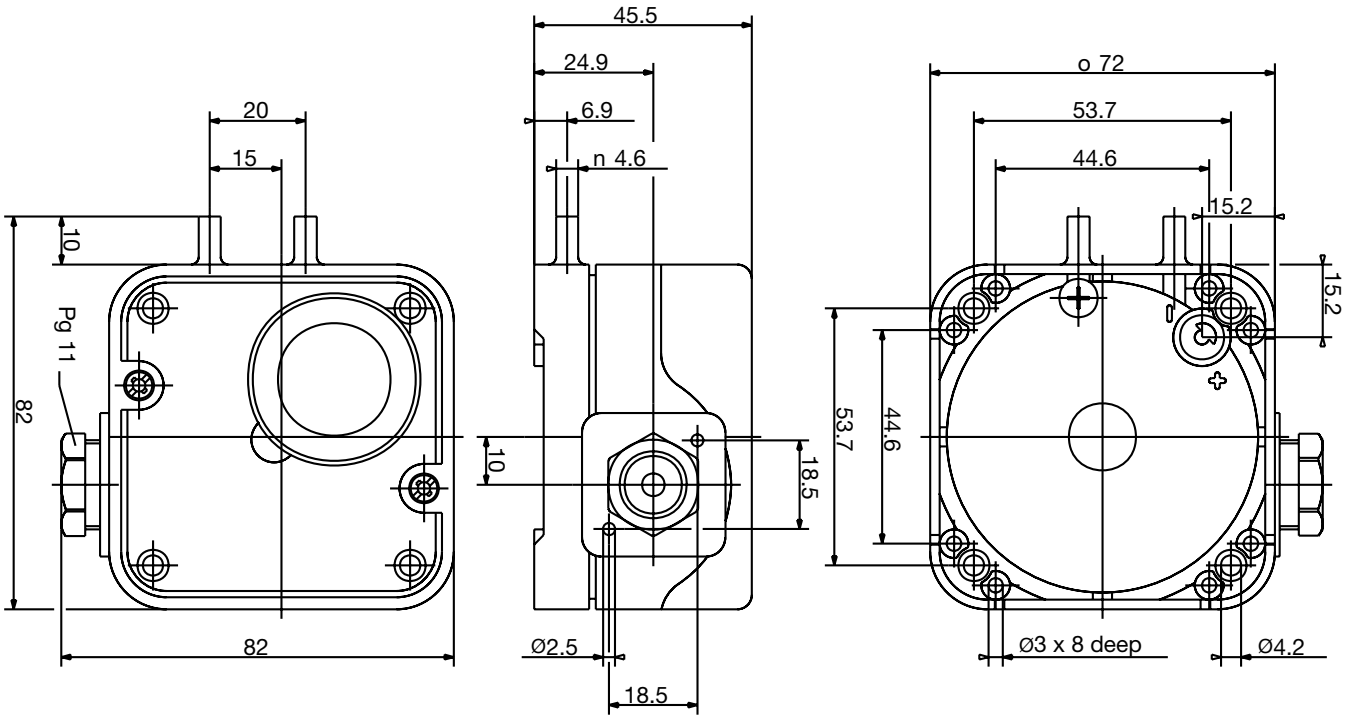
Accessories

HVAC installation kit, consisting of:
2 tube connections
6 self-tapping screws
2 extension tubes
1 jig
1 plastic fixing bracket

Electrical connection



Dimensions



Ordering details

	(1)	**Basic version**
4 ADS		Pressure and differential pressure switch for air, smoke and flue gases surface-mounting as measuring device for differential pressure adjustment range 0.4 — 150 mbar
	(2)	**Dimensions**
82		82 mm x 82 mm
	(3)	**Adjustment ranges**
01		0.4 — 3 mbar
02		1 — 10 mbar
03		2.5 — 50 mbar
04		30 — 150 mbar

	(1)		(2)		(3)
Ordering code		-		,	
Ordering example	4 ADS	-	82	,	01

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Pressure and differential pressure transmitters

Type 4304

General application

Pressure and differential pressure transmitters Type 4304 are suitable for measuring overpressure, vacuum and differential pressure of non-corrosive gases.
Preferred areas of application are: HVAC, level measurement (bubbling-through method), flow measurement and monitoring, and filter technology.
On request, the instrument can be supplied with LC display or with LC display and limit contact(s).

Technical data

Reference conditions
to DIN 16086 and DIN IEC 770/5.3

Measuring ranges
see ordering details

Overload limit

ranges	
0 — 400 mbar	5 x full scale
ranges above 400 mbar	2 x full scale

Maximum system pressure
(for Δp measurements)
1 bar (on each side)

Bursting pressure
for all ranges > 2 bar

Parts in contact with medium
Ni, Al, CuBe, PU

Output

0 — 10 V	burden ≥ 2 kΩ
0/4 — 20 mA	burden ≤ 500Ω
4 — 20 mA 2-wire	burden ≤ (U_B-12 V) / 0.02A

Burden error
≤ 0.2%

Zero offset
≤ 0.5% of full scale

Ambient temperature error
within range +10 to +50°C
(compensated temperature range)

zero:	≤ 0.02%/°C typical, ≤ 0.05%/°C max.
span:	≤ 0.02%/°C typical, ≤ 0.05%/°C max.

Characteristic
standard: linear
on request: square root

Deviation from characteristic
≤ 1% of full scale
(limit point adjustment, incl. hysteresis and repeatability)

Response time
≤ 20 msec

Stability per year
≤ 0.5% of full scale

Supply
see ordering details

Ripple
max. 1 V_{pp}

Max. current drawn
approx. 25 mA

Supply voltage error
≤ 0.02% per V
(with rated supply voltage 24 V DC)

Permissible ambient temperature
-10 to +50°C

Storage temperature
-10 to +70°C

Permissible temperature of medium
-10 to +50°C

Electromagnetic compatibility
to basic standards EN 50 081-1 and EN 50 082-1

Mechanical shock
10 g/0.1 msec

Mechanical vibration
5 g max. at 15 — 2000 Hz

Protection
IP65 to EN 60529
(connecting cable dia.
5 mm min., 7 mm max.)

Case
ABS

Process connection
see ordering details

Electrical connection
cable gland M12 x 1.9;
internal screw terminals,
for conductor cross-sections up to 1.5 mm^2

Limit contact

- contact rating: 6 A, 230 VAC
- adjustability: 0 — 100% of full scale
- differential: adjustable, 1—99% of set limit
- output per limit contact:
  1 relay changeover contact (floating)

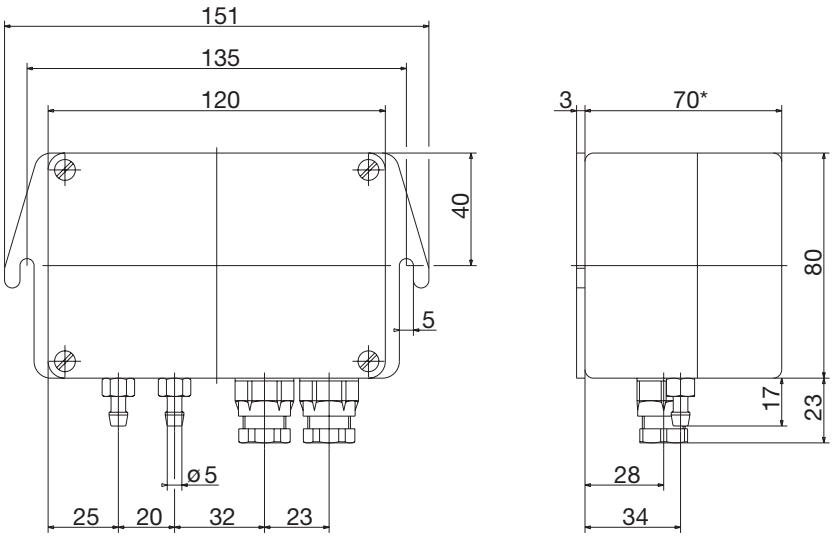
Nominal position
standard: vertical ⊥
on request: horizontal ▭
please specify when ordering

Weight
300g approx.
(400g approx. with AC supply)

Electrical connection

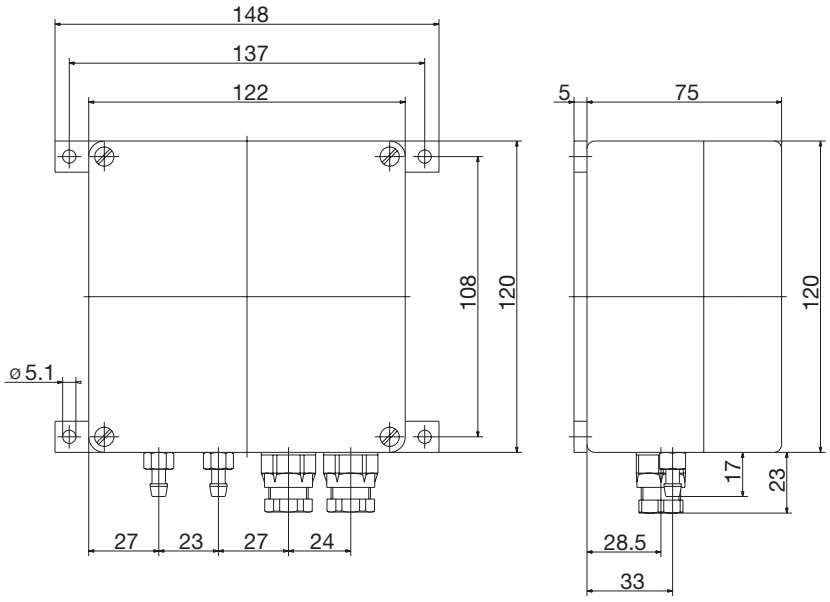
Connection			Terminals Terminal block
DC supply 11.5 — 30 V, 19 — 31V		L - L +	1 2
AC supply 230 V, 115 V, 24 V		N L 1	1 2
Output 0 — 10 V, 0/4 — 20 mA, 3-wire		- +	3 4
Output 4 — 20 mA, 2-wire 12 — 32 VDC proportional current in supply line		- +	1 2

Dimensions



* 80 for basic type extensions “011”, “012”, “014”, “015” and square root

Dimensions for ranges ≤ 40 Pa (with automatic zeroing)



Ordering details

Basic type

404304 Pressure transmitter with inductive measuring system

Basic type extensions

/ 000 none
/ 011 with one limit contact[1]
/ 012 with two limit contacts[1]
/ 013 LCD display 3 1/2-digit
/ 014 with one limit contact and LCD display 3 1/2-digit[1]
/ 015 with two limit contacts and LCD display 3 1/2-digit[1]

Nominal input range (overpressure, vacuum, differential pressure)

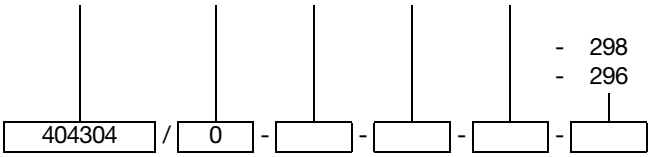
-	396	0	10 Pa [1/3]
-	397	0	20 Pa [1/3]
-	398	0	30 Pa [1/3]
-	399	0	40 Pa [1/3]
-	400	0	0.5 mbar
-	401	0	0.6 mbar
-	402	0	1 mbar
-	403	0	1.6 mbar
-	404	0	2.5 mbar
-	405	0	4 mbar
-	406	0	5 mbar
-	407	0	6 mbar
-	408	0	10 mbar
-	409	0	16 mbar
-	410	0	25 mbar
-	411	0	40 mbar
-	412	0	50 mbar
-	413	0	60 mbar
-	414	0	100 mbar
-	415	0	160 mbar
-	420	950	1050 mbar, abs.[2]
-	421	900	1100 mbar, abs.[2]
-	422	800	1200 mbar, abs.[2]
-	423	800	1000 mbar, abs.[2]
-	451	0	0.25 bar
-	452	0	0.4 bar
-	453	0	0.6 bar
-	454	0	1.0 bar
-	488	0	1.0 bar, abs.
-	999	special measuring range	

Output

-	402	0—20 mA	
-	403	0—20 mA, square root	
-	405	4—20 mA 2-wire	
-	406	4—20 mA	
-	407	4—20 mA, square root	
-	415	0—10 V	
-	416	0—10 V, square root	
-	451	0—20 mA	extended response time
-	452	0—20 mA, square root	extended response time
-	453	4—20 mA 2-wire	extended response time
-	454	4—20 mA	extended response time
-	455	4—20 mA, square root	extended response time
-	456	0—10 V	extended response time
-	457	0—10 V, square root	extended response time

Supply

-	02	230 V -10% to +6% AC, 50—60 Hz
-	05	115 V -10% to +6% AC, 50—60 Hz
-	08	24 V -10% to +6% AC, 50—60 Hz
-	27	11.5—30 V DC (with 4—20 mA 2-wire output)
-	28	19—31 V DC



Process connection

- 298 6.6 x 11 mm dia. (for flexible hoses 6 mm dia.)
- 296 screwed pipe connection 8 mm

Ordering code

1 not with 2-wire output (405 or 453)
not with supply voltage 27.

2 for barometric pressure measurement (if applicable, state site altitude a.m.s.l)

3 with housing 122 x 120 x 75 mm and automatic zeroing.
Not with 2-wire output (405 or 453).

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Pressure Transmitter with indication Type 4 AAI-10, NG 100

Description

Pressure transmitters are used for pressure measurement and transmission through standard electrical signals. A Bourdon element deflects under pressure, its movement is converted by an inductive displacement transducer into an electrical signal. The pressure transmitters are suitable for all liquids and gases provided they are not highly viscous or crystallising. Through the use of stainless steel the pressure transmitters are particularly suitable for corrosive media and for use in corrosive atmospheres.

Type designation

4 AAI – 10/

4	Product group Pressure measurement
A	pipe-mounted
A	analogue indication
I	inductive measuring system
– 10	case 100 mm dia
– 010	output signal 0 to 10 V
– 020	output signal 0 to 20 mA
– 420	output signal 4 to 20 mA

Extra Codes

/01 restrictor in pressure connection
/09 case filled with damping liquid
/52 without indication
/53 with built-in power supply 220 V a.c., 50 Hz
/54 with built-in power supply 110 V a.c., 60 Hz

Ordering example

Pressure transmitter
Type 4 AAI – 10/020/01
Range 0 to 10 bar

Operation

The pressure of the medium acts directly on the Bourdon tube whose free end rotates the pointer through a mechanical linkage. An inductive displacement transducer consisting of a differential transformer and a ferrite core attached to the Bourdon tube is energised by an oscillator in the primary winding of the differential transformer. The movement of the Bourdon tube under pressure displaces the ferrite core and causes a voltage change in the two secondary windings of the differential transformer.

Technical data

Case
case with bayonet ring, stainless steel, Mat. Ref. 1.4301

Safety devices
blow-out with breathing diaphragm, radially on case (operates at 0.2 – 0.4 bar overpressure inside the case)
window laminated safety glass, 4 mm thick

Dial
white, black figuring, to DIN 16 109

Transmission mechanism
st. steel, Mat. Ref. 1.4301

Measuring element
Bourdon tube, stainless steel
Mat. Ref. 1.4404

Vibration damping
Case filled with Energol liquid provides damping of the measuring system and the transmission mechanism in case of vibrations and pressure fluctuations. (Code /09)

Seals
all seals are Neoprene

Pressure connection
1/2" pipe to DIN 16 288, stainless steel, Mat. Ref. 1.4404

Ranges in bar

– 1 to 0	– 1/0/ 5
– 1/0/0.6	– 1/0/ 9
– 1/0/1.5	– 1/0/15
– 1/0/3	
0 to 0.6	0 to 25
0 to 1	0 to 40
0 to 1.6	0 to 60
0 to 2.5	0 to 100
0 to 4	0 to 160
0 to 6	0 to 250
0 to 10	0 to 400
0 to 16	0 to 600

Indication accuracy
to DIN 16 005, Class 1.0

Pressure limit
to DIN 16 005
steady pressure = full scale
fluctuating pressure = 90% full scale

Electrical connection
screw terminals up to 1.5 mm² conductor cross-section

Protection
IP 54

Supply
normally:
19 to 31 V d.c.
loading 40 mA max. for 20 mA output signal;
220 V a.c., 50 Hz, with built-in power supply (Code /53);
110 V a.c., 60 Hz with built-in power supply (Code /54)

Supply voltage error
0.1% between 19 and 31 V d.c.

Transfer characteristic
The linear output signal is proportional to pressure, accuracy ± 1%

Output
protected against short-circuit and open circuit

0 to 10 V	burden 2 kOhm min.
0 to 20 mA	burden 600 Ohm max.
4 to 20 mA	burden 600 Ohm max.

potentiometer adjustment in the electronics:
span: ± 20%
zero: ± 15%

Burden error

current output	0.2% max. at 0 Ω to 600 Ω
voltage output	0.2% max. at 2 kΩ to ∞

Hysteresis
not exceeding 0.5%

Response time
50 msec approx.
1 sec approx.
for transmitters with liquid damping

Voltage test
connections against case to VDE 0411, 500 V_{rms}, 50 Hz, 1 min

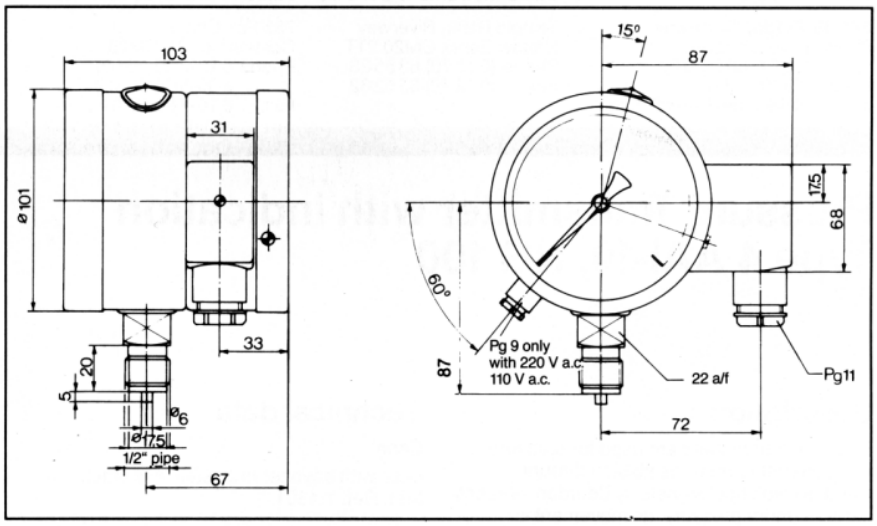
Permitted ambient temperature
– 10 to + 60°C

Ambient temperature error (0 + 40°C)

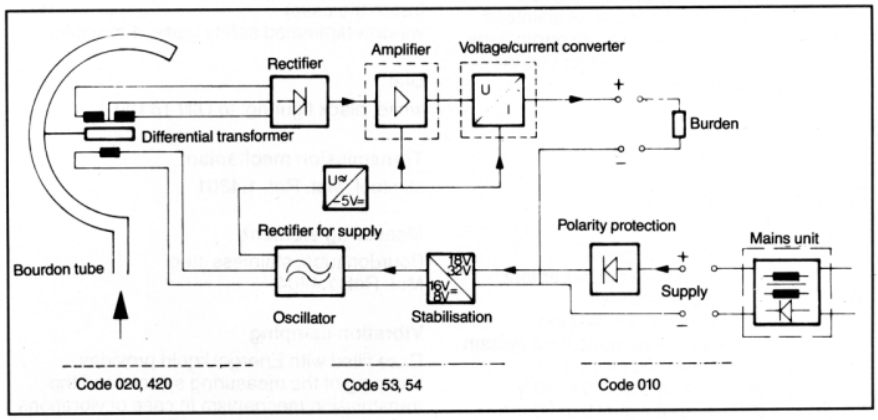
	Voltage output	Current output
Zero drift	± 0.03%/°C	± 0.03%/°C
Span drift	± 0.03%/°C	± 0.03%/°C

Nominal position
vertical

Dimensions

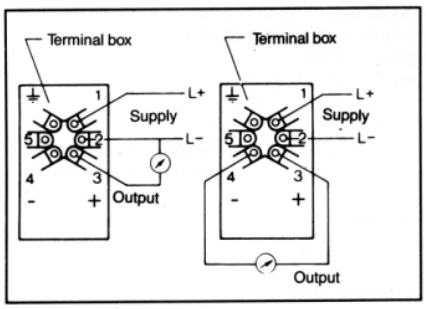


Block diagram



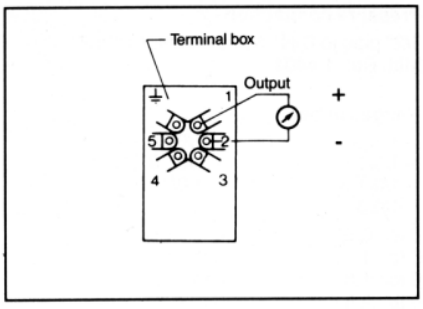
Connection diagrams

without mains unit

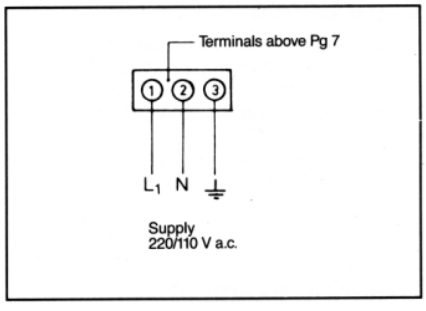


3-wire **4-wire**

with mains unit



terminals



mm	inch
5	0.20
6	0.24
17.5	0.69
20	0.79
31	1.22
33	1.30
67	2.64
68	2.68
72	2.83
87	3.43
100	3.94
101	3.98
103	4.06
1.5 mm²	0.024 in²

Note

Digital Indicator Type PdA. – 48	Data Sheet 91.300
Electronical controllers to Data Sheets of Group	97.000
JUMO Comp single-channel and multi-channel printing recorders	Data Sheet 92.300
JUMO Comp single-channel and multi-channel pen recorders	Data Sheet 92.710

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Pressure transmitter for short ranges

Type 404327

General application

Pressure transmitters are used for evaluating pressures in liquids and gases. The pressure transmitter incorporates a capacitive ceramic sensor. The pressure is converted into an electrical signal.

Technical data

Reference conditions
to DIN 16 086 and IEC 770/5.3

Ranges
see ordering data

Overload limit

Code	Range	Overload
412	0—50 mbar	-0.3/4 bar
414	0—100 mbar	-0.3/4 bar
415	0—160 mbar	5 bar
451	0—0.25 bar	6 bar
452	0—0.4 bar	6 bar
453	0—0.6 bar	10 bar
454	0—1.0 bar	10 bar

Bursting pressure
150 bar

Wetted components
normally aluminium oxide Al_2O_3 (96%)
stainless steel Mat. Ref. 1.4571
FPM
others to special order

Output
0.5 — 4.5 V min. burden 10 kΩ
4 — 20 mA max. burden (U_B-12 V)/0.02A

Burden error
less than 0.15%

Zero error
not exceeding 0.3% full scale

Output span tolerance
≤ 1.0% of full scale

Ambient temperature error
within the range -20 to +80°C
(compensated temperature range)
zero: less than 0.1%/10°C typical
less than 0.3%/10°C max.
span: less than 0.1%/10°C typical
less than 0.2%/10°C max.

Deviation from characteristic
not exceeding 0.2% full scale
(after full-scale calibration)

Response time
10 msec max.

Stability per year
0.2% full scale or better

Supply
12 — 30 V DC (with 4 — 20 mA output)
5 V ±0.5 V DC (with 0.5 — 4.5 V output)
Residual hum: the voltage spikes must not go above or below the values specified for the supply.
Current uptake:
on 5 V DC: 2 mA max.
on 24 V DC: 25 mA max.

Supply voltage error
24 V DC nominal supply voltage:
not exceeding 0.01%/V

5 V DC (±0.5 V) supply:
proportional to supply voltage

Permitted ambient temperature
-20 to +80°C

Storage temperature
-20 to +125°C

Permitted temperature of medium
-20 to +80°C

Electromagnetic compatibility
Electrostatic discharge:
IEC 801-2 severity 4
(test voltage15 kV)
Radiated electromagnetic field:
IEC 801-3 severity 3
Fast transients (burst):
IEC 801-4 severity 4
Immunity to voltage pulses (surge):
VDE 0843 Part 5 severity 2
Immunity to conductor-born interference induced by high-frequency fields:
VDE 0843 Part 6 severity 3 (U_0=3 V)
The pressure transmitter Type 404327 meets all requirements of EN 50082-2 (CE mark) for use in industrial areas.

Mechanical shock
100 g/1 msec

Mechanical vibration
20 g max. at 15 — 2000 Hz

Protection
with terminal box
IP65 to EN 60 529
(connecting cable diameter
5 mm min., 7 mm max.)
with attached cable
IP67 to EN 60 529

Case
stainless steel, Mat. Ref. 1.4571
polycarbonate GF

Pressure connection
see ordering data,
other connections to special order

Electrical connection
see ordering data
All connection variants are fitted with 2 m PVC cable (other lengths to special order)
Terminal box to DIN 43 650,
Form A,
max. conductor cross-section 1.5 mm^2;
or
attached PVC cable
or
terminal head

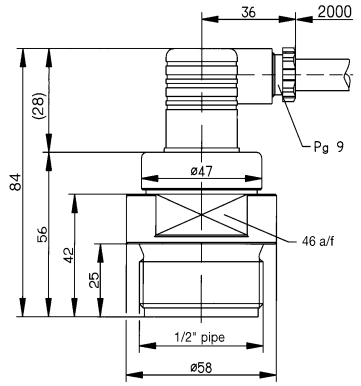
Nominal position
flat horizontal (pressure connection to the side)

Weight
0.35 to 0.55 kg (depending on version)

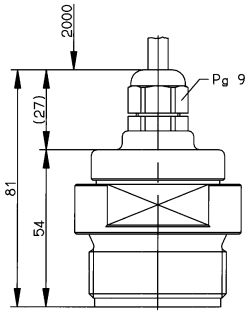
06.05 / 00349923

Dimensions

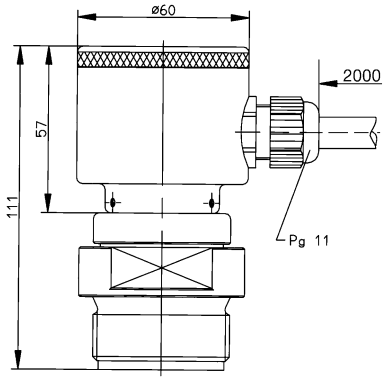
Type 404327-...-...-570-61



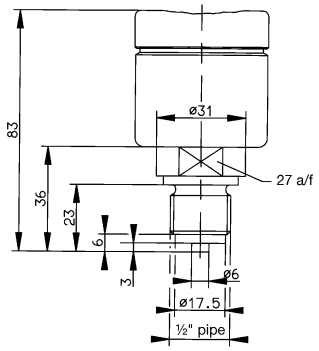
Type 404327-...-...-570-12



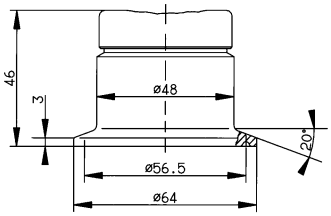
Type 404327-...-...-570-75



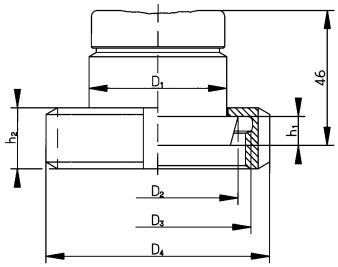
Pressure connection 504



Presssure connection 616

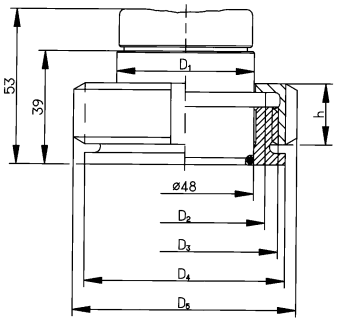


Pressure connection 606/607



Item	DN	D_1	D_2	D_3	D_4	h_1	h_2
606	40	Ø48	Ø48	RD 65x$^1/_6$	Ø78	10	21
607	50	Ø61	Ø68.5	RD 78x$^1/_6$	Ø92	11	22

Pressure connection 653/654



Item	DN	D_1	D_2	D_3	D_4	D_5	h
653	40	Ø48	Ø56	RD 65x$^1/_6$	Ø70	78	21
654	50	Ø61	Ø68.5	RD 78x$^1/_6$	Ø84	92	22

Electrical connection

Connection		Termination		
		Plug	Cable	Terminal head
Supply 12 — 30 V DC 5 V DC	+ -> -	1 2	white grey	1 2
Output 0.5 — 4.5 V	+ -> -	3 2	yellow grey	
Output 4 — 20 mA 2-wire	+ -> -	1 2	white grey	1 2
		Proportional current 4—20 mA in supply circuit		
Protective earth	⏚			3 ⏚
Screen			black	

Warning:
transmitter must be earthed!
(pressure connection and / or ⏚ or screen)

Ordering data

Basic type

404327						Pressure transmitter Type 404327 with capacitive ceramic sensor
	Input					
	412					0 — 50 mbar gauge pressure
	414					0 — 100 mbar gauge pressure
	415					0 — 160 mbar gauge pressure
	451					0 — 0.25 bar gauge pressure
	452					0 — 0.4 bar gauge pressure
	453					0 — 0.6 bar gauge pressure
	454					0 — 1.0 bar gauge pressure
	999					special range (+/- ranges)
		Output				
		405				4 — 20 mA
		412				0.5 — 4.5 V
			Pressure connection			
			504			pressure connection 1/2" pipe to DIN EN 837
			570			pressure connection 1 1/2" pipe
			606			pressure connection cone nipple with ring nut DN 40 DIN 11 851 (milk pipe)
			607			pressure connection cone nipple with ring nut DN 50 DIN 11 851 (milk pipe)
			653			tank connection with ring nut DN 40
			654			tank connection with ring nut DN 50
			616			clamp connection DN50 DIN 32 676 / DN 51 (40) ISO 2852 / 2“
				Material of pressure connection		
				26		stainless steel Mat. Ref. 1.4571
					Electrical connection	
					12	with attached cable[1]
					61	with terminal box[1]
					75	terminal head [1] (only with 4 — 20 mA output)
404327	/	-	-	-	-	**Ordering code**

[1] If the cable length required is not 2m, please specify cable length in plain text.

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Internet: www.JumoUSA.com

Pressure Transmitter JUMO dTRANS p30

Type 404366

General application

Pressure transmitters are used to measure the relative (gauge) and absolute pressures in liquids or gases. The measuring device for the transmitter is a piezo-resistive element or a thin-film strain gauge. The pressure is converted into an electrical signal.

Technical data

Reference conditions
as per DIN 16 086 and IEC 770/5.3

Ranges
see order details

Overload limit

ranges	
0 — 25 bar	3 x full scale
0 — 40 to 0 — 250 bar	2 x full scale
0 — 400 to 0 — 600 bar	1.5 full scale

Bursting pressure

ranges	
0 — 40 bar	≤ 4 x full scale
0 — 60 to 0 — 100 bar	8 x full scale
0 — 160 to 0 — 400 bar	5 x full scale
0 — 600 bar	3 x full scale

Parts in contact with medium
normally:
st. steel, Mat. Ref. 1.4571 / 1.4435
for range ≥ 60 bar:
Mat. Ref. 1.4571 / 1.4542

Output

0 — 20 mA	
3-wire	burden ≤ (U_B-12 V) / 0.02A
4 — 20 mA	
2-wire	burden ≤ (U_B-10 V) / 0.02A
4 — 20 mA	
3-wire	burden ≤ (U_B-12 V) / 0.02A
0.5 — 4.5 V	burden ≥ 50 kΩ
1 — 6 V	burden ≥ 10 kΩ
0 — 10 V	burden ≥ 10 kΩ

Burden error
0.5% max.

Zero offset
≤ 0.3% of full scale

Thermal hysteresis
± 0.5% max. of full scale
(within compensated temperature range)

± 1% max. for ranges	0 — 250 mbar
	0 — 400 mbar
	0 — 600 mbar

Ambient temperature error
within range 0 to +100°C
(compensated temperature range)
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.

with basic type extension 024:
zero: ≤ 0.01%/°C

Deviation from characteristic
≤ 0.5% of full scale
(limit point adjustment)
with basic type extension 023:
≤ 0.2% of full scale
(limit point setting)

Hysteresis
≤ 0.1% of full scale

Repeatability
≤ 0.05% of full scale

Response time
with current output (output 402, 405 or 406):
≤ 3 msec max.
with voltage output (output 412, 415, 418 or 420):
≤ 10 msec max.

Stability per year
≤ 0.5% of full scale

Supply

10 — 30 V DC	(output 4 — 20 mA and 1 — 6 V)
5 V DC	(output 0.5 — 4.5 V)
11.5 — 30 V DC	(output 0 — 10 V)
11.5 — 30 V DC	(output 0(4) — 20 mA)

Ripple: the voltage spikes must not go above or below the values specified for the supply
max. current drawn: approx. 25 mA

Supply voltage error
≤ 0.02% per V
(nominal supply voltage 24 V DC)
in proportion for supply 5 V DC (±0.5 V)

Permissible ambient temperature
-20 to +100°C

Storage temperature
-40 to +125°C

Permissible temperature of medium
-30 to +120°C

Electromagnetic compatibility
EN 61 326
interference emission: Class B
noise immunity: industrial requirements

Mechanical shock
(to IEC 68-2-27)
100 g/1 msec

Mechanical vibration
(to IEC 68-2-6)
20 g max. at 15 — 2000 Hz

Protection
with terminal box
IP65 to EN 60 529
(connecting cable diameter
5 mm min., 7 mm max.)
with connecting cable
IP67 to EN 60 529
with circular connector M12 x 1
P67 to EN 60 529

Housing
stainless steel, Mat. Ref. 1.4301
polycarbonate GF

Pressure connection
see order details;
other connections on request

Electrical connection
see order details
terminal box to DIN 43 650,
Form A,
conductor cross-section up to 1.5 mm^2;
or
attached 4-core PVC cable, length 2 m
other lengths on request

Nominal position
unrestricted

Weight
200 g

Electrical connection

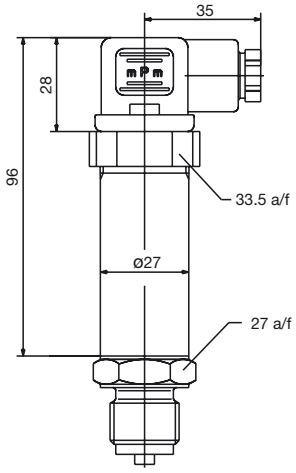
Connection		Terminals		
		Plug	Cable	M12 x 1
Supply 10 — 30 V DC 11.5 — 30 V DC 5 V DC		1 L+ 2 L-	white grey	1+ 3-
Output 1 — 6 V 0 — 10 V 0.5 — 4.5 V		2 - 3 +	grey yellow	3- 4+
Output 4 — 20 mA, 2-wire		1 + 2 -	white grey proportional current 4 to 20 mA in supply	1+ 3-
Output 0(4) — 20 mA, 3-wire		2 - 3 +	grey yellow	3- 4+
Protective earth				
Screen			black	2

Caution
Earth instrument!
(pressure connection and / or ⏚ or screen

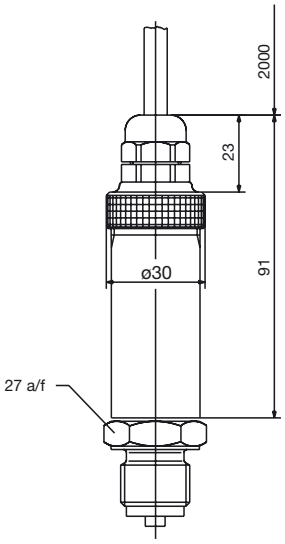
Pin assignment M12 x 1

Dimensions

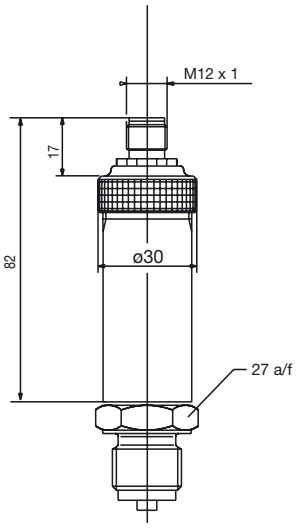
Electrical connection
with terminal box
(61)



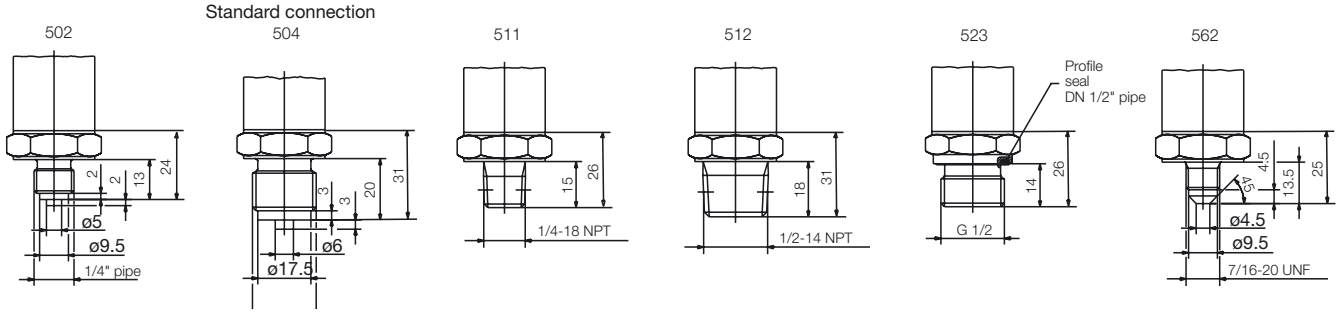
Electrical connection
with attached cable
(12)



Electrical connection
with circular connector M12 x 1
(36)

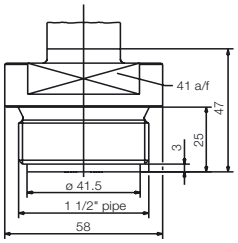


Connections (not front-flush)

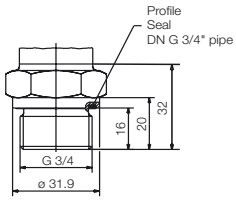


Front-flush connections

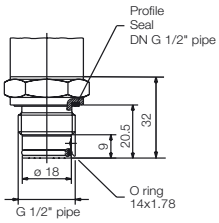
570



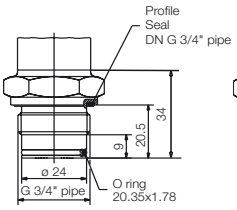
571



574



575



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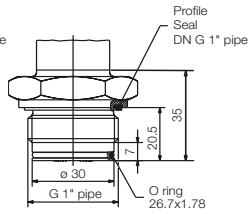
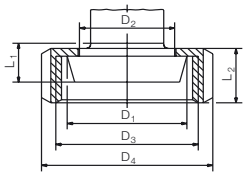


603-607

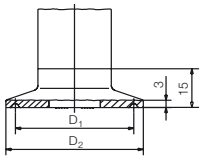
Cone nipple with slotted union nut to DIN 11 851



	DN	øD_1	øD_2	øD_3	øD_4	L_1	L_2
603	20	36.5	30	RD 44x1/6	54	13	21
604	25	44	35	RD 52x1/6	63	15	
605	32	50	41	RD 58x1/6	70		
606	40	56	48	RD 65x1/6	78		
607	50	68.5	61	RD 78x1/6	92	16	22

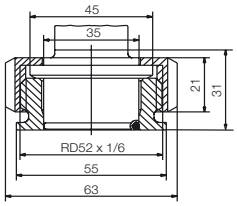
612-616

Clamp connection to DIN 32676



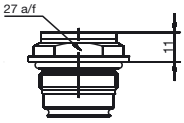
	DN DIN 32676	DN (Zoll)	Nominal Size ISO 2852	øD_1	øD_2
612	20 15		12 12.7 17.2 21.3	27.5	34
613	25 32 40	1" 1,5"	25 33.7 38	43.5	50.5
616	50	2"	40 51	56.5	64

652



997

Suitable for the JUMO PEKA adapter system, see data sheet 40.9711



Order details

				Basic type
404366				Pressure transmitter JUMO dTRANS p30
I				**Basic type extensions**
I	/000			none
I	/023			reduced deviation from characteristic[1]
I	/024			reduced ambient temperature error[2]
I	/999			special version
I	I			**Input**
I	I	451		0 — 0.25 bar gauge pressure
I	I	452		0 — 0.4 bar gauge pressure
I	I	453		0 — 0.6 bar gauge pressure
I	I	454		0 — 1.0 bar gauge pressure
I	I	455		0 — 1.6 bar gauge pressure
I	I	456		0 — 2.5 bar gauge pressure
I	I	457		0 — 4 bar gauge pressure
I	I	458		0 — 6 bar gauge pressure
I	I	459		0 — 10 bar gauge pressure
I	I	460		0 — 16 bar gauge pressure
I	I	461		0 — 25 bar gauge pressure
I	I	462		0 — 40 bar gauge pressure
I	I	463		0 — 60 bar gauge pressure
I	I	464		0 — 100 bar gauge pressure
I	I	465		0 — 160 bar gauge pressure
I	I	466		0 — 250 bar gauge pressure
I	I	467		0 — 400 bar gauge pressure
I	I	468		0 — 600 bar gauge pressure
I	I	478		-1 — 0 bar gauge pressure
I	I	479		-1 — 0.6 bar gauge pressure
I	I	480		-1 — 1.5 bar gauge pressure
I	I	481		-1 — 3 bar gauge pressure
I	I	482		-1 — 5 bar gauge pressure
I	I	483		-1 — 9 bar gauge pressure
I	I	484		-1 — 15 bar gauge pressure
I	I	485		-1 — 24 bar gauge pressure
I	I	487		0 — 0.6 bar absolute pressure
I	I	488		0 — 1.0 bar absolute pressure
I	I	489		0 — 1.6 bar absolute pressure
I	I	490		0 — 2.5 bar absolute pressure
I	I	491		0 — 4 bar absolute pressure
I	I	492		0 — 6 bar absolute pressure
I	I	493		0 — 10 bar absolute pressure
I	I	494		0 — 16 bar absolute pressure
I	I	495		0 — 25 bar absolute pressure
I	I	998		special range absolute pressure
I	I	999		special range gauge pressure
I	I	I		**Output**
I	I	I	402	0 to 20 mA 3-wire
I	I	I	405	4 to 20 mA 2-wire
I	I	I	406	4 to 20 mA 3-wire
I	I	I	412	0.5 to 4.5 V 3-wire
I	I	I	415	0 to 10 V 3-wire
I	I	I	418	1 to 5 V 3-wire
I	I	I	420	1 to 6 V 3-wire

I	I	I	I		**Process connection (not front-flush)**
I	I	I	I	502	1/4" pipe to EN 837
I	I	I	I	504	1/2" pipe to EN 837 (standard connection)
I	I	I	I	511	1/4"-18 NPT to DIN 837
I	I	I	I	512	1/2"-14 NPT to DIN 837
I	I	I	I	523	1/2" pipe to DIN 3852 T11
I	I	I	I	562	7/16"-20 UNF
I	I	I	I	998	suitable for connecting to pressure separator
I	I	I	I		**Process connection (front-flush)**
I	I	I	I	570	1 1/2" pipe[4]
I	I	I	I	571	3/4" pipe[4]
I	I	I	I	574	1/2" pipe with front seal[3]
I	I	I	I	575	3/4" pipe with front seal[4]
I	I	I	I	576	1" pipe with front seal[4]
I	I	I	I	603	taper pressure connection with slotted nut to DIN11 851, DN20[4]
I	I	I	I	604	taper pressure connection with slotted nut to DIN 11 851, DN25[4]
I	I	I	I	605	taper pressure connection with slotted nut to DIN 11 851, DN32[4]
I	I	I	I	606	taper pressure connection with slotted nut to DIN 11 851, DN40[4]
I	I	I	I	607	taper pressure connection with slotted nut to DIN 11 851, DN50[4]
I	I	I	I	612	clamp pressure connection to DIN 32 676, DN20[4]
I	I	I	I	613	clamp pressure connection to DIN 32 676, DN25[4], DN32[4] and DN40[4]
I	I	I	I	616	clamp pressure connection to DIN 32 676, DN50[4]
I	I	I	I	652	tank connection with slotted union nut[4]
I	I	I	I	997	JUMO PEKA[6]
I	I	I	I		**Material of process connection**
I	I	I	I	I 20	stainless steel
I	I	I	I	I I	**Electrical connection**
I	I	I	I	I I 12	with attached cable (cable length in plain text)
I	I	I	I	I I 36	with circular connector M12 x 1
I	I	I	I	I I 61	with terminal box
I	I	I	I	I I I	**Extra code**
I	I	I	I	I I I 000	none
I	I	I	I	I I I 591	throttle in pressure duct[5]
I	I	I	I	I I I 630	enlarged pressure duct[5]
I	I	I	I	I I I I	

404366 / [ ] - [ ] - [ ] - [ ] - 20 - [ ] / [ ] **Order code**

---

1 only for 4 to 20 mA 2-wire output
only for ranges between 0.6 and 40 bar
not with process connection 574.

2 only for spans between 4 and 25 bar
only for output 0 to10 V or 4 to 20 mA 2-wire or 0(4) to 20 mA 3-wire
not with process connection 574

3 only for ranges from 1 to 400 bar

4 only for ranges up to 25 bar

5 only with process connections that are not front-flush

6 suitable process connection adapter, see data sheet 40.9711

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e-mail: info@jumo.us
Internet: www.jumo.us

JUMO dTRANS p02 DELTA
Pressure transmitter

Type 404382

Ⓔx II 1/2G EEx ia IIC T4-T6

General application

The JUMO dTRANS p02 DELTA pressure transmitter measures the differential pressure in both corrosive and non-corrosive gases, vapors and liquids. The pressure transmitter makes use of the piezo-resistive effect to make the measurement. The output signal is a DC current which is linearly proportional to the input pressure. With flow-through measurements, it is possible to set up the output signal to be proportional to the square-root of the input pressure.
In the version "with **Ex** protection Ex II 1/2G EEx ia IIC T4-T6", the transmitter can be mounted within the hazarduos area Zone 1, for connection to Zone 0.
A wide spectrum of pressure separators is available for special applications such as level measurements, or for corrosive media.

Display options:
- pressure with choice of 13 different units, measurement in % or scaled with freely selectable dimensional unit, output current in mA
- sensor temperature in •C or °F
- measurement error, out-of-range measurement
- minimum and maximum pressures (peak-reading pointer)
- pressure and sensor temperature can be shown simultaneously (2 lines)

Setting options via keys:
- start and end of measurement with pressure input
- start and end of measurement without pressure input (blind setting)
- damping or time constant
- current generator function
- output signal on error
- key inhibit
- reset min. and max. measured value (peak-reading pointer)
- square-root characteristic (adjustable starting point), or linear
- density correction for different measurement media
- display of temperature of medium in °C or °F

The JUMO dTRANS p02 DELTA pressure transmitter can also be used with a HART® communicator or a PC in conjunction with a HART® modem and the JUMO setup program running under Windows®.

Accessories

Setup program
Sales No. 40/00365072.
The setup program for all instruments of the JUMO dTRANS p02 series has been created according to the VDI/VDE 2187-user interface. Together with the HART® modem, the program enables easy operation and parameter setting of the pressure transmitter from a PC.

HART® modem
Sales No. 40/00345666
The HART® modem provides the link between the JUMO dTRANS p02 transmitter and the serial interface of a PC.

Bracket for wall and pipe mounting
Sales No. 40/00314729

Triple valve block
Sales No. 40/00308191
to DIN 19 213, stainless steel
other valve types on request.

Oval flange 1/2" NPT
Sales No. 40/00398914
to DIN 19 213, stainless steel.
Set of 2, with M10 screws.
Other flange types on request.

Supply isolator for Ex applications, HART® capable
Sales No. 40/00389710,
see Data Sheet 40.4757

Pressure separators
for adaptation to special applications, whenever conventional pressure connection cannot be used.
See Data Sheets 40.9770 to 40.9786

06.07/00372938

Technical data

Explosion protection
(only with basic type extension 1)

Ⓔx II 1/2GD EEx ia IIC T4-T6
PTB 98 ATEX 2194
The supply must be intrinsically safe and must not exceed the following maximum values:
Ui = 30 V DC
Ii = 100 mA
Pi = 750 mW

Reference conditions
as per DIN 16 086 and IEC 770/5.3

Nominal input range
see Order details

Range setting
The measurement range can be set from the transmitter keys, by using the setup program or a HART® communicator as described below:
Start and end of the measurement range can be continuously adjusted within the nominal range.
The span should not go below 10% of the nominal range.

Displayable units
mH_2O, inH_2O, inHg, ftH_2O, mmH_2O, mm Hg, psi, bar, mbar, kg/cm², kPa, Torr, MPa;
Measurement:
% or scaled with freely adjustable unit
Output current:
mA

Additional displays
indication of sensor temperature, minimum pressure, maximum pressure.
Indication on overrange and on error.

Density correction
adjustable within the range from 0.100 to 5.000 kg/dm³

Nominal pressure
PN 160
option: PN 420

Parts in contact with medium
as standard:
stainless steel, Mat. Ref. 1.4401, 1.4404
flanges: stainless steel, Mat. Ref. 1.4408
O ring: FPM
option: see Order details

Pressure connection
see Order details

Output
4 — 20 mA burden ≤ (U_B-11.5 V) / 0.022 A
burden with HART® max. 1100 Ω, min. 250 Ω
with HART® protocol V 5.3.
Complies with the Directives of the HCF (HART® Communication Foundation)

Characteristic
linear or square-root. Adjustable starting point with square-root characteristic (ex-factory is linear up to 9.4%).

Burden error
< 0.1%

Zero offset / adjustment accuracy
≤ 0.01 mA

Effect of static pressure
zero: ≤ 0.015%/10 bar
span: ≤ 0.020%/10 bar

Ambient temperature error
within range -20 to +85°C
(compensated temperature range)
zero: ≤ 0.005% per °C typical,
≤ 0.01% per °C max.
span: ≤ 0.005% per °C typical,
≤ 0.01% per °C max.

Deviation from characteristic
limit point adjustment:
≤ 0.1% of full scale of nominal range;
as per DIN 16 086

Hysteresis
≤ 0.02% of full scale; as per DIN 16 086

Reproducibility
≤ 0.02% of full scale; as per DIN 16 086

Response time
150 msec approx., no damping

Damping
adjustable from 0 — 100 sec

Stability per year
≤ 0.1% of full scale (for nominal range at reference conditions as per IEC 770)

Supply
11.5 — 36V DC
11.5 — 30V DC (for intrinsically safe version)
Supply unit for output signal transmission with or without HART® communication, in intrinsically safe version, see Data Sheet 40.4757.
Note:
Minimum 17V DC (250Ω) for communication via HART® protocol.

Supply voltage error
≤ 0.1% of full scale per 10 V change
(nominal supply voltage 24 V DC)

Permissible ambient temperature
-40 to +85°C; as per DIN 16 086
(the LCD display may not be readable at temperatures below -20°C)
With version EX II 1/2G EEX ia IIC T4-T6: +60°C

Storage temperature
-40 to +85°C

Permissible temperature of medium
-40 to +100°C
(with halogenized filling oil -10 to +100•C)

Electromagnetic compatibility (EMC)
as per EN 61 326

Mechanical shock
50 g/11 msec

Mechanical vibration
5 g max. at 10 — 2000 Hz

Protection
with connecting cable
IP65 to EN 60 529

Insulation resistance
100 MΩ; 50 V DC

Breakdown strength
≥ 500 $V_{eff.}$

Housing
aluminium die-casting GDAlSi12

Flange screws
steel, yellow-chromed
option: stainless steel

Climatic conditions
≤ 80% rel. humidity with condensation, annual mean

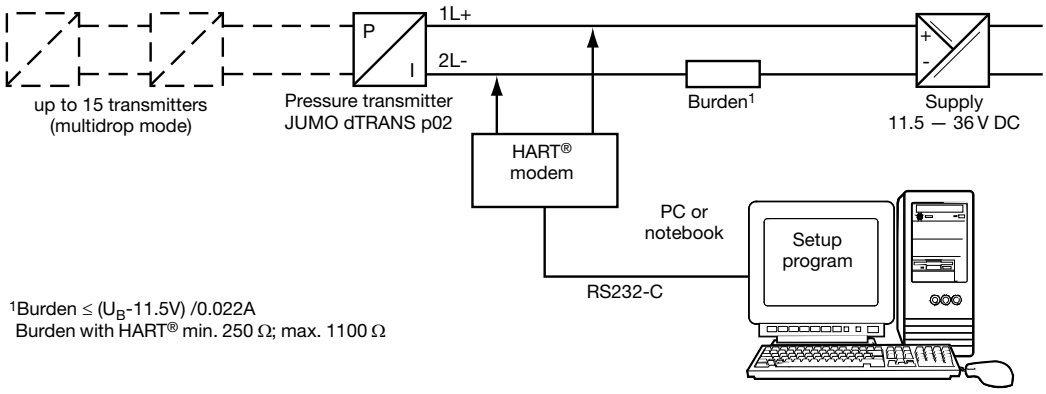
Electrical connection
clamping case with screw cover, 2-pole and earthing terminal, plastic cable gland M20 x 1.5 for cable diameters 6 to 12 mm

Nominal position
ex-factory: upright vertical
(pressure cell below)
any operating position

Weight
3.9 kg approx.

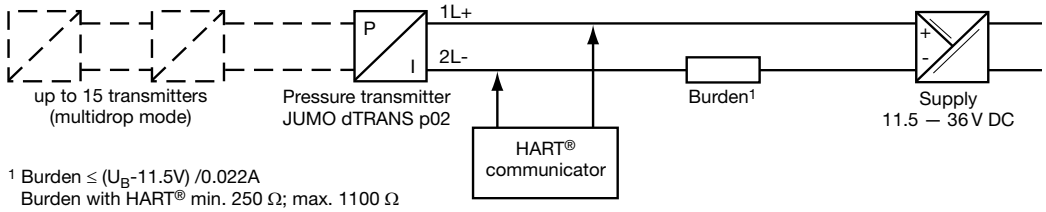
HART® communication

between PC and pressure transmitter



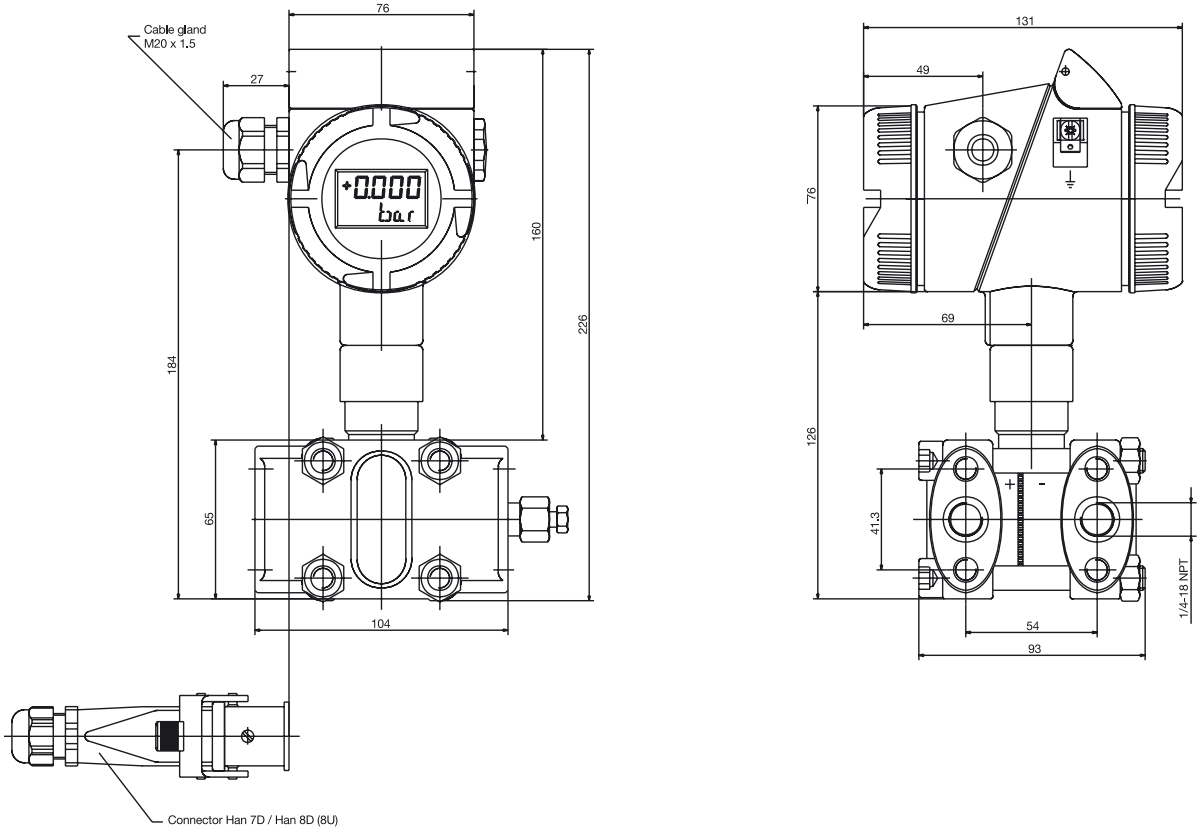
1Burden ≤ (U_B-11.5V) /0.022A
Burden with HART® min. 250 Ω; max. 1100 Ω

between HART® communicator and pressure transmitter



1 Burden ≤ (U_B-11.5V) /0.022A
Burden with HART® min. 250 Ω; max. 1100 Ω

Dimensions

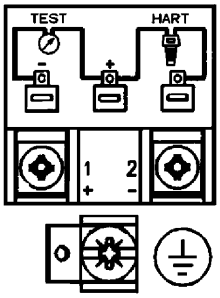


Electrical connection

Connection		Terminals	
Supply 11.5 — 36 V DC		1 L+ 2 L-	
Output 4 — 20 mA 2-wire		1 L+ 2 L-	proportional current 4 — 20 mA in supply
Test connection for current output	internal resistance of ammeter ≤ 10 Ω	TEST + TEST -	
Test connection for HART®	burden must be present!	TEST + HART®	
Potential equilibration (for intrinsically safe circuit)			
Shielding			

Caution:
Earth instrument!
(pressure connection and shielding)

Terminal assignment



Order details

Basic type
404382 pressure transmitter dTRANS p02 DELTA

Basic type extension
0 none
1 with **Ex** protection Ex II 1/2G EEx ia IIC T4-T6
5 increased nominal pressure PN 420

Nominal input range
413 60 mbar differential pressure
451 250 mbar differential pressure
454 1 bar differential pressure
457 4 bar differential pressure
461 25 bar differential pressure

Output
405 4 — 20 mA with HART® protocol

Process connection
511 2 x pressure connection 1/4-18 NPT, DIN 837
998 suitable for connection to diaphragm-type pressure separators

Material for process connection
20 stainless steel, Mat. Ref. 1.4401, 1.4404, flange Mat. Ref. 1.4408
82 special chrome-nickel alloy C276 + Mat. Ref. 2.4819, flange Mat. Ref. 1.4408
83 Monel, Mat. Ref. 2.4360, flange stainless steel Mat. Ref. 1.4408

Fastening thread
113 M10[1](standard)
117 M12 (PN 420)
152 7/16-20 UNF

Seals
601 FPM
603 PTFE (suitable for comestibles)
604 FFPM

Meas. system filling medium
1 silicone oil
2 halogenized filling oil for oxygen applications

Flange screws
2 stainless steel

404382 / [ ] - [ ] - 405 - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] **Order code**

Factory setting:
Please specify the measurement range to be set and the dimensional unit in plain text.
[1] not for “increased nominal pressure PN420” (404382/5-....)

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1-800-554-JUMO
Fax: 315-697-5867
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JUMO dTRANS p02
Pressure transmitter

Type 404385

Ⓔx II 1/2G EEx ia IIC T4-T6

General application

The pressure transmitter Type JUMO dTRANS p02 is used to measure the gauge (relative) and absolute pressures of corrosive and non-corrosive gases, vapours and liquids. The measuring device for the pressure transmitter is a piezo-resistive element or thin-film strain gauge. The output signal is a proportional DC current which is linearly proportional to the input pressure.
In the version "with **Ex** protection Ex II 1/2G EEx ia IIC T4-T6", the pressure transmitter can be mounted within the hazardous Zone 1, for connection to Zone 0. For special applications, e.g. for measuring highly viscous media, the JUMO dTRANS p02 is available with flush pressure connections in various styles. Suitable pressure connections are also available for applications involving media temperatures of up to 200°C.

The display visualises
- the pressure in 13 different units, measurement in % or scaled with a freely adjustable dimensional unit, output current in mA
- the sensor temperature in °C
- measurement error, out-of-range measurement
- minimum and maximum pressures (peak-reading indicator)
- pressure and sensor temperature can be displayed simultaneously (on two lines)

The operating keys can be used to set
- start and end of range with pressure input
- start and end of range without pressure input (blind setting)
- damping or time constant
- current generator function
- output signal on error
- key inhibit
- reset minimum and maximum measured value (peak-reading indicator)
- density correction for different media being measured
- display of the temperature of the medium, in °C or °F

The pressure transmitter JUMO dTRANS p02 can also be operated using a HART® communicator or a PC in connection with a HART® modem and the JUMO setup program running under Windows®.

Accessories

Setup program
Sales No. 40/00365072
The setup program for all instruments in the JUMO dTRANS p02 series has been created according to the VDI/VDE 2187 user interface. In conjunction with the HART® modem, the program enables convenient operation and parameter setting of the pressure transmitter from a PC.

HART® modem
Sales No. 40/00345666
The HART® modem is used to link the JUMO dTRANS p02 pressure transmitter to the serial interface of a PC.

Pressure separator
for adaptation to special situations where the usual pressure connections cannot be used. See Data Sheets 40.9770 to 40.9786.

Isolated supply for Ex applications, HART®-capable
Sales No. 40/00389710,
See Data Sheet 40.4757

Technical data

Explosion protection
(only with basic type extension 1)

⟨Ex⟩ II 1/2GD EEx ia IIC T4-T6
PTB 98 ATEX 2194
The supply must be intrinsically safe and must not exceed the following maximum values:
U_i = DC 30V
I_i = 100mA
P_i = 750mW

Reference conditions
to DIN 16 086 and IEC 770/5.3

Nominal ranges
see ordering details

Range setting
The measurement range can be set from the transmitter keys, by using the setup program or a HART® communicator as described below:

Start and end of range can be continuously adjusted within the nominal range. The span should not be less then 10% of the nominal range..

Units that can be visualised
Input pressure:
in mH_2O, inH_2O, inHg, ftH_2O, mmH_2O, mmHg, psi, bar, mbar, kg/cm², kPa, Torr, MPa
Measurement:
in %, or scaled with a freely adjustable dimensional unit
Output current:
in mA

Additional displays
Indication of the sensor temperature, minimum pressure, maximum pressure, indication of overrange and on error

Density correction
adjustable within the range from 0.100 to 5.000 kg/dm³

Overload limit
to DIN 16 086
-1bar and 4 x full scale or
-1bar and 2 x full scale with ranges ≥ 100bar

Bursting pressure
to DIN 16 086
10 x full scale; 2 000bar max.

Parts in contact with the medium
standard:
stainless steel, Mat. Ref. 1.4435, 1.4571
for range ≥ 100bar
stainless steel, Mat. Ref. 1.4571, 1.4542

Pressure connection
see ordering details

Output
4 — 20mA max. burden (U_B – 11.5V) / 22mA
burden with HART® 1100Ω max., 250Ω min.
with HART® protocol V 5.3.
Complies with the guidelines of the HCF (HART® Communication Foundation)

Burden error
< 0.1%

Zero offset / adjustment accuracy
≤ 0.01mA

Ambient temperature error
within range -20 to +85°C
(compensated temperature range)
zero: 0.005%/°C typical,
0.01%/°C max.
span: 0.005%/°C typical,
0.01%/°C max.

Deviation from characteristic
for limit setting:
not exceeding 0.1% of full scale of nominal range; to DIN 16 086

Hysteresis
For nominal ranges ≥100bar
≤ 0.05% of full scale; to DIN 16 086
For nominal ranges ≤ 25bar
≤ 0.02% of full scale; to DIN 16 086

Repeatability
For nominal ranges ≥100bar
≤ 0.05% of full scale; to DIN 16 086
For nominal ranges ≤ 25bar
≤ 0.02% of full scale; to DIN 16 086

Response time
approx. 150msec, without damping

Damping
adjustable 0 to 100 s

Stability per year
≤ 0.1% of full scale (for nominal range with reference conditions to IEC 770)

Supply
11.5 — 36V DC
11.5 — 30V DC (for intrinsically safe version)
Supply units for output signal transmission with or without HART® communication, in intrinsically safe version, see Data Sheet 40.4757.

Note:
at least 17V DC (250Ω) for communication via HART® protocol.

Supply voltage error
≤ 0.1% of full scale per 10V change
(nominal supply voltage 24V DC)

Permitted ambient temperature
-40 to +85°C; to DIN 16 086
(the LCD display cannot be read at temperatures below -20°C)
With version EX II 1/2G EEX ia IIC T4-T6:
+60°C

Storage temperature
-40 to +85°C

Permitted temperature of medium
-40 to +120°C for the standard version
-40 to +200°C for basic type extension 4

Electromagnetic compatibility
to EN 61326

Mechanical shock
50g/11msec

Mechanical vibrations
5g max. at 10 — 2000Hz

Protection
with connecting cable
IP65 to EN 60 529

Isolation resistance
100MΩ; 50V DC

Breakdown strength
≥ 500$V_{eff.}$

Housing
aluminium die-casting GDAlSi12

Climatic conditions
≤ 80% rel. humidity annual mean, with condensation

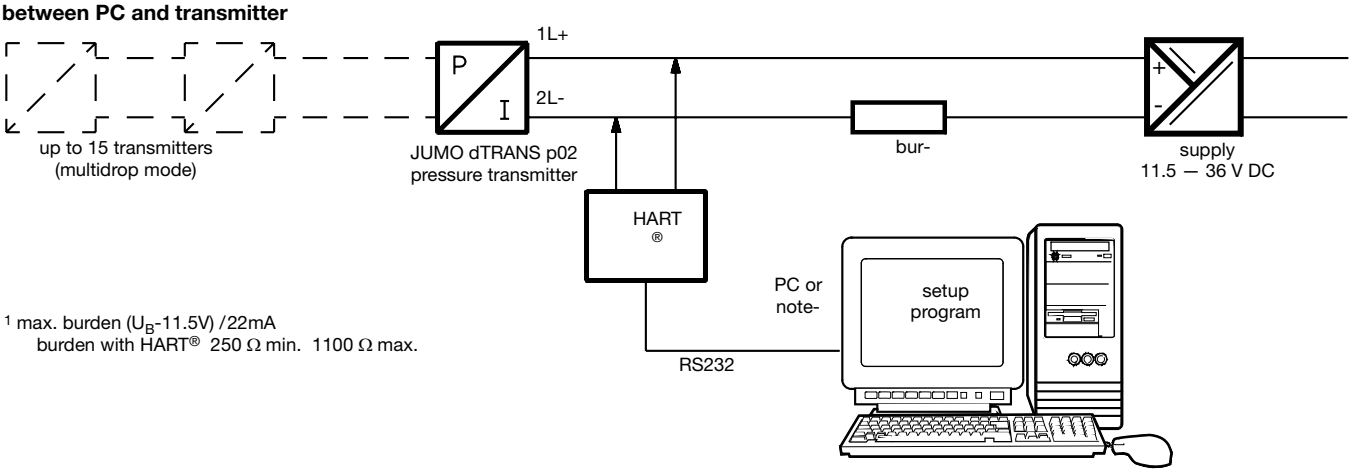
Electrical connection
clamping case with screw cover, 2-pole and earth terminal, plastic cable gland M20 x 1.5 for cable cross-section 6 to 12mm

Nominal position
factory set upright vertical
(pressure connection below)
operating position is unrestricted

Weight
approx. 1.3kg

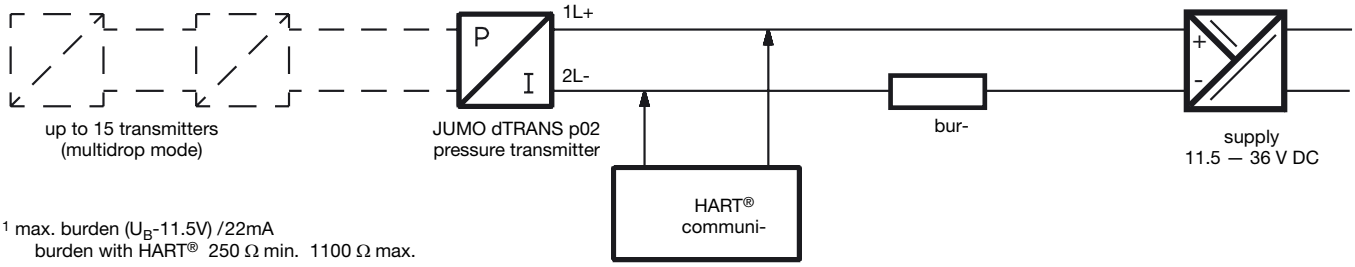
HART® communication

between PC and transmitter



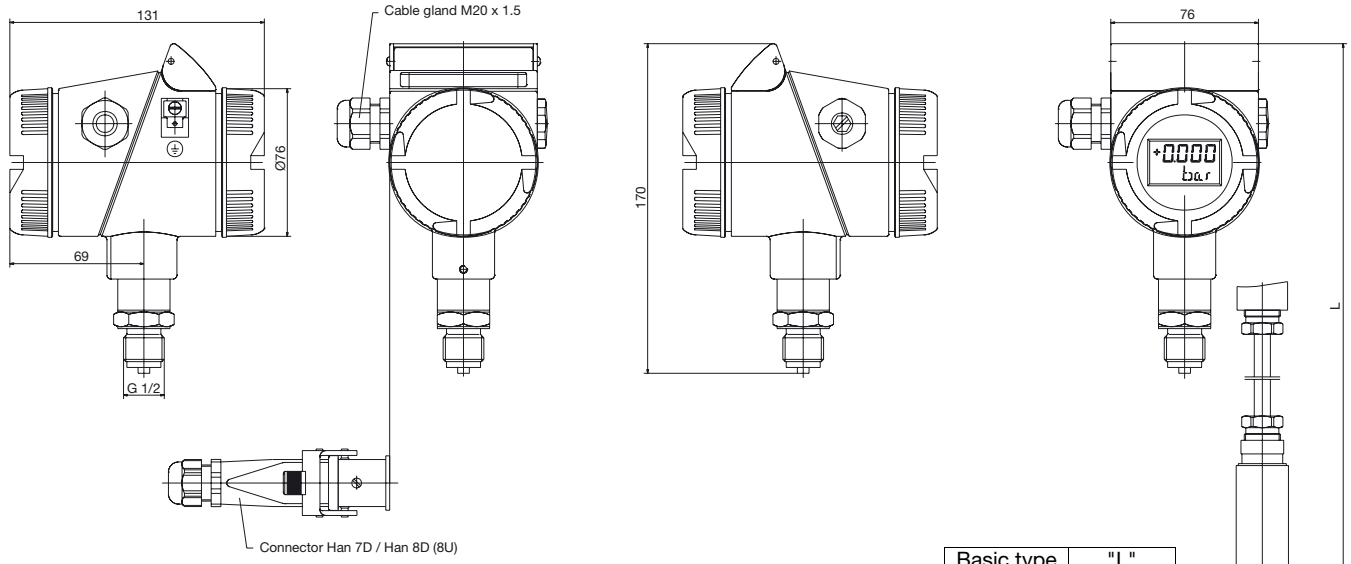
[1] max. burden (U_B-11.5V) /22mA
burden with HART® 250 Ω min. 1100 Ω max.

between HART® communicator and transmitter



[1] max. burden (U_B-11.5V) /22mA
burden with HART® 250 Ω min. 1100 Ω max.

Dimensions

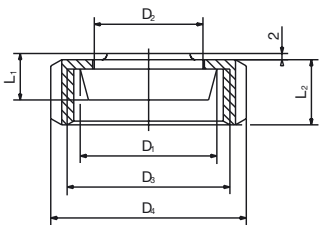


Basic type extension	"L"
0	137
1	137
4	180

NTS 527

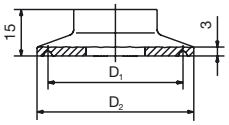
Front-flush pressure connections

604 / 606
taper connection with slotted nut
to DIN 11 851



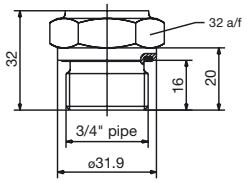
DN	D_1	D_2	D_3	D_4	L_1	L_2	NTS
25	ø44	ø35	RD 52x1/6	ø63	15	21	604
40	ø56	ø48	RD 65x1/6	ø78			606

613 / 616
to DIN 32 676

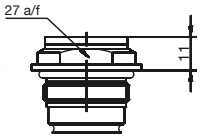


DN DIN32676	DN (inch)	Nominal Size ISO 2852	Storlek SMS 3017	D_1	D_2	NTS
25	1.5" 1"	25	25	ø43.5	ø50.5	613
50	2"	51 40	51	ø56.5	ø64	616

571

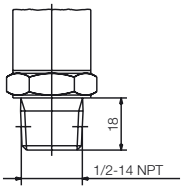


997
Suitable for the
JUMO PEKA adapter system
see ata sheet 40.9711

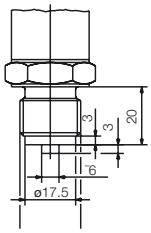


Pressure connections, not Front-flush

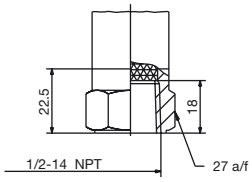
512



504



564

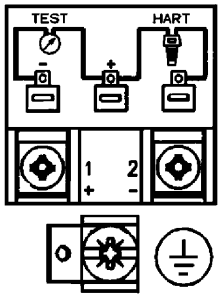


Electrical connection

Connection		Terminals	
Supply 11.5 — 36 V 11.5 — 30 V DC for intrinsically safe version		1 L+ 2 L–	
Output 4 — 20 mA 2-wire		1 L+ 2 L–	proportional current 4 — 20 mA in supply
Test connection Current output	internal resistance of the ammeter ≤ 10 Ω	TEST + TEST -	
Test connection HART®		TEST + HART®	
Potential equilibration (for intrinsically safe circuit)			
Screen			

Warning:
Earth the instrument!
(Pressure connection and screen)

Termination



Ordering details

Basic type

404385 JUMO dTRANS p02 pressure transmitter with sensor element in piezo-resistive or thin-film technology

Basic type extensions

0 none
1 with **Ex** protection Ex II 1/2G EEx ia IIC T4-T6
4 for increased temperature of medium up to 200•C[1] (for process connections 571, 604, 606, 613 and 616 only)[1, 2]

Nominal range input

414 -100 to +100 mbar gauge pressure
453 -0.6 to +0.6 bar gauge pressure
457 -1 to +4 bar gauge pressure
461 -1 to +25 bar gauge pressure
464 -1 to +100 bar gauge pressure
468 -1 to +600 bar gauge pressure
487 -0 to +0.6 bar absolute pressure
491 -0 to +4 bar absolute pressure
495 -0 to +25 bar absolute pressure

Output

405 4 — 20 mA with HART® protocol

Process connection

504 1/2" pipe to EN 837
512 1/2-14 NPT to DIN 837
564 1/2-14 NPT internal
571 3/4" pipe flush to DIN 837[1]
604 taper connection with slotted nut DN25 to DIN 11 851[1,2]
606 taper connection with slotted nut DN40 to DIN 11 851[1,2]
613 clamp connection DN 25 to DIN 32 676 [1,2]
616 clamp connection DN 50 to DIN 32 676 [1,2]
997 JUMO PEKA [3]

Material for process connection

20 stainless steel, Mat. Ref. 1.4401
82 Hastelloy C276, Mat. Ref. 2.4819
99 special material for process connection

Electrical connection

06 screw terminals
99 special electrical connection

Filling medium for measuring system

0 none (only with input for nominal range 464 and 468)
1 Silicone oil [1]

404385	/		-		-	405	-		-		-		-		**Ordering code**

Factory setting:
please specify the range to be set and the unit in plain text!

---

[1] not for nominal range –1 to 100 bar and –1 to 600 bar gauge pressure
[2] not for protection EEX ia II C
[3] suitable process connection adapter, see data sheet 40.9711

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Pressure transmitter JUMO dTRANS p02 CERAMIC

Type 404387

General application

The JUMO dTRANS p02 CERAMIC pressure transmitter measures the gauge (relative) or absolute pressure in both corrosive and non-corrosive gases, vapors and liquids. The ceramic-based measuring system in this pressure transmitter operates on the principle of capacitive measurement. The output signal is a DC current that is proportional to the input pressure.

The display can show:

- pressure in 13 different dimensional units, measurement in % or scaled with a freely selectable unit, output current in mA
- sensor temperature in °C or °F
- measurement error, out-of-range measurement
- minimum and maximum pressures (peak-reading indicator)
- pressure and sensor temperatures can be shown simultaneously (on 2 lines)

The keys can be used to set up:

- start and end of measurement, with pressure input
- start and end of measurement, without pressure input (blind setting)
- damping or time constant
- current generator function
- output signal on error
- key inhibit
- reset min. and max. measurements (peak-reading indicator)
- density correction for different measurement media
- display of the media temperature in °C or °F

The JUMO dTRANS p02 CERAMIC pressure transmitter can also be operated through a HART® communicator, or a PC in conjunction with a HART® modem and the JUMO setup program running under Windows®.

Accessories

Setup program
Sales No. 40/00365072
The setup program for all instruments in the JUMO dTRANS p02 series has been created according to the VDI / VDE 2187 user interface. In conjunction with the HART® modem, the program enables convenient operation and parameter setting of the pressure transmitter from a PC.

HART® modem
Sales No. 40/00345666
The HART® modem forms the link between the JUMO dTRANS p02 pressure transmitter and the serial interface of a PC.

Technical data

Reference conditions
as per DIN 16086 and IEC 770/5.3

Nominal input range
see Order details

Range setting
The measurement range can be set from the keys on the pressure transmitter, by using the setup program or a HART® communicator as described below:

Start and end of the measurement range can be continuously adjusted within the nominal range. The span of the measurement should not be less than 10% of the nominal range.

Displayable units
Input pressure:
mH_2O, inH_2O, inHg, ftH_2O, mmH_2O, mm Hg, psi, bar, mbar, kg/cm², kPa, Torr, MPa;
Measurement:
% or scaled with freely adjustable dimensional unit
Output current:
mA

Additional displays
Indication of the sensor temperature, minimum pressure, maximum pressure.
Indication of overrange or error

Density correction
adjustable over the range from 0.100 to 5.000 kg/dm³

Overload limits
see Order details

Bursting pressure
for all ranges: 150 bar

Parts in contact with the medium
standard:
stainless steel, Mat. Ref. 1.4571
aluminium oxide Al_2O_3 (96%),
FPM,
others on request

Pressure connection
see Order details

Output
4 — 20mA burden ≤ (U_B-11.5V) / 0.022A
burden with HART® : max. 1100Ω,
min. 250Ω with HART® protocol V 5.3.
Complies with the guidelines of the HCF (HART® Communication Foundation)

Burden error
< 0.1%

Zero offset / adjustment accuracy
≤ 0.01mA

Ambient temperature error
over the compensated temperature range from -20 to +85°C
zero: ≤ 0.005% per °C typical,
≤0.01% per °C max.
span: ≤ 0.005% per °C typical,
≤0.01% per °C max.

Deviation from characteristic
for limit point adjustment:
≤ 0.1% of full scale of nominal range;
as per DIN 16086

Hysteresis
≤ 0.02% of full scale

Reproducibility
≤ 0.02% of full scale

Response time
approx. 150msec without damping

Damping
adjustable from 0 — 100 sec

Stability over 1 year
≤ 0.1% of full scale (for nominal range, and under reference conditions as per IEC 770)

Supply voltage
11.5 — 36V DC
Note:
at least 17V DC (250Ω) for communication using the HART® protocol.

Supply voltage error
≤ 0.1% of full scale per 10V change (nominal supply voltage 24V DC)

Permissible ambient temperature
-40 to +85°C; as per DIN 16086
(it may be impossible to read the LCD display at temperatures below -20°C)

Storage temperature
-40 to +85°C

Permissible temperature of medium
-40 to +120°C

Electromagnetic compatibility (EMC)
as per EN 61 326

Mechanical shock
50g/11msec

Mechanical vibration
max. 5g over 10-2000Hz

Protection
with connecting cable
IP65 to EN 60529

Insulation resistance
100MΩ; 50V DC

Breakdown strength
≥ 500$V_{eff.}$

Housing
aluminium die-casting GDAlSi12

Climatic conditions
≤ 80% rel. humidity with condensation, annual mean

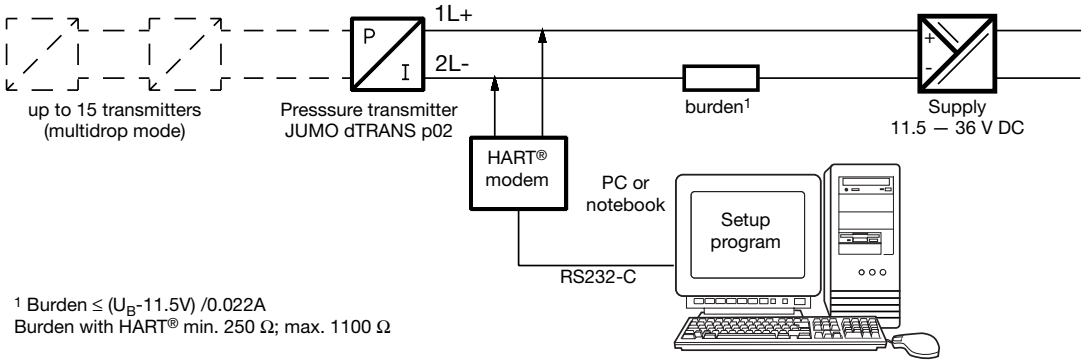
Electrical connection
clamping case with screwed cover, 2 poles and earthing terminal, plastic cable gland M20 x 1.5 for cable diameters 6 to 12mm

Nominal position
ex-factory, upright vertical
(pressure connection below)
any operating position

Weight
approx. 1.5kg

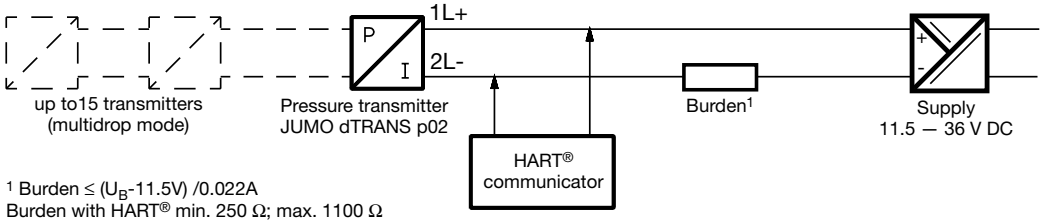
HART® communication

between PC and pressure transmitter



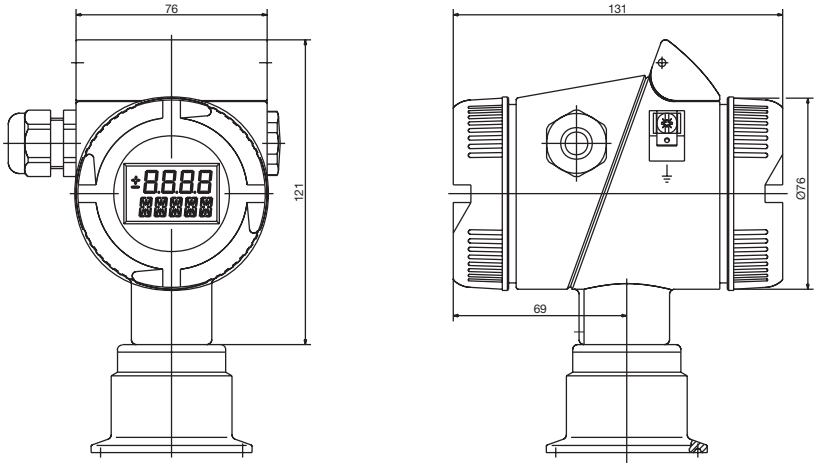
[1] Burden ≤ (U_B-11.5V) /0.022A
Burden with HART® min. 250 Ω; max. 1100 Ω

between HART® communicator and pressure transmitter



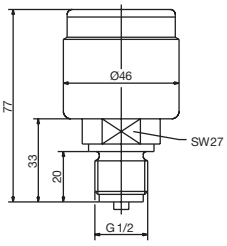
[1] Burden ≤ (U_B-11.5V) /0.022A
Burden with HART® min. 250 Ω; max. 1100 Ω

Dimensions

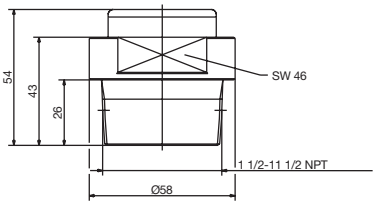


SW = a/f in mm
G = pipe fitting in "

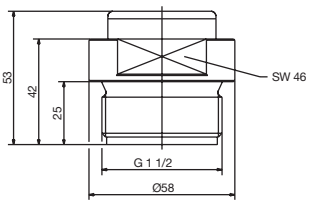
NTS 504



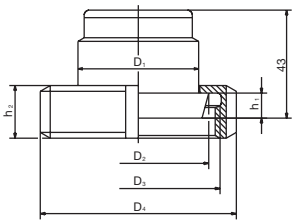
NTS 515



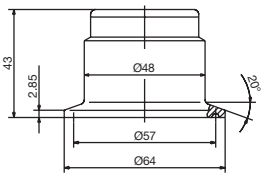
NTS 570



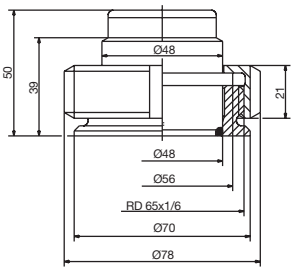
NTS 606
NTS 607



NTS 615



NTS 653



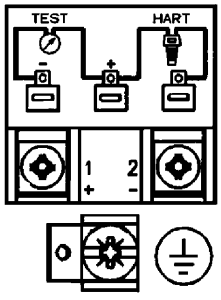
NTS	DN	D_1	D_2	D_3	D_4	h_1	h_2
606	40	Ø48	Ø56	RD 65 x 1/6	Ø78	10	21
607	50	Ø61	Ø68.5	RD 78 x 1/6	Ø92	11	22

Electrical connection

Connection		**Terminals**
Supply 11.5 — 36 V DC, 11.5 — 30 V DC for intrinsically safe version		1 L+ 2 L-
Output 4 — 20 mA 2-wire		1 L+ proportional current 4 — 20 mA 2 L- in supply
Test connection, current output	internal resistance of ammeter ≤ 10 Ω	TEST + TEST -
Test connection, HART®		TEST + HART®
Shielding		

Caution:
Earth the instrument!
(pressure connection and shielding)

Terminals



Order details

Basic type

404387 Pressure transmitter dTRANS p02 CERAMIC with capacitive-ceramic measuring system

Basic type extensions

0 none

Nominal input range

414	-100 to 100	mbar	gauge pressure	(overload limits -1 and 6 bar)
453	-0.6 to 0.6	bar	gauge pressure	(overload limits -1 and 10 bar)
457	-1 to 4	bar	gauge pressure	(overload limits -1 and 40 bar)
461	-1 to 25	bar	gauge pressure	(overload limits -1 and 60 bar)
487	0 to 0.6	bar	absolute pressure	(overload limits -1 and 10 bar)
491	0 to 4	bar	absolute pressure	(overload limits -1 and 40 bar)
495	0 to 25	bar	absolute pressure	(overload limits -1 and 60 bar)

Output

405 4 — 20 mA with HART® protocol

Process connection

504	$1/_2$" pipe to EN 837
515	$1\,1/_2$ - $11\,1/_2$ NPT
570	$1\,1/_2$" pipe to DIN 3852
606	taper connection with ring nut DN40 to DIN 11851
607	taper connection with ring nut DN50 to DIN 11851
616	clamp connection DN50 to DIN 32676
653	tank connection with ring nut DN40

Material for process connection

20	stainless steel, Mat. Ref. 1.4571
99	special material for process connection

Seal

601	FPM
604	FFPM on request

Electrical connection

06	screw terminals
99	special electrical connection

404387 / 0 - [ ] - 405 - [ ] - [ ] - [ ] - [ ] **Order code**

Factory setting:
Please specify the range to be set and the dimensional unit in plain text.

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Level Probe

Type 4390

General application

The type 4390 level probe is used for the hydrostatic measurement of levels in liquids. The pressure is converted into an electrical signal.
Applications include: level measurement in wells, boreholes, wastewater plant, vessels, and standing or running water.

Technical data

Reference conditions
as per DIN 16 086 and IEC 770/5.3

Measuring ranges
see order details

Overload limit
3 x full scale; 40 bar max.

Bursting pressure
≥ 4 x full scale; 50 bar max.

Parts in contact with the medium
stainless steel, Mat. Ref. 1.4435
FPM, polyolefin, PE (polyethylene),
with extra code /013: PUR (polyurethane)

Output
4 — 20 mA 2-wire connection
burden ≤(U_B-10 V) / 0.02A (Ω)

Burden error
< 0.1% of full scale

Zero signal deviation
≤ 0.5% of full scale

Ambient temperature error
within the range 0 to +50° C
(compensated temperature range)
zero point: < 0.2%/10°C typical,
< 0.4%/10°C max.
span: < 0.2%/10°C typical,
< 0.4%/10°C max.
for range 0 to 250 mbar and
0 to 400 mbar:
zero point: < 0.4%/10°C typical,
< 0.6%/10°C max.
span: < 0.3%/10°C typical,
< 0.5%/10°C max.

Characteristic
linear

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

Settling time
≤ 10 msec

Supply
10 — 30 V DC
Ripple: the voltage peaks must not go above or below the values specified for the supply.
max. current drawn:
≤ 30 mA

Supply voltage error
≤ 0.01% per V of full scale
(nominal supply voltage 24 V DC)

Permissible ambient and media temperature
0 to +50° C
(the instrument must not freeze in the medium)

Storage temperature
-20 to +80° C (dry)

Electromagnetic compatibility EMC
EN 61 326
interference emission: Class B
interference immunity: to industrial requirements

Electric strength
connections to housing as per VDE 0411, 150 V_{eff}, 50 Hz, 1 min.

Enclosure protection
with connecting cable:
IP68 (up to 40 bar) to EN 60 529

Pressure connection
see order details;
other connections on request

Electrical connection
6-core screened PE cable with internal pressure equilibration tubing. Minimum bending radius of cable: 120 mm (fixed installation). Can be used up to 250 m depth without additional strain relief.

Core cross-section
6 x 0.25 mm^2

Nominal position
vertical / suspended from control cable

Weight
approx. 400 g (without cable)

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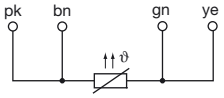
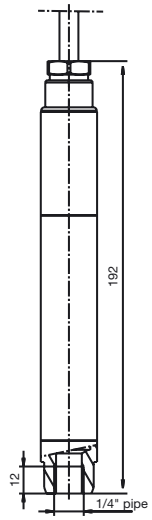
Internet: www.jumo.us

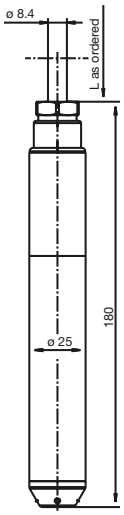
Electrical connection

Connection		Terminal assignment / cable
Supply 10 — 30 V DC		+ white - gray
Output 4 — 20 mA 2-wire		+ white - gray proportional current in supply
Temperature sensor (with extra code /027)		for version with Pt100 temperature sensor pink (pk), brown (bn) green (gn), yellow (ye)
Screening ⚠ Earth the device!		black

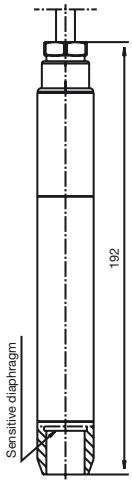
Dimensions



Process connection 567

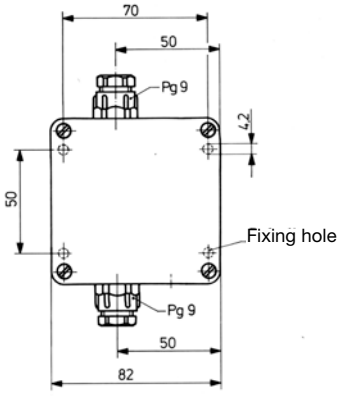


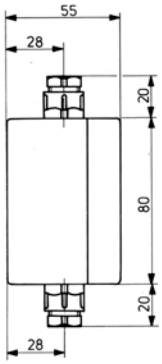
Process connection 658



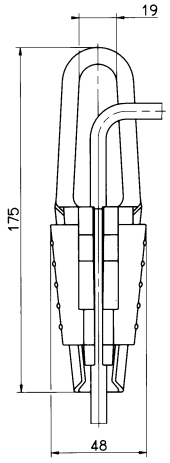
Process connection 659

Accessories





Clamping housing with pressure equilibration, Part No. 00061206



Cable holder, Part No. 00061389

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e-mail: info@jumo.us
Internet: www.jumo.us

Order details

(1) Basic type

404390 Level probe

(2) Basic type extensions

000 none
999 special version

(3) Input for gauge pressure

451 0 — 0.25 bar
452 0 — 0.4 bar
453 0 — 0.6 bar
454 0 — 1.0 bar
455 0 — 1.6 bar
456 0 — 2.5 bar
457 0 — 4 bar
458 0 — 6 bar
459 0 —10 bar
460 0 —16 bar
461 0 —25 bar
999 special measuring range

(4) Output

405 4 — 20mA 2-wire

(5) Process connection

567 G1/4 internal
658 connection closed at bottom
659 connection open at bottom

(6) Material of process connection

20 stainless steel

(7) Electrical connection

14 PUR cable
15 PE-LD cable

(8) Cable length L

005 5 m
010 10 m
015 15 m
020 20 m
025 25 m
030 30 m
035 35 m
040 40 m
045 45 m
050 50 m
055 55 m
060 60 m
065 65 m
070 70 m
075 75 m
080 80 m
085 85 m
090 90 m
095 95 m
100 100 m
999 special length on request

(9) Extra codes

000 none
027 integrated Pt100 temperature sensor

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)
Order code		/		-		-		-		-		-		-		/	
Order example	404390	/	000	-	452	-	405	-	659	-	20	-	15	-	20	/	000

Accessories

Type	**Sales No.**
Cable holder	40/00061389
Clamping housing with pressure equilibration	40/00061206

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Level probe with ceramic measuring cell

Type 4391

General application

The level probe Type 4391 is used to measure hydrostatic levels in liquids. It features a capacitive-ceramic sensor. The pressure is converted into an electrical signal.
Advantages of the ceramic measuring system:

- small ranges
- high overload capability (up to 80 times)
- very good long-term stability
- high chemical resistance
- diaphragm highly resistant to mechanical stress (cleaning, abrasive materials)

Type 404391/000...

Type 404391/022

Technical data

Reference conditions
to DIN 16 086 and IEC 770/5.3

Ranges
see Order details

Overload limit

Code	Range	Overload[1]
412	0 — 50 mbar	-0.3/4 bar
414	0 — 100 mbar	-0.3/4 bar
415	0 — 160 mbar	5 bar
451	0 — 0.25 bar	6 bar
452	0 — 0.4 bar	6 bar
453	0 — 0.6 bar	10 bar
454	0 — 1.0 bar	10 bar

[1] in plastic housing: max. 2 bar

Bursting pressure
150 bar for all ranges

Parts in contact with liquid
normally: aluminium oxide Al2O3 (96%)
stainless steel, Mat. Ref. 1.4571
FPM, polyolefine, polyamide,
depending on cable: polyurethane, polyethylene
others on request
with basic type extension 022:
aluminium oxide Al_2O_3 (99.9%) and PTFE

Output
0.5 — 4.5 V burden ≥ 10 kΩ
4 — 20 mA burden ≤(U_B-12 V) / 0.02A

Burden error
< 0.15%

Zero signal deviation
≤0.3% of full scale

Ambient temperature error
within range -20 to +60° C
(compensated temperature range)
zero: < 0.1%/10°C typical,
< 0.3%/10°C max.
span: < 0.1%/10°C typical,
< 0.2%/10°C max.

Deviation from characteristic
≤0.2% of full scale
(limit point setting)

Response time
≤10 msec

Stability per year
≤0.2% of full scale

Supply
12 — 30 VDC (for output 4 — 20 mA)
5 V ±0.5 V DC (for output 0.5 — 4.5 V)
Ripple: the voltage peaks must not go above or below the value specified for the supply voltage.
max. current drawn:
at 5 VDC: 2 mA max.
at 24 V DC: 25 mA max.

Supply voltage error
≤0.01% per V
(nominal supply voltage 24 V DC)
ratiometric with supply 5 V DC (±0.5 V)

Permissible ambient and medium temperature
normally: -20 to +60° C
with basic type extension 022: 0 to +40° C
(instrument must not freeze in medium)

Storage temperature
-20 to +100° C

Electromagnetic compatibility EMC
EN 61 326
interference emission: Class B
immunity to interference: to industrial requirements

Mechanical shock
100 g/1 msec

Mechanical vibration
20 g max. at 15 — 2000 Hz

Protection
with connecting cable
IP68 (up to 40 bar) to EN 60 529
with basic type extension 022:
IP68 (up to 4 bar) to EN 60 529

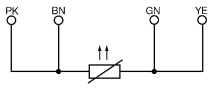
Pressure connection
see Order details;
other connections on request

Electrical connection
6-core screened cable with internal pressure equilibration tubing (core dia. 0.25 mm^2). Minimum bending radius of cable: 120 mm (fixed installation).
Can be used to 250 m depth without additional tension relief.

Nominal position
vertical / hanging on the control cable

Weight
350 gm approx. (without cable)

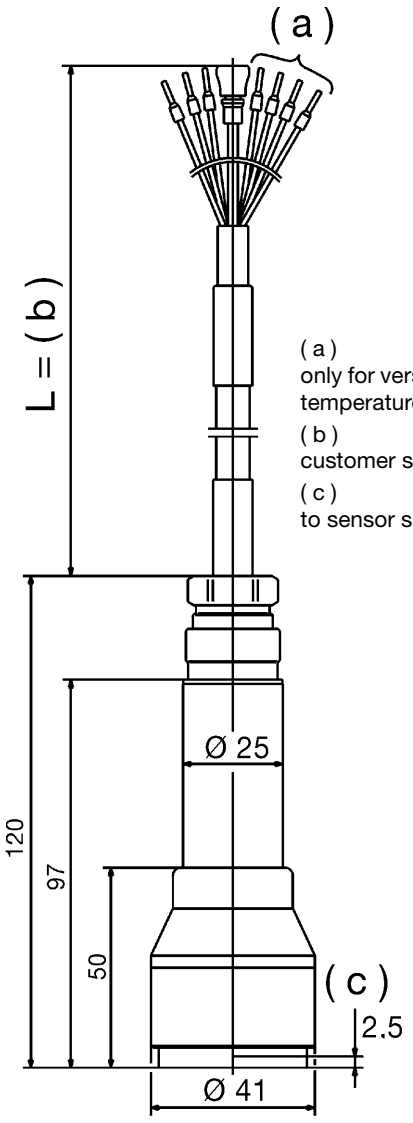
Electrical connection

Connection		Termination / cable
Supply 12 — 30 V DC 5 V DC		+ white - gray
Output 4 — 20 mA 2-wire 4 — 20 mA		+ white - gray proportional current in supply
Output 0.5—4.5V 3-wire ratiometric		+ yellow - gray
Temperature sensor (for 4—20 mA only) 		for version with temperature sensor Pt100 pink (PK), brown (BN) green (GN), yellow (YE)
Screen		black

⚠ Earth instrument! Screen ⏚

Dimensions

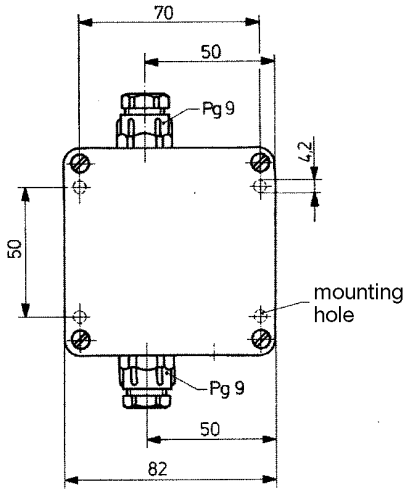
Type 404391/000-... or 404391/007-...

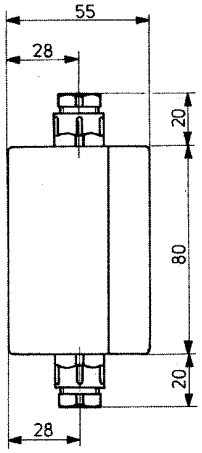


(a)
only for version with Pt100 temperature sensor
(b)
customer specification
(c)
to sensor surface

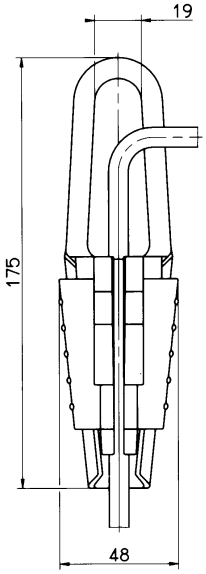
Accessory

Clamping case with pressure equilibration, Part No. 00061206

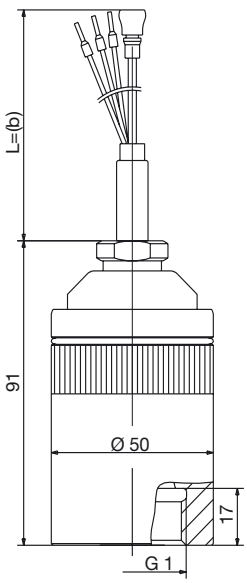




Cable holder Part No. 00061389



Type 404391/022-...



Order details

Basic type

404391 Level probe Type 404391 with capacitive-ceramic sensor

Basic type extensions

/ 000 standard
/ 007 with Pt100 temperature sensor, see Data Sheet 90.6121[1]
/ 022 parts in contact with medium in PTFE and Al_2O_3 99.9%

Input

- 412 0 — 50 mbar gauge pressure
- 414 0 — 100 mbar gauge pressure
- 415 0 — 160 mbar gauge pressure
- 451 0 — 0.25 bar gauge pressure
- 452 0 — 0.4 bar gauge pressure
- 453 0 — 0.6 bar gauge pressure
- 454 0 — 1.0 bar gauge pressure

999 special range

Output

- 405 4 — 20 mA
- 412 0.5 — 4.5 V

Process connection

- 658 connection closed at bottom
- 659 connection open at bottom
- 568 pressure connection G1 internal [2]

Electrical connection

- 13 PE cable, suitable for use in water, (drinking water, lake water, waste water and similar)
- 14 PUR cable, suitable fo use in oil and water, with excellent mechanical characteristics and enhanced UV and ozone resistance[4]
- 15 PE-LD standard cable (normally) suitable for use in water, (drinking water, lake water, waste water and similar)

Cable length[3]

- 001 001 m
- 002 002 m
- " . . . m
- 100 100 m

404391 / [ ] - [ ] - [ ] - [ ] - [ ] - [ ] **Order code**

[1] only possible for basic type extensions: standard and output 4 to 20 mA

[2] only for basic type extension 022

[3] from 5 meters, cable length only in 5m steps (e.g. 30m, 55m, 125m)

[4] not in conjunction with basic type extension /022

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Melt Pressure Transducer JUMO 4 ADM-35

Type 404450

Type 404450

General application

Type 4 ADM-35 pressure transducers are used in plastics processing, process engineering and chemical plant.
The pressure transmitter operates on the strain gauge measurement principle.

Technical data

Reference conditions
as per DIN 16 086 and IEC 770/5.3

Measuring ranges
see order details

Overload limit
up to 1000 bar: 1.5 x full scale
above 1000 bar:1.2 x full scale

Parts in contact with medium
standard: stainless steel, Mat. Ref. 1.4545 / 1.4541
optionally: Inconel® 2.4668 or Hastelloy® 2.4610

Measuring head
aluminium, anodized blue

Output
see order details

Ambient temperature effect
(on diaphragm, deviation from +200°C calibration temperature)
zero point: +/– 0.02%/°C
span: +/– 0.02%/°C

Ambient temperature effect
(on measuring head, deviation from +20°C)
zero point: +/– 0.04%/°C

Zero point deviation
+/– 3% of measuring range

Deviation from characteristic
(with tolerance band setting)
1% from 10% of measuring range

Repeatability
< 0.2% of full scale

Supply
for output 432 or 433: 5 — 10V DC
for output 405 or 450: 11.5 — 30 V DC

Calibration resistance
built-in for 80% of full-scale value

Permissible temperature of medium
on diaphragm: +20 to +400°C
with filling medium 18: +20 to +480°C
on measuring head: ≤ +100°C

Permissible ambient temperature
100°C max.

Housing
aluminium

Process connection
see order details

Tightening torque
30 Nm max.

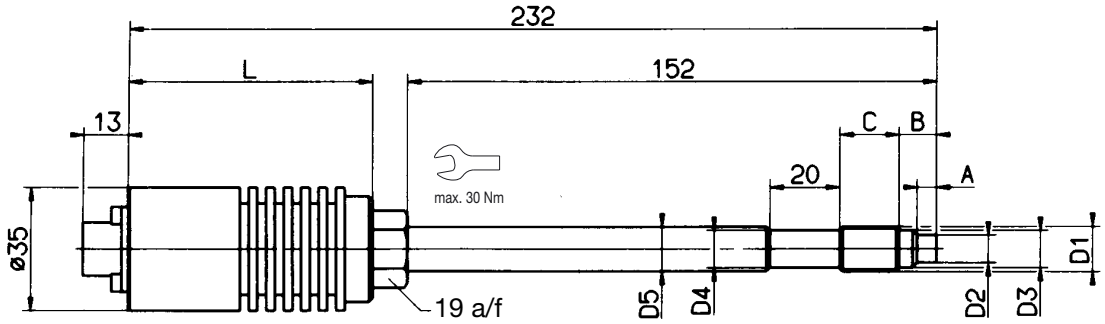
Electrical connection
for output 405, 432 or 433:
Bendix round plug connector
for output 450:
M12x1 / 5-pole

Insulation resistance
10 000 MΩ with 100 V test voltage

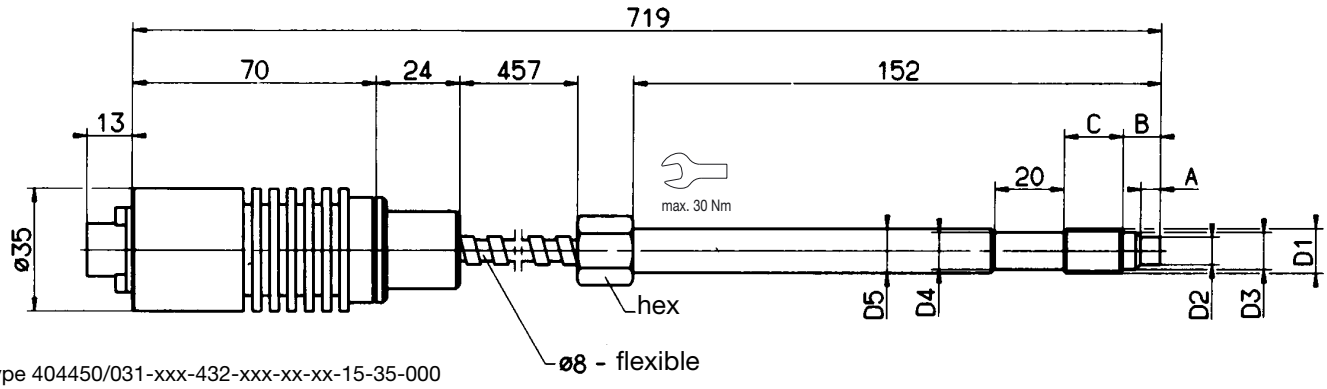
Enclosure protection
IP64 to EN 60 529

Nominal position
unrestricted

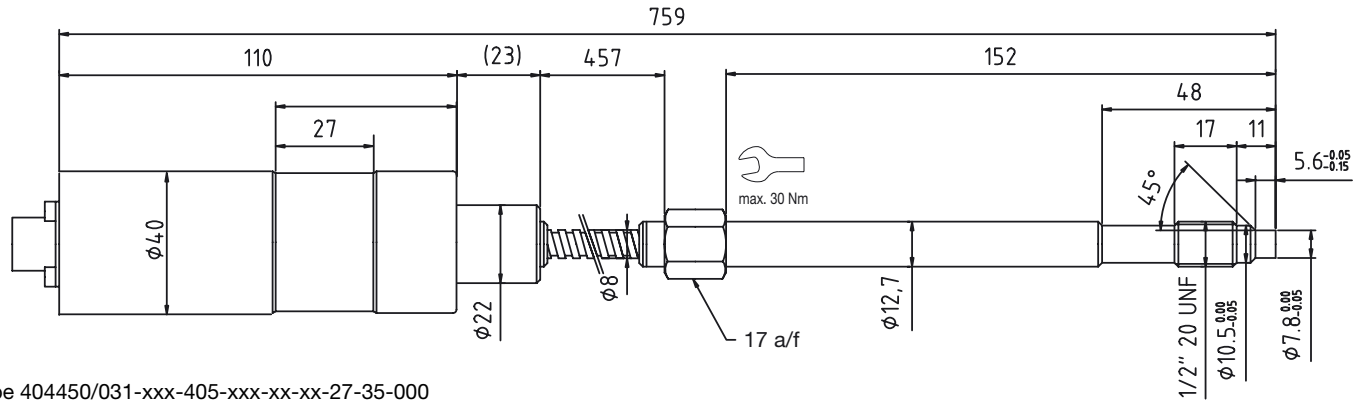
Weight
approx. 0.5 kg



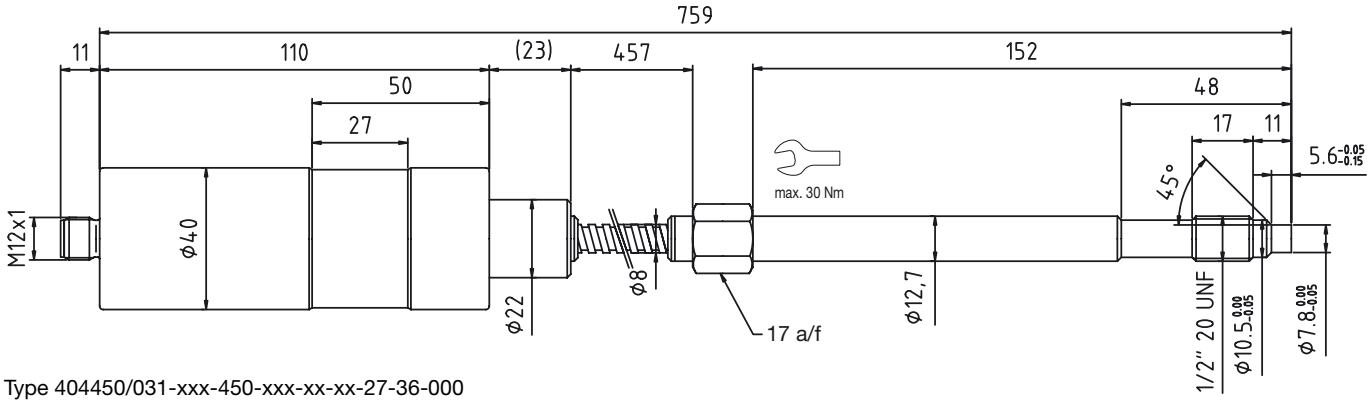
Type 404450/000-xxx-405-xxx-xx-xx-15-35-000



Type 404450/031-xxx-432-xxx-xx-xx-15-35-000



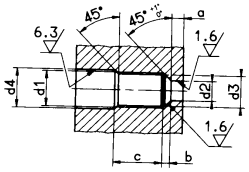
Type 404450/031-xxx-405-xxx-xx-xx-27-35-000



Type 404450/031-xxx-450-xxx-xx-xx-27-36-000

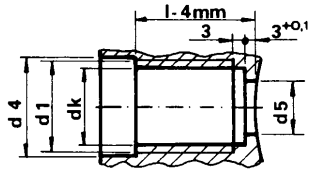
D_1	D_2	D_3	D_4	D_5	A	B	C	a/f
1/2" 20 UNF 2A	ø7.8 $^{+0/-0.05}$	ø10.5 $^{+0/-0.05}$	ø10.5 $^{+0/-0.5}$	ø12.7	5.6 $^{+0/-0.1}$	10.8	17	17
M18x1.5	ø10 $^{+0/-0.05}$	ø16 $^{+0/-0.1}$	ø16 $^{+0/-0.5}$	ø18	18 $^{+0/-0.25}$	14	20	19

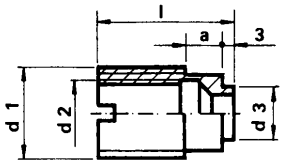
Bore for transducer



d_1	d_2	d_3	d_4	a	b	c
1/2" 20 UNF 2A	ø7.92 $^{+0.05/-0.0}$	ø10.69 $^{+0.1/-0.0}$	ø13	5.7	3.2 max.	19
M18x1.5	ø10.1 $^{+0.05/-0.0}$	ø16.1 $^{+0.1/-0.0}$	ø20	6.15	4 max.	25

Insert socket

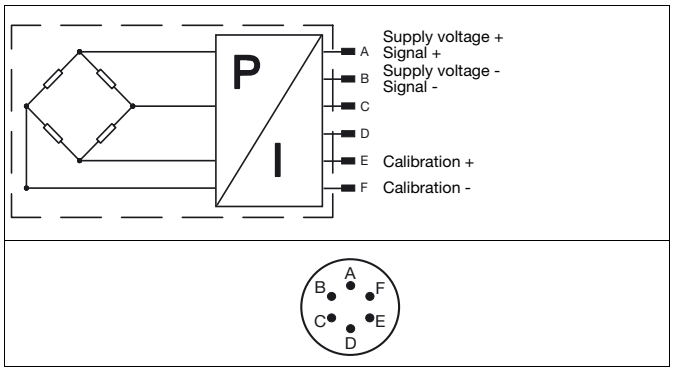




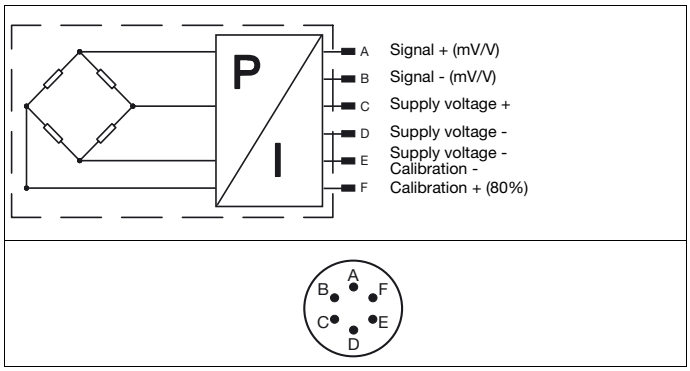
d_1	d_2	Sales No.	d_3	d_4	d_5	d_K	a	l
M16	1/2" 20 UNF 2A	40/00310280	ø10 $^{+0.05/-0.1}$	ø18	ø10	ø18	6	25
M24	M18x1.5	40/00310281	ø14 $^{+0.05/-0.1}$	ø26	ø14	ø26	10	35

Electrical connection

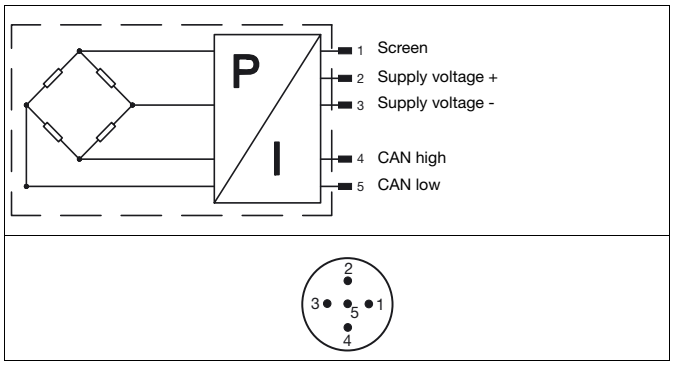
Pressure transducer with output 405 (4 — 20 mA, 2-wire)



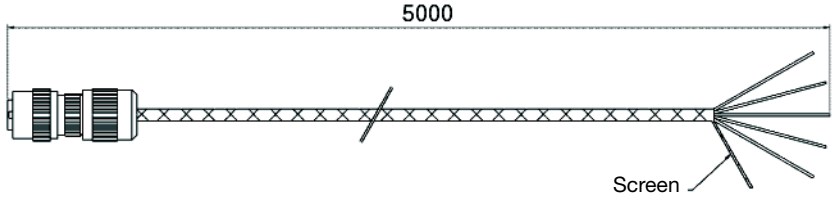
Pressure transducer with output 432 or 433 (2 mV/V or 3.3 mV/V)

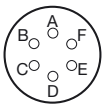


Pressure transducer with output 450 (CANopen)



Connection cable





A - yellow
B- white
C - brown
D - green
E -
F - gray

Order details

	(1)	**Basic type**
404450		Melt pressure transducer JUMO 4 ADM-35
	(2)	**Basic type extensions**
000		with rigid stem
031		with capillary
999		special version
	(3)	**Input**
510		0 — 50 bar
464		0 — 100 bar
511		0 — 200 bar
467		0 — 400 bar
468		0 — 600 bar
512		0 — 800 bar[1]
469		0 — 1000 bar[1]
471		0 — 2000 bar[1]
999		special measuring range
	(4)	**Output**
432		2 mV/V
433		3.3 mV/V
405		4 to 20 mA 2-wire
450		CANopen
	(5)	**Process connection**
535		M18x1.5
592		1/2" 20 UNF 2A
	(6)	**Material of diaphragm**
20		stainless steel 1.4545
81		Inconel® 2.4668
82		Hastelloy® 2.4610
	(7)	**Filling medium**
17		mercury Hg (standard)
18		NAK (mercury-free filling)[2]
	(8)	**Supply**
15		10V DC
27		11.5 — 30 V DC[3]
	(9)	**Electrical connection**
35		Bendix round plug connector
36		M12x1 / 5-pole[4]
69		Bendix round plug connector with coupling socket
70		Bendix round plug connector with coupling socket, including 5 m cable
	(10)	**Extra codes**
000		none
620		deviation from characteristic: 0.5% of measuring range

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)
Order code		/		-		-		-		-		-		-		-		/	
Order example	404450	/	000	-	465	-	432	-	592	-	20	-	17	-	15	-	35	/	000

Accessories

Designation	Sales No.
Instrument amplifier with LED indication and contacts	40/00456229
Cleaning tool for locating bore, 1/2" thread, 20 UNF 2A	40/00307891
Cleaning tool for locating bore, M18x1.5 thread	40/00307887
5 m connection cable, fabricated with plug connector	

[1] not with filling medium 18
[2] only with diaphragm material 81
[3] only for output 405 or 450
[4] only for output 450

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Temperature probe for the plastics industry

Type 404452

General application

Temperature probes Type 404452 are used to measure melt temperature on extruders in the plastics industry.
The measurement is converted into an electrical signal. Either thermocouples or resistance thermometers can be used. A probe tip thermally insulated with ceramic can be supplied for particularly accurate temperature measurement. The probe tip is available in different lengths in order to ensure a fast response.

Technical data

Parts in contact with the plastic
for temperatures 0 — 350°C ("843")
stainless steel, Mat. Ref. 1.4541
tip stainless steel, Mat.Ref. 1.4545
for temperatures 0 — 400°C ("848")
stainless steel, Mat. Ref. 1.4435
tip stainless steel, Mat. Ref. 1.4545 with ceramic insulation

Classification
for tolerance "1"
resistance thermometer
0 +400°C, Class B, ±0.8°C at 100°C
for tolerance "2"
resistance thermometer
0 +400°C, Class A, ±0.35°C at 100°C
for tolerance "8"
thermocouple
-40 to +750°C, Class 2 ±2.5°C

Protection
IP65 to EN 60 529

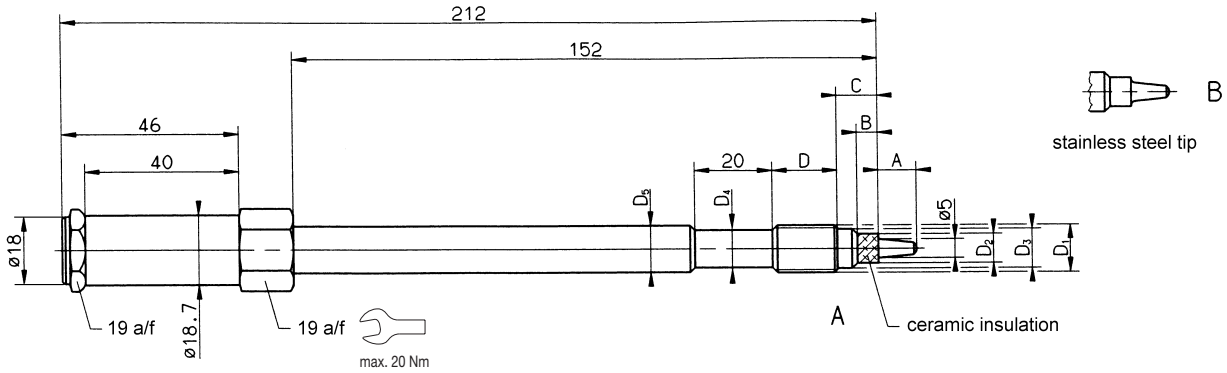
Mounting
(male thread)
("591") M18 x 1.5
("592") ∫-20 UNF-2A

Electrical connection
Lemosa round connector Type 2S 302 or
Lemosa Type 2S 304

Operating position
unrestricted

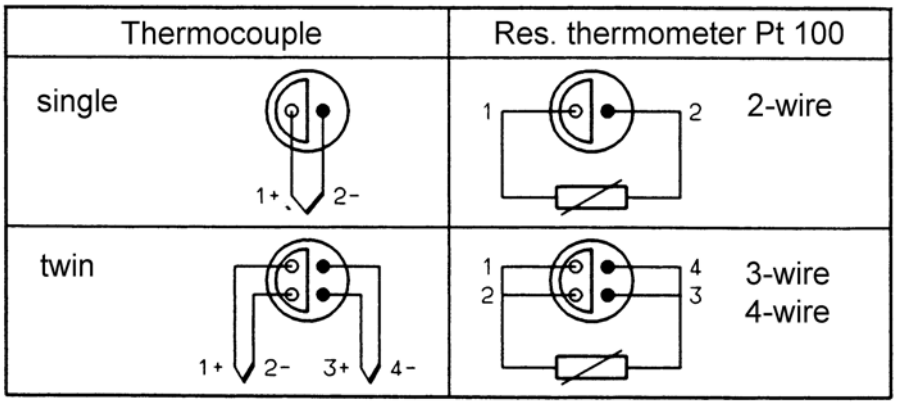
Weight
300 g approx.

Dimensions



D_1	D_2	D_3	D_4	D_5	A	B	C	D	a/f
$^1/_2$"-20 UNF 2A	ø 7.8 $^{0}_{-0.05}$	ø 10 $^{0}_{-0.05}$	ø 10 $^{0}_{-0.5}$	ø 12.5 $^{0}_{-0.5}$	see Ordering details "Probe tip length"	5.6 $^{0}_{-0.1}$	10.8	17	17 (19)
M 18 x 1.5	ø 10 $^{0}_{-0.05}$	ø 16 $^{0}_{-0.1}$	ø 16 $^{0}_{-0.5}$	ø 16		5.6 $^{0}_{-0.25}$	14	20	19

Terminal connections



Ordering details

Basic type

404452 Temperature probe for the plastics industry

	Operating temperature						
	843	0 — 350°C, stainless steel version					
	848	0 — 400°C, stainless steel version with extra ceramic insulation					
		Measuring insert					
		001	resistance thermometer Pt 100, 3-wire ISO 751				
		003	resistance thermometer Pt 100, 2-wire ISO 751				
		011	resistance thermometer Pt 100, 4-wire ISO 751				
		040	thermocouple Fe-Con J IEC 584-1				
		042	thermocouple Fe-Con L DIN 43 710				
		043	thermocouple NiCr-Ni K IEC 584-1				
			Tolerance				
			1	Class B (this is standard for resistance thermometer sensor)			
			2	Class A (to special order for resistance thermometer sensor)			
			8	Class 2 ±2.5°C (only for thermocouple sensor)			
				Mounting			
				591	M18 x 1.5		
				592	∫-20 UNF-2A		
					Probe tip length		
					0	0 mm	
					5	5 mm	
					10	10 mm	
					15	15 mm	
					20	20 mm	
					25	25 mm	
						Electrical connection	
						43	Lemosa plug size 2

404452 / [ ] - [ ] - [ ] - [ ] - [ ] - [ ] **Ordering code**

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Internet: www.jumo.us

JUMO dTRANS p33
Pressure Transmitter and Level Probe for use in hazardous areas

Type 404753

Ex II 1/2 GD EEx ia IIC T4...T6 // T/Ta; (T4) 95°C; (T5) 85°C; (T6) 70°C // IP65

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 (**G**as).
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 (**D**ust)

The EC type-examination certificate is designated: SNCH 03 ATEX 3545.

The pressure transmitter can also be used as a level probe (extra code /406).

Technical data

Explosion protection

Ex II 1/2 GD EEx ia IIC T4 – T6
T / Ta: (T4) 95°C; (T5) 85°C;
(T6) 70°C
IP65

Reference conditions
to DIN 16 086 and IEC 770/5.3

Measurement ranges
see Order details

Overload limit
for ranges < 100 bar:
4 x full scale
for ranges ≥ 100 bar:
2 x full scale

Bursting pressure
10 x full scale, 2000 bar max.

Parts in contact with medium
standard:
stainless steel, Mat. Ref. 1.4436, 1.4571
for range ≥ 60 bar:
stainless steel, Mat. Ref. 1.4571, 1.4542
with extra code 406
(level probe version):
cable material: PE (polyethylene)

Output
4 — 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

Stability per year
≤ 0.5% of full scale

Supply
11 — 28 V DC
(from intrinsically safe circuit)[1]
U_{max} ≤ 28 V
$I_{K\ max}$ ≤ 120 mA
Ripple:
The voltage spikes must not go above or below the limits specified for the supply.
max. current drawn ≤ 45 mA
(at 24 V DC)

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
with basic type ext. 004: -40 to +200°C
with extra code 406 : -40 to +70°C

Electromagnetic compatibility
EN 61 326
interference emission: Class B
interference immunity:
to industrial requirements

Electrical connection
recommended: screened 5-core cable
with extra code 406
(level probe version):
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 — 2000 Hz

Mechanical shock
(to IEC 68-2-27)
100 g/1 msec

[1] intrinsically safe circuit in conjunction with supply unit with isolating transformer, Type KFD2, Data Sheet 40.4757.

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8 Technology Boulevard
Canastota, NY 13032, USA
Phone: 315-697-JUMO
1-800-554-JUMO
Fax: 315-697-5867
e-mail: info@jumo.us
Internet: www.jumo.us

Mechanical vibration
(to IEC 68-2-6)
max. 10 g at 15 — 2000 Hz

Enclosure protection
with connector screwed on
IP65 to EN 60 529

Housing
stainless steel, Mat. Ref. 1.4301

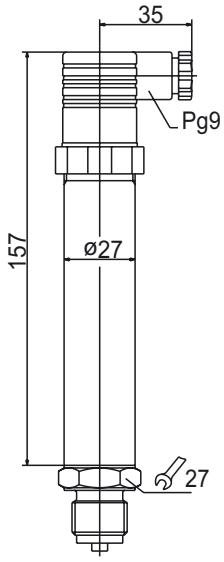
Pressure connection
see Order details;
other connections on request

Nominal position
unrestricted

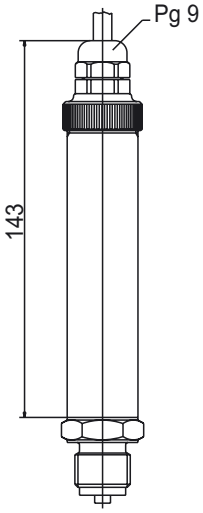
Weight
350 gm (with G 1/2 pressure connection)

Dimensions

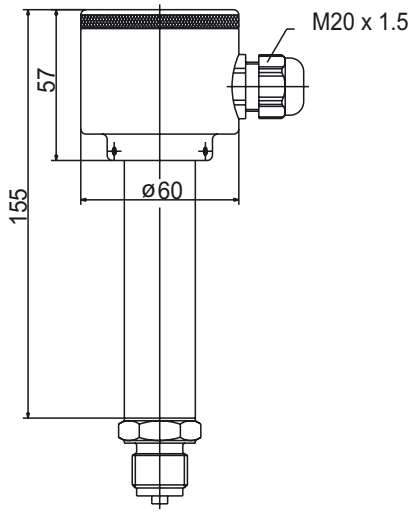
Electrical connection 61



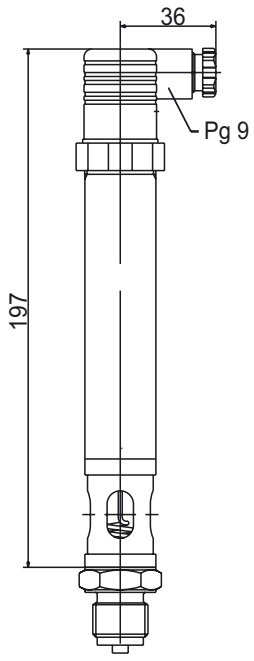
Electrical connection 12



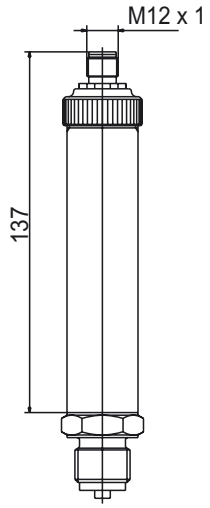
Electrical connection 75



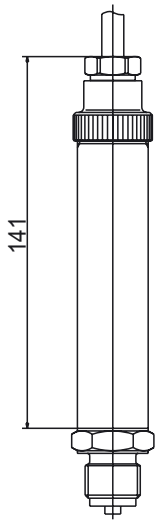
Basic type extension 004



Electrical connection 36



Extra code 406



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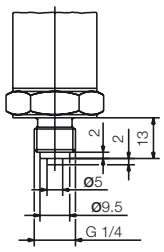
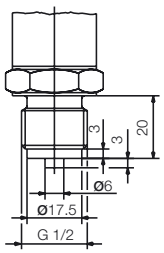
Process connection (not front-flush)

Standard connection

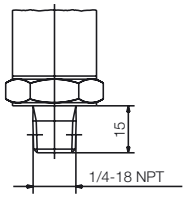
502



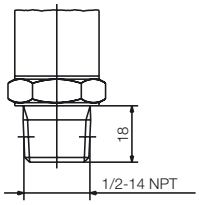
504



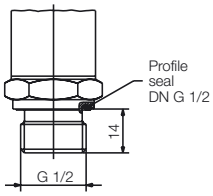
511



512

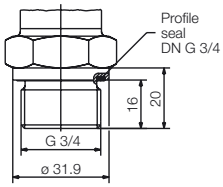


523



Process connections (front-flush)

571



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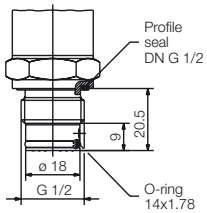
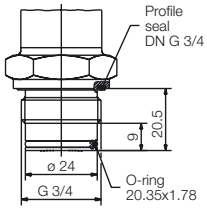
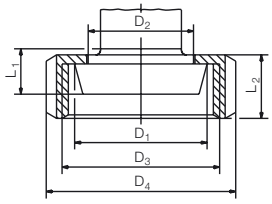


575



603-607

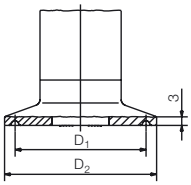
Taper connection with slotted union nut to DIN 11 851



Process conn.	DN	øD1	øD2	øD3	øD4	L1	L2
603	20	36.5	30	RD 44x1/6	54	13	21
604	25	44	35	RD 52x1/6	63	15	
605	32	50	41	RD 58x1/6	70		
606	40	56	48	RD 65x1/6	78		
607	50	68.5	61	RD 78x1/6	92	16	22

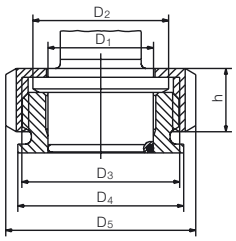
612-616

Clamp connection to DIN 32 676



Process conn.	DN DIN 32676	DN (inch)	Nominal Size ISO 2852	øD1	øD2
612	20 15		12 12.7 17.2 21.3	27.5	34
613	25 32 40	1" 1.5"	25 33.7 38	43.5	50.5
616	50	2"	40 51	56.5	64

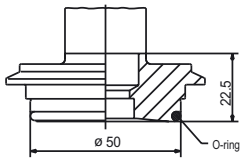
652



Process conn.	DN	øD1	øD2	øD3	øD4	øD5	h
652	25	35	45	RD 52x1/6	55	63	21

685

DN25 / 32



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Electrical connection

Connection	Terminals		
	Terminal box	Attached cable	Connector M12 x 1
Supply 11 — 28 V DC intrinsically safe 	1 L+ 2 L-	white gray	1 L+ 3 L-
Output 4 — 20 mA 2-wire proportional current 4 to 20 mA in supply 	1 + 2 -	white gray	1 + 3 -
Potential equilibration			2
Screen		black	

Pin assignment (M12 x 1), 5-pole

Order details

	(1)	**Basic type**
404753		Pressure transmitter JUMO dTRANS p33 for use in hazardous areas
	(2)	**Basic type extension**
000		none
004		elevated temperature of medium[1]
	(3)	**Nominal input range**
475		-0.25 — 0 bar gauge pressure
476		-0.4 — 0 bar gauge pressure
477		-0.6 — 0 bar gauge pressure
478		-1 — 0 bar gauge pressure
479		-1 — 0.6 bar gauge pressure
480		-1 — 1.5 bar gauge pressure
481		-1 — 3 bar gauge pressure
482		-1 — 5 bar gauge pressure
483		-1 — 9 bar gauge pressure
451		0 — 0.25 bar gauge pressure
452		0 — 0.4 bar gauge pressure
453		0 — 0.6 bar gauge pressure
454		0 — 1 bar gauge pressure
455		0 — 1.6 bar gauge pressure
456		0 — 2.5 bar gauge pressure
457		0 — 4 bar gauge pressure
458		0 — 6 bar gauge pressure
459		0 — 10 bar gauge pressure
460		0 — 16 bar gauge pressure

[1] see “Dimensions” for type of connection only for spans between 1 bar and 25 bar

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461		0 — 25 bar gauge pressure
462		0 — 40 bar gauge pressure
463		0 — 60 bar gauge pressure
464		0 — 100 bar gauge pressure
465		0 — 160 bar gauge pressure
466		0 — 250 bar gauge pressure
467		0 — 400 bar gauge pressure
468		0 — 600 bar gauge pressure
487		0 — 0.6 bar absolute pressure
488		0 — 1 bar absolute pressure
489		0 — 1.6 bar absolute pressure
490		0 — 2.5 bar absolute pressure
491		0 — 4 bar absolute pressure
492		0 — 6 bar absolute pressure
493		0 — 10 bar absolute pressure
494		0 — 16 bar absolute pressure
495		0 — 25 bar absolute pressure
998		special range absolute pressure
999		special range gauge pressure
	(4)	**Output**
405		4 — 20 mA 2-wire
	(5)	**Process connection (not front-flush)**
502		$G^1/_4$ to DIN EN 837
504		G 1/2 to DIN EN 837 (standard connection)
511		1/4-18 NPT to DIN 837
512		1/2-14 NPT to DIN 837
523		G 1/2 to DIN 3852 T11
		Process connection (front-flush) [5]
571		$G^3/_4$ to DIN 3852 T11 [2]
574		$G^1/_2$ front seal [3]
575		$G^3/_4$ front seal [2]
603		taper connection with slotted nut to DIN11851, DN20 [2]
604		taper connection with slotted nut to DIN11851, DN25 [2]
605		taper connection with slotted nut to DIN11851, DN32 [2]
606		taper connection with slotted nut to DIN11851, DN40 [2]
607		taper connection with slotted nut to DIN11851, DN50 [2]
612		clamp connection to DIN 32676, DN10 [2], DN15 [2] and DN20 [2]
613		clamp connection to DIN 32676, DN25 [2], DN32 [2] and DN40 [2]
616		clamp connection to DIN 32676, DN50 [2]
652		tank connection with slotted union nut [2]
685		level probe version closed [4]
685		Varivent DN 32/25 [2]
999		special process connection

[2] only for spans between 1 bar and 25 bar.
[3] only for ranges from 60 to 400 bar.
[4] only in conjunction with extra code 406.

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	(6)	**Material of process connection**
20		stainless steel
99		special material for process connection
	(7)	**Electrical connection** [1]
12		attached screened cable (cable length in plain text)
36		circular connector M12 x 1
61		terminal box
75		terminal head
99		special electrical connection
	(8)	**Filling medium for measurement system**
0		no filling medium
1		silicone oil[5]
9		special filling medium
	(9)	**Extra codes** (on request only)
000		keine
406		IP68 protection to EN 60 529 [6]

1 see “Dimensions” for type of connection

2 not for nominal ranges 0 — 100 bar to 0 — 600 bar gauge pressure

3 only in conjunction with electrical connection 12 “attached connecting cable...”

4

5 only for ranges up to 25 bar.

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

5 not for nominal ranges 0 — 100 bar to 0 — 600 bar gauge pressure.

6 only in conjunction with electrical connection 12 “attached connecting cable...”.

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Supply isolator for Ex transmitters with 2-wire connection, HART® capable

Type KFD 2/HART

Ⓔx II (1) GD [EEx ia] IIC (T_{amb} = -20°C to +60°C)

General application

The unit is used for the intrinsically safe supply and the electrical isolation of the output signal of transmitters with Ex protection.
The supply isolator provides an intrinsically safe supply of 16.5 V DC. The intrinsically safe output signal of the supply isolator is electrically isolated through the isolating transformer. This means that it can be connected to instruments that do not have an intrinsically safe input and are located outside the hazardous (Ex) area.
The supply isolator is suitable for providing power to the following instruments, e.g.:
JUMO dTRANS p02 (Data Sheet 40.4385);
JUMO dTRANS p02 DELTA (Data Sheet 40.4382);
JUMO dTRANS p33 (Data Sheet 40.4753);
JUMO dTRANS T01 HART / Ex (Data Sheet 70.7010).

Order example

Supply isolator for Ex transmitters with 2-wire connection
Type KFD 2/HART
Sales No. 40/00389710

Ranges

Supply unit

Approval

Ⓔx II (1) GD [EEx ia] IIC (T_{amb} = -20°C to +60°C)

Input

EEx ia IIC

Supply voltage
20 — 35 V DC

Ripple
within the supply voltage tolerance

Power consumption
1.7 W approx.

Supply for external transmitter

Intrinsically safe circuit
16.5 V approx. at 20 mA

Maximum values:

max. voltage U_0	= 25.2 V DC
max. current I_K	= 93 mA
max. power $P_{max.}$	= 0.587 W

Permissible capacitance at connection to pressure transmitter

with Group Ex II C, $C_{max.}$	= 107 nF
with Group Ex II B, $C_{max.}$	= 820 nF
with Group Ex II A, $C_{max.}$	= 2.9 µF

Permissible inductance at connection to pressure transmitter

with Group Ex II C, $L_{max.}$	= 4.2 mH
with Group Ex II B, $L_{max.}$	= 17.3 mH
with Group Ex II A, $L_{max.}$	= 35.2 mH

Isolating transformer

Input
4 — 20 mA
intrinsically safe circuit

Output
4 — 20 mA
Ripple: 10 μA_{p-p}

Transformer ratio
1:1

Burden resistance
at the isolating transformer output
R_B = 1 kΩ max.

Total error at 20°C
≤± 10 µA incl. non-linearity and burden variation

Permissible ambient temperature
-20 to +60°C

Ambient temperature error
≤± 0.4 µA per °C

Permissible storage temperature
-40 to +90°C

Case mounting
snapped on to 35 mm standard rail to EN 60 715 A.1, or screwed on by 2 screws at 90 mm spacing on pull-out lugs

Protection
EN 60 529 IP20

Electrical isolation

Input/ output:	to EN 50 020
Input/ mains supply:	to EN 50 020
Output/ mains supply:	available

Weight
150 g approx.

Electromagnetic compatibility
EN 61 326, EN 50 081-2, NAMUR NE21

Note on mounting

The instrument must be mounted outside the area with an explosion hazard.

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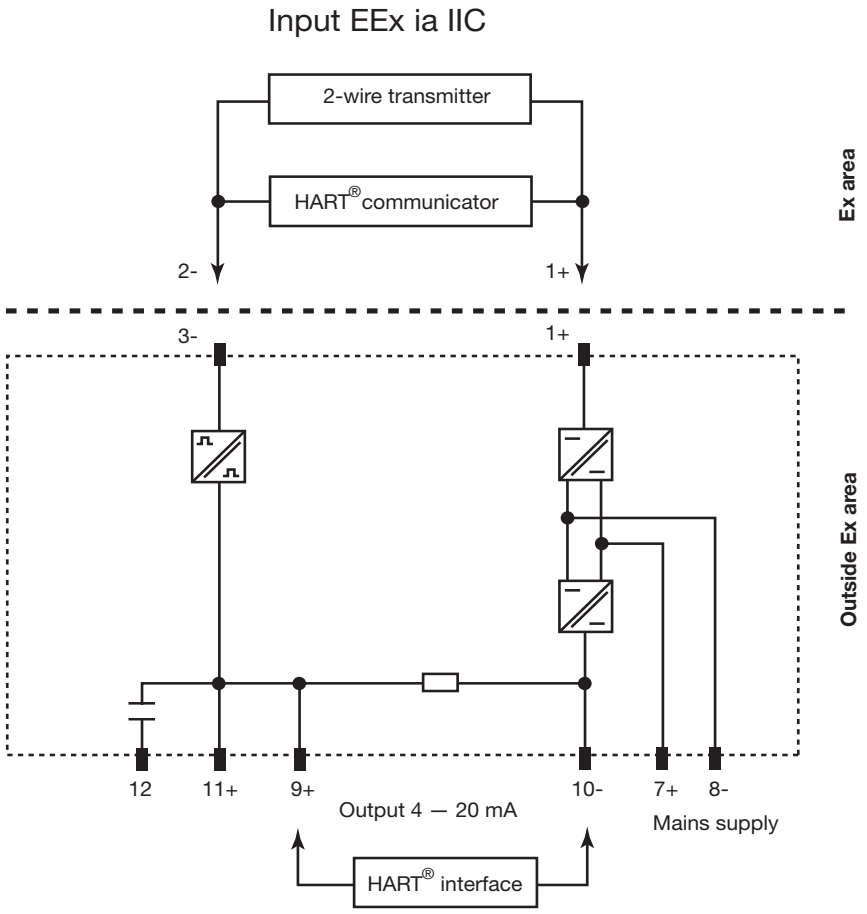
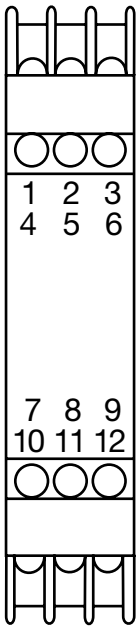
Block diagram

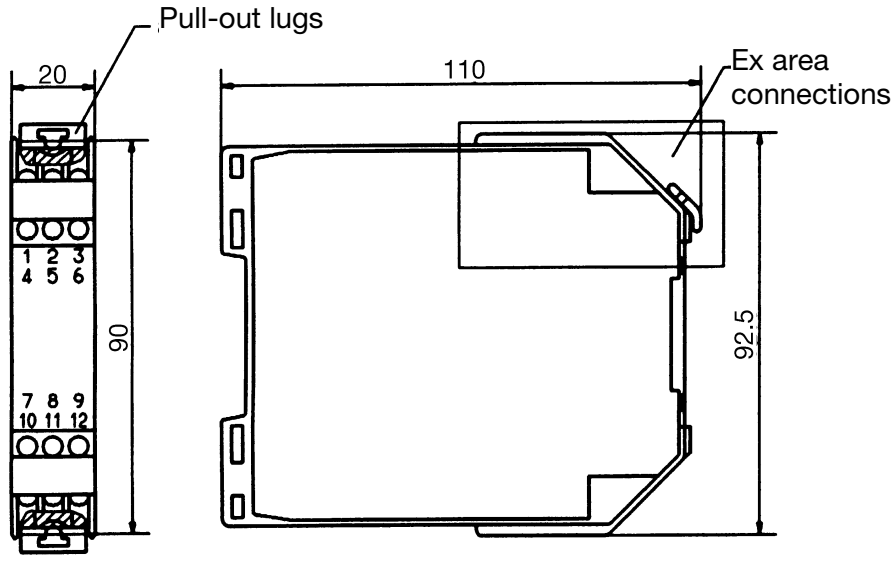


Electrical connection



	Connection	Terminals	
⊕→	Supply	20 — 35 V DC to EN 50 020	7 + 8 -
⊕→	Signal input Supply for external pressure transmitter	4 — 20 mA intrinsically safe 16.5 V DC at 20 mA	1 + 3 -
⊖→	Signal output	4 — 20 mA	9 + 10 -

Dimensions



Modular terminal box in Makrolon, flammability class to UL 94: V-0.
Can be snapped on to 35 mm standard rail to EN 60 715 A.1, or screwed on by 2 screws at 90mm spacing through pull-out lugs.

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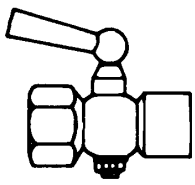
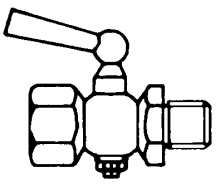
Accessories for Pressure gauges

Stopcock
similar to DIN 16 261
brass
socket x socket



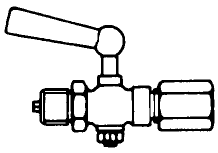
ND	Connection	Type
25	1/2" pipe	48010
6	1/4" pipe	48110

Stopcock
similar to DIN 16 261
brass
nipple x socket



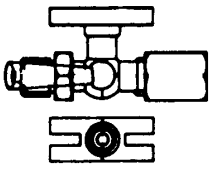
ND	Connection	Type
25	1/2" pipe	48014
6	1/4" pipe	48114

Stopcock
similar to DIN 16 262
Connection 1/2" pipe
brass
nipple x tension socket



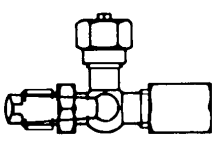
ND	Material	Type
25	brass	48016
25	st. steel Ref. 1.4571	48616

Test cock
similar to DIN 16 263
Connection 1/2" pipe
Test flange 60 x 25
nipple x tension socket



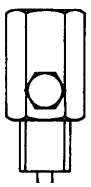
ND	Material	Type
25	brass	48034
25	steel	48534
25	st. steel Ref. 1.4571	48634

Test cock
similar DIN 16 263
Connection 1/2" pipe
Test nipple M20 x 25
nipple x tension socket



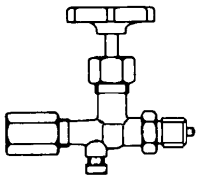
ND	Material	Type
25	brass	48035
25	steel	48535
25	st. steel Ref. 1.4571	48635

Shock absorber
(adjustable)
Connection 1/2" pipe
with restrictor screw in entry duct, locked at the side



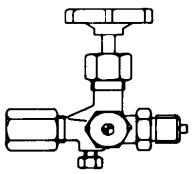
ND	Material	Type
250	brass	48088
600	steel	48588
600	st. steel Ref. 1.4571	48688

Stop valve
DIN 16 270
Connection 1/2" pipe
nipple x tension socket



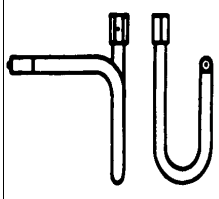
ND	Material	Type
250	brass	48060
600	steel	48560
600	st. steel Ref. 1.4571	48660

Stop valve
DIN 16 271
Connection 1/2" pipe
Test nipple M20 x 1,5
nipple x tension socket

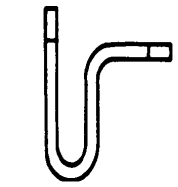


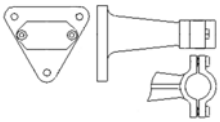
ND	Material	Type
250	brass	48070
600	steel	48570
600	st. steel Ref. 1.4571	48670
Test flange 60 x 25		
250	brass	48071
600	steel	48571
600	st. steel Ref. 1.4571	48671

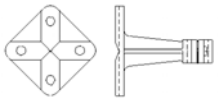
Water traps
DIN 16 282
Inlet: nipple 1/2" pipe
Outlet: tension socket 1/2" pipe

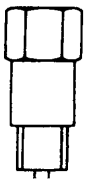


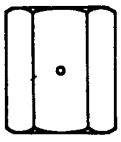
Form	Material	Type
A	steel	48591
A U-shape	st. steel Ref. 1.4571	48691
C	steel	48596
C T-shape	st. steel Ref. 1.4571	48696

Water traps similar to DIN spec.	Inlet: 1/2" pipe thread Outlet: 1/2" pipe thread		
	Form	Material	Type
	U-shape	steel	48590
	U-shape	st. steel Ref. 1.4571	48690
	T-shape	steel	48595
	T-shape	st. steel Ref. 1.4571	48695

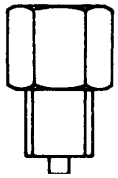
Instrument bracket Type H	Wall-mounting		
	Reach	Material	Type
	100	aluminium	48299

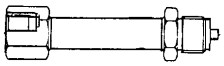
Instrument bracket Type A	Mounting on wall or 2" pipe		
	Reach	Material	Type
	100	cast iron	

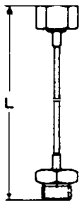
Connectors for Instrument bracket	Connection 1/2" pipe		
		Material	Type
		brass	48089
		steel	48589
		st. steel Ref. 1.4571	48689

Tension sockets	DIN 16 283		
	Thread	Material	Type
	1/2" pipe	brass	48082
	1/2" pipe	steel	48582
	1/2" pipe	st. steel Ref. 1.4571	48682

Union nut with nipple	DIN 16 284		
	Thred	Material	Type
	1/2" pipe	st. steel Ref. 1.4571	48685
	1/2" pipe	brass	48085
	1/2" pipe	st. steel Ref. 1.4571	48685

Adapters	Material: brass		
	Thread		Type
	internal	external	
	G1/4	1/8" pipe	48187/2
	G1/4	3/8" pipe	48187/4
	G1/4	1/2" pipe	TN 00026268
	G1/2	1/4" pipe	48087/8
	G1/2	3/8" pipe	48087/9
	G1/2	3/4" pipe	48087/10
	G1/2	M20 x 1,5	48087/11
	G1/2	M14 x 1,5	48087/97
	G1/2	M18 x 1,5	48087/98
	G1/2	1/2" NPT	48087/99
	Material: st. steel Ref. 1.4571		
	G1/4	1/2" pipe	TN 00060609
	G1/2	3/8" pipe	48687/9
	G1/2	3/4" pipe	48687/10
	G1/2	M14 x 1,5	48687/97
	G1/2	M18 x 1,5	48687/98
	G1/2	M20 x 1,5	48687/11
	G1/2	1/2" NPT	48687/99

Cooler	Material: st. steel Ref. 1.4571		
	Connection		Type
	1/2" pipe		48698 TN 00082371

Capillary (extension)	Material: st. steel Ref. 1.4571 internal dia. 2 mm		
	Connection	Leght	Type
	G1/2	1 m other lenghts up to 20 m to special order	48699

Seals	DIN 16 258 (flat)		
	Connection	Material	Type
	1/4" pipe	Uni "N" blue	48384
	1/4" pipe	copper	48184
	1/4" pipe	st. steel Ref. 1.4571	
	1/2" pipe	copper	48084
	1/2" pipe	st. steel Ref. 1.4571	48684

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Process Connection Adapters JUMO PEKA

Type 409711

General description

JUMO PEKA is an adapter system which connects the sensing unit (in this case, the pressure transmitter) to the process connection. The front-flush seal fitted in the adapter system is available in various materials such as FPM, EPDM or silicone.
The connection between the JUMO PEKA process connection and the appropriate process connection adapter is designed and certified according to EHEDG guidelines. The system is therefore highly suitable for an installation that meets all hygienic requirements. CIP or SIP cleaning in the pharmaceuticals/food and biotechnology sectors can be carried out without any problems.

Order

In the data sheet for the pressure transmitter, for example:
JUMO dTRANS p30 - data sheet 40.4366
JUMO dTRANS p31 - data sheet 40.2050
JUMO dTRANS p02 - data sheet 40.4385
please select process connection 997 JUMO PEKA.
In the data sheet 90.2810 (Resistance thermometers for the food and pharmaceutical industries), please choose process connection 997 JUMO PEKA.

Ordering the connection adapters

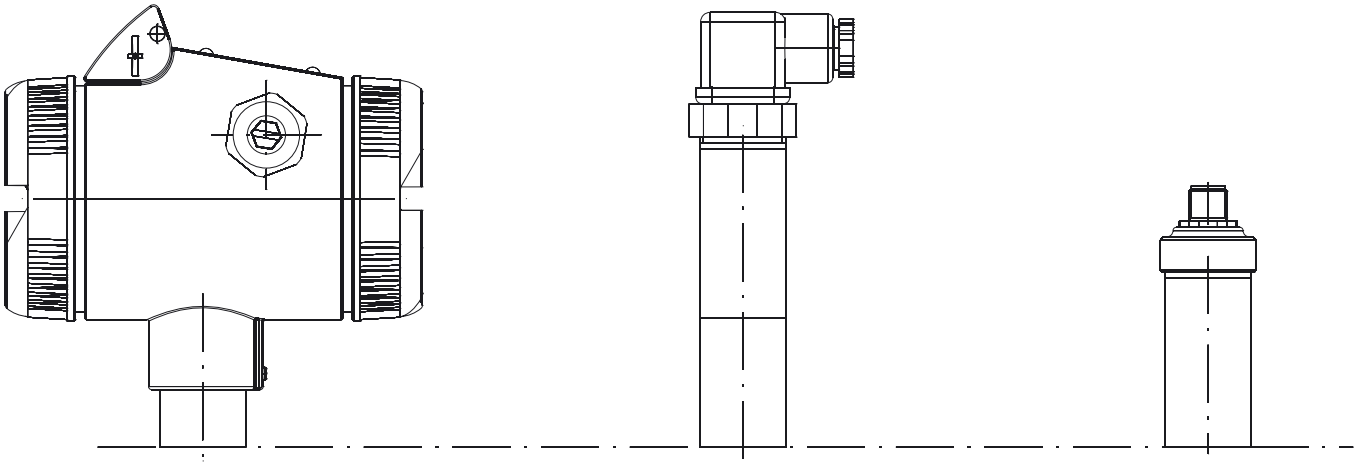
A suitable process connection adapter (the matching component for the pressure transmitter) and sealing material can be found in this data sheet.

Stock items

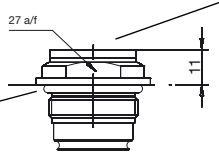
Sales No.	Process connection adapter	Material
	Varivent	
40/00446324	DN25/32	1.4435 / 316
40/00445046	DN40-125	1.4435 / 316
	Clamp	
40/00445047	DN25/32/40	1.4435 / 316
40/00445037	DN50	1.4435 / 316
	Aseptic	
40/00446458	DN40	1.4435 / 316
40/00445035	DN50	1.4435 / 316
40/00447555	NKS DN40	1.4435 / 316
	Weld-in socket	
40/00447190	55 mm dia.	1.4435 / 316
	Seal	
40/00446160	O ring 21 x 2.5	VMQ
40/00446162	O ring 21 x 2.5	EPDM
40/00446738	O ring 21 x 2.5	FPM
	Rear seal (optional)	
40/00089095	O ring 26 x 2.5	VMQ

03.06 / 00448094

Dimensions



Process connection
997



You can order the PEKA process connection (997) together with the pressure transmitter, see data sheet

40.4385	JUMO dTRANS p02
40.2050	JUMO dTRANS p31
40.4366	JUMO dTRANS p30

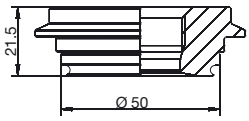
or use the data sheet for ordering, see data sheet 90.2810.

optionally available:
seal 26 x 2.5,
material: see page 1

Seal 21 x 2.5
Material: see previous page

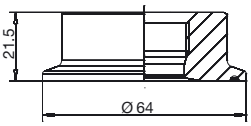
Process connection adapters

Varivent DN 25/32
Part No. 00446324

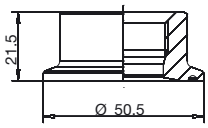


Varivent DN40-125
Part No. 00445046

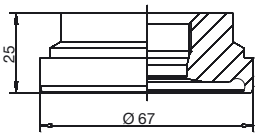
Clamp DN50
Part No. 00445037



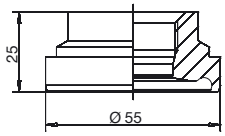
Clamp DN25/32/40
Part No. 00445047



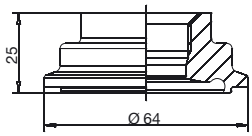
Aseptic DN 50
Part No. 00445035



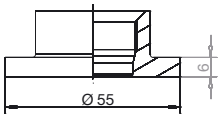
Aseptic DN40
Part No. 00446458



Aseptic-NKS DN40
Part No. 00447555



Weld-in socket
Part No. 00447190



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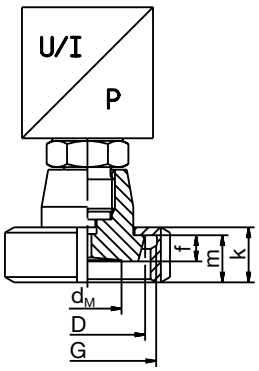
Internet: www.JumoUSA.com

Pressure separator with taper fitting or threaded adaptor DIN 11 851 (milk pipe fitting)

Type 409772

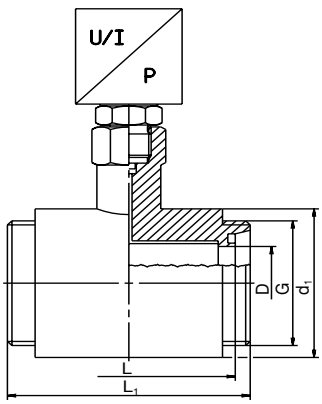
Diaphragm pressure separator Type 409772/17-...



Technical data

Process connection	Nominal pressure bar	Recommended min. pressure range bar	Temperature coefficient mbar/10°C	Weight (without meas. device) kg	Dimensions [mm]					
					d_M	D	thread G	f	m	k
DN25	PN40	above 6	+20	0.50	28	44	Rd 52 x 1/6	10	18	21
DN32		above 2	+12	0.65	34	50	Rd 58 x 1/6			
DN40		above 0.4	+6	0.73	38	56	Rd 65 x 1/6			
DN50	PN25	above 0.1	+3	1.10	46	68	Rd 78 x 1/6	11		22

Pipe pressure separator Type 409772/18-...



Technical data

Process connection	Nominal pressure bar	Recommended min. pressure range bar	Temperature coefficient mbar/10°C	Weight (without meas. device) kg	Dimensions [mm]				
					L	L_1	D	thread G	d_1
DN40	PN40	above 0.4	+6	3.20	126	140	38.0	Rd 65 x 1/6	78
DN50		above 0.1	+3	2.55	100	114	50.7	Rd 78 x 1/6	88

Order details

	(1)	**Basic type**
409772		pressure separator with taper fitting DIN 11 851 or threaded adaptor DIN 11 851
	(2)	**Basic type extension**
17		diaphragm pressure separator with taper fitting and ring nut
18		pipe pressure separator with threaded adaptor
	(3)	**Process connection**
604		DN25[1]
605		DN32[1]
606		DN40
607		DN50
	(4)	**Nominal pressure in bar**
025		PN25[1]
040		PN40
	(5)	**Material**
20		st. steel
99		special material[2]
	(6)	**Filling liquid**
1		silicone oil
2		inert liquid
3		vegetable oil
	(7)	**Capillary**
0000		no capillary
0001		with cooling device
1000		1.0 m capillary
1500		1.5 m capillary
2000		2.0 m capillary
3000		3.0 m capillary
5000		5.0 m capillary

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Order code	409772 /		-	-	-	-	-
Order example	409772 /	18	- 606	- 040	- 20	- 3	- 1500

[1] only for pressure separators with taper fitting (basic type extension 17)
[2] please specify in plain text when ordering

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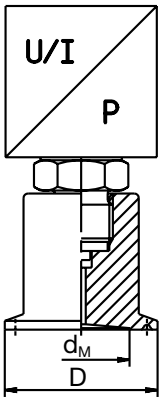
Internet: www.JumoUSA.com

Pressure separator with clamp connection

Type 409774

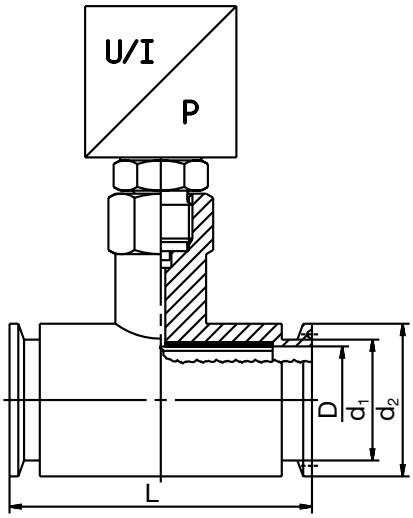
Diaphragm pressure separator Type 409774/17-...



Technical data

Process connection	Nominal pressure bar	Recommended min. pressure range bar	Temperature coefficient mbar/10°C	Weight (without meas. device) kg	Dimensions [mm]	
					d_M	D
DN 1½"	PN40	above 0.4	+12	0.32	34	50.5
DN 2"		above 0.1	+3	0.70	45	64

Pipe pressure separator Type 409774/18-...



Technical data

Process connection	Nominal pressure bar	Recommended min. pressure range bar	Temperature coefficient mbar/10°C	Weight (without meas. device) kg	Dimensions [mm]			
					L	D	d_1	d_2
DN 1½"	PN40	above 0.4	+12	0.99	126	35.5	40	50.5
DN 2"		above 0.1	+3	1.69	100	48.6	55	64

Order details

	(1)	**Basic type**
409774		pressure separator with clamp connection
	(2)	**Basic type extension**
17		diaphragm pressure separator
18		pipe pressure separator
	(3)	**Process connection**
615		DN1½"
616		DN2"
	(4)	**Nominal pressure in bar**
040		PN40
	(5)	**Material**
20		st. steel
99		special material[1]
	(6)	**Filling liquid**
1		silicone oil
2		inert liquid
3		vegetable oil
	(7)	**Capillary**
0000		no capillary
0001		with cooling device
1000		1.0 m capillary
1500		1.5 m capillary
2000		2.0 m capillary
3000		3.0 m capillary
5000		5.0 m capillary

	(1)		(2)	(3)	(4)	(5)	(6)	(7)
Order code	409774	-						
Order example	409774	-	18	616	040	20	3	1500

[1] please specify in plain text when ordering

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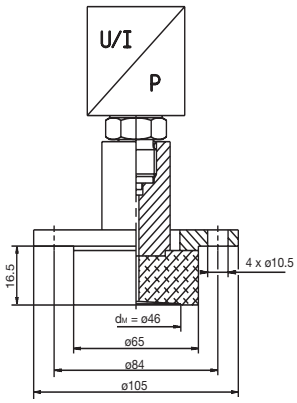
Pressure separator with DRD flange or Varivent connection

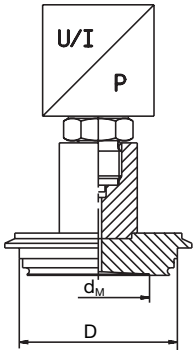
Diaphragm pressure separator with DRD flange



Technical data

Process connection	Nominal pressure bar	Recommended min. pressure range bar	Temperature coefficient mbar/10°C	Weight (without meas. device) kg
D = 65	PN40	above 0.1	+3	0.8

Diaphragm pressure separator with Varivent connection



Technical data

Process connection	Nominal pressure bar	Recommended min. pressure range bar	Temperature coefficient mbar/10°C	Weight (without meas. device) kg	Dimensions [mm]	
					d_M	D
D = 68[1]	PN10	above 0.1	+3	0.82	46	68

[1] only for pipe diameters 40 to 125 mm

Order details

	(1)	**Basic type**
409776		pressure separator with DRD flange or Varivent connection
	(2)	**Basic type extension**
00		none
	(3)	**Process connection**
661		DRD flange, D = 65 mm
686		Varivent connection, D = 68 mm[1]
	(4)	**Nominal pressure in bar**
010		PN10 [2]
040		PN40 [3]
	(5)	**Material**
20		st. steel
99		special material [4]
	(6)	**Filling liquid**
1		silicone oil
2		inert liquid
3		vegetable oil
	(7)	**Capillary**
0000		no capillary
0001		with cooling device
1000		1.0 m capillary
1500		1.5 m capillary
2000		2.0 m capillary
3000		3.0 m capillary
5000		5.0 m capillary

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Order code	409776 /	00 -		- 040 -		-	-
Order example	409776 /	00 -	661 -	040 -	20 -	3 -	1500

[1] only for pipe diameters 40 to 125 mm
[2] only for pressure separators with Varivent connection (process connection 686)
[3] only for pressure separators with DRD flange (process connection 661)
[4] please specify in plain text when ordering

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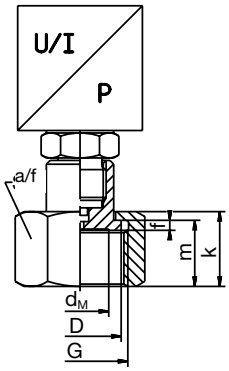
Pressure separator with ISS connection or SMS connection or RJT connection and slotted ring nut

Type 409778

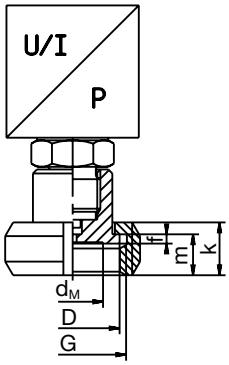
Diaphragm pressure separator with ISS connection



Technical data

Process connection	Nominal pressure bar	Recommended min. pressure range bar	Temperature coefficient mbar/10°C	Weight (without meas. device) kg	Dimensions [mm]						
					a/f	d_M	D	thread G	f	m	k
DN1"	PN40	above 6	+30	0.35	47	24	33	$1^1/_2$ x $^1/_8$"	4	26.5	30
DN1½"		above 0.4	+12	0.59	62	34	47	2 x $^1/_8$"			
DN2"		above 0.1	+3	1.00	77	45	60	$2^1/_2$ x $1^1/_8$"			

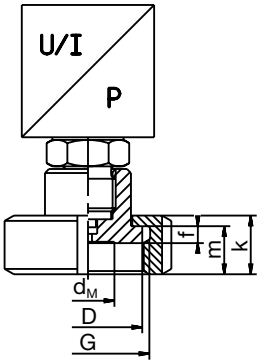
Diaphragm pressure separator with SMS connection



Technical data

Process connection	Nominal pressure bar	Recommended min. pressure range bar	Temperature coefficient mbar/10°C	Weight (without meas. device) kg	Dimensions [mm]					
					d_M	D	thread G	f	m	k
DN1"	PN40	above 6	+30	0.22	24	35.5	Rd40 x $^1/_6$"	3.5	15.5	20
DN1½"		above 0.4	+12	0.60	34	55	Rd60 x $^1/_6$"	4	21	25
DN2"		above 0.1	+3	1.00	46	65	Rd70 x $^1/_6$"			26

Diaphragm pressure separator with RJT connection



Technical data

Process connection	Nominal pressure bar	Recommended min. pressure range bar	Temperature coefficient mbar/10°C	Weight (without meas. device) kg	Dimensions [mm]					
					d_M	D	thread G	f	m	k
DN1"	PN40	above 6	+30	0.40	20	41	$1^{13}/_{16}$ x $^1/_8$"	6.4	18	22
DN1½"		above 0.4	+12	0.75	28	54	$2^5/_{16}$ x $^1/_8$"		18	22
DN2"		above 0.1	+6	1.00	38	67	$2^7/_8$ x $^1/_6$"			

Order details

	(1)	**Basic type**
409778		pressure separator with ISS connection or with SMS connection or with RJT connection and slotted ring nut
	(2)	**Basic type extension**
00		none
	(3)	**Process connection**
587		ISS DN1"
588		ISS DN1 1/2"
589		ISS DN2"
584		SMS DN1"
585		SMS DN1 1/2"
586		SMS DN2"
577		RJT DN1"
578		RJT DN1 1/2"
579		RJT DN2"
	(4)	**Nominal pressure in bar**
040		PN40
	(5)	**Material**
20		st. steel
99		special material[1]
	(6)	**Filling liquid**
1		silicone oil
2		inert liquid
3		vegetable oil
	(7)	**Capillary**
0000		no capillary
0001		with cooling device
1000		1.0 m capillary
1500		1.5 m capillary
2000		2.0 m capillary
3000		3.0 m capillary
5000		5.0 m capillary

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Order code	409778 /	00 -		040 -		-	-
Order example	409778 /	00 -	588	040 -	20	- 3	- 1500

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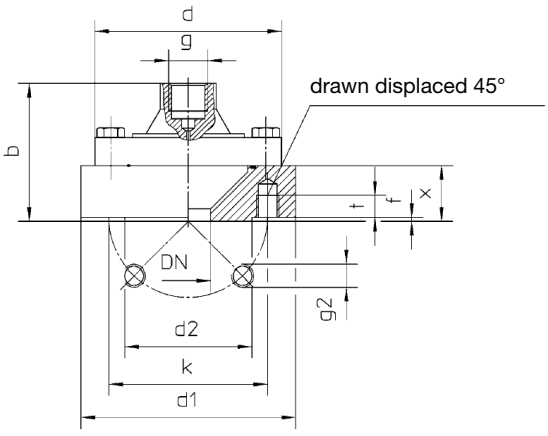
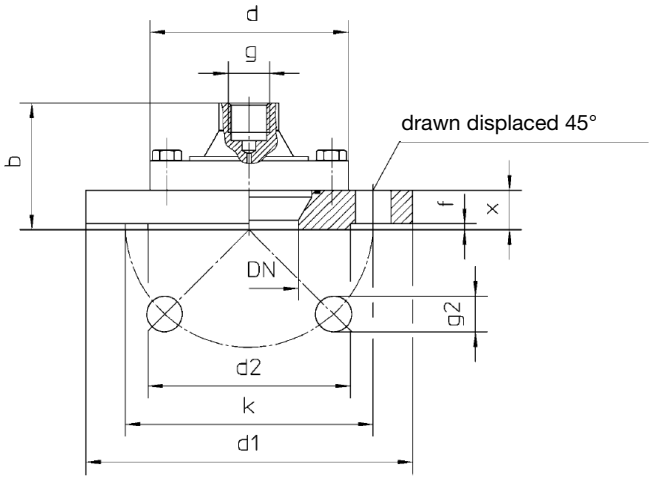
Diaphragm Chemical Seals 4MDV-10

Type 409780

Diaphragm chemical seal 4MDV-10 with flange connection to EN 1092-1 Form B1
with DN15, 20 and 25 connections



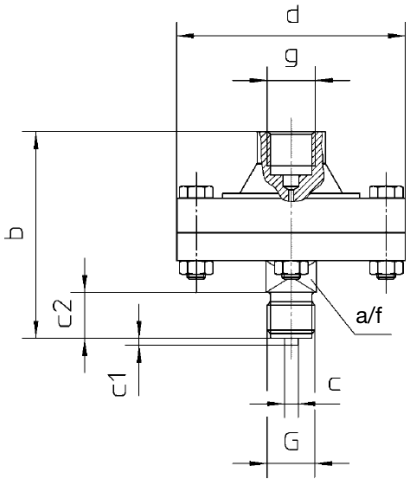
with DN50 connection



Technical data

Process connection	Nominal pressure	Recomm. minimum range bar	Weight (without meas. device) kg	Dimensions [mm]							
				DN	d_2	k	d_1	b	d	g	g_2
DN15	PN 40 — 100	0 — 1	1.85	15	45	65	99	69	99	G1/2	4 x M 12
DN20		0 — 0.6	1.95	20	58	75	105				
DN25			2.00	25	68	85	115	66			
DN50			3.35	50	102	125	165	64			4 x ø 18

Diaphragm chemical seal 4MDV-10 with G1/2 screw connection



Technical data

Process connection	Nominal pressure	Recomm. minimum range bar	Weight (without meas. device) kg	Dimensions [mm]							
				G	a/f	c	c_1	c_2	b	d	g
G1/2	PN 40 — 250	0 — 1	1.43	G1/2	22	6	3	20	90	99	G1/2

Order details

	(1)	**Basic type**
409780		Diaphragm chemical seal 4MDV-10
	(2)	**Process connection**
504		G1/2 screw connection
726		DN15 flange connection
727		DN20 flange connection
728		DN25 flange connection
729		DN50 flange connection
	(3)	**Nominal pressure in bar**
040		PN40
100		PN100
250		PN250 [2]
	(4)	**Material**
20		stainless steel
99		special material[1]
	(5)	**Filling medium**
1		silicone oil
99		special filling medium[1]
	(6)	**Capillary**
0000		without capillary
1000		1.0 m capillary
1500		1.5 m capillary
2000		2.0 m capillary
3000		3.0 m capillary
5000		5.0 m capillary

	(1)	(2)	(3)	(4)	(5)	(6)
Order code	409780 /		-	-	1 -	
Order example	409780 /	504 -	040 -	20 -	1 -	1000

1 Please specify in plain text when ordering
2 Only with process connection 504 "G1/2 screw connection"

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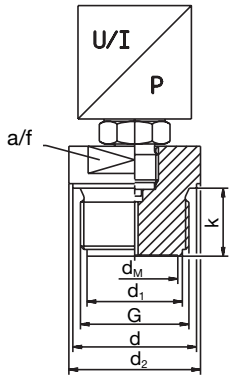
Pressure separator with male thread ISO 228/1 or ANSI B 1.201

Type 409782

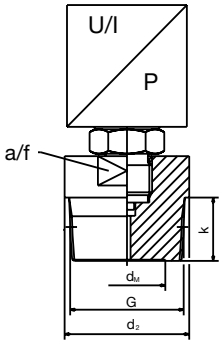
Diaphragm pressure separator ISO 228/1



Technical data

Process connection thread G	Nominal pressure bar	Recommended min. pressure range bar	Temperature coefficient mbar/10°C	Weight (without meas. device) kg	Dimensions [mm]					
					a/f	d_M	d_1	d	d_2	k
1" pipe B	PN600	above 10	+20	0.40	41	28	29	39	a/f 41	21
1½" pipe B		above 0.4	+12	1.08		38	44	55	58	30
2" pipe B		above 0.1	+3	1.95	65	46	56	68	78	

Diaphragm pressure separator ANSI B 1.201



Technical data

Process connection	Nominal pressure bar	Recommended min. pressure range bar	Temperature coefficient mbar/10°C	Weight (without meas. device) kg	Dimensions [mm]			
					a/f	d_M	d_2	k
1" NPT	PN600	above 10	+20	0.55	41	24	(a/f 41)	28
1½" NPT		above 0.4	+12	1.00	46	32	52	30
2" NPT		above 0.1	+6	1.92	65	38	78	

Order details

	(1)	**Basic type**
409782		pressure separator with male thread ISO 228/1 or ANSI B 1.201
	(2)	**Basic type extension**
00		none
	(3)	**Process connection**
572		1" pipe B (ISO 228/1)
570		1½" pipe B (ISO 228/1)
569		2" pipe B (ISO 228/1)
514		1" NPT (ANSI B1.201)
515		1½" NPT (ANSI B1.201)
516		2" NPT (ANSI B1.201)
	(4)	**Nominal pressure in bar**
600		PN600
	(5)	**Material**
20		st. steel
99		special material[1]
	(6)	**Filling liquid**
1		silicone oil
2		inert liquid
3		vegetable oil
	(7)	**Capillary**
0000		no capillary
0001		with cooling device
1000		1.0 m capillary
1500		1.5 m capillary
2000		2.0 m capillary
3000		3.0 m capillary
5000		5.0 m capillary

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Order code	409782 /	00 -		600 -			
Order example	409782 /	00 -	572 -	600 -	20 -	3 -	1500

[1] please specify in plain text when ordering

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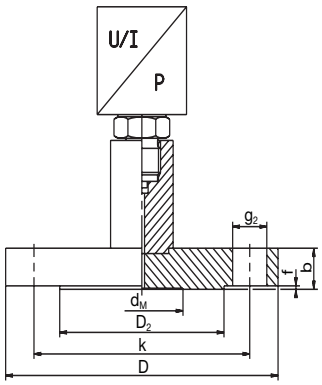
Chemical Seals with flange connection EN 1092-1 with sealing lip Form B1

Type 409784

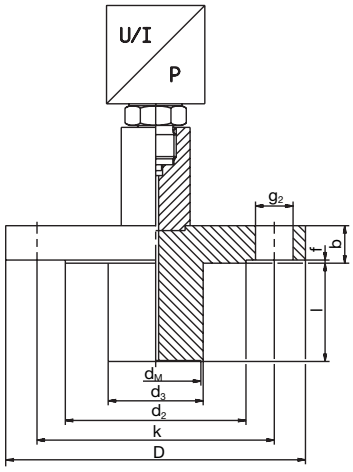
Diaphragm chemical seal without tube



Technical data

Process connection	Nominal pressure bar	Recommended min. pressure range bar	Weight (without meas. device) kg	Dimensions [mm]						
				D	d_2	d_M	f	g_2	k	b
DN25	PN40	0 - 4	1.40	115	68	28	2	4 x Ø14	85	18
DN50	PN40	0 - 1	3.00	165	102	52	3	4 x Ø18	125	20
	PN64		4.60	180				4 x Ø22	135	26
	PN100		5.70	195				4 x Ø26	145	28
	PN160		6.15	195				4 x Ø26	145	30
	PN250		7.70	200				8 x Ø26	150	38
	PN320		9.50	210				8 x Ø26	160	42
	PN400		14.70	235				8 x Ø30	180	52
DN80	PN16	0 - 0.6	4.35	200	138	80	3	8 x Ø18	160	20
	PN40		5.25	200				8 x Ø18	160	24
	PN64		6.95	215				8 x Ø22	170	28
	PN100		8.85	230				8 x Ø26	180	32
	PN160		10.05	230				8 x Ø26	180	36
	PN250		15.70	255				8 x Ø30	200	46
DN100	PN16	0 - 0.6	4.75	220	158	80	3	8 x Ø18	180	20
	PN40		6.65	235	162			8 x Ø22	190	24

Diaphragm chemical seal with tube



Technical data

Process connection	Nominal pressure bar	Recommended min. pressure range bar	Weight (without meas. device) kg	Dimensions [mm]								
				D	d_2	d_3	d_M	f	g_2	k	b	l
DN50	PN40	0 - 1	3.44	165	102	48.3	45	3	4 x Ø18	125	20	50
			3.76									100
			4.07									150
			4.37									200
DN80	PN16	0 - 0.6	5.25	200	138	76	72	3	8 x Ø18	160	20	50
			5.81									100
			6.37									150
			6.92									200
	PN40		6.15								24	50
			6.71									100
			7.27									150
			7.82									200
DN100	PN16	0 - 0.6	6.25	220	158	94	80	3	8 x Ø18	180	20	50
			7.50									100
			8.75									150
			10.00									200
	PN40		8.15	235	162				8 x Ø22	190	24	50
			9.40									100
			10.70									150
			12.00									200

Order details

	(1)	**Basic type**
409784		Chemical seal with flange connection to EN 1092-1, with sealing lip Form B1
	(2)	**Basic type extension**
00		no tube
19		with tube
	(3)	**Process connection**
632		DN25
635		DN50
637		DN80
638		DN100
	(4)	**Nominal pressure in bar**
016		PN16
040		PN40
064		PN64
100		PN100
160		PN160
250		PN250
320		PN320
400		PN400
	(5)	**Tube length**
000		no tube
050		tube 50 mm long
100		tube 100 mm long
150		tube 150 mm long
200		tube 200 mm long
	(6)	**Material**
20		st. steel
99		special material[1]
	(7)	**Filling liquid**
1		silicone oil
2		inert liquid
3		vegetable oil
	(8)	**Capillay**
0000		no capillary
0001		with cooling device
1000		1.0 m capillary
1500		1.5 m capillary
2000		2.0 m capillary
3000		3.0 m capillary
5000		5.0 m capillary

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Order code	409784 /		-	-	-	-	-	-
Order example	409784 /	19	- 635	- 040	- 050	- 20	- 3	- 1500

[1] please specify in plain text when ordering

Accessory

Flushing device
Connections to EN 1092-1, sealing lip Form B1, and former DIN 2526, sealing lip Form D

Process connection	Nominal pressure bar	Dimensions [mm]				Weight [kg]	Sales No.
		d1	d2	g	h		
DN50	PN 16 - 400	102	62	1/2"NPT	30	1.1	40/00432697
DN80		138	92			1.9	40/00438998
DN100		162	92			3.15	40/00439001

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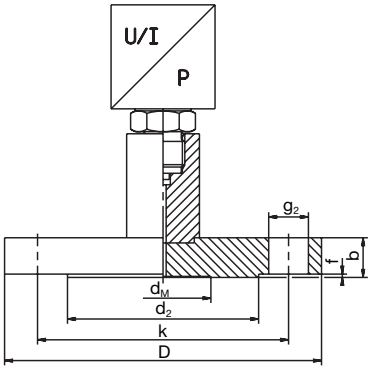
Pressure separator with flange connection to ANSI B 16.5 with sealing lip Form RF

Type 409786

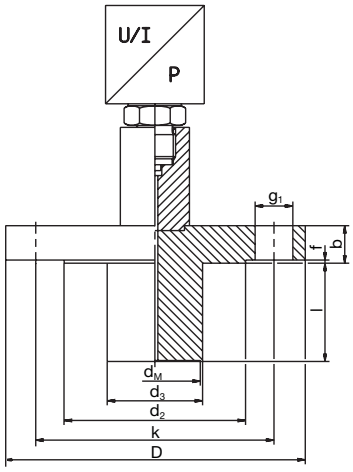
Diaphragm pressure separator Type 409786/00-...



Technical data

Process connection	Nominal pressure psi	Recommended min. pressure range bar	Weight (without meas. device) kg	Dimensions [mm]						
				D	d_2	d_M	f	g_2	k	b
DN2"	PN150	0 - 1	2.60	152	91.9	52	1.6	4 x Ø20	120.7	19.5
	PN300		3.40	165				8 x Ø20	127	22.5
	PN600		4.30	165			6.4	8 x Ø20	127	32
	PN1500		10.30	216				8 x Ø26	163.1	44.5
	PN2500		15.80	235				8 x Ø29	171.5	57.5
DN3"	PN150	0 - 0.6	5.10	191	127	80	1.6	4 x Ø20	152.4	24
	PN300		7.00	210				8 x Ø23	168.1	28.5
	PN600		8.60	210			6.4	8 x Ø23	168.1	38.5
	PN900		13.30	241				8 x Ø26	190.5	44.5
	PN1500		19.30	267				8 x Ø32	203.2	54.5
	PN2500		35.00	305				8 x Ø36	228.6	73
DN4"	PN150	0 - 0.6	7.20	229	157.2	80	1.6	8 x Ø20	190.5	24
	PN300		11.70	254				8 x Ø23	200.2	32
	PN400		13.90	254			6.4	8 x Ø26	200.2	41.5
	PN600		17.50	273				8 x Ø26	215.9	44.5
	PN900		27.10	292				8 x Ø32	234.9	51

Diaphragm pressure separator Type 409786/19...



Technical data

Process connection	Nominal pressure psi	Recommended min. pressure range bar	Weight (without meas. device) kg	Dimensions [mm]								
				D	d_2	d_3	d_M	f	g_2	k	b	l
DN2"	PN300	0 - 0.1	3.84	165	91.9	48.3	45	1.6	8 x Ø20	127	22.5	50
			4.16									100
			4.47									150
			4.77									200
DN3"	PN150	0 - 0.6	6.01	191	127	76	72	1.6	4 x Ø20	152.4	24	50
			6.56									100
			7.12									150
			7.67									200
	PN300		7.90	210					8 x Ø23	168.1	28.5	50
			8.46									100
			9.02									150
			9.57									200
DN4"	PN150	0 - 0.6	8.63	229	157.2	94	80	1.6	8 x Ø20	190.5	24	50
			9.90									100
			11.15									150
			12.40									200
	PN300		13.13	254					8 x Ø23	200.1	32	50
			14.40									100
			15.65									150
			16.91									200

Order details

	(1)	**Basic type**
409786		pressure separator with flange connection to ANSI B 16.5, with sealing lip Form RF
	(2)	**Basic type extension**
00		no tube
19		with tube
	(3)	**Process connection**
695		DN2"
696		DN3"
697		DN4"
	(4)	**Nominal pressure in psi**
0150		PN150
0300		PN300
0400		PN400
0600		PN600
0900		PN900
1500		PN1500
2500		PN2500
	(5)	**Tube length**
000		no tube
050		tube 50 mm long
100		tube 100 mm long
150		tube 150 mm long
200		tube 200 mm long
	(6)	**Material**
20		st. steel
99		special material[1]
	(7)	**Filling liquid**
1		silicone oil
2		inert liquid
3		vegetable oil
	(8)	**Capillary**
0000		no capillary
0001		with cooling device
1000		1.0 m capillary
1500		1.5 m capillary
2000		2.0 m capillary
3000		3.0 m capillary
5000		5.0 m capillary

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Order code	409786 /		-		-		-		-		-		-	
Order example	409786 /	00	-	695	-	0300	-	000	-	20	-	3	-	1500

[1] please specify in plain text when ordering