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JUMO MIDAS SI

OEM-Pressure Transmitter

Applications

- Food and pharmaceutical industry
- Mechanical and plant engineering
- Compressors

Brief description

The pressure transmitter is available with relative pressure and absolute pressure measuring ranges.

The fully welded measuring system (without seals) made of high-grade stainless steel allows this device to be used in almost all media, even in harsh conditions. The structure ensures optimum protection against process medium leakage.

The device features a silicon sensor that is extremely resistant to overloading even in the lowest measuring ranges and is capable of handling millions of pressure cycles.

Type 401006 with cable socket

Type 401006 with round plug

Customer benefits

- **Economic**
  A high degree of automation reduces production time and manufacturing costs.
- **Process-reliable**
  The piezoresistive silicon sensor has long-term stability and a high level of overload protection. The full final inspection in the fully automated measuring and calibration facility ensures that each pressure transmitter is of high quality.
- **Time-saving, uncomplicated, and versatile**
  The installation of the measuring device requires little work and the electrical installation is simple. The modular structure allows universal use in almost any application.

Special features

- 1 to 100 bar relative pressure,
  up to 25 bar also in absolute pressure
- High process reliability by welded measuring system (without seals)
- Robust and maintenance-free measuring technology by an extreme overload resistance
- Parts in contact with medium are made of stainless steel

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Technical data

General Information

Reference conditions	To DIN 16086 and DIN EN 60770
Sensor	
Material	Silicon sensor with stainless steel separating diaphragm
Pressure transfer medium	Synthetic oil
Admissible load changes	> 10 million
Mouting position	Any
Calibration position	Device upright, process connection at the bottom

Measuring range and accuracy

Measuring range	Linearity[a]	Accuracy at		Long term stability[b]	Overload[c]	Burst
		20 °C[d]	-20 to +100 °C[e]			
bar	% MSP[f]	% MSP	% MSP	% MSP per year	bar	bar
0 to 0.25 bar relative pressure	0.3	0.8	1.8	≤ 0.2	1	1.5
0 to 0.4 bar relative pressure	0.3	0.7	1.7		1.6	2
0 to 0.6 bar relative pressure	0.3	0.7	1.6		2.4	3.6
0 to 1 bar relative pressure	0.3	0.6	1.5		4	5
0 to 1.6 bar relative pressure	0.25	0.5	1.5		6	10
-1 to 0 bar relative pressure	0.3	0.6	1.5		4	5
-1 to +0.6 bar relative pressure	0.3	0.6	1.5		4	5
0 to +0.6 bar absolute pressure	0.3	0.7	1.6		4	5
0 to +1.0 bar absolute pressure	0.3	0.6	1.5		4	5
0 to +1.6 bar absolute pressure	0.25	0.5	1.5		6	10
0 to +2.5 bar absolute pressure	0.25	0.5	1.5		10	15
0 to +4 bar absolute pressure	0.25	0.5	1.2		16	20
0 to +6 bar absolute pressure	0.25	0.5	1.2		24	36
0 to +10 bar absolute pressure	0.25	0.5	1.0		40	50
0 to +16 bar absolute pressure	0.25	0.5	1.0		60	100
0 to +25 bar absolute pressure	0.25	0.5	1.0		100	125

[a] Linearity according to limit point-setting

[b] Reference conditions DIN EN 61298-1

[c] All pressure transmitter are vacuum proof.

[d] Includes: linearity, hysteresis, repeatability, deviation from measuring range start (offset), and measuring range end

[e] Includes: linearity, hysteresis, repeatability, deviation from measuring range start (offset) and measuring range end, thermal influences on measuring range start (offset), and measuring span

[f] MSP = measuring span

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Electrical data

Output signal[a]	4 to 20 mA, two-wire (output 405)	DC 0.5 to 4.5 V, three-wire, ratiometric[b] (output 412)	DC 0 to 10 V, three-wire (output 415)
Burden or load[c]	$R_L \leq (U_B - 10\ V) \div 0.02\ A(\Omega)$	$R_L \geq 20\ k\Omega$	$R_L \geq 10\ k\Omega$
Output current	3.6 to 22 mA	-20 to +250 µA	-20 µA to +1 mA
Voltage supply U_B[d]	DC 10 to 30 V	DC 4.75 to 5.25 V	DC 11.5 to 30 V
Nominal voltage	DC 24 V	DC 5 V	DC 24 V
Voltage supply influence	≤ 0.02 %/V	≤ 0.02 %/V	≤ 0.02 %/V
Current consumption[e]	≤ 25 mA	≤ 5 mA	≤ 5 mA
Reverse voltage protection	Yes	No	Yes
Short-circuit resistance[f]	-	Yes	Yes
Step response T_{90}	≤ 3 ms	≤ 3 ms	≤ 3 ms
Current circuit[g]	SELV	SELV	SELV

Output signal[a]	DC 1 to 5 V, three-wire (output 418)	DC 1 to 6 V, three-wire (output 420)	DC 0 to 10 V, three-wire, increased driver power (output 422)
Burden or load[c]	$R_L \geq 10\ k\Omega$	$R_L \geq 10\ k\Omega$	$R_L \geq 2\ k\Omega$
Output current	-20 µA to +1 mA	-20 µA to +1 mA	-200 µA to +5 mA
Voltage supply U_B[d]	DC 8 to 30 V	DC 8 to 30 V	DC 11.5 to 30 V
Nominal voltage	DC 24 V	DC 24 V	DC 24 V
Voltage supply influence	≤ 0.02 %/V	≤ 0.02 %/V	≤ 0.02 %/V
Current consumption[e]	≤ 5 mA	≤ 5 mA	≤ 5 mA
Reverse voltage protection	Yes	Yes	Yes
Short-circuit resistance[f]	Yes	Yes	Yes
Step response T_{90}	≤ 3 ms	≤ 3 ms	≤ 3 ms
Current circuit[g]	SELV	SELV	SELV

[a] Further outputs are available upon request.
[b] Ratiometric output: output signal from 10 to 90 % of the voltage supply
[c] Load resistance to S-
[d] Residual ripple: The voltage peaks or dips must not exceed or fall below the specified voltage supply values!
[e] For no-load operation (output unloaded)
[f] Short-circuit resistance S+ against V-
[g] The device must be equipped with an electrical circuit that meets the requirements of EN 61010-1 with regard to "Limited-energy circuits".

Mechanical features

Material	
Process connection	Stainless steel 316 Ti and 316 L
Membranes	Stainless steel 316 L
Housing	Stainless steel 304
Attached cable (electrical connection 11)	PA, PVC
Round plug M12 × 1 (electrical connection 36)	PBT-GF30, stainless steel 303
Cable socket (electrical connection 61)	PBT-GF30, PA, silicone
Weight	120 g with G 1/2 (process connection 502)

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Environmental influences

Admissible temperatures for electrical connection	
Attached cable	
Medium	-30 to +125 °C
Ambient	-20 to +100 °C
Storage	-20 to +100 °C
Round plug M12 × 1, cable socket	
Medium	-30 to +125 °C
Ambient	-20 to +100 °C
Storage	-40 to +125 °C
Admissible air humidity	
Operation	100 % relative humidity including condensation on the device outer case
Storage	90 % relative humidity without condensation
Admissible mechanical load	
Vibration resistance[a]	max. 20 g for 15 to 2000 Hz
Shock resistance[b]	100 g for 1 ms
Electromagnetic compatibility[c]	
Interference emission	Class B[d]
Interference immunity	Industrial requirements
Protection type for electrical connection	According to DIN EN 60529
Attached cable	IP67
Round plug M12 × 1[e]	IP67
Cable socket[f]	IP65

[a] DIN EN 60068-2-6
[b] DIN EN 60068-2-27
[c] DIN EN 61326-2-3
[d] The product is suitable for industrial use as well as for households and small businesses.
[e] The protection type is only achieved with a suitable mounted counter piece.
[f] Connecting cable diameter, minimum 5 mm, maximum 7 mm

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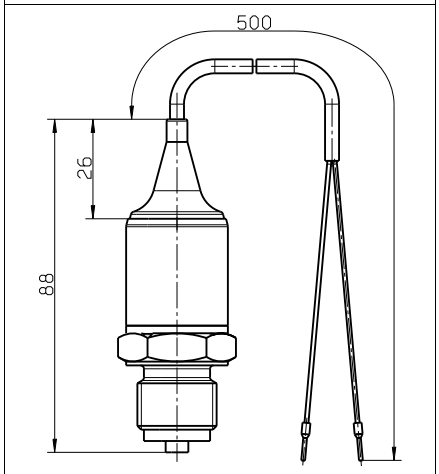
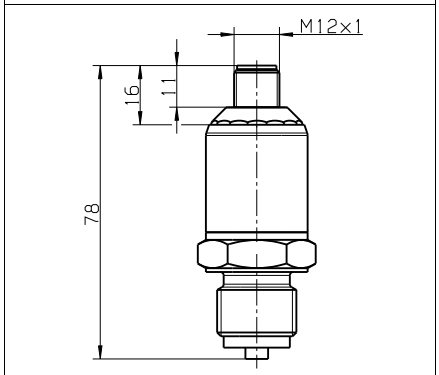
Dimensions

Electrical connection

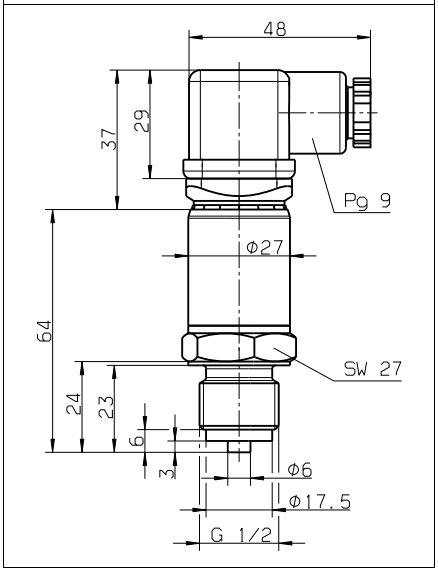
11
Attached cable



36
Round plug M12 × 1

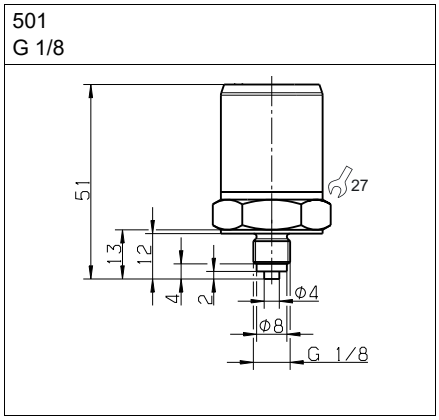


61
Cable socket

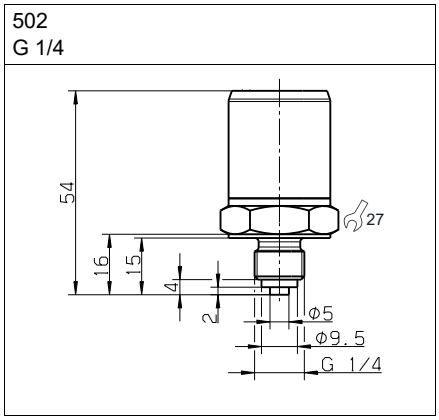


Process connection

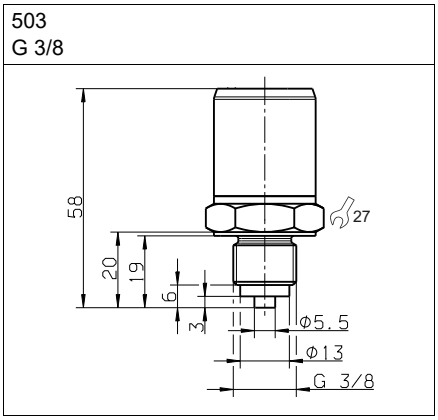
501
G 1/8



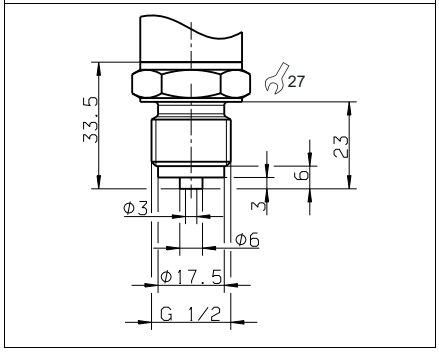
502
G 1/4



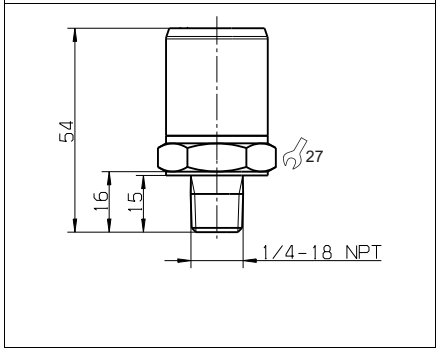
503
G 3/8



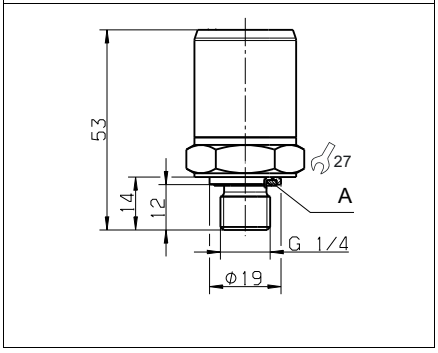
504
G 1/2



511
1/4-18 NPT



521
G 1/4



A Profile seal G 1/4

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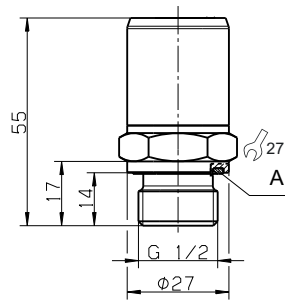
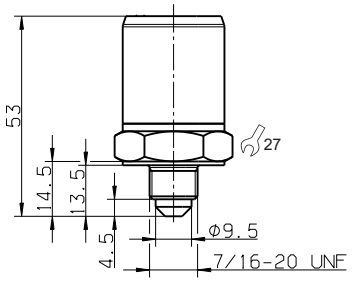
523
G 1/2

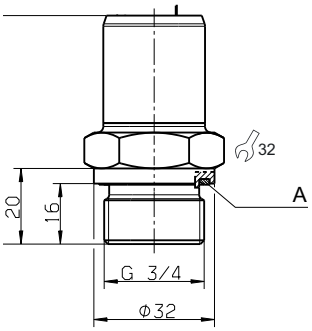


A Profile seal G 1/2

562
7/16-20 UNF

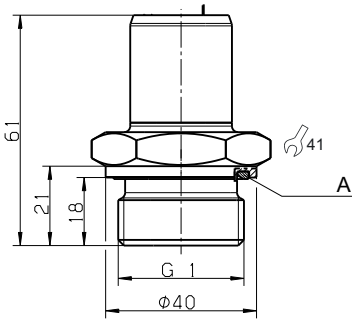


571
G 3/4



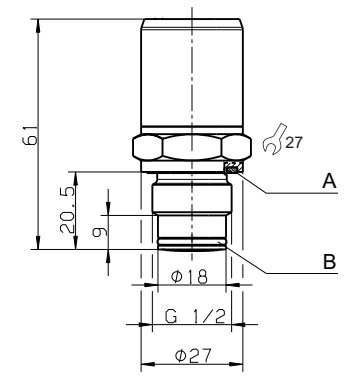
A Profile seal G 3/4

572
G 1



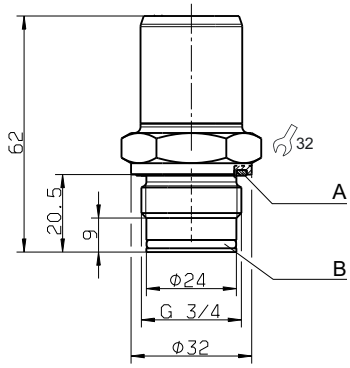
A Profile seal G 1
B

574
G 1/2



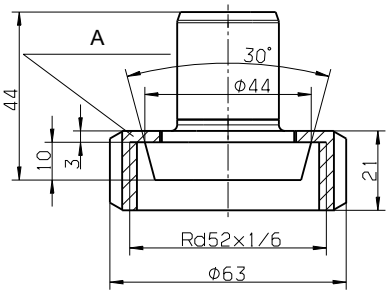
A Profile seal G 1/2
B O-ring 15.1 × 1.6

575
G 3/4



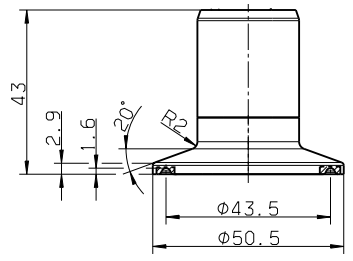
A Profile seal G 3/4
B O-ring 20.35 × 1.78

604

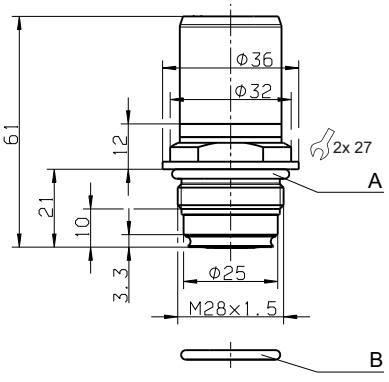


A Grooved union nut

613



997
JUMO PEKA



A O-ring 26 × 2.5
B O-ring 21 × 2.5,
not included in the delivery scope,
see data sheet 409711

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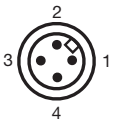
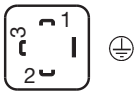
Connection diagram

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

Connection		**Terminal assignment**[a]		
				
		11 Attached cable	36 Round plug M12 × 1	61 Cable socket
4 to 20 mA, two-wire (output 405)				
Spannungsversorgung DC 10 bis 30 V	U_B/S+ 0 V/S-	WH BN	1 3	1 2
DC 0.5 to 4.5 V ratiometric (output 412)				
Voltage supply DC 4.75 to 5.25 V ratiometric output 10 to 90 % of voltage supply	U_B 0 V/S- S+	WH BN YE	1 2 3	1 2 3
DC 0 to 10 V, three-wire (output 415)				
Voltage supple DC 11.5 to 30 V	U_B 0 V/S- S+	WH BN YE	1 2 3	1 2 3
DC 1 to 5 V, three-wire (output 418) **DC 1 to 6 V, three-wire (output 420)**				
Voltage supply DC 8 to 30 V	U_B 0 V/S- S+	WH BN YE	1 2 3	1 2 3
Functional bonding conductor FB[b]		-	4	

[a] Figure: Connection to the pressure transmitter

[b] The pressure transmitter has to be connected to the potential equalization system of the plant via the electrical connection or process connection.

Color coding: connecting cable round plug M12 × 1	1 BN	Brown
	2 WH	White
	3 BU	Blue
	4 BK	Black

The color coding is **only** valid for A-coded standard cables!

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Order details

	(1)	**Basic type**
401006		JUMO MIDAS SI – OEM-Pressure transmitter
	(2)	**Basic type extension**
000		None
999		Special version
	(3)	**Input**
451		0 to 0.25 bar relative pressure
452		0 to 0.4 bar relative pressure
453		0 to 0.6 bar relative pressure
454		0 to 1.0 bar relative pressure
455		0 to 1.6 bar relative pressure
456		0 to 2.5 bar relative pressure
457		0 to 4 bar relative pressure
458		0 to 6 bar relative pressure
459		0 to 10 bar relative pressure
460		0 to 16 bar relative pressure
461		0 to 25 bar relative pressure
462		0 to 40 bar relative pressure
463		0 to 60 bar relative pressure
464		0 to 100 bar relative pressure
478		-1 to 0 bar relative pressure
479		-1 to 0.6 bar relative pressure
480		-1 to 1.5 bar relative pressure
481		-1 to 3 bar relative pressure
482		-1 to 5 bar relative pressure
483		-1 to 9 bar relative pressure
484		-1 to 15 bar relative pressure
485		-1 to 24 bar relative 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
997		Special measuring range for sealed gauge
998		Special measuring range for absolute pressure
999		Special measuring range for relative pressure
	(4)	**Output**
405		4 to 20 mA, two-wire
412		DC 0.5 to 4.5 V, three-wire, ratiometric
415		DC 0 to 10 V, three-wire
418		DC 1 to 5 V, three-wire
420		DC 1 to 6 V, three-wire
422		DC 0 to 10 V, three-wire, increased driving power
999		Special version

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	(5)	**Process connection**
501		G 1/8 according to DIN EN 837
502		G 1/4 according to DIN EN 837
503		G 3/8 according to DIN EN 837
504		G 1/2 according to DIN EN 837
511		1/4-18 NPT according to DIN EN 837
521		G 1/4 according to DIN 3852-11
523		G 1/2 according to DIN 3852-11
562		7/16-20 UNF
571		G 3/4 front-flush, DIN EN ISO 228-1
572		G 1 front-flush, DIN EN ISO 228-1
574		G 1/2 front-flush, with double seal
575		G 3/4 front-flush, with double seal
604		Taper socket with union nut DN 25, according to DIN 11851 (dairy pipe fitting)
613		Clamp DN 25, DN 32, DN 40, DIN 32676/1, 1/2“, ISO 2852
997		JUMO PEKA[a]
999		Special version
	(6)	**Process connection material**
20		CrNi (stainless steel)
	(7)	**Electrical connection**
11		Attached cable[b]
36		Round plug M12 × 1
61		Cable socekt DIN EN 175301-802, form A, ex DIN 43650
99		Special version
	(8)	**Extra code**
000		None
462		Inverted output signal
591		Choke in the pressure channel
630		Enlarged pressure channel
631		Improved moisture and vibration protection

[a] Suitable adapter for process connection see data sheet 409711.

[b] The standard cable length is 2m. Further lengths are available upon request.

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)
Order code		/		-		-		-		-		-		/	
Order example	401006	/	000	-	454	-	405	-	523	-	20	-	11	/	000

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Accessories

Item	Description	Part no.
Cable box, straight 	The PVC connecting cable is 2 m in length and has a 4-pin, straight M12 × 1 connector with gold-plated contacts on the device side.	00404585
Cable box, angled 	The PVC connecting cable is 2 m in length and has a 4-pin, angled M12 × 1 connector with gold-plated contacts on the device side.	00409334