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JUMO MIDAS

OEM-Pressure Transmitter

Applications

- Compressors
- Mechanical and plant engineering
- Industrial Pneumatics
- Commercial vehicles
- Building technology



Type 401001

Special features

- From 0 to 1,6 bar up to 0 to 100 bar, relative pressure
- Elastomer-sealed
- Compact design: from 58 mm length
- High chemical resistance
- High mechanical strength membrane

Description

The pressure transmitter is used for pressure measurement of liquid and gaseous media. With the well proofed ceramic thick film sensor, the pressure is measured, converted into an electrical standard signal (voltage or current) and output via electrical connections, e.g. line socket, M12 plug connector or attached cable.

A large number of process connections are available for adaptation to the process.

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Technical data

Electrical safety

Requirements	DIN EN 61010-1: 2020 The device must be equipped with an electrical circuit that meets the requirements for "Limited-energy circuits".

Electrical data

Output signal[a]	4 to 20 mA, two-wire	DC 0.5 to 4.5 V, three-wire, ratiometric[b]	DC 0 to 10 V, three-wire
Burden or load[c]	$R_B \leq (U_B - 10\ V) \div 0.02\ A$	$R_L \geq 20\ k\Omega$	$R_L \geq 10\ k\Omega$
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]	-	No	Yes
Step response T_{90}	≤ 3 ms	≤ 3 ms	≤ 3 ms

Output signal[a]	DC 1 to 5 V, three-wire	DC 1 to 6 V, three-wire	DC 0 to 10 V, three-wire, increased driver power
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

[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-

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Inputs

Measuring range and accuracy

Measuring range bar	Linearity[a] % MSP[f]	Accuracy at 20 °C[d] % MSP	 -20 to +100 °C[e] % MSP	Long term stability[b] % MSP per year	Overload[c] bar	Burst bar
0 to 1.6 bar relative pressure	0.3	0.5	1.6	≤ 0.2	6	12
0 to 2.5 bar relative pressure	0.3	0.5	1.6		6	12
0 to 4 bar relative pressure	0.3	0.5	1.6		12	25
0 to 6 bar relative pressure	0.25	0.5	1.4		12	25
0 to 10 bar relative pressure	0.25	0.5	1.4		20	38
0 to 16 bar relative pressure	0.25	0.5	1.4		50	75
0 to 25 bar relative pressure	0.25	0.5	1.4		50	75
0 to 40 bar relative pressure	0.25	0.5	1.4		120	200
0 to 60 bar relative pressure	0.25	0.5	1.4		120	200
0 to 100 bar relative pressure	0.25	0.5	1.4		180	250
-1 to +0.6 bar relative pressure	0.3	0.6	1.6		6	12
-1 to +1.5 bar relative pressure	0.3	0.6	1.6		6	12
-1 to +3 bar relative pressure	0.3	0.6	1.6		12	25
-1 to +5 bar relative pressure	0.25	0.6	1.4		12	25
-1 to +9 bar relative pressure	0.25	0.6	1.4		20	38
-1 to +15 bar relative pressure	0.25	0.6	1.4		50	75
-1 to +24 bar relative pressure	0.25	0.6	1.4		50	75

[a] Linearity according to limit point-setting, DIN EN 61298-2

[b] Reference conditions DIN EN 61298-1

[c] All pressure transmitter are vaccum 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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Environmental influences

Admissible temperatures	
Medium	-20 to +125 °C
Ambient	-20 to +85 °C
Storage	-40 to +125 °C (for version with connecting cable -20 to +100 °C)
Admissible air humidity	
Operation	100 % relative humidity including condensation on the device outer case
Storage	90 % elative humidity without condensation
Admissible mechanical load	IEC 60068-2-6, IEC 60068-2-27
Vibration resistance	20 g for 10 to 2000 Hz
Shock resistance	100 g for 1 ms
Electromagnetic compatibility (EMC)	DIN EN 61326-1:2013, DIN EN 61326-2-3:2013
Interference emission	Class B[a]
Interference immunity	Industrial requirements
Protection type	DIN EN 60529
Connecting cable	IP67
M12 plug connector[b]	IP67
Line socket[b, c]	IP65

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

[b] The protection type is only achieved with a suitable mounted counter piece.

[c] Connecting cable diameter, minimum 5mm, maximum 8 mm

Mechanical features

Material	
Process connection	Stainless steel 305
Seal 601 (internal[a])	FPM, standard
Seal 602 (internal[a])	CR
Seal 604 (internal[a])	FFPM
Process connection G 1/4" (external[a])	FPM
Sensor	Ceramic Al_2O_3 96 %, Measuring principle: Thick film on ceramic body (piezoresistive)
Housing	Stainless steel 305
Connecting cable	PBT-GF30, PVC
M12 plug connector	PBT-GF30, stainless steel 303 L
Line socket	PBT-GF30, PA, silicone
Sensor	
Admissible load change	> 10 million, 0 to 100 % measuring range
Mounting position	Any
Calibration position	Device upright, process connection at the bottom
Weight	100 g with process connection G 1/4"

[a] Note the medium durability of the selected seal material!

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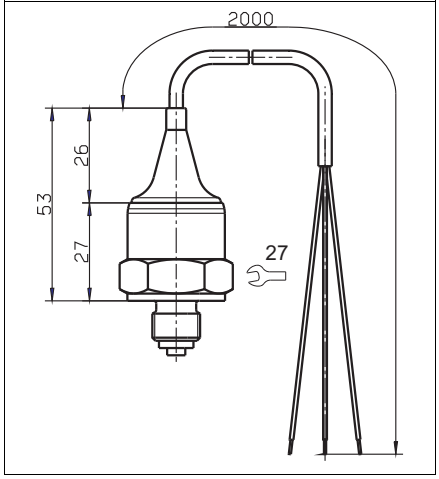
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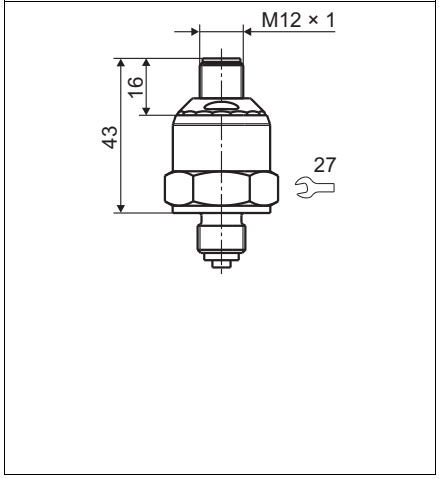
Dimensions

Device

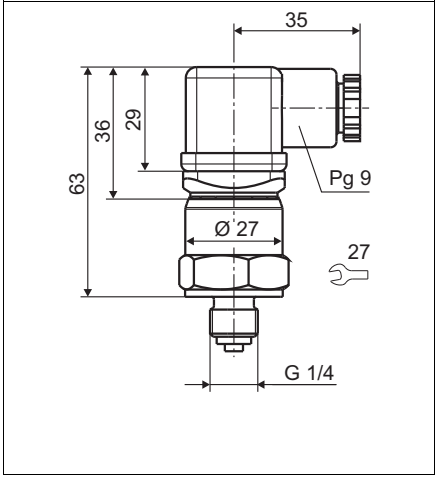
Electrical connection 11
Connecting cable



Electrical connection 36
M12 plug connector

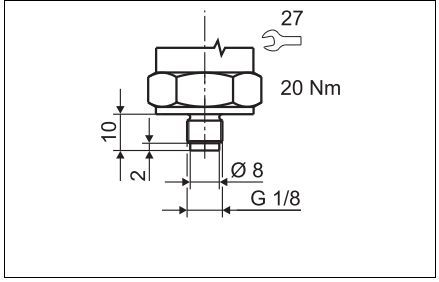


Electrical connection 61
Line socket

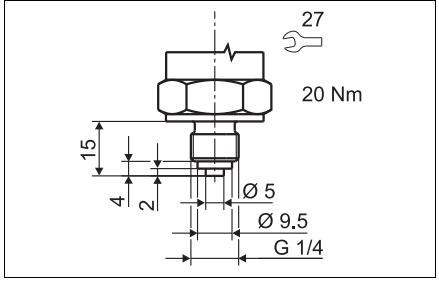


Process connections

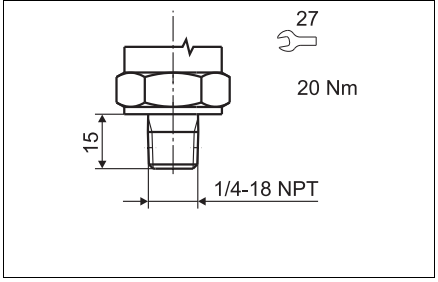
501
G 1/8"



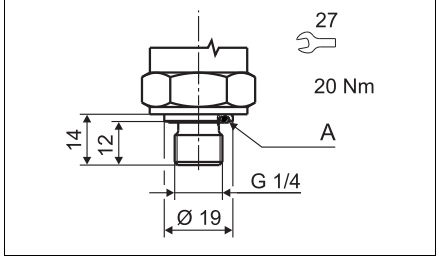
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G 1/4"



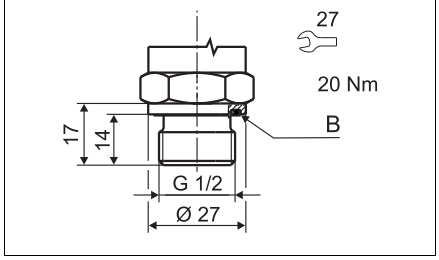
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1/4-18 NPT



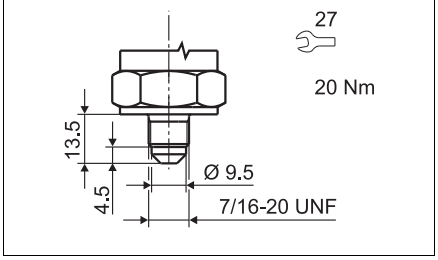
521
G 1/4"



523
G 1/2"



562
7/16-20 UNF external



A Profile seal G 1/4"

B Profile seal G 1/2"

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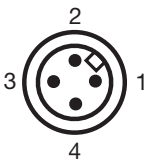
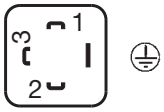
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Connection elements

The connection elements in the data sheet provide information on product selection.

For the electrical connection, only use the installation instructions or the operating manual.

Terminal assignment

			
	Connecting cable	M12 plug connector	Line socket

Designation	**Description**	**Assignment**[a]		
4 to 20 mA, two-wire Voltage supply DC 10 to 30 V	U_B/S+ 0 V/S-	WH (white) BN (brown)	1 WH (white) 3 BN (brown)	1 WH (white) 2 BN (brown)
DC 0.5 to 4.5 V, Dreileiter, ratiometric Voltage supply DC 4.75 to 5.25 V	U_B 0 V/S- S+	WH (white) BN (brown) YE (yellow)	1 WH (white) 2 BN (brown) 3 YE (yellow)	1 WH (white) 2 BN (brown) 3 YE (yellow)
DC 0 to 10 V, three-wire Voltage supply DC 11.5 to 30 V	U_B 0 V/S- S+	WH (white) BN (brown) YE (yellow)	1 WH (white) 2 BN (brown) 3 YE (yellow)	1 WH (white) 2 BN (brown) 3 YE (yellow)
DC 1 to 5(6) V, three-wire Voltage supply DC 8 to 30 V	U_B 0 V/S- S+	WH (white) BN (brown) YE (yellow)	1 WH (white) 2 BN (brown) 3 YE (yellow)	1 WH (white) 2 BN (brown) 3 YE (yellow)
Functional bonding conductor FB[b]		-	4	

[a] The color coding is only valid for A-coded standard cables!

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

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Order details

	(1)	**Basic type**
401001/000		JUMO MIDAS – OEM-Pressure transmitter
	(2)	**Input**
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[a]
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
999		Special measuring range relative pressure
	(3)	**Output**
405		4 to 20 mA, two-wire
412		0.5 to 4.5 V, three-wire
415		0 to 10 V, three-wire
418		1 to 5 V, three-wire
420		1 to 6 V, three-wire
	(4)	**Process connection**
501		G 1/8" according to DIN EN 837
502		G 1/4" 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 external
	(5)	**Process connection material**
20		CrNi (stainless steel)
	(6)	**Seal**
601		FPM (standard)
602		CR
604		FFPM
	(7)	**Electrical connection**
11		Connecting cable (standard cable length is 2 m, further lengths available upon request)
36		M12 plug connector
61		Line socket DIN EN 175301-803, form A

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(8)	Extra code
000	None
591	Choke in the pressure channel
624	Oil and grease free
630	Enlarged pressure channel
954	Technical Passport

[a] Only available in conjunction with extra code 630.

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
Order code		-		-		-		-		-		-		/		, ...[a]
Order example	401001/000	-	460	-	412	-	502	-	20	-	601	-	36	/	591	

[a] List extra codes in sequence, separated by commas.

Accessories

Designation	Part no.
Line socket, 4-pole, M12 × 1, straight, length 2 m	00404585
Line socket, 4-pole, M12 × 1, angled, length 2 m	00409334
Line socket, 4-pole, M12 × 1, with control cable, 5 m	00512341