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JUMO MIDAS S05
OEM pressure transmitter - universal



Type 401010
with terminal box



Type 401010
with M12x1 connector

Applications

- HVAC (Heating, Ventilating and Air Conditioning)
- Refrigeration
- Compressor construction
- Machine and plant engineering
- Packaging industry

Brief description

The JUMO MIDAS S05 pressure transmitter is available with both relative pressure and absolute pressure measurement ranges.
The high-quality stainless steel welded measuring system with no seals ensures the instrument can be used in almost all media, even under harsh conditions. The design offers optimum protection against process medium escaping.
The instrument features a silicon sensor that is able to handle extreme overload, even in the lowest measuring ranges, and is capable of millions of pressure cycles.

Customer benefits

• Economical
A high level of automation (digital compensation and calibration of the sensor assembly) reduces production time and manufacturing costs.
• Process safety
The piezoresistive silicon sensor is highly overload-resistant and long-term stable. The high quality of every pressure transmitter is ensured by the 100% final inspection within the fully automated measuring and calibration system.
• Time-saving, uncomplicated and versatile
There is little work involved in mounting the measuring instrument and electrical installation is simple. Universal: thanks to its modular configuration, it can be used in virtually every application.

Special features

- 1 bar to 100 bar relative pressure, up to 25 bar in absolute pressure as well
- High level of process safety thanks to a welded measuring system with no seals
- Sturdy and maintenance-free measurement technology with extreme overload resistance
- 60% faster device installation with the Quickon fast-connection system
- Sturdy design for a long service life
- Parts in contact with media made of stainless steel

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Technical data

General information

Reference conditions	DIN 16 086 and EN 60770
Sensor	
Material	Silicon sensor with stainless steel separating diaphragm
Pressure transfer medium	Synthetic oil
Permissible load change	> 10 million
Location	
Mounting position	Any
Calibration position	Device standing upright, process connection on bottom

Measuring range

Relative and absolute pressure	Measuring ranges start at 0 bar.									
Measuring range	1	1.6	2.5	4	6	10	16	25	40	bar
Overload capacity [a]	4	6	10	16	24	40	60	100	100	bar
Bursting pressure	6	10	15	24	36	60	100	150	150	bar
Relative pressure	Measuring ranges start at 0 bar.									
Measuring range	60	100								bar
Overload capacity [a]	180	180								bar
Bursting pressure	250	250								bar
Relative pressure										
Measuring range	-1 – 0	-1 – 0.6	-1 – 1.5	-1 – 3	-1 – 5	-1 – 9	-1 – 15	-1 – 24		bar
Overload capacity [a]	4	6	10	16	24	40	60	100		bar
Bursting pressure	6	10	15	24	36	60	100	150		bar

[a] All pressure transmitters are vacuum-proof

Output

Output signal[a]		
Current		
Output 405	4 – 20 mA,	two wires
Voltage		
Output 412	DC 0.5 – 4.5 V,	three wires, ratiometric 10 – 90% of the supply voltage
Output 415	DC 0 – 10 V,	three wires
Output 418	DC 1 – 5 V,	three wires
Output 420	DC 1 – 6 V,	three wires
Jump response		
T_{90}	≤5 ms	
Burden		
Current		
4 – 20 mA,	two wires	$R_i \leq (U_B - 8\ V) / 0.02\ A\ (\Omega)$
Voltage		
DC 0.5 – 4.5 V,	three wires	≥ 5 kΩ
DC 1 – 5 V,	three wires	≥ 10 kΩ
DC 1 – 6 V,	three wires	≥ 10 kΩ
DC 0 – 10 V,	three wires	≥ 10 kΩ

[a] Additional outputs are available on request.

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Mechanical properties

Process connection		
Material		Stainless steel 304[a]
Membrane		
Material		Stainless steel 316L
Enclosure		
Material		Stainless steel 304
Electrical connection		
Material		
Fixed cable,	Electr. connection 11	PBT-GF30, PVC
Quickon,	Electr. connection 23	PBT-GF30
Round plug M12x1,	Electr. connection 36	PBT-GF30, stainless steel 303
Bayonet connector,	Electr. connection 53	PBT-GF30
Terminal box,	Electr. connection 61	PBT-GF30, PA, silicon
Weight		approx. 80 g with process connection 502 (G1/4)

[a] Pressure transmitters with process connection 521 come with an FPM seal.

Ambient conditions

Permissible temperatures		
Electrical connections 36, 53 or 61		
Medium		-40 – +125°C
Environment		-40 – +125°C
Storage		-40 – +125°C
Electrical connection 11		
Medium		-40 – +125°C
Environment		-40 – +100°C
Storage		-40 – +100°C
At ambient temperature -50°C		
Restricted function		Stationary use only, danger of broken cable
Permissible relative humidity		
In operation		100% rel. humidity, incl. condensation on the outer sleeve of the instrument
Storage		90% relative humidity, no condensation
Permissible mechanical loading		
Vibration resistance[a]		20 g, 10 – 2000 Hz
Shock resistance[b]		50 g for 11 ms 100 g for 1 ms
Electromagnetic compatibility		
Interference emission[c]		Class B
Interference immunity[c]		Industrial requirements
Enclosure protection[d]		
Fixed cable,	Electr. connection 11	
Relative pressure measuring ranges		IP66
Absolute pressure measuring ranges		IP67
Quickon,	Electr. connection 23	IP66
M12x1 round plug,	Electr. connection 36	IP66
Bayonet connector,	Electr. connection 53	IP67
Terminal box[e],	Electr. connection 61	IP65

[a] IEC 60068-2-6
[b] IEC 60068-2-27
[c] EN 61326-2-3
[d] EN 60529
[e] Connecting cable diameter is min. 5 mm, max. 7 mm.

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Accuracy

Relative and absolute pressure	Measuring ranges start at 0 bar.									
Measuring range	1	1.6	2.5	4	6	10	16	25	40	bar
Linearity[a]	**0.3**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.2**	**0.2**	**0.2**	**% of FS**
Accuracy, 20°C[b]	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	% of FS
Accuracy, -20 – +100°C[c]	1.5	1.4	1.3	1.2	1.2	1.0	1.0	1.0	1.0	% of FS
Relative pressure	Measuring ranges start at 0 bar.									
Measuring range	60	100								bar
Linearity[a]	**0.2**	**0.2**								**% of FS**
Accuracy, 20°C[b]	0.5	0.5								% of FS
Accuracy, -20 – +100°C[c]	1.0	1.0								% of FS
Relative pressure										
Measuring range	-1 – 0	-1 – 0.6	-1 – 1.5	-1 – 3	-1 – 5	-1 – 9	-1 – 15	-1 – 24		bar
Linearity[a]	**0.3**	**0.3**	**0.3**	**0.3**	**0.25**	**0.25**	**0.25**	**0.2**		**% of FS**
Accuracy, 20°C[b]	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5		% of FS
Accuracy, -20 – +100°C[c]	1.5	1.5	1.4	1.3	1.3	1.2	1.0	1.0		% of FS
Long-term stability[d]	< 0.2% of FS									

[a] Linearity based on limit point setting
[b] Includes: linearity, hysteresis, repeatability, deviation from initial and full scale values of the measuring range
[c] Includes: linearity, hysteresis, repeatability, deviation from initial and final values of measuring range, thermal effect on initial value of measuring range and span
[d] EN 61298-1

Auxiliary power

Supply voltage U_B[a]				
4 – 20 mA,	two wires,	output 405	DC 8 – 30 V,	nominal power supply DC 24 V
DC 0.5 – 4.5 V,	three wires,	output 412	DC 3 – 5.25 V,	nominal supply voltage DC 5 V, radiometric output 10 – 90% of the supply voltage
DC 0 – 10 V,	three wires,	output 415	DC 11,5 – 30 V,	nominal power supply DC 24 V
DC 1 – 5 V,	three wires,	output 418	DC 8 – 30 V,	nominal power supply DC 24 V
DC 1 – 6 V,	three wires,	output 420	DC 8 – 30 V,	nominal power supply DC 24 V
Power consumption			≤ 25 mA	
Reverse polarity protection			Yes	
Circuit			SELV	

[a] Residual ripple: Peak voltages must **not** exceed or fall below the values specified for the supply voltage!

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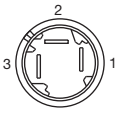
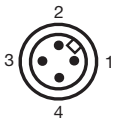
Connection diagram

Connection		**Terminal assignment**[a]				
						
		11 Fixed cable	23 Quickon	36 Round plug, M12x1	53 Bayonet	61 Terminal box
4 – 20 mA, two wires, output 405						
Supply voltage 8 – 30 V DC	UB/S+ 0 V/S-	White Brown	1 3	1 3	1 2	1 2
DC 0.5 – 4.5 V Ratiometric, output 412						
Supply voltage DC 3 – 5.25 V Ratiometric output 10 – 90 % of the supply voltage	UB 0 V/S- S+	White Brown Yellow	1 2 3	1 2 3	1 2 3	1 2 3
DC 0 – 10 V, three wires, output 415						
Supply voltage DC 11.5 – 30 V	UB 0 V/S- S+	White Brown Yellow	1 2 3	1 2 3	1 2 3	1 2 3
DC 1 – 5 V, three wires, output 418 **DC 1 – 6 V, three wires, output 420**						
Supply voltage DC 8 – 30 V	UB 0 V/S- S+	White Brown Yellow	1 2 3	1 2 3	1 2 3	1 2 3

[a] Illustration shows the pressure transmitter connector

Color assignment: Round plug, M12x1	1 bn	Brown	4 bk	Black	The color assignment applies **only** to A-coded standard cables!
	2 wh	White	5 gy	Gray	
	3 bu	Blue			

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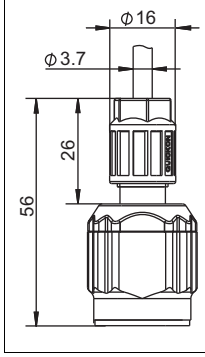
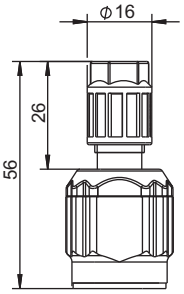
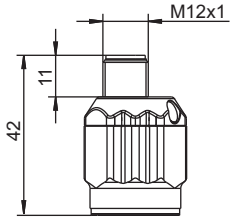
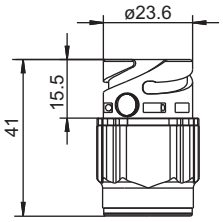
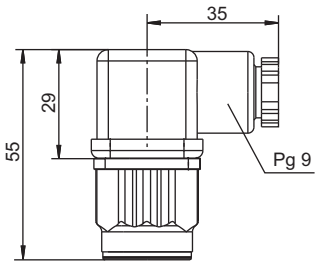
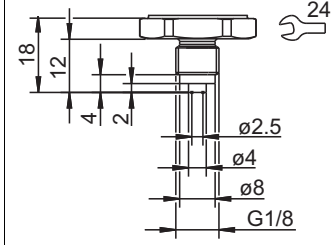
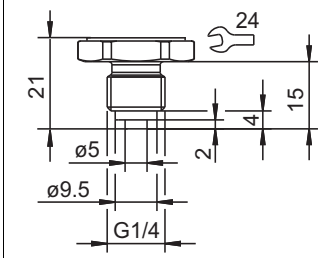
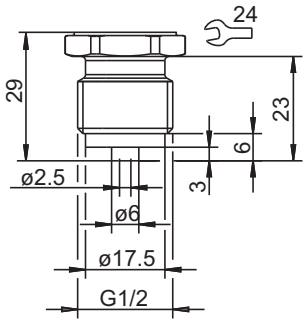
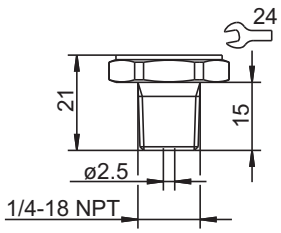
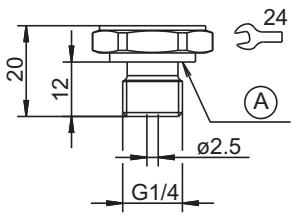
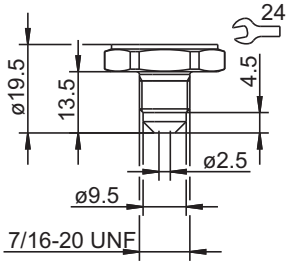
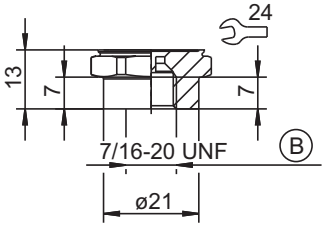
Dimensions

Electrical connection

11 Fixed cable	23 Quickon	36 Round plug, M12x1	53 Bayonet connector	61 Terminal box
				

Process connection

501 G1/8	502 G1/4	504 G1/2	511 1/4 - 18 NPT
			

521 G1/4	562 7/16-20 UNF	563 7/16 UNF inside
		

A = G1/4 profile seal

B = 7/16-20 UNF inside, with valve core depresser

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Order details

	(1)	**Basic type**
401010/000		JUMO MIDAS S05 pressure transmitter
401010/999		JUMO MIDAS S05 pressure transmitter, special design
	(2)	**Input**
454		0 – 1 bar relative pressure
455		0 – 1.6 bar relative pressure
456		0 – 2.5 bar relative pressure
457		0 – 4 bar relative pressure
458		0 – 6 bar relative pressure
459		0 – 10 bar relative pressure
460		0 – 16 bar relative pressure
461		0 – 25 bar relative pressure
462		0 – 40 bar relative pressure
463		0 – 60 bar relative pressure
464		0 – 100 bar relative pressure
478		-1 – 0 bar relative pressure
479		-1 – 600 mbar relative pressure
480		-1 – 1.5 bar relative pressure
481		-1 – 3 bar relative pressure
482		-1 – 5 bar relative pressure
483		-1 – 9 bar relative pressure
484		-1 – 15 bar relative pressure
485		-1 – 24 bar relative 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 measuring range for absolute pressure
999		Special measuring range for relative pressure
	(3)	**Output**
405		4 – 20 mA, two wires
412		DC 0.5 – 4.5 V, three wires
415		DC 0 – 10 V, three wires
418		DC 1 – 5 V, three wires
420		DC 1 – 6 V, three wires
	(4)	**Process connection**
501		G 1/8 to DIN EN 837
502		G 1/4 to DIN EN 837
504		G 1/2 to DIN EN 837
511		1/4-18 NPT to DIN 837
521		G1/4 to DIN 3852 T11
562		7/16 - 20 UNF
563		7/16 - 20 UNF inside, with valve opener
	(5)	**Process connection material**
20		CrNi (stainless steel)
	(6)	**Electrical connection**
11		Fixed cable [a]
23		Quickon
36		Round plug, M12x1
53		Bayonet instrument connector DIN 72585[b]
61		Terminal box EN 175301-803, Form A, ex DIN 43650

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	(7)	Extra codes
000		No extra code
591		Throttle in pressure channel
624		Free of oil and grease
630		Enlarged pressure channel[c]

Notes on the order details

[a] **Electrical connection 11**
Standard: 2 m fixed cable, other lengths available on request

[b] **Electrical connection 53**
Bayonet connector DIN 72585-A1-3.1-Sn/K1

[c] **Extra code 630**
Diameter 6 mm for process connection 501
Diameter 8 mm for process connections 511 and 521

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(7)
Order code		-		-		-		-		-		/		,	...
Sample order	401010/000	-	459	-	405	-	504	-	20	-	61	/	591	,	624

Minimum order quantity for production orders: 5 units
Minimum order quantity for storage orders: 1 unit

Stock versions

Order code	Description	Part no.
401010/000-456-405-502-20-61/000	0 – 2.5 bar; 4 – 20 mA; G1/4; terminal box	43012486
401010/000-457-405-502-20-61/000	0 – 4 bar; 4 – 20 mA; G1/4; terminal box	00517155
401010/000-458-405-502-20-61/000	0 – 6 bar; 4 – 20 mA; G1/4; terminal box	00517148
401010/000-459-405-502-20-61/000	0 – 10 bar; 4 – 20 mA; G1/4; terminal box	00517139
401010/000-459-405-563-20-61/000	0 – 10 bar; 4 – 20 mA; 7/16-20UNF; terminal box	43012540
401010/000-460-405-502-20-61/000	0 – 16 bar; 4 – 20 mA; G1/4; terminal box	00517133
401010/000-461-405-502-20-61/000	0 – 25 bar; 4 – 20 mA; G1/4; terminal box	00523660
401010/000-483-405-563-20-61/000	-1 – 9 bar; 4 – 20 mA; 7/16 - 20 UNF; terminal box	00531777
401010/000-491-405-502-20-61/000	0 – 4 bar abs.; 4 – 20 mA; G1/4; terminal box	43012517
401010/000-492-405-502-20-61/000	0 – 6 bar abs.; 4 – 20 mA; G1/4; terminal box	00526283

Accessories

Description	Part no.
Cable connector, straight, 4-pin, M12x1, 2m PVC cable	00404585
Cable connector, angled, 4-pin, M12x1, 2m PVC cable	00409334