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JUMO MIDAS S05

OEM Pressure Transmitter – Universal

Applications

- HVAC (heating, ventilating, and air conditioning)
- Refrigeration engineering
- Compressor engineering
- Machinery and plant engineering
- Packaging industry

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 401010 with cable socket



Type 401010 with M12 × 1 connector

Customer benefits

- **Economic**
  A high degree of automation (digital compensation and calibration of sensor module) reduces production time and manufacturing costs.
- **Process reliability**
  The piezoresistive silicon sensor has a high level of overload protection and long-term stability. 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,
  and also up to 25 bar absolute pressure
- High degree of process reliability due to a welded measuring system with no seals
- Robust and maintenance-free measurement technology thanks to extreme overload resistance
- 60 % quicker device installation with the QUICKON quick-clamp technology
- Robust construction guarantees a long operating life
- Wetted stainless steel parts

Approvals and approval marks (see technical data)

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Technical data

General Information

Reference conditions	DIN 16086 and DIN EN 60770
Sensor	
Material	Silicon sensor with stainless steel separating membrane
Pressure transfer means	Synthetic oil
Admissible load changes	> 10 million
Mounting 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-capability[c]	Burst pressure
		20 °C[d]	-20 to +100 °C[e]			
bar	% MSP[f]	% MSP	% MSP	% MSP per year	bar	bar
0 to 1 bar relative/absolute pressure	0.3	0.6	1.5	< 0.2	4	6
0 to 1.6 bar relative/absolute pressure	0.25	0.5	1.4		6	10
0 to 2.5 bar relative/absolute pressure	0.25	0.5	1.3		10	15
0 to 4 bar relative/absolute pressure	0.25	0.5	1.2		16	24
0 to 6 bar relative/absolute pressure	0.25	0.5	1.2		24	36
0 to 10 bar relative/absolute pressure	0.25	0.5	1.0		40	60
0 to 16 bar relative/absolute pressure	0.2	0.5	1.0		60	100
0 to 25 bar relative/absolute pressure	0.2	0.5	1.0		100	150
0 to 40 bar relative/absolute pressure	0.2	0.5	1.0		100	150
0 to 60 bar relative pressure	0.2	0.5	1.0		180	250
0 to 100 bar relative pressure	0.2	0.5	1.0		180	250
-600 to +600 mbar relative pressure	0.3	0.6	1.5		4	6
-1 to 0 bar relative pressure	0.3	0.6	1.5		4	6
-1 to +0.6 bar relative pressure	0.3	0.6	1.5		6	10
-1 to +1 bar relative pressure	0.3	0.6	1.5		6	10
-1 to +1.5 bar relative pressure	0.3	0.6	1.4		10	15
-1 to +3 bar relative pressure	0.3	0.5	1.3		16	24
-1 to +5 bar relative pressure	0.25	0.5	1.3		24	36
-1 to +9 bar relative pressure	0.25	0.5	1.2		40	60
-1 to +15 bar relative pressure	0.25	0.5	1.0		60	100
-1 to +24 bar relative pressure	0.2	0.5	1.0		100	150
-1 to +30 bar relative pressure	0.2	0.5	1.0		100	150

[a] Linearity according to limit point setting

[b] Reference conditions EN 61298-1

[c] All pressure transmitters are vacuum-proof.

[d] Includes: linearity, hysteresis, repeatability, deviation of measuring range initial value and measuring range end value

[e] Includes: linearity, hysteresis, repeatability, deviation of measuring range initial value and measuring range end value, thermal effect on measuring range start and measuring span

[f] MSP = measuring span

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Output

Analog output[a]	
Current	4 to 20 mA, two-wire
Voltage	DC 0.5 to 4.5 V, three-wire, ratiometric 10 to 90 % of the voltage supply
	DC 0 to 10 V, three-wire
	DC 1 to 5 V, three-wire
	DC 1 to 6 V, three-wire
Step response T_{90}	≤ 5 ms
Burden	
Current	$R_L \leq (U_B\text{-}8\ V) \div 0.02\ A\ (\Omega)$ at 4 to 20 mA, two-wire
Voltage (burden connected to "0 V/S-")	$R_L \geq 5\ k\Omega$ at DC 0.5 to 4.5 V, three-wire
	$R_L \geq 10\ k\Omega$ at DC 0 to 10 V, three-wire
	$R_L \geq 10\ k\Omega$ at DC 1 to 5 V, three-wire
	$R_L \geq 10\ k\Omega$ at DC 1 to 6 V, three-wire

[a] Further outputs are available upon request.

Mechanical features

Material	
Process connection	Stainless steel 304[a]
Membranes	Stainless steel 316 L
Housing	Stainless steel 304
Attached cable	PBT-GF30, PVC, PE
QUICKON	PBT-GF30
Round plug M12 × 1	PBT-GF30, stainless steel 303
Bayonet connector	PBT-GF30
Line socket	PBT-GF30, PA, silicone
Weight	80 g with process connection G 1/4

[a] Pressure transmitters with process connection G 1/4 are supplied with an FKM seal. Ensure the medium durability of the seal material!

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Environmental influences

Medium temperature for electrical connection	
Attached cable	-40 to +125 °C
Round plug M12 × 1	-40 to +125 °C
Bayonet connector	-40 to +125 °C
Line socket	-40 to +125 °C
Ambient temperature for electrical connection	
Attached cable	-30 to +100 °C At ambient temperature of -30 °C restricted function. Only use when stationary. Risk of cable break.
Round plug M12 × 1	-40 to +125 °C
Bayonet connector	-40 to +125 °C
Line socket	-40 to +125 °C
Storage temperature for electrical connection	
Attached cable	-30 to +100 °C
Round plug M12 × 1	-40 to +125 °C
Bayonet connector	-40 to +125 °C
Line socket	-40 to +125 °C
Admissible humidity	
Operation	100 % rel. humidity including condensation on the device outer case
Storage	90 % rel. humidity without condensation
Admissible mechanical load	
Vibration resistance	20 g at 10 to 2000 Hz, according to IEC 60068-2-6
Shock resistance	50 g for 11 ms, 100 g for 1 ms, according to IEC 60068-2-27
Electromagnetic compatibility (EMC)	According to EN 61326-2-3
Interference emission	Class B[a]
Interference immunity	Industrial requirement
Protection type for electrical connection	According to EN 60529
Attached cable	IP66 for relative pressure measuring range, IP67 for absolute pressure measuring range
QUICKON[b]	IP66
Round plug M12 × 1[c]	IP66
Bayonet connector[c]	IP67
Line socket[c, d]	IP65

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

[b] Connecting cable diameter, minimum 3.5 mm, maximum 6 mm

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

[d] Connecting cable diameter, minimum 6 mm, maximum 8 mm

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Electrical data

Voltage supply U_B[a]	
4 to 20 mA, two-wire	DC 8 to 30 V, rated voltage supply DC 24 V
DC 0.5 to 4.5 V, three-wire	DC 3 to 5.25 V, rated voltage supply DC 5 V, ratiometric output 10 to 90 % of the voltage supply
DC 0 to 10 V, three-wire	DC 11.5 to 30 V, rated voltage supply DC 24 V
DC 1 to 5 V, three-wire	DC 8 to 30 V, rated voltage supply DC 24 V
DC 1 to 6 V, three-wire	DC 8 to 30 V, rated voltage supply DC 24 V
Current consumption incl. load	
4 to 20 mA, two-wire	≤ 25 mA
DC 0.5 to 4.5 V, three-wire	≤ 3 mA
DC 0 to 10 V, three-wire	≤ 3 mA
DC 1 to 5 V, three-wire	≤ 3 mA
DC 1 to 6 V, three-wire	≤ 3 mA
Reverse voltage protection	
4 to 20 mA, two-wire	Yes
DC 0.5 to 4.5 V, three-wire	No
DC 0 to 10 V, three-wire	Yes
DC 1 to 5 V, three-wire	Yes
DC 1 to 6 V, three-wire	Yes
Electrical circuit	SELV
Requirements	The device must be equipped with an electrical circuit that meets the requirements of EN 61010-1 with regard to "Limited-energy circuits".

[a] Residual ripple: the voltage peaks must not exceed or fall below the specified voltage supply values!

Approvals and approval marks

EAC	
Testing agency	«Промтехконтроль»
Certificates/certification numbers	ЕАЭС N RU Д-DE.PA01.B.80830/21
Inspection basis	TR TS 020/2011
Valid for	Type 401010
UL	
Testing agency	Underwriter Laboratories
Certificates/certification numbers	E201387
Inspection basis	UL 61010-1 (3. Ed.), CAN/CSA-22.2 No. 61010-1 (3. Ed.)
Valid for	Extra code 061

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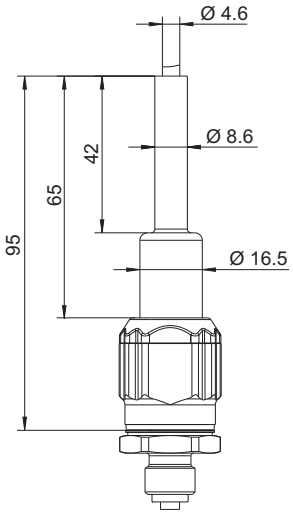
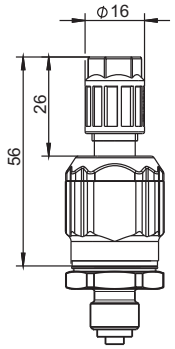
Dimensions

Electrical connection

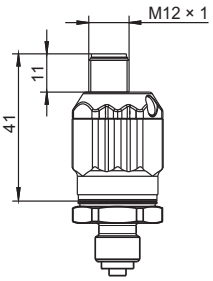
11
Attached cable



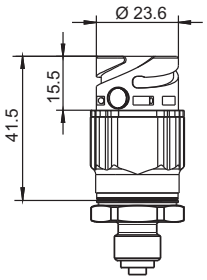
23
QUICKON



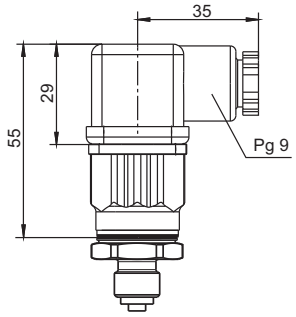
36
Round plug M12 × 1



53
Bayonet connector



61
Line socket



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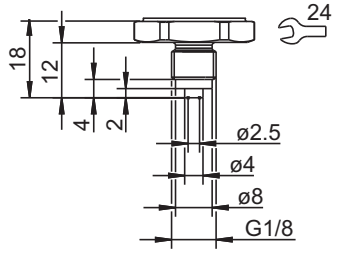
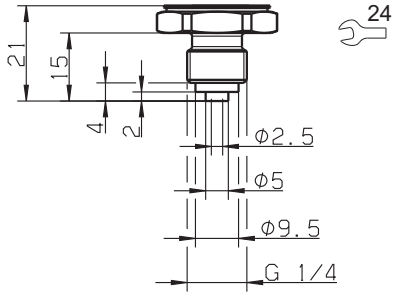
Process connection

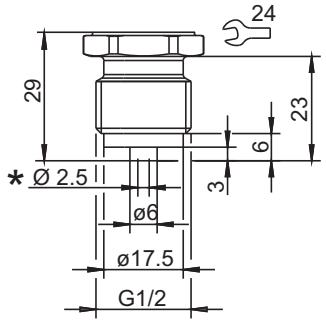
501
G 1/8



502
G 1/4

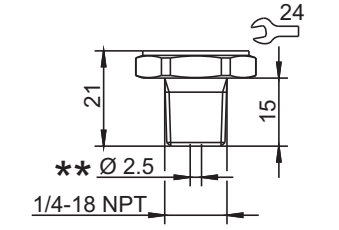


504
G 1/2



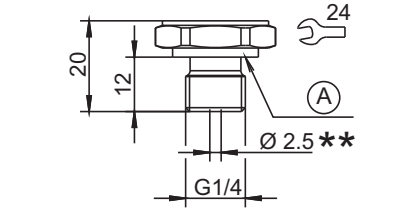
* Extra code 630 pressure channel Ø 12 mm

511
1/4-18 NPT



** Extra code 630 pressure channel Ø 8 mm

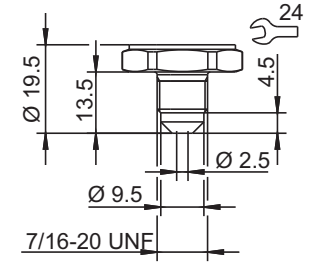
521
G 1/4



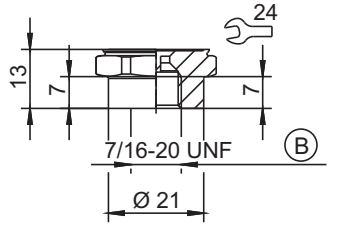
A Profile seal G 1/4

** Extra code 630 pressure channel Ø 8 mm

562
7/16-20 UNF

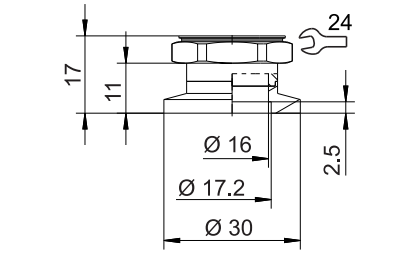


563
7/16 -20 UNF interior



B With valve core handle

621
Small flange DN 16



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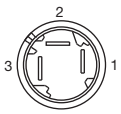
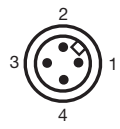
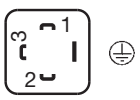
Connection diagram

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** (figure: connection to the pressure transmitter)				
						
		Attached cable	QUICKON	Round plug M12 × 1	Bayonet connector	Line socket
4 to 20 mA, two-wire						
Voltage supply DC 8 to 30 V	U_B/S+	WH	1	1	1	1
	0 V/S-	BN	3	3	2	2
DC 0.5 to 4.5 V, ratiometric						
Voltage supply DC 3 to 5.25 V Ratiometric output 10 to 90 % of the voltage supply	U_B	WH	1	1	1	1
	0 V/S-	BN	2	2	2	2
	S+	GN	3	3	3	3
DC 0 to 10 V, three-wire						
Voltage supply DC 11.5 to 30 V	U_B	WH	1	1	1	1
	0 V/S-	BN	2	2	2	2
	S+	GN	3	3	3	3
DC 1 to 5 V, three-wire **DC 1 to 6 V, three-wire**						
Voltage supply DC 8 to 30 V	U_B	WH	1	1	1	1
	0 V/S-	BN	2	2	2	2
	S+	GN	3	3	3	3
Functional bonding conductor FB[a]		-	-	4	-	

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

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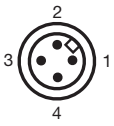
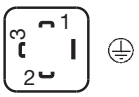
Assignment variants electrical connection, extra code 933

Please provide the assignment variant in plain text with the order details (for example "B1")!

Connection		**Terminal assignment** (figure: connection to the pressure transmitter)			
					
		36 Round plug M12 × 1			61 Line socket
Assignment variants		**B1**	**B2**	**B3**	**B4**
4 to 20 mA, two-wire					
Voltage supply DC 8 to 30 V	U_B/S+	1	4		2
	0 V/S-	2	1		1
DC 0 to 10 V, three-wire					
Voltage supply DC 11.5 to 30 V	U_B	1	1	1	3
	0 V/S-	3	4	2	2
	S+	4	2	4	1
DC 1 to 5 V, three-wire **DC 1 to 6 V, three-wire**					
Voltage supply DC 8 to 30 V	U_B	1	1	1	3
	0 V/S-	3	4	2	2
	S+	4	2	4	1
Functional bonding conductor FB[a]		-	-	-	

[a] The pressure transmitter has to be connected to the potential equalization system of the plant through 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**
401010/000		JUMO MIDAS S05 – OEM Pressure Transmitter – Universal
	(3)	**Input**
454		0 to 1 bar relative pressure
455		0 to 1.6 bar relative pressure
456		0 to 2.5 bar relative pressure
457		0 to 4 bar relative pressure
458		0 to 6 bar relative pressure
459		0 to 10 bar relative pressure
460		0 to 16 bar relative pressure
461		0 to 25 bar relative pressure
462		0 to 40 bar relative pressure
463		0 to 60 bar relative pressure
464		0 to 100 bar relative pressure
450		-600 to +600 mbar relative pressure
478		-1 to 0 bar relative pressure
479		-1 to +0.6 bar relative pressure
449		-1 to +1 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
527		-1 to +30 bar relative pressure
488		0 to 1 bar absolute pressure
489		0 to 1.6 bar absolute pressure
490		0 to 2.5 bar absolute pressure
491		0 to 4 bar absolute pressure
492		0 to 6 bar absolute pressure
493		0 to 10 bar absolute pressure
494		0 to 16 bar absolute pressure
495		0 to 25 bar absolute pressure
505		0 to 40 bar absolute pressure
998		Special measuring range for absolute pressure
999		Special measuring range for relative pressure
	(3)	**Output**
405		4 to 20 mA, two-wire
412		DC 0.5 to 4.5 V, three-wire
415		DC 0 to 10 V, three-wire
418		DC 1 to 5 V, three-wire
420		DC 1 to 6 V, three-wire

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	(4)	Process connection
501		G 1/8 according to DIN EN 837
502		G 1/4 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
562		7/16-20 UNF
563		7/16-20 UNF interior, with valve core handle
621		Small flange DN 16
	(5)	**Process connection material**
20		CrNi (stainless steel)
	(6)	**Electrical connection**
11		Attached cable[a]
23		QUICKON
36		Round plug M12 × 1
53		Bayonet DIN 72585
61		Line socket DIN EN 175301-803, Form A
	(8)	**Extra codes**
000		None
061		UL approval
591		Choke in the pressure channel
624		Oil and grease free
630		Enlarged pressure channel[b]
876		Test report
933		Assignment variants electrical connection
954		Technical Passport

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

[b] An enlarged pressure channel is only available with process connections 1/4-18 NPT, and G 1/4.

	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
Order code		-		-		-		-		-		/		, ...[a]
Order example	401010/000	-	460	-	412	-	504	-	20	-	36	/	591	

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

Stock versions

Order code	Part no.
401011/000-451-405-502-20-61/000	00543760
401011/000-451-405-504-20-61/000	00547882
401011/000-414-405-502-20-61/000	00535655
401011/000-414-405-504-20-61/000	00558996

Accessories

Designation	Part no.
Line socket, straight, 4-pole, M12 × 1, 2 m	00404585
Line socket, angled, 4-pole, M12 × 1, 2 m	00409334
Bayonet connector with 3 m cable	00463392