

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

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
Position	
Mounting position	Any
Calibration position	Device upright, process connection at the bottom

Measuring range

Relative and absolute pressure	The measuring ranges begin at 0 bar.									
Measuring range	1	1.6	2.5	4	6	10	16	25	40	bar
Overload capability ^a	4	6	10	16	24	40	60	100	100	bar
Burst pressure	6	10	15	24	36	60	100	150	150	bar
Relative pressure	The measuring ranges begin at 0 bar.									
Measuring range	60	100								bar
Overload capability ^a	180	180								bar
Burst pressure	250	250								bar
Relative pressure										
Measuring range	-1 to 0		-1 to +0.6		-1 to +1.5		-1 to +3		bar	
Overload capability	4		6		10		16		bar	
Burst pressure	6		10		15		24		bar	
Relative pressure										
Measuring range	-1 to +5		-1 to +9		-1 to +15		-1 to +24		bar	
Overload capability	24		40		60		100		bar	
Burst pressure	36		60		100		150		bar	

^a All pressure transmitters are vacuum-proof.

Output

Analog output ^a	
Current	
Output 405	4 to 20 mA, two-wire
Voltage	
Output 412	DC 0.5 to 4.5 V, three-wire, ratiometric 10 to 90 % of the voltage supply
Output 415	DC 0 to 10 V, three-wire
Output 418	DC 1 to 5 V, three-wire
Output 420	DC 1 to 6 V, three-wire
Step response	
T ₉₀	≤ 5 ms
Burden	
Current	
4 to 20 mA, two-wire	$R_L \leq (U_B - 8 \text{ V}) \div 0.02 \text{ A } (\Omega)$
Voltage	
DC 0.5 to 4.5 V, three-wire	$R_L \geq 5 \text{ k}\Omega$
DC 0 to 10 V, three-wire	$R_L \geq 10 \text{ k}\Omega$
DC 1 to 5 V, three-wire	$R_L \geq 10 \text{ k}\Omega$
DC 1 to 6 V, three-wire	$R_L \geq 10 \text{ k}\Omega$

^a Further outputs are available upon request.

Mechanical features

Process connection	
Material	Stainless steel 304 ^a
Membranes	
Material	Stainless steel 316 L
Case	
Material	Stainless steel 304
Electrical connection	
Material	
Attached cable (electrical connection 11)	PBT-GF30, PVC, PE
QUICKON (electrical connection 23)	PBT-GF30
Round plug M12 × 1 (electrical connection 36)	PBT-GF30, stainless steel 303
Bayonet connector (electrical connection 53)	PBT-GF30
Cable socket (electrical connection 61)	PBT-GF30, PA, silicone
Weight	80 g with process connection 502 (G 1/4)

^a Pressure transmitters with process connection 521 are supplied with an FPM seal. Ensure the medium durability of the seal material!

Environmental conditions

Admissible temperatures	
Electrical connection 36, 53 or 61	
Medium	-40 to +125 °C
Ambient	-40 to +125 °C
Storage	-40 to +125 °C
Electrical connection 11	
Medium	-40 to +125 °C
Ambient	-40 to +100 °C
Storage	-40 to +100 °C
At an ambient temperature of -50 °C	
Restricted function	Only use when stationary, risk of cable break
Admissible humidity	
Operation	100 % rel. humidity including condensation on the device outer case
Storage	90 % rel. humidity without condensation
Admissible mechanical load	
Vibration resistance ^a	20 g at 10 to 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 requirement
Protection type ^d	
Attached cable (electrical connection 11)	
Relative pressure measuring range	IP66
Absolute pressure measuring range	IP67
QUICKON ^e (electrical connection 23)	IP66
Round plug M12 × 1 ^f (electrical connection 36)	IP66
Bayonet connector ^f (electrical connection 53)	IP67
Cable socket ^{f, g} (electrical 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, minimum 3.5 mm, maximum 6 mm

^f The protection type is only achieved with a suitable mounted counter piece.

^g Connecting cable diameter, minimum 6 mm, maximum 8 mm

Accuracy

Relative and absolute pressure	The measuring ranges begin 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	% MSP	
Accuracy at 20 °C ^b	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	% MSP	
Accuracy at -20 to +100 °C ^c	1.5	1.4	1.3	1.2	1.2	1.0	1.0	1.0	1.0	% MSP	
Relative pressure	The measuring ranges begin at 0 bar.										
Measuring range	60	100								bar	
Linearity ^a	0.2	0.2								% MSP	
Accuracy at 20 °C ^b	0.5	0.5								% MSP	
Accuracy at -20 to +100 °C ^c	1.0	1.0								% MSP	
Relative pressure											
Measuring range	-1 to 0		-1 to +0.6		-1 to +1.5		-1 to +3		bar		
Linearity ^a	0.3		0.3		0.3		0.3		% MSP		
Accuracy at 20 °C ^b	0.6		0.6		0.6		0.5		% MSP		
Accuracy at -20 to +100 °C ^c	1.5		1.5		1.4		1.3		% MSP		
Relative pressure											
Measuring range	-1 to +5		-1 to +9		-1 to +15		-1 to +24		bar		
Linearity ^a	0.25		0.25		0.25		0.2		% MSP		
Accuracy at 20 °C ^b	0.5		0.5		0.5		0.5		% MSP		
Accuracy at -20 to +100 °C ^c	1.3		1.2		1.0		1.0		% MSP		
Long-term stability ^d	< 0.2 % MSP per year										

^a Linearity according to limit point setting

^b Includes: linearity, hysteresis, repeatability, deviation of measuring range initial value and measuring range end value

^c Includes: linearity, hysteresis, repeatability, deviation of measuring range initial value and measuring range end value, thermal effect on measuring range start and measuring span

^d Reference conditions EN 61298-1

Auxiliary energy

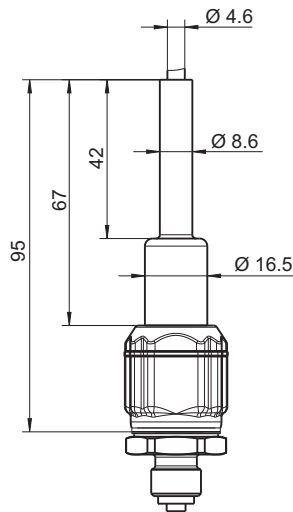
Voltage supply U_B ^a	
4 to 20 mA, two-wire (output 405)	DC 8 to 30 V, rated voltage supply DC 24 V
DC 0.5 to 4.5 V, three-wire (output 412)	DC 3 to 5.25 V, rated voltage supply DC 5 V, ratiometric output 10 to 90 % of the voltage supply
DC 0 to 10 V, three-wire (output 415)	DC 11.5 to 30 V, rated voltage supply DC 24 V
DC 1 to 5 V, three-wire (output 418)	DC 8 to 30 V, rated voltage supply DC 24 V
DC 1 to 6 V, three-wire (output 420)	DC 8 to 30 V, rated voltage supply DC 24 V
Current consumption	≤ 25 mA
Reverse voltage protection	Yes
Electrical circuit	SELV

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

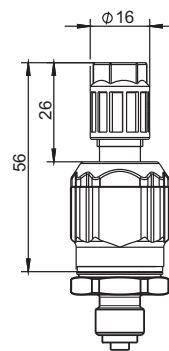
Dimensions

Electrical connection

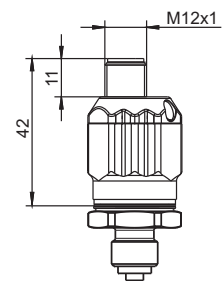
11
Attached cable



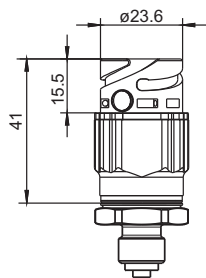
23
QUICKON



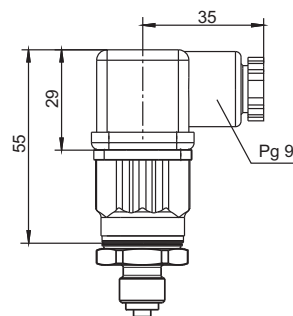
36
Round plug M12 × 1



53
Bayonet connector

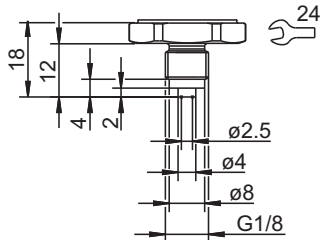


61
Cable socket

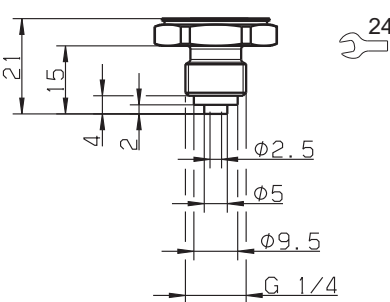


Process connection

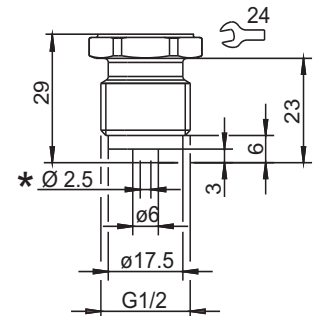
501
G 1/8



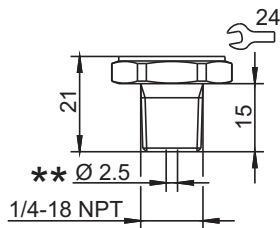
502
G 1/4



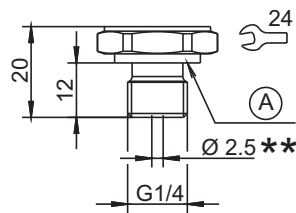
504
G 1/2



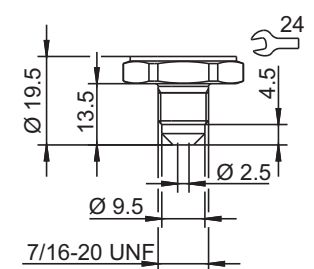
511
1/4-18 NPT



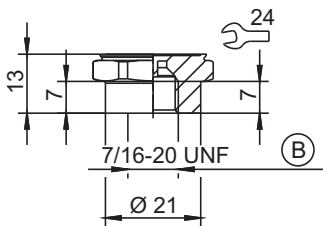
521
G 1/4



562
7/16-20 UNF




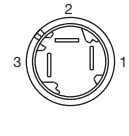
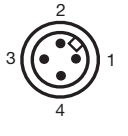
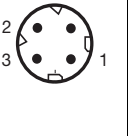
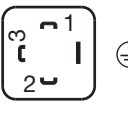



563
7/16-20 UNF interior



- A Profile seal G 1/4
- B With valve core handle
- * Extra code 630 pressure channel Ø 12 mm
- ** Extra code 630 pressure channel Ø 8 mm

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 execution of the safety information/instructions contained in these documents are mandatory for installation, electrical connection, startup, and for safety during operation.

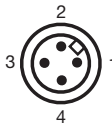
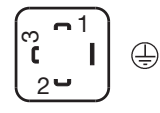


Connection		Terminal assignment ^a					
							
		11 Attached cable	23 QUICKON	36 Round plug M12 × 1	53 Bayonet connector	61 Cable socket	
4 to 20 mA, two-wire (output 405)							
Voltage supply DC 8 to 30 V	U _B /S+ 0 V/S-	WH BN	1 3	1 3	1 2	1 2	
DC 0.5 to 4.5 V ratiometric (output 412)							
Voltage supply DC 3 to 5.25 V Ratiometric output 10 to 90 % of the voltage supply	U _B 0 V/S- S+	WH BN GN	1 2 3	1 2 3	3	3	
DC 0 to 10 V, three-wire (output 415)							
Voltage supply DC 11.5 to 30 V	U _B 0 V/S- S+	WH BN GN	1 2 3	1 2 3	3	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 GN	1 2 3	1 2 3	3	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 through the electrical connection or process connection.

Assignment variants

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

Connection		Terminal assignment ^a			
					
Assignment variants		B1	B2	B3	B4
4 to 20 mA, two-wire (output 405)					
Voltage supply DC 8 to 30 V	U _B /S+				2
	0 V/S-				1
DC 0 to 10 V, three-wire (output 415)					
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 (output 418)					
DC 1 to 6 V, three-wire (output 420)					
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 ^b		-	-	-	

^a Figure: connection to the pressure transmitter

^b The pressure transmitter has to be connected to the potential equalization system of the plant through the electrical connection or process connection.

Colour coding: connecting cable round plug M12 × 1	1 BN	Brown
	2 WH	White
	3 BU	Blue
	4 BK	Black
The colour coding is only valid for A-coded standard cables!		

Order details

(1) Basic type	
401010	JUMO MIDAS S05 – OEM Pressure Transmitter – Universal
(2) Basic type extension	
000	None
999	Special version
(3) Input (measuring range)	
449	-1 to 1 bar relative pressure
450	-600 to +600 mbar relative pressure
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
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
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 relative pressure
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
999	Special version
(5) 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
999	Special version
(6) Process connection material	
20	CrNi (stainless steel)
(7) Electrical connection	
11	Attached cable ^a
23	QUICKON
36	Round plug M12 × 1 ^b
53	Bayonet DN 72585-A1-3.2-Sn/K1
61	Cable socket DIN EN 175301-803, Form A, ex DIN 43650 ^b
99	Special version
(8) Extra codes	
000	None
591	Choke in the pressure channel
624	Oil and grease free
630	Enlarged pressure channel ^c
876	Test report

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

^b If an assignment variant is ordered, please also provide the assignment variant in plain text (for example "B1")!

^c Diameter 8 mm with process connection 511 and 521, diameter 12 mm with process connection 504

Order code (1) (2) (3) (4) (5) (6) (7) (8)
 / - - - - - - / , ...^a

Order example 401010 / 000 - 460 - 412 - 504 - 20 - 36 / 591

^a List extra codes in sequence, separated by commas.



Minimum order volume for manufacturing devices: 5 pieces

Minimum order volume for warehouse devices: 1 piece

Stock versions

Item	Description	Parts no.
401010/000-456-405-502-20-61/000	0 to 2.5 bar relative pressure, G 1/4 DIN EN 837	43012486
401010/000-457-405-502-20-61/000	0 to 4 bar relative pressure, G 1/4 DIN EN 837	00517155
401010/000-458-405-502-20-61/000	0 to 6 bar relative pressure, G 1/4 DIN EN 837	00517148
401010/000-459-405-502-20-61/000	0 to 10 bar relative pressure, G 1/4 DIN EN 837	00517139
401010/000-460-405-502-20-61/000	0 to 16 bar relative pressure, G 1/4 DIN EN 837	00517133
401010/000-461-405-502-20-61/000	0 to 25 bar relative pressure, G 1/4 DIN EN 837	00523660
401010/000-491-405-502-20-61/000	0 to 4 bar absolute pressure, G 1/4 DIN EN 837	43012517
401010/000-492-405-502-20-61/000	0 to 6 bar absolute pressure, G 1/4 DIN EN 837	00526283
401010/000-483-405-502-20-61/000	-1 to +9 bar relative pressure, G 1/4 DIN EN 837	00523648

Accessories

Item	Description	Parts 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