

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

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 (output 405)	$R_L \leq (U_B - 8 \text{ V}) \div 0.02 \text{ A} (\Omega)$
Voltage	
DC 0.5 to 4.5 V, three-wire (output 412)	$R_L \geq 5 \text{ k}\Omega$
DC 0 to 10 V, three-wire (output 415)	$R_L \geq 10 \text{ k}\Omega$
DC 1 to 5 V, three-wire (output 418)	$R_L \geq 10 \text{ k}\Omega$
DC 1 to 6 V, three-wire (output 420)	$R_L \geq 10 \text{ k}\Omega$

^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 G 1/4 (process connection 502)

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

Environmental influences

Admissible temperatures Round plug M12 × 1 (electrical connection 36) Bayonet connector (electrical connection 53) Cable socket (electrical connection 61) Medium Ambient Storage Attached cable (electrical connection 11) Medium Ambient Storage At ambient temperatur of -30 °C Restricted function	-40 to +125 °C -40 to +125 °C -40 to +125 °C -40 to +125 °C -30 to +100 °C -30 to +100 °C Only use when stationary, risk of cable break
Admissible humidity Operation Storage	100 % rel. humidity including condensation on the device outer case 90 % rel. humidity without condensation
Admissible mechanical load Vibration resistance ^a Shock resistance ^b	20 g at 10 to 2000 Hz 50 g for 11 ms, 100 g for 1 ms
Electromagnetic compatibility Interference emission ^c Interference immunity ^c	Class B ^d Industrial requirement
Protection type ^e Attached cable (electrical connection 11) Relative pressure measuring range Absolute pressure measuring range QUICKON ^f (electrical connection 23) Round plug M12 × 1 ^g (electrical connection 36) Bayonet connector ^f (electrical connection 53) Cable socket ^{f, h} (electrical connection 61)	IP66 IP67 IP66 IP66 IP67 IP65

^a IEC 60068-2-6

^b IEC 60068-2-27

^c EN 61326-2-3

^d The product is suitable for industrial use as well as for households and small businesses.

^e EN 60529

^f Connecting cable diameter, minimum 3.5 mm, maximum 6 mm

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

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

Measuring range and accuracy

Measuring range bar	Linearity ^a % MSP ^f	Accuracy at		Long-term stability ^b % MSP per year	Overload- capability ^c bar	Burst pressure bar
		20 °C ^d % MSP	-20 to +100 °C ^e % MSP			
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
-0,6 to +0,6 bar 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	

^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

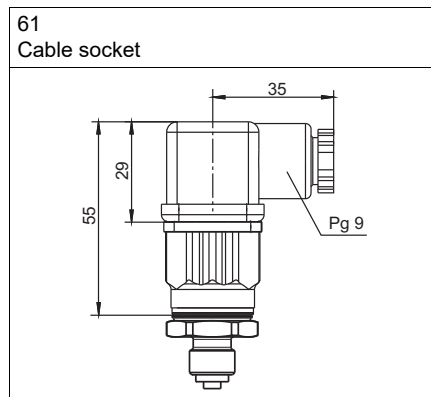
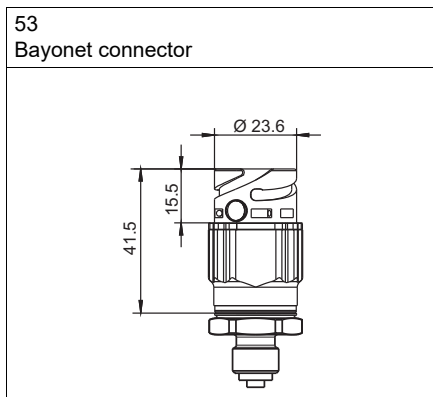
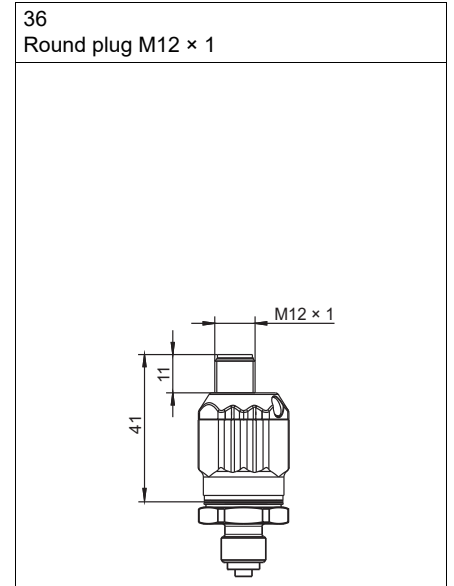
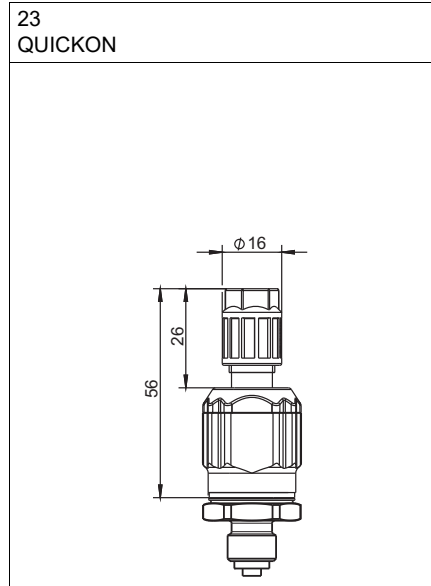
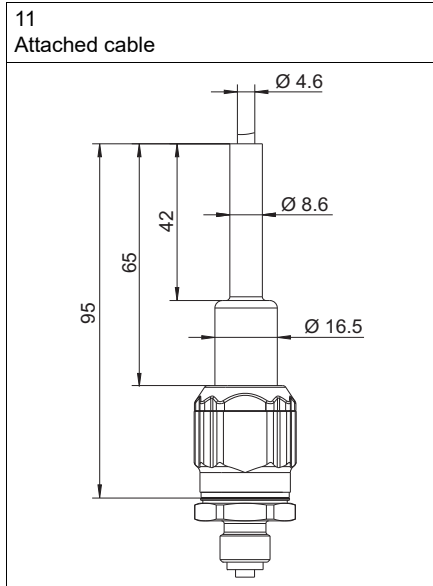
Auxiliary power

Voltage supply U _B ^a 4 to 20 mA, two-wire (output 405) DC 0.5 to 4.5 V, three-wire (output 412) DC 0 to 10 V, three-wire (output 415) DC 1 to 5 V, three-wire (output 418) DC 1 to 6 V, three-wire (output 420)	DC 8 to 30 V, rated voltage supply DC 24 V DC 3 to 5.25 V, rated voltage supply DC 5 V, ratiometric output 10 to 90 % of the voltage supply DC 11.5 to 30 V, rated voltage supply DC 24 V DC 8 to 30 V, rated voltage supply DC 24 V DC 8 to 30 V, rated voltage supply DC 24 V
Current consumption	≤ 25 mA
Reverse voltage protection	Yes
Electrical circuit Requirements	SELV The device must be equipped with an electrical circuit that meets the requirements of EN 61010-1 with regard to "Limited-energy circuits".

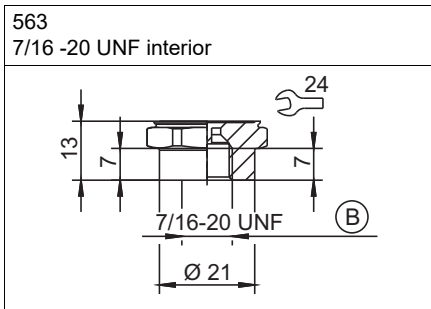
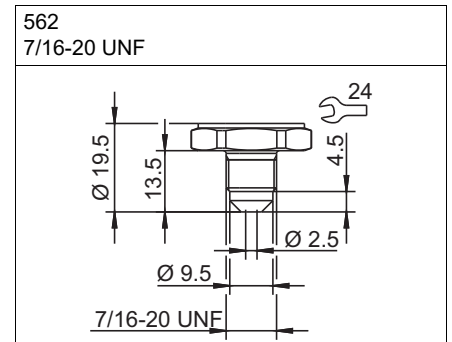
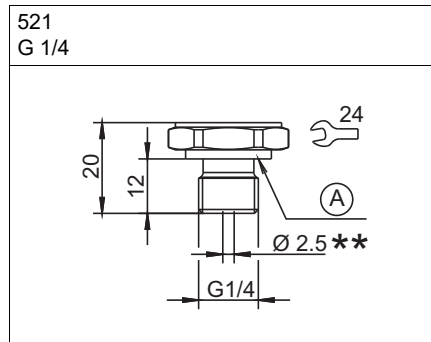
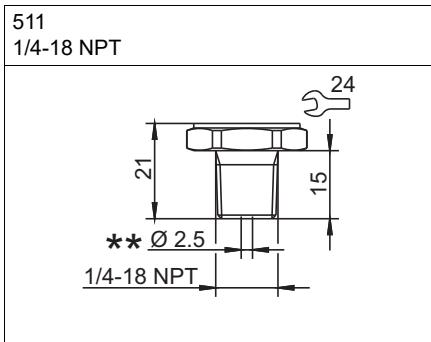
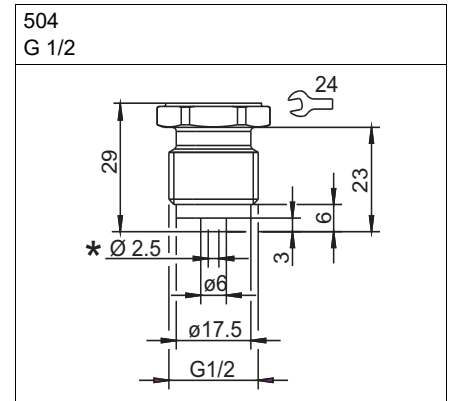
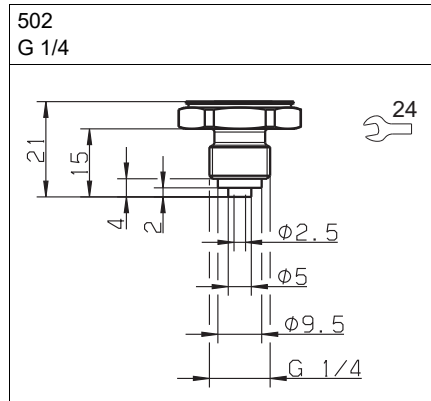
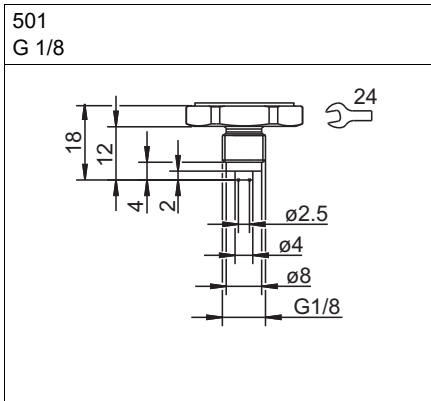
^a Residual ripple: the voltage peaks must not exceed or fall below the specified voltage supply values!

Dimensions

Electrical connection



Process connection



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

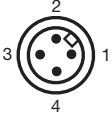
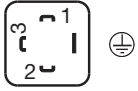


Connection		Terminal assignment ^a				
		11 Attached cable	23 QUICKON	36 Round plug M12 x 1	53 Bayonet connector	61 Cable socket
4 to 20 mA, two-wire (output 405)						
Voltage supply DC 8 to 30 V	U _B /S+	WH	1	1	1	1
	0 V/S-	BN	3	3	2	2
DC 0.5 to 4.5 V ratiometric (output 412)						
Voltage supply DC 3 to 5.25 V	U _B	WH	1	1	1	1
Ratiometric output 10 to 90 % of the voltage supply	0 V/S-	BN	2	2	2	2
	S+	GN	3	3	3	3
DC 0 to 10 V, three-wire (output 415)						
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 (output 418)						
DC 1 to 6 V, three-wire (output 420)						
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 ^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 electrical connection, extra code 933

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

Connection		Terminal assignment ^a			
					
		36 Round plug M12 × 1		61 Cable socket	
Assignment variants		B1	B2	B3	B4
4 to 20 mA, two-wire (output 405)					
Voltage supply DC 8 to 30 V	U _B /S+	1			2
	0 V/S-	2			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.

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!

Order details

(1) Basic type	
401010/000	JUMO MIDAS S05 – OEM Pressure Transmitter – Universal
401010/999	JUMO MIDAS S05 – OEM Pressure Transmitter – Universal, special version
(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	-0.6 to +0.6 bar 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
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, 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
(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
999	Special version
(5) Process connection material	
20	CrNi (stainless steel)
(6) Electrical connection	
11	Attached cable ^a
23	QUICKON
36	Round plug M12 × 1
53	Bayonet DN 72585
61	Cable socket DIN EN 175301-803, Form A
99	Special version
(8) Extra codes	
000	None
591	Choke in the pressure channel
624	Oil and grease free
630	Enlarged pressure channel ^b
876	Test report

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

^b An enlarged pressure channel is only available with process connection 1/4-18 NPT (process connection 511) and G 1/4 (process connection 521).



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

Accessories

Item	Description	Part no.
<p>Cable box, straight</p> 	<p>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.</p>	00404585
<p>Cable box, angled</p> 	<p>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.</p>	00409334