

**JUMO GmbH & Co. KG**

Company address: Moritz-Juchheim-Strasse 1, 36039 Fulda, Germany  
Delivery address: Mackenrodtstrasse 14, 36039 Fulda, Germany  
Postal address: 36035 Fulda, Germany

Tel.: +49 661 6003-715  
Fax: +49 661 6003-606  
e-mail: mail@jumo.net  
Internet: www.jumo.net



# JUMO MIDAS S05

## Pressure transmitter

### Type 401010

#### 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 safety against process medium escaping.

The instrument features a silicon sensor that is able to handle extreme overload, even in the lowest measurement ranges, and is capable of millions of pressure cycles.

Many applications may be found in cooling and air conditioning systems, compressors, mechanical engineering, commercial vehicles, and industrial pneumatic uses.



Type 401010/...

#### Key features

- Welded measuring system without seals
- Parts in contact with medium made of stainless steel
- Resistant to coolants
- Extremely overload-resistant
- For measuring relative and absolute pressure
- Available with terminal box to DIN 43650



## Technical data

### General

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

### Input

Relative and absolute pressure								
Measuring range (bar)	0 to 1	0 to 1.6	0 to 2.5	0 to 4	0 to 6	0 to 10	0 to 16	0 to 25
Overload capacity (bar) <sup>1</sup>	-1 to 4	-1 to 6	-1 to 10	-1 to 16	-1 to 24	-1 to 40	-1 to 60	-1 to 100
Bursting pressure (bar)	6	10	15	24	36	60	100	150
Measuring range (bar)	0 to 40	0 to 60						
Overload capacity (bar) <sup>1</sup>	-1 to 100	-1 to 100						
Bursting pressure (bar)	150							
Measuring range (bar)	-1 to 0	-1 to 0.6	-1 to 1.5	-1 to 3	-1 to 5	-1 to 9	-1 to 15	-1 to 24
Overload capacity (bar) <sup>1</sup>	-1 to 4	-1 to 6	-1 to 10	-1 to 16	-1 to 24	-1 to 40	60	100
Bursting pressure (bar)	6	10	15	24	36	60	100	150

<sup>1</sup> All pressure transmitters are vacuum-proof

### Analog output

<b>Output signal</b>	
Electrical current	
Output 405	4 to 20 mA, 2 wires
Voltage	
Output 412	0.5 to 4.5 V three wires (ratiometrically 10 to 90% of the power supply)
Output 415	0 to 10 V three wires
Output 418	1 to 5 V three wires
Output 420	1 to 6 V three wires
Other outputs	on request
<b>Jump response</b>	
t <sub>90</sub>	≤ 5 ms
<b>Burden</b>	
4 to 20 mA	$R_i \leq (U_B - 8 \text{ V}) / 0.02 \text{ A}$
0.5 to 4.5 V	≥ 20 kΩ
1 to 5 V	≥ 10 kΩ
1 to 6 V	≥ 10 kΩ
0 to 10 V	≥ 10 kΩ



**Measurement deviation**

<b>Relative and absolute pressure</b>									
<b>Nominal measuring range (bar)</b>	<b>0 to 1</b>	<b>0 to 1.6</b>	<b>0 to 2.5</b>	<b>0 to 4</b>	<b>0 to 6</b>	<b>0 to 10</b>	<b>0 to 16</b>	<b>0 to 25</b>	
Non-linearity (% of full scale) <sup>1</sup>	0.3	0.25					0.2		
Total error at +20°C (% of full scale) <sup>2</sup>	0.6	0.5							
Total error at -20 to +100°C (% of full scale) <sup>3</sup>	1.5	1.4	1.3	1.2		1.0			
<b>Nominal measuring range (bar)</b>	<b>0 to 40</b>	<b>0 to 60</b>							
Non-linearity (% of full scale) <sup>1</sup>	0.2								
Total error at +20°C (% of full scale) <sup>2</sup>	0.5								
Total error at -20 to +100°C (% of full scale) <sup>3</sup>	1.0								
<b>Measuring range (bar)</b>	<b>-1 to 0</b>	<b>-1 to 0.6</b>	<b>-1 to 1.5</b>	<b>-1 to 3</b>	<b>-1 to 5</b>	<b>-1 to 9</b>	<b>-1 to 15</b>	<b>-1 to 24</b>	
Non-linearity (% of full scale) <sup>1</sup>	0.3			0.25		0.2			
Total error at +20°C (% of full scale) <sup>2</sup>	0.6			0.5					
Total error at -20 ... +100°C (% of full scale) <sup>3</sup>	1.5	1.4	1.3	1.2	1.0				

<sup>1</sup> Non-linearity based on limit point setting

<sup>2</sup> Includes: non-linearity, hysteresis, non-repeatability, deviation from initial and final values of measuring range

<sup>3</sup> Includes: non-linearity, hysteresis, non-repeatability, deviation from initial and final values of measuring range, thermal effect on initial value of measuring range and span

**Mechanical properties**

<b>Materials</b>	
Process connection	Stainless steel 304
Seal	The measuring system is welded with no seals <sup>4</sup>
Diaphragm	Stainless steel 316L
Enclosure	Stainless steel 304
Threaded sleeve M12x1	Stainless steel 303
Connector	PBT-GF30
<b>Weight</b>	
Instrument with process connection 502 (G1/4)	80 g

<sup>4</sup> Pressure transmitters with process connection 521 come with an FPM seal

**Ambient conditions**

<b>Permissible temperatures</b>	
<b>with electrical connection 36, 53 or 61</b>	
Measuring material	-40 to +125°C
Environment	-40 to +125°C
Storage	-40 to +125°C
<b>With electrical connection 11</b>	
Measuring material	-40 to +125°C
Environment	-40 to +100°C
Storage	-40 to +100°C
<b>At ambient temperature -50°C</b>	
Restricted function	Stationary use only, danger of broken cable
<b>Permissible relative humidity</b>	
Operation	100% rel. humidity, incl. condensation on the outer sleeve of the instrument
Storage	90% relative humidity, no condensation

**JUMO GmbH & Co. KG**

Company address: Moritz-Juchheim-Strasse 1, 36039 Fulda, Germany  
 Delivery address: Mackenrodtstrasse 14, 36039 Fulda, Germany  
 Postal address: 36035 Fulda, Germany

Tel.: +49 661 6003-715  
 Fax: +49 661 6003-606  
 e-mail: mail@jumo.net  
 Internet: www.jumo.net



<b>Permissible mechanical loading</b> Vibration strength <sup>1</sup> Shock resistance <sup>2</sup>	20 g at to 2000 Hz 50 g for 11 ms 100 g for 1 ms
<b>Electromagnetic compatibility</b> Interference emission <sup>3</sup> Interference immunity <sup>3</sup>	Class A Performance characteristic A
<b>Enclosure protection to EN 60529</b> with electrical connection 11 (fixed cable and relative pressure measuring range) 11 (fixed cable and absolute pressure measuring range) 36 (round plug M12 x 1) 52 (Mini Metri Pack series 150) 53 (bayonet connector) 61 (terminal box) <sup>4</sup>	IP66 IP67 IP66 IP67 IP67 IP65

<sup>1</sup> Per IEC 60068-2-6

<sup>2</sup> Per IEC 60068-2-27

<sup>3</sup> Per EN61326

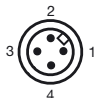
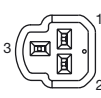
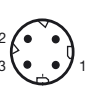
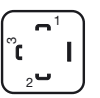
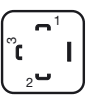




<sup>4</sup> Minimum connection line diameter 5 mm, maximum 7 mm

**Power supply**

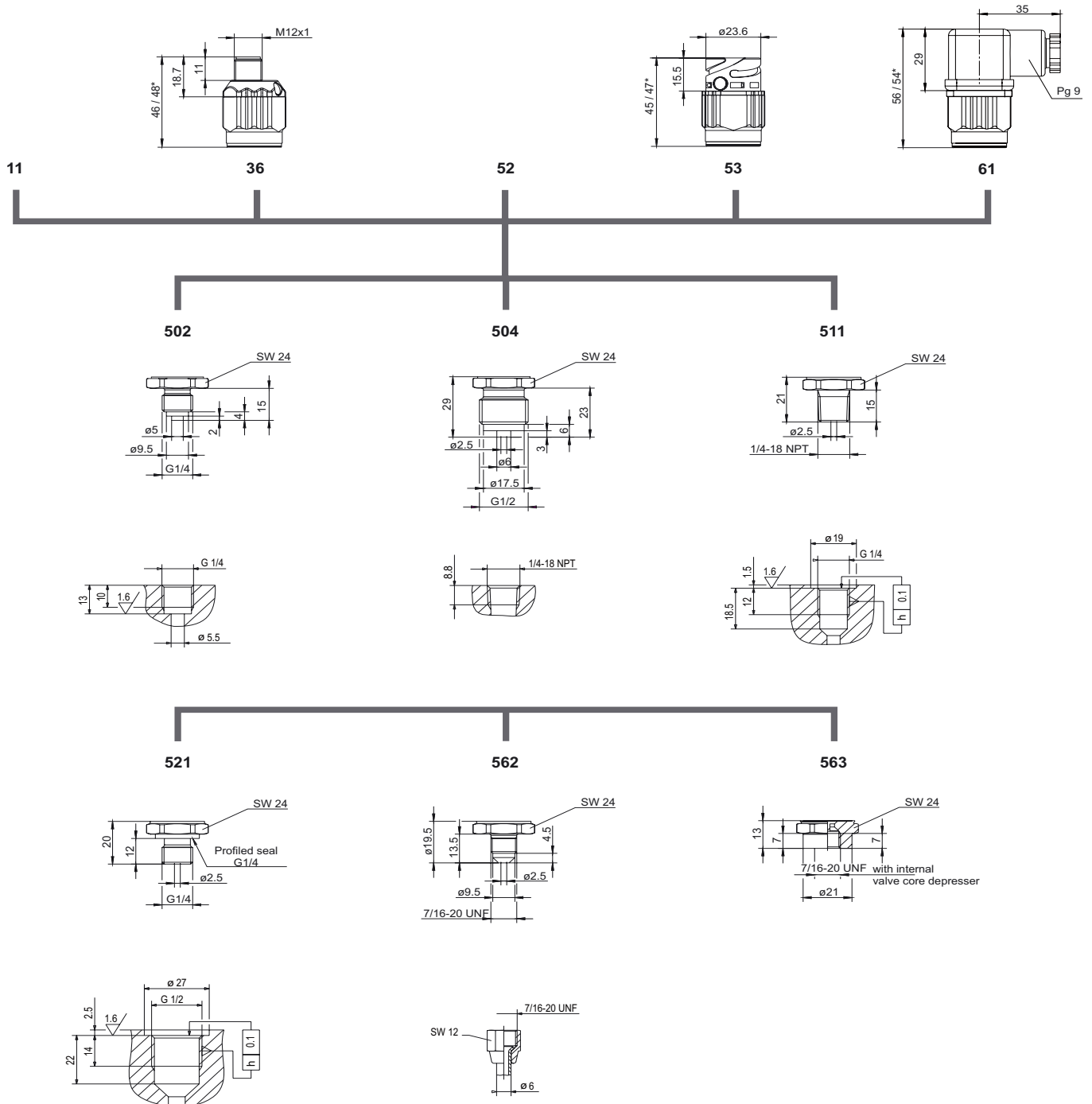
<b>Auxiliary power</b> Terminal assignment Power supply $U_B$ for output 405 = 4 to 20 mA for output 412 = 0.5 to 4.5 V for output 415 = 0 to 10 V for output 418 = 1 to 5 V for output 420 = 1 to 6 V Residual ripple Reverse polarity protection Power consumption Circuit	See page 6/8  8 to 30 V DC, nominal voltage 24 V DC 5 V DC $\pm$ 0.5 V, nominal voltage 5 V DC 12.5 to 30 V DC, nominal voltage 24 V DC 8 to 30 V DC, nominal voltage 24 V DC 8 to 30 V DC, nominal voltage 24 V DC Peak voltages must not exceed or fall below the values specified for the supply voltage yes $\leq$ 25 mA SELV
<b>Electrical connection</b> 11 = Fixed cable 36 = Round plug M12 x 1 52 = Mini Metri Pack series 150 53 = Bayonet connector 61 = Terminal box	4-core cable, PVC, length 2 m (other lengths available on request) 4-pin, A-coded Mini Metri Pack series 150 DIN 72585 A1 - 3.1 DIN 175301 Form A <sup>5</sup>

<sup>5</sup> Conductor cross-section  $\leq$  1.5 mm<sup>2</sup>

## Electrical connection

Connection		Terminal assignment						
								
		11 Cable	36 M12x1	52 Mini Metri Pack	53 Bayonet	61 Terminal box		
<b>Devices with 3-wire output</b>								
Power supply			U <sub>B</sub> 0 V	white +	1+	2+	1+	1 L+
for output 412	5 V DC			brown -	2-	1-	2-	2 L-
for output 415	12.5 to 30 V DC							
for output 418	8 to 30 V DC							
for output 420	8 to 30 V DC							
Output			S- S+	brown -	2-	1-	2-	2 -
412 = 0.5 to 4.5 V, ratiometric				yellow +	3+	3+	3+	3 +
415 = 0 to 10 V								
418 = 1 to 5 V								
420 = 1 to 6 V								
<b>Devices with 2-wire output</b>								
Power supply			U <sub>B</sub> 0 V	white +	1+	2+	1+	1 L+
for output 405	8 to 30 V DC			brown -	3-	1-	2-	2 L-
Output			S- S+	white	1+	2+	1+	1 +
405 = 4...20 mA, 2-wire				brown	3-	1-	2-	2 -
Impressed current 4 to 20 mA in power supply voltage								

## Dimensions





## Order details

### (1) Basic type

401010 JUMO MIDAS S05 pressure transmitter

### (2) Basic type extensions

000 None  
999 Special design

### (3) Input

454 0 ... 1.0 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  
478 -1 ... 0 bar relative pressure  
479 -1 ... 0.6 bar 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 ... 1.0 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  
505 0 ... 40 bar absolute pressure  
998 Special measuring range for absolute pressure  
999 Special measuring range for relative pressure

### (4) Output

405 4 to 20 mA 2 wires  
412 0.5 to 4.5 V 3 wires  
415 0 to 10 V 3 wires  
418 1 to 5 V 3 wires  
420 1 to 6 V 3 wires

### (5) Process connection (not front-flush)

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

### (6) Process connection material

20 Stainless steel

### (7) Electrical connection

11 Fixed cable<sup>1</sup>  
36 Round plug M 12  
52 Mini Metri Pack series 150<sup>1</sup>  
53 Bayonet connector  
61 Terminal box

<sup>1</sup> Available on request

**JUMO GmbH & Co. KG**

Company address: Moritz-Juchheim-Strasse 1, 36039 Fulda, Germany  
 Delivery address: Mackenrodtstrasse 14, 36039 Fulda, Germany  
 Postal address: 36035 Fulda, Germany

Tel.: +49 661 6003-715  
 Fax: +49 661 6003-606  
 e-mail: mail@jumo.net  
 Internet: www.jumo.net

**(8) Extra codes**

000 None  
 591 Throttle in pressure channel  
 624 Free of oil and grease  
 630 Larger channel hole

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Order code</b>	<input type="text"/>	/ <input type="text"/>	- <input type="text"/>	- <input type="text"/>	- <input type="text"/>	- <input type="text"/>	- <input type="text"/>	/ <input type="text"/>
<b>Sample order</b>	401010	/ 000	- 459	- 405	- 504	- 20	- 61	/ 000

**Accessories****Designation**

4-pin cable connector (straight) M12 x 1 with 2m PVC cable  
 4-pin angle box M12 x 1 with 2 m PVC cable

**Sales no.**

40/00404585  
 40/00409334