JUMO MIDAS C18 SW

OEM pressure transmitter - seawater

Applications

- Water treatment (reverse osmosis), for example sea water desalination plants, deionized water plants (e.g. to generate pure water)
- Organic acids, for example acetic acid
- Solutions containing chlorides such as sea water, brackish water and salt solutions, for example ballast tanks on ships, offshore applications, tide level measuring systems and above-ground fish farms

Brief description

The JUMO MIDAS C18 SW pressure transmitter has a resistant and hysteresis-free ceramic measuring cell as well as a titanium housing and process connection.
Titanium was selected as a material due to its extraordinarily high resistance to corrosion, especially compared to organic acids and solutions containing chlorides.
The instrument is able to record relative pressures in the measuring range 1.6 to 100 bar.
4 to 20 mA (two wires) and DC 0 to 10 V (three wires) are available as standard signals.

Type 401012 with fixed cable

Customer benefits

- **Process safety**
  The high quality of each pressure transmitter is ensured by a 100 % final inspection of a fully automated measuring and calibrating system.
  The resistance of the materials that are used leads to high system availability. Together with the oil-free measuring cell, which does not allow any filling oil to escape if the instrument bursts, a high level of process safety is ensured for critical processes, for example reverse osmosis.
- **Economical**
  A proven design ensures efficient production, which shortens delivery times. The resistant materials cut down on cleaning and repair processes, reducing system downtimes accordingly as well as associated costs.
  The compact and light design opens up many possible applications for users and also makes it easier to decide what to buy when it comes time for a replacement.

Special features

- Aluminum oxide ceramic measuring cell
- Titanium enclosure and process connection
- Long-term stability < 0.2 %
- Weighs about 40 % less compared to comparable stainless steel variants
- Encapsulated for protection against vibration, condensation and moisture
- Made in Germany

Technical data

General information

Reference conditions	DIN 16086 and EN 60770
Sensor	
Principle of measurement	Thick film on ceramic body (piezoresistive)
Permissible load change	> 10 million, 0 to 100 % measurement range
Location	
Mounting position	Any
Calibration position	Device standing upright, process connection on bottom

Measuring range

Relative pressure	The measurement ranges start at 0 bar										
Measuring range	1.6	2.5	4	6	10	16	25	40	60	100	bar
Overload capacity[a]	6	6	12	12	20	50	50	120	120	180	bar
Bursting pressure	12	12	25	25	38	75	75	200	200	250	bar
Relative pressure											
Measuring range	-1 to +0.6	-1 to +1.5	-1 to +3	-1 to +5	-1 to +9	-1 to +15	-1 to +24				bar
Overload capacity[a]	6	6	12	12	20	50	50				bar
Bursting pressure	12	12	25	25	38	75	75				bar

[a] All pressure transmitters are vacuum-proof.

Output

Analog output[a]	
Electrical current	
Output 405	4 to 20 mA, two wires
Voltage	
Output 415	DC 0 to 10 V, three wires
Step response time	
T90	≤ 2 ms
Burden	
Electrical current	
4 to 20 mA, two wires	$R_L \leq (U_B - 8\ V)/0.02\ A\ (\Omega)$
Voltage	
DC 0 to 10 V, three wires	$R_L \geq 10\ k\Omega$

[a] Additional outputs are available on request.

Mechanical properties

Process connection	
Material	Titanium grade 2 3.7035 (Ti2)
Process seal[a]	
Seal 601	FPM
Sensor	
Material	Ceramic Al_2O_3 96 %
Enclosure	
Material	Titanium grade 2 3.7035 (Ti2)
Electrical connection	
Material	
Fixed cable, electrical connection 11	PBT-GF30, PVC
Round plug M12 × 1, electrical connection 36	PBT-GF30
Terminal box, electrical connection 61	PBT-GF30, PA, silicon
Weight	44 g with process connection 502 (G 1/4) and electrical connection 36 (round plug M12 × 1)

[a] Additional materials are available on request. Note the resistance of the selected sealing material!

Ambient conditions

Permissible temperatures	
Medium	-20 to +125 °C
Environment	-20 to +85 °C, -40 to +125 °C on request
Storage	-40 to +125 °C, for version with fixed cable -20 to +100 °C
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, 15 to 2000 Hz
Shock resistance[b]	100 g for 1 ms
Electromagnetic compatibility	
Interference emission[c]	Class B
Interference immunityc	Industrial requirements
Protection[d]	
Fixed cable, electrical connection 11	IP67
Round plug M12 × 1, electrical connection 36	IP67
Terminal box, electrical connection 61	IP65

[a] IEC 60068-2-6
[b] IEC 60068-2-27
[c] EN 61326-2-3
[d] EN 60529 (when connected with suitable mating piece)

Accuracy

Relative pressure										
Nominal measuring range (bar)	0 to 1.6	0 to 2.5	0 to 4	0 to 6	0 to 10	0 to 16	0 to 25	0 to 40	0 to 60	0 to 100
Non-linearity (% of end value)[a]	0.3			0.25						
Total error at 20 °C (% of end value)[b]	0.5									
Total error for -20 to +100 °C (% of end value)[c]	1.6			1.4						
Long-term stability[d]	0.2 % of end value annually									

Relative pressure							
Measuring range (bar)	-1 to 1.6	-1 to 1.5	-1 to 3	-1 to 5	-1 to 9	-1 to 15	-1 to 24
Non-linearity (% of end value)[a]	0.3			0.25			
Total error at 20 °C (% of end value)[b]	0.6		0.5				
Total error for -20 to +100 °C (% of end value)[c]	1.6			1.4			
Long-term stability[d]	0.2 % of end value annually						

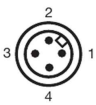
[a] Non-linearity based on limit point setting
[b] Includes: non-linearity, hysteresis, non-repeatability, deviation from initial and final values of measuring range
[c] Includes: non-linearity, hysteresis, non-repeatability, deviation from initial and final values of measuring range, thermal effect on initial value of measuring range and span
[d] See data sheet 401002

Auxiliary power

Supply voltage U_B[a]	
4 to 20 mA, two wires, output 405	DC 10 to 30 V, nominal power supply DC 24 V
DC 0 to 10 V, three wires, output 415	DC 11.5 to 30 V, nominal power supply DC 24 V
Power consumption	
4 to 20 mA, two wires, output 405	≤ 25 mA
DC 0 to 10 V, three wires, output 415	≤ 3 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.

Connection diagram

Connection		Terminal assignment[a]		
				
		11 Fixed cable	36 Round plug M12 × 1	61 Terminal box
4 to 20 mA, two wires, output 405				
Supply voltage DC 8 to 30 V	U_B/S+ 0 V/S-	White Brown	1 BN 3 BU	1 2
DC 0 to 10 V, three wires, output 415				
Supply voltage DC 11.5 to 30 V	U_B 0 V/S- S+	White Brown Yellow	1 BN 2 WH 3 BU	1 2 3

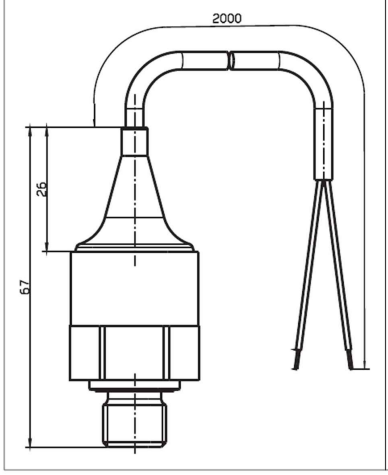
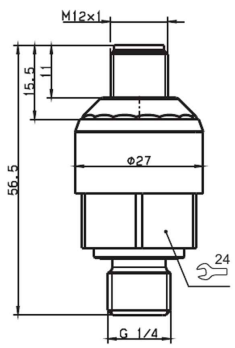
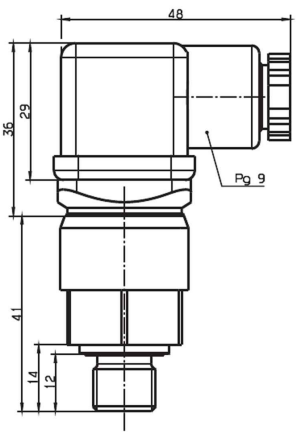
[a] Illustration: Connection on pressure transmitter

Color assignment: Round plug M12 × 1	1 BN	Brown
	2 WH	White
	3 BU	Blue
	4 BK	Black

The color assignment applies **only** to A-coded standard cables!

Dimensions

Electrical connection and process connection

11	36	61
		

Tourque: 8 ±2 Nm

Order details

	(1)	**Basic type**
401012		JUMO MIDAS C18 SW - OEM pressure transmitter - Seawater
	(2)	**Basic type extension**
000		None
999		Special design
	(3)	**Relative pressure measuring range**
		Overpressure
455		0 to 1.6 bar
456		0 to 2.5 bar
457		0 to 4 bar
458		0 to 6 bar
459		0 to 10 bar
460		0 to 16 bar
461		0 to 25 bar
462		0 to 40 bar
463		0 to 60 bar
464		0 to 100 bar
		Negative overpressure
479		-1 to +0.6 bar
480		-1 to +1.5 bar
481		-1 to +3 bar
482		-1 to +5 bar
483		-1 to +9 bar
484		-1 to +15 bar
485		-1 to +24 bar
999		Special measuring range
	(4)	**Output**
405		4 to 20 mA, two wire
415		DC 0 to 10 V, 3 wire
	(5)	**Process connection**
521		G 1/4 DIN EN 837[a]
	(6)	**Process connection material**
60		Titanium
	(7)	**Seal material**
601		FPM[b]
	(8)	**Electrical connection**
11		Fixed cable, 2 m (other lengths available on request)
36		Round plug M12 × 1
61		Terminal box EN 175301-803, Form A, ex DIN 43650
	(9)	**Extra codes**
000		None
630		Enlarged pressure channel Ø 8 mm

[a] Only available in combination with extra code 630, enlarged pressure channel.
[b] as standard

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)	
Order code		/		-		-		-		-		-		-		/		...
Sample order	401012	/	000	-	460	-	405	-	521	-	60	-	601	-	11	/	630	

Accessories

Type	Part no.
4-pin cable connector, straight, M12 × 1 with 2 m PVC cable	00404585
4-pin cable connector, angled, M12 × 1 with 2 m PVC cable	00409334