

JUMO MIDAS C18 SW

OEM seawater pressure transmitter

Applications

- water treatment
- reverse osmosis, e.g. seawater desalination plants
- purification plants
- organic acids, e.g. acetic acid
- solutions containing chloride, e.g. brackish water, seawater and saline solutions
- ballast tanks on ships
- offshore applications

Brief description

The pressure transmitter features an impervious and hysteresis-free ceramic measuring cell, a titanium case, and a titanium process connection.

Titanium was selected as the material due its extremely high corrosion resistance, in particular to organic acids and solutions containing chloride.

The device can record relative pressures in measuring ranges of 1.6 bar up to 100 bar.

4 mA to 20 mA (two-wire) and DC 0 V to 10 V (three-wire) are available as standard signals.



Type 401012 with attached cable

Customer benefits

- **process-reliable**
The full final inspection in the fully automated measuring and calibration facility guarantees that each pressure transmitter is of a high quality.
The durability of the used materials results in high plant availability. In combination with the oil-free ceramic measuring cell which prevents filling oil leaks in the event of a burst, this guarantees a high degree of process reliability for critical processes such as reverse osmosis.
- **economic**
A proven design ensures efficient production, which in turn leads to short delivery times. The resistant materials reduce cleaning and repair processes, thereby reducing plant downtimes as well as the resulting costs of these.
The compact and light design opens up many fields of application for users and makes purchase decisions easier when replacements are needed.

Special features

- measuring cell made of aluminum oxide ceramic
- case and process connection made of titanium
- long-term stability < 0.2 %
- approx. 40 % weight reduction when compared to similar stainless steel versions
- potting as protection against vibrations, condensation, and moisture
- made in Germany

Technical data

General information

Reference conditions	DIN 16086 and DIN EN 60770
Sensor	
Measuring principle	Thick film on ceramic bodies (piezo-resistive)
Admissible load changes	> 10 million, 0 % to 100 % measuring range
Position	
Mounting position	Any
Calibration position	Device upright, process connection at the bottom

Output

Analog output	
Current	
Output 405	4 mA to 20 mA, two-wire
Voltage	
Output 415	DC 0 V to 10 V, three-wire
Jump response time	
t_{90}	≤ 2 ms
Burden	
Current	
4 mA to 20 mA, two-wire	$RL \leq (U_B - 8 \text{ V}) \div 0.02 \text{ A } (\Omega)$
Voltage	
DC 0 V to 10 V, three-wire	$RL \geq 10 \text{ k}\Omega$

Mechanical features

Process connection	
Material	Titanium grade 2 3.7035 (Ti2)
Process seal ^a	
Seal 600	EPDM
Seal 601	FPM
Sensor	
Material	Ceramic Al ₂ O ₃ 96 %
Case	
Material	Titanium grade 2 3.7035 (Ti2)
Electrical connection	
Material	
Attached cable (electrical connection 11)	PBT-GF30, PVC
Round plug M12 × 1 (electrical connection 36)	PBT-GF30
Cable socket (electrical connection 61)	PBT-GF30, PA, silicone
Weight	44 g with process connection 521 (G 1/4) and electrical connection 36 (round plug M12 × 1)

^a Ensure the medium durability of the seal material!

Environmental conditions

Admissible temperatures	
Medium	-20 °C to +125 °C
Ambient	-20 °C to +85 °C
Storage	-40 °C to +125 °C, for version with attached cable -20 °C to +100 °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 ^a	20 g, 15 to 2,000 Hz
Shock resistance ^b	100 g for 1 ms
Electromagnetic compatibility	
Interference emission ^c	Class B
Interference immunity ^c	Industrial requirement
Protection type ^d	
Attached cable ^e (electrical connection 11)	IP67
Round plug M12 × 1 ^e (electrical connection 36)	IP67
Cable socket (electrical connection 61) ^{e, f}	IP65

^a IEC 60068-2-6

^b IEC 60068-2-27

^c EN 61326-2-3

^d EN 60529

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

^f 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 capacity ^c bar	Burst pressure bar
		20 °C ^d % MSP	-20 C to +100 °C ^e % MSP			
0 bar to 1.6 bar relative pressure	0.3	0.5	1.6	0.2	6	12
0 bar to 2.5 bar relative pressure	0.3	0.5	1.6		6	12
0 bar to 4 bar relative pressure	0.3	0.5	1.6		12	25
0 bar to 6 bar relative pressure	0.25	0.5	1.4		12	25
0 bar to 10 bar relative pressure	0.25	0.5	1.4		20	38
0 bar to 16 bar relative pressure	0.25	0.5	1.4		50	75
0 bar to 25 bar relative pressure	0.25	0.5	1.4		50	75
0 bar to 40 bar relative pressure	0.25	0.5	1.4		120	200
0 bar to 60 bar relative pressure	0.25	0.5	1.4		120	200
0 bar to 100 bar relative pressure	0.25	0.5	1.4		180	250
-1 bar to +0.6 bar relative pressure	0.3	0.6	1.6		6	12
-1 bar to +1.5 bar relative pressure	0.3	0.6	1.6		6	12
-1 bar to +3 bar relative pressure	0.3	0.6	1.6		12	25
-1 bar to +5 bar relative pressure	0.25	0.5	1.4		12	25
-1 bar to +9 bar relative pressure	0.25	0.5	1.4		20	38
-1 bar to +15 bar relative pressure	0.25	0.5	1.4		50	75
-1 bar to +24 bar relative pressure	0.25	0.5	1.4	50	75	

^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

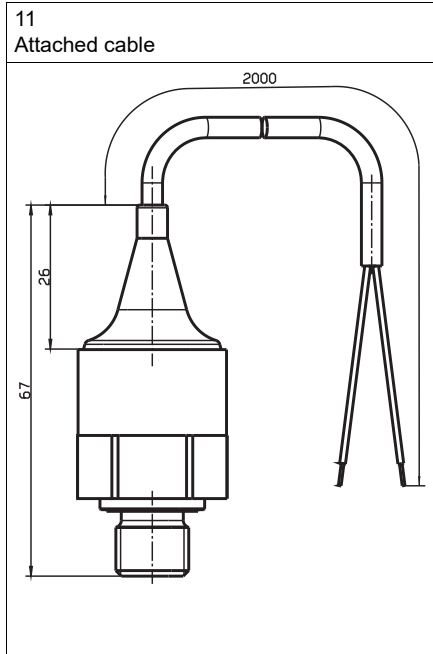
Auxiliary energy

Voltage supply U _B ^a 4 mA to 20 mA, two-wire (output 405) DC 0 V to 10 V, three-wire (output 415)	DC 10 V to 30 V, rated voltage supply DC 24 V DC 11.5 V to 30 V, rated voltage supply DC 24 V
Current consumption 4 mA to 20 mA, two-wire (output 405) DC 0 V to 10 V, three-wire (output 415)	≤ 25 mA ≤ 3 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".

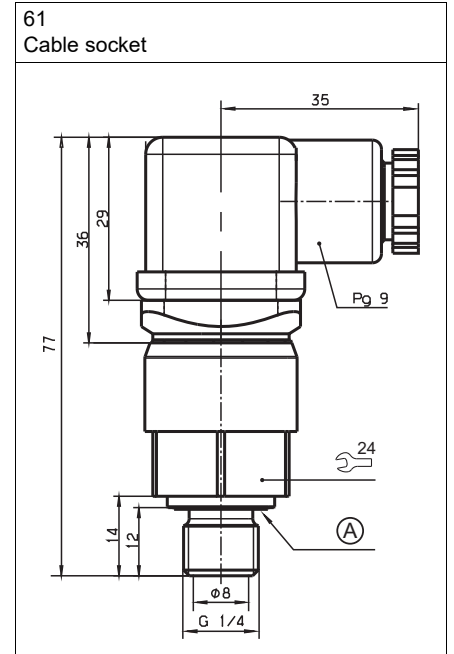
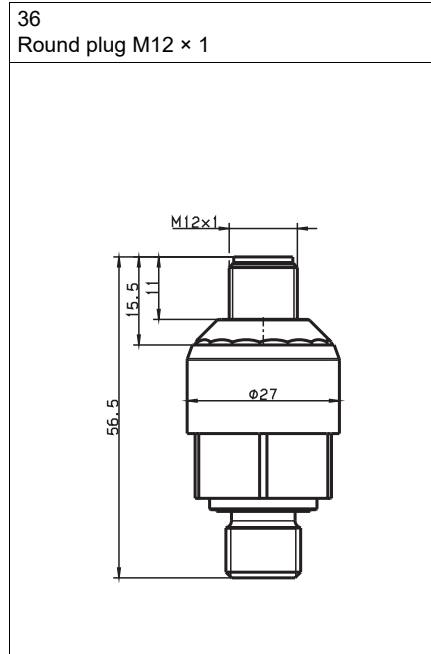
^a Residual ripple: the voltage peaks must not exceed or fall below the specified voltage supply values.

Dimensions

Electrical connection and process connection


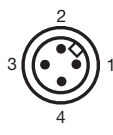
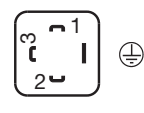




A Profile seal G 1/4



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	36 Round plug M12 × 1	61 Cable socket
4 mA to 20 mA, two-wire (output 405)				
Voltage supply DC 8 V to 30 V	U _B /S+ 0 V/S-	WH BN	1 3	1 2
DC 0 V to 10 V, three-wire (output 415)				
Voltage supply DC 11.5 V to 30 V	U _B 0 V/S- S+	WH BN YE	1 2 3	1 2 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.

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	
401012	JUMO MIDAS C18 SW – OEM pressure transmitter – seawater
(2) Basic type extension	
000	None
999	Special version
(3) Input (measuring range)	
455	0 bar to 1.6 bar
456	0 bar to 2.5 bar
457	0 bar to 4 bar
458	0 bar to 6 bar
459	0 bar to 10 bar
460	0 bar to 16 bar
461	0 bar to 25 bar
462	0 bar to 40 bar
463	0 bar to 60 bar
464	0 bar to 100 bar
479	-1 bar to +0.6 bar
480	-1 bar to +1.5 bar
481	-1 bar to +3 bar
482	-1 bar to +5 bar
483	-1 bar to +9 bar
484	-1 bar to +15 bar
485	-1 bar to +24 bar
999	Special measuring range for relative pressure
(4) Output	
405	4 mA to 20 mA, two-wire
415	DC 0 V to 10 V, three-wire
999	Special version
(5) Process connection	
521	G 1/4 DIN EN 837 ^a
999	Special version
(6) Process connection material	
60	Titanium
(7) Material seal	
600	EPDM
601	FPM
999	Special version
(8) Electrical connection	
11	Attached cable, 2 m (other lengths upon request)
36	Round plug M12 × 1
61	Cable socket DIN EN 175301-803, Form A, ex DIN 43650
99	Special version
(9) Extra codes	
630	Enlarged pressure channel

^a The process connection 521 (G 1/4) is only available in connection with extra code 630 (enlarged pressure channel).

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

Accessories

Item	Description	Part no.
<p data-bbox="113 488 304 517">Cable box, straight</p> 	<p data-bbox="549 488 1289 539">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>	<p data-bbox="1294 488 1398 517">00404585</p>
<p data-bbox="113 837 296 866">Cable box, angled</p> 	<p data-bbox="549 837 1289 889">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>	<p data-bbox="1294 837 1398 866">00409334</p>