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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

Approvals and approval marks



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

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

Output

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

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Mechanical features

Material	
Process connection	Titanium grade 2 3.7035 (Ti2)
Process seal 600 ^a	EPDM
Process seal 601 ^a	FPM
Sensor	Ceramic Al ₂ O ₃ 96 %
Case	Titanium grade 2 3.7035 (Ti2)
Attached cable (electrical connection 11)	Technomelt PA 678, PVC
Round plug M12 × 1 (electrical connection 36)	PBT-GF30
Cable socket (electrical connection 61)	PBT-GF30, PA, EPDM
Weight	44 g with G 1/4 (process connection 521) and round plug M12 × 1 (electrical connection 36)

^a Ensure the medium durability of the seal material!

Environmental influences

Medium temperature	-20 °C to +125 °C
Ambient temperature	-20 °C to +85 °C
Storage temperature	-40 °C to +125 °C -20 °C to +100 °C for version with attached cable
Admissible humidity	
Operation	100 % rel. humidity including condensation on the device outer case
Storage	90 % rel. humidity without condensation
Admissible mechanical load	
Vibration resistance	20 g, 15 to 2,000 Hz, according to IEC 60068-2-6
Shock resistance	100 g for 1 ms, according to IEC 60068-2-27
Electromagnetic compatibility	
Interference emission	Class B ^a , according to EN 61326-2-3
Interference immunity	Industrial requirement, according to EN 61326-2-3
Protection type for electrical connection	According to EN 60529
Attached cable ^b	IP67
Round plug M12 × 1 ^b	IP67
Cable socket ^{b, c}	IP65

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

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

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

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Auxiliary power

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.

Approvals and approval marks

Approval mark	Test facility	Certificate/certification number	Inspection basis	Valid for
DNV GL	DNV GL	TAA0000211	Class Guideline DNVGL-CG-00339	Only in connection with basic typ extension 062; observe order details

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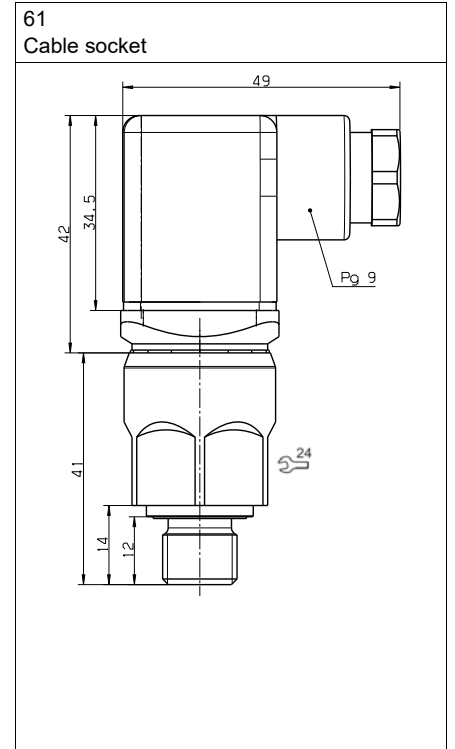
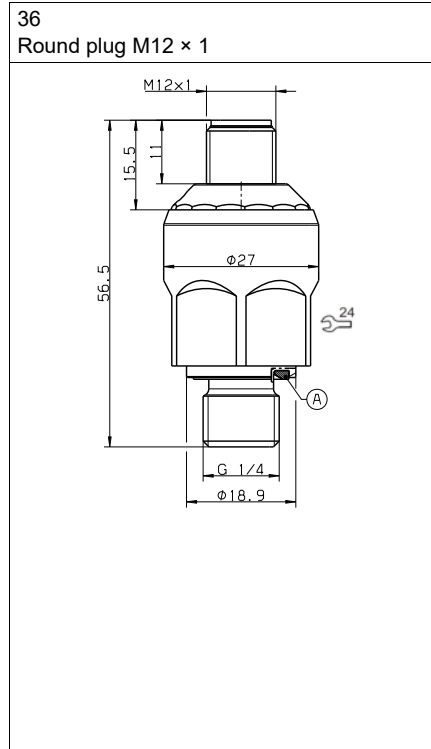
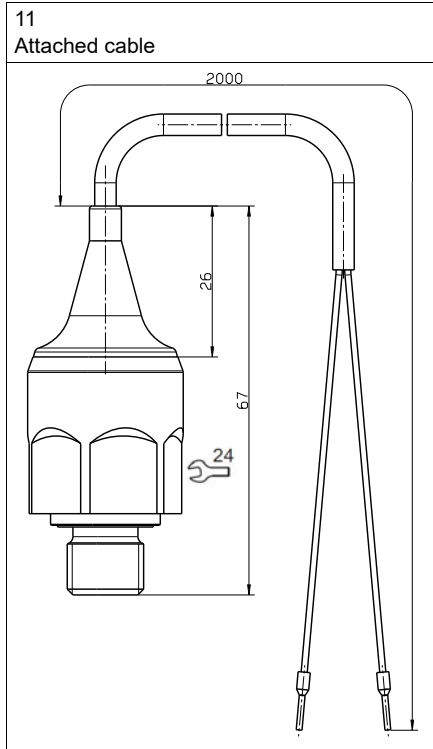
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Dimensions

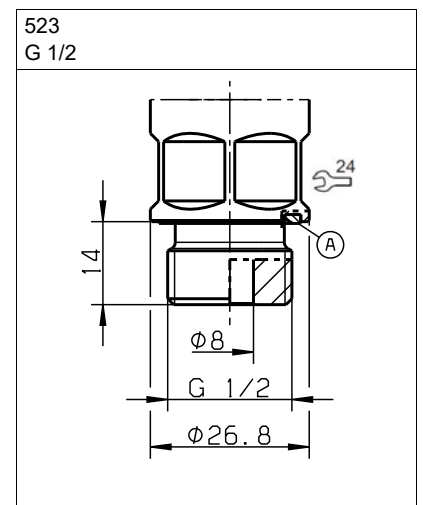
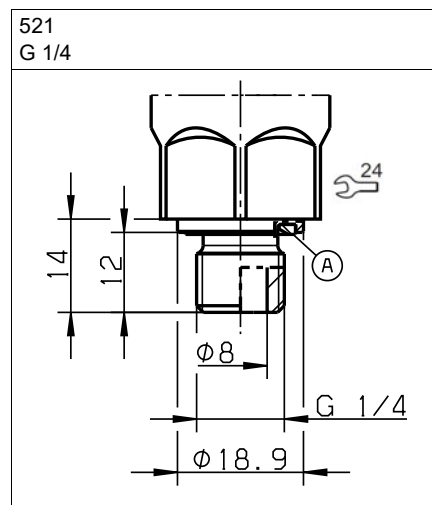
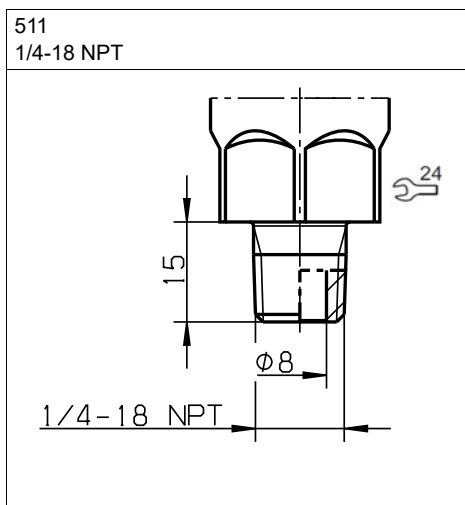
Electrical connection



A Profile seal G 1/4

Process connection

The process connections are designed as standard with an enlarged pressure channel of $\varnothing 8$ mm (extra code 630).



A Profile seal G 1/4

A Profile seal G 1/2

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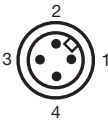
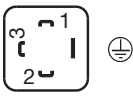


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Connection diagram

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 (figure: connection to the pressure transmitter)		
				
		Attached cable	Round plug M12 × 1	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 ^a		-	4	

^a 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!

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Order details

	(1) Basic type
401012	JUMO MIDAS C18 SW – OEM seawater pressure transmitter
	(2) Basic type extension
000	None
062	DNV GL approval
999	Special version
	(3) Input
455	0 bar to 1.6 bar relative pressure
456	0 bar to 2.5 bar relative pressure
457	0 bar to 4 bar relative pressure
458	0 bar to 6 bar relative pressure
459	0 bar to 10 bar relative pressure
460	0 bar to 16 bar relative pressure
461	0 bar to 25 bar relative pressure
462	0 bar to 40 bar relative pressure
463	0 bar to 60 bar relative pressure
464	0 bar to 100 bar relative pressure
479	-1 bar to +0.6 bar relative pressure
480	-1 bar to +1.5 bar relative pressure
481	-1 bar to +3 bar relative pressure
482	-1 bar to +5 bar relative pressure
483	-1 bar to +9 bar relative pressure
484	-1 bar to +15 bar relative pressure
485	-1 bar to +24 bar relative pressure
999	Special measuring range for relative pressure ^a
	(4) Output
405	4 mA to 20 mA, two-wire
415	DC 0 V to 10 V, three-wire
	(5) Process connection
511	1/4-18 NPT DIN EN 837
521	G 1/4 DIN 3852-11 ^b
523	G 1/2 DIN 3852-11
	(6) Process connection material
60	Ti (Titanium)
	(7) Material seal
600	EPDM
601	FPM
	(8) Electrical connection
11	Attached cable, 2 m (other lengths upon request) ^c
36	Round plug M12 × 1
61	Cable socket DIN EN 175301-803, Form A
	(9) Extra codes
000	None
630	Enlarged pressure channel

^a With DNV GL approval, special measuring ranges (input) are not allowed to exceed the 100 bar limit.

^b The process connection G 1/4 DIN 3852-11 (process connection 521) is only available as standard in conjunction with extra code 630.

^c Without DNV GL approval

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	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)
Order code	<input type="text"/>	/	<input type="text"/>	-	<input type="text"/>	-	<input type="text"/>	-	<input type="text"/>	-	<input type="text"/>	-	<input type="text"/>	-	<input type="text"/>	-	<input type="text"/>
Order example	401012	/	000	-	460	-	405	-	521	-	60	-	601	-	11	/	630

Accessories

The accessories are not checked according to DNV GL requirements.

Article	Part no.
Cable socket, 4 pole, M12 × 1, straight, 2 m	00404585
Cable socket, 4 pole, M12 × 1, ankled, 2 m	00409334
Cable socket, 4 pole, M12 × 1, straight, 5 m	00512341