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JUMO MIDAS S22 Ex

Miniature pressure transmitters for Ex-areas

Applications

- Oil, fuel, natural gas
- Painting plants/robots
- Process technology and process engineering
- Plant engineering
- Testing and laboratory technology
- Chemical industry

These recommendations are based on many years of experience; however, in individual cases they may not be fully applicable. We would be happy to provide further information, including regarding additional applications.

Brief description

The miniature pressure transmitters measures the pressure of gases, vapors, and liquids. The device operates according to the piezoresistive measuring principle. The output signal is a load-independent direct current which is linearly proportional to the input pressure.

The type 404720 meets the requirements:

- of device group II in the potentially explosive area of zones 1 and 2
- of device group III in the potentially explosive area of zones 21 und 22

The test certificate number of the EU type examination certificate is:

SEV 21 ATEX 0537 X

The certificate number of the IECEx certificate of conformity is:

IECEx SEV 21.0011X

Customer benefits

- **Cost saving**
Type pressure transmitter is based on the already well-proven sensor technology of the JUMO MIDAS pressure transmitter series. A high level of automation on the production line ensures consistently high quality and low production costs.
- **Process reliability**
The measuring device was designed and certified according to ATEX directives. Set quality standards ensure a full final inspection within the fully automated measuring and calibration system. High burst pressures up to 400 bar (10 times the measuring span) ensure that the process will operate safely even in the event of damage.
- **Versatility**
A broad spectrum of measuring ranges and a multitude of process connections ensure many variants, which can be specifically adapted to any application.



Type 404720

Special features

- Measuring ranges of 2.5 to 100 bar relative and absolute pressure rating
- ATEX approval
- Welded system
- Compact design type
- Static and dynamic measurements



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Approvals and approval marks

	Designation Testing agency Certificate no. Inspection basis Mark Valid for	ATEX Eurofins Electric & Electronic Product Testing AG SEV 21 ATEX 0537 X EN IEC 60079-0, EN 60079-11 II 2G Ex ib IIC T6 ... T4 Gb, II 2D Ex ib IIIC T70 °C ... T100 °C Db Type 404720
	Designation Testing agency Certificate no. Inspection basis Mark Valid for	UKEX Bureau Veritas EPS 22 UKEX 1 089 X EN IEC 60079-0, EN 60079-11 II 2G Ex ib IIC T4 ... T6 Gb, II 2D Ex ib IIIC T70 °C ... T100 °C Db Type 404720
	Designation Testing agency Certificate no. Inspection basis Mark Valid for	IECEX Eurofins Electric & Electronic Product Testing AG IECEX SEV 21.0011X IEC 60079-0, IEC 60079-11 Ex ib IIC T6 ... T4 Gb, Ex ib IIIC T70 °C ... T100 °C Db Type 404720

Observe "Special conditions for safe use" in hazardous areas.

Certificates for approved device versions are available for download on the manufacturer's website.

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Technical data

General Information

Reference conditions	According to DIN EN 60770-1 and DIN IEC 61298-1
Sensor	
Material	Silicon sensor with stainless steel separating membrane
Pressure transfer medium	Synthetic oil
Admissible load changes	> 10 million
Position	
Mounting position	Any
Calibration position	Device upright, process connection at the bottom

Inputs

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 +80 °C ^e % MSP			
-1 to +1.5 bar relative pressure	0.3	0.5	1.3	≤ 0.2	10	24
-1 to +3 bar relative pressure	0.3	0.5	1.2		20	50
-1 to +5 bar relative pressure	0.3	0.5	1.2		40	60
-1 to +9 bar relative pressure	0.3	0.5	1.0		50	60
0 to 2.5 bar relative pressure	0.3	0.5	1.3		10	24
0 to 4 bar relative pressure	0.3	0.5	1.2		20	50
0 to 6 bar relative pressure	0.3	0.5	1.2		40	60
0 to 10 bar relative pressure	0.3	0.5	1.0		50	60
0 bar to 16 bar relative pressure	0.3	0.5	1.0		100	150
0 bar to 25 bar relative pressure	0.3	0.5	1.0		120	180
0 bar to 40 bar relative pressure	0.3	0.5	1.0		300	400
0 bar to 60 bar relative pressure	0.3	0.5	1.0		300	400
0 bar to 100 bar relative pressure	0.3	0.5	1.0		300	400
0 to 2.5 bar absolute pressure	0.3	0.5	1.3		10	24
0 to 4 bar absolute pressure	0.3	0.5	1.2		20	50
0 to 6 bar absolute pressure	0.3	0.5	1.2		40	60
0 to 10 bar absolute pressure	0.3	0.5	1.0		50	60
0 to 16 bar absolute pressure	0.3	0.5	1.0		100	150
0 to 25 bar absolute pressure	0.3	0.5	1.0		120	180
0 to 40 bar absolute pressure	0.3	0.5	1.0		300	400
0 to 60 bar absolute pressure	0.3	0.5	1.0	300	400	
0 to 100 bar absolute pressure	0.3	0.5	1.0	300	400	

^a Linearity according to limit point setting = 2 × BFSL (best fit straight line)

^b Reference conditions EN 61298-1

^c All pressure transmitters are vacuum proof.

^d Includes: linearity, hysteresis, repeatability, deviation of measuring range initial value (offset), and measuring range end value

^e Includes: linearity, hysteresis, repeatability, deviation of measuring range initial value (offset), measuring range end value, thermal effect on measuring range start (offset), and measuring span

^f MSP = measuring span

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Outputs

Output signal Current	4 to 20 mA, 2-wire
Step response T_{90}	≤ 3 ms
Burden 4 to 20 mA, 2-wire Burden influence	$R_B \leq (U_B - 16 \text{ V}) \div 0.022 \text{ A} (\Omega)$ $\leq 0.01 \% \text{ pro } 100 \Omega$

Mechanical features

Material	
Process connection	316Ti
Protective cap	PVC (for M12 × 1 with protective cap)
Membrane	316L
Housing	304
Electrical connection	304, PA (for round plug M12 × 1) 304, PUR (for attached cable)
Cable	PUR
Conductor cross section	0.22 mm ²
Bending radius	Max. 35 mm
Weight	Approx. 55 g

Environmental influences

	Front-flush	Not front-flush
Ambient temperature	10 to 40 °C	-20 °C to +85 °C
Storage temperature	10 to 40 °C	-20 °C to +85 °C
Medium temperature	10 to 40 °C	-20 °C to +85 °C
Protection type	DIN EN 60529 IP68	
Electromagnetic compatibility (EC)	DIN EN 61326-2-3:2022 Class B ^a Industrial requirement	
Mechanical load	DIN EN 60068-2-6, DIN EN 60068-2-27	
Shock resistance	20 g/11 ms, 50 g for 1 ms	
Vibration resistance	10 g at 10 to 2000 Hz	

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

Electrical data

Voltage supply U_B ^a 4 to 20 mA, two-wire	DC 16 to 28 V
Current consumption	≤ 23 mA
Electrical circuit	Intrinsically safe

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

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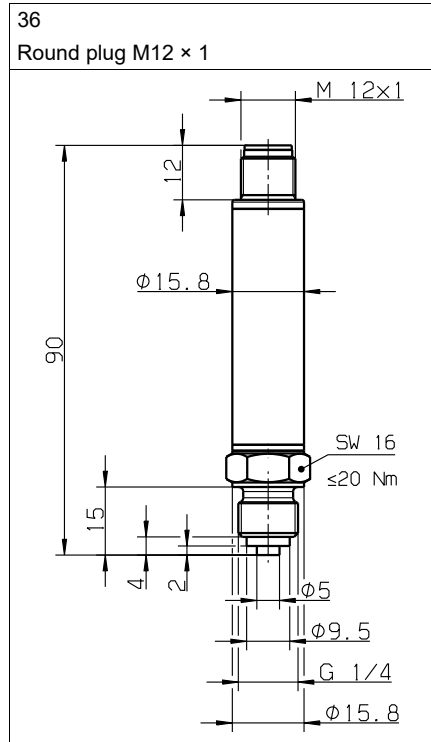
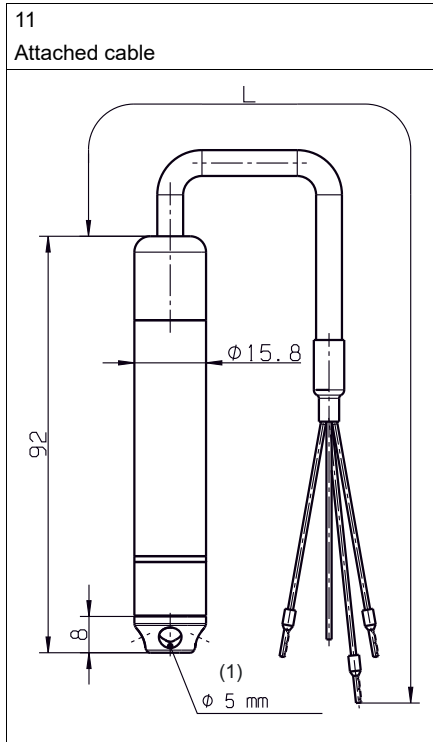
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Dimensions

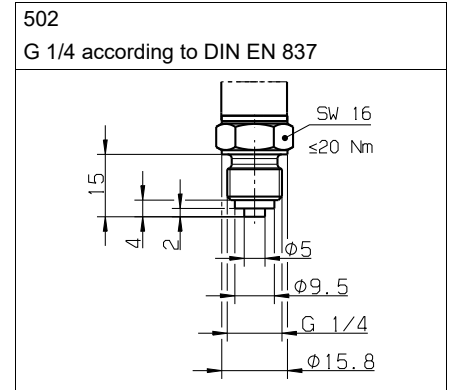
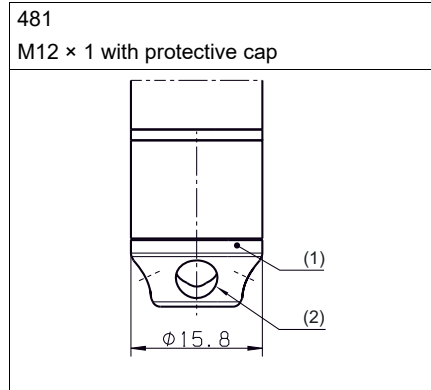
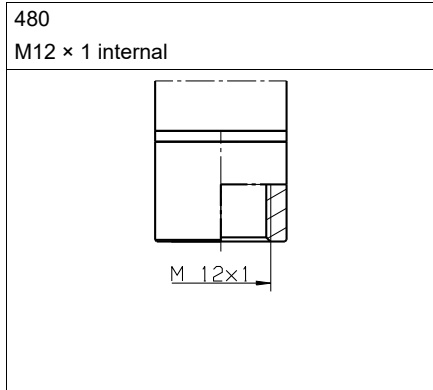
Electrical connection



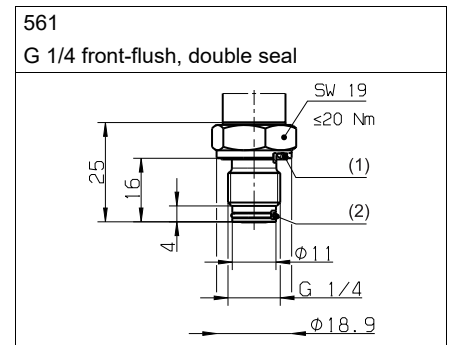
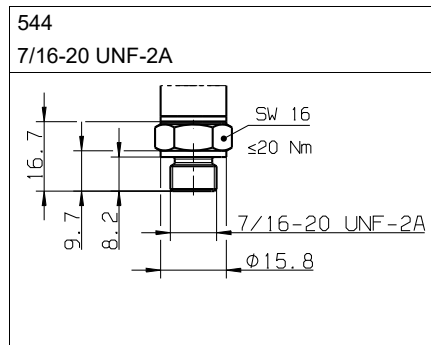
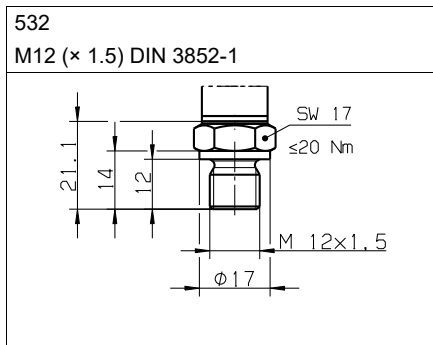
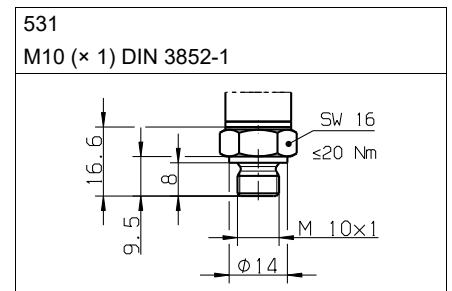
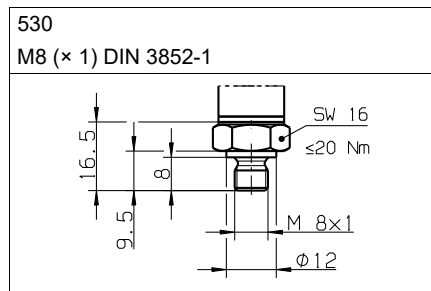
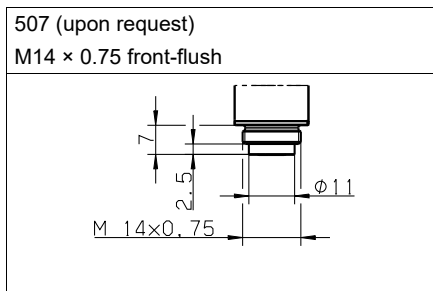
1 5× drilled hole



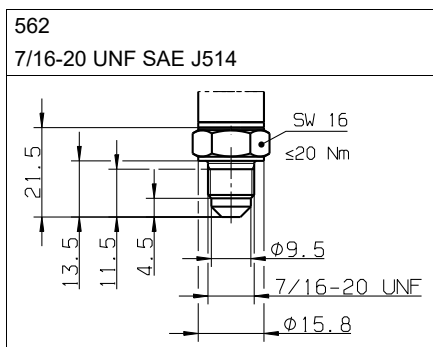
Process connections



- 1 Protective cap
- 2 5× drilled hole ϕ 5 mm



- 1 Profile seal G 1/4
- 2 O-ring 9×1



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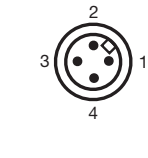


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Connection diagram

The connection diagram in the data sheet provides information on product selection.

For the electrical connection, only use the installation instructions or the operating manual.

Connection		Terminal assignment ^a			
					
		11 Attached cable	36 Round plug M12 × 1	Accessories Cable box angled/straight	
				PVC	PUR
4 to 20 mA, 2-wire (output 405)					
Voltage supply DC 16 to 28 V	U _B /S+ 0 V/S-	WH BU	1 3	BN BU	WH BU
Shielding					
Caution: ground the device! Ground all connected devices (such as pumps and valves) to the same potential!		BK	-	-	-

^a Figure: Connection to the pressure transmitter

CAUTION!

Ground (functional grounding) the housing of the pressure transmitter using the process connection to protect against electromagnetic fields and electromagnetic charges!

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Order details

	(1) Basic type
404720	JUMO MIDAS S22 Ex - Miniature Pressure Transmitter for Use in Ex-Areas
	(2) Basic type extension
000	None
	(3) Input
456	0 to 2.5 bar relative pressure
458	0 to 6 bar relative pressure
459	0 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
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
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
506	0 to 60 bar absolute pressure
507	0 to 100 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-wire
	(5) Process connection
480	M12 × 1 internal
481	M12 × 1 with protective cap
502	G 1/4 DIN EN 837
530	M8 × 1 DIN 3852-1
531	M10 × 1 DIN 3852-1
532	M12 × 1.5 DIN 3852-1
544	7/16-20UNF SAE J514 with O-ring
561	G 1/4 front-flush, double seal
562	7/16-20UNF
	(6) Process connection material
20	CrNi (stainless steel)
	(7) Electrical connection
11	Attached cable, blue ^a
36	Round plug M12 × 1
	(8) Extra codes
000	None
085	UKEX approval
462	Inverted output signal

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591	Choke in the pressure channel
624	Oil and grease free
630	Enlarged pressure channel

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

Order code (1) (2) (3) (4) (5) (6) (7) (8)
 Order example 404720 / 000 - 459 - 405 - 502 - 20 - 11 / 000

Accessories

Description	Description	Part no.
Ex-i repeater power supply / input isolating amplifier 	The Ex-i repeater power supply / input isolating amplifier is designed for operating intrinsically safe transmitters (Ex-i) and mA current sources installed in potentially explosive (Ex) areas. Two-wire transmitters are supplied with energy and analog 0/4 to 20 mA measured values are transmitted from the Ex-area to the non-Ex-area. The output of the module can be operated actively or passively. Further technical data and the relevant safety requirements are available in the operating manual B 707530.0.	00577948
Cable box, straight 	The PVC connecting cable is 2 m long and has a 4-pin, straight M12 × 1 connector with gold-plated contacts on the device side.	00404585
Cable box, angled 	The PVC connecting cable is 2 m long and has a 4-pin, angled M12 × 1 connector with gold-plated contacts on the device side.	00409334