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JUMO MIDAS H20 HP

OEM Pressure Transmitter - High Pressure

Applications

- Mobile hydraulics, such as forklifts, harvesters, and construction machinery
- Injection molding machines
- Laundry/cleaning systems
- Welding machines
- Industrial hydraulics

Brief description

The pressure transmitter is used for measuring the pressure of liquid and gaseous media. The product is based on the thin-film measuring principle. The measured pressure is converted into an electrical standard signal of voltage or current and is output via various electrical connections. These include connector variants such as M12, Deutsch DT, Metri-Pack, or AMP. An attached cable and the cable socket are also available.

ECE type approval is available for applications such as those required in mobile hydraulics.

The high degree of resistance to vibration and shock, combined with the high insulation voltage guarantees reliable operation even in difficult conditions. The compact design type of the pressure transmitter provides greater spatial freedom in its use.



Type 401020 with Metri-Pack connector variant



Type 401020 with AMP connector variant

Customer benefits

- Impervious to pressure peaks
- Highly resistant to shock and vibration
- Robust product design
- Standard connector variants available
- Can be used in harsh conditions thanks to mechanical and electrical stability
- Welded sensor technology ensures long-term tightness against leaks
- Standardization
- Protection against leaks of oil or other measuring media thanks to high bursting strength
- High accuracy even when used in fluctuating temperature conditions
- Compact design type saves space

Special features

- Measuring ranges from 100 to 1000 bar
- Temperature ranges from -40 to +125 °C
- Compact design type from 35 mm in length
- Electric strength of AC 500 V
- Protection types up to IP69K
- ECE type approval

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Approvals

c UL us	Testing agency	Underwriters Laboratories
	Certificate no.	E201387
	Inspection basis	UL 61010-1 (3. Ed.), CAN/CSA-22.2 No. 61010-1 (3. Ed.)
	Valid for	Type 401020/.../061
E24	Testing agency	NSAIO (National Standards Authority of Ireland)
	Certificate no.	E24 10R-051971
	Inspection basis	UN ECE R10
	Valid for	Type 401020

Technical data

General Information

Reference conditions	DIN 16086 and DIN EN 60770
Sensor	
Measuring principle	Thin-film technology
Admissible load changes	> 10 million
Mounting position	Any
Calibration position	Device upright, process connection at the bottom

Electrical data

Voltage supply U_B[a]	
4 to 20 mA, two-wire	DC 10 to 30 V, rated voltage supply DC 24 V
DC 0.5 to 4.5 V, three-wire	DC 4.5 to 5.5 V, rated voltage supply DC 5 V, ratiometric output 10 to 90 % of the voltage supply
DC 0 to 10 V, three-wire	DC 12 to 30 V, rated voltage supply DC 24 V
DC 1 to 5 V, three-wire	DC 9 to 30 V, rated voltage supply DC 24 V
DC 1 to 6 V, three-wire	DC 9 to 30 V, rated voltage supply DC 24 V
Current consumption incl. load	
4 to 20 mA, two-wire	≤ 25 mA
DC 0.5 to 4.5 V, three-wire	≤ 10 mA
DC 0 to 10 V, three-wire	≤ 5 mA
DC 1 to 5 V, three-wire	≤ 5 mA
DC 1 to 6 V, three-wire	≤ 5 mA
Reverse voltage protection	
4 to 20 mA, two-wire	Yes
DC 0.5 to 4.5 V, three-wire	No
DC 0 to 10 V, three-wire	Yes
DC 1 to 5 V, three-wire	Yes
DC 1 to 6 V, three-wire	Yes
Electrical circuit	SELV
Requirements	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!

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Inputs

Measuring range and accuracy

Measuring range bar	Linearity[a] % MSP[f]	Accuracy at 20 °C[d] % MSP	 -10 to +85 °C % MSP	 -20 to +100 °C[e] % MSP	Long-term stability[b] % MSP per year	Overload capacity[c] bar	Burst pressure bar
0 to 100 bar relative pressure	0.5	0.7	1	1.5	≤ 0.2	200	500
0 to 160 bar relative pressure	0.5	0.7	1	1.5		320	800
0 to 200 bar relative pressure	0.5	0.7	1	1.5		400	1000
0 to 250 bar relative pressure	0.5	0.7	1	1.5		500	1250
0 to 350 bar relative pressure	0.5	0.7	1	1.5		700	1750
0 to 400 bar relative pressure	0.5	0.7	1	1.5		800	2000
0 to 600 bar relative pressure	0.5	0.7	1	1.5		1200	3000
0 to 1000 bar relative pressure	1	1.2	1.5	2		1500	3000

[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

Outputs

Analog output	
Current	4 to 20 mA, two-wire
Voltage	DC 0.5 to 4.5 V, three-wire, ratiometric output 10 to 90 % of the voltage supply
	DC 0 to 10 V, three-wire
	DC 1 to 5 V, three-wire
	DC 1 to 6 V, three-wire
Step response T_{90}	≤ 3 ms
Burden	
Current	$R_L \leq (U_B\text{-}10\ V) \div 0.02\ A\ (\Omega)$ at 4 to 20 mA, two-wire
Voltage (burden connected to „0 V/S-“)	$R_L \geq 20\ k\Omega$ at DC 0.5 to 4.5 V, three-wire
	$R_L \geq 10\ k\Omega$ at DC 0 to 10 V, three-wire
	$R_L \geq 10\ k\Omega$ at DC 1 to 5 V, three-wire
	$R_L \geq 10\ k\Omega$ at DC 1 to 6 V, three-wire

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Environmental influences

Medium temperatures for electrical connection	
Attached cable	-40 to +125 °C
M12 plug connector	-40 to +125 °C
Metri-Pack	-40 to +125 °C
Line socket	-40 to +125 °C
AMP Superseal	-40 to +125 °C
Deutsch DT04	-40 to +125 °C
Ambient temperatures for electrical connection	
Attached cable	-30 to +100 °C At ambient temperature of -30 °C restricted function; only use when stationary, risk of cable break
M12 plug connector	-40 to +100 °C
Metri-Pack	-40 to +100 °C
Line socket	-40 to +100 °C
AMP Superseal	-40 to +100 °C
Deutsch DT04	-40 to +100 °C
Storage temperatures for electrical connection	
Attached cable	-30 to +100 °C
M12 plug connector	-40 to +100 °C
Metri-Pack	-40 to +100 °C
Line socket	-40 to +100 °C
AMP Superseal	-40 to +100 °C
Deutsch DT04	-40 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	IEC 60068-2-6, IEC 60068-2-27
Vibration resistance	20 g at 10 to 2000 Hz
Shock resistance	50 g for 11 ms, 500 g for 1 ms
Electromagnetic compatibility (EMC)	DIN EN 61326-2-3:2022, UN ECE R10
Interference emission	Class A[a]
Interference immunity	Industrial requirement
Insulation voltage	AC 500 V
Protection type for electrical connection	DIN EN 60529
Attached cable	IP67/69K
M12 plug connector	IP67
Metri-Pack	IP67
Line socket	IP65
AMP Superseal	IP67
Deutsch DT04	IP67

[a] The product is only suitable for industrial use.

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Mechanical features

Material	
Process connection	Stainless steel 304[a]
Membrane	Stainless steel 630
Housing	Stainless steel 304
Attached cable	PBT-GF30, PVC, PE
M12 plug connector	PBT-GF30
Metri-Pack	PBT-GF30
Line socket	PBT-GF30, PA, silicone
Deutsch DT04	PBT-GF30
AMP Superseal	PBT-GF30
Weight	55 g with process connection G 1/4" and M12 plug connector

[a] Process transmitters with procecc connections G 1/4" and 7/16-20 UNF-2A are supplied with an FKM seal. Ensure the medium durability of the seal material!

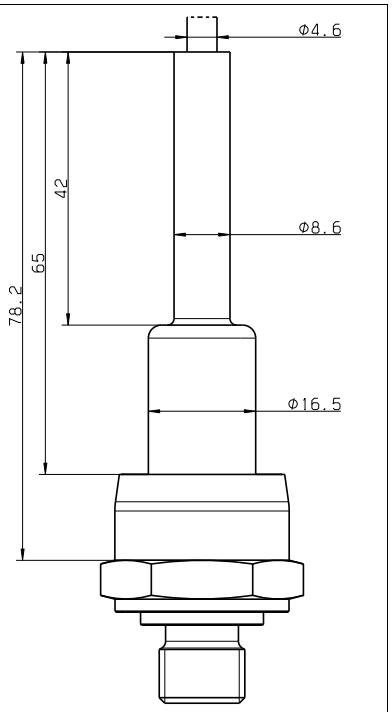
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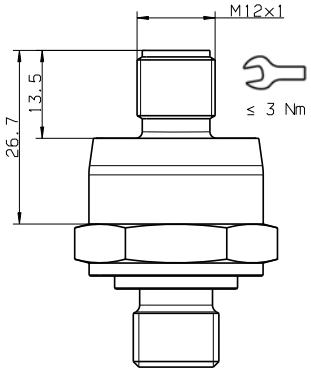
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Dimensions

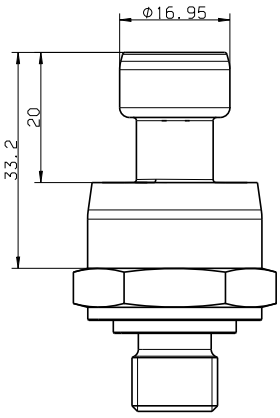
Device



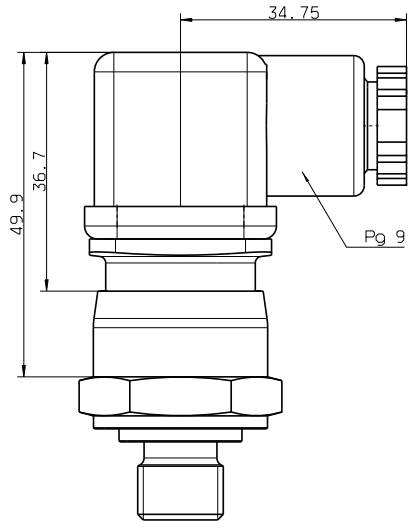
Device with attached cable



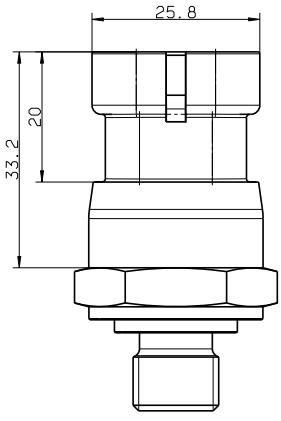
Device with M12-plug connector



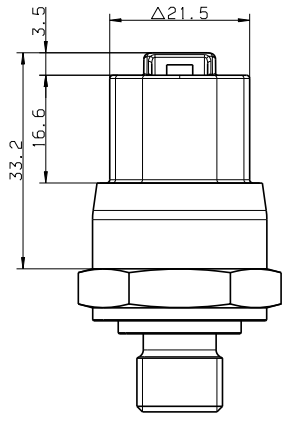
Device with Metri-Pack



Device with line socket



Device with AMP Superseal



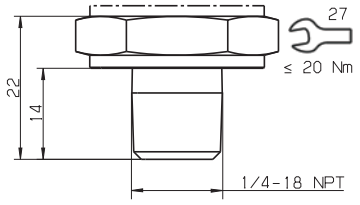
Device with Deutsch DT04

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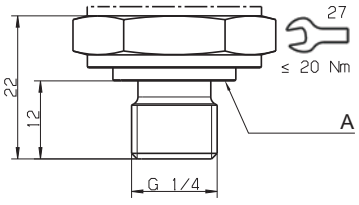
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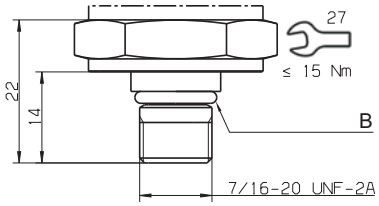
Process connections



Process connection 1/4-18 NPT



Process connection G 1/4"



Process connection 7/16-20 UNF-2A

A Profile seal G 1/4"

B O-ring

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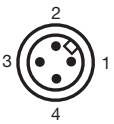
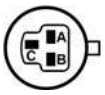
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Connection elements

The connection elements in the data sheet provide information on product selection.

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

						
	Attached cable	M12 plug connector	Metri-Pack	Line socket	AMP Superseal	Deutsch DT04

Terminal assignment

Designation	**Description**	**Assignment**[b]					
4 to 20 mA, two-wire, voltage supply DC 10 to 30 V	U_B/S+ 0 V/S-	WH (White) BN (Brown)	1 3	B A	1 2	3 1	A B
DC 0.5 to 4.5 V, ratiometric, voltage supply DC 4.5 to 5.5 V, ratiometric output 10 to 90 % of the voltage supply	U_B 0 V/S- S+	WH (White) BN (Brown) GN (Green)	1 2 3	B A C	1 2 3	3 1 2	A B C
DC 0 to 10 V, three-wire, voltage supply DC 12 to 30 V	U_B 0 V/S- S+	WH (White) BN (Brown) GN (Green)	1 2 3	B A C	1 2 3	3 1 2	A B C
DC 1 to 5 V, three-wire DC 1 to 6 V, three-wire, voltage supply DC 9 to 30 V	U_B 0 V/S- S+	WH (White) BN (Brown) GN (Green)	1 2 3	B A C	1 2 3	3 1 2	A B C
Functional bonding conductor FB[a]			4	C[b]		2[c]	C[c]

[a] The pressure transmitter has to be connected to the potential equalization system of the plant via the electrical connection or process connection.

[b] Only available for two-wire.

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Order details

	(1)	**Basic type**
401020		JUMO MIDAS H20 HP – OEM pressure transmitter – high pressure
	(2)	**Basic type extension**
000		None
	(3)	**Input (measuring range)**
464		0 to 100 bar relative pressure
465		0 to 160 bar relative pressure
511		0 to 200 bar relative pressure
466		0 to 250 bar relative pressure
517		0 to 350 bar relative pressure
467		0 to 400 bar relative pressure
468		0 to 600 bar relative pressure
469		0 to 1000 bar relative pressure
999		Special measuring range for relative pressure
	(4)	**Output**
405		4 to 20 mA, two-wire
412		0.5 to 4.5 V, three-wire, ratiometric
415		0 to 10 V, three-wire
418		1 to 5 V, three-wire
420		1 to 6 V, three-wire
	(5)	**Process connection**
511		1/4-18 NPT according to DIN EN 837
521		G 1/4" according to DIN 3852-11[a]
544		7/16-20 UNF-2A[b]
	(6)	**Process connection material**
20		CrNi (stainless steel)
	(7)	**Electrical connection**
11		Attached cable
36		M12 plug connector
52		Metri-Pack series 150, 3-pin
61		Line socket DIN EN 175301-803, Form A
77		AMP Superseal, 3-pin
89		Deutsch DT04, 3-pin
	(8)	**Extra code**
000		None
061		UL approval[c]
591		Choke in the pressure channel
624		Oil and grease free

[a] The process connection G 1/4" is only available with measuring range end up to 400 bar.

[b] The process connection 7/16-20 UNF is only available with measuring range end up to 600 bar.

[c] The UL approval stipulates use of the pressure transmitter indoors. Special measuring ranges (input) are not allowed to exceed the 1000 bar limit.

	(1)		**(2)**		**(3)**		**(4)**		**(5)**		**(6)**		**(7)**		**(8)**	
Order code		/		-		-		-		-		-		/		, ...[a]
Order example	401020	/	000	-	467	-	415	-	521	-	20	-	36	/	000	

[a] List extra codes in sequence, separated by commas.

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Accessories

Designation	Part no.
Line socket, 4-pole, M12 × 1, straight, length 2 m	00404585
Line socket, 4-pole, M12 × 1, angled, length 2 m	00409334
Line socket, 4-pole, M12 × 1, with control cable, 5 m	00512341