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JUMO MIDAS C08

OEM Pressure Transmitter – Basic

Applications

- compressors
- machinery and plant engineering
- industrial pneumatics
- commercial vehicles
- building technology

Brief description

This pressure transmitter is used as the core product for the MIDAS range for applications requiring reliable implementation of measuring tasks with long-term stability and excellent price-performance ratio. The MIDAS range provides solutions for all applications on the basis of this core product.

The innovative and patented sensor design of the specifically developed ceramic sensor provides excellent long-term stability of < 0.2 %. It can be used for recording relative pressures of 1.6 bar to 60 bar in gaseous or liquid media.



Type 401002
with QUICKON **with M12 × 1 connector**

Customer benefits

- **process-reliable**
  Through constructive measures, the pressure transmitter achieves excellent vibration resistance and enables application under high vibration load, as occurs in commercial vehicles for example. The throughput through the fully automatic measuring and calibration devices, the diagnostic function of the switching circuit, and the full final inspection complete the high standard of quality.
- **economic**
  The QUICKON quick-clamp technology enables quicker and safer installation. The connection is even guaranteed with any temperature fluctuations that may occur thanks to the spring contacts. This electrical connection means that installation times can be shortened and as a result, costs are reduced by 60 % compared to conventional connection options.
- **versatile**
  The universal application is reflected by the wide choice of measuring ranges, process connections, and electrical connections.

Special features

- long-term stability < 0.2 %
- new level of quality for the OEM sector
- 60 % quicker device installation with the QUICKON quick-clamp technology
- temperature compensation range increased by 50 % to -20 °C to +100 °C
- 2.5 times more vibration resistance than the industry standard
- made in Germany

Approvals and approval marks (see technical data)

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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	Linearity[a]	Accuracy at			Long-term stability[b]	Overload capacity[c]	Burst pressure
		20 °C[d]	-10 to +85 °C[e]	-20 to +100 °C[e]			
	% MSP[f]	% MSP	% MSP	% MSP	% MSP per year	bar	bar
0 to 1.6 bar relative pressure	0.25	0.5	0.65	1	0.2	6	12
0 to 2.5 bar relative pressure						6	12
0 to 4 bar relative pressure		0.35	0.5			12	25
0 to 6 bar relative pressure						12	25
0 to 10 bar relative pressure						20	38
0 to 16 bar relative pressure						50	75
0 to 25 bar relative pressure						50	75
0 to 40 bar relative pressure						120	200
0 to 60 bar relative pressure						120	200
-1 to +0.6 bar relative pressure		0.5	0.65			6	12
-1 to +1.5 bar relative pressure						6	12
-1 to +3 bar relative pressure		0.35	0.5			12	25
-1 to +5 bar relative pressure						12	25
-1 to +9 bar relative pressure						20	38
-1 to +15 bar relative pressure						50	75
-1 to +24 bar relative pressure						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

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Output

Analog output	Further outputs are available upon request.
Current	4 to 20 mA, two-wire
Voltage	DC 0.5 to 4.5 V, three-wire, ratiometric 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}	≤ 2 ms
Burden	
Current	$R_L \leq (U_B - 8\ V) \div 0.02\ A\ (\Omega)$ at 4 to 20 mA, two-wire
Voltage (burden connected to "0 V/S-")	$R_L \geq 5\ k\Omega$ 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

Mechanical features

Material	
Process connection	Stainless steel 304
Seal 600 (internal[a])	EPDM
Seal 601 (internal[a])	FKM, standard
Seal 602 (internal[a])	CR
Seal 604 (internal[a])	FFKM
Seal 609 (internal[a])	NBR
Process connection G 1/4 (external[a])	FKM
Sensor	Ceramic Al_2O_3 96 %
Housing	Stainless steel 304
Attached cable	PBT-GF30, PVC
QUICKON	PBT-GF30
Round plug M12 × 1	PBT-GF30, stainless steel 303 L
Bayonet connector	PBT-GF30
Cable socket	PBT-GF30, PA, silicone
Weight	70 g with prozess connection G 1/4

[a] Note the medium durability of the selected seal material!

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Environmental influences

Medium temperature for electrical connection	
Attached cable	-20 to +125 °C
Round plug M12 × 1	-20 to +125 °C
Bayonet connector	-20 to +125 °C
Cable socket	-20 to +125 °C
Ambient temperature for electrical connection	
Attached cable	-20 to +100 °C At ambient temperature of -30 °C restricted function. Only use when stationary. Risk of cable break.
Round plug M12 × 1	-20 to +100 °C
Bayonet connector	-20 to +100 °C
Cable socket	-20 to +100 °C
Storage temperature for electrical connection	
Attached cable	-30 to +100 °C
Round plug M12 × 1	-40 to +100 °C
Bayonet connector	-40 to +100 °C
Cable socket	-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	
Vibration resistance	50 g for 10 to 2000 Hz, according to IEC 60068-2-6
Shock resistance	50 g for 3 ms, 100 g for 2 ms, according to IEC 60068-2-27
Electromagnetic compatibility (EMC)	According to EN 61326-2-3
Interference emission	Class B[a]
Interference immunity	Industrial requirement
Protection type for electrical connection	According to EN 60529
Attached cable	IP67
QUICKON[b]	IP67
Round plug M12 × 1[c]	IP67
Bayonet connector[c]	IP67
Cable socket[c, d]	IP65

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

[b] Connecting cable diameter, minimum 3.5 mm, maximum 6 mm

[c] The protection type is only achieved with a suitable mounted counter piece.

[d] Connecting cable diameter, minimum 6 mm, maximum 8 mm

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Electrical data

Voltage supply U_B	Residual ripple: the voltage peaks must not exceed or fall below the specified voltage supply values!
4 to 20 mA, two-wire	DC 8 to 30 V, rated voltage supply DC 24 V
DC 0.5 to 4.5 V, three-wire	DC 3 to 5.25 V, rated voltage supply DC 5 V, ratiometric output 10 to 90 % of the voltage supply
DC 0 to 10 V, three-wire	DC 11.5 to 30 V, rated voltage supply DC 24 V
DC 1 to 5 V, three-wire	DC 8 to 30 V, rated voltage supply DC 24 V
DC 1 to 6 V, three-wire	DC 8 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	≤ 3 mA
DC 0 to 10 V, three-wire	≤ 3 mA
DC 1 to 5 V, three-wire	≤ 3 mA
DC 1 to 6 V, three-wire	≤ 3 mA
Reverse voltage protection	Yes
Electrical circuit	SELV
Requirements	The device must be equipped with an electrical circuit that meets the requirements of EN 61010-1 with regardto "Limited-energy circuits".

Approvals and approval marks

EAC	
Testing agency	«Промтехконтроль»
Certificates/certification numbers	ЕАЭС N RU Д-DE.PA01.B.80830/21
Inspection basis	TR TS 020/2011
Valid for	Type 401002
UL	
Testing agency	Underwriter Laboratories
Certificates/certification numbers	E201387
Inspection basis	UL 61010-1 (3. Ed.), CAN/CSA-22.2 No. 61010-1 (3. Ed.)
Valid for	Extra code 061

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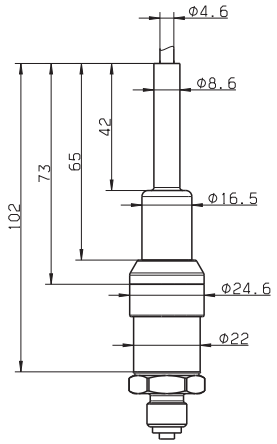
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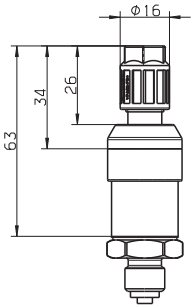
Dimensions

Electrical connection

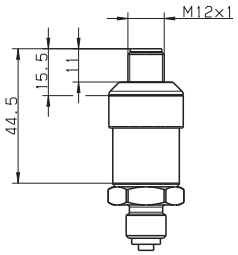
11
Attached cable



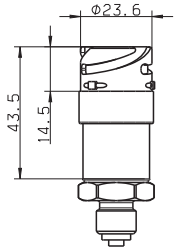
23
QUICKON



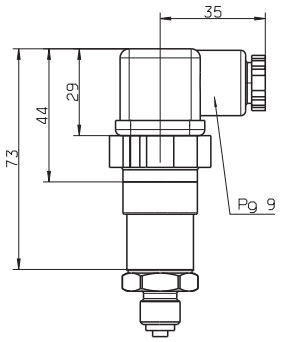
36
Round plug M12 × 1



53
Bayonet connector



61
Cable socket



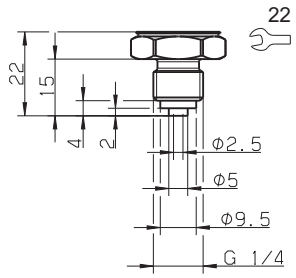
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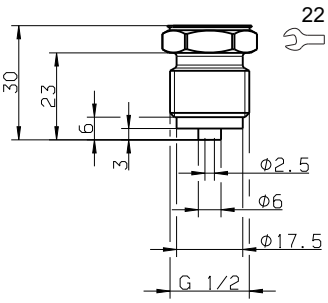
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Process connection

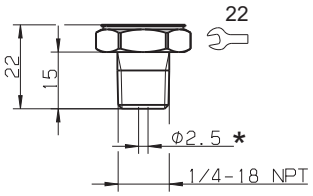
502
G 1/4



504
G 1/2

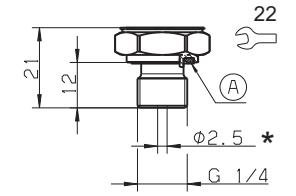


511
1/4-18 NPT

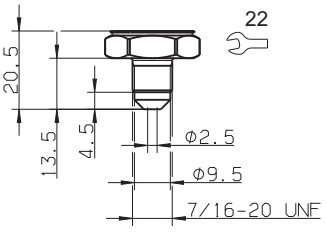


* Extra code 630 pressure channel Ø 8 mm

521
G 1/4



562
7/16-20 UNF



A Profile seal G 1/4

* Extra code 630 pressure channel Ø 8 mm

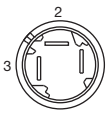
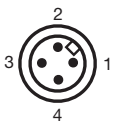
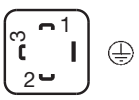
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Connection diagram

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	QUICKON	Round plug M12 × 1	Bayonet connector	Cable socket
4 to 20 mA, two-wire (output 405)						
Voltage supply DC 8 to 30 V	U_B/S+	WH	1	1	1	1
	0 V/S-	BN	3	3	2	2
DC 0.5 to 4.5 V ratiometric (output 412)						
Voltage supply DC 3 to 5.25 V Ratiometric output 10 to 90 % of the voltage supply	U_B	WH	1	1	1	1
	0 V/S-	BN	2	2	2	2
	S+	GN	3	3	3	3
DC 0 to 10 V, three-wire (output 415)						
Voltage supply DC 11.5 to 30 V	U_B	WH	1	1	1	1
	0 V/S-	BN	2	2	2	2
	S+	GN	3	3	3	3
DC 1 to 5 V, three-wire (output 418) **DC 1 to 6 V, three-wire (output 420)**						
Voltage supply DC 8 to 30 V	U_B	WH	1	1	1	1
	0 V/S-	BN	2	2	2	2
	S+	GN	3	3	3	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**
401002/000		JUMO MIDAS C08 – OEM pressure transmitter – basic
	(2)	**Input**
455		0 to 1.6 bar relative pressure
456		0 to 2.5 bar relative pressure
457		0 to 4 bar relative pressure
458		0 to 6 bar relative pressure
459		0 to 10 bar relative pressure
460		0 to 16 bar relative pressure
461		0 to 25 bar relative pressure
462		0 to 40 bar relative pressure
463		0 to 60 bar relative pressure
479		-1 to +0.6 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
484		-1 to +15 bar relative pressure
485		-1 to +24 bar relative pressure
999		Special measuring range for relative pressure
	(3)	**Output**
405		4 to 20 mA, two-wire
412		0. 5 to 4.5 V, three-wire
415		0 to 10 V, three-wire
418		1 to 5 V, three-wire
420		1 to 6 V, three-wire
	(4)	**Process connection**
502		G 1/4 DIN EN 837
504		G 1/2 DIN EN 837
511		1/4-18 NPT DIN EN 837
521		G 1/4 DIN
562		7/16-20 UNF
	(5)	**Process connection material**
20		CrNi (stainless steel)
	(6)	**Material seal**
600		EPDM
601		FKM (standard)
602		CR
604		FFKM
609		NBR
	(7)	**Electrical connection**
11		Attached cable (standard cable length is 2 m, further lengths available upon request)
23		Quickon
36		Round plug M12 × 1
53		Bayonet connector DIN 72585
61		Cable socket DIN EN 175301-803, Form A

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(8)	Extra codes
000	None
061	UL approval
591	Choke in the pressure channel
624	Oil and grease free
630	Enlarged pressure channel[a]
876	Test report
954	Technical Passport

[a] An enlarged pressure channel of diameter Ø 8 mm is only available with process connection 1/4-18 NPT, G 1/4 and the seal FKM.

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
Order code		-		-		-		-		-		-		/		, ...[a]
Order example	401002/000	-	460	-	412	-	504	-	20	-	600	-	36	/	591	

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

Stock version

Order code	Part no.
401002/000-459-405-502-20-601-23/000	00542743
401002/000-456-405-502-20-601-61/000	00546113
401002/000-457-405-502-20-601-61/000	00546119
401002/000-458-405-502-20-601-61/000	00546120
401002/000-459-405-502-20-601-61/000	00546121
401002/000-460-405-502-20-601-61/000	00546122
401002/000-460-405-504-20-601-61/000	00551012
401002/000-461-405-502-20-601-61/000	00546123
401002/000-462-405-502-20-601-61/000	00546124
401002/000-480-405-502-20-601-61/000	00552402
401002/000-481-405-502-20-601-61/000	00546125
401002/000-455-405-502-20-601-61/000	00550506

Accessories

Designation	Part no.
Cable socket, straight, 4-pole, M12 × 1, 2 m	00404585
Cable socket, angled, 4-pole, M12 × 1, 2 m	00409334
Cable socket, pressure compensation, 4-pole, M12 × 1, 5 m	00512341