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Pressure sensor
For mobile working machines, CANopen®/J1939
Model MHC-1

Applications

- Construction machines
- Agricultural machinery
- Industrial trucks
- Cranes

Special features

- Tested for harsh ambient conditions
- High EMC protection
- Version with integrated Y-connector
- CANopen® and J1939 output signals

Fig. left: With circular connector M12 x 1
Fig. right: With integrated Y-connector

Description

Reliable and high-performance
WIKA's many years of experience in the field of serial bus systems and digital pressure sensors are combined in this instrument.

The model MHC-1 combines outstanding temperature characteristics, excellent accuracy specifications and an instrument concept that has been designed for the severe operating conditions of mobile applications.
A special qualification test programme simulated these high requirements.

CANopen® or J1939
This pressure sensor has been specifically developed in order that the typical protocols for mobile hydraulics can be offered in a single instrument. The model MHC-1 is available with either CANopen® or J1939 protocol.

Application oriented
It is possible to order the instruments preconfigured so that they can be installed without further effort. In addition, a version with an integrated input and output connector (Y-connector) offers a very easy and secure installation. Both connector variants of the pressure sensor have been qualified with an IP6K9K ingress protection.

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Specifications

Accuracy specifications	
Non-linearity per BFSL per IEC 61298-2	≤ ±0.2 % of span
Accuracy	→ See “Max. measured error per IEC 61298-2”
Max. measured error per IEC 61298-2	■ ≤ ±1 % of span ■ ≤ ±0.5 % of span
Temperature error	→ See below
Temperature range 0 ... 60 °C [32 ... 140 °F]	≤ ±0.5 % of span
Temperature range -40 ... +85 °C [-40 ... +185 °F]	≤ ±1 % of span
Long-term stability per DIN 16086	≤ ±0.2 % of span/year
Reference conditions	Per IEC 61298-1

Measuring ranges, gauge pressure

bar	
0 ... 60	0 ... 400
0 ... 100	0 ... 600
0 ... 160	0 ... 1,000
0 ... 250	

psi	
0 ... 1,000	0 ... 3,000
0 ... 1,500	0 ... 5,000
0 ... 2,000	0 ... 10,000

Other measuring ranges on request.

Further details on: Measuring range	
Overpressure limit	2 times
Vacuum resistance	Yes

Process connection				
Standard	**Thread size**	**Max. measuring range**	**Overpressure limit**	**Sealing**
DIN EN ISO 1179-2 (formerly DIN 3852-E)	G ¼ A	600 bar [8,000 psi]	1,480 bar [21,466 psi]	■ FKM ■ NBR
DIN EN ISO 9974-2 (formerly DIN 3852-E)	M14 x 1.5	600 bar [8,000 psi]	858 bar [12,444 psi]	■ FKM ■ NBR
SAE J514	7/16-20 UNF-2A, O-ring BOSS	600 bar [8,000 psi]	1,144 bar [16,592 psi]	■ FKM ■ NBR
ANSI/ASME B1.20.1	¼ NPT	600 bar [8,000 psi]	1,480 bar [21,466 psi]	-

Other sealings and process connections on request.

Further details on: Process connection	
Max. measuring range	→ See above
Overpressure limit	→ See above
Sealing	→ See above
Possible limitations	Depending on the choice of sealing on the process connection, there may be limitations in the permissible temperature range
NBR	-30 … +100 °C [-22 ... +212 °F]
FKM	-20 … +100 °C [-4 ... +212 °F]

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Output signal		
Signal type		
CANopen®	Device profile DS-404	
J1939	SAE J1939	
Measuring rate	max. 1,000 Hz	
Communication		
CANopen® interface configuration	It is possible to order the model MHC-1 already preconfigured.	
	The listed parameters can also be set using the WIKA EasyCom software or any standard CANopen® software tool. Further information on configuration is contained in the software instruction manual and the EDS file (electronic data sheet). → These files are available at www.wika.com.	
Baud rate	0	1,000 kbit/s
	1	800 kbit/s
	2	500 kbit/s
	3	250 kbit/s (standard)
	4	125 kbit/s
	5	100 kbit/s
	6	50 kbit/s
	7	20 kbit/s
Node ID	001 ... 127	001 (standard) 1)
PDO mapping	N	Object 0x2090 Subindex 1(32-bit integer format) (standard)
	F	Object 0x6130 Subindex 1 (IEEE754 float format)
Decimal places	A	Automatic (standard)
	0 ... 9	Number of decimal places 1)
Transmission type	001 ... 240	Synchronous transmission 001 (standard) 1)
	253	Remote transmission request
	254	Asynchronous cyclic transmission
Event timer	0	Without (standard)
	00001 ... 65535	Event timer in milliseconds 1)
Auto operational	Z	Off (standard)
	A	On
COB-ID SYNC	Z	0x80 (standard)
	A	0x100
COB-ID used by PDO	A	0x80 (standard)
	B	0x200
	C	0x280
	D	0x300
	E	0x380
	F	0x400
	G	0x480
	H	0x500
Heartbeat	0	Without (standard)
	00001 ... 65535	Heartbeat in milliseconds 1)
Voltage supply		
Supply voltage	DC 10 ... 30 V	
Current supply	< 40 mA	

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Output signal	
Resistance to overvoltage	DC 36 V
Dynamic behaviour	
Settling time per IEC 61298-2	≤ 1.5 ms (baud rate ≥ 125 k)

1) Select a numerical value

Electrical connection	
Connection type	
Single connection	Circular connector M12 x 1
Double connection with integrated Y-connector	Circular connector M12 x 1 and female connector M12 x 1
Pin assignment	→ See below
Ingress protection (IP code) per ISO 20653 [1]	IP6K9K
Short-circuit resistance	CAN-High/CAN-Low vs. U_+/U-
Reverse polarity protection	U_+ vs. U-
Insulation voltage	DC 500 V

1) The stated ingress protection only applies when plugged in using a mating connector that has the appropriate ingress protection.

Pin assignment

Single connection with M12 x 1 circular connector

U_+	2
U-	3
CAN-High	4
CAN-Low	5
Shield	1

Double connection with integrated Y-connector

Circular connector M12 x 1

U_+	2
U-	3
CAN-High	4
CAN-Low	5
Shield	1

Female connector M12 x 1

U_+	2
U-	3
CAN-High	4
CAN-Low	5
Shield	1

Material	
Material (wetted)	Stainless steel
Material (in contact with the environment)	Stainless steel
	→ Sealing materials, see “Process connections”

Operating conditions	
Medium temperature limit	-40 ... +125 °C [-40 ... +257 °F]
Ambient temperature range	-40 ... +85 °C [-40 ... +185 °F]
Storage temperature range	-40 ... +100 °C [-40 ... +212 °F]
Vibration resistance per IEC 60068-2-6	20 g
Shock resistance per IEC 60068-2-27	500 g
Free fall	Resistant to an impact onto concrete from 1 m
Ingress protection (IP code) per ISO 20653	→ See “Electrical connection”

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Operating conditions	
Service life	> 10 million load cycles
EMC (HF field)	
80 ... 1,000 MHz	100 V/m
1,000 ... 4,200 MHz	60 V/m

Packaging and instrument labelling	
Packaging	■ Individual packaging ■ Multiple packaging (up to 20 pieces possible)
Instrument labelling	■ WIKA product label, glued ■ Customer-specific product label on request

Approvals

Logo	Description	Country
CE	**EU declaration of conformity**	European Union
	EMC directive EN 61326 emission (group 1, class B) and immunity (industrial application)	
	Pressure equipment directive	
	RoHS directive	
EAC	**EAC**	Eurasian Economic Community
	EMC directive	
	KazInMetr Metrology, measurement technology	Kazakhstan
-	**MTSCHS** Permission for commissioning	Kazakhstan
	UkrSEPRO Metrology, measurement technology	Ukraine
-	**CRN** Safety (e.g. electr. safety, overpressure, ...)	Canada

Manufacturer‘s information and certificates

Logo	Description
-	China RoHS directive

→ Approvals and certificates, see website

Safety-related characteristic values

Safety-related characteristic values	
MTTF	> 100 years

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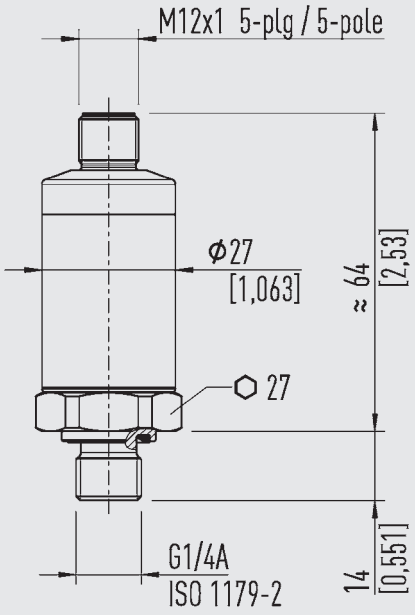
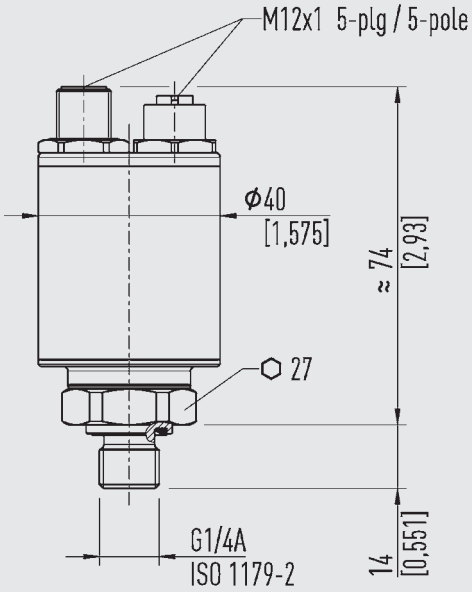
Dimensions in mm [in]

Pressure sensor

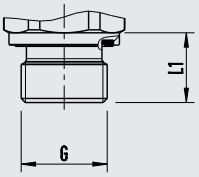
Single connection with M12 x 1 circular connector



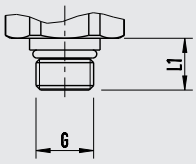
Double connection with integrated Y-connector
Circular connector M12 x 1 and female connector M12 x 1



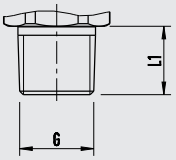
Process connections



G	L1
G ¼ A DIN EN ISO 1179-2	14 [0.55]
M14 x 1.5 DIN EN ISO 9974-2	14 [0.55]



G	L1
7/16-20 UNF-2A SAE J514 E	12.06 [0.47]



G	L1
⅛ NPT ANSI/ASME B1.20.1	10 [0.39]
¼ NPT ANSI/ASME B1.20.1	13 [0.51]

→ For information on tapped holes and welding sockets, see Technical information IN 00.14 at www.wika.com.

Accessories

Description	Order number
PCAN-USB adapter, cable set and power supply unit for configuration of CANopen®/J1939 design (for Windows® XP, Vista, 7 and 10)	7483167

Windows is a registered trademark of Microsoft Corporation in the United States and other countries.

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Ordering information

Model / Output signal / Measuring range / Process connection / Sealing / Accuracy / Electrical connection / CANopen® interface configuration / Accessories

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