

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

WIKA data sheet PE 81.49

CANopen®

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.

Specifications

Accuracy specifications	
Non-linearity per BFSL per IEC 61298-2	$\leq \pm 0.2$ % of span
Accuracy	→ See "Max. measured error per IEC 61298-2"
Max. measured error per IEC 61298-2	<div> <div></div> <div>$\leq \pm 1$ % of span</div> <div></div> <div>$\leq \pm 0.5$ % of span</div> </div>
Temperature error	→ See below
Temperature range 0 ... 60 °C [32 ... 140 °F]	$\leq \pm 0.5$ % of span
Temperature range -40 ... +85 °C [-40 ... +185 °F]	$\leq \pm 1$ % of span
Long-term stability per DIN 16086	$\leq \pm 0.2$ % 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]	<div> <div></div> <div>FKM</div> <div></div> <div>NBR</div> </div>
DIN EN ISO 9974-2 (formerly DIN 3852-E)	M14 x 1.5	600 bar [8,000 psi]	858 bar [12,444 psi]	<div> <div></div> <div>FKM</div> <div></div> <div>NBR</div> </div>
SAE J514	7/16-20 UNF-2A, O-ring BOSS	600 bar [8,000 psi]	1,144 bar [16,592 psi]	<div> <div></div> <div>FKM</div> <div></div> <div>NBR</div> </div>
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]

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 CAN-open® 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	


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"

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	<ul style="list-style-type: none"> ■ Individual packaging ■ Multiple packaging (up to 20 pieces possible)
Instrument labelling	<ul style="list-style-type: none"> ■ WIKA product label, glued ■ Customer-specific product label on request

Approvals

Logo	Description	Country
	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	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

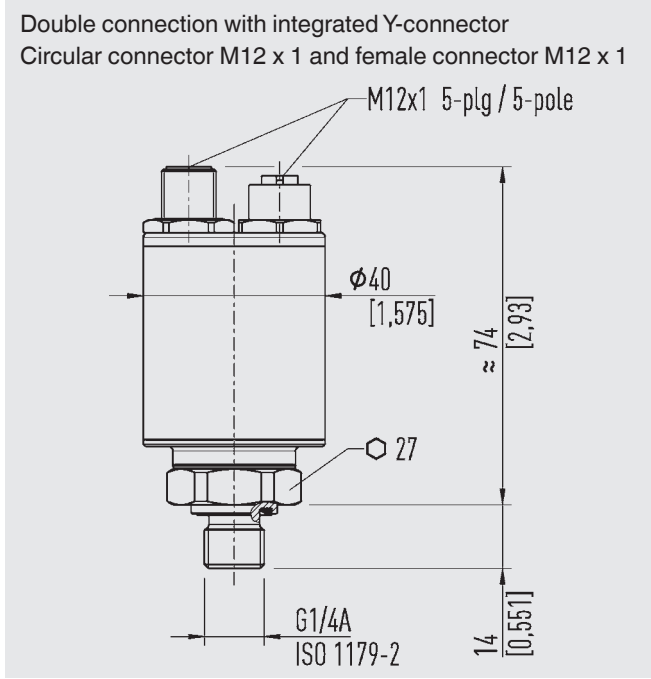
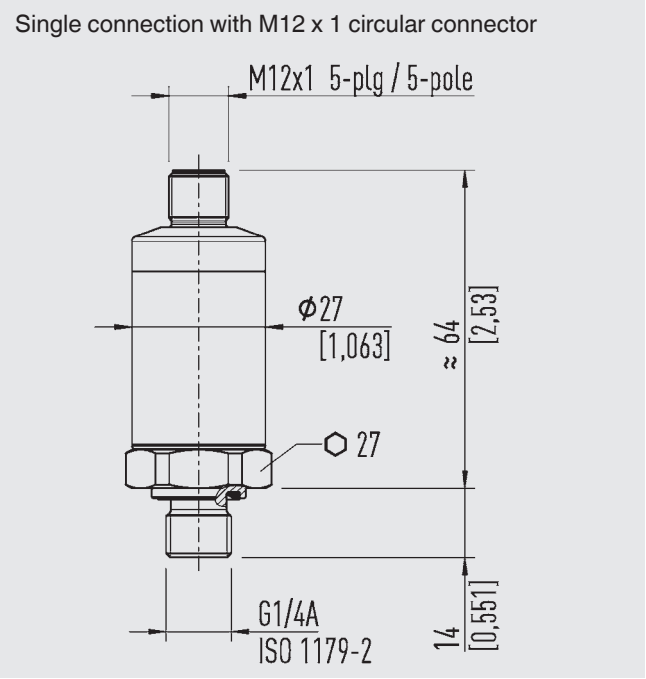
→ Approvals and certificates, see website

Safety-related characteristic values

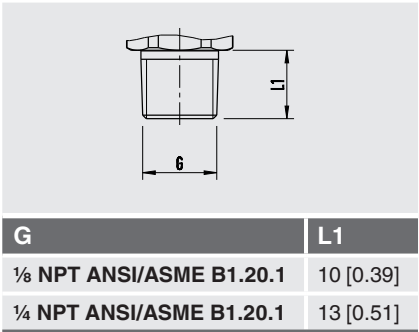
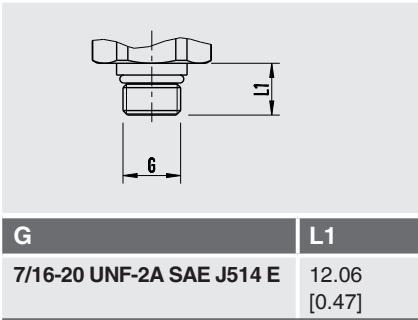
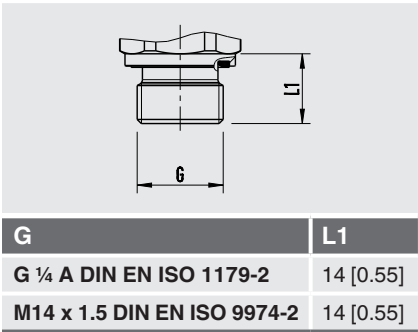
Safety-related characteristic values	
MTTF	> 100 years

Dimensions in mm [in]

Pressure sensor



Process connections



→ 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.

Ordering information

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

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Your WIKA Sales Partner



ICS Schneider Messtechnik GmbH
Briesestrasse 59
D-16562 Hohen Neuendorf / OT Bergfelde
Tel.: +49 3303 5040-66
Fax: +49 3303 5040-68
E-Mail: info@ics-schneider.de



WIKAL Alexander Wiegand SE & Co. KG
Alexander-Wiegand-Straße 30
63911 Klingenberg/Germany
Tel. +49 9372 132-0
Fax +49 9372 132-406
info@wika.com
www.wika.com