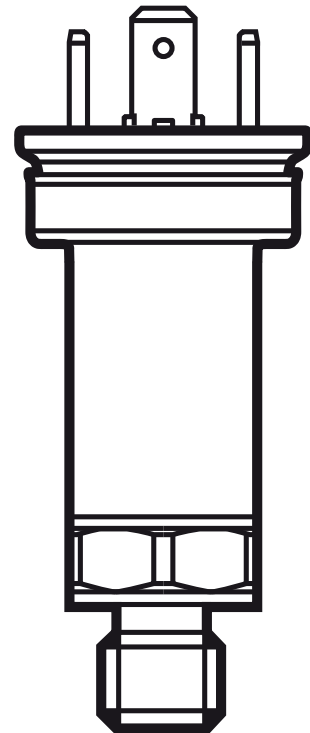


Operating instructions
Electronic pressure sensor
for industrial and mobile applications

UK

PT50xx

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1 Preliminary note

Symbols used

- ▶ Instructions
- > Reaction, result
- [...] Designation of keys, buttons or indications
- Cross-reference
-  Important note
Non-compliance may result in malfunction or interference
-  Information
Supplementary note



CAUTION

Warning of personal injury.
Slight reversible injuries may result.

2 Safety instructions

- The device described is a subcomponent for integration into a system.
 - The manufacturer of the system is responsible for the safety of the system.
 - The system manufacturer undertakes to perform a risk assessment and to create a documentation in accordance with legal and normative requirements to be provided to the operator and user of the system. This documentation must contain all necessary information and safety instructions for the operator, the user and, if applicable, for any service personnel authorised by the manufacturer of the system.
- Read this document before setting up the product and keep it during the entire service life.
- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.
- Only use the product for its intended purpose (→ Functions and features).
- Only use the product for permissible media (→ Technical data).
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.
- The manufacturer assumes no liability or warranty for any consequences caused by tampering with the product or incorrect use by the operator.
- Installation, electrical connection, set-up, operation and maintenance of the unit must be carried out by qualified personnel authorised by the machine operator.
- Installation, electrical connection, set-up, programming, configuration, operation and maintenance of the product must be carried out by personnel qualified and authorised for the respective activity.
- Protect units and cables against damage.

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CAUTION

For high medium temperatures, parts of the unit may heat up.

> Risk of burns

▶ Do not touch the unit

▶ Protect the housing against contact with flammable substances and unintentional contact.

3 Functions and features

The pressure sensor detects the system pressure and converts it into an analogue output signal.

3.1 Applications

- Type of pressure: relative pressure

Order number	Measuring range		Static pressure rating (max. permissible pressure)		Bursting pressure	
	bar	psi	bar	psi	bar	psi
PT5015	0...6	0...87	15	215	200	2900
PT5004	0...10	0...145	25	360	300	4350
PT5014	0...16	0...230	40	580	450	6525
PT5003	0...25	0...360	65	940	600	8700
PT5043	0...40	0...580	100	1450	800	11600
PT5023	0...60	0...870	150	2175	900	13050
PT5002	0...100	0...1450	250	3625	1000	14500
PT5012	0...160	0...2320	400	5800	1100	15950
PT5001	0...250	0...3625	625	9060	1200	17400
PT5000	0...400	0...5800	1000	14500	1700	24655
PT5060	0...600	0...8700	1500	21755	2500	36255

$$\text{MPa} = \text{bar} \div 10 / \text{kPa} = \text{bar} \times 100$$



Avoid static and dynamic overpressure exceeding the indicated pressure rating by taking appropriate measures. The indicated bursting pressure must not be exceeded. Even if the bursting pressure is exceeded only for a short time, the unit may be destroyed.

ATTENTION: risk of injury!



For units with a final value of the measuring range of 600 bar the limits of the pressure cycles across the lifetime apply (→ 7).



If the cable length exceeds 30 m or if used outside buildings, there is a risk of overvoltage pulses from external sources. We recommend to use the unit in protected operating environments and to limit overvoltage pulses to max. 500 V.



Pressure Equipment Directive (PED):

The units with a final value of the measuring range of 6...400 bar comply with the Pressure Equipment Directive. They are designed for group 2 fluids and are manufactured in accordance with sound engineering practice.

Use of media from group 1 fluids on request.



Pressure Equipment Directive (PED):

Units with a final value of the measuring range of 600 bar comply with the Pressure Equipment Directive, are designed for group 2 fluids and are manufactured and tested according to module A. Use of group 1 fluids on request.

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The units are vacuum resistant.

3.2 Use in hydraulic systems of mobile machines

Restrictor in the process connection:

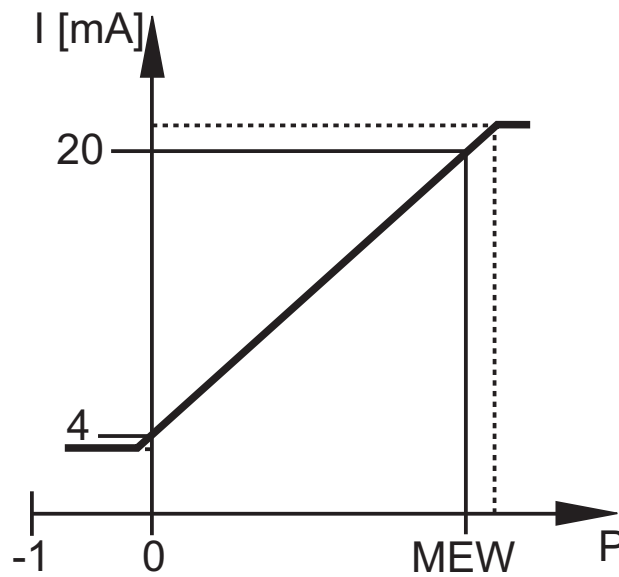
In hydraulic systems of mobile machines, highly dynamic effects such as pressure peaks, cavitation etc. may arise depending on the operating conditions. To reduce these effects on the measuring element of the sensor, a diaphragm attachment is integrated into the process connection. The specific thread pitch of the diaphragm attachment has the effect of a hole of approx. 0.3 mm.



High viscosity may reduce the response time by some milliseconds. Heavy soiling may affect the functionality.

4 Function

Current output 4...20 mA (PT5xxx)



P = system pressure, MEW = final value of the measuring range

In the measuring range the output signal is between 4 and 20 mA.

If the system pressure is above or below the measuring range, the analogue output behaves, without achieving the accuracy, as follows:

- System pressure above the measuring range: 20...25 mA.
- System pressure below the measuring range: 4...3 mA.

5 Installation



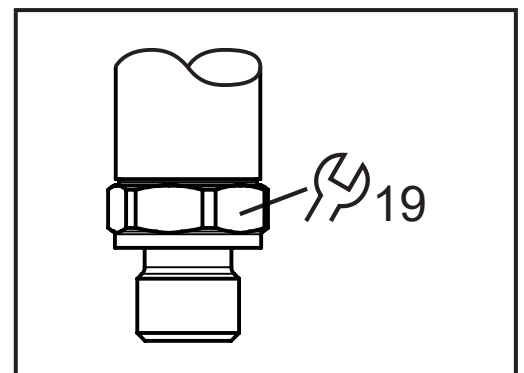
Before installing and removing the unit:

Make sure that no pressure is applied to the system.

► Insert the unit in a G $\frac{1}{4}$ process connection.



► Only screw into the process connection at the intended spanner flat.



► Tighten firmly. Recommended tightening torque:

Final value of the measuring range in bar	Tightening torque in Nm
6...400	25...35
600	30...50

Depends on lubrication, seal and pressure load.

6 Electrical connection



The unit must be connected by a qualified electrician. The national and international regulations for the installation of electrical equipment must be adhered to.

Voltage supply to EN 50178, SELV, PELV.



For marine applications (if approval available for the device), suitable cables and wirable valve plugs must be used according to the respective standards.

► Disconnect power.

► Connect the unit as follows:

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		Pin 1:	L+
		Pin 2:	analogue output 4...20 mA
		Pin 3:	not used
		functional earth (FE)	

	<p>► Connect jumper cable with valve plug.</p> <p>► Tighten fixing screw jumper cable with valve plug. Recommended tightening torque: 0.2...0.5 Nm.</p> <p>1: fixing screw jumper cable with valve plug 2: jumper cable with valve plug 3: pressure sensor</p> <p> The jumper cable with valve plug is not supplied with the unit. Accessories at www.ifm.com.</p>
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7 Technical data and scale drawing



The Pressure Equipment Directive (PED) stipulates that the following technical data must be provided for units with a final value of the measuring range of 600 bar.

PT5060	
Operating voltage [V].....	8...36DC
Analogue output	4...20 mA
Medium temperature [°C]	-40...125
Ambient temperature [°C].....	-40...100
Storage temperature [°C].....	-40...100
Pressure cycles (min.) across lifetime	60 million for 1.2 x nominal pressure
Shock resistance [g]	500 (DIN EN 60068-2-27, 1 ms)
Vibration resistance [g].....	20 (DIN EN 60068-2-6, 10...2000 Hz)

More information at www.ifm.com