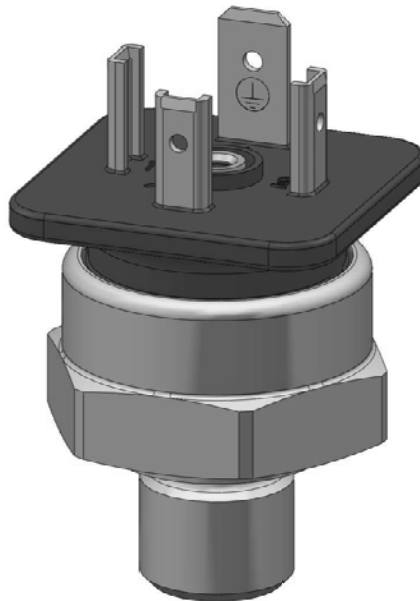




Installation Instructions

Model Series PTE5000/PE5000 Relative Pressure Sensors for General Industrial Applications



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Contents





1. General.....	2
2. Safety Instructions.....	4
3. Installation and Commissioning.....	5
Installation – mechanical properties	5
Installation – electrical connection	5
Installation of the DIN 175301-803A / GDS 207 angled connector.....	6
Installation of the M12 mating connector	6
4. Technical Data.....	7
5. Troubleshooting.....	8
6. Storage, Disposal.....	9
7. Contact Information	9

1. General

About these instructions

Carefully read through these installation instructions prior to assembling/installing and commissioning the pressure sensor, keep the instructions in an accessible location for all users. Details about specific applications are not discussed within this document on account of the wide range of general industrial uses of the device.




Symbols:

 DANGER	Indicates an imminent, hazardous situation that can result in severe injury or death if the safety instructions and warnings are not adhered to.
 WARNING	Indicates a potentially hazardous situation that can result in severe injury or death if the safety instructions and warnings are not adhered to.
 CAUTION	Indicates a potentially hazardous situation that can result in material damage or minor to serious injury if the safety instructions and warnings are not adhered to.
	Information Indicates important information about the product or about handling of the product.

Special knowledge required

Do not install or commission the pressure sensor unless you are familiar with the country-specific guidelines and codes, and possess the appropriate qualifications.

You must have in-depth knowledge of instrumentation, control technology, and electrical circuits, as the pressure sensor is an item of electrical equipment. Other specialist knowledge may be required for specific applications, i.e. aggressive media.

 <p>WARNING</p>	<p>Intended use</p> <ul style="list-style-type: none"> • The pressure sensor may be used solely for pressure measuring tasks and any directly associated control tasks. Only use the device as described in the instructions to ensure safe operation. • Correct transport, storage, setup and installation and careful use of the pressure sensors is vital for effective, trouble-free operation of the units. • Use of the devices as an "item of equipment with safety-relevant function" and use with Class 1 fluids does not represent intended use and must be evaluated by users at their own discretion (as defined by the Pressure Vessel Directive 97/23/EC).
 <p>WARNING</p>	<p>General hazards on failure to observe the safety notices</p> <ul style="list-style-type: none"> • The device may represent a hazard if it is not used or operated properly. • Any and all persons charged with the installation, commissioning, maintenance or repair of the device must have read and clearly understood the operating instructions and, in particular, the safety notices.
 <p>WARNING</p>	<p>Residual hazards</p> <ul style="list-style-type: none"> • Despite these pressure sensors being constructed to provide the greatest degree of safety, the rules of safety engineering nevertheless demand that burst protection be provided around the sensor. • The sensor must be protected against mechanical loading or impacts. • Exceeding the specified temperature limits, e.g. in a fire, renders the sensor unusable.




2. Safety Instructions



DANGER

- Do not open the connections unless they have been depressurized! Always ensure that the line is depressurized when installing / removing the pressure transmitter.
- Only use the pressure sensor within the specified overload limit range!
- Observe the operating parameters given under Technical Data. Ensure that the pressure sensor is only used as intended, i.e. as described in the instructions below.
- Never tamper with or modify the pressure sensor if such actions are not explicitly described in these operating instructions.
- If faults cannot be eliminated, de-activate the pressure sensor and secure it against inadvertent/unauthorized re-activation.
- Take all necessary precautions for residual material still in the pressure devices. This residual material can be hazardous to humans, the environment and the facilities!
- Only have repair work performed by the manufacturer.
- Prior to installation or commissioning, select the pressure sensing device with the appropriate measuring range, design and specific measuring criteria for the application.

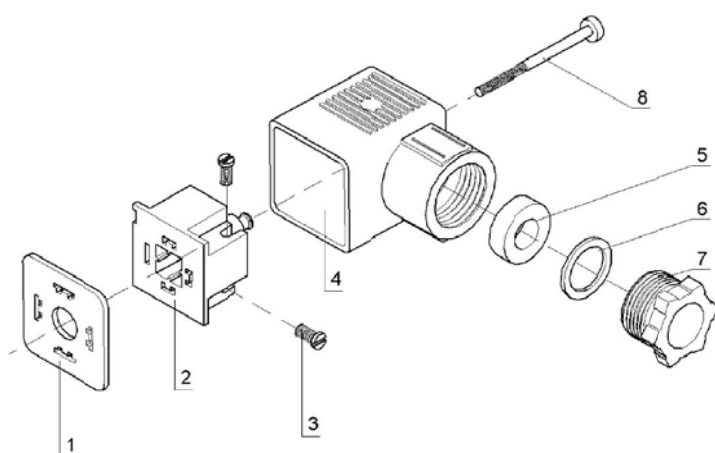
3. Installation and Commissioning

 <p>WARNING</p>	<ul style="list-style-type: none"> • Examine the pressure sensor for any shipping damage. Inform the shipping company and Kavlico immediately of any obvious damage that is detected. • Ensure that the pressure fitting threads and the terminal contacts are not damaged. • Only use the pressure sensor when it is not damaged and in good condition.
 <p>WARNING</p>	<p>Installation – mechanical properties</p> <ul style="list-style-type: none"> • When installing the device, ensure that the sealing surfaces on the device and at the measuring point are clean and intact. • Screw the device in place at the specified torque, or unscrew it using appropriate tools (e.g. SW27 (WAF) wrench). The correct torque depends on the pressure fitting and on the seal that is used (geometry/material) and is given in the corresponding thread standard if not otherwise specified. When screwing in the device ensure that the threads are always in line. • When installing the unit, the screw-in torque may not be applied via the housing, the cable entry fitting or the mating connector. • The maximum, permissible tightening torque is 25 Nm.
 <p>WARNING</p>	<p>Installation – electrical connection</p> <ul style="list-style-type: none"> • Ground the device through the pressure fitting. Use a limited-power circuit as the power supply. • The degree of protection based on the IP safety class (IEC 60 529) applies only when the unit is plugged in with line plugs (sockets) having the corresponding degree of protection. Select the cable diameter as appropriate for the cable entry fitting for the plug. Ensure that the cable gland of the attached plug fits correctly and that all seals are in place and undamaged. Tighten the gland and check for proper seating of the seals. Check to ensure that no moisture can penetrate into the ends of the cable outlets. • Refer to the technical datasheet for allocation of the different types of plugs and signal output. Switching of the poles for the sensor plugs for the corresponding mating connector is not possible owing to the clear, unique alignment. • The sensor can be damaged if polarization is not correct when preparing the cable connectors. Always observe the maximum connected load of 0.5VDC to +16VDC for output options 0.5-4.5V; 0-5V and 0-10V at the N/C pins.

Installation of the DIN 175301-803A / GDS 207 angled connector



- Insert the screwdriver into the installation opening to pry the terminal block (2) out of the housing (4).
- Select a wire diameter appropriate for the cable entry in the housing. Slide the cable through the cable gland (7), the ring (6), the seal (5) and the housing (4).
- Connect the ends of the cable to the terminals in the terminal block (2) as shown in the connection drawing.
- Press the housing (4) onto the terminal block (2).
- Screw the cable to the cable gland (7). Ensure that the seals are not damaged and that the cable gland and seals fit properly to provide the proper IP protection.
- Place the square gasket (1) over the connecting pins in the sensor housing.
- Slide the terminal block (2) onto the connecting pins in the housing.
- Use the locking screw (8) to fasten the assembled angled connector to the sensor.



Legend:

- 1 Gasket
- 2 Terminal block
- 3 Terminal screws
- 4 Housing
- 5 Seal
- 6 Ring
- 7 Cable gland
- 8 Locking screw

Installation of the M12 mating connector



- The M12 mating connector must be tightened to a torque of 0.6-1.5Nm to ensure that the required leak-tightness category is provided.

4. Technical Data

Pressure range (relative pressure)						
Measuring range	bar	10	16	25	40	60
Overload limit	bar	20	32	50	80	120
Burst pressure	bar	30	48	75	120	180
Measuring range	bar	100	160	250	400	600
Overload limit	bar	200	320	375	600	900
Burst pressure	bar	300	400	500	800	1200
Service life		10 mio. stress cycles				
Output signal - Options		4...20 mA	0.5...4.5 V ratiometric	0...5 V	0...10 V	
Auxiliary power UB	VDC	8-30	5 ±10%	8-30	14-30	
Current consumption	mA	Signal current (max. 20) for current output				
Insulation voltage	VDC	500				
Total errors in nominal temperature range	%	+/- 1.0 % of span				
Pressure fitting		G1/4"A DIN 3852-E 7/16" - 20 UNF-2B (female) SAE J1926/1; with 45° cone 7/16" - 20 UNF-2A (male) SAE J1926/2; with 45° cone				
Electrical connection (plug) / IP protection classes		DIN 175301-803 A (18 mm) GDS 207 INDUSTRIAL STANDARD (9.4 mm) M12 - 4 POLE			IP 65 IP 65 IP 67	
Weight	g	ca. 80				
Materials in contact with medium						
Pressure fitting/housing		1.4301				
Sensor measuring cell		1.4542 or similar				
Permissible temperature range						
Operating temperature range	°C	-30°C to 100°C*				
Storage temperature range	°C	-30°C to 100°C*				
* Limited temperature range with M12 connector	°C	-15°C to 85°C				
Nominal temperature range	°C	0 to 80°C				
Vibration capacity	g PSD	20 based on IEC 60068-2-6 (vibration with resonance) 20 based on IEC 60068-2-64 (noise)				
CE Conformity						
EMC Guideline		2004/108/EC Disturbance emissions and immunity				
Pressure Vessel Guideline		Classification based on Pressure Vessel Directive 97/23/EC as pressurized items of equipment without safety-relevant function (Article 3. Section 3).				
RoHs Conformity		Yes				

5. Troubleshooting



DANGER

- Do not open the connections unless they have been depressurized! The pressure sensor is maintenance-free. Only have repair work performed by the manufacturer.
- Never use any sharp, pointed or hard objects to clean the device, as this could damage the sensitive membrane of the pressure fitting.
- Take all necessary precautions for residual material in the pressure sensing devices that have been removed. This residual material can be hazardous to humans, the environment and the facilities!
- If faults cannot be eliminated, de-activate the pressure sensor and secure it against inadvertent/unauthorized re-activation.

No output signal	Open circuit	Check for continuity
Deviating zero-point signal	Overload limit exceeded	Maintain permissible overload limit (see Technical Data)
Deviating zero-point signal	Operating temperatures too high/low	Maintain permissible temperature range (see Technical Data)
Constant output signal on change in pressure	Mechanical overloading due to excessive pressure	Replace device; consult manufacturer on repeated failure of device
Signal span too narrow	Mechanical overloading due to excessive pressure	Replace device; consult manufacturer on repeated failure of device
Signal span fluctuates	EMC disturbance sources in the vicinity, e.g. frequency converters	Shield the device; wire sheath; remove source of disturbance
Signal span fluctuates / not precise	Operating temperatures too high/low	Maintain permissible temperature range (see Technical Data)
Signal span drops/too narrow	Damage to membrane, e.g. by impact, abrasive/aggressive medium; corrosion on membrane/pressure fitting; lack of transfer medium	Consult the manufacturer and replace the device

Contamination Declaration for Service (Process Material Certificate)

Rinse out and/or clean devices that have been removed before returning them to protect our employees and the environment from the hazards posed by adherent residual material in the device. Devices that have failed can only be examined safely and thoroughly when an in-depth description is provided detailing the fault and how the device is used. This description must list all the materials that the device has come into contact with, including those used for testing, during operation or for cleaning.

6. Storage, Disposal



Take appropriate precautionary measures for storage and disposal for residual materials in pressure sensing devices that have been removed. We recommend performing thorough cleaning in accordance with the measuring equipment used. Residual material in the device can be hazardous to humans, the environment and the facilities! Dispose of the device components and packing materials in compliance with the pertinent, country specific waste handling and disposal codes in the country to which the device is delivered.

7. Contact Information

<p>Kavlico Corporate Headquarters 14401 Princeton Avenue Moorpark, CA 93021 Customer Service – Transportation & Industrial tel619-710-2000 fax619-710-4799 Industrial Products Sales sales@kavlico.com fax805-523-7125</p> <p>Mexico Industrial Products Calzada Zavaleta 2505-C Col. Sta Cruz Buena Vista Puebla, Pue. Mexico C.P. 72150 Main Contact: Salvador Sanchez Jaimes tel+52-222-409 7811 fax+52-222-409-7810 mexico@cstsensors.com</p> <p>Germany Transportation & Industrial Products Potsdamer Str. 14 32423 Minden, Germany Main tel+49-571-3859-0 fax+49-571-3859-199 (Main) fax+49-571-3859-119 (Sales) info@kavlico.de</p> <p>Europe Industrial Products St. Gallerstrasse 44 8400 Winterthur - Switzerland Main Contact: Franck Ferrarese Key Account Manager – Europe Industrial Pressure Sensors tel+41 (0) 52 233 02 61 fax+41 (0) 78 636 88 31 franck.ferrarese@kavlico.de</p> <p>United Kingdom & Scandinavia Industrial Products Williams House 11 - 15 Columbus Walk Cardiff / UK Main Contact: Arron Bickerton tel+44 (0) 29 20029869 fax+44 (0) 29 20495985 cel+44 (0) 7889767377 arron.bickerton@kavlico.de</p> <p>Italy Leane International S.r.l. Transportation Products Viale Partigiani d'Italia, 1 I-43100 Parma, Italy Main Contact: Renato Rivieri tel+39 0521 242495 fax+39 0521 242505 renato.rivieri@lean.it</p>	<p>Latin America Industrial Products Alameda Rio Negro, 1084 cj A31 Barueri – SP Brazil Main tel+55-11-4191-9797 fax+55-11-4191-9136 latinamerica@cstsensors.com cst-latinoamerica.com</p> <p>South Korea Transportation & Industrial Products 5F, Jeil Building, 94-96, Youngdeungpo-dong 7ga, Youngdeungpo-gu, Seoul 150-037 South Korea Main Contact: Alain Furio tel+82 2 2629 8312 +82 2 2629 8310 korea@cstsensors.com</p> <p>China Transportation & Industrial Products 2 Floor, Innovation Building No 1009, Yi Shan Road, Shanghai 200233 China Main Contact: Niu Liang tel+86 (21) 2401 7766 fax+86 (21) 6249 0701 china@cstsensors.com</p> <p>Taiwan Transportation & Industrial Products 3F, No. 39, Ji-Hu Road Nei-Hu Dist. Taipei 114, Taiwan, R.O.C. Main tel+886 2 8751 6388 fax+886 2 2657 8725 taiwan@cstsensors.com</p> <p>Other East Asian & Pacific Countries Transportation & Industrial Products 3F, No. 39, Ji-Hu Road Nei-Hu Dist. Taipei 114, Taiwan, R.O.C. Main tel+886 2 8751 6388 fax+886 2 2657 8725 eap@cstsensors.com</p> <p>India CST Sensors India Pvt Ltd UNIT 1301 and 1302, Prestige Meridian II, 30 M.G.Road, Bangalore - 560001 Main Contact: Sridhar Nalluri tel+91 80 4113 2204 / 05 fax+91 80 4113 2206 cel+91 99 1619 0808 india@cstsensors.com</p>
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