# **Operating instructions**



CE



# Safety recommendations for electrical apparatus to be used in hazardous areas

The rotary encoder of the series PVS58X, PVM58X, PSS58X und PSM58X is an electrico-mechanical apparatus that converts rotational motion into electrical signals.

## Information on the gas-hazardous and dust explosion-hazardous area:

Gas- and dust explosion protected zone 2 / zone 22 apparatus

Declaration of conformity Conformity	PF 19 CERT 5194 X 60079-0: 2012 +A11:2013, EN 60079-15: 2010, ignition protection class "n" EN 60079-31:2014, "protection by housing"
Identification	<ul> <li>(๗) II 3G Ex nA IIB T4 Gc X</li> <li>(๗) II 3D Ex tc IIIC T120°C Dc X</li> </ul>
General technical information:	
Maximum rated operating voltage	10 to 30 Volt
Permissible ambient temperature	- 30°C to +55 °C
Maximum momentary rated speed	6 000 RPM
Degree of protection as per EN 60529	
For P**58X-*****0**-**** type	
Shaft-side	IP64 (without shaft seal)
Housing-side	IP65
For P**58X-*****W**-**** type	
Shaft-side	IP66 (with shaft seal)
Housing-side	IP66
Maximum shaft load	
For PVS58X, PVM58X type	
Radial load	110 N
Axial load	40 N
For PSS58X, PSM58X type	
Angle offset	± 0,9°
Axial offset	static: $\pm 0,3$ mm, dynamic: $\pm 0,1$ mm
Radial offset	static: ±0,5 mm, dynamic: ±0,2 mm

# **Commissioning and installation**

Information on hazardous areas and the manufacturer data sheets, as well as all laws or guidelines applying to use or planned application are to be followed.

Standard 60079-14, in its valid version, is especially to be heeded.

The device is to be shielded from strong electro-magnetic fields and from mechanical damage.

The apparatus must be protected from excessive heat due to mechanical or electrical overloads.

Application areas in which ambient conditions may damage the sealing material NBR are to be checked and avoided where possible.

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#### Important information on the rotary encoder connection cap

The degree of protection for the rotary encoder with the connection cap that can be removed by the customer must, at the least, connection caps with cable gland connection.

- For the middle and right cable gland (with view at the outside of the connector cap and cable glands pointing downwards) only cables with sheath diameter of 7.0 to 9.0 mm have to be used. For the left cable gland with the smaller insert only cables with sheath diameter of 5.0 to 6.5 mm have to be used. The cables must be correctly assembled by the operator and screwed on to the cable gland so as to permanently guarantee, depending on the variant the IP65/IP66 rating. Assembly information can be found in the Profibus manual. Unused cable glands are to be filled with an appropriate blind plug in such a way as to ensure permanent, depending on the variant IP65/IP66 protection.
- Cable glands must be tightened to at least 6.5 Nm.
- The screws on the removable connection cap placed on the rotary encoder must be tightened to at least 1 Nm.

The connection cap and the connection cap cables must not be separated when energized. The apparatus bears the warning: "Do not separate when energized!". With the connection cap disconnected, soiling of the internal area must be prevented.(i.e. the area that is inaccessible when the connector is inserted).

Rotary encoder spurs must be protected from pull and torsion stress.

## Operation

The mechanical and electrical key values (e.g. ambient temperature, speed, mechanical load, max. supply voltage, etc.) of the acquired apparatus may in no case exceed the permitted manufacturer data.

The overall system of rotary encoders with evaluation electronics is designed for a maximum momentary rated speed of 6.000 RPM. Sustained operation of over 3000 RPM is to be avoided, due to the expected premature wear of sealing elements.

Longer-lasting interferences that cause the rated voltage to be exceeded must be suppressed through appropriate measures taken by the operator.

Dust must not be allowed to accumulate to more than 5 mm. The device must not be opened.

## **Special conditions**

The permitted ambient temperature is to be taken from this operating instructions (see "General technical information") depending on the applicable construction and rotational speed.

The maximum rated voltage of the apparatus, depending on version, ranges from 5 volts to 30 volts and may be exceeded by a maximum of 10%. The rated voltage should only briefly be exceeded in order to ensure the lasting technical operation of the apparatus. The operator must take measures to prevent the rated voltage from being exceeded by more than 40% through temporary interference (transients).

Electrostatic charging of the metal housing parts should be avoided. Hazardous electrostatic charging of metal-housing parts can be prevented by grounding or integration into potential equalization, whereby very small metal-housing parts (e.g. screws) need not be considered. To minimize risk from electrostatic discharge - clean only with a damp cloth.

Only for variants of P\*\*58X-\*\*\*\*\* W\*\*-\*\*\*\* versions with degree of protection IP66, the encoder housing must be protected from any impact by means of precautions (e.g protective housing).

#### Upkeep and maintenance

The values given in the data sheet on degree of protection, climate testing, electromagnetic compatibility and shock and vibration resistance were tested and released in accordance with the specified standard. Encoder operation is assured with regard to these definitions.

Physical, chemical and mechanical influences determine the useful life of the shaft-side sealing rings. Deterioration, ambient agents, temperature, and wear and dirt combining with rotational speed are all involved.

The interaction of these influences is very complex. Hence there is no basis for calculating the useful life of the seal rings, but rather only values gleaned from experience. According to seal-ring manufacturers, under normal conditions, apparatus seals can reach a useful life of 10,000 operating hours at continuous operation or 3 to 5 years.

Since the fields of application and the demands made on apparatus can be very different, there is no general maintenance cycle prescribed for this apparatus. Depending on the application, sealing elements on the apparatus such as shaft seal rings or ballbearing sealing disk and cable entry point are to be checked for wear at appropriate intervals.

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No changes may be made. Only the manufacturer may perform repair work.

Refer to "General Notes Relating to Pepperl+Fuchs Product Information". Germany: +49 621 776 1111