

Safety Instructions

Memosens pH/ORP sensors

Safety instructions for electrical apparatus in explosion-hazardous areas

CSA C/US IS Cl. I Div. 1 GP A-D T3/T4/T6 + CSA
C/US IS Cl. I Zone 0 AEx ia IIC T3/T4/T6
CSA C/US IS Cl. I Div. 1 GP A-D T4/T6 + CSA C/US
IS Cl. I Zone 0 AEx ia IIC T4/T6
CSA C/ US Cl. 1 Div 1&2 GP A-D T6...T3



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Associated documentation

This document is an integral part of Operating Instructions BA01988C, BA02142C.

Additional documentation



- Competence Brochure CP00021Z
 - Explosion Protection: Guidelines and General Principles
 - www.endress.com

Certificates and Declarations

The certificates and declarations of conformity are available in the Downloads area of the Endress+Hauser website:

www.endress.com/download

CSA C/US certificate, certificate number: CSA20CA80021490X

Identification

The nameplate provides you with the following information on your device:

- Manufacturer identification
- Order code
- Extended order code
- Serial number
- Safety information and warnings
- Ex marking on hazardous area versions

► Compare the information on the nameplate with the order.

Type code

Item type	Version						
xPS11E xPS12E xPS16E xPS41E xPS42E xPS61E xPS62E xPS71E xPS72E xPS76E	CI: CSA C/US IS Cl. 1 Div. 1 GP A-D T3/T4/T6 + CSA C/US IS Cl. 1 Zone 0 AEx ia IIC T3/T4/T6 CB: CSA C/ US Cl. 1 Div 1&2 GP A-D T6...T3	*	*	**	*	***	+*
x = C, OC No Ex relevance		* means all options are certified					

Item type	Version	*	*	**	*	***	+*
xPS31E xPS91E xPS92E xPS96E	CI: CSA C/US IS Cl. 1 Div. 1 GP A-D T4/T6 + CSA C/US IS Cl. 1 Zone 0 AEx ia IIC T4/T6 CB: CSA C/ US Cl. 1 Div 1&2 GP A-D T6/T3						
x = C, OC No Ex relevance		* means all options are certified					


Item type	Version	*	*	**	*	***	+*
xPF81E xPF82E	CI: CSA C/US IS Cl. 1 Div. 1 GP A-D T4/T6 + CSA C/US IS Cl. 1 Zone 0 AEx ia IIC T4/T6						
x = C, OC No Ex relevance		* means all options are certified					

Certificates and approvals

Ex approvals

Details of the fulfilled standards are provided on the certificate.

Safety Instructions

- pH/ORP sensors of the series xPSxxE and xPF8xE must not be operated under electrostatically critical process conditions. Significant vapor or dust clouds, which have a direct impact on the connection system, must be avoided.
- Ex-protected digital sensors with Memosens technology are identified by an orange-red ring on the terminal head.
- Install the device according to the National Electrical Code (NFPA70) or the Canadian Electrical Code, Part 1 (C22.1), where applicable.
- The procedures for electrical connection described in the Operating Instructions must be followed. Use only as specified in the related manual. Improper use may impair protection.
- The maximum ambient and process temperatures for temperature classes T3, T4 or T6 are limited as specified in the tables of this certificate →  6.
- The plastic parts may only be cleaned with a damp cloth.
- It is the responsibility of the system assembler to ensure the safety of any system that incorporates this equipment.

Temperature tables

Sensor	Temperature class	Process temperature T_p	Ambient temperature T_a
xPS11E xPS12E xPS16E xPS41E xPS42E xPS72E	T3	$-15\text{ °C (5 °F)} \leq T_p \leq 135\text{ °C (275 °F)}$	$-15\text{ °C (5 °F)} \leq T_a \leq 70\text{ °C (158 °F)}$
	T4	$-15\text{ °C (5 °F)} \leq T_p \leq 120\text{ °C (248 °F)}$	$-15\text{ °C (5 °F)} \leq T_a \leq 75\text{ °C (167 °F)}$
		$-15\text{ °C (5 °F)} \leq T_p \leq 110\text{ °C (230 °F)}$	$-15\text{ °C (5 °F)} \leq T_a \leq 80\text{ °C (176 °F)}$
		$-15\text{ °C (5 °F)} \leq T_p \leq 100\text{ °C (212 °F)}$	$-15\text{ °C (5 °F)} \leq T_a \leq 85\text{ °C (185 °F)}$
		$-15\text{ °C (5 °F)} \leq T_p \leq 90\text{ °C (194 °F)}$	$-15\text{ °C (5 °F)} \leq T_a \leq 90\text{ °C (194 °F)}$
T6	$-15\text{ °C (5 °F)} \leq T_p \leq 70\text{ °C (158 °F)}$	$-15\text{ °C (5 °F)} \leq T_a \leq 70\text{ °C (158 °F)}$	
xPS61E xPS62E xPS71E xPS76E	T3	$0\text{ °C (32 °F)} \leq T_p \leq 140\text{ °C (284 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 70\text{ °C (158 °F)}$
	T4	$0\text{ °C (32 °F)} \leq T_p \leq 120\text{ °C (248 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 75\text{ °C (167 °F)}$
		$0\text{ °C (32 °F)} \leq T_p \leq 110\text{ °C (230 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 80\text{ °C (176 °F)}$
		$0\text{ °C (32 °F)} \leq T_p \leq 100\text{ °C (212 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 85\text{ °C (185 °F)}$
		$0\text{ °C (32 °F)} \leq T_p \leq 90\text{ °C (194 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 90\text{ °C (194 °F)}$
T6	$0\text{ °C (32 °F)} \leq T_p \leq 70\text{ °C (158 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 70\text{ °C (158 °F)}$	
xPS31E	T4	$0\text{ °C (32 °F)} \leq T_p \leq 80\text{ °C (176 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 90\text{ °C (194 °F)}$
	T6	$0\text{ °C (32 °F)} \leq T_p \leq 70\text{ °C (158 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 70\text{ °C (158 °F)}$
xPS91E xPS92E xPS96E	T4	$0\text{ °C (32 °F)} \leq T_p \leq 110\text{ °C (230 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 80\text{ °C (176 °F)}$
		$0\text{ °C (32 °F)} \leq T_p \leq 100\text{ °C (212 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 85\text{ °C (185 °F)}$
		$0\text{ °C (32 °F)} \leq T_p \leq 90\text{ °C (194 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 90\text{ °C (194 °F)}$
T6	$0\text{ °C (32 °F)} \leq T_p \leq 70\text{ °C (158 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 70\text{ °C (158 °F)}$	
xPF81E	T4	$0\text{ °C (32 °F)} \leq T_p \leq 110\text{ °C (230 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 55\text{ °C (131 °F)}$
	T6	$0\text{ °C (32 °F)} \leq T_p \leq 70\text{ °C (158 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 50\text{ °C (122 °F)}$

Sensor	Temperature class	Process temperature T_p	Ambient temperature T_a
xPF82E	T4	$0\text{ }^\circ\text{C (32 }^\circ\text{F)} \leq T_p \leq 80\text{ }^\circ\text{C (176 }^\circ\text{F)}$	$0\text{ }^\circ\text{C (32 }^\circ\text{F)} \leq T_a \leq 55\text{ }^\circ\text{C (131 }^\circ\text{F)}$
	T6	$0\text{ }^\circ\text{C (32 }^\circ\text{F)} \leq T_p \leq 70\text{ }^\circ\text{C (158 }^\circ\text{F)}$	$0\text{ }^\circ\text{C (32 }^\circ\text{F)} \leq T_a \leq 50\text{ }^\circ\text{C (122 }^\circ\text{F)}$

The temperature table above applies only under the following installation conditions, which are described in the following graphic . If the installation conditions cannot be met, the maximum process temperature T_p must not exceed the maximum ambient temperature T_a .

Connection



The sensors can be connected both Class I Division 1 and Class I Division 2:

Division 1 equipment can be used in Division 2 as long as they are installed in the same manner as they were intended for Division 1 (NEC 500.8 (B)(2)). This is the case for Memosens sensor with inductive coupling between sensor and cable. There are no different installation methods between sensor and cable. For the cable-transmitter connection the XA of the transmitter must be considered.

Ex specification

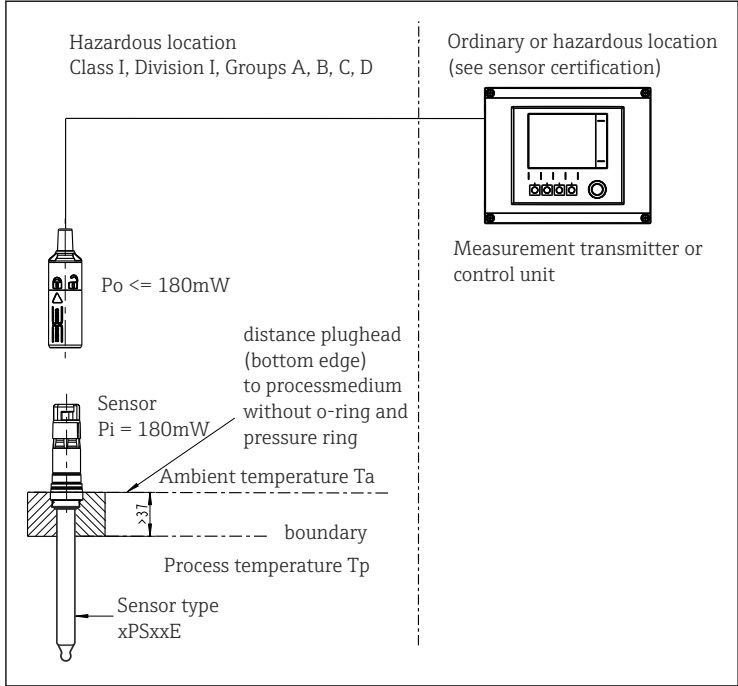
- The pH/ORP sensors of the series xPSxxE and xPF8xE are approved and are suitable for use in hazardous environments.
- The approved digital pH/ORP sensors of the model series xPSxxE and xPF8xE feature an intrinsically safe input with the following parameter set:

Parameters	Value
P_1	180 mW

The approved digital pH/ORP sensors of the model series xPSxxE and xPF8xE must be connected to a Memosens measuring cable or cable transmitter with an intrinsically safe output with the following parameter:

Parameters	Value
P_o	Maximum 180 mW

Installation conditions



A0061972

1 Installation conditions



71767089

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