

Safety Instructions

Memosens pH/ORP sensors

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



Memosens pH/ORP sensors

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

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		No Ex relevance					

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		No Ex relevance							

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		No Ex relevance							

Certificates and approvals

Ex approvals

The product meets the requirements of:

- CLASS - C225804 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe Entity - For Hazardous Locations
- CLASS - C225884 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe Entity - For Hazardous Locations - Certified to US Standards

This is verified by compliance with the following standards:

- CAN/CSA-C22.2 No. 60079-0:19
- CAN/CSA-C22.2 No. 60079-11:14
- ANSI/UL 60079-0:19
- ANSI/UL 60079-11:13
- CAN/CSA-C22.2 No. 61010-1-12 (May 2012)
- UL Std. No. 61010-1 (3rd Edition)

CPS11E/CPS12E/CPS16E/CPS41E/CPS42E/CPS61E/CPS62E/CPS71E/CPS72E/CPS76E:

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 Cl. 1 Div 1&2 GP A-D T6...T3


CPS31E/CPS91E/CPS92E/CPS96E:

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 T4/T6

CPF81E/CPF82E:

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


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.
- 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 device must be installed as specified in the control drawing 961005034.
- The plastic parts may only be cleaned with a damp cloth.


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	$0\text{ °C (32 °F)} \leq T_p \leq 70\text{ °C (158 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 70\text{ °C (158 °F)}$

Sensor	Temperature class	Process temperature T_p	Ambient temperature T_a
xPS31E	T4	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_p \leq 80\text{ }^{\circ}\text{C (176 }^{\circ}\text{F)}$	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_a \leq 90\text{ }^{\circ}\text{C (194 }^{\circ}\text{F)}$
	T6	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_p \leq 70\text{ }^{\circ}\text{C (158 }^{\circ}\text{F)}$	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_a \leq 70\text{ }^{\circ}\text{C (158 }^{\circ}\text{F)}$
xPS91E xPS92E xPS96E	T4	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_p \leq 110\text{ }^{\circ}\text{C (230 }^{\circ}\text{F)}$	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_a \leq 80\text{ }^{\circ}\text{C (176 }^{\circ}\text{F)}$
		$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_p \leq 100\text{ }^{\circ}\text{C (212 }^{\circ}\text{F)}$	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_a \leq 85\text{ }^{\circ}\text{C (185 }^{\circ}\text{F)}$
		$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_p \leq 90\text{ }^{\circ}\text{C (194 }^{\circ}\text{F)}$	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_a \leq 90\text{ }^{\circ}\text{C (194 }^{\circ}\text{F)}$
	T6	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_p \leq 70\text{ }^{\circ}\text{C (158 }^{\circ}\text{F)}$	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_a \leq 70\text{ }^{\circ}\text{C (158 }^{\circ}\text{F)}$
xPF81E	T4	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_p \leq 110\text{ }^{\circ}\text{C (230 }^{\circ}\text{F)}$	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_a \leq 55\text{ }^{\circ}\text{C (131 }^{\circ}\text{F)}$
	T6	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_p \leq 70\text{ }^{\circ}\text{C (158 }^{\circ}\text{F)}$	$0\text{ }^{\circ}\text{C (32 }^{\circ}\text{F)} \leq T_a \leq 50\text{ }^{\circ}\text{C (122 }^{\circ}\text{F)}$
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 →  9. 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

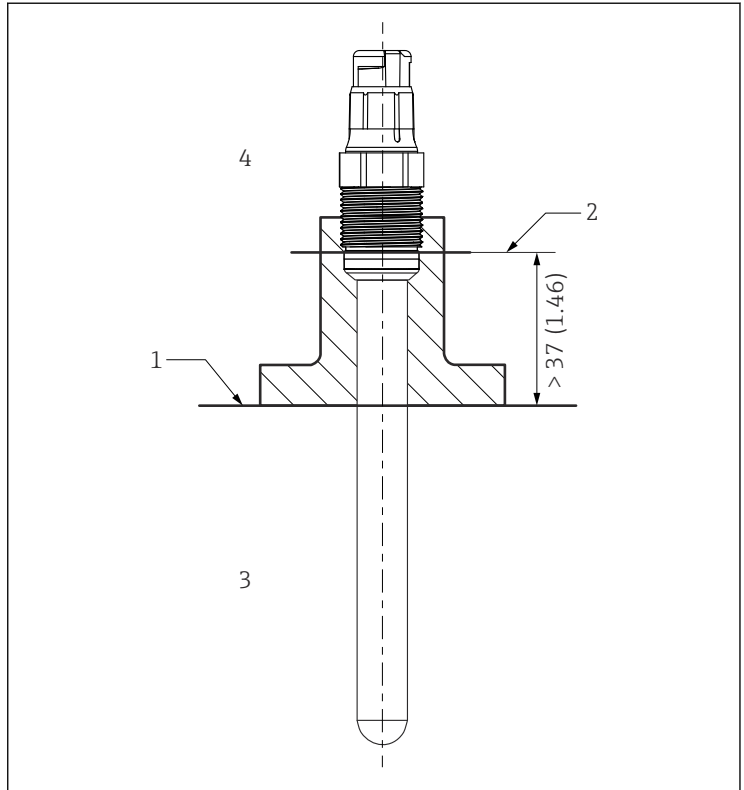
- The pH/ORP sensors of the series xPSxxE and xPF8xE are approved in accordance with CSA20CA8002.1490X and are suitable for use in hazardous environments.
- The approved digital pH/ORP sensors of the model series xPSxxE and xPF8xE feature an intrinsically safe input with the following parameter set:

Parameters	Value
P _i	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



A0041281

1 Installation conditions

- 1 Limit
- 2 Distance between plug-in head (lower edge) and process medium, without ring and thrust collar
- 3 Process temperature T_p
- 4 Ambient temperature T_a



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