

# Safety Instructions

## **Memosens pH/ORP sensors**

pH and ORP measurement

Safety instructions for electrical apparatus in explosion-hazardous areas





# Memosens pH/ORP sensors

pH and ORP measurement

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**Associated documentation** This document is an integral part of Operating Instructions BA01988C.

**Additional documentation**  Competence Brochure CP00021Z

- Explosion Protection: Guidelines and General Principles
- [www.endress.com](http://www.endress.com)

**Certificates** JPN type-examination certificate, certificate number: CML 19JPN2485X

**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					
CPS11E CPS12E CPS16E CPS41E CPS42E CPS61E CPS62E CPS71E CPS72E CPS76E	Yes	*	*	**	*	+*
	JPN Ex ia IIC T3/T4/T6 Ga	No Ex relevance				

Item type	Version					
CPS31E CPS91E CPS92E CPS96E	Yes	*	*	**	*	+*
	JPN Ex ia IIC T4/T6 Ga	No Ex relevance				

#### Certificates and approvals

##### *Ex approval*

The product meets the requirements of the Regulation on the Testing of Machinery and other Instruments set down by the Ministry of Health, Labor and Welfare in Japan.

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

Ex ia IIC T3/T4/T6 Ga

**CPS31E/CPS91E/CPS92E/CPS96E:**

Ex ia IIC T4/T6 Ga


**Safety instructions**

The inductive Memosens pH/ORP sensors CPS11E, CPS12E, CPS16E, CPS31E, CPS41E, CPS42E, CPS61E, CPS62E, CPS71E, CPS72E, CPS76E, CPS91E, CPS92E, CPS96E are suitable for use in hazardous areas in accordance with:  
JPN type-examination certificate CML 19JPN2485X including appendices

- It is not permitted to operate the sensor under electrostatically critical process conditions. Significant vapor and dust clouds, which have a direct impact on the Memosens sensor head, must be avoided.
- Ex-protected digital sensors with Memosens technology are identified by an orange-red ring on the terminal head.
- When using devices and sensors, observe the guidelines for interconnecting intrinsically safe circuits (e.g. JNIO SH-TR-NO.44).
- The procedures for electrical connection described in the Operating Instructions must be followed.
- The user must attach the yellow/black label (contained in the product packaging) beside the installed sensor (e.g. on the installed cable).
- This device was developed, manufactured and assessed in accordance with the following standards:
  - JNIO SH-TR-46-1:2015 "Equipment – General requirements"
  - JNIO SH-TR-46-6:2015 "Equipment protection by intrinsic safety "i" "

**Temperature tables**

Sensor	Temperature class	Process temperature $T_p$	Ambient temperature $T_a$
CPS11E CPS12E CPS16E CPS41E CPS42E CPS72E	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	$-15\text{ °C (5 °F)} \leq T_p \leq 70\text{ °C (158 °F)}$	$-15\text{ °C (5 °F)} \leq T_a \leq 70\text{ °C (158 °F)}$
CPS61E CPS62E CPS71E CPS76E	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	$0\text{ °C (32 °F)} \leq T_p \leq 70\text{ °C (158 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 70\text{ °C (158 °F)}$
CPS31E	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	$0\text{ °C (32 °F)} \leq T_p \leq 70\text{ °C (158 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 70\text{ °C (158 °F)}$
CPS91E CPS92E CPS96E	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	$0\text{ °C (32 °F)} \leq T_p \leq 70\text{ °C (158 °F)}$	$0\text{ °C (32 °F)} \leq T_a \leq 70\text{ °C (158 °F)}$

The temperature table above applies only under the following installation conditions, which are described in the following graphic →  6. If the installation conditions cannot be met, the maximum process temperature  $T_p$  must not exceed the maximum ambient temperature  $T_a$ .

**Connection**

**Ex specification**

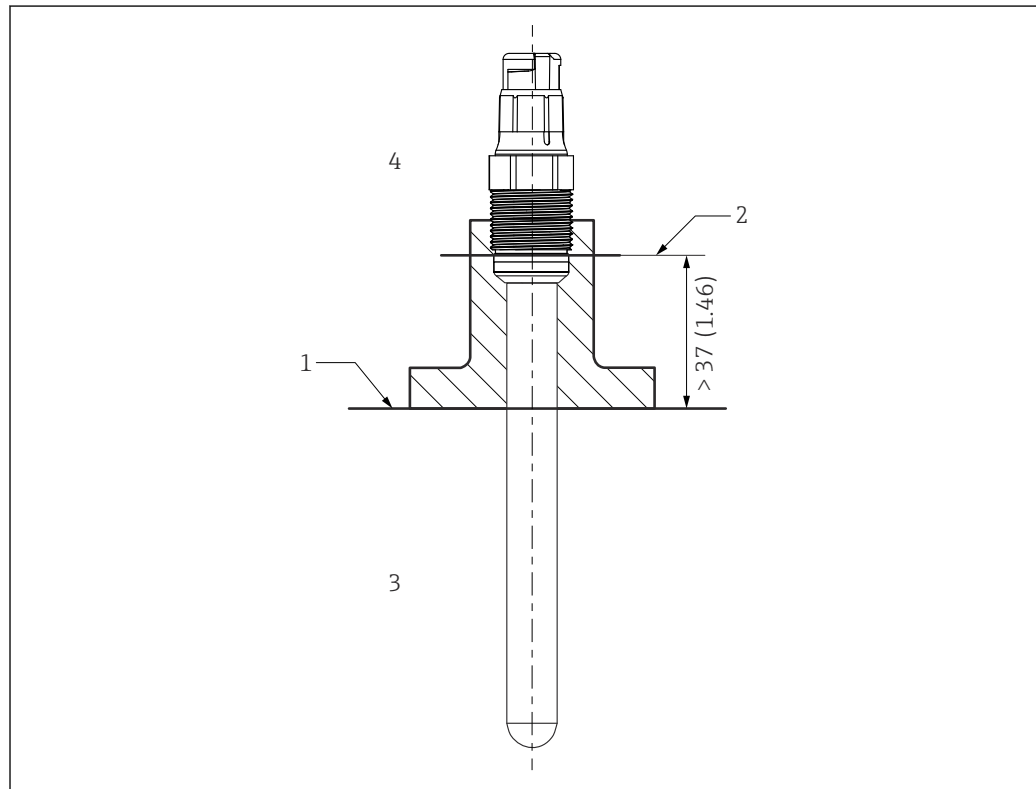
- The pH/ORP sensors of the model series CPSxxE are approved according to JPN type-examination certificate CML 19JPN2485X and are suitable for use in hazardous environments.
- The approved digital pH/ORP sensors of the model series CPSxxE have an intrinsically safe input with the following parameter set:

Parameter	Value
$P_i$	180 mW

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

Parameter	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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