

# Safety Instructions

## Memosens ISFET pH sensors

pH measurement

Supplement to BA02154C  
Safety instructions for electrical apparatus in  
explosion-hazardous areas  
ATEX II 1G Ex ia IIC T3/T4/T6 Ga  
ATEX II 1G Ex ia IIC T4/T6 Ga  
IECEX Ex ia IIC T3/T4/T6 Ga  
IECEX Ex ia IIC T4/T6 Ga





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**Associated documentation**

This document is an integral part of Operating Instructions BA02154C.

**Supplementary documentation**



- Competence Brochure CP00021Z
  - Explosion Protection: Guidelines and General Principles
  - [www.endress.com](http://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](http://www.endress.com/download)

**EU declaration of conformity**

EU\_00949

**EU type-examination certificate**

BVS 19 ATEX E 062 X

**IECEX certificate**

IECEX BVS 19.0056X

**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 labeling on hazardous area versions
- Compare the information on the nameplate with the order.

**Type code**

*ATEX*

Type	Version					
xPS47E xPS77E	BA	*	*	**	*	+
x = C, OC No Ex relevance	II 1G Ex ia IIC T3/T4/T6 Ga	No Ex relevance				

Type	Version					
xPS97E	BA	*	*	**	*	+*
x = C, OC No Ex relevance	II 1G Ex ia IIC T4/T6 Ga	No Ex relevance				

*IECEX*

Type	Version					
xPS47E xPS77E	IA	*	*	**	*	+*
x = C, OC No Ex relevance	Ex ia IIC T3/T4/T6 Ga	No Ex relevance				

Type	Version					
xPS97E	IA	*	*	**	*	+*
x = C, OC No Ex relevance	Ex ia IIC T4/T6 Ga	No Ex relevance				

**Certificates and approvals**

*Declaration of conformity*

With this declaration of conformity, the manufacturer guarantees that the product conforms to the regulations of European EMC Directive 2014/30/EU and ATEX Directive 2014/34/EU. Compliance is verified by adherence to the standards listed in the Declaration of Conformity.

*Ex approvals*

**CPS47E / CPS77E:**

⊕ II 1G Ex ia IIC T3/T4/T6 Ga

**CPS97E:**

⊕ II 1G Ex ia IIC T4/T6 Ga

The product meets the requirements of the "IEC Certification Scheme for Explosive Atmospheres". This is verified by compliance with the standards listed in the IECEX certificate. The IECEX certificate can be viewed on the following website: [www.iecex.com](http://www.iecex.com).

**CPS47E / CPS77E:**

Ex ia IIC T3/T4/T6 Ga

**CPS97E:**

Ex ia IIC T4/T6 Ga

*Notified body*


**DEKRA EXAM GmbH**

**Safety  
instructions**

- 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.
- The sensors must not be operated under process conditions where the sensor and the connection system can become electrostatically charged. Operation in liquid media that are intended for the product application and have a minimum conductivity of 10 nS/cm is not considered critical with regard to electrostatic charge.
- 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 regulations for electrical systems in hazardous areas (EN/IEC 60079-14).
- The procedures for electrical connection described in the Operating Instructions must be followed.
- This device was developed and manufactured in accordance with Directive 2014/34/EU dated February 26, 2014 and also complies with the following standards:
  - EN IEC 60079-0:2018 / IEC 60079-0:2017  
Hazardous areas  
Part 0: General requirements
  - EN 60079-11:2012 / IEC 60079-11:2011 + Corrigendum:2012  
Electrical apparatus for explosive atmospheres  
Part 11: Intrinsic safety "I"

## Temperature tables

Sensor	Temperature class	Process temperature $T_p$		Ambient temperature $T_a$	
		Minimum	Maximum	Minimum	Maximum
CPS47E CPS77E	T3	-15 °C (5 °F)	135 °C (275 °F)	-15 °C (5 °F)	70 °C (158 °F)
	T4	-15 °C (5 °F)	115 °C (239 °F)	-15 °C (5 °F)	75 °C (167 °F)
			110 °C (230 °F)		80 °C (176 °F)
			100 °C (212 °F)		85 °C (185 °F)
	90 °C (194 °F)	90 °C (194 °F)			
T6	-15 °C (5 °F)	65 °C (149 °F)	-15 °C (5 °F)	65 °C (149 °F)	
CPS97E	T4	-15 °C (5 °F)	110 °C (230 °F)	-15 °C (5 °F)	80 °C (176 °F)
			100 °C (212 °F)		85 °C (185 °F)
			90 °C (194 °F)		90 °C (194 °F)
	T6	-15 °C (5 °F)	65 °C (149 °F)	-15 °C (5 °F)	65 °C (149 °F)

The above temperature table applies only under the following installation conditions, which are described in the following graphic →  8. 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

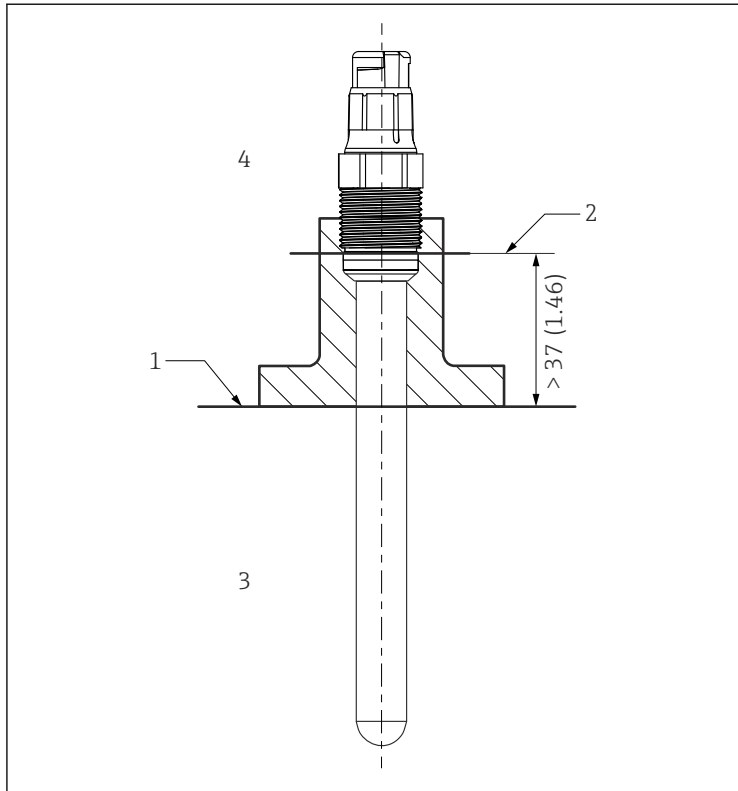
- The CPSx7E-type ISFET pH sensors are approved according to EU type-examination certificate BVS 19 ATEX E 062 X and are suitable for use in hazardous environments.
- The approved digital ISFET pH sensors have an intrinsically safe input with the following parameter set:

Parameter	Value
$P_1$	180 mW

The approved CPSx7E-type digital ISFET pH sensors must be connected to a Memosens measuring cable 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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[www.addresses.endress.com](http://www.addresses.endress.com)

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