

# Safety Instructions

## Memosens ISFET pH sensors

pH measurement

Supplement to BA02154C  
Safety instructions for electrical apparatus in  
explosion-hazardous areas  
INMETRO Ex ia IIC T3/T4/T6 Ga  
INMETRO Ex ia IIC T4/T6 Ga





# Memosens ISFET pH sensors

pH measurement

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**Associated documentation**

This document is an integral part of Operating Instructions BA02154C.

**Additional documentation**

Competence Brochure CP00021Z

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

**Certificates**

INMETRO Certificate of Compliance number: TÜV 20.0538 X

**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                       |                 |   |    |   |   |
|------------------------------|-------------------------------|-----------------|---|----|---|---|
| xPS47E<br>xPS77E             | MA                            | *               | * | ** | * | + |
| x = C, OC<br>No Ex relevance | INMETRO Ex ia IIC T3/T4/T6 Ga | No Ex relevance |   |    |   |   |

| Item type                    | Version                    |                 |   |    |   |   |
|------------------------------|----------------------------|-----------------|---|----|---|---|
| xPS97E                       | MA                         | *               | * | ** | * | + |
| x = C, OC<br>No Ex relevance | INMETRO Ex ia IIC T4/T6 Ga | No Ex relevance |   |    |   |   |

**Certificates and approvals***Ex approvals*

The product has been certified in compliance with the following:

- ABNT NBR IEC 60079-0:2013
- ABNT NBR IEC 60079-11:2013
- Portaria INMETRO n° 179 de 18/05/2010

| Item type      | Version            |    |
|----------------|--------------------|----|
| CPS47E, CPS77E | Ex ia IIC T3/T4/T6 | Ga |
| CPS97E         | Ex ia IIC T4/T6    | Ga |

*Notified Body*


**TÜV Rheinland do Brasil Ltda**

**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. Sensor operation in liquid media that are in contact with the process and have a minimum conductivity of 10 nS/cm is not considered problematic 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 (ABNT NBR IEC 60079-14).
- The procedures for electrical connection described in the Operating Instructions must be followed.

**Temperature tables**

| Sensor           | Temperature class | Process temperature T <sub>p</sub> |                 | Ambient temperature T <sub>a</sub> |                 |
|------------------|-------------------|------------------------------------|-----------------|------------------------------------|-----------------|
|                  |                   | minimum                            | maximum         | minimum                            | maximum         |
| CPS47E<br>CPS77E | T3                | -15 °C (5 °F)                      | 135 °C (275 °F) | -15 °C (5 °F)                      | 70 °C (158 °F)  |
|                  |                   |                                    | T4              |                                    | 115 °C (239 °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 temperature table above applies only under the following installation conditions, which are described in the following graphic →  7. 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

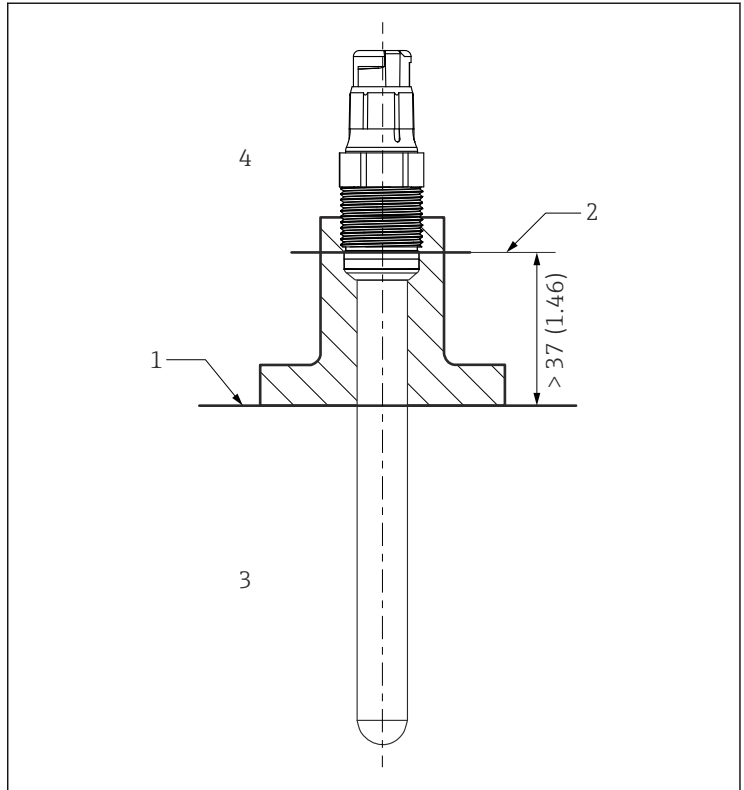
- The CPSx7E-type ISFET pH sensors are approved in accordance with the INMETRO certificate of compliance TÜV 20.0538 X and are suitable for use in hazardous environments.
- The approved digital ISFET pH sensors feature an intrinsically safe input with the following parameter set:

| Parameters | Value  |
|------------|--------|
| $P_i$      | 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:

| 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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