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Safety Instructions
Memosens ISFET pH sensors

pH measurement

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

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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

Certificates

NEPSI certificate of conformity, certificate number: GYJ19.1375X

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 xPS77E	NA	*	*	**	c	+*
x = C, OC No Ex relevance	NEPSI Ex ia IIC T3/T4/T6 Ga	c indicates the shaft length (≤ 600 mm (23.6 in) no Ex relevance)				

Item type	Version					
xPS97E	NA	*	*	**	c	+*
x = C, OC No Ex relevance	NEPSI Ex ia IIC T4/T6 Ga	c indicates the shaft length (≤ 600 mm (23.6 in) no Ex relevance)				

Certificates and approvals

Ex approvals

The Memosens ISFET pH sensors, type CPSxE, have been certified by the National Supervision and Inspection Centre for Explosion Protection

and Safety of Instrumentation (NEPSI). These products meet the following standards:

- GB 3836.1-2010 Explosive atmospheres-Part 1: Equipment-General requirements
- GB 3836.4-2010 Explosive atmospheres-Part 4: Equipment protection by intrinsic safety "i"
- GB 3836.20-2010 Explosive atmospheres-Part 20: Equipment with equipment protection level (EPL) Ga

CPS47E / CPS77E:

NEPSI Ex ia IIC T3/T4/T6 Ga

CPS97E:

NEPSI Ex ia IIC T4/T6 Ga

Safety Instructions

The inductive Memosens ISFET pH sensors CPS47E, CPS77E, CPS97E are suitable for use in hazardous areas in accordance with:
NEPSI certificate GYJ19.1375X

- 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.

- The procedures for electrical connection described in the Operating Instructions must be followed.
- In order to maintain and guarantee the explosion protection of the device, the user may not modify the configuration in any way. Every change can compromise the safety of the device.
- The end user must adhere to the Operating Instructions and the following standards for the installation, operation and maintenance of the product:
  - GB 50257-2014 "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering".
  - GB 3836.13-2013 "Explosive atmospheres - Part 13: Equipment repair, overhaul and reclamation"
  - GB/T 3836.15-2017 "Explosive atmospheres - Part 15: Electrical installations design, selection and erection"
  - GB/T 3836.16-2017 "Explosive atmospheres - Part 16: Electrical installations inspection and maintenance"
  - GB/T 3836.18-2017 "Explosive atmospheres - Part 18: Intrinsically safe electrical systems"

The correlations between the device model, the temperature class, the process temperature range and the ambient temperature range are indicated in the temperature tables .

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 temperature table above 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

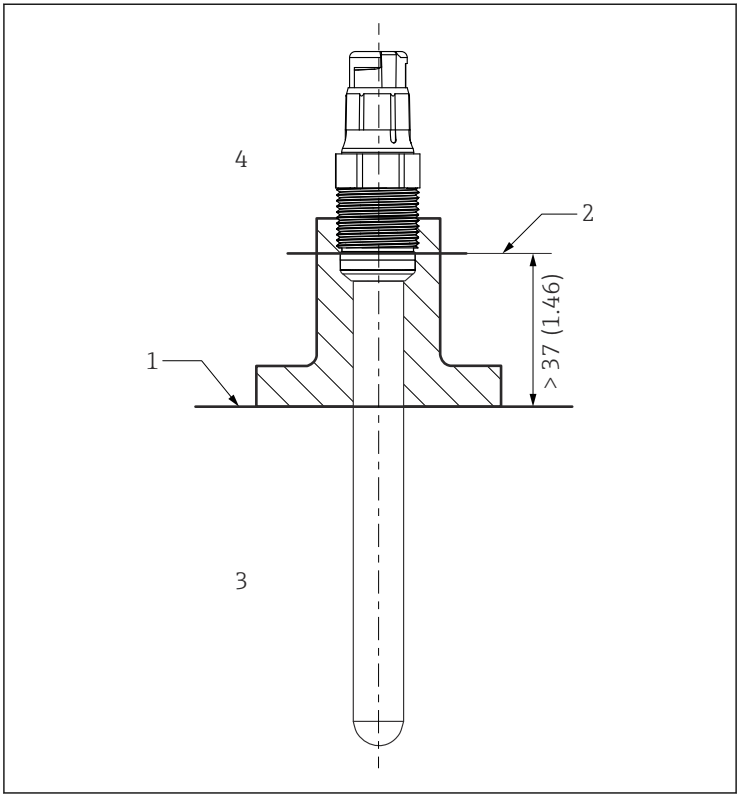
- The CPSx7E-type ISFET pH sensors are approved in accordance with NEPSI certificate GYJ19.1375X and are suitable for use in hazardous environments.
- The approved digital ISFET pH sensors feature an intrinsically safe input with the following parameter set:

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



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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