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Safety Instructions
Memosens oxygen sensors

IS Class I Div 1 Groups A, B, C, D
Ex ia IIC T6... T4 Ga
Class I Zone 0 AEx ia IIC T6... T4 Ga

Safety instructions for electrical apparatus in explosion-hazardous areas

C US

Endress+Hauser
People for Process Automation

Memosens oxygen sensors

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Associated documentation

This document is an integral part of the Memosens COS22E Operating Instructions BA02145C.

This document is an integral part of the Memosens COS51E Operating Instructions BA02146C.

Supplementary 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.

Ex-approval

CSA Ex

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Details of the fulfilled standards are provided on the certificate.

Safety instructions

The Memosens COS22E and Memosens COS51E digital oxygen sensors are suitable for use in hazardous areas.

- A maximum ambient temperature of 90 °C (194 °F) must not be exceeded at the sensor head.
- Oxygen sensors for use in hazardous areas have a special conductive O-ring. The electrical connection of the metallic sensor shaft to the conductive mounting location (such as a metallic assembly) is via the O-ring.
- Appropriate measures must be taken to connect the assembly or the mounting location to ground in accordance with the Ex guidelines.
- The plastic housing may only be cleaned with a damp cloth.
- Hazardous area versions of digital sensors with Memosens technology are marked by an orange/red ring on the plug-in head.
- The maximum permitted cable length between the sensor and transmitter is 100 m (330 ft).
- The procedures for electrical connection described in the Operating Instructions must be followed.
- Install the device according to the National Electrical Code (NFPA70) or the Canadian Electrical Code, Part 1 (C22.1), where applicable.
- Use only as specified in the related manual. Improper use may impair protection.
- It is the responsibility of the system assembler to ensure the safety of any system that incorporates this equipment.

Only Memosens COS22E:
- Oxygen sensors for use in hazardous areas have a special conductive O-ring. The electrical connection of the metallic sensor shaft to the conductive mounting location (such as a metallic assembly) is via the O-ring.
- Sensors containing parts made of titanium or other light metals must be protected against impact.
- The sensors must not be operated under electrostatically critical process conditions. Avoid strong steam or dust currents that act directly on the connection system.

Only Memosens COS51E:
- The sensors may not be operated under electrostatically critical process conditions in which electrostatic charging of the sensor and the connection system is likely to occur.
- Use of the sensor for its intended purpose in liquids with a conductivity of at least 10 nS/cm can be classified as electrostatically safe.

Type code

Memosens	COS22E-aabbccdde+g	
	aa	Approval **CB** CSA C/US IS Cl.1 Div1&2 GP A-D T6...T4 **CI** ▪ CSA C/ US IS CL 1 DIV 1 GP A-D T6...T4 ▪ CSA C/ US CL 1 Zone 0 AEx ia IIC T6... T4
	bb	Measuring range (all options are certified)
	cc	Cap characteristics AA = Stainless steel BA = Titanium CA = Alloy C22 YY = Special version
	dd	Sensor length (all options are certified) max. 600 mm (23,6 in)
	e	Material of O-ring (in the cap)(all options are certified)
	g	Optional = one or more characters determining optional features (all options are certified), e.g. test or other certificates/declarations

Memosens	COS51E-aabbcc+g	
	aa	Approval **CB** CSA C/US IS Cl.1 Div1&2 GP A-D T6 **CI** ▪ CSA C/ US IS CL 1 DIV 1 GP A-D T6 ▪ CSA C/ US CL 1 Zone 0 AEx ia IIC T6
	bb	Measuring range (all options are certified)
	cc	Cap characteristics TF = Response time T90, 0.5 minutes TN = Response time T90, 3 minutes YY = Special version
	g	Optional = one or more characters determining optional features (all options are certified), e.g. test or other certificates/declarations

Temperature tables

Sensor	Process temperature T_p	Ambient temperature T_a
COS22E	-5 °C (23 °F) ≤ T_p ≤ 70 °C (158 °F)(T6) -5 °C (23 °F) ≤ T_p ≤ 100 °C (212 °F)(T4)	-25 °C (-13 °F) ≤ T_a ≤ 70 °C (158 °F)(T6) -25 °C (-13 °F) ≤ T_a ≤ 70 °C (158 °F)(T4)
COS51E	-5 °C (23 °F) ≤ T_p ≤ 60 °C (140 °F)(T6)	-5 °C (23 °F) ≤ T_a ≤ 60 °C (140 °F)(T6)

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

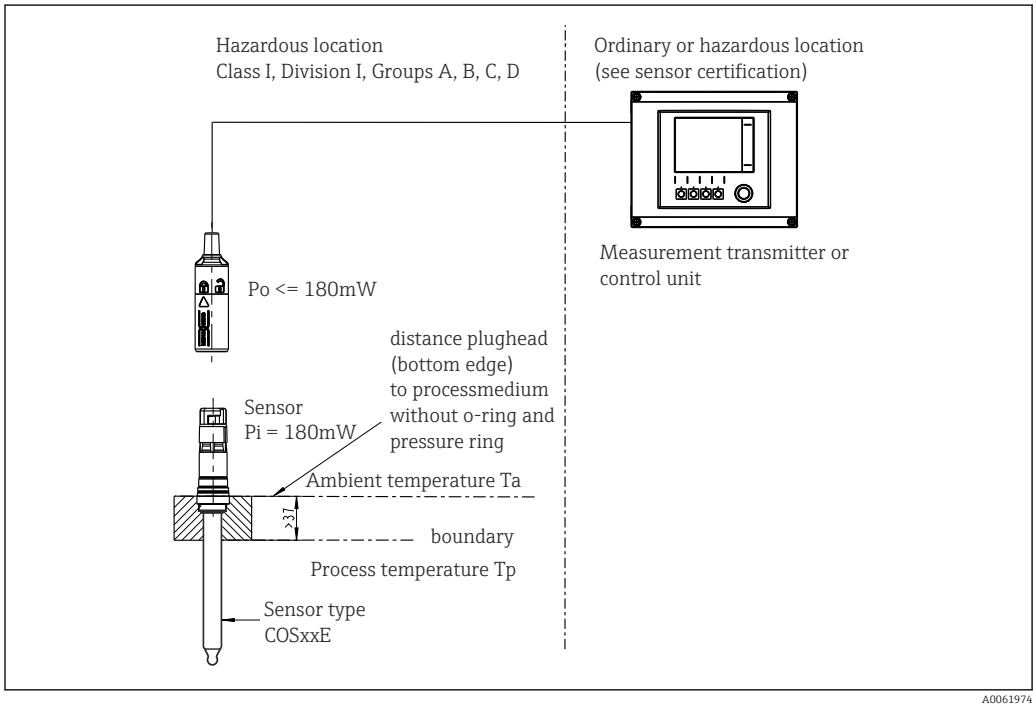
The approved Memosens COS22E and Memosens COS51E digital oxygen sensors have an intrinsically safe input with the following parameter set:

Parameter	Value
P_i	180 mW

The approved Memosens COS22E and Memosens COS51E digital oxygen sensors must be connected to a Memosens cable or cable transmitter with intrinsically safe output with the following parameter:

Parameter	Value
P_o	max. 180 mW

Installation conditions



1 *Installation conditions*

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