

Safety Instructions

Memosens CLS15E, CLS16E, CLS21E, CLS82E

Supplement to: BA02018C, BA02019C, BA02020C and
BA02027C

Safety instructions for electrical apparatus in explosion-
hazardous areas








Memosens CLS15E, CLS16E, CLS21E, CLS82E

Supplement to: BA02018C, BA02019C, BA02020C and BA02027C

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- Associated documentation** This document is an integral part of
-  Operating Instructions Memosens CLS21E, BA02020C
 -  Operating Instructions Memosens CLS15E, BA02018C
 -  Operating Instructions Memosens CLS16E, BA02019C
 -  Operating Instructions Memosens CLS82E, BA02027C

- Supplementary documentation**
-  Competence Brochure CP00021Z
 - Explosion Protection: Guidelines and General Principles
 - www.endress.com

Certificate CSA C/US certificate, certificate number: CSA20CA80021490X

- Identification** The nameplate provides you with the following information on your device:
- Manufacturer identification
 - 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

Type	Version					
xLS15E ¹⁾	- CI	**	**	a ²⁾	***	+*
xLS16E ¹⁾	- CI	**	**	***	+*	
xLS21E ¹⁾	- CI	**	**	***	+*	
xLS82E ¹⁾	- CI	**	**	***	+*	
	CSA C/US IS Cl. I Div. 1 GP A-D T3/T4/T6 + CSA C/US IS Cl. I Zone 0 AEx ia IIC T3/T4/T6	No Ex relevance				

1) x=C, O, OC

2) a = A, B

Certificates and approvals

Ex approval

The product meets the requirements of:

- CLASS - C225804 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe Entity - For Hazardous Locations
- CLASS - C225884 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe Entity - For Hazardous Locations - Certified to US Standards




This is verified by compliance with the following standards:

- CAN/CSA-C22.2 No. 60079-0:19
- CAN/CSA-C22.2 No. 60079-11:14
- ANSI/UL 60079-0:19
- ANSI/UL 60079-11:13
- CAN/CSA-C22.2 No. 61010-1-12 (May 2012)
- UL Std. No. 61010-1 (3rd Edition)

CSA C/US IS Cl. 1 Div. 1 GP A-D T3/T4/T6 + CSA C/US IS Cl. 1 Zone 0 AEx ia IIC T3/T4/T6

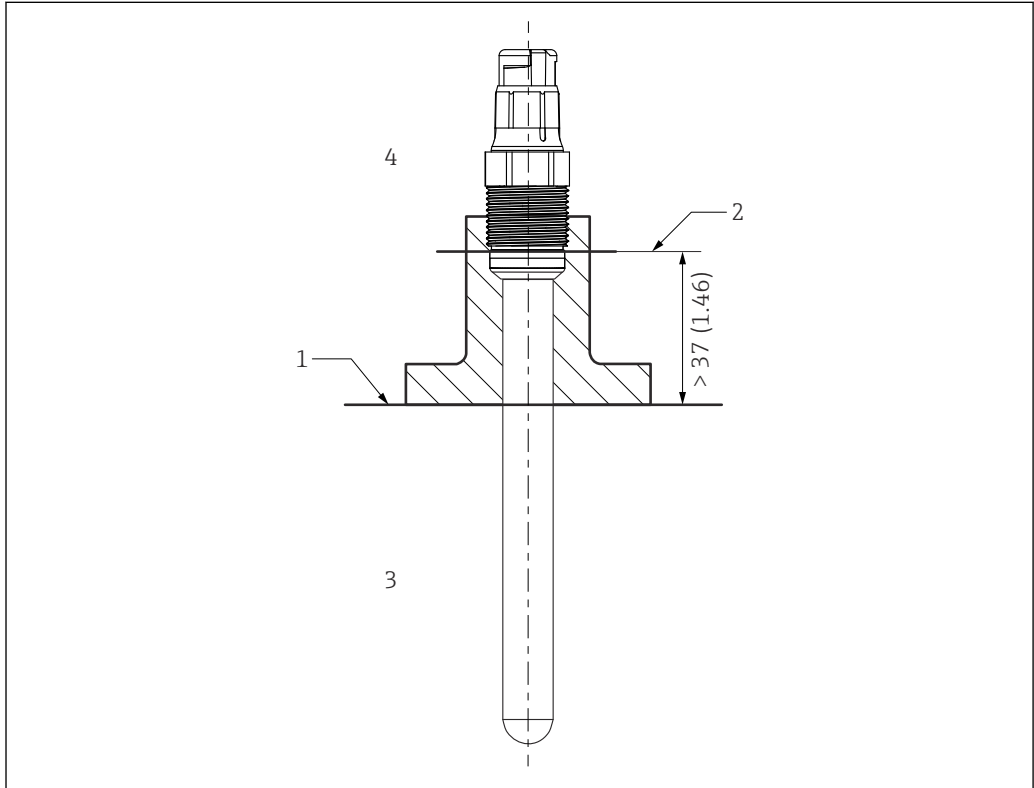
Safety instructions

The CLSxxE-type conductivity sensors are suitable for use in explosion-hazardous areas according to: CSA C/US certificate CSA20CA80021490X

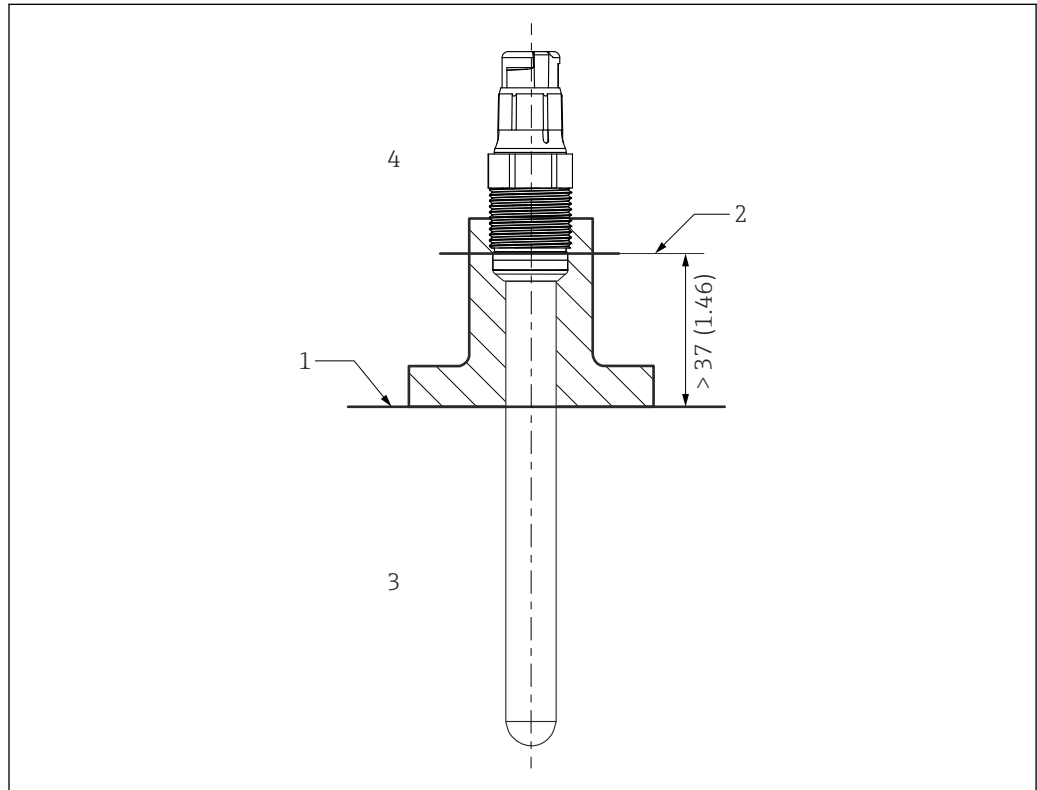
- It is not permitted to operate the sensor under electrostatically critical process conditions. Considerable steam and dust clouds that act directly on the Memosens sensor head must be avoided at all times.
- Ex-protected digital sensors with Memosens technology are identified by an orange-red ring on the terminal head.
- Install the device according to the National Electrical Code (NFPA70) or the Canadian Electrical Code, Part 1 (C22.1), where applicable.
- The electrical connection information provided in the Operating Instructions must be adhered to.
- xLS15E, xLS16E, xLS21E: Metallic process connection parts have to be mounted electrostatically conductive at the mounting location (< 1 MΩ).
- xLS15E and xLS21E with non-metallic process connection may only be used in liquid media with a conductivity of at least 10 nS/cm.
- xLS15E with non-metallic process connection may not be operated on processing conditions, in which an electrostatic loading of the sensor and in particular of the electrically separated outer electrode, could be expected to occur.
- xLS82E: The sensor may not be operated in electrostatically critical processing conditions. Intense vapour or dust flows directly impacting on the connection system must be avoided. The metallic parts of the sensor have to be mounted at the mounting location electrostatically conductive (< 1 MΩ).
- The maximum ambient and process temperatures for temperature classes T3, T4 or T6 are limited as specified in the tables of this certificate. →  5
- The device must be installed as specified in Control Drawing 211038777. →  2,  7

Temperature tables

Sensor	Temperature class	Process temperature T _p	Ambient temperature T _a
CLS15E-*****B****+	T3	-20 °C ≤ T _p ≤ +135 °C	-20 °C ≤ T _a ≤ +70 °C
		-20 °C ≤ T _p ≤ +120 °C	-20 °C ≤ T _a ≤ +75 °C
		-20 °C ≤ T _p ≤ +110 °C	-20 °C ≤ T _a ≤ +80 °C
		-20 °C ≤ T _p ≤ +100 °C	-20 °C ≤ T _a ≤ +85 °C
	T4	-20 °C ≤ T _p ≤ +90 °C	-20 °C ≤ T _a ≤ +90 °C
CLS15E-*****A****+ CLS21E-*****+*	T3	-20 °C ≤ T _p ≤ +140 °C	-20 °C ≤ T _a ≤ +70 °C
		-20 °C ≤ T _p ≤ +120 °C	-20 °C ≤ T _a ≤ +75 °C
		-20 °C ≤ T _p ≤ +110 °C	-20 °C ≤ T _a ≤ +80 °C
		-20 °C ≤ T _p ≤ +100 °C	-20 °C ≤ T _a ≤ +85 °C
	T4	-20 °C ≤ T _p ≤ +90 °C	-20 °C ≤ T _a ≤ +90 °C
CLS16E-*****+*	T3	-5 °C ≤ T _p ≤ +135 °C	-5 °C ≤ T _a ≤ +70 °C
		-5 °C ≤ T _p ≤ +120 °C	-5 °C ≤ T _a ≤ +75 °C
		-5 °C ≤ T _p ≤ +115 °C	-5 °C ≤ T _a ≤ +80 °C
		-5 °C ≤ T _p ≤ +110 °C	-5 °C ≤ T _a ≤ +85 °C
	T4	-5 °C ≤ T _p ≤ +100 °C	-5 °C ≤ T _a ≤ +90 °C
CLS82E-*****+*	T3	-20 °C ≤ T _p ≤ +140 °C	-20 °C ≤ T _p ≤ +65 °C
		-20 °C ≤ T _p ≤ +135 °C	-20 °C ≤ T _p ≤ +70 °C
		-20 °C ≤ T _p ≤ +125 °C	-20 °C ≤ T _p ≤ +75 °C
		-20 °C ≤ T _p ≤ +120 °C	-20 °C ≤ T _p ≤ +80 °C
	T4	-20 °C ≤ T _p ≤ +110 °C	-20 °C ≤ T _p ≤ +85 °C
T6	-20 °C ≤ T _p ≤ +100 °C	-20 °C ≤ T _p ≤ +90 °C	
	-20 °C ≤ T _p ≤ +90 °C	-20 °C ≤ T _p ≤ +90 °C	
	-20 °C ≤ T _p ≤ +70 °C	-20 °C ≤ T _p ≤ +70 °C	

The above temperature table applies only under the following installation conditions, which are described in the following graphic →  1. If the installation conditions cannot be met, the maximum process temperature T_p must not exceed the maximum ambient temperature T_a .

Installation conditions



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1 Installation conditions

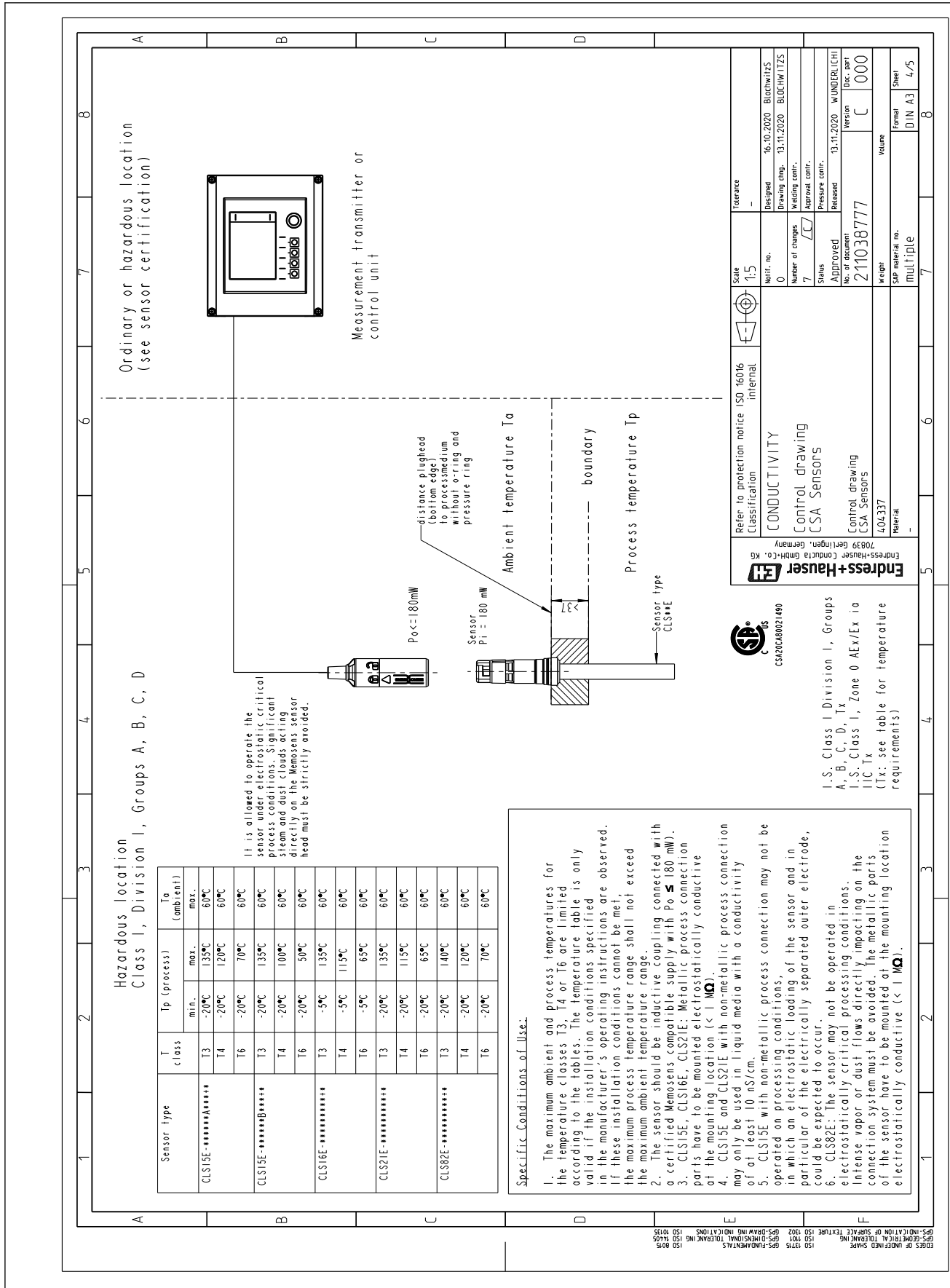
- 1 Limit
- 2 Distance between plug-in head (lower edge) and process medium, without ring and thrust collar
- 3 Process temperature T_p
- 4 Ambient temperature T_a

Connection

Ex specification

The CLSxxE-type conductivity sensors are approved according to CSA C/US certificate of compliance CSA20CA80021490X and are suitable for use in explosion-hazardous environments.

- The approved CLSxxE-type digital conductivity sensors have an intrinsically safe input with the following parameter set:
 $P_i = 180 \text{ mW}$
- The approved CLSxxE-type digital conductivity sensors may only be connected to a Memosens cable or a compact transmitter with an intrinsically safe output with the following parameter set:
 $P_o \text{ max. } 180 \text{ mW}$



Refer to protection notice ISO 16016 internal	Scale 1:5	Tolerance
Classification CONDUCTIVITY	Def. no. 0	Designed 16.10.2020 Blochwitz
Control drawing	Number of changes 7	Drawing comp. 13.11.2020 Blochwitz
CSA Sensors	Status Approved	Welding contr.
Control drawing	No. of document 211038777	Approval contr.
CSA Sensors	Version C	Pressure contr.
404337	Weight multiple	Released 13.11.2020 WUNDERLICH
Material	SAP material no. multiple	Doc. part 000
	Sheet 4/5	Volume

Endress+Hauser
 70939 Gertling, Germany
 Endress+Hauser Conducta GmbH
 CS-CLASS I DIVISION I GROUPS A, B, C, D, TX
 I.S. Class I, Zone 0 AEx/Ex ia IIC Tx
 (Tx: see table for temperature requirements)

2 Control drawing



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