

# Safety Instructions

## Condumax CLS12, CLS13, CLS15, CLS16B, CLS21

Conductivity sensors with conductive measurement of conductivity

EAC Ex 0Ex ia IIC T6 ... T2 Ga (only CLS13)

EAC Ex 0Ex ia IIC T6 ... T3 Ga (CLS12, CLS15, CLS16B  
and CLS21)





# Condumax CLS12, CLS13, CLS15, CLS16B, CLS21

Conductivity sensors with conductive measurement of conductivity

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**Related documentation**

The technical documentation for the device is available on the Internet:

[www.endress.com](http://www.endress.com)

- ▶ Enter the serial number from the nameplate into the search screen (magnifying glass).



Operating Instructions for Condumax CLS12/CLS13, BA01641C



Operating instructions for Condumax CLS16B, BA02334C



Operating instructions for Condumax CLS15/CLS21/(CLS16), BA01148C

**Supplemental documentation**

Competence Brochure CP00021Z

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

**Certifications**

EAC Ex certificate EA3C KZ 7500525.01.01.02089

The sensors CLS15 and CLS21 have not enough space on the nameplate for marking the EAC Ex relevant content, therefore this XA contents all relevant information.

**Identification**

The nameplate provides you with the following information on your device:

- Manufacturer identification
- 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**

Type	Version					
CLS12	A/B <sup>1)</sup>	** 3)	* 5)	A <sup>6)</sup>		
CLS13	A/B <sup>1)</sup>	** 3)	* 5)	A <sup>6)</sup>		
CLS15	A/B/L <sup>1)</sup>	** 3)	* 5)	A <sup>6)</sup>		
CLS16B-	GA <sup>2)</sup>	** 3)	** 4)	* 5)	A/B <sup>6)</sup>	+ (optional) <sup>7)</sup>
CLS21	C/L <sup>1)</sup>	** 3)	*	A/D <sup>6)</sup>		

- 1) Measuring range, cell constant (not Ex-relevant), A: k = 0.01/cm, B: k = 0.1/cm, C: k = 1/cm, L: PWIS-free version of B (CLS15) or C (CLS21)
- 2) EAC 0Ex ia IIC T6... T3 Ga
- 3) Process connection (not Ex-relevant)
- 4) Material (not Ex-relevant)
- 5) Cable connection (not Ex-relevant)
- 6) Temperature sensor, A: Pt100, B: Pt1000
- 7) Optional features (not Ex-relevant)

**Certificates and approvals**

- CLS12: 0Ex ia IIC T6 ... T3 Ga
- CLS13: 0Ex ia IIC T6 ... T2 Ga
- CLS15: 0Ex ia IIC T6 ... T3 Ga
- CLS16B: 0Ex ia IIC T6 ... T3 Ga
- CLS21: 0Ex ia IIC T6 ... T3 Ga

**Ex approvals**

The product has been certified in accordance with Directive TP TC 012/2011 valid within the Eurasian Economic Area (EAEU). The EAC conformity mark has been affixed to the product

**Ex-certification body**

**ТОО/ЖШС "Т-Стандарт"**

**Safety instructions**

- ▶ The sensors have been developed and manufactured in accordance with the applicable standards and guidelines and are suitable for use in hazardous areas.
- ▶ The electrical connection of the sensors must be carried out in accordance with the Operating Instructions.
- ▶ The sensors may only be operated on suitable intrinsically safe circuits. Make sure that the maximum permissible sensor input characteristic values, the maximum permissible inductance  $L_i$  and capacitance values  $C_i$  in these circuits and the ambient temperature ranges indicated are not exceeded.
- ▶ The maximum permissible cable length is limited by the maximum permissible characteristic values of the transmitter. The total of the maximum permissible inductance  $L_i$  and capacitance values  $C_i$  for the sensor and measuring cable may not exceed the maximum permissible inductance  $L_o$  and capacitance values  $C_o$  for the transmitter.
- ▶ When connected to the Liquiline M CM42 and Liquiline M CM42B transmitter, the maximum permissible length of measuring cables CYK71 or CYK71-Ex is 50 m.
- ▶ The CLS21 sensor may only be used for measurement in liquids with a minimum conductivity > 10 nS/cm.
- ▶ Pay attention to the regulations for electrical installations in explosive atmospheres (EN 60079-14) when using the devices and sensors.
- ▶ Do not operate type CLS15 sensors with non-metallic process connections and type CLS21 sensors under process conditions in which electrostatic charging of the sensor, particularly of the electrically insulated outer electrode, is likely to occur.
- ▶ The sensor heads of types CLS12 and CLS13 have to be protectively installed against impacts and friction.
- ▶ The ambient temperature range of the sensor head is  $-20\text{ °C} \leq T_a \leq 60\text{ °C}$ .

**Temperature tables**

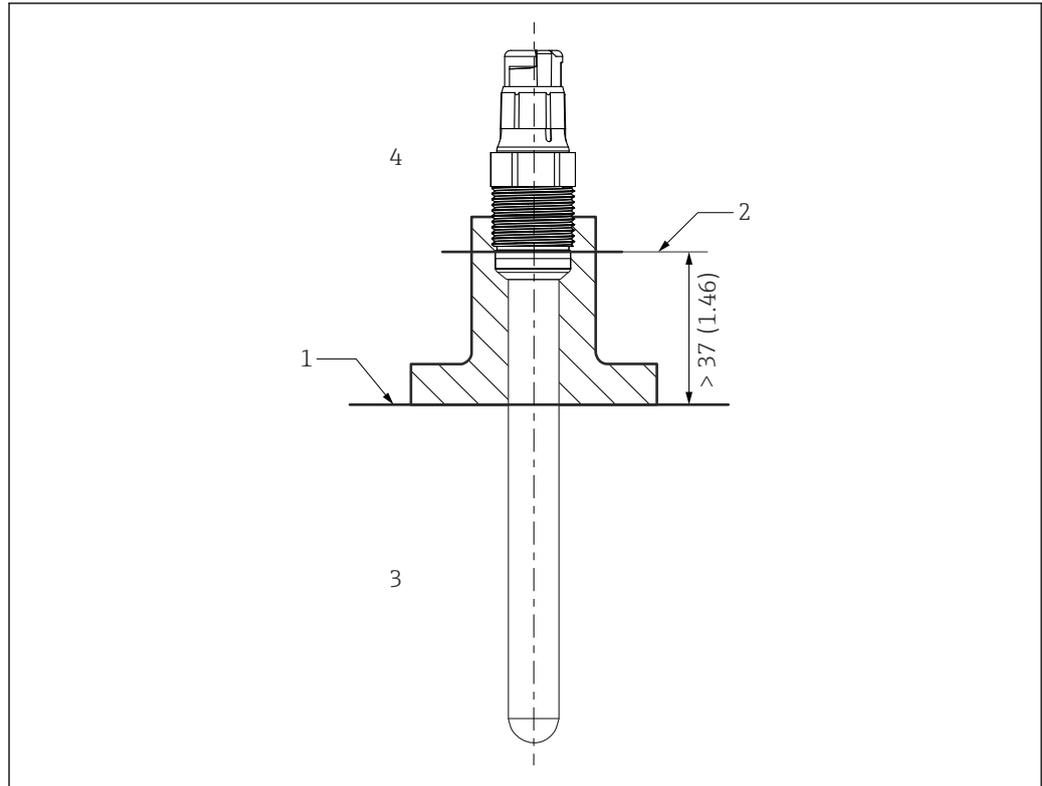
Type	Temperature class			
	T2	T3	T4	T6
CLS12	- 1)	$-20\text{ °C} \leq T_a \leq 160\text{ °C}$	$-20\text{ °C} \leq T_a \leq 125\text{ °C}$	$-20\text{ °C} \leq T_a \leq 75\text{ °C}$
CLS13	$-20\text{ °C} \leq T_a \leq +250\text{ °C}$	$-20\text{ °C} \leq T_a \leq 190\text{ °C}$	$-20\text{ °C} \leq T_a \leq 125\text{ °C}$	$-20\text{ °C} \leq T_a \leq 75\text{ °C}$
CLS15	- 1)	$-20\text{ °C} \leq T_a \leq 140\text{ °C}$	$-20\text{ °C} \leq T_a \leq 115\text{ °C}$	$-20\text{ °C} \leq T_a \leq 65\text{ °C}$
CLS16B	- 1)	$-5\text{ °C} \leq T_a \leq 150\text{ °C}$	$-5\text{ °C} \leq T_a \leq 115\text{ °C}$	$-5\text{ °C} \leq T_a \leq 65\text{ °C}$
CLS21-****A	- 1)	$-20\text{ °C} \leq T_a \leq 135\text{ °C}$	$-20\text{ °C} \leq T_a \leq 115\text{ °C}$	$-20\text{ °C} \leq T_a \leq 65\text{ °C}$
CLS21-****D	- 1)	$-20\text{ °C} \leq T_a \leq 135\text{ °C}$	$-20\text{ °C} \leq T_a \leq 130\text{ °C}$	$-20\text{ °C} \leq T_a \leq 80\text{ °C}$

1) not applicable

The temperature tables apply only under the installation conditions 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  $T_a$ .

- For functional reasons, the CLS15 sensors may only be operated up to 120 °C (248 °F) during continuous operation/and up to 140 °C (284 °F) for short periods.
- For functional reasons, the CLS16B sensors may only be operated up to 120 °C (248 °F) during continuous operation/and up to 150 °C (302 °F) for short periods.

## 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  $T_a$

## Connection

### Ex specification

The following connection data refer to safety-related limit values which must not be exceeded.

#### Associated transmitter

Characteristic	Connection data
Power supply circuit	Intrinsically safe
Maximum output voltage $U_o$	15 V
Maximum output current $I_o$	30 mA
Maximum output power $P_o$	130 mW

#### Sensor

Characteristic	Connection data
Maximum internal capacitance $C_i$	Negligible
Maximum internal inductance $L_i$	Negligible

#### Cables

Characteristic	Connection data
Maximum internal capacitance $C_i$	1 nF/m
Maximum internal inductance $L_i$	6 $\mu$ H/m

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[www.addresses.endress.com](http://www.addresses.endress.com)

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