

# Safety Instructions

## Condumax CLS12, CLS13, CLS15, CLS16, CLS21

Supplement to: BA01641C and BA01148C

Safety instructions for electrical equipment in hazardous  
areas

ATEX II 1G Ex ia IIC T6 ... T2 Ga





# Condumax CLS12, CLS13, CLS15, CLS16, CLS21

Supplement to: BA01641C and BA01148C

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**Associated documentation**

Operating Instructions for Condumax CLS12/CLS13, BA01641C



Operating Instructions for Condumax CLS15/CLS16/CLS21, BA01148C

**Documentation**

Competence Brochure CP00021Z

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

**Certificates**

EU Declaration of Conformity EC\_00317

EU type-examination certificate TÜV 15 ATEX 7778 X

**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>	** 2)	* 3)	A <sup>4)</sup>
CLS13	A/B <sup>1)</sup>	** 2)	* 3)	A <sup>4)</sup>
CLS15	A/B/L <sup>1)</sup>	** 2)	* 3)	A <sup>4)</sup>
CLS16-	** 2)	* 3)	A/B <sup>4)</sup>	** 5)
CLS21	C/L <sup>1)</sup>	** 2)	*	A/D <sup>4)</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) Process connection (not Ex-relevant)
- 3) Cable connection (not Ex-relevant), 1/4/5: cable plug, 2: fixed cable 5 m, 3: fixed cable 10 m
- 4) Temperature sensor, A: Pt100, B: Pt1000, D: no temperature sensor
- 5) Additional option (not Ex-relevant)

**Certificates and approvals***Ex approvals*

- CLS12: II 1G Ex ia IIC T6 ... T3 Ga
- CLS13: II 1G Ex ia IIC T6 ... T2 Ga
- CLS15: II 1G Ex ia IIC T6 ... T3 Ga
- CLS16: II 1G Ex ia IIC T6 ... T3 Ga
- CLS21: II 1G Ex ia IIC T6 ... T3 Ga

*Ex inspection body*

TÜV Rheinland Industrie Service GmbH

**Safety instructions**


- ▶ The sensors have been developed and manufactured in accordance with the applicable European standards and guidelines and are suitable for use in hazardous areas.
- ▶ The EU type-examination certificate confirms compliance with the harmonized European standards for using the sensors 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 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  $> 10 \text{ nS/cm}$ .
- ▶ 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!
- ▶ Mount type CLS12 and CLS13 sensors on the housing cover in such a way that they are protected against impact and friction!
- ▶ The ambient temperature range of the sensor head is  $-20 \text{ °C} \leq T_a \leq 60 \text{ °C}$ .

Temperature tables

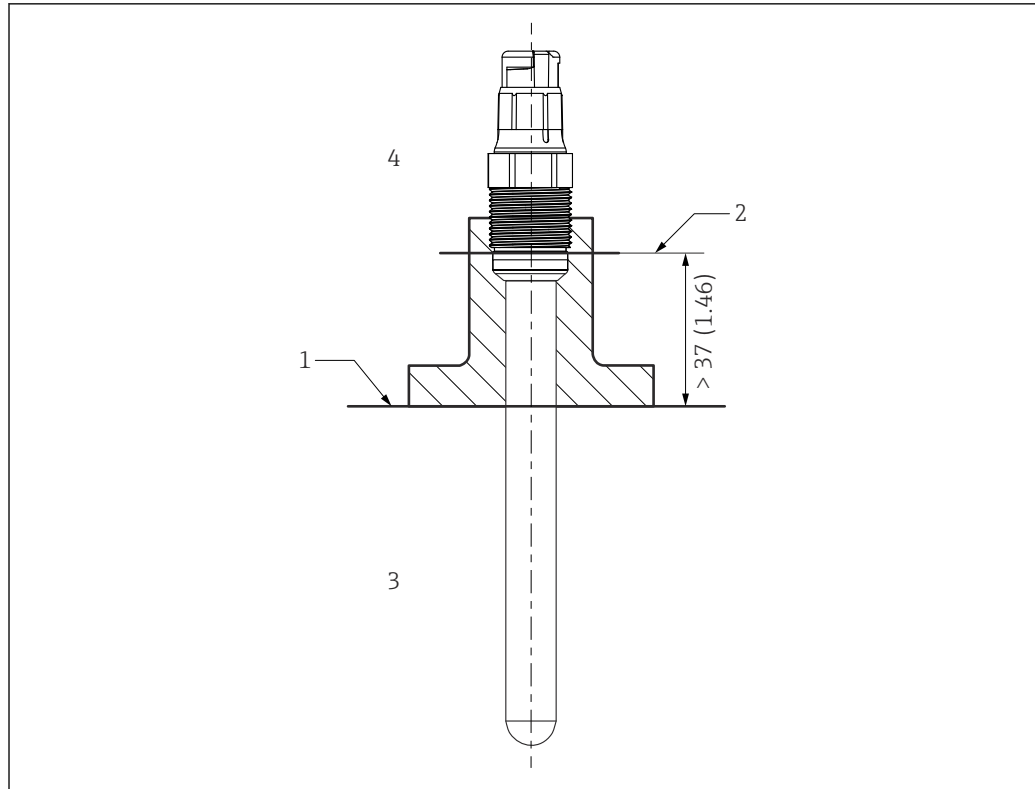
Type	Temperature class			
	T2	T3	T4	T6
CLS12	- 1)	$-20 \text{ °C} \leq T_a \leq 160 \text{ °C}$	$-20 \text{ °C} \leq T_a \leq 125 \text{ °C}$	$-20 \text{ °C} \leq T_a \leq 75 \text{ °C}$
CLS13	$-20 \text{ °C} \leq T_a \leq +250 \text{ °C}$	$-20 \text{ °C} \leq T_a \leq 190 \text{ °C}$	$-20 \text{ °C} \leq T_a \leq 125 \text{ °C}$	$-20 \text{ °C} \leq T_a \leq 75 \text{ °C}$
CLS15	- 1)	$-20 \text{ °C} \leq T_a \leq 140 \text{ °C}$	$-20 \text{ °C} \leq T_a \leq 115 \text{ °C}$	$-20 \text{ °C} \leq T_a \leq 65 \text{ °C}$
CLS16	- 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  $120 \text{ °C}$  ( $248 \text{ °F}$ ) during continuous operation / and up to  $140 \text{ °C}$  ( $284 \text{ °F}$ ) for short periods.
- For functional reasons, the CLS16 sensors may only be operated up to  $120 \text{ °C}$  ( $248 \text{ °F}$ ) during continuous operation / and up to  $150 \text{ °C}$  ( $302 \text{ °F}$ ) 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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