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Safety Instructions
CLS15D, CLS16D, CLS21D, CLS50D, CLS50, CLS54, CLS82D

Safety instructions for electrical equipment in explosion-hazardous areas

EAC Ex, 0Ex ia IIC T6/T4 Ga X
Supplement to:
BA01147C, BA00182C, BA01591C, BA01326C

Endress+Hauser
People for Process Automation

CLS15D, CLS16D, CLS21D, CLS50D, CLS50, CLS54, CLS82D

Safety instructions for electrical equipment in explosion-hazardous areas

Table of contents

Associated documentation

This document is an integral part of

Operating Instructions for Indumax CLS50D/CLS50, BA00182C

Operating Instructions for Condumax CLS15D/CLS16D/CLS21D, BA01147C

Operating Instructions for Indumax CLS54, BA01591C

Operating Instructions for Memosens CLS82D, BA01326C

Supplementary documentation

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

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

Name	Type		Version		
Condumax	CLS15D CLS16D CLS21D	- - -	* ** *	** ** **	K K K
			Process connections, materials not Ex-relevant		for use in hazardous areas, EAC Ex, 0Ex ia IIC T6/T4/T3 Ga X

Name	Type		Version							
Indumax	CLS50D	-	GB	x	B/C /D	x	x	+	x	x
			For use in hazardous areas, EAC Ex, 0Ex ia IIC T6/T4 Ga X	Process connections, materials, cable connection, calibration, service No Ex relevance						

Name	Type		Version				
Indumax	CLS50	-	K	x	x	1/2 /3/ 4	
			For use in hazardous areas, EAC Ex, 0Ex ia IIC T6/T4 Ga X	Process connections, materials, cable connection, calibration, service No Ex relevance			

Name	Type		Version					
Indumax	CLS54	-	K	xxx	x	x	x	+	x
			For use in hazardous areas, EAC Ex, 0Ex ia IIC T6/T4 Ga X	Process connections, additional options, cable connection, temperature sensor, identification No Ex relevance					

Type		Approval	Version
CLS82D	-	GC	***
		for use in hazardous areas, EAC Ex, 0Ex ia IIC T3/T4/T6 Ga X	Process connections, materials not Ex-relevant

Certificates and approvals

Ex approvals

The product has been certified in accordance with Directive TR CU 012/2011 which applies in the Eurasian Economic Union (EAEU). The product bears the EAC mark of conformity.
EAC Ex, 0Ex ia IIC T6/T4 Ga X
- Zone 0
- Certificate number: ЕАЭС RU C-DE.AA87.B.00833/21

Ex-certification body

ООО "НАНИО ЦСВЭ"
Russian Federation

Safety instructions

CLS15D, CLS16D, CLS21D

The Memosens inductive sensor cable connection system, consisting of conductivity sensors CLS15D-A/B/L**K, CLS16D-****K or CLS21D-***K and the CYK10 measuring cable, is suitable for use in explosive atmospheres.
- In conjunction with the CYK10 measuring cable, the certified conductivity sensors Condumax CLS15D-A/B/L**K, CLS16D-****K and CLS21D-***K may only be connected to certified, intrinsically safe, digital sensor circuits of the approved transmitters (e.g. CM42 with FSDG1 module).
- The electrical connection must be made according to the wiring diagram of the transmitter.
- Metal process connection parts have to be mounted at the installation site so that they are electrostatically conductive (<1 MΩ).
- The CLS15D-type sensors with non-metal process connections and the CLS21D-type sensors may only be used in liquid media with a conductivity of at least 10 nS/cm.
- The CLS15D-type sensors with non-metal process connections may not be operated under process conditions in which electrostatic charging of the sensor, and in particular of the electrically separated outer electrode, could be expected to occur.
- Measuring cable type CYK10 and its terminal head must be protected against electrostatic charging if it is run through Zone 0.
- The maximum permitted cable length is 100 m.
- Ex versions of digital sensors with Memosens technology are indicated by an orange-red ring.
- Full compliance with regulations for electrical systems in explosive atmospheres (EN/IEC 60079-14) is mandatory when using the devices and sensors.

CLS50D, CLS50

CLS50D-GB** and CLS50-K***
- The sensors may be operated in an environment specified as Ex Zone 0 (1G).
- The sensors may only be used in liquid media with a conductivity of at least 10 nS/cm.
- If the connecting cable is installed through Ex Zone 0 (1G), it must be protected against electrostatic charge.

CLS50D-GB**
- The sensor is a digital sensor with the Memosens protocol and its connection values are those specified below.
- In conjunction with the CYK10 measuring cable, the certified conductivity sensor CLS50D may only be connected to certified, intrinsically safe, digital sensor circuits of the approved transmitters (e.g. CM42 with FSDG1 module).
- The maximum permitted length of the measuring cable is 100 m (330 ft) here.

*Connection values of the CLS50D-GB**** sensor*

U_i	5.1 V
I_i	130 mA

P_i	166 mW
C_i	18 µF
L_i	0.72 µH/m

The following also applies for all sensors

- Compliance with the specified ambient and medium temperature ranges is a prerequisite for safe use.
- The sensor must be connected and operated in accordance with the Operating Instructions of the sensor and of the transmitter to be connected. All sensor operating data must be observed.
- Avoid electrostatic charge. Metal process connection parts have to be mounted at the installation site so that they are electrostatically conductive (R ≤ 1 MΩ).
- Non-metal process connections must be protected against electrostatic charge.
- In order to avoid electrostatic charge clean the sensor with a damp cloth only.
- Full compliance with regulations for electrical systems in explosive atmospheres (EN/IEC 60079-14) is mandatory when using the devices and sensors.
- Ensure correct installation to maintain the housing protection type. (Use original seal. Fit cable entry properly. Tighten nut).
- The degree of protection only applies when the flange is mounted.

CLS50 only

In the CLS50 sensor, the internal sensor circuits are connected with the shielded wire of the supply cable. When installing the CM42 or CLM153 transmitter, the shielding of the sensor cable must be connected to functional ground as prescribed. As a result, the intrinsically safe sensor circuits of CLS50 are also connected to ground. Therefore, the power supply of the transmitter must be galvanically isolated and connected to ground.
The CM42 and CLM153 transmitters already have secure internal galvanic isolation and therefore safely separate the sensor circuit from the other circuits.

CLS54

- The sensor may only be connected via a measuring cable to approved transmitters (e. g. CM42).
- The sensor has been developed and manufactured in accordance with the applicable standards and guidelines and is suitable for use in hazardous areas.
- The sensor must be connected and operated in accordance with the associated Operation Instructions. All sensor operating data must be observed.
- Ensure that it is professionally installed in order to achieve the degree of protection (IP65) for the housing. Use the original seal, and install the cable entry properly.
- Compliance with the specified ambient and process temperature ranges is a prerequisite for safe use of the device!
- The sensors may only be used in liquid media with a conductivity >10 nS/cm.
- To avoid electrostatic charges, all CLS54 versions with metal surfaces (depends on process connection) must be electrostatically connected in such a way that R ≤1 MΩ.
- The maximum permitted length of the measuring cable is 50 m.
- Full compliance with regulations for electrical apparatus in explosive atmospheres (EN 60079-14) is mandatory when using the devices and sensors.

CLS82D

- The Memosens inductive sensor-cable connector system, consisting of conductivity sensor CLS82D-GC*** and measuring cable CYK10, is suitable for use in hazardous areas in accordance with certificate number EAЭC RU C-DE.AA87.B.00566/20. Applied standards: TR CU 012/2011.
- The sensor may be used in an environment specified as Ex Zone 0 (1G).
- The sensor must be connected and operated in accordance with the accompanying Technical Information and Operating Instructions for the transmitter to be connected. All sensor operating data must be observed. Ensure correct installation to maintain housing protection type (IP68). Use original seal. Fit cable entry properly.
- Compliance with the specified ambient and medium temperature ranges is a prerequisite for safe use of the device!
- The certified conductivity sensor CLS82D may only be connected via the measuring cable CYK10 to certified intrinsically safe digital sensor circuits of the approved transmitter (e.g. CM42 with FSDG1 module).
- The electrical connection must be made according to the wiring diagram of the transmitter.
- Metal process connection parts must be mounted at the mounting location in such a way that they are electrostatically conductive (< 1 MΩ).

- Non-metal process connections must be protected against electrostatic charging (also when used in Ex Zone 1 (2G)).
- Measuring cable CYK10-G, including its terminal head, must be protected against electrostatic charging if it is run through Zone 0.
- The maximum permitted cable length is 100 m.
- Ex versions of digital sensors with Memosens technology are indicated by an orange-red ring.
- Full compliance with regulations for electrical systems in hazardous locations (EN/IEC 60079-14) is mandatory when using the devices and sensors.

Temperature tables

Type					Medium temp. T_a for temperature class (Tn)	Cat.
CLS15D	-	A	**		-20 °C ≤ Ta ≤ +135 °C (T3) -20 °C ≤ Ta ≤ +120 °C (T4) -20 °C ≤ Ta ≤ +70 °C (T6)	II 1G
CLS15D	-	B/L	**		-20 °C ≤ Ta ≤ +135 °C (T3) -20 °C ≤ Ta ≤ +100 °C (T4) -20 °C ≤ Ta ≤ +50 °C (T6)	II 1G
CLS16D	-	**	**		-5 °C ≤ Ta ≤ +135 °C (T3) -5 °C ≤ Ta ≤ +115 °C (T4) -5 °C ≤ Ta ≤ +65 °C (T6)	II 1G
CLS21D	-	*	**		-20 °C ≤ Ta ≤ +135 °C (T3) -20 °C ≤ Ta ≤ +115 °C (T4) -20 °C ≤ Ta ≤ +65 °C (T6)	II 1G

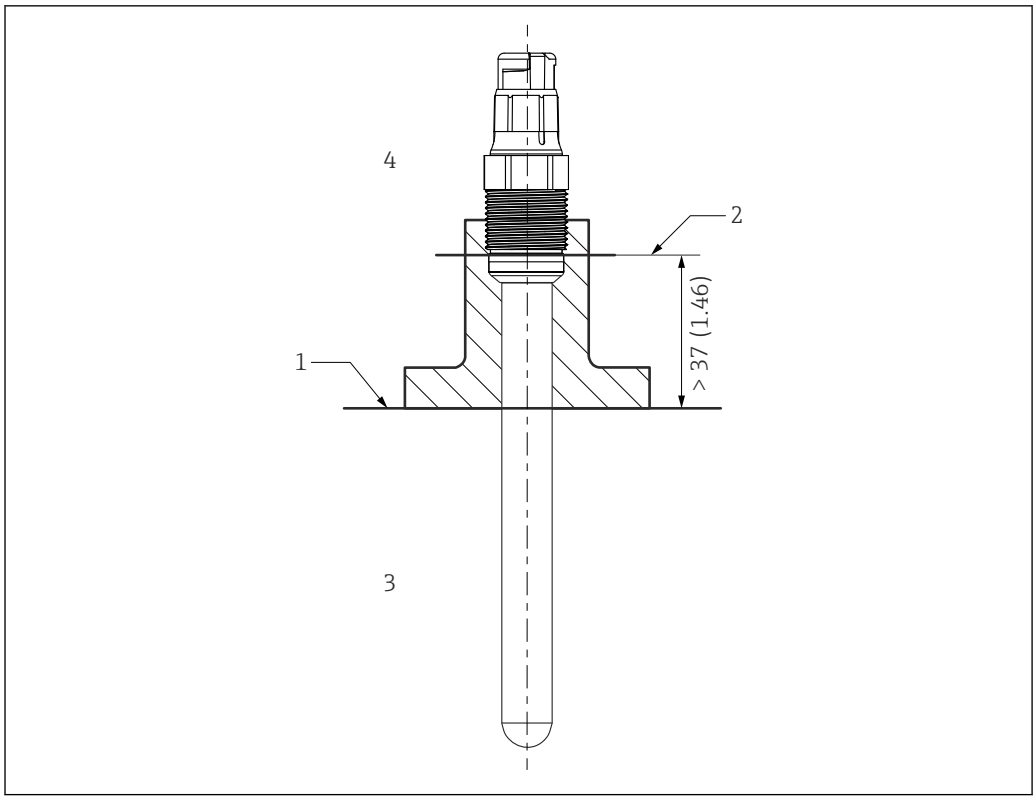
Temperature class	Sensor	Ambient temperature range T_a	Medium temperature range T_{med}
T4	CLS50D-BA/IA/GB*D** CLS50D-BA/IA/GB*C** CLS50D-BA/IA/GB*B**	-20 to +60 °C -20 to +60 °C -20 to +60 °C	-20 to +110 °C -20 to +120 °C -20 to +120 °C
T6	CLS50D-BA/IA/GB*D** CLS50D-BA/IA/GB*C** CLS50D-BA/IA/GB*B**	-20 to +60 °C -20 to +60 °C -20 to +60 °C	-20 to +70 °C -20 to +70 °C -20 to +70 °C

Temperature class	Sensor	Ambient temperature range T_a	Medium temperature range T_{med}
T4	CLS50-K***	-20 to +125 °C	-20 to +125 °C
T6	CLS50-K***	-20 to +75 °C	-20 to +75 °C

Type				Medium temp. T_a for temperature class (Tn)
CLS82D	-	GC	***	-20 °C ≤ Ta ≤ +140 °C (T3) -20 °C ≤ Ta ≤ +115 °C (T4) -20 °C ≤ Ta ≤ +65 °C (T6)

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.

Installation requirements



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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