

# Safety Instructions

## Memosens Wave CKI50

for measuring color, color variations

ATEX, IECEx:

Ex ia op is/db [ia Ga] IIC T6 Ga/Gb



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# Memosens Wave CKI50


for measuring color, color variations

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**Associated documentation** This document is an integral part of Operating Instructions BA01932C.

**Supplementary documentation**

-  Competence Brochure CP00021Z
  - Explosion Protection: Guidelines and General Principles
  - [www.endress.com](http://www.endress.com)

**Certificates and declarations** The certificates and declarations of conformity are available in the Downloads area of the Endress+Hauser website:  
[www.endress.com/download](http://www.endress.com/download)

**EU declaration of conformity**

EU\_01016

**EU type-examination certificate**

TÜV 22 ATEX 8769 X

**IECEX certificate**

IECEX TUR 22.0005X

**Identification**

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

- Manufacturer identification
  - Extended order code
  - Serial number
  - Safety information and warnings
- Compare the information on the nameplate with the order.

**Type code**

Type	Version															Option 1	
	-	83 <sup>1)</sup>	*2)	**3)	*4)	*5)	11 <sup>6)</sup>	*7)	**8)	**9)	**10)	*11)	*12)	*13)	**14)		+
CKI50	-	83 <sup>1)</sup>	*2)	**3)	*4)	*5)	11 <sup>6)</sup>	*7)	**8)	**9)	**10)	*11)	*12)	*13)	**14)	+	15)

Ex relevance	1)	Approval: ATEX, IECEX II 1/2G Ex ia op is/db [ia Ga] IIC T6...T3 Ga/Gb
No Ex relevance	2)	Sensor communication
	3)	Application
	4)	Calibration/validation
	5)	Measuring head
Ex relevance	6)	Material, Roughness; Length: 316L/1.4404, Ra = 0.8; L = 48.5mm wetted
No Ex relevance	7)	Diameter Measuring Head
	8)	Window material
	9)	Optical path length
	10)	Process connection
	11)	Seals Wetted
	12)	Adaption cable
	13)	Cable length

	<sup>14)</sup>	Device model
	<sup>15)</sup>	Optional features, e.g. test certificates or other certificates/declarations

**Certificates and approvals**

II 1/2G Ex ia op is/db [ia Ga] IIC T6...T3 Ga/Gb

The product meets the requirements of the "IEC Certification Scheme for Explosive Atmospheres". This is verified by compliance with the standards listed in the IECEx certificate. The IECEx certificate can be viewed on the following website: [www.iecex.com](http://www.iecex.com).

*Notified body*

**TÜV Rheinland Industrie Service GmbH**

**Safety instructions**



- The procedures for electrical connection, installation, operation and maintenance described in the Operating Instructions must be followed.
- The maximum permitted cable length is 100 m (328.1 ft).
- Pay attention to the regulations for electrical installations in explosive atmospheres (EN 60079-14) when using the devices and sensors.
- A grounding cable with cross section of at least 4 mm<sup>2</sup> (0.006 in<sup>2</sup>) is needed for the installation. An additional cable lug is required if the cable diameter is too large.
- Integration into potential equalization is carried out via the installation.
- If the process sensor exhibits external damage, the equipment must be immediately taken out of service. Under no circumstances are modifications permitted on the process sensor that compromise the explosion protection of the equipment.
- The process sensor can heat up during operation and is cooled mainly through heat dissipation on the surface of the housing. If this heat transfer is restricted, e.g. by a layer of dust or an additional cover, the maximum ambient conditions cannot be observed and the operator must take appropriate action.
- If the device comes into contact with aggressive substances, the user must adopt appropriate protective measures to ensure that the confirmed level of protection of the measuring system is not compromised. Examples of aggressive substances include acidic liquids or gases that corrode metal, or solvents that can damage polymeric materials. Appropriate protective measures include regular checks as part of routine inspections, or checks to verify the resistance of materials to specific chemicals based on the material data sheet. Care must be taken to ensure that the stainless steel, sapphire glass, seals or cable of the sensor are not exposed to corrosive chemicals or mechanical damage.
- The two RS-485 cables (blue and white) must be connected to the terminals provided. For use in hazardous areas: Note that the communication line (RS-485 connection) has no internal safety mechanism. Incorrect connection may result in uncontrolled power consumption by the process sensor.
- Do not separate when energized.
- Do not open the device in hazardous areas.
- The process sensor can only be operated with a protective mechanism which has a 1500 A breaking capacity. The maximum input power of the sensor must be limited to the specified maximum value by a current limitation (fuse or electronic).

This device has been designed and manufactured in accordance with Directive 2014/34/EU of February 26, 2014 and also complies with the following standards:

- EN IEC 60079-0:2018/ IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
- EN 60079-1:2014/ IEC 60079-1:2014 Equipment protection by flameproof enclosures "d"
- EN 60079-11:2012 / IEC 60079-11:2011 + Cor.:2012 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
- EN 60079-26:2015/ IEC 60079-26:2014 Equipment with Equipment Protection Level (EPL) Ga
- EN 60079-28:2015/ IEC 60079-28:2015 Protection of equipment and transmission systems using optical radiation

## Temperature tables

Hazardous area	Ambient temperature $T_a$	Process temperature $T_p$
Gas	$-20\text{ °C }(-4\text{ °F}) \leq T_a \leq 50\text{ °C } (122\text{ °F})$ (T6) $-20\text{ °C }(-4\text{ °F}) \leq T_a \leq 50\text{ °C } (122\text{ °F})$ (T5) $-20\text{ °C }(-4\text{ °F}) \leq T_a \leq 50\text{ °C } (122\text{ °F})$ (T4) $-20\text{ °C }(-4\text{ °F}) \leq T_a \leq 50\text{ °C } (122\text{ °F})$ (T3)	$-20\text{ °C }(-4\text{ °F}) \leq T_p \leq 50\text{ °C } (122\text{ °F})$ (T6) $-20\text{ °C }(-4\text{ °F}) \leq T_p \leq 65\text{ °C } (149\text{ °F})$ (T5) $-20\text{ °C }(-4\text{ °F}) \leq T_p \leq 100\text{ °C } (212\text{ °F})$ (T4) $-20\text{ °C }(-4\text{ °F}) \leq T_p \leq 140\text{ °C } (284\text{ °F})$ (T3)

The temperature table above only applies under the following installation conditions, which are described in the graphic below →  1,  7. If the installation conditions cannot be met, the maximum process temperature  $T_p$  must not exceed the maximum ambient temperature  $T_a$ .

## Connections

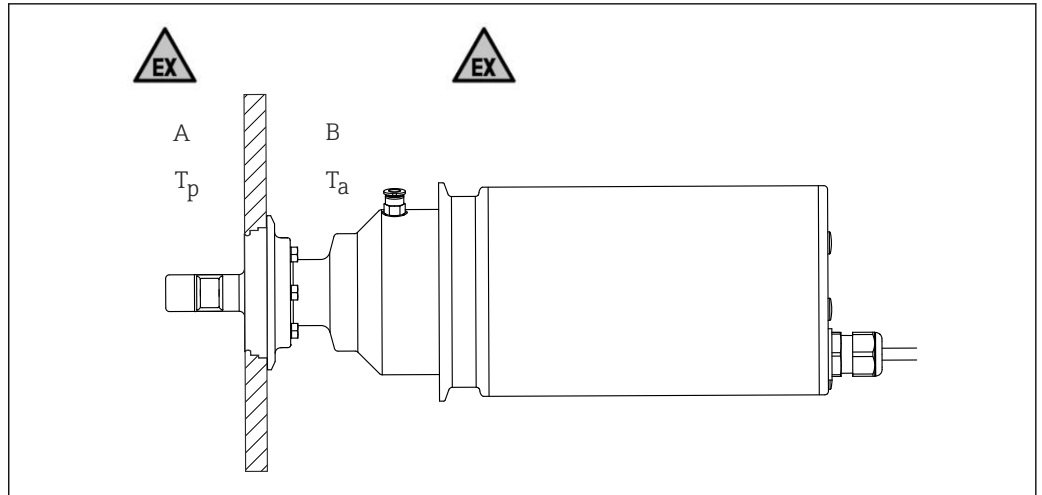
## Ex-specification

Parameter	Value
Nominal voltage	24 VDC
Maximum current via fuse	0.63 A
Maximum permitted power $P_{max}$ for safety purposes	10 W, maximum 16.7 W
Protection class	IP69
Minimum cable length	2 m (6.56 ft)
Size (length, diameter)	361 mm (14.21 in), 114 mm (4.49 in)
Housing	stainless steel 1.4404 or 1.4435
Volume	< 2 l (0.53 gal) (approx. 1.5 l (0.4 gal))

The process sensor is connected to a transmitter. A junction box can be optionally installed between the process sensor and the transmitter. The junction box is suitable for use in hazardous areas (Zone 1, 2 for gas) and consists of a 1-1 terminal strip. The cable cores are clamped individually on the terminal strip. Depending on the transmitter certificate, it can also be installed in hazardous areas or must be mounted outside potentially hazardous areas.

Process sensor CKI50 is intended for connection to transmitter CM44P, which does not have an IECEx/ATEX approval. The transmitter nevertheless meets the safety requirements for connecting process sensor CKI50 under the specified conditions. The electrical current of the CM44P is limited to the permitted 16.7 W at 24 VDC. In addition, the transmitter displays the internal temperature values and provides information about other values pertaining to process sensor CKI50.

Installation conditions



A0050071

1 Installation conditions

- A Zone 0
- B Zone 1
- $T_a$  Ambient temperature
- $T_p$  Process temperature



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