XA03619C/07/EN/01.25-00
71713913
2025-07-21

Safety Instructions
Liquiline CM42B

Two-wire transmitter

CHN Ex ia IIC T6/T4 Ga

Endress+Hauser
People for Process Automation

Liquiline CM42B

Two-wire transmitter

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Related documentation

This document is an integral part of the Liquiline CM42B Operating instructions BA02380C and BA02381C.

Supplementary documentation

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

Certificates and declarations

Hazardous area approvals

Certificate number: GYJ24.1267X

Certification body

Shanghai Inspection and Testing Institute of Instruments and Automation Systems Co., Ltd. - NEPSI

The NEPSI certificates and other certificates/declarations of conformity are available in the Downloads area of the Endress+Hauser website:

www.endress.com/download

Standards applied

Applied standards are listed in the certificate.

Identification

The following information on the device can be found on the nameplate:
- Manufacturer identification
- Product designation
- Serial number
- Ambient conditions
- Input and output values
- Safety information and warnings
- Ex markings
- Certification information
- Warnings

▶ Compare the information on the nameplate with the order.

Type code

CHN Ex

Model	Version						
CM42B	NA	**	**	**	**	**	+*
	Ex ia IIC T6/T4 Ga	No Ex relevance					

Technical data

Voltage input	nom. 24 V DC max. 30 V DC min. 17 V DC ELV
Current	4...20 mA loop max. 23 mA
Ambient temperature range T_a	T6: -20° C ≤ T_a ≤ +50° C (-4° F ≤ T_a ≤ +122° F) T4: -20° C ≤ T_a ≤ +60° C (-4° F ≤ T_a ≤ +140° F)

Safety instructions

The transmitter CM42B is suitable for use in hazardous areas.

The transmitter meets the requirements of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations SI 2016 No. 1107 and is suitable for use in hazardous areas.

The product meets the requirements of the Regulation on the Testing of Machinery and other Instruments set down by the Ministry of Health, Labor and Welfare in Japan. The user must attach the yellow/black label (included in the delivery) beside the installed sensor (e.g. on the connected cable).

The transmitter meets the requirements of Chinese explosion protection regulations.

- The transmitter is an intrinsically safe electrical apparatus for use in hazardous areas, spec. classified as Zone 0, 1 or 2.
- The transmitter provides Equipment Protection Level Ga.
- The output protection level is "ia", therefore approved intrinsically safe sensors can be connected, which may be located in Zone 0, dependent on the Ex marking of the sensor.
- Only sensors intended for use in hazardous areas must be connected.
- The rated values of input and output circuits must be followed, particularly the intrinsic safety parameter.
- The transmitter may only be connected to a suitable power supply with protection level "ia". Associated apparatus with galvanic isolation from other circuits is preferred, such as e.g. active barrier.
- Metal enclosures must be connected to the local equipotential bonding system at the point of installation.
- Only genuine spare parts may be used for maintenance and repair work on the device. This work may only be carried out by service staff or specially trained and authorized personnel.
- Installation, electrical connection, commissioning, inspection, maintenance and repair may only be performed by qualified specialists trained to work on explosion protected devices in accordance with the applicable standards, e.g. EN 60079-14, -17, -19 IEC 60079-14, -17, -19 or JNIOSH-TR-44 for Japan (or GB 50257, GB/T 3836.13, GB/T 3836.15, GB/T 3836.16, GB/T 3836.18). Comply with the instructions in the Operating Instructions.
- Compliance with all of the technical data of the device is mandatory.
- The device shall be installed in a way to minimize the risk of electrostatic discharge. For ESD safety reasons the transmitter is marked with a warning label. Following content is stated on the label: "Beware of electrostatic charging. Device must be cleaned using a wetted cloth."
- In case of repair work, when the cable management module has been dismantled, attention shall be applied to fix the screw to the earthing bolt when reassembling.
- If the battery for the clock shall be replaced, the following types must be used only:
  - Maxell CR2032
  - Panasonic BR2032
- The cables must be installed such that they are fixed in place. Adequate strain relief must be ensured.
- Make sure that the cable glands are secured to prevent from working loose.
- The rail mount version of the device is intended to be used within another enclosure, e.g. control box.
- The connector marked “Display” is not for external use, but for connection of the display which is part of the device only.
- The connector marked “Service” is not for external use, but for manufacturer purposes only.
- The transmitter meets the requirements of the JNIOSH-TR-46 standard series and is suitable for use in hazardous areas.

Connection

Connection values

Current outputs SA1 and SA2 (terminals 33 and 34)

Intrinsically safe power supply and signal circuits	
Max. input voltage U_i	30 V
Max. input current I_i	100 mA
Max. input power P_i	750 mW
Max. internal inductance L_i	30 µH
Max. internal capacitance C_i	Current output 1: 15.2 nF Current output 2: 7.9 nF

Memosens input (terminals 87, 88, 97, 98)

Max. output voltage U_o	5 V
Max. output current I_o	100 mA
Max. output power P_o	120 mW
Max. internal inductance L_i	Negligible
Max. internal capacitance C_i	15.6 µF
Max. external inductance L_o	3.5 mH
Max. external capacitance C_o	100 µF

Only approved devices shall be connected to the digital Memosens sensor input:
- Memosens cable xYK10, xYK20
  The connection of the CM42B and the Memosens cable xYK10 and xYK20 with a maximum length of 100 m is certified as a system via spark ignition test, separate proof of intrinsic safety is not necessary.
- Digital Memosens sensors / other Memosens devices
  Digital Memosens sensors and other devices that match the stated electrical parameters of the Liquiline CM42B.
  Digital Memosens sensors/devices other than xLS50D are connected via an inductive interface to the Memosens cables xYK10 and xYK20.
  The devices stated in the following certificates and additional devices that match the stated entity parameter may be connected to the Liquiline CM42B.

IECEx
- xYK10 and xYK20 according to IECEx BVS 11.0052X
- xLS50D according to IECEx BVS 14.0004X

ATEX
- BVS 04 ATEX E121X
- BVS 12 ATEX E048X

CSA C/US
- xYK10 and xYK20 according to CSA certificate no. 80021719
- xLS50D according to CSA certificate no. 80021719

In addition to the table above, it is allowed to connect intrinsically safe certified MEMOSENS cables xYK10 and xYK20 according to GYJ24.1204X and the fixed cable MEMOSENS sensor xLS50D according to GYJ24.1068X.

Analog input conductivity, inductive measurement (terminals 11, 12, 13, 15, 16, 17, 18, 20)

Max. output voltage U_o	7.6 V
Max. output current I_o	95 mA
Max. output power P_o	100 mW
Max. internal inductance L_i	Negligible
Max. external inductance L_o	3.5 mH
Max. internal capacitance C_i	480 nF
Max. external capacitance C_o	10.4 µF

Analog input conductivity, conductive measurement (terminals 11, 12, 13, 19, 20)

Max. output voltage U_o	8.2 V
Max. output current I_o	30 mA
Max. output power P_o	38 mW
Max. internal inductance L_i	Negligible
Max. external inductance L_o	30 mH
Max. internal capacitance C_i	0 nF
Max. external capacitance C_o	7.6 µF

Analog input pH/ ORP (terminals 11, 12, 13, 14, 16, 17, 18, 20, 21, 22)

Max. output voltage U_o	5 V
Max. output current I_o	30 mA
Max. output power P_o	37.5 mW
Max. internal inductance L_i	Negligible
Max. external inductance L_o	30 mH
Max. internal capacitance C_i	1 µF
Max. external capacitance C_o	100 µF

Galvanic isolation

The device electronic is fully isolated from earthed metal parts up to a test voltage of 500 VAC rms.

Analog sensor interface:
- The analog sensor interface is galvanically isolated from current output 1 & 2 up to a test voltage of 500 VAC rms.
- The galvanic isolation ensures that the intrinsically safe current output circuits in the sense of IEC 60079-14 EN 60079-14 can be considered isolated from earth, even if the intrinsically safe sensor circuit has a functional earthing.

Digital Memosens sensor interface:
- The digital sensor output of the device is not galvanically isolated from current output 1.
- If the sensor connection cable runs through areas of Zone 0 or Div.1 or the sensor is installed in Zone 0 or Div. 1, the use of a galvanically isolated power supply is recommended.

Galvanic isolation between current output 1 and current output 2
The two current outputs of the CM42B are isolated from each other up to a test voltage of 500 VAC rms.

Cable specification

Qualified cable glands (only field device)

Cable gland	Clamping area, permitted cable diameter
M20x1.5	6 to 12 mm (0.24 to 0.47 in) 5 to 9 mm (0.2 to 0.35 in)
NPT1/2 Via M20x1.5 adapter on NPT1/2	6 to 12 mm (0.24 to 0.47 in) 5 to 9 mm (0.2 to 0.35 in)
G1/2 Via M20x1.5 adapter on G1/2	7 to 12 mm (0.28 to 0.47 in) 4 to 9 mm (0.16 to 0.35 in)

Cable cross-section

Terminal connector is suitable for strands and ferrules.

Cable cross-section: 0.25 mm^2 (≙23 AWG) to 2.5 mm^2 (≙12 AWG)

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