

Safety Instructions

Liquiline CM42B

Two-wire transmitter

IND II 1G Ex ia IIC T6/T4 Ga



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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

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

IND

Model	Version						
CM42B	PA	**	**	**	**	**	+*
	II 1G Ex ia IIC T6/T4 Ga	No Ex relevance					

Certificates and declarations

Hazardous area approvals

PESO

CM42B

II 1G Ex ia IIC T6/T4 Ga

Approval number: P646395

Approval body

Ministry of Commerce & Industry Petroleum & Explosives Safety Organisation (PESO)

Standards applied

Applied standards are listed in the approval letter.

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: $-20^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$ ($-4^{\circ}\text{F} \leq T_a \leq +122^{\circ}\text{F}$) T4: $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$ ($-4^{\circ}\text{F} \leq T_a \leq +140^{\circ}\text{F}$)

Safety instructions

The Liquiline CM42B transmitter is suitable for use in explosion-hazardous areas.

- The transmitter is an intrinsically safe electrical device for use in Zone 0, 1 or 2.
- The transmitter meets equipment protection level Ga.
- The output's type of protection is intrinsic safety (ia) and therefore intrinsically safe sensors can be connected and may be located in Zone 0 depending on the sensor's Ex marking.
- Only sensors suitable for use in explosion-hazardous areas may be connected.
- The nominal values of the input and output circuits must be observed, especially the intrinsic safety parameters.
- The transmitter may only be connected to a suitable power supply with ia protection. The power supply must be safely isolated from other circuits, e.g. by using an active barrier.
- Metal housings must be connected to the installation location's potential equalization system.
- Repair work may only be carried out by the manufacturer's service personnel. Only original spare parts may be used in this context.
- 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. IS 16724. Comply with the instructions in the Operating Instructions.
- It is absolutely essential that all technical data for the device are complied with.
- To avoid electrostatic charge, the device is fitted with a warning label bearing the following information: "Protect against electrostatic charge. Clean the device with a damp cloth only."
- If the cable management module has been disassembled during repair work, ensure that the grounding bolt screw is properly reattached after reassembly.
- Only the following battery types may be used to replace the clock battery:
 - Maxell CR2032
 - Panasonic BR2032
- Make sure that the cables are strain-relieved and securely connected.
- Secure the cable glands against loosening.
- The device for DIN rail mounting must be operated in an additional enclosure, e.g. in a control cabinet.
- The terminal connection labeled "Display" is only to be used for connecting the display, which is part of the device.
- The terminal connection labeled "Service" is intended for manufacturer use only.

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 μ H
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 μ F
Max. external inductance L_o	3.5 mH
Max. external capacitance C_o	100 μ F

Only approved devices may be connected to the digital Memosens input:

- Memosens cable xYK10, xYK20

Connecting the Liquiline CM42B to the Memosens cable xYK10 and xYK20 with a maximum length of 100 m is certified as a system via spark ignition testing; no separate proof of intrinsic safety is required.

- Digital Memosens sensors/other Memosens devices

Digital Memosens sensors and other Memosens devices corresponding to the electrical parameters specified for the Liquiline CM42B.

With the exception of the sensor xLS50D, all Memosens sensors are connected via their inductive interface with the Memosens cables xYK10 and xYK20 cables.

Devices named in the certificates listed below may be connected to the Liquiline CM42B, as well as other devices that comply with the specified entity parameters:

ATEX

- BVS 04 ATEX E121X
- BVS 12 ATEX E048X

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 μ F

The sensors named in the certificates listed below may be connected, as well as other devices that comply with the specified entity parameters:

ATEX:

- xLS50-G according to: DMT 99 ATEX E075X
- xLS54 according to: BVS 07 ATEX E158X

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 μ F

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 μ F
Max. external capacitance C_o	100 μ F

L_o and C_o are based on maximum output voltage and current values. These values are applicable when used independently but not in combination of both L_o and C_o . The values for each parameter must be compensated for L_i and C_i accordingly.

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 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 mm to 12 mm (0.24" to 0.47") 5 mm to 9 mm (0.2" to 0.35")
NPT1/2 Via M20x1.5 adapter on NPT1/2	6 mm to 12 mm (0.24" to 0.47") 5 mm to 9 mm (0.2" to 0.35")
G1/2 Via M20x1.5 adapter on G1/2	7 mm to 12 mm (0.28" to 0.47") 4 mm to 9 mm (0.16" to 0.35")

Cable cross-section

Terminal connector is suitable for strands and ferrules.

Cable cross-section: 0.25 mm² (≈23 AWG) to 2.5 mm² (≈12 AWG)



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