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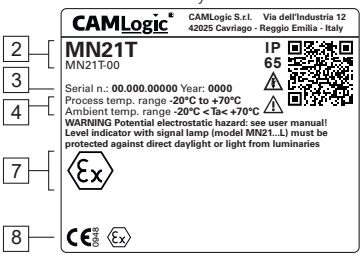
COSTRUZIONI MECCANICHE ELETTRICHE

Operating and maintenance instructions for overpressure indicator MN21T

PRODUCT IDENTIFICATION

The MN21T is an overpressure indicator used to prevent the buildup of excessively high pressure inside silos or tanks.
The device is identified by the label on the side of the case, the characteristics of which are given below:



1. Manufacturer information
2. Product model and reference code for the specific configuration
3. Serial number and year of production
4. Ambient and process temperature range
5. QR code leading to the specific configuration and IP rating
6. Usage warnings
7. Markings and certificate numbers
8. Conformities and certification symbols

Tampering with the label voids certifications and warranty.

PRODUCT VARIANTS

MN21T	**..**	**..**	**..**	Standard: ø180 mm flange with 4 holes ø160, EPDM and stainless steel AISI 316 / EN 1.4401 membrane
	A	**..**	**..**	Screws that not protude from the membrane fixing counterflange
		F	**..**	Smaller flange (ø154 mm, 4 holes ø142)
			L	Optional led lamp

PRODUCT CHARACTERISTICS

Materials:	casing and cover in die-cast aluminium
Connection to process:	flanged
Cable entry:	M20x1,5 (standard), G 1/2 (BSPP) or 1/2 NPT on request
Power consumption:	none / 0,05W (models with lamp)
Cables size:	0,5 ÷ 2,5 mm^2 (14 AWG)
Contacts capacity:	2A at 250V (AC) / 0,02A at 24V (DC)
Signal output:	SPDT
Life cycle:	5 x10 ^ 6 minimum
Process temperature:	-40 ÷ +85°C (-40 ÷ 185°F)
Ambient temperature:	-20 ÷ +70°C (-4 ÷ 158°F)
Protection rating:	IP 65 (dust-tight, protection against water jets)
Sensitivity:	~10 ÷ 80 mbar (standard) or ~200 ÷ 1000 mbar (high pressure version)
Means of protection:	Class I (PE connected) - overvoltage category II
Environmental conditions:	indoor and outdoor use, altitude up to 2000 m (6.562 ft), max. relative humidity 80% for temp. up to 31°C (88°F) decreasing linearly to 50% at 40°C (104°F), pollution degree 2
For use in wet location:	no

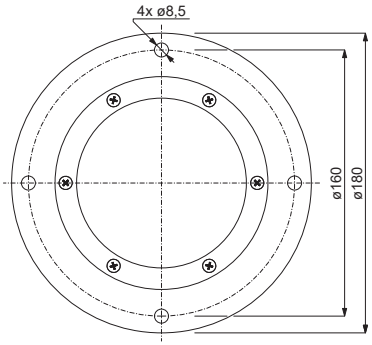
INSTALLATION

The indicator can be mounted in any position, on the wall of the silo or container, by means of a counterflange of dimensions corresponding to the dimensioning of the chosen model. The MN21T is available with two different flanged connections: standard with 4 ø8.5 holes on ø160, or smaller size with 4 ø7 holes on ø142.
Seal the cable entry with a cable gland suitable for the working range indicated on the label. Place the cable in a way that it doesn't pull the level indicator.

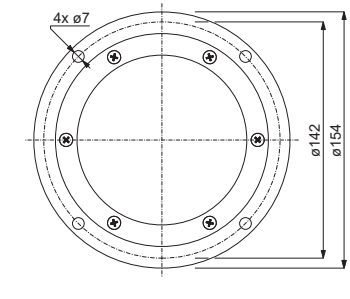
SAFETY WARNINGS

The installation, maintenance and diagnostics of the device must be carried out only by authorized personnel informed about the regulations in force. Before starting work, specialized personnel must have read and understood the instruction.
When using electrically operated equipment, it is necessary to take the appropriate safety precautions, required by the current regulations, to reduce the risk of fire, electric shock, and injury to people.
Before installing the device, check its perfect integrity making sure that it has not been damaged during transport.
The removal/replacement/modification of any part of the device entails the loss of validity of the certifications of the product itself.
The earthing connection is mandatory and the sole responsibility of the installer. The level indicator must be used within the range of temperatures indicated on the plate.

OVERALL DIMENSIONS



STANDARD FLANGE



SMALL FLANGE

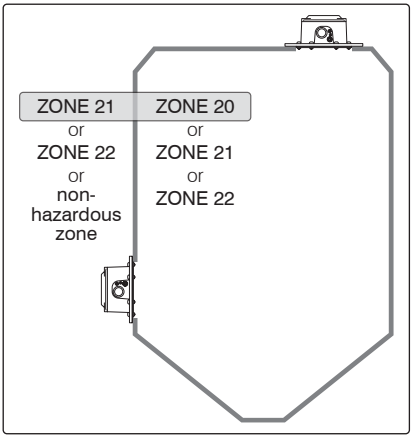
SPECIFIC CONDITION FOR USE OF ATEX / IECEx MODELS

⚠ It is necessary for the operator to refer to this documentation to preserve the protection afforded by the equipment!

In accordance with Directive 1992/92/EC / DSEAR 2002, it is responsibility of the user to ensure that the equipment, used in areas where explosive atmospheres might be present, is mantained in such a way as to reduce the risk of explosion.

Learn more about the product and find drawings of each model on our website.

The installation must be carried out in compliance with IEC 60079-14 / BS EN 60079-14. Install the device in compliance with the Ex-zones indicated in the image alongside (wall thickness of containment ≥ 1 mm).
Only the connection to process can be installed in zone 20.



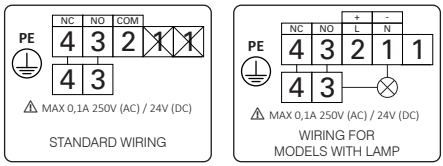
Seal the cable entry with a cable gland certified for the tb protection method, in compliance with the Directive 2014/34/EU / S.I. 2016 No. 1107, able to guarantee a minimum ingress protection (IP) of 65.
The device is not explosion-proof when the casing is open. Close the cover minding the correct orientation. After installing, check that you have completely tightened the cover screws and that you have properly tightened the cable gland, before starting the device.

Avoid the onset of electrostatic charges on plastic parts (do not dry rub).
The maximum surface temperature is calculated taking into account a safety margin, but without considering a possible dust deposit on the equipment. During installation, use and maintenance, any electrostatic charging should be avoided, for example by: protection from direct air flow, cleaning with wet clothes, earthing connection of the housing perfectly grounded.

WIRING

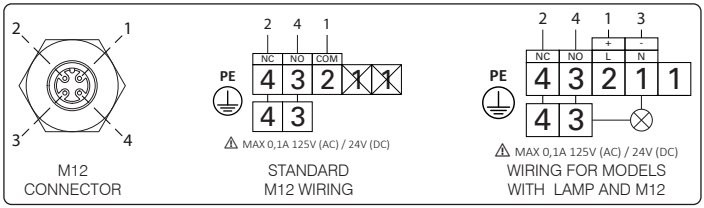
The entire connection of the device must take place while the device is de-energized.
On the device there are two terminals for the protective earth connection, marked by the relative symbols (IEC 60417 / BS EN 60417-1): one inside the casing and one outside, in proximity of the cable entry. The earthing connection, by means of an M5x8 screw and a notched stainless-steel washer, must take place before any other connection is established. The cross-sectional area of the protective earth (PE) conductor must be the same as that of the phase conductor (S), with a maximum of 16mm^2.

Connect both earthing terminals to the ground. Protect the cables with an overload protection element (rated current ≤ 2A). A disconnect switch must be present near the device, to cut off poter supply in the event of fault.



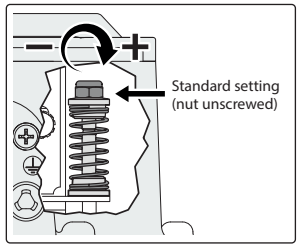
⚠ Utilize cables suitable for use up to 90°C.

The indicator can be supplied with an M12 circular connector for a quick and safe electrical connection. The connector will be mounted on the cable entry with a M20x1,5 or G 1/2 thread and wired to the circuit in accordance to the diagrams shown below. ATTENTION! Do not separate the connector when powered.



SENSITIVITY ADJUSTMENT

The sensitivity of the instrument can be adjusted by means of the self-locking nut shown in the image alongside. Screwing the nut increases the compression of the spring and consequently the resistance of the membrane to the material to be detected, increasing the pressure necessary to trigger the microswitch. Conversely, unscrewing reduces the compression of the spring and decreases the pressure needed to trigger the microswitch.



- The standard setting, with the nut fully unscrewed, corresponds to an activation pressure of 10 mbar (high pressure version = 200 mbar).
- Every two turns (clockwise) of the nut correspond to an increase of 9 mbar (high pressure version = 100 mbar).
- Fully tightened the activation pressure is 80 mbar (high pressure version = 1000 mbar).
- The return hysteresis value is 15 mbar (high pressure version = 50 mbar).

MAINTENANCE

Maintenance must be carried out in compliance with IEC 60079-17 / BS EN 60079-17 standards. CAMLogic level indicators need no routine maintenance, however it is advisable to carry out the following check: at each opening of the cover or removal of the instrument, visually check the sealing gaskets present.
Replace the EPDM membrane on the connection process every 72 months.
In case there is evidence of damage or excessive tearing of the gaskets on the cover or other parts of the device, contact the manufacturer CAMLogic for the replacement with suitable materials. The diameter of the cable must correspond to the tightening range indicated by the cable gland used.

REPAIRS

The MN21T level sensor can only be repaired by the manufacturer CAMLogic or following instructions from the manufacturer.
In case of doubts concerning malfuncions or repairs, contact the manufacturer: CAMLogic S.r.l. - Via dell'Industria 12-12/A - 42025 Cavriago - Italy. Repairs must be carried out in compliance with IEC 60079-19 / BS EN IEC 60079-19 standards.

WARRANTY

CAMLogic, in addition to the terms of the supply contract, guarantees its products for a period of twenty-four (24) months from the date of shipment. This warranty is expressed only in the repair or replacement free of charge of parts that, after careful examination by the manufacturer, turn out to be defective.
Warranty, excluding all liability for direct or indirect damage, is considered to be restricted to only defects in materials and has no effect if the parts returned turn out to have been anyhow dismantled, tampered with or repaired by anyone other than the manufacturer.
Warranty likewise excludes damage deriving from negligence, carelessness, bad or improper use of the level gauge, or from bad handling by the operator and faulty installation. Warranty is moreover forfeit if non-genuine spare parts have been used.
A returned level indicator, even if under warranty, must be shipped carriage free.

Ex MARKING DETAILS

Standard **MN21T** models have ATEX and IECEx certification for Zone 20/21.
Models with the optional lamp, as well as **A** models, will have ATEX certification for Zone 22 instead.

Ⓔx	II	1/2	D	Ex	ta/tb	IIIC	T85°C	IP65	Da/Db	**ATEX** MARKING for dusts, Zone 20/21
Ⓔx	II	3	D	Ex	tc	IIIB	T85°C	IP65	Dc	**ATEX** MARKING for dusts, Zone 22 (certification for **A** and **L** models)
				Ex	ta/tb	IIIC	T85°C		Da/Db	**IECEx** MARKING for dusts, Zone 20/21
										European Community marking for equipment intended for use in areas at risk of explosion.
										Group II equipment intended for use in surface industry.
										Category: **1** suitable for use in areas classified as **Zone 20** **2** suitable for use in areas classified as **Zone 21** **3** suitable for use in areas classified as **Zone 22** A double category refers to the inside/outside parts of the process.
										Combustible dusts; combustible substance present in the installation area and in the internal volume.
										Ex symbol.
										Protection method **Ex t** - protection against ignition of combustible dusts. **ta** = very high level of protection **tb** = high level of protection **tc** = augmented level of protection
										Dust types: **IIIC** (conductive dusts) or **IIIB** (non-conductive dusts)
										Temperature class (max. surface temperature reached by the device)
										IP65 (Ingress Protection) - **6** = dust-tight, no dust ingress; **5** = protected against water jets, limited ingress protection.
										EPL (Equipment Protection Level): level of protection of the equipment. **Da** = very high level of protection **Db** = high level of protection **Dc** = augmented level of protection

Symbol	Reference	Description
⎓	IEC 60417-5031 (2002-10)	Direct current
~	IEC 60417-5032 (2002-10)	Alternating current
⏚	IEC 60417-5019 (2006-08)	Protective earth / protective ground
⚡	IEC 60417-6042 (2010-11)	Caution: risk of electric shock
⚠	ISO 7000-0434B (2004-01)	Caution: if the instrument is used in a manner not specified by the manufacturer, the protection offered by the equipment may be impaired.

Please note: the printed version of this manual may not reflect the most recent changes.
Please always refer to the updated digital version available on the official CAMLogic website: www.camlogic.it