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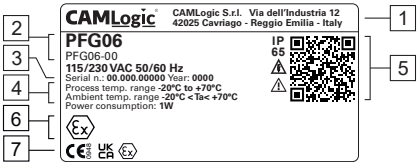
UK CA CE 0948

COSTRUZIONI MECCANICHE ELETTRICHE

Operating and maintenance instructions for capacitive level indicator PFG06

PRODUCT IDENTIFICATION

The PFG06 is a capacitive level indicator that detects the presence or absence of solid material thanks to the variation in electrical capacitance when the material approaches the probe.
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. Markings and certificate numbers
7. Conformities and certification symbols

Tampering with the label voids certifications and warranty.

PRODUCT CHARACTERISTICS

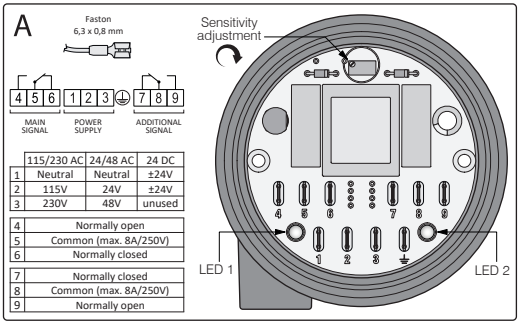
Materials:	casing and cover in reinforced polyamide 6, sensor housing in EMI shielding polyamide 66 connection to process in AISI 304 / EN 1.4301 stainless steel
Connection to process:	standard thread R 1" 1/2 (BSPT), available with DN 1" 1/2 tri-clamp or flanged connection
Power supply voltages:	115/230 and 24/48 VAC 50/60 Hz or 24 VDC
Power consumption:	1W
Cable size:	0,5 ÷ 2,5 mm^2 (14 AWG)
Contacts capacity:	8A at 250 VAC
Signal output:	DPDT or SPDT
Process temperature:	-20 ÷ +70°C (-4 ÷ 158°F)
Ambient temperature:	-20 ÷ +70°C (-4 ÷ 158°F)
Max process pressure:	0,8 ÷ 1,1 bar (11,6 ÷15,9 psi)
Sensitivity:	intervention range 0-50 mm
Protection rating:	IP65 (dust-tight, protection against water jets)
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), not for use in wet locations, pollution degree 2

INSTALLATION

The indicator can be mounted in any position, on the wall of the silo or container. The connection of the instrument to the container wall can be threaded, flanged or tri-clamp; the reference figures in these instructions show the relevant dimensions. Always refer to the technical drawings supplied by the manufacturer together with this manual.
Protect the sensor housing from falling material or excessive weight, using protective deflectors. Seal the cable entry with a cable gland suitable for the operating range indicated on the label. The diameter of the power cable must match the clamping range indicated by the cable gland used.

WIRING

All wiring operations must be carried out with the device de-energised. The protective earth (PE) connection must always be made before any other connection.
The cross-sectional area of the PE conductor must be equal to that of the phase conductor (S), up to a maximum of 16 mm^2.



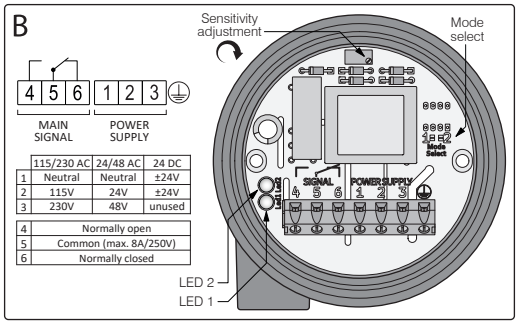
	115/230 AC	24/48 AC	24 DC
1	Neutral	Neutral	±24V
2	115V	24V	±24V
3	230V	48V	unused

4	Normally open
5	Common (max. 8A/250V)
6	Normally closed
7	Normally closed
8	Common (max. 8A/250V)
9	Normally open

Faston Connection Version (diagram A)
In the standard configuration, PFG06 indicators are supplied with Faston connectors. The earth terminal in the diagram is identified by the IEC 60417-5017 symbol.
This version provides a DPDT output, with:
- Main signal: contacts 4–5–6
- Additional signal: contacts 7–8–9

Two LEDs indicate the status of the relays:
- LED 1 (main signal): illuminates when the sensor detects material presence.
- LED 2 (additional signal): illuminates when no material is detected.

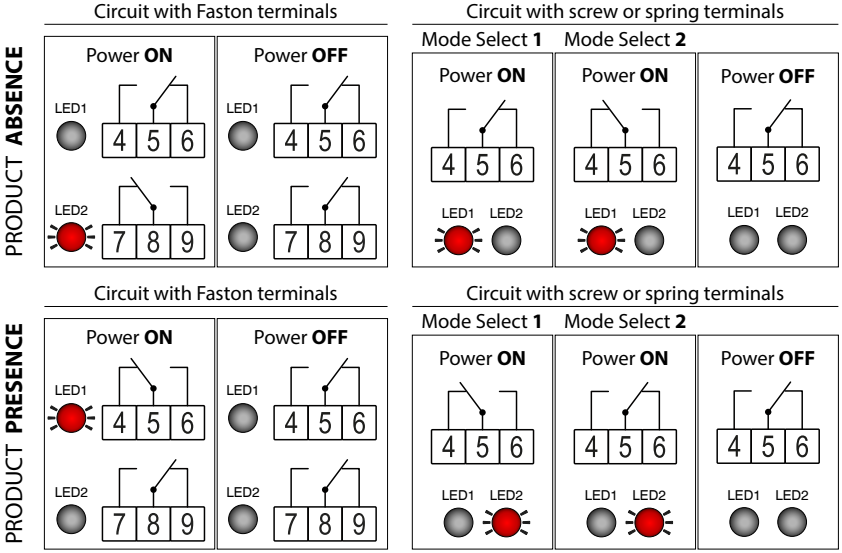
Screw or Spring Terminal Version (diagram B)
On request, PFG06 indicators can be supplied with screw or spring terminals. The protective earth terminal in the diagram is identified by the IEC 60417-5019 symbol.
This version provides a SPDT output, featuring two selectable operating modes defined by the Mode Select solder bridge:
• Mode 1 (default): corresponds to the contact diagram shown in the illustration.
• Mode 2: reverses both the operation of the changeover contact and the LEDs.
The two LEDs operate identically to those in the Faston version.



	115/230 AC	24/48 AC	24 DC
1	Neutral	Neutral	±24V
2	115V	24V	±24V
3	230V	48V	unused

4	Normally open
5	Common (max. 8A/250V)
6	Normally closed

The sensitivity adjustment trim allows you to customize the sensor's response to the material's characteristics. Turning the trim clockwise increases sensitivity, and turning it counterclockwise decreases sensitivity. The sensor's operating range is 0 to 50 mm. With the standard setting, the operating range is approximately 10 mm.
The image below shows the state of the contacts in the different configurations, when the product is present or absent.



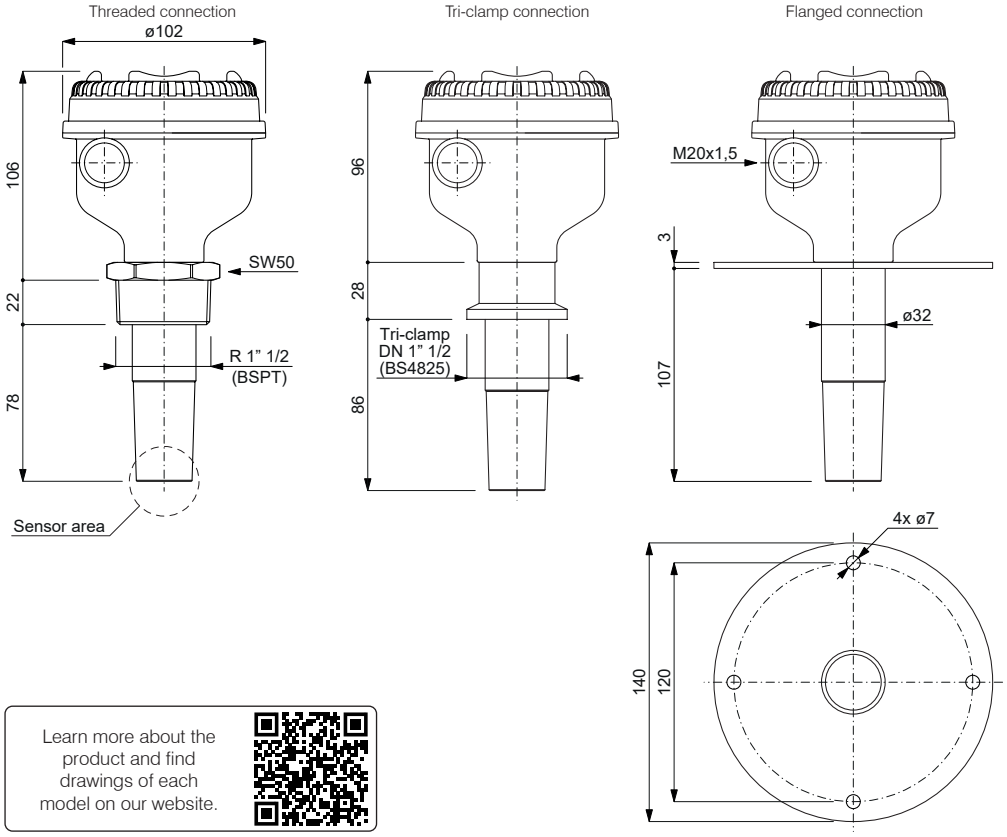
For models with Faston terminals, fail-safe operation is achieved by using contacts 4-5-6 to monitor the minimum level, and contacts 7-8-9 to monitor the maximum level.
For models with screw or spring terminals, however, a solder bridge must be placed on Mode Select 1 for the minimum-level mode, and on Mode Select 2 instead for the maximum-level mode. This operation must be performed by the manufacturer and requested upon ordering.

Protect the power and signal carrying cables with an overload protection element (rated current ≤ 8A)
A disconnect switch must be present near the device, to cut off power supply in the event of a fault, in an easy to reach position and marked as the disconnecting device of the equipment.

SAFETY WARNINGS

All the operations described in the documentation must be carried out only by qualified personnel authorized by the plant manager,, adopting all the appropriate safety precautions to reduce the risk of fire, electric shock and personal injury.
Before installation, perform a visual inspection of the device to make sure that it did not sustain any damage during transport or storage. If anomalies are found, the product must be sent to the manufacturer for restoration of efficiency.
The operational safety of the device is guaranteed only by use in accordance with the regulations, the instructions for use and any additional instructions. Arbitrary transformations or modifications are categorically prohibited. In the event of improper or non-intended use, the device can be a source of dangers related to the specific application, or damage to the plant due to incorrect assembly or configuration.
Verify that the power supply system complies with the standards, with an automatic protection switch incorporated.
Any control, cleaning, maintenance, change or replacement of parts must be carried out with the indicator disconnected and the plug disconnected from the power supply.

REFERENCE FIGURES



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

SPECIFIC CONDITIONS FOR USE OF ATEX MODELS

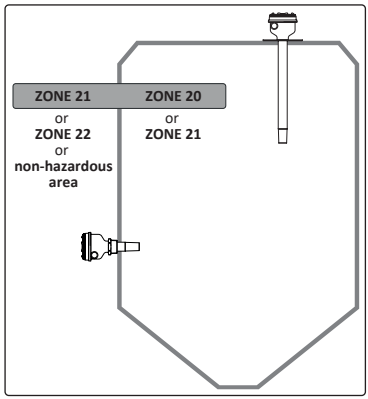
⚠ It is necessary for the operator to refer to this documentation to preserve the protection afforded by the equipment!

In accordance with Directive 1999/92/EC / DSEAR 2002, it is the responsibility of the user to ensure that the equipment, used in areas where an explosive atmosphere might be present, is maintained in such a way as to reduce the risk of explosion. Installation must be carried out in compliance with IEC 60079-14 / EN 60079-14 standard.

Install the device in compliance with the Ex-zones (all parts can be installed in zone 21; only the sensor part - below the connection to process can be installed in zone 20). Seal the cable entry with a cable gland certified in compliance with the Directive 2014/34/EU / S.I. 2016 No. 1107 for the tb protection method, provided with a gasket for the interface with the device casing, able to guarantee a minimum ingress protection (IP) of 65. The plastic protective cap supplied with the level indicator is not suitable for use in explosive atmospheres and it is the responsibility of the installer to replace it.

The device is not explosion-proof when the casing is open. After installing, check that you have completely tightened the cover and that you have tightened the cable gland correctly, before starting the device.

The maximum surface temperature is calculated taking into account a safety margin, but without considering a possible dust deposit on the equipment.



MAINTENANCE

The **PFG06** capacitive level indicators do not require routine maintenance.

REPAIRS

The **PFG06** can only be repaired by CAMLogic or by following the manufacturer's instructions.
If in doubt about malfunctions or repairs, contact the manufacturer:
CAMLogic S.r.l. - Via dell'Industria 12-12/A - 42025 Cavriago (RE) - Italy (camlogic@camlogic.it - www.camlogic.it).

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 exclusively in the repair or replacement, free of charge, of those parts which, after careful examination by the manufacturer, are found to be defective.
The warranty, excluding any liability for direct or indirect damages, is limited to material defects only and has no effect if the returned parts are found to have been in any way disassembled, tampered with or repaired by anyone other than the manufacturer. Also excluded from the warranty is damage resulting from negligence, carelessness, incorrect or improper use of the level indicator, operator mishandling or improper installation.
The warranty is also void if non-original spare parts have been used. A returned level indicator, even if under warranty, must be shipped freight prepaid.

Ex MARKING DETAILS

The **PFG06** capacitive level indicator is available with **ATEX certification** for Zone 20/21 for dust.

	II	1/2	D	Ex ta/tb	IIIC	T90°C	IP65	Da/Db	**ATEX MARKING** for dust, 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.
									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)
									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 60417-5017 (2006-08)	Earth / ground
	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