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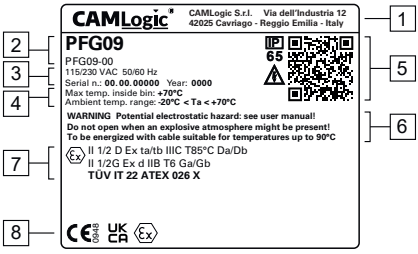
UK CA CE 0948

COSTRUZIONI MECCANICHE ELETTRICHE

Use and maintenance manual for rotary level indicator PFG09

PRODUCT IDENTIFICATION

Instruments in the PFG09 range are rotary level indicators for granular solids. The device is identified by the label on the side of the case, the characteristics of which are given below:



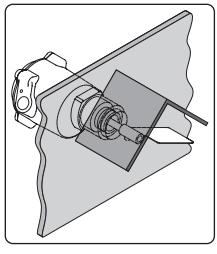
1. Manufacturer information
2. Product model and reference code for the specific configuration
3. Serial number and year of production
4. Ambient and process temperature range
5. QR code leading to the specific configuration and IP rating
6. Usage warnings
7. Markings and certificate numbers
8. Conformities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

Tampering with the label entails the loss of validity of the certifications.

PRODUCT CHARACTERISTICS

- Casing and cover in die-cast aluminium, shaft in AISI 303 / EN 1.4305 stainless-steel on lubricated sealed bearings
- Broad range of paddles in polyamide or AISI 304 / EN 1.4301 stainless steel
- G 1" 1/2 (BSPP) process connection
- M20x1,5 or 1/2 NPT (on request) cable entry
- Rotation speed: 1 turn / minute
- Power supply voltages: 115/230V - 50...60Hz (AC), 24/48V - 50...60Hz (AC) o 24V (DC)
- Power consumption: 4W
- Cable size: 0,5 ÷ 2,5 mm² (14 AWG)
- Contact capacity: 0,1A 250V (AC) / 24V (DC)
- Signal output: microswitch SPDT
- Ambient temperature: -20 ÷ +70°C (-4 ÷ 158°F)
- Process temperature: -20 ÷ +70°C (-4 ÷ 158°F)
  -20 ÷ +200°C (-4 ÷ 392°F) - **ZATF** models
- Max process pressure: 0,8 ÷ 1,1 bar (11,6 ÷15,9 psi)
- Life cycle: 5 x10 ^ 5 minimum
- Means of protection: Class I (PE connected) - Overvoltage category II
- Environmental conditions: indoor and outdoor use - altitude up to 6,562 ft (2000 m) - 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 location - pollution degree 2

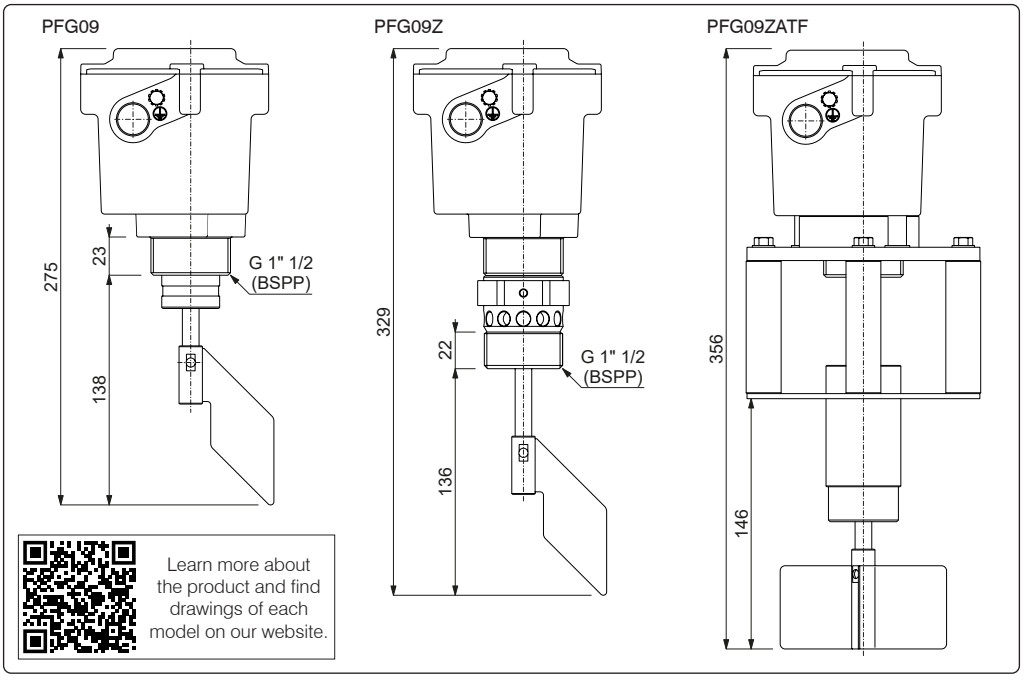
INSTALLATION



Before installation, visually check the external structure of the level indicator. Check the movement of the propeller shaft and the operation of the clutch assembly. If the check reveals abnormalities, the indicator should be sent to the manufacturer for restoration of efficiency. CAMLogic level indicators can be installed in any position.
It is recommended that, with the shaft in a horizontal or inclined position, the indicator be mounted with the cable entry positioned at the bottom.
The indicator is mounted, on cells and silos, to the side or top. Choose the position so that the device is not hit by the load jet, also taking care that the material can move freely all around the indicator.
The installation of protective baffles (side image) is recommended when the weight bearing on the shaft is considerable or when difficult-to-slide material is subject to blocking movements.
Mounting can be via the standard G1" 1/2 (BSPP) threaded nut or sleeve connection, or via flanged connection with M6 screws.

WIRING

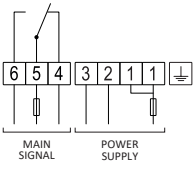
The entire connection of the device must be made while the device is de-energized.
The ground connection, with the supplied M5x8 screw and notched stainless steel washer, must be made before any other connection is made. One terminal for the protective earth connection is on the outside of the enclosure, near the cable entry, and another on the inside. Both are marked with the PE symbol (IEC 60417 / EN 60417-1).
The cross section of the protective conductor (PE) should be the same as that of the phase conductor (S), with a maximum of 16 mm2. Connect both grounding terminals to ground. Before putting the device into service, make sure that the supply voltage matches the voltage indicated on the nameplate.



Protect the power and signal wires with an overload protection element (rated current ≤ 10A).
In models with screw terminals, remove a maximum of 5 mm of insulation from the power cable. There should be a disconnect switch in the vicinity of the device, to cut off the power supply in the event of a fault, in an easily accessible location and marked as an equipment disconnect device.
Use cables suitable for use up to 90°C.
The wiring diagram can be found inside the cover.

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

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



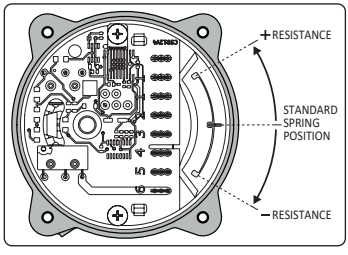
Overload protection elements:
POWER: Fuse gG 1A 250V
SIGNAL: Fuse gG 2A 250V

SAFETY WARNINGS

Installation, maintenance and diagnostics of the device should be carried out only by authorized personnel who are informed of current regulations. Before starting work, trained personnel must have read and understood the instructions.
When using electrically operated equipment, appropriate safety precautions, as required by applicable regulations, must be taken to reduce the risk of fire, electric shock and injury to persons.
Before installing the device, check its perfect integrity by ensuring that it has not been damaged during transportation. Removal/replacement/modification of any part of the device will result in the loss of validity of the product certifications itself.
Ground connection is mandatory and is the sole responsibility of the installer.

SENSITIVITY ADJUSTMENT

The sensitivity of the instrument is adjustable thanks to the spring, which can be moved to increase or decrease the resistance to the material. The standard setting is with the spring in the middle position. Increased resistance increases the force required to stop the paddle rotating, improving its functionality with sticky or heavy materials. Conversely, positioning the spring to decrease resistance increases sensitivity and makes the instrument more suitable for light materials.

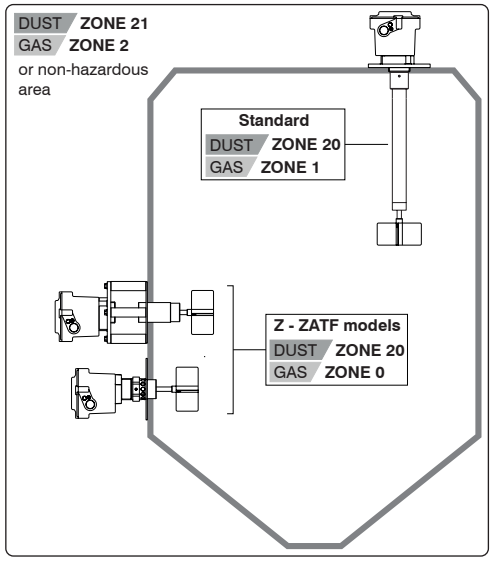


SPECIFIC CONDITION FOR INSTALLATION IN EXPLOSIVE ATMOSPHERES

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

In accordance with Directive 1992/92/EC / DSEAR 2002, it is the responsibility of the user to ensure that equipment, used in areas where an explosive atmosphere may be present, is maintained in such a way as to reduce the risk of explosion. Installation must be carried out in accordance with IEC 60079-14 / EN 60079-14.
Install the device respecting the Ex zones indicated (all parts can be installed in zone 21; only the mechanical part-- vane, shaft,

support-- under the process connection can be installed in zone 20). Use only cable glands certified in accordance with Directive 2014/35/EU, Category 2 and EN 60079-31. The protective cap supplied with the level indicator is not suitable for use in explosive atmospheres and it is the installer's responsibility to replace them.
The device is not explosion-proof when the enclosure is open. Close the cover paying attention to the correct orientation.
After installation, check that the cover screws are fully tightened and that the cable glands and any end caps are properly tightened before starting the device. Avoid the occurrence of electrostatic charge on plastic parts (do not rub).
In the case of high-temperature models **PFG09ZATF**, use cables suitable for temperature ≥ 100°C.
The maximum surface temperature is calculated taking into account a safety margin, but without considering possible dust deposit on the equipment. During installation, operation and maintenance, any electrostatic charge should be avoided, such as by: protection from direct airflow, cleaning with wet clothes, perfectly grounded housing connection.



MAINTENANCE

Maintenance should be carried out in accordance with IEC 60079-17 / EN 60079-17 standards.
CAMLogic level indicators do not require routine maintenance, however the following checks are recommended: each time the cover is opened or the instrument removed, visually check the seals. Always turn off the power before opening the instrument cover. If there are signs of damage or excessive tearing of the lid gaskets or other parts of the device, contact the CAMLogic manufacturer for replacement with suitable materials. Cover screws should be fully tightened and cable glands and/or end caps should be tightened securely; ensure that power and ground terminals are connected properly and in good condition.

REPAIRS

PFG09 series level sensors may only be repaired by the manufacturer CAMLogic or by following the manufacturer's instructions. In case of questions concerning malfunctions or repairs, please contact the manufacturer: CAMLogic S.r.l. - Via dell'Industria 12-12/A - 42025 Cavriago (RE) - Italy.
In any case, repairs must be carried out in compliance with IEC 60079-19 / 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 exclusively in the repair or replacement free of charge of those parts which, after careful examination by the Manufacturer, prove to be defective.
The warranty, which excludes any liability for direct or indirect damage, shall be limited to material defects and shall have no effect if the returned parts are found to have been dismantled, tampered with or repaired by anyone other than the Manufacturer. Also excluded from the guarantee are damages resulting from negligence, carelessness, incorrect or improper use of the level indicator, or mishandling by the operator and incorrect 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 prepaid.

DETAILS OF EX MARKINGS

All PFG09 models have the same ATEX certification for Zone 20/21 for dust.

	II	1/2	D	Ex	ta/tb	IIIC	T85°C	IP65	Da/Db	**ATEX** 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)
										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

On the other hand, ATEX certification for gas differs depending on the model, as shown in the following table.

	II	1/2	G	Ex	d	IIB	T6	Ga/Gb	**ATEX** MARKING for gas, Zone 0/1
	II	2	G	Ex	d	IIB	T6	Gb	**ATEX** MARKING for gas, Zone 1
									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 0** **2** suitable for use in areas classified as **Zone 1** **3** suitable for use in areas classified as **Zone 2** A double category refers to the inside/outside parts of the process.
									Flammable gases: explosive atmosphere consisting of a mixture of air or hazardous substances in the form of gases or vapors.
									Ex symbol.
									Protection method **Ex t** - protection by enclosure
									Gas group: **IIB** (e.g. acetaldehyde, cyclopropane, ethyl ether, ethylene)
									Temperature class (max. surface temperature reached by the device)
									EPL (Equipment Protection Level): level of protection of the equipment. **Ga** = very high level of protection **Gb** = high level of protection **Gc** = augmented level of protection