

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

CAMLogic S.p.A. Via dell'Industria 12
42025 Cavriago - Reggio Emilia - Italy

PFG09
PFG09-00
115/230 VAC 50/60 Hz
Serial n.: 00.000.00000 Year: 0000
Process temp. range -20°C to +70°C
Ambient temp. range -20°C to +70°C
Power consumption: 4W
WARNING Potential electrostatic hazard: see user manual!
Do not open when an explosive atmosphere might be present!
To be energized with cable suitable for temperatures up to 90°C

IP 65

II 1/2 D Ex ta/tb IIIC T85°C Da/Db
II 1/2 G Ex d IIB T6 Ga/Gb
TUV IT 22 ATEX 026 X

CE UK CA

Tampering with the label voids certifications and warranty.

PRODUCT CHARACTERISTICS

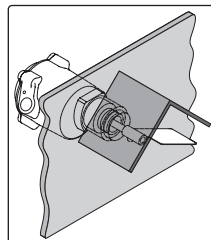
Materials:	casing and cover in die-cast aluminium, shaft in AISI 303 / EN 1.4305 stainless steel broad range of paddles in polyamide or AISI 304 / EN 1.4301 stainless steel
Connection to process:	G 1" 1/2 (BSPP)
Cable entry:	M20x1,5 (standard) or 1/2 NPT on request
Power supply voltages:	115/230 and 24/48 VAC 50/60 Hz or 24 VDC
Power consumption:	4W
Cable size:	0,5 ÷ 2,5 mm ² (14 AWG)
Contacts capacity:	5A 250V (AC)
Signal output:	SPDT
Life cycle:	5 x 10 ⁶ minimum
Process temperature:	-20 ÷ +70°C (-4 ÷ 158°F) -20 ÷ +200°C (-4 ÷ 392°F) - ZATF models
Ambient temperature:	-20 ÷ +70°C (-4 ÷ 158°F)
Max process pressure:	0,8 ÷ 1,1 bar (11,6 ÷ 15,9 psi)
Protection rating:	IP65 (dust-tight, protection against water jets)
Rotation speed:	1 turn / minute
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

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. When the shaft is horizontal or inclined, it is recommended that the indicator is mounted with the cable entry positioned at the bottom.

The indicator is mounted, on cells and silos, to the side or top. Protect the device from falling material or excessive weight, using protective deflectors, also taking care that the material can move freely all around the indicator. The installation of protective deflectors (side image) is recommended when the weight bearing on the shaft is considerable. Mounting can be via the standard G 1" 1/2 (BSPP) threaded nut or sleeve connection, or via flanged connection with M6 screws.



WIRING

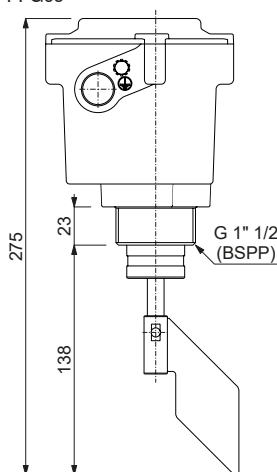
The entire connection of the device must take place while the device is de-energised. The earthing connection, with the supplied M5x8 screw and notched stainless-steel washer, must take place before any other connection is established.

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 60417-5019).

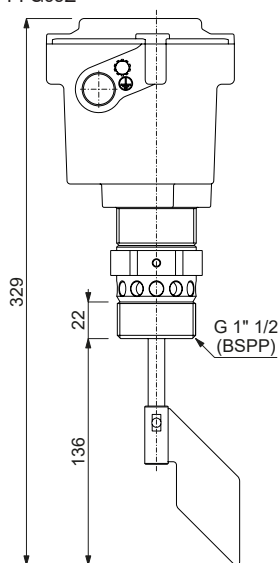
The cross section of the protective conductor (PE) should be the same as that of the phase conductor (S), with a maximum of 16 mm². Connect both grounding terminals to ground. Before putting the device into service, make sure that the supply voltage matches the voltage indicated on the nameplate.

REFERENCE FIGURES

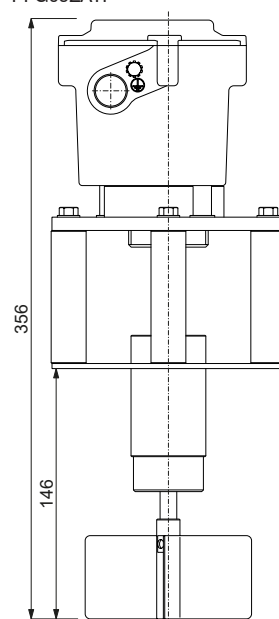
PFG09



PFG09Z



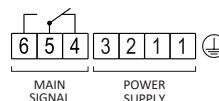
PFG09ZATF



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

Protect the power and signal wires with an overload protection element (rated current $\leq 10A$). 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	$\pm 24V$
2	115V	24V	$\pm 24V$
3	230V	48V	unused
4	Normally closed		
5	Common (max. 5A/250V)		
6	Normally open		



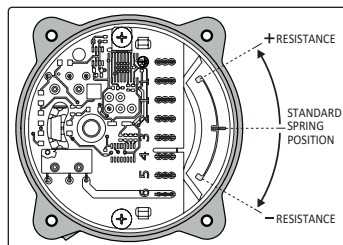
SAFETY WARNINGS

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.

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.

SENSITIVITY ADJUSTMENT

The sensitivity of the instrument is adjustable by means of 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 1999/92/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.

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 it.

The device is not explosion-proof when the enclosure is open.
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).

For high-temperature models **PFG09ZATF**, use cables suitable for temperature $\geq 100^{\circ}\text{C}$.

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, ensuring the housing is properly grounded.

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 disconnect 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 using 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 can only be repaired by the CAMLogic manufacturer or by following the manufacturer's instructions.

If in doubt about malfunctions or repairs, contact the manufacturer:

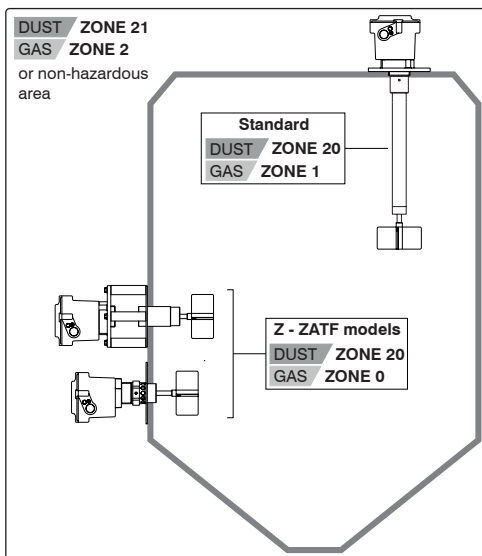
CAMLogic S.r.l. - Via dell'Industria 12-12/A - 42025 Cavriago (RE) - Italy (camlogic@camlogic.it - www.camlogic.it).

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 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 in any way 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.



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 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.
										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 (Z and ZATF models)
	II	2	G	Ex	d	IIB	T6	Gb	ATEX MARKING for gas, Zone 1 (standard model)
									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 d - flameproof enclosure
									Gas type: 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

Symbol	Reference	Description
	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