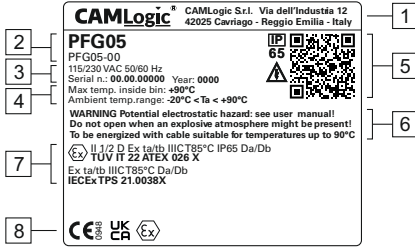


## COSTRUZIONI MECCANICHE ELETTRICHE

# Use and maintenance manual for rotary level indicator series PFG05 & PFG57

## PRODUCT IDENTIFICATION

The **PFG05** and **PFG57** series instruments are rotary level indicators for granular solids. The identification of the device is accomplished by the specific label on the side of the casing, whose characteristics are shown below:



1. Manufacturer information
2. Product model and reference code for the specific configuration
3. Power supply, serial number and year of production
4. Ambient and process temperature range
5. QR code leading 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 product certifications.

## PRODUCT CHARACTERISTICS

- Casing and cover in die-cast aluminium, shaft in AISI 303 / EN 1.4305 stainless steel on life-lubricated sealed bearings, with dust-tight retaining ring in NBR
- Broad range of paddles in polyamide or AISI 304 / EN 1.4301 stainless steel
- 2" 1/2 Gas (BSPP) process connection for PFG05\* models, 1" 1/2 Gas (BSPP) process connection for PFG57\* models
- Single (PFG57\*) or double (PFG05\*) M20x1,5 cable entry
- Rotation speed 1 turn / minute
- Available power supply voltages: 115/230V - 50 ... 60 Hz (AC), 24/48V - 50 ... 60 Hz (AC) or 24V (DC)
- Power consumption: max 4 W
- Contact capacity: 10A at 250V (AC) for PFG05\* models, 5A at 250V (AC) for PFG57\* models
- Signal output: microswitch SPDT
- Cable size: 0,5 ÷ 2,5 mm2 (14 AWG)
- Ambient temperature: -20 ÷ +70°C (-4 ÷ 194°F)
- Ambient temperature with low temperature optional: -40 ÷ +70°C (-40 ÷ 158°F)
- Process temperature: -20 ÷ +200°C (-4 ÷ 392°F)
- Process pressure range: 0,8 ÷ 5 bar (11,6 ÷ 72,5 psi)
- IP protection rating: IP65 (dustproof, protection against water jets)

\* Depending on the model  
 Standard and X models  
 AT / ATFV models  
 ATFV models  
 ATFV models

## CHARACTERISTICS FOR ATEX / IECEx CERTIFIED PRODUCTS

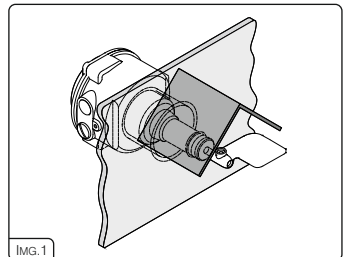
- Ambient temperature: -20 ÷ +70°C (-4 ÷ 158°F)
- Ambient temperature with low temperature optional: -40 ÷ +70°C (-40 ÷ 158°F)
- Process temperature: -20 ÷ +200°C (-4 ÷ 392°F)
- Process pressure range: 0,8 ÷ 1,1 bar (11,6 ÷ 15,9 psi)

\* Depending on the model  
 Standard and X models  
 AT / ATFV models

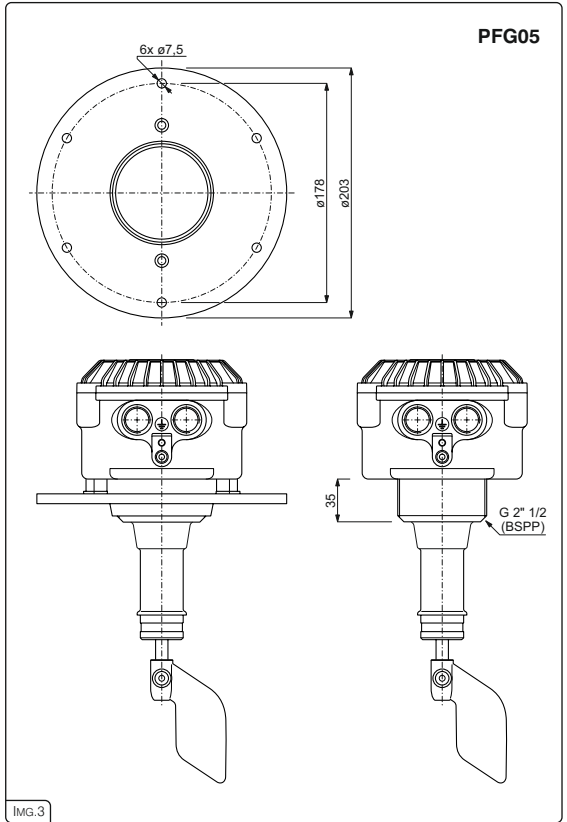
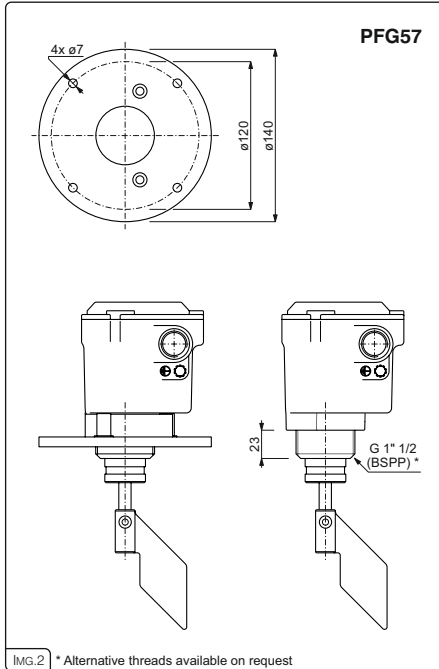
## INSTALLATION

The device can be installed in any position. In case of an horizontal or titled installation, mount the device with the cable entrance on the right side for PFG05 models, or lower side for PFG57 models. The coupling of the instrument with the wall of the container (silos) can be either threaded or flanged; images 2 and 3 show the standard couplings. Always refer to the technical drawings supplied by the Manufacturer together with this manual.

Protect the device from falling material or excessive weight, using protective deflectors. For cable entries, 1 (one) or 2 (two) M20x1,5 threaded holes are available. Seal the cable entries with cable glands or sealing caps suitable for the operating range shown on the label. The protective caps supplied with the device are only for protection during transport and storage, they are not suitable for the use of the instrument and it is responsibility of the installer to replace them.



The diameter of the power supply cable must correspond to the tightening range indicated by the cable gland used.



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



## ELECTRICAL CONNECTION

The entire connection of the device must take place while the device is de-energized.

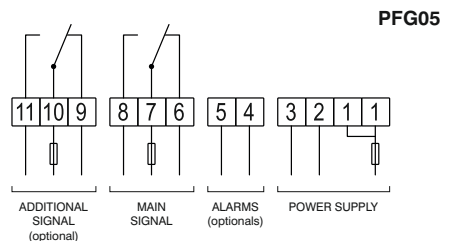
The earthing connection, by means of an M5x8 screw, must take place before any other connection is established.

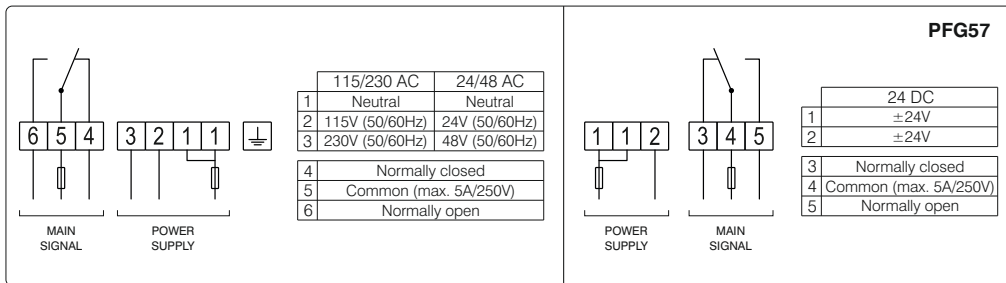
Inside the device there is a terminals for the protective earth connection, marked by relative symbol (IEC 60417 / BS EN 60417-1) in proximity of the cable entry. The cross-sectional area of the protective earth (PE) conductor must be the same as that of the phase conductor (S), with a maximum of 16mm<sup>2</sup>.

Before putting the device into service, make sure that the power supply voltage corresponds to the voltage indicated on the plate. Protect the power and signal carrying cables with an overload protection element (rated current  $\leq 10A$ ).

A disconnect switch must be present near the device, to cut off power supply in the even of a fault. Utilize cables suitable for use up to 90°C. The wiring diagram is located inside the lid.

	115/230 AC	24/48 AC	24 DC
1	Neutral	Neutral	$\pm 24V$
2	115V (50/60Hz)	24V (50/60Hz)	$\pm 24V$
3	230V (50/60Hz)	48V (50/60Hz)	unused
4	Rotation control (voltage as per contact 1)		
5	Voltage control (voltage as per contact 7)		
6	Normally closed		
7	Common (max. 10A/250V)		
8	Normally open		
9	Normally closed		
10	Common (max. 10A/250V)		
11	Normally open		





### 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 instructions. When using electrically operated equipment, it is necessary to take the appropriate safety precautions, required by 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 products itself.

The earthing connection is mandatory and the sole responsibility of the installer.

Level indicators must be used within the range of ambient temperatures indicated on the plate. The models with the optional for low temperatures are suitable for use in temperatures un to -40°C, thanks to the internal self-regulating heater, which guarantees a service temperature inside the casing, necessary to its proper operation. When an internal temperature of 20°C is reached, the heater switches off autonomously.

### SPECIFIC CONDITION FOR USE OF ATEX / IECEX MODELS

In accordance with Directive 1992/92/EC / DSEAR 2002, it is 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 IECEx 60079-14 / BS EN 60079-14 standard.

Install the device in compliance with the Ex-zones indicated in image 4 (all parts can be installed in zone 21; only the mechanical part - paddle, shaft, support - below the connection to process can be installed in zone 20).

Seal the cable entries with cable glands or sealing caps 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 caps supplied with the level indicator are not suitable for use in explosive atmospheres and it is responsibility of the installer to replace them. 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 tightened the cable glands and any sealing caps correctly, before starting the device. Avoid the onset of electrostatic charges on plastic parts (do not rub dry).

In the case of models for high temperature applications

**PFG\*...AT**, use cables suitable for temperatures ≥ 100°C.

For all PFG57\* versions, the equipment should be installed

in such a way that the risk of mechanical danger is low (the aluminium case must be protected against impact).

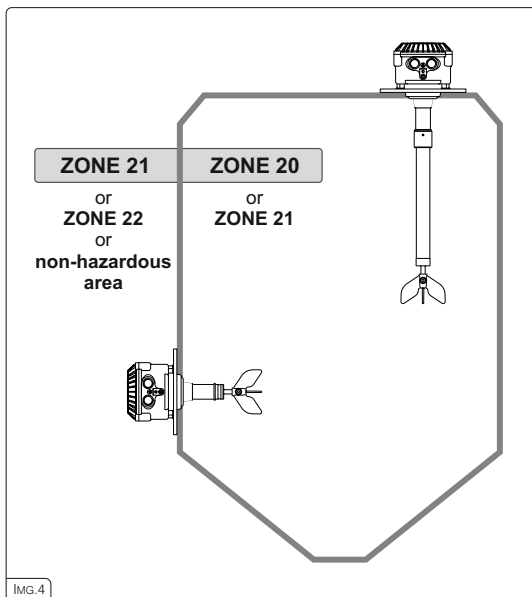
The maximum surface temperature is calculated taking into account a safety margin, but without considering a possible dust deposit on the equipment. During installation, use and maintenance, any electrostatic charging should be avoided, for example by: protection from direct air flow, cleaning with wet clothes, earthing connection of the housing perfectly grounded.

### 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 checks: at each opening of the cover or removal of the instrument, visually check the sealing gaskets present.

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 screws on the cover must be fully tightened and the cable glands and/or sealing caps must be properly tightened; make sure that the power and grounding terminals are correctly connected and in good condition.

## REPAIR

The level sensors series **PFG05\*** and **PFG57\*** can only be repaired by the manufacturer CAMLogic or following instructions from the manufacturer. In case of doubts concerning malfunctions or repairs, contact the manufacturer: CAMLogic S.r.l. - Via dell'Industria 12-12/A - 42025 Cavriago (RE) - Italy.

In any case, the 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.

## AVAILABLE CONFORMITIES AND CERTIFICATIONS

UE conformity	Present in all models..
UK conformity	Available for all models.
EAC conformity	Available for all models.
Food contact compliance	Available for all PFG05X and PFG57X models.
ATEX certification, Zone 20/21	Available for all models, up to 200°C (392°F). The condensation filter and/or the M12 connector accessories do not invalidate this certification. However, the lamp accessory precludes the choice of this certification.
ATEX certification, Zone 22	Available for all models, up to 200°C (392°F), including those with lamp.
IECEx certification	Available for all models, up to 200°C (392°F). The condensation filter and/or the M12 connector accessories do not invalidate this certification. However, the lamp accessory precludes the choice of this certification.

## Ex MARKING DETAILS

	II	1/2	D	Ex	ta/tb	IIIC	T**	IP65	Da/Db	ATEX MARKING for dusts, Zone 20/21
	II	3	D	Ex	tc	IIIB	T**	IP65	Dc	ATEX MARKING for dusts, Zone 22
				Ex	ta/tb	IIIC	T**		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.
										Dust types: IIIC (conductive dusts) IIIB (non conductive dusts)
										Temperature class (max. surface temperature reached by the device): T85°C = standard version T200°C = high temperature versions (PFG*.../AT)
										IP65 (Ingress Protection) - 6 = dust-tight, no dust ingress; 5 = protected against water jets, limited ingress protection.
										EPL (Equipment Protection Level); Da = very high level of protection Db = high level of protection.