

ICC and ICC-V

Capacitive level indicator
for solids

Operating Instructions

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- ▶ **Read these Safety Instructions before using the switch for the first time and follow the Operating instructions.**

Safety instructions

1. The installation, initial operation and maintenance should only be carried out by a qualified expert with electrical know-how.
2. Comply with the local and statutory rules and/or the VDE0100.
3. Before electrical connection, check the specifications on the data plate and the technical data of this manual.
4. A fuse must be connected in series to the supply voltage, according to the Standard and Normative documents.
5. Protect the signal contacts of the limit switch against voltage peaks when inductive or capacitive loads are connected.
6. The device may be put into operation only if the electrical connection is correct. To secure the type of protection, the sealing cap and the gasket must be placed correctly and the screw nut of the cable gland has to be fixed and fastened to the cable entry.
7. The rod must not be struck by the filling stream. Therefore the bulk material stream should be directed or redirected accordingly, or install a stable deflector or protective cover. Also, this protection roof or cover has to be installed in the detection of minimum levels in silos or vessels where heavy loads due to the nature of the materials or the emptying system may damage the rod.
8. For a proper function in side mountings, the device should be installed with a 20 ° to 30 ° slope from the horizontal onto the silo wall to facilitate the flow of the material and to prevent the material from remaining over the probe.
9. For a proper function, the device should be installed with a distance of minimum 300 mm from the silo walls.
10. Switch off the power supply, before disconnecting the device.

Operating instructions

1. Specification

1.1 Intended use

The capacitive levels indicators ICC and ICC-V are to be used to control the maximum or minimum level of bulk solids in silos or vessels.

The model ICC has a Stainless Steel rod recovered of PTFE and the devices can have a shaft up to 2.000 mm length depending of the product to control.

The model ICC-V is for vertical mounting and has a Stainless Steel cable rope that can be Polypropylene recovered under request and a Stainless Steel counterweight. The devices can have a rope shaft up to 15.000 mm length depending of the product to control.

Both models have a insensitive rod between the probe and the process connection to avoid the possibility of settle of the product over the probe and false signals. It is not recommended for sticky solids or products that have the tendency to settle over probe.

1.2 Function

The rod must to be exposed to the material. When the level of product reaches the rod, the control unit reverses the signal due to a change of the capacity of the environment.

When the product disappear from the detection range, the signal turns to the initial position.

These devices have inside the housing a regulation system that allow the adjustment of the sensitivity due to a nut in the electronic module.

1.3 Technical data

Manufacturer	Talleres Filsa, S.A.U.	
Address	Bernat Metge, 33 08100 Mollet del Vallès (Barcelona)	
Name	Capacitive level indicator	
Type	ICC	ref: 2160-...-001
	ICC-V	ref: 2161-...-001
	ICC-V rec. PP	ref: 2161-...-002

Supply voltage

2160-230-001, 2161-230-001 230 V AC (50 ... 60 Hz)
and **2161-230-002**

2160-115-001, 2161-115-001 115 V AC (50 ... 60 Hz)
and **2161-115-002**

2160-024-001, 2161-024-001 24 V AC (50 ... 60 Hz)
and **2161-024-002**

2160-2122-001, 12 ... 35 V DC

2161-2122-001

and **2161-2122-002**

Power consumption 1 VA

Cable entry 2 of M20x1.5

Relay output

1 NO + 1 NC

1 A / 250 V AC

Function status

Under voltage: green LED

Relay enabled: red LED

Product temperature

-10 °C ... +90 °C

Ambient temperature

-10 °C ... +60 °C

Protection

IP65 according DIN EN60529

Weight

1.40 kg depending on the model

1.4 Materials

Housing

Polycarbonate

Rod

Stainless Steel 1.4305

Rod cover

PTFE

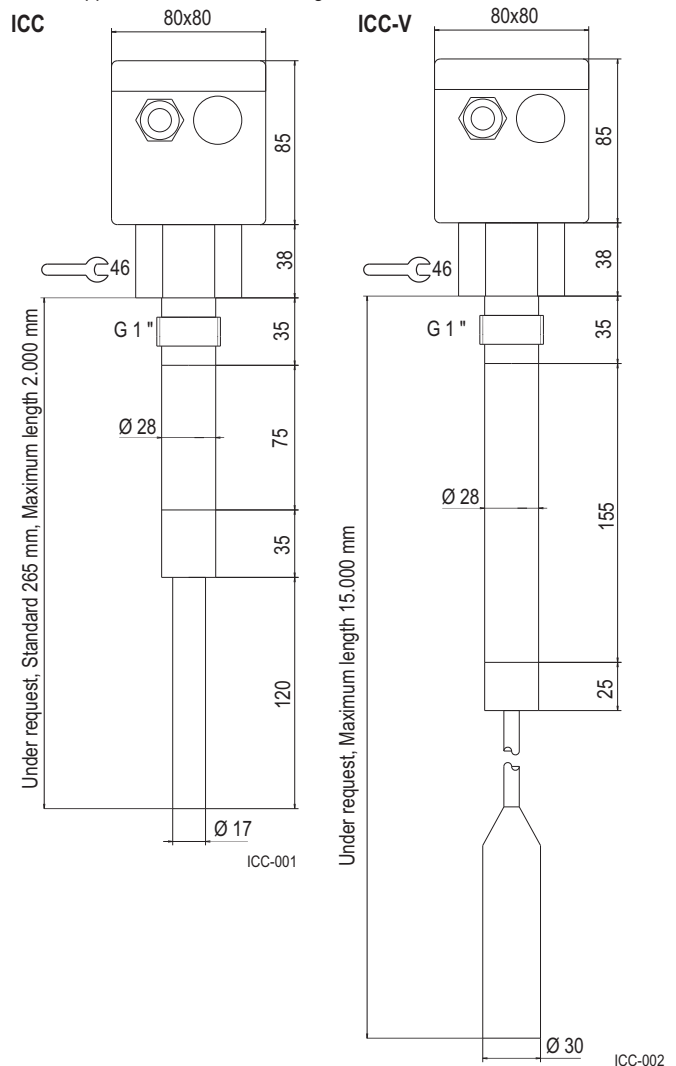
Cable

Stainless Steel

(Under request Polypropylene recovered)

1.5 Dimensions

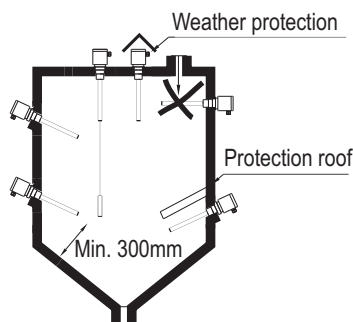
Approximate measures are given in mm.



2. Installation

2.1 Preparing for use

- Read the Safety Instructions and the Operation Instructions before using the controller.
- The rod must not be struck by the filling stream. Therefore the bulk material stream should be directed or redirected accordingly, or install a stable deflector or protective cover. Also, this protection roof or cover has to be installed in the detection of minimum levels in silos or vessels where heavy loads due to the nature of the materials or the emptying system may damage the rod.



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- For a proper function in side mountings, the device should be installed with a 20° to 30° slope from the horizontal onto the silo wall to facilitate the flow of the material and to prevent the material from remaining over the probe.
- For a proper function, the device should be installed with a distance of minimum 300 mm from the silo walls.

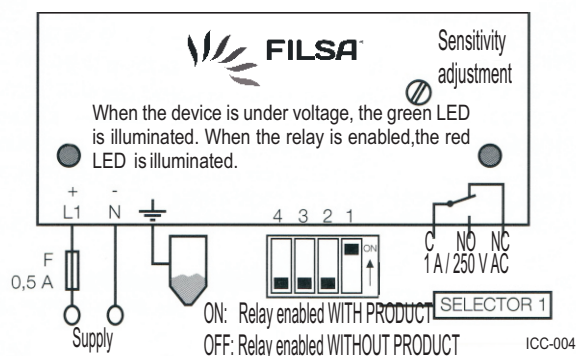
2.2 Mechanical connection

The device can be mounted horizontally or vertically depending on the model.

The normal installation is by screwing the device onto the deposit wall, with a mounting flange or with an appropriate support to fix it.

2.3 Electrical connection

Connection diagram



ICC-004

Cable gland

- Fasten the cable gland after making the electrical connection.
- Fix and fasten the screw nut of the cable gland to make sure of the water-tightness.

3. Use

3.1 Commissioning

- Put the controller into operation only if the installation and the electrical connection have been done correctly.

3.2 Normal operation

- Use the pneumatic controller in its intended application only.
- Comply with the specifications on the data plate and the technical data of this manual.
- If the controller is damaged, disconnect it immediately.
- It is forbidden to make changes to the device. This violates the Normative.

3.3 Inexpert handling

- Ignoring the Safety instructions and the Operating instructions.
- Not intended use.
- Making changes or handling the controller.
- Violation against applicable Law and Standards.
- Using of non original parts.

4. Maintenance, servicing and spare parts

4.1 Maintenance

- If used correctly, no specific maintenance is required.

4.2 Servicing

- Check and review the state of the housing, the rod and the correct commutation of the electrical contact, as well.

4.3 Spare parts

- Use original spare parts.
- The only possible spare part for these controllers is the electronic module.

5. Storage

- Store the controller in a dry and dust-free environment.

6. Disposal

- Switch off the power supply, before disconnecting the device.
- The controller can be recycled.
- The disposal applies to the valid environmental Guidelines according to the location of the carrier and the local manufacturing conditions.

FILSA constantly strives to improve its products and reserves the right to modify designs, materials and data without prior notice.

Keep this manual for further questions!