

Capacitive Limit Detection *nivocompact FTC 431*

Compact level limit switch for bulk solids



FTC 431
with disk probe,
for flush mounting from
the side.
For maximum detection
of heavy bulk materials
or
for minimum detection
of light bulk materials.

Applications

The Nivocompact FTC 431 is used for limit detection in silos containing bulk solids (for minimum or maximum level indication).

Application Examples

Sand	Glass aggregate
Gravel	Moulding sand
Line	Ore, crushed
Plaster	Aluminium shavings
Cement	Grain
Pumice	Flour
Dolomite	Sugar beet chips
Kaolin	Fodder

and similar bulk solids

Note:
Bulk solids should have dielectric
constants $\epsilon_r \geq 3.0$.

Advantages:

- Complete system consisting of probe with plug-in electronic insert:
 - simple mounting, low installation costs
 - for automation and control systems (PLC, PLC, PC, relays, contactors, etc.)
- No moving parts in silo:
 - no wear, long operating life
 - no maintenance
- Probe flush with silo wall
 - no internal structures
 - no material build-up

Endress + Hauser

Nothing beats know-how

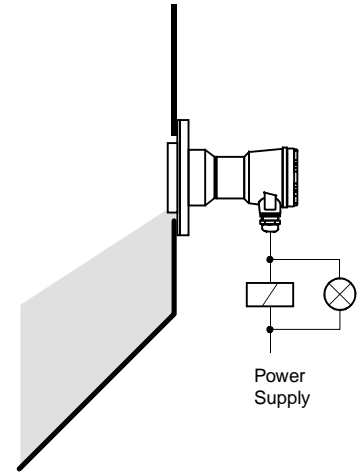


The Complete Measuring System

The Nivocompact is an electronic switch. The entire measuring system consists of:

- Nivocompact FTC 431
- power supply and
- connected control systems, switches, signal transmitters (e.g. process control systems, PLC, relays, microcontactors, lamps, sirens etc.)

The capacitive level limit switch Nivocompact FTC 431 in practise.



Technical Data

Operating Data

Operating temperature in silo:
-20 °C...+60 °C

Operating pressure p_e , according to operating temperature: up to 6 bar

Max. permissible load on disk probe: up to 60 N/cm², frontal, depending on temperature

Minimum dielectric constant ϵ_r of material: 3.0

Ambient temperature for housing:
-20 °C...+60 °C

Storage temperature: -40 °C...+85 °C

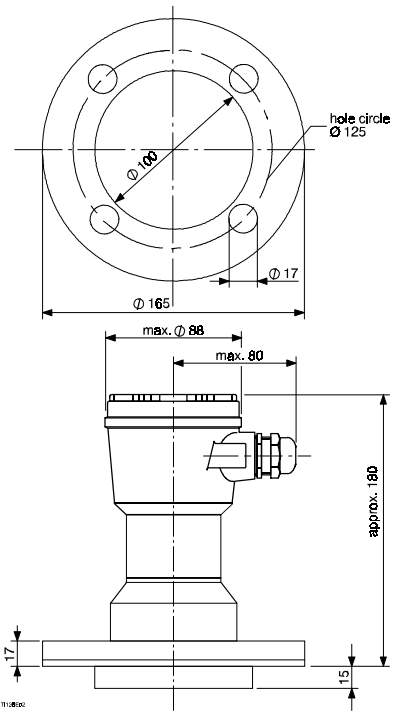
Process Connection

Flange:

Aluminium flange with PP layer on vessel side, for counter flange DN 50, PN 16 conf. to DIN 2502, expanded from DN 50 to \varnothing 101 mm.

Material of disk probe:
steel, insulated with PP

Protection of instrument conf. to DIN 40050: IP 50



Dimensions FTC 431

Housing Versions: see TI 133

Electrical Data: see TI 133

Connection: see TI 133

Subject to modification.

Project Planning

Material and Construction of Silo

The FTC 431 can be installed in silos with walls made of metal, synthetic or wood; the aluminium flange forms the counter electrode to the disk probe.

Mounting should only be on square silos which have straight walls or on round silos with large diameters.

Filling the Silo

The filling stream should not be directed onto the probe.

Distance Between Probes

If more than one probe is mounted in a silo, then a minimum distance of 0.5 m must be allowed for in order to avoid mutual interference.

Angle of Material Flow

Note the angle of material flow or the outlet funnel when determining the measuring point.

Operating Temperature and Load

The resistance to physical load of the disk probe is reduced at very high or low temperatures. The Nivocompact FTC 431 should therefore only be used for minimum detection with light bulk materials (mounted on vertical silo walls) or for maximum detection.

Installation Point

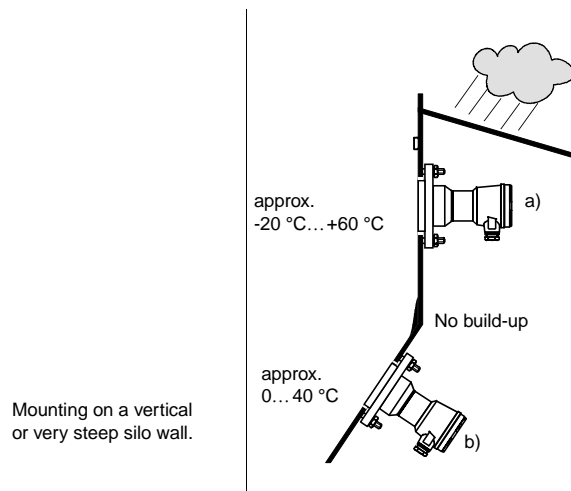
The Nivocompact FTC 431 (Protection IP 50) is designed for mounting in dry areas.

The disk probe has a diameter of 100 mm.
Cut into the silo wall so that the disk probe fits exactly.

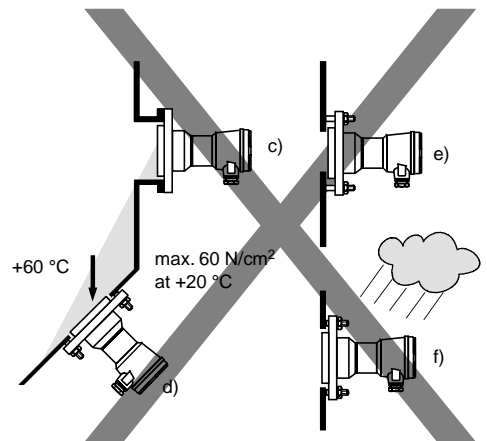
The 15 mm thick disk probe should be completely flush with the inside wall of the silo.

Application Examples

Correct Installation



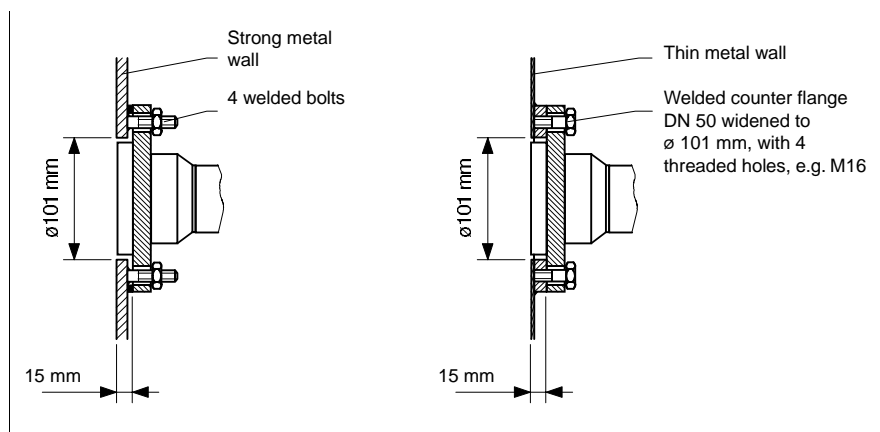
Incorrect Installation



- a) In an indoor area or under a protective roof.
Area cut out of the silo wall is as large as the disk probe.
Probe surface flush with the internal wall of the silo.
- b) In a steep outlet cone where no material can gather.
This position is only for lower temperatures.

- c) Mounting pipe too long, material builds up in it.
- d) In an area where there is a deposit or build-up of the material.
The temperature is too high for this position.
- e) Area cut out of silo wall too small.
- f) In open without protective roof.

Mounting Examples



Order Specification Key Nivocompact FTC 431

FTC 431 capacitive level limit switch with disk probe ø 100 mm

Aluminium flange with synthetic disk probe (PP) Weight
1.02 kg

Housing

A Aluminium housing, IP 55 0.43 kg
 K PBTP synthetic housing, IP 66 0.31 kg
 Y Others on request

Electronic Insert

1 21 V... 250 V, 50/60 Hz (EC 20) 0.17 kg
 Two-wire AC connection
 2 PNP 10 V... 55 V (EC 22) 0.17 kg
 Three-wire DC connection
 3 NPN 10 V... 55 V (EC 23) 0.17 kg
 Three-wire DC connection
 4 Relay, 21 V... 250 V AC/200 V= (EC 24) 0.17 kg
 AC or DC connection
 with relay output (change-over contact)
 9 Others on request

FTC 431 Order code

Total weight kg

Supplementary Documentation

- Nivocompact FTC 131/231/331 with rod or rope probe
 Technical Information TI 133
 The Technical Information TI 133 contains all other important details on this Technical Information for the FTC 431,
 e.g. operation, connection, technical data on the electronics.
- Nivocompact FTC 731 or Nivocompact FTC 831 for applications where large build-ups are to be expected.
 Technical Information TI 134

Details When Ordering

- Order code (see above)

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Unser Maßstab ist die Praxis

