TI00052R/09/EN/14.22-00
71633918
2022-09-30



# Technical Information
# **Soliswitch FTE30**

Point level switch
Economical rotary paddle point level switch



## Applications

The universal rotary paddle point level switch is used as a full, empty and demand alarm in bulk solids silos. Its design and materials make the unit suitable for use in the food industry.

Typical applications are level detection in:

- Cereals
- Sugar
- Cocoa
- Animal feeds/Washing detergents
- Chalk
- Dry plaster/cement
- Granulate
- Wood chips/pellets

## Your benefits

- Simple operation
- Proven principle
- Slip clutch
- Degree of protection IP 65

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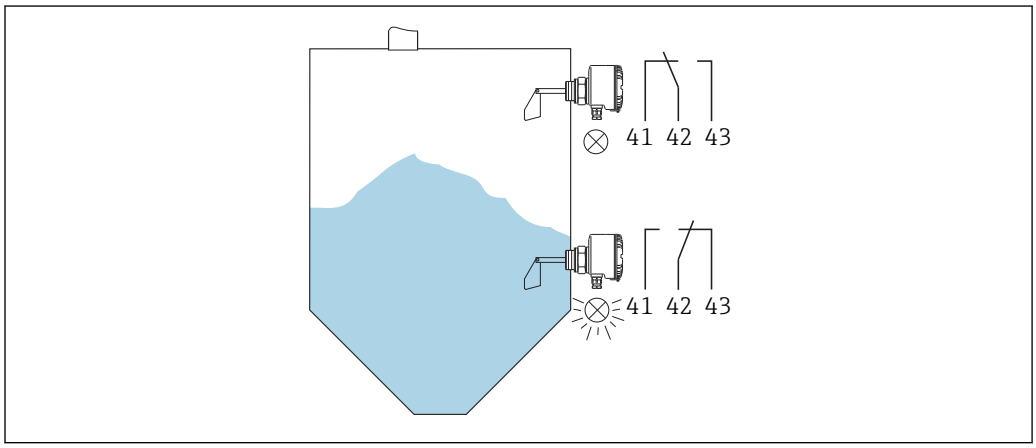
# Function and system design

**Measuring principle**

The shaft and paddle are driven using a reduction gear and synchronous motor. If the paddle is stopped by material covering it, the hinged motor in the housing moves from the rest to the switch position. This movement operates two switch contacts; the first is for external level indication and the second switches off the power to the motor.

The paddle starts to rotate once the medium level falls below the paddle, the hinged motor returns to its rest position and the two contacts switch to normal operation. Intermittent loads that operate against or even in the same direction of rotation are evened out by a slip clutch.

**Measuring system**




*1 Level indication*

Complete point level switch consisting of a shaft with synchronous motor and slip clutch, and single pole changeover contact. Typical application areas are level detection in cereals, sugar, cacao, animal feeds, washing powders, chalk, dry plaster, cement, granulate and wood chips for example

# Input

**Measured variable**

Level of bulk solids (in line with the orientation and length)

**Measuring range**

The measuring range depends on the mounting location of the device and the length of the rotating shaft selected.

# Output

**Output signal**

Binary, the contact changes when the solids reach the set level.

**Switch output**

Potential-free changeover contact

Connectable load

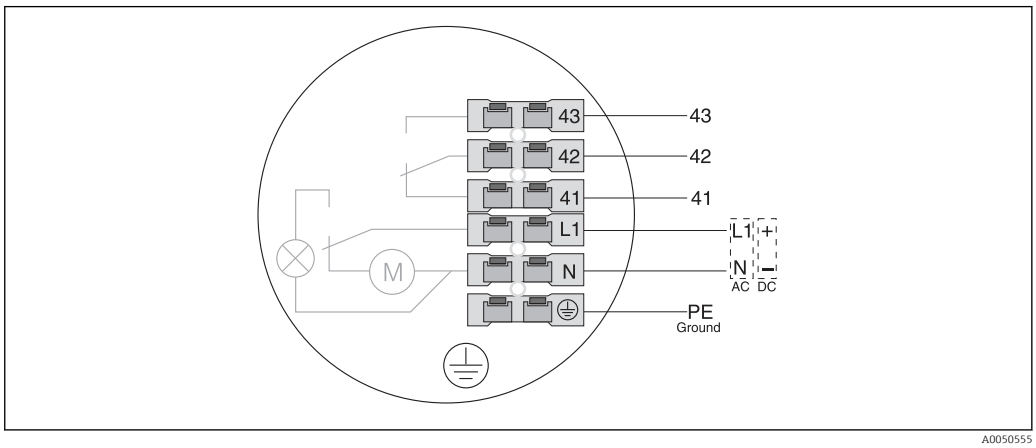
| | |
|---|---|
| **Option: relay 250 $V_{AC}$** | 250 $V_{AC}$, nominal current 100 mA to 10 A, on motor load ≤ 3 A |
| **Option: relay PLC 48 $V_{DC}$** | 48 $V_{DC}$, nominal current 10 to 100 mA |
| **Switching time** | 2 s |

**Mechanical operating life**

Min. 500,000 switching cycles

# Energy supply

**Terminal assignment**




2 *Terminal assignment of the point level switch*

| Symbol | Description |
|---|---|
| ⏚ | Protective ground |
| N | Power connection: N (AC), - (DC) |
| L1 | Power connection: L1 (AC), + (DC) |
| 41 | Normally closed contact |
| 42 | Changeover contact |
| 43 | Normally open contact |

**Supply voltage**

- 20 to 28 $V_{DC}$, $I_{max}$ = 66 mA
- 24 $V_{AC}$ ± 10 %, 50/60 Hz, max. 4.5 VA
- 48 $V_{AC}$ ± 10 %, 50/60 Hz, max. 4.5 VA
- 115 $V_{AC}$ ± 10 %, 50/60 Hz, max. 4.5 VA
- 230 $V_{AC}$ ± 10 %, 50/60 Hz, max. 4.5 VA

**Power consumption**

| | |
|---|---|
| **AC** | P < 4.5 VA |
| **DC** | P < 3.5 W |

**Current consumption**

| | |
|---|---|
| **DC** | $I_{max}$ ≤ 66 mA |

**Cable entries**

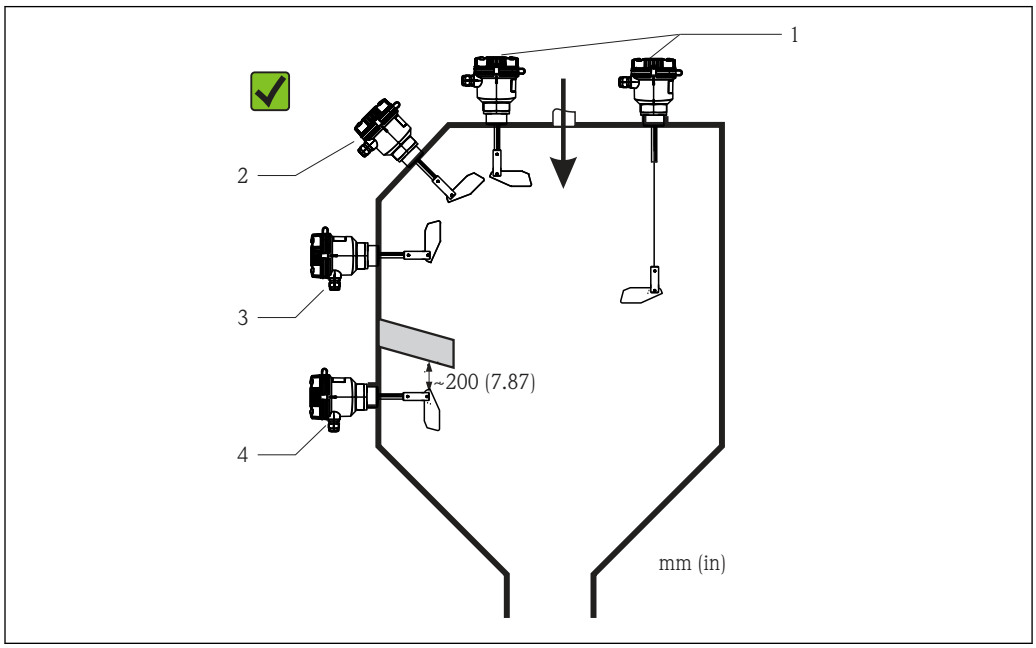
PG 13.5 cable gland for cable diameter 7 to 11 mm (0.28 to 0.43 in)

**Terminals**

- Plug-in terminal 2.5 mm² (14 AWG), solid
- 1.5 mm² (16 AWG) strand with end ferrule

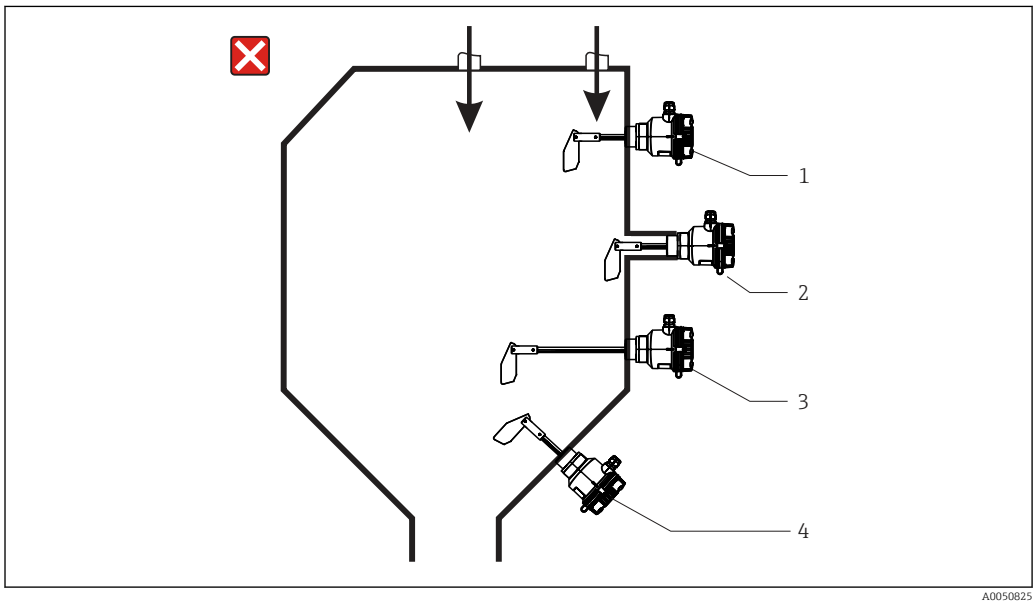
# Mounting

## Mounting location




3 *Correct installation positions of the device*

1 *Vertical from the top*
2 *Angled from the top*
3 *From the side*
4 *From the side with protective cover against falling solids*




4 *Incorrect installation positions of the device*

1 *In direction of solids flow*
2 *Installation coupling too long*
3 *Horizontal with shaft length > 300 mm (11.8 in)*
4 *Angled from the bottom*

## Special mounting instructions

**Side load on the shaft**
- Max. 60 N
- Max. 1 500 N for version with reinforced shaft

**Load on the rope**
Max. 1 500 N

## Environment

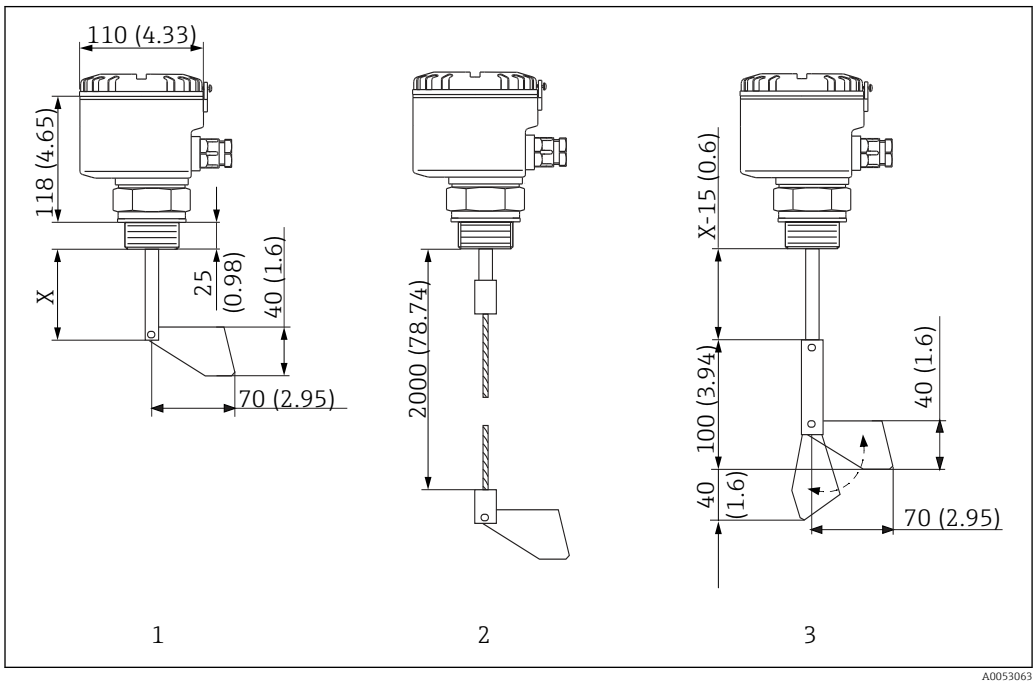
| | |
|---|---|
| **Ambient temperature range** | −20 to +60 °C (−4 to +140 °F) |
| **Storage temperature** | −20 to +60 °C (−4 to +140 °F) |
| **Altitude** | Up to 2 000 m (6 560 ft) above sea level. |
| **Degree of protection** | ▪ IP 65, NEMA 4x, type 4x with closed cover<br>▪ IP 20, NEMA with cover open |
| **Vibration resistance** | IEC 654-3, dimension V.S.1 (v < 3 mm/s, 1 < f < 150 Hz) |
| **Protection class** | I |
| **Measuring category** | II |
| **Pollution degree** | Pollution degree 2 |

## Process

| | |
|---|---|
| **Medium temperature range** | −20 to +80 °C (−4 to +176 °F) |
| **Process pressure range** | 0.5 to 1.8 bar (7.25 to 26.1 psi) (absolute) |
| **Bulk density** | 100 g/l |
| **State of aggregation** | Solids particle size ≤ 50 mm (1.97 in) |

# Mechanical construction

**Design, dimensions**




*1 Shaft version*
*2 Rope version*
*3 Version with hinged rotary paddle*

| Compact version | Extended version | Reinforced version | Rope version |
|---|---|---|---|
| Shaft length X | Shaft length X | Shaft length X | Rope length approx. 2 000 mm (78.74 in) 2 m (78.74 in), can be shortened |
| 75 mm (2.95 in) | 100 mm (3.94 in) | 300 mm (11.81 in) | |
| | 200 mm (7.87 in) | 500 mm (19.7 in) | |
| | 300 mm (11.81 in) | 800 mm (23.6 in) | |
| | 400 mm (15.75 in) | | |
| | 500 mm (19.7 in) | | |
| | 600 mm (23.6 in) | | |

**Additional equipment**

- Hinged rotary paddle (optional or can be ordered as an accessory)
  The paddle is hinged for easier installation of the device using an installation coupling. Because it is spring loaded, the paddle opens again automatically inside the silo. Removal of the device is always possible. The hinged paddle can be mounted in both the solid shaft and rope extended versions.
- Protective cover (accessories)
  When installing the device, the protective cover can be easily mounted at the same time. It protects the device in outdoor use against extreme climatic conditions, e.g. hailstorm when used on the roof of a silo.

**Weight**

Compact version approx. 1 kg (2.2 lb)

**Materials**

| Designation | Material |
|---|---|
| Housing, sealing cover | Polycarbonate with 30% fiberglass |
| Shaft | 1.4305 / 303 |
| Rope extension | 1.4401 / 316 |

| Designation | Material |
|---|---|
| Rotary paddle (standard/hinged) | 1.4301 / 304<br>1.4305 / 303<br>1.4435 / 316L |
| O-ring seal | NBR |
| Shaft sealing ring | Perbunan NBR |
| PG 13.5 cable gland for cable diameter 7 to 11 mm (0.28 to 0.43 in) | Polyamide with neoprene CR seal |
| Process connection | 1.4305 / 303 or PBT plastic (optional) |
| Thermowell | 1.4301 / 304 |
| Protective cover | 1.4301 / 304 |

**Shaft bearing**

High performance friction bearing - maintenance free

**Shaft speed**

Approx. 1 revolution per minute

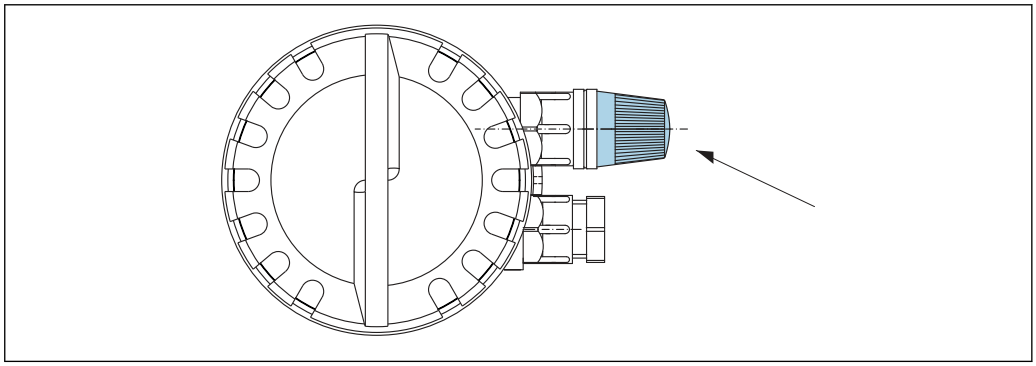
**Process connection**

G1½" thread

# Display and user interface

**Display elements**

**Signal lamp (optional)**
Yellow signal lamp lit in switching state (vertical shaft). The signal lamp is installed in the cable entry. It shows the switching state of the device:
- Signal lamp on: contact 42-43 closed
- Signal lamp off: contact 41-42 closed




*5 Signal lamp as an option*

# Certificates and approvals

Current certificates and approvals for the product are available at www.endress.com on the relevant product page:

1. Select the product using the filters and search field.
2. Open the product page.
3. Select **Downloads**.

# Ordering information

Detailed ordering information is available from your nearest sales organization www.addresses.endress.com or in the Product Configurator at www.endress.com:

1. Select the product using the filters and search field.
2. Open the product page.
3. Select **Configuration**.

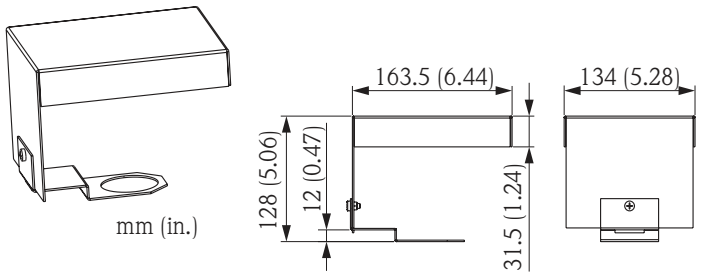
**Product Configurator - the tool for individual product configuration**
- Up-to-the-minute configuration data
- Depending on the device: Direct input of measuring point-specific information such as measuring range or operating language
- Automatic verification of exclusion criteria
- Automatic creation of the order code and its breakdown in PDF or Excel output format
- Ability to order directly in the Endress+Hauser Online Shop

# Accessories

Various accessories, which can be ordered with the device or subsequently from Endress+Hauser, are available for the device. Detailed information on the order code in question is available from your local Endress+Hauser sales center or on the product page of the Endress+Hauser website: www.endress.com.

Always quote the serial number of the device when ordering accessories.

**Device-specific accessories**

| Accessories | Order number |
|---|---|
| Hinged rotary paddle as alteration kit | 50089768 |
| Protective cover, dimensions in mm (in)<br> | 51005551 |
| Rope extension, 2 m (78.74 in) | 50080209 |

# Supplementary documentation

The following types of documentation are available on the product pages and in the Download Area of the Endress+Hauser website (www.endress.com/downloads) (depending on the selected device version):

| Document | Purpose and content of the document |
|---|---|
| Technical Information (TI) | **Planning aid for your device**<br>The document contains all the technical data on the device and provides an overview of the accessories and other products that can be ordered for the device. |
| Brief Operating Instructions (KA) | **Guide that takes you quickly to the 1st measured value**<br>The Brief Operating Instructions contain all the essential information from incoming acceptance to initial commissioning. |

| Document | Purpose and content of the document |
|---|---|
| Operating Instructions (BA) | **Your reference document**<br>The Operating Instructions contain all the information that is required in various phases of the life cycle of the device: from product identification, incoming acceptance and storage, to mounting, connection, operation and commissioning through to troubleshooting, maintenance and disposal. |
| Description of Device Parameters (GP) | **Reference for your parameters**<br>The document provides a detailed explanation of each individual parameter. The description is aimed at those who work with the device over the entire life cycle and perform specific configurations. |
| Safety Instructions (XA) | Depending on the approval, Safety Instructions (XA) are supplied with the device. The Safety Instructions are an integral part of the Operating Instructions.<br>Information on the Safety Instructions (XA) that are relevant for the device is provided on the nameplate. |
| Supplementary device-dependent documentation (SD/FY) | Always comply strictly with the instructions in the relevant supplementary documentation. The supplementary documentation is an integral part of the device documentation. |




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