

A Higher Level of Performance



Data Sheet

RS4000

Rotation Switch Series



For more information, please visit >

Overview

RS4000 Rotation Switch Series



Principle of Operation

The rotating measuring vane is driven by a brushless synchronous motor. Once the material level reaches the vane, it stops rotating, which is detected by a micro switch to stop the motor and switch the level output.

Once the material level begins to fall and the vane is free of material the motor will restart and the vane will rotate again.

Function

The slowly rotating measuring vane is stopped when covered by bulk material. The reaction torque thus generated is converted into an electrical signal.

Typical Uses

For safe and multi-purpose solid level monitoring in all types of containers and silos, it can be used with all bulk materials with a density from starting 100g/l (> 6 lb/ft³).

Certifications

ATEX II 1/2D Ex tD A20/21 and FM DIP Cl. II, III
Div.1 Gr. E, F, G

Primary Areas of Application

Plastic Industry:

Powder, Granular, Pellets and etc.

Building Industry:

Lime, Styrofoam, Molding Sand, Urea, Cement, Gypsum, Crushed Rock

Food Industry:

Milk Powder, Flour, Salt, Sugar, Minerals, Herbs, Grain

Paper & Pulp Industry:

Wood Chips, Saw Dust and etc.

Chemical Industry:

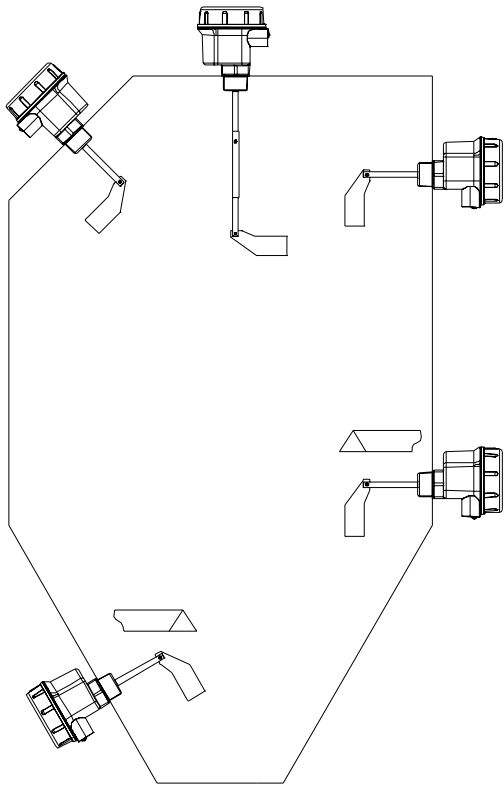
Rubber, Coating, Foam

Features

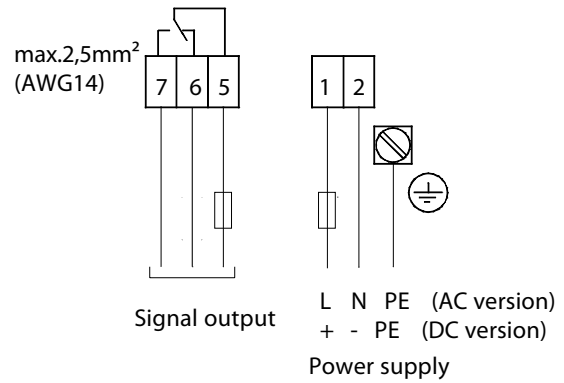
- ATEX and FM approvals for use in dust explosion areas
- No calibration
- High reliability
- Robust
- Wide range of applications
- Enclosure rating IP66/NEMA 4
- Friction clutch - protects gears against mechanical blows to the vane
- Two different probe lengths
- Selectable sensitivity for low density powders



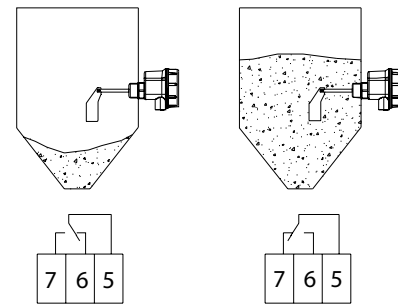
High or low level detector in containers and silos. Wiring



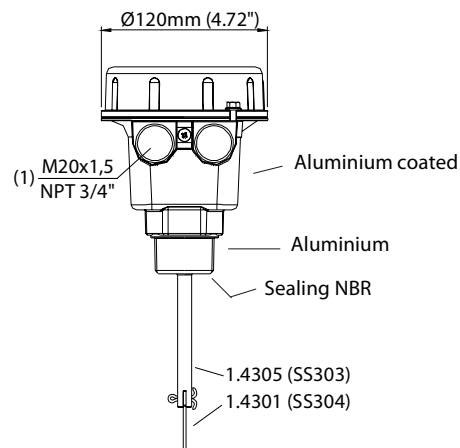
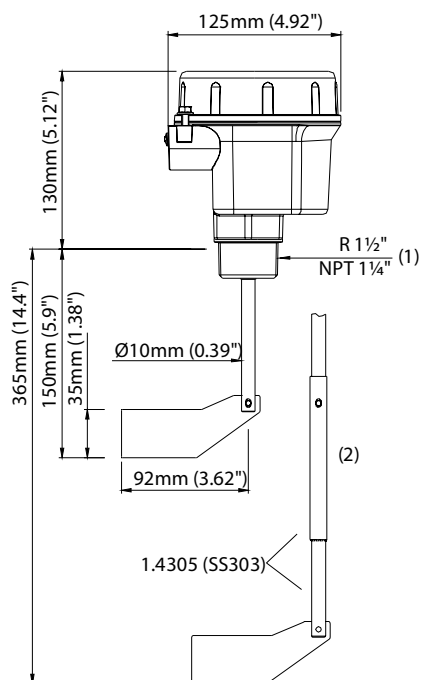
Electrical connection:



Switching logic:



Dimensions



(1) Order dependant
R 1 1/2" (DIN 2999) and M20x1.5
or
NPT 1 1/4" (ANSI B 1.20.1) and NPT 3/4"

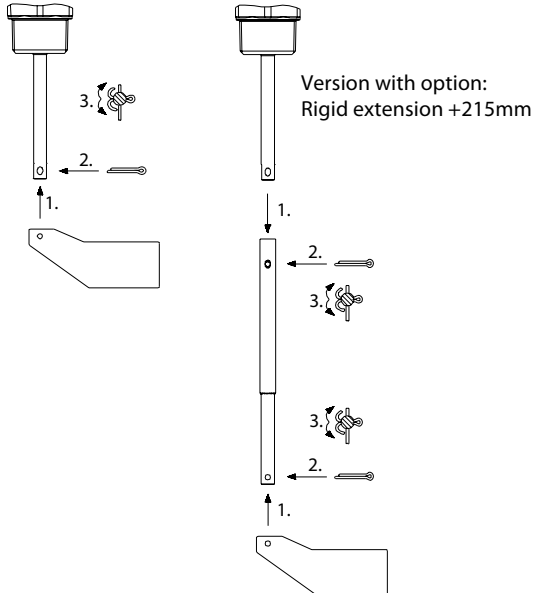
(2) Option:
Rigid extension +215mm

Installation

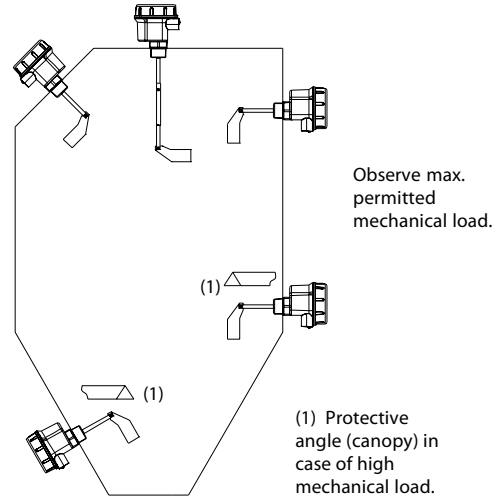
RS4000 Rotation Switch Series



Assembly



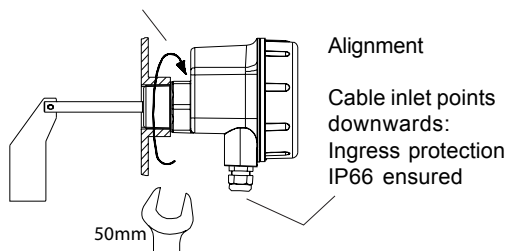
Installation



Installation / Adjustment

Fixing / sealing

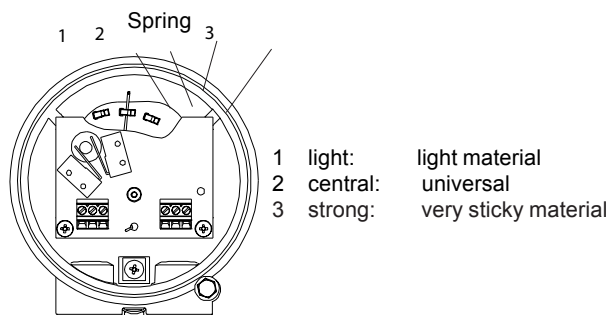
Use teflon tape



Cable inlet

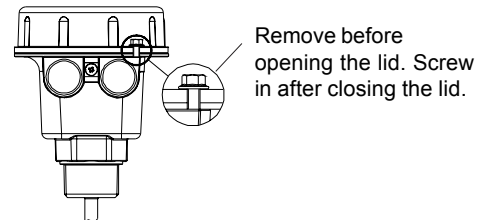
Use suitable cable glands or conduit system.
Unused entries must be tightly sealed.

Spring force adjustment

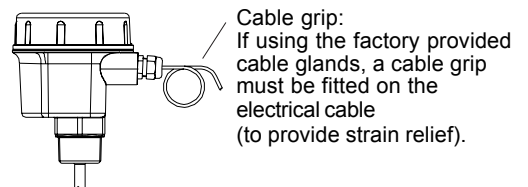


Installation: EX additional requirements

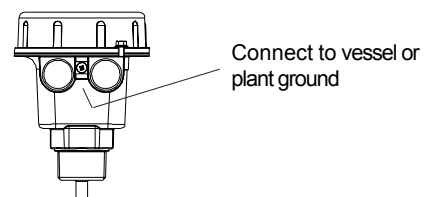
Lid safety lock



Cable grip



External grounding screw



Specifications / Part Numbering

RS4000 Rotation Switch Series



Mechanical Data

Degree of protection

- IP 66 (EN 60529), NEMA 4

Bearing

- High grade slide bearing with teflon coating

Sealing

- Radial shaft sealing NBR (butadien-acrylnitrile rubber)

Friction clutch

- Protects the gear against mechanical blows to the vane

Rotation speed of vane

- 1 rev/min

Signal delay

- Vane free -> covered approx. 1.3 sec
- Vane covered -> free approx. 0.2 sec

Weight ca. 1.2kg (2.6lbs)

Electrical Data

Power supply AC version

- 115V or 230V 50/60Hz all voltages $\pm 15\%$ (including 10% from EN 61010) max. 4VA

DC version

- 24V DC $\pm 15\%$ (including 10% from EN 61010), max. 2.5W

Signal output

- Micro switch SPDT
- Max. 250V AC, 5A, non inductive
- Max. 30V DC, 3A, non inductive
- Permitted fuses max. 5A
- Protection class I
- Installation category III
- Pollution degree 2
- Isolation Power supply to signal output : 2225 Vrms

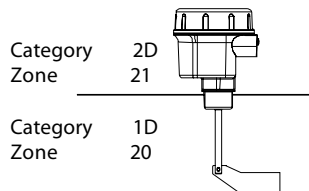
Operating Conditions

- Ambient temperature at housing $-20^{\circ}\text{C} (-4^{\circ}\text{F}) \dots +60^{\circ}\text{C} (140^{\circ}\text{F})$
- Process temperature $-25^{\circ}\text{C} (-13^{\circ}\text{F}) \dots +80^{\circ}\text{C} (176^{\circ}\text{F})$
- Max. process pressure 0.8 bar (11.6psi)
- Min. powder density $> 100 \text{ g/l} (> 6 \text{ lb/ft}^3)$
- Bulk material grain size $< 50\text{mm} (2")$
- Permitted mechanical loading
- Max. 300N (at L = 150mm (5.9")) at the end of the shaft
- Max. 100N (at L = 365mm (14.4")) at the end of the shaft

EX relevant data

Approvals ATEX II 1/2D Ex tD A20/21 and FM DIP Cl. II, III Div.1 Gr. E, F, G

Zone classification for ATEX



Max. surface temperature

Ambient temperature		Max. surface temperature	Temperature class
Zone 21	Zone 20		
+ 40°C (104°F)	80°C (176°F)	85°C (185°F)	T6
+ 50°C (122°F)	80°C (176°F)	95°C (203°F)	T5
+ 60°C (140°F)	80°C (176°F)	105°C (221°F)	T4A

Part Numbering

Model

RS4000 Rotation Switch Series

Power Supply

- A 230 VAC 50-60 Hz, 1 rev/min
- B 115 VAC 50-60 Hz, 1 rev/min
- C 48 VAC 50-60 Hz, 1 rev/min
- D 24 VAC 50-60 Hz, 1 rev/min
- E 24 VDC, 1 rev/min

Output Options

- S Switch only, 1 relay
- Z Special Request

Housing

- S Standard Aluminium Coated

Mounting

- TR Conical Thread 1.5" DIN 2999 (comes with M20x1.5 thread for conduit entry)
- TN125 1.25" NPT Thread (comes with 3/4" NPT thread for conduit entry)
- TN15 1.5" NPT Thread (comes with 3/4" NPT thread for conduit entry)

Approval Standard

- X Not Required
- A2021 ATEX Dust (Grp II Cat 1/2 D Ex tD A20/21 IP6X T)

Probe Length

- P15 15 cm (5.9")
- P37 37 cm (14.6")

RS4000 A S S TR A2021 P15

Accessories

- RS-ADP-002 Adapter socket, 1.5" NPT galvanized, (1.25" NPT mounting thread only)
- RS-CA-GLA-M20-003 Cable gland M20x1.5
- RS-PLUG-M20-004 Blind plug M20x1.5
- RS-PLUG-NPT-005 Blind plug 3/4" NPT, brass