

A Higher Level of Performance



Data Sheet

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## RS4000

### Rotation Switch Series



For more information, please visit >  
[www.hawkmeasure.com](http://www.hawkmeasure.com)

# 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/ft<sup>3</sup>).

### 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:

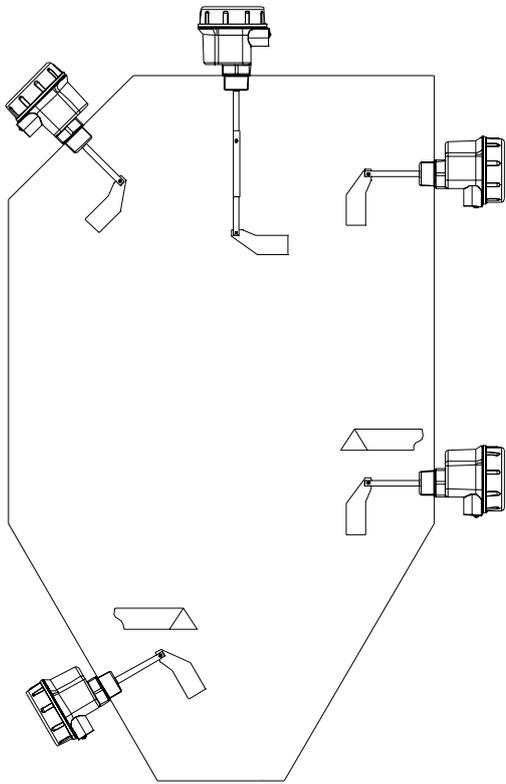
Rubber, Coating, Foam

### Features

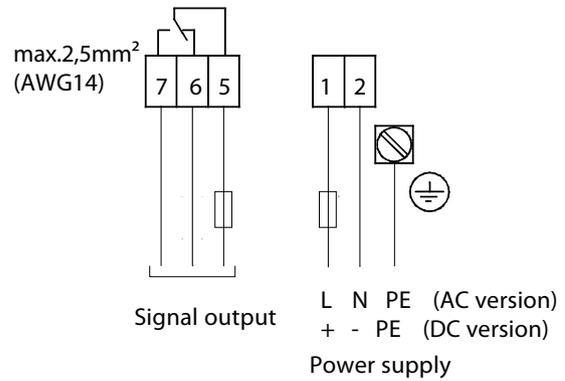
- ATEX and FM approvals for use in dust explosion areas
- No calibration
- High reliability
- Robust
- Wide range of applications
- Enclosure rating IP66/NEMA 4
- Friction clutch - protects gears against mechanical blows to the vane
- Two different probe lengths
- Selectable sensitivity for low density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



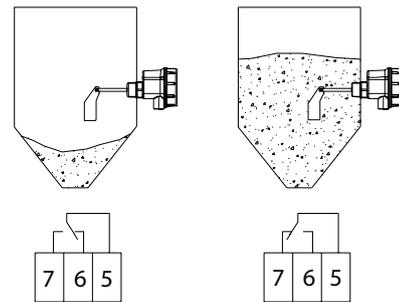
### High or low level detector in containers and silos. Wiring



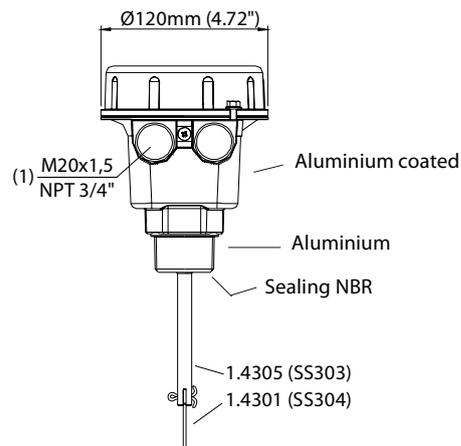
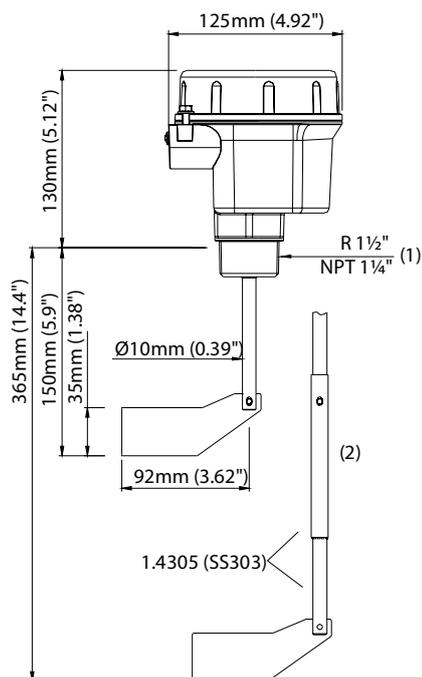
#### Electrical connection:



#### 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"

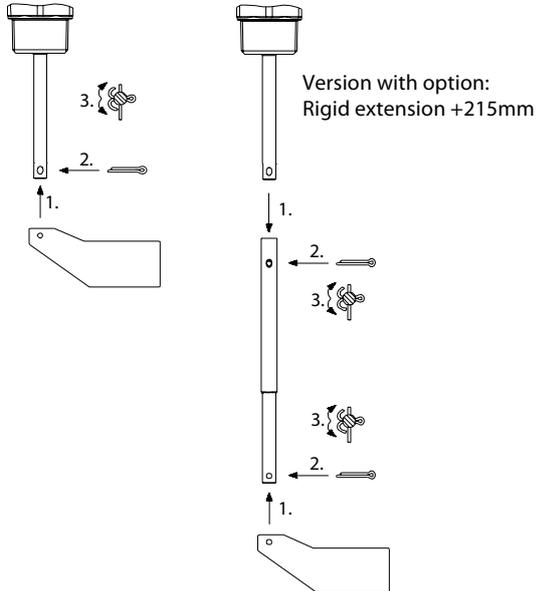
(2) Option:  
Rigid extension +215mm

# Installation

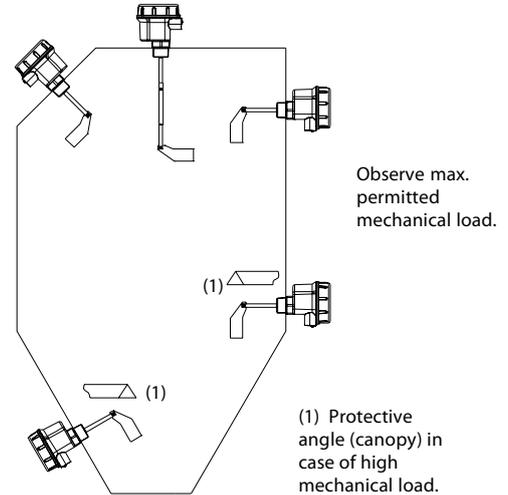
## RS4000 Rotation Switch Series



### Assembly



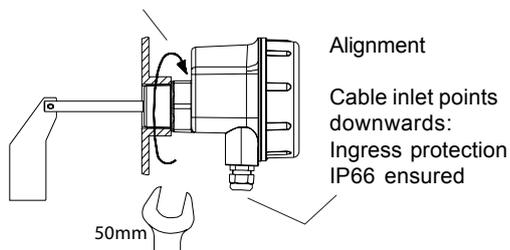
### Installation



### Installation / Adjustment

#### Fixing / sealing

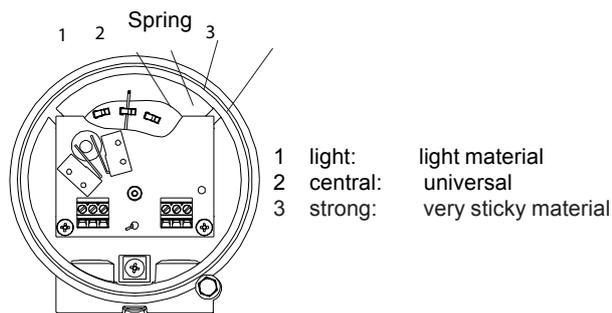
##### Use teflon tape



#### Cable inlet

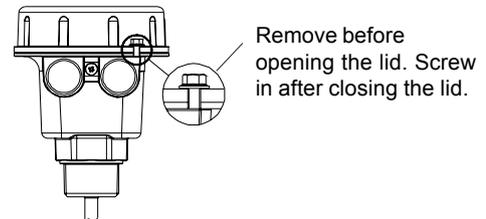
Use suitable cable glands or conduit system.  
Unused entries must be tightly sealed.

#### Spring force adjustment

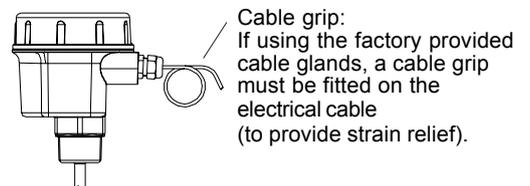


### Installation: EX additional requirements

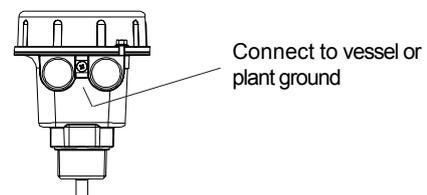
#### Lid safety lock



#### 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  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ) ..+  $60^{\circ}\text{C}$  ( $140^{\circ}\text{F}$ )
- Process temperature  $-25^{\circ}\text{C}$  ( $-13^{\circ}\text{F}$ ) ..+  $80^{\circ}\text{C}$  ( $176^{\circ}\text{F}$ )
- Max. process pressure 0.8 bar (11.6psi)
- Min. powder density > 100 g/l (> 6 lb/ft<sup>3</sup>)
- Bulk material grain size <50mm (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

### Hawk Measurement Systems

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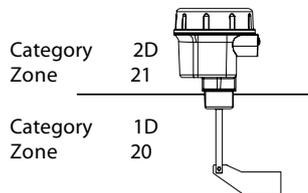
Additional product warranty and application guarantees upon request.

Technical data subject to change without notice.

### 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

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#### 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

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