

ELS-R series

Rotary paddle Level-Limit-Sensor

Instruction Manual

Adpro-Instruments Ltd.
Malta

General Safety /Warning Notes

Installation, maintenance and commissioning must be accomplished only by qualified technical personnel.

The product must be used only in the manner outlined in this instruction manual. In the case of inexpert handling or handling malpractice, the safety of the device cannot be guaranteed.

For terminal connection of the device, the local regulations or VDE 0100 (Regulations of German electrotechnical Engineers) must be observed.

Switch off the supply voltage before opening the device.

All field wirings must have insulation suitable for at least 250V AC. The temperature rating must be at least 90°C.

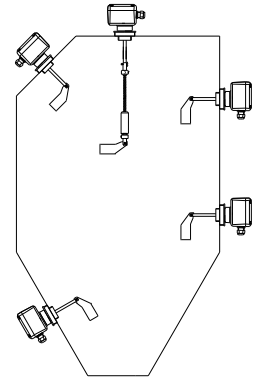
In the case of a defect, the distribution voltage must automatically be cut off by a RCCB protection switch so as to protect the user of the device from indirect contact with dangerous voltage.

A voltage-disconnecting switch must be provided near the device.

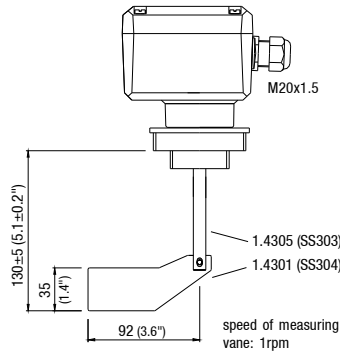
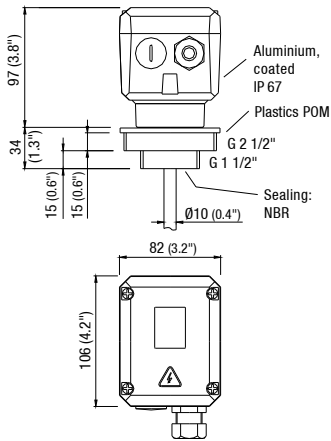
Materials of construction must be checked on their chemical compatibility.

Applications

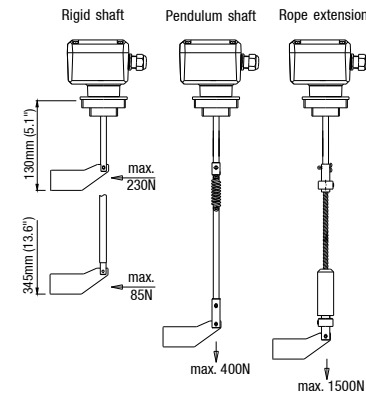
Level Limit Switch for monitoring of bulk goods.
Applicable as full-, demand- and empty detector.



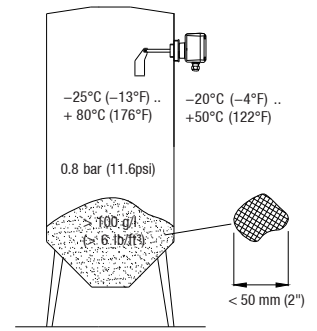
Technical data / Process specifications



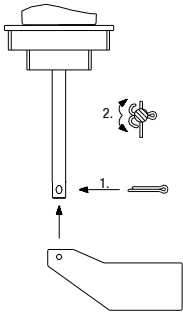
Dimensions in mm (inch)



Version with extension only permitted as full detector.

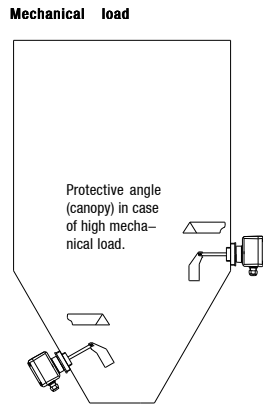


Assembly



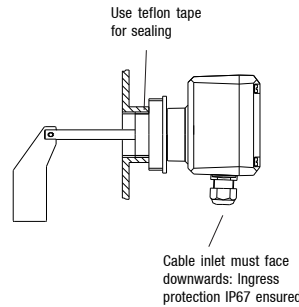
Note:
For assembly of shaft/rope extensions see separate instruction delivered with the extensions.

Installation



Version with extension only permitted as full detector.

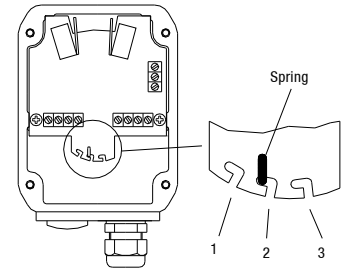
Fixing / Sealing



Use suitable cable glands or conduit system. Not used entries have to be closed tight.

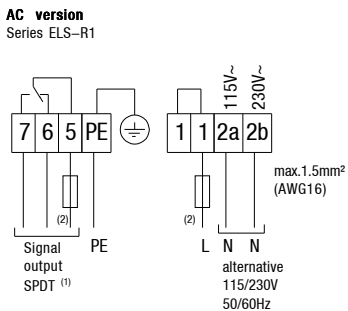
Adjustment

Adjustment of the spring force



- 1 light: light material
- 2 central: universal
- 3 strong: very sticky material

Electrical connection



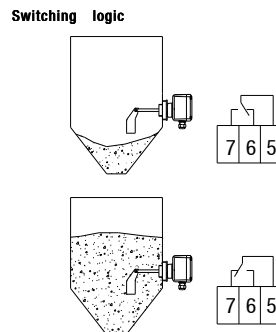
Supply voltage ±10% (including 10% from EN 61010), max. 4VA

- (1) max. 250V AC, 2A, 500W
- max. 300V DC, 2A, 60W
- (2) fuse max. 10A, HBC, 250V, fast or slow

Supply voltage ±10% (including 10% from EN 61010), max. 2.5W

- (1) max. 250V AC, 2A, 500W
- max. 300V DC, 2A, 60W
- (2) fuse max. 10A, HBC, 250V, fast or slow

Switching logic / Maintenance



Maintenance
Normally not required

EC - Declaration of Conformity

Manufacturer Adpro-Instruments, Malta
Type Level Limit Sensor, Series ELS-R

2006/95/EC Low Voltage Directive

Applied standards for evaluation of the unit:
EN 61 010-1

2004/108/EC Electromagnetic compatibility

Applied standards for evaluation of the unit:
EN 61 326

We hereby confirm, that the above-mentioned unit corresponds with the essential safety targets, which are fixed in the above mentioned directives.

Information to the signer:

Name: Dipl. Ing. (FH) A. Haug, Technical Manager
Date: 02/2014
Unterschrift / Sign: *A. Haug*

solido®



Standard



Pipe extension



Pendulum shaft



Metal rope extension



Level detection at low level price

The rotating paddle sensor Solido® 500 offers excellent value for money and is suitable for most bulk solid applications as well as for applications in hazardous areas – dust explosion (ATEX).

It is extremely reliable and very easy to use – the perfect device for simple level limit measurement.

Solido – developed in Germany, produced in Europe (Malta)!



Applications

Suitable for all kind of materials such as:

- flour
- grain
- feed
- wood chips
- cement
- sand
- chalk
- plastic granulate
- mineral fertilizers
- mixtures



Contact

UWT Level Controls LLC
4445 Malone Road
38118 Memphis TN
USA
Tel: +1 901 531 6090
Fax: +1 901 531 6095
www.uwtlevel.com
info@uwtlevel.com

Features

Housing: Powder coated aluminium housing

Process connection: Aluminium

Length: 150 mm (5.9")

Extension length: rope up to 2m (87.7"), pendulum shaft up to 1m (39.4"), pipe extension up to 350mm (13.8")

Supply Voltage:
230V AC, 115V AC, 24V DC

Certificates:
ATEX, FM, TR-CU
(Dust explosion-proof)

Working principle

A motor driven shaft causes a vane to rotate. Once the material level reaches the vane, thereby preventing further rotation, switches are activated which result in an output signal and the motor stops.

When the vane is free again from material, the output signal is reset and the motor driven shaft rotates again.



Solido® 500

Level Limit Switch for Solids
Technical Information



Adpro-Instruments Ltd.
ADVANCED PROCESS INSTRUMENTS

Applications / Principle of operation

General Description

The Solido® 500 bin level indicator is an electromechanical rotating paddle limit switch designed for level monitoring of bulk solid materials. When installed on a vessel containing bulk solid material, it may be used to indicate high level for overflow protection, low level for empty detection, or at any point along the height of a bin at which point level indication is necessary.

Principle of Operation

A rotating measuring vane is driven by a brushless synchronous motor at one revolution per minute. When material in the vessel makes contact with the vane, rotation is impeded and the resulting motor torque activates an output switch and stops the motor. As material in the vessel ceases to impede rotation of the vane, a spring mechanism returns the unit to a normal state, thereby deactivating the output switch and reactivating the motor.

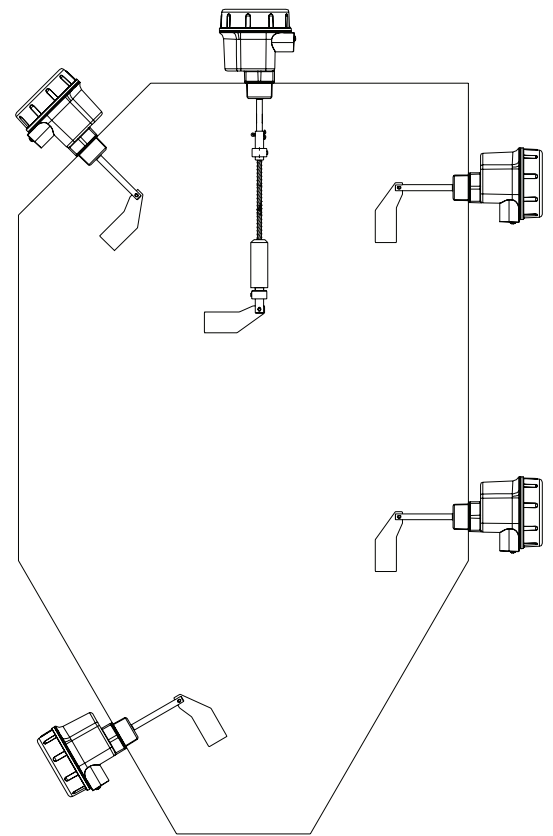
Applications

The Solido® 500 bin level indicator is designed to detect the presence of most bulk solid materials, including:

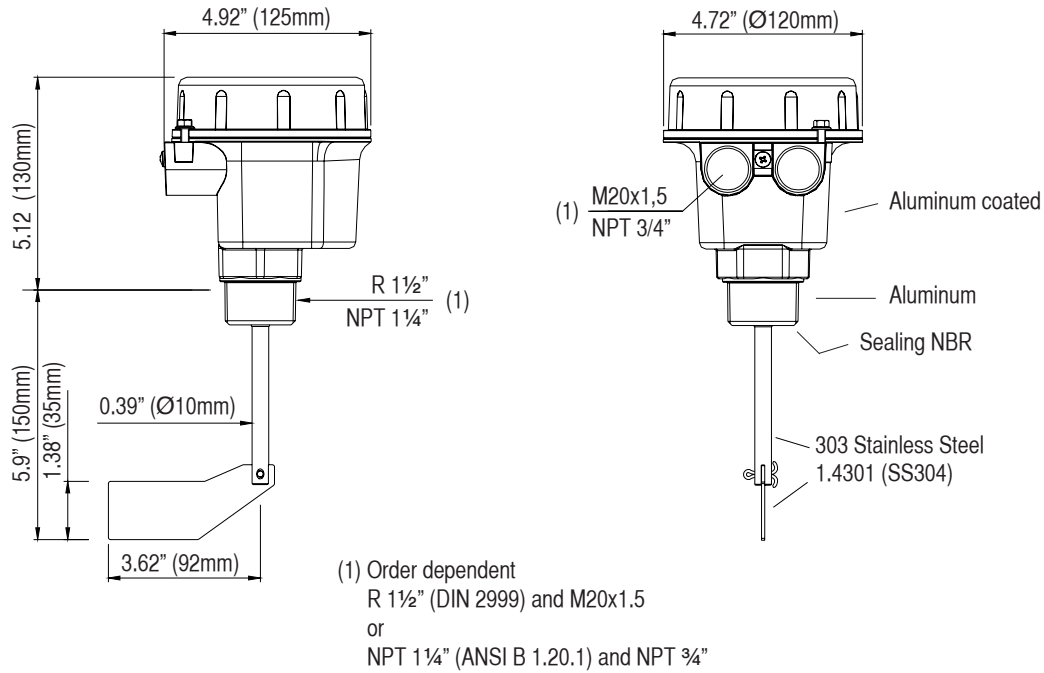
- Plastic Powders and Granulates
- Building Materials
- Food Materials
- Wooden Fibers and Pellets
- Any Material with a Density Able to Impede Vane Rotation

Features

- Deactivating Motor for Extended Life
- Insertable Paddle
- Field Adjustable Sensitivity
- Dual Conduit Entries
- Stainless Steel Paddle and Shaft
- Threaded Screw-on Cover
- Shaft Extensions
- Multiple Voltages
- FM and ATEX hazardous approvals

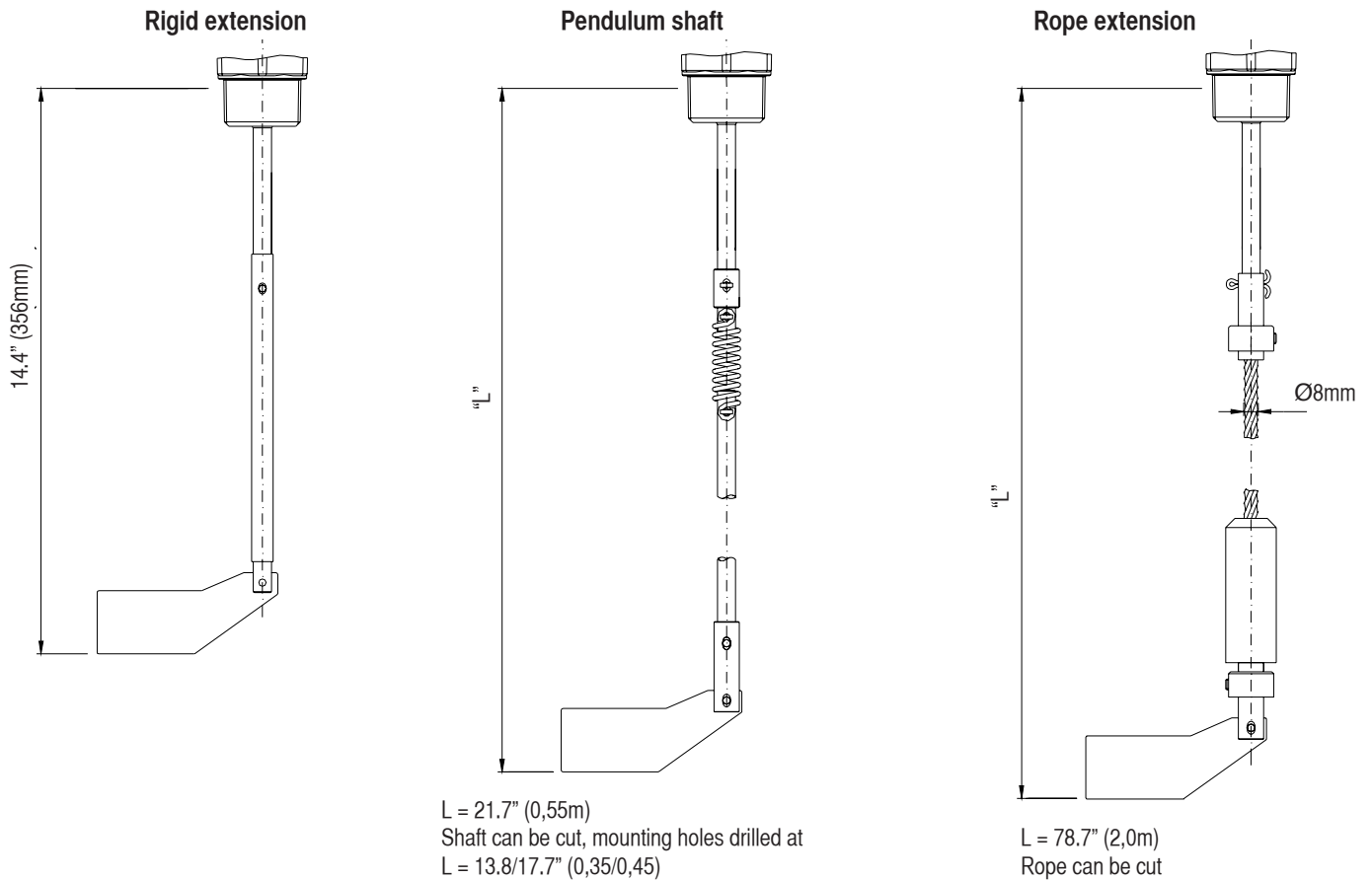


Dimensions / Construction material



Extensions (accessory)

All extensions will be delivered as a kit.
 All parts 303 Stainless Steel.
 Observe maximum permitted load. For use only during high level detection inserted at top of vessel.



L = 21.7" (0,55m)
 Shaft can be cut, mounting holes drilled at
 L = 13.8/17.7" (0,35/0,45)

alternative
 L = 41.3" (1,05m)
 Shaft can be cut, mounting holes drilled at
 L = 25.6/29.5/33.5/37.4" (0,65/0,75/0,85/0,95m)

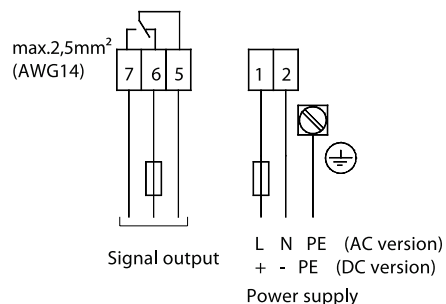
Mechanical data

Housing	Aluminum, powder coated
Ingress Protection	NEMA 4; IP 66
Wetted Materials	Paddle: 304 SS Exposed Shaft 303 SS Shaft Seal: NBR (butadiene-acrylnitrile rubber) Process Connection: Aluminum
Bearing	Teflon Coated Slide Bearing
Friction Clutch	Protects gears against mechanical loads to the vane/shaft
Process Connection	1 1/4" NPT Threaded
Conduit Connection	3/4" NPT Female Threaded
Weight	2.6 lbs (1.2kg); Without Extensions

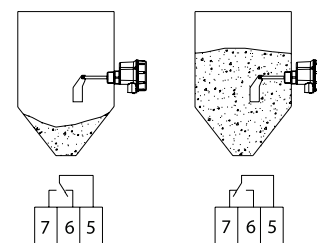
Electrical data

Power Requirement	115 VAC, 230 VAC, and 24VDC Available
Power Consumption	AC versions: 4VA DC version: 2.5W
Signal Output	SPDT relay contact microswitch AC versions: 5A @ 250V DC versions: 3A @ 30V
Permitted Fuse	5A maximum
Protection Class	I
Installation Category	III
Pollution Degree	2
Isolation	Power Supply to Signal Output: 2225 Vrms

Electrical connection:



Switching logic:



Operating conditions

Temperature Limits	Process: -13 to 176°F (-25 to 80°C) Ambient: -4 to 140°F (-20 to 60°C)
Process Pressure	11.6 psi (0.8 bar) maximum
Sensitivity	6 lb/ft³ (100 g/l) minimum (three sensitivity settings)
Bulk Material Properties	2 inch (50mm) maximum grain size
Permitted Mechanical Load	Standard shaft: maximum 67 lb _f (300N) Extended shaft: maximum 22 lb _f (100N)
Traction Load:	Solid rod shaft: 90 lb _f (400N) Rope extension shaft: 337 lb _f (1500N)

Hazardous Rating Data

Approvals	FM DIP Cl. II,III Div.1 Gr. E, F, G and ATEX II 1/2D Ex tD A20/21
Zone classification for ATEX	see figure right hand

Max surface temperature

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

