JIWEI
计为自动化

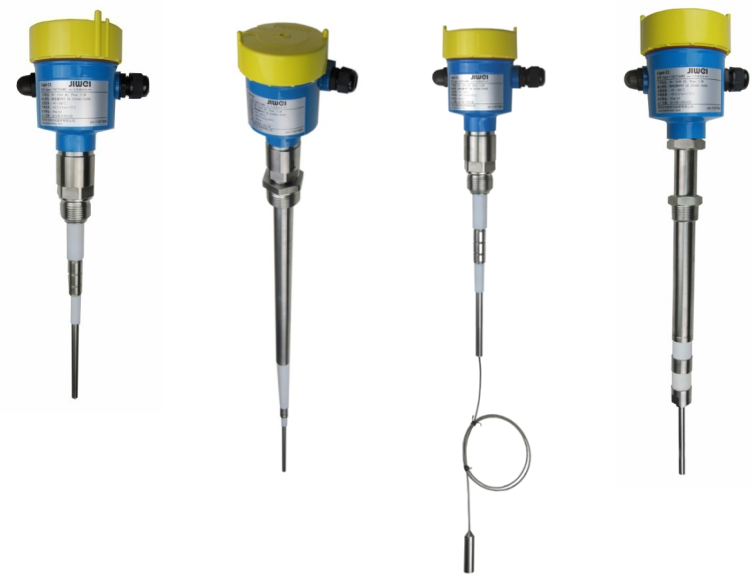
Cape-11H Ultra-high Temperature RF Admittance Level Switch

SHENZHEN JIWEI AUTOMATIONS LTD

Cape-11 RF Admittance Level Switch

Cape-11 RF Admittance Level Switch is a level measurement instrument mainly designed for powdery coal ashes, solid granules and adhesive materials. It possesses merits and benefits of other similar products in the market. Besides that, Jiwei has developed innovative techniques and manufacturing technologies to make Cape-11 very competitive. Cape-11 has high reliability and strong flexibility.

In Cape-11 RF Admittance Level Switch series products, a probe is designed to detect the change of the capacitance and impedance between the probe and the vessel wall to fulfill the material level measurement and control. The internal electronic unit, the reactance between the measurement electrode and the wall of an empty vessel constitute a balanced bridge circuit which outputs a stable oscillation signal. As the medium level rises, the measured medium covers the measurement electrode, the reactance between the electrode and the wall of the vessel changes. It causes imbalance of the bridge circuit and stops the oscillation as a result. A post-circuit is designed to detect the change of the output signal from the bridge circuit and generate an alarm signal. In addition, the oscillation signal at radio frequency is not only applied to the measurement electrode but also applied to a shield pole through a 1: 1 voltage-follower. So the measurement electrode and the shield pole have the same electric potential, phase, and frequency, but these two electrodes are insulated from each other. Even if there is medium buildup on the probe, because there is no electric potential difference between the measurement electrode and the shield pole, and the reactance change on the shield pole has no effect on the detection of the post-circuit. Therefore, only the reactance change on the measurement electrode induced by the filled medium between measurement electrode and the wall of the vessel will be detected by the post-circuit. It eliminates the effect of medium buildup on the level measurement.



Standard Guard Rope Ultra-high temperature

Four models of Cape-11 RF admittance Level Switch

Jiwei Cape-11 Admittance Level Switch series products possess merits and benefits of other similar products in the market. On top of that, we have developed innovative techniques, focused on details of manufacturing process, introduced strict product process management and quality inspection to ensure Cape-11 works in super high reliability. Compared with other similar products in the market, Cape-11 series products have the following advantages:

- Strong flexibility, widely used for the level measurement of fly ash, solid granules and adhesive materials.
- With dual color LED indicator, the housing with electronics can be rotated during installation to make the orientation of the LED easy for long distance observation.
- Modular design for high reliability, easy installation and maintenance.
- Strong impact resistance with a stainless steel protective sleeve assembled.
- Industry leading design for high temperature endurance, process temperature can be up to 450℃.

Electronic modular

Housing with electronics & LED cover

Hexagon bolt process fitting

High temperature ceramic probe

cable probe

Rolling grove

Cape-11 RF Admittance Level Switch series include four models: Standard, Guard, Rope and Ultra-high Temperature:

Cape-11A Standard: Suitable for level measurement of dust and coal ash etc., flexible and easy for installation and maintenance.

Cape-11P Guard: A stainless steel protective sleeve assembled on standard Cape-11 to enhance the impact resistance of the instrument for heavy materials.

Cape-11R Rope: Suitable for large silos or bunkers, install vertically to effectively avoid the material impact from side.

Cape-11H Ultra-high Temperature: A leading product in the field. The probe is made of high temperature ceramic, can tolerate high process temperature up to 450℃.

Cape-11H Ultra-high Temperature RF Admittance Level Switch

Overview

Cape-11H Ultra-high Temperature Admittance Level Switch is specially designed for applications in which process temperature is over 250° C to 450° C maximum. The probe is made of high temperature ceramics. It is widely used in metallurgy, environmental protection, chemical industry, etc.

Features

- Ceramic probe, process temperature can be tolerated up to 450℃.
- With an external dual color LED indicator and the housing with electronics can be rotated during installation to make the orientation of the LED convenient for long distance observation.
- Modular design for high reliability, easy installation and maintenance.
- Passed third party reliability test and received certification from the third party, extremely high reliability guaranteed.

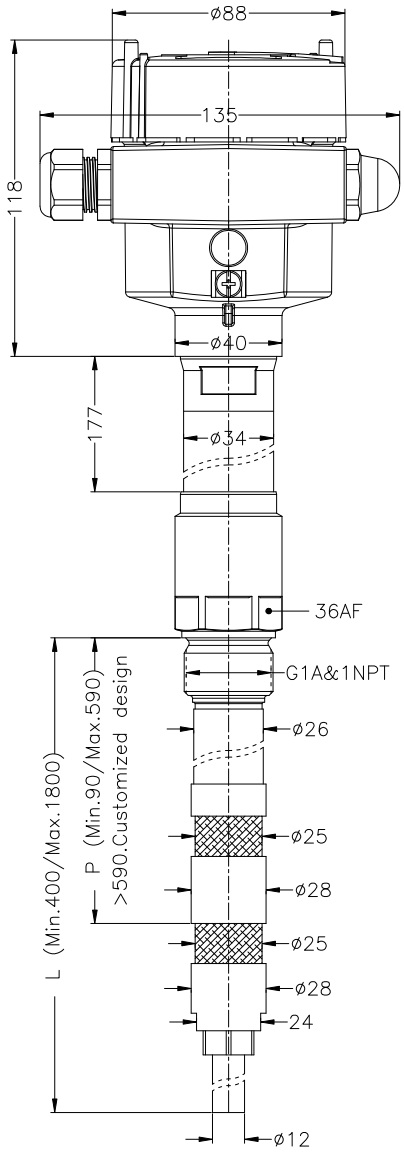
Technical data

Medium	Medium type	Solid powder or granules under high temperature
	Dielectric constant	≥1.6
Probe data	Probe length	400～1800mm
	Shield length	90～590mm, depends on probe length and customer´s requirement.
	Diameter	Φ12mm
Materials	External housing	Aluminum
	Inner housing	Plastic
	Metallic parts	SUS304
	Insulation	Ceramic
Power supply	AC	85～264V AC
	DC	18～30V DC
	Power consumption	≤3W
Switch delay	When immersed	1s
	When laid bare	1s
Signal output	Relay	DPDT, 8A/250V AC/30V DC
	Delay	0～30s continuous adjustable
Operating conditions	Process temperature	-40℃～450℃
	Ambient temperature	-40℃～70℃
	Storage and transport temperature	-40℃～80℃
Approvals	Protection rating	IP66

Typical Applications

- Level measurement for economizer coal ash hopper at a coal-fired power plant.
- Level measurement for sintering ash silo at a smelting plant.
- Level measurement for clinker cooler and clinker silo at a cement plant.

Dimensional drawings



Installation diagrams

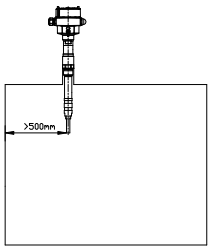


Fig.1

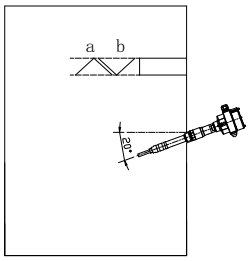


Fig.2

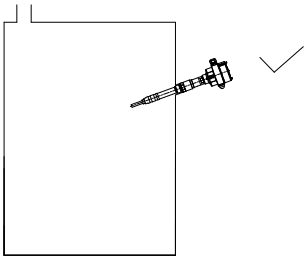


Fig.3

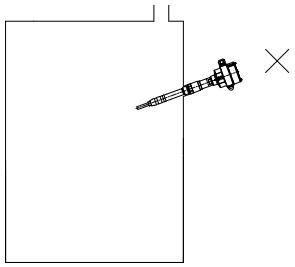


Fig.4

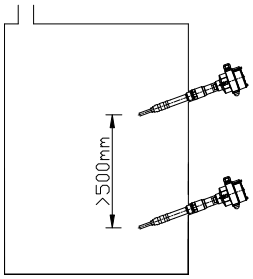


Fig.5

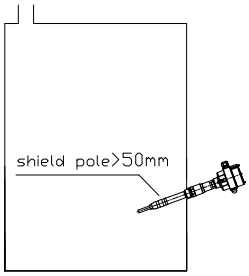


Fig.6

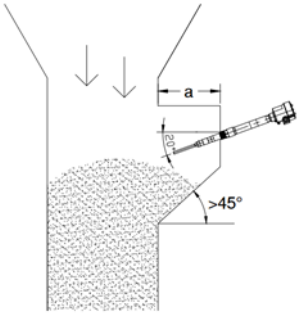


Fig.7

Notes:

- For vertical installation, RF Admittance Level Switch should be mounted at least 500mm apart from the vessel wall.
- For horizontal installation, RF Admittance Level Switch should be mounted approx. 20° inclined to the vessel bottom to avoid medium buildup. If the medium level goes up and down rapidly (the medium fills in or flows out rapidly) or the medium flows rapidly, a protection baffle is needed to ensure Cape-11 work reliably, as Fig.2 shows. The protection baffle should be installed above the vibrating body and should be longer than the intrusion depth (horizontally) of the probe to prevent the probe from impact damage. Generally the protection baffle can be a convex shape (inverted “V” section) as in Fig.2 (a). But when the medium is coarse and abrasive, the baffle in concave shape (erected “v” section) would be a better choice as in Fig.2 (b). The medium could stack up a bit in the concave area to reduce the material impact to the baffle and extend the life time of the protection baffle.
- Please mount the instrument away from the inlet (Fig.3). Avoid installing the instrument near the inlet point (Fig.4) to prevent the instrument from filling impact damage or generating false signals.

- If multiple level switches are needed for one silo or bin, the vertical distance between two probes should be at least 500mm as shown in Fig.5.
- The shield pole of RF Admittance Level Switch should protrude into the silo at least 50mm (Fig.6).
- If the measured medium is with higher density and bigger granular size, and the medium fills in vertically downwards, it will impact the probe. The instrument should be mounted in a recess portion of the container (Fig.6) to protect the probe from impact damage or being bent by the filling material and ensure the life time of the instrument and reliable measurement.

Order information

Cape-11 H □ □ □ — □ □ □ — □ □ □ □

Power supply	A 220 V AC D 24 V DC
Cable entry	M M20 x 1.5 N ½ " NPT
Process fitting	TH Thread G 1"A TM Thread 1" NPT TE Thread G 1¼"A TF Thread 1¼" NPT TG Thread G 1½"A TN Thread 1½" NPT FC Flange DN50 PN16 FD Flange DN80 PN16 XX Customized design
Shield length	Customized, selectable between 90～590mm.
Intruding depth	Customized, selectable between 400～1800mm.

Note: Shield length and Intruding depth are in three and four digits respectively in mm. For example: The shield length is 90mm, expressed as "090"; the intruding depth of 750mm, expressed as "0750".