

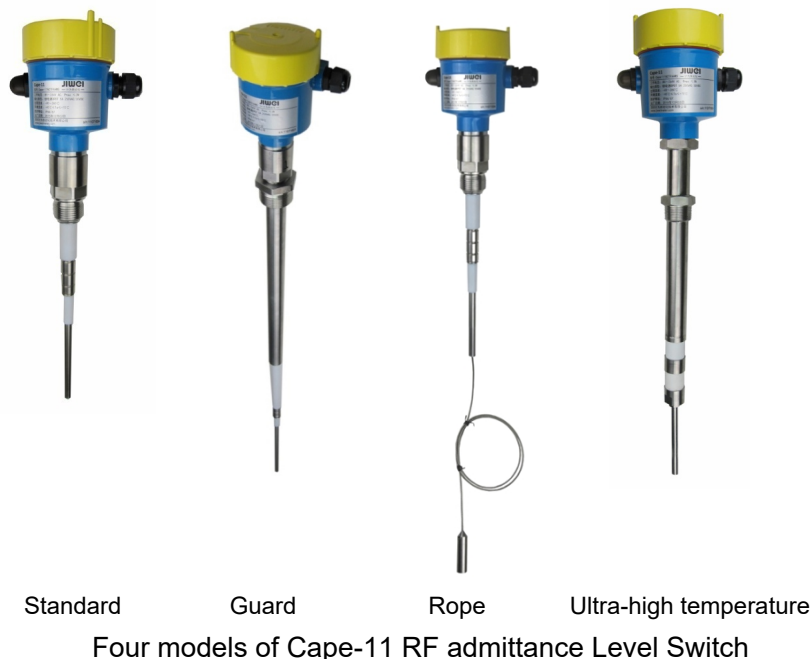
## Cape-11 RF Admittance Level Switch



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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.



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°C.



Electronic modular



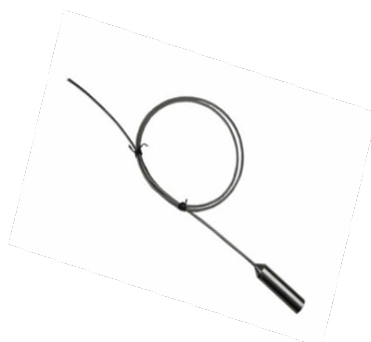
Housing with electronics & LED cover



Hexagon bolt process fitting



High temperature ceramic probe



cable probe



Rolling groove

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°C.

## Cape-11A Standard RF Admittance Level Switch

### Overview

Cape-11A Standard RF Admittance Level Switch can measure capacitance as well as impedance between probe and vessel. It is suitable for dust and coal ashes level measurement. The probe is not susceptible to material buildup. It is flexible for various applications. Cape-11A is with modular design, easy for installation and maintenance. External LED light is better for long distance observation.



### Features

- Excellent flexibility, widely used for the level measurement of fly ash, solid granules and adhesive materials.
- With an external dual color LED indicator and the housing with electronics can be rotated during installation to make the orientation of the LED indicator 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, guaranteed extreme high reliability.
- Inexpensive with super quality, high cost-effective ratio.

### Technical data

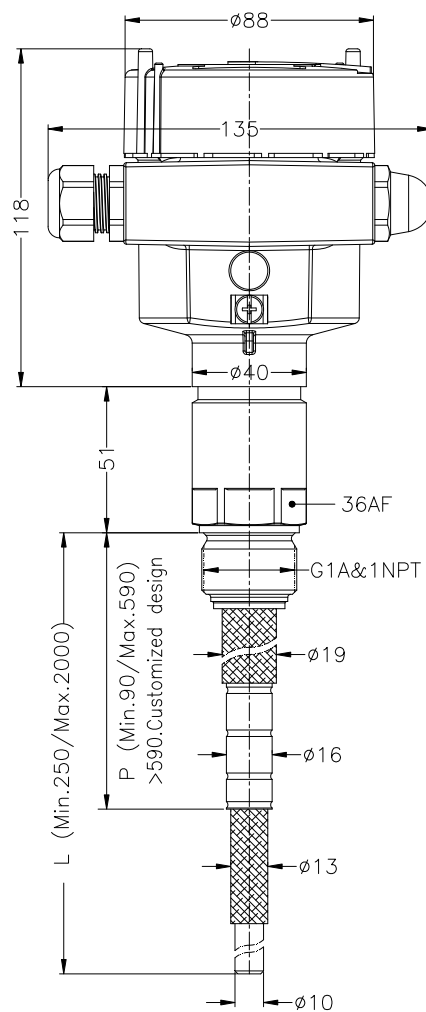
Medium	Medium Type	Solid granules, powdery dust and adhesive materials
	Dielectric constant	≥1.6
Probe data	Probe length	250~2000 mm
	Shield length	90, 240, 300, 590mm, can also be customized.
	Diameter	Φ 8/Φ 10mm
Materials	External housing	Aluminum alloy
	Inner housing	Plastic
	Metallic parts	SUS304, 316L
	Insulation	PTFE
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
	Relay Delay	0~30s continuous adjustable
Operating conditions	Process temperature	-40℃~250℃
	Ambient temperature	-40℃~70℃
	Storage and transport temperature	-40℃~80℃
Approvals	Protection rating	IP66

**Typical Applications**

- Level switches for the electrostatic precipitator bag, the ash hopper and the conveying pump in the ash transport system at a power plant.
- Level switch for the coal ash bunker in the coal ash collecting device at a power plant.
- Level switches for the soot bin and the silo in the flue gas desulfurization apparatus at a power plant.
- Level switch for the limestone silo in a sintering desulfurization apparatus.

**Dimensional drawings**

Cape-11A Standard Model



Installation diagrams

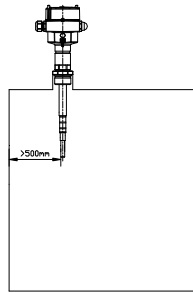


Fig.1

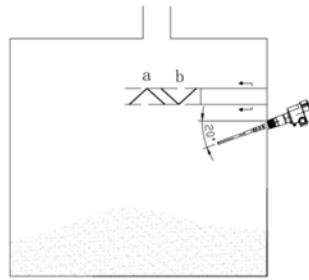


Fig.2

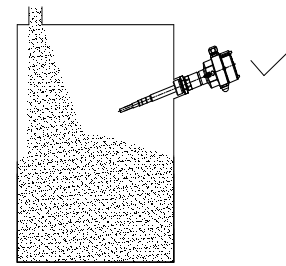


Fig.3

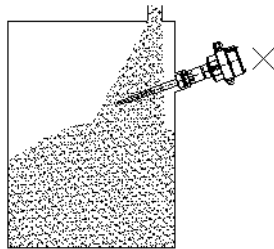


Fig.4

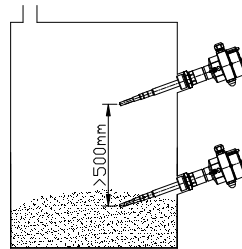


Fig.5

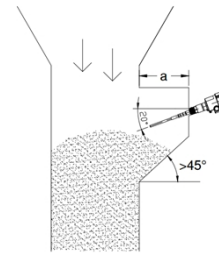


Fig.6

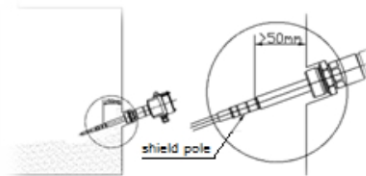


Fig.7

Notes:

- For vertical installation, RF Admittance Level Switch should be mounted at least 500mm apart from the vessel wall.
- For horizontal installation, mount the Cape-11 approx.20° inclined to the bottom of the vessel to avoid the 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 probe 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 if 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 to prevent the instrument from filling impact damage or generating false signals (Fig.4).
- If multiple level switches are applied for one silo or bunker, the vertical distance between two probes should be at least 500mm as shown in Fig.5.

- 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 materials and ensure the life time of the instrument and reliable measurement.
- The shield pole of RF Admittance Level Switch should protrude into the silo at least 50mm (Fig.7).

**Order information**

Cape-11		A										
Power supply	A	220 V AC										
	D	24 V DC										
Cable entry	M	M20 x 1.5										
	N	½" NPT										
Process fitting	TC	Thread G ¾"A										
	TD	Thread ¾" NPT										
	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										
	FA	Flange DN50 PN16										
	FB	Flange DN80 PN16										
	XX	customized design										
Shield length	Common length: 90, 240, 300, 590mm. Or customized length.											
Intruding depth	Common depth: 250, 550, 750, 900, 1000, 1200mm. Customized depth: selectable between 250~2000mm.											

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".