

The Microwave Capacitive Level Switch —CSF112 Series



Features

- Supportting PWM output: wide compatibility.
- Stable detection: unaffected by foam.
- Compact structure: suitable for installation in small space.
- Window-type alarm mode: conductive to the detection of layered media.
- Anti-hanging characteristics: effective detection of adhesion.
- Supporting dual-channel independent alarm: suitable for the detection of layered media.
- Easy to use: easy to set the alarm threshold and view the measured value on site by hand-held communication devices.
- Wetted parts with PEEK and stainless steel: suitable for hygiene and industrial fields.

Working Principle

The microwave capacitive level switch consists of a sensor, a metal housing and an internal electronic unit. An alternating electric field is generated at the tip of the sensor. When the sensor is covered by a media or the dielectric constant of the media to be measured changes, the capacitance of the sensor will change greatly. This change is detected by the internal electronic unit and converted into a switching command. This measurement method can eliminate the influence of adhesion effectively.

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The microwave capacitive level switch has a wide range of applications. It is suitable for the detection of solids, liquids and slurries with a dielectric constant greater than or equal to 1.5. It can be used in hygiene, food and industrial fields.



Specifications

Performance characteristics		Housing				
Measuring principle	Frequency sweep	Material Stainless steel				
Media characteristic	DC≥1.5	Power supply	ipply			
Response time	0.15S	Voltage supply range	1230VDC			
Alarm-delay	030S, adjustable	Power-up time	<1S			
Damping	03S, adjustable	Current consumption (no load)	5mA(typical), 40mA(Max.)			
Process conditions (refer to section "Operation Conditions")		Reverse polarity protection	Yes			
Process temperature (Standard)	-40℃…115℃	Dielectric strenth	500VAC			
Process pressure (Standard)	-0.11MPa	Factory settings	settings			
Electrical connection		Damping	0S			
Connector	4*0.5mm ² cable gland; M12 4-pin connector	Measured value P1000	01000, after the calibration: 100: the probe is in the air 800: the probe is in tap water			
Output signal		Window alarm hysteresis	Whyst=20			
Output type	NPN or PNP	Protection function	Before being unlocked, parameter cannot be modified.			
Switching logic	Normally open(NO) or Normally closed(NC)	Window alarm parameters	Wind0=550, Wind1=1000 (for the detection of water-based liquids) When Wind0≤P1000≤Wind1, the alarm function is activited.			
Voltage drop	PNP:1.5±0.5V, Rload=10K NPN:1.5±0.5V, Rload=10K		provals			
Output current	Max.20mA	Rail transit certification	GBT25119			
Off leak current	<100µA	Explosion protection	Ex ia IIC T6 Ga Ex ia D21 T80 ℃			
Short circuit Protection	Yes	EMI Immunity	EN61326-1:2013 installed in a closed metal tank			
Process connection		EMC Emission	EN61326-1:2013 installed in a closed metal tank			
Connection variants Refer to section "Operating Conditions"		Ambient conditions				
Mounting position	Top, bottom, side	Degree of protection	IP67			
Wetted parts materail	PEEK 304/316L	Humidity	<98%RH, condensing			
Surface roughness of wetted parts	RA<0.8µm	Operation/ storage temperature	Cable gland: -25℃70℃; M12 connector: -40℃85℃			



Operation Conditions



Standard version

Reverse mounting version

	Continuo	ous	Temporary(T<1H)			
Process connection	Process temperature @Tamb<50℃	Precess pressure	Process temperature max. @Tanb<50℃	Process pressure @Process temperature max.		
Thread G1/2, standard version	-40 …115℃	-0.11MPa	135 ℃	-0.11MPa		
Thread G1/2, reverse mounting, standard version	-40…115℃	-0.11MPa	135 ℃	-0.11MPa		
Thread G1/2, standard version, with cooling part	-40…150℃	-0.11MPa	150 ℃	-0.11MPa		
Thread G1/2, hygienic version, standard version	-40…115 ℃	-0.11MPa	135 ℃	-0.11MPa		
Thread G1/2, length 150mm	-40…150℃	-0.11MPa	150 ℃	-0.11MPa		
Thread G1/2, length 250mm	-40…200 ℃	-0.11MPa	200 ℃	-0.11MPa		



Selection Code

CSF112-										
	1	2	3	4	5	6	7	8	9	10
1:License										
XX	Standar	rd version								
СХ	Gas int	rinsic safe	ety type (explosion	-proof un	determin	ed)			
FX	Stive in	Stive intrinsic safety type (Ex iaD 20 IP65 T80°C)								
2:Type of the sensor and process connection										
S0	Standar	Standard version, thread G1/2								
S1	Standar	Standard version, reverse mounting, thread G1/2								
S2	Standar	Standard version, thread G1/2, with cooling part								
S3	Standar	Standard version, thread G1/2, hygienic version								
H1	Thread	G1/2, len	gth 150n	nm						
H2	Thread	G1/2, len		nm						
TT	Special	Special customized								
3:Output	·									
N	NPN									
Р	PNP									
R	Matche	d MPCE								
4:Working mode	!									
A	Single of	hannel al	arm mod	е						
В	Dual inc	dependent	t alarm m	node (NO	+NC)					
С	Dual inc	lependent	t alarm m	node (NO	+NO)					
D	PWM o	utput		· · ·						
5:Material of the ho	using	-								
0	SUS304	1								
8	SUS316	SUS316L								
6:Sealing washer										
Х	NULL									
Т	Special	customiz	ed							
7:Cable interface										
U	4-wire d	cable, len	gth 1M							
R	4-pin M	4-pin M12 connector								
8:Factory setting										
А	Water-b	based liqu	iids settir	ng						
Т	Special	Special customized								
9:Hygienic certifica	tion									
Х	NULL									
А	FDA or AAA									
10:Industry code										
XX	Unspec	ified indus	stry code							