



CAPACITANCE LEVEL SWITCH

Technical Parameter

General description	
Measurement principle:	Sweep frequency
Return difference measurment	± 1mm
Media property	DC ≥ 1.5
Response time	0.2s
Damping time	0-5s(Can be adjusted)
Repeatability	± 1mm
Process conditions	
Process temp(Standard process connection)	-40~115℃
Process pressure(Standard process connection)	-0.1-10MPa
Other connections Process conditons	Refer to Operation conditions t able
Process connection types	
Types	Refer to dimension diagram
Installation location:	Top, bottom, side
Wetted materials	PEEK 304 or 316L
Wetted materials	Ra< 0.8 μm
Environment conditions	
Protection level	IP67
Humidity	<98% RH,there is condensation
Environment temp	Cable outlet type:-25-70 ℃,M12 Connector type: -40-85 ℃
Storage temp	Cable outlet type:-25-70 ℃,M12 Connector type: -40-85 ℃
Output signal	
Output type	NPN/PNP
Output logic(NPN, PNP type)	NO(Normally turn on)NC(Normally turn off)
Output voltage drop(Typical value)	PNP:1.5 0.5V,Rload=10k NPN:1.5 0.5V,Rload=10k
Output current	20mA(Max,Value)
Leakage current	<100uA
Output short circuit protection	Yes
Size	Refer to dimension diagram
Material	Stainless steel
Electrical connection	
Connectionmethod	4x0.5mm 2 Cable wire M12 4 pin connector
Power supply	
Voltage range	12-30VDC
Start time	<1s
Supply current(No load)	8mA (Typical value)40mA(Max,value)
Reverse polarity protection	Yes
Media strength	500VAC

Default factory setting

Damping time	0s
Alarm point parameters AL1	250(low dielectric constant)550(Water-based media)720(Conductive paste) P1000≥AL1 Alarm triggered
Measurement value PV	0-1000: After calibration,100 :Probe in air,900:Probe in water
Return difference alarm	25
Protection function	Parameters cannot be modified before being unlocked

Certification

EMI irradiation	GB/T 24338.4-2009
EMC immunity	GB/T 24338.4-2009
Explosion-proof certification	Ex ia IIC T6 Ga Ex iaD 20 IP65 T80°
Hygienic certification	FDA, AAA

Model Name Components

VRFS	50									
	1	2	3	4	5	6	7	8	9	10

1 Model Name

VRFS 50 series number

2 Output Type

N NPN
R PNP
R Relay (External Module)

3 Software Type

0 One-way alarm
1 Dual independent alarm(NO+NC)
2 Dual independent alarm(NO+NO)
4 PWM pulse width modulation

4 Alarm Setting

D Default (water)
C User specified

5 Healthcare cert

0 No healthcare certificaiton
1 FDA/AAA

6 E-Proof cert

0 No explosion proof certification
1 Intrinsically safe explosion-proof
2 Explosion-proof in dusty places

7 Process material

TI Titanium alloy
6L 316L stainless steel

8 Sealing ring

N No gasket
C Specified material gasket

9 Electrical Connection

M M12A 4-pin header (plastic)
L M12A 4-pin header(metal)
W Wire four-core cable outlet 1 meter

10 Process connection

G0 G0-G1/2 Thread+Standard probe
RG RG-reverse installation G1/2 thread + standard probe
G1 G1-G1/2 thread + cooling neck + standard probe
H0 H0-Hygienic type G1/2 thread + standard probe
H150 H1-G1/2 thread + 150mm deep probe
H250 H2-G1/2 thread + 250mm deep probe

Smart Liquid & Solid Sensor



Able to detect and monitor foam, adhesive and not to be affected by residual material adhering to the sensor probe

Advantages

- Wide applications: Detect Solid/Liquid and Paste
- Compact design: Suitable for tight space installations
- High reliability: Not affected by foam but can detect foam
- Adhesive: Able to detect adhesive and conductive paste/slurry
- Easy to use: Portable device able to check process variable values
- Adhesive: Not affected by adhesive media of maximum viscosity of 50000cp
- Temperature range: standard model 115°C/ high temp model 150°C/liquid contact side 200°C

General Industrial Series

Hygienic Industrial Series

Explosion-proof Series



Industry application

Beverages, milk yogurt, beer fermentation and sterilization treatment, solid-liquid environmental treatment, cosmetics, food sauces, Lithium battery injection, precision engineering, chemicals, etc.

Features

Media separation and phase separation detection

For some specific processes, the material will have different levels of phases, which may need to be identified (such as the oil phase floating on the water surface) or may need to be ignored (such as the foam layer)



Level detection of tanks/vessels and pipelines

Generally, storage tanks, buffer tanks and filling pipelines are equipped with level sensor to detect the level of the material. The extremely short response time of the sensor enables precise and reliable control



Media contamination detection

Media contamination is not only a food safety issue, it is also economically important to be able to remove it from the entire process as early as possible. For example, residual cleaning agents in liquid foods can be reliably detected long before subsequent processing.



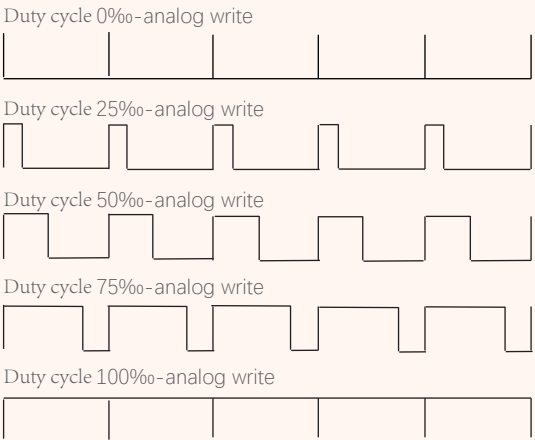
Protection of pipeline pumps

Pump applications are ubiquitous in industrial production, and pump idling is a serious process problem, as it can lead to misalignment or damage to equipment. However, even with viscous media or media prone to crystallization, this condition can still be detected by our sensor.



PWM output for sensors for all applications

Can detect a variety of different media
Using Pulse Width Modulation (PWM) technology, users can detect different media in the same production line or processing tank in order to separate out the final product (such as various flavored soy sauce, beer, etc.). The detection uses an analog time signal, which facilitates continuous measurement. In addition, the time signal can be changed according to the DK value (dielectric constant) of the medium. So it is convenient to carry out continuous measurement and can also change different output signals according to the DK value (dielectric constant) of the medium.



Unique Features of Smart Level Sensors

- Allows triggering under conditions of multiple media (e.g. stirred vessels)
- Ability to detect changes in the DK value of the medium (e.g. to measure the purity of the lubricating oil)

Features of Smart liquid level sensor

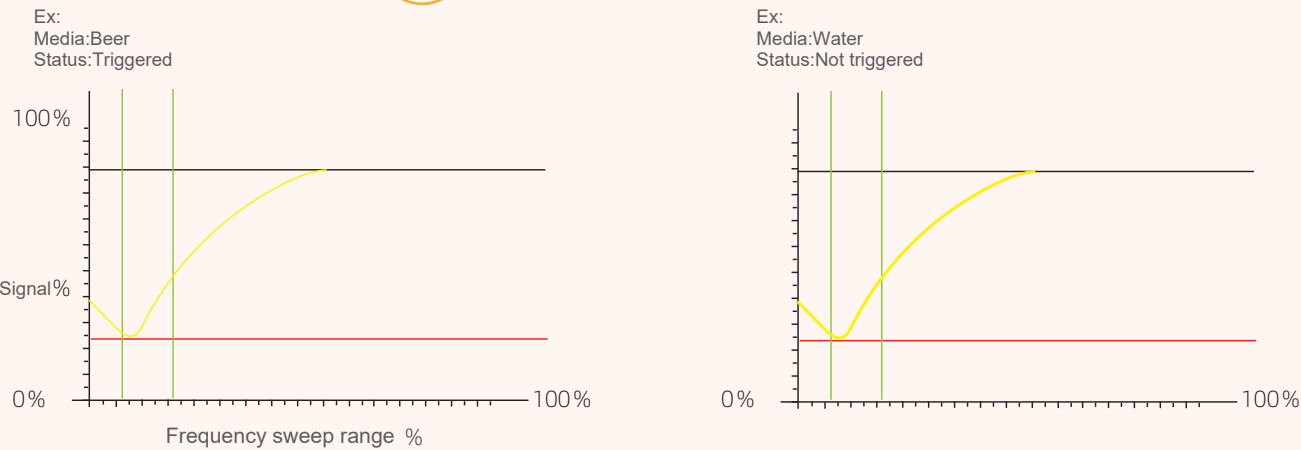
- Identify the specific medium that is flowing in the pipeline (eg milk, water, CIP fluid, etc.)
- Take action if the medium is contaminated with another medium (e.g. oil is contaminated with water)

Application example

In dairy production plants water is often used to separate two different products in a pipeline. The PWM technology continuously measures the DK value, ensuring that only product mixed with water is discharged into the waste water system, and no undiluted qualified milk product is wasted. This reduces the amount of waste to a minimum.



Distinguish two very similar media



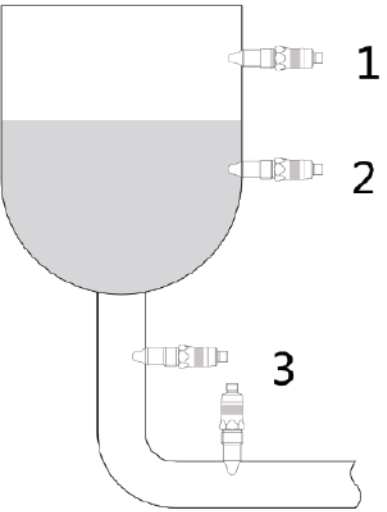
At some point, the DK value of the two media may be the same, so how to separate it
Setting two separate switch points doesn't help (two blue lines)
Smart level sensors are the perfect solution, utilizing frequency scanning technology and its ability to analyze signal strength, with different signal transitions for different media. Therefore, even if the DK value of two related media is the same, the sensor still only detects the specific media.

Operation specification

Process connection	ID	Work Environment (long-term)Temp < 50°C	Workpressure (Long-term)	Max work temp (1hr) Temp < 50°C	Work Pressure (1hr max temp) < 50°C
G 1/2 Standard thread type	0	-40~115 °C	-0.1~ 10MPa	135°C	-0.1~ 10MPa
G 1/2 Thread reverse installation type	1	-40~115 °C	-0.1~ 10MPa	135°C	-0.1~ 10MPa
G1/2 Thread with cooling neck type	2	-40~150 °C	-0.1~ 10MPa	135°C	-0.1~ 10MPa

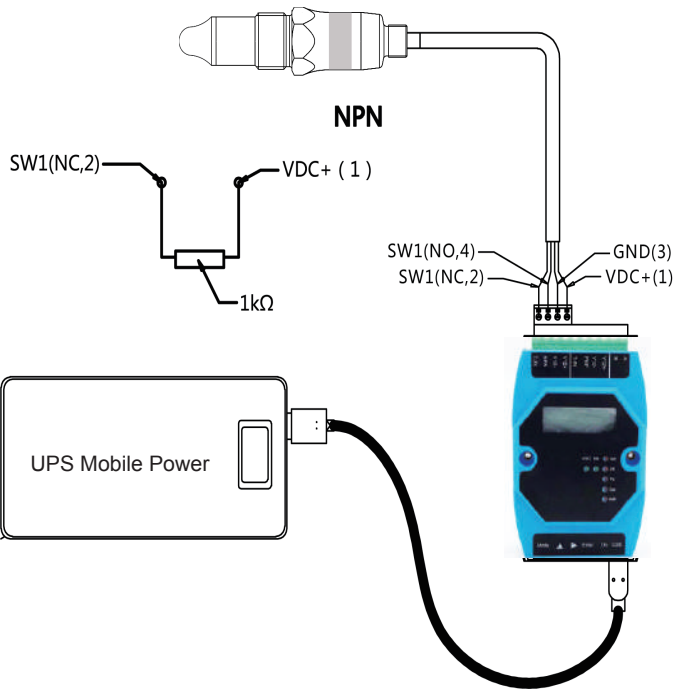
Can be installed anywhere in a pipe or tank
Use a torque wrench to install the sensor at the desire measurement point

- Material level upper limit
- Material level upper limit
- Material level upper limit



KOMM700 Portable Operator

Use a portable programmer to check, configure, backup and restore R series sensor data parameters, and can also be used to modify threshold parameters and functions on the sensor installation site



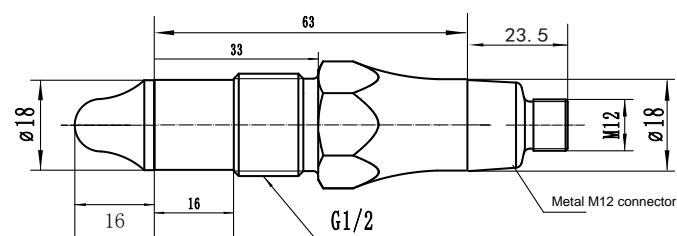
Media	Example	Recommended alarm thresholds
Water based solution	Faucet water, Acid, alkali solution	550(Default factory setting)
Foam	Beer foam	350
Viscous conductive medium	Flour paste	720
Grease	Edible oil, lubricating oil	250
Low water solids particles	Dried tea leaves	180
High water solid particles	Rice, wheat	250

Product category

VRFS 50 series



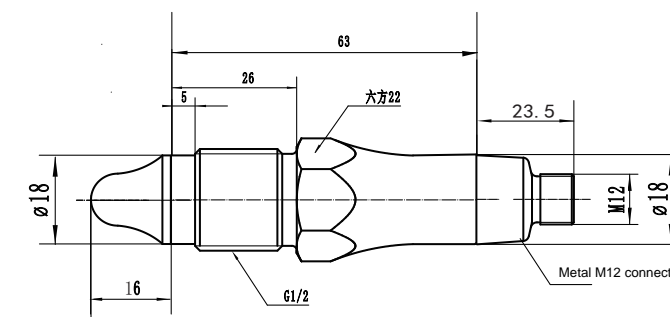
H0-Hygienic Thread + Standard Probe



VRFS 50 series



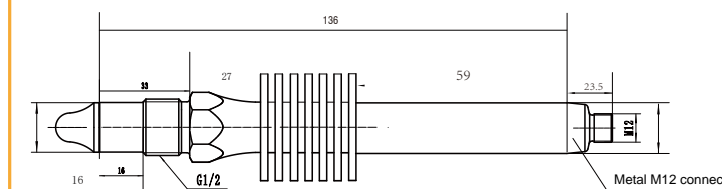
G0-G1/2 thread + standard probe



VRFS 50 series



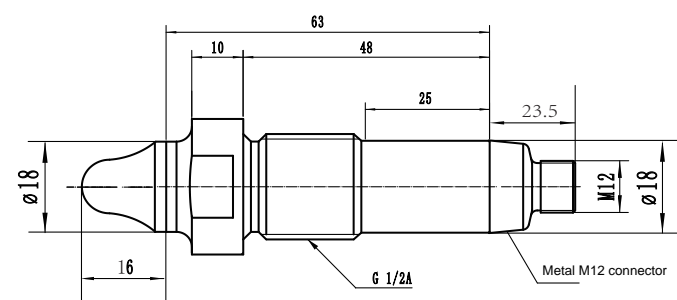
H0-G1/2 thread + heat dissipation neck + standard probe High temperature resistance 150° C



VRFS 50 series



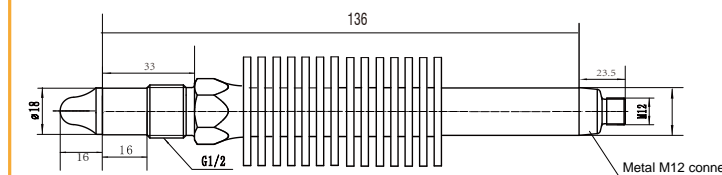
RG-Reverse installation G1/2 thread + standard probe



VRFS 50 series



H0-G1/2 thread + double cooling neck + standard probe

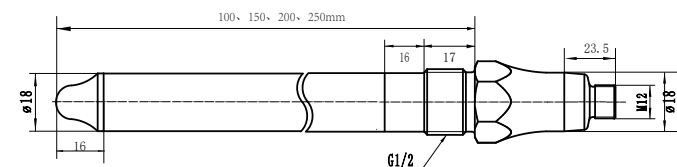


VRFS 50 series

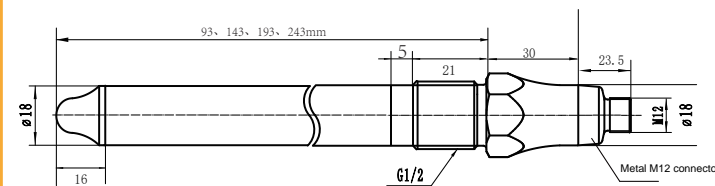


Extended probe rod 100-250 mm

H1-G1/2 thread + 100 mm insertion depth probe
 H1-G1/2 thread + 150 mm insertion depth probe
 H1-G1/2 thread + 200 mm insertion depth probe
 H1-G1/2 thread + 250 mm insertion depth probe



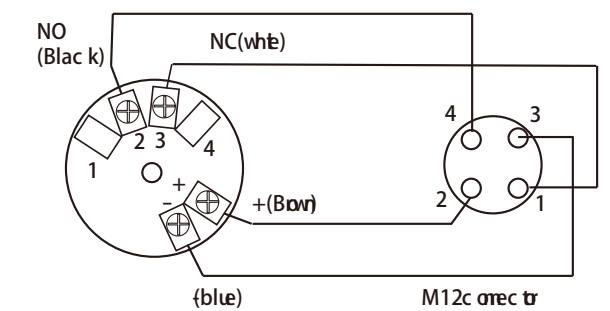
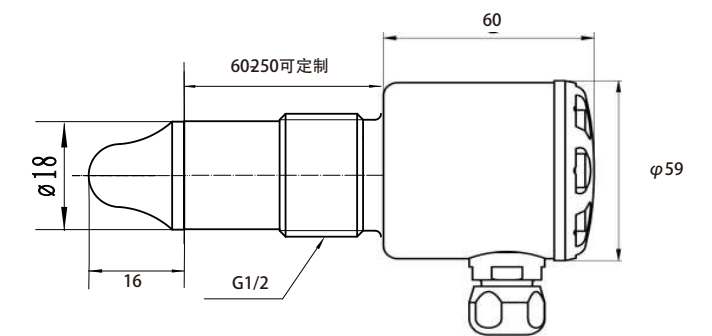
H1-G1/2 thread + 93 mm insertion depth probe
 H1-G1/2 thread + 143 mm insertion depth probe
 H1-G1/2 thread + 193 mm insertion depth probe
 H1-G1/2 thread + 242 mm insertion depth probe



VRFS 60 series



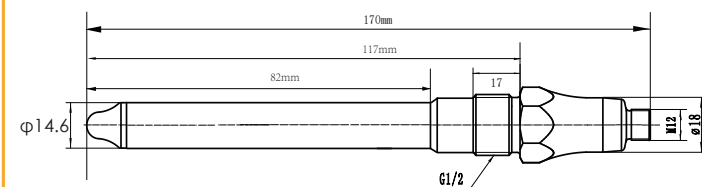
VRFS 60 - Explosion-proof Type 2088



VRFS 50 series



Variable diameter 14.6MM-G1/2 thread + 166MM insertion depth probe



VRFS 70 series



VRFS 70 direct connection G1/2 thread + standard probe

