

SFC51SRF Admittance Level Sensor

Overview

The measurement principle of the SFC5 Series RF Admittance Level Sensors is based on a universal level measurement technology. Admittance-based products can eliminate measurement errors caused by electrode material buildup by detecting both capacitance and resistance simultaneously. As a physical quantity concept, admittance is the reciprocal of impedance. Since inductance is rarely encountered in practical applications, the admittance referenced here actually refers to capacitance and resistance. To achieve accurate level measurement, an RF signal with an appropriate frequency is also required, and its frequency range is generally 15–400 kHz. Hence, this level measurement technology is termed RF admittance technology. RF admittance capacitive level measurement technology is developed on the basis of capacitive level measurement. It addresses the electrode material buildup issue inherent in capacitive level measurement while retaining all the advantages of this traditional capacitive technology. As the liquid level changes, the SFC5 Series RF Admittance Level Sensors convert the liquid level variation into a 0.5–4.5V analog signal or a digital RS485 Modbus output. These sensors are equipped with an on-site calibratable function: users can perform range setting, zero-point, and full-scale calibration via buttons. When fitted with a display gauge, they can directly show the corresponding liquid level height information locally.

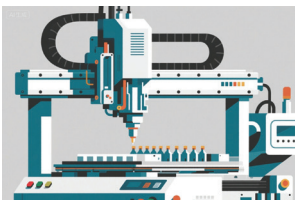
The SFC5 Series RF Admittance Level Sensors are suitable not only for continuous liquid level detection (e.g., for oil, water, viscous liquids, etc.) but also for providing switch alarm output for liquid level control points. The entire unit contains no movable or elastic components, offering excellent impact resistance, easy installation, and high reliability.



Features

- It can be installed and fixed through flange or thread, which is simple and easy to operate. After the SFC5 series thread is locked, the meter head can be rotated 300° and can be adjusted to an easy-to-observe orientation.
- The new algorithm can achieve stable measurement in a variety of environments. Users can calibrate on-site by pressing buttons or by sending instructions.
- The SFC5 series can adopt a split structure and is suitable for extreme high and low temperature applications.
- The product adopts a dedicated ASIC chip, a mature and stable circuit and a structure without any mechanical moving parts, ensuring the stable and reliable continuous use of the sensor. The MTBF can reach 60000h.

Application areas



Automatic dispensing machine

- ◆ Oils
- ◆ Glue



Petrochemical industry

- ◆ Oil
- ◆ water



Engineering vehicles

- ◆ Heavy oil
- ◆ Resin



- ◆ Jam
- ◆ Detection of viscous liquids such as syrup, dairy products, etc.

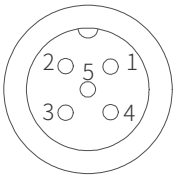
Parameters

	SFC5 Serie
Application scenarios	Viscous liquids, water, oils, liquid chemicals
Operating power supply	9~36VDC
Operating current	50~1000mA
Output signal	0.5~4.5VDC/RS485
Load capacity	≤20mA
Resolution	1mm
Accuracy	Measuring medium type: water (dielectric constant ≥ 25) $\pm 2\%$ FS; Measuring medium type: oil (dielectric constant ≥ 5) $\pm 4\%$ FS; Measuring medium type: glue (dielectric constant < 5) $\pm 5\%$ FS;
Repeat error	$< \pm 1\%$ FS
Temperature coefficient	$< 0.05\%/^{\circ}\text{C}$
Operating temperature	Integrated probe: -40°C ~ 85°C ; Split probe: -55°C ~ 200°C ;
Storage temperature	-40°C ~ 100°C
Rated working pressure	2.5MPa
Rod surface material	FEP
Installation interface	Threaded connection (G1)
Connection method	Aviation plug M12
Protection level	IP65

Cable order number

Order code	Outline drawing	Drawing number	Cable information
AFC-C001		See Figure 2	5-core M12 aviation plug female/wire material PUR/cable length 2 meters
AFC-C002			5-core M12 aviation plug female/wire material PUR/cable length 5 meters
AFC-C003			5-core M12 aviation plug female/wire material PUR/cable length 10 meters
AFC-C004		See Figure 3	5-core M12 aviation plug double-sided female/wire material PUR/cable length 2 meters
AFC-C005			5-core M12 aviation plug double-sided female/wire material PUR/cable length 5 meters
AFC-C006			5-core M12 aviation plug double-sided female/wire material PUR/cable length 10 meters
AFC-C007		See Figure 4	5-core M12 aviation plug female and male/wire material PUR/cable length 2 meters
AFC-C008			5-core M12 aviation plug female and male/wire material PUR/cable length 5 meters
AFC-C009			5-core M12 aviation plug female and male/wire material PUR/cable length 10 meters

Pin definition

M12-5Pin	Definition	 <p>Male plug (sensor connection end)</p>
1	+V	
2	RS485_B	
3	RS485_A	
4	-V(地)	
5	VOUT(0~10VDC Range optional)	

Dimensions

Figure 1: SFC51S Series SFC51S-XXXX-MRVD45

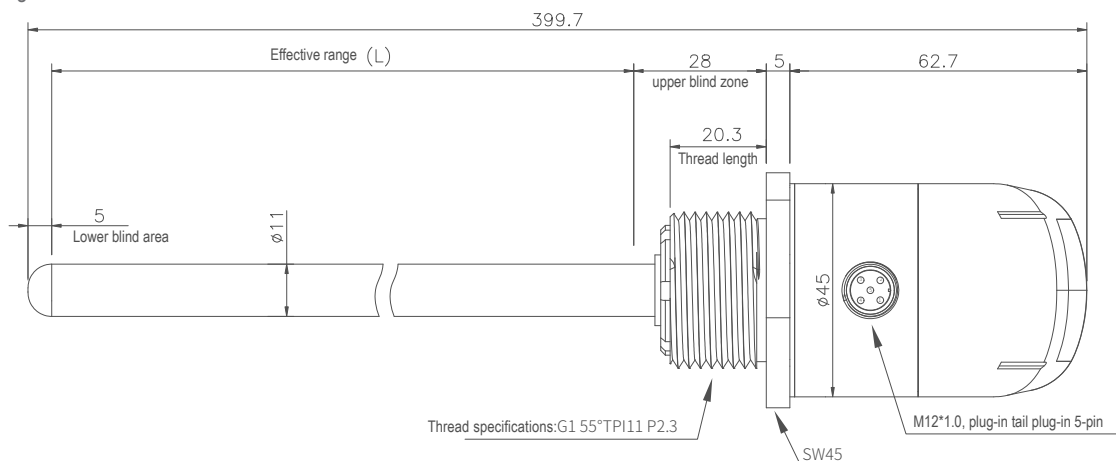


Figure 2: Straight out line

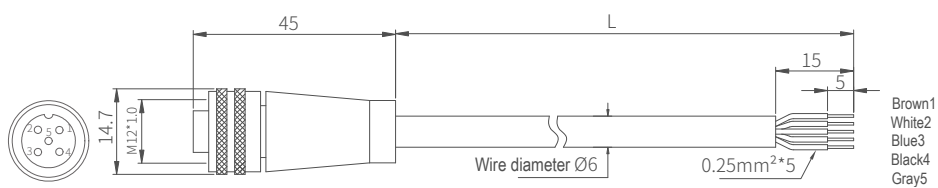


Figure 3: Bilateral female connector

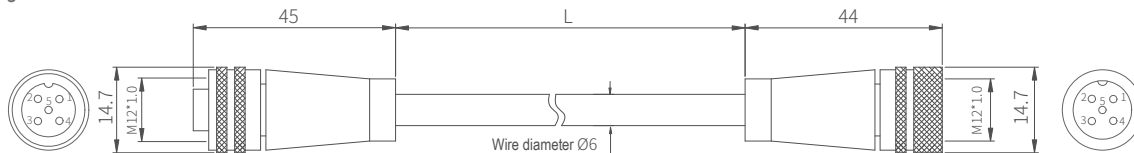
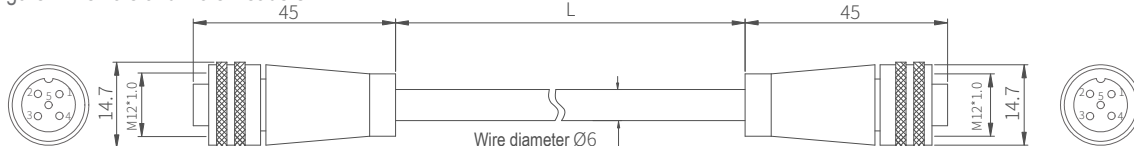
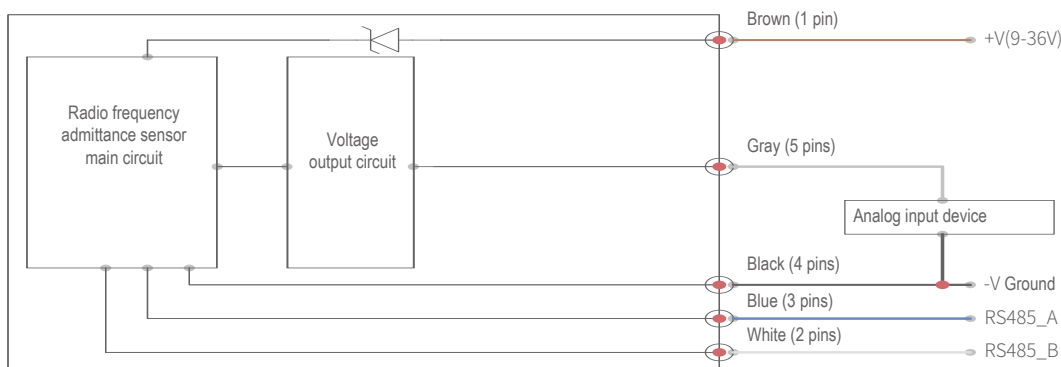


Figure 4: Female and Male Headers



Wiring diagram



Installation diagram

