SGL-RF10 RF Admittance Level Sensor

Coating-immune continuous level · 0.5–4.5 VDC / RS485 (Modbus) · push-button calibration · local display

Overview

The SGL-RF10 uses RF admittance level measurement. Admittance is the reciprocal of impedance; because inductance in a real measuring circuit is very small, admittance here effectively means capacitance and resistance. RF admittance technology typically excites the probe with an RF signal at a suitable frequency between 15 and 400 kHz. By measuring the capacitive and resistive components at the same time, the sensor eliminates the error caused by material coating the probe — it solves the coating problem of capacitive level measurement while keeping all of its advantages.

The level change is converted into a 0.5–4.5 VDC analog signal or an RS485 Modbus digital output. The sensor can be calibrated in the field: push buttons set the range and calibrate the zero and full-scale points, and the display head shows the level height on site.

It suits continuous level measurement of oil, water and viscous liquids, and can also give a switching alarm at a level control point. With no moving or elastic parts, it is shock resistant, easy to install and highly reliable.

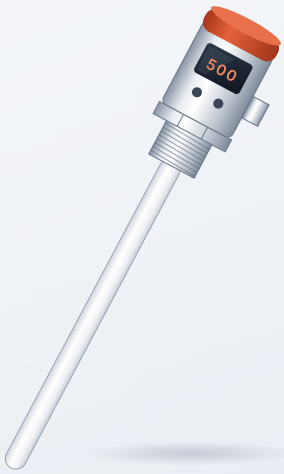


Illustration only; actual appearance may differ

9–36 VDC	50–1000 mm	1 mm	2.5 MPa	IP65	60000 h
Supply voltage	Measuring range	Resolution	Rated pressure	Protection	MTBF

Features

01 Flexible mounting, rotating head
Mounts by thread or flange and is simple to install. After the thread is locked, the head can still rotate 300° to face the easiest viewing direction.

02 New algorithm, two calibration methods
A new measuring algorithm keeps readings stable in many conditions. Calibrate on site with the push buttons or by sending a command.

03 Optional remote (split) version
The series is available with a remote electronics design for extreme temperatures; the remote probe operates from -55 to 200 °C.

04 No moving parts, long-term reliability
A dedicated ASIC, proven circuitry and a design with no mechanical moving parts give stable continuous operation, with MTBF up to 60,000 h.

Applications


Dispensing machines


Petrochemical


Construction vehicles

Suitable media

Oils · Heavy oil · Alcohol · Glue · Resin · Liquid chemicals · Jam · Syrup · Dairy · Water

Especially suited to viscous liquids that tend to coat the probe.

Specifications

Measurement		
Application media	Viscous liquids, water, oils, liquid chemicals	
Measuring range	50–1000 mm	
Resolution	1 mm	
Accuracy	Water (dielectric constant ≥ 25) Oil (dielectric constant ≥ 5) Glue (dielectric constant < 5)	**±2% FS** **±4% FS** **±5% FS**
Repeatability	< ±1% FS	
Temperature coefficient	< 0.05%/°C	
Electrical		
Supply voltage	9–36 VDC	
Output signal	0.5–4.5 VDC analog / RS485 (Modbus)	
Load capacity	≤ 20 mA	
Connection	M12 connector (5-pin)	
Environment & construction		
Operating temperature	Integral version Remote probe	**-40 to 85 °C** **-55 to 200 °C**
Storage temperature	-40 to 100 °C	
Rated working pressure	2.5 MPa	
Probe surface material	FEP	
Process connection	G1 thread	
Protection class	IP65	

Accuracy depends on the dielectric constant of the medium. Please state the medium name or its dielectric constant when selecting.

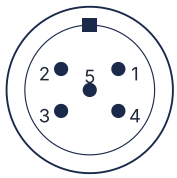
Cable Ordering Codes

Order code	Type	Fig.	Cable details
SGA-M12F-02	 Female, open end	**Fig. 2**	M12 5-pin, female, open end, PUR / 2 m
SGA-M12F-05			M12 5-pin, female, open end, PUR / 5 m
SGA-M12F-10			M12 5-pin, female, open end, PUR / 10 m
SGA-M12FF-02	 Female – female	**Fig. 3**	M12 5-pin, female both ends, PUR / 2 m
SGA-M12FF-05			M12 5-pin, female both ends, PUR / 5 m
SGA-M12FF-10			M12 5-pin, female both ends, PUR / 10 m
SGA-M12FM-02	 Female – male (extension)	**Fig. 4**	M12 5-pin, female + male, PUR / 2 m
SGA-M12FM-05			M12 5-pin, female + male, PUR / 5 m
SGA-M12FM-10			M12 5-pin, female + male, PUR / 10 m

Cables are accessories and are ordered separately; see Fig. 2–4 on page 3 for dimensions.

Pin Assignment

M12 pin	Colour	Function
1	Brown	+V (9–36 VDC)
2	White	RS485_B
3	Blue	RS485_A
4	Black	−V (GND)
5	Grey	VOUT voltage output (range settable within 0–10 VDC)



Male connector (sensor side)

Wire colours refer to the conductors of the matching SGA series cables.

Dimensions (mm)

Fig. 1 SGL-RF10 integral version (Ø45 head)

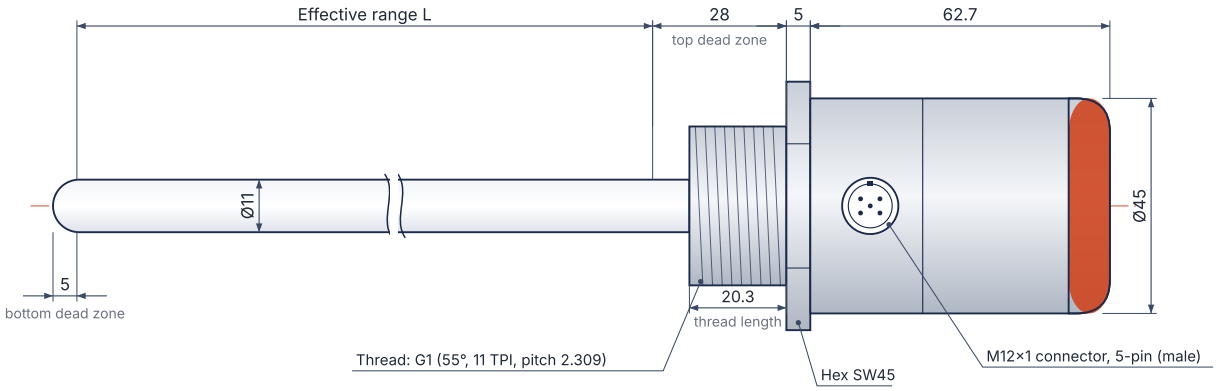


Fig. 2 Female connector, open-end cable (SGA-M12F)

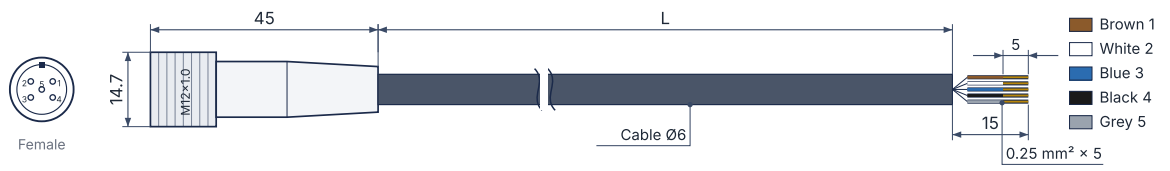


Fig. 3 Female – female (SGA-M12FF)

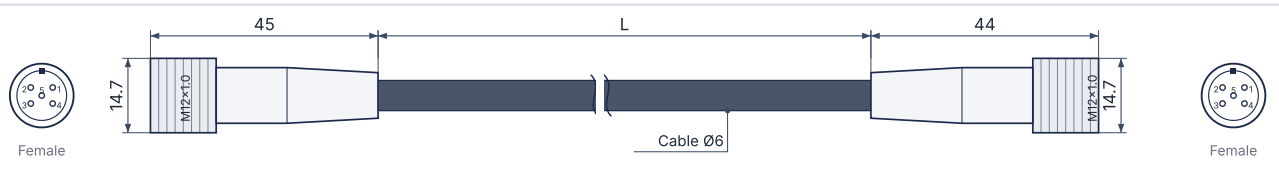
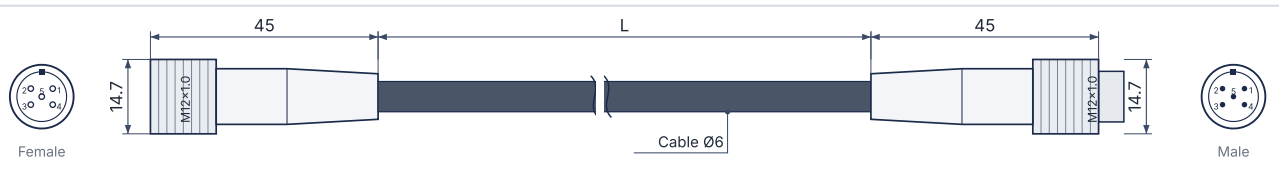
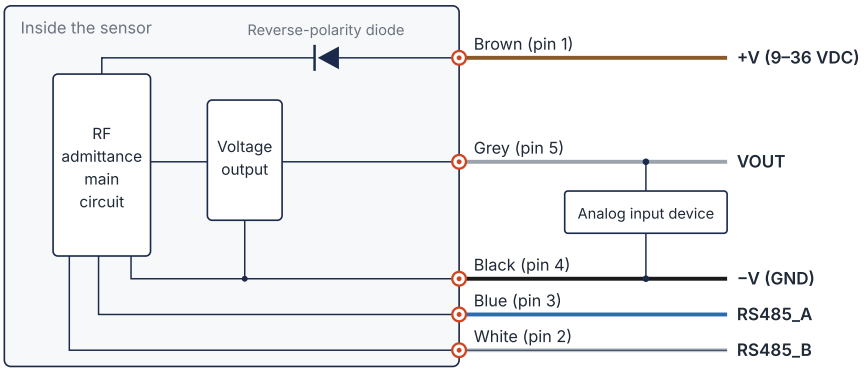


Fig. 4 Female – male (SGA-M12FM)



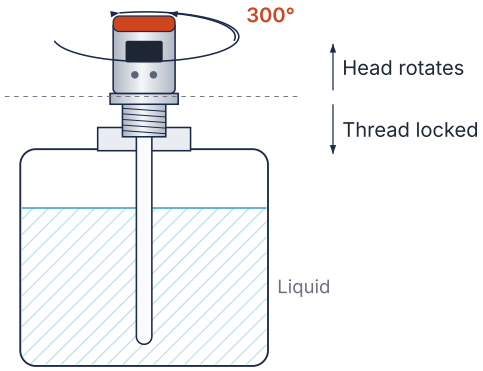
L is the effective measuring range (Fig. 1) or the cable length (Fig. 2–4). Overall sensor length varies with the range; refer to the drawing confirmed with your order.

Wiring



Connect the analog input between VOUT (grey) and –V (black). For RS485, connect A (blue) and B (white) to the matching lines of the Modbus master.

Installation



Installation notes

1. Mount the sensor vertically on top of the vessel with the G1 thread (or a flange) and tighten the thread first.
2. After the thread is locked, rotate the head (up to 300°) so the display faces the easiest viewing direction.
3. Do not exceed 2.5 MPa working pressure. The integral version operates from -40 to 85 °C; beyond this range choose the remote version (probe -55 to 200 °C).
4. After installation, set the range and calibrate zero and full scale with the push buttons, or calibrate by communication command.

Selection & Ordering

Item	Please specify / available options
Medium	Medium name or dielectric constant (sets the accuracy class)
Effective range L	50–1000 mm
Version	Integral (-40 to 85 °C) / remote (probe -55 to 200 °C)
Output	0.5–4.5 VDC analog / RS485 (Modbus)
Mounting	G1 thread / flange (flange size confirmed with the order)
Cable	Choose from the cable ordering codes on page 2 (SGA-M12F / FF / FM, 2 / 5 / 10 m)

Ordering example

SGL-RF10, integral version, effective range L = 500 mm, RS485 (Modbus) output, G1 thread mounting; cable **SGA-M12F-05** (female connector, open end, 5 m).

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For 3D models (STEP) or a selection review, contact our engineers.
Production lead time and MOQ are confirmed with the quotation.

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