



FR-S01

Short range sensor main unit with integrated display Standard model



*Please note that accessories depicted in the image are for illustrative purposes only and may not be included with the product.

Specifications

Model		FR-S01
Type		Short range Standard model
Measuring range		Up to 1.5 m 4.9' *1
Display range		Up to 2 m 6.6' *1
Measurable dielectric constant of medium		2 or higher*2
Resolution		1 mm 0.04"
Precision		Up to 0.1 m 0.3' : ± 20 mm 0.79" ; 0.1 to 0.3 m 0.3' to 1.0' : ± 5 mm 0.20" ; 0.3 to 1.5 m 1.0' to 4.9' : ± 1 mm 0.04" *3
Response time		0.4 s, 1.5 s, 4 s (default value), 10 s
Tank pressure		-0.1 to +1 Mpa
Material	Tank interior	Lens: PTFE Internal packing: FKM Joint: SUS304
	Housing	PBT PAR
Connection diameter		G3/4 (20 A)
Output	No. of control outputs	Maximum 5
	Control output/auxiliary output	NPN/PNP open collector (switching type) 30 VDC or less, max 50 mA for each Residual voltage of 1.4 V or less (50 mA or less) N.O./N.C. Switching type IO2 is switchable to IO-Link IO5 is switchable to external input
	Analog output	0–20 mA/4–20 mA maximum load resistance 260 Ω (Response time: 0.2 s after judgment output is confirmed [90% response])
External input		Short-circuit current: 1.5 mA or less Input time 500 ms or more
Network compatibility		IO-Link v1.1/COM2
Analog output accuracy	Resolution	1 mm 0.04" *4
	Zero accuracy	± 0.1 mA (zero point = 4 mA)*4
	F.S. accuracy	± 0.2 mA (full-scale = 20 mA)*4
Power supply	Power voltage	24 VDC + 25%/–20% Including ripple Class 2 or LPS
	Power consumption	80 mA or less (Excluding Load Current)
Environmental resistance	Ambient temperature	–20°C to +55°C *5 *6 –4°F to +131°F (no freezing)
	Relative humidity	Up to 85% RH (no condensation)
	Temperature of coupling used	–20 to +85°C –4°F to +185°F (no freezing) *5 *6
	Vibration resistance	10–500 Hz Power spectral density: 0.816 G ² ; X, Y and Z directions

	Shock resistance	100 m/s ² (10 G), 16 ms pulses, 1000 times each for X, Y and Z directions
Enclosure rating		IP67 (IEC60529)
Protection circuit		Protection against reverse power connection, power supply surges, output overcurrent protection, and output surges
Weight		Approx. 170 g 6.00 oz

*1 Guaranteed value in water with the recommended installation. Static water can be measured up to the edge of the lens. An undetectable area on the short-range side is created due to the environment and measurement medium. The maximum measuring distance is also shortened.

*2 Measurement may not be possible depending on the shape and environment of the target.

*3 This is the guaranteed value from verification performed at KEYENCE inspection facilities. Measurement errors may occur depending on the customer's environment.

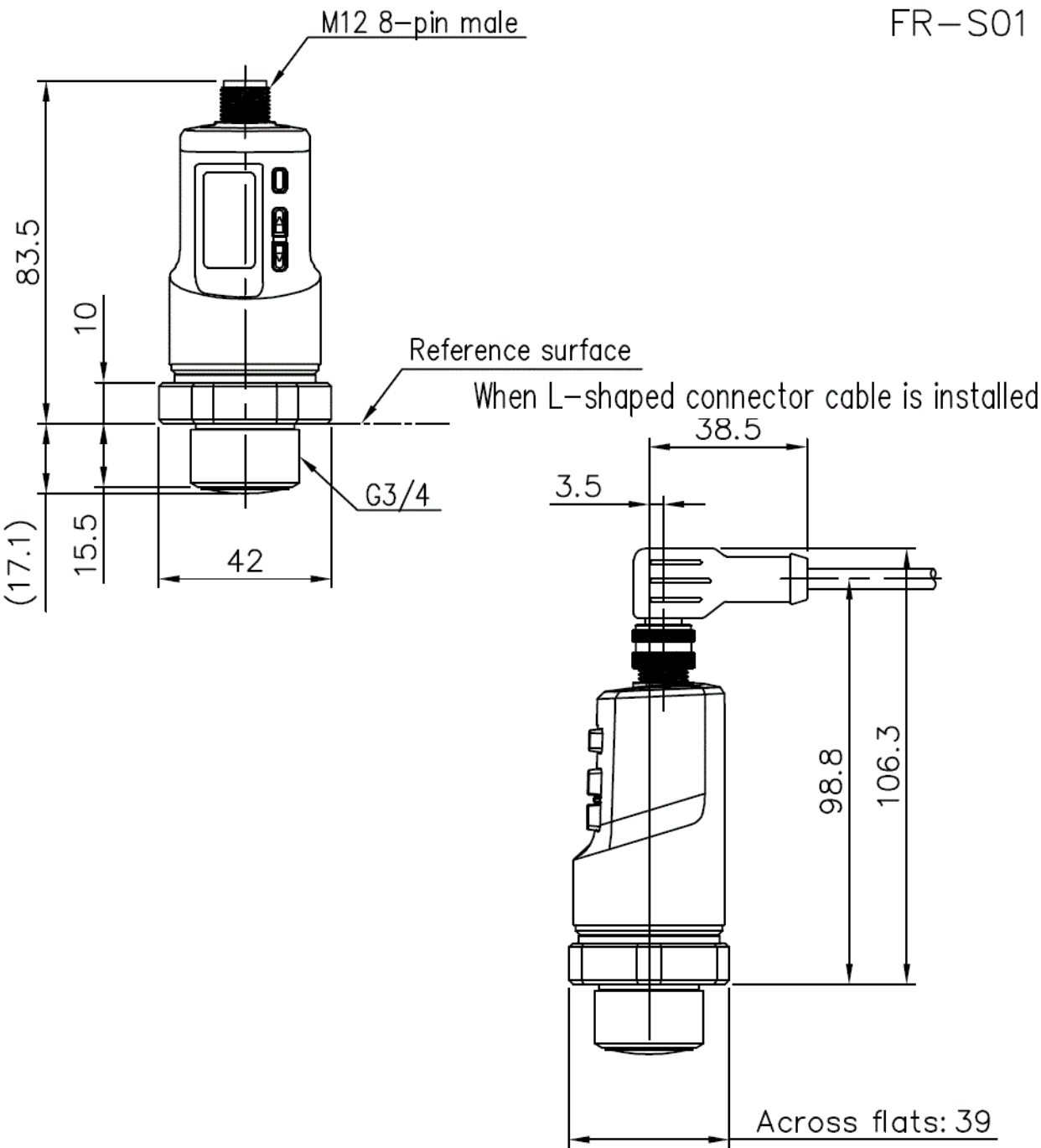
*4 This is the guaranteed value from verification performed at KEYENCE inspection facilities with a load resistance of 250 Ω. Measurement errors may occur depending on the customer's environment.

*5 The FR-S01 and FR-LM20L/LP20L can be used up to an ambient temperature setpoint of 10°C 50°F by selecting "Off when not in Operation" under "Screen Brightness."

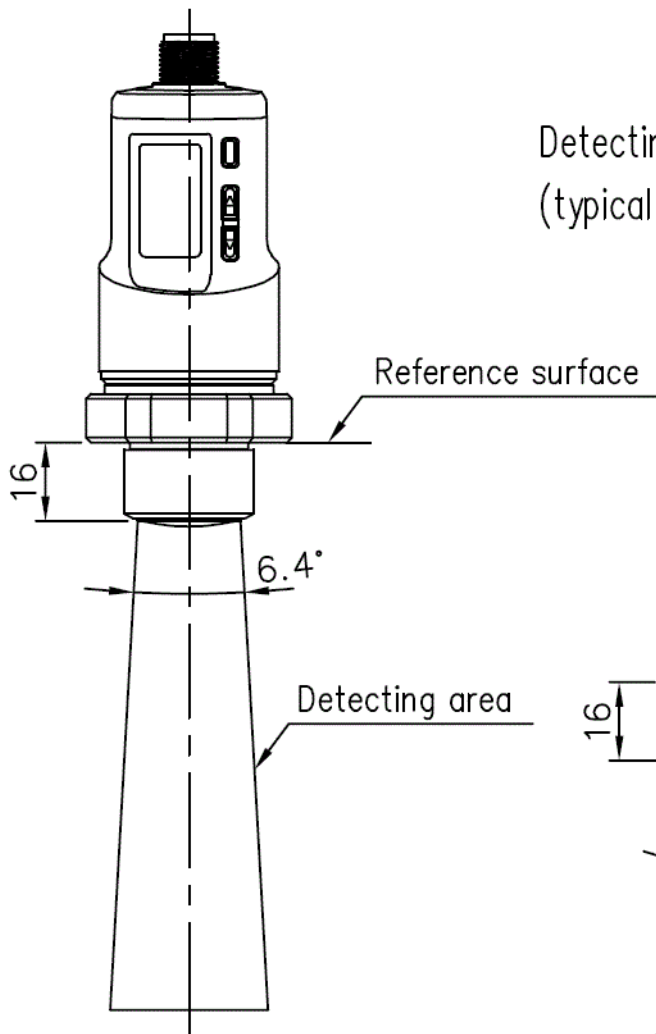
*6 When performing SIP with the FR-LS20L, do so for 1 hour or less with an ambient temperature of 40°C 104°F or less and an internal system temperature of 130°C 266°F. When performing SIP with the FR-S01/LM20L/LP20L, turn the power supply off, and then perform this operation for 1 hour or less with an ambient temperature of 40°C 104°F or less and an internal system temperature of 130°C 266°F. In addition, always install the KEYENCE optional ferrule mounting bracket and internal gasket.

Dimensions

* Download CAD file or product manual for larger image/text and more detail.



Detecting area for water based liquid
(typical value)



Detecting area for oil based liquid or powder
(typical value)

