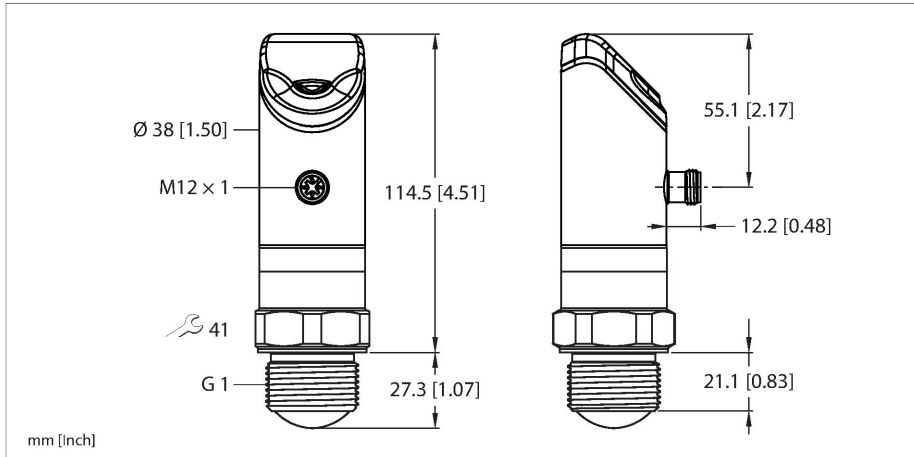


LRS510-10-69-LI2UPN8-H1141

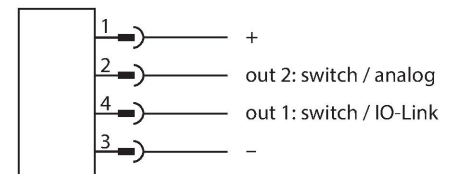
Radar Sensor – Level Control



Features

- Range: 10 m
- Blind zone: 35 cm
- Resolution: 1 mm
- Cone angle of the radar beam: $\pm 3^\circ$
- Distance, level, volume or % output
- Approved according to ETSI 305550-2
- Approved according to FCC/CFR. 47 Part 15.
- Male connector, M12 x 1, 4-pin
- Operating voltage 18...33 VDC
- Switching output switchable between PNP/ NPN
- Analog output switchable between 4... 20 mA/0...10 V
- Automatic current/voltage detection
- IO-Link
- 4-digit, 2-colored, 14-segment display
- Housing is rotatable by 180° after mounting the process connection
- Process connection G1"
- Pressure resistance -1...16 bar rel.

Wiring diagram

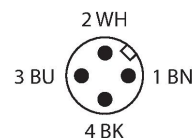


Technical data

Type	LRS510-10-69-LI2UPN8-H1141
ID	100012722
Radar data	
Function	Radar scanner
Frequency range	122 - 123 GHz
Range	350...10000 mm
Resolution	1 mm
Minimum measuring range	500 mm
Minimum switching range	50 mm
Linearity error	$\leq \pm 0.1 \%$
Edge lengths of the nominal actuator	100 mm
Output power EIRP	10 dBm
Cone angle	6 °
Repeatability	2 mm
Hysteresis	≤ 50 mm
Electrical data	
Operating voltage U_B	17...33 VDC
Residual ripple	$< 10 \%$ U_{ss}
DC rated operating current I_o	≤ 250 mA
No-load current	≤ 100 mA
Residual current	≤ 0.1 mA
Short-circuit protection	yes/Cyclic
Reverse polarity protection	yes

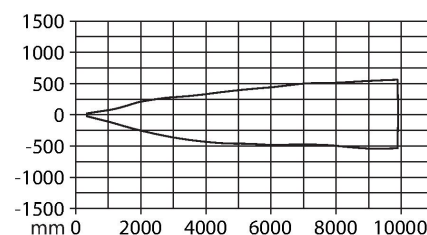
Technical data

Communication protocol	IO-Link
Output function	NO/NC programmable, PNP/NPN, analog output
Output 2	Analog or switching output
Current output	4...20 mA
Voltage output	0...10 V
Load resistance current output	$\leq 0.5 \text{ k}\Omega$
Load resistance voltage output	$\geq 2 \text{ k}\Omega$
Voltage drop at I_o	$\leq 2 \text{ V}$
Switching frequency	$\leq 10 \text{ Hz}$
Response time typical	$< 10 \text{ ms}$
IO-Link	
IO-Link specification	V 1.1
IO-Link port type	Class A
Communication mode	COM 3 (230.4 kBaud)
Process data width	80 bit
Measured value information	64 bit
Switchpoint information	4 bit
Frame type	2.2
Minimum cycle time	5 ms
Function pin 4	IO-Link
Function Pin 2	Analog
Maximum cable length	20 m
Profile support	Smart Sensor Profile
Mechanical data	
Design	With display (integrated probe), LRS
Dimensions	$\varnothing 38 \times 141.8 \times 38 \times 50.2 \text{ mm}$
Housing material	Stainless-steel/Plastic, 1.4404 (AISI 316L)/polyarylamide 50 % GF UL 94 V-0 PEEK
Lens	plastic, PEEK
Max. tightening torque of housing nut	45 Nm
Electrical connection	Connector, M12 $\times$ 1
Process connection	G 1"
Ambient temperature	-25...+65 °C
Storage temperature	-40...+85 °C
Process Pressure	16 bar
Protection class	IP67 IP69K
	Not assessed by UL



Functional principle

FMCW radar stands for frequency modulated continuous wave radar. FMCW is the English abbreviation for Frequency Modulated Continuous Wave. Non-modulated continuous wave radars have the disadvantage that they cannot measure distances due to lack of time reference. Such a time reference for distance measurement of stationary objects can be generated by means of frequency modulation. Using this method, a signal is emitted which continually changes the frequency. A periodic, linear frequency which varies upwards and downwards is used to limit the frequency range and to simplify the signal evaluation. The factor for the rate of change df/dt remains constant. If an echo signal is received, then this has a runtime delay as with the pulse radar, and thus a different frequency that is proportional to the distance.



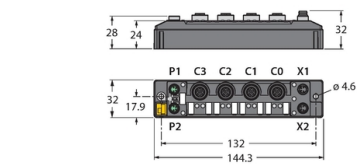
Technical data

Switching state	2 × LEDs, Yellow
Vibration resistance	20 g (10...2000 Hz), EN 60068-2-6
Shock test	EN 60068-2-27
Shock resistance	50 g (11 ms)
EMV	EN 61000-6-2:2019 ETSI EN 301489-3 v.1.6.1
Approvals	CE, ETSI, FCC, UL

Wiring accessories

Dimension drawing	Type	ID	
	RK 4.4T-2/S760/S771	U-29271	Connection cable, M12 female connector, straight, 4-pin, cable length: 2 m, jacket material: PVC, black; cULus approval
	RK 4.4T-2-RS 4.4TS760/S771	U2-09882	Extension cable, M12 female connector, straight, 4-pin to M12 male connector, straight, 4-pin, cable length: 2 m, jacket material: PVC, black; cULus approval

Accessories

Dimension drawing	Type	ID	
	TBEN-S2-4IOL	6814024	Compact multiprotocol I/O module, 4 IO-Link Master 1.1 Class A, 4 universal PNP digital channels 0.5 A