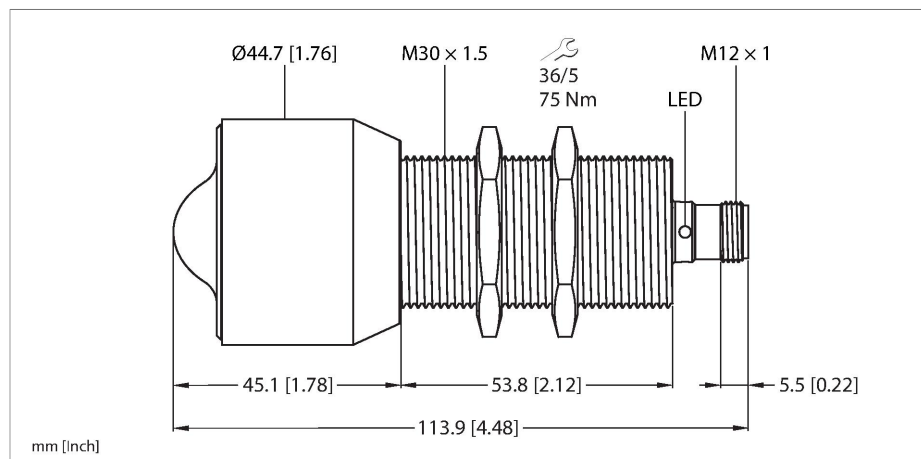


DR15S-M30E-IOL8X2-H1141

Radar Sensor – Distance/Object Detection



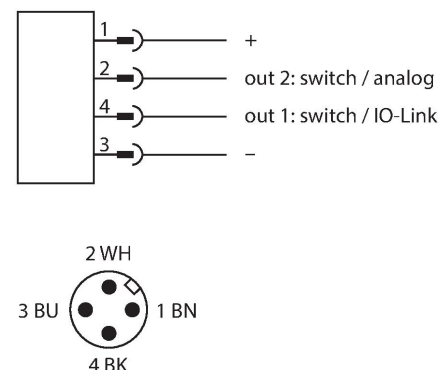
Technical data

Type	DR15S-M30E-IOL8X2-H1141
ID	100030148
Radar data	
Function	Radar scanner
Frequency range	122 - 123 GHz
Range	350...15000 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 ERP	10 dBm
Output power EIRP	20 dBm
Cone angle	15 °
Repeatability	2 mm
Hysteresis	$\leq 50 \text{ mm}$
Electrical data	
Operating voltage U_B	18...33 VDC
Residual ripple	$< 10 \% U_{ss}$
DC rated operating current I_o	$\leq 250 \text{ mA}$
No-load current	$\leq 150 \text{ mA}$
Residual current	$\leq 0.1 \text{ mA}$
Short-circuit protection	yes/Cyclic

Features

- Blind zone: 35 cm
- Range: 15 m
- Resolution: 1 mm
- Cone angle of the radar beam: Standard $\pm 7.5^\circ$
- Approved acc. to ETSI 305550-2
- Approved acc. to FCC/CFR 47 Part 15.
- M12 x 1 male connector, 4-pin
- Operating voltage 18...33 VDC
- Operating voltage 10...33 VDC (in SIO mode)
- Switching output switchable between PNP/ NPN
- Analog output switchable between 4... 20 mA/0...10 V
- Automatic current/voltage detection
- IO-Link
- M30 cylindrical design, stainless steel

Wiring diagram

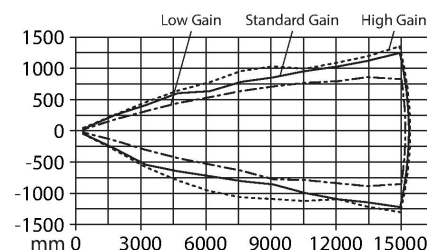


Technical data

Reverse polarity protection	yes
Communication protocol	IO-Link
Output function	NO/NC programmable, PNP/NPN, analog output
Output 2	Analog 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	$\leq 10 \text{ Hz}$
Readiness delay	$\leq 450 \text{ ms}$
Response time typical	$< 10 \text{ ms}$
IO-Link	
IO-Link specification	V 1.1
IO-Link port type	Class A
Communication mode	COM 2 (38.4 kBaud)
Process data width	48 bit
Measured value information	32 bit
Switchpoint information	1 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	Threaded barrel, M30E
Dimensions	$\varnothing 44.7 \times 113.9 \text{ mm}$
Housing material	Stainless steel, 1.4401 (AISI 316) PTFE
Lens	plastic, PTFE
Max. tightening torque of housing nut	75 Nm
Electrical connection	Connector, M12 $\times$ 1
Ambient temperature	-25...+65 °C
Storage temperature	-40...+85 °C
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.



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

