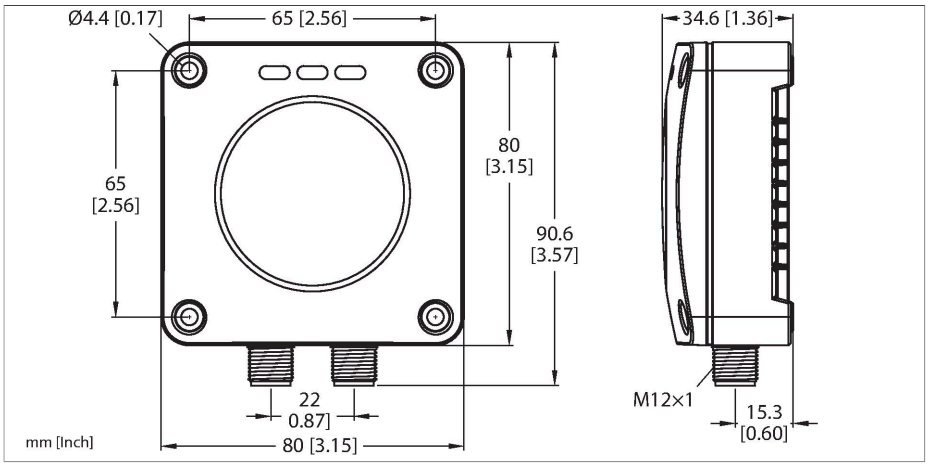
MR15-Q80-IOLCJ-H1141
Radar Sensor – Scanner for Object and Position Detection



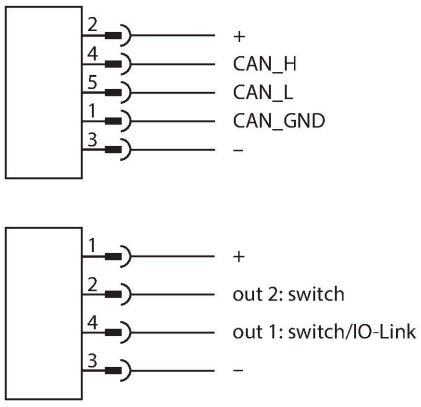
Technical data

Type	MR15-Q80-IOLCJ-H1141
ID	100041054
Radar data	
Function	Radar scanner
Frequency range	60–64 GHz
Range	350…15000 mm
Resolution	1 mm
Minimum switching range	50 mm
Linearity error	≤ ± 0.3 %
Edge lengths of the nominal actuator	100 mm
Output power ERP	10 dBm
Output power EIRP	20 dBm
Cone angle	120 °
Repeatability	4 mm
Electrical data	
Operating voltage U_B	9…33 VDC
Residual ripple	< 10 % U_{ss}
DC rated operating current I_e	≤ 250 mA
No-load current	≤ 400 mA
Short-circuit protection	yes/Cyclic
Reverse polarity protection	yes
Communication protocol	IO-Link SAE J1939
Output function	NO/NC programmable, PNP/NPN
Output 2	Switching output
Voltage drop at I_e	≤ 2 V
Switching frequency	≤ 10 Hz

Features

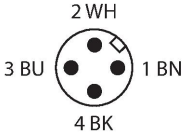
- Blind zone: 35 cm
- Range: 15 m
- Distance accuracy: ± 2 mm
- Angular accuracy: ±5°
- 3D sensing range: Adjustable max. 120°
- Information about distance, angle, and object speed
- Radius and zone evaluation
- Data visualization via Turck Radar Monitor
- Approved acc. to ETSI 305550-2
- Approved acc. to FCC/CFR 47 Part 15.
- 2 × M12 × 1, 1 × 4-pin, 1 × 5-pin
- Operating voltage 9…33 VDC
- Switching output switchable between PNP/NPN
- IO-Link, SSP 4
- SAE J1939
- Rectangular 80 × 80
- Housing material PBT, AlSi10Mg

Wiring diagram



Technical data

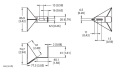
Readiness delay	≤ 300 ms
Response time typical	< 70 ms
IO-Link	
IO-Link specification	V 1.1
IO-Link port type	Class A
Communication mode	COM 3 (230.4 kBaud)
Process data width	128 bit
Measured value information	128 bit
Switchpoint information	17 bit
Frame type	2.2
Minimum cycle time	3 ms
Function pin 4	IO-Link
Function Pin 2	DI
Maximum cable length	20 m
Profile support	Smart Sensor Profile
Mechanical data	
Design	Rectangular, Q80
Dimensions	90.6 x 80 x 34.6 mm
Housing material	Plastic, PBT-GF20 Die-cast aluminum alloy
Electrical connection	Connector, M12 × 1
Ambient temperature	-40…+85 °C
Storage temperature	-40…+85 °C
Protection class	IP67 IP68 IP69K
	Not assessed by UL
Power-on indication	LED, Green
Switching state	3-color LED, Yellow
Vibration resistance	20 g (10…2000 Hz), EN 60068-2-6
Shock test	EN 60068-2-27
Shock resistance	100 g (11 ms)
EMV	EN 61000-6-2:2019 ETSI EN 301489-3 v.1.6.1
Approvals	CE, ETSI, FCC, UL

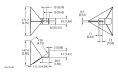
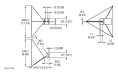


Functional principle

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.

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
	RR-6	100047726	Stainless steel radar reflector, optimized detection performance of an object, cathetus length: 60 mm, RadarCrossSection: 10 m² (cf.

Dimension drawing	Type	ID	
			automobile), reliable object detection up to 6.5 m
	RR-12	100047727	Stainless steel radar reflector, optimized detection performance of an object, cathetus length: 120 mm, RadarCrossSection: 250 m² (cf. HGV), reliable object detection up to 15 m
	RR-20	100047728	Stainless steel radar reflector, optimized detection performance of an object, cathetus length: 200 mm, RadarCrossSection: 1115 m² (cf. ship), reliable object detection up to 25 m