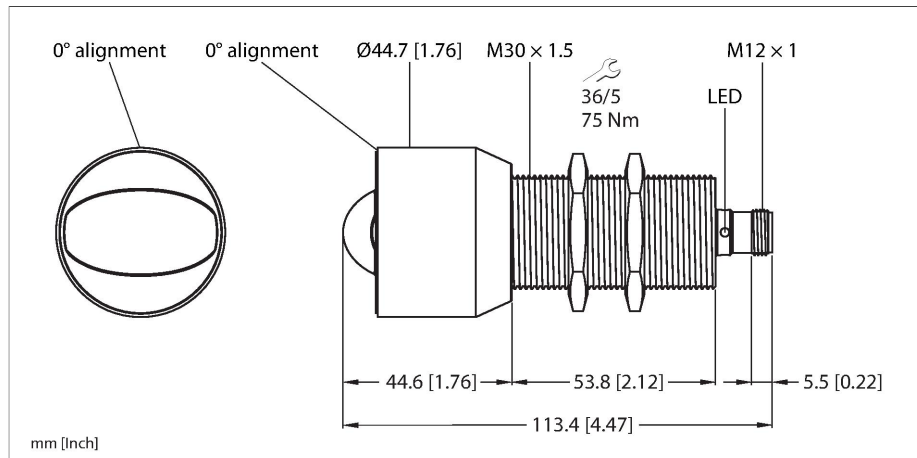


DR7.5WE-M30E-2UPN8X2-H1141

Radar Sensor – Distance/Object Detection



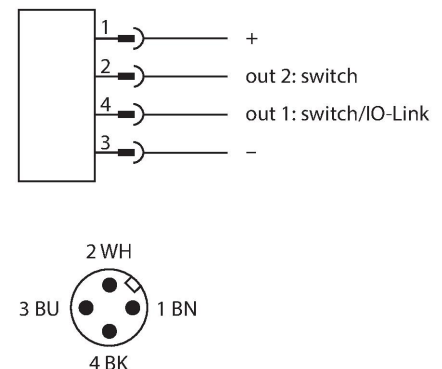
Technical data

Type	DR7.5WE-M30E-2UPN8X2-H1141
ID	100030151
Radar data	
Function	Radar scanner
Frequency range	122 - 123 GHz
Range	350...7500 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	45 °
Horizontal cone angle	15 °
Repeatability	2 mm
Hysteresis	≤ 50 mm
Electrical data	
Operating voltage U_B	18...33 VDC
Residual ripple	$< 10 \%$ U_{ss}
DC rated operating current I_o	≤ 250 mA
No-load current	≤ 150 mA
Residual current	≤ 0.1 mA
Short-circuit protection	yes/Cyclic
Reverse polarity protection	yes
Communication protocol	IO-Link
Output function	NO/NC programmable, PNP/NPN

Features

- Blind zone: 35 cm
- Range: 7.5 m
- Resolution: 1 mm
- Cone angle of the radar beam: Elliptical $\pm 22.5^\circ \times \pm 7.5^\circ$
- 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
- IO-Link
- M30 cylindrical design, stainless steel

Wiring diagram



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

Technical data

Output 2	Switching output
Load resistance current output	$\leq 0.5 \text{ k}\Omega$
Load resistance voltage output	$\geq 2 \text{ k}\Omega$
Voltage drop at I_L	$\leq 2 \text{ V}$
Switching frequency	$\leq 10 \text{ Hz}$
Readiness delay	$\leq 450 \text{ ms}$
Response time typical	$< 10 \text{ ms}$

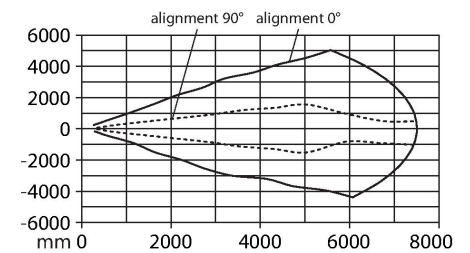
IO-Link

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	2 bit
Frame type	2.2
Minimum cycle time	5 ms
Function pin 4	IO-Link
Function Pin 2	DI
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
Power-on indication	LED, Green
Switching state	2-color LED, Yellow
MTTF	187 years
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

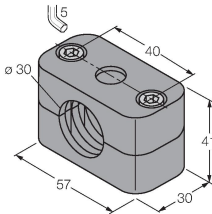
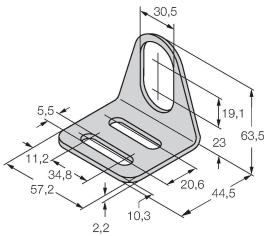
reference. Such a time reference for distance measurement of stationary objects can be generated by means of frequency modulation. Using this method, a signal is emitted which continually changes the frequency. A periodic, linear frequency which varies upwards and downwards is used to limit the frequency 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.



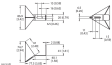
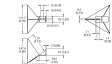
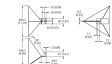
Technical data

Approvals	CE, ETSI, FCC, UL, UKCA
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Accessories

BSS-30	6901319	MW30	6945005
	Mounting clamp for smooth and threaded barrel sensors; material: Polypropylene		Mounting bracket for threaded barrel sensors; material: Stainless steel A2 1.4301 (AISI 304)

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. 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