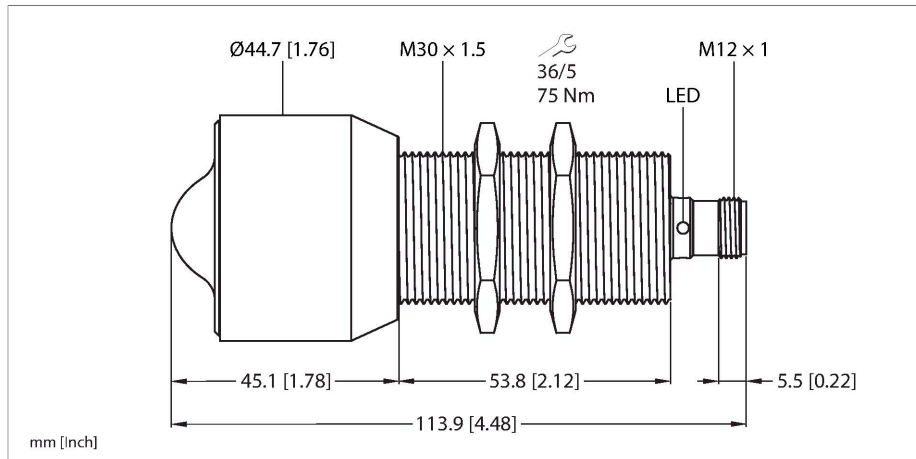


DR15S-M30E-2UPN8X2-H1141

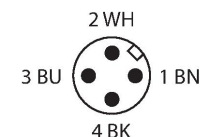
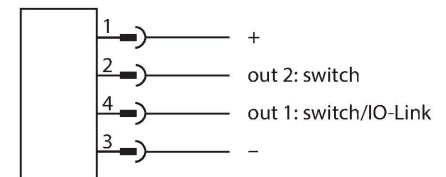
Radar Sensor – Distance/Object Detection



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
- IO-Link
- M30 cylindrical design, stainless steel

Wiring diagram



Technical data

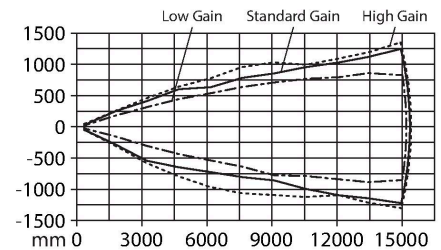
| | |
|--------------------------------------|--------------------------|
| Type | DR15S-M30E-2UPN8X2-H1141 |
| ID | 100030149 |
| Radar data | |
| Function | Radar scanner |
| Frequency range | 122 - 123 GHz |
| Range | 350...15000 mm |
| Resolution | 1 mm |
| Minimum measuring range | 500 mm |
| Minimum 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 | ≤ 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 |

Technical data

| | |
|---------------------------------------|--|
| Reverse polarity protection | yes |
| Communication protocol | IO-Link |
| Output function | NO/NC programmable, PNP/NPN |
| Output 2 | Switching output |
| Load resistance current output | ≤ 0.5 kΩ |
| Load resistance voltage output | ≥ 2 kΩ |
| Voltage drop at I _o | ≤ 2 V |
| Switching frequency | ≤ 10 Hz |
| Readiness delay | ≤ 450 ms |
| Response time typical | < 10 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 | Ø 44.7 x 113.9 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 × 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 |

Functional principle

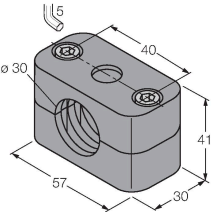
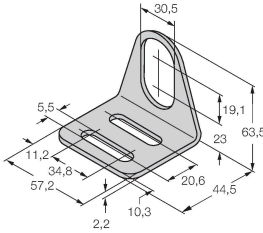
FMCW radar stands for frequency modulated continuous wave radar. FMCW is the English abbreviation for Frequency Modulated Continuous Wave. Non-modulated continuous wave radars have the disadvantage that they cannot measure distances due to lack of time reference. Such a time reference for distance measurement 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.



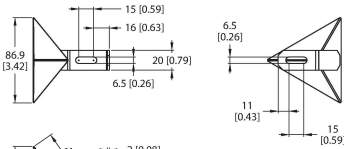
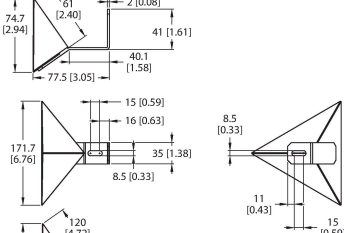
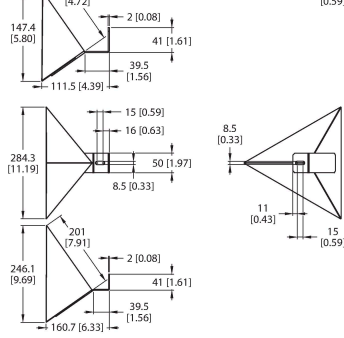
Technical data

| | |
|----------------------|---|
| 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, UKCA |

Accessories

| BSS-30 | 6901319 | MW30 | 6945005 |
|---|---|---|---|
|  <p>Technical drawing of the BSS-30 mounting clamp. It is a rectangular polypropylene part with a diameter of 30 mm and a length of 40 mm. The height is 4.1 mm. The mounting holes are spaced 57 mm apart. A detail shows a 15 mm diameter hole with a 0.15 mm depth.</p> | <p>Mounting clamp for smooth and threaded barrel sensors; material: Polypropylene</p> |  <p>Technical drawing of the MW30 mounting bracket. It is a stainless steel A2 1.4301 part. Dimensions include a top width of 30.5 mm, a height of 19.1 mm, and a base width of 63.5 mm. Other dimensions include 5.5 mm, 11.2 mm, 34.8 mm, 57.2 mm, 2.2 mm, 10.3 mm, 20.6 mm, and 44.5 mm.</p> | <p>Mounting bracket for threaded barrel sensors; material: Stainless steel A2 1.4301 (AISI 304)</p> |

Accessories

| Dimension drawing | Type | ID | |
|---|-------|-----------|---|
|  <p>Technical drawing of the RR-6 radar reflector. It features a conical reflector with a cathetus length of 60 mm. Dimensions include a diameter of 15 mm, a length of 16 mm, and a total length of 20 mm. A detail shows a 6.5 mm diameter hole with a 0.26 mm depth.</p> | RR-6 | 100047726 | Stainless steel radar reflector, optimized detection performance of an object, cathetus length: 60 mm, RadarCrossSection: 10 m ² (cf. automobile), reliable object detection up to 6.5 m |
|  <p>Technical drawing of the RR-12 radar reflector. It features a conical reflector with a cathetus length of 120 mm. Dimensions include a diameter of 15 mm, a length of 16 mm, and a total length of 35 mm. A detail shows an 8.5 mm diameter hole with a 0.33 mm depth.</p> | RR-12 | 100047727 | Stainless steel radar reflector, optimized detection performance of an object, cathetus length: 120 mm, RadarCrossSection: 250 m ² (cf. HGV), reliable object detection up to 15 m |
|  <p>Technical drawing of the RR-20 radar reflector. It features a conical reflector with a cathetus length of 200 mm. Dimensions include a diameter of 15 mm, a length of 16 mm, and a total length of 50 mm. A detail shows an 8.5 mm diameter hole with a 0.33 mm depth.</p> | RR-20 | 100047728 | Stainless steel radar reflector, optimized detection performance of an object, cathetus length: 200 mm, RadarCrossSection: 1115 m ² (cf. ship), reliable object detection up to 25 m |

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Dimension drawing

Type
TBEN-S2-4IOL

ID
6814024

Compact multiprotocol I/O module, 4
IO-Link Master 1.1 Class A, 4 universal
PNP digital channels 0.5 A

