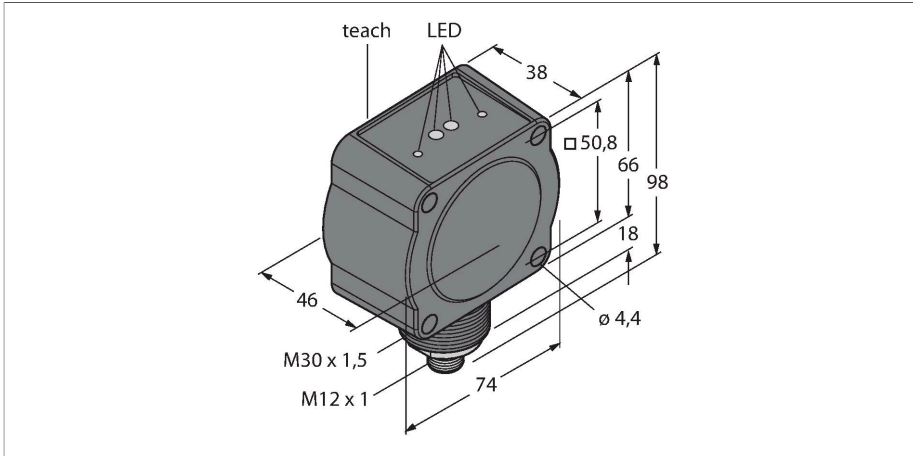


QT50R-EU-AFHQ

Radar Sensor

With Switching Output



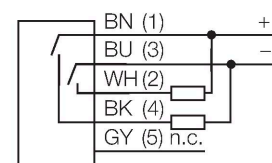
Technical data

| | |
|--------------------------------------|--|
| Type | QT50R-EU-AFHQ |
| ID | 3025370 |
| Radar data | |
| Function | Proximity switch |
| Operating mode | Time-of-Flight |
| Frequency band | K band, ISM region |
| Frequency range | 24.05 - 24.25 GHz |
| Modulation | FMCW (Frequency Modulated Continuous Wave) |
| Range | 2000...24000 mm |
| Edge lengths of the nominal actuator | 200 mm |
| Number of radio channels | 1 |
| Duty cycle | 100 % |
| Antenna connection | Internal, planar |
| Antenna gain | 15 dBi |
| Antenna pattern | 45o (Azimuth) / 38o (Elevation) |
| Side-lobe suppression | 13 dB (azimuth)/13 dB (elevation) |
| Output power ERP | 5 dBm / 3.3 mW ERP |
| Output power EIRP | 20 dBm / 100 mW EIRP |
| Field strength max. | 88-20log(m) dBuA/m or 24-20log(m) dBmW/m2 |
| Electrical data | |
| Operating voltage U_b | 12...30 VDC |
| No-load current | ≤ 100 mA |
| Short-circuit protection | yes/Cyclic |
| Reverse polarity protection | yes |

Features

- M12 × 1 male connector, 5-pin
- Protection class IP67
- FMCW radar (frequency-modulated continuous wave radar), detects stationary and moving objects
- Approved for Europe (incl. UK), Australia, New Zealand, Japan and China
- Max. range 24 m
- Configuration via DIP switch
- Operating voltage 12...30 VDC
- PNP/NPN switching output

Wiring diagram



Functional principle

An FMCW radar is a Frequency Modulated Continuous Wave radar. FMCW is the English abbreviation for Frequency Modulated Continuous Wave. Unmodulated continuous wave radars have the disadvantage that they cannot measure distances due to the lack of a time reference. Such a time reference for measuring the distance of stationary objects can be generated by means of frequency modulation. Using this method, a signal is emitted which continually changes frequency. A periodic frequency that increases and decreases linearly 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

Technical data

| | |
|------------------------|---|
| Output function | NO/NC programmable, PNP/NPN |
| Readiness delay | ≤ 2000 ms |
| Response time typical | < 30 ms |
| Mechanical data | |
| Design | Rectangular, QT50 |
| Dimensions | 46.1 x 74.1 x 99.7 mm |
| Housing material | Plastic, ABS/Polycarbonate, Black |
| Electrical connection | Connector, M12 × 1, PVC |
| Number of cores | 5 |
| Ambient temperature | -40...+65 °C |
| Protection class | IP67 |
| Power-on indication | LED, Green |
| Switching state | LED, Yellow |
| Excess gain indication | LED, red |
| Tests/approvals | |
| MTTF | 100 years acc. to SN 29500 (Ed. 99) 40 °C |
| Approvals | CE, UKCA |

the pulse radar, and thus a different frequency that is proportional to the distance. As a result, unlike with unmodulated Continuous Wave (CW) radars, both stationary and moving objects can be detected.

Conformity

CE

ISM defined in ITU-R 5.138, 5.150 and 5.280

ETSI/EN 300 440

FCC part 15

RSS-210

ANATEL Category II

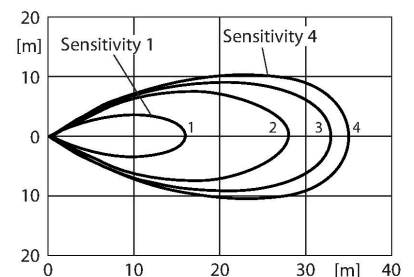
CMIIT Category G

ARIB STD T-73

KC mark — MSIP/RRA

NCC

Excess Gain Curve

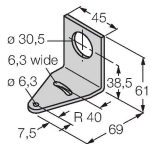


Accessories

SMB30A

3032723

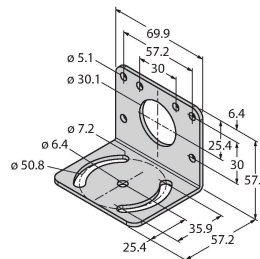
Mounting bracket, rectangular, stainless steel, for sensors with 30mm thread



SMB30MM

3027162

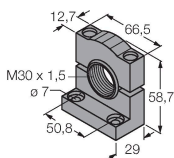
Mounting bracket, rectangular, stainless steel, for sensors with 30 mm thread, wide holes for accurate alignment



SMB30SC

3052521

Mounting bracket, PBT black, for sensors with 30 mm thread, rotatable



Accessories

| Dimension drawing | Type | ID | |
|-------------------|---------------|---------|---|
| | WKC4.5T-2/TEL | 6625028 | Connection cable, M12 female connector, angled, 5-pin, cable length: 2 m, jacket material: PVC, black; cULus approval |
| | RKC4.5T-2/TEL | 6625016 | Connection cable, M12 female connector, straight, 5-pin, cable length: 2 m, jacket material: PVC, black; cULus approval |

Accessories

| Dimension drawing | Type | ID | |
|-------------------|------------|---------|--|
| | QT50RCK | 3079975 | Protective cap prevents water film or ice formation on the face, needed for rain or snow |
| | BRTR-CC20E | 3011118 | Radar reflector, large tetrahedron, protected by plastic, 7-fold function reserve at a distance of 6 m, optional |