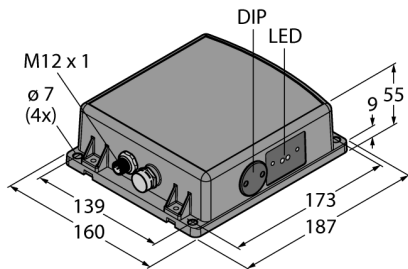


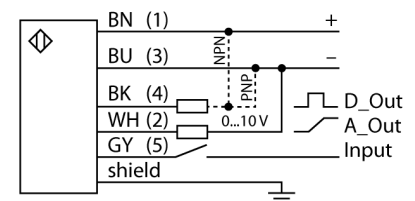
Radar Sensor With Switching and Analog Output Q240RA-EU-ULQ



Type	Q240RA-EU-ULQ
ID	3801994
Function	Proximity switch
Operating mode	Time-of-Flight
Range	3500...100000 mm
Electrical data	
Operating voltage U_a	12...30 VDC
No-load current I_o	≤ 100 mA
Short-circuit protection	yes/Cyclic
Reverse polarity protection	yes
Output function	NO/NC programmable, PNP/NPN, analog output
Output 2	Analog voltage
Voltage output	0...10 V
Readiness delay	≤ 2000 ms
Response time typical	< 15 ms
Mechanical data	
Design	Rectangular, Q240
Housing material	Plastic, PC, Grey
Electrical connection	Connector, M12 x 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	98 years acc. to SN 29500 (Ed. 99) 40 °C
Approvals	CE

- M12 x 1 male, 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 100 m
- Configuration via DIP switch
- Operating voltage 12...30 VDC
- PNP/NPN switching output
- 0...10 V analog 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 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