

Off-the-shelf radar sensor successfully operated in perimeter security, altimeters, traffic management, and automotive applications.



The Universal Medium Range Radar (UMRR) sensor family measures positions and speed of multiple targets simultaneously with high accuracy and short measurement cycles. The sensor platform is flexible and works under adverse weather or light conditions.

They operate in the 24 GHz ISM band and have been certified worldwide. Software parameters, bandwidths, or antenna patterns can be optimized for use in multiple sensor applications.

UNIVERSAL MEDIUM RANGE RADAR (UMRR)

The modular design of the UMRR allows for use across multiple platforms with the same reliable performance, low cost, and compact design. A list of multiple raw targets is communicated whether the sensor is in motion or stationary via CAN bus, RS485, 10/100M Ethernet, or WiFi.

Information from the sensor includes:

- » Radial range
- » Azimuth angle
- » Radial velocity
- » Tracked targets with x-y position and x-y velocity

STATIONARY SENSOR APPLICATIONS

Traffic management applications

- » Intersection monitoring
- » Flow management
- » Counting
- » Classification by vehicle length

SECURITY APPLICATIONS

- » Long and short range perimeter monitoring
- » Rooftop monitoring
- » Area surveillance with user defined alarm zones

MOVING SENSOR APPLICATIONS

Automotive applications

- » Forward looking: Adaptive Cruise Control, Stop-and-Go, and Pre-Crash Detection
- » Rearward looking: Lane Change Assist, Cross-Traffic Detection and Blind Zone Detection
- » Programmable operating bandwidth allows for use in numerous markets with no hardware changes required

FEATURES

- » FCC and ETSI certified
- » Tracking range up to 260 yd for autos, 100 yd range on humans
- » Velocities measured from -310 to +155 mph
- » Field of view from +/-15 to +/-60 deg, depending on model
- » Measurement cycle time as low as 30 msec
- » PLL for accurate frequency calibration
- » Standard communication interfaces
- » Low power dissipation
- » Small size at 15 cubic in
- » Operating temperature range from -40 to +95°C

Single Chip 24 GHz Radar Transceiver & Specifications

MODEL NUMBER UMRR-09

SENSOR FAMILY

Common to long, medium, and short range sensors

Transmit Frequency	24.000 GHz to 24.250 GHz; ISM band
Power Adjust Range	16.0 dB
Sensor Communication	CAN Bus, RS485, 10/100M Ethernet, or 802.11b,g
Sensors per sub-network (without central unit)	up to 9
Objects Tracked (per sensor)	up to 32
Measurement Cycle Time	30 to 120 msec
Range Measurement Accuracy	< 2.5%
Angle Measurement Accuracy	< 0.5 deg
Speed Measurement Accuracy	< 0.16 mph
Power Supply	< 3.5 W @ 7 to 32 V
Operating Temperature	-40 to +95°C

	LONG RANGE	MEDIUM RANGE	SHORT RANGE
Maximum Output Power (EIRP)	30.0 dBm	24 dBm	20 dBm
Minimum Range	1 yd	0.5 yd	0.5 yd
Detection Range (humans)	100 yd	50 yd	35 yd
Detection Range (auto)	240 yd	160 yd	90 yd
Field of View (Az/EI deg)	±15 / ±4.5	±25 / ±6	±35 / ±8
Physical Size (in)	8.4 x 6.1 x 1.2	4.3 x 3.9 x 1.2	3.7 x 3.3 x 1.2
Weight Size	2.8 lb	1.0 lb	0.75 lb

AERONAUTICAL APPLICATIONS

- » Altimeter
- » Landing aids
- » Collision avoidance

EXPANDED VISIBILITY

Install multiple sensors to create a network of sensors, significantly increasing target visibility. In automobiles, both blind spots will be visible, or you can secure an entire installation perimeter.

PERFORMANCE RELIABILITY

All UMRR sensors are designed with standard digital signal processing and RF modules:

- » High levels of integration
- » Standard surface mount assembly
- » Eliminates performance variation risks and yield issues

COST SAVINGS

All sensor applications are constructed with the same standard modules resulting in volume production cost savings.



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