

SRR 308 short range radar sensor

Safe - reliable - good performance - small design

AUMOVIO offers a new type of radar sensor, the SRR 308-21, as a possible adaption in different application.

Measuring procedure

The rugged SRR 308-21 sensor from AUMOVIO measures independent the distance and velocity (Doppler's principle) to objects without reflector in one measuring cycle due basis of PCM (Pulse Compression Modulation) with very fast ramps, with a real time scanning of app. 25/sec.. A special feature of the device is the simultaneously measurement of distances up to 95m, relative velocity and the angle relation between two or several objects.

Typical areas of application:

- Simple anti-collision protection for vehicles of every description (particul. autonomous)
- Headway control for mid distance field (vehicles of every description, particularly autonomous)
- Area monitoring system for mid field, e.g. of hazardous or non-accessible areas
- All around recognition for vehicles and different other objects
- Object detection, e.g. in confusing or unclear areas
- Unremarkable object detection by affix a protection cover before it

Advantages:

- **Fast and safe:** The SRR 308-21 dispels with the apparent contradiction between excellent great measuring performance and a high degree of operational safety. The rugged SRR 308-21 radar sensor is capable of determining the distance to an object in real time scanning and dependent on the driving speed a possible risk of collision.
- **Reliable:** The SRR 308-21 radar sensor is fail-safe and able to recognize troubles of the Sensor and sensor environment and display it automatically.
- **Robust and very small design:** By using a radar technology with less complex measuring principle and the development and mass production in automotive supply industry, the design is kept small in spite of a good performance of the SRR 308-21.



SRR 308-21 short range radar 24 GHz - data sheet

Measuring performance	Comment	to natural targets (non-reflector targets)
Distance range		0.3 ...95m at 6dBm2 (80m at 3dBm2) <2 m no accurate distance measuring
Resolution distance measuring	for single target	1.0 m for point targets; target discrimination = 2 x resolution
Accuracy distance measuring	(field of view FoV)	±0.2 m at distance >2 m / ±0.5 m at distance <2 m
Azimuth angle augmentation	(field of view FoV)	-75°...+75° (measurement) -75°...+75° up to -90°...+90° (detection)
Elevation angle augmentation	selectivity / separation effect	12° at -6 dB / 16° at -10 dB / 23° at -20 dB
Resolution angle measuring	for single target	14° (14° at 0° azimuth) - targets only with different angle - amplitude difference max 6 dB, otherwise smaller targets will be suppressed
Accuracy angle measuring	possible if it meets	-2°...+2° at ±30°(FoV), -4°...+4° at ±60°, -5°...+5° at ±75°
Speed measurement range	receiver / transmitter	-300 km/h...+300 km/h (- leaving objects.+ approximation)
Speed measurement resolution		1.2 km/h for point targets; target discrimination = 2 x resol.
Speed measurement accuracy		±0.2 km/h for single targets
Target separation (point targets)		speed difference >2.4 km/h / distance difference > 2.0 m
Update rate / transmission cycle		40 ms
Planar antenna beams - process		4 Rx / 2 Tx column - digital beam forming with 8 beams
Operating conditions	Comment	to natural targets (non-reflector targets)
Radar operating frequency band		24.05..24.25 GHz (ISM band)
Transmission capacity (EIRP)	emitted radar power	app. 18.5 mW = <12.7 dBm average / <20 dBm peak
Mains power supply	typ. 12 V DC	+9.0 V...16 V DC full operation, >+16 V DC sensor functions deactivated, >+32 V DC overvoltage protection activated (hardware)
Power consumption	at 12.0 V DC at 13.8 V DC	app. 3.9 W / 325 mA normal operation - 7.5 A inrush current app. 3.9 W / 280 mA normal operation - 8.5 A inrush current
Over voltage protection bus pins		-40 V...+40 V DC
Operating-/ storage temperature		-40°C...+85°C / -40°C...+95°C
Shock	mechanical	50 g - no mechanical driven components inside
Vibration	mechanical	27,78 m/s ² RMS acceleration at 5 - 2000Hz
Protection rating		IP 6K9K (high-pressure cleaning), dust, ice-water shock test, salt fog resistant, mixed gas EN 60068-2-60



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Displays and connections	Comment	to natural targets (non-reflector targets)
Monitoring function		self monitoring (fail-safe designed)
Displays		none
Interface		1 x CAN high-speed 500 kbit/s

Housing	Comment	to natural targets (non-reflector targets)
Dimensions / weight	L * W * H (mm) / mass (g)	127.2 * 129.6 * 26.5 (80 * 89.3 * 25 without mount / connector) / app. 172g
Material	housing / cover	PBT 30GF black colored (Ultradur) / AlMg3 W19

Miscellaneous

Measuring principle (Doppler's principle) in one measuring cycle due basis of FMCW with very fast ramps independent measurement of distance and velocity

Version SRR 308-21 / sensor for the industry / CAN protocol for free communication

The version -21 allows to set maximum 8 ID's and maximum 8 collision avoidance regions and to change the sensitivity between low and high sensitivity by the user continuously

Interfaces: The device is fitted with two CAN bus interfaces as standard. Further interfaces as converter, software adaption, housing and / or hardware adaption are possible on demand and in case of assumption of costs. The SRR 308-21 also could be used for complex measuring tasks.

