

ARS 548 RDI 3D/4D long range radar sensor

Reliable - Robust - New Design

AUMOVIO offers a new type of radar sensor, the ARS 548 RDI.

Measuring procedure

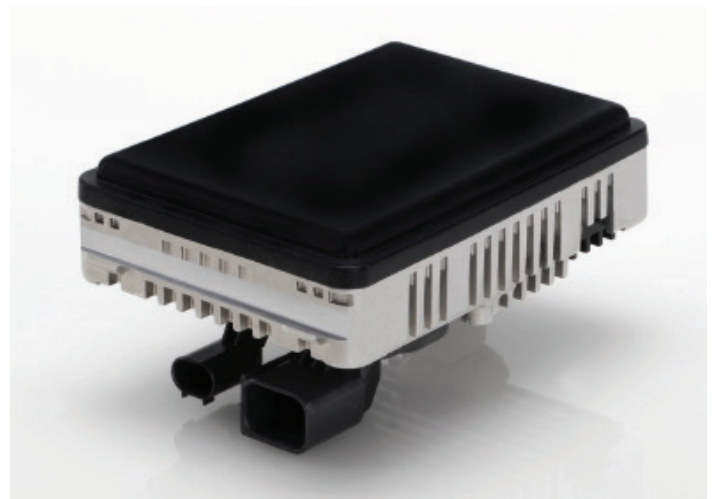
The rugged ARS 548 RDI sensor from AUMOVIO measures independently the distance, speed (Doppler's principle), angle and height of objects in one measurement cycle based on pulse compression with new frequency modulation. The improved range resolution is available in the complete FoV with a real time scanning frequency of 20 times per second. Simultaneous detection output of target distances up to 300 m, relative speed and angle for each target in azimuth and elevation with a high resolution is possible - via RDI (Radar Detection Interface).

Typical areas of application:

- Collision warning
- Area monitoring system for far range
- Classification of objects
- Height measuring
- Object detection

Advantages:

- **Fast:** The ARS 548 RDI provides excellent measuring performance. The rugged ARS 548 RDI radar sensor is capable of determining the distance to an object in real time scanning.
- **Robust and new design:** By using the newest radar technology with a new design and a new measuring principle for mass production in automotive supply industry, the design is kept very robust with a high performance.



ARS 548 RDI long range radar sensor 77 GHz - data sheet

Measuring performance	Comment	to natural targets (non-reflector targets)
Distance range		ext. Range 301m - 1514m
Resolution distance measuring		0.22 m
Accuracy distance measuring	point targets, no tracking	±0.15 m depending on ego speed (thresholds at 115/110 kph)
Azimuth angle augmentation	(field of view FoV)	±60° internally processing, ±50° Output of OI/RDI ±70° keep out zone – for max. misalignment
Elevation angle augmentation	(field of view FoV)	±4°... ±14° - ±4°@300m - ±14°@<100m ±20° keep out zone
Azimuth beam width (3 dB)		1.2°... 1.68° - 1.2°@0...±15° - 1.68°@±45°
Elevation beam width (3 dB)		2.3°
Azimuth Auto Alignment	Only ARS540 automotive	±4.°
Elevation Auto Alignment	Only ARS540 automotive	±6.°
Accuracy azimuth angle		±0.1° ... ±0.5° ±0.1°@±15°; ±0.2°@50°; ±0.5°@60° linear interpolation
Accuracy elevation angle		±0.1°
Speed range/ resolution / accuracy		-400 km/h...+200 km/h (negative values: oncoming vehicles) 0.35 kph /±0.1 kph
Cycle time	In standstill: 100 ms	app. 50 ms complete FoV is covered in single cycle time app. 70 ms rear
Antenna channels / -principle		increased number of 1.75xARS430 / 8x incl. virtual anten-na, 16 x Rx and 12 x Tx = 192 virtual antennas Digital Beam Forming - new RF/Antenna interconnect
Operating conditions	Comment	to natural targets (non-reflector targets)
Radar operating frequency band	acc. ETSI & FCC	76...77 GHz
Mains power supply	at 12 V DC	+8.5 V...17 V DC
Power consumption	at 12 V DC	18 W / 1.5 A typ. - 23 W maximum / 3.0 A peak current
Overvoltage		>18 V DC sensor functions deactivated
Operating-/ storage temperature		-40°C...+85°C / -40°C...+105°C
Life time	LV 124 Specification	8,000 h or 15 years or 300,000 km
Shock		Mechanical acc. LV 124
Vibration		Mechanical acc. LV 124
Protection rating	Ingress Protection	IPx6K/9K (water proof, high-pressure cleaning – ISO 16750+20653) IP6Kx (dust proof – ISO 20653)
Output Power	RMS EIRP, average	<= 35 dBm – 3.16 W @ -40°C ambient temperature



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Measuring performance	Comment	to natural targets (non-reflector targets)
Interface		1 x BRR BroadR Reach Ethernet 100 Mbit/s
Housing	Comment	to natural targets (non-reflector targets)
Dimensions / weight	L * W * H (mm) / mass (g)	137 * 90 * 39 (65.5 with connector) / 526 g 4 g 2-pin / 8 g 6-pin connector - without any cable
Material	housing radome front / bottom plate	PBT GF 30 black (BASF-Ultradur B4300G6 LS sw 15073) / AC-47100 (AlSi12Cu1(FE)) die cast aluminum or EN AW 5754 (3.535) AlMg3 pressed-formed aluminum

Housing

Measuring principle (Doppler's principle) in one measuring cycle due basis of pulse compression with stepped frequency modulation to improve range resolution. Independent measurement of distance, speed, azimuth and elevation angle.

Version ARS 548 RDI
sensor with object output
BRR BroadR Reach Ethernet 100 Mbit/s

Mounting possible with 3 equipped bolt screws on the back cover or own designed bracket
Connector type CT-A
6 pin Main connector, 2 pin Ethernet connector,
Housing M-A
Special Case SC1 with 80 GHz frequency band for China infrastructure

Setting / Configuration possible by customer himself:

- closed / equipped bolt screws
- Mounting position / orientation
- Extended range up to 1,500 m

