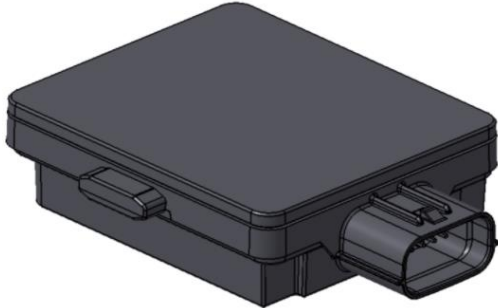


77GHz 角雷达



Vehicle-mounted millimeter wave radar is mainly used in automobile assisted driving systems. The radar narrow beam generated by the radar transmitter emits a Frequency Modulated Continuous Wave (FMCW) signal. When the transmitted signal encounters the target, it is reflected back and received by the receiving antenna . After mixing and amplification, its difference frequency signal frequency can be used to represent the radar. The distance to the target, and then based on the phase difference of the difference frequency signal, the relative angle, speed and danger time of the target to the radar are calculated , so as to make a pre-judgment warning for the vehicle.

RH-MSR-GF01/704AAR is a 77GHz angular radar developed by Shenzhen Ronghui Technology Co., Ltd., with a horizontal FOV of $\pm 75^\circ$ and a maximum detection range of 100m. Can support BSD (blind spot monitoring), LCW (lane change assist warning), DOW (door opening warning), RCTA (rear cross collision warning), RCTB (rear cross collision braking), RCW (rear approach warning), FCTA (Forward crossing warning) and other functions.

This product has the characteristics of long detection distance, compact size, light weight, and easy integration. It can be customized and developed according to customer needs , and its product performance has been recognized by many partners .

Product Features

Accurate, effective and safe

- **Safety:** It can detect obstacles up to 100m away, assisting the driver to make judgments in

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advance and ensuring the safety of vehicles and personnel;

- **Multi-target:** supports 64 targets for simultaneous output, giving accurate detection results in the shortest time;

Work around the clock, around the clock

- **All-weather:** All-weather real-time protection, adaptable to rain, snow, fog, haze, sand and other severe weather, to minimize missed alarms and eliminate false alarms ;
- **High protection level:** Radar IP67 protection, high waterproof and dustproof level, anti-seismic and anti-shake, can work normally in various extreme environmental conditions ;
- **High accuracy :** Using a number of advanced digital signal processing technologies such as FFT and target cluster tracking, the beam detection range is wide, reducing the risk of collision in the blind area of the rear corner ;

Efficient, reliable and highly integrated

- **Efficient:** Using FMCW modulation technology, combined with high-performance processing chips, it can quickly identify obstacle information in the rear blind area and promptly remind the driver to take necessary measures ;
- **Reliable:** The radar transceiver antenna is designed with a wide beam in the azimuth plane, and the -3 dB beam width in the azimuth plane is about 80 ° , which can increase the radar detection range in the azimuth plane ; the elevation plane is designed with a narrow beam, and the -3 dB beam width in the elevation plane is about 16 ° ;
- **Simple:** Easy to connect: the product supports CAN FD interface with a rate of up to 2M bit/s, which can realize high-speed interconnection with the car body ;
- **High integration:** This product uses advanced signal processing strategies to simultaneously complete multiple tasks such as target detection, trajectory tracking, and target output in a single chip ;
- **Anti-interference :** The transceiver antenna adopts a low side-lobe pattern design , which makes the radar less susceptible to interference from ground clutter and targets outside the main beam, and can significantly improve the signal- to-noise ratio of radar detection targets ;

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Small size, light weight, low power consumption

- **Small size:** It adopts integrated chip design and real miniaturized antenna design, which greatly reduces the size of the radar ;
- **Light weight:** light weight and easy to integrate ;
- **power consumption :** The main chip is built using CMOS technology , which reduces product power consumption. The power consumption of the whole machine is only 2W, which is suitable for various environments;

Reference standard documents:

serial number	category	name
1	GB/T	GB/T39265 road vehicles Blind spot monitoring (BSD) system performance requirements and test methods
2	GB/T	GB/T37471 Intelligent transportation system Lane changing decision assistance system Performance requirements and testing methods
3	I - VISTA	Intelligent driving assistance test procedures i-VISTA SM-ADAS-ICAT-A0-2019 3.10
4	standard	C-NCAP China New Car Evaluation Specification 2023 version active safety research

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Technical specifications

Measure performance	
Modulation	FMCW
Ranging range	0.2m~100m
distance resolution	0.4m
Distance accuracy	0.1m
Angle measurement range	$\pm 75^\circ$
Angular resolution	5°
Angular accuracy	1°
speed range	- 200 km/h~+ 200 km/h (- means close to the target, + means far away from the target)
speed resolution	0.2 m/s
Speed accuracy	0.05 m/s
Number of antenna channels	2T4R
cycle period	50ms _
The detected targets are output in order of distance or RCS size. By default, the targets are output in order of distance from near to far.	
Other properties	
Radar transmit frequency	76GHz~77GHz
power supply	9V ~ 16V _ DC
Power consumption	<2 W
Quiescent Current	$\leq 0.1\text{mA}$
operating temperature	$-40^\circ\text{C} \sim +85^\circ\text{C}$
storage temperature	$-40^\circ\text{C} \sim +90^\circ\text{C}$
Protection level	IP67
Interface Type	
interface	1xCANFD-2Mbit/s
shell	
size	W*L*H 90.2mm*74.5mm*20.8mm
weight	106g _
Material	Radome / bottom case PBT+GF30 / PET+GF35 (laser welding)

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FCC regulatory compliance statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To satisfy RF exposure requirements, a separation distance of **20** cm or more should be maintained between the antenna of this device and persons during device operation.

To ensure compliance, operations at closer than this distance is not recommended.

All controls, adjustments and switches that may be operated or adjusted without resulting in a violation of FCC rules;

Any adjustment that could result in a violation of FCC rules or that is recommended to be performed only by or under the immediate supervision and responsibility of a person certified as technically qualified to perform transmitter maintenance and repair duties in the relevant radio service by an organization or committee representative of users of that service;

The replacement of any transmitter component (crystal, semiconductor, etc.) that could result in a violation of FCC rules;