

AFM711 Stereo Dual Wide-Angle Radar



AFM711 radar detects the reflection of the electromagnetic wave by emitting a conical electromagnetic wave to the front, judges whether there is an obstacle ahead, and feeds back the relative distance, angle, speed and other information between the obstacle and the radar; And accurately prompt that driver of obstacle information in the forward or reverse drive process of the low-speed vehicle.

The product adopts multi-transmitting and multi-receiving antenna, with measurement distance of 0.1 ~ 20 m, compact size, high sensitivity, stable performance, light weight and easy integration. The product is used in low-speed vehicle scenarios such as unmanned sweeper, environmental protection vehicle, unmanned shuttle vehicle and mine car, and its performance has been recognized by many partners.



AFM711

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Product characteristics

Double wide angle detection

- **120 ° horizontal wide angle:** It covers the range of $\pm 60^\circ$ ahead, which can effectively detect pedestrians and obstacles at close range and realize omni-directional safety warning. Compared with ultrasonic radar, the design of horizontal wide angle reduces the number of sensors and the cost of the system.
- **120 ° elevation wide angle:** the elevation angle reaches 120° , and the FoV detection is improved by 4 ~ 8 times, which greatly widens the vertical field of view, reduces the elevation blind area, accurately detects weak targets such as cones

Multi-target precision detection

- **High resolution:** for two objects with a radial distance greater than 0.2 m, the target can be effectively distinguished and output
- **Safety:** It can detect obstacles up to 20 meters away, assist operators to make judgments in advance, and ensure the safety of vehicles and personnel.
- **Multi-target:** supports detection and tracking of up to 64 targets/frame

Work 24/7/365

- **All-weather:** All-weather real-time protection, adapt to rain, snow, fog, haze, sand and dust and other bad weather, to maximize the elimination of missed reports, eliminate false alarms
- **High protection grade:** radar IP67 protection, high waterproof and dustproof grade, anti-shock and anti-shake, can work normally under various extreme environmental conditions

Small in size, easy to integrate, and supports

the design of Ray-Vision integration

- **Multiple product forms:** PCBA and radar modules can be provided to meet different application requirements of customers
- **Small size:** the size of the finished product is $40 * 40 * 22.5\text{mm}$, only the size of 3 coins, which does not occupy space, and the installation is beautiful. The size of PCBA is $32 * 32 * 13\text{mm}$, only the size of 2 coins, which can save equipment space during integration.
- **Rich interfaces:** support serial port, 485 interface and can port design, easy for customer integration

Flexible configuration and more convenient use

- **Multiple defense zone settings:** 3 defense zone settings, support the customer to develop different alarm information output of 3 defense zones, and increase the alarm level in turn according to the target distance.
- **10-gear sensitivity design:** 1 ~ 10 gear sensitivity settings. High sensitivity can improve the target detection rate and prevent false alarm. Low sensitivity can reduce the false alarm rate.

Intelligent sensing for 4D height detection

- Target height information can be detected, and targets (such as viaducts, signal lights, signs and height limit poles) in the elevation direction can be filtered by setting the height limit, so as to reduce the false alarm rate.

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Technical specifications

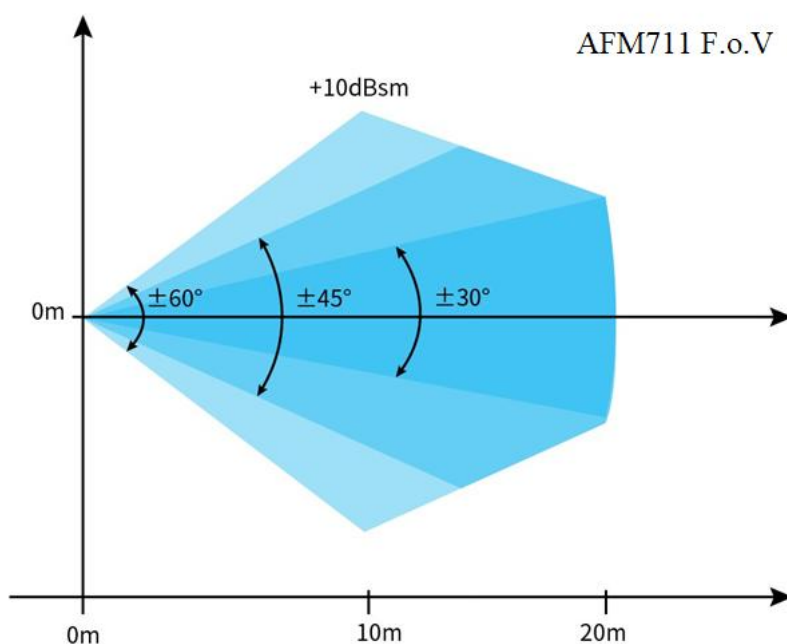
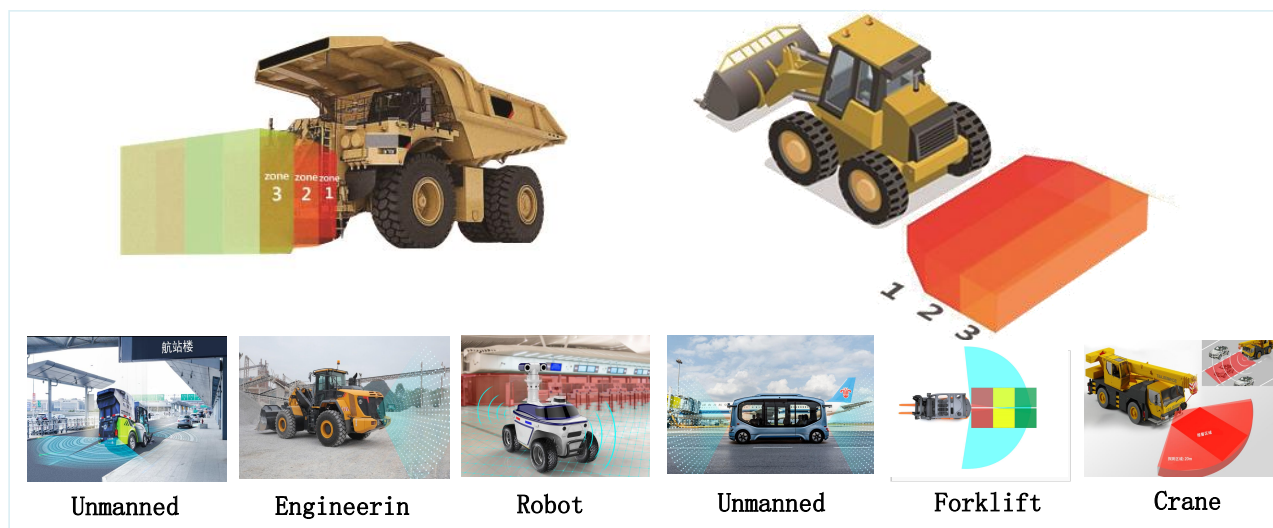
Measurement Performance General Target (Non-Reflective Target)		
Modulation mode		FMCW
Ranging range		0.10~20m
Range measurement resolution	Point target, non-tracking	0.2m
Distance measurement accuracy	Point target, non-tracking	$\pm 0.1\text{m}$
Angular accuracy	Point target, non-tracking	$\pm 1^\circ$
Speed range		-60km/h ~+60km/h
Velocity resolution	Point target, non-tracking	0.36m/s
Speed accuracy	Point target, non-tracking	$\pm 0.18\text{m/s}$
Number of antenna channels		3TX/4RX = 12 channels
Cycle period		40ms
Elevation beam	-6dB	120°
Azimuth beam	-6dB	120°
By default, the target data is output in the order of the radial distance of the target from near to far.		
Operating conditions		
Radar transmitting frequency	Follow ETSI & FCC	76...77GHz
Transmitting power	Average/Peak EIRP	16.0dBm
Power source		9.0V~24VDC
Power consumption		2.5W
Operating temperature		-40°C...+85°C
Storage		-40°C...+105°C

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temperature		
Degree of protection		IP67
Interface type		
Interface		1xCAN-ISO11898-2 compliant (default 500K) 1x485/TTL
Enclosure		
Size	L*W*H	40x40x24.5mm
Weight		60g
Material	Enclosure Front/Rear Cover	PBT+GF30

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Application scenario



FOV Diagram of AFM711 Radar System