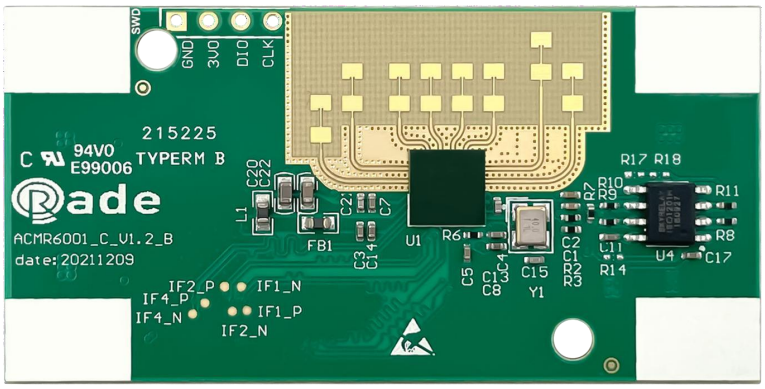
Smart air-conditioning radar LD6001

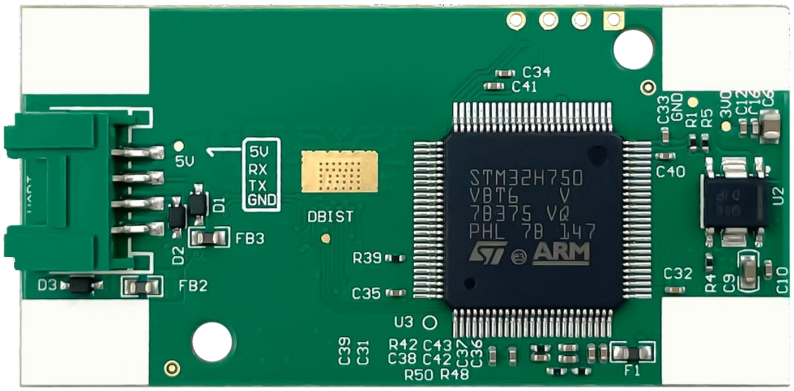
User Manual

1. Module Overview

LD6001 module is a 4T3R (four-way transmission, three-way reception) fully integrated 60GHz millimeter wave radar module. It can be used to detect the regional location, number statistics (within 8 people), walking trajectory, etc. of the human body .



Front of module (antenna facing up)



Back of module

Note: The module may be slightly modified due to iterations, etc. Please refer to the latest physical module received. The above pictures are for reference only.

Communication interface socket, wiring sequence from bottom to top:

Pin	Function
VCC	Power supply pin, DC 5V
RX	Serial port receiving pin, TTL, 5V level
TX	Serial port sending pin, TTL, 5V level
GND	Ground pin

2. Module parameters

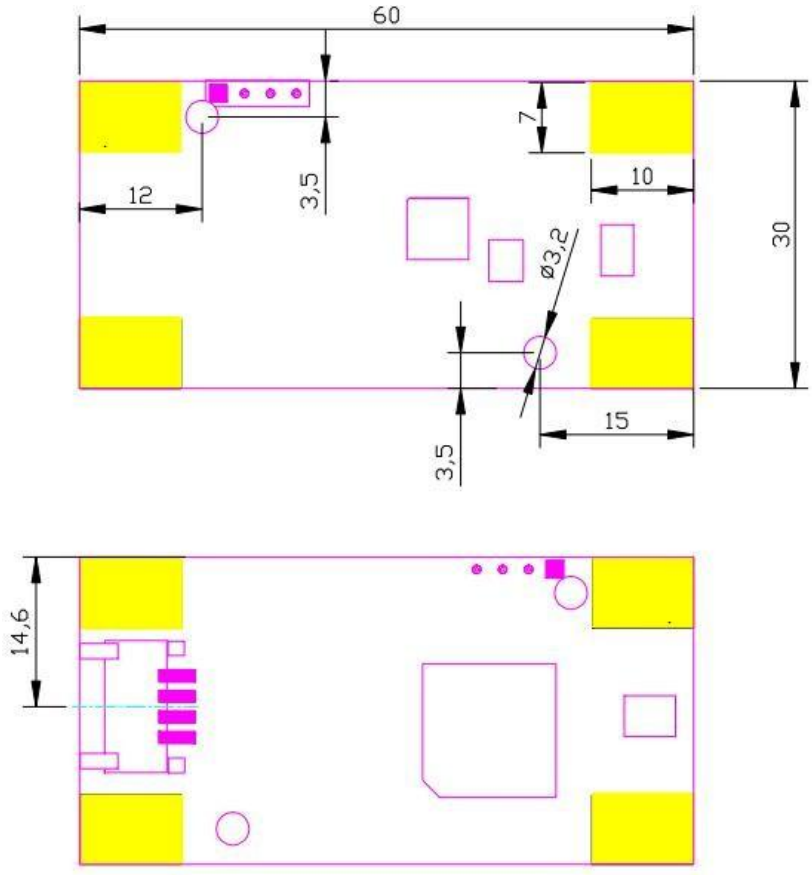
The following are the technical parameters of the module:

parameter	Value	Unit	Remark
Operating frequency range	60	GHz	
Transmit power	12	dBm	
Modulation	FMCW	\	FM Continuous Wave
Sweep bandwidth	4	GHz	
Antenna beam width	±60	°	
Antenna beam elevation width	±30	°	
Maximum detection distance	8	m	
Operating voltage	5	V	
Average power consumption	1.1	W	

Operating temperature	-15 ~ 70	℃	
Module size	60*30	mm	
Startup time	3	s	

3. Instructions

3.1 PCB Size description (unit: mm)



Size=0-10mm Tolerance=±0.10mm

Size=10-150mm Tolerance= ± 0.20 mm

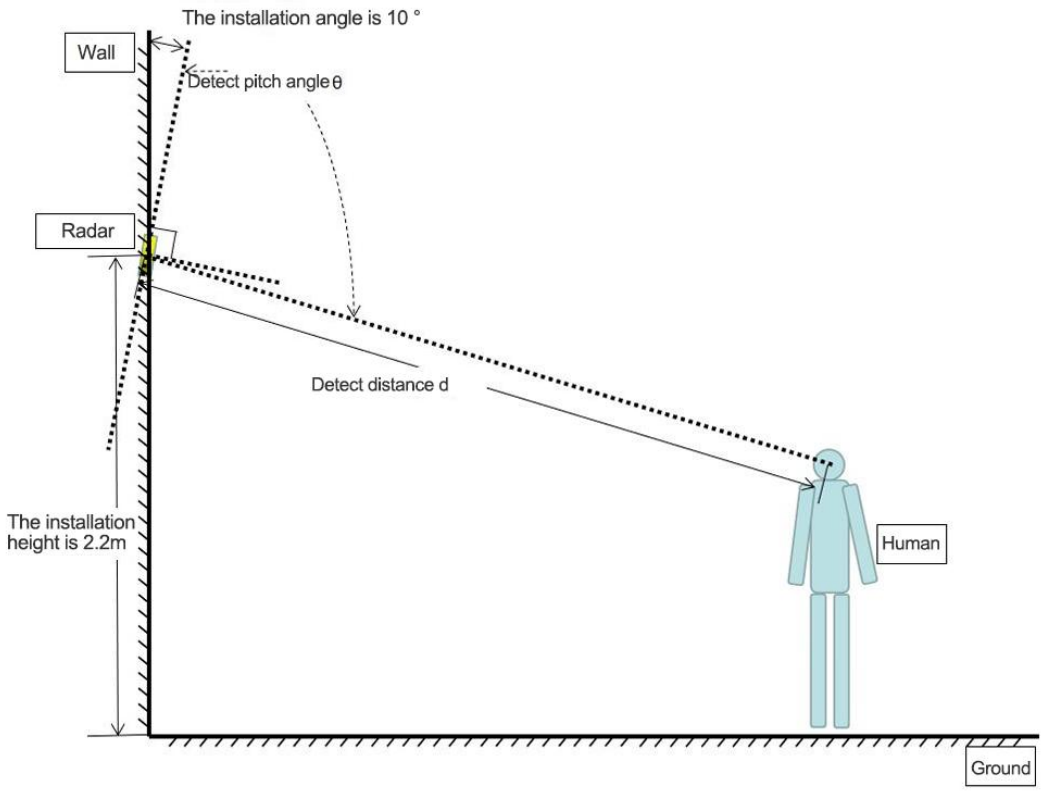
Surface socket specifications: horizontal, 4 pins , pin spacing 2.0 mm, green

Burning port: spacing 2.54mm , aperture 0.9m , function definition refers to the physical mark

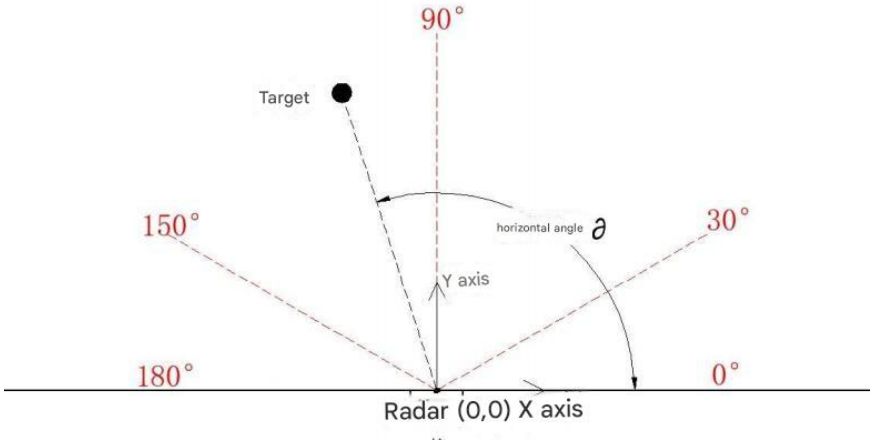
3.2. Installation requirements

Install the module on a vertical wall at a height of 2.2 meters, and tilt the front of the module (antenna facing upward) by 10 degrees. It is generally recommended to install it in this way for the best effect, but you can also install it slightly higher or adjust the angle slightly as needed. The specific results are subject to actual test results.

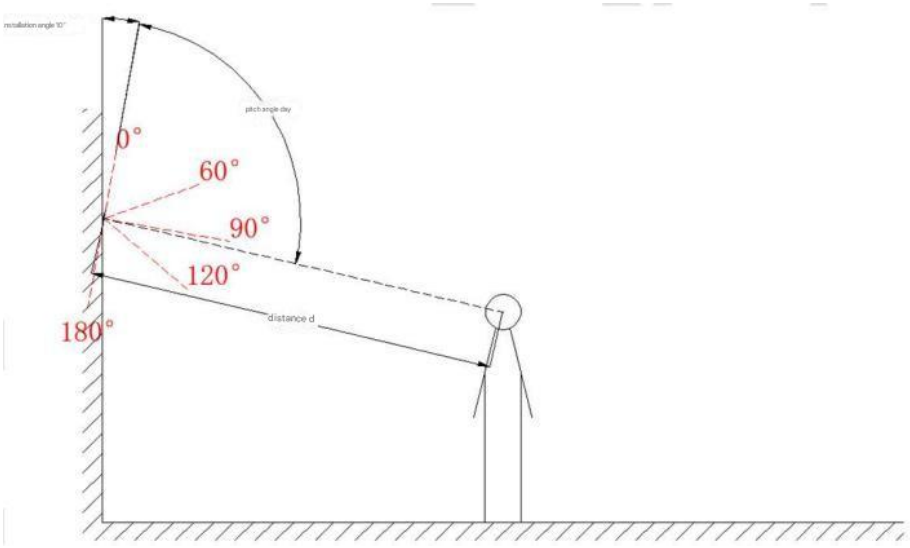
The schematic diagram of the target installation effect, as well as the distance, horizontal angle and pitch angle are shown in the following figure:



Installation Diagram



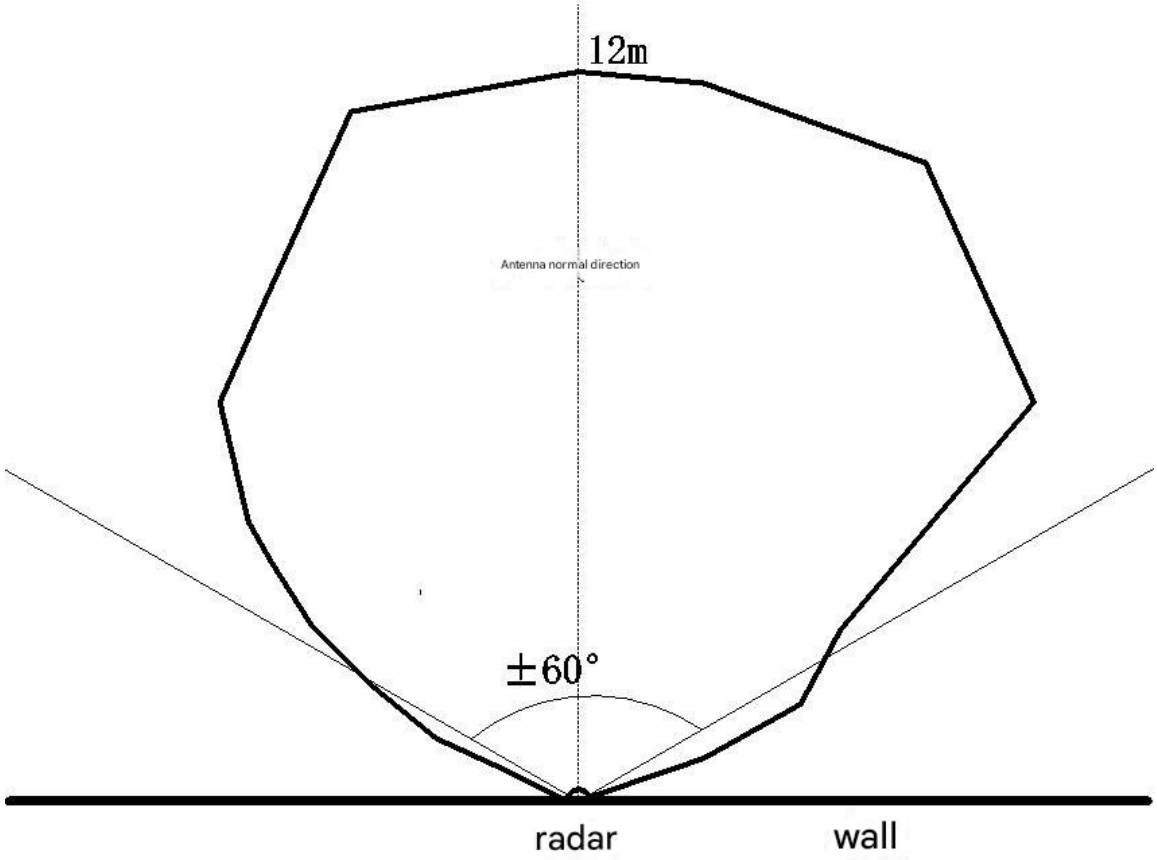
Horizontal Angle



Pitch Angle

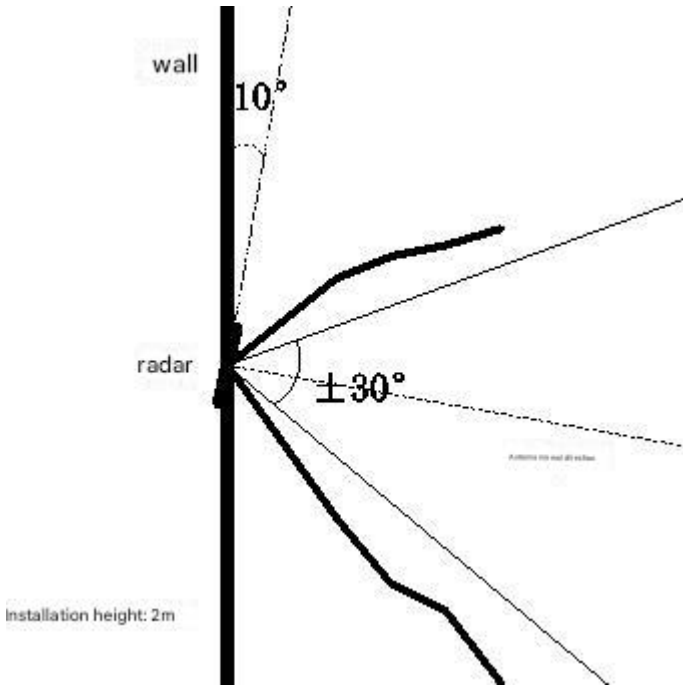
3.3 Actual radiation range

A. Horizontal radiation range



The horizontal radiation range of the radar module is shown in the figure above. The horizontal width of the antenna beam can cover a range of ±60° .

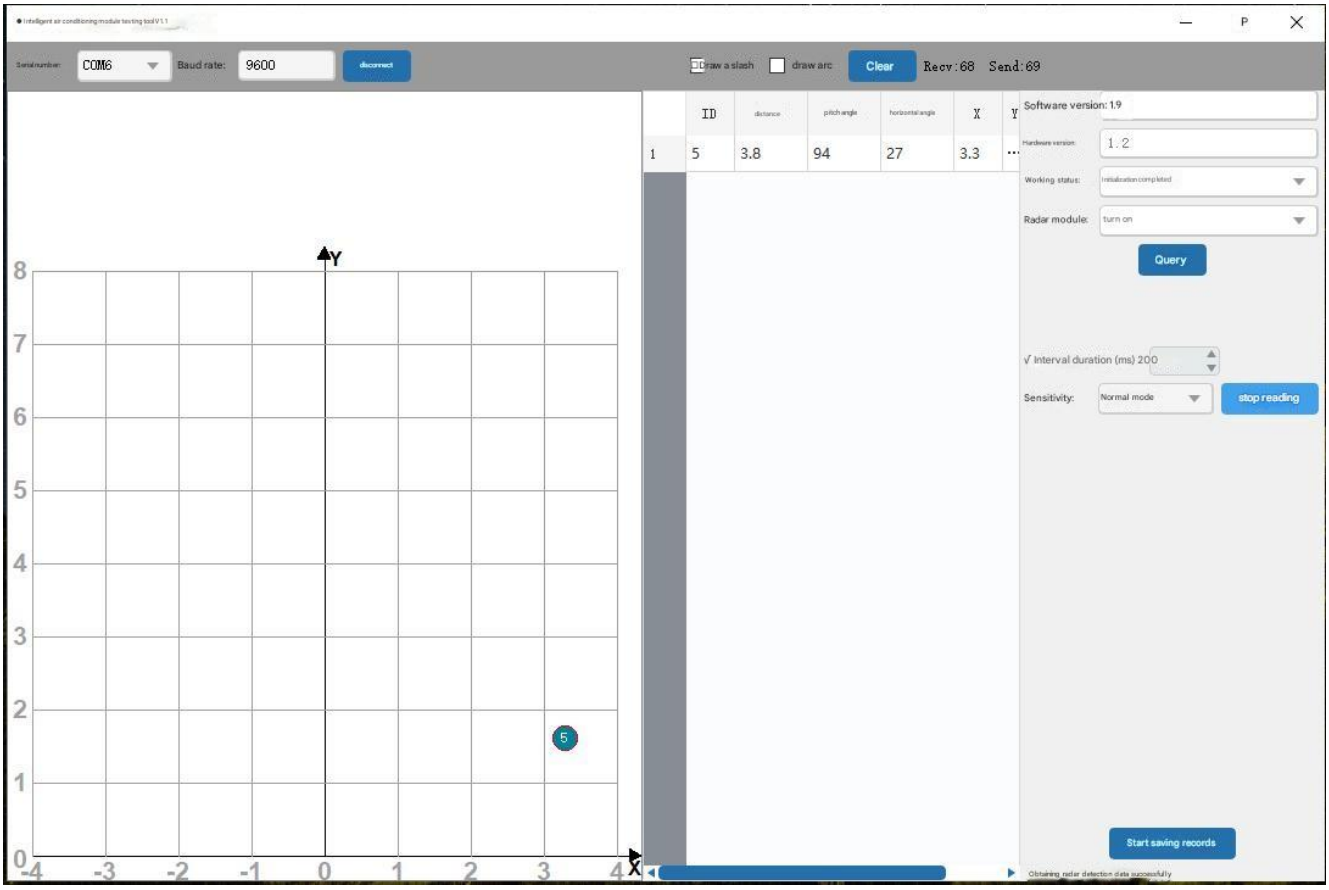
B. Elevation radiation range



The elevation radiation range of the radar module is shown in the figure above. The antenna beam elevation width can cover a range of ±30° .

3.4 Host computer test instructions

Connect the module via the computer serial port, open the host computer tool, select the corresponding serial port, and the baud rate defaults to 9600. First click query to obtain the software and hardware version number, and confirm that the device working status has been "initialized" and the radar module is in the "on" state , then click the read target button to display the position and trajectory of people within the radar range.



Interval time: The target coordinate data is obtained through active query, so the interval time is to set how often to query the target status. The default is to read the target coordinates once every 200ms ;

Sensitivity:

Normal mode - after the target enters the detection area, the tracking time is longer but the accuracy is higher;

High sensitivity mode - When a target enters the detection area, it can be quickly triggered and displayed, but the probability of false scenes appearing in the

corresponding initial state is higher, and the accuracy will be slightly affected.

Protocol:

For specific protocol, please refer to the document "Intelligent Air Conditioning Radar LD6001 Protocol Description Document V1.1.pdf ".