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› JMT HLK-LD2450 24GHz Trajectory Sensor Module User Manual

JMT HLK-LD2450

JMT HLK-LD2450 24GHz Trajectory Sensor Module User Manual

Model: HLK-LD2450 (F50749)

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1. PRODUCT OVERVIEW

The JMT HLK-LD2450 is a 24GHz radar module designed for real-time tracking of moving targets within a detection area. It provides distance, angle, and speed information of these targets via a serial port. This module is primarily intended for indoor applications such as smart homes, offices, and hotels, enabling precise positioning and tracking of people.

Human movement trajectory tracking radar module

Moving targets within the 24GHz ISM frequency band/8 meters

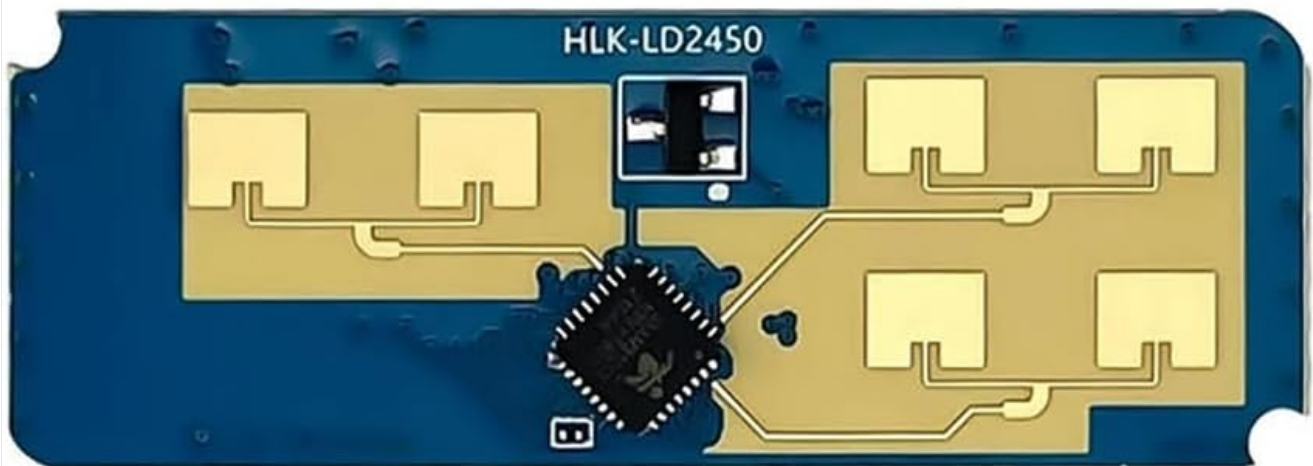


Figure 1: Overview of the JMT HLK-LD2450 radar module, illustrating its compact design for human movement trajectory tracking.

2. KEY FEATURES

- **Trajectory Tracking:** Real-time tracking of moving targets, outputting distance, angle, and speed data.
- **Application Scenes:** Optimized for indoor environments including homes, offices, and hotels for human presence and movement detection.
- **Detection Angle:** Azimuth $\pm 60^\circ$ / Tilt $\pm 35^\circ$.
- **Angle Accuracy:** 2° to 20° .
- **Detection Distance:** Maximum sensing distance of 8 meters.
- **Distance Measurement Accuracy:** 0.15 meters.
- **Data Output:** Serial ASCII format.
- **Modulation Mode:** FMCW (Frequency Modulated Continuous Wave).
- **Frequency:** 24G-24.25GHz (ISM band).
- **Sweep Bandwidth:** 250MHz (CE/FCC compliant).
- **Serial Port Baud Rate:** 256000, with 1 stop bit and no parity bit.
- **Package:** Default 1.5mm x 4Pin Female connector.

3. TECHNICAL SPECIFICATIONS

Parameter	Value
Frequency	24G-24.25GHz
Sweep Bandwidth	250MHz (CE/FCC compliant)
Modulation Mode	FMCW
Power Supply Voltage	5V (Typical)
External Dimension	15mm x 40mm
Detection Angle (Azimuth)	± 60°
Detection Angle (Tilt)	± 35°
Maximum Sensing Distance	8m
Distance Defense Rate	0.75m
Distance Measurement Accuracy	0.15m
Angle Accuracy	2° ~ 20°
Data Refresh Rate	10Hz
Ambient Temperature	-40°C ~ +85°C
Data Format	Serial ASCII output
Serial Port Baud Rate	256000
Serial Port Configuration	1 stop bit, no parity bit
Connector Type	1.5mm x 4Pin Female (Default)
Item Weight	9.07 g (0.32 ounces)

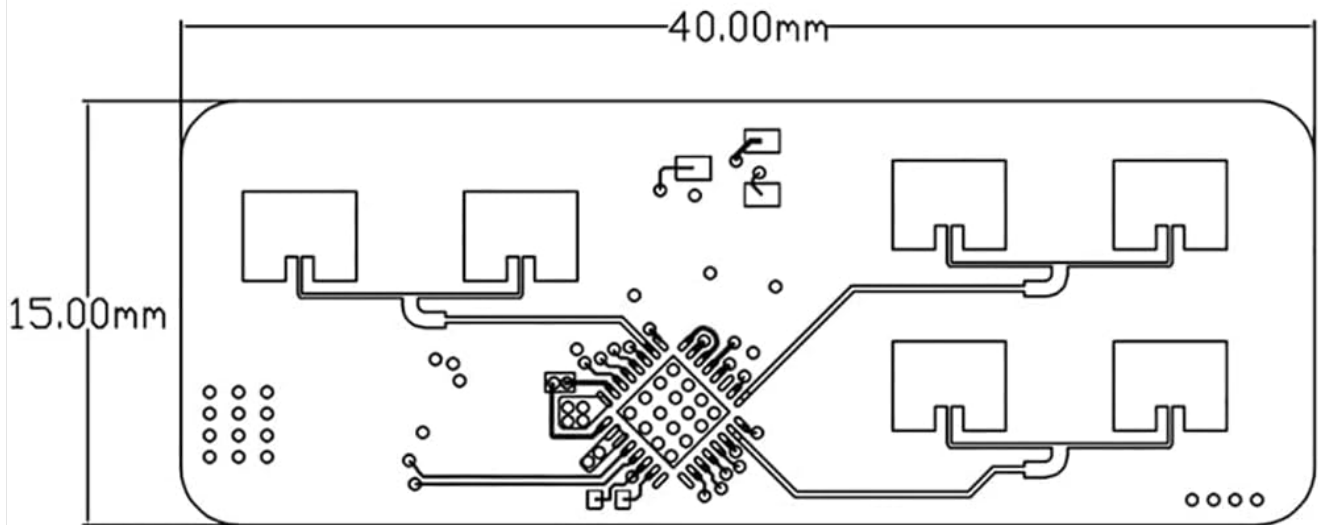
4. SETUP INSTRUCTIONS

This section details the physical connection and initial configuration of the HLK-LD2450 module.

4.1. Module Interface

The module features a 4-pin interface for power and serial communication. Refer to the diagram below for pin assignments.

Product diagram



Interface type: (1.5mm × 4PIN arrangement)

1: VCC, 5V power input

2: GND, power ground

3: TX, serial transmission

4: RX, serial port reception

Figure 2: HLK-LD2450 module dimensions and interface pinout. The module measures 15mm x 40mm.

1: VCC - 5V Power Input

2: GND - Power Ground

3: TX - Serial Transmission (Output from module)

4: RX - Serial Port Reception (Input to module)

Ensure correct polarity and voltage when connecting the power supply. Incorrect connections may damage the module.

4.2. Physical Installation

The module is suitable for wall-mounted installation in indoor environments. Consider the detection angle specifications (Azimuth $\pm 60^\circ$ / Tilt $\pm 35^\circ$) to optimize coverage for the desired tracking area.

One transmitter, two receivers motion positioning and tracking radar

Indoor scene application/wall mounted installation/
meeting certification requirements

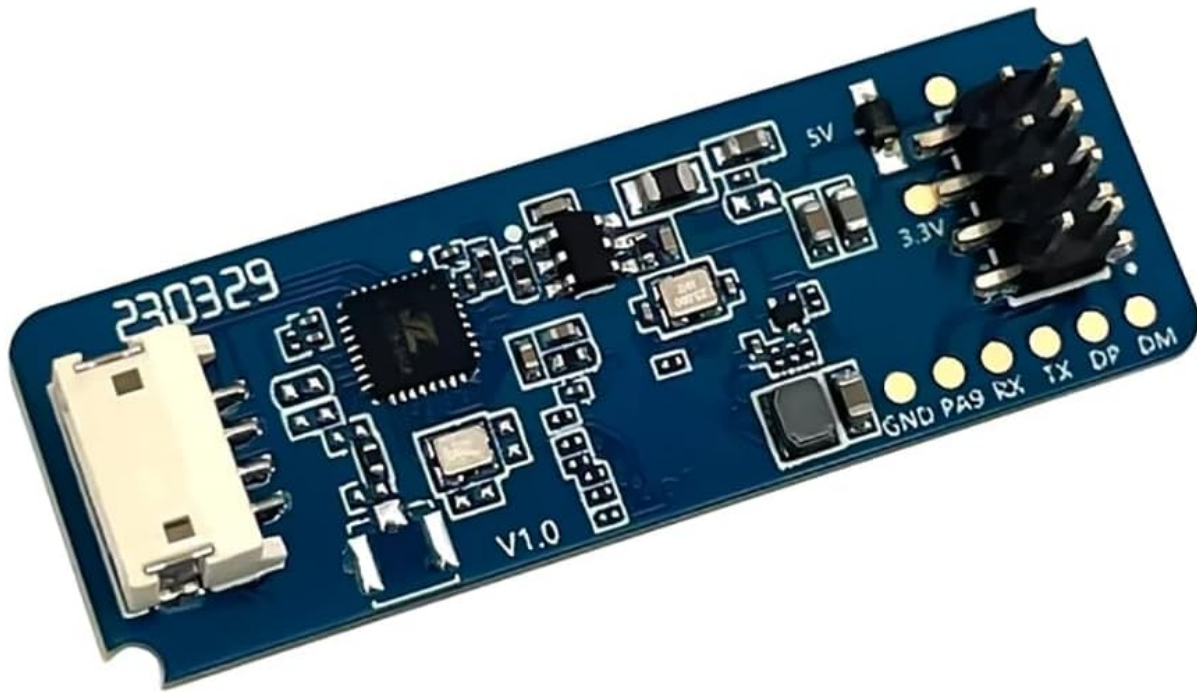


Figure 3: The HLK-LD2450 module showing the pin headers for connection, designed for motion positioning and tracking.

5. OPERATING INSTRUCTIONS

The HLK-LD2450 module communicates via a serial port, outputting target information in ASCII format.

5.1. Serial Communication Parameters

- **Baud Rate:** 256000
- **Stop Bits:** 1
- **Parity Bit:** None

5.2. Using the Configuration Tool

To interact with the module and retrieve data, use the dedicated Configuration Tool (software provided separately by the manufacturer, if applicable). Follow these steps:

1. Connect the HLK-LD2450 module to your computer via a serial interface (e.g., USB-to-serial converter).
2. Open the Configuration Tool software.
3. In the Configuration Tool, select the correct serial port number (COM port) corresponding to your connected module.
4. Ensure the serial port information (baud rate, stop bits, parity) matches the module's specifications (256000, 1 stop bit, no parity).

5. Click the "Detect Device" button within the Configuration Tool.
6. Once the module is detected, click "Start" to begin receiving moving target information from the detection area.

Important Note: The serial port tool and the host tool cannot be used simultaneously. Ensure only one application is accessing the serial port at any given time.

6. MAINTENANCE

The JMT HLK-LD2450 module is designed for reliable operation with minimal maintenance. Adhere to the following guidelines:

- **Environmental Conditions:** Operate the module within the specified ambient temperature range of -40°C to +85°C. Avoid exposure to extreme humidity, dust, or corrosive environments.
- **Cleaning:** If necessary, gently clean the module's surface with a soft, dry cloth. Do not use liquid cleaners or solvents.
- **Physical Handling:** Handle the module with care to prevent physical damage to the PCB or components. Avoid bending or applying excessive force.
- **Power Supply:** Ensure a stable 5V power supply is used. Fluctuations or incorrect voltage can affect performance or damage the module.

7. TROUBLESHOOTING

This section provides solutions to common issues you might encounter with the HLK-LD2450 module.

7.1. No Data Output / Connection Issues

- **Check Power:** Verify that the module is receiving a stable 5V power supply and that the VCC and GND connections are correct.
- **Serial Port Selection:** Ensure the correct COM port is selected in your Configuration Tool or serial terminal software.
- **Serial Port Parameters:** Confirm that the baud rate is set to 256000, with 1 stop bit and no parity bit.
- **Cable Connections:** Inspect all serial communication cables for proper connection and integrity. Ensure TX and RX lines are correctly cross-connected if using a direct serial connection (TX of module to RX of host, RX of module to TX of host).
- **Software Conflict:** Remember that the serial port tool and the host tool cannot be used at the same time. Close any other applications that might be accessing the serial port.
- **Driver Issues:** Ensure that the drivers for your USB-to-serial converter (if used) are correctly installed and up-to-date.

7.2. Inaccurate or Intermittent Tracking

- **Obstructions:** Ensure there are no significant physical obstructions (e.g., thick walls, large metal objects) between the module and the target area that could interfere with radar signals. While the module can detect through thin materials, dense objects will block signals.
- **Mounting Position:** Adjust the module's mounting position and angle to ensure optimal coverage of the desired detection area, considering the specified Azimuth and Tilt angles.
- **Environmental Interference:** While 24GHz is robust, strong electromagnetic interference in the immediate vicinity could potentially affect performance.

8. WARRANTY INFORMATION

Specific warranty details for the JMT HLK-LD2450 module are not provided in the available product information. Please refer to the seller or manufacturer's official website for warranty terms and conditions.

9. CUSTOMER SUPPORT

For technical assistance, further documentation, or inquiries regarding the JMT HLK-LD2450 module, please contact your point of purchase or visit the official JMT website. Support contact information is not available in the provided product data.