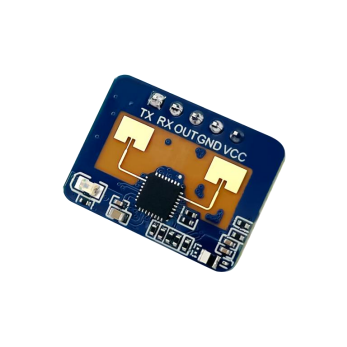


**Shenzhen Hi-Link ElectronicCo.,Ltd**

**HLK-LD2410C**

**Human presence sensingmoduleserial communicationprotocol**

****

**Version: V1.00 Modify date: 2022-11-7 Copyright @Shenzhen Hi-Link Electronic Co.,Ltd**

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**LD2410C**

**Shenzhen Hi-Link Electronic Co.,Ltd** 

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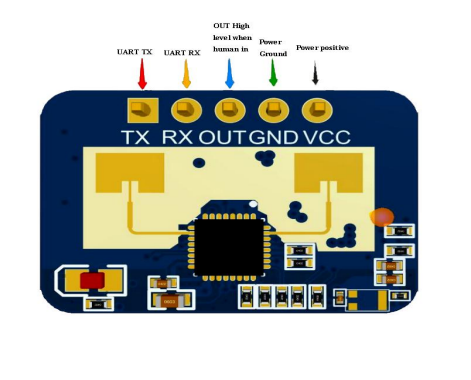
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**1 Communication interface introduction 1.1 Pin definition** 

**Figure 1 Module pin definition diagram**

| **Pin** | **Symbol** | **Name** | **Function** |
| --- | --- | --- | --- |
| 1 | UART\_Tx | UART | Tx UARTTx pin |
| 2 | UART\_Rx | UART | Rx UARTRx pin |
| 3 | OUT | Target state output | Human presence detected: output highlevelNo human presence: output lowlevel |
| 4 | GND | Power Ground | Power Ground |
| 5 | VCC | Power input | Power input 5~12V(Suggest: 5V) |

**Table 1 Pin definition table**

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**Shenzhen Hi-Link Electronic Co.,Ltd 1.2 Use and configuration**

**1.2.1 Typical application circuits**

LD2410C module directly through an IO pin output the detectedtarget state(someone high, no one low), but also through the serial port in accordancewiththeprescribed protocol for the output of the detection results data, the serial output datacontains the target state and distance auxiliary information, etc., the user canbeusedflexibly according to specific application scenarios.

The module power supply voltage is 5V and the power supply capacityof theinputpower supply is required to be greater than 200mA.

The module IO output level is 3.3 V. The default baud rate of the serial portis256000, with 1 stop bit and no parity bit.

**1.2.2 The role of configuration parameters**

Users can modify the configuration parameters to the module through theserial portof LD2410C to adapt to different application requirements.

The configurable radar detection parameters include the following : ● **The farthest detection distance**

Set the maximum detectable distance, only human targets that appear withinthismaximum distance will be detected and the result will be output. Set up in units of distance from the door, each distance fromthe door is 0.75m. Including motion detection of the farthest distance gate and stationarydetectionofthe farthest distance gate, can be set in the range of 1 to 8, for example, set thefarthestdistance gate for 2, only the presence of the human body within 1.5mwill beeffectively detected and output the results.

● **Sensitivity**

The presence of a target is determined when the detected target energyvalue(range0 to 100) is greater than the sensitivity value, otherwise it is ignored. Sensitivity value can be set in the range of 0 to 100. Each distance gatecanbesetindependently of the sensitivity, that is, the detection of different distances withinthe

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**LD2410C**

**Shenzhen Hi-Link Electronic Co.,Ltd** range of precise adjustment, local precision detection or filtering of specificareasofinterference sources.

In addition if the sensitivity of a distance gate is set to 100, the effect ofnotidentifying the target under this distance gate can be achieved. For example, thesensitivity of distance gate 3 and distance gate 4 is set to 20, and the sensitivityofallother distance gates is set to 100, then only the human body within 2.25to3.75mofthe distance module can be achieved to detect.

● **no-one duration**

Radar in the output from occupied to unoccupied results, will continue toreportaperiod of time on the occupied, if the radar test range in this time periodcontinuedunoccupied, the radar reported unoccupied; if the radar detects someone inthistimeperiod, then refreshed this time, unit seconds. Equivalent to no one delaytime, afterthe person left, keep no one more than this duration before the output status for noone.

**1.2.3 Visual configuration tool description**

In order to facilitate users to quickly and efficiently test and configure themodule,the PC terminal configuration tool is provided. Users can use this tool softwaretoconnect to the serial port of the module, read and configure the parametersofthemodule, and also receive the detection result data reported by the module, andmakereal-time visualization display, which is greatly convenient for users.

**Usage of the Uplink tool:**

1. properly connect the module serial port with the USB to serial port tool. 2. select the corresponding serial port number in the upper computer tool, set thebaudrate 256000, select the engineering mode and click connect the device. 3. after successful connection, click the start button, the right graphical interfacewilldisplay the detection results and data.

4. after connection, when the start button is not clicked, or click stop after starting, themode parameter information can be read or set.

Note: Parameters cannot be read and configured after clicking Start, andcanonlybeconfigured after stopping.

The interface and common functions of the OP tool are shown below:

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**LD2410C**

**Shenzhen Hi-Link Electronic Co.,Ltd **

**2 Communication protocols**

The LD2410C communicates with the outside world through a serial port (TTLlevel). Data output and parameter configuration commands of the radar are carriedoutunder this protocol. The default baud rate of the radar serial port is 256000, 1stopbit,no parity bit.

**2.1 Protocol format**

**2.1.1 Protocol data format**

The LD2410C uses small-end format for serial data communication, and all datainthefollowing tables are in hexadecimal.

**2.1.2 Command protocol frame format**

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**Shenzhen Hi-Link Electronic Co.,Ltd** The format of the protocol-defined radar configuration commands andACKcommands are shown in Table 1 to Table 4.

**Table 2 Send command protocol frame format**

| Frame header | Intra-frame data length | Intra-frame | data Endof frame |
| --- | --- | --- | --- |
| FD | FC FB FA 2 bytes See | Table | 3 04 030201 |

**Table 3 Data format in the sending frame**

| Command word (2 bytes) | Command value (Nbytes) |
| --- | --- |

**Table 4 ACK command protocol frame format**

| Frame header | Intra-frame data | length Intra-frame | data Endof frame |
| --- | --- | --- | --- |
| FD | FC FB FA 2 bytes See | Table | 5 04 030201 |

**Table 5 ACK intra-frame data format**

| Send command word | 0x0100 (2 | bytes) Return value (Nbytes) |
| --- | --- |

**2.2 Send command with ACK 2.2.1 Enabling configuration commands**

Any other commands issued to the radar must be executed after this commandisissued, otherwise they are invalid.

Command word: 0x00FF

Command value: 0x0001

Return value: 2 bytes ACK status (0 success, 1 failure) + 2 bytes protocol version(0x0001) + 2 bytes buffer size (0x0040)

Send data:

| **FD FC** | **FB FA 04 00** | **FF** | **00 01** | **00 04 03 02** |
| --- | --- | --- | --- | --- |

**01**

Radar ACK (success):

| **FD** | **FC FB FA** | **08 00 FF** | **01 00** | **00 01** | **00 40** | **00 04** |
| --- | --- | --- | --- | --- | --- | --- |

**030201**

**2.2.2 End configuration command**

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**Shenzhen Hi-Link Electronic Co.,Ltd**

End the configuration command and the radar resumes working mode after execution.If you need to issue other commands again, you need to send the enable configurationcommand first.

Command word: 0x00FE

Command value: None

Return value: 2-byte ACK status (0 success, 1 failure)

Send data:

| **FD FC** | **FB FA 02 00** | **FE** | **00 04 03 02** |
| --- | --- | --- | --- |

**01**

Radar ACK (success):

| **FD** | **FC FB FA 04** | **00 FE** | **01 00** | **00 04 03** |
| --- | --- | --- | --- | --- |

**0201**

**2.2.3 Maximum distance gate and unoccupied duration parameters configurationcommand**

This command sets the radar maximum detection distance gate (motion&stationary)(configuration range 2~8), and the unmanned duration parameter (configurationrange

0~65535 seconds). Please refer to the specific parameter word Table 5- 5. Thisconfiguration value is not lost when power is dropped.

Command word: 0x0060

Command value: 2-byte maximum motion distance gate word + 4-bytemaximummotion distance gate parameter + 2-byte maximum standstill distance gateword+4-byte maximum standstill distance gate parameter + 2-byte unoccupied durationword+4-byte unoccupied duration parameter

Return value: 2-byte ACK status (0 success, 1 failure)

0x0060 protocol parameter word

| Parameter name | Parameter word |
| --- | --- |
| Maximum movement distance door | 0x0000 |
| Maximum resting distance door | 0x0001 |
| No one duration | 0x0002 |

Send data: maximum distance door 8 (motion & stationary), no one duration5seconds

| **FD FC** | **FB FA** | **14 00 60** |  | **00 00 00 08 00** | **00** | **00 01 00 08 00** | **00 00** | **02 00 05** | **00 00 00 04030201** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

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**LD2410C**

**Shenzhen Hi-Link Electronic Co.,Ltd** Radar ACK (success):

| **FD** | **FC FB FA 04** | **00 60** | **01 00** | **00 04 03** |
| --- | --- | --- | --- | --- |

**0201**

**2.2.4 Read parameter command**

This command allows you to read the current configuration parameters of theradar. Command word: 0x0061

Command value: None

Return value: 2 bytes ACK status (0 success, 1 failure) + header (0xAA) +maxdistance gate N (0x08) + configure max motion distance gate + configure maxrest distance gate + distance gate 0 motion sensitivity (1 byte) + ... + distance gateNmotion sensitivity (1 byte) + distance gate 0 rest sensitivity 1 byte) + ... +distancegateN stationary sensitivity (1 byte) + unoccupied duration (2 bytes)

Send data:

| **FD FC** | **FB FA 02 00** | **61 00** | **04 03 02** |
| --- | --- | --- | --- |

**01**

Radar ACK: (success, maximum distance gate 8, configured motion distancegate8, stationary distance gate 8, 0~8 motion sensitivity 20, 0~8 stationary sensitivity25, unoccupied duration 5 seconds)

| Byte | | 1~4 Byte | 5, 6 Byte | 7, 8Byte9, | Byte  11  10 | Byte  12 | Byte  13 | Byte  14 | Byte  15 | Byte  16 | Byte  17 | Byte  18 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| FD | | FC FB FA 1C | 00 61 | 01 | 00 | 00 AA |  |  | 08 08 08 | 14 | 14 | 1414 |
| Byte  19 | Byte  20 | Byte | 21 Byte | 22Byte23 | Byte  24 | Byte  25 | Byte  26 | Byte  27 | Byte  28 | Byte  29 | Byte30 | |
| 14 |  | 14 14 | 14 |  | 14 | 19 | 19 | 19 | 19 | 19 | 19 19 | |
| Byte  31 | Byte  32 | Byte | 33, 34Byte35~38 |  |  |  |  |  |  |  |  | |
| 19 |  | 19 05 | 000401 | 03 02 | |  |  |  |  |  |  | |

**2.2.5 Enabling engineering mode command**

This command opens the radar engineering mode. When the engineering modeisturned on, each distance gate energy value will be added to the radar report data, please refer to 2.3.2 Target Data Composition for detailed format. Engineeringmodeis off by default after the module is powered on, this configuration value is lost whenpower is lost.

Command word: 0x0062

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**Shenzhen Hi-Link Electronic Co.,Ltd**

Command value: None

Return value: 2-byte ACK status (0 success, 1 failure)

Send data:

| **FD FC** | **FB FA 02 00** | **62 00** | **04 03 02** |
| --- | --- | --- | --- |

**01**

Radar ACK (success):

| **FD** | **FC FB FA 04** | **00 62** | **01 00** | **00 04 03** |
| --- | --- | --- | --- | --- |

**0201**

**2.2.6 Close project mode command**

This command turns off the radar engineering mode. After it is turned off, pleasereferto 2.3.2 Target Data Composition for the format of radar report data. Command word: 0x0063

Command value: None

Return value: 2-byte ACK status (0 success, 1 failure)

Send data:

| **FD FC** | **FB FA 02 00** | **63 00** | **04 03 02** |
| --- | --- | --- | --- |

**01**

Radar ACK (success):

| **FD** | **FC FB FA 04** | **00 63** | **01 00** | **00 04 03** |
| --- | --- | --- | --- | --- |

**0201**

**2.2.7 Distance gate sensitivity configuration command**

This command configures the sensitivity of the distance gate, and the configuredvalueis not lost when power is dropped. It supports both configuring each distancegate

individually and configuring all distance gates to a uniform value at the sametime. Ifsetting all distance gates sensitivity to the same value at the same time, the distancegate value needs to be set to 0xFFFF.

Command word: 0x0064

Command value: 2-byte distance gate word + 4-byte distance gate value +2-bytemotion sensitivity word + 4-byte motion sensitivity value + 2-byte standstill sensitivityword + 4-byte standstill sensitivity value

Return value: 2-byte ACK status (0 success, 1 failure)

0x0064 protocol parameter word

| Parameter name | Parameter word |
| --- | --- |
| Distance door | 0x0000 |

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| Movement sensitivity word | 0x0001 |
| --- | --- |
| Static Sensitivity Word | 0x0002 |

Send data: configured distance from the door 3 motion sensitivity 40, stationarysensitivity 40

| **FD FC** | **FB FA** |  | **14 00 64** | **00 00 00 03 00** | **00** | **00 01 00 28 00** | **00** | **00 02 00 28** | **00 00 00 04030201** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Radar ACK (success):

| **FD** | **FC FB FA 04** | **00 64** | **01 00** | **00 04 03** |
| --- | --- | --- | --- | --- |

**0201**

Send data: Configure motion sensitivity 40 for all distance doors, rest sensitivity40

| **FD FC** |  | **FB FA 14 00 64** |  | **00 00 00 FF FF** |  | **00 00 01 00 28 00** | **00** | **00 02 00 28** | **00 00 00 04030201** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Radar ACK (success):

| **FD** | **FC FB FA 04** | **00 64** | **01 00** | **00 04 03** |
| --- | --- | --- | --- | --- |

**0201**

**2.2.8 Read firmware version command**

This command reads the radar firmware version information.

Command word: 0x00A0

Command value: None

Return value: 2 bytes ACK status (0 success, 1 failure) + 2 bytes firmware type(0x0001) + 2 bytes major version number + 4 bytes minor versionnumber

Send data:

| **FD FC** | **FB FA 02 00** | **A0 00** | **04 03 02** |
| --- | --- | --- | --- |

**01**

Radar ACK (success):

| **FD FC** |  | **FB FA 0C 00 00 00** |  | **00 01** | **07 01 16 15** | **09 22 04** |
| --- | --- | --- | --- | --- | --- | --- |

The corresponding version number is V1.07.22091615 **2.2.9 Set serial port baud rate**

**03 02 01**

This command is used to set the baud rate of the serial port of the module. Theconfigured value is not lost when power is lost, and the configured value takeseffectafter restarting the module.

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**LD2410C**

**Shenzhen Hi-Link Electronic Co.,Ltd** Command word: 0x00A1

Command value: 2-byte baud rate selection index Return value: 2-byte ACK status (0 success, 1 failure)

**Table 6 Serial port baud rate selection**

| **Baud rate selection index** | **value Baud rate** |
| --- | --- |
| 0x0001 | 9600 |
| 0x0002 | 19200 |
| 0x0003 | 38400 |
| 0x0004 | 57600 |
| 0x0005 | 115200 |
| 0x0006 | 230400 |
| 0x0007 | 256000 |
| 0x0008 | 460800 |

The factory default value is 0x0007, which is 256000 Send data:

| **FD** | **FC FB FA 04** | **00 A1** | **00 07** | **00 04 03** |
| --- | --- | --- | --- | --- |

**02 01**

Radar ACK (success):

| **FD** | **FC FB FA 04** | **00 A1** | **01 00** | **00 04 03** |
| --- | --- | --- | --- | --- |

**0201**

**2.2.10 Restore factory settings**

This command is used to restore all the configuration values to their non-factoryvalues, which take effect after rebooting the module.

Command word: 0x00A2

Command value: None

Return value: 2-byte ACK status (0 success, 1 failure)

Send data:

| **FD** | **FC FB FA 02** | **00 A2** | **00 04 03** |
| --- | --- | --- | --- |

Radar ACK (success):

**02 01**

| **FD** | **FC FB FA 04** | **00 A2** | **01 00** | **00 04 03** |
| --- | --- | --- | --- | --- |

**02 01**

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**LD2410C**

**Shenzhen Hi-Link Electronic Co.,Ltd** The factory default configuration values are as follows:

**Table 7 Factory default configuration values**

| **Configuration items Default** | **value** |
| --- | --- |
| Maximum movement distance | door 8 |
| Maximum resting distance door | 8 |
| No one duration | 5 |
| Serial port baud | rate 256000 |

| **Configuration items Default** |  | **value Configuration items Default** | **value** |
| --- | --- | --- | --- |
| Motion sensitivity of distance | gate 0 50 | Static sensitivity of distance | gate 0 -(not settable) |
| Motion sensitivity of distance | gate 1 50 | Static sensitivity of distance | gate 1 -(not settable) |
| Motion sensitivity of distance | gate 2 40 | Static sensitivity of distance | gate 2 40 |
| Motion sensitivity of distance | gate 3 30 | Static sensitivity of distance | gate 3 40 |
| Motion sensitivity of distance | gate 4 20 | Static sensitivity of distance | gate 4 30 |
| Motion sensitivity of distance | gate 5 15 | Static sensitivity of distance | gate 5 30 |
| Motion sensitivity of distance | gate 6 15 | Static sensitivity of distance | gate 6 20 |
| Motion sensitivity of distance | gate 7 15 | Static sensitivity of distance | gate 7 20 |
| Motion sensitivity of distance | gate 8 15 | Static sensitivity of distance | gate 8 20 |

**2.2.11 Restart module**

The module receives this command and will automatically restart after the answerissent.

Command word: 0x00A3

Command value: None

Return value: 2-byte ACK status (0 success, 1 failure)

Send data:

| **FD** | **FC FB FA 02** | **00 A3** | **00 04 03** |
| --- | --- | --- | --- |

Radar ACK (success):

**02 01**

| **FD** | **FC FB FA 04** | **00 A3** | **01 00** | **00 04 03** |
| --- | --- | --- | --- | --- |

**02 01**

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**Shenzhen Hi-Link Electronic Co.,Ltd 2.2.12 Bluetooth settings**

This command is used to control the Bluetooth on or off, the Bluetooth functionofthemodule is on by default.

After receiving this command, a reboot is required for the function to take effect. Command word: 0x00A4

Command value: 0x0100 Turn on bluetooth 0x0000 Turn off bluetoothReturn value: 2-byte ACK status (0 success, 1 failure)

Send data: (Turn on bluetooth)

| **FD** | **FC FB FA 04** | **00 A4** | **00 01** | **00 04 03** |
| --- | --- | --- | --- | --- |

**02 01**

Radar ACK (success):

| **FD** | **FC FB FA 04** | **00 A4** | **01 00** | **00 04 03** |
| --- | --- | --- | --- | --- |

**0201**

**2.2.13 Get mac address**

This command is used to query the MAC address.

Command word: 0x00A5

Command value: 0x0001

Return value: 2-byte ACK status (0 success, 1 failure) + 1 byte fixed type (0x00)+3bytes MAC address (address is in big terminal order)

Send data:

| **FD** | **FC FB FA 04** | **00 A5** | **00 01** | **00 04 03** |
| --- | --- | --- | --- | --- |

**02 01**

Radar ACK (success):

| **FD** | **FC** | **FB FA 0A** | **00 A5 01 00** | **00 8F** | **27 2E** | **B8 0F** | **65 04030201** |
| --- | --- | --- | --- | --- | --- | --- | --- |

The mac address queried is: 8F 27 2E B8 0F 65

**2.2.14 Obtaining bluetooth permissions**

This command is used to get the Bluetooth permission, and you can use the APPtogetthe device information and debugging parameters through Bluetooth after successfulacquisition.

Command word: 0x00A8

Command value: 6 bytes of password value (every 2 bytes in small end order)

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**LD2410C**

**Shenzhen Hi-Link Electronic Co.,Ltd** Return value: 2-byte ACK status (0 success, 1 failure)

The default password is "HiLink", then the corresponding value is 0x4869(Hi) 0x4c69 (Li) 0x6e6b (nk).

Send data:

| **FD** | **FC** | **FB FA 08 00 A8** | **00 48** | **69 4c** | **69 6e** | **6b 48** | **69 04030201** |
| --- | --- | --- | --- | --- | --- | --- | --- |

Radar ACK (success):

| **FD FC** | **FB FA 04** | **00 A8** | **01 00** | **00 04 03** |
| --- | --- | --- | --- | --- |

**0201**

Note: This response only answers to Bluetooth, not to the serial port.

**2.2.15 Setting Bluetooth password**

This command is used to set the password for Bluetooth control. Command word: 0x00A9

Command value: 6 bytes of password value (each byte is in small end order) Return value: 2-byte ACK status (0 success, 1 failure)

Send data:

| **FD** | **FC** | **FB FA 08 00 A9** | **00 48** | **69 4c** | **69 6e** | **6b 48** | **69 04030201** |
| --- | --- | --- | --- | --- | --- | --- | --- |

Radar ACK (success):

| **FD** | **FC FB FA 04** | **00 A9** | **01 00** | **00 04 030201** |
| --- | --- | --- | --- | --- |

**2.2.16 Distance resolution setting**

Set the distance resolution of the module, that is how far away each distancegaterepresents, the configuration value is not lost when power is lost, and the configurationvalue takes effect after restarting the module.

Can be configured to 0.75m or 0.2m per distance gate, the maximumnumber of distance gates supported are 8.

Command word: 0x00AA

Command value: 2-byte distance resolution selection index Return value: 2-byte ACK status (0 success, 1 failure)

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**Shenzhen Hi-Link Electronic Co.,Ltd Table 8 Distance resolution selection**

| **Distance resolution selection index** | **Distance resolution (distance represented byeach value**  **distance gate)** |
| --- | --- |
| 0x0000 | 0.75m |
| 0x0001 | 0.2m |

Factory default value is 0x0001, which is 0.75m.

Send data:

| **FD** | **FC FB FA 04 00** | **AA** | **00 01** | **00 04 03** |
| --- | --- | --- | --- | --- |

**0201**

Radar ACK (success):

| **FD** | **FC FB FA 04** | **00 A1** | **01 00** | **00 04 03** |
| --- | --- | --- | --- | --- |

**0201**

**2.2.17 Query distance resolution setting**

Query the module's current distance resolution setting, i.e. howfar away eachdistancegate represents.

Command word: 0x00AB

Command value: None

Return value: 2-byte ACK status (0 success, 1 failure) + 2-byte distance resolutionselection index

Return value definition is the same as **Table 8 Distance resolution selection** Send data:

| **FD** | **FC FB FA 02** | **00 AB** | **00 04 03** |
| --- | --- | --- | --- |

Radar ACK (success):

**02 01**

| **FD** | **FC FB FA** | **06 00 AB** | **01 00** | **00 01** | **00 04 03** |
| --- | --- | --- | --- | --- | --- |

**0201**

Represents the currently set distance resolution of 0.2m.

**2.3 Radar data output protocol**

LD2410C outputs the radar detection result through serial port, the default outputis basic target information, including target status, motion energy value, stationaryenergy value, motion distance, stationary distance and other information. If theradaris

configured as engineering mode, the radar will additionally output each distancegateenergy value (motion & stationary). Radar data is output in the prescribedframeformat.

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**LD2410C**

**Shenzhen Hi-Link Electronic Co.,Ltd**

**2.3.1 Reported data frame format**

The format of the radar uplink message frames defined by the protocol is shownin Table 9 and Table 10. The definition of the report data type values in normal operation mode and engineering mode are shown in Table 11.

**Table 9 Reported data frame format**

| Frame header | Length of data in the frame | Intra-frame data | End of frame |
| --- | --- | --- | --- |
| F4 F3 F2 | F1 2 bytes | See Table | 9 F8 F7 F6F5 |

**Table 10 Intra-frame data frame format**

| Data type | Head | Target data | Tail | Calibration |
| --- | --- | --- | --- | --- |
| 1 byte (See Table | 10) 0xAA | See Table 11, Table | 13 0x55 | 0x00 |

**Table 11 Data type description**

| Data type value | Description |
| --- | --- |
| 0x01 | Engineering mode data |
| 0x02 | Target basic information data |

**2.3.2 Target data composition**

The content of the target data reported by the radar will change dependingontheoperating mode of the radar. In normal operation mode, the radar outputs thebasicinformation data of the target by default; when configured to engineeringmode, theradar adds each distance gate energy value information after the basic informationdataof the target. Therefore, the basic information of the target will always be output intheradar report data, while the distance gate energy value information needs tobeenabledby command to be output.

The composition of the target data reported by the radar in normal operationmode is shown in Table 11, and the definition of the target state values is showninTable 12. The composition of the target data frame in engineering mode is showninTable 13, with additional data added to the data reported in normal operationmode.

**Table 12 Target basic information data composition**

| Target Status | Movement targetdistance | Exercise  energy  (cm) | Distance to  target  target (cm)  value | Stationary  stationary  energy | Detection  target  distance(cm) value |
| --- | --- | --- | --- | --- | --- |
| 1 byteTable | (See  12) 2 bytes 1 |  | byte 2 bytes 1 |  | byte 2bytes |

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**Table 13 Target state value description**

| Target state value | Description |
| --- | --- |
| 0x00 | No target |
| 0x01 | Campaign target |
| 0x02 | Stationary target |
| 0x03 | Campaign & Stationary target |

**Table 14 Engineering model target data composition**

Add the following data after the target basic information data in Table 11

| ... | Maximum  movement  distance    door | Maximum  resting  distance  door  N | Movement  distance  0 energyvalue  N | ... | Movement    distance  gate  N      value | Stationary  distance  gate  0 energy energy  value | ... | Stationary  distance  gate  Nenergy      value | Retaindata,store  gate  additional  information |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ... | 1 | byte 1 | byte 1 byte |  | ... 1 | byte 1 byte |  | ... 1 | byte Mbyte |

**Example of reported data:**

Data reported in normal operating mode:

| Frame | header Length of data in | frame Intra-frame data | End of frame |
| --- | --- | --- | --- |
| F4 F3 | F2 F1 0D | 00 02 AA 02 51 00 00 00 00 3B | 00 00 55 00 F8 F7F6F5 |

Data reported in engineering mode:

| Frame | header Length of data | in frame Intra-frame data | End of frame |
| --- | --- | --- | --- |
| F4 | F3 F2 F1 23 00 | 01 AA 03 1E 00 3C 00 00 39 003C 22 05 03 03 04 03 06 05 00 0006 06 08 04 03 05 55 00 | 00 08 08  F8 F7 F6 39 10 13 |

F5

**2.4 Radar command configuration method 2.4.1 Radar command configuration steps**

The process of executing a configuration command by LD2410Cradar consistsof two parts: the upper computer "sends the command" and the radar "replies tothecommand ACK". If the radar does not reply with ACK or fails to reply withACK, itmeans the radar fails to execute the configuration command.

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**Shenzhen Hi-Link Electronic Co.,Ltd** As mentioned earlier, before sending any other commands to the radar, thedeveloper needs to send the "enable configuration" command and thensendtheconfiguration command within the specified time. After the commands are configured,the "end configuration" command is sent to inform the radar that the configurationisfinished.

For example, if you want to read the radar configuration parameters, first thehostcomputer sends the "enable configuration" command; after receiving a successful radar ACK, then sends the "read parameters" command; after receiving a successfulradar ACK, finally sends the After receiving successful radar ACK, then send"endconfiguration" command; after receiving successful radar ACK, it indicates that thecomplete action of reading parameters is finished.

The radar command configuration flow is shown in the following figure. 

**Figure 2 Radar command configuration process**

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| Data | version | Modify the content |
| --- | --- | --- |
| 2022-11-7 | 1.00 | Initial version |

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**4 Technical support and contact information**

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