

LD8001H Distance /Level Measurement Radar Communication Protocol Description

This manual describes the ranging radar protocol and is intended to guide you in debugging and using this radar product. To ensure a better and more comprehensive experience with this device, please carefully read this protocol description document before installation and use.

MODBUS-RTU instructions:

Register	Read and Write	Parameter meaning	Instruction	Remark
0x0001	R/-	empty height	01 03 00 01 00 01 D5 CA	Unit: mm, filtered data
0x0003	R/-	water level	01 03 00 03 00 01 74 0A	Unit: mm, filtered data
0x0005	R/W	Installation height	01 03 00 05 00 01 94 0B 01 06 00 05 [AA] [BB] [CC] [DD]	Unit: cm The distance from the radar to the bottom of the water. The water level is equal to the installation height minus the clearance height. To read the water level, first set the installation height.
0x3F4	R/W	Device Address	01 03 03 F4 00 01 C5 BC 01 06 03 F4 [AA] [BB] [CC] [DD]	Range: 0x01-0xFD supports broadcast 0xFF
0x3F6	R/W	Baud rate adjustment	01 03 03 F6 00 01 64 7C 01 06 03 F6 [AA] [BB] [CC] [DD]	48 96 144 192 384 560 576 1152 1290 Read and write baud rate, which is the actual baud rate/100
0x07D4	R/W	Range	01 03 07 D4 00 01 C5 46 01 06 07 D4 00 [AA] [BB] [CC]	Default: 0X0A, unit: m. Maximum range is related to product model.

Other instructions:

1. Read and write function code 03, write single register 06, default address is : 1 ; default baud rate is: 115200

2. Data format: 8N1 verification: CRC16 (polynomial A001)

3. The above register numbers are in decimal and need to be converted to hexadecimal to operate these registers through the MODBUS protocol

For example, to open the domain value search mode, we need to send 01 06 07 DB 00 05 38 86

The first byte is the device address.

The second byte, function code 0x03 reads the register value, 0x06 rewrites the register value

The third and fourth bytes are register addresses.

The fifth and sixth bytes, when the function code is 0x03 : the number of registers to be read

Function code 0x06 : data to be stored in register

The seven and eight bytes, CRC check

When we need to write registers, there will be parameters such as [A A] [BB] [CC] [DD] , and the values of these parameters need to be determined according to the requirements.

1. Modbus protocol to ASCII protocol instruction (register 0x03E7): 01 06 03 E7 55 AA 86 96

Switch to the private protocol and keep the current baud rate

2. ASCII protocol to modbus command: 07 F5 08 00 01 02 03 04 05 07 07

ASCII private protocol:

1) Set command 1 : 07 F5 0B AA BB CC DD 14 FF GG HH I I JJ KK

Recommended default parameters: 07 F5 0B 00 FF 01 80 14 00 0A 07 00 10 64

Read the set parameters: 07 F5 0B 00 00 00 00 00 00 00 00 00 00

AA output format: 8 - bit unsigned number, setting range 0x00-0x01 , 0x00 > two columns of output, 0x01> six columns of data output, this parameter is not saved when power is off.

BB distance jump DeltaR threshold: 8-bit unsigned number, setting range 0x01-0x FF , unit mm. When the distance jump is greater than DeltaR, the output remains at the original value unless the DeltaT threshold is reached.

CC distance jump DeltaT threshold: 8-bit unsigned number, setting range 0x01-0xFF , jump frame count. When a jump occurs and the number of jump frames is greater than DeltaT , the output value is updated to the new value.

DD sets the filter queue length: 8-bit unsigned number, setting range 0x08-0xFF .

FF IF gain: 8-bit unsigned number, setting range 0x00-0x08 , 0x00 is automatic gain, 0x01-0x08 is fixed gain, multiples are 1, 2, 4, 8 , 16, 32, 64, 128. If high-precision measurement is required, it is necessary to adjust to the appropriate fixed gain.

GG blind zone setting: 8-bit unsigned number, setting range 0x0 0 -0x FF , unit 0.01 meter, can be used to configure the interference signal within the minimum blind zone.

HH transmit power: 8-bit unsigned number, setting range 0x01-0x07, 07 is the minimum transmit power, 01 is the maximum.

II Distance Correction: 8 - bit unsigned number, setting range 0x00-0xFF , adjustment unit 1mm. For example: 0 1 increases by 1mm, 0 2 increases by 2mm. F F decreases by 1mm, F E decreases by 2mm .

JJ CFAR value: 8- bit unsigned number, setting range 0x01-0xFF . This parameter can reduce the sensitivity

of reading the value. If there is a lot of interference, it can be increased appropriately.

KK refresh rate: 8-bit unsigned number, setting range 0x0 0 -0x FF , 0x01 0.1fps, 0x64 10fps. This parameter setting allows the radar to detect changes in output data, effectively reducing power consumption. It is generally not necessary to set this parameter.

If you have any questions or suggestions about this product, please contact us and we will be happy to serve you!

Email: sales@hlktech.com

Thanks