



MR31XX Series 2.4GHz active Reader
Instruction Manual
(V1.0)

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1、 Introduction

1.1 Main Features

- Integrate, Beautiful Designed with internal antenna.
- Waterproof and Dustproof.
- Quick, Simple installation
- MR3102X: Double protocols design, Radiate in horizontal and vertical, Reduction of signal blind area.
- MR3104X: Directional antenna, High gain and excellent front-o-back ratio so that UHF can be receive consistently, Long range reading.
- Identify distance enable to adjust by software.
- Reading speed to be 500 pieces per second.
- Wide range of applicable voltage, Apply to various of power supply system, minimize overall power demand.
- Support many interfaces included 10M/100M TCP/IP, RS232, RS485. Supply standard second Developing Packet.
- Support Ethernet to device management and firmware upgrades.
- MR3102W: Works quite well with offline mode, automatically trigger, read tag and so on working mode. Support multiple interface output simultaneously. Point to point wireless transmits data, suitable for outdoor applications.

1.2 Product description

MR31XX series active reader, using high performance RF transceiver chip and CORTEX M3 microcontroller , with high reading speed, multi interface, high stability characteristics.

Note: All 2.45GHz active reader need to works with Marktrace active tag together, otherwise it will not working properly.

The series of products including directional MR3104X reader and MR3102X omni directional reader two types. This series of reader using built-in integrated antenna, suitable for different application environments. In general, the directional reader is suitable for vehicle management, personnel and attendance; omni-directional reader is suitable for indoor positioning, asset management applications.

1.3 Applications

- Intelligent traffic, Vehicle parking system
- School communication attendance Management.
- Larger goods logistics tracking (automobile etc.)
- Fixed assets inventory, access control system
- staff attendance, indoor tracking management

1.4 Product Pictures:



MR3102X



MR3104X

1.5 Purchasing guide

Model number	Product name	parameter
MR3104E	2.45GHzdirectional reader	Internal 14dBi directional antenna, With RJ45(TCP/IP) interface, RS232,R485, Wiegand 26/34.
MR3102E	2.45GHz Omni-directional Reader	Internal 2dBiOmni-directional, with RJ45 (TCP/IP) interface, without 433M
MR3102W	2.45GHz Omni-directional Reader	Internal 2dBiOmni-directional, with 433M wireless transfer, without RS485and RJ45(TCP/IP)

2 Attention

- 1、 Dismantle and parts replace: Marktrace has no warranty duties on those faults which caused by dismantle and parts replace by customer.;
- 2、 Power supply: Please use the power adaptor which alone with precuts to get power. If not may harm the products.;
- 3、 Falling damage: Mind parts damage by device falling, if this happens, turn off power

immediately and connect the distributor or Marktrace customer service center.;

- 4、 Unusual condition: Away from fire. If you find unusual odor when you use this products, or reader on overheating or emitting smog, please power off immediately and drop plug form the plug seat. You can connect the distributor or Marktrace customer service center for helps. If you continue to use this device, may cause the danger of fire or electronic shock.;
- 5、 Place: Don't place device on the site which is not level, mind damage or personal injury on falling.

3 Technical parameter

3.1. MR3104E

Item	parameter
Physical Attributes	
Case Material	Aluminum alloy, PVC, grey
Size	315*195*68mm
Weight	1700g
Installation method	wall mounted, outdoor
Technical character	
Identify method	Directional identification, horizontal 60°C, vertical 60°C
Signal Modulation mode	GFSK
Traffic rate	1Mbit/s
Work frequency	2440MHz
Max. Receive sensitivity	-85dbm
Antenna gain	14dbi
Communication Interfaces	
RS232	Baud rate: 115200bps; data bit: 8; stop bit: 1; check bit: N
RS485	Baud rate: 19200bps; data bit: 8; stop bit: 1; check bit: N
Wiegand	Wiegand 26/34
RJ45	10/100M Ethernet
Power requirements character	
Working current	120mA
Working voltage	9VDC

3.2. MR3102E/W

Item	parameter
Physical Attributes Character	
Material	ABS
Size	92*Φ110mm
Weight	200g
Installation	wall mounted
Technical character	
Identify method	Omni-directional identify, reading radius 80m, 360 degree spherical(can connect with external directional reader)
Signal Modulation mode	GFSK
Traffic rate	1Mbit/s
Work frequency	2.4GHz-2.5GHz
Receive sensitivity	-90dbm
Antenna gain	2dbi, dual polarization
Communication interfaces	
RS232	Baud rate: 115200bps; data bit: 8; stop bit: 1; check bit: N
RS485	Baud rate: 19200bps; data bit: 8; stop bit: 1; check bit: N
RJ45	10/100M Ethernet
433Mwireless transfer	With the information collector to collect data(Note: If you choose to use 433MCommunication interface mode, there is not RS485 and network interface).
Power requirements character	
Working current	350mA
Power adapter	9V DC

4 Interface Explanation

interface	RS485		power		RS232		
color	Brown	Yellow	Red	Black	White	Blue	Grey
define	A+	B-	9V	GEN	TX	RX	GND

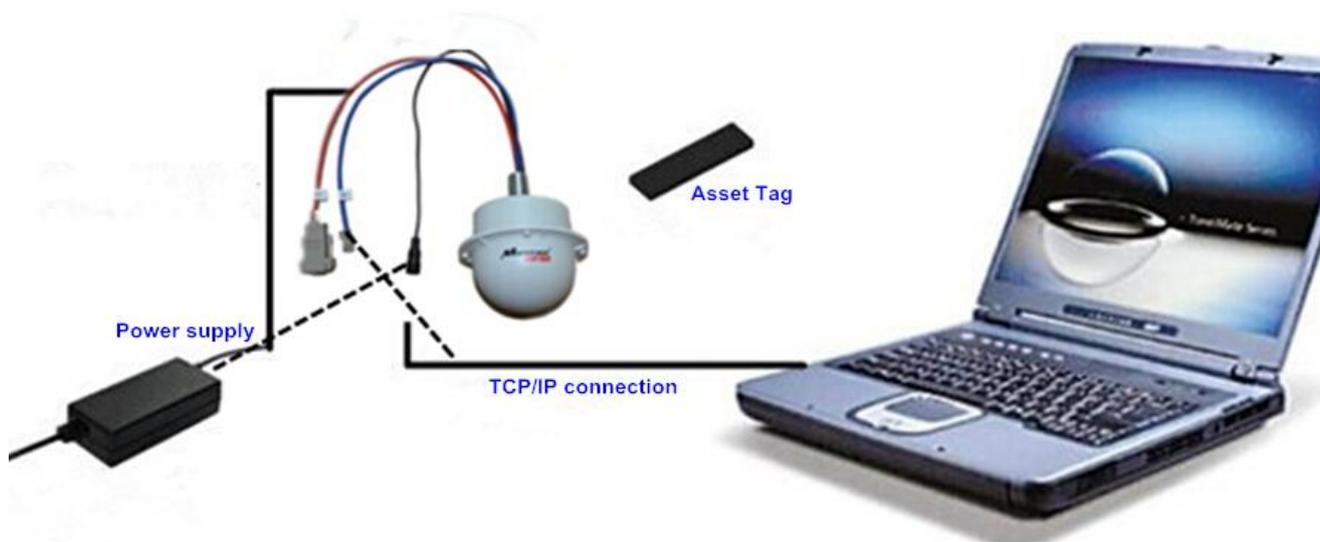
RS232: the Reader provides standard RS232 communication interface as the output port for data modulation. RS232 has 8 data bits format: 1 start bit and 1 stop bit, no parity bit. The default baud rate is 115200 bps. The RS232 interface connection supports the reader parameters configuration, software upgrading, demo program and serial

communication with second development packet function.

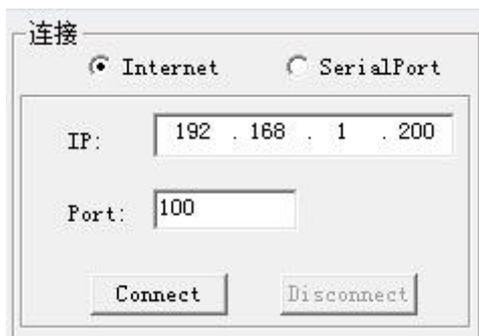
RJ45 (Ethernet Port): 10/100M Ethernet, TCP Server Mode; It can be main method for connecting communication with PC, also can use to be data output main mode, The interface supports the reader parameters configuration, software upgrading, demo program and TCP/IP communication with second development packet functions

RS485: Reader provide RS485 communication interface, can work as main data output mode, also can connect with PC via serial port with a RS232-RS485 converter, in this way, RS485 interface support all RS232 supported functions;

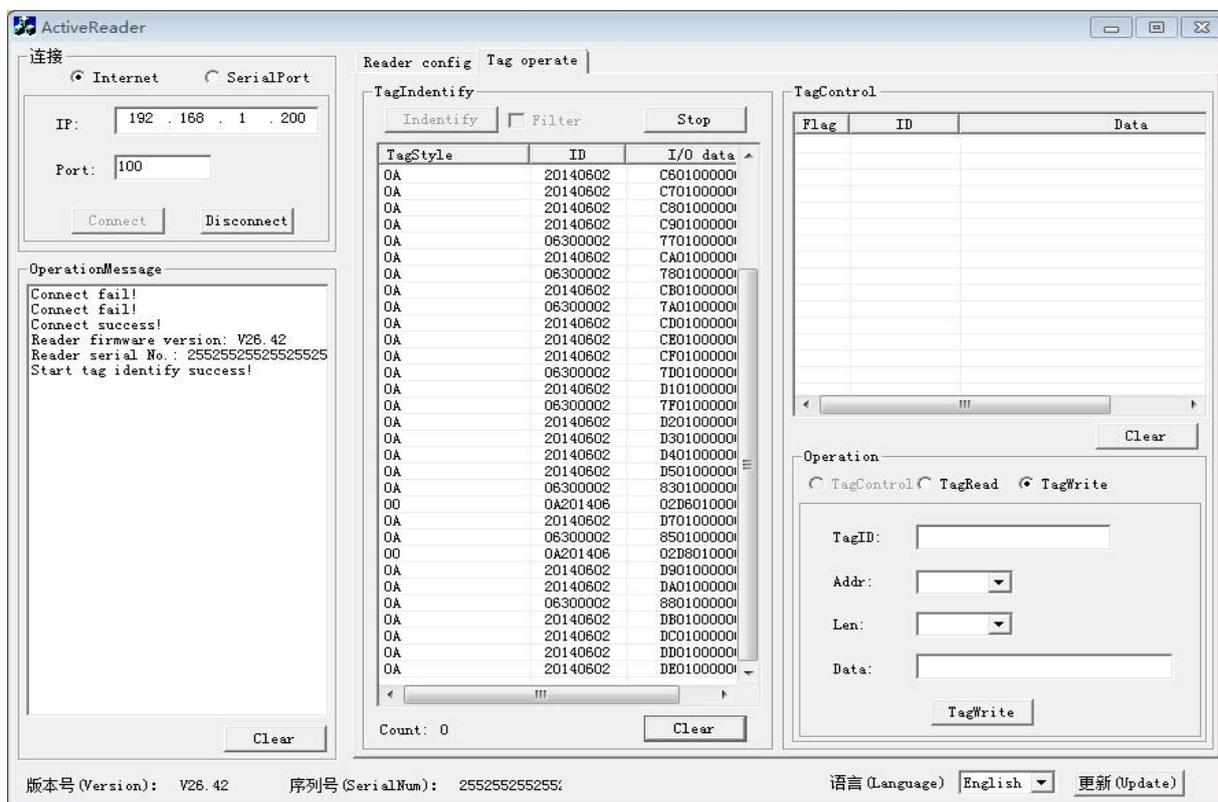
5 Main operate guide



1. Connect power adapter to reader and then power on, connect reader to LAN or PC by network cable;
2. Opening demo software in PC, fill in reader IP address and click "Connect" to connect reader (reader factory default IP address: 192.168.1.200, The port number is fixed at 100)



- 3. In "Tag operate" page, click the button "Identify" will beginning of the query operation, see below:



- 4. Click the "stop" button to stop the query operation;

6 DEMO software Operation

6.1. The reader connection

① The network connection

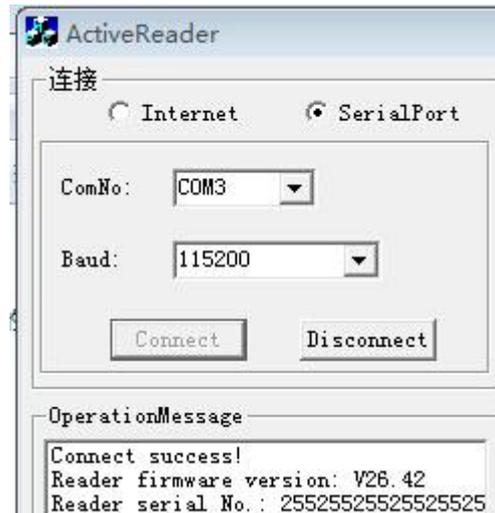
Opening the demo software in PC, input reader's IP into the IP input box (Default IP: 192.168.1.200, Port: 100 which is fixed), then click "connect" in box, software information display box will display the reader's parameter on the success connection.

Below image demonstrate the success connection:



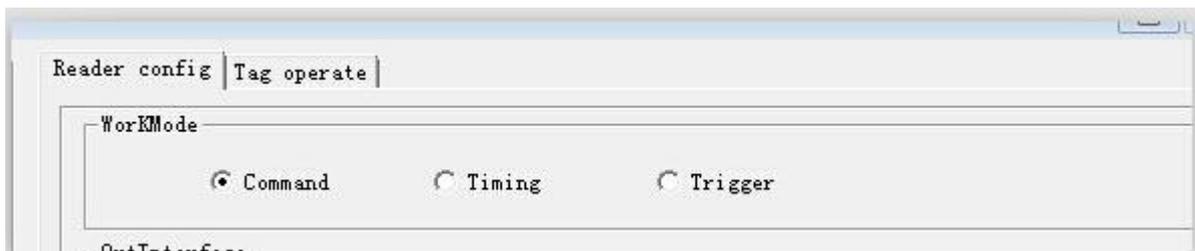
② Serial port connection

Opening demo software in PC, choose "serial port" in the "connection", select correct serial port number, baud rate (baud rate should be 115200), click "connect" button to connect, it will display following information after a successful connection:



6.2. Operating mode configuration

Choose the "reader config" page, in the "working mode" Colum, the user can select one of working methods: Command or Timing mode:

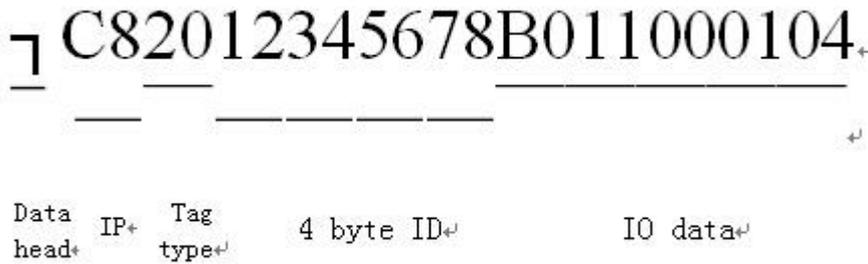


6.3. Output interface settings

The user can set output port according to the actual demanding, there are RS232, RS485, Wiegand, and TCP/IP output port for optional. Wiegand protocol will support for Wiegand26 and Wiegand34; It can be selected one or more active output port.



The output data format:



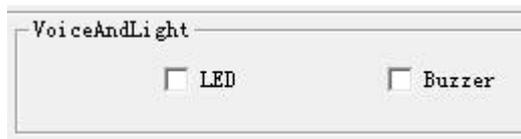
6.4. Tag filter settings

The same tag ID number will not repeat output during the setting time, filtering time can be set between 1 - 250 s. Setting reference as following:



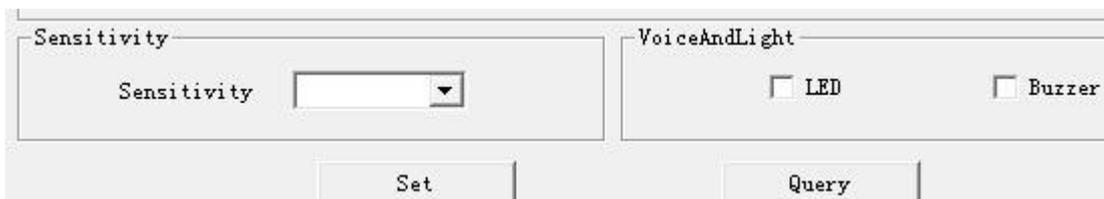
6.5. Voice and light settings

Choose the "reader config" page, Reader can set BUZZER AND LED as reading indication; user can select that according to needs



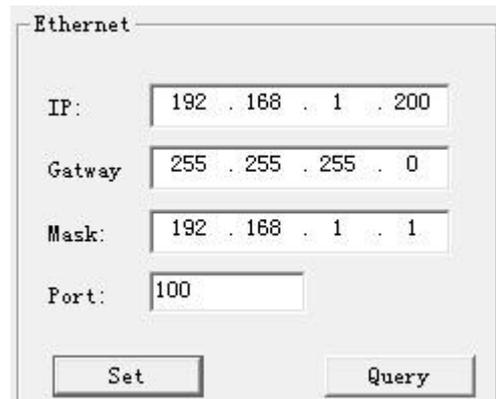
6.6. Sensitivity settings

In "reader config" page, user can select 0-30 in the drop-down menu to set the sensitivity, After choose corresponding Parameters, click the "set" button to keep selected parameters, click "search" button can check the above parameters configure situation.



6.7. Network settings

Select the "reader config" page, the user can set IP address according to needs, gateway and mask (fixed port for 100);



Ethernet

IP: 192 . 168 . 1 . 200

Gateway: 255 . 255 . 255 . 0

Mask: 192 . 168 . 1 . 1

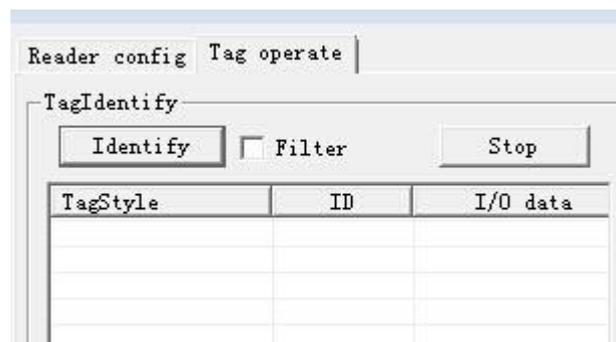
Port: 100

Set Query

Note: After set the reader parameters; please remember to click "reset reader" button to make it work.

6.8. Tag identification

"Tag operate" page, click "Identify" button in that Tag Identity column, the device beginning to read tag , when working successfully, relative data will be showed about tag style, Tag's ID and I/O data. Please reference the following photo:



Reader config Tag operate

TagIdentify

Identify Filter Stop

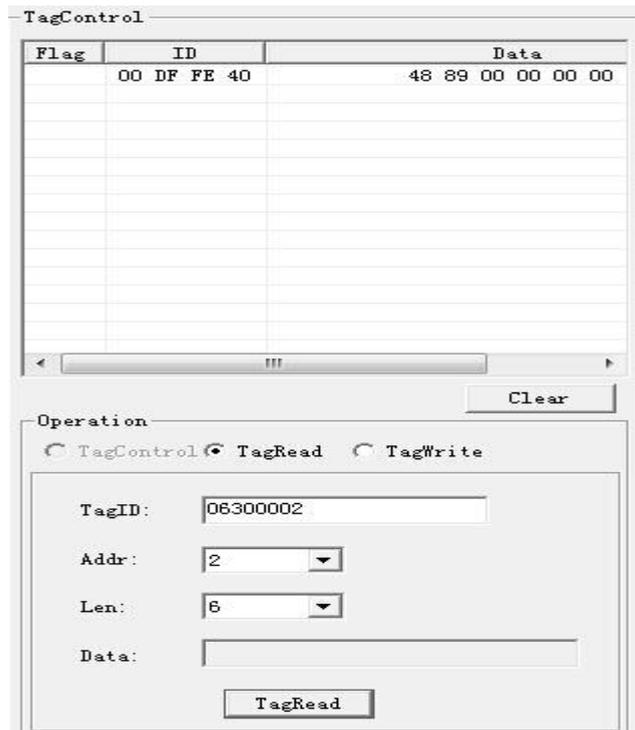
TagStyle	ID	I/O data

If checked the "filter", it will display tag serial number, tag style, ID, and I/O data.

6.9. Tag read

This function is only available for reading and writing type of tag.

Click "tag read "button in operation column, input tag ID number in the "tag ID" column (or click the tag ID number which had identified, the ID number will be Auto filled). At the same time, select the starting address and read length, after that click "tag reading", it will be display as following photo:



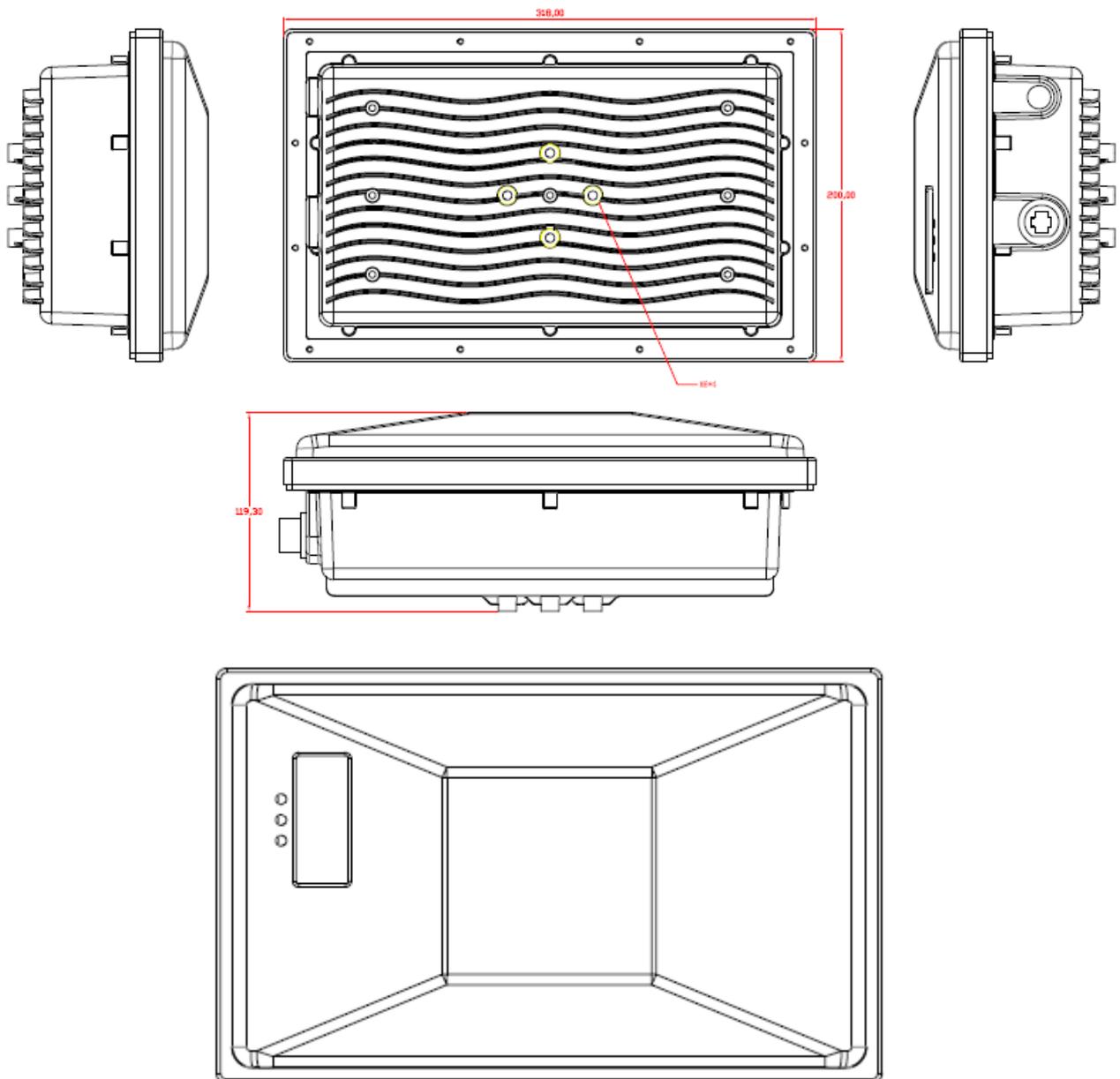
6.10. Tag write

This function is only available for reading and writing type of tag. Click "tagread" button in operation column,(or click the tag ID number which had identified, ID will be filled in automatically), to select the starting length and ID data length that need to write, write the ID number on the "data", click on the bottom of the "tag write" .

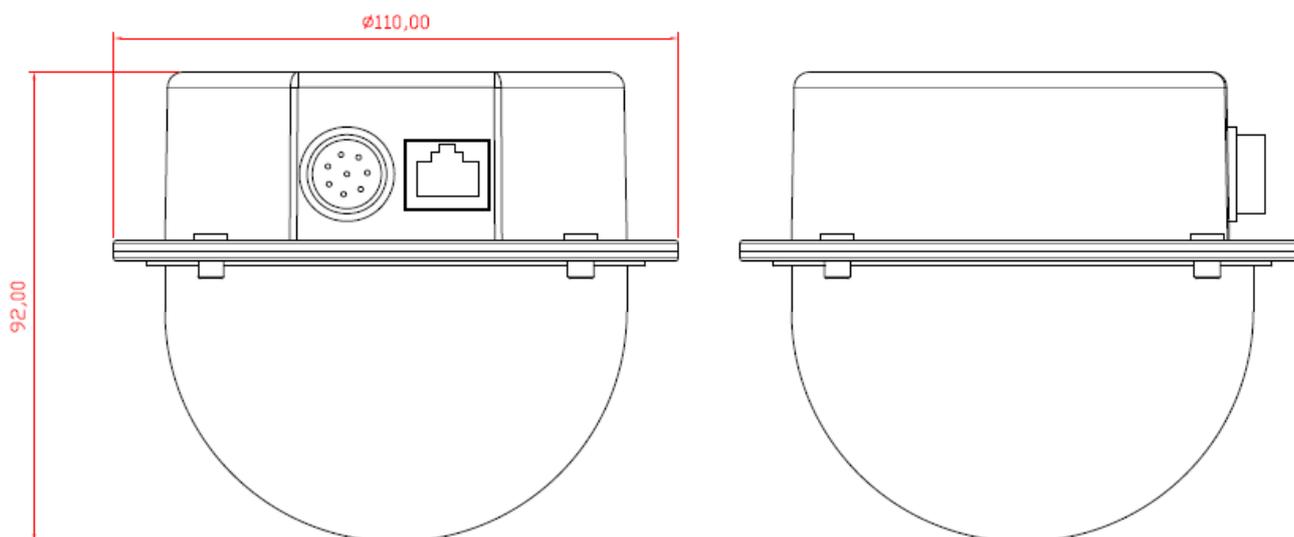


7 Reader structure

MR3104E 2.45GHz directional reader structure sketch map:



MR3102E/W 2.45GHz Omni-directional Reader structure sketch map:



8 Secondary development

User can make secondary development for reader application software if needing. We provide SDK, which supports VC++, See more detail, please reference to 《MR31XX serial reader SDK instruction》

9 Trouble and Troubleshooting

Failure Description	Solve method
Failure to start reader	<ul style="list-style-type: none"> ■make sure the power adapter indicator light is on. ■make sure the reader power supply is connected well.
Unable to connect reader	<ul style="list-style-type: none"> ■ make sure the reader interface is connected correctly. ■make sure the reader IP address is correct. ■make sure the network environment is good.
No sound when reading tag	<ul style="list-style-type: none"> ■make sure the buzzer is open.
Reader is unable to identify tag	<ul style="list-style-type: none"> ■Make sure antenna power is not "0".



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