



CNS-RFID-01/1S

RFID Sensor

INSTRUCTION MANUAL

*Thankyou for using our products

*This manual explains how to use the product and
safety matters

*Read this manual well and pay attention to safety
during use

* Keep this manual in a suitable place for easy
reference at anytime

Foshan Hinson Robot Technology Co.Ltd

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Applicable version statement

Version	Increase or decrease information
V1.2	Add LED status description

Safety attention

After reading it, please keep it in a place where the user can check it at anytime.



The precautions here are important content related to safety, please be sure to follow them, the meaning of the graphic representation is as follows:



Warning Violation of the content requirements of this warning during operation may result in personal injury or death.



Note Violation of the content requirements of this precaution during operation may result in personal injury or property damage.



Remind In order to use the product correctly, the user must comply with the matters.

1 SAFETY

1.1 SAFETY WARNINGS

The precautions here are intended to enable you to use the product safely and correctly, so as not to cause harm and damage to you and others. Please fully understand its content before using this product.



Note

Do not use this product in explosive gas, flammable gas and corrosive environment, places prone to water and combustible materials, otherwise it may cause fire or injury.

Setup, connection, operation, inspection and fault diagnosis should be carried out by appropriately qualified persons, otherwise it may cause fire, injury or product damage.

Setup

Please install the sensor in the machine frame, otherwise the equipment may be damaged.

Connection

The power input voltage must be controlled within the rated range, otherwise it may cause a fire.

Please connect according to the connection diagram, otherwise it may cause a fire.

Do not forcibly bend, pull or clamp the cable, otherwise it may cause a fire.

Please use the cable according to the specified size, otherwise it may cause a fire.

Maintenance and inspection

Maintenance and inspection must be performed after turning off the power, otherwise it may cause injury.

Do not touch When conducting insulation resistance measurement and insulation withstand voltage test, otherwise it may cause electric shock.

Repair, dismantling, remodeling

Do not disassemble or modify the sensor, otherwise it may cause injury or damage to the device. For internal inspection or repair, please contact our company.

2 PRODUCT OVERVIEW

When the AGV is running, it needs to execute instructions according to the preset landmark points. When the AGV needs to execute a certain instruction on the path line, it needs to set the command landmark point at this point. The AGV executes by reading the information of different landmark points. Prescribed instructions. The device for reading landmark points is an addressing sensor. The current mainstream addressing sensors are mainly divided into two categories, one is a magnetic landmark sensor, and the other is a radio frequency landmark sensor.

2.1 MODEL RULES

Part 1	CNS: Company code
Part 2	RFID: RFID sensor class
Part 3	1S: Antenna size 87mm sensor 01: Antenna size 140mm sensor
Part 4	Blank: Standard N: Support CAN OPEN function V: Support RS485 free protocol broadcast mode
Part 5	Special model code

2.2 PRODUCT COMPOSITION

RFID sensor

Model	Input power	Output signal type	Features
CNS-RFID-01	DC 12-36V	communication method	RF landmark sensor
CNS-RFID-1S	DC 12-36V	communication method	RF landmark sensor
CNS-CRFID	Passive		Landmark card

RFID tag (sold separately)

RFID card writer (sold separately)

2.3 SPECIFICATIONS

		CNS-RFID-01	CNS-RFID-01N	CNS-RFID-1S	CNS-RFID-1N
Performance	Frequency	13.56 MHz			
	Power	200mW			
	Reader range	Maximum 150mm（depends on the size and quality of the card）		Maximum 140mm（depends on the size and quality of the card）	
	Detect distance	0-150mm（depends on the size of the card）		0-140mm（depends on the size of the card）	
	Antenna	Integrated antenna			
	Read and Write time	Read 4Byte: 13ms Write 4Byte: 16ms Read 8Byte: 15ms Write 8Byte: 32ms			
	Transmission speed	26kbit/s			
	Extra functions	The length of read and write data can be programmed.the signal strenghtcan be detected			
Communication	RS-232	RS-232 HS protocol Message transmission rate: 19200bps, 115200bps			
	RS-485	RS-485 HS protocol, MODBUS protocol Message transmission: 9600bps -- 115200bps			
	CAN BUS	CAN BUS-HS protocol Transmissi on rate: 125K -- 1000K	CAN OPEN protocol Transmission rate: 125K -- 1000K	CAN BUS-HS protocol Transmission rate: 125K -- 1000K	CAN OPEN protocol Transmission rate: 125K -- 1000K
	Display	5 LED indicator light			
Power supply	Voltage	12V DC-36V DC			
	Consumed power	Typical value 1.5W			
Construction	Ingress protection	IP54			
	Weight	410g		190g	
	Size	148mm*87mm*40mm		65mm*65mm*40mm	
	Cable length	1.5m			
Environment	Environmentt emperature	-10~+50. C（Ice-free）			
	Environment humidity	Below 80%（Non condensing）			

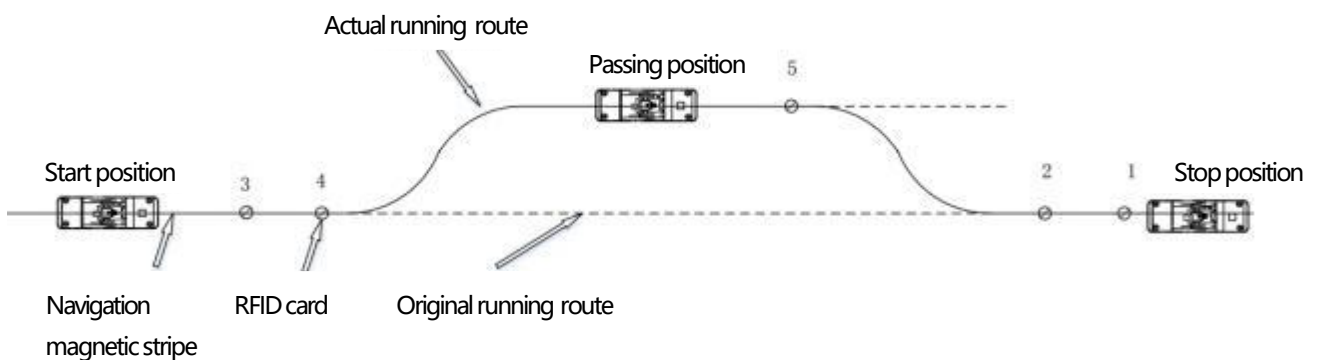
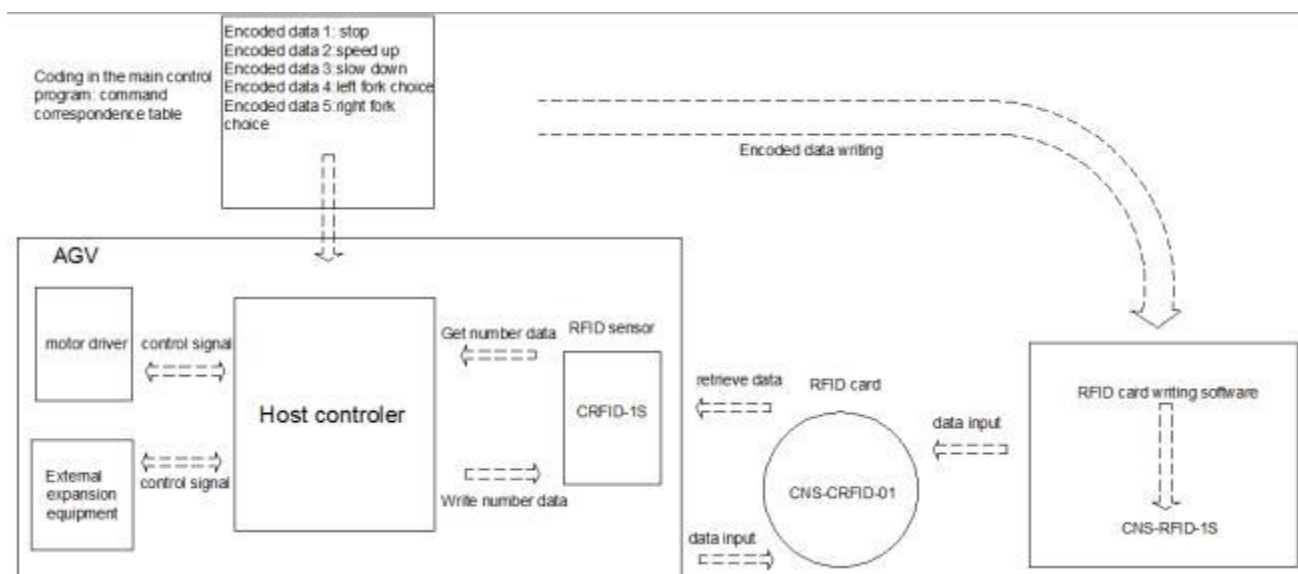
	Medium environment	No corrosive,flammable gas or dust.cannot be used in special environment containing radioactive material.strong magnetic field and vacuum
	Storage temperature	-20~+70. C (Ice-free)
	Storage humidity	Below 85% (Non condensing)

If you need the magnetic landmark sensor CNS-MDS-01, please consult the salesperson.

Please check if the models are consistent.

This instruction will explain the parameters and use of CNS-RFID-01/1S radio frequency landmark sensor.

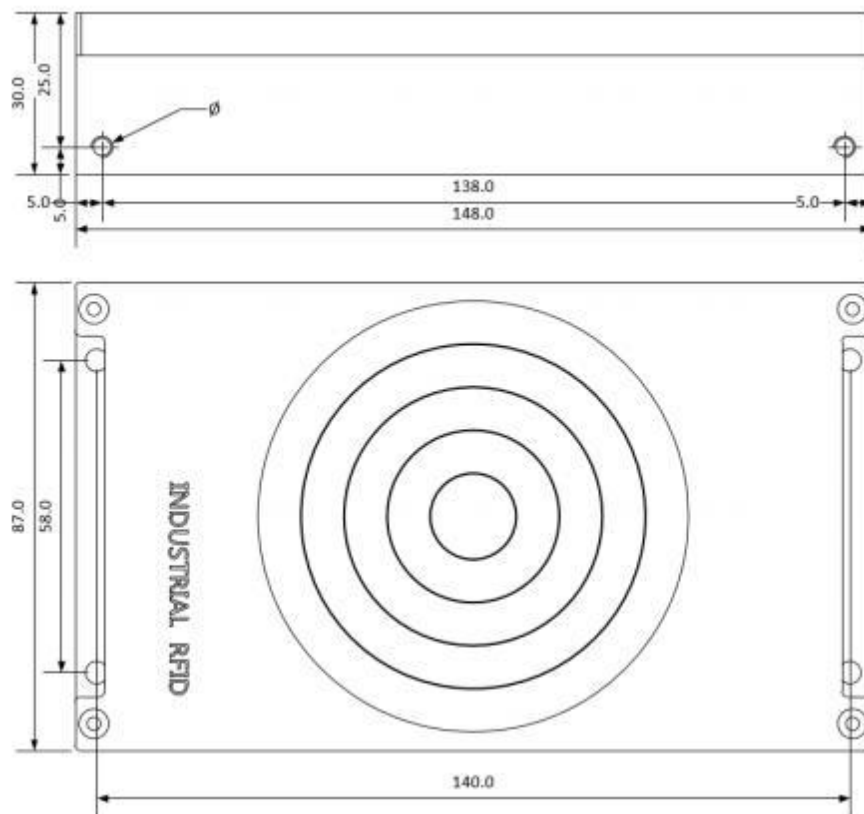
2.4 EXAMPLES OF ACTUAL OPERATION



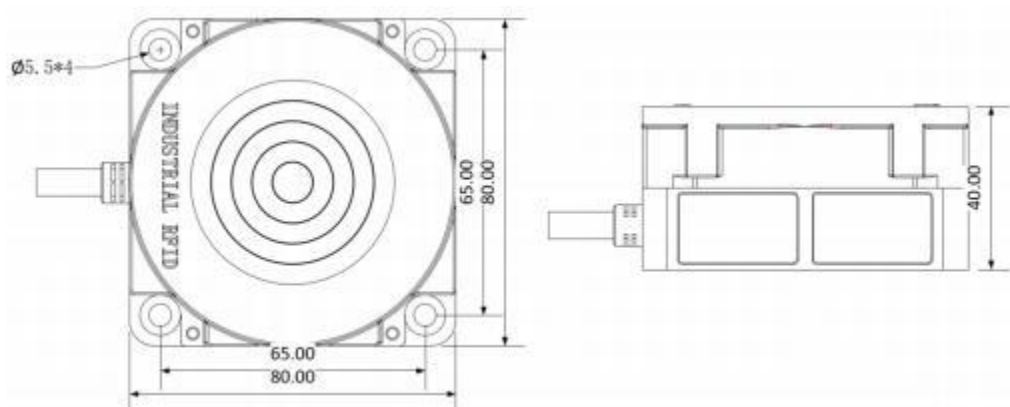
3 INSTALLATION AND SETUP

3.1 DIMENSION

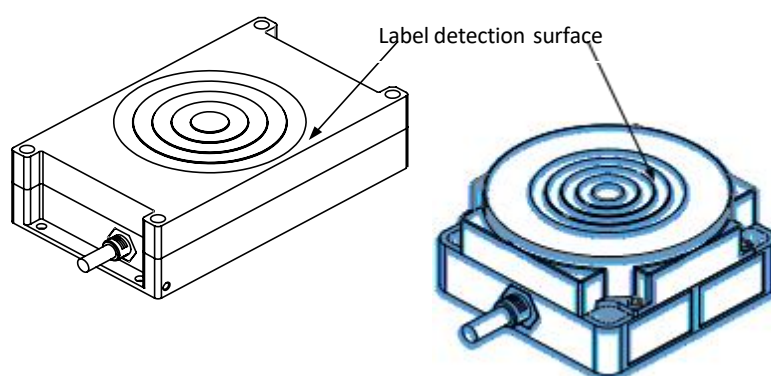
CNS-RFID-01 dimension



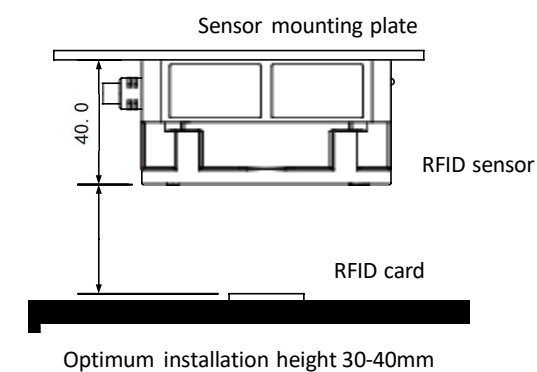
CNS-RFID-1S Dimensions



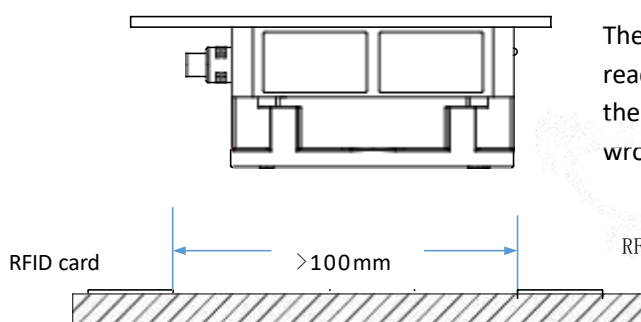
3.2 INSTALLATION CONDITIONS



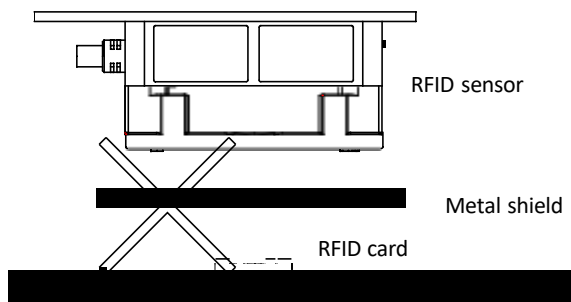
1) The following figure uses RFID-1S as an illustration, and the RFID-01 model is installed according to the following figure.



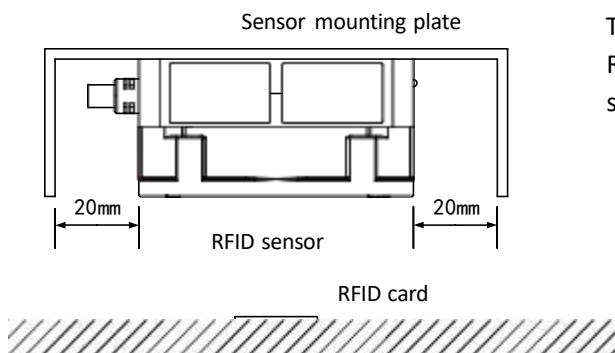
Use CNS-CRFID-01 label



The sensor does not have the function of reading multiple RFID tags at the same time. If the tags are too close, the reading data will be wrong.

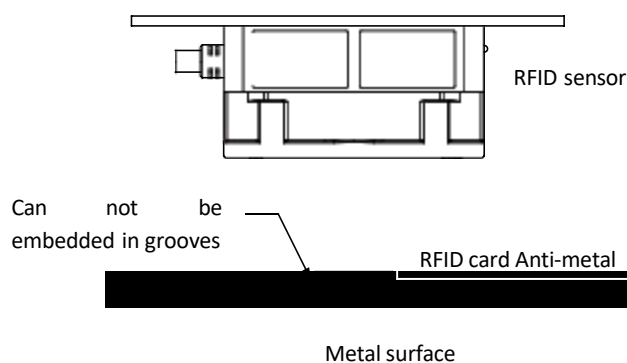


There must be no metal material between the sensor and the RFID tag

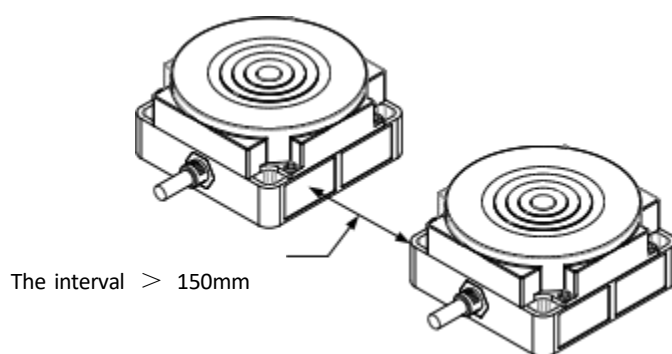


There should be no metal materials near the RFID sensor antenna, otherwise it will cause the sensor signal to be affected.

There should be no metal obstruction within 20mm around the sensor



For metal surfaces, anti-metal tags must be used, please check the RFID catalog for specific models



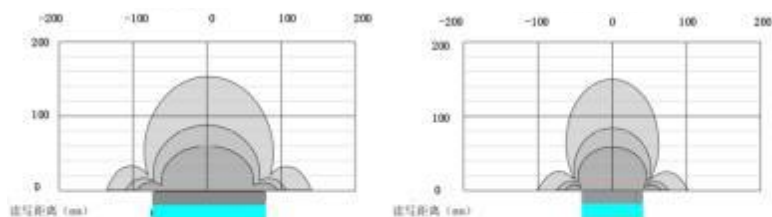
Installation conditions	Mounting plate
Installation height	Determined according to the card reading distance
Use environment	Use environment temperature: -20 - +50℃ Use environment humidity: below 80%RH (no frost and dew) Prohibited to use in corrosive, flammable gas and dust environment

3.3 READING CONDITIONS

Detect rang

Horizontal reading and writing range (mm)

Vertical reading and writing range (mm)

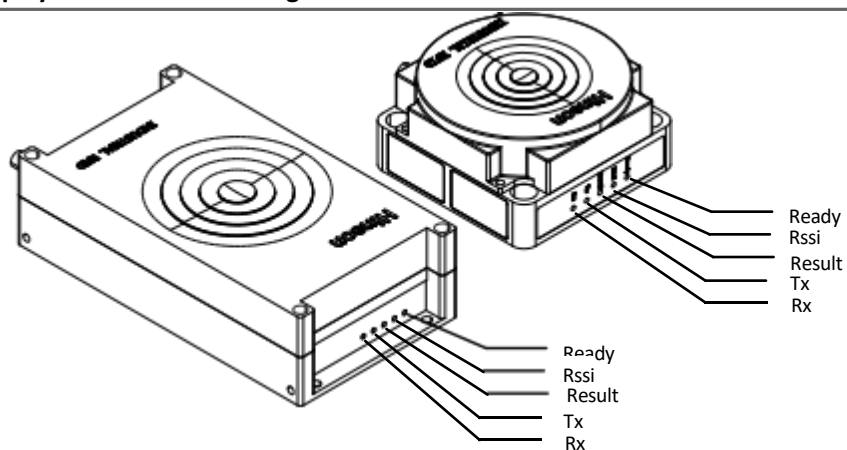


Relative velocity

<3.5m/S

3.4 STATUS PROMPT

CNS-RFID-01/1S displays sensor status through 5 LEDs

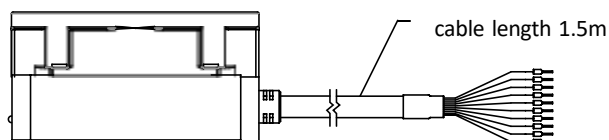


	State
Ready	Ready indicator Steady on: Ready to read status Off: Abnormal power supply or internal fault
Rssi	Card reading signal strength indicator, the stronger the signal, the higher the brightness
Reault	Reading result status light Steady on: successful card reading Off: No card is read
Tx	Data sending instructions
Rx	Data reception indication

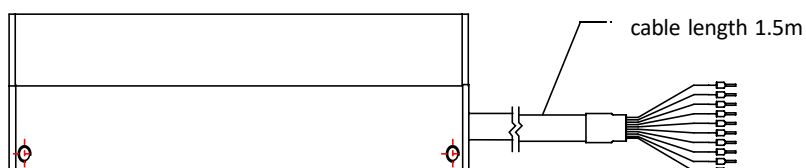
3.5 WIRE COLOR DEFINITION AND PORTS

Wire color definition

CNS-RFID-1S/1SN



CNS-RFID-01/01N

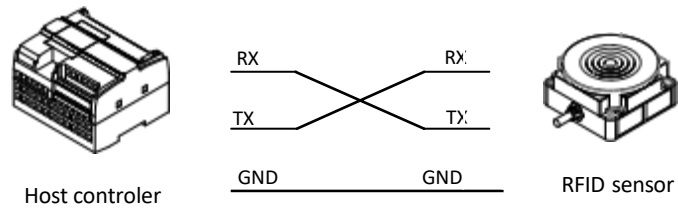


Wire specification	AWG22*9	
Wire color	Definition	Description
Red	V+	DC24V Power in
Blue	V-	
Black	RS232-RX	RS232 Port
Gray	RS232-TX	
Purple	RS232-GND	
White	RS485-A	RS485 Port
Brown	RS485-B	
Green	RS485-GND	
Orange	CAN-H	CAN BUS Port
Yellow	CAN-L	
1) The communication ports are all non-isolated ports		
2) V-, RS232-GND, RS485-GND are connected internally		
Port support		
RS232 Port	1) Configure parameters and monitor sensor status 2) Use the HS protocol to access the sensor to obtain data	
RS485 Port	1) Use the HS protocol to access the sensor to obtain data 2) Use Modbus protocol to access the sensor to obtain data	
CAN-BUS Port	1) Use the HS protocol to access the sensor to obtain data 2) Models CNS-RIFD-1SN and CNS-RIFD-01N sensors support CAN OPEN protocol	

3.6 CONNECTION

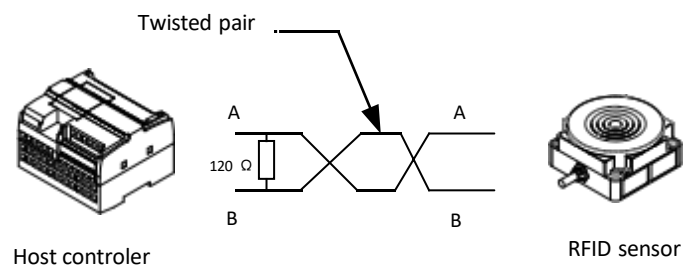
RS232 Connected

Make the following connections between the main controller and the sensor

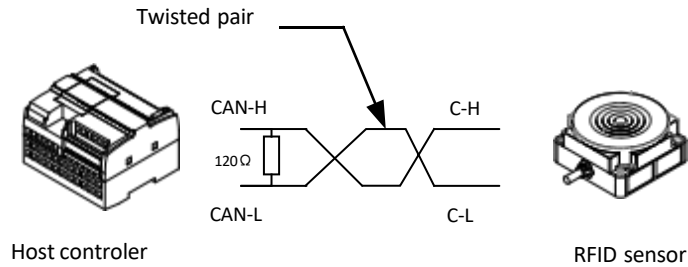


1) The GND wire of RS232 must be connected

RS485 Connected



CANBUS Connected



2) CAN BUS communication must have terminal resistance.

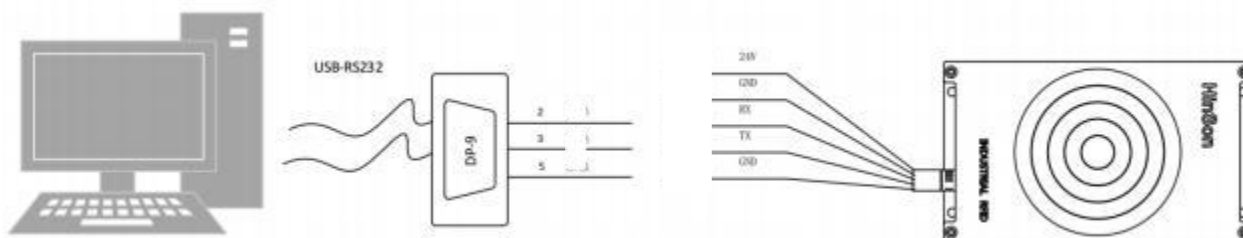
3.7 FUNCTION CONFIGURATION

CNS-RFID-01/1S allows customers to adapt according to actual use occasions and methods, and allows users to modify parameters. Use Hinson configuration software to configure parameters through the RS232 serial port.

Preparation		
	Connection wire	
	Brand	Superior
	Model	Y105
	Port	USB-DB9
	screwdriver	
	Model	Not specified
	Type	Cross opening or one word opening
	Size requirements	The end face is about 3mm
	Transfer terminal	
	Model	DB9-M2
	Brand	Hinson
	Computer	
	Computer	Windows7 or above
	Demand condition	Install the USB port driver
Required software	Hinson configuration software V1.3.0 and above Please visit www.hinson-xs.com or contact WeChat 13928672909	

■ Connect with PC

Connect to the PC through the USB-RS232 serial cable, and connect as shown in the figure below



1) USB-RS232 serial port specifications, please confirm with the serial port parameters of CNS-RFID-01/1S

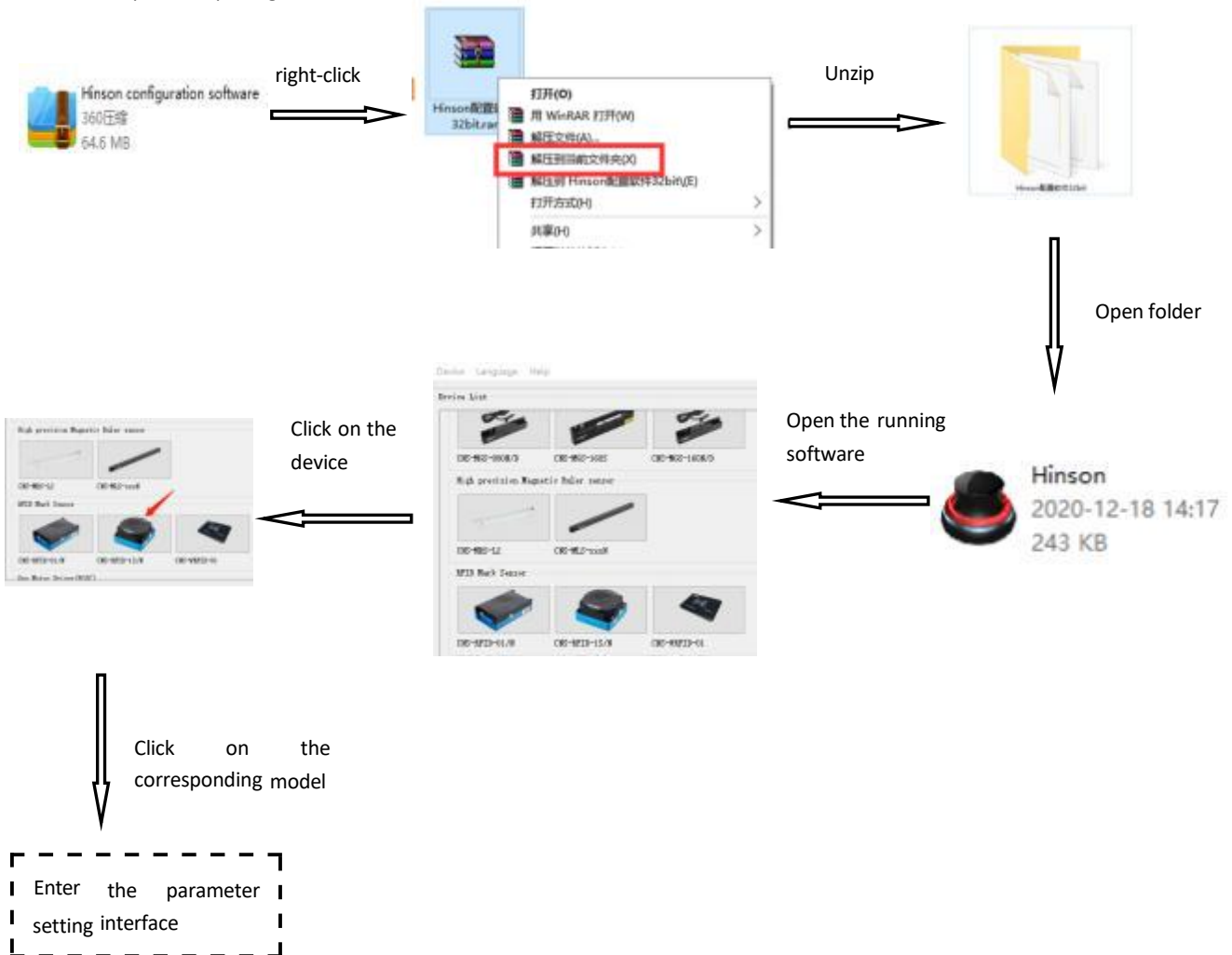
Communication method	parameter	Parameter information	Default setting
	Communication rate	19200bps , 115200bps	115200bps

	Data bit	8 bit	8 bit
	Check bit	No verification	No verification
	Stop bit	1 bit	1 bit

- 1) Confirm that the power cord has been connected
- 2) Confirm to provide 12-36V DC power supply

Configuration software operation

Software compression package



Parameter description

After entering the configuration interface

Parameter name	Parameter	Default parameter
Device interface and protocol	1: RS232-HS protocol 2: RS485-HS protocol 3: CAN Bus-HS protocol 4: RS485-modbus protocol	RS232-HS protocol
Device address	1-127	127
RS232 communication baud rate	1: 19200bps 2: 115200bps	1: 115200bps
RS232 reading mode	1: Query mode 2: Card reader trigger mode 3: Timed broadcast mode	1: Query mode
RS232 card reader trigger frame number	1: 1 frame 2: 2 frame 3: 3 frame 4: 4 frame 5: Continuous	1 frame
RS232 Broadcast interval	1: 5ms 2: 10ms 3: 20ms 4: 50ms 5: 100ms	1:5ms
RS485 Communication baud rate	1: 9600bps 2: 19200bps 3: 38400bps 4: 57600bps 5: 115200bps	5: 115200bps
RS485 parity check	1: No verification 2: Odd parity 3: Even parity	1: No verification
RS485 stop bit	1: 1bit 2: 1.5bit 3: 2bit	1: 1 bit
CAN Bus baud rate	1: 125K 2: 250K 3: 500K 4: 1000K	4: 1000K
CAN bus read mode	1: Query mode 2: Card reader trigger mode 3: Timed broadcast mode	1: Query mode
CAN bus card reader trigger frame number	1: 1 frame 2: 2 frame	1: frame

	3: 3 frame 4: 4 frame 5: Continuous sending	
CAN bus broadcast interval	1: 5ms 2: 10ms 3: 20ms 4: 50ms 5: 100ms	1: 5ms
Number of bytes read	4 bytes 8 bytes	4 bytes

Configuration complete operation

After the configuration is complete, you need to perform the power-on operation to make the settings take effect.

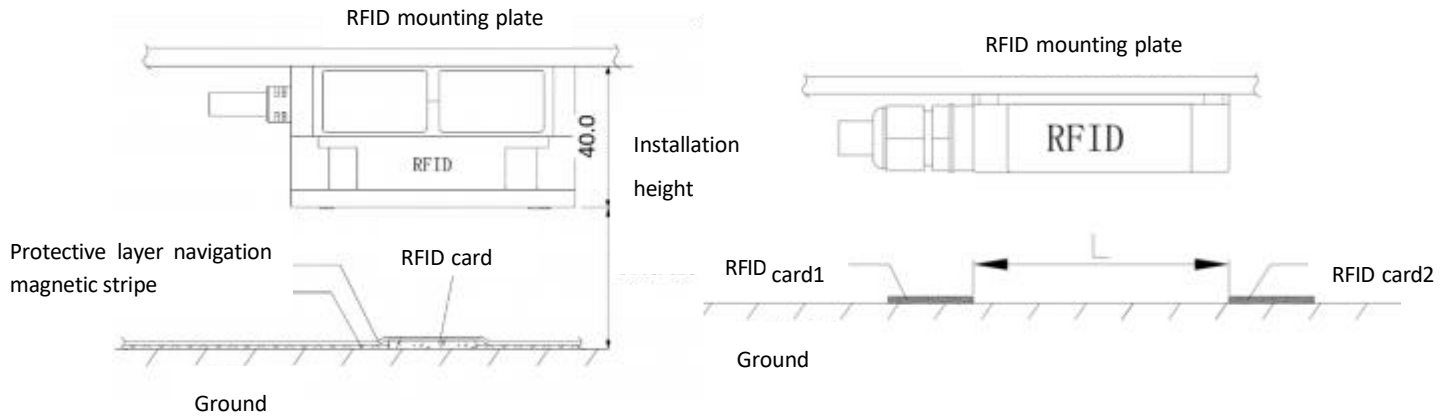
PC read and write operations

After completing the settings, enter the function test page to perform card reading and writing operations.

The screenshot shows the 'CNS-RFID-1S' software interface with the 'Simulation Test' tab selected. The interface is divided into two main sections: 'RFID ReadData' and 'RFID Write Data'. The 'RFID ReadData' section includes a text box for 'RS485 ID Address' (set to 127), a checkbox for 'RFID Read OK Signal', a progress bar for 'RSSI Signal Strength' (0%), and eight input boxes for 'Byte1' through 'Byte8'. The 'RFID Write Data' section includes a checkbox for 'Write Byte(0-255)' (checked), eight input boxes for 'Byte1' through 'Byte8' (all set to 0), a checkbox for 'Write Half(0-65535)' (unchecked), and four input boxes for 'Data1' through 'Data4' (all set to 0). A dashed box highlights the 'RFID ReadData' section, labeled 'Card reading area'. Another dashed box highlights the 'RFID Write Data' section, labeled 'Write card area'.

3.8 RFID TAG LAYOUT

To ensure accurate reading, CNS-CRFID must be arranged in the sensing range path of CNS-RFID-01/1S. Due to the small size of the RFID card, it is easy to be lost and destroyed when stuck on the ground independently. Generally, at the beginning of AGV design, the card reader CNS-RFID-01/1S is installed directly above the navigation magnetic stripe, so that the RFID card can be laid directly under the magnetic stripe.



	Parameter
Installation height	Depends on the size of the card
The protective layer	Hard tape
Navigation magnetic stripe	Thickness 1.2mm
Ground	The ground roughness is best with epoxy resin ground. If the ground is uneven, it needs to be filled between the RFID card and the ground.
Installation distance	Horizontal placement: $\geq 300\text{mm}$, vertical placement: $\geq 200\text{mm}$

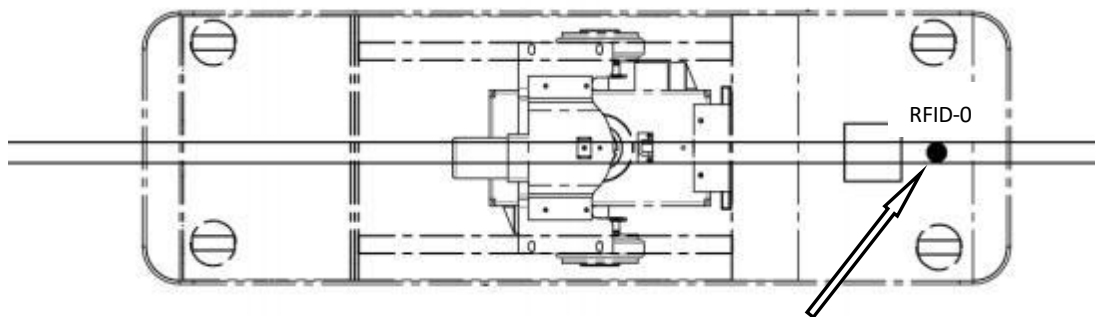
RFID tag model

Model	Appearance	Size	Maximum reading distance	Applicable surface medium
CNS-CRFID-01	Round coin type	25*3mm	80mm	Non-metal

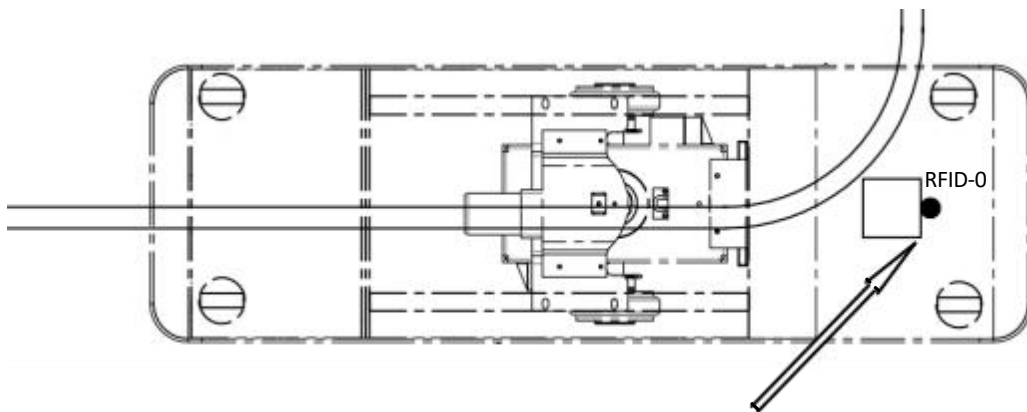
If you need special requirements, please contact Hinson Technology to confirm.

3.8.1 Layout location

Depending on the route the AGV runs, the RFID placement location is also different. Take the installation on the front of the AGV body as an example.



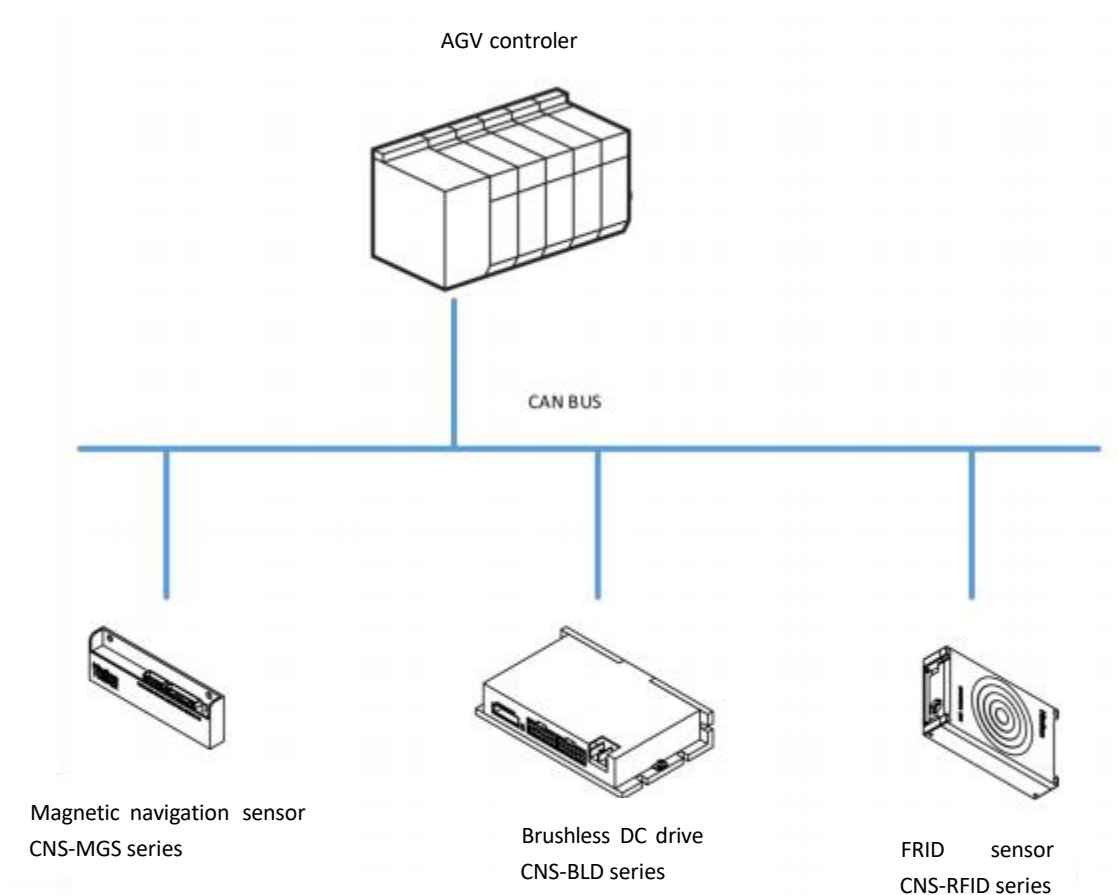
When the AGV goes straight, the RFID card arrangement position can overlap with the navigation magnetic stripe.



When the AGV turns, the RFID card needs to be placed outside the navigation magnetic strip.

4 PRODUCT INTERCONNECTION

CNS-RFID-01/1S can be connected to the main controller through CAN bus and RS485 communication. For customers who use multiple CNS series products, the system structure is further simplified.



Magnetic navigation sensor	DC brushless driver	Landmark sensor
CNS-MGS-080N	CNS-BLD-2S	CNS-RFID-01/1S
CNS-MGS-160N	CNS-BLD-2S-NC	
	CNS-BLS-2L	
	CNS-BLD-2L-NC	

5 AFTER-SALES

5.1 WARRANTY PERIOD

CNS-RFID-01/1S provides a limited warranty. CNS-CRFID does not provide a warranty. If the product cannot be used normally due to quality problems, design defects, etc., we will carry out after-sales maintenance for free during the warranty period.

. Warranty period: 2 years from sale.

5.2 WARRANTY SCOPE

If the product is within the scope of the warranty during the warranty period, we will repair or replace it free of charge.

- The warranty and after-sales service of this product are limited to mainland China.
- The product cannot be used normally after unpacking due to transportation
- Failure to work normally caused by damage to the product's own components.
- Product design defects cause it to be unable to use normally.

5.3 EXEMPTION SCOPE

Please pay attention to the following conditions during the use of the product, we will not provide free after-sales and warranty.

- . Failure to install the product according to the instructions correctly. causing damage to the product.
- . Using this product under unsuitable environments and conditions may cause damage to the product.
- . The product is damaged due to non-compliance with the product specification.
- . Disassemble or repair the product without the permission of the company.
- . Product damage caused by irresistible external forces such as natural disasters and fires.

5.4 TECHNICAL SUPPORT

Manufacturer:Foshan Hinson Robot Technology Co.Ltd

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Guangdong Province, China

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Importer:XXXX (located in EU)

Address:XXXX (located in EU)