

# 1. Technical Specifications

## 1.1 Features

CARIX is a cost-effective integrated UHF RFID reader, it supports ISO18000-6C protocol. The work frequency includes China standard frequency 920MHz~ 925MHz, FCC 902MHz ~ 928MHz and ETSI 865MHz ~ 868MHz.

Output power from 0 ~ 30dBm adjustable, it has the characteristics of cost-effective, fast speed, anti-interference, various communication interfaces, and structure anti-collision and shock resistance.

## 1.2 Main Functions and Technical Performance

### 1.2.1 Product Features

- ✧ Protocol Support: ISO18000-6B/C EPC C1G2
- ✧ Communications Interface : TCP/IP, RS232,RS485
- ✧ Support tag data filtering
- ✧ Support Custom Data Format Output
- ✧ RSSI Support: the strength of the signal can be sensed.
- ✧ Adjustable RF Output Power
- ✧ Working Mode: fixed frequency/frequency hopping optional
- ✧ Support Online Upgrade
- ✧ Inputs/Outputs:1 optocoupler input (0-24V, lower than 1V is low, higher than 1V is high), 2 IO outputs (shared with Wiegand, low level 0V, high level 5V)

### 1.2.2 Performance Parameters

- ✧ Working frequency: ETS:865MHz~868MHz
- ✧ RF output power (port): 25dBm±1 (MAX)
- ✧ Output power adjustment: 0-25dBm (1dBm step)
- ✧ Reading distance: 0m~7m (related to factors such as transmitting power, tag type and application environment)
- ✧ Channel occupied bandwidth: <200KHz
- ✧ RS232 interface communication rate: 115200bps(default),19200 bps,9600bps
- ✧ Power Consumption: < 10W (reading tags at 30dB maximum power)
- ✧ AC-DC power adapter: AC input 100V~240V,50Hz~60Hz DC output 9-30V
- ✧ Standby current: 24V/60mA

### 1.2.3 Environmental Parameters

✧ Working temperature:  $-20^{\circ}\text{C}\sim+70^{\circ}\text{C}$

✧ Working humidity:  $5\%\sim 90\%\text{RH}$  ( $+25^{\circ}\text{C}$ )

## 2. Sketch map

### 2.1 Physical construction

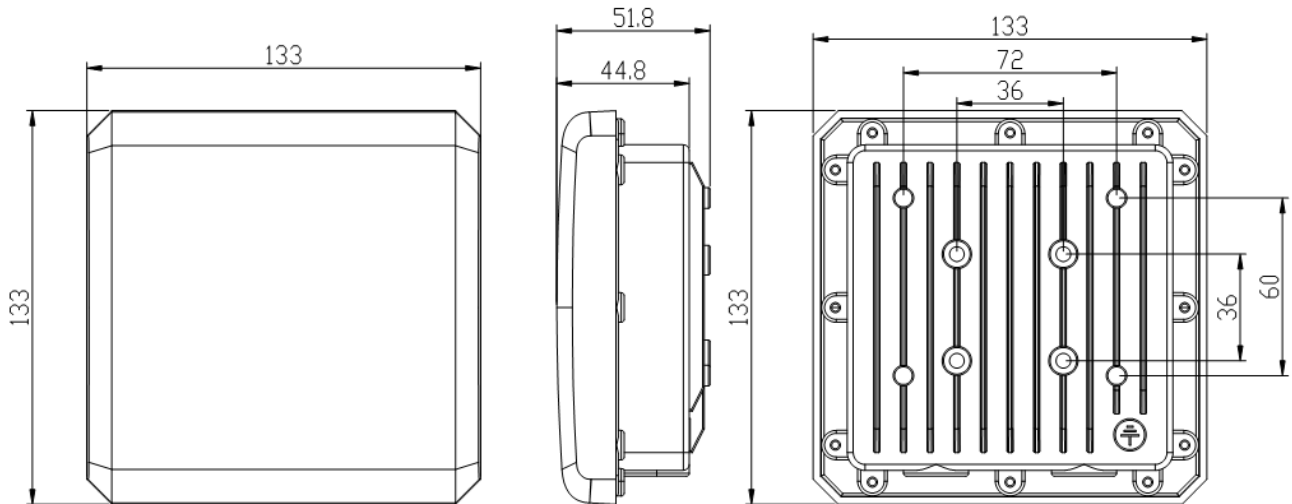


Figure 2-1 Structure diagram of CARIX integrated reader

#### Dimensions

133mm(L)\*133mm(W)\*52mm(H)(without accessories)

### 2.2 I/O Interface Definition

This reader uses a cable with DC 2PIN power terminal, network port, serial port and two 4PIN Phoenix terminals, the Phoenix terminals are defined as follows.

4Pin Connector	Mark	Definition
Yellow	Tx	GPO1/wiegand 0
	+	GPI
	-	GPO2/wiegand 1
	Rx	GND
Black	Tx	Reserved
	+	RS485 +
	-	RS485 -
	Rx	Reserved

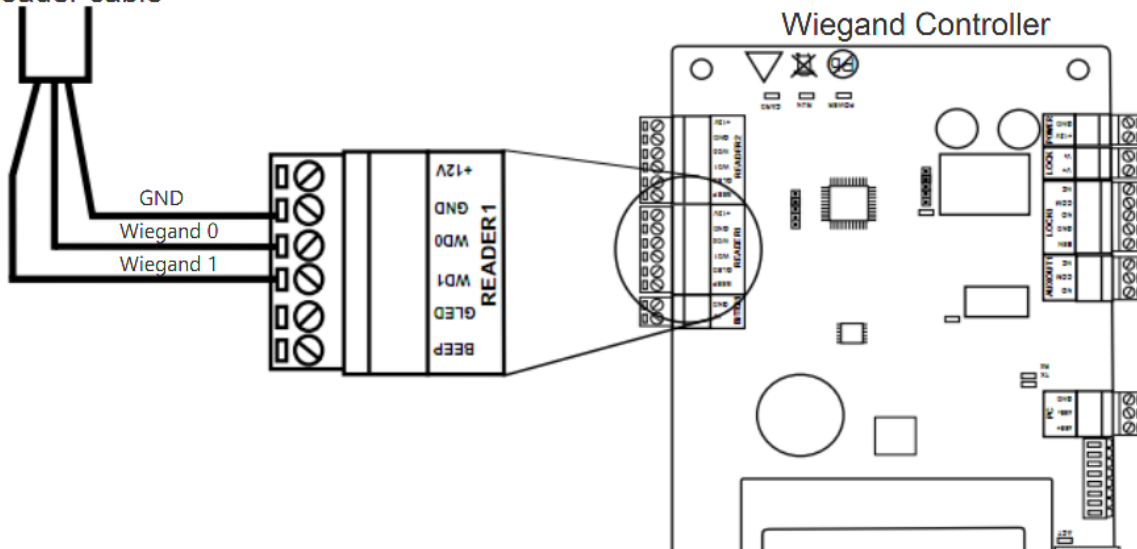
#### Wiegand Connection Instructions

Reader Wiegand 0 connected to Wiegand control board WD0

Reader Wiegand 1 connected to Wiegand control board WD1

Reader GND connected to Wiegand control board GND

Reader cable

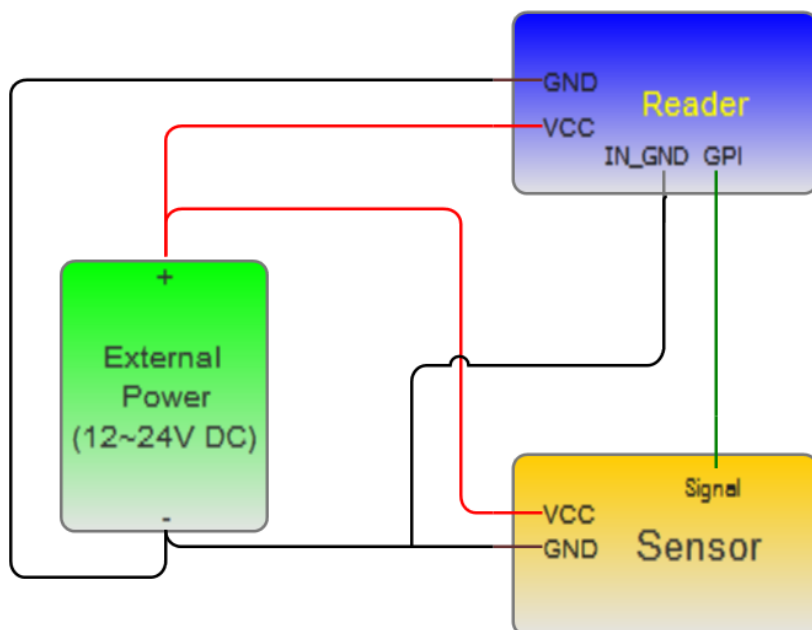


Note: Wiegand 1/Wiegand 0 must not be connected to a voltage higher than 5V, because this will damage the Wiegand components.

### GPI Usage Example

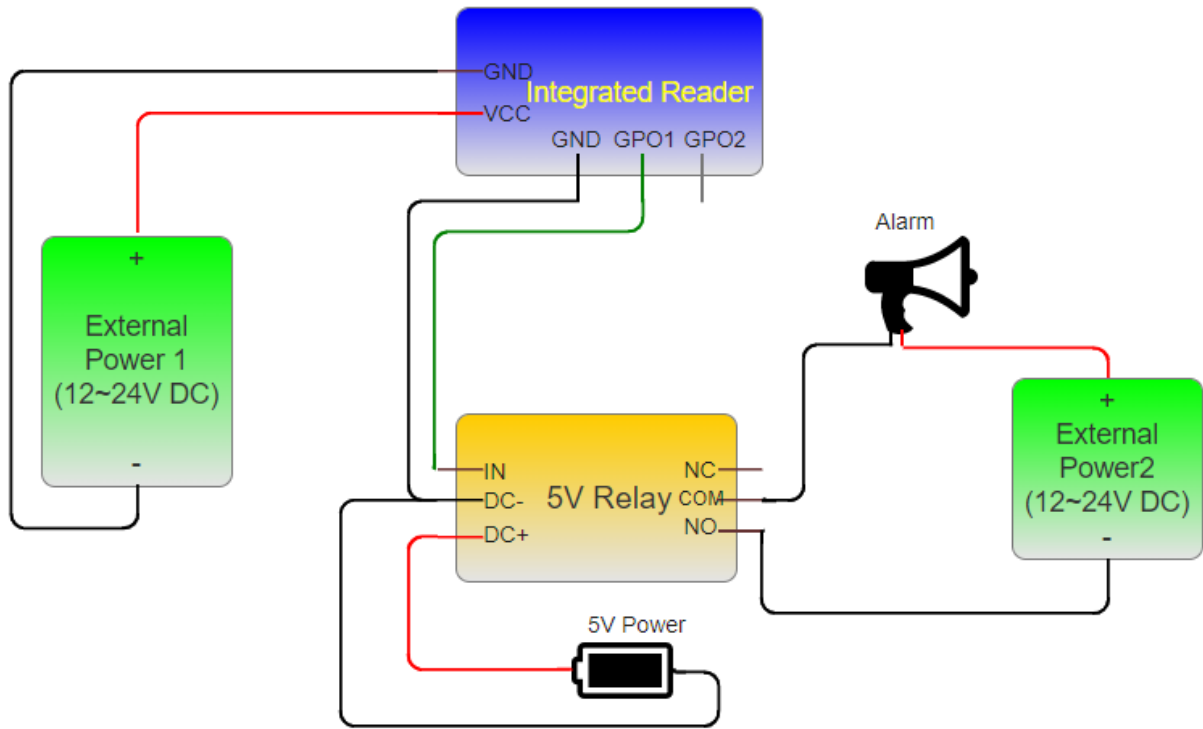
GPI: Optocoupler input, DC, 0~24V, higher than 1V is high level, lower than 1V is low level

Infrared sensor selection: Choose PNP NO type, which means that the infrared is normally low, when the object is detected, the signal line outputs a positive voltage signal.



### GPO Usage Example

The GPO of CARIX is a 5V GPO shared with Wiegand, Wiegand 0 is GPO1, and Wiegand 1 is GPO2. GPO needs to be used in combination with GND. When GPO is set to high level, GPO will output a high level of 5V /10mA, which can drive an external relay to work.



## 3. Installation description

### 3.1 Precautions

In order to ensure normal and stable operation of the equipment and your personal and property safety, please carefully read the following notes before installing CARIX integrated reader:

1. First check whether the outlet is connected to the ground, and check if the local power supply voltage meet reader voltage requirements;
2. Check if the device is connected tightly;
3. Pay attention to the network cable and serial cable type selection and length restrictions;
  - Serial port cable length 5m maximum.
  - RS485 length 80m maximum.
  - Ethernet length 80m maximum.
4. When installing multiple readers, the antenna position and the antenna spacing should be appropriate to avoid interference with each other.
5. Please test & ensure the reader can work normally before using it.
6. Please disconnect the power supply before wiring and do not operate with electricity

### 3.2 Installation conditions

Before installing the reader, please carefully check and confirm the product is intact, the accessories are complete, if there are any damages or shortage, please contact your supplier.

### 3.3 Device connection

#### 3.3.1 Power Supplies

Plug one end of the power adapter into the AC power supply socket, and then connect the DC end of the power adapter to the power interface of the reader; the reader will enter the standby state after powering on the reader.

#### 3.3.2 Connecting to a PC

- ☆ Reader cable interface includes all signal cords in the interface definition table.
- ☆RS-232 interface is used for short-range communication (less than 5m), can be connected to a PC via DB9 connector for communication.
- ☆ R485 port is used for longer range serial port communications (less than 80m);
- ☆Ethernet port is used for longer range communications (less than 80m).

### 3.4 Installation

The reading and writing range of the reader depends on the on-site application, the tilt angle of the antenna is adjusted to achieve the best reading and writing performance.

## 4. Common Failures

### 4.1 Daily Maintenance

- ✧ Check & ensure if the wires are fixed firmly
- ✧ Check & ensure if the power supply cable is connected well.

### 4.2 Common Failure Analysis and Solutions

#### ✧ **Power supply system failure:**

Check whether the power supply of the power adapter is normal and whether the AC power supply voltage is between 100V and 240V

#### ✧ **The serial port cannot be connected:**

The serial port cable is not connected or not firmly connected

Whether the serial port connection baud rate of the reader is correct

Is the selected COM port correct?

#### ✧ **The network port cannot be connected:**

The network cable is not connected or not firmly connected

The default IP address and port number of the CARIX integrated reader is 192.168.1.116:9090. Make sure that the IP address of the PC and the IP address of the reader are in the same network segment, such as "192.168.1.XXX". If you forgot the IP address of the reader, you can reset the IP address of the reader through demo software via the serial connection.

#### ✧ **The reader cannot read tags**

- Check if the tag is damaged
- Check whether the tag placement position is within the effective reading and writing range of the reader
- Check whether there is electromagnetic interference between readers or other devices
- For problems that users cannot solve by themselves, please contact after-sales service.



## 5. Packaging Accessories and Storage

### 5.1 Package

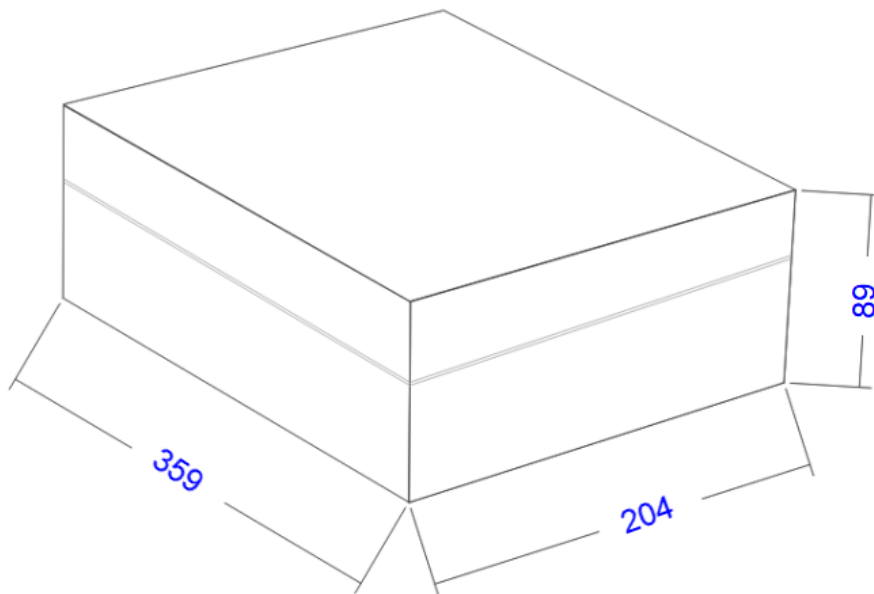


Figure 5-1 Package dimensions

Carton box size: 359 mm×204 mm×89mm

### 5.2 Accessories

In order to facilitate future storage and transportation, after unpacking the CARIX integrated reader, properly store the box and packaging materials. In addition to the reader, the box also includes the accessories required for the use of the product. Please confirm whether the product and accessories are complete according to the product packing list. If there is any discrepancy or damage, please contact the after-sales service in time. The specific packing list is shown in Table 5-1:

Table 5-1 Packing list

No	Name	Unit	Quantity	Remarks
1	CARIX integrated reader	Set	1	Included
2	Power adapter 24V/2.5A	Pcs	1	Optional
3	AC power cord	Pcs	1	Optional
4	bracket	Pcs	1	Optional
5	warranty card	Pcs	1	Included
6	Certificate of approval	Pcs	1	Included

### 5.3 Storage Requirements

CARIX integrated reader should be stored in below conditions:

- ◇ □ Environmental temperature: -40°C~ +85°C
- ◇ □ Relative humidity: 5% RH ~ 90%RH

## 6. After-sale Service

### Letter to Customers

Since our aim is to continuously improve our products for better user experience, we may modify the product characteristics, composition and design of circuits without given notifications. Thus the real product may be not in accordance with this manual. Generally, we will provide timely amendments to this manual. If it's not provided timely, please consult our service department.

Shenzhen Polaris Technologies Co., Ltd.

### Guarantee card of Polaris Technologies Co., Ltd

Product Name		Model No.	
Product Code		Level	
Description of troubles			
User's name		Postcode	
Contact Person		Contact No.	

### Warranty Description

In order to offer users better service, our company provide warranty card with each device, please keep it to enjoy the service.

1. Products can replace free under conditions within one month after sale, in the precondition of normal operation without repairing.
2. Free maintenance won't be given under the following circumstance:
  - ✧ The damage of the terminal caused by high voltage of the power grid.
  - ✧ The damage caused by misuse or operated improperly.
  - ✧ The damage caused by excessive vibration when user delivering.
3. The software of this product can be upgraded freely, users can be training in our company for free.
4. Will be charge appropriately if the user doesn't have a warranty card.
5. Users will need to fill out the warranty card for repair service, and sent back to Polaris.