RFID Reader User's Guide

Version	V11.11
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This User's Guide is for salesperson, installing and technical support person of RFID Reader, in order to make them understand the installing and testing of our readers clearly. Before operating the reader, please read the guide carefully.

CATALOG

1. Brief Introduction

RFID Reader is one of our developed RFID Readers for UHF Electronic Tags. It supports ISO18000-6B and EPC Class1 Gen2 protocol so that to read and write the relative tags. With perfect performance and easy operation, it can be integrated in many applications listed below:

Application	Examples	Description
Vehicle Management	Parking lot	Charge automation, pass in and out management
	Highway Charge	Charge automation for highway, bridge and tunnel
	Dock/Container	Container management in road, railway and dock
	Vehicle Monitor	Vehicle monitor in traffic management
Logistics Management	Warehouse	Warehouse, Super market, Mailing, Package management
	Manufacture	Monitor the products in production-line
	Custom	Goods management for custom clearance
	Anti-fake	Anti-fake for products
Staff Management	Access Control	Access control system for staff pass in and out
	Work Attendance	Check on work attendance, HR management
	Miner	Miner management, insurance
	EduToHome	Students management between school and home

1.1 Product Performance

Item	Parameters & Performance
Reader-Tag Protocol	ISO18000-6B, EPC Class1 Gen2
Antenna Port	Integrated antenna, Circular Polarization
Frequency Band	US(902-928MHz)
Frequency Mode	Fixed frequency mode(915MHz)
Communication	RS232/USB/LAN, RS485/Wiegand/GPIO
Identify Tag Range	Read 0 - 15M, depended on environment and tag
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Software Support	Provide Windows API, Demo software with source code
Power Supply	DC 12V supply, less than 2A
Dimension	440x440x80 mm (not including fitting)
Weight	4.0Kg
Pole Diameter	60-70mm
Storage Temp	-30 ~ +85 degree celsius
Operation Temp	-20 ~ +80 degree celsius
Anti-thunder Protection	Shell direct to the ground, communication 1.5KV surge endurance
Work Performance	High speed micro-processor controlled, running steadily
Work Mode	Support Master-Slave mode, Trigger/Automatic mode
Fast Identify	Tags with more than 160Km/h speed can be identified
Upgrade	Firmware can be upgraded easily by RS232/USB/LAN

2. Installation & Connection

The reader must be installed and connected correctly before operating. First you should connect power supply and antenna before connecting PC or controller.

2.1 Installation & Power Supply

The reader can be simply installed. Please adjust the fixture to a suitable angle according to your application.

The maxmium distance between the reader and host varys from data port types. The reliable communication distance is 10m for RS232, 5m for USB, 15m for Wiegand, 100m for LAN, and 1.0KM for RS485. Exceeding the above distances is not suggested.

The power input of this reader is 12V DC. An AC to DC adaptor is offered. Plug the adaptor into DC connector of reader before operating. If the reader makes a sound of a long Beep, the power input is normal.

2.2 Connect to PC & Controller

The reader can be connected to PC by RS232, USB(need a RS232 To USB Converter). *(For detail please see Part 4. Communication Port.)*

The reader can be connected to controller by RS485 or WIEGAND. It can realize input / output operation and response to outer trigger or GPIO port(not lead out by default). *(For detail please see Part 4. Communication Port.)*

3. Working Mode

The reader can identify working modes automatically and make corresponding response.

3.1 Master-Slave Mode

Under Master-Slave working mode, readers must be controlled by host machine (PC or controller). It receives the command from host, executing read/write actions on tags, and responsing the data to the host. Before receiving command from host, reader will stay idle.

We provide SDK software package for reader. This kit package includes Serial Port Communication Protocol, API functions set and Demo sample program. API functions set and Demo sample program is for PC to communicate with reader, while Serial Port Communication Protocol is for Controller to communicate with reader.

3.2 Trigger/Automatic Mode

Under Trgger/Automatic working mode, reader will detect tag automatically in periodical time. After that, it will response data to the host. In this mode reader does not need to wait command from the host.

4. Communication Port

The reader has kinds of communication ports. It can communicate with PC or controller that has standard RS232,RS485 or Wiegand port. The communication ports of the reader include:

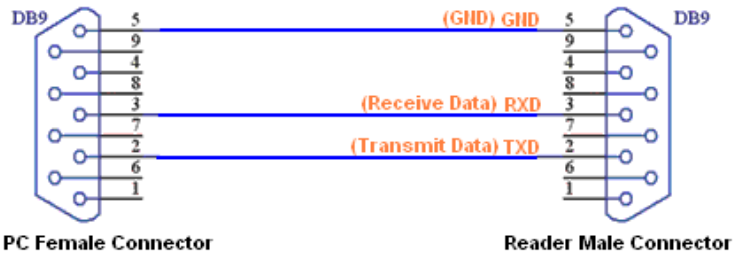
Port Name	Port Type	Port Qty.	Application
TRIGGER	IN	1 Pcs	Connect Reader to outer Relay
RS-485	A+,B-	1 Group	Connect Reader to Controller
WIEGAND	D0,D1	1 Group	Connect Reader to Controller
RS-232	DB9 Female Port	1 Pcs	Connect Reader to PC
LAN	RJ45 Port	1 Pcs	Connect Reader to PC/HUB
GPIO	GPI, GPO	Optional, not lead out by default	General Input/Output

Connect to PC

The reader can be connected to PC by RS232 or LAN.

RS232

The reader has a DB9 RS232 port which is usually connected to PC for communication. Directly connect RS232 of reader to the COM port of PC with DB9 Female cable. The inner connecting relationship is illustrated below:



4.1 Connect to Controller

The reader can be connected to controller by RS485 or WIEGAND.

RS485

The reader has a RS485 connector, which is usually used for connection between reader and controller. It can be intergrated to RS485 network or connected to PC through a converter. RS485 should be a twist masked cable, with 1000m of reliable communication distance. RS485 cable consists of two difference signal wires: RS485A+(**A+**) and RS485B-(**B-**).

Wiegand

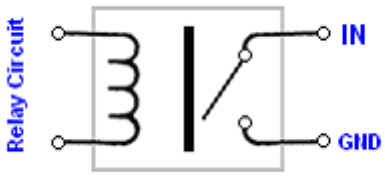
The reader has a Wiegand connector, which is usually used for connection between reader and controller. Wiegand should be a twist masked cable, within 10m of reliable communication distance. Wiegand cable consists of three signal wires: Data0(**D0**), Data1(**D1**) and Ground(**GND**). Please make sure the good connection to the ground.

4.2 Connect to Trigger & GPIO

The reader can response outer trigger. It can realize input/output by GPIO, too.

Trigger

In Trigger connection, you should touch **IN** to **GND** by outer trigger. For example, you may add a relay to realize a trigger from ground sensor or key-pressing. The suggested connecting method is illustrated below:



GPIO

Note: By default we do not give **GPIO**, user may ask us to customize them if needed.

In **GPIO** connection, you should connect **GPO**(Output) and **GPI**(Input) to the outer equipment. The **GPO** could be connected to outer equipment(eg. Relay) to drive the barrier or light.

5. FAQ

The frequent asked questions and the resolutions are listed below:

Failure	Possible Reason	Solution
Tag unreadable	Tag is too far from antenna	Move the tag close to antenna
	Tag direction does not match the antenna polarization	Please face tag to antenna, and keep the correct polarization
	Tag has been damaged	Change a new tag
Power does not work	Poor contact for power plug	Check the power supply, use the correct power

FCC Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.