Instruction of NFC-4311

NFC-4311 is one of 433MHz RFID series that we independently developed. With contactless, free from environment impact, long reading distance, excellent anti-collision etc, NFC-4311 reader is applied to various field. Currently NFC-4311 has widely applied to logistics and warehouse intelligent management, transportation intelligent management and school management, luggage parcel management, docks container management ant personnel positioning system etc.

1. Overview

NFC-4311 is 433MHz RFID reader with integrity structure and full-function. It includes RF Module、central control unit, input/output ports, Ethernet module, serial communication interface, non-volatile memory modules and working status indication module etc.

NFC-4311 support NFC company protocol. To meet the requirement about protocol and function expanding, and protect user's investment, the reader can be upgraded with our upgrade software conveniently.

Figure 1 NFC-4311

2. Product features

l   Small in size and easy to install

l   Long communication distance and high receiving sensitivity. The reading distance is 0-100m when connecting 2 dBi omni-directional antenna outside.

l   Excellent anti-collision performance, up to 500 tags read simultaneously;

l   Communication interface: There are 6 kinds of conventional communication interface, such as RS-232, RS-485, Wiegand26/34/42/50, USB, CAN and Ethernet. Other interfaces can also be customized for user's demand, such as GPRS, Bluetooth, 3G and WIFI etc.;

l   Led indicator and buzzer with esthetic intuition design;

l   NFC company protocol, which also can be customized and extended other protocol for user's demand;

l   More optional function can be customized to meet customers' requirement;

l   Compatible with other tag protocol, and also enhance the price-quality ratio on system applications;

l   Provide API software so that user can complete their development soon.

3. Function introduction

l   Support protocol: NFC-4311 adopts NFC company protocol for development, meanwhile, it also compatible with the communication protocol of other suppliers;

l   Protocol specific optimization: NFC-4311 can be optimized for protocol of other manufacturer or for a specific protocol, making it possible to enhance the price-quality ratio on close-loop system applications;

l   Off-line function: Reader is designed with nonvolatile memory for storage of tag data, when the communication is failed between reader and application system, the identified tag ID can be stored into reader to ensure the stable work;

l   ID matching function: NFC-4311 reader has built-in nonvolatile memory. In a close-loop application system, user can store the required tag data in the nonvolatile memory in advance, when reader identify tags, it will compare the tag data with the stored tag, and then perform the action which predefined by reader or designed by user;

l   Input/Output function: The reader is designed with 1 trigger input, it will identify tags in accordance with external trigger commands, so as to meet green energy requirements and reduces energy consumption. It's also designed with 2 relay outputs;

l   Time function: Reader comes with a built-in real time clock, which can set up and read reader time. It also supports time-stamp function under off-line working mode to meet precisely user's application design for time;

l   RSSI function: NFC-4311 supports RSSI function, it can detect signal strength so as to realize positioning function;

l   Data security: Provide three kinds of encryption method, including AES encryption, link layer encryption and random number encrypted, to ensure the security of data transmission;

l   Anti-interference function: Reader adopts channel isolation technique assures non-interference among different equipments;

l   Tag reading/writing function: Tag reading/writing function can be realized;

l   Upgrade function: NFC-4311 reader supports the firmware online upgrade function to optimize the performance.

4. Technology parameter

Table 1: NFC-4311 technology parameter

NFC-4311 Technology parameter	
Technology parameter	**Specifications**
Operating frequency	433.050-434.790MHz (Working frequency can be configured by our software)
Antenna	Reverse Polarity (RP-SMA) Antenna
RF power range	-30.0dBm-10.0dBm
Receiving sensitivity	-112.0dBm
Operating mode	fixed frequency
Modulation	ASK
Communication rate	250Kbps, 1Mbps, 2Mbps (set by software)
Reading/writing Range	0~100m (Standard matched 2dBi Omni-directional antenna) Remark: With RSSI function，the reading distance of NFC-4311 can be controlled within 3m.
Anti-collision	Up to 1000 tags read simultaneously

Buffer capacity	2000 tags data
Communication interface	RS-232, RS-485, USB, Wiegand26/34/42/50, RJ45
Input/output	1triggering input
Optional function	2 relays, CAN, RSSI, ID match function, Offline function and Time function
Data Encryption	AES encryption: AES-128bits key encryption to prevent data from being eavesdropped, to ensure the safety of data transmission.
	Link layer encryption: Data link layer specified command, response frame types and data formats. Command frame can be user-defined.
	Random No. encrypted：Random No. Generator is the formation of key data encryption, prevent data from being eavesdropped, to ensure the security of data transmission.
Power supply	AC input: 100~240V, 50/60Hz 1.2A DC output: 5V/1A
Product size	134mm*99mm*34mm
Packing size	284mm*275mm*85mm
Gross weight	0.79kg
Net weight	0.25kg
Working temperature	-20℃~+70℃
Storage temperature	-40℃~+85℃
Accessories	Power adapter, Power cable, RS-232 cable, USB cable, Ethernet cable
Work status indication	Communication indicator, Power indicator, Buzzer, LED indicator

5. Packing and interface instruction

5.1. Packing list

Please confirm all items are present upon receiving the package. If any question, please contact our sales representative directly.

Please check the packing list of NFC-4311 as table 2.

Table 1: NFC-4311 packing list

NFC-4311 Packing list			
No.	Item description	Quantity	Unit
1	NFC-4311	1	Set
2	Reverse Polarity (RP-SMA)antenna	1	Piece
3	RS-232 cable	1	Set
4	USB cable	1	Set
5	Ethernet cable	1	Piece
6	5V/1A power adaptor	1	Set

7	Packing list	1	Piece

5.2. Appearance

NFC-4311 is cuboid and medium grey color designed, it could be installed on wood, concrete, desk or brick surfaces, and also be put on the desk etc. NFC-4311 is designed with four holes, which can be fixed by screw.

5.3. Interface insruction

❙ DB9

DB9 socket is RS-232 serial port sockets, which can be compatible with other communication interface

Table 3: DB9 pin assignment

DB9 pin assignment		
Pin number	**Signal name**	**Signal function**
1	T1/K1	Trigger/relay 1(optional)
2	RXD	RS -232TXD
3	TXD	RS -232TXD
4	K1	Relay 1
5	GND	Ground
6	DATA0/K2	Wiegand data 0/relay 2（optional）
7	DATA1/K2	Wiegand data 1/relay 2（optional）
8	B-/CAN	Wiegand data 1/relay 2（optional）
9	A+/CAN	Wiegand data 1/relay 2（optional）

❙ RJ45-USB single-layer interface

RJ45-USB is combined interface both USB and TCP/IP, NFC-4311 can transmit data by RJ45 and USB. Before using RJ45-USB, please install USB driver in advance.

❙ Led indicator

There are 4 LED indicators for NFC-4311, which can add more aesthetic perception and understand promptly the working status of reader/transmission module, when illuminated their functions are:

Table 4: LED indicator

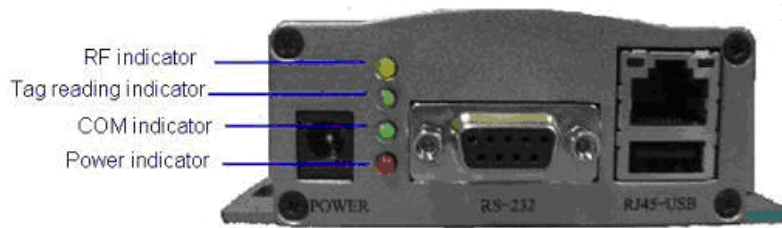| LED indicator(from top to bottom)			
No.	**Color**	**Function**	**Instruction**
1	Yellow	RF indicator	Blink when transmitting power
2	Green	READ indicator/ data transmitted indicator	Blink when successfully identify tag and transmitting data
3	Green	COM indicator	Blink when successfully identify tag and transmitting data
4	Red	Power indicator	Blink when successfully identify tag and transmitting data

Figure 2 Working status indication

6. Caution

l   When installing NFC-4311, please avoid being shield fully by metal or liquid.

l   Please pay attention to the waterproofness of NFC-4311 reader, you can cover reader by non-metallic shield case.

l   When NFC-4311 connect to antenna, the cable can't be up to 10m.

7. Typical Application

l   Intelligent transportation management;

l   Asset automatically identify, tracking, flow and inventory management;

l   Guard patrolling intelligent management;

l   Coal well management for personnel positioning, tracking and query;

l   Monitoring and positioning management for infant, prisoner, older and psychopaths etc.;

l   E-ticket, access control, meeting attendance, electronic record and school management;

l   Intelligent management for house and hotel;

l   Medical waste/drug and equipment management;

l   Intelligent management for channel boat and airport pavement;

l   Objects management among buildings or inside buildings.

8. After-sale service

We have one year guarantee and any repair is free of charge within this guarantee time (Based on products model No. and manufacture date). However, the damage in the event of mechanical impact, over-high voltage, improper operating, dismantling the reader personally etc. shall be excluded from the guarantee.

Welcome your feedback to us while using the products, we would be dedicated to serve you. If you have any query, please free to contact sales representatives.

Tel: 86-755-6118 1991

Hot line: 400--602--0005

Fax: 86-755-6118 1977

Email: info@rfid-nfc.com   support@rfid-nfc.com

FCC STATEMENT:

1.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.

2. Changes or modifications not expressly approved by the party responsiblefor compliance could void the user's
   authority to operate the equipment

NOTE: 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 designedto provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses and can radiate radio frequency energyand, if not installed and used in accordance with the instructions,
may cause harmfulinterference 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

-- 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.