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SYS-IoT UHF Reader RU42X
Hardware User's Guide
V1.2.0

2019-02-02

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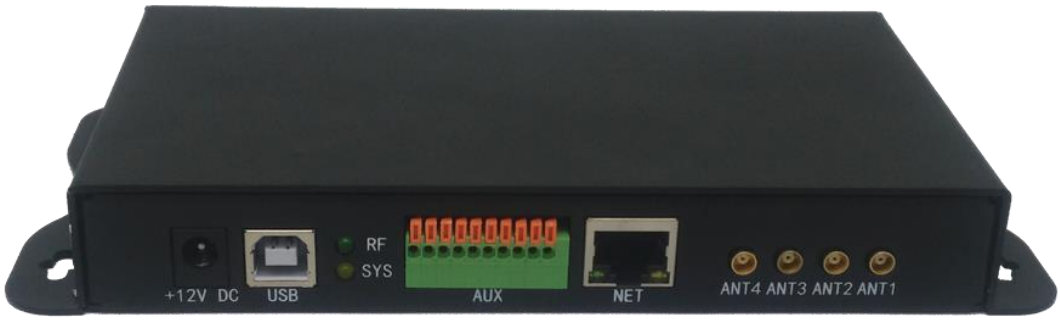
CATALOG

Overview

This document describes the RU420x fixed reader about the working mode and hardware interface instructions.RU420x reader, external communication interface including USB2.0 full speed interface, Ethernet interface, RS232 (optional), RS485 and general GPIO port;RU420x reader RF interface includes a single port and four - port MCX interface.

1. Hardware description

1.1 Product Appearance



1.2 Interface specification

The interface appearance of RU420x reader is shown as follows:

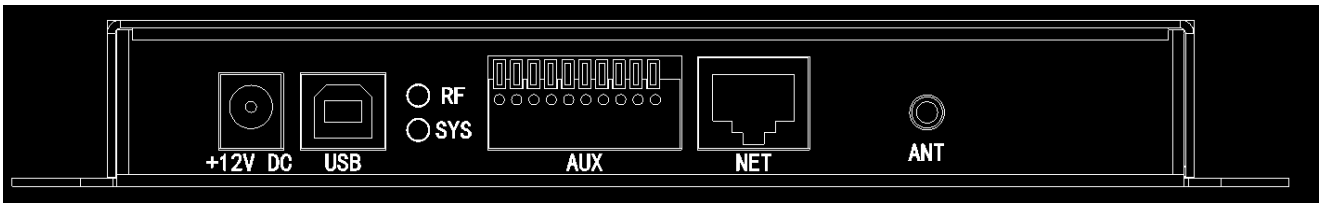


Figure 2 RU420A Single port Reader.

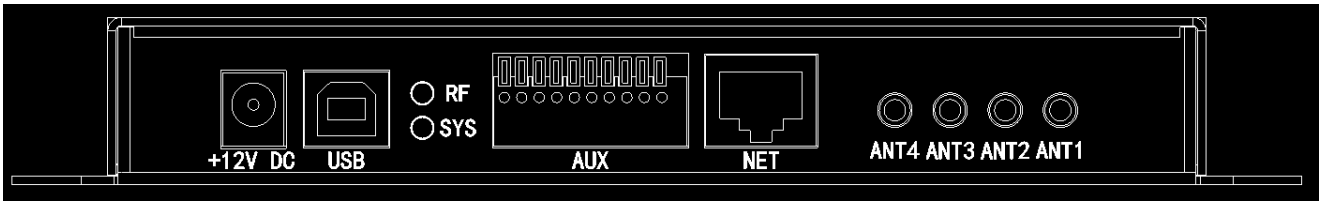


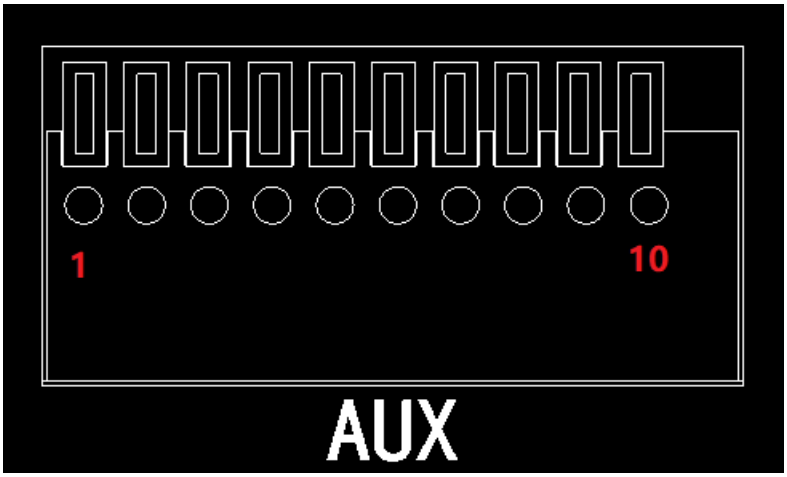
Figure 2 RU420A Four ports Reader.

1. **+12V DC**, Power input interface of +12V DC, provide power supply for the reader;
2. **USB Port**, Virtual USB interface, virtual serial port, easy to connect with the computer communication;

3. **LED indicator**, Provide LED indication function for reader operation state. SYS system operation indication, normal state flashing once per second; RF indication, reader-reader RF power emission state indication, including the LED indication when power amplifier is opened or Tag is operating;
4. **AUX Port**, Auxiliary communication and control interfaces, providing additional communication interfaces (such as RS232 and RS485) and input/output control interfaces for users;
5. **NET Port**, 100M Ethernet communication interface, convenient for users to connect readers to the network system;
6. **ANT Port**, Connect with RFID antenna to read RFID electronic tag; Four antenna ports are connected with the four RFID antennas, switching time sharing to increase the reader's RF coverage of the electronic tag.

1.2.1 AUX Communication Port

AUX ports, as shown in the figure, comprise a total of 10 external interfaces, defined as shown in the table.



No.	Name	Description
1	+5V	DC +5V/0.3A
2	GND	Ground
3	RS232 TXD	RS232 TXD
4	RS232 RXD	RS232 RXD
5	GPO2	General Purpose Input Output, +5V, 8mA, TVS Protect.
6	GPO1	General Purpose Input Output, +5V, 8mA, TVS Protect
7	GPI2	General Purpose Input Output, +5V, 8mA, TVS Protect
8	GPI1	General Purpose Input Output, +5V, 8mA, TVS Protect
9	RS485+	RS485 Interface, positive, TVS Protect
10	RS485-	RS485 Interface, negative, TVS Protect

2.Work Mode

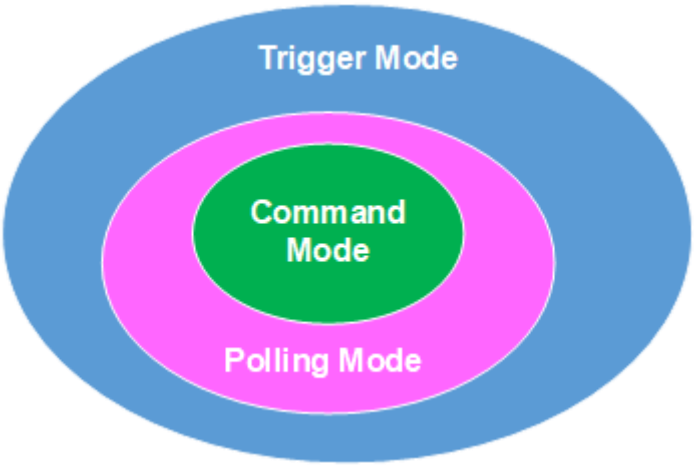
The working modes of RU420x reader include: command mode, polling mode and trigger mode. Users should adopted corresponding working modes according to the actual application of the system to simplify users' use of the reader.

- **Command Mode:** Host send commands to reader by a communication port, and the reader do some operation according the commands and answer back to host by the same communication port.

- **Polling Mode:** In this mode, the reader will automatically inventory the electronic tags in a period time by user's setting, and automatically sending the tag's data to a communication port in a selected protocol format by user's setting. This will be beneficial to some simple application and simplify the user's application.

- **Trigger Mode:** In this mode, the reader keep in mute status, unless a valid trigger signal appear in a GPI port. The valid trigger signal will continuously trigger the reader into Polling Mode description as above until the trigger signal disappear.

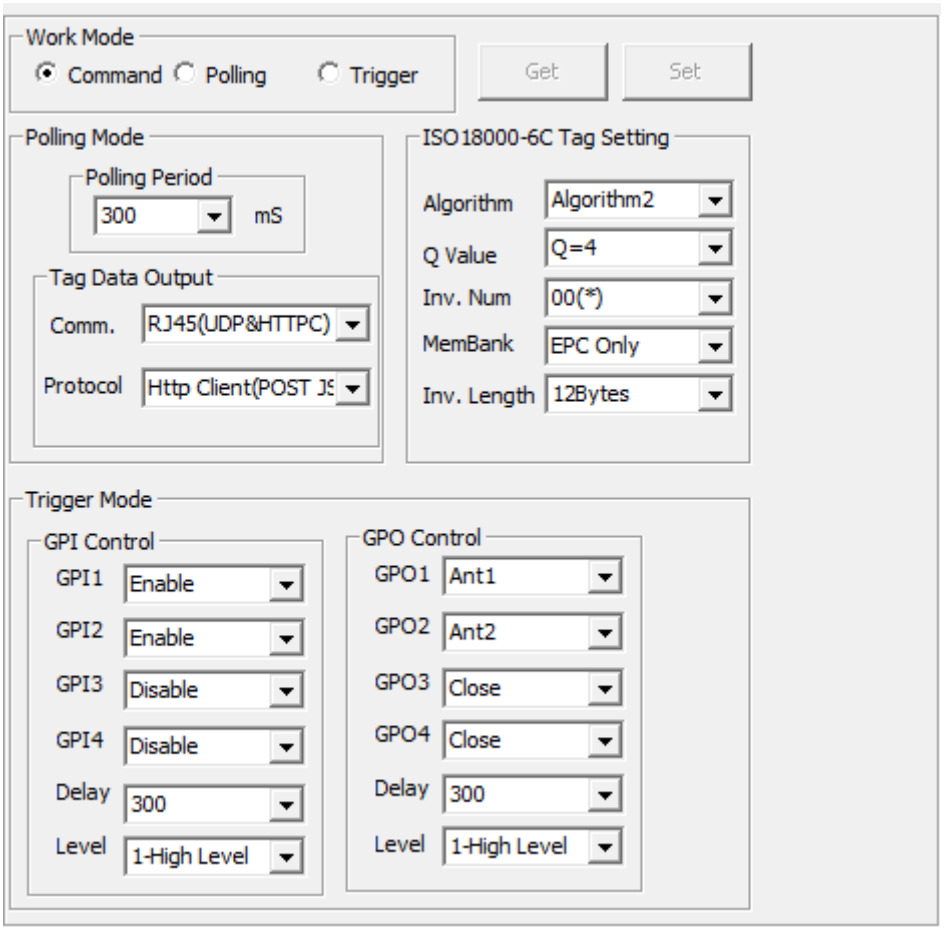
The diagram for command mode, polling mode, and trigger mode is shown below:



Whether the reader is in polling mode or trigger mode, the command mode is still valid for the reader, that is, both polling mode and trigger mode contain the function of command mode.

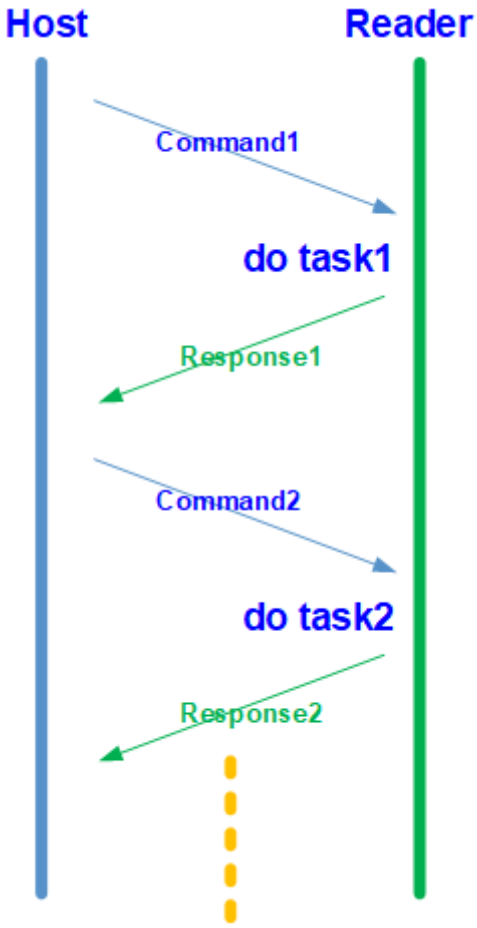
When the reader is in polling mode or trigger mode, once the host sends a command to the reader, the reader will immediately go into command mode to avoid the task conflict in different work modes. In order to resume the original mode of the reader, the host could send a reset command to reset the reader or repower the reader manually.

To set the working parameters of the reader, please use the software "xReaderConfiger3.1.exe" to set the parameters.


Work Mode
Command
Polling
Trigger
Get
Set
Polling Mode
Polling Period
300
mS
Tag Data Output
Comm.
RJ45(UDP&HTTPC)
Protocol
Http Client(POST JS
ISO18000-6C Tag Setting
Algorithm
Algorithm2
Q Value
Q=4
Inv. Num
00(*)
MemBank
EPC Only
Inv. Length
12Bytes
Trigger Mode
GPI Control
GPI1
Enable
GPI2
Enable
GPI3
Disable
GPI4
Disable
Delay
300
Level
1-High Level
GPO Control
GPO1
Ant1
GPO2
Ant2
GPO3
Close
GPO4
Close
Delay
300
Level
1-High Level

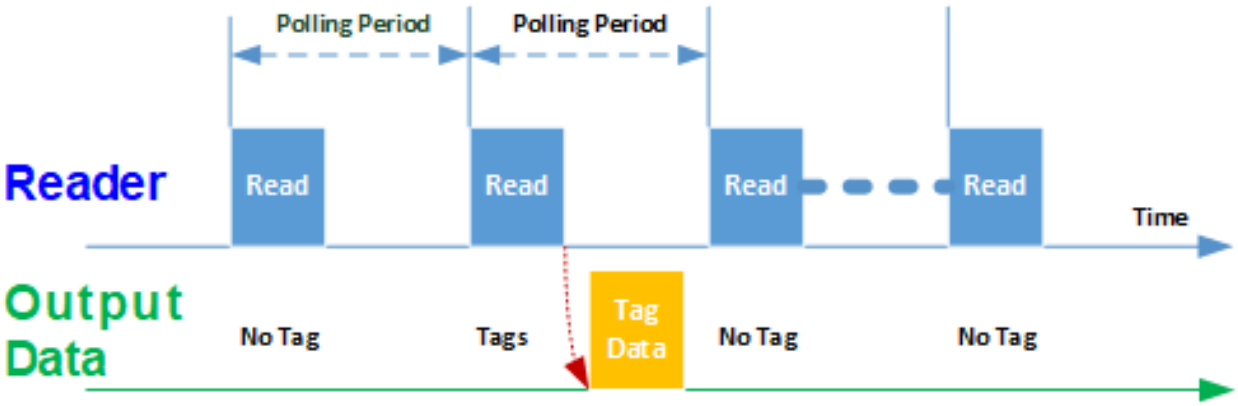
2.1 Command Mode

The working sequence of command mode is as follows:



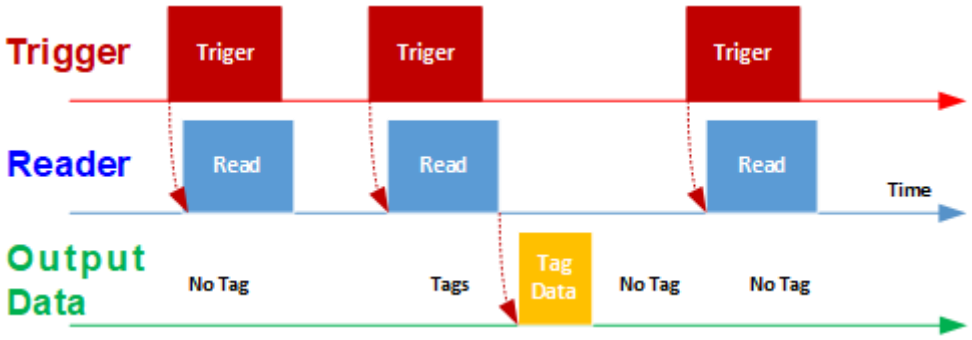
2.2 Polling Mode

The working sequence of Polling Mode is as follows:



2.3 Trigger Mode

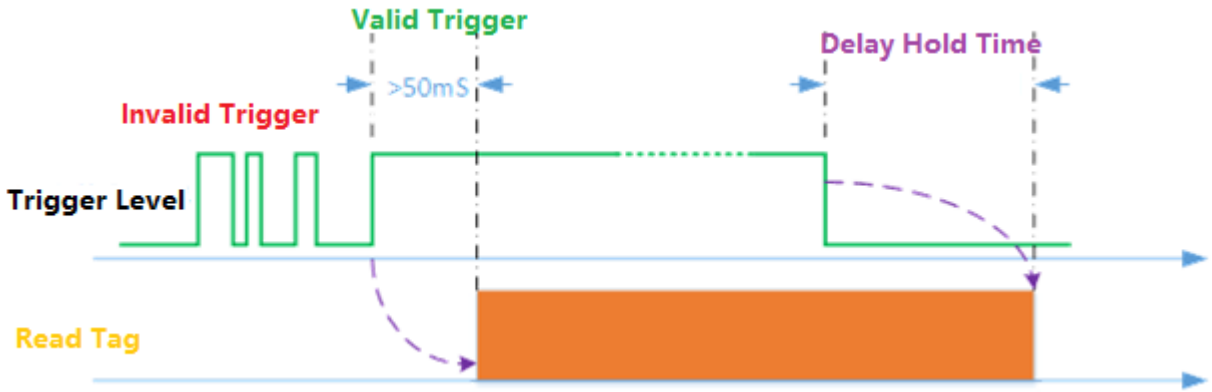
The working sequence of Trigger Mode is as follows:



3. GPIO Function

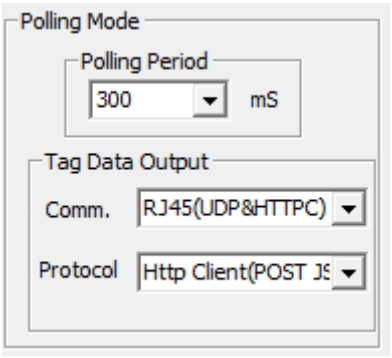
3.1 GPI Trigger Function

The reader have two-channel or four-channel GPIs input trigger interface, which is used to trigger the reader to start Tag operation function such as inventory tag inventory, instead of having to start the reader's inventory tag operation by the host to send a command, which simplifies the user's operation steps to the reader.



After the GPI received a valid trigger signal level which keep last over 50mS, the reader start an inventory tag operation automatically unless the valid trigger signal level is disappear

The Trigger could be shut down by settings.

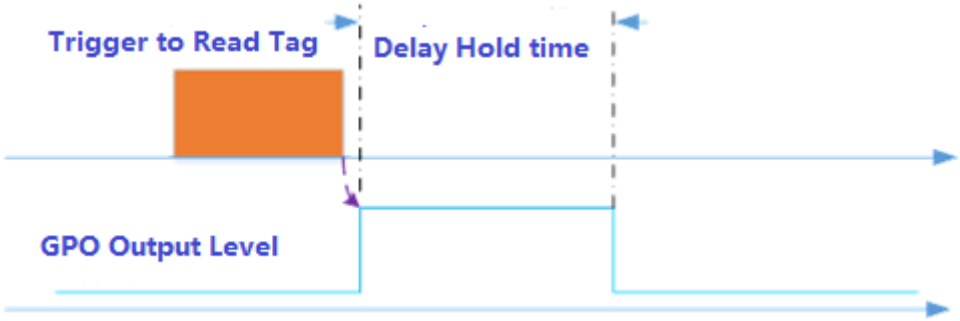


3.2 GPO Output Control Function

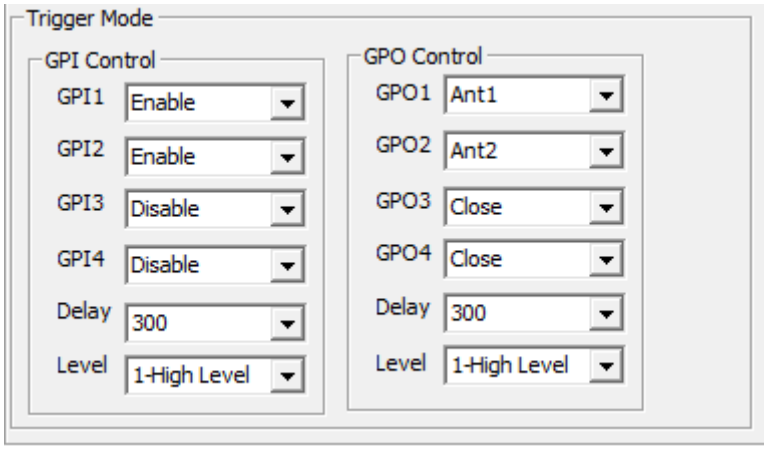
The GPO port used to control the other peripheral which is used together with reader. The reader have two-channel or four-channel GPO port.

There are two ways to control the GPO Port: 1) The host sending a control API command in command mode; 2) After read a tags and control the GPO level by reader automatically in Trigger Mode.

After a reader is triggered to read a tag, the corresponding GPO will output a valid level keep lasted a Delay Hold time for the other peripheral. The running sequence is show as:



The GPO output could be shut down by settings.



4.Tag Inventory Settings

Tag Inventory Settings is used for a method to inventory tag in the Polling Mode or

Trigger Mode. Users should flexibly set the method of reading tags according to different application, in order to improve the efficiency of inventory tags.