

Active RFID Reader User Manual

1. Package Contents:

- Active RFID Reader x 1
- Battery power line with connector x 1
- User manual x 1
- USB Cable x 1
- 0dBi Dipole Antenna x 1

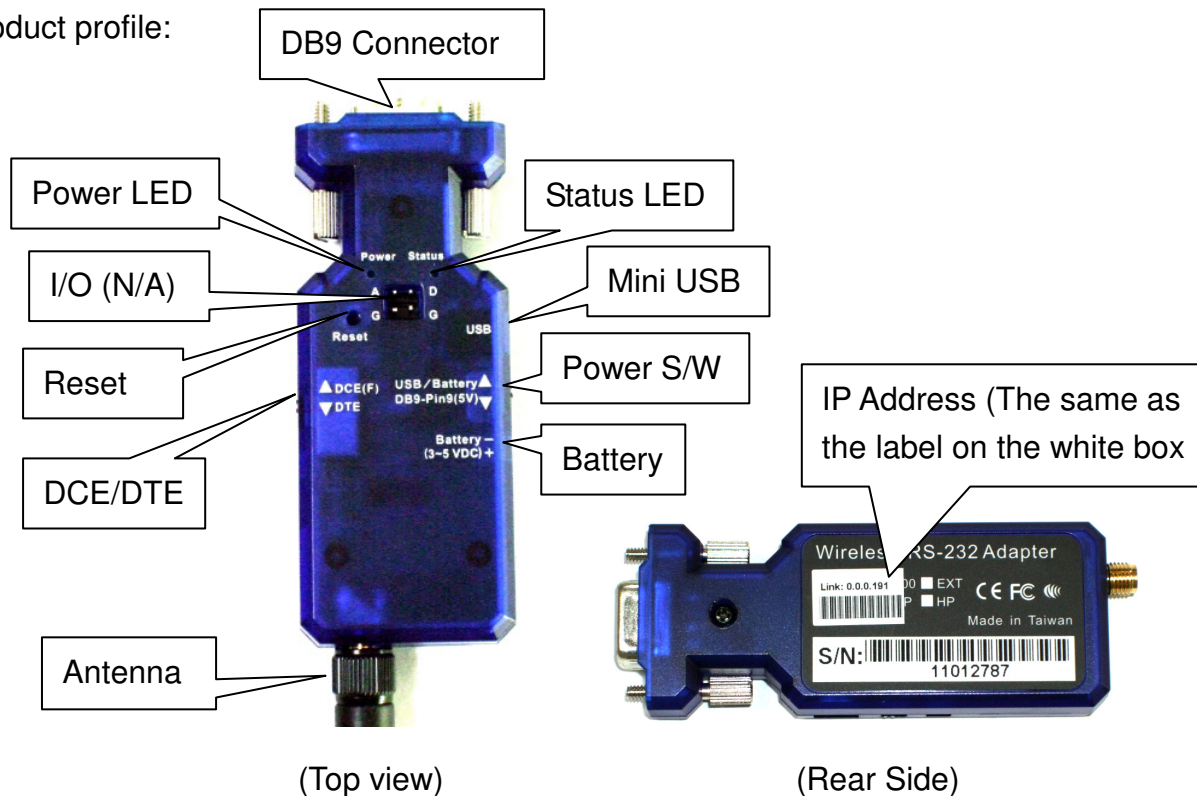


IP Address

White box: Dimension: 10 x 5.5 x 5 (cm)
Weight: 122 g



2. Product profile:



3. Power supply:

3.1 Mini USB: The USB cable is included in the package

3.2 Pin 9 of DB9 connector: 5VDC input, 1.5A Max.

3.3 External battery

- Standard A, AA or AAA battery: 3 units for each model.



- Li-Polymer Battery: 3~3.7 VDC. The capacity depends on the applications. General working power consumption: 100 mAh (for reference)



4. Default setting of the COM port

- Baud rate: 9600 bps
- Data bit: 8

- Parity: none
- Stop bit: 1
- Flow control: none

Restore the factory settings by the “Reset” (Pressed with a clip or pin into the hole)

5. DCE/DTE Slide Switch

Use the slide switch to swap between DTE/DCE. By switching, you can set the adaptor either as a DTE (towards antenna connector) or a DCE (towards RS232 connector).

6. Packet format

The reader can send tag or its own information to the other application by RS-232 interface. Tag information is received by RF from tag devices. The reader information is from the reader itself and can be sent periodically to indicate the reader alive or information.

The following example is the data format of the message:

```
$0,100.100.100.10,NODE1,100.100.100.11,AP1,0,0,1,0,32,-13#
```

The data format of the message starts with a “\$” character, ends with a “#” character, and separates with Comma. The detailed description of the fields is on the table

No.	Name	Description	Example
1	Node Type	This field is used to indicate if the data is from Master or Slave node.	0: Slave 1: Master
2	TAG Address	This field is 32 bits address of the node which represented by IP address format.	100.100.100.10
3	TAG ID	This field is 4 bytes id of the node.	NODE1
4	Reader Address	This field is 32 bits address of the AP which represented by IP address format.	100.100.100.11
5	Reader ID	This field is 4 bytes id of the AP.	AP1
6	RX Type	This field is used to indicate if this message is broadcast or unicast.	0: broadcast 1: unicast
7	Message Type	This field is used to indicate if this message is periodic report or panic indication.	0: periodic report 1: panic indication
8	Digital IO Input	This field is used to indicate if digital IO input is high or low when digital IO input is set.	0: digital IO is low or digital IO is output 1: digital IO is high
9	ADC Value	This field is used to indicate the ADC value if ADC v is greater than 0	0: ADC Value is less than ADC threshold 1-1024: ADC value is greater

			than threshold
10	Voltage	This field is battery voltage. The actual voltage is 1/10 of this field.	32 means 3.2V on battery.
11	RSSI	This field is RSSI value between sensor and collector node.	-13 means -13dbm

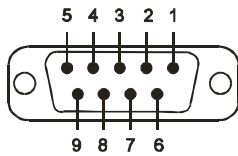
7. Command for the reader

CMD	Description	Options	Default Value
JT	Set Join Token by IP address format	0.0.0.0 ~ 255.255.255.255	0x05060708
LT	Set Link Token by IP address format	0.0.0.0 ~ 255.255.255.255	0x01020304
PT	Set Peer Token by IP address format with Peer Index	Peer Index: 0-7 Peer Token: 0.0.0.0 ~ 255.255.255.255	0 0.0.0.0
RF	Read configuration data from flash memory.		
WF	Write configuration data to flash memory.		
CN	Configure channel number.	1: 922 MHz 2: 924 MHz 3: 926 MHz 4: 928 MHz	2:924
CP	Configure the channel power. (dBi)	1: -10 dBm 2: 0 dBm 3: 10 dBm	2:0
RP	Configure report period.	0-86400 Sec	3
BRP	Configure battery report period.	0-86400 Sec	3
COMBR	Configure Baud Rate of COM port.	1: 4800 bps 2: 9600 bps 3: 19200 bps 4: 38400 bps 5: 57600 bps 6: 115200 bps 7: 230400 bps	2:9600
COMCL	Configure control of COM port.	Bit 7 Parity enable 0: Parity disabled 1: Parity enabled Bit 6 Parity select 0: Odd parity	0 Parity disabled Odd parity 8-bit data One stop bit

		1: Even parity Bit 4 Character length 0: 8-bit data 1: 7-bit data Bit 3 Stop bit select 0 One stop bit 1 Two stop bits	
ADCCL	Configure ADC Control. If ADC Control is 0, ADC is off without detection. If ADC Control is 1, ADC value is greater than ADC threshold and then ADC value will be reported. If ADC Control is 2, ADC value is smaller than ADC threshold and then ADC value will be reported. If ADC Control is 3, ADC value will be reported.	0: ADC off 1: > 2: < 3: any	0: ADC off
ADCTH	Configure the ADC Threshold.	0-1023	0
SHOW	Display all configuration setting.		
DIO	Configure Digital IO setting.	0: Digital IO is set to input. 1: Digital IO is set to output	0
ID	Configure Tag ID	8bytes ASCII Character	""
RB	Reboot the device.		
JS	<p>On reader device, JS is used to configure join setting. There are three kinds of join setting. If join setting is 0, the reader does not allow to join or Set On Air. If join setting is 1, the reader allows tag to join the device. If join setting is 2, the reader can be used to set the tag device on air.</p> <p>On tag device, JS is used to join or Set On Air by reader device depending on JS setting on reader device. If reader allows the tag device to be set, the tag device will be configured by reader remotely. If reader allows the tag device to join, the tag device will join to the reader.</p>	0: Normal 1: Join 2: Set	0: Normal

8. RS232 Interface

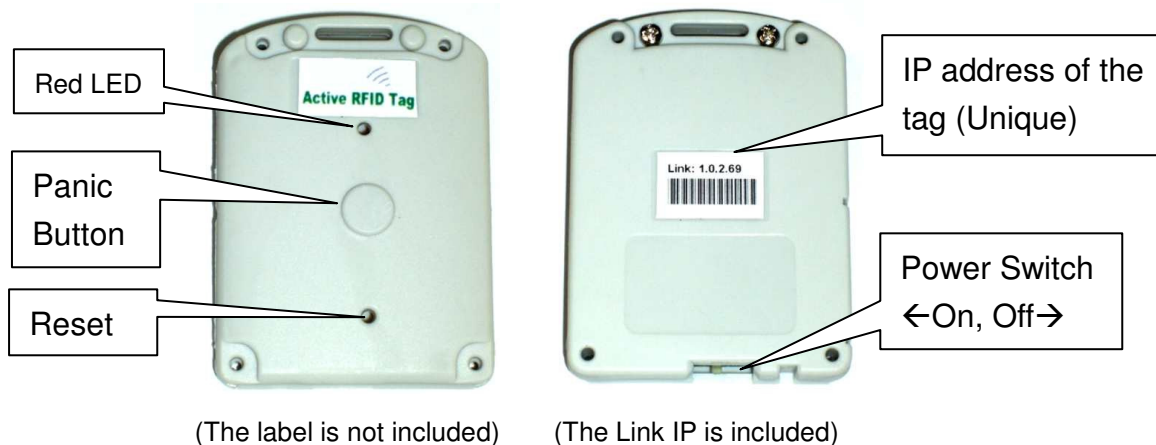
8.1 Pin-out:



8.2 Signals:

Pin	Signal	DTE Direction	DCE Direction	Description
1	CD	Input	Output	Not connected
2	TxD	Output	Input	Transmitted data
3	RxD	Input	Output	Received data
4	DSR	Input	Output	Contact manufacturer to set this
5	GND	N/A	N/A	Signal ground
6	DTR	Output	Input	Contact manufacturer to set this
7	CTS	Input	Output	Clear to send
8	RTS	Output	Input	Request to send (Default)
9	Vcc	Input	Input	Power supply (5VDC, 1.5A Max.)

9. Active RFID Tag



9. Test Video

http://www.youtube.com/embed/lcuKF59_WbU?hl=zh&fs=1

or Search “UHF Active RFID Reader & Tag Introduction and Setting” on Youtube site.

10. Reader Setting

10.1 Connect the RS-232 Reader with the PC or NB via RS-232 connector

10.2 Execute COM port tool (Tera Term for example)

Default COM value:9600 bps, 8-N-1, Non Flow control

The report data will be displayed on the window once per 3 seconds.

10.3 Key in "WF" which means write flash and the setting will be saved. The command will be restores to default value when power on next time.

The screenshot shows the Tera Term window with the following content:

```

$1,0.0.0.2,4,0.0.0.2,4,0,0,0,33,0#
$1,0.0.0.2,4,0.0.0.2,4,0,0,0,33,0#

MASTER>?
usage: command [##] [0x##]
LT #.#.#.#: Link Token
PT #.#.#.#: Set Peer Token
RF : Save Configuration
WF : Write Configuration
RT : Reset
CN #: Channel Number (1:922 2:924 3:926 4:928)
CP #: Channel Power (1:-10 2:0 3:10)
RP #: Report Period (0-86400 Sec)
BRP #: Battery Report Period (0-86400 Sec)
COMBR #: COM Baud Rate (1-6:9600-230400)
COMCL #: COM Control (Bit 7,6,4,3)
  
```

Callout 1 (orange box): The report data will be displayed on the window once per 3 seconds (Default)

Callout 2 (green box):

1. Press Enter key and the "MASTER>" will be displayed
2. Key in "?" and press Enter key, the command guide will be displayed.

11. Tag Setting via Air

11.1 Key in “JS 2” command in “MASTER>” mode

11.2 Press “Panic button” when the power of the tag is off and slide the switch to “On” side.



Step 1: Press the button

Step 2: Slide the S/W on the rear side toward → to power “On” the tag

11.3 The “SLAVE” is shown in the window.

11.4 Set the tag by using the same command as the reader.

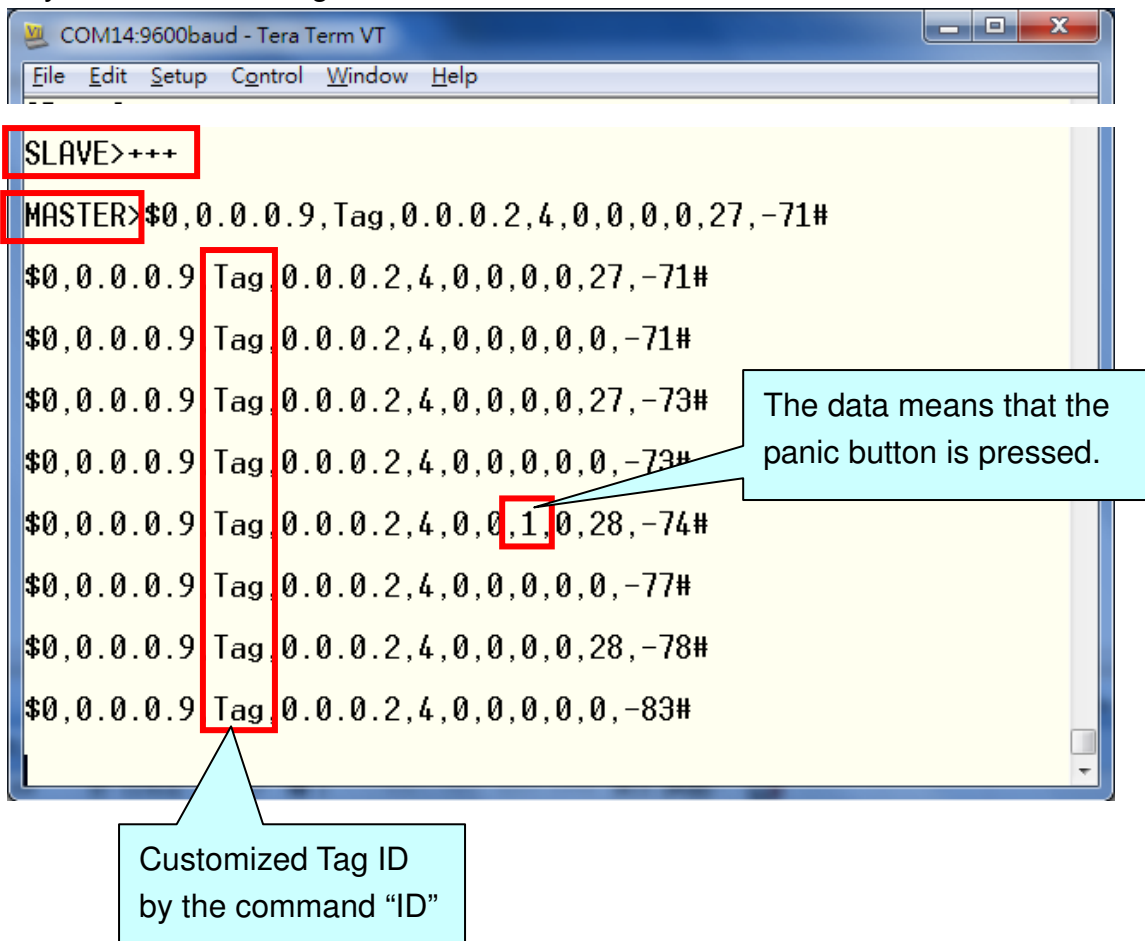
11.5 Key in “WF” which means write flash and the setting will be saved. The command will be restores to default value when power on next time.

11.6 Key in “SHOW” will display all the setting of the Tag.

The screenshot shows a terminal window titled "COM14:9600baud - Tera Term VT". The window contains the following text:

```
MASTER>JS 2
OK
SLAVE>RP 1
OK
SLAVE>ID Tag
OK
SLAVE>WF
OK
SLAVE>SHOW
FV = 0.0.5.0
ID = Tag
LT = 0.0.0.9
PT = 0.0.0.0
CN = 2
CP = 2
RP = 1
BRP = 3
COMBR = 2
```

12. Key in “+++” will change from “SLAVE” to “MASTER” mode.



Federal Communications Commission (FCC) Statement
RADIO FREQUENCY INTERFERENCE STATEMENT

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 correcting the interference by one or more of the following measures:

- Reorient 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.

Warning : A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used. You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

Declaration:

1. The information contained in this document is subject to change without notice.
2. Document Release V1.0, Date: 2011.10.20

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