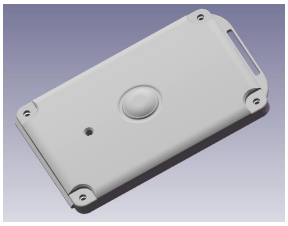
Active RFID Tag & Reader

(Model: Tag-922, Reader-922)

(Reader)

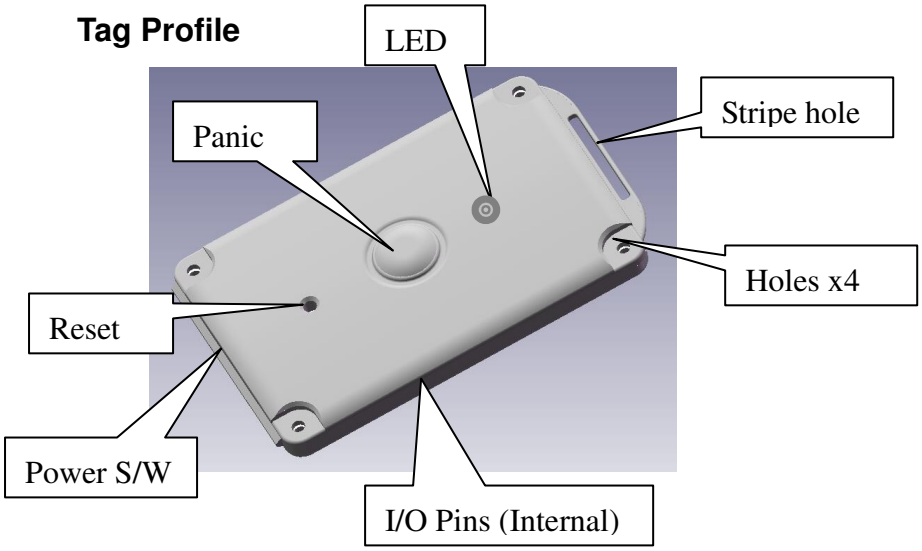


(Tag)

Features

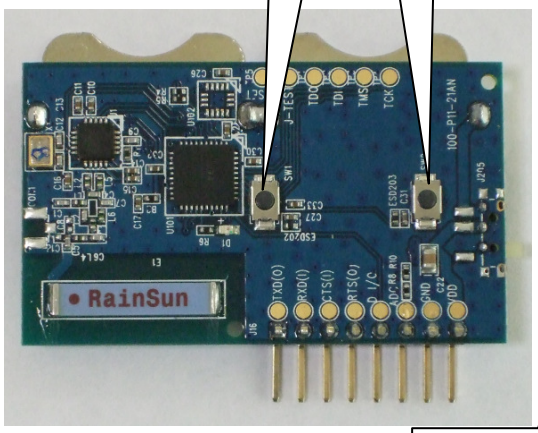
• Support 868/915 MHz band circuit design
• 200 nA deep-sleep mode current consumption
• Fast startup time; 120μs from sleep to RX or TX mode
• Wake-on-radio functionality for automatic low-power RX polling
• Separate 128-byte RX and TX data FIFOs (enables burst mode data transmission) RF Performance
• High sensitivity (–112 dBm at 1.2 kBaud,@868 MHz, -116dBm at 0.6kBaud, 1% packet error rate)
• Low current consumption
• Programmable output power up to +11dBm for all supported frequencies
• Excellent receiver selectivity and blocking performance
• Programmable data rate from 1.2 to 500k Baud

Tag Profile

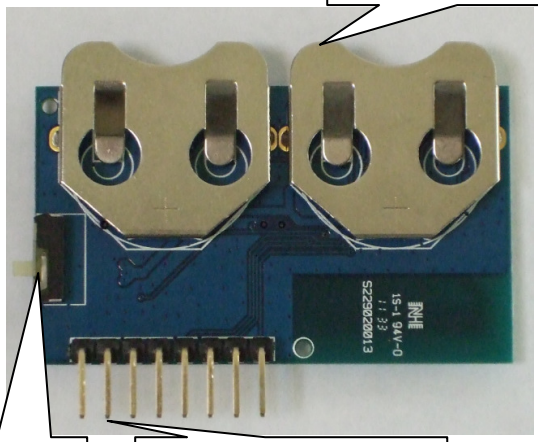


PCBA:

Tag top view



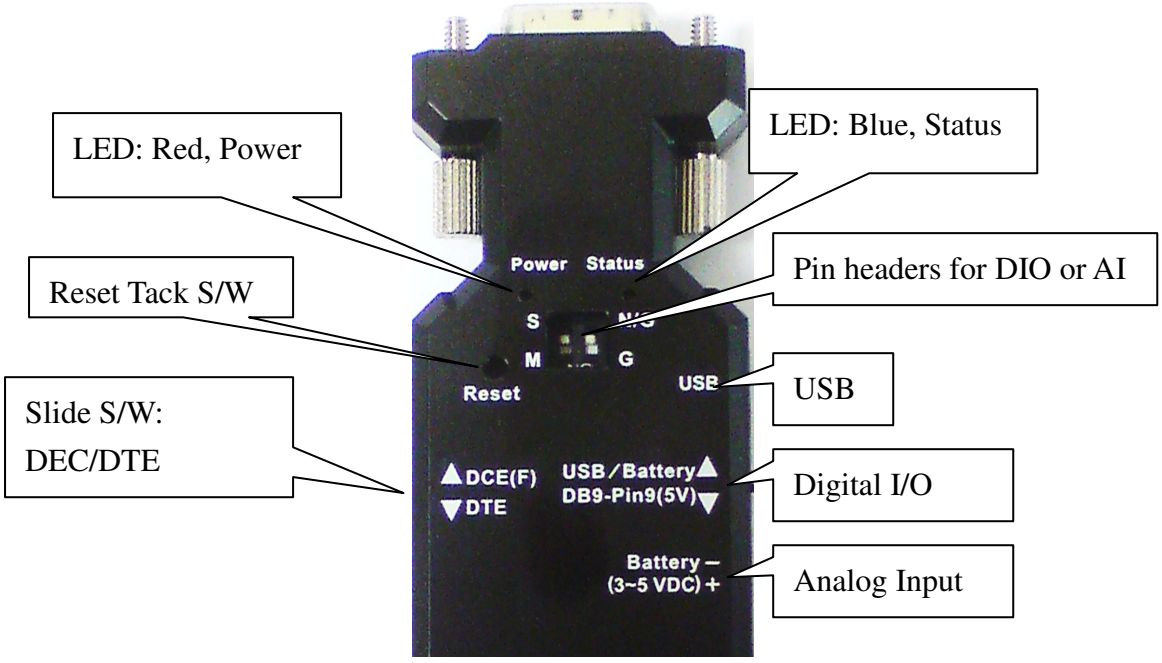
Tag rear view:



Features:

- Built in G-sensor (Option)
- Tack switch x 2: Key-1 for panic button (external), Key-2 for reset (push via the hole of the housing)
- LED x 1: panic, battery low, status
- Slide switch for power on/off, on the
- CR-2032 battery x 2: on the rear side of the PCBA, pull out the battery from the side of the holder
- Chip Antenna (Default), IPEX connector (Option)
- Built in Power capacity sensor
- Setting: Configurable report data, power level, Channel, I/O
- I/O interfaces: UART x 1, Digital I/O x 1, Analog Input x 1, VCC, GND (The pin header is option)

Reader Profile:



Protocol:

The reader can send tag or its own information to the other application by UART 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

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 2: 924 3: 926 4: 928	2:924
CP	Configure the channel power.	1: -10	2:0

	(dBi)	2: 0 3: 10	
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 2: 9600 3: 19200 4: 38400 5: 57600 6: 115200 7: 230400	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 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	0 Parity disabled Odd parity 8-bit data One stop bit
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.	0

		1: Digital IO is set to output	
ID	Configure Tag ID	8bytes ASCII Character	“”
RB	Reboot the device.		
JS	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. 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.	0: Normal 1: Join 2: Set	0: Normal

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