Wireless Devices Inc.

Alarm Follow Message Transceiver Center

AF-21MQTT/HTTP

Operation Manual

CCW210541-010
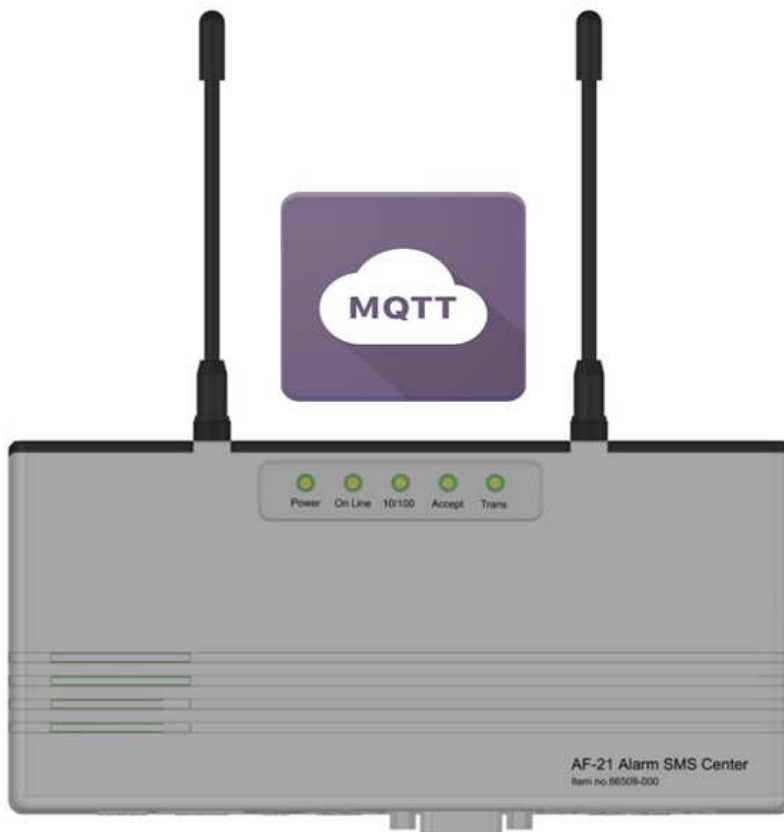
1. INTRODUCTION

A new generation of IoT Cloud Access-automation-security alarm message transmission center.
You can send short messages to the smart phones, pagers, Tab computer, and PC without paying telecommunication charges

AF-21 uses the new MQTT/HTTP protocol to connect the network to the wired alarm input and to the wireless device

With AF-21 MQTT version, it's a device that is Two-way, the device would upload the message to the cloud to App (Android and iOS), or standard MQTT server. And the device would receive command from the cloud from App (Android and iOS) or standard MQTT server by SCOPE format and transmitter POCSAG signal locally.

AF-21 contains WLAN, Wi-Fi and POCSAG transceiver modules
When the connected equipment is abnormal or an alarm occurs, AF-21 will immediately send pre-programmed information to the pager and smart phone. Of course, including tablet laptops and PCs as long as you want to connect some devices..
Rich back-end connection serial ports Contains RJ-45, USB, RS-232, RS-485/RS-422. Meet the needs of security and nurse call system and industry automation..

About the transmission, the AF-21 is a POCSAG synthesized message transmitter that operates in the 136MHz to 931MHz, frequency bands.

The AF-21 inside encoder contents, which are the cap code, speed and message
Etc, can be sent by the alphanumeric (7-bit) using the POCSAG paging protocol out from either the serial port or from the Ethernet port.

The AF-21 option selection also has 8 ON/OFF dry contacts for the alarm applications. Each input is an independent port control for the contact input status either from the open to short or from the short to open. Once the alarm is activated, the pre-programmed input cap-code and message will be sent out immediately.
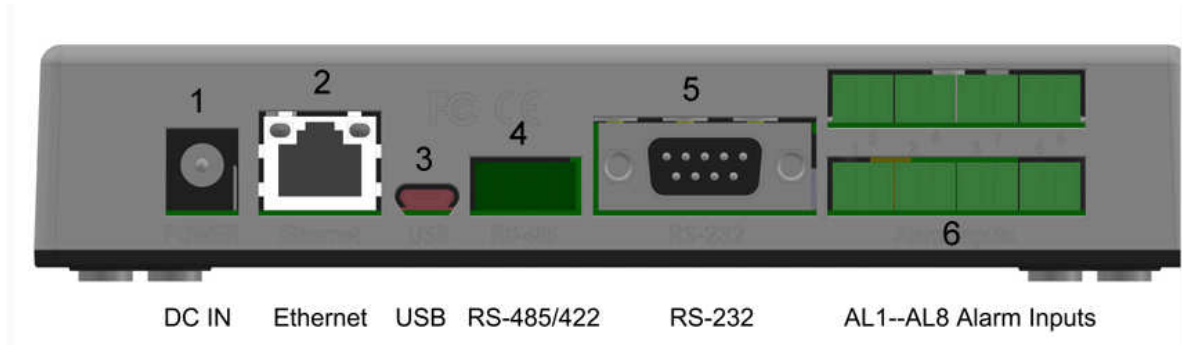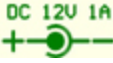
The key Features of the AF-21
- 8 preprogrammed messages dry conduct transmitter(short trigger/open trigger)
- IoT receiver that receive POCSAG message and send it up to Smart Phone
- Wi-Fi and Ethernet for internet connection (MQTTversion is Wi-Fi only)
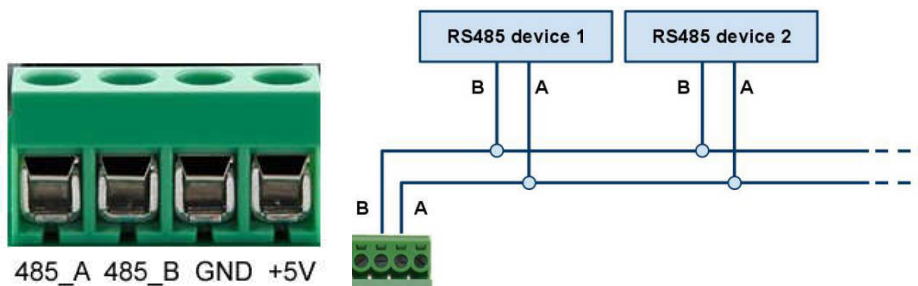
● RS-485 for receive data

2. Appearance
2-1 Rear I/O Connector

DC IN   Ethernet   USB RS-485/422   RS-232   AL1--AL8 Alarm Inputs

1. DC Power IN: 10V-13.8V In Minimum 1A.

2. Ethernet cable: Connect to the Internet HUB by Cat.6 and up cable.

3. Micro USB Jack: For System Programming.

4. RS-485/RS-422: To/From other equipment to be connected in the building.

485_A 485_B GND +5V

5. RS-232 Serial port:

Pin 2 **TX** (data output To PC DB-9 Pin 2 RD)

Pin 3 **RX** (data received From PC DB-9 Pin 3 TD)

Pin 5 **GND** (required to PC DB-9 pin 5)
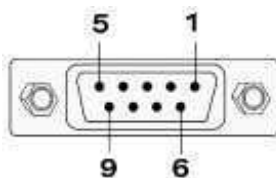
6. Alarm Input: AL1...AL8.Speed up connectors. For 8 Alarm dry contact input

Each alarm from NO to NC or from NC to NO can be active trigger.
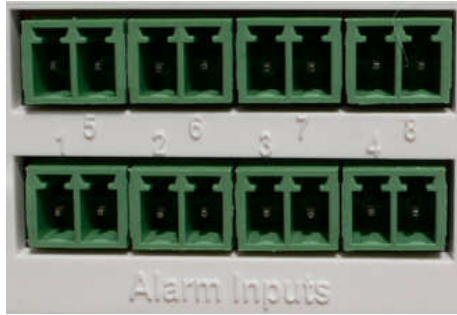
 ← Female (inside AF-21) ←Male (attached)

2-2 LED indicator on the top of the housing

Power = System power ON

On Line = WAN connected
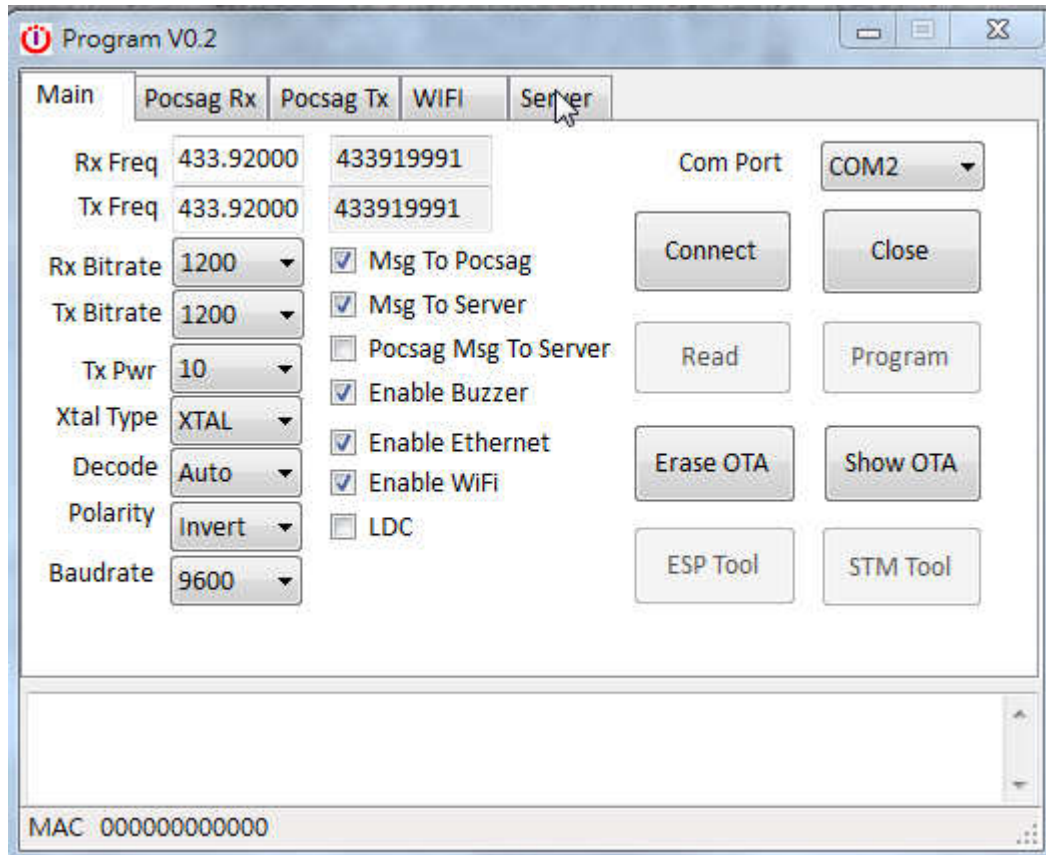
10/100 = Flash for Net 10/100M link

Accept = POCSAG Received

Trans = POCSAG Transmitter

3. Programming Tool:

   User's Manual of Programming Software for AF-21(MQTT version)

Please connect AF-21 with computer via USB cable, choose the com port, and click on Connect.

Please Read first to avoid empty data input.

1. Rx Freq: Pocsag receiving frequency.
2. Tx Freq: Pocsag transmitting frequency.
3. Rx bitrate: Pocsag receiving bit rate.
4. Tx bitrate: Pocsag transmitting bit rate.
5. Tx power: Transmitting output power level.
6. Xtal Type: The type of the oscillator.
7. Decode: Alphanumeric, numeric, or auto.
8. Polarity: Pocsag Data Polarity, Normal or Invert.
9. Baudrate: Baudrate for RS-232, RS-485.
10. Msg to Pocsag: 8 dry contact trigger to transmit On/Off. (Pocsag transmit)
11. Msg to Server: 8 dry contact trigger to upload message to server. (MQTT/HTTP)
12. Pocsag Msg to Server: When receiving Pocsag message upload the message to server On/Off. (MQTT/HTTP)

13. Enable Buzzer: Turn Buzzer sound On/Off.
14. Enable Ethernet: Turn Ethernet (RJ-45) On/Off. (Not available in MQTT version)
15. Enable Wi-Fi: Turn Wi-Fi On/Off.
16. LDC: Low power consumption mode. (not available)
17. Com Port: select the com port the device is on.
18. Connect: connect device with programming tool.
19. Read: load all the parameters on the device.
20. Program: programming the device with current parameters.
21. Erase OTA: Erase the capcode programmed by OTA.
22. Show OTA: list the capcode programmed by OTA
23. ESP Tool: For firmware update. (Wi-Fi)
24. STM Tool: For firmware update.

To reset the Wi-Fi: press and hold the reset button for over 5 seconds. (Two led blink)

To program capcode by OTA: click the reset button. (Green led blinks)

Pocsag Receiver Setting:
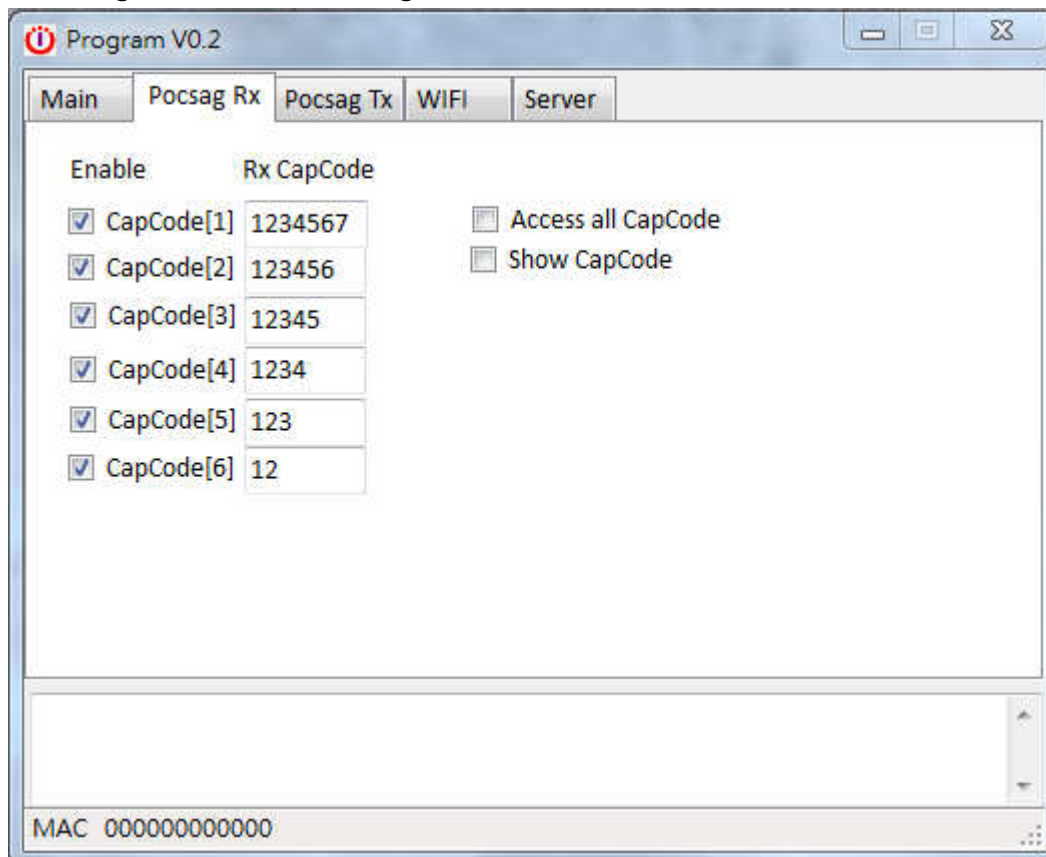
1. Capcode: Capcode for Pocsag receiver.
2. Access all Capcode: receive all capcode On/Off.
3. Show Capcode: Show receiving capcode when upload the message to server On/Off.

Dry Contact Pocsag Transmitter Setting:

1. Tx Capdoe: Capcode for the message when transmitting.
2. Trig Mode: Rising (trigger when high potential). Falling (trigger when low potential). Rising/Falling (trigger when change happens)
3. Debounce: Same trigger ignore within select time. (unit second)
4. Repeat: Times to repeat transmit.

Wi-Fi setting:

1. Wi-Fi SSID: Wi-Fi SSID to be preprogram.
2. Wi-Fi Password: Wi-Fi password of the Wi-Fi SSID.
3. Leave all Blank for Wi-Fi to be set by Smart phone or PC. (i.e. select IOT_000000 in the Wi-Fi list to enter the setting page)

Server Setting:

1. Protocol: HTTP/MQTT (HTTP for our AF-21 IoTstations app) (MQTT for our MQTT stations app. And also compatible for other MQTT platform or app)
2. MQTT: The web address for the MQTT broker.
3. Port: The port for the MQTT broker.
4. Username: Username for the MQTT broker.
5. Password: Password of the Username for the MQTT broker.
6. Client ID: Client ID for the MQTT.
7. Subscribe/Subscribe2: Topic to Subscribe. (For AF-21 to receive scope protocol command from MQTT broker.)
8. Publish/Publish2: Topic to Publish. (For AF-21 upload message to MQTT broker)
9. Clear Session: Clean Session On/Off.
10.   Topic Pending with Mac: Automatic add last 6 digits Mac Address to the Topic On/Off. (For using our server and apps please select On)
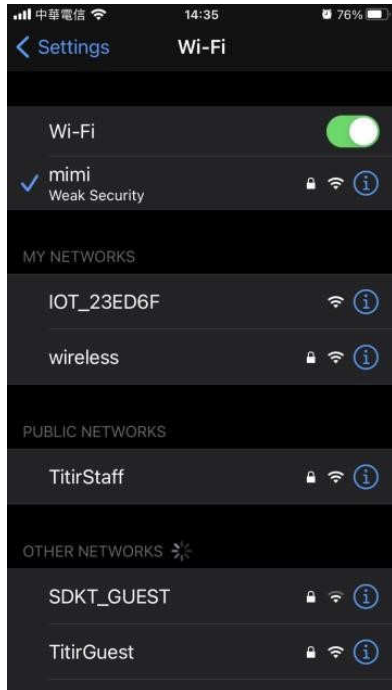
*New Function*Pocsag Forward Function:
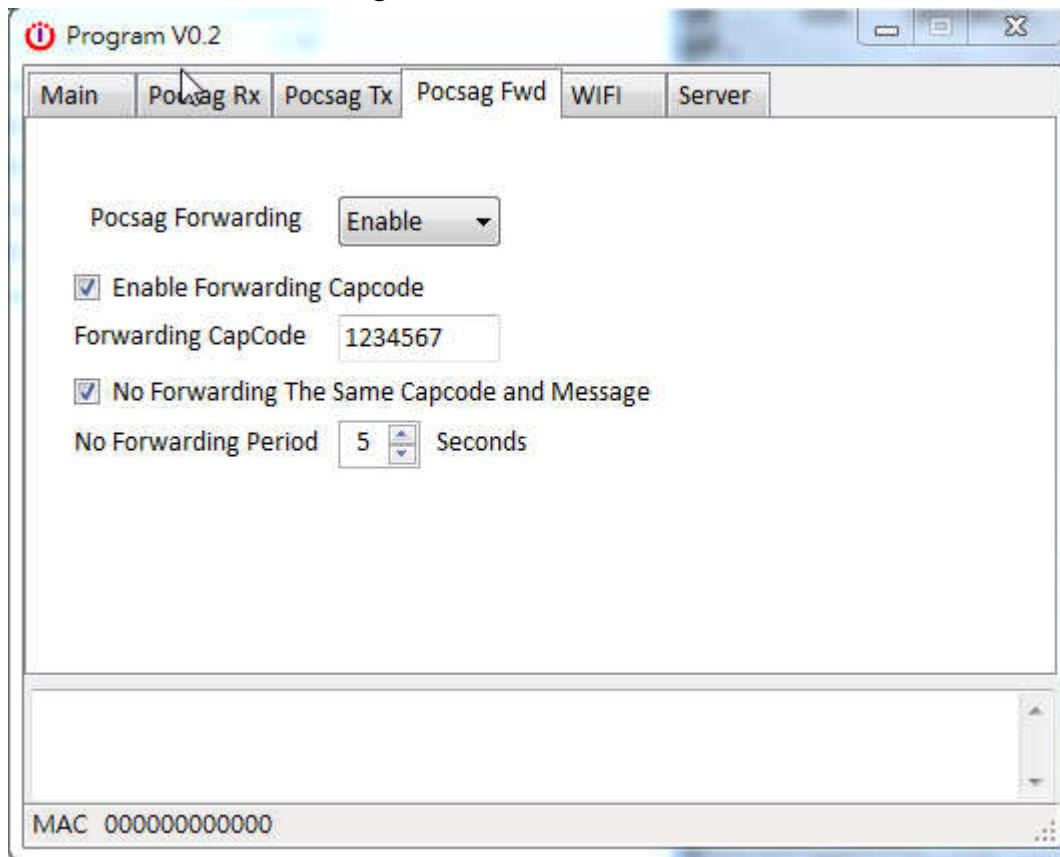
1. Pocsag Forwarding: Enable/Disable
2. Enable Forwarding Capcode: checked to change capcode of forwarding Message, unchecked to forward message with original capcode.
3. No Forwarding The same capcode and message: to avoid repeating forward with two or above AF-21 with forwarding function on.

While programming, the AF-21 DC plug must be off and disconnected.

(Just use the DC power source from the PC USB.)

4. Easy to set up the Wi-Fi

1. To use smart phone or computer to set up.

2. Open the Wi-Fi and choose the name start with IOT_XXXXXX.

3. Choose the Configure Wi-Fi.
4. Choose the Wi-Fi and enter the password then click on save.

5. APP Download(HTTP version)

Open the app, choose add existing station.

Scan the QR code or enter the device serial, and the password.

iOS Version:

Android Version:

Programming Tool PC version:

https://drive.google.com/file/d/1FTMpaaTeaJSJx3fzE6DEwCI0FlA8ICyo/view?usp=sharing

Download the App (MQTTversion)for Android from GooglePlay:
https://play.google.com/store/apps/details?id=com.wireless.mqtt2021&hl=zh_TW&gl=US

Download the App for iOS from AppStore:
https://apps.apple.com/tw/app/mqtt-stations/id1578411683

Download the Programming Tool for AF-21MQTT/HTTP for Windows:

https://drive.google.com/file/d/11G_X0EsiXcJae18npOgIHotaOv_JsLzb/view?usp=sharing

Station

▶ Individual

Long press to change name

Wi-Fi set up

Add Device

8 Floor(E868E7808282)

A1234563DAF02trigger05

7 Floor(E868E780FCE8)

AF02trigger05

6

6 Floor(E868E7808292)

AF02trigger05

7

▼ Group

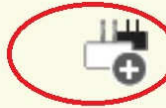Sound & Viberation

Info and Delet Msgs

Station

▼ Individual

▶ Group   **Function to combine several device as a group(receive & control in single dialog box)**

test

6 Floor(E868E7808292),7 Floor(E868E780FCE8),8 Floor(E868E7808282)   **13**

AF02trigger05

8 Floor
(E868E7808282)

2021/05/25
10:46:44

ABCD1234567890 BCD

2021/05/25 11:49:32

ABCD1234567890ABCD

2021/05/25 11:52:48

ABCD1234567890ABCD

2021/05/25 11:53:10

From system developer:

N1234562DFull version 1 launched

2021/05/25 21:24:54

Test 1234567890

2021/05/26 08:26:46

A1234563DAF02trigger05

2021/05/26 09:44:23

Long press to save message as quick message

A1234567DJamestest

2021/05/26 11:31:25

Open saved message list
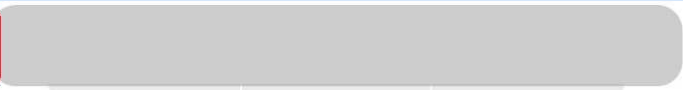
Long press on the sent message to save to message list.

Message send should be in scope format.
Ex:
"AF1234567DHello World"
[A] Pager type Alphanumeric, N=Numeric
[F] Data bud rate, F=1200bps, N=512 bps, S=2400bps, if blank= Default 1200bps.
[1234567] Pager capcode, pager address.
[D] Pager tone alert, A for tone A, B for tone B, C for tone C, D for tone D.
[Hello World] message word.

(Version 0.14291527)

AF-21 Specifications

Port of Ethernet section.	
Net port	Rj45, 10/100mMbps
Serial port	600~460.8K(bps)
Network protocol	IP, IPV4, TCP/UDP, ARP, ICMP
Access way to IP	Static IP, DHCP
Single transparent transmission	TCP Server/TCP client/UDP Server/UDP Client
TCP server connection	Default 4 and maximum 16
Net buffer	Send:6Kbyte; receive:4Kbyte
Serial port buffer	Receive: 2048byte
Average transport delay	<10ms
Wi-Fi section.	
Certification	Wi-Fi Alliance
Protocols	802.11 b/g/n (HT20)
Frequency Range	2.4 GHz ~ 2.5 GHz (2400 MHz ~ 2483.5 MHz)
TX Power	802.11 b: +20dBm 802.11 g: +17dBm 802.11 n: +14dBm
Rx Sensitivity	802.11 b: –91dBm (11 Mbps) 802.11 g: –75dBm (54 Mbps) 802.11 n: –72dBm (MCS7)
Antenna	PCB Trace
Peripheral Interface	UART/SDIO/SPI/I2C/I2S/IR Remote Control GPIO/ADC/PWM/LED Light & Button
Security	WPA/WPA2
Encryption	UART Download / OTA (via network)
Network Protocols	IPv4, TCP/UDP/HTTP
User Configuration	AT Instruction Set, Cloud Server, Android/iOS App

POCSAG Transceiver section.

Frequency:	410-490 MHz Synthesized	868-915 MHz Synthesized
Paging format:	POCSAG.	
Pager Baud rate:	512bps / 1200bps / 2400bps.	
Message type :	ASCII	
Channel Spacing:	6.25K / 12.5K / 25K. Frequency Synthesized by USB programming	
Frequency stability:	+/- 1ppm by TCXO	
Selectivity	55dB	
Inter modulation rejection	60dB	
Modulation:	NRZ NFSK, for POCSAG	
Deviation:	3.5-4.5Khz	
Sensitivity	-110dBm (512bps), -107dBm (1200bps), -104dBm (2400bps)	
RF output power:	500mW	200mW
RF connector:	Input/output by SMA RF female connectors.	

General

P/C Interface:	USB 2.0 RS-232 (9600/19200/38400/57600) N,8,1.
RS-485 RS422 I/O	ANSI/TIA/EIA-485-A-1998, TIA/EIA-422 –6V to +6V
Operation temperature:	-25°C ~ 70°C
Power Supply:	DC 12V 1A(Minimum)
Size:	165 mm X 80 mm X 35 mm.
Model Weight:	1.2KGs. include AC 100~240 to DC 12V 2A switching power adapter.

Notes: Specifications are subject to change without notice