

“Aether” Radio Receiver

PCB V2 Rev 3
Software
App 2a
01/09/18

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Operation

On power up after 10 Seconds the Red Led will light and with the correct IP settings the Receiver will broadcast a "Hello Message" to the server .

Receive a transmission:

Upon receiving a valid alert transmission the Red Led turns off and the green Led lights up .(for the transmit duration)

The Red Led re-lights and the green Led turns off after end of the reception.

The information package is then sent to the Server over Ethernet (See details of Ethernet Package)

When a alert is received the immediate transmission of the alert package to the Server is preceeded by a 'A' .

A alert storage buffer is implimented within the receiver (25 Alerts) and formed in a indexed tube buffer , where the last in is at location 1, oldest in location 25.

Each receiver can be allocated a unique address (0 - 99) from a Server command , allowing identification of the source of the reception.

Commands are also available to set Hours,Minutes,Day,Month,Year of the receiver's Real time clock. A response is transmitted if successful. (See details : Server Command Package)

Batch Number,Alert Identity ,Alert Device Type, Device Battery status, Recieved Signal Strength,Receiver Identity and Time stamp are included in the Alert transmission to the Server.

Options for the Server Commands are to Set:

Time , Date , Year , Reciever Identity number ,

View a Individual Alert , View All stored alerts , Clear all Stored Alerts and request current internal Real time Clock time.

All transmissions : Alert Package and Server Commands are via ascii (32-126 inc) , Numeric values are in Decimal.

SEE NEXT PAGE FOR AUTOMATIC DEFAULT SETUP

Upon connection to POE both Leds will flash alternately, while the K3 ethernet module is initialised. The Red led will then remain steady but will extinguish for 50mS every 15 seconds to show unit is running.

On battery: The red led will extinguish but will flash for 50mS every 15 seconds to show unit is running.

In either power mode , on a reception of a alert the green led will flash.

While in battery mode any received alerts (to a Max of the 25 most recent) are stored in the buffer , for later interigation.

If the battery is allowed to run completely flat , resetting of the clock is required.

A "I'm still here" message is now transmitted via ethernet approx every 5/6 minutes. (See recorded transmission sheet screen shot)

Reset to default :

Open enclosure

Power up receiver with POE as normal.

Wait for alternate flashing leds to cease.

Press Switch 1 for 5 Seconds (Green Led will Flash)

After 5 Seconds both leds will illuminate.

Release Switch 1

Both Leds will turn off

Then turn back on while the Factory Defaults are set.

The receiver will then automatically re-power (Alternate flashing Leds)

**NOTE : THE INTERNAL SERIAL LINK MUST BE SET TO
9600 baud / 1 start bit / 1 stop bit / No Parity / No Handshake.
(Unless externally modified this is the Factory Standard)**

Parameters Set are:-

IP Type = DHCP

TCP = Client mode

Internal Receiver Number = 0

Internal Clock = Reset

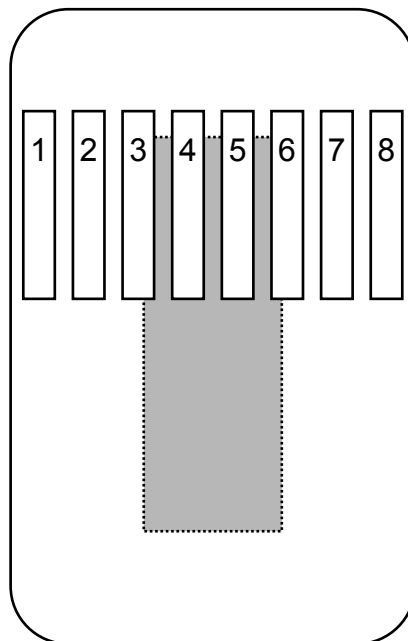
All previous Alerts are removed

Ethernet Connection

Connection is designed for use of Power Over Ethernet using the two spare ethernet pairs (Pins 4&5 : Pins 7&8)

Ethernet Plug Connector

View with
Latch Clip
to Back




Pin1 = Transmit +
Pin2 = Transmit -
Pin3 = Receive +
Pin4 = Power A
Pin5 = Power A
Pin6 = Receive -
Pin7 = Power B
Pin8 = Power B

The Red Led illuminates to show power connected and internal program running

Ethernet Set Up

To change the IP configuration etc.
open a web browser and connect to 192.168.0.xx
The unit will respond and ask for UserName and Password
Both are "admin"


This dialogue will open:

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Current Status	parameter	help
Local IP Config	Module Name: USR-K3	<ul style="list-style-type: none">• Run time: run time means the minutes since latest reboot• TX/RX Count: TX/RX count give us a calculation of the total byte we have been received or send.
TTL1	Firmware Revision: 3014	
Web to Serial	Current IP Address: 192.168.0.7	
Misc Config	MAC Address: d8-b0-4c-d3-8d-e2	
Reboot	Run Time: 0day: 0hour: 0min:25	
	TX Count(ETH) : 0 bytes	
	RX Count(ETH) : 0 bytes	
	Conn Status(ETH)A: CONNECTING	
	Conn Status(ETH)B: IDLE	

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Select : Local IP Config to change any options required


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Current Status	parameter	help
Local IP Config	<p>IP Type: <input type="text" value="Static IP"/></p> <p>Static IP: <input type="text" value="192"/> · <input type="text" value="168"/> · <input type="text" value="0"/> · <input type="text" value="7"/></p> <p>Submask: <input type="text" value="255"/> · <input type="text" value="255"/> · <input type="text" value="255"/> · <input type="text" value="0"/></p> <p>Gateway: <input type="text" value="192"/> · <input type="text" value="168"/> · <input type="text" value="0"/> · <input type="text" value="1"/></p> <p>Dns Server: <input type="text" value="192"/> · <input type="text" value="168"/> · <input type="text" value="0"/> · <input type="text" value="1"/></p> <p style="text-align: center;"><input type="button" value="Save"/> <input type="button" value="Cancel"/></p>	<p>IP type: StaticIP or DHCP</p> <p>StaticIP Module's static ip</p> <p>Submask usually 255.255.255.0</p> <p>Gateway Usually router's ip address</p>
TTL1		
Web to Serial		
Misc Config		
Reboot		

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Select TTL1 to re-config Client / Server options etc .

Firmware Version: V3014 中文



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Current Status	parameter	help
TTL1	<p>Baud Rate: <input type="text" value="9600"/> bps(600~230400)bps</p> <p>Data Size: <input type="text" value="8"/> bit</p> <p>Parity: <input type="text" value="None"/></p> <p>Stop Bits: <input type="text" value="1"/> bit</p> <p>Flow Control: <input type="text" value="None"/></p> <p>UART Packet Time: <input type="text" value="0"/> (0~255)ms</p> <p>UART Packet Length: <input type="text" value="0"/> (0~1460)chars</p> <p>Sync Baudrate (RF2217 Similar): <input checked="" type="checkbox"/></p> <p>Enable Uart Heartbeat Packet: <input type="checkbox"/></p> <hr/> <p style="text-align: center;">Socket A Parameters</p> <p>Work Mode: <input type="text" value="TCP Client"/> <input type="text" value="None"/></p> <p>Remote Server Addr: <input type="text" value="192.168.0.8"/> [192.168.0.8]</p> <p>Local/Remote Port Number: <input type="text" value="23"/> <input type="text" value="23"/> (1~65535)</p> <p>Timeout Reconnection : <input type="text" value="86400"/> (1~99999)s</p> <p>PRINT: <input type="checkbox"/></p> <p>ModbusTCP Poll: <input type="checkbox"/> Poll Timeout : <input type="text" value="200"/> (200~9999) ms</p> <p>Enable Net Heartbeat Packet: <input type="checkbox"/></p> <p>Registry Type: <input type="text" value="None"/> Location <input type="text" value="Connect With"/></p>	<ul style="list-style-type: none">• local port 1~65535. when TCP Client, set this to 0 means use random local port• remote port 1~65535• packet time/length default 0/0, means automatic packet mechanism; you can modify it as a none-zero value

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Note : Do NOT change the Serial settings

Alert Package To Server

Examples:

Instant on Reception of Alarm Alert Package

A <12345,67890,1,0,078,42,13,24,02,08,17>
Batch Ident Dev Batt Rssi Rx Ts1 Ts2 Ts3 Ts4 Ts5

Return Alert Package on Request from a Server Command

<12345,67890,1,0,078,42,13,24,02,08,17>
Batch Ident Dev Batt Rssi Rx Ts1 Ts2 Ts3 Ts4 Ts5

< = Start of information

Batch = Batch Number of Received Alert (0-65535)

Ident = Identity Number of Received Alert (0-65535)

Dev = Type of Device that triggered Alert

Batt = Battery State of Transmitting Device ('0' = Good / '1' = Poor)

Rssi = Received Signal Strength of a Transmission

Rx = Numeric identity of the receiver

Ts1 = Time Stamp [Hours] (24 Hour Clock)

Ts2 = Time Stamp [Minutes]

Ts3 = Time Stamp [Day]

Ts4 = Time Stamp [Month]

Ts5 = Time Stamp [Year]

> = End of information

A = Only Transmitted on a immediate reception of a Alert

,

Server Command Packages

Standard Outline

< # = X X X X X : X X X X X >
 ↑
 Command Value

D0 D1 D2 D3 D4 D5 D6 D7 D8 D9

- < = Start of information
- # = Command Type (Upper Case Letter)
- D0 - D4 = First Bank of Data (5 Bytes)
- :
- = Data separator
- D5 - D9 = Second Bank of Data (5 Bytes)
- > = End of information

The < , # , = , : , > characters are tested for position and integrity on receiver reception.

15 Ascii characters (32-126 inc) are always Transmitted for a command

Commands

< T = x x x H H : x x x M M >
 Set Time : Hours , Minutes

< D = x x x D D : x x x M M >
 Set Date : Days , Months

< Y = x x x x x : x x x Y Y >
 Set Time : Year

< R = x x x x x : x x x x x >
 Return Current Time,Date,Year

< I = x x x x x : x x x T U >
 Set : Receiver Number (Ten,Unit : 0-99)

< A = x x x x x : x x x T U >
 Return : Indexed Alert (Ten,Unit:1-25)

< V = x x x x x : x x x x x >
 Return : All Alerts in Buffer (1 to 25)

< C = x x x x x : x x x x x >
 Clear : All Alerts in Buffer (1 to 25)

x = Any ascii value (32-126) as these are unused
 Used values are tested for integrity