

KO4BB Appendix A Configuring the WiFi Module Option User Manual

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Appendix A – Configuring the WiFi Module Option

Note: this version of the manual relates to the new WiFi module as shown below. Note that the antenna connector is located in the middle of the board and that the main chip is a square package with 48 pins. The back of the board has only a few resistors and capacitors.



By comparison, the older WiFi module had the antenna connector located in the corner of the board, the top of the board has an 8 pin chip and the back of the board has two high pin count chips. Please refer to the other manual if you have the older module.

The WiFi module as shipped is pre-configured with Soft-AP enabled and the baud rate set to 9600. This should allow anyone with a WiFi enabled computer or laptop and a web browser to configure the WiFi module for your network. The procedure to use for that is shown below.

Configuration is necessary to let the WiFi Module join your WiFi network. Before starting, you will need the following information:

- Your Access Point's SSID and passkey
- The encryption method used by the access point (WPA2PSK/AES is recommended)
- A method for obtaining an IP address to operate on your network.

The WiFi module offers two standard ways to obtain an IP address:

1. you can tell the WiFi module which IP address to use (called a "fixed or static IP address"). You would normally obtain an IP address (including subnet mask and gateway information) from your network administrator, or
2. you can tell the WiFi module to obtain an IP address automatically using the DHCP protocol.

Please note that the DHCP protocol does not guaranty that the WiFi Module will always get the same address, as this is dependent on your router. Using DHCP may be convenient to verify that the WiFi module is working, but for an operational system, a fixed IP address is recommended.

If something goes wrong during configuration, it is possible that the Soft-AP feature of the WiFi module may have been turned off, which would make it impossible to regain control via the web browser. In this case, the Thunderbolt Kit has a special function ("Reset WiFi") accessible via the menu that returns the WiFi module to its factory default settings, including enabling the SoftAP feature. When that function is activated, a second procedure should be used to return the module to a state where it can be configured for your network. This second procedure is shown below the first procedure. Note that kits version 5 and above do not have that functionality.

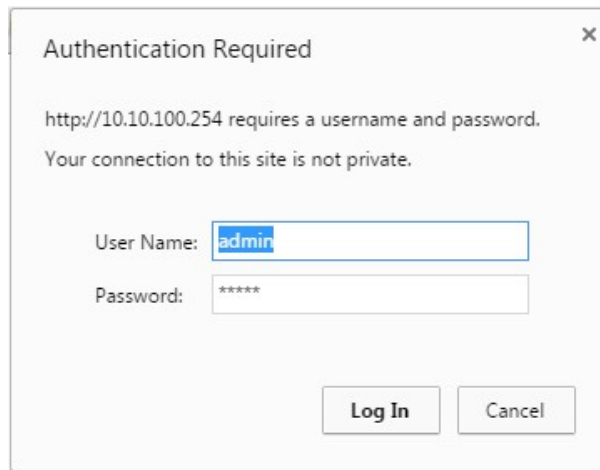
Notes:

1. These steps have been tested with a computer running Windows 7 through 10. I believe it should work the same under other operating systems but I have not tried. I welcome feedback (positive or negative) with your experience in that regard.
2. The WiFi module's web page has a tab named Update FW. You should not try to update the firmware on the WiFi module for the following reason: the firmware update feature, when required, must only be done in concert with a Thunderbolt Monitor kit firmware upgrade, and only when advised to do so in the Thunderbolt Monitor kit firmware upgrade procedure. Failure to yield to this important point may result in the WiFi module becoming inoperative.

Configuration steps (with WiFi module pre-configured as received):

1. Using a WiFi-equipped computer or tablet, open the Network and Sharing Center (or equivalent) and list the visible Access Points. After a few seconds, you should see an access point named "TBMon-XXXX" where XXXX is a series of hexadecimal numbers. Connect to it (the access point is open.) Your computer may complain that there is no Internet access through this access point. This is normal.
2. Once your computer is connected to the "TBMon" access point, open your browser to

“http://10.10.100.254/index_en.html”. A login window similar to Figure 1 below will open, asking you for a login and password. As shipped, the login is “admin” and the password is “admin”. This can be changed later.



Authentication Required

http://10.10.100.254 requires a username and password.
Your connection to this site is not private.

User Name:

Password:

Figure 1: login page

3. Click “OK”. A page similar to Figure 2 will load.



Figure 2: Main setup page (Chinese)

Figure 2: Main setup page (Chinese)

4. Click on “English” at the top right of the page. The page will change to Figure 3

Web: V2.3.3 Firmware Version: V2.2.3 中文

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Be Honest, Do Best!

| System Status | Parameter | Help |
|-----------------|---------------------------|--|
| WiFi Setting | Module MAC: d8b04cb52180 | • Module Ver: The current firmware version |
| Trans Setting | Module Mid: USR-C215 | • WiFi Mode: The WiFi mode of module contains AP/Station/APSTA |
| Extra Function | Module Ver: 2.2.3 | |
| System Setting | WiFi Mode: apsta | |
| Firmware Update | AP IP: 10.10.100.254 | |
| About USR | AP SSID: TBMon-2180 | |
| | AP Secure: NONE | |
| | STA SSID: USR-C215 | |
| | STA IP: 10.10.10.254 | |
| | STA Gateway: 10.10.10.254 | |

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Figure 3: Main setup page (English)

Figure 3: Main setup page (English)

5.

Click on “WiFi Setting”, the page will change to Figure 4:

Web: V2.3.3 Firmware Version: V2.2.3 中文

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Be Honest, Do Best!

| System Status | WiFi Mode Select | Help |
|-----------------|-------------------------------------|--|
| WiFi Setting | WiFi Work Mode: AP+STA mode ▼ | • Network Name(SSID): 1-32 characters Case sensitive |
| Trans Setting | AP Mode | • Password: The AP password is 8-63 bytes (STA password without this restriction), NONE said no encryption; Case sensitive |
| Extra Function | Network Name(SSID): TBMon-2180 | • DHCP: Open this feature, will get IP by dhcp; turn off, need to manually enter the IP |
| System Setting | Password(8-63 bytes): NONE | |
| Firmware Update | IP Address: 10.10.100.254 | |
| About USR | Mask: 255.255.255.0 | |
| | STA Mode | |
| | Network Name(SSID): USR-C215 Search | |
| | Encryption Method: OPEN ▼ | |
| | Encryption Algorithm: NONE ▼ | |
| | STA Password: NONE | |
| | DHCP: Enable ▼ | |
| | Save | |

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Figure 4: WiFi Setting

Figure 4: WiFi Setting

Change the WiFi Work Mode selection to “AP+STA mode”, enter your router’s SSID in the Network Name (SSID) box, select an Encryption Method (“WPA2PSK recommended, supported by all recent routers) and Encryption Algorithm and enter your router’s password as shown in Figure 4. Typically, you will also leave DHCP enabled, at least initially. Leave other fields untouched. Note: if you want later to set your Thunderbolt Monitor to a fixed (static) IP address, you will need to go back to this page and select “Disable” in the DHCP box and fill the other fields as desired.

6. Once you have verified that all the fields are as desired, click the “Save” button. The page will change to Figure

5.



Figure 5: STA Settings changed
Figure 5: STA Settings changed

Click the “Restart” button, wait a few seconds and recycle power to the Thunderbolt Monitor kit to ensure a clean reboot.

As the kit reboots, the WiFi module will attempt to connect to your router and should, after a few seconds obtain an IP address. The very first time, it may fail. This is not unusual as the first time a new WiFi device is connected to a router, there is a fair amount of interaction taking place and the connection may time out before the setup completes. If so, simply recycle power again and the second time it should connect. If it does not, redo the steps from the beginning and verify all the information you enter.

Connecting the Thunderbolt Monitor kit to a WiFi access point:

The WiFi LED on the kit’s main board should turn on when the WiFi module is associated with your router. If you are using DHCP, you will need to get into your router’s admin page to see what IP address the kit was assigned. The kit will likely be identified at TBMon or USR-IOT. All routers are different so I can’t give you a useful example. Refer to your router’s manual. Make a note of the IP address.

Connecting the Thunderbolt Monitor kit to LadyHeather:

Please note that the WiFi module listens to TCP port 8899 for connections. This is the port number you will have to use with Lady Heather.

A typical shortcut to start LadyHeather as a TCP client is: “C:\Program Files\Heather\heather.exe” /ip=192.168.1.24:8899”

Simply replace the IP address as needed.

When the kit is being accessed by a Lady Heather client via WiFi, the DATA LED will blink as messages are sent to the WiFi module. The messages are short, so the LED will blink very briefly.

Also, note that the kit supports up to 3 connections from clients at a time. This is limited by the WiFi module itself.

The details of operation of the Lady Heather software is beyond the scope of this manual.

Resetting the WiFi module:

In case of persistent problem, the WiFi module may need to be reset to factory settings using the kit's menu ("Reset WiFi") , then re-initialized using the steps described in the second part of this document.

Configuration steps (with WiFi module factory reset):

After a WiFi Reset command, you need to redo steps 1 through 6 above with the following changes and additions: Once the module has rebooted, reconnect to it and now go to the "Trans Setting" page and change the Baud Rate to 9600 per Figure 6

The screenshot shows the USR IOT web interface with the 'Trans Setting' page selected. The interface includes a sidebar with navigation options: System Status, WiFi Setting, Trans Setting (highlighted), Extra Function, System Setting, Firmware Update, and About USR. The main content area is divided into three sections: Serial Port Set, Network set, and Socket Connect Set. The Serial Port Set section has fields for Baud Rate (9600), Data Bit (8), Check Bit (None), Stop Bit (1), and CTSRTS/485 (NFC). The Network set section has a Mode dropdown set to Transparent. The Socket Connect Set section has two sub-sections: SocketA Connect Set and SocketB Connect Set. Both have Protocol dropdowns (TCP-Server and OFF respectively) and Port and Server IP Address fields. A Save button is at the bottom. A right sidebar contains a Help section with details on Baud Rate, CTSRTS/485, Port, and Server IP Address. The footer shows copyright information and the website URL.

| Serial Port Set |
|---------------------------------------|
| Baud Rate (1200~460800 bps): 9600 bps |
| Data Bit: 8 bit |
| Check Bit: None |
| Stop Bit: 1 bit |
| CTSRTS/485: NFC |

| Network set |
|-------------------|
| Mode: Transparent |

| SocketA Connect Set |
|----------------------------------|
| Protocol: TCP-Server |
| Port: 8899 |
| Server IP Address: 10.10.100.254 |

| SocketB Connect Set |
|----------------------------------|
| Protocol: OFF |
| Port: 8899 |
| Server IP Address: 10.10.100.254 |

Save

Figure 6: Transmission Settings
Figure 6: Transmission Settings

Click Save

When the web page changes, change to the "WiFi Setting" page.

In the "WiFi Mode Select" box, make sure that "AP+STA" is selected. In the "AP Mode" box, change "Network Name" to "TBMon"

Click Save

Recycle power to the TboltMon kit. After a few seconds, the Associated LED should be lit and the LCD display will display the IP address assigned to the WiFi module. That is the information you will need to setup the Lady Heather software.


Notes:

1. When the WiFi module is powered up the first time after configuration, it may take 30 seconds or more before the Associated LED turns ON. This is a function of the WiFi router.
2. As shipped, the WiFi module's SSID in AP mode is set to TBMon-XXXX where XXXX is replaced with the last 4 digits of the MAC address (you can see the MAC address of the module on the System Status page). It is not necessary to include these digits but it will be convenient if you have more than one TBMon+WiFi running. If they all have the same SSID, it may be difficult to know which one you are connecting to.

Manual versions

V4.2.2 (August 27, 2017): Fix issue with GPS Week rollover and issue with WiFi module

Documents / Resources

| | |
|---|---|
|  | <p>KO4BB Appendix A Configuring the WiFi Module Option [pdf] User Manual Appendix A, Configuring the WiFi Module Option</p> |
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