Ham Radio Solutions
CW Hotline User Manual
Version 0.46
https://hamradio.solutions/cwhotline/

HRS
hamradio.solutions

Overview

The Ham Radio Solutions CW Hotline is a internet WiFi connected Morse Code/CW keyer that provides a private Morse code link between friends, enables remote keying of a CW transceiver, is a stand alone Morse code iambic keyer, and a latency free interface for HamRadio.Solutions VBand service. It includes a built-in iambic paddle or straight key, but can also accept an external paddle or key. It has a built-in speaker, line-out audio jack, and a key output to drive a connected radio. Once linked to one or more other CW Hotline devices, any CW entered into one will be sent to and played by all other linked devices. Multiple devices can be connected to each other with a user generated link key entered into each device.

CW Hotline includes the following user interfaces:

- A green Link LED to show the status of the WiFi link to other devices
- A red Key LED to show when it is sending or receiving Morse code
- A speed button to adjust the WPM speed of the iambic keyer or select straight key mode
- An optional built-in iambic paddle or straight key
- An internal speaker to generate Morse code audio
- A 3.5mm TRS jack for an external paddle or straight key input
- A 3.5mm TRS jack for line out audio to an external amplified speaker
- A 3.5mm TRS jack for an output connection to key an external transmitter
- A micro-usb connection for power and serial connection

Settings

CW Hotline has several user settings to control operation. These settings can be adjusted via the CW Hotline website, the built in WiFi access point, or a serial terminal program. The settings are explained below.

- **SSID** - The SSID of the local WiFi access point to which the CW Hotline shall attempt to connect.
- **Password** - The password of the local WiFi access point.
- **Alt SSID** - And alternate WiFi SSID to attempt to connect to if the first fails. Set to a single space to not attempt.
- **Alt Password** - The password of the alternate WiFi access point.
- **Device Key** - A unique key provided by HamRadio Solutions to access the server. This can be found inside the cardboard CW Hotline shipping box. It can also be found inside the plastic CW Hotline case lid. Do not share this key with others.
- **Link Key** - A user generated code to determine which other devices to link with. Choose a code word/key/phrase, and share this with other users. All devices using this link key will be connected together. Do not choose an obvious, guessable key, especially if you are connecting to a CW transmitter, as anyone with this key would be able to key your radio.

- **Callsign / Name** - The callsign or name of the CW Hotline user.
- **Min Latency** - The number of milliseconds delay between receiving code and playing it. 200 is a good starting value.
- **Speaker Enable** - Set to 1 to enable the speaker when sending, or 0 to disable the speaker.
- **Flip Paddle** - Set to 0 for a right side dah and left side dit on the paddle, or to 1 to swap those.
- **WPM** - The keyer speed in Words per Minute. Setting to 7 will enable straight key mode. This can also be set with the button on the top of the device.
- **Local tone** - The frequency in Hz of the sidetone for locally generated code.
- **Remote tone** - The frequency in Hz for received code.

Website Settings Config Mode

The recommended method to adjust settings is via the CW Hotline website. The CW Hotline must be connected to a computer USB port. A micro USB data cable must be used. A charging only cable will not work. A CH340 serial port driver will also be needed, but may be pre-installed on some computers. Go to the CW Hotline website: https://hamradio.solutions/cwhotline/, select the Connect tab along the top, click the connect button and select the serial port. New firmware can be loaded, firmware version checked, and settings updated from this page.

Access Point Config Mode

Settings can also be adjusted by turning CW Hotline into a WiFi access point, and connecting with a phone or computer. Note that connecting to a phone hotspot requires a separate computing device. This mode can be enabled by resetting power, and then quickly pressing and holding the speed button AND the straight key or dit or dah paddle AFTER the 3 red and green LED flashes begin. If the dit or dah paddles are pressed at the start of powerup, it will not start. Wait for the 3 flashes to start, and while they are flashing quickly press and hold the buttons & paddles. Normal operation is cancelled in access point mode, and both LEDs will be on solid.

Once Access Point Config Mode is running, use a nearby WiFi enabled phone or computer, and connect to the WiFi Access Point "**CW Hotline AP**" with password "**morsecode**".

You may automatically be presented with the captive portal main screen. If not, try browsing to IP address 192.168.4.1 . Select "**Configure WiFi**". It will scan for local WiFi access points. Select the desired access point SSID and enter the password, **even if not changing from the previous setting**. Adjust any other desired settings, then click "**Save**". The CW Hotline will reset and attempt to connect to the selected WiFi access point.

Serial Configuration Mode

Settings can also be adjusted via a USB connection to a computer as described above, and a serial terminal program, such as TeraTerm Pro on Windows, or CoolTerm on Mac. In the terminal program, select the connected port, set it for 115200 baud, and send 3 asterisks (*) followed by the Enter key to begin the serial configuration. For each setting, the current value will be shown. Just press Enter to accept, or type in the new value followed by Enter to change. Go through all settings to have them saved, then reset power to apply the new values. It may help to enable Local Echo in the terminal program as the CW Hotline will not send back the keys you type.

Operation

Once the CW Hotline has successfully connected to the HamRadio.Solutions CW Hotline server (green LED is flashing quickly or on solid), any closure of a connected straight key or paddle will light the red LED, sound the speaker, key a connected radio, and send that CW timing to the server and all other devices linked with the same link key. If any other linked CW Hotline device generates CW, that will be received and the red LED will light, the speaker will sound, the connected radio will be keyed. The speaker tone for locally generated code is slightly different from the tone from remotely generated code.

Iambic Speed / Straight Key Mode

Pressing the speed button will begin speed adjustment mode. The speaker will make alternating dit and dah tones at the current iambic speed. If in straight key mode, the speaker tone will be solid. The red LED will not light with the tone. The dit/dah tones will be sent at the current iambic keyer speed. Tap the right (Dah) paddle to speed up by 1 WPM. Tap the left (Dit) paddle to slow down by 1 WPM. The minimum keyer speed is 8 WPM. If you attempt to go slower than than, the tone will switch from dit/dah to a solid tone to indicate the keyer is now in straight key mode. Increasing the speed from straight key mode will move back to dit/dah tones at 8 WPM. Press the speed button again to leave speed adjust mode. It will play the selected speed in morse code over the speaker, either **SK** (... -.-) for straight key mode, or the speed in words per minute, then return to normal operation.

Powerup Status Code

CW Hotline will send Morse code over the speaker after powerup to indicate operation status:
- **OK** (--- -.-) when it has successfully connected to the WiFi access point.
- **VER** (...- . .-.) when there is new firmware available, but the running version is still functional.
- **UP** (..- .--.) when the current firmware version is incompatible and must be updated.
- **NC** (-. -.-.) when it was unable to connect to WiFi, and is operating off-line as a keyer.
- **AP** (.- .--.) when it has booted into Access Point configuration mode.
- **VB** (...- -...) when entering VBand mode, which disables outgoing WiFi CW.
- **VX** (...- -..-) when exiting VBand mode, and re-enabling outgoing WiFi CW.

LED Status

The green and red LEDs will flash 3 times after powerup, then be used to show link and key status. Both LEDs will be lit solid when in access point mode. LEDs will alternate when attempting to connect to WiFi.

Once connected, the green Link LED will show the status of the WiFi link to other devices. It will blink slowly when unable to connect to the CW Hotline WiFi server. It will blick quickly when connected to the server, but when no other devices are connected with the same link key. It will be on solid when connected and paired with at least one other device.

The red Key LED will show when it is sending or receiving Morse code.

Use with VBand

CW Hotline can be used as an input device with Ham Radio Solutions' VBand internet CW tool. This method of keying eliminates the local latency sometimes experienced on VBand. To enable, connect CW Hotline to the computer with a micro USB data cable, and install a serial driver if needed. In the VBand Settings tab, click the **Connect to CW Hotline** button and select the correct serial port. CW Hotline should respond with "VB" in Morse Code. Anything sent with CW Hotline will now be entered into the current VBand channel. One benefit of operating VBand this way is that VBand doesn't need to have focus to receive the input. When CW Hotline is put into VBand mode, it will no longer send code to other devices on the same link key.

To return CW Hotline to normal operation, click the **Disconnect from CW Hotline** button in VBand settings, or just cycle CW Hotline power. Note that after disconnecting with the button, CW Hotline can still be used as a VBand input device, but the code will also be sent to the other connected CW Hotline devices.

Testing with VBand

There is a bridge set up whereby CW Hotline users can monitor their transmissions on VBand. Go to https://hamradio.solutions/vband/?channel=sxnyis5osy and you will see a channel called "CWHotline" in the available channel lists. Any transmissions sent with a CW Hotline device using a link key of "vband" will show up as sender "CW HOTLINE" in that channel. VBand transmissions will not be bridged back to the CW Hotline devices.

Using your CW Hotline

Though you can specify any link name you wish, we would suggest that you use "hotline" so you may meet up with other users online. Feel free to also coordinate testing/QSOs on our Discord channel #cw-hotline.

Two CW Hotline devices can be used to send CW with a remotely controlled CW radio. Choose a unique Link Key and enter into both units. Connect the Key Out line of one to the key in of the radio. The other device can be used anywhere WiFi is available. You will need additional software to monitor and control the radio remotely.

A cell phone hotspot can be entered into one of the SSID settings to allow for operation when other WiFi is not available.