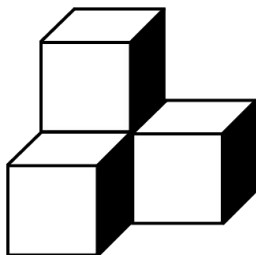# HAM Cube CW Decoding board

User manual

HAM Cube

Hand Electronics Studio
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Dear OM：

Thank you for using HAM Cube Pocket Wizard CW decoding expansion board. This expansion board uses high-performance microcontroller to conduct DSP digital processing on CW audio signal, and decoded CW signal from it and sent to pocket Wizard host for display processing. The difficulty of short-wave CW automatic decoding mainly lies in the fact that short-wave signals are affected by ionosphere and have different degrees of QSB, which leads to great changes in signal strength and high short-wave background noise, thus affecting the accuracy of CW signal decoding. So machine decoding can not replace manual decoding, can only be used as an auxiliary means.

There are two main methods to improve the decoding accuracy by using HAM Cube CW decoding expansion board for CW audio decoding. One is that the audio signal level sent by the short-wave radio station to the decoding board should be just right, so that the decoding board is at the most sensitive level for CW audio signal, which will greatly improve the decoding accuracy and reduce the error code level. The second is to adjust the frequency of the receiver, the CW audio signal frequency is controlled near 600Hz, will greatly improve the signal recognition rate of the expansion board; Specific operations are as follows:

1. Control of decoding volume level

Connect the audio of the shortwave radio station to the audio input port of

the decoding board through the audio cable with a 3.5mm plug, or connect the audio input port of the decoding board with an external MIC module. Open the radio and adjust the volume of the radio knob or RF gain control, or adjust the external MIC module gain potentiometer (volume up, volume down small), the pocket elf host panel on the CW decoding indicator in the absence of the CW signal, just go out (increase will flash), then the audio level of the highest sensitivity, When the CW signal is present, the CW decoder light will flash clearly in accordance with the rhythm of the code signal, and when the signal stops, the corresponding flashing will also stop. At this time the decoding accuracy will be relatively high. Of course, the recognition rate of CW decoding is directly proportional to the quality and signal-to-noise ratio of the signal, the better the signal is, the clearer the decoding accuracy is, and the weaker the signal or the noise is, the decoding accuracy will decrease or even cannot be decoded.

2. Decoded CW frequency control

In the audio input level after the adjustment, will have signal, radio frequency to fine-tune knob, radio frequency makes the CW signal occurs, the pocket elf host panel light is bright, is the accurate decoding frequency, although about frequency deviation can be decoded, but obviously the accurate decoding frequency, will improve the decoding of the time.

3. Daily operation and setup

After power on the decoding board, long press the shortcut key F2 to enter the decoding function area, the specific functions are as follows:

F1: The host is muted or restored

F2: Decoding board digital filter bandwidth selection (wide/medium/narrow)

F3: DSP digital Noise reduction (None/Level 1-6)

F4: Clears the characters in the decoding area

The interfaces of the decoding board are as follows:

A. AUX1: radio audio or external MIC module audio input port (to be decoded CW audio signal input)

B. AUX2: headset jack, can be connected to the external headset or active speaker, must be stereo plug

C. AUX3: Auxiliary interface 3 (not used)

Common Settings are:

The filter is set to medium, the digital noise reduction is set to none, the decoding tolerance set by the host system is set to 9, and the decoding lock is closed. When the signal interference is large, turning the filter to narrow or starting the digital noise reduction function can improve the ability of decoding CW signal from noise to a certain extent.

When the decoding expansion board is not in use, please turn off the

decoding board power in the main control menu to save the battery power consumption of the main control.

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