

USER MANUAL

MASTER-CW LINK

Send and receive Morse code (CW) over an ordinary 2 m FM transceiver, from a phone or PC web page over Wi-Fi, or from a keyboard plugged into the unit.

1. Introduction

The MASTER-CW LINK lets you send and receive Morse code (CW) over an ordinary 2 m FM transceiver. It keys the radio's PTT, sends a clean audio tone (MCW) into the microphone input, and decodes incoming CW from the speaker audio into text.

You can operate it two ways: from a phone or PC web page over Wi-Fi, or from a keyboard plugged into the unit. It runs from its internal rechargeable battery and charges from any 5 V USB-C charger. Received and sent text is shown on the built-in OLED display and on the web page.

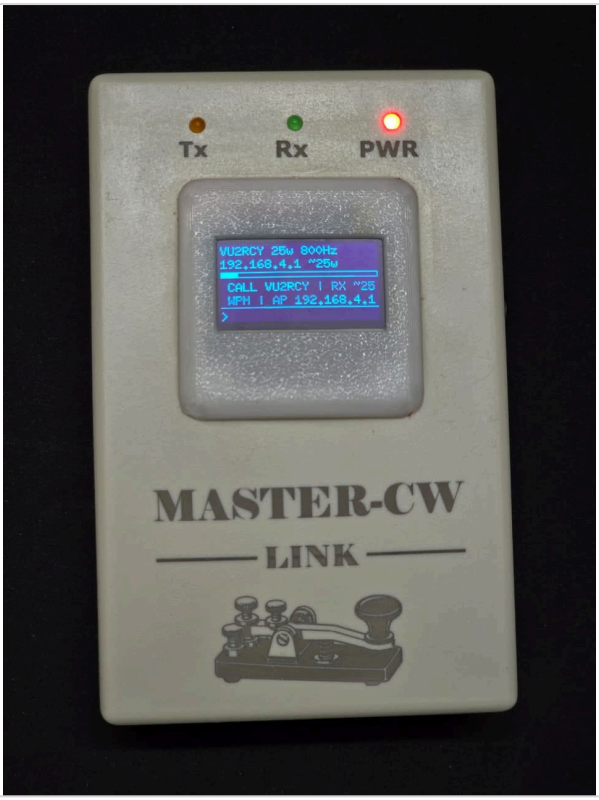
Main features

- Automatic CW decoder with speed tracking (shows the other station's approximate WPM)
- Automatic tone tracking (AFC) from 400 to 1200 Hz
- Keyboard sending in Live mode (each key sent as typed) or Line mode (Enter sends)
- 8 programmable memory buttons, saved permanently; {CALL} is replaced by your callsign
- Prosigns <AR> <SK> <BT> <KN> and more
- Adjustable speed 5–40 WPM, tone 400–1200 Hz, TX level, PTT lead and hang times
- 2-minute transmit time-out protection
- Every transmission starts a new red **TX>** line, received text appears on **RX>** lines
- All settings stored in memory and kept after power off

2. Getting to know the unit

The front panel has three indicators and the display. All connectors and the power switch are on the **left side**: the **top** jack goes to the radio (**Transceiver**), the **bottom** jack goes to the **Keyboard**.

Front panel



Front panel

PART	MEANING
Tx LED (amber)	Lights while the radio is keyed (transmitting)
Rx LED (green)	Lights while a CW tone is being received
PWR LED (red)	Unit is switched on
Display	See the display layout below

Left side panel (top to bottom)



Left side panel

PART	LABEL	USE
Slide switch	ON / OFF	Switches the unit on and off
Top jack	Transceiver	Radio interface cable to your 2 m FM transceiver: speaker audio in, microphone audio out, PTT, ground
Bottom jack	Keyboard	Keyboard cable
Indicator	CHARGING	Lights while the internal battery is charging
USB-C socket	DC 5V	Charging from a 5 V USB charger

Display layout

LINE	SHOWS	EXAMPLE
1	Your callsign, sending speed, tone	VU2RCY 25w 800Hz
2	Web address of the unit, speed of the received station	192.168.4.1 ~25w
3	Bar graph of received tone strength	—
4–5	Latest received and sent text	CALL VU2RCY | RX ~25
6	Text you are typing or still waiting to be sent (> = Live mode, : = Line mode)	>

At switch-on the Tx and Rx LEDs light for half a second as a lamp test.

Cautions

- Plug or unplug the keyboard only with the unit switched off.
- Check that the Transceiver cable is wired for your radio model before transmitting.
- Do not swap the two jacks: the top one is always the Transceiver, the bottom one always the Keyboard.

3. Getting started

SETUP WI-FI NETWORK

Wi-Fi	`CW-VU2RCY`
Password	`cw123456`
Open	`http://192.168.4.1`

1. Charge the unit fully before first use: connect a 5 V USB-C charger to the **DC 5V** socket. The **CHARGING** light shows charging is in progress.
2. With the switch at OFF, plug the radio cable into the top **Transceiver** jack and the keyboard into the bottom **Keyboard** jack.
3. Set the radio to the 2 m FM simplex frequency you will use, with a medium volume.
4. Slide the switch to **ON**. The red **PWR** LED lights and the display shows the start-up screen, then your callsign.
5. On your phone or PC, join the Wi-Fi network **CW-VU2RCY**, password **cw123456**.
6. Open a browser at **http://192.168.4.1**. The control page appears.
7. Enter your callsign under **Settings** and press **Save**.
8. Press **TUNE 10s** and adjust **TX level** until the transmitted tone sounds clean on a second receiver.
9. Listen to a CW signal. The green **Rx** LED lights with each tone and the decoded text appears on **RX>** lines.

Using your home Wi-Fi (optional): enter your home network name and password under Settings, press Save, then Reboot. The unit stays reachable on its own network and also joins your home network. The display then shows the home IP address; you can also use **http://cw.local**.

4. Web control page

The web page has three panels: the live text window, the sending panel and Settings.

Live text window

- **RX / TX** pill: turns red **TX** while transmitting.
- **TONE / no tone** pill: turns green while a CW tone is detected.
- Info line: received level, detected tone frequency (Hz) and the other station's speed (WPM).
- Signal bar: strength of the received tone.
- Text window: sent text on red **TX>** lines, received text on **RX>** lines. **Clear** empties the window.
- “to send:” shows text still waiting in the send queue.

Sending panel

- Type in the box and press **Enter** to send the line.
- Tick **Live typing** to send each character as you type; Enter then sends a word space.
- **Esc** or **STOP** cancels everything still waiting to be sent.
- **TUNE 10s** sends a steady tone for 10 seconds, for level setting.
- **Memory buttons M1–M8**: click to send. See section 6.

5. Keyboard operation

A keyboard on the bottom **Keyboard** jack lets you operate without a phone or PC. The bottom line of the display shows what you are typing: **>** in Live mode (text waiting to be sent), **:** in Line mode (text being typed).

- **Live mode:** each key is sent as you type it. Enter sends a word space.
- **Line mode:** type a whole line, then press Enter to send it. A line starting with **/** is a command (section 8).
- Type prosigns with angle brackets, for example <AR> (Shift + comma, A, R, Shift + full stop).

KEY	FUNCTION
Letters, numbers, punctuation	Sent in Morse
Enter	Send line (Line mode) / word space (Live mode)
Backspace or Delete	Remove the last character not yet sent
Esc	STOP – cancel all unsent text
F1 – F7	Send memories M1 – M7
Shift + F1	Send memory M8
F8	Switch Live / Line mode
F9	Speed – 1 WPM
F10	Speed + 1 WPM
F11	Tone – 50 Hz
Shift + F11	Tone + 50 Hz
F12	Save settings

Changes made with F8–F11 are lost at power off unless you press **F12** to save.

6. Memory buttons

Eight memories hold ready-made messages of up to 99 characters. {CALL} inside a memory is replaced by your callsign when sent.

MEMORY	DEFAULT LABEL	DEFAULT TEXT
M1	CQ	CQ CQ CQ DE {CALL} {CALL} {CALL} K
M2	QRZ?	QRZ? DE {CALL} K
M3	5NN	UR 5NN 5NN
M4	AR	<AR>
M5	KN	<KN>
M6	73 SK	TU 73 <SK>
M7	DE	DE {CALL}
M8	M8	(empty)

To edit a memory: on the web page, right-click the button (PC) or press and hold it (phone). Change the label and text, then press **Save**. **Clear** empties both fields. Memories are saved permanently at once.

7. Settings

Open the Settings panel on the web page, change values, and press **Save**. Settings are stored permanently. Wi-Fi changes take effect after **Reboot**.

SETTING	RANGE	DEFAULT	PURPOSE
Callsign	up to 11 characters	VU2RCY	Used in {CALL} and /CQ
Speed (WPM)	5 – 40	18	Sending speed
Tone Hz	400 – 1200	800	Transmitted tone and sidetone
RX auto tone (AFC)	ON / OFF	ON	ON: decodes any tone 400–1200 Hz. OFF: only your set tone
Key mode	Straight / Iambic A / Iambic B	Iambic B	For the optional Morse key or paddle
Swap paddles	No / Yes	No	Exchanges dit and dah
PTT lead ms	0 – 1000	300	Delay from PTT on to first tone, lets the radio settle
PTT hang ms	0 – 5000	600	Time PTT stays on after the last tone
TX level	10 – 127	90	Audio level into the radio microphone
RX min level	0 – 500	20	Ignores received audio below this level (noise)
PS/2 keyboard	Live / Line	Live	Keyboard sending mode
Radio SQL pin	Ignore / Low = open / High = open	Ignore	Uses the radio's squelch line to block noise
Home Wi-Fi SSID / password	—	blank	Join your home network
Wi-Fi name (this unit)	up to 32 characters	CW-VU2RCY	Name of the unit's own network
AP password	8+ characters	cw123456	Password of the unit's own network

Factory default resets all settings and memories and restarts the unit. Afterwards, reconnect to **CW-VU2RCY** with password **cw123456**.

8. Commands

Type these in the web send box, or on the keyboard in Line mode. Commands are not case-sensitive.

COMMAND	ACTION
/HELP	Show the command list
/STATUS	Show all current settings and IP address
/WPM n	Speed 5–40
/TONE n	Tone 400–1200 Hz
/AFC ON or OFF	Automatic RX tone tracking
/MODE S, A or B	Straight key, Iambic A, Iambic B
/SWAP	Swap paddles
/LEAD ms, /HANG ms	PTT lead and hang times
/LEVEL n	TX level 10–127
/SQL n	RX minimum level 0–500
/SQLPIN 0, 1 or 2	Ignore / Low = open / High = open
/CALL xxx	Set callsign
/CQ	Send a standard CQ call
/M1 … /M8	Send a memory
/TUNE s	Steady tone for 1–60 seconds (default 10)
/DEBUG	Show live receive measurements twice a second
/STOP	Cancel sending
/SAVE	Save settings permanently
/DEFAULT	Factory default and restart

Settings changed by command are lost at power off unless you use **/SAVE** (or F12, or Save on the web page).

9. Protection and behaviour

- **Time-out:** transmission stops automatically after 2 minutes of continuous PTT. Release the key and clear the queue to transmit again.
- **Key priority:** touching the Morse key or paddle while text is sending cancels the remaining text.
- **New TX line:** each new transmission starts a fresh red TX> line, so your messages are easy to find.
- The decoder pauses during transmit and resumes after PTT releases.

10. Troubleshooting

PROBLEM	CHECK
Cannot find the Wi-Fi network	Wait 10 seconds after power on. If the name or password was changed, type /DEFAULT on the keyboard in Line mode and press Enter.
Page does not open	Use http://192.168.4.1 while joined to the unit's network. Turn off mobile data on the phone.
No decoding, green LED never lights	Raise radio volume. Lower RX min level. Check AFC is ON. Set Radio SQL pin to Ignore.
Random letters from noise	Raise RX min level, or use the Radio SQL pin setting.
First character cut off on air	Increase PTT lead time.
PTT drops between words	Increase PTT hang time.
Distorted transmitted tone	Lower TX level.
Keyboard does nothing	Switch off, push the keyboard plug fully into the bottom Keyboard jack, switch on.
“TX buffer full”	Wait for the queue to send, or press STOP.
“TX time-out”	Release the key; transmission was over 2 minutes.
PWR LED does not light	Check the ON/OFF switch. Charge the battery from the DC 5V socket.

11. Specifications

ITEM	VALUE
Mode	MCW (tone-keyed CW) over 2 m FM
Sending speed	5 – 40 WPM
Tone	400 – 1200 Hz, 5 ms soft keying edges
Receive tone tracking	400 – 1200 Hz in 100 Hz steps
Transmit time-out	2 minutes
Memories	8 × 99 characters
Send queue	about 1000 characters
Control	Wi-Fi web page, keyboard
Connectors	Transceiver jack, Keyboard jack, DC 5V USB-C
Indicators	Tx, Rx, PWR, CHARGING
Display	128 × 64 OLED
Power	Internal rechargeable battery, charged at 5 V via USB-C
Default Wi-Fi	CW-VU2RCY, password cw123456, http://192.168.4.1

Need help? Message me.
Scan the code to message me on WhatsApp.

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