Lynovation CTR2-MIDI

Reviewed by Pascal Villeneuve, VA2PV
va2pv@arrl.org

For many years, Lynovation has been creating low-cost devices to interface with different software and radios.

The CTR2-MIDI is a small MIDI controller that can be used in combination with CAT software. You can program button functions and use the main VFO knob encoder to change frequencies, adjust volume, etc.

The CTR2-MIDI is another product designed by Lynn Hansen, KU7Q. It can work on different types of devices, and it's supported by the popular iOS and macOS software developed by Marcus Roskosch, DL8MRE, like *SmartSDR* (for FLEX radios), *SDR-*

Bottom Line

The CTR2-MIDI is a low-cost controller for remote software operations. It adds quick and easy access to functionalities similar to a physical radio.

Figure 6 — The CTR2-MIDI beside a 10.5-inch iPad Pro.

Control (for Icom radios), and more. Also supported are *Thetis* and the RHR Console from Remote Ham Radio (**www.remotehamradio.com**). In addition, it works with other radio control apps like Simon Brown's *SDR-Console*, *SparkSDR*, and *piHPSDR*. The manufacturer also mentioned that if the app supports MIDI control, the CTR2-MIDI should work with it. Keep in mind that the control functionalities will vary depending on the software used.

For this review I used the CTR2-MIDI firmware version 1.02.01 (February 2025), and all of my experiments were done using only the *SDR-Control* software for Icom radios, with all three versions — MacOS, iPad, and iPhone. For more details about the *SDR-Control* software from Marcus, DL8MRE, you will find the review in the November 2022 issue of *QST*.

Description

Measuring only 2.36 × 2.36 × 1.3 inches (including the VFO encoder knob), it feels heavy because of the solid metal VFO knob, so it's impressively stable on the desk for its size. See the CTR2-MIDI beside my iPad Pro, which is 10.5 inches, in Figure 6.

On the back of the unit (see Figure 7), you will find a USB-C port for connectivity, firmware upgrade, or powering the unit. This unit can connect via Bluetooth or USB; it doesn't have an internal battery, but a third-party solution exists (see **https://shop.g7ufo.radio/products/kit-battery-add-on-for-lynovation-ctr2-midi-and-ctr2-micro**). Without a battery for wireless Bluetooth connectivity, you will need a power source connected to the USB port. Beside the USB-C connector there is a "Paddle In" 3.5-millimeter (⅛-inch) stereo input jack that can be configured to use a paddle or a straight key/PTT.

On top of the unit, you will find the encoder, which I call VFO; this is also a pushbutton that is used to toggle between four modes, with each mode having a primary and secondary function. There are two yellow LED lights on the top left, which are used to provide an indication of the selected mode. In the first mode, the two yellow LEDs are off; in the second mode, only the one below is on; in the third mode, only the one above is on; and in the fourth mode, both are on. If you continue past the fourth mode with a short press, you get back to the first mode with both LEDs off. These modes are very useful. For example, in the first mode, the encoder knob is used as a VFO, the second mode can be programmed so the encoder knob becomes the control for the volume, and so forth. All of these knobs are customizable.

On the top right side, there is a red LED for "TX indication" and a green LED below indicating "Paddle mode." If you give a long push on the VFO encoder knob, it will toggle between paddle mode (green light off) and key/PTT mode (green light on). If you use a mono connector

Figure 7 — The CTR2-MIDI rear panel.

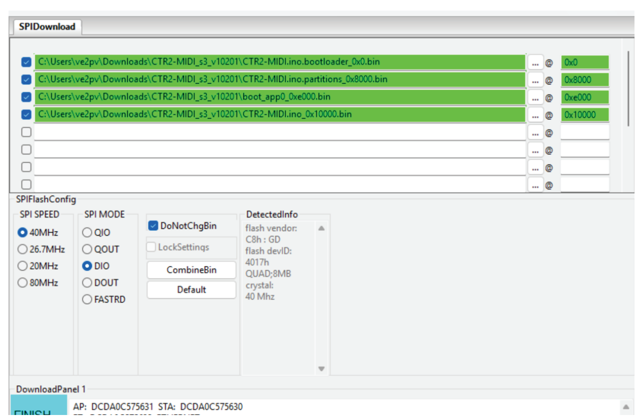

Figure 8 — Windows PC screenshot of the *Espressif* software with the firmware update completed.

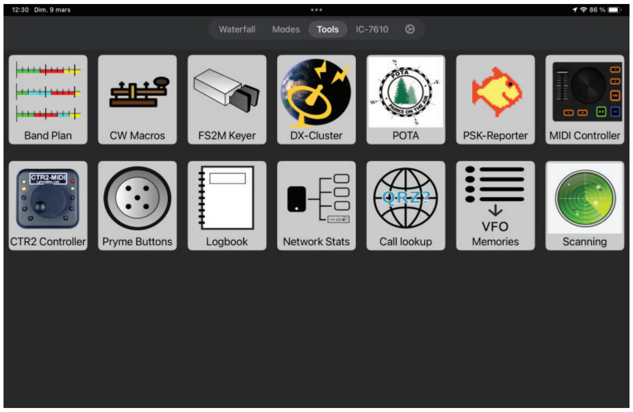

Figure 9 — The iPad *SDR-Control* software Tools menu.

for the key/PTT mode to the paddle input, you can build an adapter cable to use only the tip and the sleeve of the stereo connector, or you can simply change the mapping in the app for MIDI control 21 or 31, depending on which paddle mode the CTR2-MIDI is in. That way, it won't matter if the ring terminal is grounded by the mono plug.

There are also six programmable pushbuttons, labeled MFB1 to MFB6. The first three are located at the left of the centered encoder knob; the one at the top is MFB1, and the one at the bottom is MFB3. On the right side of the encoder knob there are three other buttons; the one at the bottom is MFB4, and MFB6 is the one at the top (see the lead photo). All of these are customizable. The MFBx buttons can be used to activate or deactivate functions like noise reduction (NR), noise blanker (NB), switching between filters, etc. You can also use a combination of the buttons to activate or deactivate functions like turning on and off the Bluetooth radio (more on this later).

Firmware Update

Updating the firmware is very different from what I'm used to. The CTR2-MIDI uses the ESP32-S3 processor, and you will need to download a third-party flashing software called *Espressif Flash Download Tools* (**www.espressif.com/en/support/download/other-tools**), which is more of a developer's tool for this platform. It's available only for Windows PCs, with Windows 7 or higher. Everything is explained in detail in the 38-page CTR2-MIDI operations manual. Both the firmware and the manual can be downloaded from the manufacturer's website (**https://ctr2.lynovation.com/download-ctr2-midi-firmware**).

Once you've downloaded the latest firmware and the *Espressif* software, you will need to connect the CTR2-MIDI to a Windows PC USB port. I was unable to do this on macOS, but according to the manual this can also be done using terminal software like *PuTTY*. Next, you will need to follow the multiple steps shown in the manual. I encountered an issue with the COM port detection to flash the firmware, so I followed the manual and had to find the very small button to force it into program mode. This small button is located beside the USB-C connector inside the unit, but it is accessible without dismantling the unit. Pressing on it using a toothpick (as recommended in the manual) while connecting the USB port worked on the first try, and the upgrade was done in a few seconds. See Figure 8 for a screenshot of the *Espressif* software with the update completed.

The Lynovation YouTube channel has a video showing how to update the firmware (see **https://youtu.be/Si0i80jzNyQ**).

Connectivity

As mentioned previously, the CTR2-MIDI can be connected to your application either using a USB cable or via Bluetooth. But because you always need a power source via USB, I prefer using the USB connection directly to the computer or mobile device, as using Bluetooth won't make the CTR2-MIDI completely wireless. It will draw power from the computer, phone, or tablet, and you may need a special adapter if the mobile device needs to be charged at the same time, so Bluetooth may come in handy if you use a separate power source for the controller.

When using USB, you connect the USB cable before starting the application. With *SDR-Control*, you go into the **TOOLS** menu (see Figure 9) and select "MIDI Controller" (see Figure 10) or "CTR2 Controller" mode (see Figure 11). The "CTR2 Controller" is the preferred mode because it's preconfigured for the CTR2-MIDI.

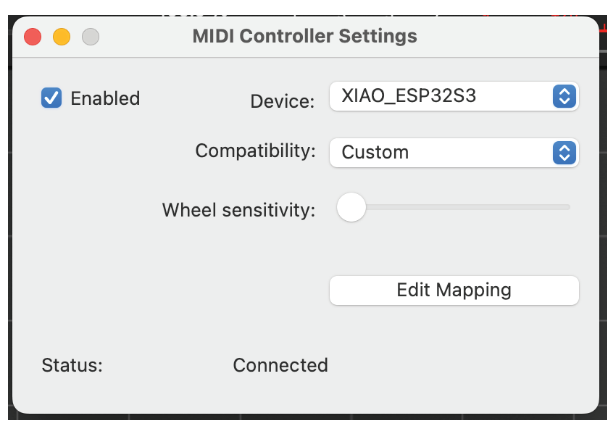

Figure 10 — The *SDR-Control* MIDI Controller settings for USB connection mode.

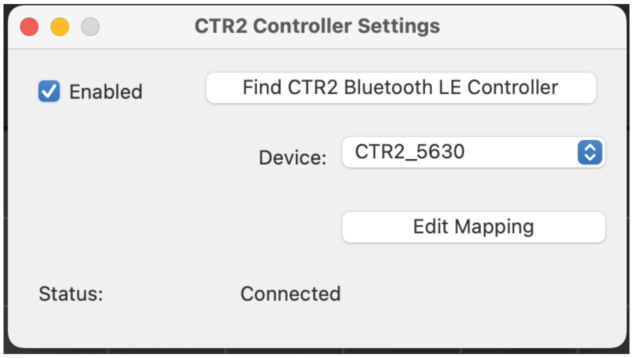

Figure 11 — The *SDR-Control* CTR2 Controller settings for Bluetooth connection mode.

Keep in mind that the MIDI Controller and the CTR2-MIDI tool in this app support both connection modes. Every time you toggle between the two connection modes, you will need to restart the software and the controller by unplugging the USB cable, as there is no power switch on the unit.

With the new firmware, both modes (the iOS and the macOS versions) in *SDR-Control* are equally easy to set up. In previous versions, the Bluetooth connection required a third-party MIDI software so the device would recognize the controller; now you can simply click on “Find CTR2 Bluetooth LE Controller,” and it will find it instantly (see Figure 9 for the controller settings for the CTR2 Controller mode).

If you have the mobile version of *SDR-Control* for iPhone, only the Bluetooth CTR2 Controller mode is available. I have the software version running on my iPhone 15 Pro, and I’m able to power the unit using a USB-C-to-USB-C cable while running in Bluetooth — but I don’t know for how long. Most of the time when I use the iPhone app, I can’t attach the CTR2-MIDI to it, as I’m usually on the move.

Customizing the CTR2-MIDI

When you download the latest firmware, it includes three files with a “.map” extension. These are preprogrammed for different platforms (FlexRadio, Icom, and Thetis) to give you a starting point for controlling your radio. These files can be customized directly into the remote software.

To customize mine, I had to look at the manual and use trial and error. With *SDR-Control* you can import the mapping settings from the provided files with the firmware, customize it, and export the file. This can be shared via iCloud and imported on another device. That’s what I did to have the same configuration on my iPad and my Mac. Keep in mind that if you use the Bluetooth and the USB connection, you will have to import the mapping into both connectivity modes (see Figures 10 and 11).

You can do many things with the CTR2-MIDI. I can’t list them all in this review, so it is best to read the manual to learn more about the possibilities.

Using the CTR2-MIDI

Once you’ve completed the setup, updated the firmware to the latest version, and customized the button functions, you’re ready to play.

After a little while you will get accustomed to your CTR2-MIDI configuration. It just adds a radio feel to your remote software operations. It’s way more intuitive than using the iPad touchscreen for commonly used functions. With the CTR2-MIDI, I now have a physical VFO knob for my mobile device using the *SDR-Control* software. I can also quickly adjust the volume; change bands, modes, and filters; and activate frequently used functions like NB and NR — all without the need to use the iPad touchscreen. Plus, it’s small enough to be carried around in a backpack or directly in a pocket.

The unit doesn’t seem to draw a lot of current on my mobile device. I didn’t measure it, but I frequently use it in USB mode on my iPad and have never run out of power, though it’s rarely used more than 2 hours at a time. According to the manual, when the Bluetooth radio is on, the CTR2-MIDI draws around 93 mA. When Bluetooth is off, the current draw is around 43 mA. The Bluetooth radio can be turned on and off by pressing the **MFB6** and **ENCODER** buttons; a Morse code signal will be heard for the active status (“BLE 0” means Bluetooth radio is off, and “BLE 1” means Bluetooth radio is on).

Conclusion

If you’re using any of the compatible software, especially *SDR-Control* or *SmartSDR*, to control your radio, you can’t go wrong with the CTR2-MIDI. It’s inexpensive for what it does, and firmware updates are frequent. It provides a better operating experience than just a software interface, while allowing quick and easy access to functionalities that make the operations feel more like a physical radio. Note that Lynovation recently released a new product called CTR2-Dial, which consists of a CTR2-MIDI with an added touchscreen.

Manufacturer: Lynovation, **www.lynovation.com**. Price: assembled unit, $69; kit, $49.