How to use a straight or paddle key with PowerSDR and a Softrock RXTX
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7 February 2023

Once you have PowerSDR (version 2.4.4 as modified by SV1EIA, see
http://www.wb5rvz.org/common/PowerSDR_244_Installation)
working with the SoftRock RXTX, e.g. with N1MM or WSJTx, so that you can receive and transmit,
the following describes one method to connect a straight or paddle key to allow sending manual CW.

This method requires a physical COM port.

Step 1. Identify an available physical COM port. My laptop had only one, COM 1 with a 9 pin
connector.

This method takes advantage of PowerSDR's built-in software iambic **internal keyer** facility with
sidetone generator. This can be setup as shown below. With my old, slow, laptop the latency from key
press to sidetone sound was much too long to be useable. Possibly a faster computer would have low
enough latency to make this useable. However, the keying system can be used with an **external keyer**
that has a zero latency sidetone generator for practical manual CW keying.

Step 2. Configure PowerSDR as shown on page 138 of the SDR-1000 manual
http://www.flexradio.com/downloads/sdr-1000_operating_manual_v1-8-0-pdf/
as shown in the copied image below.

Internal Keyer

If using PowerSDR's internal keyer, open the Setup Form – DSP Tab, Keyer Sub-Tab shown below.
Several of the controls in this form are also available in the **Mode Specific Controls – CW (8)** section on
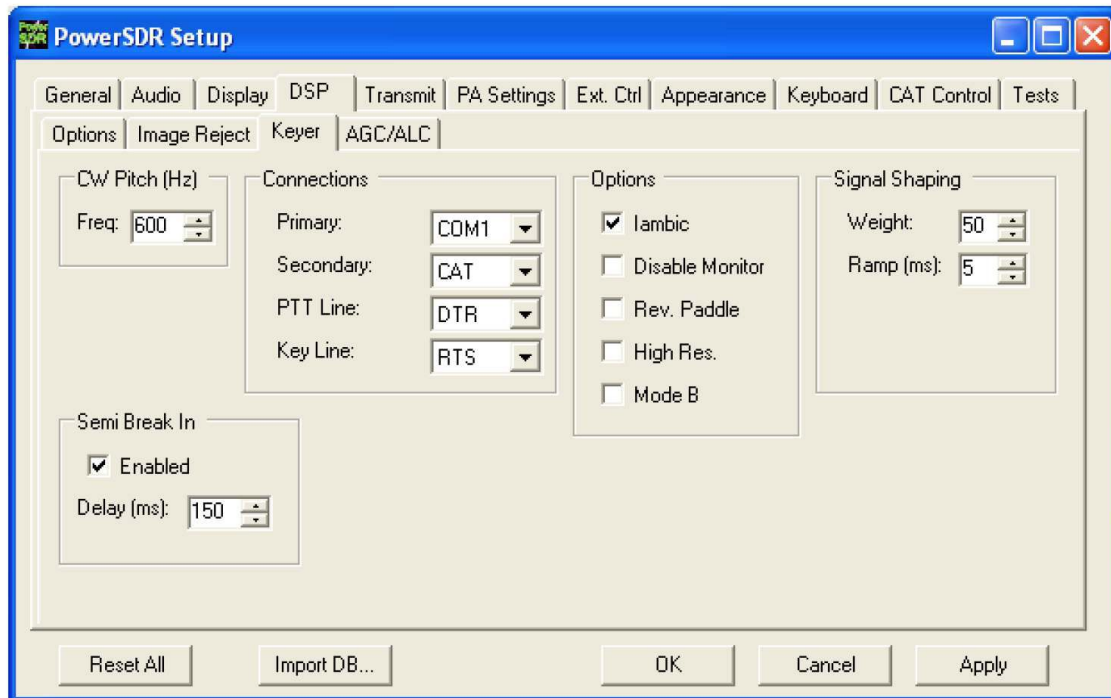the Front Console.

Figure 133: Setup Form – DSP Tab, Keyer Sub-Tab

Step 3. **For use of PowerSDR's built-in keyer**, connect the key paddle according to the instructions on page 139 of the SDR-1000 manual, as shown in the image below, except that the "Iambic" box SHOULD be checked if you are connecting a paddle for use of the internal keyer function. I found that a keyer paddle connected as in Table 11 above produced dots when dashes should have been produced, and vice versa, thus requiring checking the "Rev. Paddle" box. For a straight key or bug, just use the Pin 4 and Pin 8 connections and uncheck the "Iambic" box.

> **Hint:** For best CW performance, connect your paddles to a serial port using the following table to make the connections.

Table 11: Serial Port CW Pinout

Pin*	Connection
4 (DTR)	Common
6 (DSR)	Dot
8 (CTS)	Dash

* Assumes a 9-Pin connector

For my laptop, I measured + 6.2 Volts on pin 4, zero volts on pins 6 and 8 as referenced to pin 5 (signal ground).

For use with an external keyer, make sure that the external keyer provides a suitable means for connecting the COM 1 pin 4 line (+6Vdc) to the pin 8 line (raising the pin 8 line to about 5Vdc). This requires that both lines must be kept isolated from keyer ground. Neither of the two outputs of my MFJ-406 keyer was suitable. A modification of this keyer provided connections to COM 1 through a 4N25 Optocoupler, which provided reliable keying while maintaining isolation of the PC and the SDR/keyer grounds.

Step 4. Follow the instructions on pages 139-140 of the SDR-1000 manual, as shown in the image below. The "Iambic" box must be unchecked since you are connecting to an **external keyer** that itself generates the dots and dashes.

External Keyer

1. If you have your external keyer connected to a COM port, set the **Primary Connection** to this **COM** port. Set the **Primary Connection** to **SDR** if you have your external keyer connected to the SDR keyer input plug (see preceding Plug Pin-Outs chapter).

> **Hint:** For best CW performance, connect your external keyer to a serial port. See the table above on how to make the connections.

2. In the **Options** section, leave **Iambic** unchecked. If your external keyer seems reversed, check **Rev. Paddle**. If using an external keyer with a sidetone, check the **Disable Monitor** checkbox to avoid hearing the side tone from the internal keyer. The **Semi Break In** option allows the radio to be put into transmit mode simply with detection of keyer input. Set **Delay** to the amount of time between

the last detected input and when the radio will switch back to receive (preferably higher than 250ms).

3. If using the sidetone from the internal keyer, select the settings for **CW Pitch.** Select the settings for **Weight** and **Ramp** as desired (refer to the **Keyer Sub-Tab** section of the preceding Setup Form chapter for more detail).

4. If not using **Semi Break In**, click **MOX (16)** on the Front Console and begin transmitting using your external keyer. If using **Semi Break In**, simply begin transmitting to key the radio If **Disable Monitor** is unchecked, you should hear the side tone. Verify with the **TX Meter (4)** set to **Fwd Pwr** that there is forward power.

5. You are now ready to begin a QSO. If a 50 ohm dummy load was connected, connect an antenna in its place. Tune to the desired frequency using one of the methods outlined in the Tuning Methods section above. Select either **CWL** or **CWU (6)** and proceed with the QSO.

Step 5. According to https://beta.groups.yahoo.com/neo/groups/FlexRadio/conversations/messages/19947 (link broken as of 7 Feb 3023) "Turning on HPET (High Precision Event Timer) in your PC's Bios helps to smooth out keying".