



An Easy, Inexpensive Voice Keyer

This little box with “Record and Play” pushbuttons is convenient for contesting operations.

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I frequently operate my Colorado station remotely using voice-operated transmit (VOX) with a laptop and PC headset. But for contests and special events, a voice keyer in a little box with a pushbutton to record a message would be better (see the lead image). The ISD1820 voice recorder module fits the bill. It's capable of recording and playing back one 10-second-long message.

Parts and Construction

I fit everything in a 100 × 60 × 25-millimeter plastic box, including the module, speaker, switches, and battery (see Figure 1). The module is attached using two #4-40 screws and nuts, plus two small nuts for spacers. I drilled 3/32-inch holes in a 1.25-inch round pattern for the included speaker and attached it with two dabs of hot glue.

The module includes switches to record and play, but these are inaccessible for practical use, so I added two momentary contact switches: a red double pole double throw (DPDT) for recording and a black single pole single throw (SPST) or single pole double throw (SPDT) for playback. I used switches similar to C&K 8221 (DPDT) and 8121 (SPDT).

Using a headset microphone to record the message helps make it sound nearly identical to live audio. I removed the on-board microphone element and added a Dupont two-pin header. A 3.5-millimeter stereo jack makes the connection to the headset electret microphone.

The DPDT record switch transfers the headset microphone from output to the module microphone input and starts the recording. The default sampling rate is 6.4 kHz. I added a small resistor to increase the rate to 8 kHz for better fidelity. This reduced the available



Figure 1 — An internal view of the voice keyer. The ISD1820 module is on the upper left, and the battery is on the lower left.

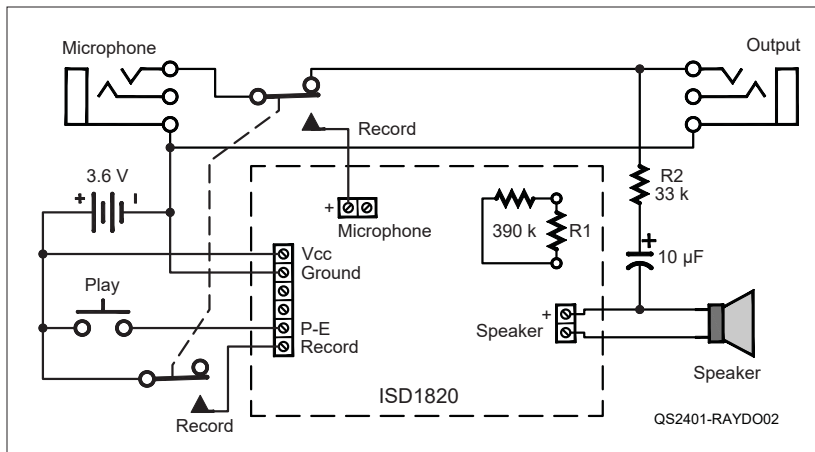


Figure 2 — Schematic of the voice keyer.



Figure 3 — Press and hold the red button on the top left corner of the keyer to record your 8- to 10-second message. Access the digital edition of *QST* (www.arrl.org/qst) to experience this voice keyer in action.

message length to 8 seconds, which is still adequate for my purpose. Add a 390 kΩ, 1/8 W resistor in parallel across R1, which is a 100 kΩ (marked 104) surface-mount resistor (see Figure 2).

The headset microphone audio and module audio are combined in the output using a 10 µF capacitor (the value isn't critical) and a series resistor. Select the R2 resistor value that makes the message volume equal to the headset microphone volume. I used 33 kΩ. A small trim pot would allow adjustment, if desired. A 3.5-millimeter stereo jack provides the combined output to the laptop.

I used Dupont-type plugs to connect the battery and switches. These plugs are available online or from defunct PCs. You could also solder the wires to the pins.

The module needs 2.7 to 5.5 V. The current drain during recordings is 10 mA, and the playback is 30 mA. Standby current is essentially zero (0.5 µA), so no power switch is needed. I selected an ER14250 3.6 V lithium battery for its small size (1/2 AA) and good capacity (1200 mAh). I attached the holder in the box with double-sided tape.

PC-type headsets use an electret microphone element, which is the same as the module. A dynamic-type microphone could be used instead, if a capacitor of around 10 µF is inserted between the microphone and the module connection to isolate the microphone from the module bias voltage.

Setup and Operation

Plug the headset microphone into the proper jack, and press the record button to start an 8- to 10-second message (see Figure 3). Release the button at the end of the message. The module has a lot of microphone gain. Even though it has automatic gain control, the audio will distort if you're speaking too loudly while recording. Press the play button to hear the recording on the internal speaker. Your message will be retained until you push the record button again.

I connected the keyer output (using a 3.5-millimeter stereo cable) and headset phones to a TRRS (four-pole) Y adapter to fit my laptop. My voice and

the recorded message will trigger the VOX to transmit. This little device can record only one message. It's easy to use, inexpensive, and fun to build!

John S. Raydo, KØIZ, was first licensed in 1957 as KNØLMZ at age 13. He enjoys constructing equipment and has authored a number of articles in *QST*, *QEX*, and *Electric Radio*. His most recent projects include a 13-tube SSB transceiver and a grounded-grid 813 amplifier. Other interests include contesting and special event operations with WW1USA, the National WWI Museum and Memorial. John can be reached at kcflyers@yahoo.com.

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