Eclectic Technology

Steve Ford, WB8IMY, wb8imy@arrl.org

A Digital Interface in Time for Field Day

There is no question that CW and SSB are the most popular operating modes for Field Day. However, each year we see evidence in the Field Day logs of the increasing use of digital communications, primarily PSK31, PSK63, and RTTY.

If you're heading into the field with the intent of putting an HF digital signal on the air, you'll obviously need an SSB transceiver and a computer of some sort. Regardless of how you choose to run your digital software, however, chances are you will also need an interface to key your transceiver and handle the transmit and receive audio. (The exceptions are transceivers with built-in digital capability, USB ports, etc.) There are a number of commercial interfaces to choose from, as a browse through dealer websites and *QST* advertising pages will demonstrate.

But if you have the time and inclination, you can also build your own digital communications interface for far less money than you might imagine.

The G4ILO Interface

The late Julian Moss, G4ILO, designed an interface around an ultra-inexpensive USB sound device, the type you can find on Amazon for less than $10. Just go to **www.amazon.com** and search for "external stereo sound adapter." Not counting the cost of the enclosure, you can build the entire interface for less than $25.

Julian's approach requires that you pry open the sound adapter and locate a place to tap the 5 V dc supply and ground at the USB plug. This allows the interface to be powered from the host computer. The alternative is to supply 5 V dc from another source, but I think Julian's technique is more elegant.

As you'll see in Figure 1, Julian connects the headphone output of the adapter to a VOX (Voice Operated Switch) circuit that keys your transceiver PTT (push-to-talk) whenever it detects transmit audio from your computer. In addition, the design also taps the headphone audio to feed to the transceiver as transmit audio, with a 1 kΩ potentiometer (R2) to control the level.

For receiving, the transceiver's receive audio — obtained either from a rear panel accessory port or an external speaker/headphone jack — is fed directly to the adapter's microphone input.

The interface attaches to your computer with a female-to-male USB extension cable that you can also pick up on Amazon and many other places for less than $10. When you attach the interface, your computer should recognize it as a separate sound device. In your digital software, you'll need to select the device for your transmit and receive audio.

Julian's Legacy

Julian was a constant tinkerer with a passion for digital operating, QRP, and various other pursuits. His Amateur Radio web page is still available at **www.g4ilo.com**. He was also an excellent writer, and he chronicled his battle with brain cancer at his "One Foot in the Grave" blog at **onefootingrave.blogspot.com/**. I hope his web pages will remain available for a long time to come.
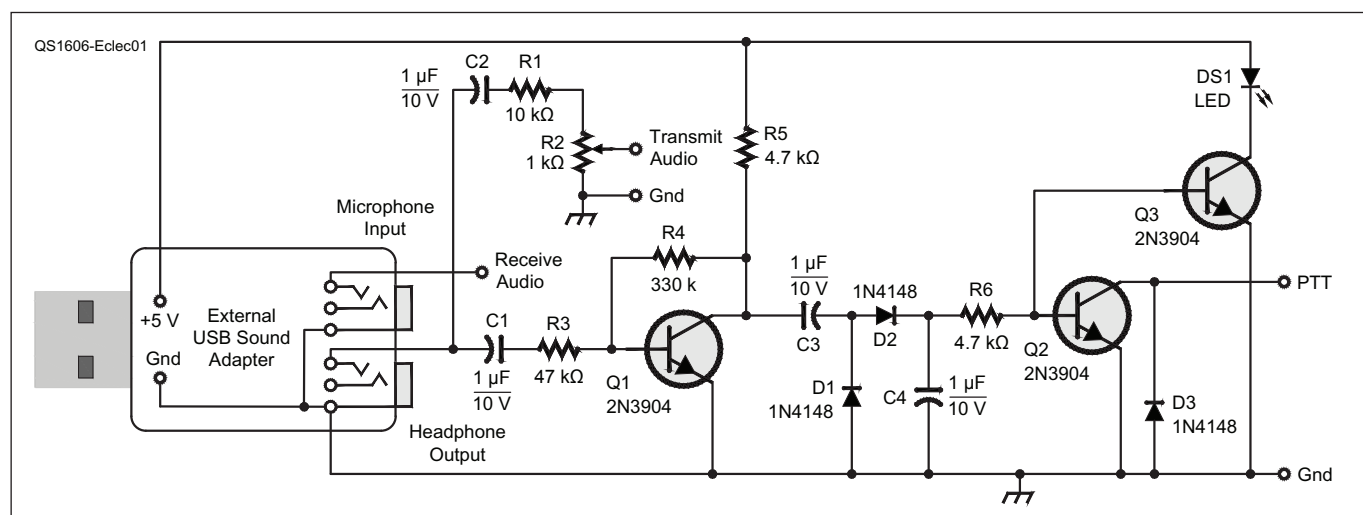

Figure 1 — The G4ILO digital communications interface. The heart of the interface is an inexpensive external sound adapter. The accompanying circuitry is used to channel the transmit and receive audio, and key the transceiver. Mouser Electronics part numbers shown (**www.mouser.com**).

C1, C2, C3, C4 — 1 µF ceramic disc capacitors (810-FK24X5R1C105K)
D1, D2, D3 — 1N4148 diodes (512-1N4148)
DS1 — Red LED (78-TLCS5100)

Q1, Q2, Q3 — 2N3904 transistors (610-2N3904)
R1 — 10 kΩ ¼ W resistor (791-RC1/4-103JB)
R2 — 1 kΩ potentiometer (652-PDB181K415K102A2)

R3 — 47 kΩ ¼ W resistor (791-RC1/4-473JB)
R4 — 330 kΩ ¼ W resistor (791-RC1/4-344JB)
R5, R6 — 4.7 kΩ ¼ W resistors (791-RC1/4-472JB)