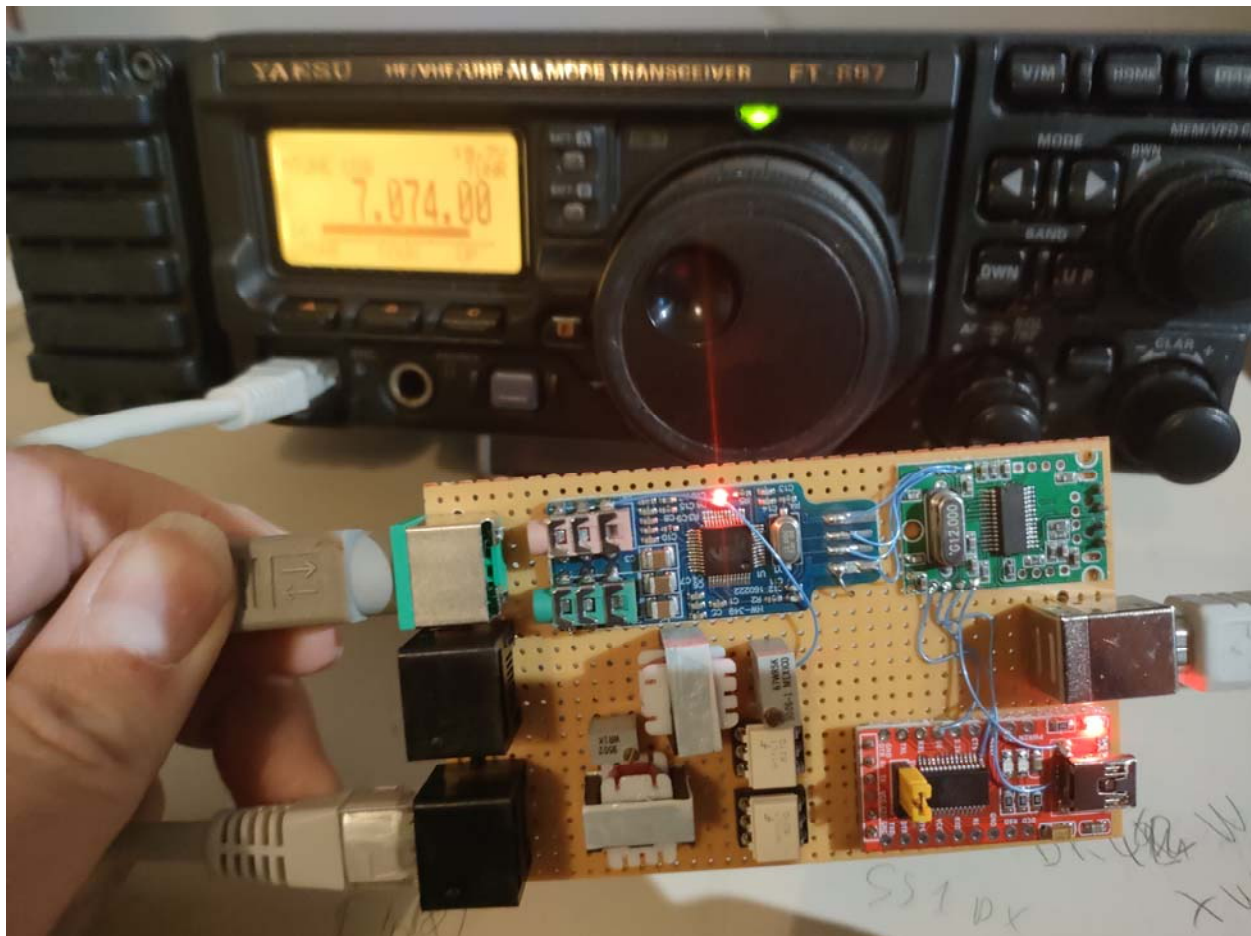# <u>QST-in-Depth</u> – USB Interface for Transceiver

Make this homebrew USB interface to drive your transceiver.
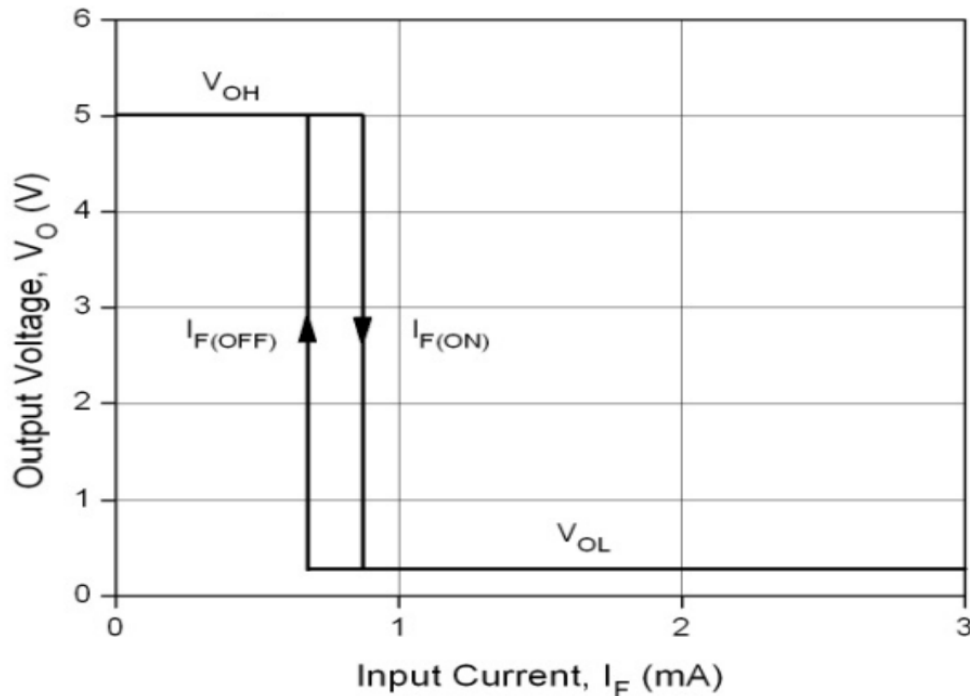
By Anthony Le Cren, F4GOH

The following supplementary materials include:

● Additional technical details

● Additional images showing the circuit board and optocoupler transfer function
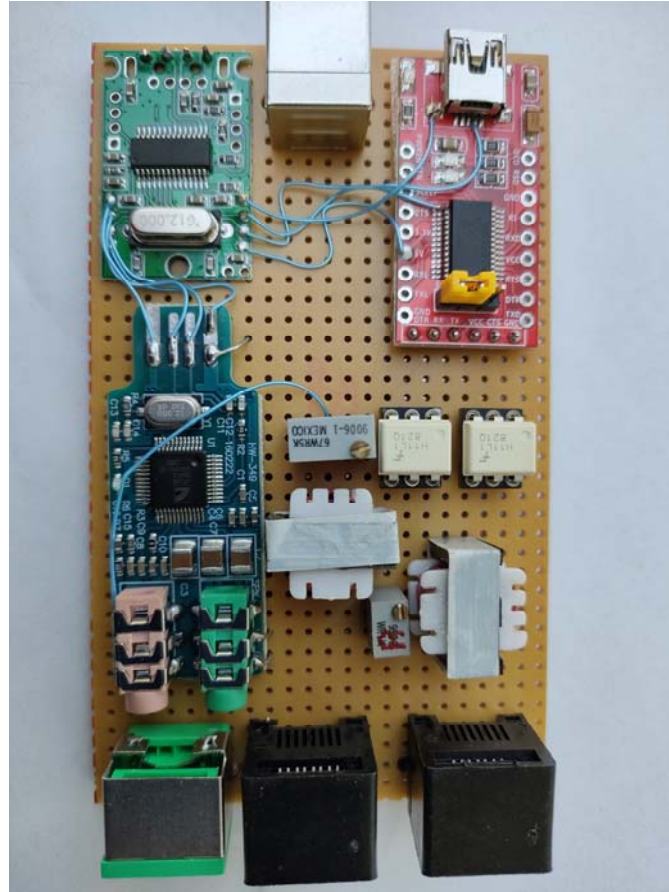
● Assembly and driver installation.

The transfer function of the H11L1 optocoupler is shown below.

In the proposed configuration, a low logic level on the TX output of the FT232RL imposes a current (2mA) into the optocoupler LED, resulting in a low level output. This is easy to understand by looking at the transfer function of the H11L1 optocoupler. The input and output signals of the optocoupler are then not inverted, perfect for driving the Yaesu FT-897D.

If you want to invert the signals for your specific TRX control, you will need to set the optocoupler LED high. The TX output of the FT232RL will be connected to pin 1 of the optocoupler via a 2.2 kΩ resistor. Pin 2 will be connected to ground.

Two multi-turn potentiometers allow the adjustment of the ALC of the TRX and the LF level of the sound card's microphone input. See the interface breadboard below.
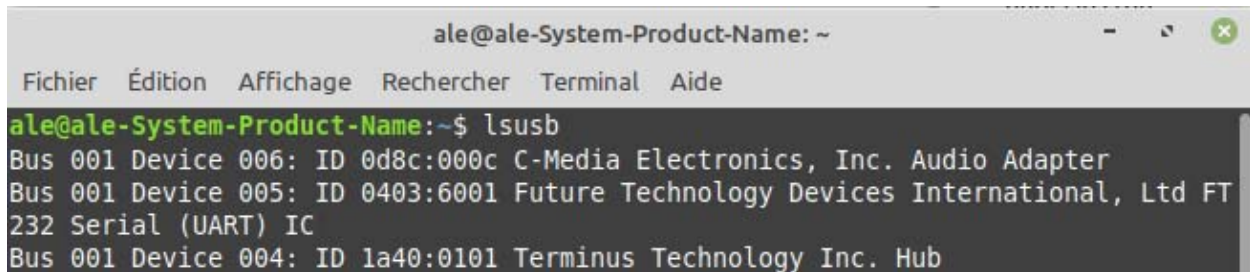
Assembly and Driver Installation

I assembled the circuit on a simple 60 mm by 99 mm perfboard. The interconnections are made with wire wrapping. I use 1206 SMD resistors on the copper side, but there is still enough room on the board to install feed-through resistors. The connectors connected to the TRX should be adapted according to your needs.

The enclosure is very easy to install with an aluminum profile. Search for "100x66x43mm Aluminum Electronic Instrument Case Box". A

All that remains to be done is to cut out the front and rear connectors.

Driver installation

USB device drivers are automatically recognized by Windows and Linux. There is no need to install specific drivers. The image below shows the USB devices under Linux using the "lsusb" command.

Conclusion

This interface is not very complicated to build and it will save you the cost of a commercial product ready to use, while having the pleasure to build an homebrew assembly. Thanks to Jean-Pierre Huron, F1EZX, for his help with the FT897D transceiver.