

RCForb Client External PTT Interface

External PTT with Push Button, Foot Switch or Remote Control Relays!

by Gene Hinkle, K5PA

Introduction

Ham operators like using RemoteHams RCForb Client application (<http://download.remotehams.com/>) to connect to remote radio servers world-wide. However, using the Client's radio GUI leaves something to be desired when controlling the push-to-talk soft button. The space bar can also be used if the PTT is highlight by the mouse. However, what is missing is a standard PTT interface using a switch closure from a finger operated push-button, foot switch or remote-control relay that provides freedom of movement. Luckily, the RCForb Client software (**Version Reference: RCForbClientSetup_v0.9.246.exe**) already has a built-in interface using a serial port on your computer! All that is needed is an inexpensive USB to TTL converter that exposes the serial control signals (e.g., CTS, DTS, etc.). This technical note explains how to easily assembly one from parts obtainable from online sources such as Amazon.

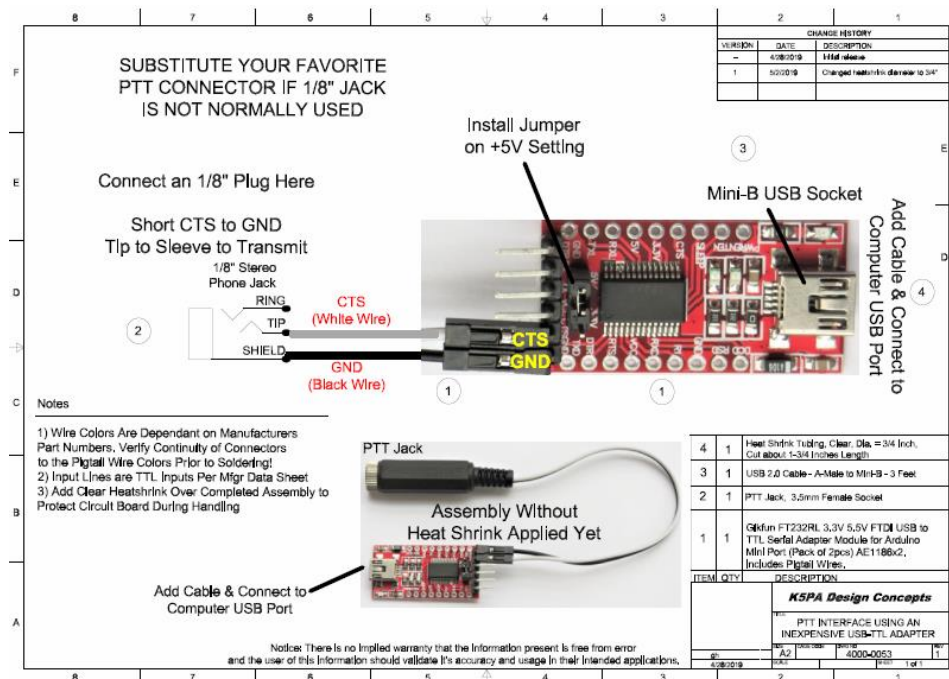


Figure 1. Author's PTT Schematic Using a USB to TTL Interface Board

The simple schematic is shown in Figure 1. This circuit board requires connecting cable from the Mini-B USB socket to the computer's USB port. The other side of the circuit board has a two-wire connection for the PTT switch closure to connect the control signal **CTS** to Ground (**GND**). A common 3.5 mm TRS phone jack is used to connect to the switch closure of choice. Once the software has been setup to receive this signal, connecting these two lines together sends the signal for PTT to the RCForb Client software.

Client Software Setup

The RCForb software has setting under the **Control Devices** tab at the top of the main GUI. Initially the **External PTT** tab is **OFF**. It cannot be turned **ON** until the **CONFIG COM #** assignment and **PTT Pin CTS** is defined.

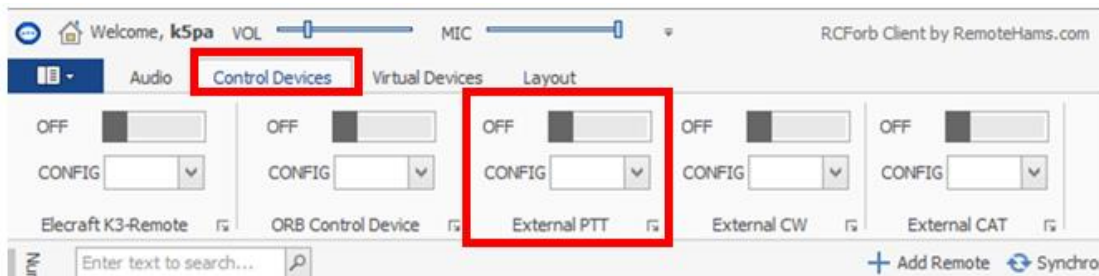


Figure 2. Control Devices Tab, External PTT in OFF State

When the USB to TTL interface is plugged into the computer's USB port, the connection creates a **COM #** port, where # is the number assignment. This **COM #** port number will be displayed in the **CONFIG** drop down menu as shown below. Selecting the **COM #** port number and the **CTS** line for the PTT function will allow the Client to use this port for PTT.

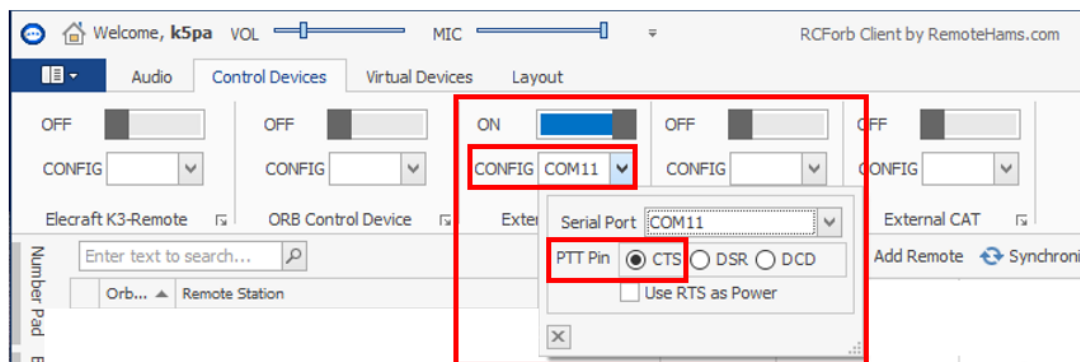


Figure 3. External PTT Selection for COM Port, PTT Pin Assignment CTS

When the **External PTT** settings have been finalized the software slide switch can be change from **OFF** to **ON** that is already shown **ON** in Figure 3. It is now able to respond to a hardware PTT using the small interface board.

Hardware Schematic and Bill of Materials

The schematic diagram is included in the **Appendix** as well as the **Bill of Materials** (Bom). The BoM includes suggestions for part numbers and vendors to purchase any components. Feel free to make substitutions based on the BoM given. Also provided are links that can be clicked to take your browser to the vendor.

There is a pin jumper block that is used to select 3.3 or 5 VDC operation on the board. Install the jumper as shown on the schematic to the 5V jumper setting. The circuit board is protected by applying a clear 3/4" diameter heat shrink tubing over the assembly. Leave enough room at the ends to allow connection of the CTS/GND pins and the Mini-B USB socket. The red LED can be seen through the heat shrink indicating power is applied.

I might mention there are several alternative configurations for USB to TTL circuit boards on the market. Some already have the USB male connector mounted on the board. This could be substituted but I chose not to select a board that might put a strain on my laptop's USB connector. If you select an alternate circuit board configuration or a different source, beware of using boards that do not have the FTDI chipset and driver availability. Otherwise, ***your mileage may vary*** as the saying goes!

73 Gene K5PA

APPENDIX

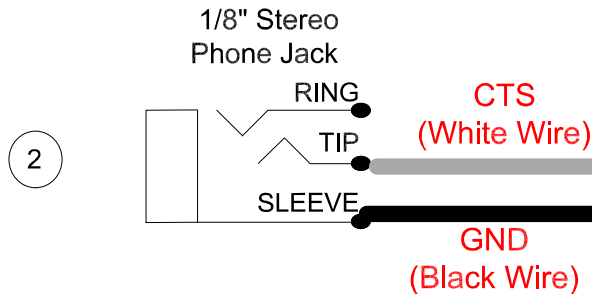
- SCHEMATIC, P/N 4000-0053 rev-1
- BILL OF MATERIALS (WITH CLICKABLE URL VENDOR LINKS)

CHANGE HISTORY		
VERSION	DATE	DESCRIPTION
-	4/28/2019	Initial release
1	5/2/2019	Changed heatshrink diameter to 3/4"

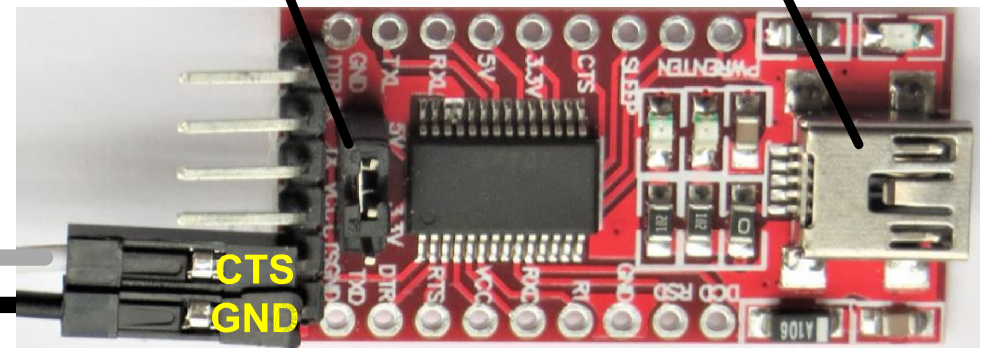
SUBSTITUTE YOUR FAVORITE PTT CONNECTOR IF 1/8" JACK IS NOT NORMALLY USED

Connect an 1/8" Plug Here

Short CTS to GND
Tip to Sleeve to Transmit



Install Jumper on +5V Setting



Mini-B USB Socket

Add Cable & Connect to Computer USB Port

Notes

- 1) Wire Colors Are Dependant on Manufacturers Part Numbers. Select Pigtail Wire Colors Per You Choice. Colors Shown are Just a Suggestion.
- 2) Input Lines are TTL Inputs Per Mfgr Data Sheet
- 3) Add Clear Heatshrink Over Completed Assembly to Protect Circuit Board During Handling

PTT Jack



Add Cable & Connect to Computer USB Port

ITEM	QTY	DESCRIPTION
4	1	Heat Shrink Tubing, Clear, Dia. = 3/4 Inch, Cut about 1-3/4 Inches Length
3	1	USB 2.0 Cable - A-Male to Mini-B - 3 Feet
2	1	PTT Jack, 3.5mm Female Socket
1	1	Gikfun FT232RL 3.3V 5.5V FTDI USB to TTL Serial Adapter Module for Arduino Mini Port (Pack of 2pcs) AE1186x2. Includes Pigtail Wires.

K5PA Design Concepts
TITLE
PTT INTERFACE USING AN INEXPENSIVE USB-TTL ADAPTER

SIZE A2 CAGE CODE DWG NO 4000-0053 REV 1
SCALE SHEET 1 of 1

Notice: There is no implied warranty that the information present is free from error and the user of this information should validate it's accuracy and usage in their intended applications.

Date: 5/2/2019

Bill of Materials Drawing 4000-0053 Rev-1

PTT Interface Using an Inexpensive USB-TTL Adapter

Item	Part No.	Part Description	Mfgr	Part No.	Vendor	URL of Vendor P/N	Qty	Item Cost	Extended Cost	Shipping / Handling	Notes
1	4000-0053	Gikfun FT232RL 3.3V 5.5V FTDI Mini USB to TTL Serial Converter Adapter Module DIY Kit for Arduino Mini Port (Pack of 2pcs) AE1186x2_1 (Includes Pin/Socket Cable)	Esooho	ASIN: B07FCGS8TN	Amazon	FT232RL 3.3V 5.5V FTDI Mini USB to TTL	1	\$ 9.36	\$ 9.36		Qty 2
2	4000-0053	Besmelody 5-Pack 3.5mm Female Socket Repair Headphone Earphone 3 Pole TRS Jack Stereo Audio Plug Connector Soldering	Besmelody	ASIN: B07G6HBQQM Model: BEST9439	Amazon	3.5mm Female Socket	1	\$ 4.99	\$ 4.99		Qty 10
3	4000-0053	AmazonBasics USB 2.0 Cable - A-Male to Mini-B - 3 Feet (0.9 Meters)	Amazon Basics	Model: AFIR	Amazon Basics	USB A-Male to Mini-B	1	\$ 4.80	\$ 4.80		Qty 1
4	4000-0053	Heat Shrink Tubing, Clear, Dia. = 3/4 Inch, Length = 5 Ft, Shrink Ratio 2:1, Note: Cut About 1-3/4 Inches Length to Shrink Over Mini USB to TTL Adapter Module	225FWY	ASIN: B074HS5TYJ	Amazon	Heat Shrink Tubing, Clear, 3/4 IN x 5 FT	1	\$ 7.99	\$ 7.99		Qty 5 Feet, Cut to Length to Fit