Wiring the Star-Tech Fob as an Asterisk Linked Repeater Controller

This article will take you step by step in converting, and making, your Asterisk Repeater Controller.

First, and most important, you MUST get the proper Star-Tech USB to Stereo Audio Adapter Converter, number ICUSBAUDIO. Don't be fooled by adapters that make look alike. The only supplier that we are sure that can consistently supply the proper adapter is Newegg; see http://www.newegg.com/Product/Product.aspx?Item=N82E16829128002

The price on these adapters, that we will refer to in the article as FOBS, will vary in price from $16.00 to $22.00, excluding shipping.

To begin, the FOB must be separated from its case; much like opening a clam.

After you separate the board from the case, turn the FOB over, with the USB plug pointed down, and observe the upper left hand corner. You will see a path which looks some like the number 7. This path, or trace, must be cut. NOTE: There are some earlier FOBS that did not have the described trace. Double check!

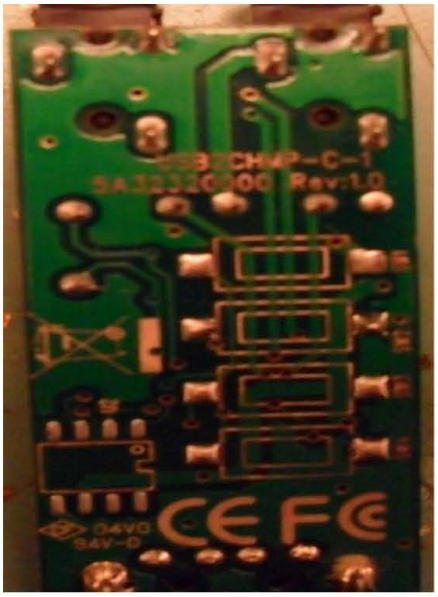
StarTech ICUSBAUDIO USB to Stereo Audio Adapter Converter

Bad USB Sound FOB

Cut trace that red arrow points to on bad FOB

Bad FOB

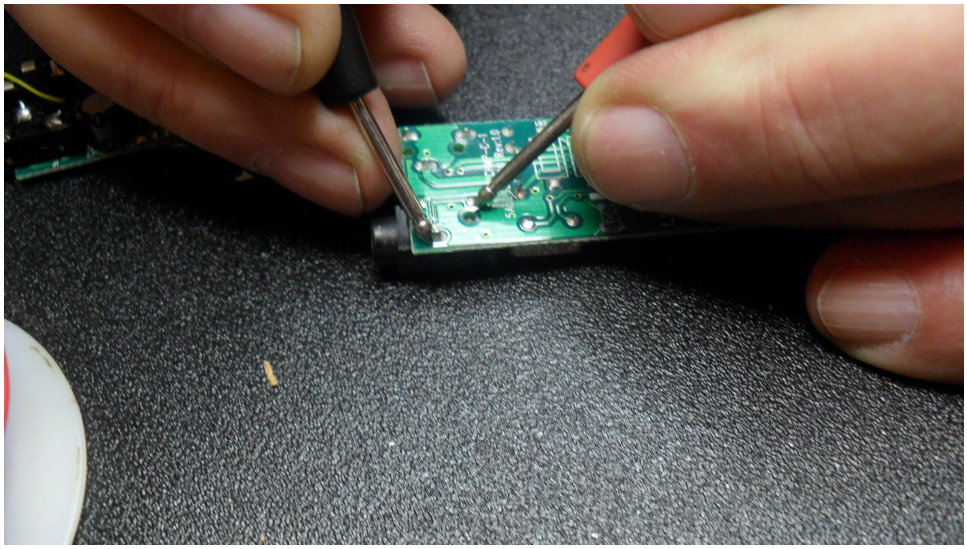
Good FOB



These were purchased from NewEgg everything is identical except that trace

http://www.newegg.com/Product/Product.aspx?Item=N82E16829128002&cm_re=cm108-_-29-128-002-_-Product

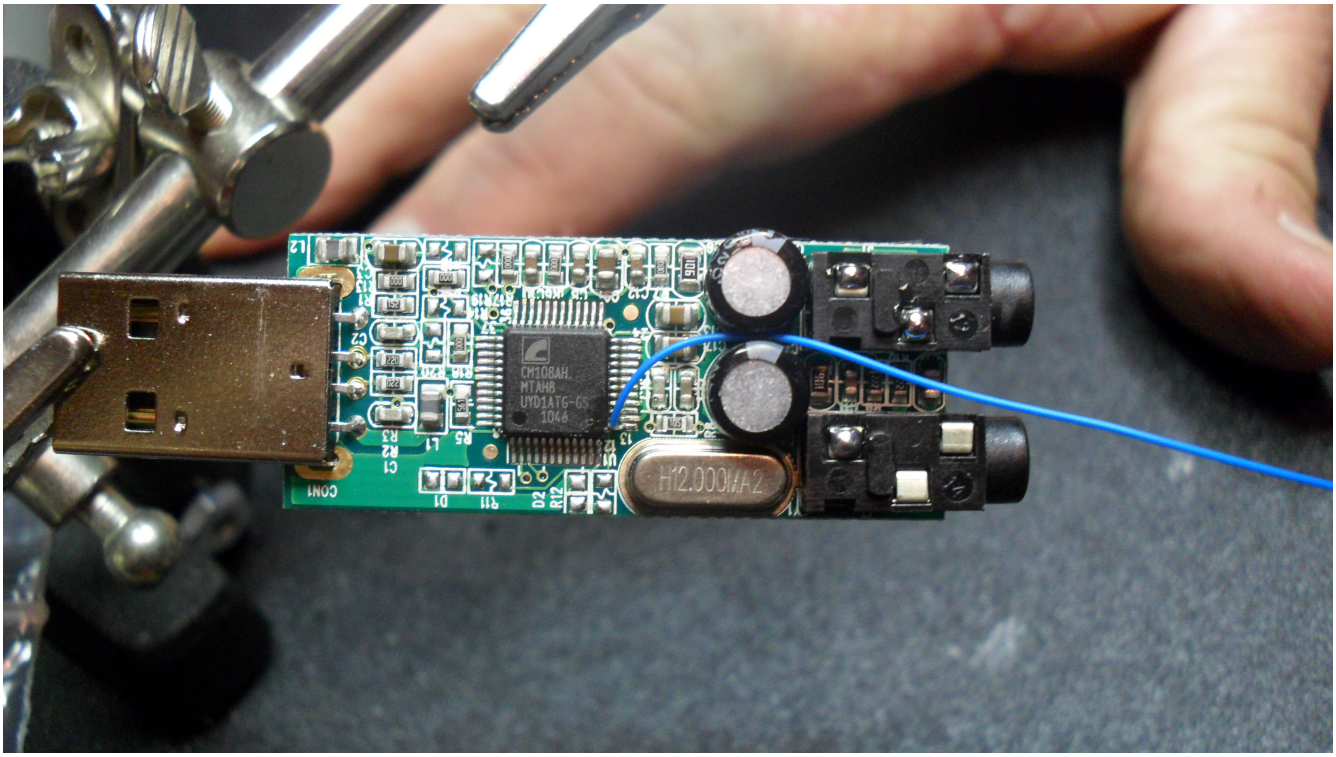
After cutting the trace, check it with an ohm meter to make sure the path has in fact been separated.

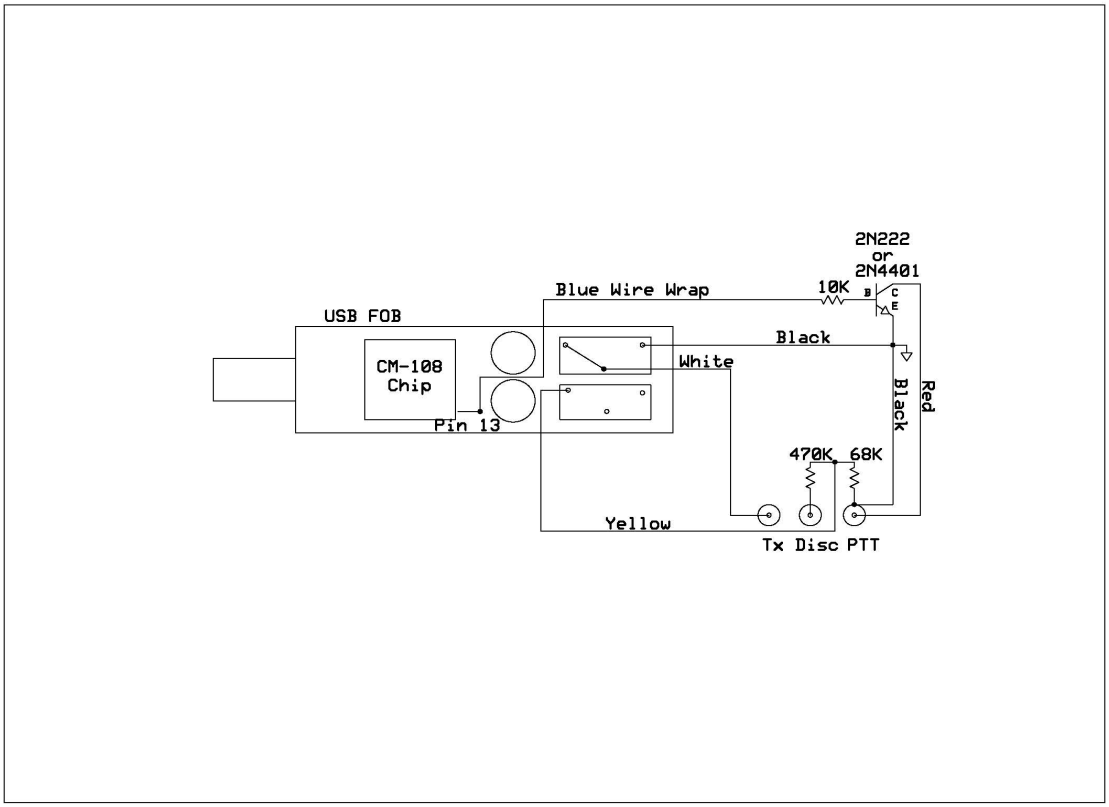


Now is the biggest challenge of the project. We must solder a piece of tiny (wire wrap) wire, to pin 13 on the IC located in the center of the FOB. You will note that pin 13 is on the corner of the chip, which is good for soldering. I would suggest you use the largest magnifying glass you have along with the smallest solder station and tip. Also, have some solder wick available in the event you bridge some of the pins with solder. If that should happen, use the wick to clean the pins.

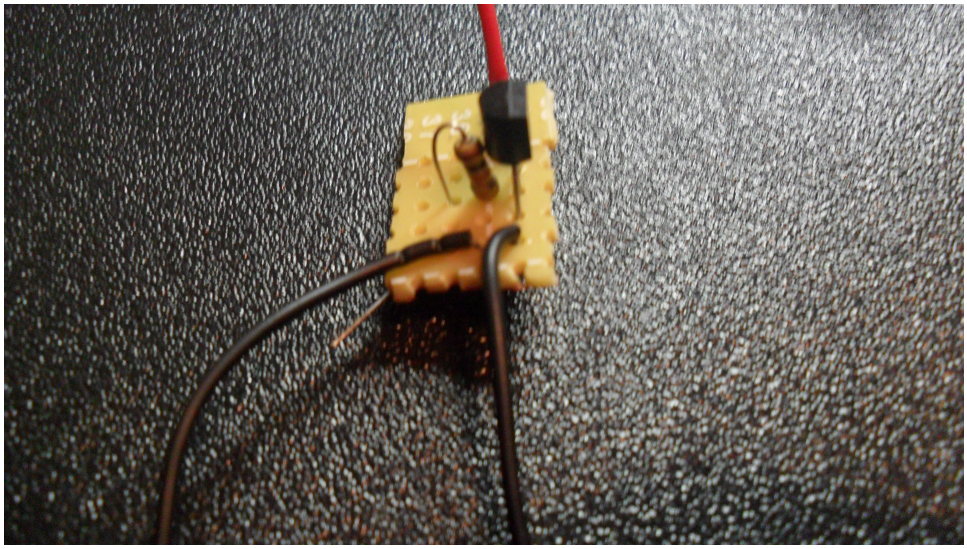
Clean your solder tip, tin the wire you are going to solder to pin 13, and clean the tip again. Use the solder that is on the wire. Lay the wire on the chip, heating the wire and IC pin for about two seconds. Check again under magnification and if the solder sticks, and there are no bridges, you have completed the most challenging part of the project. If the wire did not stick, check for bridges, clean with solder wick if necessary, and do the process over again. This particular step takes a steady hand and patients.

After you have the wire soldered, push it down between the two on board capacitors under the chip, which will strain relief the wire. This wire will go to the resistor on the base of the PTT Transistor in a future step. The worst part is over!

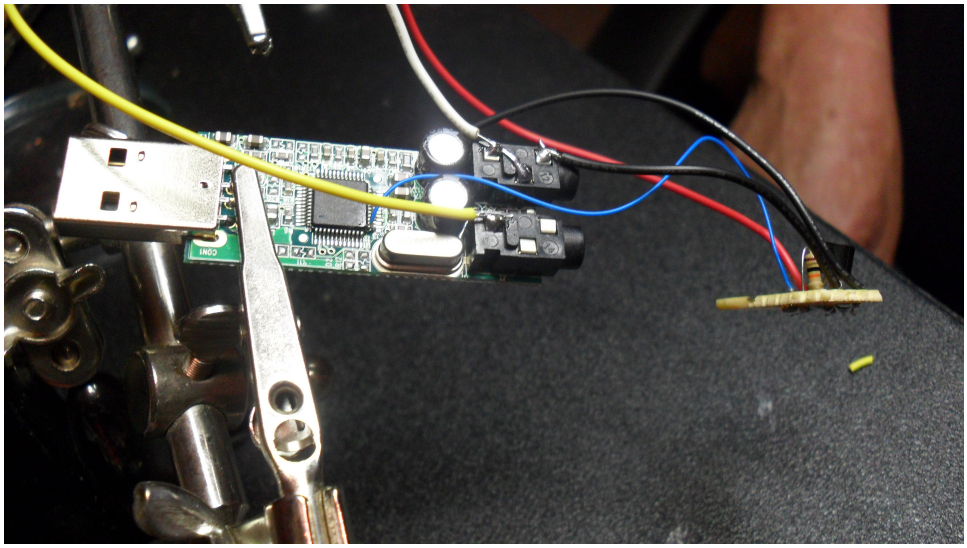

CM108AH
MTAH8
UYD1ATG-GS
1046
H12.000MA2


2N222
or
2N4401
Blue Wire Wrap
10K
B
C
E
USB FOB
Black
CM-108
Chip
White
Red
Black
Pin 13
470K
68K
Yellow
Tx Disc PTT

We now take a piece of perforated board and make the Push to Talk (PTT) Circuit. On the board you will place a 2N2222, or equivalent NPN Transistor. On the base of the transistor (center pin) we place 10K resistor. The wire you soldered to pin 13 goes to the other end of the 10K resistor. Now you add two wires, that you bridged together and hooked to the emitter of the transistor. NOTE: Looking at the flat side of the 2N2222 Transistor, the left pin is Emitter, Center is Base and Right is Collector. Now put another wire to the collector of the transistor.



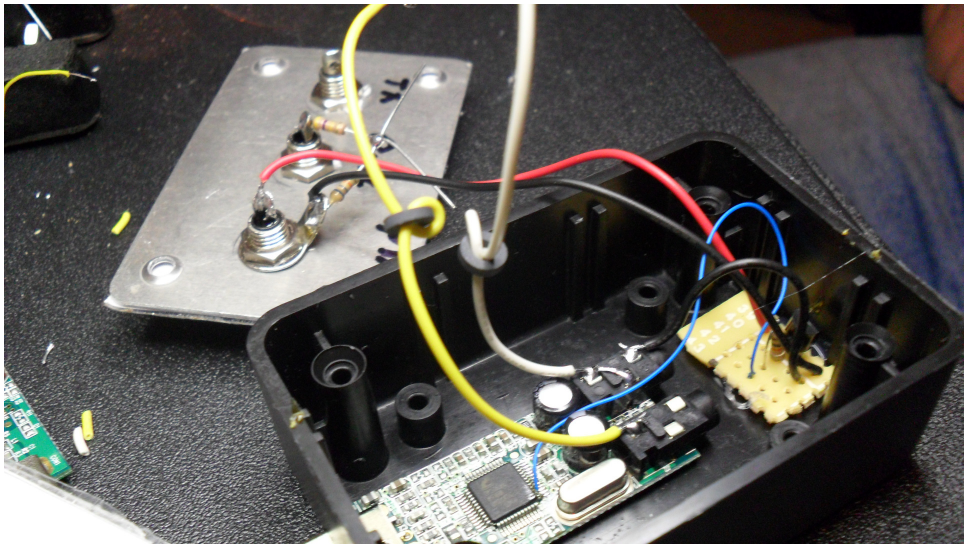
Now we go back to the FOB and concentrate on the two phone connectors on the right. We will refer to the connectors as Top and Bottom Connector.



On the bottom connector we solder a wire (yellow in our photo) to the upper left corner of the phone jack.

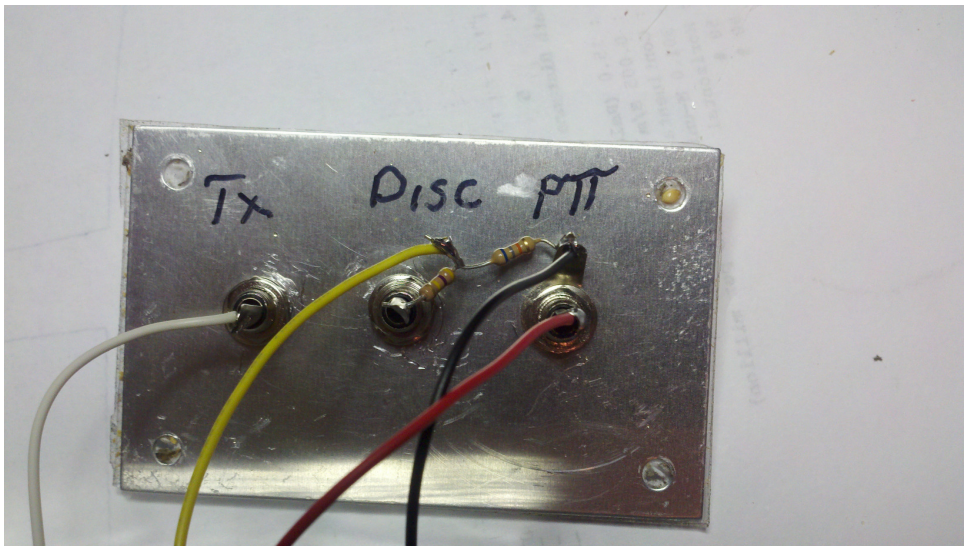
On the top phone plug we have placed a wire to the upper left corner (white in our photo) and bridged the wire to the center bottom of the same connector.

On the PTT board we take one of the black wires and place it on the right of the top phone plug. This is the main ground and is very important.



Note that half way up the yellow and white wire we have placed a ferrite bead for RF suppression.

We now select an enclosure box to house our controller. We have selected a plastic box with a metal top. The top is drilled and three Female RCA Connectors are installed. In our configuration, the center is: Discriminator, right is: PTT and the left is: Transmit Audio. At the connectors we place a 68K resistor to the ground, and a 470K resistor to the center of the Discriminator Jack, and bridge these resistors together.



The white wire from the top phone jack goes to the Transmit Audio Jack.

The Yellow wire from the bottom phone jack goes to the junction of the two resistors.

The Red wire from the collector of the 2N2222 on the PTT Board goes to the center of the PTT Jack.

Now, we must cut a hole on the end of the plastic box to bring the USB Connector out. This was done with a Dremel Tool. Hot glue was used to mount the PTT Board and the FOB.

This process completes the construction of the Asterisk Computer Controller.