Ground Loops and other Buzz

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Aug 15

MaxTroller update

BUG Fix

There was a rather significant bug in my tuning computation used in **Maxtroller**.

While the QSH command takes seven digits, 8600250, the code was discarding the last digit before computing the PLL settings. This is incorrect, as it will round down the 12.5kHz steps used in most of the country.

The newest release fixes this bug.

Also, support has been added for a few new things.

CSQ (Squelch Detect)

If you connect the Maxtrac CSQ testpoint to pin D8 on the Arduino, then **Maxtroller** will report the squelch state in response to the PWR command. This appears as RSSI of 0 or 99. The CSQ testpoint is very easy to locate, as it is circled and labeled "CSQ" on the logic board.

CSQ timing

The Maxtrac detects a carrier and opens the squelch in about 20 milliseconds.

Not bad, eh? Tuning to a dead channel drops the squelch in 12 milliseconds.

REL command

For those times when you want to leave the **MaxTroller** connected to your MaxTrac yet use the radio normally, there is the "REL" command, which releases all control from the connected lines. To regain control and resume normal **Maxtroller** operation, reset the Arduino. Note that if you disconnect from the COM port, this will often reset the Arduino as well, which will then default to driving the lines.

This function is also useful for testing, as you should REL before using any test software or radio settings.

To cut or not cut traces?

There are two ways to go about connecting the Arduino to the Data J6-6 and Clock J6-7 lines. If you cut the traces going to these pins, then Arduino has exclusive control of the PLL synthesizer, and the Maxtrac CPU is not driving them at all. This means the Arduino should never release the lines and let them 'float'. Additionally, the Arduino doesn't have to release control of the bus to allow the CPU to program the TCXO warp DAC, since it's essentially isolated on the CPU side. For 'PrivacyPlus' and other trunk-only radios, this may be the only way to use **Maxtroller**, since the CPU will retune the PLL non-stop as it searches for a signal. On these configurations set: #define TRACES_CUT 1

For a Maxtrac that can be programmed to a Conventional (CSQ) mode, there is no need to cut traces. The radio will not retune the PLL as long as it believes it is sitting on one channel. For these radios, it is important that the Arduino let the bus float when it is not actively programming the PLL. This allows the radio CPU to reach the DAC for programming, as well as the display. The code then seizes (drives) and releases the Clock/Data bus each time it programs the PLL or display, and releases it when idle. If your radio can be programmed to stay on one Conventional mode, this is the ideal configuration. #define TRACES_CUT 0

You can find these features in the updated code:

http://www.trix.com/GroundLoop/**maxtroller**-2.3.zip

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2 months ago sivantoledo responded:

Very cool. Is there a way to also control the PL settings (especially on transmit)?

About

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Ground Loop's profile »

(Bill Israel designed, posterous powered)