

MTR2000 Buffered Interface

My radio club has had a VHF and a UHF MTR2000 repeater on-the-air for quite some time as part of a linked system using RoIP. The wiring interface is a cable from the radio's System Connector (J5) to a multiport repeater controller. There's no buffering between the radio and the controller.

I've read about repeater builders that have damaged their MTR2000 Station Control Module while working with external cabling connected to the System Connector. I wanted to avoid those problems.

More than just a board and a couple of connectors, the MTR2000 Buffered Interface described here minimizes those risks by buffering all signaling between the MTR2000 System Connector (J5) and any external control equipment.

In addition to the usual station audio and control signals, the interface module also provides access to aux power for an external controller and to alarm and wildcard I/O. Jumper options allow customization.

Features

Radio Port Terminal Strip

- RX Audio Out
- TX Audio In
- RSSI Out
- CTCSS Encode Tone Audio In
- TX PTT Logic In
- RX COR Logic Out
- RX CTCSS Decode Logic Out

Wireline Terminal Strip

- Pair 1 +/- TX Audio In
- Pair 2 +/- RX Audio Out

Alarm and I/O Terminal Strip

- AC Fail Logic Out
- PA Fail Logic Out (Aux I/O) *
- VSWR Fault Logic Out (Aux I/O) *
- RX LOCK Logic Out (Aux I/O) *
- TX LOCK Logic Out (Aux I/O) *
- GPO 0 Logic Out (WildCard Out, Aux I/O) *
- GPO 2 Logic Out (WildCard Out, Aux I/O) *
- GPI 3 Logic In (WildCard In, Aux I/O) *
- GPI 7 Logic In (WildCard In, Aux I/O) *

*Note: * Denotes Aux I/O Board Required for Alarm and GPIO*

14.2VDC Power Out Terminal Strip

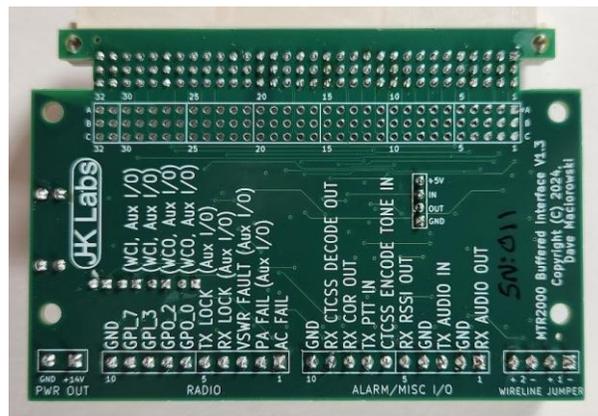
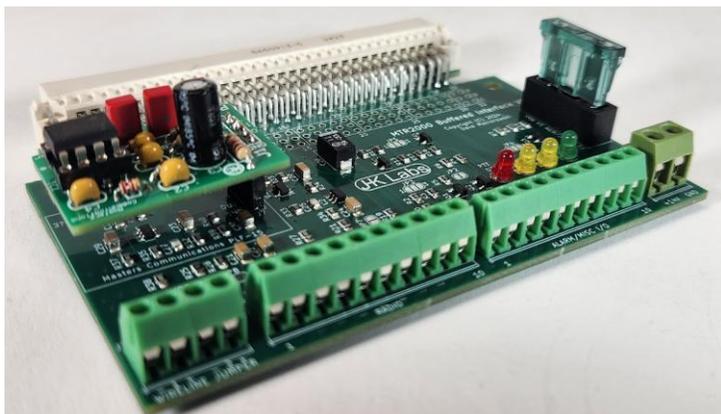
- ATC Fuse (1A supplied)

Solder Jumper Options

- TX Audio In to Wireline or AUX TX In
- RX Audio Out from Wireline or RX Discriminator
- COR Logic Out Active High or Low
- CTCSS Decode Logic Out Active High or Low
- PTT Logic In Active High or Low
- PTT Logic In Pullup
- COR Logic Out Pullup
- CTCSS Decode Logic Out Pullup
- AC Fail Logic Out Pullup

Other Features

- Summing amp combines TX Audio In and CTCSS Encode Audio In to the MTR2000 AUX Tx Audio In.
- No Pots. Audio Levels adjusted with the MTR2000 RSS
- Powered from MTR2000 Internal +5VDC
- Status LEDs: PTT, COR, CTCSS, Power
- Optional: CTCSS High Pass Filter
 - Accepts a Masters Communications PLF-15



Note: Shown with Optional CTCSS High Pass Filter

Configuration

Option Jumpers

- JP1: Solder to Pullup TX PTT In (Default)
- JP2: Solder to Pullup AC Fail Out
- JP3: 1-2: Low Active PTT Input (Default)
3-2: High Active PTT Input
- JP4: 1-2: High Active CTCSS Out
3-2: Low Active CTCSS Out (Default)
- JP5: 1-2: High Active COR Out
3-2: Low Active COR Out (Default)
- JP6: Solder to Pullup RX CTCSS Decode Out
- JP7: Solder to Pullup RX COR Out
- JP8: 1-2: RP TX Audio Input to AUX TX Input (Default)
3-2: RP TX Audio Input to Wireline TX Input
- JP9: 1-2: RX Disc Audio Output to RP RX Audio Out (Default)
3-2: RX Wireline Output to RP RX Audio Output

Wireline Terminal Strip

- 1: (1-) GND
- 2: (1+) TX Audio Out
- 3: (2-) GND
- 4: (2+) RX Audio In

Ref: <https://www.repeater-builder.com/motorola/mtr2k/more-mtr2k-int/mtr2000-interfacing-followup.html>

Radio Port (RP) Terminal Strip

- 1: RX Audio Out
- 2: GND
- 3: TX Audio In
- 4: GND
- 5: RX RSSI Analog Out
- 6: CTCSS Encode Tone Audio In
- 7: TX PTT Logic In
- 8: RX COR Logic Out
- 9: RX CTCSS Decode Logic Out
- 10: GND

Alarm/Misc I/O Terminal Strip

- 1: AC Fail Out
- 2: PA Fail Out (Aux I/O)
- 3: VSWR FAULT Out (Aux I/O)
- 4: RX LOCK Out (Aux I/O)
- 5: TX LOCK Out (Aux I/O)
- 6: GPO 0 Out (WCO, Aux I/O)
- 7: GPO 2 Out (WCO, Aux I/O)
- 8: GPI 3 In (WCI, Aux I/O)
- 9: GPI 7 In (WCI, Aux I/O)
- 10: GND

NOTE: Pins Marked Aux I/O Require Aux I/O Option Board

Auxiliary Power Terminal Strip

- 1: +14V Out
- 2: GND

Update: 5/26/2025