

# Specification Covering the Line-up and Installation of the VHF Motorola MSF5000

## Purpose:

This document summarizes the changes in configuration as well as the interface specifications for a VHF Motorola MSF5000 in order to be used with the ACC RC-850 repeater controller.

## Equipment:

The equipment covered by this specification is as follows:

- Motorola VHF MSF5000 Model C73CXB7106BT (secure capable with trunked tone remote control option installed)
- Motorola TLN4704A Directional Coupler
- Motorola TPN1218A Power Supply

## Software configuration:

“SoftPot” Settings for initial installation were changed as follows:

SoftPot	Original	Modified
0	50	00
1	10	00
2	78	78
3	73	73
4	82	82
5	99	99
6	89	00
7	41	00
8	50	00
9	00	00
A	00	00
B	00	00
C	50	00
D	00	00
E	02	00

## Hardware changes from the original configuration (as purchased):

Secure Capable Station Control Board (SSCB):

- JU2 Moved to Normal Position. This jumper selects whether the HSR data is routed to the Secure Board or not.
- JU3 Moved to Normal Position. This jumper selects whether coded mod audio is injected into the TX path or not. Normal position is not.
- JU5 Moved to Alternate Position. This jumper selects whether TKG mod audio is injected into the TX path or not. Alternate position is not.
- JU10 Moved to Normal Position. This jumper selects whether secure RX audio is enabled or not. Normal position is not.

#### Trunked Tone Remote Control Board (TTRC):

- Cable harnesses for external connections were disconnected and saved.
- Reconnecting the cables is a matter of matching the color code on the RJ-12 jacks and connecting the Molex connector to the appropriate connector on the TTRC board.

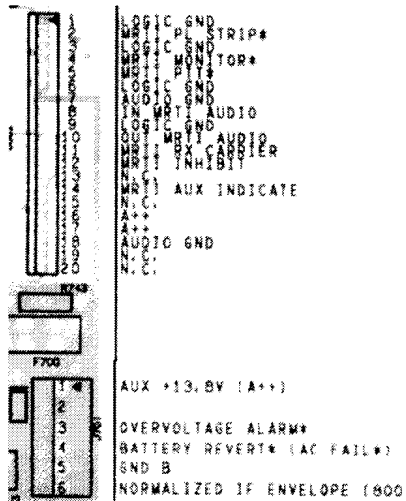
#### Secure Module:

- Cable harness connected to J4001 removed and saved.
- This cable is the KVL interface cable for loading secure keys into the secure module.
- The TLN3045B Secure board was disconnected and removed.
- As a result, JU2 on the SSCB was moved to the Normal position to loop back HSR Data properly.
- This board and associated cable were sold.

#### **Interface Specifications:**

Upon researching the various options for interfacing the control and audio lines from the RC-850 to the MSF5000, it was determined that using the MRTI interface connector on the MSF5000 was the most effective option. It was also decided to combine all of the audio and control lines to and from the MSF5000 into a female DB9 connector to be mounted to the chassis. This was done in order to assist in the ease of installation and removal of the MSF5000 or the RC-850.

The pinout of the MRTI (J802) connector is as follows:



The pins used on this connector are as follows:

- Pin1            Logic Ground
- Pin2            /MRTI PL Strip
- Pin5            /MRTI PTT
- Pin7            Audio Ground
- Pin8            In MRTI Audio
- Pin10           Out MRTI Audio

Pin descriptions:

### **Logic Ground**

Ground connection used as reference for logic connections.

### **/MRTI PL Strip**

Active low input. Tied to Autopatch Offhook output from RC-850. Allows DPL transmitted during normal operation to be turned off during an autopatch call to facilitate selective monitoring.

### **/MRTI PTT**

Active low input. Used as PTT input from RC-850 to key transmitter.

### **Audio Ground**

Ground connection used as reference for audio connections.

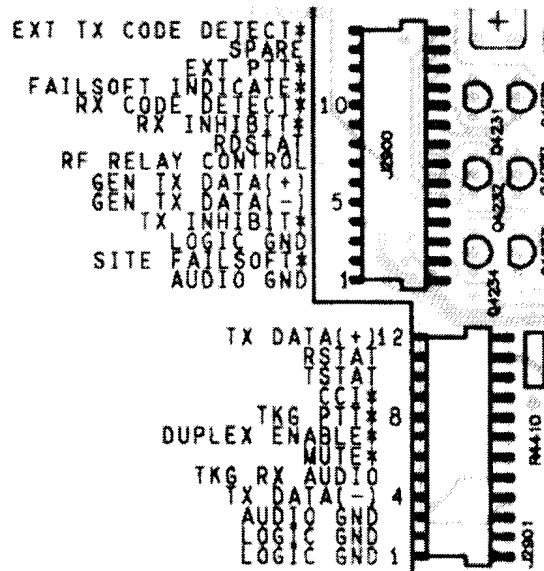
### **In MRTI Audio**

Audio in from RC-850 to be transmitted.

### Out MRTI Audio

Audio out to RC-850 from receiver.

The pinouts of the TTRC connectors (J2900 and J2901) are as follows:



Most of the pins used for the interface to the RC-850 are available from the MRTI connector (see above). However, one pin that is required but not available on that connector is some sort of Carrier On Receive (COR) signal.

That signal is available in as either active low or active high as required, the pins involved are:

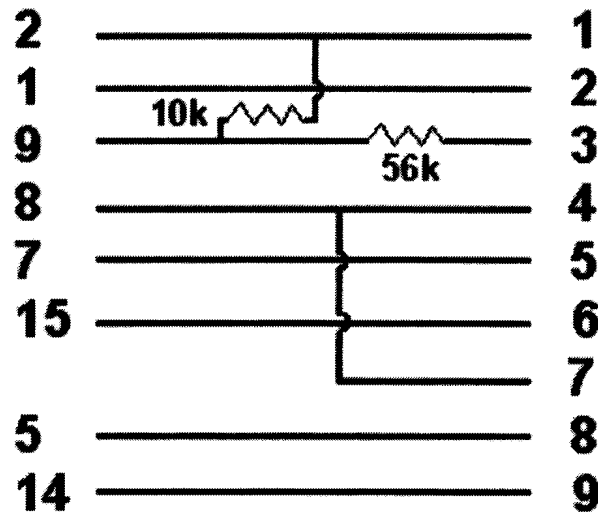
- J2900, 3      Logic Ground
- J2900, 8      /RDSTAT (active low)
  
- J2901, 2      Logic Ground
- J2901, 11     RSTAT (active high)

The only other signal required is an external keying signal for the power amplifier. This signal is active low and is available from the RF Tray Interconnect Board on either J502A, 6 or J596A, 4 as desired. Ground, if required, is available at J502A, 5 or J596A, 3.

### DB9 Connector Pin Specifications:

**RC-850  
DB15**

**MSF5000  
DB9**



The pinout of the DB9 connector added to the MSF5000 chassis for interfacing to the RC-850 is as follows:

DB9	MSF5000	RC-850	Description
1	J802, 7	DB15, 2 (AGND)	Audio Ground
2	J802, 8	DB15, 1 (J10, 10)	Audio From RC-850
3	J802, 10	DB15, 9 (J10, 2)	Audio To RC-850
4	J2900, 8	DB15, 8 (DGND)	Logic Ground
5	J2900, 3	DB15, 7 (J6, 17)	/COS
6	J701A, 4	(J6, 14)	/AC Fail
7	J802, 1	DB15, 8 (DGND)	Logic Ground
8	J802, 5	DB15, 5 (J6, 7)	/PTT
9	J802, 2	(J7, 8)	/DPL Disable

**RC850-MSF5000 Interface Cable Specifications:**

The cable below was constructed to interface the MSF5000 to the RC-850. A resistor divider network was used to reduce the audio to the RC-850 from about 6.4 Vpp to 1 Vpp (@1khz).