



Application Note

Amateur Radio Division

Subject: TM-733A Cross-band Repeat Mode

Date: April 4, 1994

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The TM-733A is capable of operating as a "cross-band repeater." Two different repeater modes are available: Bi-directional cross-band repeat; and fixed direction repeat mode.

- Bi-directional cross-band repeat mode allows the user to configure the radio so that it will repeat a signal originating from either the VHF band or the UHF band.
- Fixed-directional cross-band repeat mode allows the user to configure the radio so that it will only repeat those signals originating in the VHF band or the UHF band (but not both).

Procedure:

1. Select the desired VHF and UHF operating frequencies.
 - Note: You cannot select the same band for both transmit and receive.
2. For fixed direction repeater operation: Press the BAND SEL key for the desired transmit band. This will turn on the CONT SEL indicator and the PTT indicator for the band.
3. For bi-directional repeater operation: Make sure the operating band and the transmit band are different. This is done by pressing the BAND SEL key for the desired transmit band and then pressing the CONT SEL key to turn on the CONT SEL indicator for the other band.
4. Press the [F] key for 1 second or longer. This will cause the cross band repeat indicator (x) to appear on the display. Press the key immediately below this indicator to initiate the cross band repeat mode.
5. The decimal points for MHz, 100 kHz, and 10 kHz positions will begin flashing as a visual indication that you are in the "repeater mode."
6. To cancel the "repeater mode" repeat step number 4.

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AAN-0009

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Notes:

1. CTCSS encode and decode will function in "Cross-band Repeat Mode." The transmit tone and receive tone may be different if required for your application. Program the tone frequencies before entering the "Cross-band Repeat Mode."
2. DTSS Paging does not function in the "Cross-band Repeat Mode."
3. Normal offsets, or odd-split offsets can be used on the transmit band.
4. If the VxV or UxU function is active you will not be able to enter the "Cross-band Repeat Mode."

Transmitter Hang Time Adjustment

The repeater will continue to transmit for 500 ms after the incoming receive signal drops out. The repeater then returns to the standby mode awaiting another signal. The "Hang Time" feature can be turned off and on with the following procedure:

1. Turn the radio off while in the cross-band repeat mode.
2. Press and hold the LOW key and turn the power back on. Then release the LOW key. An ON and OFF indicator will appear in the display to inform you of the Hang Time status.

Time-out Timer

The "TOT" function can be programmed by the user for 3, 5, 10, 20, or 30 minute limits. This feature could be set before entering the Cross-band Repeat mode. To activate this function:

1. Hold down the F key for 1 second and then press the key immediately below the TOT indicator. Use the microphone UP/DWN keys or the channel select knobs to select the desired time.
2. "TOT" will appear in the display as a reminder that this function has been set.
3. To cancel this function repeat step number 1.

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AAN-0009

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Remote Control of Repeater Operation

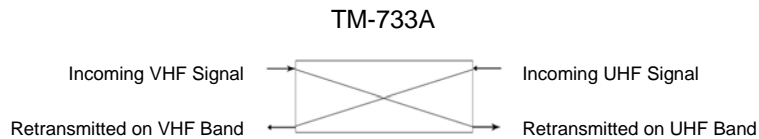
Cross-band repeater operation can be turned ON or OFF from the DTMF microphone or from another transceiver in addition to the front panel method discussed above.

DTMF Microphone Control

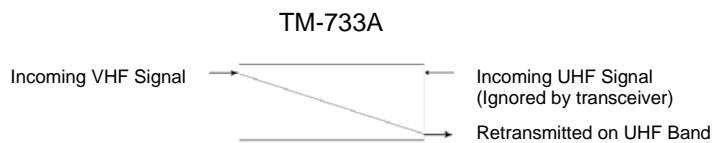
1. Press and hold the F key and the CONT key. The S-meter "1-5-9" indicators on the Remote Control Band will begin flashing.
2. To activate the Cross-band Repeater function press the D key and then the C key on the microphone. Repeat to cancel the function.

External DTMF control

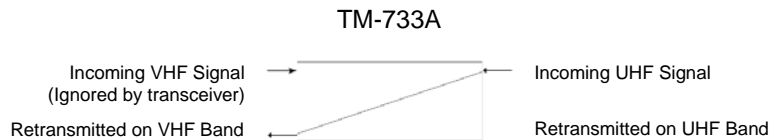
1. Turn the radio off.
2. Press and hold the CONT key and turn the power back ON. Release the CONT key after the radio comes back on.
3. See Application Note AAN-0008 for additional information on the External Remote Control Function.



Bi-Directional Cross-Band Repeat



**Fixed-Directional Cross-Band Repeat
VHF Receive/UHF Transmit**



**Fixed-Directional Cross-Band Repeat
UHF Receive/VHF Transmit**