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FIRMWARE INFORMATION RELEASE

Product:	MX800, TRB Series, MXD1500, S Series. **BASE STATION/REPEATERS**			
New Version:	3.5.1	Build 0x01	Previous version:	3.5.0
Release Date:	08/11/2006 10:50		EPROM size:	62741 bytes
Released By:	Anthony Chadd		Checksum:	00D5
			File Name	MX803501.Bin

Summary of Software Change(s) in this Release

New Features

- **Digital Output for Multiple CTCSS decodes.**
  This option can be enabled from MXTools' Configuration screen under Multiple CTCSS Settings tab.
  When enabled, a digital output code is generated on the (CN3)DB25 pins-1,14,2,15. This pattern is determined by the corresponding RX decoded subtone. The Multiple CTCSS table shows this pattern in the left-hand side column next to the tone index number.
  The decoded subtone will be reflected in digital port according to the table in MXTools. Note that digital polarity will have an effect on value of digital output; the value can be observed in the table, which is adjustable upon changing the digital polarity and the output value is latched. The initial state of the output is either 0xx0 (binary pattern 0000) or 0xxF (binary pattern 1111) depending on digital polarity set. If digital polarity is disabled from MXTools, the value that is set in digital output will be the last byte that was saved in radio's Configuration from MXTools Remote Screen.
  There are 14 available indexes that can be used (0x1 – 0xE), 0x0 and 0xF are reserved to indicate either initialized state or subtone outside the 14 is decoded. Therefore, the first time radio is run the digital output is in inactive state (0xx0 in active high or 0xxF in active low) and when the subtone decoded is not within the range of 0x1 to 0xE, the digital output will be set to active state (0xxF if digital polarity is active high or 0xx0 if active low).

  Firmware required >3.5.0
  MXTOOLS required >3.1.7579

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- **Alarm Tone To Air**
  This option can be enabled from MXTools' Configuration screen under Alarm Settings tab. In firmware the bit enabled is located in AUX data.
  This feature provides the user with remote alarm monitoring via a tone beep process that is transmitted to the end of a valid transmission. This mean that the alarm tone will not transmit on its own. Alarm tone will only be at the tail of other transmission, including voting heartbeat. MX800 uses a number of beeps to indicate what alarm it is with a general idea that the more critical alarm will have higher number of beeps (rapid). If two alarms conditions occur at the same time, only the highest priority or most critical alarm tone alarm will be indicated. Therefore only one tone sequence will be transmitted.
  The transmitted tones have a deviation of 750Hz with 800Hz frequency. The alarm condition and its corresponding tone are listed below:
  Level 1. High Voltage Alarm. {Lowest priority} 1 beep
  Level 2. High RF Reflected Volts Alarm. 2 beeps
  Level 3. Low Voltage Alarm. 3 beeps
  Level 4. Low RF Forward power Alarm. 4 beeps
  Level 5. Receiver UNLOCK Alarm.{Highest priority} 5 beeps

  Firmware required >3.5.0
  MXTOOLS required >3.1.7579

- **Voting Heartbeat**
  This option can be set in MXTools Configuration screen under Software Settings tab. There are two controls to be set, the enable bit and the interval. The interval used here is similar to the one used in morse (from 1 min up to 90 mins). The count down timer to generate the heartbeat PTT is reset every time MX800 is transmitting; hence the operation is very similar to morse on inactivity. However note that TX hang time is not considered as radio activity, for example if PTT has 20 seconds TX hang time, the count down timer until the next heartbeat PTT starts from the end of external/mic PTT input, ignoring the tail of transmission.
  Voting Heartbeat PTT will transmit with the subtone that is programmed in Channel screen. The length of voting Heartbeat PTT is 500 ms, except when DCS is active which has tone off tail for another 150 ms. There is no hang time applicable for heartbeat PTT.
  During heartbeat PTT transmission the M lead output pin is also enabled.

  This feature is used in conjunction with a mobile voting system. This function is only required to be enabled on one of the base units (Master) in the system. This then allows all the connected bases to be keyed simultaneously via the M lead when the timer has expired in the master unit. The programmable intervals are 1, 2, 5, 10, 15, 30, 60 and 90 minutes.

  Firmware required >3.5.0
  MXTOOLS required >3.1.7579

- **RF Mode option**
  This option is set from MXTools' Configuration screen under Software Settings tab. If this bit is enabled, a digital signal on the (CN3)DB25 connector Pin 3 to indicate simplex or repeater mode. When a channel is programmed as simplex and is enabled on the motherboard via DIP2-2, the digital output signal will be set.
  The output is then controlled by the current channels RF mode setting and the

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polarity is influenced via the active I/O state & JMP19.
E.g.
The current channels RF mode setting is simplex and the polarity is active High, then (CN3) DB25 connector Pin 3 will be high. If the radio was to change channel which the RF mode bit is Repeater, then (CN3) DB25 connector Pin 3 will change states to Active low.

Firmware required >3.5.0
MXTOOLS required >3.1.7579

- **Tone Indicator on Busy Channel Lock Out**
  This is a feature that has been implemented in firmware 3.5.0 or latter. The radio will send out a tone to the speaker (requires T13 option) with the purpose of informing user who is trying to PTT when the channel is currently busy (when busy lock out channel is enabled) and the radio will not transmit. The tone will be applied as long as the user kept on pressing the MIC PTT button or activates the external PTT line.

- **Tone Indicator on Power Up**
  The radio will now sends out a tone indicating the end of initialization and it is now in operation mode.
  Firmware required >3.5.0

- **Diagnostic Information update**
  When using Mxtools diagnostics the Fan and Software PTT status will now be displayed. MX800 now reports the status of Fan and Software PTT in diagnostic string. MXTools version 3.1.7582 or latter will display these states during diagnostic. The software PTT status includes remote software PTT, alarm tone to air, voting heartbeat and Morse.
  Firmware required >3.5.0

- **Subtone Delay**
  This feature can be set from MXTools' Configuration screen under Software Settings tab. To enable the subtone delay, select the desired delay length from the drop down control, which has a range from 0 to 750ms in 50ms increment step. In order to disable this feature, simply programmed the MX800 with 0 ms delay selected. Note that there is no enable bit associated with this feature. If any value other than 0 is selected, the subtone will be delayed by the amount of time selected after the PA PTT has gone active.

  This feature provides a subtone delay on the ALL PTT inputs and repeater mode. This is used on radio systems that have leading ANI and don't want users of the system to hear the ANI.

  Firmware required >3.5.0
  MXTOOLS required >3.1.7579

- **Extended Hang Time**
  This feature is only available from firmware version 3.5.0 and MXTools v3.1.7582 or latter. When this feature is available from firmware (automatically detected by MXTools) the drop down controls for the tone tail length for both Repeater and PTT have extra value from 3 seconds up to 20 seconds in 1-second increment. Whereas the Tx tail time controls have extra values from 5 to 20 seconds in 1-second increment as well. The default hang time data is stored in Configuration data in firmware, the new

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extended hang time still uses the Configuration data, however in addition, it also uses the AUX data. There is an issue that may arise from using older version of MXTools and the new firmware with extended hang time programmed. If this occurs the extended hang time value will not be recognized by MXTools and will be overwritten when configuration data is re-sent to radio.

Summary of Bug fix ups in 3.5.0

- ✓ Low voltage alarm level. Active @ <12V and clear >13V.
- ✓ Signal to Noise ratio improved
- ✓ Busy Channel Lock Out fix
- ✓ Software RESET
- ✓ Alarm ignored period for non-continuous VCO mode, modified to from 100 to 150 ms

Summary of Bug fix ups in 3.5.1

- ✓ AUX led ignored period for non-continuous VCO mode.
- ✓ Prevent the CTCSS Led from lighting, if there is no Rx signal present.