Monicor Electronic Corporation February 8, 2000
Monicor (c)

APPLICATION NOTE 064

TITLE: **The Monicor Radio-Modem EEROM**

If you don't need any whys and wherefores, skip to the seven-step recovery.

Monicor radio-modems use memory components known as EEROM to keep all of the configuration settings, which allows you to customize each radio as needed.

EEROM does not lose data while power is removed, and is read when the radio is powered-on to obtain and "load" all of the initial settings.

As a precaution, the EEROM has extra "checksum" values which serve to prevent the radio from ever starting with any bogus settings.

A possible EEROM error is indicated by the following "service signals" (internally-generated text output strings) from a radio serial port:

1. "X-error-X"
2. "Factory Data Failure" + BEL + CR + LF
3. "Configuration Failure" + BEL + CR + LF

The next service signal does not imply failure, but simply indicates recognition of the default-configuration-plug power-up procedure, by which you force the radio to load the standard factory-default settings and ignore the initial-configuration in the EEROM:

4. "Configuration Overrule" + BEL + CR + LF

The first three signals normally indicate the following conditions:

1. One or more bits failed the comparison test, the final step of each "write" command.
2. The EEROM has not been preset at the factory. This should only occur within the factory prior to final shipment setup & test. However, if it occurs outside the factory, and any write command is then executed, then the EEROM checksum will also be corrupted.
3. The EEROM data has a checksum error, usually due to all three areas of the EEROM not being written for the first time prior to final shipment setup. Note that the radio will start with the factory-default configuration if the EEROM checksum fails the power-up testing.

However, the "possible EEROM error" could be caused by an actual EEROM component failure, or by corruption of data within it, e.g. by interruption of a write from loss of power before it completed.

Since it is usually difficult to determine the cause of an error in a deployed-application scenario, it usually easier to try (once) rewriting the EEROM and assuming some innocuous cause if the problem never reappears.

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Seven-Step EEROM Recovery

The following procedure addresses the above types of EEROM data failure. If this is not successful, then assume the radio has a hardware failure, which requires repair by Monicor.

1. Connect the proper RS-232 serial cable between the terminal and radio.
2. Turn on terminal power (or start terminal emulation). Set the terminal RS- 232 com-port to 9600 baud, no-parity, 8-data bits, and one-stop bit, unless already set.
3. Turn on the radio power, verify that:
   --> red & green lamps are on for about 3 seconds, except red if absent,
   --> the terminal indicates "Monicor <model>, Version #.#",
   --> the cursor follows a "*" prompt.
4. If no factory-data-failure message was received, skip to step 5. Otherwise the factory-data-failure condition must be cleared as follows:

   --> Erase the EEPROM: To get the "ERR:" prompt, hit the following 16k keys:
   f a e r b t s t ctrl-X ~ l a x t ~ ctrl-X

   --> Then, depending on the type of radio, key in at ERR:
   e 65535 . to erase all, except point-to-point radios.
   e 1 . to erase all in point-to-point radios.

   --> Confirm the "<verified>" response.

   --> Turn the radio power off and on to verify the factory-fail status has cleared.

Note that you must use lowercase to get the ERR: prompt, ignore beeps during entry. Also, the radio will "fail" with both lamps on if you "e" a radio which did not have a factory-data failure. Then you have to power off and back on and do it right.

5. If there is a configuration-failure message, you must have (or get) a valid configuration and then correct the EEROM checksum per step 6. If you don't care to see or keep any previous configuration settings, then skip to step 6 now. But if you want to keep or read the previous settings then read this step carefully. It is easy to simply write the factory-default con figuration in step 6 and set the proper desired configuration later, if you know exactly what it should be. When the configuration-failure signal is sent, the radio has already loaded the factory default settings to start with.

However, if you do not want to lose the current initial settings in a particular area(s) (baud, facilities, profile), you must not write the factory defaults. Instead, load the current EEROM initial values by using the "Initial" option of the Baud/Facilities/Profile command(s). Be aware that at this point, you don't know if the "failure" was in one or more of the settings, or just in the checksum itself. Either now or later you should make a thorough check of each area you want to retain, or at least try out the settings in the actual application.

You may want to load the initial settings just to read them manually. In that case, issue the initial command(s), issue the appropriate commands to see the desired settings, then issue the default command before proceeding to step 6.

The "Default" command always loads the factory-default configuration, which is a common starting point from which to make all of the desired changes.

Use the following keystrokes to load factory defaults:

d CR

Enter these three commands to entirely retrieve whatever is in the EEROM.
You may check it or assume it is correct for now.

b i CR
f i CR
p i CR

If the initial baud settings are different, you will need to change the terminal baud to match the radio after issuing "Baud Initial".

Warning: It is possible to force an EEROM-error-caused configuration error, which was detected and ignored up to now, to be forced into use by loading it and writing it. And any unknown wrong settings have the potential to "disable" the radio with regard to a specific application. You might even be forced to use the default-plug power-up procedure to regain control of the radio.

6. If you did not get a configuration-failure message, skip to step 7. Once all three areas have known settings, then clear the configuration failure with by writing all three areas (in any order). Hit the keys:

   w b CR y CR (will probably still indicate X-error-X)
   w f CR y CR (will probably still indicate X-error-X)
   w p CR y CR (must indicate <verified>)

7. Turn power off and on and verify that no failure messages are issued. (Ignore Restart and Reset messages). If the radio is using the factory default settings, then modify and write the proper initial settings as needed.