Programming Manual

MASTR® IIe/III
UTILITY PROGRAM

ERICSSON ≥

LBI-38540

PERSONAL COMPUTER PROGRAMMING

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INTRODUCTION

Ericsson Inc. welcomes you to the world of mobile communications. We believe there is no equal to Ericsson products and have made a commitment to our customers to ensure that product satisfaction and reliable service is our number one priority.

The MASTR IIe/III Utility Program provides a simple means of accessing a subset of the MASTR IIe/III Station diagnostics and programming capabilities.

This manual is organized to support you in computer aided diagnostics of the MASTR IIe/III Control Station and will discuss:

Utility Configuration
Serial Functions
Potentiometer Settings
Metering
Station Configuration
Software/Firmware Information
Programmable Timers
Remote Diagnostics
Serial Port Access
Modem Configuration
Serial Request Timeout
Phone Directory
Station Diagnostics
Station Status
Tone Diagnostics
Parallel I/O
Switches/Inputs

CHAPTER 1
BEFORE YOU BEGIN

ABOUT THIS MANUAL

This manual is designed to present you with information necessary to connect a MASTR IIe/III Control Station to the computer and to make operational adjustments to the Station through the computer keyboard.

Chapter 1 - provides you with some basic information to be aware of prior to running the software. It explains screen functionality, keyboard layout, and some commonly used terms.

Chapter 2 - contains a list of the contents of this package and instructions for installing the MASTR IIe/III Utility Program Software.

Chapter 3 - will instruct you in software operation such as activating screens, adjusting potentiometers, identifying software, and monitoring station performance.

Screen diagrams are used throughout this manual to help clarify section discussions. Please pay particular attention to NOTES as they contain pertinent information that you should be aware of.

IMPORTANT TERMS

Field - Refers to the area of the screen that allows data entry. This area is readily identifiable by a reverse video bar when moving the cursor across the screen. Since underlined direct data entry is prohibited (only modifiable by cursor keys, etc.), incorrect data cannot be entered.

Help - Pressing **[F1]** activates a Help Screen associated with any given field. In the Potentiometer Screen pressing **[F1]** causes a Help Screen to appear in the center of the screen indicating which keys are operational in the Potentiometer Screen.

Personality - Refers to information that is stored in a station by a field programmer to make it perform differently than other stations. The information can then be modified or deleted and is stored on a disk for later reference.

Screen - The term Screen is used throughout the MASTR IIe/III Utility Program Manual. Each screen is divided into two areas: (1) screen title, and (2) screen area. The screen title describes the screen area functionality. The screen area displays pertinent information or allows programming alternatives.

SCREEN LAYOUT

```
┌─────────────────────────────────────────┐
│(1)>UTILITY PROGRAM MAIN MENU             │
├─────────────────────────────────────────┤
│(2)│ UTILITY CONFIGURATION               │
│   │ SERIAL FUNCTIONS                    │
│   │ POTENTIOMETER SETTINGS              │
│   │ METERING                            │
│   │ STATION CONFIGURATION               │
│   │ SW VERSION CONTROL                  │
│   │ PROGRAMMABLE TIMERS                 │
│   │ REMOTE DIAGNOSTICS SETUP            │
│   │ PHONE DIRECTORY                     │
│   │ STATION DIAGNOSTICS                 │
│   │ DOS SHELL                           │
└─────────────────────────────────────────┘
```
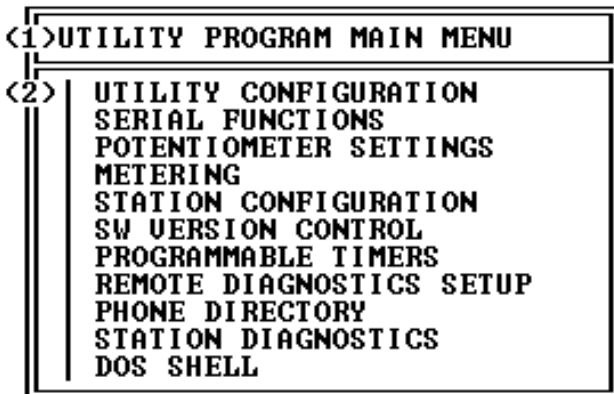
Figure 1-1 - Screen Layout

  (1) Screen Heading   - describes area functionality
  (2) Screen Area   - displays programming alternatives

The Screen Layout, shown in Figure 1-1, indicates the overall layout of the utility program. Highlighting a field and pressing the **<enter>** key will cause that field to appear as a screen or enable its functionality. Each screen is discussed in further detail in Chapter 3.

USING THE KEYBOARD

Figure 1-2 - Keyboard

It is important that you be familiar with the keyboard of your computer system. Each keyboard is different in relation to the placement of some of the keys. In the Utility Program Software package there are a limited number of operational keys residing in the following categories:

- Function

- Editing

- Movement

The following sections give an overview of which keys are included in these categories and their functions. In many screens, only the use of cursor keys will be necessary.

Function Keys

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10

OR:

The purpose of a specific function key is dependent on the screen being accessed. The **F1** function key activates a Help screen from any area you are in. Other function keys perform a specific function pertaining to the screen that is currently activated. Be sure that you fully understand the purpose for any function key prior to pressing it.

F1	F2
F3	F4
F5	F6
F7	F8

There are two types of function keys: Active and Inactive. Active function keys cause the software to execute the action delegated to that particular key. Inactive function keys have no operational capabilities.

Editing Keys
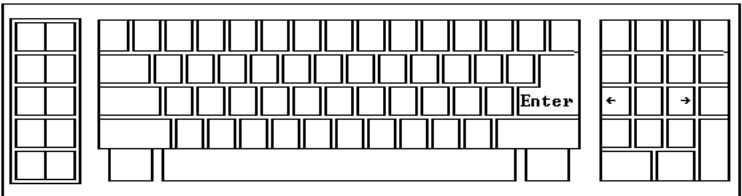
Editing keys manipulate data within a field. These keys are:

Right Arrow: Will either toggle field values or cause the highlighted field to begin its designated operation.

Left Arrow: Will either toggle field values or cause the highlighted field to terminate operation.

Enter: Causes the highlighted field to become active.

<u>Movement Keys</u>
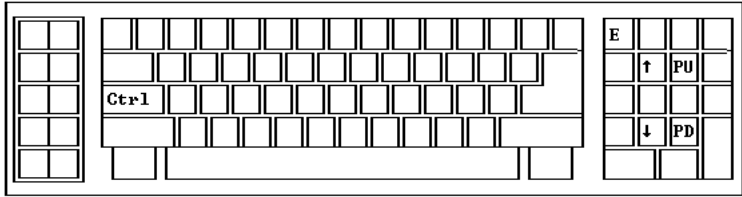
These keys enable cursor positioning in a screen.

Up and Down Arrows: Each time one of these arrows is pressed it moves the cursor, as a highlighted bar, over a field. The Up Arrow will move the cursor to the field above its current position. The Down Arrow will move the cursor to the field below its current position.

Page Up and Ctrl Page Up: Used to scroll through a list to the top field in a screen.

Page Down and Ctrl Page Down: Used to scroll through a list to the bottom field in a screen.

Escape: Used to exit out of the current screen.

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CHAPTER 2
INSTALLATION

UNPACKING

Upon unpacking this package you should be sure you have received the following:

- MASTR IIe/III Utility Program Programming Software, to include:
  Two double-sided, double-density 5-1/4 inch diskettes,
  and, a single 3-1/2 inch diskette.

SOFTWARE REQUIREMENTS

The following hardware and software is required to perform diagnostics on a MASTR IIe/III Control Station:

A. IBM PC/XT/AT or any true compatible with MS-DOS version 3.0 or later, and having the following minimum configuration:

   1. Single or dual flexible (floppy), or fixed (hard) disk drive system.

   2. 640K Internal RAM.

   3. Serial Port.

B. Standard RS-232 cable (TQ-3356).

C. MASTR IIe/III Utility Program Software (TQ-0619).

DISKETTE HANDLING

While working with your diskettes you may want to consider the following handling procedures:

- Always store your diskettes in their envelope.

- Insert diskettes into the drive carefully.

- Use only felt tipped pens to write on diskette labels.

- Store your diskettes at a comfortable room temperature.

- Refrain from touching the recording surface.

- Do not bend the diskettes.

- Do not allow any form of liquid to come in contact with the diskette surface.

- Keep diskettes away from magnetic force fields as found in electronic equipment.

If you follow these simple guidelines you will receive long service from your diskettes.

MAKING BACKUPS

The MASTR IIe/III Utility Program Software is provided to you on two double-sided double-density 5-1/4 inch diskettes, and a 3-1/2 inch diskette. The diskettes are very sensitive and fragile and therefore, should be handled with care and stored in a secure area.

We recommend that, upon receipt of your diskette, you copy the original Utility Program Software diskette to another diskette or a fixed disk and store the original in a safe place. This ensures the availability of an accurate program should a copy fail during program application.

SYSTEM HOOK-UP

Connect all peripheral equipment to your computer prior to configuring the Utility Program Software items. Remember to refer to the operating manuals of each device for correct installation procedures.

If your system is already established, check to see that you have all the equipment necessary to execute the program. Isolate all cables connecting the computer to devices to prevent tangling, interference, and damage.

Step One:

Refer to Figure 2-1, Programming System Hook-Up, and then look at your computer to locate a serial port. This port will usually be located at the rear of the computer. However, since this is dependent upon the design of your computer refer to the computer operator's manual for directions.

The IBM PC XT/AT systems support up to two serial ports. There are two physical standards for the serial port configurations of personal computers. One standard is a 25 pin RS-232 output that has a DB-25 male connector at the computer. The other standard is a DB-9 male connector at the computer (used on the IBM-AT and many portable laptop computers).

Please note at this point that the Utility Program Software only communicates with the unit and its interface on the serial port designated as COM1 or COM2. Your computer references will assist you in determining which serial port has been so designated. Once located, examine the keyed plug on the RS-232 cable for the correct keyed end and insert it carefully into the appropriate serial port on the computer.

The other end of the RS-232 cable should now be connected into the computer receptacle (J6) on the MASTR IIe/III Control Station. Check carefully to ensure that plugs are fully seated in the receptacle and, if retaining screws are included, that they are carefully tightened to firmly hold the plug in place. Should the plug not seat correctly to its receptacle, remove the plug and examine the pins to determine if the proper plug was inserted and to determine if pins are aligned and undamaged. Damaged pins and broken connections will cause the Utility Program Software to fail.
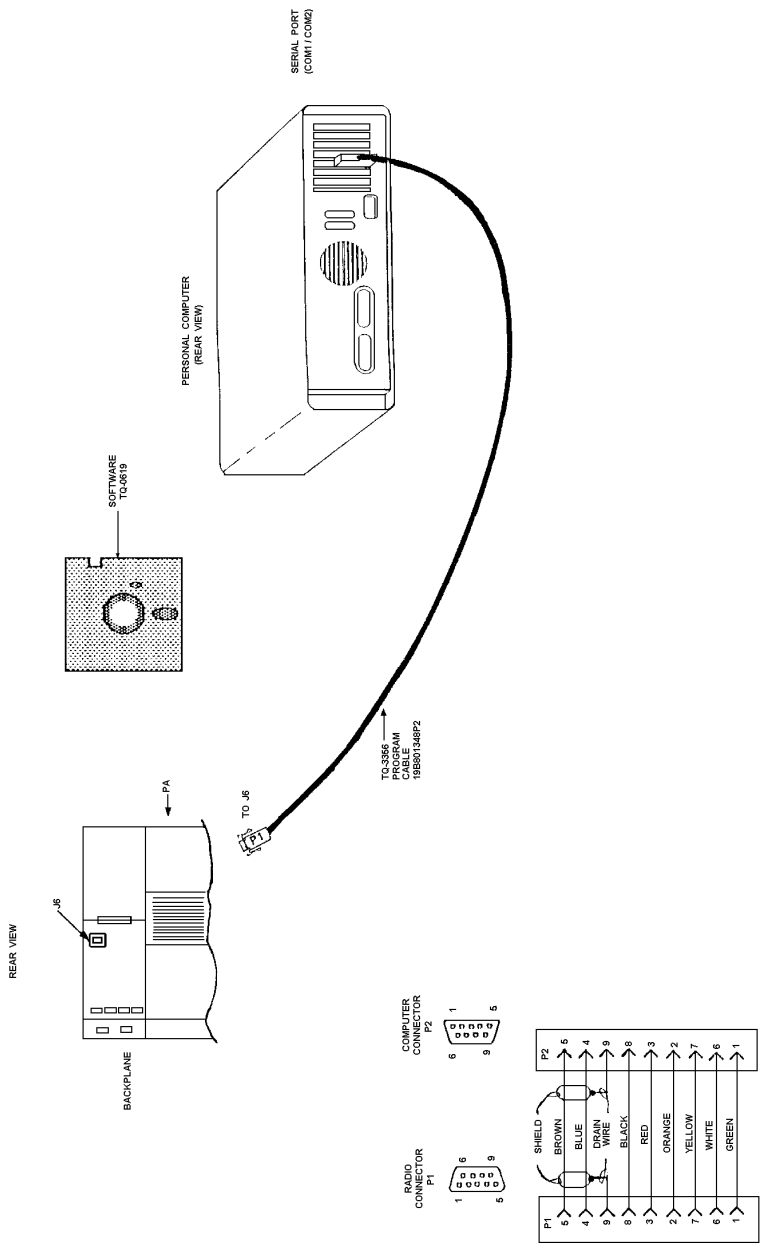
Figure 2-1 - Programming System Hook-Up

LOADING THE SOFTWARE

The PC software can be installed on a fixed drive or run from a 3-1/2" floppy diskette in a single floppy drive configuration.

```
────────────────── NOTE ──────────────────
To enhance program execution, it is recommended that this soft-
ware be installed on a hard drive.
```

Software Installation

Hard Drive

5-1/4 Inch or 3-1/2 Inch Diskette:

When using a 5-1/4 inch or a 3-1/2 inch diskette, the software installation is initiated by inserting Program Disk #1 in drive A: and typing the following:

    INSTALL <enter>

You will be prompted for the target drive letter (default C:). Installation will result in a subdirectory named MASTRUTL on the target drive.

Single Floppy 3-1/2"

When using a single floppy, place the floppy diskette in drive A: and type the following:

    A: <enter>
    CD GE/MASTRUTL <enter>
    MASTRUTL <enter>

```
────────────────── NOTE ──────────────────
The correct physical connections must be made before implementing
program execution.
```

———— **NOTE** ————

When using a floppy, the write protect should NOT be employed if the user modifies/enters the program configuration screen as this will cause an attempt to write to the file COMCFG.MDG and will subsequently result in failure of MS-DOS.

CHAPTER 3
RUNNING THE PROGRAM

INITIALIZATION

Depending on its manufacturer, your personal computer will have certain unique operating characteristics which make it different from other computers of similar capability. For example, file names and file extensions must conform to the requirements of your disk operating system. We, therefore, recommend that you become fully conversant with your computer's disk operating system and its operating manual prior to beginning this program.

When you turn on your personal computer, it begins an initialization routine which every system must go through to prepare for operation. During the initialization of your system, the MS-DOS program is loaded into memory. Remember that MS-DOS is the interpreter between your keyboard actions and the capabilities of the Utility Program Software.

When using a PC floppy drive - After the PC is initialized and you have received the DOS prompt, you should type:

A: <enter>
CD GE\MASTRUTL <enter>
MASTRUTL <enter>

When using a PC hard drive - After the PC is initialized and you have received the DOS prompt, you should type:

CD GE <enter>
CD MASTRUTL <enter>
MASTRUTL <enter>

The Utility Program Main Menu Screen will appear.

MAIN MENU FOR THE UTILITY PROGRAM

```
┌─────────────────────────────────────────┐
│ UTILITY PROGRAM MAIN MENU      <1>       │
│ ┌─────────────────────────────────────┐ │
│ │ UTILITY CONFIGURATION        <2>    │ │
│ │ SERIAL FUNCTIONS             <3>    │ │
│ │ POTENTIOMETER SETTINGS       <4>    │ │
│ │ METERING                     <5>    │ │
│ │ STATION CONFIGURATION        <6>    │ │
│ │ SW VERSION CONTROL           <7>    │ │
│ │ PROGRAMMABLE TIMERS          <8>    │ │
│ │ REMOTE DIAGNOSTICS SETUP     <9>    │ │
│ │ PHONE DIRECTORY              <10>   │ │
│ │ STATION DIAGNOSTICS          <11>   │ │
│ │ DOS SHELL                    <12>   │ │
│ └─────────────────────────────────────┘ │
└─────────────────────────────────────────┘
```
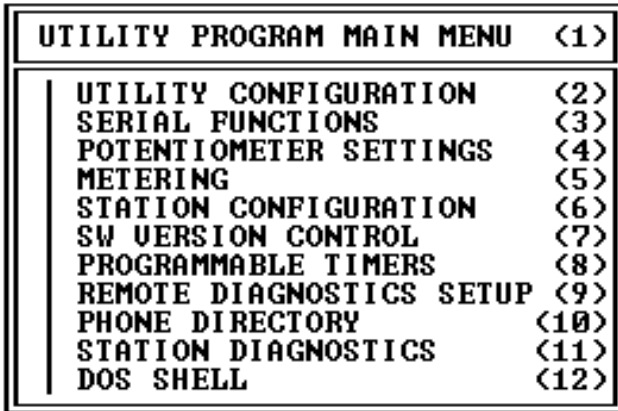
Figure 3-1 - Utility Program Main Menu Screen

(1) Screen Title	- utility program main menu
(2) Utility Configuration	- modify configuration parameters
(3) Serial Functions	- MASTR IIe/III perform change
(4) Potentiometer Settings	- adjust potentiometer settings
(5) Metering	- various DC voltage settings
(6) Station Configuration	- current system configuration
(7) SW Version Control	- lists some soft/firmware info
(8) Programmable Timers	- adjusts various timers
(9) Remote Diagnostic Setup	- sets up access through modems
(10) Phone Directory	- access phone entries
(11) Station Diagnostics	- displays various status screens
(12) DOS Shell	- gain DOS access

The Utility Program Main Menu Screen, shown in Figure 3-1, displays the main screen for programming a MASTR IIe/III Control Station. Each field allows access into individual screens where control station defaults can be established.

From any field, pressing **F1 Help** will display a help screen for that particular field. Pressing **<esc>** will normally exit a screen and return you to the previous one.

UTILITY CONFIGURATION (2) The **UTILITY CONFIGURATION** field allows you to access a screen where modification of some MASTR IIe/III program configuration parameters can be made.

To make a program configuration modifi-cation, use the **Up/Down** Arrow keys to highlight the UTILITY CONFIGURATION field and press **<enter>**.

SERIAL FUNCTIONS (3) The **SERIAL FUNCTIONS** field allows you to access a screen where a temporary change can be made to the performance of the MASTR IIe/III Control Station.

To make a serial function change, use the **Up/Down** Arrow keys to highlight the SERIAL FUNCTIONS field and press **<enter>**.

POTENTIOMETER SETTINGS (4) The **POTENTIOMETER SETTINGS** field allows you to access a screen where adjustments to various MASTR IIe/III Control Station potentiometer settings can be made.

To adjust station potentiometer settings, use the **Up/Down** Arrow keys to highlight the POTENTIOMETER SETTINGS field and press **<enter>**.

METERING (5) The **METERING** field allows you to access a screen displaying specific MASTR IIe/III Control Station DC voltages.

To view DC voltages, use the **Up/Down** Arrow keys to highlight the METERING field and press **<enter>**.

STATION CONFIGURATION (6) The **STATION CONFIGURATION** field allows you to access a screen displaying the system configuration for the MASTR IIe/III Control Station.

```
STATION CONFIGURATION  <6>
SW VERSION CONTROL     <7>
PROGRAMMABLE TIMERS    <8>
REMOTE DIAGNOSTICS SETUP <9>
PHONE DIRECTORY        <10>
STATION DIAGNOSTICS    <11>
DOS SHELL              <12>
```

STATION (6) To view the current system configuration, use
CONFIG- the **Up/Down** Arrow keys to highlight the STA-
URATION TION CONFIGURATION field and press
Cont'd **<enter>**.

SW (7) The **SW VERSION CONTROL** field allows
VERSION you to access a screen displaying a list of
CONTROL various Software and Firmware version infor-
mation.

To display the SW version control list, use the
Up/Down Arrow keys to highlight the SW
VERSION CONTROL field and press **<en-
ter>**.

PROGRAM- (8) The **PROGRAMMABLE TIMERS** field al-
MABLE lows you to access a screen where various time
TIMERS related aspects of station performance can be
set.

To adjust timers use the **Up/Down** Arrow keys
to highlight the PROGRAMMABLE TIMERS
field and press **<enter>**.

REMOTE (9) The **REMOTE DIAGNOSTICS SETUP**
DIAGNOS- field allows you to access a screen where you
TICS can transmit keyboard characters across an ac-
SETUP tive com port, set various modem parameters,
and set the response wait time that occurs after
making a serial request.

To access the screen to make the above
changes, use the **Up/Down** Arrow keys to
highlight the REMOTE DIAGNOSTICS
SETUP field and press **<enter>**.

PHONE (10) The **PHONE DIRECTORY** field allows you
DIRECTORY to access a screen where you can add, modify,
or delete phone entries. Once these entries are
entered, you can dial these numbers by select-
ing one of them. An option is also available to
dial a number manually without using one of
the previously entered phone numbers. In ad-
dition, the capability to hang up the phone is
also present.

To add, modify, delete, dial, or hang up any
phone entry use the **Up/Down** Arrow keys to
highlight the PHONE DIRECTORY field and
press **<enter>**.

STATION (11) The **STATION DIAGNOSTICS** field allows
DIAGNOS- you to access various diagnostic screens per-
TICS taining to the MASTR IIe/III Control Station.

— MIII STATION STATUS:
Shows information only pertaining to
MASTR III base stations. Information in-
cludes the following:

- Fault status of the different modules.

- Values of the receive, transmit, and refer-
ence frequencies.

- Setting of the Power Amplifier potenti-
ometer.

- Circulator status.

— TONE DIAGNOSTICS:
Shows any control tones the station is re-
ceiving and acting on.

— PARALLEL I/O:
Shows the status of the inputs and outputs
that interface with the microprocessor via
the Programmable Peripheral Interface chip
(U34) on the System Board.

— SWITCHES/INPUTS:
Shows the status of the following:

```
STATION CONFIGURATION    <6>
SW VERSION CONTROL       <7>
PROGRAMMABLE TIMERS      <8>
REMOTE DIAGNOSTICS SETUP <9>
PHONE DIRECTORY          <10>
STATION DIAGNOSTICS      <11>
DOS SHELL                <12>
```

STATION (11)
DIAGNOS-
TICS
Cont'd

- The three switches on the front of the System Module along with the attached System Module inputs (REMOTE PTT and CG MON).

- The System Module inputs called CAS, LOCAL PTT, and BATT STDBY (battery standby).

- The DC control current.

– FUNCTIONS/MISC:
Shows the status of various functions and other miscellaneous information.

– BASIC INFORMATION:
Shows the following information:

- The currently active channel.

- The way audio is being routed through the System Module.

- Status of Channel Guard.

- What, if anything, is keying the station.

- Status of the transmitter control lines.

To display the DIAGNOSTICS screen, use the **Up/Down** Arrow keys to highlight the STATION DIAGNOSTICS field, press **<enter>.**

DOS (12)
SHELL

The **DOS SHELL** field allows you to suspend MASTRUTL to get a DOS prompt. To run MASTRUTL again, type in **"exit"** at the DOS prompt.

To suspend MASTRUTL to get a DOS prompt, use the **Up/Down** Arrow keys to highlight the DOS Shell field and press **<enter>**.

UTILITY CONFIGURATION

```
┌─────────────────────────────────────────────┐
│         <1> PROGRAM CONFIGURATION            │
│                                              │
│  MOUSE SUPPORT XXX  <2>                       │
│      <3>                    <4>              │
│  COM PORT      →1        BAUD RATE  │   300   │
│                │2                   │  1200   │
│                │3                   │  2400   │
│                │4                   │  4800   │
│                                     │  9600   │
│                                     →19200    │
│                                              │
│  Esc=Exit                                    │
└─────────────────────────────────────────────┘
```

Figure 3-2 - Program Configuration Screen

(1) Screen Title   - program configuration
(2) Mouse Support   - enables mouse support
(3) Com Port   - select communication port
(4) Baud Rate   - select baud rate

The Program Configuration Screen, shown in Figure 3-2, allows you to modify some MASTRUTL configuration parameters for a MASTR IIe/III Control Station.

MOUSE   (2)   The **MOUSE SUPPORT** field is a toggle field
SUPPORT   which enables or disables mouse support.

                     To change the Mouse Support setting, use the
                     Up/Down arrow keys to select the field, press
                     <enter> to gain access into the field. Using the
                     Left/Right arrow keys select "YES" to enable
                     mouse support or "NO" to disable mouse sup-
                     port.

COM   (3)   The **COM PORT** field indicates the selected
PORT   communications port for the MASTR IIe/III
                     Control Station.

```
MOUSE SUPPORT XXX  (2)
    (3)                  (4)
COM PORT      →1         BAUD RATE          300
              2                             1200
              3                             2400
              4                             4800
                                            9600
                                          →19200
```

COM PORT Cont'd	(3)	To change the Com Port setting, use the **Up/Down** arrow keys to select the desired setting and press **<enter>** to make a selection.
BAUD RATE	(4)	The **BAUD RATE** fields indicates the selected Baud Rate for the MASTR IIe/III Control Station.

To change the Baud Rate setting, use the **Up/Down** arrow keys to select the desired setting and press **<enter>** to make a selection.

---- NOTE ----

The control station defaults to 9600 baud.

SERIAL FUNCTIONS

```
(1) SERIAL FUNCTIONS

      → START   STOP

Serial Function Select:
  XXXXXXXXXXXXXXXXXXXXXXXXXXX  (2)

Esc=Exit
```
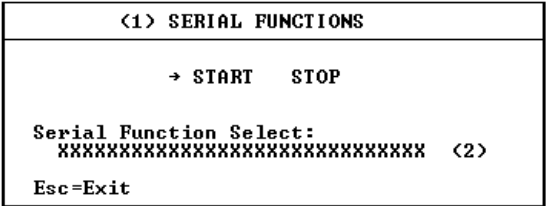
Figure 3-3 - Serial Functions Screen

(1) Screen Title   - serial functions
(2) Serial Function Select - displays list of functions available

The Serial Functions Screen, shown in Figure 3-3, allows you to temporarily change the performance of the MASTR IIe/III Control Station.

SERIAL (2) The **Serial Function Select** field is used to
FUNCTION   display a list of functions which, if enabled,
SELECT   will temporarily change the performance of the
MASTR IIe/III Control Station. If Logic Standby is not enabled, cycling power or performing a system reset at any time will cause the system to return to its default EEPROM settings.

To display the list of functions, press **\<enter\>**. Use **Up/Down**, **Page Up/Page Down**, and **Control Page Up/Control Page Down** arrow keys to scroll through the list. Use the **Right/Left** arrow keys to start/stop the highlighted function.

Possible selections are:

− Repeat Disable:
  START - disables repeater function.
  STOP - restores original EEPROM setting.

− Tx Disable:
  START - disables the transmitter.
  STOP - restores original EEPROM setting.

− Channel Guard Encode Disable:
  START - disables the Channel Guard encode.
  STOP - restores original EEPROM setting.

− Channel Guard Decode Disable
  START - disables the Channel Guard decode.
  STOP - restores original EEPROM setting.
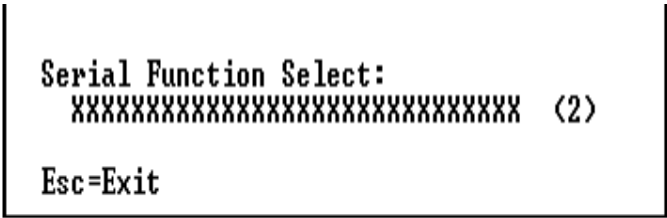
```
Serial Function Select:
  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  (2)

Esc=Exit
```

SERIAL (2)
FUNCTION
SELECT
Cont'd

− RUS Mute:
   START - disables the main receiver.
   STOP - restores original EEPROM setting.

− Channel Guard Monitor:
   START - enables Channel Guard monitor function.
   STOP - restores original EEPROM setting.

− Remote PTT:
   START - keys the remote push-to-talk.
   STOP - unkeys the remote push-to-talk.

− Local PTT:
   START - keys the local push-to-talk.
   STOP - unkeys the local push-to-talk.

− External PTT:
   START - keys the external push-to-talk.
   STOP - unkeys the external push-to-talk.

− Morse Code:
   START - sends Morse Code ID when programmed. (If no ID is present, Start has no effect.
   STOP disables the Morse Code ID function. (If the stop function is selected while the station is transmitting an ID, the ID transmission terminates.)

− Battery Alarm Disable:
   START - disables the battery alarm tone.
   STOP - restores the original EEPROM setting.

− Test Tone:
START - begins sending test tone. (The test tone default frequency is 1000 Hertz.)
STOP - ends test tone.

− System Reset:
START - reinitializes system software.
STOP - has no effect on this function.

− Carrier Control Timer Disable:
START - disables the carrier control timer.
STOP - restores the original EEPROM setting.

− RUS Disable:
START - disables receiver unsquelch PTT function.
STOP - restores the original EEPROM setting.

− Scan Enable:
START - enables the scan function if the station is programmed to scan.
STOP - restores the original EEPROM setting.

− Scan Disable:
START - disables the scan function.
STOP - restores the original EEPROM setting.

− Main Rx Enable:
START - enables the main receiver.
STOP - restores the original EEPROM setting.

− Main Rx Disable:
START - disables the main receiver.
STOP - restores the original EEPROM setting.

− Aux Rx Enable:
START - enables aux receiver and toggles Aux Rx Mute.
STOP - has no effect.

```
┌─────────────────────────────────────────────┐
│                                             │
│  Serial Function Select:                    │
│    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  (2)       │
│                                             │
│  Esc=Exit                                   │
│                                             │
└─────────────────────────────────────────────┘
```
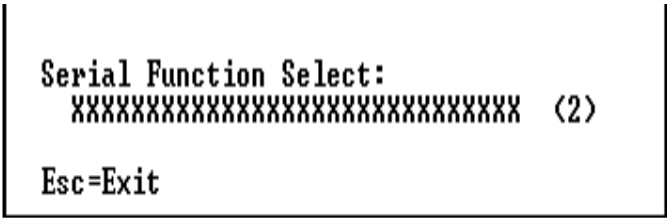
SERIAL   (2)
FUNCTION
SELECT
Cont'd

− Aux Rx Disable:
   START - disables aux receiver and toggles
   Aux Rx Mute.
   STOP - has no effect.

− Aux Control 1 On:
   START - activates auxiliary 1 output if the
   station is programmed with AUX1 control.
   STOP - restores the original EEPROM set-
   ting.

− Aux Control 1 Off:
   START - deactivates auxiliary 1 output if the
   station is programmed with AUX1 control.
   STOP - restores the original EEPROM set-
   ting.

− Priority Scan Disable:
   START - disables the priority scan function.
   STOP - restores the original EEPROM set-
   ting.

− Scan Inhibit:
   START - suspends scan operation (if en-
   abled).
   STOP - restores the original EEPROM set-
   ting.

− Voting Tone Enable:
   START - enables the voting tone if the sta-
   tion is programmed to output a voting tone.
   STOP - disables the voting tone.

POTENTIOMETER SETTINGS

```
<MASTR III ONLY>

┌─────────────────────────────────────────────────────────┐
│              <1> STATION POT SETTINGS                     │
│                                                           │
│  POT ADJUSTMENT              CHANNEL SELECT X         <2> │
│                                  XXXXXX               <3> │
│       →increment pot        XXX.X%    XXX Line Out    <4> │
│       ←decrement pot        XXX.X%    XXX Transmit    <5> │
│       [F5]    1X            XXX.X%    XXX Line In     <6> │
│       [F6]   10X            XXX.X%    XXX Channel Guard <7>│
│       [F7]  100X            XXX.X%    XXX DSP Line Cancellation <8>│
│       [F8] 1000X            XXX.X%    XXX DSP Line In <9> │
│                             XXX.X%  XXXXX DSP Compressor Gain <10>│
│   CH SELECT   [F9]          XXX.X%    XXX Voting Tone Gain <11>│
│                             XXX.X%  XXXXX Compressor Threshold <12>│
│                             XXX.X%     XX Morse ID Transmit <13>│
│          <17>               XXX.X%     XX PA Power    <14>│
│  SQUELCH SELECT [F4]:MANUAL XXX.X%  XXXXX Repeater Gain <15>│
│               CAS OFF       XXX.X%     XX Digital Squelch <16>│
│                                                           │
│  Esc=Exit                                                 │
└─────────────────────────────────────────────────────────┘
```

Figure 3-4 - Station Pot Settings Screen

(1)	Screen Title	- station pot settings
(2)	Channel Select	- designates selected channel
(3)	Pot Adjust Factor	- displays pot adjustment factor
(4)	Line Out	- indicates line out level
(5)	Transmit	- indicates transmitter deviation
(6)	Line In	- indicates gain on line input
(7)	Channel Guard	- indicates CG deviation level
(8)	DSP Line Cancellation	- sets shelf line output audio gain
(9)	DSP Line In	- adjusts signal level entering DSP
(10)	DSP Compressor Gain	- adjusts gain on DSP line input
(11)	Voting Tone Gain	- indicates level of voting tone
(12)	Compressor Threshold	- max signal at compressor output
(13)	Morse ID Transmit	- indicates transmit pot morse code ID
(14)	PA Power	- sets PA power output
(15)	Repeater Gain	- sets transmitter deviation
(16)	Digital Squelch	- controls adjustment of squelch pot
(17)	Squelch Select	- chooses squelch type

The Station Pot Settings Screen, shown in Figure 3-4, allows you to adjust potentiometer settings to ensure optimum station performance.

```
┌   POT ADJUSTMENT          CHANNEL SELECT X                 <2>│
│                               XXXXXX                       <3>│
│        →increment pot      XXX.X%     XXX Line Out         <4>│
│        ←decrement pot      XXX.X%     XXX Transmit         <5>│
│          [F5]   1X         XXX.X%     XXX Line In          <6>│
```

CHANNEL   (2)   The **Channel Select** field indicates the current
SELECT   channel selection.

                   To enable a channel, select CH SELECT **[F9]**.
                   A portal will appear displaying available chan-
                   nels. Using the **Up/Down** arrow keys select
                   the desired channel and press **<enter>**.
                   <ESC> will exit the Select New Channel
                   Screen and return you to the Station Pot Set-
                   tings Screen.

POT   (3)   The **Potentiometer Adjustment Factor** field
ADJUST   displays the currently selected potentiometer
FACTOR   adjustment factor.

                   The potentiometer adjustment factor can be
                   changed by pressing one of four function keys.
                   Pressing **[F5]** will cause the pot adjust factor to
                   be set at 1X. Pressing [**F6**] will cause the pot
                   adjust factor to be set at 10X. Pressing [**F7**] will
                   cause the pot adjust factor to be set at 100X.
                   Pressing **[F8]** will cause the pot adjust factor to
                   be set at 1000X.

LINE OUT   (4)   The **Line Out Potentiometer** field indicates
                   the line out level.

                   To change the Line Out setting, use the
                   Left/Right arrow keys to decrement/increment
                   the current value. Numbers between 0 and 255
                   are valid. A low value corresponds to a low line
                   out level. A high value corresponds to a high
                   line out level.

– MASTR IIe/III:
In non-remote systems the Line Out level is normally set to zero. In remote systems this field is set so that 3 KHz of unsquelched receiver audio results in 0 dBm of line output audio.

TRANSMIT (5)   The **Transmit Audio Potentiometer** field is used to set a MASTR IIe Control Station transmitter deviation or to set the MASTR III Control Station transmitter deviation limit.

To change the Transmit setting, use the **Left/Right** arrow keys to decrement/increment the current value. Numbers between 0 and 255 are valid. A low value corresponds to a low deviation. A high value corresponds to a high deviation.

– MASTR IIe:
In systems that repeat, this field is normally set so that 3 KHz of unsquelched receiver audio results in 3 KHz of transmitter audio. In other systems it is necessary to send nominal audio into a fixed-gain input path like the local microphone. This potentiometer is then used to set the desired nominal transmitter deviation.

– MASTR III:
This field is normally set so that maximum input results in 4.5 KHz of transmitter audio.

LINE IN   (6)   The **Line In Potentiometer** field is used to adjust the gain on the line input.

To change the Line In setting, use the **Left/Right** arrow keys to decrement/increment the current value. Numbers between 0 and 255 are valid. A low value corresponds to a low gain. A high value corresponds to a high gain.

```
[F5]    1X          XXX.X%    XXX Line In                 <6>
[F6]   10X          XXX.X%    XXX Channel Guard           <7>
[F7]  100X          XXX.X%    XXX DSP Line Cancellation   <8>
[F8] 1000X          XXX.X%    XXX DSP Line In             <9>
```

LINE IN (6)   – MASTR IIe:
Cont'd
In DC Remote systems with the DSP Compression field (in the Remote Options Screen of the PC Program) set to "Disabled", this field is normally set so that nominal line input audio results in output audio which is at 3 KHz deviation. In other systems, this field is set to zero because the line audio is either non-existent or is processed through a different DSP board path.

– MASTR III:
This field is normally set to zero because the line audio is either non-existent or it is processed through a different DSP board path.

CHANNEL (7)   The **Channel Guard Potentiometer** field is
GUARD   used to set the Channel Guard deviation level.

To change the Channel Guard deviation level, use the **Left/Right** arrow keys to decrement/increment the current value. Numbers between 0 and 255 are valid. A low value corresponds to a low deviation level. A high value corresponds to a high deviation level.

– MASTR IIe/III:
The value entered in this field will be the Channel Guard potentiometer setting while this channel is active.

DSP LINE (8)   The **DSP Line Cancellation Potentiometer**
CANCELLA-   field is used to cancel the Control Station's line
TION   output audio from the line input audio. This potentiometer is used only in 2-wire systems.

Before being subtracted from the contended 2-wire line, the line output audio is attenuated according to the value entered here.

To change the DSP Line Cancellation setting, use the **Left/Right** arrow keys to decrement/increment the current value. Numbers between 0 and 255 are valid. A low value corresponds to a low gain. A high value corresponds to a high gain.

− MASTR IIe:
    In any system that does not use a DSP compressor (all tone remote systems use a DSP compressor), this pot is never used and should be set to zero.

− MASTR III:
    For 2-wire tone remote systems, set this field to 75. Otherwise, set it to zero.

DSP   (9)   The **DSP Line In Potentiometer** field is used
LINE IN   to adjust the signal level entering the DSP.

To change the DSP Line In setting, use the **Left/Right** arrow keys to decrement/increment the current value. Numbers between 0 and 255 are valid. A low value corresponds to a low gain on the line input. A high value corresponds to a high gain on the line input.

− MASTR IIe:
    In non-remote systems, and in DC Remote systems having the DSP Compressor field (in the Remote Options Screen of the PC Program) set to "Disabled", this field should be set to zero. Otherwise, this field should be set so that under all operating conditions this level will not over drive the analog-to-digital converter on the DSP board (U5).

```
        [F8] 1000X        XXX.X%    XXX DSP Line In         <9>
                          XXX.X%  XXXXX DSP Compressor Gain (10)
     CH SELECT  [F9]      XXX.X%    XXX Voting Tone Gain    <11>
                          XXX.X%  XXXXX Compressor Threshold <12>
                          XXX.X%     XX Morse ID Transmit    <13>
            <17>          XXX.X%     XX PA Power             <14>
```

DSP   (9) — MASTR III:
LINE IN   In non-remote systems, this field should be
Cont'd   set to zero. Otherwise, this field should be
                     set so that under all operating conditions,
                     this level will not over drive the analog-to-
                     digital converter on the DSP board (U5).

DSP   (10) The **DSP Compressor Gain** field is used to
COMPRESS   adjust the gain on the DSP line input. This pot
GAIN   is a gain on the linear region of the DSP com-
                  pressor which determines the level of line input
                  voltage which leads to compression**.**

                  To change the DSP Compressor setting, use the
                  Left/Right arrow keys to decrement/increment
                  the current value. Numbers between 0 and
                  32767 are valid. A low value corresponds to a
                  low gain. A high value corresponds to a high
                  gain.

                  — MASTR IIe/III:
                       For remote systems using the DSP Com-
                       pressor (all tone remote systems use the
                       DSP Compressor), this field should be set so
                       that nominal line input audio results in out-
                       put audio which is at 3 KHz deviation. For
                       other systems, this field should be set to
                       zero.

VOTING   (11) The **Voting Tone Gain** field is used to indicate
TONE GAIN   the voting tone level.

                  To change the Voting Tone Gain, use the
                  Left/Right arrow keys to decrement/increment
                  the current value. Numbers between 0 and 127

are valid. A low value corresponds to a low level. A high value corresponds to a high level.

COMPRES- (12) SOR THRES- HOLD

The **Compressor Threshold** field is used to adjust the maximum signal level appearing at the output of the compressor.

To change the Compressor Threshold setting, use the **Left/Right** arrow keys to decrement/increment the current value. Numbers between 0 and 32767 are valid. To disable the compressor, enter 32767.

MORSE ID (13) TRANSMIT

The **Morse Code Identification Transmission Potentiometer** field is used to indicate the value to be loaded into the Tx Pot during Morse Code ID transmission when the Tx Pot field for the active channel is set to "Yes" (in the PC program).

To change the Morse ID Transmit setting, use the **Left/Right** Arrow keys to decrement/increment the current value.

• The value entered in this field is only valid for System Module Firmware Version 6.00 and above.

PA POWER (14)

The **PA Power** field is used to set the PA power output setting for a MASTR III Control Station.

To change the PA Power setting, use the **Left/Right** Arrow keys to decrement/increment the current value. Numbers between 0 and 99 are valid. A level of 99 corresponds to full power.

• This field value pertains only to the MASTR III Control Station.

```
            (17)              XXX.X%      XX PA Power           (14)
SQUELCH SELECT [F4]:MANUAL    XXX.X%    XXXXX Repeater Gain     (15)
               CAS OFF  XXX.X%      XX Digital Squelch     (16)

Esc=Exit
```

REPEATER (15) The **Repeater Gain** field is used to set the
GAIN transmitter deviation setting for a MASTR III
Control Station.

To change the Repeater Gain setting, use the
Left/Right arrow keys to decrement/increment
the current value. Numbers between 0 and
32767 are valid. A low value corresponds to a
low deviation. A high value corresponds to a
high deviation.

In systems that repeat, this field is normally set
so that 3 KHz of unsquelched receiver audio
results in 3 KHz of transmitter audio. In other
systems, it is necessary to send nominal audio
into a fixed-gain input path line like the local
microphone. This field is then used to set the
desired nominal transmitter deviation.

- This field value pertains only to the MASTR
  III Control Station.

DIGITAL (16) The **Digital Squelch** setting controls the ad-
SQUELCH justment of the squelch potentiometer on
MASTR III base stations. The adjustment
value entered here is applicable only when
SQUELCH SELECT is set to "Digital".

To change the Digital Squelch setting, use the
Left/Right Arrow keys to decrement/ incre-
ment the current value. Numbers between 0
and 99 are valid.

- This field value pertains only to the MASTR
  III Control Station.

| SQUELCH SELECT | (17) | The **Squelch Select** field determines the squelch potentiometer adjustment control. |

To change the Squelch Select setting, use [**F4**] to toggle between "Manual" (local) and "Digital" (remote) control.

NOTE

The station must be reset after changing the squelch type.

- This field pertains only to the MASTR III Control Station.

METERING

```
 ┌─────────────────────────────────────┐
 │        (1) METERING                 │
 │    ─(2)──────(3)──────────(4)─      │
 │    PWR      X.XX Volts      XXX     │
 │    RX       X.XX Volts      XXX     │
 │    TX       X.XX Volts      XXX     │
 │    EXT      X.XX Volts      XXX     │
 │                                     │
 │   Esc=Exit                          │
 └─────────────────────────────────────┘
```

Figure 3-5 - Metering Screen

(1) Screen Title   - Metering
(2) DC Voltages   - indicates DC voltages displayed
(3) Voltage   - displays voltage readings
(4) Digital   - displays digital readings

The Metering Screen, shown in Figure 3-5, displays DC voltage readings associated with a MASTR IIe/III Control Station. All fields in this screen are "DISPLAY ONLY" and cannot be modified.

(2) The DC Voltages field is used to label the DC voltages being displayed.

Application:

	Mastr IIe	Mastr III	Range
PWR	Not Used	Circulator Power Sensor	0-5V
RX	RX Meter	RSSI,Receiver Sensitivity	0-5V
TX	TX Meter	External Metering Point	0-5V
EXT	Not Used	External Metering Point	0-10V

The RX Meter and TX Meter functions in the MASTR IIe are used with the Meter Switching Kit, 19B226293G1. See LBI-4848.

(3)In the MASTR III, PWR returns a voltage proportional to the reflected power in the circulator. RX is the RSSI line from the IF module. TX and EXT are external metering points on the MASTR III and are brought to a header on the MASTR III backplane for use in special functions. Otherwise, they are available for the operator to use in various metering applications.

(4)The digital reading, which is used to calculate the voltage, is also displayed. Digital readings vary from 0 (minimum) to 255 (maximum). Voltage will vary from 0 to 5 volts for all but EXT. The EXT voltage range is 0 to 10 volts. The sampling rate is fixed at one second intervals.

STATION CONFIGURATION

```
┌─────────────────────────────────────────────────┐
│         (1) STATION CONFIGURATION                │
│                                                  │
│              (2) MASTR IIe                        │
│ X wire(3)  DC remote(4)X CH(5)    CH X ACTIVE(6) │
│ Transmitter XXXXXXXX(6) Repeater XXXXXXXX    (8) │
│ TX XXXXXXXXXXXX (9)     CG encode XXXXXXXXX(10)  │
│ RX XXXXXXXXXXXX         CG decode XXXXXXXXX       │
│ CCT XXXXXXXXXXXXX(11)   DODT XXXXXXXXXXXX  (12)  │
│ Esc=Exit                                         │
└─────────────────────────────────────────────────┘
```

Figure 3-6 - Station Configuration Screen

(1)	Screen Title	-	station configuration
(2)	Station	-	specifies current control station
(3)	Wires	-	specifies how many wires
(4)	Station Type	-	specifies type of station
(5)	Channels	-	indicates number of channels
(6)	Active Channel	-	specifies which channel is active
(7)	Transmitter	-	indicates transmitter status
(8)	Repeater	-	indicates repeater status
(9)	ICOM	-	specifies ICOM selection
(10)	CG	-	indicates Channel Guard status
(11)	CCT	-	carrier control timer status
(12)	DODT	-	specifies DODT status

The Station Configuration Screen, shown in Figure 3-6, allows you to view station information. All fields in this screen are "DISPLAY ONLY" and cannot be modified.

STATION (2) The **Station** field will display either MASTR IIe or MASTR III as the current Control Station.

WIRES (3) The **Wires** field displays either 2 or 4 wires.

STATION TYPE (4) The **Station Type** field will display the currently selected type of station (e.g. DC Remote).

CHANNELS (5) The **Channels** field displays the number of channels available.

ACTIVE CHANNEL (6) The **Active Channel** field displays the channel currently selected.

TRANS-MITTER (7) The **Transmitter** field will display the current transmitter status as "ENABLED" or "DISABLED".

REPEATER (8) The **Repeater** field is will display the current repeater status as "ENABLED" or "DISABLED".

ICOM/ SYNTHE-SIZER (9) When MASTR IIe is the selected Control Station the **ICOM** fields will the display TX and RX ICOM status as a previously determined value.

When MASTR III is the selected Control Station, the **Synthesizer** fields display TX and RX Synthesizer frequencies as previously determined.

CG (10) The **CG** fields display the Control Station Channel Guard encode tone and decode tone status either "ENABLED" or "DISABLED" as the value previously determined.

CCT (11) The **CCT** field displays the current status of the carrier control timer.

DODT (12) The **DODT** field displays current DODT status.

SW VERSION CONTROL

```
┌─────────────────────────────────────────┐
│  ┌─────────────────────────────────────┐ │
│  │  (1) SW VERSION CONTROL             │ │
│  ├─────────────────────────────────────┤ │
│  │   │ FIELD PROGRAM DATE    (2)       │ │
│  │   │ FACTORY PROGRAM DATE(3)         │ │
│  │   │ SW SERIAL NUMBER      (4)       │ │
│  │   │ EEPROM SOFTWARE ID    (5)       │ │
│  │   │ DSP SOFTWARE ID       (6)       │ │
│  │   │ EPROM SOFTWARE ID     (7)       │ │
│  │   │ EPROM CHECKSUM        (8)       │ │
│  └─────────────────────────────────────┘ │
└─────────────────────────────────────────┘
```

Figure 3-7 - SW Version Control Screen

(1) Screen Title   - sw version control
(2) Field Program Date   - PC program software version
(3) Factory Program Date   - date personality factory modified
(4) SW Serial Number   - file name given to control shelf
(5) EEPROM Software ID   - original loaded ROMdefault vers
(6) DSP Software ID   - software version of DSP in sys
(7) EPROM Software ID   - current firmware version ID
(8) EPROM Checksum   - display of checksum of EPROM

The SW Version Control Screen, shown in Figure 3-7, provides software control information. Each field allows access into individual screens. Use the **Up/Down** Arrow keys to highlight the desired field and press **<enter>**. All fields in this screen are "DISPLAY ONLY" and cannot be modified.

FIELD PROGRAM DATE (2)   The **FIELD PROGRAM DATE** screen is used to indicate the current PC version, date and time.

FACTORY PROGRAM DATE (3)   The **FACTORY PROGRAM DATE** screen is used to indicate the latest date that the personality has been modified at the factory.

SW SERIAL NUMBER (4)   The **SW SERIAL NUMBER** screen is used to indicate the file name given to the control

shelf by the PC Programmer. This name is typically used to form a link between a file which resides on a PC and the current control shelf personality.

EEPROM (5)
SOFTWARE ID

The **EEPROM SOFTWARE ID** screen is used to indicate the version of ROM that originally loaded defaults into the EEPROM. The version, date, time, and number will be displayed.

DSP (6)
SOFTWARE ID

The **DSP SOFTWARE ID** screen is used to indicate the software version of the Digital Signal Processor in the system. The version, date, time, and number will be displayed.

EPROM (7)
SOFTWARE ID

The **EPROM SOFTWARE ID** screen is used to indicate the current firmware version identification. The version, date, time, and number will be displayed.

EPROM (8)
CHECKSUM

The **EPROM CHECKSUM** screen is used to display the checksum of the EPROM. The value indicated here should match that of the EPROM label.

PROGRAMMABLE TIMERS

```
┌─────────────────────────────────────────────────────────┐
│                 (1)Programmable Timers                    │
│                                                           │
│ DTMF Time Out  (1=100ms) 50 (2)   2175 Debounce   (1=10ms) 20(6) │
│ CAS On Debounce  (1=2ms) 1  (3)   Repeat Delay    (1=10ms) 20(7) │
│ CAS Off Debounce (1=2ms) 5  (4)   STE Output Time (1=10ms) 15(8) │
│ DC Debounce     (1=10ms) 15 (5)                           │
│                                                           │
│                                                           │
│ Esc=Exit          WRITE [F5]      READ [F6]               │
└─────────────────────────────────────────────────────────┘
```

Figure 3-8 - Programmable Timers Screen

(1) Screen Title   - programmable timers
(2) DTMF Time Out   - max time between DTMF digits
(3) CAS on Debounce   - wait time determine CAS present
(4) CAS off Debounce   - wait time determine CAS absent
(5) DC Debounce   - wait time to act on remote DC
(6) 2175 Debounce   - sampling time for 2175 Hz tone
(7) Repeat Delay   - delay time to repeag audio
(8) STE Output Time   - length of STE transmission

The Programmable Timers Screen, shown in Figure 3-8, allows you to define timer values. Press **[F6]** to read in values from the Control Shelf.

DTMF   (2)   The **DTMF TIMEOUT** field is used to adjust
TIMEOUT   the maximum time between DTMF digits. A
                  larger setting allows more time between each
                  digit before the Control Shelf resets the DTMF
                  receive buffer.

                  To change this field, press **<enter>** to gain field
                  entry. Enter a value in the range of 0 to 255.
                  Each unit corresponds to 100 milliseconds. To
                  exit the field press **<enter>, <esc>**, or
                  Up/Down Arrow keys. Press **[F5]** to write
                  changes to the Control Shelf.

```
                  (1)Programmable Timers
DTMF Time Out  (1=100ms) 50 (2)    2175 Debounce   (1=10ms) 20(6)
CAS On Debounce  (1=2ms) 1   (3)   Repeat Delay    (1=10ms) 20(7)
CAS Off Debounce (1=2ms) 5   (4)   STE Output Time (1=10ms) 15(8)
DC Debounce      (1=10ms) 15 (5)

Esc=Exit             WRITE [F5]      READ [F6]
```

CAS ON   (3)   The **CAS ON DEBOUNCE** field is used to
DEBOUNCE   indicate the delay between the time CAS is
                   detected by the System Module and when it is
                   acted on. The debounce is used to ignore any
                   glitches on the CAS line.

                   To change this field, press **<enter>** to gain field
                   entry. Enter a value in the range of 0 to 255.
                   Each unit corresponds to 2 milliseconds. To
                   exit the field press **<enter>**,**<esc>**, or
                   Up/Down Arrow keys. Press **[F5]** to write
                   changes to the Control Shelf.

CAS OFF   (4)   The **CAS OFF DEBOUNCE** field is used to
DEBOUNCE   indicate the delay between the time the System
                   Module detects that CAS has gone away and
                   the time it operates as if there is no CAS. The
                   debounce is used to ignore any glitches that
                   may occur on the CAS line.

                   To change this field, press **<enter>** to gain field
                   entry.Enter a value in the range of 0 to 255.
                   Each unit corresponds to 2 milliseconds. To
                   exit the field press **<enter>**,**<esc>**, or
                   Up/Down Arrow keys. Press **[F5]** to write
                   changes to the Control Shelf.

DC   (5)   The **DC DEBOUNCE** field is used to indicate
DEBOUNCE   the delay between the time a change in the DC
                   Remote control current is detected and the time
                   the System Module acts on that control current.
                   This debounce is used to ignore momentary
                   changes of the control current.

Enter value

To change this field, press **<enter>** to gain field entry. Enter a value in the range of 0 to 255. Each unit corresponds to 10 milliseconds. To exit the field press **<enter>**,**<esc>**, or **Up/Down** Arrow keys. Press **[F5]** to write changes to the Control Shelf.

2175 DEBOUNCE (6) The **2175 DEBOUNCE** field is used to indicate the delay between the time the System Module detects that a 2175 Hz tone has gone away and the time the station executes the 2175 Off function list.

To change this field, press **<enter>** to gain field entry. Enter a value in the range of 0 to 255. Each unit corresponds to 10 milliseconds. To exit the field press **<enter>**,**<esc>**, or **Up/Down** Arrow keys. Press **[F5]** to write changes to the Control Shelf.

REPEAT DELAY (7) The **REPEAT DELAY** field is used to indicate the delay between the time RUS is detected and the audio is repeated. This delay, used mostly in voting systems, gives the voter time to do a remote push-to-talk.

To change this field, press **<enter>** to gain field entry. Enter a value in the range of 0 to 255. Each unit corresponds to 10 milliseconds. To exit the field press **<enter>**,**<esc>**, or **Up/Down** Arrow keys. Press **[F5]** to write changes to the Control Shelf.

- This field will only operate when Repeat Delay is enabled. Repeat Delay is usually only enabled in voting systems.

STE OUTPUT TIME (8) The **STE OUTPUT TIME** field is used to indicate the amount of time squelch tail elimination (STE) is transmitted. STE is a signal from the station to a mobile or portable unit indicating that the transmitter is about to go off. In systems using tone Channel Guards, the

station will shift the phase of the Channel Guard to signal the end of transmission. In systems using Digital Channel Guards, the station outputs a square wave until the transmitter is turned off. The time entered in this field sets the delay between the time the signal is transmitted and the time the transmitter shuts off.

To change this field, press **<enter>** to gain field entry. Enter a value in the range of 14 to 20. Each unit corresponds to 10 milliseconds. To exit the field press **<enter>**,**<esc>**, or **Up/Down** Arrow keys. Press **[F5]** to write changes to the Control Shelf.

REMOTE DIAGNOSTICS SETUP

```
┌─────────────────────────────────────┐
│       MODEM ACCESS          <1>      │
├─────────────────────────────────────┤
│ │ SERIAL PORT ACCESS        <2>      │
│ │ MODEM CONFIGURATION       <3>      │
│ │ SERIAL REQUEST TIMEOUT    <4>      │
└─────────────────────────────────────┘
```
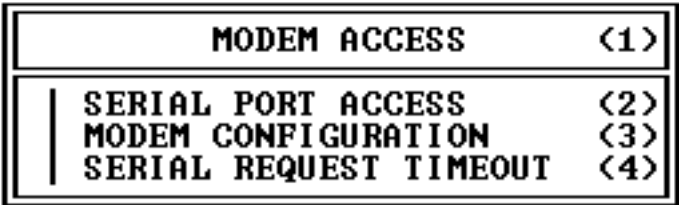
Figure 3-9 - Modem Access Screen

(1) Screen Title   - modem access
(2) Serial Port Access   - sends characters across com port
(3) Modem Configuration   - sets various modem parameters
(4) Serial Request Timeout - sets wait time for response

The Modem Access Screen, shown in Figure 3-9, allows you to fine tune a modem, modify a subset of modem parameters, and set data request program wait time.

SERIAL PORT ACCESS   (2)   The **SERIAL PORT ACCESS** field allows you to access a screen where keyboard characters can be transmitted across the active com port. Since the Modem Configuration option is limited, this function allows further fine tuning of a modem. Modem settings applied here are NOT saved to a file.

To send a keyboard character across the active com port, use the **Up/Down** Arrow keys to highlight this field and press **<enter>**.

MODEM CONFIG URATION   (3)   The **MODEM CONFIGURATION** field allows you to access a screen where a subset of modem parameters can be modified. You may also save the settings to a file. If the modified settings are NOT saved, then the old settings will be in force when using the modem.

To modify the modem parameters, use the **Up/Down** Arrow keys to highlight this field and press **<enter>**.

SERIAL REQUEST TIME OUT   (4)   The **SERIAL REQUEST TIME OUT** field allows you to access a screen where you can set the amount of time that the program will wait for a response after sending a data request. Once the timer expires, an error message will appear.

To modify the wait time, use the **Up/Down** Arrow keys to highlight this field and press **<enter>.**

SERIAL PORT ACCESS

```
┌─────────────────────────────────────────────────────┐
│ ENTER ASCII STRING:              <1>                  │
└─────────────────────────────────────────────────────┘
┌─────────────────────────────────────────────────────┐
│                         <2>                           │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
└─────────────────────────────────────────────────────┘
```

Figure 3-10 - Serial Port Access Screen

  (1) Enter ASCII String   - characters to send across com port
  (2) Echo Window   - characters sent will be echoed here

The Serial Port Access Screen, shown in Figure 3-10, allows keyboard characters to be transmitted across the active communication port. Since the Modem Configuration option is limited, this function allows further fine tuning of a modem.

To send keyboard characters across the active communication port, enter the characters in the ENTER ASCII STRING field and press **<enter>**. The characters sent will echo in the ECHO WINDOW.

Modem settings applied here are NOT saved to a file.

MODEM CONFIGURATION

```
          MODEM PARAMETERS (1)

Modem Delay Type: Wait For OK  (2) Tone Timing:       70 (7)
Modem Intercommand Delay: 2    (3) Wait For Dial Tone: 2  (8)
Dialing Type:      TOUCH TONE (4) Wait For Carrier:  12 (9)
Modem Speaker Status:     1   (5) Recognize Carrier:  6 (10)
Comma Pause Time:         1   (6) Carrier Dropout:    7 (11)


Esc=Exit                              WRITE [F5]
```

Figure 3-11 - Modem Parameters Screen

  (1) Screen Title   - modem parameters
  (2) Modem Delay Type   - wait mode
  (3) Modem Intercom Delay   - time between "AT" commands
  (4) Dialing Type   - touch tone/pulse
  (5) Modem Speaker Status   - tells if speaker is on/off
  (6) Comma Pause Time   - wait time after comma detected
  (7) Tone Timing   - time between DTMF/duration digit
  (8) Wait for Dial Tone   - wait time before dialing
  (9) Wait for Carrier   - wait time before aborting call
 (10) Recognize Carrier   - time before carrier recognized
 (11) Carrier Dropout   - wait time before disconnecting

The Modem Parameters Screen, shown in Figure 3-11, allows you to modify a subset of modem parameters.

MODEM DELAY TYPE (2) The **MODEM DELAY TYPE** field is used to permit Hayes compatible modems to accept "AT" type commands with or without a pause between them. To change this field, press **<enter>** to gain field entry. Press the **Left/Right** Arrow keys to toggle between "Wait for OK'" and "Fixed Delay". "Wait for OK" will wait for the modem to return to a predefined string.

```
                    MODEM PARAMETERS (1)

Modem Delay Type: Wait For OK  (2) Tone Timing:        70 (7)
Modem Intercommand Delay: 2    (3) Wait For Dial Tone: 2  (8)
Dialing Type:      TOUCH TONE  (4) Wait For Carrier:   12 (9)
Modem Speaker Status:     1    (5) Recognize Carrier:  6 (10)
Comma Pause Time:         1    (6) Carrier Dropout:    7 (11)


Esc=Exit                                      WRITE [F5]
```

MODEM   (2)   "Fixed Delay" will wait a fixed period of time
DELAY   between each "AT" command. To exit the field,
TYPE   press **<enter>**, **<esc>**, or **Up/Down** Arrow
Cont'd   keys. Press [**F5**] to write changes to the Control
                 Shelf.

MODEM   (3)   The **MODEM INTERCOMMAND DELAY**
INTER-   field is used to indicate the amount of time to
COMMAND   wait between "AT" commands. If the MODEM
DELAY   DELAY TYPE is "Wait for OK" this field will
                 specify the amount of ticks to wait for the
                 modem to respond. If the MODEM DELAY
                 TYPE is "Fixed Delay" this field will specify
                 the amount of ticks to wait between each "AT"
                 command.

                 To change this field, press **<enter>** to gain field
                 entry. Enter a value in the range of 0 to 255
                 ticks. Each unit (tick) corresponds to 1/18th
                 second. To exit the field press **<enter>**,**<esc>**,
                 or **Up/Down** Arrow keys. Press [**F5**] to write
                 changes to the Control Shelf.

DIALING   (4)   The **DIALING TYPE** field allows you to dial
TYPE   in either "Pulse" or "Touch Tone" mode.

                 To change this field, press **<enter>** to gain field
                 entry. Press the **Left/Right** Arrow keys to tog-
                 gle between "Pulse" and "Touch Tone" mode.
                 To exit the field press **<enter>**,**<esc>**, or
                 Up/Down Arrow keys. Press [**F5**] to write
                 changes to the Control Shelf.

MODEM
SPEAKER
STATUS

(5) The **MODEM SPEAKER STATUS** field allows you to select the modem speaker status.

To change this field, press **<enter>** to gain field entry. Enter either "0", "1", or "2". "0" sends modem command ATM0, turning the modem speaker off. "1" sends modem command ATM1, turning modem speaker on until carrier is enabled. "2" sends modem command ATM2, turning the modem speaker on continuously. To exit the field, press **<enter>**,**<esc>**, or **Up/Down** Arrow keys. Press **[F5]** to write changes to the Control Shelf.

COMMA
PAUSE
TIME

(6) The **COMMA PAUSE TIME** field is used to set modem register S8 to the specified value. S8 contains the number of seconds to pause when a comma is found in the dialed digits screen.

To change this field, press **<enter>** to gain field entry. Enter a value in the range of 0 to 255. Each unit corresponds to 1 second. To exit the field, press **<enter>**, **<esc>,** or **Up/Down** Arrow keys. Press **[F5]** to write changes to the Control Shelf.

TONE
TIMING

(7) The **TONE TIMING** field is used to specify the number of milliseconds each digit is toned out and the number of milliseconds between each digit. To change this field, press **<enter>** to gain field entry. Enter a value in the range of 0 to 255. Each unit corresponds to 1 millisecond. To exit the field, press **<enter>**, **<esc>**, or **Up/Down** Arrow keys. Press **[F5]** to write changes to the Control Shelf.

WAIT FOR
DIAL TONE

(8) The **WAIT FOR DIAL TONE** field is used to set modem register S6 to the specified value. The modem will wait the indicated amount of time after going off hook before dialing begins.

```
                    MODEM PARAMETERS (1)
  Modem Delay Type: Wait For OK  (2) Tone Timing:         70 (7)
  Modem Intercommand Delay:  2   (3) Wait For Dial Tone:  2  (8)
  Dialing Type:      TOUCH TONE (4) Wait For Carrier:    12 (9)
  Modem Speaker Status:       1   (5) Recognize Carrier:   6 (10)
  Comma Pause Time:           1   (6) Carrier Dropout:     7 (11)


  Esc=Exit                                        WRITE [F5]
```

WAIT FOR DIAL TONE Cont'd	(8)	To change this field, press <enter> to gain field entry. Enter a value in the range of 0 to 255. Each unit corresponds to 1 second. To exit the field, press **<enter>**, **<esc>**, or **Up/Down** Arrow keys. Press **[F5]** to write changes to the Control Shelf.
WAIT FOR CARRIER	(9)	The **WAIT FOR CARRIER** field is used to set modem register S6 to the specified value. The modem will wait the specified number of seconds after after dialing is complete before aborting the call.
		To change this field, press **<enter>** to gain field entry.Enter a value in the range of 0 to 255. Each unit corresponds to 1 second. To exit the field, press **<enter>**, **<esc>**, or **Up/Down** Arrow keys. Press **[F5]** to write changes to the Control Shelf.
RECOG- NIZE CARRIER	(10)	The **RECOGNIZE CARRIER** field is used to specify the amount of time to wait after the carrier is present before it is recognized.
		To change this field, press **<enter>** to gain field entry. Enter a value in the range of 0 to 255. Each unit corresponds to 100 milliseconds. To exit the field, press **<enter>**, **<esc>**, or **Up/Down** Arrow keys. Press **[F5]** to write changes to the Control Shelf.
CARRIER DROPOUT	(11)	The **CARRIER DROPOUT** field is used to specify the amount of time the modem will wait after losing the carrier before disconnect-

ing. This field sets modem register S10 to the specified value.

To change this field, press **<enter>** to gain field entry. Enter a value in the range of 0 to 255. Each unit corresponds to 100 milliseconds. To exit the field, press **<enter>**, **<esc>**, or **Up/Down** Arrow keys. Press **[F5]** to write changes to the Control Shelf.

SERIAL REQUEST TIMEOUT

```
┌─────────────────────────────────────────────┐
│        SERIAL PORT TIMEOUT (1)               │
├─────────────────────────────────────────────┤
│ Enter Timeout Value (3 to 99 sec) 3 (2)      │
│                                              │
│ Esc=Exit                                     │
└─────────────────────────────────────────────┘
```

Figure 3-12 - Serial Port Timeout Screen

(1) Screen Title   - serial port timeout
(2) Enter Timeout Value   - wait time in seconds

The Serial Port Timeout Screen, shown in Figure 3-12, allows you to set the time out time for the serial port.

ENTER   (2)   The **ENTER TIMEOUT VALUE** field is
TIMEOUT   used to specify the amount of time the program
VALUE   will wait for a response once a data request has
                 been sent. When this timer expires, the follow-
                 ing error message appears: SERIAL LINK
                 NOT RESPONDING. PLEASE CHECK
                 CONNECTIONS.

To change this field, press **<enter>** to gain field entry. Enter a value in the range of 3 to 99 seconds. When the timer expires, an error message will appear. To exit the field, press **<enter>**, **<esc>**, or the **Up/Down** Arrow keys.

PHONE DIRECTORY LIST

```
  NAME<1>                  NUMBER<2>              <3>BAUD      PORT<4>

 Clark Kent                1-800-555-1515          9600        COM 1




   [F5] DIAL HIGHLIGHT<5>  [INSERT] ADD DIRECTORY ENTRY    <8>
   [F6] DIAL MANUAL   <6>  [F3]     REVISE HIGHLIGHT ENTRY<9>
   [F7] HANG UP       <7>  [DELETE] DELETE HIGHLIGHT ENTRY<10>
   Esc=Exit
```

Figure 3-13 - Phone Directory List Screen

(1) Name	- entry identifier
(2) Number	- phone number
(3) Baud	- baud rate to be used
(4) Port	- communication port to use
(5) Dial Highlight	- dials selected number
(6) Dial Manual	- allows manual number dial
(7) Hang Up	- disconnects call
(8) Add Directory Entry	- inserts new phone entry in list
(9) Revise Highlight Entry	- modifies selected number
(10) Delete Highlight Entry	- deletes selected phone entry

The Phone Directory List Screen, shown in Figure 3-13, provides a phone directory displaying a list of phone numbers unique to the specific needs of the control shelf user.

NAME   (1)   The **Name** field is used as the entry identifier. This field can consist of up to 22 alphabetic characters. Entries are shown according to the

order they are added. Newest entries will appear at the bottom of the list. Oldest entries are at the top. Modifying and saving an entry will cause it to be placed at the end of the list as though it were a new entry.

You can add, modify, or delete an entry through the Phone Directory List Screen. To add an entry, press **Insert**. To Delete an entry, use the **Up/Down** Arrow keys to highlight the entry and press **Delete**. To modify an existing entry, use the **Up/Down** Arrow keys to highlight the entry and press [**F3**].

You can easily place a call using the Phone Directory List. Use the **Up/Down** Arrow keys to highlight the entry and press [**F5**] to automatically dial the number, or press [**F6**] to manually dial the number. Once a call is complete, press [**F7**] to disconnect the call.

NUMBER   (2)   The **Number** field is used to indicate the phone number associated with the entry identifier shown in the Name field. This field can consist of up to 20 digits. Numerals, hyphens, parenthesis, and commas are acceptable characters. The use of commas slow modem dialing speed. Entries are shown according to the order they are added. Newest entries will appear at the bottom of the list. Oldest entries are at the top. Modifying and saving a number in an entry will cause it to be placed at the end of the list as though it were a new entry.

You can add, modify, or delete a number through the Phone Directory List. To add a number, press **Insert**. To Delete a number, use the **Up/Down** Arrow keys to highlight the entry and press **Delete**. To modify an existing number, use the **Up/Down** Arrow keys to highlight the entry and press [**F3**].

BAUD   (3)   The **Baud Rate** field is used to indicate the selected baud rate for this call. Supported baud rates are 300, 1200, 2400, 4800, 9600 and 19200. Entries are shown according to the order they are added. Newest entries will appear at the bottom of the list. Oldest entries are at the top. Modifying and saving the baud rate in an entry will cause it to be placed at the end of the list as though it were a new entry.

    You can add, modify, or delete an entry through the Phone Directory List. To add an entry, press **Insert**. To Delete an entry, use the **Up/Down** Arrow keys to highlight the entry and press **Delete**. To modify an existing entry, use the **Up/Down** Arrow keys to highlight the entry and press **[F3]**.

PORT   (4)   The **Communication Port** field is used to indicate the selected communication port for this call. Supported communication ports are 1, 2, 3, or 4. Entries are shown according to the order they are added.

    Newest entries will appear at the bottom of the list. Oldest entries are at the top. Modifying and saving a communication port setting in an entry will cause it to be placed at the end of the list as though it were a new entry.

    You can add, modify, or delete an entry through the Phone Directory List. To add an entry, press **Insert**. To Delete an entry, use the **Up/Down** Arrow keys to highlight the entry and press **Delete**. To modify an existing entry, use the **Up/Down** Arrow keys to highlight the entry and press **[F3]**.

PHONE DIRECTORY SETTINGS

```
             PHONE DIRECTORY   <1>

   NAME:                       <2>
   NUMBER:                     <3>
   BAUD RATE:    300           <4>
   COM PORT:   COM 1           <5>

 Esc=Exit                   WRITE [F2]
```

Figure 3-14 - Phone Directory Screen

(1) Screen Title   - phone directory
(2) Name   - entry identifier
(3) Number   - phone number
(4) Baud Rate   - baud rate setting
(5) Com Port   - communication port setting

The Phone Directory Screen, shown in Figure 3-14, allows you to define the settings displayed in the Phone Directory List.

NAME   (2)   The **Name** field is used to indicate the name to be displayed as the entry identifier in the Phone Directory List.

To define the Name field, type in the desired characters. To be valid, this field can consist of up to 22 alphabetic characters. To exit the field press the **Up/Down** arrow keys, or **<esc>** .Pressing **[F2]** will save the selection(s) made in this screen.

NUMBER   (3)   The **Number** field is used to indicate the number to be displayed as the phone number in the Phone Directory List.

```
┌─────────────────────────────────────────────┐
│           PHONE DIRECTORY   <1>              │
├─────────────────────────────────────────────┤
│   NAME:                     <2>              │
│   NUMBER:                   <3>              │
│   BAUD RATE:    300         <4>              │
│   COM PORT:   COM 1         <5>              │
│                                              │
│   Esc=Exit                  WRITE [F2]       │
└─────────────────────────────────────────────┘
```

NUMBER   (3)   To define the Number field, type in the desired
Cont'd   phone number to be used in association with the above defined name. The Number field can consist of up to 20 characters. To be valid, characters can be numeric, hyphens, parenthesis, or commas. However, commas will slow modem dialing speed. To exit the field press the **Up/Down** arrow keys, or **<esc>**. Pressing **[F2]** will save the selection(s) made in this screen.

BAUD   (4)   The **Baud Rate** field is used to select the baud
RATE   rate for the entry defined above.

               To define the Baud Rate field, press **<enter>** to bring up the Baud Rate Selection Menu. Use the **Up/Down** Arrow keys to highlight the desired baud rate. Press **<enter>** to select the setting and return to the Phone Directory List Screen. To exit the Baud Rate field press the **Up/Down** arrow keys. Pressing **[F2]** will save the selection(s) made in this screen.

COM   (5)   The **Communication Port** field is used to
PORT   select the communication port for the entry defined above.

               To define the Com Port field, use the **Left/Right** Arrow keys to scroll through the list. Press **<enter>** to select the setting. To exit the Com Port field press the **Up/Down** arrow keys. Pressing **[F2]** will save the selection(s) made in this screen.

STATION DIAGNOSTICS

```
┌─────────────────────────────────────┐
│   DIAGNOSTICS          ⟨1⟩           │
│ ┌─────────────────────────────────┐ │
│ │ MASTR III STATION STATUS⟨2⟩      │ │
│ │ TONE DIAGNOSTIC          ⟨3⟩     │ │
│ │ PARALLEL I/O             ⟨4⟩     │ │
│ │ SWITCHES/INPUTS          ⟨5⟩     │ │
│ │ FUNCTIONS/MISC           ⟨6⟩     │ │
│ │ BASIC INFORMATION        ⟨7⟩     │ │
│ └─────────────────────────────────┘ │
└─────────────────────────────────────┘
```

Figure 3-15 - Diagnostics Screen

(1) Screen Title   - diagnostics
(2) MASTR III Station Status   - displays MASTR III station info
(3) Tone Diagnostic   - helps define tones station receives
(4) Parallel I/O   - system input/output voltage levels
(5) Switches Inputs   - shows System Module input list
(6) Functions/Misc   - status of various functions/ misc
(7) Basic Information   - assists in defining station actions

The Diagnostics Screen, shown in Figure 3-15, provides access into screens where station diagnostics can be performed.

MASTR III   (2)   The **MASTR III Station Status** field provides
STATION   access to a screen displaying the MASTR III
STATUS   station module fault status, frequency values,
                  circulator status, and the power amplifier po-
                  tentiometer setting.

                  To access the screen, use the **Up/Down** Arrow
                  keys to highlight the MASTR III STATION
                  STATUS field and press **<enter>**.

```
┌─────────────────────────────┐
│     DIAGNOSTICS      <1>     │
├─────────────────────────────┤
│ MASTR III STATION STATUS<2> │
│ TONE DIAGNOSTIC         <3> │
│ PARALLEL I/O            <4> │
│ SWITCHES/INPUTS         <5> │
│ FUNCTIONS/MISC          <6> │
│ BASIC INFORMATION       <7> │
└─────────────────────────────┘
```

MASTR III   (2)   • Pertains to MASTR III Stations ONLY. If
STATION   this station is a MASTR IIe the following
STATUS   screen appears:
Cont'd

Warning
Station is programmed as a Mastr IIe

TONE   (3)   The **Tone Diagnostics** field provides access to
DIAG-   a screen which displays control tones that the
NOSTIC   station receives and acts on.

                   To access the screen, use the **Up/Down** Arrow
                   keys to highlight the TONE DIAGNOSTIC
                   field and press **<enter>**.

PARAL-   (4)   The **Parallel I/O** field provides the status of the
LEL I/O   inputs and outputs that interface with the mi-
                   croprocessor via the Programmable Peripheral
                   Interface chip (U34) on the System Board.

                   To access the screen, use the **Up/Down** Arrow
                   keys to highlight the PARALLEL I/O field and
                   press **<enter>**.

SWITCHES/   **(5)**   The **Switches /Inputs** field provides the status
INPUTS   of the System Module inputs (REMOTE PTT,
                   CG MON, CAS, LOCAL PTT, and BATT
                   STDBY), three switches on front of the System
                   Module, and the DC Control Current.

To access the screen, use the **Up/Down** Arrow keys to highlight the SWITCHES/INPUTS field and press **<enter>**.

FUNC-
TIONS/
MISC

(6) The **Functions/Miscellaneous** field provides access to a screen which displays the status of several functions and other miscellaneous information such as whether or not scan is active, repeats are enabled, and transmits are enabled.

To access the screen, use the **Up/Down** Arrow keys to highlight the FUNCTIONS/MISC field and press **<enter>**.

BASIC
INFORMA-
TION

(7) The **Basic Information** field displays the status of the currently active channel, how audio is routed through the System Module, the status of Channel Guard, status of the transmitter control lines, and what is keying the station.

To access the screen, use the **Up/Down** Arrow keys to highlight the BASIC INFORMATION field and press **<enter>**.

MASTR III STATION STATUS

```
              MASTR III STATUS (1)

                 CHANNEL 1 (2)

  POWER AMP GOOD (3)
  TX LOCKED GOOD (4)          TX FREQ  152.1250(11)
  RX LOCKED GOOD (5)          RX FREQ  151.5000(12)
  IF MODULE GOOD (6)          PA POWER 1        (13)
  RF MODULE GOOD (7)

  CIRCULATOR:              REFERENCE FREQUENCY:
     ENABLE DISABLED (8)      SOURCE  INTERNAL(14)
     STATUS GOOD     (9)      FREQ    12.80000(15)
     LEVEL  170     (10)

  Esc=Exit                             READING
```

Figure 3-16 - MASTR III Status Screen

(1) Screen Title	- MASTR III status
(2) Channel	- displays currently active channel
(3) Power Amp	- displays power amplifier status
(4) Tx Locked	- displays transmit synthesizer status
(5) Rx Locked	- displays receive synthesizer status
(6) IF Module	- displays IF module status
(7) RF Module	- displays receiver front end status
(8) Circulator Enable	- displays enable status of circulator fault
(9) Circulator Status	- displays status of circulator fault
(10) Circulator Level	- displays level of circulator fault
(11) Tx Freq	- displays transmit frequency
(12) Rx Freq	- displays receive frequency
(13) PA Power	- displays power amplifier pot setting
(14) Ref Freq Source	- displays type of reference frequency
(15) Ref Freq Freq	- displays frequency of reference freq

The MASTR III Status Screen, shown in Figure 3-16, allows you to view data pertaining only to MASTR III stations. If access into this screen is attempted from a station other than MASTR III a warning will appear preventing screen entry. All fields in this screen are "DISPLAY ONLY" and cannot be modified.

CHANNEL (2) The **Channel** field displays the MASTR III station's currently active channel.

POWER
AMP

(3) The **Power Amplifier** field displays the status of the Power Amplifier. This information is only useful when the station is transmitting.

When the station is transmitting and the power amplifier has problems, the field will read "FAULT". When the station is not trying to transmit, the field will read "GOOD".

TX
LOCKED

(4) The **TX Locked** field displays the status of the transmit synthesizer. This information is only useful when the station is transmitting.

When the transmit synthesizer is in the station, this field will display "GOOD" until a transmission is attempted. If the synthesizer locks on a frequency, the field will continue to display "GOOD". If the transmit synthesizer does not lock at transmission, the field will read "FAULT".

RX
LOCKED

(5) The **Rx Locked** field displays the status of the receive synthesizer.

When the receiver is in the station, and when it locks on the programmed frequency, the field will display "GOOD". When the receive synthesizer does not lock onto the programmed frequency, the field will read "FAULT".

IF
MODULE

(6) The **IF Module** field displays the status of the IF module.

When the IF module fault indicator is lit, the field will display "FAULT". When the IF module fault indicator is not lit, the field will display "GOOD".

RF
MODULE

(7) The **RF Module** field displays the status of the receiver front end.

```
RF MODULE GOOD (7)

CIRCULATOR:                    REFERENCE FREQUENCY:
    ENABLE DISABLED (8)           SOURCE  INTERNAL(14)
    STATUS GOOD      (9)          FREQ    12.80000(15)
    LEVEL  170      (10)

Esc=Exit                                      READING
```

RF
MODULE
Cont'd

(7) When the front end's fault indicator is lit, the field will display "FAULT". When the front end's fault indicator is not lit, the field will display "GOOD".

NOTE

When any of the above four modules (transmit synthesizer, receive synthesizer, IF module, or RF module) are not present in the station, the associated field will show "FAULT" if Interface Board is Rev. A or later. The display will show "GOOD" if the Interface Board is not Rev. A or later.

CIRCU-
LATOR
ENABLE

(8) The **Circulator Enable** field displays whether or not the station has been programmed to detect circulator faults.

When the station has been programmed to detect circulator faults, the field will display "ENABLED". When the station has not been programmed to detect circulator faults the field will display "DISABLED".

To detect a circulator fault, an output of the circulator is connected to the Interface Board. This voltage determines the voltage on the input to the System Board power sensor. This voltage is then converted to a number between 0 (for 0 volts) and 255 (for 5 volts). This number is then compared with the number

displayed in the LEVEL field. When the number reaches or exceeds the LEVEL field value the station detects a circulator fault. The transmitter will then be disabled and the PA Alarm LED on the front of the station will flash. The circulator fault state will remain until the voltage is lowered and a reset is done on the station.

CIRCU- LATOR STATUS	(9)	The **Circulator Status** field displays whether or not the station detects a circulator fault.

When the Circulator Enable field displays "ENABLED" this field will display "FAULT" when a circulator fault occurs. This field will display "GOOD" when no circulator fault is detected. When the Circulator Enable field displays "DISABLED", the Circulator Status field will never display "FAULT".

CIRCU- LATOR LEVEL	(10)	The **Circulator Level** field displays the level that will cause a circulator fault.
TX FREQ	(11)	The **TX Freq** field displays the transmit frequency for the current channel. Frequencies are displayed in Mhz.
RX FREQ	(12)	The **RX Freq** field displays the receive frequency for the current channel. Frequencies are displayed in Mhz.
PA POWER	(13)	The **PA Power** field displays the setting of the power amplifier potentiometer on the Interface Board.
REF FREQ SOURCE	(14)	The **Reference Frequency Source** field displays whether an internal or external reference frequency is being used.

When an internal reference frequency is being used the Source field will display "INTERNAL". When an external reference frequency

is used the Source field will display "EXTER-NAL".

REF   (15) The **Reference Frequency Freq** field displays
FREQ   the actual frequency in Mhz of the reference
FREQ   frequency.

TONE DIAGNOSTICS

```
        TONE STATUS <1>                          <7>

REMOTE         4 WIRE   <2>
TONE REMOTE    ENABLE   <3>
DTMF DECODE    DISABLE  <4>
TYPE 90        DISABLE  <5>
SECURIT LEVEL TONE   ACCEPT <6>




         F2=ClrScr

Esc=Exit    F3=PauseScr    Pause Off
```
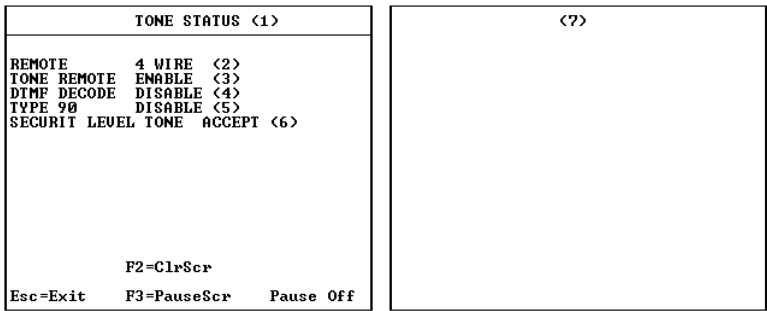
Figure 3-17 - Tone Status Screen

(1) Screen Title   - tone status
(2) Remote   - indicates #-wire remote
(3) Tone Remote   - displays tone remote setting
(4) DTMF Decode   - displays DTMF decode setting
(5) Type 90   - displays type 90 tone setting
(6) Securit Level Tone - indicates whether secur-it level function
                                tones are accepted
(7) Tones   - shows tones detected by station

The Tone Status Screen, shown in Figure 3-17, displays information on how the station is programmed and what tones are detected by the station. All fields are "DISPLAY ONLY" and cannot be modified.

REMOTE   (2)   The **Remote** field displays whether the station
                    is programmed to work with a four-wire re-mote or a two-wire remote.

This field will display "2 WIRE" unless the station has been programmed to work with a four-wire remote. When programmed to work with a four-wire remote the field will display "4 WIRE".

TONE   (3)   The **Tone Remote** field displays whether or not
REMOTE   the station is programmed to work with a tone
                     remote.

When the station is programmed to work with a tone remote, this field will display "EN-ABLE". Otherwise the field will display "DIS-ABLE".

DTMF   (4)   The **DTMF Decode** field displays whether or
DECODE   not the station is programmed to decode
                     DTMF.

When the station is programmed to decode DTMF, this field will display "ENABLE". Otherwise the field will display "DISABLE".

TYPE 90   (5)   The **Type 90** field displays whether or not the
                     station is programmed to detect type 90 tones.

When the station is programmed to detect type 90 tones, this field will display "ENABLE". Otherwise the field will display "DISABLE".

SECURIT   (6)   The **Securit Level Tone** field displays how
LEVEL   function tones near the same level as the Secur-
TONE   it tone will be treated. On tone remote systems,
                     the level of the function tone that comes after
                     the Secur-it tone is usually 10 dB below the
                     level of the Secur-it tone.

When the station is programmed to not enforce the 10 dB level difference this field will display "ACCEPT". Function tones that are higher than 10 dB below the Secur-it are processed. When the station is programmed to enforce the 10 dB level difference, this field will display

```
┌──────────────────────────────┐ ┌──────────────────────────────┐
│        TONE STATUS <1>        │ │            <7>               │
│                              │ │                              │
│ REMOTE      4 WIRE  <2>      │ │                              │
│ TONE REMOTE ENABLE  <3>      │ │                              │
│ DTMF DECODE DISABLE <4>      │ │                              │
│ TYPE 90     DISABLE <5>      │ │                              │
│ SECURIT LEVEL TONE  ACCEPT <6>│ │                              │
│                              │ │                              │
│                              │ │                              │
│                              │ │                              │
│          F2=ClrScr           │ │                              │
│                              │ │                              │
│ Esc=Exit  F3=PauseScr  Pause Off│ │                              │
└──────────────────────────────┘ └──────────────────────────────┘
```

"IGNORE". Function tones higher than 10 dB under the Secur-it are ignored.

TONE (7) The **Tone** field, or right side of the Tone Status Screen, displays any tones that are detected by the station.

– Tone Remote:
The Tone Remote field must be enabled for the station to detect tone remote tones.
When the station detects a tone remote tone, the message "TONE REMOTE" will appear in the screen. The frequency of the tone and a level indicator will also appear. If the tone is 2175 Hz, the tone will show a Secur-it, Function, or Hold level. If the incoming tone does not have a frequency of 2175 Hz, the level indicated will be either Secur-it or Function. When the station detects that the tones have gone away the message "TONE REMOTE NO TONE" will appear. No message for a function tone will appear unless that function tone has been programmed to do something.

– DTMF:
The DTMF Decode field must be enabled for the station to detect DTMF tones.
When a DTMF tone is detected by the station, "DTMF" will appear with the value of the DTMF digit received. When the tone goes away, a "NO TONE" message will appear.

− TYPE 90:
   The Type 90 field must be enabled for the
   station to detect Type 90 tones.
   When detected, the words "TYPE 90" ap-
   pear with the frequency displayed also.
   When the tone goes away a "NO TONE"
   message will appear.

Messages can be cleared at any time by press-
ing **[F2]**. The display of messages can be
stopped at any time by pressing **[F3]**. When
messages are stopped, "PAUSE ON" will be
displayed. During the pause, all messages that
would have been displayed are discarded.

PARALLEL I/O

```
<MASTR IIE>
┌─────────────────────────────────────────────────────┐
│                  PARALLEL I/O <1>                    │
│                                                       │
│ GETC OUT <2>      GETC IN <3>       ICOMS <4>         │
│                                     /MIII Control     │
│                   HIGH COMB PTT     OPEN Rxf4/AUX2    │
│                   HIGH TX CG Dis    OPEN Rxf3/AUX1    │
│  GND Rx Mute      HIGH Delay PTT     GND Rxf2         │
│ OPEN Comb PTT      LOW RUS in       OPEN Rxf1         │
│ OPEN Rem PTT      HIGH 1950 Dis     OPEN Txf4/UG guard│
│ OPEN CG Mon       HIGH Detect Dis   OPEN Txf3/UG clear│
│ OPEN UG PTT       HIGH Repeat PTT   OPEN Txf2         │
│ OPEN Rep PTT      HIGH UG Sq Dis     GND Txf1         │
│                                                       │
│                                                       │
│ Esc=Exit                                   READING    │
└─────────────────────────────────────────────────────┘


<MASTR III>
┌─────────────────────────────────────────────────────┐
│                  PARALLEL I/O <1>                    │
│                                                       │
│ GETC OUT <2>      GETC IN <3>       ICOMS <4>         │
│                                     /MIII Control     │
│                   HIGH COMB PTT       X Rxf4/AUX2     │
│                    LOW TX CG Dis    OPEN Rxf3/AUX1    │
│  GND Rx Mute      HIGH Delay PTT      X Rxf2          │
│ OPEN Comb PTT     HIGH RUS in         X Rxf1          │
│ OPEN Rem PTT      HIGH 1950 Dis     OPEN Txf4/UG guard│
│ OPEN CG Mon        LOW Detect Dis   OPEN Txf3/UG clear│
│ OPEN UG PTT       HIGH Repeat PTT     X Txf2          │
│ OPEN Rep PTT      HIGH UG Sq Dis      X Txf1          │
│                                                       │
│                                                       │
│ Esc=Exit                                   UPDATE     │
└─────────────────────────────────────────────────────┘
```

Figure 3-18 - Parallel I/O Screen

(1) Screen Title   - parallel I/O
(2) GETC Out   - outputs coming from Port A
(3) GETC In   - inputs going to Port B of chip U34
(4) ICOMS/MIII Control   - outputs coming from Port C

The Parallel I/O Screens, shown in Figure 3-18, displays inputs and outputs of the System Module. The screen is repetitively updated with the voltage

level of these inputs and outputs. All fields in the screen are "DISPLAY ONLY" and cannot be modified.

GETC OUT   (2)   The **GETC Out** column displays outputs coming from Port A of chip U34 on the System Board. Most outputs are GETC control lines.

GETC Out entries reflect the status of corresponding outputs. If an entry reads "GND", the output is at 0 volts at the backplane. If an entry reads "OPEN", the corresponding output will be open, and a pull-up resistor must be used to set the voltage of the outputs.

GETC IN   (3)   The **GETC In** column displays inputs eventually going to Port B of chip U34 on the System Board. Most inputs are GETC control lines.

GETC In entries reflect the voltage at the corresponding inputs. If these voltages are at a low logic level (around 0 volts), the field will read "LOW". Otherwise, the voltages are at high logic levels (around 5 volts), and the field will read "HIGH".

ICOMS/ M III CONTROL   (4)   The **ICOMS/MIII Control** column displays the status of the outputs coming from Port C of chip U34 on the System Board. These outputs control the transmit and receive ICOMS on MASTR IIe stations. On MASTR III stations, some of the lines are used to communicate with the Interface Board.

ICOM/MIII Control entries reflect the status of corresponding outputs. If an entry reads "GND", the output is at 0 volts at the backplane. If an entry reads "OPEN", the corresponding output will be open, and a pull-up resistor must be used to set the voltage of the outputs. However, if the station being read is a MASTR III station, those lines that are used to communicate with the Interface Board will always have an "X" beside them. The "X" is

placed there because those lines change much
faster than the screen can be updated.

SWITCHES/INPUTS

```
┌─────────────────────────────────────┐
│        SWITCHES/INPUTS (1)           │
│                                      │
│                                      │
│   OFF (HIGH) Rem PTT      (2)        │
│   OFF (HIGH) Tx Dis       (3)        │
│   OFF (HIGH) CG Mon       (4)        │
│   OFF (HIGH) Batt Stdby   (5)        │
│          -11 DC mA        (6)        │
│   OFF (HIGH) Local PTT    (7)        │
│   OFF  (GND) CAS          (8)        │
│                                      │
│   Esc=Exit            READING        │
└─────────────────────────────────────┘
```

Figure 3-19 - Switches/Inputs Screen

(1) Screen Title   - switches/inputs
(2) Rem PTT   - displays status of remote ptt
(3) Tx Dis   - displays status of transmit disable
(4) CG Mon   - displays Channel Guard monitor status
(5) Batt Stdby   - displays status of battery standby
(6) DC mA   - interpretation of DC control input
(7) Local PTT   - displays status of local ptt
(8) CAS   - displays status of CAS

The Switches/Inputs Screen, shown in Figure 3-19, displays a list of System
Module inputs. All fields in this screen are "DISPLAY ONLY" and cannot
be modified.

REM PTT   (2)   The **Rem PTT** field displays the status of the
                  System Module REMOTE PTT IN input. This
                  input is grounded when the System Module
                  REM PTT switch is in the up position.

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This field will display "ON (GND)" when the REM PTT switch is up. When the REM PTT switch is down, the field will indicate the status of the REMOTE PTT IN line. If this line is ground, the field will display "ON (GND)". If this line is at a high logic level, this field will display "OFF (HIGH)".

TX DIS   (3)   The **Tx Dis** field displays the status of the transmit disable switch on the front of the System Module.

This field will display "ON (GND)" when the switch is up. The input to chip U25 is set to GND when this switch is up. The field will display "OFF (HIGH)" when the switch is down. The input is at a high logic level when this switch is down.

CG MON   (4)   The **CG Mon** field displays the status of the System Module CG Monitor input.

This field will display "ON (GND)" when the CG Monitor switch is up. When the switch is down, the field will indicate the status of the CG MON line. If this line is at ground, the field will display "ON (GND)". If this line is at a high logic level, this field will display "OFF (HIGH)".

BATT STDBY   (5)   The **Battery Standby** field displays how the station is being powered.

This field will display "ON (GND)" when the station is powered by the battery backup and the Batt Stdby input is driven to GND. Otherwise the BATT STDBY field will display "OFF (HIGH)" .

DC MA   (6)   The **DC mA** field displays an interpretation of the DC control inputs.

This field will display a value representing the control current in milliamps present at Line In.

LOCAL
PTT

(7)   The **Local Push-To-Talk** field displays whether the voltage at the Local PTT input is near GND or at a high logic level.

This field will display "ON (GND)" when a local microphone keys the station and the voltage at the Local PTT input is close to GND. The field will display "OFF (HIGH)" when the input is at a high logic level.

CAS

(8)   The **CAS** field is used to indicate when a carrier is detected at the station.

This field will display "ON (HIGH)" whenever a carrier is detected at the station and the voltage at the CAS input is driven to a high logic level. Otherwise the field will display "OFF (GND)".

FUNCTIONS/MISCELLANEOUS

```
┌─────────────────────────────────────┐
│         FUNCTIONS/MISC (1)           │
├─────────────────────────────────────┤
│  FUNCTIONS (2)          MISC (3)     │
│  OFF Local PTT      OFF UG CLEAR     │
│  OFF Remote PTT     OFF UG GUARD     │
│  OFF RUS PTT        OFF Uote Tone    │
│  OFF External PTT    NO Scan Active  │
│  OFF RUS Mute       YES Rep Ena      │
│                     OFF CG Mon Latch │
│                     YES Tx Enable    │
│                                      │
│  Esc=Exit               UPDATE       │
└─────────────────────────────────────┘
```

Figure 3-20 - Functions/Misc Screen

(1) Screen Title   - functions/misc
(2) Functions   - displays station function information
(3) Misc   - displays misc station information

The Functions/Misc Screen, shown in Figure 3-20, displays station function information and some miscellaneous information pertinent to station operation. All fields in this screen are "DISPLAY ONLY" and cannot be modified.

FUNC-   (2)   The **Functions** column displays the status of
TIONS   several station functions.

This column displays "ON" beside a field indicating when a function has been started, or "OFF" indicating the function is not operating.

MISC   (3)   The **Miscellaneous** column displays miscellaneous station data.

− VG Clear:
This field pertains only to stations having Voice Guard.
This field will display "ON" when the station Voice Guard is in Clear mode. Otherwise the field will display "OFF".

− VG Guard:
This field pertains only to stations having Voice Guard.
This field will display "ON" when the station Voice Guard is in Guarded mode. Otherwise the field will display "OFF".

− Vote Tone:
This field displays "ON" when the microprocessor on the System Board instructs the DSP board to output a voting tone. This does not necessarily mean that the voting tone is output from the station. The field displays "OFF" when no voting tone is output from the DSP board.

– Scan Active:
  This field displays "YES" when the micro-processor on the System Board scans receiver channels. This field displays "NO" when receiver channels are not scanned.

– Rep Ena:
  This field displays "YES" when repeats are enabled. Otherwise the field will display "NO".

– CG Mon Latch:
  This field displays "ON" when a remote, having a Channel Guard On-Off button, starts the Channel Guard monitor latch to prevent Channel Guard decoding. This field displays "OFF" when the Channel Guard monitor latch is disabled.

– Tx Enable:
  This field will display "YES" when transmits are enabled. Otherwise the field will display "NO".

BASIC INFORMATION

```
┌─────────────────────────────────────────────────┐
│            BASIC INFORMATION (1)                │
│                                                 │
│                Channel 1 (2)                    │
│                                                 │
│  AUDIO (3)    CH GUARD (4)    KEYS (5)        TX (6) │
│  LO AGND      OFF Encode   UNKEY Active  OFF (HIGH) ANT RLY │
│  TX AGND      OFF Decode     OFF LOC     OFF (GND) OSC CTRL │
│  LS DSP Line Tx  YES Found   OFF REM         NO Active │
│               OFF Monitor    OFF RUS            │
│                              OFF MCD            │
│  Repeater State IDLE (7)     OFF EXT           │
│  CAS Input OFF      (8)                         │
│                                                 │
│  Esc=Exit                              UPDATE  │
└─────────────────────────────────────────────────┘
```

Figure 3-21 - Basic Information Screen

(1) Screen Title   - basic information

(2) Channel   - displays currently active channel
(3) Audio   - shows how audio is routed
(4) Ch Guard   - displays Channel Guard information
(5) Keys   - indicates push-to-talks occuring
(6) Tx   - displays transmitter information
(7) Repeater State   - indicates base station state
(8) CAS   - station detects carrier on receiver

The Basic Information Screen, shown in Figure 3-21, provides information pertaining to station performance. All fields in this screen are "DISPLAY ONLY" and cannot be modified.

CHANNEL (2) The **Channel** field displays the currently active channel.

AUDIO (3) The **Audio** column displays three fields which indicate how audio is routed through the station. These fields correspond to the three analog multiplexers on the System Module. The multiplexers control the audio to LO (Line Out), TX (Transmitter), and LS (Local Speaker).

The following list indicates possible entries beside LO, TX,and LS:

− Line In
  Line In audio.

− Local Mic
  Local Microphone audio.

− VSQ
  Receiver audio (Volume/Squelch).

− AUX Rcvr
  Auxilliary (2nd) Receiver audio.

− Simul Monitor
  Simultaneous Monitor. This is the sum of the Main Receiver audio (VSQ) and Auxillary Receiver audio.

```
                    BASIC INFORMATION <1>

                        Channel 1 <2>

AUDIO <3>         CH GUARD <4>        KEYS <5>              TX <6>
LO AGND           OFF Encode     UNKEY Active   OFF <HIGH> ANT RLY
TX AGND           OFF Decode       OFF LOC      OFF <GND> OSC CTRL
LS DSP Line Tx    YES Found        OFF REM             NO Active
                  OFF Monitor      OFF RUS
                                   OFF MCD
Repeater State IDLE <7>            OFF EXT
CAS Input OFF        <8>

Esc=Exit                                              UPDATE
```

AUDIO   (3)   − DSP Line Tx
Cont'd   Audio on DSP Line/Tx Aud. This is an
                      output of the DSP Board.

         − DSP Tx
              Audio on DSP Tx Aud. This is an output of
              the DSP Board.

         − Modem Tx
              Modem Line Transmit (MDM Line TXD).
              (This selection is rarely used).

         − Ext HS Data
              External Highspeed Data (EXT HSD).

         − OPEN
              Selects a resistor connected to GND. This is
              selected when only the audio coming from
              the BATT ALRM line should go to Line Out.
              Test tone, battery alarm tone, and morse
              code are put on BATT ALRM.

         − AGND
              Selects Analog GND. Selected when no
              audio should go to Line Out.

CH   (4)   The **Channel Guard** column displays fields
GUARD   containing information pertaining to Channel
                Guard.

         − Encode:
              Displays "ON" when the station is transmit-
              ting and encoding Channel Guard. Other-
              wise this field will display "OFF".

         − Decode:

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Displays "ON" when the station is decoding Channel Guard. Otherwise this field will display "OFF".

− Found:
Displays "YES" when the station is not decoding Channel Guard or when the station is decoding Channel Guard and the programmed Channel Guard has been detected. Otherwise this field will display "NO".

− Monitor:
Displays "ON" when the station is performing Channel Guard Monitor. Otherwise this field will display "OFF".

KEYS (5) The **Keys** column displays any push-to-talks (PTTs) occuring.

− The Active field will display the highest priority PTT.

− The LOC field will display "ON" when Local PTT occurs.

− The REM field will display "ON" when Remote PTT occurs.

− The RUS field will display "ON" when RUS PTT occurs.

− The MDC field will display "ON" when Morse Code is being transmitted.

− The EXT field will display "ON" when External PTT occurs.

TX (6) The **TX** column displays transmitter information.

This field displays "NO" when the transmitter is off. The ANT RLY field will display "OFF

```
                    BASIC INFORMATION <1>

                        Channel 1 <2>

AUDIO <3>            CH GUARD <4>      KEYS <5>                 TX <6>
LO AGND             OFF Encode     UNKEY Active    OFF <HIGH> ANT RLY
TX AGND             OFF Decode       OFF LOC       OFF <GND> OSC CTRL
LS DSP Line Tx      YES Found        OFF REM                NO Active
                    OFF Monitor      OFF RUS
                                     OFF MCD
Repeater State IDLE <7>              OFF EXT
CAS Input OFF       <8>

Esc=Exit                                                       UPDATE
```

TX   (6)   (HIGH)" indicating the ANT RLY line is set to
Cont'd   a high logic voltage level. The OSC CTRL field
                   will display "OFF (GND)" indicating the entry
                   will be at GND.

                   This field displays "YES" when the microproc-
                   essor tries to turn the transmitter on. The ANT
                   RLY will display "ON (GND)" indicating the
                   line is set at GND. The OSC CTRL field will
                   display "ON (HIGH)" indicating a high logic
                   voltage level.

                   On MASTR III stations, the OSC CTRL will
                   not turn on if the Tx Synthesizer does not lock
                   onto the programmed frequency.

REPEAT-   (7)   The **Repeater State** field indicates the state of
ER STATE   the base station.

                   Four displays may appear in this field:

                   − IDLE
                     There are no push-to-talks and the transmit-
                     ter is off.

                   − PTT
                     A push-to-talk is occurring.

                   − DODT
                     A drop out delay is being performed.

                   − STE
                     Squelch tail elimination is being transmit-
                     ted.

CAS   (8) The **CAS Input** field indicates the station de-
INPUT   tects a carrier on the receiver (CAS).

      This field displays "ON" when the station
      thinks it detects a carrier and acts on it. Other-
      wise the field displays "OFF".

      Sometimes the station will detect CAS and
      ignore it. For example, on simplex stations any
      CAS detected could be the result of a previous
      transmission. Therefore, the station will ignore
      any detected CAS for a predetermined time to
      allow CAS from a previous transmission to
      decay. During this delay the hardware CAS line
      is active but the CAS input entry on the screen
      indicates "OFF".

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APPENDIX A

ACCEPTABLE VALUES

INPUT FIELD	ACCEPTABLE VALUES	DEFAULT VALUE
Program Configuration		
Mouse Support	Yes or No	No
Com Port	1, 2, 3, 4	1
Baud Rate	300, 1200, 2400, 4800, 9600, 19200	9600
Modem Parameters		
Modem Delay Type	Wait for OK or Fixed Delay	Fixed Delay
Modem Intercommand Delay	0 to 255	9
Dialing Type	Pulse or Touch Tone	Touch Tone
Modem Speaker Status	0, 1, 2	1
Comma Pause Time	0 to 255	1
Tone Timing	0 to 255	70
Wait for Dial Tone	0 to 255	2
Wait for Carrier	0 to 255	30
Recognize Carrier	0 to 255	6
Carrier Dropout	0 to 255	7
Serial Request Timeout		
Enter Timeout Value	3 to 99 seconds	3
Phone Directory List		
Name	Up to 22 alphabetic characters	blank
Number	Up to 20 numerals, hyphens, parenthesis, or commas	blank
Baud Rate	300, 1200, 2400, 4800, 9600 or 19200	blank
Port	1, 2, 3, 4	blank

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INPUT FIELD	ACCEPTABLE VALUES	DEFAULT VALUE
Phone Directory Settings		
Name	Up to 22 alphabetic characters	blank
Number	Up to 20 numerals, hyphens, parenthesis, or commas	blank
Baud Rate	300, 1200, 2400, 4800, 9600 or 19200	300
Com Port	1, 2, 3, 4	1