



USER'S GUIDE

M.H. Corbin LLC HIS Highway Advisory Radio HAR100



PUBLISHED BY

M.H. Corbin LLC
8355 Rausch Drive
Plain City, Ohio 43064

Phone: 614-873-5216
Fax: 614-873-8095

Visit our website at www.mhcorbin.com.

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CHAPTER 1

INTRODUCTION

The Black Max™ was designed for use by Highway Advisory Radio (HAR) broadcast stations to provide motorists with up-to-the-minute travel and weather information utilizing their standard car radios.

The Black Max™ is a modular unit (see Figure 1) currently consisting of four (4) modules: Power Supply Module DRPSM1, AM Transmitter Module DRTXM4, DR1500AM Digital Recorder/Player and the Weather Receiver Model DRWX1. Each of these units is described in later sections of this manual. Future expansion capability has been designed into the Black Max™.

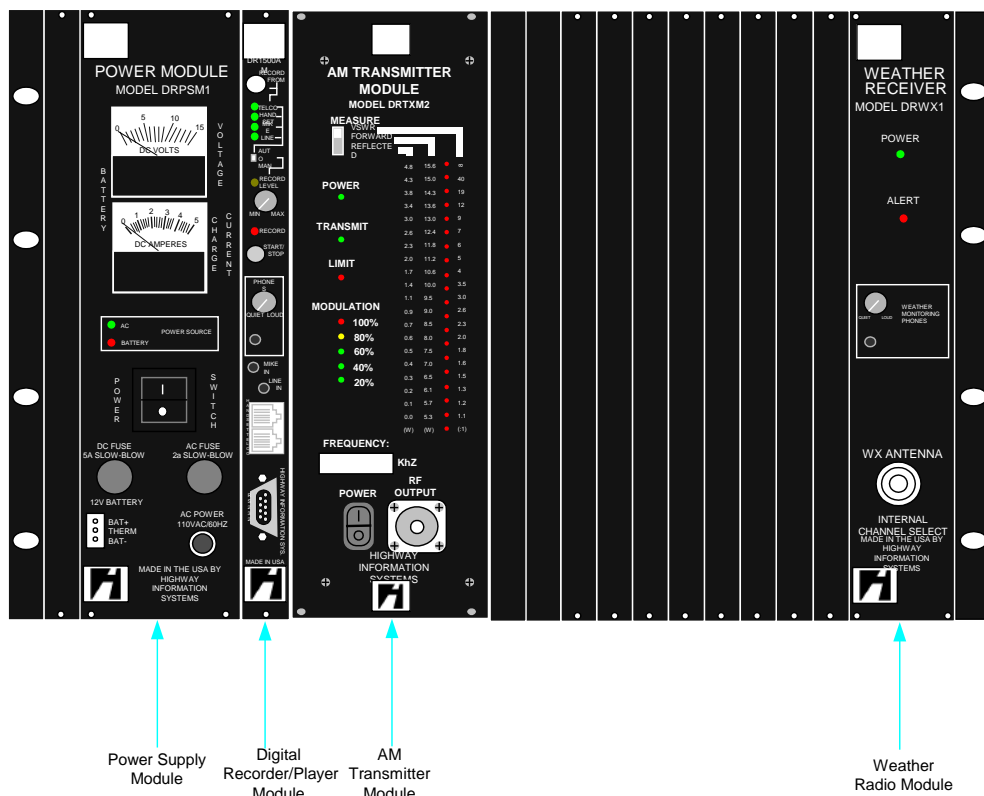


Figure 1 - Black Max™ Modules.

The modular packaging of the Black Max™ supports rapid field installation and replacement.

CHAPTER 2

POWER SUPPLY MODULE

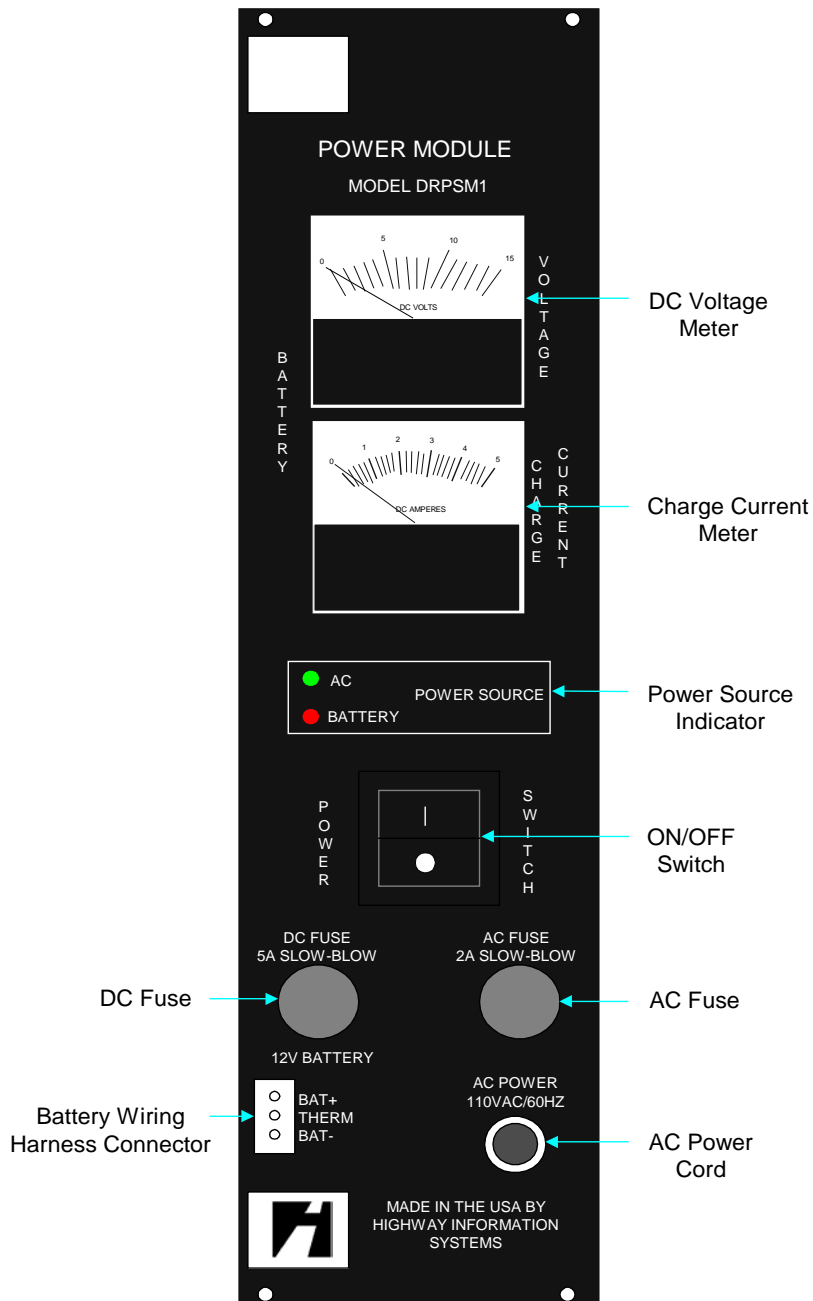


Figure 2 - Power Supply Front Panel Controls.

The Power Supply Module DRPSM1 (Figure 2) for the Black Max™ equipment is a high-performance system power supply and backup battery charger/maintainer. The system features a conservatively-rated, high-efficiency, switching power supply, low voltage disconnect to protect system modules and an automatic battery switch over on power failure.

This unit utilizes a three-phase, temperature-compensated charger/ maintainer that senses current battery (wet or gel) conditions. Severely discharged batteries are brought to minimum voltage levels before constant current charging. Once the battery achieves full charge, the unit automatically switches to a constant voltage maintenance mode.

This unit supplies AC and Direct Current (DC) fused protection for the installed modules.

There are a number of indicators on the front panel, which affect operation of the unit.

- A. DC Voltage Meter — displays the battery voltage.
- B. Charge Current Meter — displays DC battery charging amperage.
- C. Power Source — displays which source is powering the unit; the AC source displays a green light and the DC source displays a red light.
- D. ON/OFF Switch — turns power source on or off.
- E. The battery wiring harness from the battery backup enclosure is inserted into the plug-in connector on the lower left of the front panel.



Before inserting the connector, ensure that it is wired properly as follows: the RED wire goes to BAT +, the GREEN wire goes to the temperature sensor (THERM) and the BLACK wire goes to BAT -. A special tool is required to remove these wires, if not wired properly.

PRODUCT FEATURES

- Temperature-compensated, three-phase battery charger/maintainer.
- System AC power supply with instantaneous backup battery switch over.
- Automatic low voltage disconnect.
- Easily exchanged plug-in module.
- Fuse protected for both DC and AC voltage

SPECIFICATIONS

AC INPUT POWER: 110 – 120 or 220 – 240 VAC, switch selectable 50 – 60 Hz 150 W maximum

DC OUTPUT POWER: 13.6 VDC at 5 amps nominal 15 VDC maximum 10 amps maximum

BATTERY CHARGING: Temperature compensated for gel cells and wet batteries. Suitable for all 12V batteries greater than 30 A-hour including 8D form factor

FULL-CHARGE MODE: Trickle current at 13.45V

NORMAL-CHARGE MODE: 2.2 amps, 7.5V to 13.45V

RECOVERY-CHARGE MODE: 20 mA below 7.5V after deep discharge

UPS FUNCTION: Switches to batteries on loss of AC power with no interruption. Disconnects batteries below 8 VDC

GENERAL: Size 10.3" (h) x 2.4" (w) x 9.2" (d). Weight: 3.0 pounds. Power 150 W maximum at 110 VAC. Temperature: -40 to +85°C. Humidity: 95% non-condensing

CHAPTER 3

AM TRANSMITTER MODULE

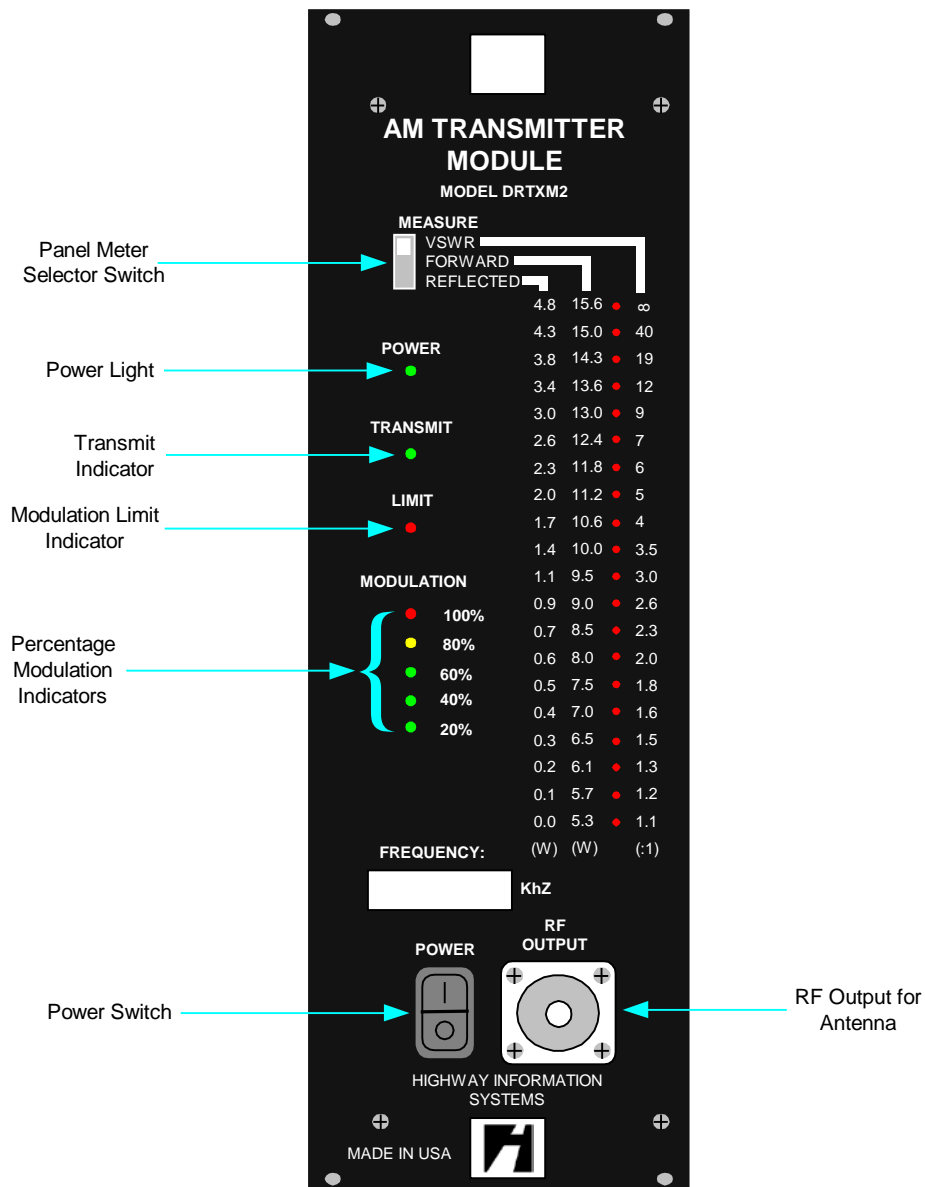


Figure 3 - AM Transmitter Module Front Panel Controls.

The AM Transmitter Module DRTXM4 (Figure 3) is a special low-power consumption Class D 10 Watt transmitter designed specifically for Highway

Advisory Radio applications. The frequency crystal and other components will be installed at the factory for the specific frequency of the HAR station. Upon installation the unit will be calibrated for the correct output power to meet FCC restrictions.

There are a number of indicators on the front panel, which affect operation of the unit.

- A. Power light — indicates that there is power to the unit.
- B. Transmit light — indicates that the unit is currently broadcasting.
- C. Limit light – indicates that the build in limiter is operating to prevent over modulation and AM “splat.”
- D. Modulation lights – indicates the percentage of full modulation that the transmitter is operating at.
- E. VSWR and Power meter lights – shows instantaneous power output and antenna VSWR readings
- E. RF Output — connects to the antenna.

PRODUCT FEATURES

- Type-accepted for HAR operations by the Federal Communications Commission (FCC).
- RF power output is adjustable from 4 to 16 watts¹.
- Frequency ranges from 530 to 1700 Kilohertz (kHz).
- Input voltage of 12 Volts Direct Current (VDC).
- Nominal power requirement is 1.5 Amperes (amps) average at 12 VDC broadcasting 10 Watts.

¹ FCC regulations restrict maximum power output of a HAR system to 10 Watts not to exceed a field strength of 2 mV/m at 2km (1.5 miles)

OPERATING INSTRUCTIONS

The DRTXM4 has two switches on the front panel for control of certain features. The first switch is at the bottom of the front panel. It is the power switch and controls the power for the transmitter only. Putting this switch in the “off” position (O) will cut all power to the transmitter even when the DRPSM1 main power switch is in the “on” position (I). This switch is a new feature added for us in the **SolarMax™** when two transmitters are used. Putting this switch in the “on” position (I) allows the unit to power up when the DRPSM1 main power switch is in the “on” position (I).

The second switch is located at the top of the front panel. It is the output meter selector switch. It has three different positions that choose what output measurement to view on the LED bargraph. The first position is for the VSWR measurement reading. This reading indicates the Voltage Wave Standing Ratio which tells how well the antenna is tuned. The lower the reading (the fewer the LEDs lit) the lower the VSWR. The normal reading for the VSWR meter will most likely be between 0 (no LEDs lit) and 1.6 (five LEDs lit.)

The second switch position is for the FORWARD power measurement reading. This reading indicates how much power the transmitter is outputting. This actual power that gets transmitted via the antenna depends upon the VSWR (how well the antenna is tuned.)

The third switch position is for the REVERSE power measurement reading. This reading indicates how much power is reflected by the imbalance in the antenna. A higher VSWR reading will typically coincide with a higher REVERSE power reading. The actual power that is transmitted can be determined by subtracting the REVERSE power

measurement from the FORWARD power measurement.

CHAPTER 4

DR1500AM DIGITAL RECORDER PLAYER

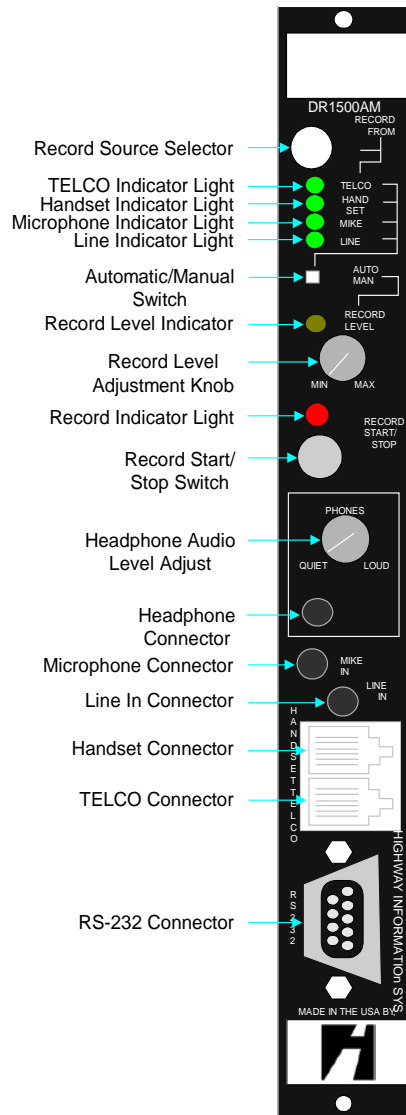


Figure x - DR1500AM Front Panel Controls

INTRODUCTION

The DR1500AM is a state-of-the-art digital recorder/player which stores high-quality messages in digital memory and plays them back automatically or at timed intervals.

The following controls, indicators and switches located on the front panel affect operation of the DR1500AM.

- A. Record Source Selector — Pressing this selector cycles the input source between the four possible sources; TELCO, handset, microphone or line.
 - 1. TELCO Indicator Light — will illuminate when the normal telephone line is selected as the input source. TELCO is the input source default.
 - 2. Handset Indicator Light — will illuminate when the local handset is selected as the input source.
 - 3. Microphone Indicator Light — will illuminate when a microphone input is selected.
 - 4. Line Indicator Light — will illuminate when the Line In input is selected.
- B. Automatic/Manual Switch — cycles the unit between the automatic and manual modes for controlling the audio input level when recording.
- C. Record Level Indicator — indicates the audio level of the input source when the unit is recording a message.
- D. Record Level Adjustment Knob — the record level will be increased when the knob is turned clockwise, and will decrease when the knob is turned counterclockwise. This control is only active when the AUTO/MAN switch is in the Manual (MAN) position.
- E. Record Indicator Light — will illuminate when the unit is recording.
- F. Record Start/Stop Switch — this switch is pressed once to start a recording and then pressed a second time to terminate the recording.
- G. Headphone Audio Level Adjust — this knob is turned clockwise to increase the audio volume to the headphones and is turned counterclockwise to decrease the audio volume.

- H. Headphone Connector — a standard pair of stereo headphones with 1/8th inch jack may be plugged into this connector to monitor the audio going into the transmitter.
- I. Microphone Connector — a hand-held microphone is plugged into this connector to make a recording from the local HAR site.
- J. Line In Connector — is an alternate audio source for recording, e.g., tape recorder/player or Compact Disk (CD).
- K. Handset Connector — the local handset is plugged into this receptacle, so that the DR1500AM can be accessed and controlled locally.
- L. TELCO Connector — the standard telephone line is plugged into this receptacle, so that the DR1500AM can be accessed and controlled by a touch-tone or cellular telephone.
- M. RS232 Connector — will be used for future interface expansion.

Audio messages may be input via the TELCO, local handset, line input or microphone. Messages can be monitored via the TELCO, local handset, or headphone connector. The DR1500AM incorporates two separate audio codecs for simultaneous recording and playback without interrupting on-the-air message output.

Audio quality is rated as superb. M.H. Corbin LLC's proprietary 16-bit audio encoding not only enhances high frequency clarity, but gives a dynamic range of over 80 dB. The Non-Volatile FLASH Memory allows up to 40 minutes of audio recording. The scheduling capabilities allow up to 512 distinct messages (of any length), 20 message lists (with a sequence of up to 100 messages in each) and a master schedule of up to 200 messages or message lists, which can be programmed on a weekly cyclical basis.

A security code prevents unauthorized system access while system programming may be performed locally or remotely via the handset or TELCO interface, respectively. Telephone keypad sequences reflect the DR1500AM's enhancements.

The DR1500AM uses a high-speed Digital Signal Processor (DSP), dual 16-bit audio codecs and 16 Megabytes (MB) of FLASH RAM. The DR1500AM's modular packaging supports rapid field installation and replacement.

PRODUCT FEATURES

- True simultaneous record and playback.
- Built-in voice prompts for ease of use.
- 5 kHz audio bandwidth at 11,025 samples per second, with a dynamic range of >80 Decibels (dB).
- Up to 512 variable length messages, 30 message lists (each with a sequence of up to 100 messages), and 242 events in the master schedule.
- Programmable on a weekly cyclical schedule.
- TELCO, local handset, line and microphone record inputs and playback outputs.
- Headphone monitoring output.
- Weather radio interface.
- RS-232 and parallel digital interface.
- New Black Max™ series modular construction.
- 28 Million Instructions per Second (MIPS) 16/32 bit DSP microprocessor.
- Seven (7) analog instrument inputs for expansion options.

PRODUCT SPECIFICATIONS

Specification	Parameter
Audio Quality	5 kHz bandwidth Less than 1% distortion
Audio Inputs	Greater than 80 dB dynamic range TELCO, dynamic microphone, line (4), weather radio, local handset
Audio Outputs	Manual or automatic level control Transmitter, TELCO, headphones, line, local
Audio Coding	16-bit Analog to Digital (A/D) and Digital to Analog (D/A) with dynamic 8-bit
Programming Controls	Local: handset w/mouthpiece dynamic mike or Remote: touch-tone keypad
Digital Interface	RS-232: 9600 baud Parallel: 20 Kilobytes per Second (KB/sec)
Instrumentation Interfaces	Seven (7) A/D channels, 8 bits, 0 – 2.5 volt levels 13 digital input lines Transistor to Transistor Logic (TTL)
Digital Electronics	Eight (8) digital output lines (TTL) TMS320C203 28 MIP DSP microprocessor 64 Thousand (K) x 16 RAM, 64K x 8 Read-Only-Memory (ROM) 16 to 64 Mbytes x 8 FLASH Two TMS320AD5C 16-bit codecs, 11.025 kHz sample rate
Event Scheduler	55 circuit packages 242 events 512 messages 30 message lists (up to 100 messages each)

VOICE PROMPTS

The DR1500AM is user friendly and courteous with complete voice instructions from *"Hello"* to *"Goodbye"*. These voice prompts are

provided to allow the user to access and control the system from a remote telephone or directly from the local telephone handset.

INTRODUCTION TO MESSAGES

Each segment of sound recorded into the DR1500AM is called a *message*. Recording a message stores it in memory for future playback. Once a message has been recorded into memory, it may be played any number of times without any degradation of sound quality. The message remains in memory until it is erased.

Monitoring a previously recorded message allows the operator to listen to it without playing it over the air. This ensures that the message accurately conveys the intended information.

Erasing messages clears memory of message data and allows new messages to be recorded.

The maximum number of messages and the total time available to record them depends upon the configuration of the DR1500AM. Each unit is shipped with enough memory to store up to 512 individual messages.

SCHEDULE MAINTENANCE

It is strongly suggested that the operator keep a message, message list and schedule logbook. Each individual log should contain details of each message, message list and schedule entered into the system. Sample message and schedule log sheets are shown on the following pages. These samples may be copied as is, or may be modified to suit an individual station's requirements.

It is very important that the logs be kept, regardless of the form. Without logs, it may become necessary to erase all messages, message lists and schedules. Accurate logs help maintain message, message list and schedule continuity.

One convenient logbook is a three-ring binder holding message, message list and schedule log sheets arranged by number.

ADMINISTRATIVE LOG SHEET

SITE LOCATION: _____ **DATE:** _____ **FREQUENCY:** _____

MESSAGE NUMBER: _____ (RANGE 1-512)

MESSAGE LIST NUMBER: _____ (RANGE 1-30)

DAY: _____
DAY

TIME: _____
HOUR (0-23) MINUTE (0-59)

PLAY ON DAYS OF WEEK:

- | | | | |
|----|-----------|----|-----------|
| 0= | EVERY DAY | 4= | WEDNESDAY |
| 1= | SUNDAY | 5= | THURSDAY |
| 2= | MONDAY | 6= | FRIDAY |
| 3= | TUESDAY | 7= | SATURDAY |

MESSAGE(S) NUMBERS:

- | | | |
|----------|----------|----------|
| 1. _____ | 2. _____ | 3. _____ |
| 4. _____ | | |
| 5. _____ | 6. _____ | 7. _____ |
| 8. _____ | | |

MESSAGE CONTENT BY No.:

1. _____
2. _____
3. _____

COMMENTS:

(Copy this page for use at your station)

FCC Compliance Statement

This equipment complies with Part 68 of the FCC rules. On the RJ-11 jack located on the front panel of the DR1500AM is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN) for this equipment. If requested, this information must be provided to the telephone company.

An FCC compliant modular plug is provided with the equipment. This equipment is designated to be connected to the telephone network or premises wiring using a compatible modular jack which is Part 68 compliant. See Installation Instructions for details. The registration jack USOC (Universal Service Order Code) for the DR1500AM is *RJ11*. The FIC (Facility Interface Code) is *02LS2* and the SOC (Service Order Code for analog services is *9.0Y*.

The ringer equivalence number (REN) is used to determine the quantity of devices which may be connected to the telephone line. Excessive RENs on the telephone line may result in the device not ringing in response to an incoming call. In most, but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the local telephone company.

If the DR1500AM causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

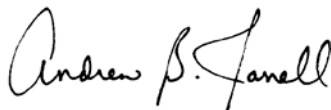
The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with the DR1500AM, for repairs or warranty information, please contact M.H. Corbin LLC, Inc at 877-M.H. CORBIN LLC (option #2). If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

Repairs by the customer are not advised as they will void the warranty. Please contact M.H. Corbin LLC if any problems arise.

The DR1500AM cannot be used on public coin phone service provided by the telephone company. Connection to the party line service is subject to state tariffs. (Contact the state public utility commission, public service commission or corporation commission for information.)

By: Andrew B. Jarrell



Signed

Date: 7/30/98

Title: Engineer

CHAPTER 5

DIGITAL COMMUNICATIONS CONTROLLER

Introduction

The Digital Communications Controller (DCC) provides closed loop control and the flexibility for HAR stations to be controlled over multiple communications channels including landline and cellular telephones, wired or wireless modems, as well as, over, an Ethernet connection. The DCC also performs continuous monitoring of the systems's status with regard to power, operating mode, and absence of broadcast. The DCC can be configured to detect faults in these status conditions and provide the user notification via telephone, e-mail, pager, or on-screen at the central control server.

The DCC module is easily installed alongside the DR1500 Digital Recorder/Player module in the BlackMax cage to provide HAR system capabilities without equal in the industry.

Technical Specifications

Closed Loop Controller Methods

- Digital commands

Message Download Methods

- Real time audio
- Compressed digitized audio files

Health Monitoring

- Battery voltage
- AC vs. DC power operation status
- Current HAR mode
- Absence of broadcast (silence sensor)
- Monitoring of demodulated broadcast

User Notification Methods

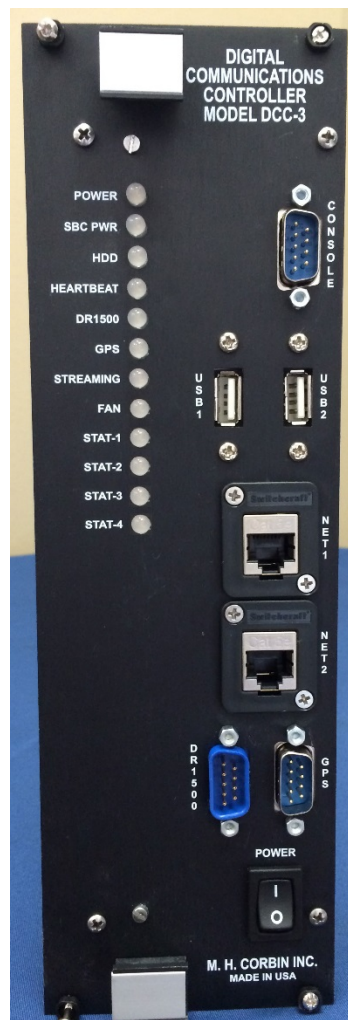
- E-mail
- Pager
- Telephone

- Notification to central control server

Interfaces

- Two Ethernet Ports– TCP/IP (RJ45)
- Three RS232C Ports (DB9)
- Two USB Ports

Figure 5 - Digital Communications Controller (DCC)



Front Panel LED Indicators

There are a number of indicators on the front panel, which affect operation of the unit.

Table 1: Front Panel LED Initial Indications

DR1500 – Lights green when the communication with the DR1500 is successful. Amber indicates active communication (aka ‘busy’), while red indicates an error. See the web interface for more details.

GPS – Lights green when the communication with the GPS unit is successful. Amber indicates that the GPS is communicating, but it does not have a satellite lock. Red means that there is either no communication or an error has occurred. See the web interface for more details.

Streaming – Lights red when audio encoding and/or audio decoding are occurring.

Fan – Lights green when the fan is on. This corresponds to the CPU temperature at which the fan should become active. If the light is on and the fan cannot be heard, it is likely a hardware failure.

Stat-1 OFF HK/ANS – See *Descriptions of Functions* below for more detail.

Red (Off Hook) - Indicates that the DR1500 is in the “Off Hook” mode connected over the telephone line.

Green (Answer) - Indicates that the DR1500 is in the “Answer” mode responding to the telephone line.

Amber (Off Hook & Answer) – Indicates that the DR1500 is in both “Answer” and “Off Hook” modes.

Stat-2 AUDIO- See *Descriptions of Functions* below for more detail.

Red (Future) – reserved for future use

Green (Audio) – Indicates that demodulated audio is present.

Amber (Future) - reserved for future use

Stat-3 FAULT/BUSY - See *Descriptions of Functions* below for more detail.

Red (Fault) - Indicates that a fault condition has been detected by the DR1500.

Green (Busy) - Indicates that the DR1500 is busy processing commands.

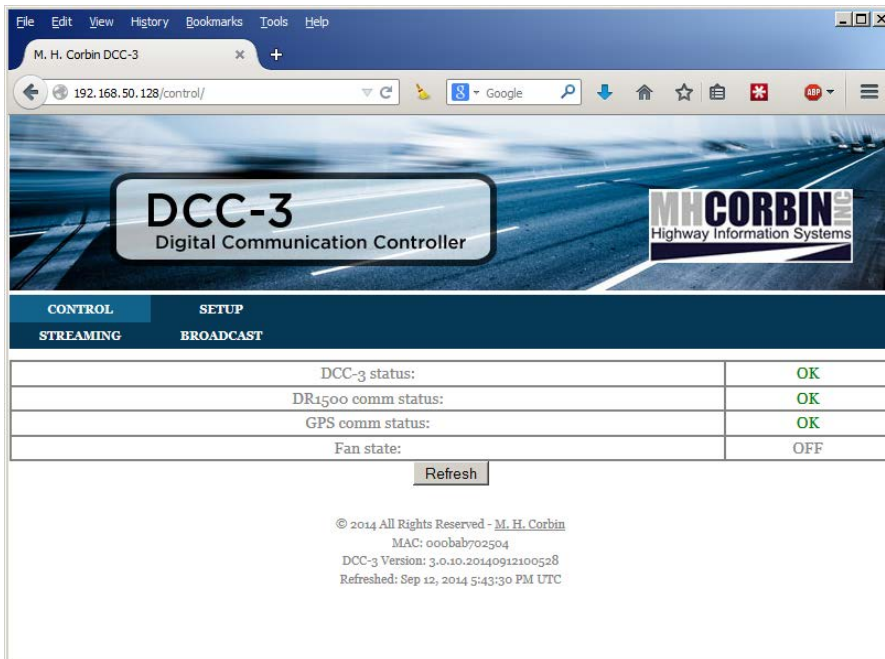
Amber (Fault & Busy) – Indicates that the DR1500 is busy and fault conditions.

Stat-4 USB READ – Lights red when reading playlists from a connected USB thumb drive.

Web interface

Once the assigned IP address has been determined (DHCP) or set (Static), use a web browser from a computer connected on this same network to open the URL <http://{ipaddress}>.

In the following picture the URL would be <http://192.168.50.128>:



Tap on “Login”. You will be prompted for the control password. By default, the login credentials are:

Username: **control**

Password: **control**

It is imperative that this password be changed.

This is the Control Interface for the DCC. It shows the status of the modules similar to the front panel lights.

Administration of the device is done through the “Setup” pages. Tap on “Setup” in the menu bar. By default, the login credentials are:

Username: **setup**

Password: **setup**

It is imperative that this password be changed.

CHAPTER 6

WEATHER RECEIVER

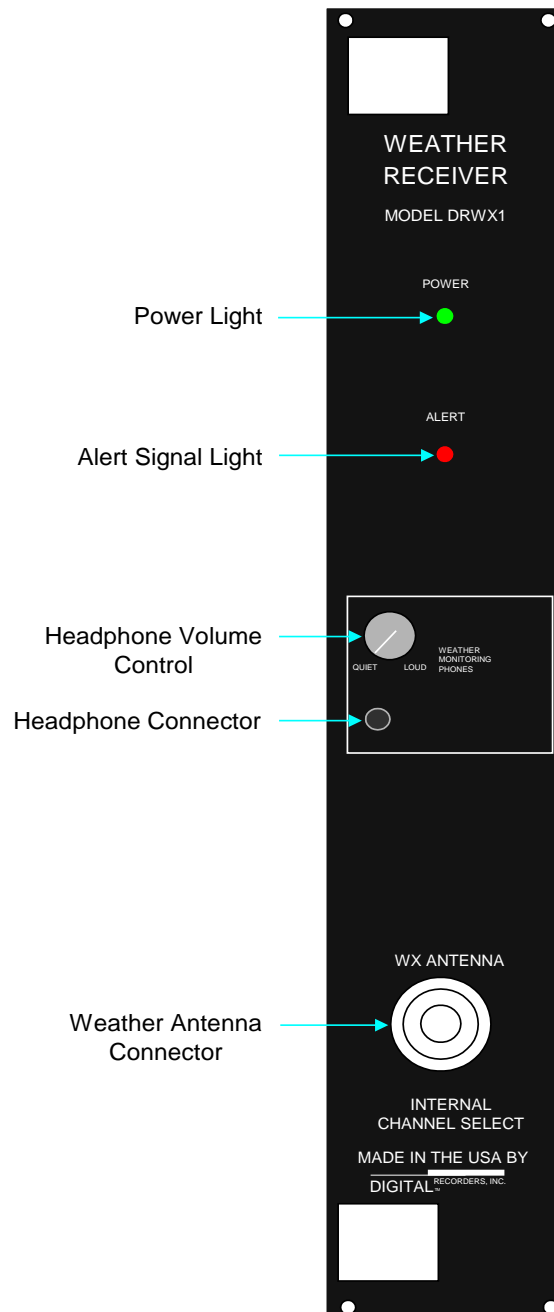


Figure 6 - Weather Receiver Front Panel Controls.

The Weather Receiver DRWX1 (Figure 6) is a high-sensitivity, weather radio module intended for use in the Black Max™ system. This receiver was designed to provide weather information from the National Weather Service (NWS).

This receiver is weather band selectable from one of seven bands, which are selected by Dual In-Line Package (DIP) switches located inside the unit.

The following are the selectable bands:

- 1 – 162.400 Megahertz (MHz)
- 2 – 162.425 MHz
- 3 – 162.450 MHz
- 4 – 162.475 MHz
- 5 – 162.500 Mhz
- 6 – 162.525 Mhz
- 7 – 162.550 Mhz

The weather receiver is continuously operational and can be integrated into the schedules of the DR1500AM.

This unit has a built-in speaker and a headphone jack for on-site monitoring of weather information.

The following controls, indicators and connectors located on the front panel affect operation of this unit.

- A. The Power Light — indicates that the unit has power applied.
- B. Alert Light — illuminates when the NWS broadcasts a 1050 Hz tone indicating a weather alert message.
- C. Headphone Volume Control — regulates the speaker or headphone volume. Turn the knob clockwise to increase the volume and counterclockwise to decrease it.
- D. Headphone Connector — headphones are plugged to this outlet.
- E. Weather Antenna Connector — antenna is connected to this input.

PRODUCT FEATURES

- High sensitivity and selectivity.
- 1050 Hz weather alert detection.
- Crystal controlled.
- Dual conversion receiver.
- Directly interfaces to the DR1500AM.
- Built-in monitor loud speaker.
- 1/8" headphone connector with volume control.

DIP SWITCH SETTINGS

The following are the dip switch settings for this equipment:

UP = ON One switch is ON and the rest of the switches are OFF.

Switch	Frequency	Station
1	162.400	WX2
2	162.425	
3	162.450	
4	162.475	WX3
5	162.500	
6	162.525	
7	162.550	WX1

CHAPTER 7

DR1500 OPERATING INSTRUCTIONS

Introduction

Operating From the Telephone and Handset

The DR1500AM may be programmed using touch-tones (DTMF tones) produced by a telephone keypad. The unit provides two telephone access points, (1) a telephone hand-set input, for local control at the transmitter site, and (2) a standard telephone line input, for remote control from a telephone connected anywhere in the telephone system.

The DR1500AM communicates with the operator through an interactive menu and voice prompts. The main menu provides the primary system control functions. The voice prompts ask the operator for information and the operator responds by entering characters on the telephone keypad. In this manner, a *conversation* or *dialog* is established between the operator and the DR1500AM.

These voice prompts are provided to allow the user to access and control the system from a remote telephone or directly from the local telephone handset.

When the HAR is dialed up using a remote telephone (including a cellular telephone), the system will respond:

"Hello, enter the security code followed by the # sign."

Enter the 5-digit security code followed by the # sign. The default security code is "12345#."

If an incorrect security code is entered, the system will respond:

"Entry is not valid, Goodbye."

The system will then hang up the telephone.

After the correct security code has been entered, the system will respond:

*"Main Menu, to hear the command list, enter *0#."*

The system will wait for a command to be entered before proceeding.

Operating from the handset is the same as telephone. Pick up handset and enter #. The system will respond:

*“Main Menu, to hear the command list, enter *0#.”*

At this point, the procedure exactly follows that given in the examples below. However, one important difference to keep in mind is that the telephone is the default audio input device for recording or broadcasting using the “Go-Live” feature or the “911” feature. Therefore it is important when using the hand set to make sure to set the record source as outlined below using the command \$ *7# for “Set record source” and for “Handset.”

Analog audio messages may be input via the telephone line, local handset, audio line input, or microphone. Digital messages can be downloaded through the serial port. Messages can be monitored via the telephone, the local handset, or the front-panel headphone connector. Note that one of the features of the DR1500AM is that it incorporates two separate audio systems so that it can record and playback over the phone line while simultaneously playing the on-the-air broadcast.

About Menus

DR1500AM menus are the means by which the operator selects functions to perform. Menu selections are always made with a keystroke combination followed by the # sign. When responding to DR1500AM requests for information, the response must be terminated by entering the # sign.

It is not necessary to wait for a menu to finish playing before making a menu selection. Entering a character combination, while the menu is playing, immediately engages the selected function and silences the menu.

The command list may be played at any time by entering the [*0#] character combination. The following are the commands in the command list:

The menu system is set up so that a user, unfamiliar with the system, can listen to the menu and then select a function by entering the correct character combination. Any user, familiar with the menu system, may go directly to that function desired by selecting the correct character combination.

Computer Control of the DR1500AM

The DR1500 can be remotely controlled by a computer by sending DTMF tones through the telephone line input or by sending ASCII characters through the serial interface. For each section of this manual describing an individual command, there is a sub-section at the end which describes the details of how the sequences of DTMF tones or ASCII characters are to be structured for that command and how the DR1500AM will respond.

Note that while DTMF commands can be input to the DR1500AM at any time, to operate as a closed loop system, the DTMF response mode must be set to the active mode using command *211#. Similarly while serial commands can be input to the DR1500AM at any time, to operate as a closed loop system, the serial response mode must be set to the active mode using command *211#.

For more general information on how packets are constructed for all the commands, refer to the section entitled "Computer-Control Data Packets" near the end of this chapter and to the Appendix, which tabulates the computer-control data packets.

Command List in Numerical Order

To get the command list in numerical order, enter **[*0#]** and the system will respond:

Command	Cmd Code
Record a message	*1#
Listen to a message	*2#
Erase a message	*3#
Set message spacing	*4#
Create the broadcast list	*5#
Report the broadcast list	*6#
Select record input source	*7#
Go live on the air	*8#
Broadcast Aux fill during message spacing	*9#
Configure NOAA alert	*10#
Optimize message space	*11#
Set the calendar	*12#
Report the Calendar	*15#
Set the clock	*21#
Create day-of-the-week scheduled events	*22#
Report day-of-the-week scheduled events	*23#
Clear day-of-the-week scheduled events	*24#
Report the clock	*25#
Set the clock calendar	*26#
Monitor clock seconds	*27#
Create month-date-year scheduled events	*32#
Report month-date-year scheduled events	*33#
Clear month-date-year scheduled events	*34#
Create a playlist	*41#
Report a playlist	*42#
Copy a playlist to broadcast list and activate	*43#
Clear a playlist	*44#
Activate a playlist	*45#
Control the telephone connection	*51#
Report record time available	*60#
Record for a specified time	*61#
Control the transmitter	*62#
Turn the Transmitter on or off	*63#
Set attenuator Level	*65#
Set security code	*71#
Broadcast aux audio for a specified time	*76#
Set hang-up time	*77#
Report the time stamp	*101#
Configure system status	*102#
Report system status	*103#
Control master alert flag	*104#
Report system status over telephone	*105#
Report HAR mode and sub mode	*106#
Configure EAS alert	*110#
Reset the system	*127#
Silence Telephone voice prompts	*201#
Activate Telephone voice prompts	*202#
Set DTMF delay	*210#
Set telephone response mode	*211#
Set serial response mode	*212#
Set telephone response mode source	*220#
Download an ASCII digital message	*251#
Download a binary digital message	*252#
Trim a recorded message	*254#
Report message length	*257#
Report message status	*258#
Clear message re-recorded flag	*259#
Report software revision number	*300#
Report software build number	*301#

Command	Cmd Code
Report EPROM checksum	*302#
Broadcast emergency message	*911#

At the end of the list, the system will wait in silence for a command to be entered before proceeding.

Command List in Functional Order

To get the command list in functional order, enter ***00#** and the system will respond:

Command Function	
<i>Emergency broadcasts and alerts</i>	<i>0#</i>
<i>Recorded messages</i>	<i>1#</i>
<i>Broadcast</i>	<i>2#</i>
<i>Playlists</i>	<i>3#</i>
<i>Transmitter and attenuator</i>	<i>4#</i>
<i>System control</i>	<i>5#</i>
<i>Clock calendar</i>	<i>6#</i>
<i>Scheduled events</i>	<i>7#</i>
<i>Synchronized messages</i>	<i>8#</i>
<i>System status</i>	<i>9#</i>
<i>To hear all commands in numerical order</i>	<i>*0#</i>
<i>To return to the main menu</i>	<i>#</i>

Emergency Broadcasts and Alerts, 0#

If the list of commands for “Emergency Broadcasts” is selected by entering **0#**, the system will respond:

<i>To go on the air live</i>	<i>*8#</i>
<i>To record and broadcast an emergency message</i>	<i>*911#</i>
<i>To configure the NOAA alert</i>	<i>*10#</i>
<i>To configure the EAS alert</i>	<i>*110#</i>
<i>To return to the main menu</i>	<i>#</i>

Recorded Messages, 1#

If the list of commands for “Recorded Messages” is selected by entering **1#**, the system will respond:

<i>To set the input source</i>	<i>*7#</i>
<i>To record a message</i>	<i>*1#</i>
<i>To listen to a message</i>	<i>*2#</i>
<i>To erase a message</i>	<i>*3#</i>
<i>To report record time available</i>	<i>*60#</i>
<i>To record for a specified time</i>	<i>*61#</i>
<i>To return to the main menu</i>	<i>#</i>

Broadcast, 2#

If the list of commands for “Broadcast List” is selected by entering **2#**, the system will respond:

<i>To create the broadcast list</i>	<i>*5#</i>
<i>To report the broadcast list</i>	<i>*6#</i>
<i>To set message spacing</i>	<i>*4#</i>
<i>To broadcast auxiliary fill during message spacing</i>	<i>*9#</i>
<i>To broadcast auxiliary audio for a specified time</i>	<i>*76#</i>
<i>To return to the main menu</i>	<i>#</i>

Playlists, 3#

If the list of commands for “Playlists” is selected by entering **3#**, the system will respond:

<i>To create a playlist</i>	<i>*41#</i>
<i>To report a playlist</i>	<i>*42#</i>
<i>To copy a playlist to broadcast list and activate</i>	<i>*43#</i>
<i>To clear a playlist</i>	<i>*44#</i>
<i>To activate a playlist</i>	<i>*45#</i>
<i>To return to the main menu</i>	<i>#</i>

Transmitter and Attenuator, 4#

If the list of commands for “Transmitter and Auxiliary Audio” is selected by entering **4#**, the system will respond:

<i>To control the transmitter</i>	<i>*62#</i>
<i>To turn the transmitter on or off</i>	<i>*63#</i>
<i>To set attenuator level</i>	<i>*65#</i>
<i>To return to the main menu</i>	<i>#</i>

System Control, 5#

If the list of commands for “System Control” is selected by entering **5#**, the system will

respond:

<i>To optimize message space</i>	*11#
<i>To control the telephone connection</i>	*51#
<i>To set the security code</i>	*71#
<i>To set hang-up time</i>	*77#
<i>To reset system</i>	*127#
<i>To silence telephone response mode</i>	*201#
<i>Activate telephone response mode</i>	*202#
<i>To set DTMF delay</i>	*210#
<i>To set telephone response mode</i>	*211#
<i>To set serial response mode</i>	*212#
<i>To return to the main menu</i>	#

Clock Calendar, 6#

If the list of commands for the clock calendar is selected by entering **6#**, the system will respond:

<i>To set the calendar</i>	*12#
<i>To report the calendar</i>	*15#
<i>To set the clock</i>	*21#
<i>To report the clock</i>	*25#
<i>To set the clock calendar</i>	*26#
<i>To monitor clock seconds</i>	*27#

Scheduled Events, 7#

If the list of commands for "Month-Date-Year Schedules" is selected by entering **7#**, the system will respond:

<i>To create day-of-the-week scheduled events</i>	*22#
<i>To report day-of-the-week scheduled events</i>	*23#
<i>To clear day-of-the-week scheduled events</i>	*24#
<i>To create month-date-year scheduled events</i>	*32#
<i>To report month-date-year scheduled events</i>	*33#
<i>To clear month-date-year scheduled events</i>	*34#
<i>To return to the main menu</i>	#

Synchronized Messages, 8#

If the list of commands for “Synchronized Messages” is selected by entering **8#**, the system will respond:

<i>To download an ASCII digital message</i>	<i>*251#</i>
<i>To download a binary digital message</i>	<i>*251#</i>
<i>To trim a recorded message</i>	<i>*254#</i>
<i>To report message length</i>	<i>*257#</i>
<i>To report message status</i>	<i>*258#</i>
<i>To clear message re-recorded flag</i>	<i>*259#</i>
<i>To return to the main menu</i>	<i>#</i>

System Status, 9#

If the list of commands for “Month-Date-Year Schedules” is selected by entering **7#**, the system will respond:

<i>To report the time stamp</i>	<i>*101#</i>
<i>To configure system status</i>	<i>*102#</i>
<i>To report system status</i>	<i>*103#</i>
<i>To control master alert flag</i>	<i>*104#</i>
<i>To report system status over telephone</i>	<i>*105#</i>
<i>To report HAR mode and sub mode</i>	<i>*106#</i>
<i>To report software revision number</i>	<i>*300#</i>
<i>To report software build number</i>	<i>*301#</i>
<i>To report EPROM checksum</i>	<i>*302#</i>
<i>To return to the main menu</i>	<i>#</i>

Syntax, Glossary, and Error Response

As suggested by the brief examples of interacting with the DR1500AM already given, in the examples below, a few simple syntax conventions are used. These are as follows:

The voice responses of the DR1500AM system are printed indented, in italics, and in quotes, as follows:

*“Main Menu, to hear the command list, enter *0#.”*

In example dialogs, sequences to be entered are printed in bold-faced type and the corresponding variables in the responses are also in boldface type. Thus, the example dialogue for setting the spacing time in seconds between messages is printed as follows:

To set the spacing to 5 seconds, enter **5#** and the system will respond:

*“Message spacing is: **five** seconds.”*

“Enter message spacing in seconds followed by the # sign.”

“To return to the Main Menu, press #.”

This allows the reader to quickly scan the examples, enter the characters highlighted by the bold type, and listen in particular for the response highlighted by the bold type.

Some of the conventions with respect to the telephone keypad are listed here:

- *** The star (or asterisk) is entered using the character in the lower left corner of the telephone keypad and is spoken by the DR1500AM as the word "star." The star is used as the lead character to differentiate system commands from numerical responses.
- #** The pound sign is entered using the character in the lower right corner of the telephone keypad and is spoken by the DR1500AM as the word "pound." The pound character is used (1) as the terminating character in entering commands or numerical values and (2) as an "escape" character to terminate the current interaction and return to the main menu.
- t** Represents a spoken amount of time, such as when the system is reporting that there are "one thousand seconds of record time available."
- [Beep] A confirming tone indicating that the system has received a response or completed a task such as entering a parameter value.
- [Buzz] An error tone indicating that the entry is not valid. This is always followed by a prompt suggesting how to correct the entry.

Emergency Override Commands

The DR1500 provides two override broadcast modes that allow emergency messages to be quickly set up for broadcast and then quickly deactivated for return to the normal broadcast schedule. The first emergency override mode is the "Go-Live" mode, which allows the user to immediately begin broadcasting live over the air in real time from the telephone handset. The second emergency override mode is the "911" mode, which allows the user to quickly record an emergency message, and then have the DR1500 immediately begin broadcasting that message repeatedly.

The instructions for both of these commands are given below.

Go-Live On the Air, *8#

The “Go-Live” feature allows the user to immediately begin broadcasting live over the air in real time. Broadcasting in the Go-Live mode overrides all other broadcast modes. To activate the “Go Live” mode it is necessary to enter the command code *8# and then to enter a confirming 1#. While in the “Go-Live” mode, any DTMF tones can be entered (to operate remote equipment such as flashing lights) except the # character, which is reserved for terminating the live broadcast.

Voice Prompt Interface

To Go-Live, enter ***8#**. In the default state with the telephone as the input, the system will respond:

*“Input source is: **telephone**.”*
“To go on the air live, enter 1#.”
“To return to the Main Menu, press #.”

If the reported record source is incorrect, it will be necessary to exit to the main menu and then use the “Set Record Source” command *7# to set the input to the handset, the microphone, or line.

To continue with the current input source, enter **1#** and the system will respond:

“Going on the air live”
“To terminate press #.”

After the tone ends, begin speaking slowly and clearly to be understood while broadcasting live over the air.

When done broadcasting, enter the # character. The system will respond:

*“Main Menu, to hear the command list, enter *0#.”*

Indicating that the live broadcast has been terminated and the unit has returned to the main menu.

At this time, the broadcast will revert to whatever was previously programmed, including any scheduled events that were temporarily held off until after the unit came out of the “Go-Live” mode.

Broadcast an Emergency Message, *911#

The “Broadcast Emergency Message” feature allows the user to quickly record an emergency message and then immediately begin broadcasting the message repeatedly. Broadcasting in the emergency message mode overrides all other broadcast modes except the Go-Live mode. To activate the “Broadcast Emergency Message” mode first enter the command code *911# and then enter a confirming 1#. At the prompt record the message and terminate it with a # sign. To return to the main menu, press the # sign one final time. The emergency 911 message will continue to broadcast indefinitely until it is cleared by entering the sub-menu choice

of 0# within the 911 menu, or until it is overridden by going on the air live.

Voice Prompt Interface

To record and immediately begin broadcasting an emergency override message, enter ***911#**. The system will respond:

Enter ***911#**. In the default state, with the 911 emergency broadcast off, the system will respond:

*"The 911 broadcast is: **off**."*

"To record and broadcast, enter 1#."

"To cancel, enter 0#."

"To return to the Main Menu, press #."

To record and immediately begin broadcasting a repeated 911 emergency message, enter **1#** sign. In the default state, with the telephone as the input, the system will respond:

*"Record time available is **t** seconds."*

*"Input source is: **telephone**."*

"Begin recording at the beep and press # to terminate."

If the reported record time is insufficient, it may be possible to make additional time available using the "Optimize Message Storage" command ***11#** to reorganize how the messages are stored in the flash memory. If this does not free up sufficient space, it will be necessary to erase some stored messages using the "Erase Message" command ***3#**.

If the reported record source is incorrect, it will be necessary to use the "Set Record Source" command ***7#** to set the input to the handset, the microphone, or line.

To return to the main menu to access any of these commands, enter **#** once to terminate the recording of the 911 broadcast and then enter **#** again to return to the main menu.

If the record source is set correctly and there is sufficient record time available, wait for the beep, record the 911 message, and then enter the **#** character to terminate the recording. The recording can contain any DTMF tones except the **#** character, which is reserved as the termination character.

The emergency 911 message will begin being broadcast as soon as the terminating **#** sign is entered. The system will respond:

*"The 911 broadcast is **on**."*

"To record and broadcast, enter 1#."

"To clear, enter 0#."

"To return to the Main Menu, press #."

Here the system has returned to the same menu that was presented at the beginning of the 911 sequence. At this point the

operator can (1) overwrite the message just recorded by entering 1#, (2) clear the 911 emergency broadcast and revert to the original non-emergency broadcast by entering 0#, or (3) leave the emergency 911 message playing and return to the main menu by entering the # sign.

Note that the emergency 911 message will continue to broadcast indefinitely until it is cleared by entering the sub-menu choice of 0# within the 911 menu, or until it is overridden by going on the air live.

If an invalid entry is made, the system will respond:

"[Buzz] Entry is not valid."

*"Main Menu, to hear the command list, enter *0#."*

Recorded Message Commands

The recorded message commands allow the user to (1) set the input source for recording messages, (2) record messages, (3) listen to messages, (4) erase messages, and (5) record messages of a specified length.

Select Record Input Source, *7#

The "Select Record Input Source" command *7# selects the source for analog audio recording. The possible entries are:

- 1# – for mic
- 2# – for line
- 3# – for telephone
- 4# – for handset

The normal default input is the telephone.

Voice Prompt Interface

To select the input source enter *7#. In the default state with the telephone as the input, the system will respond:

*"Input source is: **telephone**."*

"To set input source, enter:"

1# – for mic,"

2# – for line,"

3# – for telephone,"

4# – for handset"

"To return to the Main Menu, press #"

If, for example the handset is selected by entering **4#**, the system will respond:

*“Input source is: **handset**.”*
“To set input source, enter:”
1# – for mic,”
2# – for line,”
3# – for telephone,”
4# – for handset”
“To return to the Main Menu, press #”

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”
*“Main Menu, to hear the command list, enter *0#.”*

Record a Message, *1#

The “Record Message” command is used to digitize an audio message and store it in the flash memory of the DR1500AM. The valid input values for the message number are 1 to 999.

Voice Prompt Interface

To record a message enter ***1#**. If the system is in the default condition with the telephone as the input, it will respond:

*“Record time available is **t** seconds.”*
*“Input source is: **telephone**.”*
“To record a message, enter a message number followed by the # sign.”
“To return to the Main Menu, press #.”

If the reported record time is insufficient, it may be possible to make additional time available using the “Optimize Message Storage” command ***11#** to reorganize how the messages are stored in the flash memory. If this does not free up sufficient space, it will be necessary to erase some stored messages using the “Erase Message” command ***3#**.

If the reported record source is incorrect, it will be necessary to use the “Set Record Source” command ***7#** to set the input to the handset, the microphone, or line.

To return to the main menu to access any of these commands, enter **#** once to terminate the recording and then enter **#** again to return to the main menu.

If the record source is set correctly and there is sufficient record time available, continue with the recording process by entering a message number between 1 and 999, followed by the **#** sign. For example, to record message number ten enter **10#** and the system will respond:

*“Message number: **ten**.”*
“Begin recording at the beep and press # to terminate.”

Record the message. When recording is complete, enter the **#** character. The system will respond:

*“Message number: **ten**. Record complete”
“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

*“[Buzz] Entry is not valid.”
“Main Menu, to hear the command list, enter *0#.”*

Listen to a Message, *2#

The “Listen to a Message” command is used to play back audio messages that have previously been stored in the flash memory of the DR1500AM. The valid input values for the message number are 1 to 999 plus 99999 to listen to all messages.

Voice Prompt Interface

To listen to recorded messages stored in the digital flash memory of the DR1500AM, enter ***2#**. The system will respond:

*“To listen to a message, enter a message number followed by the # sign.”
“For all, enter 99999#.”
“To return to the Main Menu, press #.”*

For example, to listen to message number 10 enter **10#** and the system will respond:

*“Message number: **ten**.”*

The message will then be played, terminated by a single beep. If there is no message recorded, only the terminating beep will be returned. After the message has been played, the system will respond:

*“Main Menu, to hear the command list, enter *0#.”*

To listen to all messages in memory, enter **99999#**. All messages will be played in ascending numerical order. For each message, the number will be announced, and then the message will be played, followed by a single terminating beep. After all messages in memory have been played, the system will respond:

*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

*“[Buzz] Entry is not valid.”
“Main Menu, to hear the command list, enter *0#.”*

Erase a Message, *3#

The “Erase Message” command *3# erases a recorded message stored in the digital flash memory of the DR1500AM. To erase all messages in memory, the code is 99999.

Voice Prompt Interface

To erase a message enter ***3#**. The system will respond:

*“To erase a message, enter a message number followed by the # sign.”
“For all, enter 99999#.”
“To return to the Main Menu, press #”*

For example, to erase message number 11 enter **11#** and the system will respond:

*“Please wait. [Pause]
“Message number **eleven**, erase complete.”
“Main Menu, to hear the command list, enter *0#.”*

To erase all messages in memory, enter **99999#**. The system will respond:

*“Please wait. [Pause]
“Erase **all**, complete.”
“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

*“[Buzz] Entry is not valid.”
“Main Menu, to hear the command list, enter *0#.”*

Report Record Time Available, *60#

The “Report Record Time Available” command *60# is used to obtain a report of the number of minutes of record time currently available in the flash memory of the DR1500AM.

If the reported record time is insufficient, it may be possible to make additional time available using the “Optimize Message Storage” command *11# to reorganize how the messages are stored in the flash memory. If this does not free up sufficient space, it will be necessary to erase some stored messages using the “Erase Message” command *3#.

Voice Prompt Interface

To hear a report of the record time available enter ***60#**. The system will respond:

*“Record time available is **t** seconds.”
“To return to the Main Menu, press #.”*

Record for a Specified Time, *61#

The “Record for a Specified Time” command is used to digitize an audio message and store it in the flash memory of the DR1500AM. The valid range of input values for the message number is 1 to 999. The valid range of input values for the record time is 1 second to the total record time available in memory.

Voice Prompt Interface

To record a message with a predetermined length in the digital flash memory of the DR1500AM enter ***61#**. If the system is in the default condition with the telephone as the input, it will respond:

*“Record time available is **t** seconds.”*

*“Input source is: **telephone**.”*

“To record, enter message number # and time in seconds #.”

“To return to the Main Menu, press #.”

If the reported record time is not sufficient, use the “Optimize Message Storage” command ***11#** or the “Erase Message” command ***3#** to free up some memory space. If the reported record source is incorrect, use the “Set Record Source” command ***7#** to select the correct source.

If the record source is set correctly and there is sufficient record time available, continue with the recording process by entering a message number between 1 and 999 (followed by the # sign) plus the desired message length in seconds (followed by the # sign). For example, to record message 5 with a total length of 10 seconds, enter **5#** followed by **10#**. The system will respond:

“Begin recording at the beep.”

After the beep, record the message. The recording length can be the full length specified previously, or can be terminated just as with the “Record Message” command by entering the # character. After the recording is terminated in either way, the system will respond:

*“Message number **five**. Record complete.”*

*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

If the specified recording time is greater than the time currently available in memory, the system will respond:

“[Buzz] Time specified is greater than time available.”

*“Main Menu, to hear the command list, enter *0#.”*

If there is no record time available, the system will respond:

"[Buzz] No record time available."

*"Main Menu, to hear the command list, enter *0#."*

Broadcast List Commands

The broadcast list contains a sequence of up to 100 message numbers or playlist numbers that are to be played sequentially over the air in a repeated loop. The broadcast list commands described below allow the user to (1) create the broadcast list by entering individual messages and playlists into a broadcast list, (2) hear a report of which message numbers or playlist numbers are currently on the broadcast list, and (3) set spacing in seconds that will be inserted between each message when they are broadcast over the air.

Create the Broadcast List, *5#

The "Create Broadcast List" command *5# changes the entries in the broadcast list. After the command code, the desired message numbers (between 1 and 999) are entered, each followed by the # sign.

After the command is entered, the new broadcast list will be created, and the messages will begin playing as soon as the current message buffer is empty. The messages or playlists will repeat indefinitely until a new broadcast list is entered, until a scheduled event sets up a new broadcast list, or until the broadcast list is temporarily superseded by an emergency broadcast.

To clear the broadcast list so that no messages will be played, set the message number to 0. After the broadcast list is cleared, silence will be aired unless the broadcast auxiliary fill during message spacing has been set.

Note that message numbers of messages that have not yet been created can be included in the broadcast list, but will not be played until after they have been created. Also note that a message may be duplicated any number of times on the broadcast list, within the constraint that the total number of entries does not exceed 100.

Voice Prompt Interface

To create a new broadcast list enter *5# from the main menu. The system will respond:

"Enter each message number followed by the # sign."

"To clear broadcast list, enter 0#"

"To return to the Main Menu, press #"

Sequentially enter the desired message numbers (between 1 and 999) each followed by the # sign. When done, press the # key one final time to terminate the input to the broadcast list and return to the main menu. For example, to place messages 1, 3, and 5 on the broadcast list, enter **1#**, **2#**, **3#**, plus the final terminating #, and the

system will respond:

*“Broadcast list is: **one, two, three**”*

*“Main Menu, to hear the command list, enter *0#.”*

To clear the broadcast list so that no messages will be played, enter **0#**. The system will respond:

*“Broadcast list is: **zero**.”*

*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Report the Broadcast List, *6#

To get a report of which message numbers are currently on the broadcast list, the command coded is ***6#**.

Voice Prompt Interface

To hear a report of which message numbers are currently on the broadcast list, enter ***6#** from the main menu. If, for example, the broadcast list contained message numbers 1, 2, and 3, the system would respond:

*“Broadcast list is: **one, two, three**”*

*“Main Menu, to hear the command list, enter *0#.”*

If the broadcast had been cleared by entering 0#, the system will respond:

*“Broadcast list is: **zero**.”*

*“Main Menu, to hear the command list, enter *0#.”*

Set Message Spacing, *4#

The “Set Message Spacing” command is used to set the spacing in seconds that will be inserted between each message when they are broadcast over the air. The range of values for the message spacing is 0 up to 990 seconds in 10-second increments, corresponding to no message spacing up to 16.5 minutes.

Voice Prompt Interface

To set the message spacing enter ***4#** from the main menu. The system will respond:

*“Message spacing is: **t** seconds.”*

“Enter message spacing in seconds followed by the # sign.”

“To return to the Main Menu, press #”

Enter a number between 0 and 990 seconds, followed by the # sign. For example, to

set the spacing to 20 seconds, enter **20#** and the system will respond:

*"Message spacing is: **twenty** seconds."
"Main Menu, to hear the command list, enter *0#."*

If a number of seconds that is not an increment of 10 seconds is entered, the system will round up to the next possible 10-second increment. For example, if the value 21 is entered, the system will respond:

*"Message spacing is: **thirty** seconds."
"Main Menu, to hear the command list, enter *0#."*

If an invalid entry is made, the system will respond:

*"[Buzz] Entry is not valid."
"Main Menu, to hear the command list, enter *0#."*

Broadcast Aux Fill During Message Spacing, *9#

The "**Broadcast Aux Fill During Message Spacing**" command is used to fill the spacing between messages with the audio signal from the auxiliary input. To enable the HAR to broadcast the auxiliary input during spacing, it is necessary to configure the system as shown in the following table:

- 0 – Silence (deactivated)
- 1 – Auxiliary input activated
- 5 – Silence (deactivated)

The value 5 has the same functionality as the value 0 and is included to make the numbering compatible with the message numbering for periodic auxiliary messages.

Voice Prompt Interface

To broadcast auxiliary fill during message spacing, enter ***9#** from the main menu. If the system is in the default state, with the auxiliary fill function on, the system will respond:

*"Aux fill is: **one**."
"To activate, enter 1#."
"To deactivate, enter 0#."
"To return to the Main Menu, press #."*

For example, to deactivate the auxiliary fill function, enter **0#**. The system will respond:

*"Aux fill is: **zero**."
"Main Menu, to hear the command list, enter *0#."*

If an invalid entry is made, the system will respond:

*"[Buzz] Entry is not valid."
"Main Menu, to hear the command list, enter *0#."*

Broadcast Aux Audio For Specified Time, *76#

The “Broadcast Aux Audio for Specified Time” command is used to manually override the broadcast with audio from the auxiliary input, for example, the weather radio.

The time can be any number between 0 and 1440 minutes (corresponding to 24 hours). Entering a value of zero broadcasts the auxiliary audio indefinitely.

Voice Prompt Interface

To broadcast auxiliary audio for a specified time, enter ***76#** from the main menu. The system will respond:

“To broadcast auxiliary audio, enter time in minutes.”

“To return to the Main Menu, press #.”

For example, to broadcast auxiliary audio for 3 minutes, enter **3#**. The system will respond:

*“Auxiliary audio is **ON**.”*

“To terminate, press #.”

At the end of the interval, or if # is entered before the interval is timed out, the system will respond:

*“Main Menu, to hear the command list, enter *0#.”*

Note that no other user interface activity is possible while the system is broadcasting auxiliary audio. If it is desired to broadcast auxiliary audio while still maintaining access to the user interface, a playlist containing an auxiliary audio message number should be stored and played, as described in the section of this manual on message number codes.

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Transmitter and Monitor Commands

The transmitter commands can be used to (1) control whether the transmitter is on or off, and (2) monitor the broadcast or the auxiliary audio input, which is typically used to input audio from the weather receiver. Note that if an external device such as the DCC is sending periodic packets to the DR1500AM, the monitoring process will be terminated as soon as these packets are received.

Control the Transmitter, *62#

The “Control the Transmitter” command is used to access the sub-menu to turn the transmitter ON or OFF and to monitor the broadcast or the auxiliary audio signals. The commands in the sub-menu are as follows:

2008# – Turn on (activate) the transmitter

2009# – Turn off (deactivate) the transmitter

7900# – Listen to the broadcast

7901# – Listen to the auxiliary input (e.g. weather radio)

All of the functionality of the “Control the Transmitter” sub-commands can be implemented more straightforwardly with the following direct commands accessible from the main menu:

- Turning the transmitter on and off can be done with the “Transmitter On/Off” command (*63#).
- Listening to the broadcast can be done with the “Monitor Broadcast Audio” command (**#)
- Listening to the auxiliary input can be done with the “Monitor Auxiliary Audio” command (***)

Note that the broadcast audio signal monitored using the 7900# sub-command monitors the output of the DR1500AM recorder player. If the HAR system is equipped with an RF demodulator to monitor the actual output of the transmitter, this is accessed by first using the “Select Auxiliary Mode Input Source” command to select the demodulated RF audio signal and then using the “Monitor Auxiliary Audio” command (***) or using the combination of the *62# command plus the 7901# sub command.

Also, note that if the HAR system is transmitting weather radio, then the auxiliary audio input is dedicated to that use and cannot be used to monitor any other auxiliary audio input source such as the demodulated RF signal.

Voice Prompt Interface

To control the transmitter enter *62# from the main menu. For example, in the default condition, the system will respond:

*“The transmitter is **ON**.”*

“To activate the transmitter, enter 2008#.”

“To deactivate the transmitter, enter 2009#.”

“To listen to the broadcast, enter 7900#.”

“To listen to the auxiliary input, enter 7901#.”

“To return to the Main Menu, press #.”

For example, to turn the transmitter off, enter **2009#**. The system will respond:

*“The transmitter is **OFF**.”*

*“Main Menu, to hear the command list, enter *0#.”*

To monitor the broadcast enter **7900#** or to monitor the weather radio enter **7901#**. After one of these monitor selections is entered, the corresponding audio signal will be reported over the telephone or handset. To terminate monitoring and return to the main menu enter **#**.

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Turn the Transmitter On or Off, ***63#**

The “Turn the Transmitter On or Off” command is used to turn the transmitter on or off directly from the main menu. The control values are as follows:

0 – Turn off (deactivate) the transmitter

1 – Turn on (activate) the transmitter

The functionality of this command is equivalent to the combination of the “Control the Transmitter” command (***62#**) and its sub-command (**2008#** and **2009#**) described in a previous section.

Voice Prompt Interface

To turn the transmitter on or off, enter ***63#** from the main menu. For example, in the default condition with the transmitter on, the system will respond:

*“The transmitter is **ON**.”*

*“Main Menu, to hear the command list, enter *0#.”*

For example, to turn the transmitter off, enter **0#**. The system will respond:

*“The transmitter is **OFF**.”*

*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Set Attenuator Level, ***65#**

Some HAR systems have an external attenuator that allows the power to the antenna to be reduced by remote control. The “Set Attenuator Level” command ***65#** is used to set the external RF attenuator level. The actual power reductions depend on the specific design of the attenuator, but typical values are:

1 – 35%

2 – 50%

3 – 70%

4 – 100%

The normal default value is 4.

Voice Prompt Interface

To set the attenuator enter ***65#**. In the default state with the attenuator set to level 4, the system will respond:

*“Attenuator is: **four**.”*

“Enter an attenuator value between one and four followed by the pound sign.”

“To return to the Main Menu, press #”

If, for example, the attenuator is to be set to level 2, enter **4#**, and the system will respond:

*“Attenuator is: **two**.”*

*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Set Transmitter Power Level, *66#

Some HAR systems have a transmitter control module that allows the transmitter power to be varied remotely using the “Set Transmitter Power Level” command ***66#**. The transmitter power level ranges from 1.0 Watts to 30.0 Watts in increments of 0.1 Watt. The corresponding parameter values range from 10 tenths-of-a-Watt to 300 tenths-of-a-Watt in increments of 1 tenth-of-a-Watt. The default value after a Non Volatile RAM reset is 10 Watts or 100 tenths-of-a-Watt.

Voice Prompt Interface

To set the transmitter power level enter ***66#**. In the default state with the transmitter power level set to 10.0 Watts, the system will respond:

*“Transmitter power in tenths-of-a-Watt is **100**.”*

“Enter a transmitter power level in tenths-of-a-Watt.”

“To return to the Main Menu, press #”

If, for example, the transmitter power level is to be set to level 8.0 Watts, enter **80#**, and the system will respond:

*“Transmitter power in tenths-of-a-Watt is **80**.”*

*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Monitor the Broadcast Audio, **#

The “Monitor the Broadcast Audio” command is provided as a quick shortcut to monitor the audio signal at the broadcast output of the DR1500AM. Its function is equivalent to entering the command *62# followed by the command 7900#. To monitor the broadcast audio through the telephone or handset, enter **# from the main menu. To terminate monitoring and return to the main menu enter #. There is no computer-serial interface version of this command. Note that if an external device such as the DCC is sending periodic packets to the DR1500AM, the monitoring process will be terminated as soon as these packets are received.

Monitor the Auxiliary Audio, *#**

The “Monitor the Auxiliary Audio” command is provided as a quick shortcut to monitor the audio signal at the auxiliary input. Its function is equivalent to entering the command *62# followed by the command 7901#. To monitor the auxiliary audio through the telephone or handset, enter ***# from the main menu. To terminate monitoring and return to the main menu enter #. There is no computer-serial interface version of this command. Note that if an external device such as the DCC is sending periodic packets to the DR1500AM, the monitoring process will be terminated as soon as these packets are received.

Monitor the Demodulated Audio, **#**

The “Monitor the Broadcast Audio” command is provided as a quick shortcut to monitor the demodulated transmitter audio signal. To monitor the demodulated audio through the telephone or handset, enter ****# from the main menu. To terminate monitoring and return to the main menu enter #. There is no computer-serial interface version of this command. Note that if an external device such as the DCC is sending periodic packets to the DR1500AM, the monitoring process will be terminated as soon as these packets are received.

Clock-Calendar Commands

The clock-calendar commands are used to check and set the internal battery-backed clock-calendar chip. These commands are (1) the set-calendar function, which is used to control the month, date, and year; and (2) the set clock function, which is used to control the day-of-the-week, hour, and minute.

Set the Calendar, *12#

The “Set the Calendar” command is used to set the month, date, and year in the

internal battery-backed clock-calendar chip. When in the voice mode, this command can be used to obtain a report of the calendar by entering the command code to hear the report and then aborting the command sequence by pressing the pound sign. The "Report the Calendar" command can be used in all modes to obtain a report of the calendar setting.

To set the calendar, the month, date, year, hour, and minute are entered sequentially.

Month number values are 1 for January to 12 for December.

Date number values are 1-31. Note that no checking will be done for the actual number of days in a month at the time of entry. Thus, for example, a date of 31 could be entered in the month of February. However, at the end of the day, the internal clock will automatically roll around to a valid date, which, in the above example, would be March 1.

Year number values are 2000 to 2099.

Voice Prompt Interface

To set the calendar, enter ***12#** from the main menu. The system will respond with, for example:

*"The calendar is: **April fifteen, two thousand one**"*

"To set the calendar, enter month #."

"To return to the Main Menu, press #."

After the month is entered, the system will respond:

"Enter date #."

"To return to the Main Menu, press #."

After the date is entered, the system will respond:

"Enter year #."

"To return to the Main Menu, press #."

Example for ***12#**:

For example, to set the calendar to November 10th, 2001, enter:

11#, for November

10#, for the date of the 10th.

2001#, for the year 2001.

After the calendar values are entered, the system will respond:

*"The calendar is: **November ten, two-thousand one.**"*

*"Main Menu, to hear the command list, enter *0#."*

If an invalid entry is made, the system will respond:

"[Buzz] Entry is not valid."

*"Main Menu, to hear the command list, enter *0#."*

Report the Calendar, ***15#**

The "Report the Calendar" command is used to obtain a report of the current setting

of the month, date, and year in the internal battery-backed clock-calendar chip without changing the setting.

Voice Prompt Interface

To hear a report of the calendar, enter ***15#** from the main menu. The system will respond with, for example:

*“The calendar is: **November tenth, two thousand one**”
“Main Menu, to hear the command list, enter *0#.”*

Set the Clock, *21#

The “Set the Clock” command is used to set the day-of-the-week (DOW), hour, and minutes in the internal battery-backed clock-calendar chip. When in the voice mode, this command can be used to obtain a report of the clock by entering the command code to hear the report and then aborting the command sequence by pressing the pound sign. The “Report the Calendar” command can be used in all modes to obtain a report of the calendar setting.

To set the clock, the day of the week, the hour, and minute are entered sequentially.

Day number values are as follows:

*1 for Sunday
2 for Monday
3 for Tuesday
4 for Wednesday
5 for Thursday
6 for Friday
7 for Saturday*

Hour number values are 0 for midnight to 23 for 11 p.m.

Minute number values are 0 – 59.

Voice Prompt Interface

To set the clock, enter ***21#** from the main menu. The system will respond with, for example:

*“The clock is, **Monday, ten-fifteen.**
“To set the clock, enter day #.”
“To return to the Main Menu, press #.”*

After the day of the week is entered, the system will respond:

*“Enter hour #.”
“To return to the Main Menu, press #.”*

After the hour is entered, the system will respond:

*“Enter minute #.”
“To return to the Main Menu, press #.”*

Example for *21#:

For example, to set the clock to Wednesday at 2:25 p.m., enter:

4#, for Wednesday
14#, for the hour in 2:25 p.m.
25#, for the minute in 2:25 p.m.

After the after the clock values are entered, the system will respond:

*"The clock is, **Wednesday, fourteen-twenty-five.**"*
*"Main Menu, to hear the command list, enter *0#."*

If an invalid entry is made, the system will respond:

"[Buzz] Entry is not valid."
*"Main Menu, to hear the command list, enter *0#."*

Report the Clock, *25#

The "Report the Clock" command is used to obtain a report of the current setting of the day of the week, hour, and minute in the internal battery-backed clock-calendar chip without changing the setting.

Voice Prompt Interface

To report the clock, enter ***25#** from the main menu. The system will respond with, for example:

*"The clock is, **Wednesday, fourteen-twenty-five.**"*
*"Main Menu, to hear the command list, enter *0#."*

Set the Clock-Calendar, *26#

In systems with an external device, such as a Digital Communications Controller (DCC), to automatically synchronize the DR1500AM's internal battery-backed clock-calendar chip, the "Set the Clock-Calendar" command is used to set the month, date, year, day-of-the-week (DOW), hour, minute, and second with a single command. Note that this command does not affect the time stamp, even though it changes an important operating parameter. The reason for this is so that the external device can keep the DR1500AM's clock synchronized with GPS time without defeating the functionality of the time stamp.

Valid entries for the month, date, and year are the same as for the "Set the Calendar" command. Valid entries for the day of the week, hour, and minute are the same as for the "Set the Clock" command. Valid entries for the second are 0 – 59.

Voice Prompt Interface

To set the clock-calendar, enter ***26#** from the main menu. The system will respond with, for example:

*"The calendar is: **April fifteen, two thousand one**"*

*"The clock is, **Monday, ten-fifteen.***

"To set the calendar, enter month #."

"To return to the Main Menu, press #."

After the month is entered, the system will respond:

"Enter date #."

"To return to the Main Menu, press #."

After the date is entered, the system will respond:

"Enter year #."

"To return to the Main Menu, press #."

The system will then respond with:

"To set the clock, enter day #."

"To return to the Main Menu, press #."

After the day of the week is entered, the system will respond:

"Enter hour #."

"To return to the Main Menu, press #."

After the hour is entered, the system will respond:

"Enter minute #."

"To return to the Main Menu, press #."

After the minute is entered, the system will respond:

"Enter second #."

"To return to the Main Menu, press #."

After the seconds are entered, the system will respond:

*"The calendar is: **April fifteen, two thousand one**"*

*"The clock is, **Monday, ten-fifteen, oh one.***

*"Main Menu, to hear the command list, enter *0#."*

Note that the time will correspond to the value read from the real-time clock at the time the response is generated and thus may be one second later than the input values.

Example for *26#:

For example, to set the clock-calendar to November 10th, 2001, Wednesday at 2:25:30 p.m., enter:

11#, for November

10#, for the date of the 10th.

2001#, for the year 2001.

4#, for Wednesday

14#, for the hour in 2:25:30 p.m.
25#, for the minute in 2:25:30 p.m.
30#, for the second in 2:25:30 p.m

If an invalid entry is made, the system will respond:

*"[Buzz] Entry is not valid."
"Main Menu, to hear the command list, enter *0#."*

Monitor Clock Seconds, *27#

The "Monitor Clock Seconds" commands provides a precise timing beep for each even second over the telephone or handset. This command is useful for checking the precision of the internal real-time clock.

Voice Prompt Interface

To monitor the clock seconds, enter ***27#** from the main menu. At the next exact even second the system will respond with, for example:

*"BEEP two"
"BEEP four"
"BEEP six"
etc.*

The beginning of the beep will be within approximately a millisecond of the exact internal real-time clock transition. To exit, enter #. The system will respond:

*"Main Menu, to hear the command list, enter *0#."*

Information About Message Number Categories

This section provides information about the various message number categories that can be used in the creation of the broadcast list, playlists, and scheduled events. The different ranges of message numbers and the corresponding categories are listed in the table below. How these various message numbers are used are described briefly in the subsections below and in more detail in the subsections on the specific command codes.

Summary of Message Number Categories

	Range of Digits 2, 3, 4	Digit 1	Digit 2	Digit 3	Digit 4	Digit 5
Individual message, non-synch	00000-00999	0	0	Msg 100s	Msg 10s	Msg 1s
Playlist, non-synch	01001-01025	0	1	0	Playlist Num 10s	Playlist Num 1s
Individual message, synch	02000-02999	0	2	Msg 100s	Msg 10s	Msg 1s
Playlist, synch	03001-03025	0	3	0	Playlist Num 10s	Playlist Num 1s
Periodic Messages	09100-09599	0	9	Periodic Type (1-5)	Repeat Count 10s	Repeat Count 1s
Aux 1, 2, 3, 4, (5 = silence)	10100-59999	1, 2, 3, 4, 5	Time 100s	Time 10s	Repeat Count 10s	Repeat Count 1s

Note that the message number field is five-digits long. When using the telephone-DTMF interface either manually with the voice prompts or with a computer, the leading zeroes are optional. When using the serial-ASCII interface, all five digits are required. In the descriptions below, the five-digit form required for the serial-ASCII interface are shown in parentheses.

Individual Message Numbers: 1—999

Message numbers in the range 1 to 999 (00001 to 00999) are used to identify individual stored messages 1 to 999. Message number 0 (00000) is used to clear the broadcast list.

Note that messages in the range from 990 to 999 have special functions such as emergency broadcasts and periodic messages. Thus, use of these message numbers for general-purpose messages is not recommended.

Playlist Numbers: 1001—1025

Message numbers in the range 1001 to 1025 (01001 to 01025) are used to identify playlists 1 to 25.

Synchronized Individual Message Numbers: 2001—2999

Message numbers in the range 2001 to 2999 (02001 to 02999) are used to identify that an individual message in the range 1 to 999 is to be played in the synchronized audio mode. Note that messages designated by 2001-2999 are the same actual messages as those designated by 1-999. The only difference is that a reference to a message using the 2000 range indicates that the message is to be broadcast in the synchronized mode. More information on synchronized messages is given in the section of this manual on synchronized broadcasts.

Synchronized Playlist Numbers: 3001—3025

Message numbers in the range 3001 to 3025 (03001 to 03025) are used to identify that playlists 1 to 25 are to be played in the synchronized audio mode. Note that playlists designated by 3001 to 3025 are the same actual playlists as those designated by 1001-1025. The only difference is that a reference to a playlist using the 3000 range indicates that the playlist is to be broadcast in the synchronized mode. More information on synchronized playlists is given in the section of this manual on synchronized broadcasts.

Periodic Messages: 9100—9599

Message numbers in the range 9100 to 9599 (09100 to 09599), when included in a playlist, configure the DR1500AM to broadcast the time, the date, or a message (e.g. the call sign) at periodic intervals.

The functionality of the digits in the periodic message number are as follows:

Digits 1 and 2 (=09) identify that this is a periodic message

Digit 3 determines the type of periodic message as shown here:

- 09 1 00 – Periodic Time Announcement
- 09 2 00 – Periodic Date Announcement
- 09 3 00 – Periodic Playing of Message 993
- 09 4 00 – Periodic Playing of Message 994
- 09 5 00 – Periodic Playing of Message 995

Digits 4 and 5 determine the cycle count, which is defined as the number of times the playlist will be played before the periodic message is repeated. The count can be 1 to 99. A cycle count of 0 will cause the periodic message to be played before each message in the playlist.

How this works can be most easily understood by way of some examples.

Periodic Example 1—Time Only

To broadcast the time every third time the message list plays, the message number would be 09103, which is constructed as follows:

09103

- 09 Identifies the message number as periodic
- 1 Identifies that the message should broadcast the time
- 03 Identifies that the message should be broadcast every third loop of the playlist

Assuming that the following playlist has been constructed:

Playlist number 01003 = [09103, 00001, 00002]

As described above, the first message number 09103 identifies that when this playlist is broadcast, the time should be broadcast periodically after every third cycle through the playlist. The other two entries consist of individual messages 1 and 2. Thus, the broadcast sequence would be as follows:

Time, Message 1, Message 2, Message 1, Message 2, Message 1, Message 2,
Time, Message 1, Message 2, Message 1, Message 2, Message 1, Message 2,
 Etc.

Periodic Example 2—Time, Date, and Message

To show how all the periodic message numbers can be used together, the second example assumes that message 993 is the call sign and the following playlist has been constructed:

Playlist number 01004 = [09101, 09202, 09303, 00001, 00002]

Here the broadcast sequence would be as follows:

Time, Date, Call Sign, Message 1, Message 2,
Time, Message 1, Message 2,
Time, Date, Message 1, Message 2,
Time, Call Sign, Message 1, Message 2,
Time, Date, Message 1, Message 2,
Time, Message 1, Message 2,
Time, Date, Call Sign, Message 1, Message 2,
 Etc.

Periodic Example 3—Time Before Each Message

A message count of 0 causes the periodic message to be played after each message in the message list. Assuming that the following playlist has been constructed:

Playlist number 01005 = [09100, 09202, 09303, 00001, 00002]

The broadcast sequence would be as follows:

Time, Date, Call Sign, Message 1, **Time**, Message 2,
Time, Message 1, **Time**, Message 2,
Time, Date, Message 1, **Time**, Message 2,
Time, Call Sign, Message 1, **Time**, Message 2,
Time, Date, Message 1, **Time**, Message 2,
Time, Message 1, **Time**, Message 2,
Time, Date, Call Sign, Message 1, **Time**, Message 2,
Etc.

Note 1: If multiple periodic message numbers of the same type are included in a playlist, only the last one will be operative and all preceding ones will be ignored.

Note 2: If more than one periodic message (or auxiliary message as defined below) with a cycle count of 0 are included in a playlist, only the last one will be played before all messages in the playlist and all preceding ones will be ignored.

Note 3: If a periodic message is played as part of a synchronized playlist, it will be played in the synchronized mode.

Auxiliary Input Messages: 10000—50000 Range)

Message numbers in the range 10000 to 19999, are used to configure the DR1500 to broadcast the audio from the auxiliary input. The functionality of the digits in the message number are as follows:

Digit 1 determines whether the broadcast will be the auxiliary audio input or silence as shown here:

10000 – Auxiliary input
50000 – Silence

Digits 2 and 3 determine the play time for the Aux input message in units of 10 seconds over the range 10 seconds to 990 seconds (corresponding to 16.5 minutes). If a time longer than this is required, two or more auxiliary input message numbers can be placed in sequence in the playlist. A value of 0 corresponds to broadcasting the corresponding Aux input indefinitely.

Digits 4 and 5 determine the cycle count, which is defined as the number of times the playlist will repeat before the auxiliary message is repeated. The count can be 1 to 99. A cycle count of 0 will cause the auxiliary message to be played before each message in the playlist.

Thus, for example to broadcast the audio input from Aux 4 for 30 seconds before each cycle through the playlist, the message number would be 40301 where the components of the composite message number can be broken out as follows:

4	03	01	
4			Configures the source as Aux 4 (per the above table)
	03		Configures the play time as 30 seconds (i.e. 3 ten-second increments)
		01	Configures the cycle count as once per loop through the playlist

The functionality that message number 1000 “Broadcast Silence” had on earlier versions of the DR1500AM can be implemented using auxiliary message number 50000, which corresponds to playing silence indefinitely.

Note that if an auxiliary message is played as part of a synchronized playlist, it will be played in the synchronized mode, meaning that its start and stop will be timed precisely. However, the audio content will be determined by the external audio source and may or may not be synchronized.

Alert Mode Commands

The auxiliary mode commands can be used to (1) automatically broadcast auxiliary fill during message spacing or to broadcast auxiliary audio during an alert.

Note that the DR1500AM can also be configured to play the audio from the auxiliary input using the auxiliary input message numbers in the 10,000 to 19,999 range as described in the section on message numbers.

Configure NOAA Alert, *10#

The “Configure NOAA Alert” command is used to configure the DR1500AM to respond to a NOAA alert signal. The “Configure NOAA Alert” command contains the following parameters:

NOAA Alert Hold Time

The first parameter is the NOAA alert hold time and can be any number between 0 and 1440 minutes (corresponding to 24 hours). This parameter controls how long the DR1500AM will override the normal broadcast with the auxiliary input after a NOAA alert is received. Note that the NOAA alert will be continuously re-triggered if another alert is received before an earlier alert has timed out. Entering an alert time value of 0 deactivates the NOAA alert functionality.

NOAA Alert Follow-on Message Number

The second parameter is the NOAA alert follow-on message number. This number can be in any of the following ranges:

1	-999	Individual message, non-synchronized
2001	-2999	Individual message, synchronized
1000	-1025	Playlist, non-synchronized
3000	-3025	Playlist, synchronized

Note that a follow-on message number must be entered, even if a NOAA alert hold time of zero was entered and even if the follow-on message functionality is to be disabled by the follow-on message repeat number being set to 0 as described in the next subsection.

NOAA Alert Follow-on Message Repeat Count

The third parameter is the NOAA alert follow-on message repeat count, which can be any number between 0 and 99. Setting the repeat count to 0 disables the follow-on message functionality, but does not affect the basic NOAA alert functionality. Note that a follow-on message number count must be entered, even if a NOAA alert hold time of zero was entered to deactivate the NOAA alert functionality.

Voice Prompt Interface

To set up the system to broadcast the auxiliary input on NOAA alert, enter ***10#** from the main menu. If the alert was previously set to the default conditions, the system will respond:

*“NOAA alert hold time in minutes is: **zero**.”*

*“Message number is: **one**.”*

*“Repeat count is: **zero**.”*

“Enter NOAA alert hold time.”

“To deactivate, enter 0#.”

“To return to the Main Menu, press #.”

To activate, enter an alert hold time between 1 and 1440 minutes. For example, to set the time to 8 minutes, enter **8#**. The system will respond:

“Enter NOAA alert message number.”

“To return to the Main Menu, press #.”

Assuming the follow-on message is number 123, enter **123#**. The system will respond:

“Enter NOAA alert repeat count.”

“To return to the Main Menu, press #.”

Assuming the follow-on message is number is to be repeated 5 times, enter **5#**. The system will respond:

*“NOAA alert hold time is: **eight** minutes.”*

*“Message number is: **one hundred twenty three**.”*

*“Repeat count is: **five**.”*

*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Configure EAS Alert, *110#

The “Configure EAS Alert” command is used to configure the DR1500AM to respond to an EAS alert signal. The “Configure EAS Alert” command contains the following parameters:

EAS Alert Enable

The first parameter is the EAS alert enable and can be either 0 (DISABLE) or 1 (ENABLE).

EAS Alert Follow-On Message Number

The second parameter is the EAS alert follow-on message number. This number can be in any of the following ranges:

1	-999	Individual message, non-
synchronized		
2001 -2999		Individual message, synchronized

1000	-1025	Playlist, non-synchronized
3000	-3025	Playlist, synchronized

Note that a follow-on message number must be entered, even if an EAS enable value of zero was entered and even if the follow-on message functionality is to be disabled by the follow-on message repeat number being set to 0 as described in the next subsection.

EAS Alert Follow-on Message Repeat Count

The third parameter is the EAS alert follow-on message repeat count, which can be any number between 0 and 99. Setting the repeat count to 0 disables the follow-on message functionality, but does not affect the basic EAS alert functionality. Note that a follow-on message number count must be entered, even if an EAS enable value of zero was entered to deactivate the EAS alert functionality.

Voice Prompt Interface

To set up the system to broadcast the auxiliary input on an EAS alert, enter ***110#** from the main menu. If the alert was previously set to the default conditions, the system will respond:

*“EAS enable is **zero**.”*
*“Message number is: **one**.”*
*“Repeat count is: **zero**.”*
“Enter EAS alert enable.”
“To deactivate, enter 0#.”
“To return to the Main Menu, press #.”

To activate, enter an enable value of **1#**. The system will respond:

“Enter message number #.”
“To return to the Main Menu, press #.”

Assuming the follow-on message is number 123, enter **123#**. The system will respond:

“Enter count #.”
“To return to the Main Menu, press #.”

Assuming the follow-on message is number is to be repeated 5 times, enter **5#**. The system will respond:

*“EAS alert enable is **one**.”*
*“Message number is: **one hundred twenty three**.”*
*“Count is: **five**.”*
*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”
*“Main Menu, to hear the command list, enter *0#.”*

Playlist Commands

Playlists can be used in both the broadcast list and in event schedules to reference a number of messages with a single playlist number. The DR1500AM has the capability of storing up to 25 playlists, each containing a sequence of up to 100 individual message numbers.

Playlists are similar to the broadcast list with the following exceptions: (1) The broadcast list can reference both individual messages and playlists, but playlists can reference only individual messages and cannot have other playlists nested within them. (2) The broadcast list is cleared by entering message number 0# whereas playlists are cleared using a separate clear command (*44#).

The playlist commands described below allow the user to (1) create playlists, (2) get a report of the messages that are contained in a playlist, (3) make a playlist the current broadcast list, and (4) clear a playlist. Note that the playlist commands can be used for non-synchronized playlists in the range 1001-1025 and for synchronized playlists in the 3001-3025 range.

Create a Playlist, *41#

The "Create a Playlist" command is used to create a new playlist or replace an existing playlist.

When one of the twenty-five possible playlists is created using this command, the allowed identification number is in the range 1001-1025. This is independent of whether the playlist is later to be played in the non-synchronized mode by referring to it with a playlist number in the 1001-1025 range or in the synchronized mode by referring to it with a playlist number in the 3001-3025 range.

Voice Prompt Interface

To create a new playlist, enter ***41#** from the main menu. The system will respond:

*"To create a playlist, enter a playlist number followed by the # sign."
"To return to the Main Menu, press #."*

For example, to create playlist 1020, enter **1020#** and the system will respond:

*"For each entry in the playlist, enter a message number followed by the # sign."
"To return to the Main Menu, press #."*

Sequentially enter the desired message numbers each followed by the # sign, after which the DR1500AM will respond with an acknowledgement beep. When done, enter the # character one final time to terminate the input to the playlist and return to the main menu. For example, to set playlist 1020 to contain message numbers 1, 2, and 20601 (to broadcast Aux 2 for 60 seconds for each single loop through the playlist), enter **1#, 2#, 20601#**, followed by the terminating **#**. The system will respond:

"Playlist one thousand twenty complete."

*“Main Menu, to hear the command list, enter *0#.”*

Allowed message numbers are those in the following ranges:

1-999	Individual messages
2,001-2,999	Synchronized individual messages
9,000 Range	Periodic Messages
10,000—59,999 Range	Aux messages

For more information on message numbers, see the separate section on “Categories of Message Numbers.”

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Note that entry of invalid message numbers will not affect the valid message numbers already stored on the playlist.

Report a Playlist, *42#

The “Report a Playlist” command is used to get a report of which messages are currently included in a particular playlist.

When one of the twenty-five possible playlists is reported using this command, the allowed identification number is in the range 1001-1025. This is independent of whether the playlist is later to be played in the non-synchronized mode by referring to it with a playlist number in the 1001-1025 range or in the synchronized mode by referring to it with a playlist number in the 3001-3025 range.

Voice Prompt Interface

To get a report of which message numbers are contained in a particular playlist, enter ***42#**. The system will respond:

“To report a playlist, enter a playlist number followed by the # sign.”

“To return to the Main Menu, press #.”

If for example, playlist 1020 contains individual messages 1, 2, and 20601, entering **1020#**, to get a report of playlist 1020, will cause the system to respond:

*“Playlist **one thousand twenty** is: **one, two, four thousand six.**”*

*“Main Menu, to hear the command list, enter *0#.”*

If, on the other hand, playlist 1020 were empty (either by default or by having been cleared using the ***44#** command), entering 1020# would cause the system to respond:

*“Playlist **one thousand twenty** is: **zero.**”*

*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

"[Buzz] Entry is not valid."

*"Main Menu, to hear the command list, enter *0#."*

Copy a Playlist to Broadcast List and Activate, *43#

The "Copy a Playlist to Broadcast List and Activate" command is used to immediately copy a playlist to the broadcast list and activate the new broadcast list.

When using this command, enter a playlist number between 1001 and 1025 to create a non-synchronized broadcast list or a playlist number between 3001 and 3025 to create a synchronized broadcast list.

Voice Prompt Interface

To copy a playlist the current broadcast list and activate it enter ***43#** from the main menu. The system will respond:

"To copy a playlist to the broadcast list, enter a playlist number followed by the # sign."

"To return to the Main Menu, press #."

For example, assuming playlist 1020 consists of individual messages 1, 2, and 20601, then entering **1020#** would cause the system will respond:

*"Broadcast list is: **one, two, twenty thousand six hundred one.**"*

*"Main Menu, to hear the command list, enter *0#."*

If an invalid entry is made, the system will respond:

"[Buzz] Entry is not valid."

*"Main Menu, to hear the command list, enter *0#."*

Clear a Playlist, *44#

The "Clear a Playlist" command is used to clear or empty a particular playlist.

When one of the twenty-five possible playlists is cleared using this command, the allowed identification number is in the range 1001-1025. This is independent of whether the playlist had been played in the non-synchronized mode by referring to it with a playlist number in the 1001-1025 range or in the synchronized mode by referring to it with a playlist number in the 3001-3025 range.

Voice Prompt Interface

To clear a playlist to zero, enter ***44#** from the main menu. The system will respond:

"To clear a playlist, enter a playlist number followed by the # sign."

"For all, enter 9999#."

"To return to the Main Menu, press #."

For example, if **1020#** is entered to clear playlist 1020, the system will respond:

*“Playlist **one thousand twenty** is: **zero**.
“Main Menu, to hear the command list, enter *0#.”*

To clear all playlists, enter **99999#**. The system will respond:

*“**All** playlists cleared.”
“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

*“[Buzz] Entry is not valid.”
“Main Menu, to hear the command list, enter *0#.”*

Activate a Playlist, *45#

The “Activate a Playlist” command is used to immediately begin broadcasting a playlist. While similar to the “Copy a Playlist to Broadcast List and Activate” command, this command leaves the current broadcast list (i.e. playlist number 1000) unchanged so that the current broadcast list can later be restarted, if desired.

When using this command, enter a playlist number between 1000 and 1025 to activate the playlist in the non-synchronized mode, or a playlist number between 3000 and 3025 to activate the playlist in the synchronized mode. Note that the range of playlist numbers includes 1000 and 3000, which correspond to activating or re-activating the broadcast list in the non-synchronized or synchronized modes, respectively.

Voice Prompt Interface

To activate a playlist enter ***45#** from the main menu. The system will respond:

*“To activate a playlist, enter a playlist number followed by the # sign.”
“To return to the Main Menu, press #.”*

For example, entering **1020#** would cause the system will respond:

*“Playlist **1020** activated.”
“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

*“[Buzz] Entry is not valid.”
“Main Menu, to hear the command list, enter *0#.”*

Information About Event Schedules

Types of Event Schedules

Event schedules are lists of events to be automatically played at some time in the future. There are two types of scheduled events that can be set up and stored in the

non-volatile memory of the DR1500AM, including:

- (1) *Day-of-the-week events scheduled by day-of-the-week, hour, minute, and message or playlist number.*
- (2) *Month-date-year events scheduled by the month, date, year, hour, minute, and message or playlist number.*

The DR1500AM has the capability of storing up to 200 total scheduled events in any mix of day-of-the-week or month-date-year.

Multiple Events with the Same Scheduled Time

Individual scheduled events can be scheduled to broadcast at the same time. At the shared event time, each event will be read from the schedule table and executed. Thus, individual messages will interrupt the broadcast list and playlists will replace the broadcast list in the order they are stored in the schedule table. If one or more playlists are scheduled, the last to be copied will remain as the new broadcast list, to be played repeatedly until it is replaced or overridden.

Note that the exact order in which multiple events scheduled for the same time will be executed is the order that they are stored in the schedule table. This order may or may not be the order in which the events were entered, since slots in the table are reused if previously scheduled events are cleared.

If it is necessary that multiple simultaneous events be executed in a certain order they should be entered with unique times differentiated by at least one minute. If for some reason, it is desired to have the times be identical, the schedule table must first be cleared using the appropriate "Clear Message Schedule" command for the particular type of scheduled event being programmed, and then the events must be entered in the cleared schedule table in the exact order in which it is desired for them to play at the time of the event.

Contents of Scheduled Messages and Playlists

Note that when a schedule event is created it is simply the message number, the playlist number, or the auxiliary control number that is stored in the schedule table. There is no checking when the schedule is set up of whether the scheduled message contains an actual recording, or of whether a scheduled playlist contains an actual list of message numbers.

For proper operation, all that is required is that the messages or playlists be set up sometime before the time of the scheduled event. If they are still empty at the event time, they simply will not be played. Similarly, users should keep in mind that just because a message or playlist is set up appropriately at the time the schedule event is created, either of them could be changed during the time period before the event is actually executed, producing an inappropriate broadcast. To guard against this, it is advised that a suitably disciplined protocol be followed in setting up messages and playlists to be used for scheduled events. In particular, it is recommended that a logbook of messages, playlists, and schedules be kept. A convenient form is to keep a three-ring binder listing the contents of messages, playlists, and schedules

arranged by number.

Special Entries for “Every” and “All”

As shown in the table below, special entries designating “every” are a series of the digit “8” and entries designating “all” are a series of the digit “9.” The number of digits in the series is equal to the maximum number of digits required for each field. Thus, the day of the week is one digit; the month, date, hour and minute are two digits, and the year and message number are four digits.

Special Entries for “Every” and “All”

	Input Range	Every	All
Year	2000-2099	8888	9999
Month	1-12	88	99
Date	1-31	88	99
Day	1-7	8	9
Hour	0-23	88	99
Minute	0-59	88	99
Msg Num	1 – 59999	n/a	99999

Day-of-Week Scheduled Event Commands

Day-of-the-week scheduled events can be used to automatically broadcast messages that occur repeatedly on a weekly basis. The day-of-the-week schedule commands described below allow the user to (1) create, (2) get a report of, and (3) clear events scheduled by the day-of-the-week. Similar commands for month-date-year and periodic scheduled events are described in subsequent sections of this manual.

Create Day-of-the-Week Scheduled Events, *22#

To create day-of-the-week scheduled events in the schedule table, the day of the week, the hour, minute, and message number are entered sequentially.

Day number values are as follows:

- 1 for Sunday
- 2 for Monday
- 3 for Tuesday
- 4 for Wednesday
- 5 for Thursday
- 6 for Friday
- 7 for Saturday

For events to be played every day, enter 8 in place of the day-of-the-week number.

Hour number values are 0 for midnight to 23 for 11 p.m. For events to be played every hour, enter 88.

Minute number values are 0 – 59. For events to be played every minute, enter 88.

Message Number values are the full set of message numbers as described in the section on “Categories of Message Numbers.” These categories include message numbers for individual messages, playlists, and auxiliary messages in both synchronized and un-synchronized modes.

Note that message number entries corresponding to the synchronized mode are incompatible with day-of-the-week scheduled events and will cause an invalid entry that will not be stored in the table of scheduled events.

Voice Prompt Interface

To create day-of-the-week scheduled events in the schedule table, enter ***22#** from the main menu. The system will respond:

“To create day-of-the-week scheduled events, first enter day #.”
“To return to the Main Menu, press #.”

After the day is entered, the system will respond:

“Enter hour #.”
“To return to the Main Menu, press #.”

After the hour is entered, the system will respond:

“Enter minute #.”
“To return to the Main Menu, press #.”

After the minute is entered, the system will respond:

“Enter message number #.”
“To return to the Main Menu, press #.”

After the message number is entered, the system will confirm the entered values and prompt the user whether to proceed with creating a new event in the schedule table, as illustrated in the example below.

Example for ***22#**:

For example, to create a schedule event to be played on Monday afternoons at 4:15 p.m. consisting of message number 9, enter:

2#, for Monday
16#, for the hour in 4:15 p.m.
15#, for the minute in 4:15 p.m.
9#, for individual message number 9

The system will then confirm the entered values:

*“Entered values are: Day: **Monday**, hour: **sixteen**, minute: **fifteen**,*

*message number: **nine**.”*

“To keep, enter 1#.”

“To clear, enter 2#.”

“To repeat, enter 3#.”

“To return to the Main Menu, press #.”

If **1#** is entered, the corresponding new event will be created in the schedule table and the system will loop back to request a new set of entry values.

If **2#** is entered, no new event will be created, and the system will loop back to request a new set of entry values.

If **3#** is entered, the previous set of entry values will be reconfirmed along with the choice to keep, clear, or repeat.

Invalid Entries for *22#:

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Report Day-of-the-Week Scheduled Events, *23#

To report selected day-of-the-week scheduled events in the schedule table, the day of the week, the hour, minute, and message number are entered sequentially to select which messages are to be reported.

Day number values are as follows:

- 1 for Sunday*
- 2 for Monday*
- 3 for Tuesday*
- 4 for Wednesday*
- 5 for Thursday*
- 6 for Friday*
- 7 for Saturday*

To report only those events that were originally scheduled to be played every day, enter 8 as the day-of-the-week number for the report. To report all events originally scheduled with any day-of-the-week number (1-8), enter 9 as the day-of-the-week number for the report.

Hour number values are 0 for midnight to 23 for 11 p.m. To report only those events that were originally scheduled to be played every hour, enter 88 as the hour number for the report. To report all events originally scheduled with any hour number (0-23, 88), enter 99 as the hour number for the report.

Minute number values are 0 – 59. To report only those events that were originally scheduled to be played every minute, enter 88 as the minute number for the report. To report all events originally scheduled with any minute number (0-59, 88), enter 99 as the minute number for the report.

Message numbers values are the full set of message numbers as described in the

section on "Information About Message Numbers." Enter 99999 to select all possible message numbers.

Voice Prompt Interface

To obtain a report of day-of-the-week scheduled events stored in the schedule table, enter ***23#**. The system will respond:

*"To report day-of-the-week scheduled events, first enter day #."
"To return to the Main Menu, press #."*

After the day is entered, the system will respond:

*"Enter hour #."
"To return to the Main Menu, press #."*

After the hour is entered, the system will respond:

*"Enter minute #."
"To return to the Main Menu, press #."*

After the minute is entered, the system will respond:

*"Enter message number #."
"To return to the Main Menu, press #."*

After the message number is entered, the system will first confirm the set of entered values and then search through memory and report any matching scheduled events, as illustrated in the example below.

A report of scheduled events can be interrupted by entering #, which will cause the system to escape to the main menu.

Example for ***23#**:

Assume that the schedule table includes an event to be played every Monday afternoon at 4:15 p.m. consisting of message number 9, plus another event to be played every Monday afternoon at 4:20 p.m. consisting of message number 11. To get a report of scheduled events to be played every Monday afternoon anytime during the 4 p.m. hour enter:

2#, for Monday
16#, for the hour from 4:00 p.m. to 4:59 pm
99#, for any minute in that hour
99999#, for any message number

The system will then confirm the entered values:

*"Entered values are: Day: **Monday**, hour: **sixteen**, minute: **all**, message number: **all**."*

For the example given above on creating scheduled events, the system would report:

"Scheduled event values are:

*“Day: **Monday**, hour: **sixteen**, minute: **fifteen**, message number: **nine**
[beep].”*

*“Day: **Monday**, hour: **sixteen**, minute: **twenty**, message number: **eleven**
[beep].”*

When done searching, the system will respond:

“Report Complete”

The system will then loop back to request a new set of entry values.

Invalid Entries for *23#:

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Clear Day-of-the-Week Scheduled Events, *24#

To clear (i.e. delete) selected day-of-the-week scheduled events in the schedule table, the day of the week, the hour, minute, and message number are entered sequentially to select which messages are to be deleted.

Day number values are as follows:

- 1 for Sunday*
- 2 for Monday*
- 3 for Tuesday*
- 4 for Wednesday*
- 5 for Thursday*
- 6 for Friday*
- 7 for Saturday*

To clear only those events that were originally scheduled to be played every day, enter 8 as the day-of-the-week number for the clear. To clear all events originally scheduled with any day-of-the-week number (1-8), enter 9 as the day-of-the-week number for the clear.

Hour number values are 0 for midnight to 23 for 11 p.m. To clear only those events that were originally scheduled to be played every hour, enter 88 as the hour number for the clear. To clear all events originally scheduled with any hour number (0-23, 88), enter 99 as the hour number for the clear.

Minute number values are 0 – 59. To clear only those events that were originally scheduled to be played every minute, enter 88 as the minute number for the clear. To clear all events originally scheduled with any minute number (0-59, 88), enter 99 as the minute number for the clear.

Message numbers values are the full set of message numbers as described in the section on “Information About Message Numbers.” Enter 99999 to select all possible message numbers.

Voice Prompt Interface

To clear day-of-the-week scheduled events from the schedule table, enter ***24#** from the main menu. The system will respond:

*"To clear day-of-the-week scheduled events, first enter day #."
"To return to the Main Menu, press #."*

After the day is entered, the system will respond:

*"Enter hour #."
"To return to the Main Menu, press #."*

After the hour is entered, the system will respond:

*"Enter minute #."
"To return to the Main Menu, press #."*

After the minute is entered, the system will respond:

*"Enter message number #."
"To return to the Main Menu, press #."*

After the message number is entered, the system will confirm the entered values and prompt the user whether to proceed with the clearing of matching scheduled events, as illustrated in the example below.

Example for ***24#**:

For example, to clear all scheduled events to be played every Monday afternoon in the 4 p.m. hour, enter:

2#, for Monday
16#, for the hour in 4:15 p.m.
99#, for any minute value.
99999#, for any message number

The system will then confirm the entered values:

*"Entered values are: Day: **Monday**, hour: **sixteen**, minute: **all**, message number: **all**."
"To keep, enter 1#."
"To clear, enter 2#."
"To repeat, enter 3#."
"To return to the Main Menu, press #."*

If **1#** is entered, events will be kept and the system will loop back to request a new set of entry values.

If **2#** is entered, all matching events stored in the schedule table will be cleared. The system will report:

"Clear complete."

The system will then loop back to request a new set of entry values.

If **3#** is entered, the previous set of entry values will be reconfirmed along with the choice to keep, clear, or repeat.

Invalid Entries for *24#:

If an invalid entry is made, the system will respond:

"[Buzz] Entry is not valid."

*"Main Menu, to hear the command list, enter *0#."*

Month-Date-Year Scheduled Event Commands

Month-date-year scheduled events can be used to automatically broadcast messages that occur at a specific date and time in the future. The month-date-year scheduled event commands described below allow the user to (1) create, (2) get a report of, and (3) clear events scheduled by month-date-year. Similar commands for day-of-the-week scheduled events and periodic scheduled events are described in other sections of this manual.

Create Month-Date-Year Scheduled Events, *32#

To create month-date-year scheduled events in the schedule table, the month, date, year, hour, minute, and message number are entered sequentially.

Month number values are 1 for January to 12 for December. For events to be played every month, enter 88.

Date number values are 1-31. For events to be played every date, enter 88. Note that no checking will be done for the actual number of days in a month. Thus, for example, a month and date of February 30 could be entered for an event, but such an event would never actually be executed (unless the calendar had been manually set to this unreal date and had not yet rolled around automatically.)

Year number values are 2000 to 2099. For events to be played every year, enter 8888.

Hour number values are 0 for midnight to 23 for 11 p.m. For events to be played every hour, enter 88.

Minute number values are 0 – 59. For events to be played every minute, enter 88.

Message Number values are the full set of message numbers as described in the section on "Categories of Message Numbers." These categories include message numbers for individual messages, playlists, and auxiliary messages in both synchronized and un-synchronized modes.

Note that message number entries corresponding to the synchronized mode are incompatible with entries to be played every month (88), date (88), year (8888), hour (88), or minute (88) and will cause an invalid entry that will not be stored in the table

of scheduled events.

Voice Prompt Interface

To create month-date-year scheduled events in the schedule table, enter ***32#** from the main menu. The system will respond:

*"To create month-date-year scheduled events, first enter month #."
"To return to the Main Menu, press #."*

After the month is entered, the system will respond:

*"Enter date #."
"To return to the Main Menu, press #."*

After the date is entered, the system will respond:

*"Enter year #."
"To return to the Main Menu, press #."*

After the year is entered, the system will respond:

*"Enter hour #."
"To return to the Main Menu, press #."*

After the hour is entered, the system will respond:

*"Enter minute #."
"To return to the Main Menu, press #."*

After the minute is entered, the system will respond:

*"Enter message number #."
"To return to the Main Menu, press #."*

After the message number is entered, the system will confirm the entered values and prompt the user whether to proceed with creating a new event in the schedule table, as illustrated in the example below.

Example for ***32#**:

For example, to create a schedule event to be played on January 2, 2003 at 4:05 a.m. consisting of message number 6, enter:

1#, for January
2#, for the 2nd of the month
3#, for the year 2003
4#, for the hour in 4:05 a.m.
5#, for the minute in 4:05 a.m., and
6#, for message number 6

The system will then confirm the entered values:

*“Entered values are: Month: **January**, date: **two**, year: **two-thousand three**, hour: **four**, minute: **five**, message number: **six**.”*

“To keep, enter 1#.”

“To clear, enter 2#.”

“To repeat, enter 3#.”

“To return to the Main Menu, press #.”

If **1#** is entered, the corresponding new event will be created in the schedule table and the system will loop back to request a new set of entry values.

If **2#** is entered, no new event will be created, and the system will loop back to request a new set of entry values.

If **3#** is entered, the previous set of entry values will be reconfirmed along with the choice to keep, clear, or repeat.

Invalid Entries for *32#:

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Report Month-Date-Year Scheduled Events, *33#

To report month-date-year scheduled events stored in the schedule table, the month, date, year, hour, minute, and message number are entered sequentially to select which messages are to be reported.

Month number values are 1 for January to 12 for December. To report only those events that were originally scheduled to be played every month, enter 88 as the month number for the report. To report all events originally scheduled with any month number (1-12, 88), enter 99 as the month number for the report.

Date number values are 1-31 plus 88. To report only those events that were originally scheduled to be played every date, enter 88 as the date number for the report. To report all events originally scheduled with any date number (1-31, 88), enter 99 as the date number for the report.

Year number values are 2000 to 2099. To report only those events that were originally scheduled to be played every year, enter 8888 as the year number for the report. To report all events originally scheduled with any year number (2000-2099, 8888), enter 9999 as the year number for the report.

Hour number values are 0 for midnight to 23 for 11 p.m. To report only those events that were originally scheduled to be played every hour, enter 88 as the hour number for the report. To report all events originally scheduled with any hour number (0-23, 88), enter 99 as the hour number for the report.

Minute number values are 0 – 59. To report only those events that were originally scheduled to be played every minute, enter 88 as the minute number for the report. To report all events originally scheduled with any minute number (0-59, 88), enter 99 as the minute number for the report.

Message numbers values are the full set of message numbers as described in the section on "Information About Message Numbers." To report all events originally scheduled with any message number, enter 99999 as the message number for the report.

Voice Prompt Interface

To obtain a report of month-date-year scheduled events stored in the schedule table, enter ***33#** from the main menu. The system will respond:

"To report month-date-year scheduled events, first enter month #."
"To return to the Main Menu, press #."

After the month is entered, the system will respond:

"Enter date #."
"To return to the Main Menu, press #."

After the date is entered, the system will respond:

"Enter year #."
"To return to the Main Menu, press #."

After the year is entered, the system will respond:

"Enter hour #."
"To return to the Main Menu, press #."

After the hour is entered, the system will respond:

"Enter minute #."
"To return to the Main Menu, press #."

After the minute is entered, the system will respond:

"Enter message number #."
"To return to the Main Menu, press #."

After the message number is entered, the system will first confirm the set of entered values and then search through memory and report any matching scheduled events, as illustrated in the example below.

A report of scheduled events can be interrupted by entering #, which will cause the system to escape to the main menu.

Example for ***33#**:

For example, to get a report of scheduled events to be played on January 2, 2003 at any time of day, enter:

1#, for January
2#, for the 2nd of the month
3#, for the year 2003

99#, for all hours.
99#, for all minutes, and
99999#, for all message numbers.

The system will then confirm the entered values:

*“Entry values are: Month: **January**, date: **two**, year: **two-thousand three**, hour: **all**, minute: **all**, message number: **all**.”*

For the example given above on creating scheduled events, the system would report:

*“Scheduled event values are: Month: **January**, date: **two**, year: **two-thousand three**, hour: **four**, minute: **five**, message number: **six**.”*

When done searching, the system will respond:

“Report Complete.”

The system will then loop back to request a new set of entry values.

Invalid Entries for *33#:

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”
*“Main Menu, to hear the command list, enter *0#.”*

Clear Month-Date-Year Scheduled Events, *34#

To clear (i.e. delete) month-date-year scheduled events stored in the schedule table, the month, date, year, hour, minute, and message number are entered sequentially to select which messages are to be cleared.

Month number values are 1 for January to 12 for December. To clear only those events that were originally scheduled to be played every month, enter 88 as the month number for the clear. To clear all events originally scheduled with any month number (1-12, 88), enter 99 as the month number for the clear.

Date number values are 1-31. To clear only those events that were originally scheduled to be played every date, enter 88 as the date number for the clear. To clear all events originally scheduled with any date number (1-31, 88), enter 99 as the date number for the clear.

Year number values are 2000 to 2099. To clear only those events that were originally scheduled to be played every year, enter 8888 as the year number for the clear. To clear all events originally scheduled with any year number (2000-2099, 8888), enter 9999 as the year number for the clear.

Hour number values are 0 for midnight to 23 for 11 p.m. To clear only those events that were originally scheduled to be played every hour, enter 88 as the hour number for the clear. To clear all events originally scheduled with any hour number (0-23, 88), enter 99 as the hour number for the clear.

Minute number values are 0 – 59. To clear only those events that were originally scheduled to be played every minute, enter 88 as the minute number for the clear. To clear all events originally scheduled with any minute number (0-59, 88), enter 99 as the minute number for the clear.

Message numbers values are the full set of message numbers as described in the section on “Information About Message Numbers.” To clear all events originally scheduled with any message number, enter 99999 as the message number for the clear.

Voice Prompt Interface

To clear month-date-year scheduled events from the schedule table, enter ***34#** from the main menu. The system will respond:

“To clear month-date-year scheduled events, first enter month #.”

“To return to the Main Menu, press #.”

After the month is entered, the system will respond:

“Enter date #.”

“To return to the Main Menu, press #.”

After the date is entered, the system will respond:

“Enter year #.”

“To return to the Main Menu, press #.”

After the year is entered, the system will respond:

“Enter hour #.”

“To return to the Main Menu, press #.”

After the hour is entered, the system will respond:

“Enter minute #.”

“To return to the Main Menu, press #.”

After the minute is entered, the system will respond:

“Enter message number #.”

“To return to the Main Menu, press #.”

After the message number is entered, the system will confirm the entered values and prompt the user whether to proceed with the clearing of matching scheduled events, as illustrated in the example below.

Example for ***34#**:

For example, to clear all scheduled events to be played on January 2, 2003 at any time of day, enter:

1#, for January

2#, for the 2nd of the month
3#, for the year 2003
99#, for all hours.
99#, for all minutes, and
99999#, for all message numbers.

The system will then confirm the entered values:

*“Entered values are: Month: **January**, date: **two**, year: **two-thousand three**, hour: **all**, minute: **all**, message number: **all**.”*
“To keep, enter 1#.”
“To clear, enter 2#.”
“To repeat, enter 3#.”
“To return to the Main Menu, press #.”

If **1#** is entered, events will be kept and the system will loop back to request a new set of entry values.

If **2#** is entered, all matching events stored in the schedule table will be cleared. The system will report:

“Clear complete.”

The system will then loop back to request a new set of entry values.

If **3#** is entered, the previous set of entry values will be reconfirmed along with the choice to keep, clear, or repeat.

Invalid Entries for *34#:

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”
*“Main Menu, to hear the command list, enter *0#.”*

Information About Synchronized Messages

The synchronized audio capabilities of the DR1500AM make it possible for two or more separate HARs to broadcast simultaneous audio signals that are synchronized to produce seamless coverage between the two stations. The basic steps in producing a synchronized broadcast are (1) precisely synchronizing the clock in the DR1500AM, (2) creating synchronizable messages, (3) incorporating synchronizable messages into playlists, and (4) activating the playlists in the synchronized mode.

This section provides information about how various commands, described elsewhere in this manual, can be combined to carry out the functions necessary to produce such synchronized audio broadcasts. The categories of these commands (and the specific command codes) are listed here:

Clock Calendar Commands (*26#)

Record Message Commands (*1#, *61#)
Synchronized Message Commands (*251 #, *254#)
Playlist Commands (*41#, *43#)
Schedule Event Commands (*22#, *32#)

Also useful for the following discussion is the information contained in the following overview sections:

Information About Message Numbers
Information About Event Schedules

The following subsections describe how the various commands are used. Later subsections give the complete descriptions of how each of the synchronized message commands is used.

Precisely Synchronizing the Clock

Synchronization of the DR1500AM's internal battery-backed clock-calendar chip within sub-one-second accuracy is accomplished by the Digital Communications Controller (DCC) using the "Set the Clock-Calendar" command. Further precision in timing is achieved by the use of a timing pulse delivered to the DR1500AM through the backplane of the BlackMax rack. This precise timing signal is typically derived from a GPS timing receiver.

Creating Synchronizable Messages

The first step in creating a synchronized broadcast is to record synchronizable messages in the DR1500. This can be accomplished by digital download or by processing audio recordings to produce stored messages with precisely defined start times.

Downloaded Digital Messages

Downloading of an ASCII Digital Message (*251#) command or the "Download of a Binary Digital Message (*252#) command. Because of their digital nature, such messages produce identical output from any DR1500AM to which they have been downloaded.

Processed Analog Messages

Special processing software in the DR2000 computer control system can be used to add precision start tones to messages before they are recorded in the DR1500AM using the standard "Record Message" (*1#) or "Record for a Specified Time" (*61#) commands. These messages can then be trimmed to have precise start times and precise lengths using the "Trim a Recorded Message" (*254#) command.

Creating Synchronizable Playlists

The next step in creating a synchronized broadcast is to create a synchronizable

playlist containing references to the synchronizable messages recorded as described in the previous paragraphs. This is done using the “Create a Playlist (*41#) command. The use of this command for creating a synchronizable playlist is the same as for creating a non-synchronized playlist except that all the messages in the synchronized playlist must be synchronizable messages and all message numbers must have 2000 added to them so that they are in the 2001 to 2999 range. If these conditions are not met, the messages will still be played, but not in the fully synchronized mode.

Activating the Synchronizable Playlist

The final step in creating a synchronized broadcast is to activate the synchronizable playlist previously created. This can be accomplished using the “Copy a Playlist to Broadcast List and Activate (*43#) command, the “Activate a Playlist (*45#) command, or by creating a scheduled event with the corresponding playlist number. All playlist numbers that are to be played in the synchronized mode must have 2000 added to them so that they are in the 3001 to 3025 range. If this condition is not met, the playlist will still be played, but not in the fully synchronized mode.

Example of Commands to Create a Synchronized Broadcast

The following steps illustrate one way that a synchronized broadcast could be created. Typically, these commands would be issued by the DR2000, but they are listed here to help understand the process being used.

First, one or more messages containing the precision start tones are recorded using the “Record a Message” command. For example to record messages 95 and 96 the commands would be:

```
* 1 # 95 # [recording] #  
* 1 # 96 # [recording] #
```

Next, the messages are trimmed to have precision starting points using the “Trim a Recorded Message” command. For example to trim message number 95 and store it in message 5, using a length of 20 seconds and the default values for the threshold and error code, the command would be:

```
* 254 # 95 # 5 # 20 # 0 # 0 #
```

Next, the playlist is created using the “Create a Playlist” command. For example to create playlist number 1010, containing messages 5 and 6 with their message numbers modified to identify them as synchronizable messages, the commands would be:

```
* 41 # 1010 # 2005 # 2006 # #
```

Finally, the playlist is activated in the synchronized mode. For example to copy playlist 1010 to the broadcast list and activate it in the synchronized mode, the

commands would be:

* 43 # 3010 #

System Commands

Control the Telephone Connection, *51#

The "Control the Telephone Connection" command is used to terminate or establish a telephone connection to the system. Note that, with respect to terminating the telephone connection, simply hanging up the telephone may or may not work correctly, depending on how the system is configured. The input parameter values are as follows:

- 1 – Terminate telephone connection
- 2 – Establish telephone connection

Voice Prompt Interface

To control the telephone connection, enter ***51#** from the main menu. The system will respond:

"To terminate the session and hang up, enter 1#."
"To establish a connection, enter 2#."
"To return to the Main Menu, press #."

To terminate the connection, enter **1#**. The system will respond:

"Goodbye."

The system then hangs up the telephone, thereby terminating the remote telephone session.

To establish a connection, enter **2#**. The system will respond:

"Hello."

The system then makes the connection between the front panel TELEPHONE input jack and the DR1500AM's telephone input circuitry.

If a number other than 1 or 2 is entered, the system will respond:

*"Main Menu, to hear the command list, enter *0#."*

Override DR1500 Answer Mode, *52#

In systems with an external digital modem, the system answer mode controls whether the DR1500 or the external modem has a higher priority for answering

incoming telephone calls. When the DR1500 answer mode is set to 1 or ON, the DR1500 has a higher priority and the external modem has a lower priority for answering incoming calls. When the system answer mode is set to 0 or OFF, the DR1500 has a lower priority and the external modem has a higher priority.

When the DR1500 has the higher priority it is set to answer promptly (typically on 1 or 2 rings) and the modem is set to answer later (typically after 5 or 6 rings). Conversely, when the DR1500 has the lower priority it is set to answer later and the modem is set to answer promptly. Thus, in normal operation, the unit with higher priority answers first, which then stops the ring tone so that the unit with lower priority never answers. However, if the higher priority unit fails to answer, the unit with lower priority will answer later as a backup.

The default value of the answer mode is determined by segment 4 on the 8-segment DIP switch on the DR1500 board as follows:

- Segment 4 down sets the DR1500 answer mode to ON so DR1500 normally answers promptly
- Segment 4 up clears the DR1500 answer mode to OFF so external modem normally answers promptly

The “Override DR1500 Answer Mode” command is used to temporarily override the default value of DR1500 answer mode to allow an external computer to communicate with the unit that normally does not answer in the default state.

The “Override DR1500 Answer Mode” command has two input parameters. The first input parameter is the time interval for the override. This can be any number between 0 and 240 seconds (4 minutes). Entering a value of 0 will de-activate the override immediately and return the mode to the default state.

The second input parameter “Keeps”, “Clears”, or “Sets” the DR1500 answer mode, as follows:

1. Keep the current answer mode.
2. Clear the DR1500 answer mode to OFF (state 0) so the external modem answers promptly.
3. Set the DR1500 answer mode to ON (state 1) so the DR1500 answers promptly.

The signaling between the DR1500 and the external modem is accomplished by a hardware signal line on the BlackMax backplane. This signal is the “DR1500_ANSWER” active-high signal line at pin C-13. When this signal line is asserted (high) the DR1500 should answer promptly and the modem should not. When this signal line is de-asserted (low), the modem should answer promptly and the DR1500 should not.

For example, in operation with an external control computer such as the DR2000, the default DR1500 answer mode would normally be set to ON (DIP switch segment 4 OFF) so that the DR1500 would answer promptly. When the DR2000 needed to send data to the modem, it would first issue an “Override DR1500 Answer Mode” command and clear the DR1500 answer mode to OFF so that the DR1500 would not answer and the external modem would. When the DR2000 had completed its communication with the external modem, it could either send a second “Override

DR1500 Answer Mode” command or it could simply wait for the override interval to time out, after which it could resume its normal communications with the DR1500.

Voice Prompt Interface

To activate the “Override DR1500 Answer Mode” command, enter ***52#** from the main menu. The system will respond:

*“DR1500 answer mode time is **60** seconds.”*
*“DR1500 answer mode is **ON**.”*
“Enter time in seconds #.”
“To return to the Main Menu, enter #.”

For example, if the interval is to be set to forty five seconds, enter **45#**. The system will respond:

“Enter 1 to keep, 2 to clear, or 3 to set.”
“To return to the Main Menu, press #”

For example, if the answer mode is to be cleared to OFF so that the DR1500 will not answer promptly and the external modem will, enter **2#**. The system will respond:

*“DR1500 answer mode time is **45** seconds.”*
*“DR1500 answer mode is **OFF**.”*
*“Main Menu, to hear the command list, enter *0#.”*

If a number not in the allowed range is entered, the system will respond:

*“Main Menu, to hear the command list, enter *0#.”*

Set Hang-Up Time, *77#

The “Set Hang-Up Time” command is used to control the amount of time the DR1500AM will wait before hanging up the telephone line if no commands are being received. If the DR1500AM does not receive command inputs for some time, but begins receiving commands within a time interval less than the hang up time, the countdown timer will be reset and the unit will remain connected indefinitely. Note that if the DR1500AM is in the record mode or the go-live mode, it will not hang up as long as an audio signal is being input.

The range of values for the hang-up Time is 1 to 1440 minutes, corresponding to 24 hours. The default value is 4 minutes.

Choosing an appropriate value for the hang-up time requires a balance between (1) choosing times long enough so that the unit will not hang up while command inputs are being received and (2) choosing a time short enough so that if the unit becomes disconnected without terminating the session, the wait before it times out and disconnects so that it can be called back is not unbearably long.

Voice Prompt Interface

To set the hang-up time enter ***77#** from the main menu. The system will respond:

*“Hang-up time is: **t** minutes.”*
“Enter hang-up time in minutes followed by the # sign.”
“To return to the Main Menu, press #”

Enter a number between 0 and 1440 minutes, followed by the # sign. For example, to set the hang-up time to 5 minutes, enter **5#** and the system will respond:

*“Hang-up time is: **five** minutes.”*
“Enter hang-up time in minutes followed by the # sign.”
“To return to the Main Menu, press #”

The system will continue to report the current hang-up time and prompt for a new hang-up time until the # sign is pressed to return to the main menu.

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”
*“Main Menu, to hear the command list, enter *0#.”*

Set Security Code, 71#

The “Set Security Code” command is used to set or get the five-digit security code that must be entered to log in to the system over the telephone. The default security code when delivered from the factory and after a system reset is “12345.” Note that the security code is not required to log in locally with the handset.

Voice Prompt Interface

To set the security code, enter ***71#** from the main menu. Assuming that the security code is set to the default, the system will respond:

*“The security code is, **one, two, three, four, five.**”*
“Enter a five digit security code, followed by the # sign.”
“To deactivate, enter 0#.”
“To return to the Main Menu, press #.”

An active security code consists of numbers in the range 00001 to 99999. When entering an active security code, all five digits must be entered, including any leading zeroes. To deactivate the security code, only a single zero is required.

If, for example, the code **54321#** is entered, the system will respond:

*“The security code is, **five, four, three, two one.**”*
“Enter a five digit security code, followed by the # sign.”
“To deactivate, enter 0#.”
“To return to the Main Menu, press #.”

To deactivate the security code, so that when called on the remote telephone the system will bypass the request for the security code and go directly to the main menu, enter, **0#**. The system will respond:

*“The security code is, **OFF.**”*

“Enter a five digit security code, followed by the # sign.”
“To deactivate, enter 0#.”
“To return to the Main Menu, press #.”

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”
*“Main Menu, to hear the command list, enter *0#.”*

Note that when an invalid entry is made, the previous value will be retained.

Reset the System, *127#

The “Reset the System” command provides one or more of the following functions:

Reinitialize the parameter values in non-volatile memory (**NV_RAM**) to the factory defaults.

Erase all messages stored in **flash** memory

Restart the DR1500AM under hardware control (**HW Restart**).

Restart the DR1500AM under software control (**SW Restart**).

Which specific function or functions is to be implemented is controlled by the parameter value entered with the reset the system command as shown in the table below.

Reset the System Functions

Reset Parameter Value	Reinitialize Parameters In NV_RAM	Erase Messages In Flash	Hardware Restart	Software Restart
1	Reinitialize			
2		Erase		
3	Reinitialize	Erase		
4			HW Restart	
5	Reinitialize		HW Restart	
6		Erase	HW Restart	
7	Reinitialize	Erase	HW Restart	
8				SW Restart
9	Reinitialize			SW Restart
10		Erase		SW Restart
11	Reinitialize	Erase		SW Restart

Thus, for example, entering 1 will cause only the parameters in non-volatile RAM to be initialized to the factory defaults, entering 2 will cause only the messages in flash to be erased, entering 4 will cause only a hardware restart to be performed and entering an 8 will cause only a software restart. Other values will cause various combinations as shown in the table.

Note that to emulate the reset functionality of older versions of the DR1500AM code, the parameter value 3 should be used to reinitialize the parameters in NV_RAM and

erase all messages in flash.

Reinitialization of Parameters in Non-Volatile RAM to Default Values

When non-volatile memory is reinitialized all schedules are erased, all playlists are cleared, and all the parameters stored in non-volatile memory are set to default values permanently written into the system EPROM. These parameters can be divided into two classes, as follows:

1) Parameters that Control the Operating Mode of the DR1500

The first class of parameters stored in non-volatile memory are those that actually control the operating mode of the DR1500AM. After reinitialization, the operating mode changes to match the parameter values, as shown in the table below:

Default Values for Non-Volatile RAM Initialization

Parameter Name	Default Value	Parameter Name	Default Value
Message Spacing	0 sec	EAS Message Num	1
		EAS Count	0
Go Live	OFF	EAS Enable	OFF
Auxiliary Fill	OFF	EAS Time	0 min
NOAA Alert Time	0 min	Broadcast List	0 (OFF)
NOAA Alert Count	0 repeats	Schedule Table	Cleared
NOAA Message Num	1	HAR ID	1
Xmtr	ON	AC Power Threshold	0 (Disabled)
		DC Voltage Threshold	0 Volts (Disabled)
Attenuator	4 (100%)	Broadcast Monitor Threshold	0% (Disabled)
Security Code	12345	Fault-If-If True Flag	0 (Disabled)
		Fault-If-If False Flag	0 (Disabled)
		Outdated Message Threshold	0 hours (Disabled)
911 Mode	OFF	Telephone Report Repeat Count	3
DTMF Delay	900 msec		

Note that the numerical values shown in the table are nominal values only and HIS reserves the right to change the specific default values in the future. In systems where the value of a parameter is critical, the parameter value should be explicitly set after a re-initialization is performed rather than depending on the value being set correctly by the global reinitialization command.

2) Parameters that are Used for “Get” Response

In contrast to the above parameters which actually control the operating mode of the DR1500AM and thus change the mode they are reinitialized, there are a number of parameters stored in non-volatile memory that are only used to report back the last value entered in response to a “get” command. For example, when recording a message, the message number that was last input is stored in the non-volatile memory to be returned in response to the corresponding get. However, after the non-volatile memory is reinitialized, the returned value will always be message number 1, independent of what message number actually was used in the previous record message command. If it is necessary to update any of these parameters, the

corresponding command must be executed, after which the new value will be stored in non-volatile memory.

Software and Hardware Restart

When a hardware reset is performed, any re-initialization of non-volatile memory or erasing of flash memory selected by the reset input parameter is done first. Then the program goes into an infinite loop, which causes the watchdog timer to initiate a hardware reset.

Similarly, when a software restart is performed, any re-initialization of non-volatile memory or erasing of flash memory selected by the reset input parameter is done first. Then the program jumps to the beginning point of the program.

The time required for the system to re-initialize the non-volatile RAM or to perform a software or hardware restart is a second or less. The time required for the system to erase all the messages in flash is approximately 10 seconds. During any of these delays, the auxiliary input audio is output to the transmitter, the telephone, and the handset.

Voice Prompt Interface

To reset the system, enter ***127#** from the main menu. The system will respond:

*"To reset system, enter reset number followed by the pound sign."
"To return to the Main Menu, press #."*

To proceed with resetting the system, enter the selected parameter value. For example, to just reinitialize the non-volatile RAM parameters to the default values, enter **1#**. The system will respond:

"Please wait."

There will then be a pause (up to several seconds if long while the system resets, after which the system will respond:

*"Main Menu, to hear the command list, enter *0#."*

If an invalid entry is made, the system will respond:

*"[Buzz] Entry is not valid."
"Main Menu, to hear the command list, enter *0#."*

Optimize Message Space, *11#

The "Optimize Message Space" command is used to defragment the message-storage space in flash memory, and thus allow more efficient use of this space. Entry values are the command code plus a confirming value of 1 to initiate the process.

Voice Prompt Interface

To optimize the message space, enter ***11#** from the main menu. The system will

respond:

“To optimize message space, enter 1#.”

“To return to the Main Menu, press #.”

To proceed with optimizing the message space, enter **1#**. The system will respond:

“Please wait.”

“[Silence for up to several minutes]”

“Optimize message space complete.”

“Record time available is t seconds.”

*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Note that during the optimization of the message space, messages will not be broadcast. However, the auxiliary audio will be broadcast if it is set to play during message spacing.

Response Control Commands

Set Telephone Response Mode, *211#

The “Set Telephone Response Mode” command *211# controls what the system will output through the front-panel telephone jacks in response to input commands. The possible entries are:

1# – for no response (silent)

2# – for voice prompt response

3# – for DTMF response

The normal default mode is voice prompt response, which is set at power up, after a system reset, and after the telephone connection has been terminated.

The format of the DTMF response is described in general terms at the beginning of this chapter and specific examples are given for each command in their individual sections.

Note that the response does not depend on how the original command was input. Thus, if the system has been configured for DTMF response, but a command is input through the serial port, the system would still produce a DTMF output through the telephone jacks.

Voice Prompt Interface

To select the telephone response mode enter ***211#**. In the default state corresponding to voice prompt response, the system will respond:

"To set telephone response, enter:"

1# – for no response,"

2# – for voice,"

3# – for DTMF"

"To return to the Main Menu, press #"

If the silent response mode is selected by entering **1#**, the system will respond with:

<silence>

If the voice response mode is selected by entering **2#**, the system will respond with:

*"Main Menu, to hear the command list, enter *0#."*

If the DTMF response mode is selected by entering **3#**, the system will respond with a series of DTMF tones.

If an invalid entry is made, the system will respond:

"[Buzz] Entry is not valid."

*"Main Menu, to hear the command list, enter *0#."*

Silence Telephone Voice Prompts, *201#

The "Silence Telephone Voice Prompts" command ***201#** is a shortcut command for putting the system in the telephone silent mode. This command is equivalent to using the "Set Telephone Response Mode" command with the value:

*** 211 # 1 #**

The "Silence Telephone Voice Prompts" command is provided so that the DR1500AM will operate properly with older versions of the computer control software that use this command.

Voice Prompt Interface

To make the telephone response silent enter:

***201#**

Activate Telephone Voice Prompts, *202#

The "Activate Telephone Voice Prompts" command ***202#** is a shortcut command for putting the system in the telephone voice prompts active mode. This command is equivalent to using the "Set Telephone Response Mode" command with the value:

*** 211 # 2 #**

The “Activate Telephone Voice Prompts” command is provided so that the DR1500AM will operate properly with older versions of the computer control software that use this command.

Voice Prompt Interface

To make the telephone response active enter:

*202#

Set Telephone Response Mode Source, *220#

The “Set Telephone Response Mode Source” command *220# controls how the “Telephone Response Mode” is determined at power up and after a telephone connection is terminated. The possible parameter value entries are:

- 0# – Reset the telephone response mode to voice prompts
- 1# – Recover the previous telephone response mode from NV RAM
Thus, if the “Telephone Response Mode Source” parameter equals 0, then each time system is powered up or a telephone connection is terminated, the “Telephone Response Mode” parameter will automatically be set to a value of 2 corresponding to “voice prompt response.” This is the functionality of earlier versions of the system firmware.

If the “Telephone Response Mode Source” parameter equals 1, then each time the system is powered up or a telephone connection is terminated, the “Telephone Response Mode” parameter will be recovered from non-volatile (NV) RAM, thus keeping the telephone response mode unchanged from the previously configured state. This previously configured state could result from:

- Using the “Set Telephone Response Mode” command (*211#)
- Using the “Silence Telephone Voice Prompts” command (*201#)
- Using the “Activate Telephone Voice Prompts” command (*202#)
- Having terminated a telephone connection when the “Telephone Response Mode Source” parameter was set to zero, thus causing the “Telephone Response Mode” parameter to be automatically reset to the default value of 2, corresponding to “voice prompt response.”

Note that both the “Set Telephone Response Mode” parameter and the “Set Telephone Response Mode Source” parameter are stored in NV RAM to ensure that their values are preserved when power is cycled. However, these parameters will not be preserved when the NV RAM parameters are reset using the “Reset the System” command. After such a reset, the “Set Telephone Response Mode” parameter will be returned to the default value of 2 (voice prompt response mode) and the “Set Telephone Response Mode Source” parameter will be returned to the default value

of 0 (reset the telephone response mode to voice prompts).

Operating Modes

For operating in legacy systems, leave the "Set Telephone Response Mode Source" parameter in the default value of 0. This will ensure that the "Telephone Response Mode" parameter will always be set to a value of 2 at power up and when a telephone connection is terminated, as it was in earlier versions of the system firmware.

For operating in a computer system where it is desired to have the system remain completely silent, perform the following steps:

Assuming the unit has the factory defaults, use a telephone or the DR2000 to send the "Set Telephone Response Mode Source" command for "recover the previous telephone response mode from NV RAM" by entering:

* 220 # 1 #

Then send the "Set Telephone Response Mode" command for "no response" by entering:

* 211 # 1 #

Alternatively, send the "Silence Telephone Voice Prompts" command by entering:

* 201 #

Once these commands are sent, the system will be silent even after a power cycle and after a telephone connection has been terminated. Since this behavior is different from earlier versions, it is important to note that if the DR1500 is not saying prompts, it is advisable to try sending the command * 211 # 2 # to turn the voice prompts back on before assuming that the unit is not working.

A similar sequence could be used to permanently put the system in the DTMF response mode by sending the command *220 # 1 # followed by the command * 211 # 3 #.

Note that changing the "Telephone Response Mode" parameter immediately affects how the system responds so that there will be no response after sending the command * 211 # 1 #. However, changing the "Telephone Response Mode Source" parameter does not affect how the system responds until after the next time the system is powered up or the next time a telephone connection is terminated.

Voice Prompt Interface

To select the telephone response mode source enter ***220#**. In the default state corresponding to voice prompt response, the system will respond:

*"220 is 0."
"Enter parameter."*

“To return to the Main Menu, press #”

If the “answer with previous response mode” is selected by entering 1, the system will respond:

“220 is 1.”

*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Set DTMF Delay, *210#

The “Set DTMF Delay” command *210# is used to insert a variable delay between each tone when the DR1500AM is in the DTMF response mode. The allowed entry values are 0 to 9 corresponding to 0 to 900 milliseconds in 100 millisecond increments.

Voice Prompt Interface

To set the DTMF delay enter ***210#**. Assuming the DR1500AM is in the default state with the delay initialized to 900 msec, the system will respond:

“210 is 9.”

“Enter parameter.”

“To return to the Main Menu, press #”

If a delay of 200 msec is desired, enter **2#**. The system will respond:

“210 is 2.”

*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Set Serial Response Mode, *212#

The “Set Serial Response Mode” command *212# controls what the system will output through the front-panel serial port in response to input commands. The possible entries are:

1# – for no response

2# – for serial response

The normal default mode is no response, which is set at power up, after a system reset, and after hang-up.

The format of the serial response is described in general terms at the beginning of this chapter and specific examples are given for each command in their individual sections.

Note that the response does not depend on how the original command was input. Thus, if the system has been configured for serial response, but a command is input using DTMF codes, the system would still produce a serial output.

Voice Prompt Interface

To select the serial response mode enter ***212#**. In the default state corresponding to voice prompt response, the system will respond:

*“To set serial response, enter:”
“1# – for no response”
“2# – for serial response”
“To return to the Main Menu, press #”*

If the telephone response mode is active, the system will respond.

*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

*“[Buzz] Entry is not valid.”
“Main Menu, to hear the command list, enter *0#.”*

Status Commands

Report the Time Stamp, *101#

The “Report the Time Stamp” command *101# is used to obtain a report of the time stamp. The time stamp is a numeric value read from the real-time clock and stored in non-volatile memory in the DR1500AM whenever a set command that could affect operations has been processed.

In operation, at the end of a session with the DR1500AM, the last operation would be to read the time stamp and then disconnect. When starting the next session, the first operation would be to read back the time stamp and verify that it is the same as was recorded at the end of the last session. If it is the same, it provides verification that the integrity of the HAR configuration is still intact. If it has changed unexpectedly, it provides notification that an unknown user has accessed the HAR and that its configuration may not be the synchronized with the control computer’s database. The time stamp encodes the date, day of the week, and time in the following format:

yy, mm, dt, dy, hh, mm, ss

Thus, for example, a typical time stamp value might be:

03, 04, 05, 06, 07, 08, 09

This would correspond to 2003 April 5 Friday at 07:08:09.

Note that the absolute accuracy of the time stamp is unimportant; it only matters that the time stamp stored in the DR1500AM matches the time stamp recorded by the control computer.

The effect of the various DR1500AM commands on the time stamp are listed in the last column of the table “Summary of Computer Control Commands” in the Appendix. Commands that affect the time stamp in the set mode are indicated by “Y” and those that do not are indicated by “—”. Note that for all commands a get function leaves the time stamp unaffected.

Note 1: The “Control the Transmitter” command consists of several sub-commands. The sub-commands used to set the transmitter configuration will affect the time stamp, but those that are used to monitor audio will not. This is shown explicitly in the following table:

Effect of “Control the Transmitter” Sub-Commands on Time Stamp

Sub-Command	Code	Set	Get
Turn the transmitter on	2008#	Modified	—
Turn the transmitter off	2009#	Modified	—
Listen to the broadcast	7900#	—	—
Listen to the auxiliary input	7901#	—	—

Voice Prompt Interface

To hear a report of the time stamp, enter ***101#**. The system will respond:

“Time stamp is 20, yy, mm, dd, hh, mm, ss.”
*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”
*“Main Menu, to hear the command list, enter *0#.”*

Configure System Status, *102#

The “Configure System Status” command *102# is used to configure parameters used in the “Report System Status” and the “Report System Status over Telephone” commands. Many of the parameters also affect the alert notification functions.

The “Configure System Status” command contains the following parameters.

HAR ID Number

The first number is the ID number of the HAR and can be any number between 1 and 65535.

AC Power Source Alert Threshold

The second number is the AC power source alert threshold. Allowed values are 0 and 1.

In operation, the DR1500AM compares the AC power source value 0 (OFF) or 1 (ON) with this threshold and determines whether the AC alert is 0 (FAULT) or 1 (OK). For example, if the threshold was set to 1 (ON), and the AC power source value was 1 (ON), then the AC alert would be 1 (OK). Conversely, if the threshold were set to 1 (ON), but the AC power source value now was 0 (OFF), then the AC alert would be 0 (FAULT).

Setting the threshold to 0 means that the AC power source alert will always test to 1 (OK) independent of whether AC powers source is on or off, thus effectively disabling AC alert notification.

DC Voltage Alert Threshold

The third number is the DC voltage alert threshold in millivolts (mV). Allowed values are 0 to 32767 mV.

In operation, the DR1500AM compares the measured DC voltage level with this threshold and determines whether the DC voltage alert is 0 (FAULT) or 1 (OK). For example, if the threshold was set to 12350 mV and the measured voltage was 12350 mV or higher, the DC voltage alert would be 1 (OK). Conversely, if the value were less than 12350 the DC voltage alert would be 0 (FAULT).

Setting the threshold to 0 means that the DC voltage alert will always be set to 1 (OK) independent of the DC voltage value, thus effectively disabling DC voltage alert notification.

Broadcast Monitor Alert Threshold

The fourth number is the broadcast monitor alert threshold in percent of full scale. Allowed values are 0 to 127 percent of full scale.

In operation, the DR1500AM compares the measured broadcast level with this threshold and determines whether the broadcast monitor alert is 0 (FAULT) or 1 (OK). For example, if the threshold was set to 30 percent of full scale and the measured broadcast level were 30 or higher, the broadcast monitor alert would be 1 (OK). Conversely, if the value were less than 30, the broadcast monitor alert would be 0 (FAULT).

Setting the threshold to 0 means that the broadcast monitor alert will always be set to 1 (OK) independent of the broadcast level, thus effectively disabling broadcast monitor alert notification.

HAR Mode Alert if True and Alert if False Bit Masks

The fifth and sixth numbers are the HAR mode alert-if-true bit mask and the HAR

mode alert-if-false bit mask, which control the HAR mode alert. Allowed values of the bit masks are 0 to 255.

When operating, the HAR mode can be any of the modes listed in the first column of the table below:

Mode	Mode Number	Bit Number	Decimal Value
OFF	1	1	1
Playlist	2	2	2
Alert	3	3	4
Live	4	4	8
Auxiliary	5	5	16
Other	6	6	32

Thus, for example, if it is desired that an alert be generated if HAR mode changes into either the “OFF or “Alert” modes, then bit 1 (value = 1) and bit 3 (value = 4) of the HAR mode alert-if-true bit mask should both be set true. This would correspond to a HAR mode alert-if-true bit mask value of $1 + 4 = 5$. If it is further desired that an alert be generated if the HAR mode changes from the playlist mode, then bit 2 (value 2) of the HAR mode alert-if-false bit mask should be set true. This would correspond to a HAR mode alert-if-false bit mask value of 2.

Setting the bit masks to 0 means that the HAR mode alert will always be set to 1 (OK) independent of the HAR mode, thus effectively disabling HAR mode alert notification.

Outdated Message Threshold

The seventh number is the outdated message threshold in hours. Allowed values are 0 to 480 hours corresponding to 20 days.

In operation, the DR1500AM computes the elapsed time since the last new message event and compares it with the outdated message threshold to determine whether the outdated message alert is 0 (FAULT) or 1 (OK). For example, if the threshold was set to 24 hours and the elapsed time was 24 hours or less, the outdated message alert would be 1 (OK). Conversely, if the value were greater than 24, the outdated message alert would be 0 (FAULT).

Setting the threshold to 0 means that the outdated message alert will always be set to 1 (OK) independent of the elapsed time, thus effectively disabling outdated message alert notification.

Report System Status Over Telephone Repeat Number

The eighth number is the report system status over telephone repeat number. In operation, the DR1500AM uses this number to determine how many times to repeat the report when executing the “Report System Status Over Telephone.” Allowed values are 1 to 9.

Voice Prompt Interface

To configure the system status enter ***102#**. A typical response might be:

"HAR system number is 11111"
"AC power alert threshold is 1."
"DC voltage alert threshold is 11223."
"Broadcast monitor alert threshold is 20."
"HAR mode alert if true bit mask is 0."
"HAR mode alert if false bit mask is 0."
"Outdated message alert threshold is 24"
"Telephone repeat number is 4"

"Enter HAR ID number followed by the pound sign"
"To return to the Main Menu, press #."

Assuming the HAR ID number is to be set to 22222, enter **22222#** and the system will respond:

"Enter AC power alert threshold followed by the pound sign"
"To return to the Main Menu, press #."

Assuming the AC power alert threshold is to be set to 1, enter **1#** and the system will respond:

"Enter DC voltage alert threshold followed by the pound sign"
"To return to the Main Menu, press #."

Assuming the DC voltage threshold is to be set to 12345 millivolts, enter **12345#** and the system will respond:

"Enter broadcast monitor alert threshold followed by the pound sign"
"To return to the Main Menu, press #."

Assuming the monitor threshold is to be set to 30 percent of full scale, enter **30#** and the system will respond:

"Enter HAR mode alert if true bit mask followed by the pound sign"
"To return to the Main Menu, press #."

Assuming the HAR mode alert if true bit mask is to be set to 5, enter **5#** and the system will respond:

"Enter HAR mode alert if false bit mask followed by the pound sign"
"To return to the Main Menu, press #."

Assuming the HAR mode alert if false bit mask is to be set to 2, enter **2#** and the system will respond:

“Enter outdated message alert threshold in hours followed by the pound sign”

“To return to the Main Menu, press #.”

Assuming the outdated-message-threshold is to be set to 48 hours, enter **48#** and the system will respond:

“Enter telephone repeat number followed by the pound sign”

“To return to the Main Menu, press #.”

Assuming the number of repeat times is to be set to 3, enter **3#** and the system will respond:

*“Main Menu, to hear the command list, enter *0#.”*

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”

*“Main Menu, to hear the command list, enter *0#.”*

Report System Status, *103#

The “Report System Status” command *103# is used to obtain a report of the system status parameters. The parameters are as follows:

HAR ID Number

The first number is the ID number of the HAR and can be any number between 1 and 65535. The ID number is input to the DR1500 using the “Configure System Status” command.

AC Power Alert Flag

The second number is the AC power alert flag, defined as follows:

0 – AC power alert flag FAULT

1 – AC power alert flag OK

The threshold for determining the AC power alert flag from the AC power value is set using the “Configure System Status” command.

AC Power Value

The third number is the AC power value, defined as follows:

0 – AC power OFF

1 – AC power ON

DC Voltage Alert Flag

The fourth number is the DC voltage alert flag, defined as follows:

- 0 – DC voltage alert flag FAULT
- 1 – DC voltage alert flag OK

The threshold voltage for determining the DC voltage alert flag from the DC power supply voltage is set using the “Configure System Status” command.

DC Power Supply Voltage

The fifth number gives the DC power supply voltage in millivolts. Thus for example, for the numerical value:

12350

The corresponding voltage value would be:

12.35 DC Volts

The range of allowed values is 0 to 32750 millivolts, corresponding to 0.000 to 32.750 Volts. The voltage values are rounded to the nearest 50 millivolts.

Broadcast Monitor Alert Flag

The sixth number is the broadcast monitor alert flag, defined as follows:

- 0 – Broadcast monitor alert flag FAULT
- 1 – Broadcast monitor alert flag OK

The threshold for determining the broadcast monitor alert flag from the broadcast monitor percent of full scale is set using the “Configure System Status” command.

Broadcast Monitor Percent of Full Scale

The seventh number is the broadcast monitor percent of full scale. The range of allowed values is 0 to 127 percent of full scale. A typical value for full modulation is 80 percent of full scale.

HAR Mode Alert Flag

The eighth number is the HAR mode alert flag, with the following values.

- 0 – HAR mode alert flag FAULT
- 1 – HAR mode alert flag OK

The functionality of the HAR mode alert flag is defined in the section on “Configure System Status” command.

HAR Mode

The ninth number is the HAR mode, defined as follows:

- 1 – OFF
- 2 – Playlist
- 3 – Alert
- 4 – Live
- 5 – Auxiliary
- 0, 6-99 – Other

The range of allowed values is 0 to 99.

Outdated Message Alert Flag

The tenth number is the outdated message alert flag, with the following values.

- 0 – Outdated message alert FAULT
- 1 – Outdated message alert OK

The threshold for determining the outdated message alert flag from the outdated message elapsed time is set using the “Configure System Status” command.

Outdated Message Elapsed Time

The eleventh number is the outdated message elapsed time in hours. The range of times is 0 to 480 hours. If the actual elapsed time is greater than 480 hours, the reported time will remain at 480.

Voice Prompt Interface

To hear a report of the system status enter ***103#**. A typical response might be:

*“This is a status report form HAR system number is **65535**.”*
*“AC power alert is **OK**.”*
*“AC power is **ON**.”*
*“DC voltage alert is **OK**.”*
*“DC voltage is **12350**.”*
*“Broadcast monitor alert is **OK**.”*
*“Broadcast monitor percent is **80**”*
*“HAR mode alert is **OK**.”*
*“HAR mode is **1, playlist**.”*
*“Outdated message alert is **OK**.”*
*“Outdated message elapsed time in hours is **35**.”*
*“Main Menu, to hear the command list, enter ***0#**.”*

If an invalid entry is made, the system will respond:

“[Buzz] Entry is not valid.”
*“Main Menu, to hear the command list, enter ***0#**.”*

Control Master Alert Flag, *104#

In systems with an external device, such as a Digital Communications Controller

(DCC), the master alert flag and its associated master alert line are used by the DR1500AM to signal to the external device that an alert condition has been detected by the DR1500AM.

In operation, the DR1500AM automatically sets the master alert flag to FAULT (0) when it detects a change (either from OK to FAULT or from FAULT to OK) in any of the following individual alert flags.

- AC power alert flag
- DC voltage alert flag
- Broadcast monitor alert flag
- HAR mode alert flag
- Outdated message alert flag

When the master alert flag is set to FAULT (0), the DR1500AM also asserts a hardware alert signal line that is applied to backplane signal line CTLOUT5 (pin 75 = A 11) using negative logic (0 V asserted, 5 V de-asserted).

The “Control Master Alert Flag” command *104# is used to obtain a report of the master alert flag, to clear the flag, or to set it manually. The corresponding entry values are:

- 1 – Leave the master alert flag unchanged
- 2 – Clear the master alert flag
- 3 – Set the master alert flag

In operation in a typical system, a value 1 would be used to obtain a report of the current value of the master alert flag, but without changing it. A value of 2 would be used by an external device to clear the master alert flag and the master alert signal line after the alert had been serviced. A value of 3 to set the master alert flag would not have any use in normal system functioning, but is useful for testing the alert notification functionality.

Voice Prompt Interface

To control the master alert flag enter *104#. A typical response might be:

*“Master alert is **FAULT**.”*
“To keep press 1#.”
“To clear press 2#.”
“To set press 3#.”
“To return to the Main Menu, press #”

For example, to clear the master alert flag enter 2# and the system will respond:

*“Master alert is **OK**.”*
*“Main Menu, to hear the command list, enter *0#.”*

At this point, the DR1500 would also change the hardware fault alert signal line from asserted to de-asserted.

If an invalid entry is made, the system will respond:

"[Buzz] Entry is not valid."

*"Main Menu, to hear the command list, enter *0#."*

Report System Status Over Telephone, *105#

In systems with an external device, such as a Digital Communications Controller (DCC), the "Telephone Report of System Status" command is used to notify users of fault conditions over the telephone line with either a voice prompt or a string of DTMF tones.

Voice Prompt Interface

To activate the "Report System Status Over Telephone" enter ***105#**. Assuming that the various status parameters are the same as in the example for the "Report System Status" command described in an earlier section, the system will respond first with a single:

"Hello."

Next, the following payload block will be repeated the number of times specified using the "Configure System Status" command.

*"This is a status report form HAR system number is **65535**."*

*"AC power alert is **OK**."*

*"AC power is **ON**."*

*"DC voltage alert is **OK**."*

*"DC voltage is **12350**."*

*"Broadcast monitor alert is **OK**."*

*"Broadcast monitor percent is **80**"*

*"HAR mode alert is **OK**."*

*"HAR mode is **1, playlist**."*

*"Outdated message alert is **OK**."*

*"Outdated message elapsed time in hours is **35**."*

*"Main Menu, to hear the command list, enter *0#."*

After the payload block has finished repeating, the system will say:

"Goodbye."

Finally, the system will automatically go "on hook" i.e. disconnect the telephone connection. Note that this automatic disconnect will take place even if the system is being accessed remotely through the telephone connection.

Report HAR Mode and Sub Mode, *106#

The "Report HAR Mode and Sub Mode" command ***106#** is used to obtain a report of the current HAR mode and HAR sub mode. The parameters are as follows:

HAR Mode

The first number is the HAR mode, defined in the same way as for the "Report System Status" command *103#.

- 1 – OFF
- 2 – Playlist
- 3 – Alert
- 4 – Live
- 5 – Auxiliary
- 0, 6-99 – Other

The range of allowed values is 0 to 99.

HAR Sub Mode

The second number is the HAR sub mode, which provides an increased level of detail relative to the HAR mode, especially with respect to synchronized versus non-synchronized individual messages and playlists.

- 0 – Individual message, non-synchronized
- 1 – Playlist, non-synchronized
- 2 – Individual message, synchronized
- 3 – Playlist, synchronized
- 10 – Broadcast Auxiliary Input
- 15 – Broadcast Auxiliary Silent
- 80 – Alert

Voice Prompt Interface

To hear a report of the HAR mode and sub mode enter *106#. A typical response might be:

*"HAR mode is 1, playlist."
"Sub mode is 2."
"Main Menu, to hear the command list, enter *0#."*

If an invalid entry is made, the system will respond:

*"[Buzz] Entry is not valid."
"Main Menu, to hear the command list, enter *0#."*

Report Software Revision Number, *300#

The "Report Software Revision Number" command *300# is used to obtain a report of the software revision number times one hundred. For example, software revision 1.50 will be reported as 150 and software revision 1.60 will be reported as 160.

Voice Prompt Interface

To hear a report of the software revision number enter *300#. Assuming the revision

is 1.60, the system will respond:

“160”

*“Main Menu, to hear the command list, enter *0#.”*

Report Software Build Number, *301#

The “Report Software Build Number” command *301# is used to obtain a report of the software build number. The build number consists of 4 values as follows:

YYYY	Year (4 digit)
MM	Month (2 digit)
DD	Date (2 digit)
SS	Serial number (2 digit)

Voice Prompt Interface

To hear a report of the software build number enter ***301#**. Assuming the build occurred in 2001 February 3 and was the 4th build on that date, the system would respond:

“Year 2001”

“Month 2”

“Date 3”

“Number 4”

Report EPROM Checksum, *302#

The “Report EPROM Checksum” command *302# is used to obtain a report of the checksum of the EPROM and thus uniquely identify which EPROM is installed on any particular unit. The checksum is a number between 0 and 65535.

Voice Prompt Interface

To hear a report of the EPROM checksum enter ***302#**. A typical response would be:

“12345”

CHAPTER 8

DIGITAL COMMUNICATIONS CONTROLLER OPERATING INSTRUCTIONS

Overview

This is a getting started guide for use with the M. H. Corbin Inc. Digital Communication Controller Model 3 (DCC-3).

This document describes administration, maintenance, and troubleshooting tasks that are required for continued operation.

Installation

1. Completely power down the BlackMax rack.
2. Remove any IM-1 if present.
3. Ensure the power switch on the front panel of the DCC-3 is OFF (the “O” position”).
4. Slide the DCC-3 into the card guide and ensure the backplane connector completely engages.
5. Screw down the unit at the top and bottom of the faceplate with the supplied retainer screws.
6. Attach the network cable to either of the 2 Cat5e Ethernet connectors. They are bridged together, similar to a network switch.
7. Attach the GPS serial cable from the “GPS” port of the faceplate to the “RS-232C” port on the faceplate of the GPS module.
8. Attach the DR1500 serial cable from the “DR1500” port of the faceplate to the “RS-232” port on the faceplate of the DR1500 module.
9. Optional – Attach a Null Modem serial cable from the console port of the faceplate to a laptop with the SRT software installed.
10. Power on the unit and watch for the heartbeat light to flash green.



Network IP Configuration

You will need either a DHCP enabled IPv4 network, or a Windows PC/laptop with an available serial port.

The DCC-3 supports IPv4 networks through DHCP and Static addressing. From the factory, the unit comes with DHCP enabled.

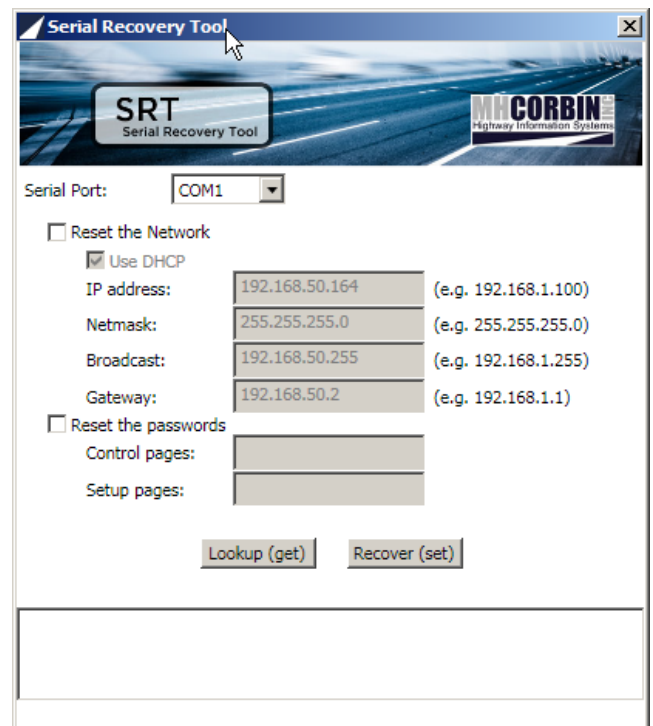
To configure the unit with a static address, there are 2 options:

1 – Using DHCP to acquire an initial address – Place the unit onto a network which supports DHCP addressing. This will allow the unit to first acquire a temporary address which can be changed through the web interface.

Use the DHCP server tools to determine what address has been assigned to the device. The exact steps to do this vary greatly depending on the DHCP server used. Once the assigned IP address has been determined, skip ahead to the “Operation - Web Interface” section.

2 – Program via serial cable – Program the unit's IP address directly by connecting the DCC-3's console port to a PC using a NULL modem serial cable and the Serial Recovery Tool (SRT).

The Serial Recovery Tool (SRT) is a Windows application which can be used to configure the DCC-3 when no network connection is available, or when the setup password has been lost. SRT requires a NULL modem serial connection to the device, so the PC/laptop being used must have either an on-board or USB serial port.



The application is available for download under DCC-3 Resources from:

<http://www.mhcorbin.com/products/manufactured-products/highway-advisory-radio>

Once the NULL modem serial cable is connected to the console port, open up the SRT window. You should see several fields with gray text, which you cannot interact with. In the top left corner of the SRT window, there will be a “Reset” option with a clickable box to its left. Click on that box. You should then see the fields in gray become enabled. This will be important because you will then assign DDC-3 an IP address from the IP address field. At the bottom of the window, you should see a Recovery button. Click on that button.

Once the assigned IP address has been set, skip ahead to the “Operation - Web Interface” section.

Operation

Front panel lights

Power – Lights green when the unit is receiving power from the backplane.

SBC Pwr – Lights green when the internal Single Board Computer has powered up.

HDD – Flashes green during disk activity

Heartbeat – Flashes green when the DCC is operating normally. If the light flashes red, an error has occurred. See the web interface for more details.

DR1500 – Lights green when the communication with the DR1500 is successful. Amber indicates active communication (aka ‘busy’), while red indicates an error. See the web interface for more details.

GPS – Lights green when the communication with the GPS unit is successful. Amber indicates that the GPS is communicating, but it does not have a satellite lock. Red means that there is either no communication or an error has occurred. See the web interface for more details.

Streaming – Lights green when audio encoding and/or audio decoding are occurring. Red indicates failure.

Fan – Lights green when the fan is on. This corresponds to the CPU temperature at which the fan should become active. If the light is on and the fan cannot be heard, it is likely a hardware failure.

Stat-1 OFF HK/ANS – See *Descriptions of Functions* below for more detail.

Red (Off Hook) - Indicates that the DR1500 is in the “Off Hook” mode connected over the telephone line.

Green (Answer) - Indicates that the DR1500 is in the “Answer” mode responding to the telephone line.

Amber (Off Hook & Answer) – Indicates that the DR1500 is in both “Answer” and “Off Hook” modes.

Stat-2 AUDIO- See *Descriptions of Functions* below for more detail.



Red (Future) – reserved for future use

Green (Audio) – Indicates that demodulated audio is present.

Amber (Future) - reserved for future use

Stat-3 FAULT/BUSY - See *Descriptions of Functions* below for more detail.

Red (Fault) - Indicates that a fault condition has been detected by the DR1500.

Green (Busy) - Indicates that the DR1500 is busy processing commands.

Amber (Fault & Busy) – Indicates that the DR1500 is busy and fault conditions.

Stat-4 USB READ – Lights red when reading playlists from a connected USB thumb drive.

Web interface

Once the assigned IP address has been determined (DHCP) or set (Static), use a web browser from a computer connected on this same network to open the URL <http://{ipaddress}>.

In the following picture the URL would be <http://192.168.50.128>:



DCC-3 Web interface

Tap on “Login”. You will be prompted for the control password. By default, the login credentials are:

Username: *control*
Password: *control*

It is imperative that this password be changed.

This is the Control Interface for the DCC. It shows the status of the modules similar to the front panel lights.

Administration of the device is done through the “Setup” pages. Tap on “Setup” in the menu bar. By default, the login credentials are:

Username: *setup*
Password: *setup*

It is imperative that this password be changed.

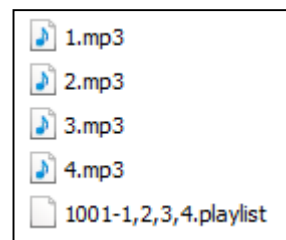
Setup – Displays the Linux Kernel version, uptime, serial number, and firmware versions. Also provides a Reboot button for remotely resetting the device.

IP – Allows you to view the device's current IP configuration, as well as change it to either DHCP or Static addressing modes.

Logging – Displays the software logging for troubleshooting and allows the user to increase or decrease the logging level.

Password – Provides entries used to set new control and setup passwords.

Firmware – Provides a mechanism for remotely upgrading the device firmware.



Activating a Playlist using a USB thumb drive

The DCC-3 supports message downloads and playlist creating by inserting a correctly formatted USB thumb drive. The following requirements must be met:

1. The drive should have a single FAT32 partition. Most new drives come already formatted this way.
2. The message and playlist files must be at the root of the drive's file system, not in subfolders.
3. Message (audio) files must be named “*{message slot number}.{type}*”. The slot number must be in the range 1-999. The type must be .wav, .mp3, .wma, or .aif. For example, valid message filenames would be “1.mp3” and “100.wav”.
4. Playlist files must be named “*{playlist slot number}-{message slot number}*”.

CSV}.playlist”. Playlist slot number must be in the range 1001-1025. The message slot number CSV is comma separated message slot numbers. For example, a valid playlist filename would be “1001-1,2,3,4.playlist”. The actual playlist file contents are not used and ignored, therefore a blank file is preferred.

5. There should only be a single playlist file on the drive. If multiple playlist files do exist, only the lowest slot number playlist will be activated.

Once the USB thumb drive has been inserted into the DCC-3 front panel, the following occurs:

1. It may take up to a minute to discover the thumb drive. Sometimes, it’s faster than others.
2. The “stat-4” light will illuminate red to indicate the drive has been discovered and is in the correct format
3. Message (audio) files are enumerated and downloaded to the DR1500 in order from the lowest slot number to the highest. Any existing message in that slot will be overwritten.
4. The playlist file is enumerated and created on the DR1500. Once created, the playlist is activated and the transmitter is turned on.
5. The “stat-4” light is turned off and the drive can now be safely removed.

Descriptions of IM-1 Functions

Audio Level and Broadcast Monitor Function

On units equipped with a transmitter demodulator for monitoring the signal, an audio signal is fed to the rear-panel DEMOD AUD IN jack on the DCC-3 board and this signal is converted to a DC signal for monitoring. When modulated audio is coming from the transmitter the Audio LED indicator will be ON and when there is no demodulated audio signal the LED indicator will be OFF. In operation, the rear-panel DEMOD ADJ potentiometer should be adjusted so that the Audio Level Indicator is ON most of the time when there is modulated audio.

The demodulated audio signal is fed to the DR1500 for monitoring and for controlling the broadcast monitor alert flag. (Note that the Audio Level indicator on the DCC-3 board is independent of the audio level sensing functionality on the DR1500.)

Busy Indicator

The busy signal line is used by the DR1500 to inhibit the Digital Communications Controller (DCC) from sending commands to the DR1500 when it is already processing a previously sent command. When the DR1500 is busy, the Busy LED Indicator will be ON. When the DR1500 is not busy or idle, the Busy LED Indicator will be OFF.

Fault Indicator

In systems with an external device, such as a Digital Communications Controller (DCC), the master alert flag and its associated master alert line are used by the DR1500AM to signal to the external device that an alert condition has been detected by the DR1500AM. When the master alert flag is asserted, the FAULT LED indicator on the DCC-3 Interface Module will be ON. When the master alert flag is not asserted, the FAULT LED will be OFF.

For further information about programming the Master Alert Flag, see the DR1500 Operating Manual.

Answer Mode Indicator

In systems with an external digital modem, the system answer mode controls whether the DR1500 or the external modem has a higher priority for answering incoming telephone calls. When the DR1500 answer mode is set to 1 or ON, the DR1500 has a higher priority and the external modem has a lower priority for answering incoming calls. When the system answer mode is set to 0 or OFF, the DR1500 has a lower priority and the external modem has a higher priority. When the DR1500 answer mode is ON the front panel LED on the DCC-3 will be ON and when the DR1500 answer mode is OFF the front panel LED on the DCC-3 will be OFF.

For further information about programming the Answer Mode functionality, see the DR1500 Operating Manual.

Off Hook

In telephone jargon the term “Off Hook” means that the handset has been picked up and the telephone is connected to the line. In the context of the DR1500, Off Hook means that the connection to the telephone line is “on” or active. When the DR1500 is Off Hook (equivalent to picking up the phone) the Off Hook LED indicator will be ON and when it is On Hook (equivalent to being hung up) the LED indicator will be OFF.

AC Power Sense Input

The rear-panel AC Power Sense Input jack is used to detect the presence of AC power. (Note that this AC power is not the input power to the DCC-3, which comes through the backplane of the BlackMax rack.) In operation, when there is AC power being applied to the external power module provides a DC voltage at this input. If the AC power fails and the HAR system switches over to battery power, the input voltage will drop to zero, allowing the DR1500 to know that there is a power outage and act accordingly.

CHAPTER 9

TROUBLESHOOTING

This chapter describes common problems, their probable causes and remedies, and provides contact information for technical support.

Technical Support and Product Returns

For technical questions or product returns, contact M.H. Corbin LLC at 1-800-380-1718. Provide the following supporting information and request either service or product return:

- Name and model of the product in question
- Serial number of the product
- Name and location of the installation site
- Name and contact information of a technically competent person who can provide further information on the problem.

APPENDIX A

GLOSSARY

Acronyms

A/D	Analog to Digital
AC	Alternating Current
AM	Amplitude Modulation
Amp/hr	Amperes per Hour
Amp	Amperes
AUTO	Automatic
C	Centigrade
CMOS	Complimentary Metal Oxide Semiconductor
D	Depth
D/a	Digital to Analog
dB	Decibels
DC	Direct Current
DIP	Dual In-line Package
DSP	Digital Signal Processor
FCC	Federal Communications Commission
H	Height
HAR	Highway Advisory Radio
Hz	Hertz
K	Thousand
KB/sec	Kilobits per Second
kHz	Kilohertz
lbs	Pounds
LED	Light Emitting Diode
M	Megabytes
MA	Milliamperes
MAN	Manual
Mbytes	Megabytes
Mhz	Megahertz
MIPS	Million Instructions per Second
NWS	National Weather Service

RAM	Random Access Memory
RF	Radio Frequency
ROM	Read-Only-Memory
SINAD	Signal to Noise Ratio Audio
TELCO	Telephone Company
TTL	Transistor to Transistor Logic
V	Volt
VAC	Volts Alternating Current
VDC	Volts Direct Current
W	Width
WX	Weather
™	Trademark
μV	Microvolts

APPENDIX B

QUICK START GUIDE

For remote operation, dial up the HAR and one (1) second later, the system will respond with: *"Hello, please enter your security code followed by the pound sign."* Enter your 5-digit security code followed by the pound (#) sign. The system will respond with: *"Main Menu, to hear the command list, press *0#."*

Silence The system will wait for you to enter a command.

When using the local handset, pick up the handset and press [#], the system will respond with: *"Main Menu, to hear the command list, press *0#."*

Silence The system will wait for you to enter a command.

Press [*0#] to hear the command list.

Silence The system will wait for you to enter a command.

To record a message, press [*1#].

(This instance use 10.)

"Record time available is xxxx seconds."

*"Record source is mic|line|
telephone|handset."*

"To record a message, enter the message number followed by the pound sign."

"To return to the Main Menu, press #."

[10#] beep Record message. Press [*]. The system will respond with: *"Message 10, record complete."* Press [#].

To hear message, press [*2#].

(This instance use 10.)

"To hear a message, enter the message number followed by the pound sign."

"To hear all messages, press 999#."

*"To return to the Main Menu, press *0#."*

[10#] The system will respond with: *"Message 10."* and it will be played.

[999#] Message numbers are announced and played in ascending numerical order; until all messages have been played; then a single **beep** is played.

Press [#].

To erase message, press [*3#].

(This instance use 10.)

"To erase a message, enter the message number followed by the pound sign."

"To erase all messages, press 999#."

"To return to the Main Menu, press #."

[10#] The system will respond with: *"Please wait (pause) beep "Message 10, erase complete." "Main Menu, to hear the command list, press *0#."*

[999#]. The system will respond with: **beep** *"All erase complete."*

Press [*0#].



NOTE: 999# may be used up to the point that a valid single message number is entered. A string of 0 to *n* invalid message numbers does not invalidate 999#.

To modify the broadcast, press [*5#].

(This instance use 1020.)

"Please enter each message or message list number followed by the pound sign."

"To play all messages, press 999#."

"To cancel the broadcast, press 0#."

"To return to the Main Menu, press #."

[1020#] The system will respond with: *"Broadcast complete."* *"Broadcast is set to x, x, x."* **beep** *"Main Menu, to hear the command list, press *0#."*

[999#] Plays all recorded messages. The system will then respond with: *"Broadcast is set to all."* **beep** *"Broadcast complete."* *"Main Menu, to hear the command list, press *0#."*

[0#] Stops all messages/message lists from playing. The system will then respond with: *"Broadcast canceled."* *"Main Menu, to hear the command list, press *0#."*

Press [#].



NOTE: If the broadcast is canceled, silence will be aired unless the Weather Radio is on.

To hear the broadcast, press [*6#].

"Broadcast is set for x, x, xx, ..., xxx." **beep**

"End broadcast."

If 999# was entered in para D above, the system will respond with: *"Broadcast is set for all."* **beep**

If 0 was entered in para D above, the system will respond with: *"Broadcast is set for 0."* **beep**
Press [#].

To set record source, press [*7#].

(This instance use 4.)

*"Record source is mic|line|
telephone|handset."*

"To set record source, press:

1# – for mic,

2# – for line,

3# – for telephone,

4# – for handset."

"To return to the Main Menu, press #."

[4#] The system will respond with: **beep** *"Record source is handset."*
Press [#].

To schedule a message or message list, press [*22#].

(This instance use 2, 0900, 25.)

"To schedule a message or message list, enter the day #, time # and message number #."

"To return to the Main Menu, press #."

Valid day numbers are as follows:

0 = every day	4 = Wednesday
1 = Sunday	5 = Thursday
2 = Monday	6 = Friday
3 = Tuesday	7 = Saturday

[2# 0900# 25#] **beep** *"Message [message list] 25, "Monday", "0900". "To schedule a message or message list, enter the day #, time # and message number #." "To return to the Main Menu, press #."*



There is no checking for message or message list existence. (If an invalid number is entered, only that

attempted entry fails, no other messages scheduled for that day are affected.

Entering day#, time#, 1000# schedules silence until overridden.
Press [#].

To create a message list, press [*41#].

(This instance use 15.)

"To create a message list, enter the message list number followed by the pound sign."

"To return to the Main Menu, press #."

Up to 20 message lists may be created. The maximum number of messages in all message lists is 100.

[15#] The system will respond with: **beep** *"For each entry in the message list, enter a message number followed by the pound sign."*

[1#] [3#] [5#] [7#] [#] The system will respond with: **beep** *"Message list 15 complete."* *"Main Menu, to hear the command list, press *0#."*

Invalid message numbers do not affect the previously entered valid message numbers in the message list.
Press [#].



Only one message list can be created each time *41# is entered. To create another message list, press [*41#] again.

To make a message list the current broadcast, press [*43#].

(This instance use 18.)

"To make a message list the current broadcast, enter the message list number followed by the pound sign."

"To return to the Main Menu, press #."

[18#] The system will respond with: *"Message list set for: x, x, x."* *"End message list."* **beep**
Press [#].



When an empty or undefined message list is activated, the message source is silent or is the Weather Radio audio depending on the radio's status.

To erase a message list, press [*44#].

(This instance use 15.)

"To erase a message list, enter the message list number followed by the pound sign."

"To erase all, press 999#."

"To return to the Main Menu, press #."

[15] The system will respond with: **beep** *"Message list 15 is set to 0."*

[999#] The system will respond with: **beep** *"All message lists erased."*
Press [#].



If the message list to be erased is the message list currently being broadcast, this function will erase all its messages, but the message list will remain active.

To terminate the session and hang up, press [*51#].

(This instance use 1.)

*"To terminate the session and hang-up, press 1#."
"To return to the Main Menu, press #."*

[1#] The system will respond with: *"Goodbye."*

The system then hangs up the telephone. The remote session will also time out (end) if no command is entered, or the # key is not pressed for a period of more than 10 minutes.

The local control telephone session does not time out and is not affected by this command.
Press **[#]**.

To control the transmitter, press [*62#].

(This instance use 2008.)

"Transmitter is on/off."

"To activate the transmitter, press 2008#."

"To deactivate the transmitter, press 2009#."

"To listen to the broadcast, press 7900#."

"To listen to the Weather Radio, press 7901#."

"To return to the Main Menu, press #."

If **[2008#]** or **[2009#]** are entered, the system will respond with the updated status of the transmitter:
"Transmitter is on/off." *"Main Menu, to hear the command list, press *0#."*
Press **[#]**.

To set the security code, press [*71#].

(This instance use 12345.)

"Security code is off|xxxxx."

"To deactivate the security code, press 0#, or enter a 5-digit numerical code followed by the pound sign."

"To return to the Main Menu, press #."

The status of the security code is announced. If a security code has not been entered, enter a 5-digit numerical code (numbers 00000 - 99999) and press the pound (#) sign. The system will respond with: **beep**
"Security code is xxxxx. Please note."

When accessed remotely, the unit will prompt you for your security code.

When using the local control telephone port, no security code is required to gain access.

If * is pressed during security code entry, the access code is not updated and no error message is generated.
Press **[#]**.



NOTE: 27709 is the default power up access code.

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