DR1500 Operating Instructions

1. Introduction

1.1. 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.

1.1.1 Remote Telephone Control

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.

If no commands are received for an interval longer than the hang-up time, the system will hang up automatically. See the section on the "Set Hang-Up Time" command (*77#) for additional information on this feature. Also see the section on the "Set Security Code" command (*71) for additional information on the use of security codes.

1.1.2 Local Handset Control

Operating from the handset requires entering the same security code value used for establishing a telephone connection. However, the procedure using the handset is different from the procedure using the telephone because the handset is always connected.

Under normal conditions if the handset has not been used for some time, the handset will be locked out and no numerical commands will be allowed to be entered. In this case, enter ***#**. The system will respond:

"Enter the security code followed by the # sign."
"To return to the main menu press #."

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

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

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

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

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

The handset will still be locked out and will remain locked out until the correct security code is entered.

If no commands are received for an interval longer than the hang-up time, the system will disable the handset automatically. See the section on the "Set Hang-Up Time" command (*77#) for additional information on this feature.

Note that when the handset is locked out, entering a * and any numerical value is equivalent to entering *#, the command for entering the handset security code. Thus, for example, if the handset is locked out, after entering ***6** the system will respond:

"Enter the security code followed by the # sign."
"To return to the main menu press #."

After this prompt, the security code can be entered. However, if the normal full sequence such as *6# had been entered, it would be interpreted as entering a blank security code and the system would respond:

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

Once the correct security code has been entered from the handset, the procedure for controlling the DR1500 is the same as when using the remote telephone connection. 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 "Set record source" command *7#.

Also note that during the periods of time when the remote telephone line is connected the handset will not be locked out.

1.2. 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.

1.3. 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.

1.4. Command List in Numerical Order

To get the command list in numerical order, enter ***0#** and the system will respond with a list of the commands.

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

1.5. Command List in Functional Order

To get the command list in functional order, enter *00# and the system will respond with the following sub-categories:

Emergency Broadcasts and Alerts, 0#

Recorded Messages, 1#
Broadcast, 2#
Playlists, 3#
Transmitter and Attenuator, 4#
System Control, 5#
Clock Calendar, 6#
Scheduled Events, 7#
Synchronized Messages, 8#
System Status, 9#

Enter the number followed by the pound sign to hear the commands for the corresponding sub-category.

1.6. 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.

1.7. DIP Switch Settings

1.7.1 Baud Rate DIP Switch Settings

Segments 1 and 2 of the internal DIP switch set the BAUD rate of the front-panel serial port on the DR1500 as shown in the following table:

Computer-Telephone DTMF Packets for “Go-Live On the Air”

Segment 1	Segment 2	Index	BAUD Rate
OFF	OFF	0	9,600
ON	OFF	1	28,800
OFF	ON	2	57,600
ON	ON	3	115,200

1.7.2 Reinitialize Broadcast DIP Switch Settings

Segment 3 of internal DIP switch determines what mode the DR1500 will begin broadcasting in immediately after power up, after a software reset or a hardware reset. As shown in the table below, if DIP switch segment 3 is OFF, the DR1500 will start in the normal mode, namely, the last broadcast mode will be retrieved from non-volatile RAM and the broadcast will restart essentially where it left off. If the segment is ON, the DR1500 will reinitialize itself so that the broadcast list is set to message number 1. As if the command sequence * 5 # 1# # had been entered.

Computer-Telephone DTMF Packets for “Go-Live On the Air”

Segment 3	Index	Restart Broadcast Mode
OFF	0	Recovered from NV RAM and resumes as configured previously
ON	1	Reinitialized to message 1.

2. 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.

2.1. 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.

2.1.1 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, time in minutes or zero.”
“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.

The time in minutes should be longer than the intended time for going on the air live. To go on the air indefinitely, enter zero. 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.

2.1.2 Computer Interfaces

Going live on the air using the computer-telephone DTMF interface is relatively straightforward since it follows the same sequence as when using the voice-prompt interface. Use of the computer-serial ASCII interface for this command is not recommended.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Go-Live On the Air"

	Set Mode	Get Mode
Input Format	* <Cmd_1> # <Val_1> # <AudioMessage> #	C <Cmd_1> #
Input Example	* 8 # 1 # <AudioMessage> #	C 8 #
Response Format	A <Len_3> B <Val_1> B #	A <Len_3> B <Val_1> B #
Response Example	A008B008B1B#	A008B008B1B#
Time Stamp	Modified	Unaffected

Note that in the computer/DTMF interface mode, the audio message is usually sent over the same telephone line as the DTMF control tones and thus is automatically synchronized with the recording process. Using this mode, it is recommended that a pause of ½ to 1 second be placed before and after the audio message to ensure that the recorded message is not truncated improperly. If the audio message is being sent from another input source, suitable pauses must be inserted so that it the audio is played within the time interval between the two "#" DTMF tones bracketing the <AudioMessage> as shown in the table.

Computer-Serial ASCII Interface

Although use of the computer-serial ASCII interface is not recommended for the Go-Live On the Air command, the computer-serial ASCII packets are supported as shown in the table:

Computer-Serial ASCII Packets for "Go-Live On the Air"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-008,1	&004-008
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-008:1<CR+LF>	%008-008:1<CR+LF>
Time Stamp	Modified	Unaffected

2.2. 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.

2.2.1 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#."*

2.2.2 Computer Interfaces

Executing the "Broadcast Emergency Message" function using the computer-telephone DTMF interface is relatively straightforward since it follows the same sequence as when using the voice-prompt interface. Use of the computer-serial ASCII interface for this command is not recommended.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Broadcast Emergency Message"

	Set Mode	Get Mode
Input Format	* <Cmd_3> # <Val_1> # <AudioMessage> # #	C <Cmd_3> #
Input Example	* 911 # 1 # <AudioMessage> # #	C 911 #
Response Format	A <Len_3> B <Val_1> B #	A <Len_3> B <Val_1> B #
Response Example	A008B911B1B#	A008B911B1B#
Time Stamp	Modified	Unaffected

Note that in the computer/DTMF interface mode, the audio message is usually sent over the same telephone line as the DTMF control tones and thus is automatically synchronized with the recording process. Using this mode, it is recommended that a pause of ½ to 1 second be placed before and after the audio message to ensure that the recorded message is not truncated improperly. If the audio message is being sent from another input source, suitable pauses must be inserted so that it the audio is played within the time interval between the two "#" DTMF tones bracketing the <AudioMessage> as shown in the table.

Computer-Serial ASCII Interface

Although use of the computer-serial ASCII interface is not recommended for the Emergency 911 command, the computer-serial ASCII packets are supported as shown in the table:

Computer-Serial ASCII Packets for "Broadcast Emergency Message"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-911,1,	&004-911
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-911:1<CR+LF>	%008-911:1<CR+LF>
Time Stamp	Modified	Unaffected

Note that the confirming 1 at the end of the packet must be followed by a comma to properly terminate this command.

3. 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.

3.1. 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.

3.1.1 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#."*

3.1.2 Computer Interfaces

The examples below assume the input source is to be set to the handset (4#).

Computer-Telephone DTMF Interface

Using the computer computer-telephone interface, the DTMF input-response packets would be as shown

in the table:

Computer-Telephone DTMF Packets for "Select Record Input Source"

	Set Mode	Get Mode
Input Format	* <Cmd_1> # <Val_1> #	C <Cmd_1> #
Input Example	* 7 # 4 #	C 7 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B #
Response Example	A008B007B4B#	A008B007B4B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Select Record Input Source"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-007:4	&004-007
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-007:4<CR+LF>	%008-007:4<CR+LF>
Time Stamp	Modified	Unaffected

3.2. 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.

Note that the hang-up time as configured by command *77# must be greater than the length of the message or the recording will be terminated prematurely.

3.2.1 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#."*

3.2.2 Record Level

The DR1500 provides two methods for setting the record level as selected by the front-panel AUTO/MAN switch. In the AUTO mode, the record level for all input sources is set controlled by the Automatic Gain Control (AGC) circuit in the DR1500. In the MAN mode, the record level for HANDSET, MIKE, and LINE are controlled by the front panel RECORD LEVEL control while the level for the TELCO input is still controlled by the AGC circuit.

3.2.3 Computer Interfaces

The examples below assume that message number 10 is to be recorded. Recording using the computer-telephone DTMF interface is relatively straightforward since it follows the same sequence as recording using the voice-prompt interface. Use of the computer computer-serial ASCII interface for this command is not recommended.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Record Message"

	Set Mode	Get Mode
Input Format	* <Cmd_1> # <Msg_n> # <AudioMessage> #	C <Cmd_1> #
Input Example	* 1 # 00010 # <AudioMessage> #	C 1 #
Response Format	A <Len_3> B <Cmd_3> B <Msg_5> B #	A <Len_3> B <Cmd_3> B <Msg_5> B #
Response Example	A012-001:00010B#	A012-001:00010B#
Time Stamp	Modified	Unaffected

Note that in the computer/DTMF interface mode, the audio message is usually sent over the same telephone line as the DTMF control tones and thus is automatically synchronized with the recording process. Using this mode, it is recommended that a pause of ½ to 1 second be placed before and after the audio message to ensure that the recorded message is not truncated improperly. If the audio message is being recorded from another input source, suitable pauses must be inserted so that it the

audio is played within the time interval between the two "#" DTMF tones bracketing the <AudioMessage> as shown in the table.

Computer-Serial ASCII Interface

Although use of the computer-serial ASCII interface is not recommended for actually recording voice messages, the computer-serial ASCII packets are supported as shown in the table:

Computer-Serial ASCII Packets for "Record Message"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Msg_5>	& <Len_3> - <Cmd_3>
Input Example	$011-001:00010,	&004-001
Response Format	% <Len_3> - <Cmd_3> : <Msg_5> <CR+LF>	% <Len_3> - <Cmd_3> : <Msg_5> <CR+LF>
Response Example	%012-001:00010<CR+LF>	%012-001:00010<CR+LF>
Time Stamp	Modified	Unaffected

Note that for the set input packet the message number must be followed by a comma to properly terminate this command.

Also note that effectively the result of using the set mode of this command over the computer-serial interface will be to record a message of approximately zero length.

3.3. 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.

3.3.1 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#."*

3.3.2 Computer Interfaces

The examples below assume message number 10 is to be played. Using the set mode causes the actual message to be played whereas using the get mode simply returns the message number from the last request.

Computer-Telephone DTMF Interface

In the computer/DTMF interface mode, the audio message is returned through both the RJ11 telephone line jack and the RJ11 telephone handset jack on the front panel of the DR1500AM. Thus, the control unit must wait until the DR1500AM completes the playing of the message and outputs the terminating DTMF "B" and #, before sending additional commands through these ports. Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Listen to a Message"

	Set Mode	Get Mode
Input Format	* <Cmd_1> : <Msg_5>	C <Cmd_1> #
Input Example	* 2 # 10 #	C 2 #
Response Format	A <Len_3> B <Cmd_3> B <Msg_5> <AudioMessage> B #	A <Len_3> B <Cmd_3> B <Msg_5> B #
Response Example	A012B002B00010<AudioMessage>B#	A012B002B00010B#
Time Stamp	Unaffected	Unaffected

Note that the message will be played through the telephone interface even if the telephone voice prompts have been switched off.

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Listen to a Message"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Msg_5>	& <Len_3> - <Cmd_3>
Input Example	$010-002:00010	&004-002
Response Format	% <Len_3> - <Cmd_3> : <Msg_5> <AudioMessage> <CR+LF>	% <Len_3> - <Cmd_3> : <Msg_5> <CR+LF>
Response Example	%012-002:00010<AudioMessage> <CR+LF>	%012-002:00010<AudioMessage> <CR+LF>
Time Stamp	Unaffected	Unaffected

Note that in the computer-serial interface mode, the command codes come through the serial port while the audio message is played through both the RJ11 telephone line jack and the RJ11 telephone handset jack on the front panel of the DR1500AM. Thus, the control unit must wait while the DR1500AM plays the message. The sequence is as follows:

1. Send the "Listen to a Message" set packet to the DR1500AM, as shown above
2. Wait for the carriage return and line feed indicating the message has ended.

3.4. 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.

3.4.1 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#."*

3.4.2 Computer Interfaces

Using computer interfaces in the set mode, there will be a pause of a few seconds before the response while the message files are being erased. During this interval, the DR1500AM will not respond to commands. In the get mode, the message number reported will be that of the most recently erased message. The examples below assume message number 11 is to be erased.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Erase Message"

	Set Mode	Get Mode
Input Format	* <Cmd_1> # <Msg_n>	C <Cmd_1> #
Input Example	* 3 # 11 #	C 3 #
Response Format	A <Len_3> B <Cmd_3> B <Msg_5> B #	A <Len_3> B <Cmd_3> B <Msg_5> B #
Response Example	A012B003B00011B#	A012B003B00011B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Erase Message"

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Msg_5>	& <Len_3> - <Cmd_3>
Input Example	$010-003:00011	&004-003
Response Format	% <Len_3> - <Cmd_3> : <Msg_5> <CR+LF>	% <Len_3> - <Cmd_3> : <Msg_5> <CR+LF>
Response Example	%012-003:00011<CR+LF>	%012-003:00011<CR+LF>
Time Stamp	Modified	Unaffected

3.5. 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#.

3.5.1 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 #."

3.5.2 Computer Interfaces

Note that this command functions essentially as a get command in both the set and get modes. The examples below assume the record time available is 1234 seconds.

Computer-Telephone DTMF Interface

Using the computer computer-telephone interface, the DTMF input-response packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report Record Time Available"

	Set Mode	Get Mode
Input Format	* <Cmd_2> #	C <Cmd_2> #
Input Example	* 60 #	C 60 #
Response Format	A <Len_3> B <Cmd_3> B <Time_4> B #	A <Len_3> B <Cmd_3> B <Time_4> B #
Response Example	A012B060B01234B#	A012B060B01234B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report Record Time Available"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-060	&004-060
Response Format	% <Len_3> - <Cmd_3> : <Time_4> <CR+LF>	% <Len_3> - <Cmd_3> : <Time_4> <CR+LF>
Response Example	%012-060:01234<CR+LF>	%012-060:01234<CR+LF>
Time Stamp	Unaffected	Unaffected

3.6. 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.

3.6.1 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#."*

3.6.2 Computer Interfaces

The examples below assume message number 5 is to be recorded with a length of 10 seconds. Recording using the computer-telephone DTMF interface is relatively straightforward since it follows the same sequence as recording using the voice-prompt interface. Use of the computer computer-serial ASCII interface for this command is not recommended.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Record for a Specified Time"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Msg_n> # <Time_5> # <AudioMessage> #	C <Cmd_2> #
Input Example	* 61 # 0005 # 00010 # <AudioMessage> #	C 61 #
Response Format	A <Len_3> B <Cmd_3> B <Msg_5> B <Time_5> B #	A <Len_3> B <Cmd_3> B <Msg_5> B <Time_5> B #
Response Example	A018B061B0005B00010B#	A018B061B0005B00010B#
Time Stamp	Modified	Unaffected

Note that in the computer/DTMF interface mode, the audio message is usually sent over the same telephone line as the DTMF control tones and thus is automatically synchronized with the recording process. Using this mode, it is recommended that a pause of ½ to 1 second be placed before and after the audio message to ensure that the recorded message is not truncated improperly. If the audio message is being recorded from another input source, suitable pauses must be inserted so that it the audio is played within the time interval between the two "#" DTMF tones bracketing the <AudioMessage> as shown in the table.

After the recording process is started, it will continue until it is stopped when either (1) the specified record time is reached or (2) the packet-terminating # sign is received. The audio message can end at any time. If it ends before recording process is stopped, the remaining record time will be silent. If it continues after the recording process stops, it will be truncated.

Computer-Serial ASCII Interface

Although use of the computer-serial ASCII interface is not recommended for actually recording voice messages, the computer-serial ASCII packets are supported as shown in the table:

Computer-Serial ASCII Packets for "Record for a Specified Time"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Msg_5> : <Time_5>	& <Len_3> - <Cmd_3>
Input Example	$015-061:0005:00010	&004-061
Response Format	% <Len_3> - <Cmd_3> : <Msg_5> <Time_5> <CR+LF>	% <Len_3> - <Cmd_3> : <Msg_5> <Time_5> <CR+LF>
Response Example	%018-061:0005:00010<CR+LF>	%018-061:0005:00010<CR+LF>
Time Stamp	Modified	Unaffected

Note that effectively the result of using the set mode of this command over the computer-serial interface will be to record a silent message of approximately zero length.

4. 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.

4.1. 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.

4.1.1 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#."*

4.1.2 Computer Interfaces

The examples below assume the broadcast list is to be set to messages 1, 2, and 3. The response to the both the set and get modes is a full report of the broadcast list

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Create Broadcast List"

	Set Mode	Get Mode
Input Format	* <Cmd_1> # <Msg_n> # [<Msg_n> #] [<Msg_n> #] #	C <Cmd_1> #
Input Example	* 5 # 1 # 2 # 3 # #	C 5 #
Response Format	A <Len_3> B <Cmd_3> B <Msg_5> [B <Msg_5>] [B <Msg_5>] B #	A <Len_3> B <Cmd_3> B <Msg_5> [B <Msg_5>] [B <Msg_5>] B #
Response Example	C024B005B00001B00002B00003B#	C024B005B00001B00002B00003B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Create Broadcast List"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Msg_5>, [<Msg_5>] , [<Msg_5>]	& <Len_3> - <Cmd_3>
Input Example	$022-005:00001,00002,00003,	&004-005
Response Format	% <Len_3> - <Cmd_3> : <Msg_5> [, <Msg_5>] [, <Msg_5>] <CR+LF>	% <Len_3> - <Cmd_3> : <Msg_5> [, <Msg_5>] [, <Msg_5>] <CR+LF>
Response Example	%024-005: 00001,00003,00005 <CR+LF>	%024-005: 00001,00003,00005 <CR+LF>
Time Stamp	Modified	Unaffected

Note that the final message number in the list at the end of the packet must be followed by a comma to properly terminate this command.

4.2. Report the Broadcast List, *6#

To get a report of which message numbers are currently on the broadcast list, the command coded is *__6#__.

4.2.1 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#."*

4.2.2 Computer Interfaces

Note that this command functions essentially as a get command in both the set and get modes. The examples below assume the broadcast list is set to messages 1, 2, and 3. As with the Create Broadcast List command (*5#), the response to the set mode is a full report of the broadcast list while the response to the get mode gives only the most recent message number entered using the set mode of the Create Broadcast List command.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table below:

Computer-Telephone DTMF Packets for "Report Broadcast List"

	Set Mode	Get Mode
Input Format	* <Cmd_1> #	C <Cmd_1> #
Input Example	* 6 #	C 6 #
Response Format	A <Len_3> B <Cmd_3> B <Msg_5> [B <Msg_5>] [B <Msg_5>] B #	A <Len_3> B <Cmd_3> B <Msg_5> [B <Msg_5>] [B <Msg_5>] B #
Response Example	C024B006B00001B00002B00003B#	C024B006B00001B00002B00003B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report Broadcast List"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-006	&004-006
Response Format	% <Len_3> - <Cmd_3> : <Msg_5> [, <Msg_5>] [, <Msg_5>] <CR+LF>	% <Len_3> - <Cmd_3> : <Msg_5> [, <Msg_5>] [, <Msg_5>] <CR+LF>
Response Example	%024-006:00001,00003,00005 <CR+LF>	%024-006:00001,00003,00005 <CR+LF>
Time Stamp	Unaffected	Unaffected

4.3. 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.

4.3.1 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#."*

4.3.2 Computer Interfaces

The examples below assume message spacing is to be set to 5 seconds.

Computer-Telephone DTMF Interface

Using the computer computer-telephone interface, the DTMF input-response packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set Message Spacing"

	Set Mode	Get Mode
Input Format	* <Cmd_1> # <Time_4> #	C <Cmd_1> #
Input Example	* 4 # 0005 #	C 4 #
Response Format	A <Len_3> B <Cmd_3> B <Time_4> B #	A <Len_3> B <Cmd_3> B <Time_4> B #
Response Example	A011B004B0005B#	A011B004B0005B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set Message Spacing"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Time_4>	& <Len_3> - <Cmd_3>
Input Example	$009-004:0005	&004-004
Response Format	% <Len_3> - <Cmd_3> : <Time_4> <CR+LF>	% <Len_3> - <Cmd_3> : <Time_4> <CR+LF>
Response Example	%011-004:0005<CR+LF>	%011-004:0005<CR+LF>
Time Stamp	Modified	Unaffected

4.4. 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.

4.4.1 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#."*

4.4.2 Computer Interfaces

The examples below assume that auxiliary fill during message spacing is to be set to 0 (OFF).

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Broadcast Aux Fill During Message Spacing"

	Set Mode	Get Mode
Input Format	* <Cmd_1> # <Val_1> #	C <Cmd_1> #
Input Example	* 9 # 0 #	C 9 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B #
Response Example	A008B009B0B#	A008B009B0B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Broadcast Aux Fill During Message Spacing"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-009:0	&004-009
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-009:0<CR+LF>	%008-009:0<CR+LF>
Time Stamp	Modified	Unaffected

4.5. 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.

4.5.1 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#."*

4.5.2 Computer Interfaces

The examples below assume the same conditions as in the voice prompt examples.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Broadcast Aux Audio During Message Spacing"

	Set Mode	Get Mode
Input Format	* <Cmd_1> # <Time_4> #	C <Cmd_1> #
Input Example	* 76 # 3 #	C 9 #
Response Format	A <Len_3> B <Cmd_3> B <Time_4> B #	A <Len_3> B <Cmd_3> B <Time_4> B #
Response Example	A011B076B0003B#	A011B076B0003B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Broadcast Aux Audio During Message Spacing"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Time_4>	& <Len_3> - <Cmd_3>
Input Example	$006-076:0004	&004-009
Response Format	% <Len_3> - <Cmd_3> : <Time_4> <CR+LF>	% <Len_3> - <Cmd_3> : <Time_4> <CR+LF>
Response Example	%011-076:0003<CR+LF>	%011-076:0003<CR+LF>
Time Stamp	Modified	Unaffected

4.6. Broadcast a DTMF Playlist, *53#

The "Broadcast a DTMF Playlist" command is used to broadcast a sequence of DTMF tones, typically used for turning a radio-controlled beacon on or off.

To broadcast a DTMF sequence the following parameters are entered sequentially:

Spacing Between DTMF Tones is the delay between each tone in units of 100 msec (0.1 sec) when the DR1500AM is broadcasting the tones. The allowed entry values are 0 to 9 corresponding to 0 to 900 milliseconds in 100 millisecond increments. Note that if a spacing value of 0 is entered and the DTMF string has two identical tones in sequence, most detection circuits would probably misinterpret this as one long tone.

Tone Sequence Values are selected using "Tone Message Numbers" as shown in the following table:

DTMF Tone	Tone Message Number		DTMF Tone	Tone Message Number
0	240		A	250
1	241		B	251
2	242		C	252
3	243		D	253
4	244		*	254
5	245		#	255
6	246		Space	145
7	247		Reserved 1	
8	248		Reserved 2	
9	249		Reserved 3	

The DTMF tone identified as "Space" inserts a silent space between tones equal in length to a DTMF tone and functions much as a comma does in a modem control string. The tones identified as Reserved 1-3 are for future use to allow other prompts to be played on a guaranteed basis.

Note that other values not in the table can be entered and will cause a prompt to be broadcast. For example, values 1 through 20 will broadcast the numbers "one" through "twenty" respectively. However, the prompts actually played may vary depending on version number and build number of the firmware, and thus are not guaranteed.

4.6.1 Voice Prompt Interface

To broadcast a DTMF playlist, enter ***53#** from the main menu. The system will respond:

"Enter parameter."

Enter a value between 0 and 9 to set the spacing between DTMF tones, followed by the # sign. For example, to set the DTMF spacing to 100 msec, enter:

1 #

The system will respond:

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

Sequentially enter the desired Tone 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 tone list and return to the main menu. For example, to set the DTMF playlist to:

*** 1 # <space> * 1 #**

Enter:

254 # 241 # 255 # 145 # 254 # 241 # 255 # #

The system will respond:

"One. Playlist 1027 complete."
*"Main Menu, to hear the command list, enter *0#."*

Where the value one corresponds to the choice of 100 msec for the spacing parameter. If an invalid entry is made, the system will respond:

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

4.6.2 Computer Interfaces

The examples below assume that the DTMF playlist is as given in the previous example.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Create a Playlist"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Val_1> # <Msg_3> # [<Msg_3> #] [<Msg_3> #] #	C <Cmd_2> #
Input Example	* 53 # 254 # 1 # 241 # 255 # 145 # 254 # 241 # 255 # #	C 53 #
Response Format	A <Len_3> B <Cmd_3> B #	A <Len_3> B <Cmd_3> B #
Response Example	A006B053B#	A006B053B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Create a Playlist"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>, <Msg_5>, [<Msg_5>,] [<Msg_5>,]	& <Len_3> - <Cmd_3>
Input Example	$027-053:1,254,241,255,256,254,241,255,	&004-053
Response Format	% <Len_3> - <Cmd_3> <CR+LF>	% <Len_3> - <Cmd_3> <CR+LF>
Response Example	%011-053<CR+LF>	%011-053<CR+LF>
Time Stamp	Modified	Unaffected

Note that the final message number at the end of the list in the input packet must be followed by a comma to properly terminate this command.

4.7. Set DTMF Delay, *210#

4.7.1 Voice Prompt Interface

To set the DTMF delay enter ***210#.** Assuming the DR1500AM is in the default state with the

DTMF response delay set to the initial value of 900 msec and the DTMF beacon delay set to 100 msec, the system will respond:

"210 is nine one."
"Enter parameter."
"To return to the Main Menu, press #"

If a response DTMF delay of delay of 200 msec and a beacon delay of 0 msec is desired, enter **2# 0#**. The system will respond:

*"210 is **two 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#."*

4.7.2 Computer Interfaces

The examples below assume the "Set DTMF Delay" is to be set to DTMF mode:

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set DTMF Delay"

	Set Mode	Get Mode
Input Format	* <Cmd_3> # <Val_1> # <Val_1> #	C <Cmd_3> #
Input Example	* 210 # 2 # 0 #	C 210 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B <Val_1> B #
Response Example	A010B210B2B0B#	A010B210B2B0B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set DTMF Delay"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>,<Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-210:2	&004-210
Response Format	% <Len_3> - <Cmd_3> : <Val_1>, <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1>, <Val_1> <CR+LF>
Response Example	%010-210:2,0<CR+LF>	%010-210:2,0<CR+LF>
Time Stamp	Modified	Unaffected

5. 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.

5.1. 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.

5.1.1 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#."*

5.1.2 Computer Interfaces

The examples below assume transmitter is to be set to ON (2009#).

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Control the Transmitter"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Val_4> # #	C <Cmd_2> #
Input Example	* 62 # 2009 # #	C 62 #
Response Format	A <Len_3> B <Cmd_3> B <Val_4> B #	A <Len_3> B <Cmd_3> B <Val_4> B #
Response Example	A011B062B2009B#	A011B062B2009B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Control the Transmitter"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_4>,	& <Len_3> - <Cmd_3>
Input Example	$010-062:2009,	&004-062
Response Format	% <Len_3> - <Cmd_3> : <Val_4> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_4> <CR+LF>
Response Example	%011-062:2009<CR+LF>	%011-062:2009<CR+LF>
Time Stamp	Modified	Unaffected

5.2. 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.

5.2.1 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#."*

5.2.2 Computer Interfaces

The examples below assume transmitter is to be set to ON (1#).

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Turn the Transmitter On or Off"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Val_1> #	C <Cmd_2> #
Input Example	* 63 # 1 #	C 63 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B #
Response Example	A008B063B1B$	A008B063B1B$
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Turn the Transmitter On or Off"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-063:1	&004-063
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-063:1<CR+LF>	%008-063:1<CR+LF>
Time Stamp	Modified	Unaffected

5.3. 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.

Note that the RF Attenuator Module and the Transmitter Control Module share the same signal lines on the backplane of the BlackMax rack module. Because of this there is an interaction between the "Set Attenuator Level" command *65# (described in this section) and the "Set Transmitter Power Level" command *66# (described in the next section).

To operate the RF Attenuator Module as described in this section, the Transmitter Control Module must be switched OFF by entering the parameter value 0 using the "Set Transmitter Power Level" command as described in the section below. If the transmitter power level is not switched OFF, a continuous stream of digital control signals will be sent to the Attenuator Module causing it to chatter.

5.3.1 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#."*

5.3.2 Computer Interfaces

The examples below assume the attenuator is to be set to level 2.

Computer-Telephone DTMF Interface

Using the computer computer-telephone interface, the DTMF input-response packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set Attenuator Level"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Val_1> #	C <Cmd_2> #
Input Example	* 65 #2 #	C 65 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B #
Response Example	A008B065B2B#	A008B065B2B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set Attenuator Level"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-0065:2	&004-0065
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-0065:2<CR+LF>	%008-0065:2<CR+LF>
Time Stamp	Modified	Unaffected

5.4. Set Transmitter Power Level, *66#

Some HAR systems have a Transmitter Control Module (TCM-1) that allows the transmitter power to be varied remotely by the DR1500 using the "Set Transmitter Power Level" command. The transmitter power level ranges from 0.1 Watts to 30.0 Watts in increments of 0.1 Watt. The corresponding input parameter values range from 1 tenths-of-a-Watt (0.1 W) to 300 tenths-of-a-Watt (30.0 W) in increments of 1 tenth-of-a-Watt (0.1W). The default value after a Non Volatile RAM reset is 10.0 Watts or 100 tenths-of-a-Watt.

Note that when the transmitter is driving the nominal antenna-load impedance of 50 Ohms, the DR1500 will set the transmitter power to match the power level requested using the "Set Transmitter Power Level" command. However, if there is an antenna-load impedance mismatch, such as when the antenna is open or shorted, the DR1500 will detect the increase in the reflected power due to the mismatch and will then limit the actual power output to avoid damage to the transmitter. See the "Report Transmitter Status" command *67# for additional information.

In addition, as noted in the section above in the description of the "Set Attenuator Level" command, the RF Attenuator Module and the Transmitter Control Module share the same signal lines on the backplane of the BlackMax rack module. Because of this there is an interaction between the "Set Attenuator Level" command *65# (described in the previous section) and the "Set Transmitter Power Level" command *66# (described in this section).

As noted before, to operate the RF Attenuator Module, the Transmitter Control Module must be switched OFF by entering the parameter value 0 in the "Set Transmitter Power Level command, *66#. All non-zero values of the parameter will cause the Transmitter Control Module to vary the power level. When the parameter is set to zero, the Transmitter Control Module is set to zero power level and the "Set Attenuator Level" command *65# can be used to vary the level of

the RF Attenuator between the values of 1 and 4.

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#."*

5.4.1 Computer Interfaces

The examples below assume the transmitter power level is to be set to 8.0 Watts or 80 tenths-of-a-Watt.

Computer-Telephone DTMF Interface

Using the computer computer-telephone interface, the DTMF input-response packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set Transmitter Power Level"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Val_3> #	C <Cmd_2> #
Input Example	* 66 #80 #	C 66 #
Response Format	A <Len_3> B <Cmd_3> B <Val_3> B #	A <Len_3> B <Cmd_3> B <Val_3> B #
Response Example	A010B066B080B#	A010B066B080B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set Transmitter Power Level"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_3>	& <Len_3> - <Cmd_3>
Input Example	$006-0066:080	&004-0066
Response Format	% <Len_3> - <Cmd_3> : <Val_3> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_3> <CR+LF>
Response Example	%010-0066:080<CR+LF>	%010-0066:080<CR+LF>
Time Stamp	Modified	Unaffected

5.5. 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.

5.6. 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.

5.7. 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.

6. 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.

6.1. 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.

6.1.1 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#."*

6.1.2 Computer Interfaces

In the following examples, it is assumed that the calendar is to be set to November 10th, 2001. For both the set and get modes, the response packet contains a full report of the current calendar setting. Note that the year must always be entered as a full four-digit number.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set the Calendar"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Mon_2> # <Date_2> # <Yr_4> #	C <Cmd_2> #
Input Example	* 12 # 11 # 10 # 2001 #	C 12 #
Response Format	A <Len_3> B <Cmd_3> B <Mon_2> B <Date_2> B <Yr_4> B #	A <Len_3> B <Cmd_3> B <Mon_2> B <Date_2> B <Yr_4> B #
Response Example	A017B012B11B10B2001B#	A017B012B11B10B2001B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set the Calendar"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4>	& <Len_3> - <Cmd_3>
Input Example	$015-012:11,10,2001	&004-012
Response Format	% <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4> <CR+LF>	% <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4> <CR+LF>
Response Example	%017-012:11,10,2001<CR+LF>	%017-012:11,10,2001<CR+LF>
Time Stamp	Modified	Unaffected

6.2. 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.

6.2.1 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#."*

6.2.2 Computer Interfaces

In the following examples, it is assumed that the current value of the calendar is November 10th, 2001. For both the set and get modes, the response packet provides a full report of the current calendar.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report the Calendar"

	Set Mode	Get Mode
Input Format	* <Cmd_2> #	C <Cmd_2> #
Input Example	* 15 #	C 15 #
Response Format	A <Len_3> B <Cmd_3> B <Mon_2> B <Date_2> B <Yr_4> B #	A <Len_3> B <Cmd_3> B <Mon_2> B <Date_2> B <Yr_4> B #
Response Example	A017B015B11B10B2001B#	A017B015B11B10B2001B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report the Calendar"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-015	&004-015
Response Format	% <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4> <CR+LF>	% <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4> <CR+LF>
Response Example	%017-012:11,10,2001<CR+LF>	%017-012:11,10,2001<CR+LF>
Time Stamp	Unaffected	Unaffected

6.3. 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.

6.3.1 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#."*

6.3.2 Computer Interfaces

In the following examples, it is assumed that the clock is to be set to Wednesday, 2:25 pm. For both the set and get modes, the response packet contains a full report of the current clock setting.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set the Clock"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Day_1> # <Hr_2> # <Min_2> #	C <Cmd_2> #
Input Example	* 21 # 4 # 14 # 25 #	C 21 #
Response Format	A <Len_3> B <Cmd_3> B < Day 1 > B <Hr_2> B <Min_2> B #	A <Len_3> B <Cmd_3> B < Day 1 > B <Hr_2> B <Min_2> B #
Response Example	A015B021B4B14B25B#	A015B021B4B14B25B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set the Clock"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Day_1>, <Hr_2>, <Min_2>	& <Len_3> - <Cmd_3>
Input Example	$012-021:4,14,25	&004-021
Response Format	$ <Len_3> - <Cmd_3> : <Day_1>, <Hr_2>, <Min_2> <CR+LF>	$ <Len_3> - <Cmd_3> : <Day_1>, <Hr_2>, <Min_2> <CR+LF>
Response Example	%014-021:4,14,25<CR+LF>	%014-021:4,14,25<CR+LF>
Time Stamp	Modified	Unaffected

6.4. 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.

6.4.1 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#."*

6.4.2 Computer Interfaces

In the following examples, it is assumed that the current value of the clock is Wednesday, 2:25 pm. For both the set and get modes, the response packet provides a full report of the current clock setting.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report the Clock"

	Set Mode	Get Mode
Input Format	* <Cmd_2> #	C <Cmd_2> #
Input Example	* 25 #	C 25 #
Response Format	A <Len_3> B <Cmd_3> B < Day 1 > B <Hr_2> B <Min_2> B #	A <Len_3> B <Cmd_3> B < Day 1 > B <Hr_2> B <Min_2> B #
Response Example	A015B025B4B14B25B#	A015B025B4B14B25B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report the Clock"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-025	&004-025
Response Format	% <Len_3> - <Cmd_3> : <Day_1>, <Hr_2>, <Min_2> <CR+LF>	% <Len_3> - <Cmd_3> : <Day_1>, <Hr_2>, <Min_2> <CR+LF>
Response Example	%014-025:4,14,25<CR+LF>	%014-025:4,14,25<CR+LF>
Time Stamp	Unaffected	Unaffected

6.5. 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.

6.5.1 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#."*

6.5.2 Computer Interfaces

In the following examples, it is assumed that the clock is to be set to January 2nd, 2003, Wednesday, 5:06:07. Note that the responses are read from the real time clock, so that the response could be a second later than the value that was input.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set the Clock-Calendar"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Mon_2> # <Date_2> # <Yr_4> # <Day_1> # <Hr_2> # <Min_2> # <Sec_2> #	C <Cmd_2> #
Input Example	* 26# 01 # 02 # 2003 # 4 # 05 # 06 # 07 #	C 26#
Response Format	A <Len_3> B <Cmd_3> B <Mon_2> B <Date_2> B <Yr_4> B <Day_1> B <Hr_2> B <Min_2> B <Sec_2> B #	A <Len_3> B <Cmd_3> B <Mon_2> B <Date_2> B <Yr_4> B <Day_1> B <Hr_2> B <Min_2> B <Sec_2> B #
Response Example	A028B026B01B02B2003 B4B05B06B07B#	A028B026B01B02B2003 B4B05B06B07B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set the Clock-Calendar"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4>, <Day_1>, <Hr_2>, <Min_2>, <Sec_2>	& <Len_3> - <Cmd_3>
Input Example	$012-026:01,02,2003,4,05,06,07	&004-026
Response Format	% <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4> <Day_1>, <Hr_2>, <Min_2>, <Sec_2> <CR+LF>	% <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4> <Day_1>, <Hr_2>, <Min_2>, <Sec_2> <CR+LF>
Response Example	%028-026:01,02,2003,4,05,06,07 <CR+LF>	%028-026:01,02,2003,4,05,06,07 <CR+LF>
Time Stamp	Unaffected	Unaffected

6.6. Monitor Clock Seconds, *27#

The "Monitor Clock Seconds" command 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.

6.6.1 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#."*

6.6.2 Computer Interfaces

Although the “Monitor Clock Seconds” command provides a useful functionality only when used with the voice prompt interface, the command can be entered using the computer interfaces. The response parameter value is always 1.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for “Set the Clock-Calendar”

	Set Mode	Get Mode
Input Format	* <Cmd_2> #	C <Cmd_2> #
Input Example	* 27#	C 27#
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B #
Response Example	A008B027B1B#	A008B027B1B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for “Set the Clock-Calendar”

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-027	&004-027
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%007-027:1<CR+LF>	%007-027:1<CR+LF>
Time Stamp	Unaffected	Unaffected

7. 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 is 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 forms required for the serial-ASCII interface are shown in parentheses.

7.1. 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.

7.2. Playlist Numbers: 1001—1025

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

7.3. 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.

7.4. 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.

7.5. 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 functionalities 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.

7.5.1 Periodic Example 1—Periodic Message Only

To broadcast message 993 every fourth time the message list plays, the message number would be 09304, which is constructed as follows:

09304

09 Identifies the message number as periodic
3 Identifies that the message should broadcast message 993
04 Identifies that the message should be broadcast every fourth loop of the playlist

Assuming that the following playlist has been constructed:

Playlist number 01003 = [09304, 00001, 00002]

As described above, the first message number 09304 identifies that when this playlist is broadcast, message 993 should be broadcast periodically after every fourth cycle through the playlist. The other two entries consist of individual messages 1 and 2. Thus, the broadcast sequence would be as follows:

Message 993, Message 1, Message 2, Message 1, Message 2, Message 1, Message 2, Message 1, Message 2,
Message 993, Message 1, Message 2, Message 1, Message 2, Message 1, Message 2, Message 1, Message 2,
Etc.

7.5.2 Periodic Example 2—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.

7.5.3 Periodic Example 3—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.

7.5.4 Periodic Example 4—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 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.

7.6. 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 functionalities 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.

8. 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.

8.1. 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.

8.1.1 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#."*

8.1.2 Computer Interfaces

The examples below assume the same values as in the voice prompt example above.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Broadcast Aux Input on Alert"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Time_4> # <Msg_5> # <Count_2> #	C <Cmd_3> #
Input Example	* 10 # 8 # 123 # 5 #	C 10 #
Response Format	A <Len_3> B <Cmd_3> B # <Time_4> # <Msg_5> # <Count_2> B #	A <Len_3> B <Cmd_3> B # <Time_4> # <Msg_5> # <Count_2> B #
Response Example	A020B010B0008B00123B05B#	A020B010B0008B00123B05B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Broadcast Aux Input on Alert"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Time_4> , <Msg_5> , <Count_2>	& <Len_3> - <Cmd_3>
Input Example	$007-010:0008,00123,05	&004-010
Response Format	% <Len_3> - <Cmd_3> : <Time_4> , <Msg_5> , <Count_2> <CR+LF>	% <Len_3> - <Cmd_3> : <Time_4> , <Msg_5> , <Count_2> <CR+LF>
Response Example	%020-010:0008,00123,05<CR+LF>	%020-010:0008,00123,05<CR+LF>
Time Stamp	Modified	Unaffected

8.2. 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.

8.2.1 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#."*

8.2.2 Computer Interfaces

The examples below assume the same values as in the voice prompt example above.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Broadcast Aux Input on Alert"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Enab_1> # <Msg_5> # <Count_2> #	C <Cmd_3> #
Input Example	* 110 # 1 # 123 # 5 #	C 110 #
Response Format	A <Len_3> B <Cmd_3> B # <Enab_1> # <Msg_5> # <Count_2> B #	A <Len_3> B <Cmd_3> B # <Enab_1> # <Msg_5> # <Count_2> B #
Response Example	A017B110B1B00123B05B#	A017B110B1B00123B05B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Broadcast Aux Input on Alert"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Enab_1> , <Msg_5> , <Count_2>	& <Len_3> - <Cmd_3>
Input Example	$007-0110:1,00123,05	&004-0110
Response Format	% <Len_3> - <Cmd_3> : < Enab_1> , <Msg_5> , <Count_2> <CR+LF>	% <Len_3> - <Cmd_3> : < Enab_1> , <Msg_5> , <Count_2> <CR+LF>
Response Example	%017-110:1,00123,05<CR+LF>	%017-110:1,00123,05<CR+LF>
Time Stamp	Modified	Unaffected

9. 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.

9.1. 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.

9.1.1 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.

9.1.2 Computer Interfaces

The examples below assume that playlist 1020 is to be set to contain messages 1, 2, plus auxiliary message 10601, which configures the playing of the auxiliary audio input for 060 seconds at the beginning of each cycle through the playlist. See the section on message numbers for more information.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Create a Playlist"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <List_4> # <Msg_n> # [<Msg_n> #] [<Msg_n> #] #	C <Cmd_2> #
Input Example	* 41 # 1020 # 1 # 2 # 10601 # #	C 41 #
Response Format	A <Len_3> B <Cmd_3> B <List_4> B #	A <Len_3> B <Cmd_3> B <List_4> B #
Response Example	A011B041B1020B#	A011B041B1020B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Create a Playlist"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <List_4>, <Msg_5>, [<Msg_5>,] [<Msg_5>,]	& <Len_3> - <Cmd_3>
Input Example	$027-041:1020,00001,00002,10601,	&004-041
Response Format	% <Len_3> - <Cmd_3> : <List_4> <CR+LF>	% <Len_3> - <Cmd_3> : <List_4> <CR+LF>
Response Example	%011-041:1020 <CR+LF>	%011-041:1020 <CR+LF>
Time Stamp	Modified	Unaffected

Note that the final message number at the end of the list in the input packet must be followed by a comma to properly terminate this command.

9.2. 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.

9.2.1 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#."*

9.2.2 Computer Interfaces

The examples below assume that playlist 1020 contains messages 1, 2, and 10601. Note that the get command does not specify the playlist number and produces an output response corresponding to the playlist number of the last set command.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report Playlist"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <List_4> #	C <Cmd_2> #
Input Example	* 42 # 1020 #	C 42 #
Response Format	A <Len_3> B <Cmd_3> B <List_4> B <Msg_5> [B <Msg_5>] [B <Msg_5>] B #	A <Len_3> B <Cmd_3> B <List_4> B <Msg_5> [B <Msg_5>] [B <Msg_5>] B #
Response Example	A029B042B 1020B00001B00003B10601B#	A029B042B 1020B00001B00003B10601B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report Playlist"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>: <List_4>	& <Len_3> - <Cmd_3>
Input Example	$009-042:1020	&004-042
Response Format	% <Len_3> - <Cmd_3> : <List_4> : <Msg_5> [, <Msg_5>] [, <Msg_5>] <CR+LF>	% <Len_3> - <Cmd_3> : <List_4> : <Msg_5> [, <Msg_5>] [, <Msg_5>] <CR+LF>
Response Example	%029-042:1020:00001,00003,20601 <CR+LF>	%029-042:1020:00001,00003,20601 <CR+LF>
Time Stamp	Unaffected	Unaffected

9.3. 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.

9.3.1 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#."*

9.3.2 Computer Interfaces

The examples below assume that playlist 1020 is to be copied to the broadcast list and activated.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Copy a Playlist to Broadcast List and Activate"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <List_4> #	C <Cmd_2> #
Input Example	* 43 # 1020 #	C 43 #
Response Format	A <Len_3> B <Cmd_3> B <List_4> B #	A <Len_3> B <Cmd_3> B <List_4> B #
Response Example	A011B043B1020B#	A011B043B1020B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Copy a Playlist to Broadcast List and Activate"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>: <List_4>	& <Len_3> - <Cmd_3>
Input Example	$009-043:1020	&004-043
Response Format	% <Len_3> - <Cmd_3> : <List_4> <CR+LF>	% <Len_3> - <Cmd_3> : <List_4> <CR+LF>
Response Example	%011-043:1020 <CR+LF>	%011-043:1020 <CR+LF>
Time Stamp	Modified	Unaffected

9.4. 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.

9.4.1 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#."*

9.4.2 Computer Interfaces

The examples below assume that playlist 1020 is to be cleared.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Clear a Playlist"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <List_4> #	C <Cmd_2> #
Input Example	* 44 # 1020 #	C 44 #
Response Format	A <Len_3> B <Cmd_3> B <List_4> B #	A <Len_3> B <Cmd_3> B <List_4> B #
Response Example	C011B044B1020B#	C011B044B1020B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Clear a Playlist"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>: <List_4>	& <Len_3> - <Cmd_3>
Input Example	$009-044:1020	&004-044
Response Format	% <Len_3> - <Cmd_3> : <List_4> <CR+LF>	% <Len_3> - <Cmd_3> : <List_4> <CR+LF>
Response Example	%011-044:1020<CR+LF>	%011-044:1020<CR+LF>
Time Stamp	Modified	Unaffected

9.5. 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.

9.5.1 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#."*

9.5.2 Computer Interfaces

The examples below assume that playlist 1020 is to be activated.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Activate a Playlist"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <List_4> #	C <Cmd_2> #
Input Example	* 45 # 1020 #	C 45 #
Response Format	A <Len_3> B <Cmd_3> B <List_4> B #	A <Len_3> B <Cmd_3> B <List_4> B #
Response Example	A011B045B1020B#	A011B045B1020B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Activate a Playlist"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>: <List_4>	& <Len_3> - <Cmd_3>
Input Example	$009-045:1020	&004-045
Response Format	% <Len_3> - <Cmd_3> : <List_4> <CR+LF>	% <Len_3> - <Cmd_3> : <List_4> <CR+LF>
Response Example	%011-045:1020 <CR+LF>	%011-045:1020 <CR+LF>
Time Stamp	Modified	Unaffected

10. Information About Event Schedules

10.1. 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.

10.2. 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.

10.3. 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.

10.4. 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

11. 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.

11.1. 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.

11.1.1 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#."*

11.1.2 Computer Interfaces

The examples below assume schedule entry is for an event to be played every Monday afternoon at 4:15 p.m. consisting of message number 9. Note that the final confirmation value must always be 1 in order to actually implement the create function.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Create Day-of-the-Week Scheduled Events"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Day_1> # <Hr_2> # <Min_2> # <Msg_n> # <Val_1> #	C <Cmd_2> #
Input Example	* 22 # 2 # 16# 15 # 9 # 1 #	C 22 #
Response Format	A <Len_3> B <Cmd_3> B <Day_1> B <Hr_2> B <Min_2> B <Msg_5> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Day_1> B <Hr_2> B <Min_2> B <Msg_5> B <Val_1> B #
Response Example	A021B022B2B16B15B0009B1B#	A021B022B2B16B15B0009B1B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Create Day-of-the-Week Scheduled Events"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Day_1>, <Hr_2>, <Min_2>, <Msg_5>, <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$019-022:2,16,15,0009,1	&004-022
Response Format	% <Len_3> - <Cmd_3> : <Day_1>, <Hr_2>, <Min_2>, <Msg_5>, <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Day_1>, <Hr_2>, <Min_2>, <Msg_5>, <Val_1> <CR+LF>
Response Example	%021-022:2,16,15,0009,1<CR+LF>	%021-022:2,16,15,0009,1<CR+LF>
Time Stamp	Modified	Unaffected

Note that the "Create Day-of-the-Week Scheduled Events" command is primarily a set command. The get function only returns the numerical values of the set command that immediately preceded the get command. To obtain a report on the day-of-the-week schedules stored in the DR1500AM use the separate "Report Day-of-the-Week Scheduled Events" command.

11.2. 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.

11.2.1 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#."*

11.2.2 Computer Interfaces

In the examples below it is assumed that it is desired to report events scheduled for Monday in the 4 o'clock hour with any minute and any message number. It is also assumed that the schedule table includes:

1. An event to be played every Monday afternoon at 4:15 p.m. consisting of message number 9
2. An event to be played every Monday afternoon at 4:20 p.m. consisting of message number 11

The response to a set command is a list of all scheduled events matching the selection criteria. The response in the get mode contains the selection criteria entered in the most recent use of the set mode.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table below.

Computer-Telephone DTMF Packets for "Report Day-of-the-Week Scheduled Events"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Day_1> # <Hr_2> # <Min_2> # <Msg_n> #	C <Cmd_2> #
Input Example	* 23 # 2 # 16 # 99 # 99999 #	C 23 #
Response Format	A <Len_3> B <Cmd_3> B <Day_1> B <Hr_2> B <Min_2> B <Msg_5> [B <Day_1> B <Hr_2> B <Min_2> B <Msg_5>] B #	A <Len_3> B <Cmd_3> B <Day_1> B <Hr_2> B <Min_2> B <Msg_5> B #
Response Example	A033B023B 2B16B15B00009 B2B16B20B00011B#	A023B023B 2B16B99B99999B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report Day-of-the-Week Scheduled Events"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Day_1> : <Hr_2> : <Min_2> : <Msg_5>	& <Len_3> - <Cmd_3>
Input Example	$017-023:2:16:99:99999	&004:023
Response Format	% <Len_3> - <Cmd_3> : <Day_1>, <Hr_2>, <Min_2>, <Msg_5> [<dot> <Day_1> : <Hr_2> : <Min_2> : <Msg_5>] <CR+LF>	% <Len_3> - <Cmd_3> : <Day_1> : <Hr_2> : <Min_2> : <Msg_5> <CR+LF>
Response Example	%033-023: 2,16,15,00009 .2,16, 20,00011 <CR+LF>	%023-023: 2,16,99,99999 <CR+LF>
Time Stamp	Unaffected	Unaffected

Note that the record separator identified above as <dot> is a period (ASCII 46 decimal)

11.3. 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.

11.3.1 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#."*

11.3.2 Computer Interfaces

In the examples below it is assumed that it is desired to clear all events scheduled for Monday in the 4 o'clock hour with all minute and all message numbers. Note that the confirmation value must always be 2 in order to actually implement the clear function. The response for both the set and get modes contains the selection criteria entered in the most recent use of the set mode.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Clear Day-of-the-Week Scheduled Events"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Day_1> # <Hr_2> # <Min_2> # <Msg_n> # <Val_1> #	C <Cmd_2> #
Input Example	* 24 # 2 # 16 # 99 # 99999 # 2 #	C 24 #
Response Format	A <Len_3> B <Cmd_3> B <Day_1> B <Hr_2> B <Min_2> B <Msg_5> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Day_1> B <Hr_2> B <Min_2> B <Msg_5> B <Val_1> B #
Response Example	A022B024B 2B16B99B99999B2B#	A022B024B 2B16B99B99999B2B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Clear Day-of-the-Week Scheduled Events"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Day_1>, <Hr_2>, <Min_2>, <Msg_5>, <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$020-024:2,16,99,99999,2	&004-024
Response Format	% <Len_3> - <Cmd_3> : <Day_1>, <Hr_2>, <Min_2>, <Msg_5>, <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Day_1>, <Hr_2>, <Min_2>, <Msg_5>, <Val_1> <CR+LF>
Response Example	%022-024: 2,16,99,99999,2<CR+LF>	%022-024: 2,16,99,99999,2<CR+LF>
Time Stamp	Modified	Unaffected

12. 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.

12.1. 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.

12.1.1 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#."*

12.1.2 Computer Interfaces

The examples below assume the schedule entry is for an event to be played on January 2, 2003 at 4:05 a.m. consisting of message number 6. Note that the final confirmation value must always be 1 in order to actually implement the create function.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Create Day-of-the-Week Scheduled Events"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Mon_2> # <Date_2> # <Yr_4> # <Hr_2> # <Min_2> # <Msg_n> # <Val_1> #	C <Cmd_2> #
Input Example	* 32 # 1# 2 # 2003 # 4 # 5 # 6 # 1 #	C 32 #
Response Format	A <Len_3> - <Cmd_3> : <Mon_2> B <Date_2> B <Yr_4> B <Hr_2> B <Min_2> B <Msg_5> B #	A <Len_3> - <Cmd_3> : <Mon_2> B <Date_2> B <Yr_4> B <Hr_2> B <Min_2> B <Msg_5> B #
Response Example	A028B032B01B02B2003B04B05B0006B#	A028B032B01B02B2003B04B05B0006B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Create Month-Date-Year Scheduled Events"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4>, <Hr_2>, <Min_2>, <Msg_5>	& <Len_3> - <Cmd_3>
Input Example	$029-032:01,02,2003,16,05,00006,1	&004-032
Response Format	% <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4>, <Hr_2>, <Min_2>, <Msg_5>,<Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4>, <Hr_2>, <Min_2>, <Msg_5>,<Val_1> <CR+LF>
Response Example	%031-032: 01,02,2003,04,05,00006,1<CR+LF>	%031-032: 01,02,2003,04,05,00006,1<CR+LF>
Time Stamp	Modified	Unaffected

Note that the "Create Month-Date-Year Scheduled Events" command is primarily a set command. The get function only returns the numerical values of the set command that immediately preceded the get command. To obtain a report on the day-of-the-week schedules stored in the DR1500AM use the separate "Report Month-Date-Year Scheduled Events" command.

12.2. 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.

12.2.1 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#."*

12.2.2 Computer Interfaces

In the examples below it is assumed that it is desired to report events scheduled for January 2, 2003 with any hour, any minute, and any message number. It is also assumed that the schedule table includes:

1. An event to be played on January 2, 2003 at 4:15 p.m. consisting of message number 9
2. An event to be played on January 2, 2003 at 4:20 p.m. consisting of message number 11

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report Day-of-the-Week Scheduled Events"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Mon_2> # <Date_2> # <Yr_4> # <Hr_2> # <Min_2> # <Msg_n>	C <Cmd_2> #
Input Example	* 33 # 01# 02 # 2003 # 99 # 99 # 99999 #	C 33 #
Response Format	A <Len_3> B <Cmd_3> B <Mon_2> B <Date_2> B <Yr_4> B <Hr_2> B <Min_2> B <Msg_5> [B <Mon_2> B <Date_2> B <Yr_4> B <Hr_2> B <Min_2> B <Msg_5>] B #	A <Len_3> B <Cmd_3> B <Mon_2> B <Date_2> B <Yr_4> B <Hr_2> B <Min_2> B <Msg_5> B #
Response Example	A051B033B 01B02B2003B16B15B00009 B01B02B2003B16B20B00011B#	A028B033B 01B02B2003B99B99B99999B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report Day-of-the-Week Scheduled Events"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4>, <Hr_2>, <Min_2>, <Msg_5>	& <Len_3> - <Cmd_3>
Input Example	$026-033:01,02,2003,99,99,99999	&004-033
Response Format	% <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4>, <Hr_2>, <Min_2>, <Msg_5> [<dot> <Mon_2>, <Date_2>, <Yr_4>, <Hr_2>, <Min_2>, <Msg_5>] <CR+LF>	% <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4>, <Hr_2>, <Min_2>, <Msg_5> <CR+LF>
Response Example	%051-033: 01,02,2003,16,15,00009 .01,02,2003,16, 20,00011 <CR+LF>	%028-033: 01,02,2003,99,99,99999 <CR+LF>
Time Stamp	Unaffected	Unaffected

Note that the record separator identified above as <dot> is a period (ASCII 46 decimal)

12.3. 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.

12.3.1 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#."*

12.3.2 Computer Interfaces

In the examples below it is assumed that it is desired to clear events scheduled for January 2, 2003 with any hour, any minute, and any message number. Note that the confirmation value must always be 2 in order to actually implement the clear function. The response for both the set and get modes contains the selection criteria entered in the most recent use of the set mode.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Clear Month-Date-Year Scheduled Events"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Mon_2> # <Date_2> # <Yr_4> # <Hour n> # <Min n> # <Msg_n> # <Val_2> #	C <Cmd_2> #
Input Example	* 34 # 1# 2 # 2003 # 99 # 99 # 99999 # 2 #	C 34 #
Response Format	A <Len_3> B <Cmd_3> B <Mon_2> B <Date_2> B <Yr_4> B <Hr_2> B <Min_2> B <Msg_5> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Mon_2> B <Date_2> B <Yr_4> B <Hr_2> B <Min_2> B <Msg_5> B <Val_1> B #
Response Example	A031B034B 01B02B2003B99B99B99999B2B#	A031B034B 01B02B2003B99B99B99999B2B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Clear Month-Date-Year Scheduled Events"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4>, <Hr_2>, <Min_2>, <Msg_5>, <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$029-034:01,02,2003,99,99,99999,2	&004-034
Response Format	% <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4>, <Hr_2>, <Min_2>, <Msg_5>, <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Mon_2>, <Date_2>, <Yr_4>, <Hr_2>, <Min_2>, <Msg_5>, <Val_1> <CR+LF>
Response Example	%031-034: 01,02,2003,99,99,99999,2 <CR+LF>	%031-034: 01,02,2003,99,99,99999,2 <CR+LF>
Time Stamp	Modified	Unaffected

13. 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.

13.1. 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.

13.2. 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.

13.2.1 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.

13.2.2 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.

13.3. 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.

13.4. 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 playlists 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.

13.5. 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 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 crate 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 #

13.6. Troubleshooting Synchronization Problems

This section gives troubleshooting procedures for testing and correcting various conditions that will prevent the proper operation of synchronized broadcasts

13.6.1 DR1500 Date, Time, and Seconds Set Correctly

The clock in the DR1500 is set to GPS time by a command from the DCC and must be correct to a fraction of a second for synchronization to work. Troubleshooting procedures for testing and correcting this condition are described below. Note that these tests are best performed when separate telephones or handsets can be used to simultaneously connect to the two HARs, but some troubleshooting can be done even if the units can only be accessed separately. Also note that if the HAR does not have a telephone connection, these tests must be done at the HAR and thus cannot be done simultaneously.

Test Procedure

Send the "Set Clock-Calendar" command (*26#) to both HARs, simultaneously if possible, and confirm that the date and time for both units match. If both units cannot be accessed simultaneously, connect to one, and note the time relative to an accurate clock or watch. Note that the hour reported is in GPS time and so will be different from local time by the number of hours difference between the local time and UTC (also called GMT). For example, EST is 5 hours different so that if the local time were 4:34 pm EST then the reported time would be 21:34.

Send the "Monitor Clock Seconds" command (*27#) to both HARs, simultaneously if possible, and confirm that beeps and second counts match. If both units cannot be accessed simultaneously, connect to one, and note the time relative to an accurate clock or watch. Note that the seconds reported is in GPS time and so will be different from local time by the current number of GPS leap seconds. As of January 1, 2006, GPS time is ahead of UTC by fourteen (14) seconds, so that, for example, if the local time were 10 seconds after the minute, the reported time would be 24 seconds.

Correction Procedures

The following steps can be used to determine the cause and possible fix for the problem of the DR1500 clock not being synchronized:

GPS-1 Not Locked to GPS Time

The GPS-1 may not be locked to GPS time because of an antenna problem, a defective timing receiver, or some other problem. To check this, disconnect the RS-232C connector from the front of the GPS-1 and connect it to a laptop running the Trimble GPS software. The primary check is that the timing offset is not large compared to 100 nsec. Other checks are described in the GPS-1 manual. The simple fix is to power cycle the GPS-1 and then give the unit 10 to 30 minutes to lock up while monitoring the performance on the laptop as outline in the GPS-1 manual. If no obvious trouble is found such as an open or shorted antenna or no satellites, and the unit will still not lock up, then the unit is probably defective.

DCC not Sending Timing Information to the DR1500

Connect a handset to the DR1500 and power cycle the BlackMax rack including the DR1500 and the DCC. Within 30 seconds the DR1500 should report the response to the "Set the Clock-Calendar" command, indicating that the DCC has sent the command. If it does not, it indicates a problem with the DCC unit.

DR1500 Clock not Setting Correctly

Use the handset or telephone to manually set the clock calendar using the "Set the Calendar"

command (*12#) and “Set the Clock” command (*21#) or using the “Set the Clock-Calendar” command (*26#). If simultaneous phone or handset access to both units is possible, then by pressing the final pound sign of the “Set the Clock” command simultaneously, the clocks can be synchronized within a few hundredths of a second. If manually synchronizing the clocks now makes the broadcast sound synchronized, it confirms that the problem was in the synchronizing of the clocks.

14. Synchronized Message Commands

14.1. Download of an ASCII Digital Message, *251#

The “Download of an ASCII Digital Message” command is used to download a digital message to the DR1500AM through the serial port using ASCII characters encoded into separate commands. It is supported only for the computer-serial ASCII interface.

14.1.1 Packet Format

The basic packet design for the “Download of an ASCII Digital Message” command is as follows:

$ <Len_3> - <Com_> : <Msg_5>, <Pac_5>, <Tot_05>, <Expon_2>, <Chk_5>, <ASCII_Payload>

Length The first field gives the packet length as a 3-digit decimal number, as with other packets. Lengths for these packets are typically in the range of 500 to 800 characters long.

Command Code The second field gives the command code as a 3 digit decimal number.

Message Number The third field gives the message number of where the message is to be stored in the DR1500 flash memory.

Packet Number The fourth field gives the number of the current packet in the set of packets that make up the whole digitally encoded message. The packet number is given as a 5 digit decimal number.

Total Number of Packets The fifth field gives the total number of packets that make up the whole digitally encoded message. Thus the packet number and number of packets functions much the same as the “Page 1 of 10” does in a fax. The number of packets is given as a 5 digit decimal number.

Compression Exponent The sixth field gives the shift value that is to be applied to the compressed data to re-expand the dynamic range for playback.

Check Sum The seventh field gives the check sum on the packet, defined as the sum of the decimal value of all the values in the payload. No error recovery from a bad packet is given, except that if the check sum fails, an error packet sent from the DR1500AM.

ASCII Payload The eighth field is the payload data stream. This is a continuous stream of ASCII characters in the decimal range of 48 to 111, which encodes the binary data of the wave.

14.1.2 Exception Handling

If an exception (error) is detected in a packet, the response packet will have all parameter fields set equal to zero except the field related to the specific error, which will be set to the last good value. When an exception packet is encountered by the DR1500AM, the data in the original packet is not processed and the audio data is not stored. To recover from an exception, the DR2000 must determine the problem and send the correct packet to the DR1500AM.

Message Number Exception

If the message number is different from the value received with packet number 1, the last good value is returned. For example, packet number 1 had a value for the message number of 500, but the current packet had a value of 501, the response would be:

%0031-251:00500,00000,00000,00,00000<CR+LF>

Packet-Number Exception

If the packet number is not one more than the last packet successfully processed, the last good value is returned. For example, if the DR1500AM had successfully processed packet number 1 and was expecting packet number 2, but instead received packet number 3, the exception packet would be:

%0031-251:00000,00001,00000,00,00000<CR+LF>

Note: If at any time the DR1500AM receives a packet number 1, even if it is expecting another packet as part of an ongoing download, the DR1500AM will restart the download process and no exception packet will be transmitted. This functionality is provided to allow a mechanism for resetting or aborting the download process.

Total Number of Packets Exception

If the total number of packets is different from the value received with packet number 1, the last good value is returned. For example, if packet number 1 had a value for the total number of packets of 65535, but the current packet had a value of 65534, the response would be:

%0031-251:00000,00000,65535,00,00000<CR+LF>

Compression Exponent Exception

If the compression exponent is different from the value received with the previous packets making up the same block, the last good value is returned. For example, packets 1 through 6

are all part of the same data block and should all have the same exponent. However, if packet number 1 had a value for the compression exponent of 3 but packet number 2 had a value of 4, the response would be:

%0031-251:00000,00000,00000,03,00000<CR+LF>

Check Sum Exception

The check sum is evaluated after all the data in the packet has been received. If the check sum is incorrect, the value of the check sum specified in the current packet header is returned. For example, if the checksum in the packet header was 01234, but the check sum of the received data was 23456, the following exception packet would be returned:

%0031-251:00000,00000,00000,00,01234<CR+LF>

14.1.3 Voice Prompt Interface

The "ASCII Download of a Digital Message" command is not supported through the voice prompt interface and should not be used in this mode.

14.1.4 Computer Interfaces

The examples below assume the following:

Length of Packet:	512
Command Code:	251
Message Number:	50
Packet Number:	1
Total Packets:	65535
Exponent:	08
Check Sum:	01234

Computer-Telephone DTMF Interface

The "ASCII Download of a Digital Message" command is not supported through the DTMF interface and should not be used in this mode.

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Download of an ASCII Digital Message"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Msg_5>, <Packet_5> <Total_5>, <Expon_1>, <Chk_Sum_5>, <ASCII_Payload_n>	& <Len_3> - <Cmd_3>
Input Example	$512-251: 00050,0001,65535,08,01234, 4SAFiklj8Klihj5jUf…	&004-251
Response Format	% <Len_3> - <Cmd_3> : <Msg_5>, <Packet_5>, <Total_5>, <Expon_1>, <Chk_Sum_5> <CR+LF>	% <Len_3> - <Cmd_3> : <Msg_5>, <Packet_5>, <Total_5>, <Expon_1>, <Chk_Sum_5> <CR+LF>
Response Example	$028-251: 00050,0001,65535,08, 01234<CR+LF>	$028-251: 00050,0001,65535,08, 01234<CR+LF>
Time Stamp	Modified	Unaffected

14.2. Download of a Binary Digital Message, *252#

The “Download of a Binary Digital Message” command is used to set up the DR1500 for downloading of a digital message in binary format either through the front-panel serial port or through the parallel printer port.

14.2.1 Parameter Values

The parameters to be entered for the “Download of a Binary Digital Message” command are:

Message Number tells the DR1500 where to store the message in flash memory. The allowed range is 1 to 999.

Connection Type defines the connection type for the transfer of binary data into the DR1500. The value 0 corresponds to connection through the DR1500’s front-panel serial port and a value of 1 corresponds to connection through the DR1500’s parallel printer port.

Compression Exponent The sixth field gives the shift value that is to be applied to the compressed data to re-expand the dynamic range for playback.

Message Length gives the message length in units of 2048 Byte blocks. The message length is entered as a 5 digit decimal number between 1 and 65,535. For example, at a typical recording rate of 11,025 Bytes/sec a 1-minute message would have a length of 323 blocks. At this same recording rate, the range of possible length values would correspond to 0.2 seconds to 200 minutes. If

Check Sum is the sum of the decimal equivalents of all the binary values in the message. The DR1500 does not process the entered checksum, but does compute its own value of the checksum, which is returned in the response packet at the end of the download.

In addition to the above parameters, the DR1500 response packet contains the following parameter:

Error Code is a two-digit number, which encodes the error or exception response from the DR1500 as described in the next subsection.

14.2.2 Exception Handling

If a general type of exception such as a malformed packet or a parameter out of range is encountered, the DR1500 will generate an exception response packet as described in the chapter on Computer Control Data Packets elsewhere in this manual. However, there are three special cases of exceptions for the for the Download of a Binary Digital Message command

Message Length Exception (Error Code Value1)

After receiving the command packet, but before beginning the download process, the DR1500 compares the requested message-length parameter with the available flash memory. If the requested length is too long, a message-length exception is generated. The exception handling actions of the DR1500 are (1) to abort the download process, (2) add a value of 1 to the error code parameter, and (3) send a response packet that includes the corresponding error code parameter.

Timeout Exception (Error Code Value 2)

At the beginning of the download of each 2048 Byte long block of binary data, the DR1500 starts a timer with a duration of 30 seconds, typical. If the full 2048 Bytes are not received before the timer counts down, a timeout exception is generated. The exception handling actions of the DR1500 are (1) to abort the binary transfer process, (2) erase any of the messages recorded so far, (3) add a value of 2 to the error code parameter, and (4) send a response packet that includes the corresponding error code parameter.

Checksum Exception (Error Code Value 4)

As the binary data is being transferred, the DR1500 adds each value to the checksum. When the transfer is complete, the DR1500 compares its computed checksum to the checksum parameter value in the original command. If the checksum does not match, a checksum exception is generated. The exception handling actions of the DR1500 are (1) to abort any remaining parts of the message download process, (2) erase any of the message recorded so far, (3) add a value of 4 to the error code parameter, and (4) send a response packet which includes the computed value of the checksum in place of the entered value plus the corresponding error code parameter.

14.2.3 Voice Prompt Interface

The “Download of a Binary Digital Message” command is not supported through the voice prompt interface and should not be used in this mode.

14.2.4 Computer Interfaces

The example below assumes the following:

Message Number:	00050
Connection Type:	0 (serial)
Compression Exponent:	07
Message Length:	00323 (~1 minute)

Entered Checksum: 12345
Computed Checksum: 54321
Error Code: 04 (Checksum error)

Computer-Telephone DTMF Interface

The "Download of a Binary Digital Message" command is not supported through the DTMF interface and should not be used in this mode.

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Download of a Binary Digital Message"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Msg_5>, <Conn_1> <Exp_2>, <Msg_Len_5>, <Chk_Sum_5>	& <Len_3> - <Cmd_3>
Input Example	$028-252: 00050,0,07,00323,12345	&004-252
Response Format	% <Len_3> - <Cmd_3> : <Msg_5>, <Conn_1> <Exp_2>, <Msg_Len_5>, <Chk_Sum_5>, <Err_2> <CR+LF>	% <Len_3> - <Cmd_3> : <Msg_5>, <Conn_1> <Exp_2>, <Msg_Len_5>, <Chk_Sum_5>, <Err_2> <CR+LF>
Response Example	$028-252:00050,0,07,00323,54321,4 <CR+LF>	$028-252:00050,0,07,00323,54321,4 <CR+LF>
Time Stamp	Modified	Unaffected

14.3. Trim a Recorded Message, *254#

The "Trim a Recorded Message" command is used to trim a previously-recorded message so that it has a precise start time and a precise length. This can only be done with special messages prepared by the DR2000 software with precision start tones. To trim the message, the following parameters are entered sequentially:

Source Message Number is the source of the message to be trimmed. Allowed values are 1 to 999. This message will be left unchanged by the "Trim a Recorded Message" operation. This message can be deleted after the trim operation using the "Erase a Message" (*3#) command and the flash memory space can be recovered using the "Optimize Message Space" (*11#) command.

Destination Message Number is the destination of the trimmed message. Allowed values are 1 to 999. Any message previously stored with the destination message number will be erased.

Trimmed Message Length is the length of the trimmed message in frames. Frames are defined as 2048 bytes of audio data. Thus, the relationship between message length in seconds and message length in frames is nominally 11025/2048 = 5.383301 frames per second. The value of the message length in frames is limited by the lesser of the available message space in frames or the number 65535, which corresponds to a message length of about 3 hours.

Tone Threshold is the value of the threshold for detecting the synchronizing tone at the beginning of the source message. Allowed values are 1 to 99 percent. Typical values are 10 to

50 percent. If a value of 0 is entered, a default value of 25 percent will be used.

Error Code has no function in the input sequence, but serves as a placeholder so that the input and output packets will have the exact same format. The error code value returned in the output packet is the sum of the binary values shown in the following table:

Message Trim Command Error Codes

Error Description	Binary Value
No error	0
Source message empty	1
No trigger found	2

It is recommended that after the message trim command is used that the "Listen to Message" command be used to verify that it has been trimmed as expected.

14.3.1 Voice Prompt Interface

To trim a recorded message, enter ***254#** from the main menu. The system will respond:

"To trim a message, enter source message number #."
"To return to the Main Menu, press #."

After the source message number is entered, the system will respond:

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

After the destination message number is entered, the system will respond:

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

After the trimmed message length is entered, the system will respond:

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

For the tone threshold, an explicit value between 1 and 99 can be entered or a value of 0 can be entered to use the default value. The system will respond:

"Enter trim error code #."
"To return to the Main Menu, press #."

Enter 0, which is used as the error-code placeholder.

After the terminating pound is entered the DR1500AM will begin trimming the source message and copying it to the destination. While the trim is in process, the auxiliary input will be heard over the telephone.

When the trim is complete, the DR1500AM responds with a report. The following example assumes that the source message number is 300, the destination message number is 400, the trimmed message length is 123 seconds, the tone threshold is 25 percent, and that no errors were detected.

"Trim Complete."
*"Source **300**."*
*"Destination **400**."*
*"Length **123**."*

*"Threshold **25**."*
*"Error code **0**."*

14.3.2 Computer Interfaces

Computer-Telephone DTMF Interface

The following examples assume the same conditions as in the example for the voice prompt interface.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Trim a Recorded Message"

	Set Mode	Get Mode
Input Format	* <Cmd_3> # <Msg_n> # <Msg_n> # <Time_5> # <Val_2> # <Val_2> # <Val_2> #	C <Cmd_3> #
Input Example	*254#300#400#00123#25#00#	C254#
Response Format	A <Len_3> B <Cmd_3> B <Msg_5> B <Msg_5> B <Time_5> B <Val_2> # <Val_2> B #	A <Len_3> B <Cmd_3> B <Msg_5> B <Msg_5> B <Time_5> B <Val_2> # <Val_2> B #
Response Example	A026B254 B00300B00400B00123B25B00B#	A026B254 B00300B00400B00123B25B00B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Trim a Recorded Message"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Msg_5>, <Msg_5>, <Time_5>, <Val_2>, <Val_2>	& <Len_3> - <Cmd_3>
Input Example	$028-254:00300,00400,00123,25,00	&004-254
Response Format	% <Len_3> - <Cmd_3> : <Msg_5>, <Msg_5>, <Time_5>, <Val_2> <CR+LF>	% <Len_3> - <Cmd_3> : <Msg_5>, <Msg_5>, <Time_5>, <Val_2> <CR+LF>
Response Example	% 030-254:00300,00400,00123,25,00 <CR+LF>	% 030-254:00300,00400,00123,25,00 <CR+LF>
Time Stamp	Modified	Unaffected

14.4. Report Message Length, *257#

The "Report Message Length" command *257# is used to obtain a report of the length of a recorded message in the DR1500AM's flash memory.

The response consists of the message number and the length of the corresponding message in seconds.

14.4.1 Voice Prompt Interface

To hear a report of the length of a recorded message stored in the digital flash memory of the DR1500AM, enter ***257#.** The system will respond:

"To hear a length report, enter a message number followed by the # sign."
"To return to the Main Menu, press #."

Enter a message number between 1 and 999, followed by the # sign. If for example, message 10 is 15 seconds long, entering **10#** will cause the system to respond:

*"Message number: **ten**."*
*"Message length: **fifteen**."*
*"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#."*

14.4.2 Computer Interfaces

The examples below assume that message 10 is 15 seconds long. Note that the get command input does not specify the message number and produces an output response corresponding to the message number of the last set command.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report Message Length"

	Set Mode	Get Mode
Input Format	* <Cmd_3> # <Msg_n> #	C <Cmd_3> #
Input Example	* 257 # 10 #	C 257 #
Response Format	A <Len_3> B <Cmd_3> B <Msg_5> B <Time_4> B #	A <Len_3> B <Cmd_3> B <Msg_5> B <Time_4> B #
Response Example	A017B257B00010B0015B#	A017B257B00010B0015B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report Message Length"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>: <Msg_5>	& <Len_3> - <Cmd_3>
Input Example	$010-257:00010	&004-257
Response Format	% <Len_3> - <Cmd_3> : <Msg_5> : <Time_4> <CR+LF>	% <Len_3> - <Cmd_3> : <Msg_5> : <Time_4> <CR+LF>
Response Example	%017-257:00010,0015 <CR+LF>	%017-257:00010,0015 <CR+LF>
Time Stamp	Unaffected	Unaffected

14.5. Report Message Status, *258#

The "Report Message Status" command *258# is used to obtain a report of the status of a recorded message in the DR1500AM's flash memory.

The response consists of the message number and two values. The first value indicates whether a message is stored at the designated message number and what type of message it is as shown here:

0 – No message at this message number
1 – Standard, non-Synchronized message at this message number
2 – Spare designator not used
3 – Trimmed synchronizable message at this message number
4 – Digitally downloaded message at this message number

The second value is the "message re-recorded" flag, which reports whether the message has be re-recorded since the last clearing of the "message re-recorded" flag as follows:

0 – Message has not been re-recorded
1 – Message has been re-recorded

The "message re-recorded" flag is cleared using the "Clear Message Re-Recorded Flag" command (*259#). The "message re-recorded" flag is automatically set by the DR1500AM whenever the message is recorded. This allows the user to monitor whether any messages have been re-recorded since the last time the flag was cleared.

14.5.1 Voice Prompt Interface

To hear a report of the status of a recorded message stored in the digital flash memory of the DR1500AM, enter ***258#.** The system will respond:

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

Enter a message number between 1 and 999, followed by the # sign. If for example, message 10 is a standard, non-synchronized message, which has not been re-recorded, entering **10#** will cause the system to respond:

*"Message number: **ten**."*
*"Type: **one**."*
*"Status: **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#."*

14.5.2 Computer Interfaces

The examples below assume that message 10 is a standard, non-synchronized message, which has not been re-recorded. Note that the get command input does not specify the message number and produces an output response corresponding to the message number of the last set command.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report Message Status"

	Set Mode	Get Mode
Input Format	* <Cmd_3> # <Msg_n> #	C <Cmd_3> #
Input Example	* 258 # 10 #	C 258 #
Response Format	A <Len_3> B <Cmd_3> B <Msg_5> B <Stat_1> B <Stat_1> B #	A <Len_3> B <Cmd_3> B <List_4> B <Msg_5> [B <Msg_5>] [B <Msg_5>] B #
Response Example	A016B258B00010B1B0B#	A016B258B00010B1B0B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report Message Status"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>: <Msg_5>	& <Len_3> - <Cmd_3>
Input Example	$010-258:00010	&004-258
Response Format	% <Len_3> - <Cmd_3> : <Msg_5> : <Stat_1>, < Stat_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Msg_5> : <Stat_1>, < Stat_1> <CR+LF>
Response Example	%016-258:00010,1,0 <CR+LF>	%016-258:00010,1,0 <CR+LF>
Time Stamp	Unaffected	Unaffected

14.6. Clear Message Re-Recorded Flag, *259#

The "Clear Message Re-Recorded Flag" command *259# is used to manually clear the "message re-recorded" flag to the value 0.

Since the "message re-recorded" flag is automatically set by the DR1500AM whenever the message is recorded, use of these two commands, allows the system to ensure the integrity of recorded messages in the DR1500AM.

Entry values are a message number between 1 and 999.

14.6.1 Voice Prompt Interface

To clear the message re-recorded flag for a particular recorded message stored in the digital

flash memory of the DR1500AM, enter ***259#.** The system will respond:

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

Enter a message number between 1 and 999, followed by the # sign. For example, to clear the message re-recorded flag for message 10, enter **10#** and the system will respond:

*"Message number: **ten**."*
*"Message re-recorded status 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#."*

14.6.2 Computer Interfaces

The examples below assume that the re-recorded flag for message 10 is to be set to zero (cleared). Note that the get command does not specify the message number and produces an output response corresponding to the message number of the last set command.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report Playlist"

	Set Mode	Get Mode
Input Format	* <Cmd_3> # <Msg_n> #	C <Cmd_3> #
Input Example	* 259 # 10 #	C 259 #
Response Format	A <Len_3> B <Cmd_3> B <Msg_5> B #	A <Len_3> B <Cmd_3> B <Msg_5> B #
Response Example	A012B259B00010B#	A012B259B00010B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report Playlist"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>: <Msg_5>	& <Len_3> - <Cmd_3>
Input Example	$010-259:00010	&004-259
Response Format	% <Len_3> - <Cmd_3> : <Msg_5> <CR+LF>	% <Len_3> - <Cmd_3> : <Msg_5> <CR+LF>
Response Example	%012-259:00010 <CR+LF>	%012-259:00010 <CR+LF>
Time Stamp	Unaffected	Unaffected

15. System Commands

15.1. 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

15.1.1 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#."*

15.1.2 Computer Interfaces

The examples below assume that the telephone connection is to be terminated.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Control the Telephone Connection"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Val_1> #	C <Cmd_2> #
Input Example	* 51 # 1 #	C 51 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B #
Response Example	A008B051B1B#	A008B051B1B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Control the Telephone Connection"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-051:1	&004-051
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-051:1<CR+LF>	%008-051:1<CR+LF>
Time Stamp	Modified	Unaffected

15.2. 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.

15.2.1 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#.”*

15.2.2 Computer Interfaces

The examples below assume the same conditions as for the voice prompt example.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Override DR1500 Answer Mode"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Time_n> # <Val_1> #	C <Cmd_2> #
Input Example	* 52 # 45 # 2 #	C 52 #
Response Format	A <Len_3> B <Cmd_3> B <Time_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Time_3> B <Val_1> B #
Response Example	A012B052B045B0B#	A012B052B045B2B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Override DR1500 Answer Mode"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Time_3>, <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$010-052:045,2	&004-052
Response Format	% <Len_3> - <Cmd_3> : <Time_3> , <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Time_3> , <Val_1> <CR+LF>
Response Example	%012-052:045,0<CR+LF>	%012-052:045,2<CR+LF>
Time Stamp	Modified	Unaffected

Note that after entering an input value of 2 to clear the answer mode to OFF, the actual value of the answer mode state is 0, which is what is returned in the response. Similarly, after entering an input value of 3 to set the answer mode to ON, the actual value of the answer mode state is 1, which is what is returned in the response.

15.3. Set Hang-Up Time, *77#

The "Set Hang-Up Time" command is used to control the amount of time the DR1500 will wait when no DTMF commands are being received before hanging up the telephone or disabling the handset. If the DR1500AM begins receiving commands before the hang-up time has expired, the countdown timer will be reset and the unit will remain connected indefinitely.

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.

15.3.1 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#."*

15.3.2 Computer Interfaces

The examples below assume the hang-up time is to be set to 5 minutes.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set Hang-Up Time"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Min_n> #	C <Cmd_2> #
Input Example	* 77 # 5 #	C 77 #
Response Format	A <Len_3> B <Cmd_3> B <Min_4> B #	A <Len_3> B <Cmd_3> B <Min_4> B #
Response Example	A012B077B0005B#	A012B077B0005B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set Hang-Up Time"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Min_2>	& <Len_3> - <Cmd_3>
Input Example	$009-077:0005	&004-077
Response Format	% <Len_3> - <Cmd_3> : <Min_4> <CR+LF>	% <Len_3> - <Cmd_3> : <Min_4> <CR+LF>
Response Example	%011-077:0005<CR+LF>	%011-077:0005<CR+LF>
Time Stamp	Modified	Unaffected

15.4. 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."*

15.4.1 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.

15.4.2 Computer Interfaces

The examples below assume the security code is to be set to 54321.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set Security Code"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Val_5> #	C <Cmd_2> #
Input Example	*71#54321#	C71#
Response Format	A <Len_3> B <Cmd_3> B <Val_5> B #	A <Len_3> B <Cmd_3> B <Val_5> B #
Response Example	A012B071B54321B#	A012B071B54321B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set Security Code"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_5>	& <Len_3> - <Cmd_3>
Input Example	$010-071:54321	&004-071
Response Format	% <Len_3> - <Cmd_3> : <Val_5> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_5> <CR+LF>
Response Example	%012-071:54321<CR+LF>	%012-071:54321<CR+LF>
Time Stamp	Modified	Unaffected

15.5. 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	Software Restart	Hardware Restart
1	Reinitialize			
2		Erase		
3	Reinitialize	Erase		
4			SW Restart	
5	Reinitialize		SW Restart	
6		Erase	SW Restart	
7	Reinitialize	Erase	SW Restart	
8				HW Restart
9	Reinitialize			HW Restart
10		Erase		HW Restart
11	Reinitialize	Erase		HW 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.

Re-Initialization 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 is composed of those that actually control the operating mode of the DR1500AM. After re-initialization, 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 re-initialization 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.

15.5.1 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#."*

15.5.2 Computer Interfaces

Note that in the set mode, the response packet will not be sent by the DR1500AM until after the reset process is complete.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Reset the System"

	Set Mode	Get Mode
Input Format	* <Cmd_3> # <Val_1> #	C <Cmd_3> # <Val_1> #
Input Example	* 127 # 1 #	C 127 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B #
Response Example	A008B127B1B#	A008B127B1B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Reset the System"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-127:1	&004-127
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-127:1<CR+LF>	%008-127:1<CR+LF>
Time Stamp	Modified	Unaffected

15.6. 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.

15.6.1 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.

15.6.2 Computer Interfaces

Note that in the set mode, the response packet will not be sent by the DR1500AM until after the optimization process is complete.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Optimize Message Space"

	Set Mode	Get Mode
Input Format	* <Cmd_2> # <Val_1> #	C <Cmd_2> #
Input Example	* 11 # 1 #	C 11 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B #
Response Example	A008B011B1B#	A008B011B1B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Optimize Message Space"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-011:1	&004-011
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-011:1<CR+LF>	%008-011:1<CR+LF>
Time Stamp	Modified	Unaffected

16. Response Control Commands

16.1. 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.

16.1.1 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#."*

16.1.2 Computer Interfaces

The examples below assume the "Set Telephone Response Mode" is to be set to DTMF mode:

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set Telephone Response Mode"

	Set Mode	Get Mode
Input Format	* <Cmd_3> # <Val_1> #	C <Cmd_3> #
Input Example	* 211 # 3 #	C 211 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B #
Response Example	A008B211B3B#	A008B211B3B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set Telephone Response Mode"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-211:3	&004-211
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-211:3<CR+LF>	%008-211:3<CR+LF>
Time Stamp	Modified	Unaffected

16.2. 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.

16.2.1 Voice Prompt Interface

To make the telephone response silent enter *201#

16.2.2 Computer Interfaces

The output response for this command is the value of the "Set Serial Response Mode" variable.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Silence Telephone Voice Prompts"

	Set Mode	Get Mode
Input Format	* <Cmd_3> #	C <Cmd_3> #
Input Example	* 201 #	C 201 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B #
Response Example	A006B201B1B#	A006B201B1B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Silence Telephone Voice Prompts"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-201	&004-201
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-201:1<CR+LF>	%008-201:1<CR+LF>
Time Stamp	Modified	Unaffected

16.3. 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.

16.3.1 Voice Prompt Interface

To make the telephone response active enter *202#

16.3.2 Computer Interfaces

The output response for this command is the value of the "Set Serial Response Mode" command variable.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Activate Telephone Voice Prompts"

	Set Mode	Get Mode
Input Format	* <Cmd_3> #	C <Cmd_3> #
Input Example	* 202 #	C 202 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B #
Response Example	A006B202B2B#	A006B202B2B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Activate Telephone Voice Prompts"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-202	&004-202
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-202:2<CR+LF>	%008-202:2<CR+LF>
Time Stamp	Modified	Unaffected

16.4. 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.

16.4.1 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#."*

16.4.2 Computer Interfaces

The examples below assume the "Set Telephone Response Mode Source" is to be set to "answer with previous response mode:

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set Telephone Response Mode Source"

	Set Mode	Get Mode
Input Format	* <Cmd_3> # <Val_1> #	C <Cmd_3> #
Input Example	* 220 # 1 #	C 220 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B #
Response Example	A008B220B1B#	A008B220B1B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set Telephone Response Mode Source"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-220:1	&004-220
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-220:1<CR+LF>	%008-220:1<CR+LF>
Time Stamp	Modified	Unaffected

16.5. Set DTMF Delay, *210#

The "Set DTMF Delay" command *210# is used to enter two DTMF delay parameters:

1. The first parameter is the delay in units of 100 msec (0.1 sec) between each tone when the DR1500AM is in the DTMF response mode
2. The second parameter is the delay in units of 100 msec (0.1 sec) between each tone when the DR1500AM is broadcasting tones for a beacon controller using the

The allowed entry values are 0 to 9 corresponding to 0 to 900 milliseconds in 100 millisecond increments.

16.5.1 Voice Prompt Interface

To set the DTMF delay enter ***210#.** Assuming the DR1500AM is in the default state with the DTMF response delay set to the initial value of 900 msec and the DTMF beacon delay set to 100 msec, the system will respond:

"210 is nine one."
"Enter parameter."
"To return to the Main Menu, press #"

If a response DTMF delay of delay of 200 msec and a beacon delay of 0 msec is desired, enter **2# 0#**. The system will respond:

*"210 is **two 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#."*

16.5.2 Computer Interfaces

The examples below assume the "Set DTMF Delay" is to be set to DTMF mode:

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set DTMF Delay"

	Set Mode	Get Mode
Input Format	* <Cmd_3> # <Val_1> # <Val_1> #	C <Cmd_3> #
Input Example	* 210 # 2 # 0 #	C 210 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B <Val_1> B #
Response Example	A010B210B2B0B#	A010B210B2B0B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set DTMF Delay"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>,<Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-210:2	&004-210
Response Format	% <Len_3> - <Cmd_3> : <Val_1>, <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1>, <Val_1> <CR+LF>
Response Example	%010-210:2,0<CR+LF>	%010-210:2,0<CR+LF>
Time Stamp	Modified	Unaffected

16.6. 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.

16.6.1 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#."*

16.6.2 Computer Interfaces

The examples below assume the "Set Serial Response Mode" is to be set to serial response active mode:

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set Serial Response Mode"

	Set Mode	Get Mode
Input Format	* <Cmd_3> # <Val_1> #	C <Cmd_3> #
Input Example	* 212 # 2 #	C 212 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Val_1> B #
Response Example	A008B212B2B#	A008B212B2B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set Serial Response Mode"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-212:2	&004-212
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-212:2<CR+LF>	%008-212:2<CR+LF>
Time Stamp	Modified	Unaffected

Note that the mode is modified while the command is processed so that there will be a response to the command $006-212:2 and there will be no response to the command $006-212:1.

17. Status Commands

17.1. 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 each of the various DR1500AM commands on the time stamp is 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#	—	—

17.1.1 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#."*

17.1.2 Computer Interfaces

The examples below assume time stamp is 20, 03, 04, 05, 06, 07, 08 corresponding to 2003, April 5, 6 am, 07 minutes, and 08 seconds. Note that this command functions essentially as a get command in both the set and get modes.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report the Time Stamp"

	Set Mode	Get Mode
Input Format	* <Cmd_3> #	C <Cmd_3> #
Input Example	* 101 #	C 101 #
Response Format	A <Len_3> B <Cmd_3> B <Dec 02> B <Yr 02> B <Mon 02> B <Date 02> B <Day 02> B <Hr 02> B <Min 02> B <Sec 02> B #	A <Len_3> B <Cmd_3> B <Dec 02> B <Yr 02> B <Mon 02> B <Date 02> B <Day 02> B <Hr 02> B <Min 02> B <Sec 02> B #
Response Example	A008B0101B20B03B04B05B06B07B08B#	A008B0101B20B03B04B05B06B07B08B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report the Time Stamp"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-101	&004-101
Response Format	% <Len_3> - <Cmd_3> : <Dec 02>, <Yr 02>, <Mon 02>, <Date 02>, <Day 02>, <Hr 02>, <Min 02>, <Sec 02> <CR+LF>	% <Len_3> - <Cmd_3> : <Dec 02>, <Yr 02>, <Mon 02>, <Date 02>, <Day 02>, <Hr 02>, <Min 02>, <Sec 02> <CR+LF>
Response Example	%008-0101: 20,03,04,05,06,07,08 <CR+LF>	%008-0101: 20,03,04,05,06,07,08 <CR+LF>
Time Stamp	Unaffected	Unaffected

17.2. 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:

HAR Modes and Alert Bit Masks

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.

17.2.1 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 fault if true bit mask is **0**."*
*"HAR mode fault 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#."*

17.2.2 Computer Interfaces

The examples below assume that the conditions are the same as in the example for the voice prompt interface.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Set System Status"

	Set Mode	Get Mode
Input Format	* <Cmd_3> # <ID_n> # <Thresh_1> # <Thresh_5> # <Thresh_5> # <Mask_n> # <Mask_n> # <Thresh_3> # <Count_n> #<Val_n> #	C <Cmd_3> #
Input Example	* 102 # 22222#1#12345 # 30 # 5 # 2 # 48 # 3 #	C 102 #
Response Format	A <Len_3> B <Cmd_3> B <ID_5> B <Thresh_1> B <Thresh_5> B <Thresh_3> B <Mask_3> B <Mask_3> B <Thresh_3> B <Count_1> B#	A <Len_3> B <Cmd_3> B <ID_5> B <Thresh_1> B <Thresh_5> B <Thresh_3> B <Mask_3> B <Mask_3> B <Thresh_3> B <Count_1> B#
Response Example	A038B102B 22222B1B12345B030B005B002B048B3 B#	A038B102B 22222B1B12345B030B005B002B048B3 B#
Time Stamp	Modified	Modified

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Set System Status"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <ID_5>, <Thresh_1> , <Thresh_5>, <Thresh_3>, <Mask_3>, <Mask_3>, <Thresh_3>, <Count_1>	& <Len_3> - <Cmd_3>
Input Example	%034-102:22222,12345,030,005,002,048,3	&004-102
Response Format	% <Len_3> - <Cmd_3> : <ID_5>, <Thresh_1> , <Thresh_5>, <Thresh_3>, <Mask_3>, <Mask_3>, <Thresh_3>, <Count_1> <CR+LF>	% <Len_3> - <Cmd_3> : <ID_5>, <Thresh_1> , <Thresh_5>, <Thresh_3>, <Mask_3>, <Mask_3>, <Thresh_3>, <Count_1> <CR+LF>
Response Example	%038-102:22222,1,12345,030,005,002,048,3 <CR+LF>	%038-102:22222,1,12345,030,005,002,048,3 <CR+LF>
Time Stamp	Modified	Modified

17.3. 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.

17.3.1 Voice Prompt Interface

To hear a report of the system status enter ***103#.** A typical response might be:

*“This is a status report from HAR system number is **65535**.”*
*“AC power alert flag is **OK**.”*
*“AC power is **ON**.”*
*“DC voltage alert flag is **OK**.”*
*“DC voltage is **12350**.”*
*“Broadcast monitor alert flag is **OK**.”*
*“Broadcast monitor percent is **80**”*
*“HAR mode alert flag is **OK**.”*
*“HAR mode is **1, playlist**.”*
*“Outdated message alert flag 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#.”*

17.3.2 Computer Interfaces

The computer interface examples below assume the same conditions as in the examples for the voice prompt interface given above. Note that this command functions essentially as a get command in both the set and get modes.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report System Status"

	Set Mode	Get Mode
Input Format	* <Cmd_3> #	C <Cmd_3> #
Input Example	* 103 #	C 103 #
Response Format	A <Len_3> B <Cmd_3> B <ID_5> B (Val_1> B <Stat_1> B <Volts_5> B <Stat_1> B <Pct_3> B <Stat_1> B <Mode_2> <Stat_1> B <Time_3> B #	A <Len_3> B <Cmd_3> B <ID_5> B (Val_1> B <Stat_1> B <Volts_5> B <Stat_1> B <Pct_3> B <Stat_1> B <Mode_2> <Stat_1> B <Time_3> B #
Response Example	A039B103B22222B1B1B12350B1B080B1B02B1B035B#	A039B103B22222B1B1B12350B1B080B1B02B1B035B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report System Status"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-103	&004-103
Response Format	% <Len_3> - <Cmd_3> : <ID_5>, <Val_1>, <Stat_1>, <Volts_5>, <Stat_1>, <Pct_3>, <Stat_1>, <Mode_2>, <Stat_1>, <Time_3> <CR+LF>	% <Len_3> - <Cmd_3> : <ID_5>, <Val_1>, <Stat_1>, <Volts_5>, <Stat_1>, <Pct_3>, <Stat_1>, <Mode_2>, <Stat_1>, <Time_3> <CR+LF>
Response Example	%039-103:22222,1,1,12350,1,080,1,02,1,035 <CR+LF>	%039-103:22222,1,1,12350,1,080,1,02,1,035 <CR+LF>
Time Stamp	Unaffected	Unaffected

17.4. 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.

17.4.1 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 flag 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#.”*

17.4.2 Computer Interfaces

The computer interface examples below assume the same conditions as in the examples for the voice prompt interface given above.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Control Master Alert Flag"

	Set Mode	Get Mode
Input Format	* <Cmd_3> # <Val_1> #	C <Cmd_3> #
Input Example	* 104 # 2 #	C 104 #
Response Format	A <Len_3> B <Cmd_3> B <Val_1> B #	A <Len_3> B <Cmd_3> B <Stat_1> B #
Response Example	A008B104B1B#	A009B104B1B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Control Master Alert Flag"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Val_1>	& <Len_3> - <Cmd_3>
Input Example	$006-104:2	&004-104
Response Format	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_1> <CR+LF>
Response Example	%008-104:1<CR+LF>	%008-104:1<CR+LF>
Time Stamp	Unaffected	Unaffected

17.5. 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.

Note that this command terminates in a special way because of its intended use for notification over the telephone in automatic systems. Thus, when used with the telephone interface it terminates by saying "Goodbye" and automatically hanging up the telephone. When used with the handset interface it terminates by stopping at the end of the report and waiting without prompting for the next command. If a report of system status with the normal termination is desired, the corresponding "Report System Status" command *103# should be used.

17.5.1 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 from HAR system number is **65535**."*
*"AC power alert flag is **OK**."*
*"AC power is **ON**."*
*"DC voltage alert flag is **OK**."*
*"DC voltage is **12350**."*
*"Broadcast monitor alert flag is **OK**."*

*"Broadcast monitor percent is **80**"*
*"HAR mode alert flag is **OK**."*
*"HAR mode is **1, playlist**."*
*"Outdated message alert flag 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.

17.5.2 Computer Interfaces

The computer interface examples below assume the same conditions as in the examples for the voice prompt interface given above. Note that when using the computer interfaces the system only issues a single report. Also, note that this command functions essentially as a get command in both the set and get modes.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the tables:

Computer-Telephone DTMF Packets for "Report System Status Over Telephone"

	Set Mode	Get Mode
Input Format	* <Cmd_3> #	C <Cmd_3> #
Input Example	* 105 #	C 105 #
Response Format	A <Len_3> B <Cmd_3> B <ID_5> B <Val_1> B <Stat_1> B <Volts_5> B <Stat_1> B <Pct_3> B <Stat_1> B <Mode_2> <Stat_1> B <Time_3> <CR+LF>	A <Len_3> B <Cmd_3> B <ID_5> B <Val_1> B <Stat_1> B <Volts_5> B <Stat_1> B <Pct_3> B <Stat_1> B <Mode_2> <Stat_1> B <Time_3> <CR+LF>
Response Example	A039B105B22222B1B1B12350 B1B080B1B02B1B035B#	A039B105B22222B1B1B12350 B1B080B1B02B1B035B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the tables:

Computer-Serial ASCII Packets for "Report System Status Over Telephone"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-105	&004-105
Response Format	% <Len_3> - <Cmd_3> : <ID_5> , <Val_1> , <Stat_1>, <Volts_5>, <Stat_1>, <Pct_3>, <Stat_1>, <Mode_2>, <Stat_1>, <Time_3> <CR+LF>	% <Len_3> - <Cmd_3> : <ID_5> , <Val_1> , <Stat_1>, <Volts_5>, <Stat_1>, <Pct_3>, <Stat_1>, <Mode_2>, <Stat_1>, <Time_3> <CR+LF>
Response Example	%039- 105:22222,1,1,12350,1,080,1,02,1,035 <CR+LF>	%039- 105:22222,1,1,12350,1,080,1,02,1,035 <CR+LF>
Time Stamp	Unaffected	Unaffected

17.6. 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, HAR sub mode, and HAR synch 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
10-14 – Broadcast Auxiliary Input
15 – Broadcast Auxiliary Silent
21-22 – Periodic Announcement
43-45 – Periodic Message
80-88 – Alert

HAR Synch Mode

The third number is the HAR synch mode. If all conditions for synchronized broadcast have been met, the sync mode will be 1 or ON. If any of the conditions are not met, the synch mode will be 0 or OFF.

17.6.1 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**."*
*"Synch mode is **0**."*
*"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#."*

17.6.2 Computer Interfaces

The computer interface examples below assume the same conditions as in the examples for the voice prompt interface given above. Note that this command functions essentially as a get command in both the set and get modes.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report System Status"

	Set Mode	Get Mode
Input Format	* <Cmd_3> #	C <Cmd_3> #
Input Example	* 106 #	C 106 #
Response Format	A <Len_3> B <Cmd_3> <Mode_2> B <Sub_2> B <Val_1> B #	A <Len_3> B <Cmd_3> <Mode_2> B <Sub_2> B <Val_1> B #
Response Example	A012B106B01B02B0B#	A012B106B01B02B0B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report System Status"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-106	&004-106
Response Format	% <Len_3> - <Cmd_3> : <Mode_2>, <Sub_2> , <Val_1> <CR+LF>	% <Len_3> - <Cmd_3> : <Mode_2>, <Sub_2> , <Val_1> <CR+LF>
Response Example	%014-106:01,02,0<CR+LF>	%014-106:01,02,0<CR+LF>
Time Stamp	Unaffected	Unaffected

17.7. Report Transmitter Status, *67#

Some HAR systems have a Transmitter Control Module (TCM-1) that allows certain transmitter parameters to be monitored remotely using the "Report Transmitter Status" command *67#.

Set Power

The first number is the Set Power that was requested using the *66# command code. The values are reported in tenths of a Watt and range from 10 (corresponding to 1.0 Watts) up to 300 (corresponding to 30 Watts). This number should exactly match the input value.

Measured Forward Power

The second number is the Measured Forward Power. The values are reported in tenths of a Watt and range from 0 (corresponding to 0.0 Watts) up to 300 (corresponding to 30 Watts). These values are intended to provide an estimate of the forward power that is useful for remotely monitoring if the transmitter is operating properly. If a more accurate measurement of the power is required, such as would be required when tuning the transmitter, either the LED bar graph on the front of the transmitter should be used, or an external power meter should be used.

Measured Reflected Power

The third number is the Measured Reflected Power. The values are reported in tenths of a Watt and range from 0 (corresponding to 0.0 Watts) up to 300 (corresponding to 30 Watts). As with the forward power, these values are intended to provide a useful estimate of the reflected power. If a more accurate measurement of the reflected power is required, either the LED bar graph on the front of the transmitter should be used, or an external power meter should be used.

Note that the DR1500 automatically limits the reflected power level to prevent damage to the transmitter when there is an antenna-load impedance mismatch, so that the practical range of values is limited to approximately 30 (corresponding to 3.0 Watts).

VSWR

The fourth number is the Measured Voltage Standing Wave Ratio (VSWR). The values are reported in tenths and range from 10 (corresponding to the perfect condition of a VSWR of 1.0:1) up to 300 (corresponding to a VSWR of 30.0:1). As with the forward and reflected power, these values are intended to provide a useful estimate of the VSWR. If a more accurate

measurement of the VSWR is required, either the LED bar graph on the front of the transmitter should be used, or an external power meter should be used.

Modulation Level

The fifth number is the Measured Modulation Level. The values are reported in percent and range from 20% to 100%. This value should exactly match the value displayed on the LED bar graph on the front of the transmitter.

17.7.1 Voice Prompt Interface

To report the transmitter status enter ***67#.** Assuming the set power is 10.0 Watts, the measured power is 10.1 Watts, the reflected power is 0.1 Watts, the VSWR is 12, and the modulation is 60 percent, the system will respond:

*"Set power in tenths-of-a-Watt is **100**."*
*"Forward power in tenths-of-a-Watt is **101**."*
*"Reflected power in tenths-of-a-Watt is **1**."*
*"VSWR is **12**."*
*"Modulation in percent is **60**."*

17.7.2 Computer Interfaces

The examples below assume the same values as in the example for the voice prompt interface.

Computer-Telephone DTMF Interface

Using the computer computer-telephone interface, the DTMF input-response packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report Transmitter Status"

	Set Mode	Get Mode
Input Format	* <Cmd_2> #	C <Cmd_2> #
Input Example	* 67#	C 67 #
Response Format	A <Len_3> B <Cmd_3> B <Val_3> B <Val_4> B <Val_4> B <Val_4> B <Val_3> B #	A <Len_3> B <Cmd_3> B <Val_3> B <Val_4> B <Val_4> B <Val_4> B <Val_3> B #
Response Example	A010B067B100B0101B0001B0012B060B#	A010B067B100B0101B0001B0012B060B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report Transmitter Status"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-067	&004-067
Response Format	% <Len_3> - <Cmd_3> : <Val_3>, <Val_4>, <Val_4>, <Val_4>, <Val_3>, <CR+LF>	% <Len_3> - <Cmd_3> : <Val_3>, <Val_4>, <Val_4>, <Val_4>, <Val_3>, <CR+LF>
Response Example	%029-067:100,0101,0001,0012,060 <CR+LF>	%029-067:100,0101,0001,0012,060 <CR+LF>
Time Stamp	Unaffected	Unaffected

17.8. 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.

17.8.1 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#."*

17.8.2 Computer Interfaces

The examples below assume software revision is 1.60. Note that this command functions essentially as a get command in both the set and get modes.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report Software Revision Number"

	Set Mode	Get Mode
Input Format	* <Cmd_3> #	C <Cmd_3> #
Input Example	* 300 #	C 300 #
Response Format	A <Len_3> B <Cmd_3> B <Val_3> B #	A <Len_3> B <Cmd_3> B <Val_3> B #
Response Example	A009B300B160B#	A009B300B160B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report Software Revision Number"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-300	&004-300
Response Format	% <Len_3> - <Cmd_3> : <Val_3> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_3> <CR+LF>
Response Example	%009-300:160<CR+LF>	%009-300:160<CR+LF>
Time Stamp	Unaffected	Unaffected

17.9. 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)

17.9.1 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**"*

17.9.2 Computer Interfaces

The examples below assume the same values as in the voice prompt example given above. Note that this command functions essentially as a get command in both the set and get modes.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report Software Build Number"

	Set Mode	Get Mode
Input Format	* <Cmd_3> #	C <Cmd_3> #
Input Example	* 301 #	C 301 #
Response Format	A <Len_3> B <Cmd_3> B <Yr_4> B <Mon_2> B <Date_2> B <Val_2> B #	A <Len_3> B <Cmd_3> B <Yr_4> B <Mon_2> B <Date_2> B <Val_2> B #
Response Example	A017B301B2001B2B3B4B#	A017B301B2001B2B3B4B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report Software Build Number"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-301	&004-301
Response Format	% <Len_3> - <Cmd_3> : <Yr_4> , <Mon_2> , <Date_2> , <Val_2> <CR+LF>	% <Len_3> - <Cmd_3> : <Yr_4> , <Mon_2> , <Date_2> , <Val_2> <CR+LF>
Response Example	%017-301:2001,2,3,4<CR+LF>	%017-301:2001,2,3,4<CR+LF>
Time Stamp	Unaffected	Unaffected

17.10. 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.

17.10.1 Voice Prompt Interface

To hear a report of the EPROM checksum enter ***302#.** A typical response would be:

*"**12345**"*

17.10.2 Computer Interfaces

The examples below assume the same values as in the voice prompt example given above. Note that this command functions essentially as a get command in both the set and get modes.

Computer-Telephone DTMF Interface

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Report Software Build Number"

	Set Mode	Get Mode
Input Format	* <Cmd_3> #	C <Cmd_3> #
Input Example	* 302 #	C 302 #
Response Format	A <Len_3> B <Cmd_3> B <Val_5> B #	A <Len_3> B <Cmd_3> B <Val_5> B #
Response Example	A012B302B12345B#	A012B302B12345B#
Time Stamp	Unaffected	Unaffected

Computer-Serial ASCII Interface

Using the computer-serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Report Software Build Number"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3>	& <Len_3> - <Cmd_3>
Input Example	$004-302	&004-302
Response Format	% <Len_3> - <Cmd_3> : <Val_5> <CR+LF>	% <Len_3> - <Cmd_3> : <Val_5> <CR+LF>
Response Example	%012-302:12345<CR+LF>	%012-302:12345<CR+LF>
Time Stamp	Unaffected	Unaffected

18. Computer-Control Data Packets

As mentioned in the Introduction, 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. In the previous sections of this manual, for each section describing an individual command, there was a sub-section at the end which described the details of how the sequences of DTMF tones or ASCII characters are to be structured for that command and how the DR1500AM would respond. More general information on how packets are constructed for all the commands is contained in this section. For a summary of all the computer-control data packets, refer to the Appendix immediately following this section.

By way of introduction to packet structure, some simple examples of DTMF and ASCII serial packets will be given here, to be followed by a more formal description. For the DTMF packets, the structure can be described quite simply as following the sequence that would be used when manually controlling the DR1500 from a touch-tone keypad. For example, to set the message spacing to 10 seconds, the DTMF packet could be:

*4#10#

Since the message spacing parameter could be up to 4 digits long, a more formal packet structure would be:

*4#0010#

Note that while the length of the parameter is variable when using the DTMF input and can have leading zeroes, the length of the command code must have no leading zeroes.

For the ASCII serial packets, the structure is more formalized and can be described most simply by giving as an example, the equivalent to the above command for setting the message spacing, as shown here:

$009-004:0010

Here the "$" is the packet header character identifying this as a set command. The value "009" in the first field is the packet length, followed by a "-" dash or hyphen, which functions as a field separator. The value "004" in the second field identifies the command code for the message spacing corresponding to *4# for DTMF input. This is followed by a ":" colon, which functions as a second field separator. The value 0010 in the last field is the actual payload that sets the message spacing to 10 seconds.

The subsections below provide details of (1) Data Packet Structure, (2) Data Packet Examples, (3) Normal Packet Processing, and (4) Exception Packet Processing.

18.1. Data Packet Structure

Data packets are made up of several elements arranged in a specific order. Each of the elements that go into making up a packet are described in turn in the following sub-sections.

18.1.1 Packet Headers

All packets begin with a packet header, which identifies the type of packet. All ASCII serial packets begin with a header consisting of an ASCII $ (set), & (get), or % (response). All DTMF packets begin with a header consisting of a DTMF "*" (set), DTMF "C" (get), or DTMF "A" (response).

18.1.2 Packet Length Field

The packet-length field is required in all ASCII input packets to allow them to be parsed correctly. DTMF input packets are parsed by the sequence of pound sign delimiters in the command, and thus do not have a packet length field. All output packets have the three-digit length as the first field. The length is defined as the number of characters following packet length separator (described in the next sub-section) to the end of the packet, including termination characters, such as carriage return <CR> or line feed <LF>.

18.1.3 Packet-Length Separator

The packet-length separator marks the boundary between the packet length field and the command code filed which follows it. For all ASCII serial packets, the packet-length separator is a dash. For DTMF input packets, there is no packet length separator, since there is no length field. For DTMF output packets, the length separator is a DTMF "B."

18.1.4 Command Code Field

The command code field identifies which command the packet refers to. For ASCII serial packets, the command code is always the second field and is always 3 digits long. For DTMF

input packets, the command code is always the first field. It is entered without any leading zeroes, and thus is either 1, 2, or 3 digits long. For DTMF output packets, the command code is identical to that of the ASCII serial packets and thus is always the second field and is always 3 digits long.

18.1.5 Command Code Separator

The command-code separator marks the boundary between the command code field and subsequent data fields, if any. The command code separator for all ASCII serial packets is a colon. For DTMF input packets, the command code separator is a DTMF "#," while for DTMF output packets, the command-code separator is a DTMF "B."

18.1.6 Data Elements

One or more data elements can follow the command code separator. The maximum field length is given in the format description for each command. It is recommended that these maximum lengths be used for all data elements, with leading zeroes added as necessary. However, for the input mode, the leading zeroes for data elements can be eliminated, provided the packet length is computed accordingly.

18.1.7 Data-Element Separator

Data-element separators mark the boundaries between data elements in the packet. The data-element separator for all ASCII serial packets is a comma. For DTMF input packets, the data-element separator is a DTMF "#", while for DTMF output packets, the data-element separator is a DTMF "B." Note that for ASCII serial packets with an indefinite number of elements (e.g. Create Broadcast List) the final data element in the packet must be followed by one final data element separator.

18.1.8 Record Separator

For output packets, record separators mark the boundaries between groups of data elements (i.e. records) in the packet. Thus, for example, in a report of events in a schedule table, each event would be separated by the record separator. For ASCII serial output packets, the record separator is a dot. For DTMF output packets, the record separator is a DTMF "B." The record separator is never used for input packets.

18.1.9 Packet Terminators

For ASCII serial input packets, the end of the packet is determined strictly by the packet length, and a packet terminator is optional. Note that if a terminator is appended to the end of an input packet, the packet length should include it. For all ASCII serial output packets, a CR+LF is appended and is included in the length.

For all DTMF input packets, the packet terminator is a pound. For all DTMF output packets the terminator is a DTMF "B" plus a DTMF "#".

18.1.10 Data Packet Elements

The table below summarizes the specific elements used in the computer-control data-

communications packets. For elements bracketed by arrows such as <Cmd_3>, the number indicates the number of digits in the field.

Computer-Control Data Packet Elements

Name	ASCII Format	ASCII Example	ASCII Hex Char Values	DTMF Format	DTMF Tone Example
Header, Input, Set	$	$	0x24	DTMF "*"	*
Header, Input, Get	&	&	0x26	DTMF "C"	C
Header, Output	%	%	0x40	DTMF "A"	A
Length, Input	<Len_3>	012	0x30	n/a	n/a
Length, Output	<Len_3>	012	0x30	<Len_3>	012
Length Separator, Input	-	-	0x2D	n/a	n/a
Length Separator, Output	-	-	0x2D	DTMF "B"	B
Command Code, Input	<Cmd_3>	007	0x30	<Cmd_N>	7
Command Code, Output	<Cmd_3>	007	0x30	<Cmd_3>	007
Command Separator, Input	:	:	0x3A	DTMF "#"	#
Command Separator, Output	:	:	0x3A	DTMF "B"	B
Data Value	<Val_1>	1	0x31	<Val_1>	1
Message Number	<Msg_5>	00005	0x30	<Msg_5>	00005
Time Interval	<Time_4>	0123	0x30	<Time_4>	0123
Playlist	<List_4>	1025	0x31	<List_4>	1025
Status	<Stat_1>	1	0x31	<Stat_1>	1
Month	<Mon_2>	12	0x31	<Mon_2>	12
Date	<Date_2>	31	0x33	<Date_2>	31
Year	<Yr_4>	2001	0x30	<Yr_4>	2001
Day of the Week	<Day_1>	7	0x37	<Day_1>	7
Hour	<Hr_2>	12	0x31	<Hr_2>	12
Minute	<Min_2>	15	0x31	<Min_2>	15
Second	<Sec_2>	20	0x32	<Sec_2>	20
Error Flag, Output Only	<ErrFlg_3>	999	0x39	<ErrFlg_3>	999
Error ID, Output Only	<ErrID_3>	004	0x30	<ErrID_3>	004
Separator, List Item, Input	,	,	0x2C	DTMF "#"	#
Separator, List Item, Output	,	,	0x2C	DTMF "B"	B
Record Terminator, Output	<dot>	.	0x09	DTMF "B"	B
Packet Terminator, Output	<CR+LF>	↵	0x0D 0x0A	DTMF "B" then "pound"	B#

Note that for ASCII serial packets, all numerical values are represented by sequences of ASCII characters. For example, the number 012 for the length parameter in the above table is represented by an ASCII "0" (x30), followed by an ASCII "1" (x31), and ending with an ASCII "2" (x32). Similarly for DTMF packets, all numerical values are represented by sequences of the sixteen extended DTMF tones 0-9, A-D, * and #.

18.2. Data Packet Examples

To illustrate how the packet elements are combined to create data packets, the computer-control packet sub-section for the "Create Broadcast List" command are given below.

18.2.1 Computer-Control Packets for "Create Broadcast List"

The examples below assume the broadcast list is to be set to messages 1, 2, and 3. The response to the both the set and get modes is a full report of the broadcast list.

Computer-Telephone DTMF Interface for "Create Broadcast List", *5#

Using the computer-telephone interface, the input-response DTMF packets would be as shown in the table:

Computer-Telephone DTMF Packets for "Create Broadcast List"

	Set Mode	Get Mode
Input Format	* <Cmd_1> # <Msg_n> # [<Msg_n> #] [<Msg_n> #] #	C <Cmd_1> #
Input Example	* 5 # 1 # 2 # 3 # #	C 5 #
Response Format	A <Len_3> B <Cmd_3> B <Msg_5> [B <Msg_5>] [B <Msg_5>] B #	A <Len_3> B <Cmd_3> B <Msg_5> [B <Msg_5>] [B <Msg_5>] B #
Response Example	C024B005B00001B00002B00003B#	C024B005B00001B00002B00003B#
Time Stamp	Modified	Unaffected

Computer-Serial ASCII Interface for "Create Broadcast List", *5#

Using the computer serial interface, the input-response ASCII packets would be as shown in the table:

Computer-Serial ASCII Packets for "Create Broadcast List"

	Set Mode	Get Mode
Input Format	$ <Len_3> - <Cmd_3> : <Msg_5>, [<Msg_5>,] [<Msg_5>,]	& <Len_3> - <Cmd_3>
Input Example	$023-005:00001,00002,00003,	&004-005
Response Format	% <Len_3> - <Cmd_3> : <Msg_5> [,<Msg_5>] [, <Msg_5>] <CR+LF>	% <Len_3> - <Cmd_3> : <Msg_5> [, <Msg_5>] [, <Msg_5>] <CR+LF>
Response Example	%024-005:00001,00003,00005 <CR+LF>	%024-005:00001,00003,00005 <CR+LF>
Time Stamp	Modified	Unaffected

Note that the final message number at the end of the set input packet must be followed by a comma to properly terminate this command.

18.3. Normal Packet Processing

The following subsections describe the sequence of events followed by the DR1500AM in processing normal packets. The first sub-section describes the sequence for DTMF packets and the second sub-section describes the processing for ASCII serial packets.

18.3.1 DTMF Normal Packet Processing

As individual DTMF tones are received by the DR1500AM, they are stored in a buffer until a "#"

is encountered, at which time the contents of the buffer, along with the terminating # sign, are processed by the user-interface state machine. For example, with the message spacing command of the form "*4#10#" the "*" and the "4" are buffered until the "#" is received, at which time the string "*4#" is processed. Since this string matches the case of the message spacing command, the DR1500 changes from the idle state to the "awaiting-message-spacing-input-data" state.

When the subsequent 10# is received, it is processed as the message spacing and stored appropriately as a parameter in the DR1500AM's memory. The DR1500AM then returns to the idle state awaiting the next command.

If the telephone response mode or the serial response mode is enabled, the DR1500AM will output the appropriate responses at this point.

18.3.2 Serial ASCII Normal Packet Processing

Processing of serial ASCII packets is a two-stage process in which the packet elements are first pre-processed by a parsing state machine in the DR1500AM firmware and then passed to the same user-interface state machine that processes DTMF inputs. The parser states are numbered from 0 to 5 and are described in a step-by-step sequence in the following paragraph. Note that in all cases it is assumed that processing proceeds normally without exceptions, which will be described in the sub-section immediately following this one.

Parser State 0: Awaiting Valid Packet Header:

Normally, the DR1500AM is in the "awaiting valid packet header" which is essentially an "idle" state. As individual ASCII characters are received by the DR1500AM, they are compared with the two possible valid packet headers "$" (for set commands) and "&" (for get commands).

Parser State 1: Process Packet Length:

Once a valid packet header character is received, the DR1500 sets a flag for whether the command is a set or a get and changes to the "process-packet-length" state. The next three ASCII characters are buffered and then converted to a numeric value, which is used to determine exactly how many characters after the length will be processed.

Parser State 2: Awaiting Dash Separator:

After the packet length is processed, the DR1500 changes to the "awaiting dash separator" state and checks the subsequent ASCII character to make sure it is a "-" dash.

Parser State 3: Process Command Code Number:

After the dash separator has been detected, the DR1500 changes to the "process-command-code-number" state. The next three ASCII characters are buffered and then converted to a numeric value. This numeric value is passed to the main user-interface state machine where it is compared with the possible command code numbers. For example if the command code were 004, the main user interface would be put in the "awaiting-message-spacing-input-data" state.

Parser State 4: Awaiting Colon Separator:

After the command code is processed, the DR1500 changes to the "awaiting colon separator"

state and checks the subsequent ASCII character to make sure it is a ":" colon.

Parser State 5: Process Input Variable(s):
After the colon separator has been detected, the DR1500AM changes to the "process-input-variables" state. The data input fields are placed in a string buffer until either (1) the parser reaches the end of the packet as defined by the packet length or (2) a variable separator is encountered. The string buffer is then passed to the main user-interface state machine where it is converted to a numeric value, tested for validity, and stored appropriately as a parameter in the DR1500AM's memory.

When the processing of the input command is complete, if the telephone response mode or the serial response mode is enabled, the DR1500AM will output the appropriate responses at this point. After successful processing of the packet, the DR1500 returns to the "awaiting valid packet header" state.

18.4. Exception Packet Processing

The above description of the sequence of processing computer command packets assumed that each step was successful and led to the next step in the process. However, if the DR1500AM encounters exceptions the normal flow is altered. In general, these exceptions cause the DR1500 to enter an exception state in which an exception packet is "thrown" by the DR1500. Whether or not these exception packets are actually output by the DR1500AM is controlled by whether the telephone response mode or the serial response mode is enabled.

After the exception packet is thrown, the DR1500 returns to the idle state in which it is waiting for either a terminating # through the DTMF input or a valid header character through the serial port.

18.4.1 Exception Packet Structure

A typical ASCII serial exception packet might have the form:

%010-981:013<CR+LF>

- Here the "%" indicates that this is a response packet being output by the DR1500AM.
- The value "010" in the length field is the packet size from the dash to the LF inclusive.
- The value "98" in the first two digits of the command code field indicates that this particular exception was detected by the parsing state machine.
- The value "1" in the third digit of the command code field indicates that this exception occurred when the parser was in state 1.
- The value "013" indicates that the unexpected ASCII character was a carriage return.
- The <CR+LF> is the standard termination for output packets from the DR1500AM.

The equivalent DTMF packet would be:

A010B981B013B#

The table below shows the detailed structure of the exception packets for DTMF and serial ASCII responses.

Computer-Telephone DTMF Packets for Exception Response

	Set Mode	Get Mode
Error Resp Format	% <Len_3> - <ErrFlg_3> : <ErrID_3> <CR+LF>	% <Len_3> - <ErrFlg_3> : <ErrID_3> <CR+LF>
Error Resp Example	A010B981B010B#	A010B981B010B#

Computer-Serial ASCII Packets for Exception Response

	Set Mode	Get Mode
Error Resp Format	% <Len_3> - <ErrFlg_3> : <ErrID_3> <CR+LF>	% <Len_3> - <ErrFlg_3> : <ErrID_3> <CR+LF>
Error Resp Example	%010-981:010<CR+LF>	%010-981:010<CR+LF>

18.4.2 Generation and Sending of Parser Exception Packets

When the DR1500AM encounters and exception during the serial input parsing process, it generates an exception packet in the range 980 through 984. The last digit of the exception code indicates where in the parsing routine the DR1500 has failed. The three-digit field following the ':' is the decimal value of the unexpected ASCII character.

It is important to note that while the DR1500AM generates exception packets in the range 980 through 984, it only outputs packets in the range 981 through 984. This is because output of 980 exception packets is suppressed by the DR1500AM to minimize the number of unexpected packets that would be received by the control computer if it sent an extended malformed packet to the DR1500AM.

In other words, when in state 0, the DR1500 effectively ignores all characters except for a valid header character, which then switches the parser state machine into state 1.

Note that in all cases, exception packets will only be output if telephone response mode or the serial response mode is enabled.

18.4.3 Examples of Parser Exception Packets

Since the exception process parallels the normal process, the exception modes will be described in order of the flow through the serial packet-processor state machine. The following paragraphs give examples of input packets that cause exceptions in the serial input-parser state machine and the corresponding response packet output by the DR1500AM

Parser State 0 Exceptions: Awaiting Valid Packet Header:

While the actual output of parser state 0 exceptions are suppressed by the DR1500, these exceptions are generated internally and their functionality is included here for completeness. The simplest case that would cause a parser state 0 or 980 exception would be a single ASCII character received by the DR1500 when it was in the idle state expecting a valid packet header. For example, if the input packet were:

A

The corresponding internally-generated (but not transmitted) exception packet would be:

%010-980:065<CR-LF>

Where the 980 indicates that the exception was detected in parser state 0 and the 065 corresponds to the decimal value of the ASCII character “A” by itself.

A more realistic example of this type of exception would be caused if the input packet were:

$009-004:0010<CR+LF>

The corresponding internally-generated (but not transmitted) packet would be:

%010-980:013<CR-LF>

Here the exception is generated by the fact that the while the parser expects the packet to consist of only 9 characters past the length value, it receives an unexpected carriage return whose ASCII decimal value is 13.

Note that the exceptions occur at the processing of the unexpected CR and LF characters after the DR1500 has completed the processing of the command to set the message spacing and returned to the idle state. Both the CR and LF generate internal 980 exceptions whose output is suppressed by the DR1500AM, thus effectively ignoring these characters.

Parser State 1 Exceptions: Process Packet Length:

A 981 exception is reported when the DR1500 receives an invalid packet length character. The only valid characters are three decimal digits. For example, if the input packet were:

$05-007:4

The corresponding exception packet would be:

%010-981:045<CR-LF>

Here the exception is generated by the fact that the while the parser expects a third packet length digit, it receives an unexpected dash “-“ whose ASCII decimal value is 45. All following characters generate internal 980 exceptions whose output is suppressed by the DR1500AM, thus effectively ignoring these characters.

Parser State 2 Exceptions: Awaiting Dash Separator:

A 982 exception is reported when the DR1500 expects to receive a dash separator, but receives another character. For example, if the input packet were:

$0040301

The corresponding exception packet would be:

%010-981:048<CR-LF>

Here the exception is generated by the fact that the while the parser expects an ASCII dash, it receives an unexpected ASCII zero whose ASCII decimal value is 48. All following characters generate internal 980 exceptions whose output is suppressed by the DR1500AM, thus effectively ignoring these characters.

Note that the exception actually occurs at the processing of the unexpected '0' character. All following characters generate internal 980 exceptions which are suppressed by the DR1500AM, thus effectively ignoring these characters.

Parser State 3 Exceptions: Process Command Code Number:

A 983 exception is reported when the DR1500 expects to receive a three-digit command code, but receives another character instead. For example, if the input packet were:

$005-07:4

The corresponding exception packet would be:

%010-983:058<CR-LF>

Here the exception is generated by the fact that the while the parser expects the third digit of the command code, it receives an unexpected colon whose ASCII decimal value is 58. All following characters generate internal 980 exceptions which are suppressed by the DR1500AM, thus effectively ignoring these characters.

Note that even if the command code is not a valid one recognized by the DR1500AM user interface state machine, (e.g. “987”) it will not generate a 983 exception as long as it consists of 3 ASCII digits. Rather, such command codes will generate 990 exceptions later in the input process.

Parser State 4 Exceptions: Awaiting Colon Separator:

A 984 exception is reported when the DR1500 expects to receive a colon separator, but receives another character instead. For example, if the input packet were:

$006-00763

The corresponding exception packet would be:

%010-984:054<CR-LF>

Here the exception is generated by the fact that the while the parser expects the colon separator, it receives an unexpected “6” whose ASCII decimal value is 54. All following characters generate internal 980 exceptions which are suppressed by the DR1500AM, thus effectively ignoring these characters.

Parser State 5 Exceptions: Process Parameter Value:

Although a 985 exception corresponding to a packet parsing error when processing a parameter value exists in principle, in fact all errors relating to processing parameter values are generated in the main user-interface state machine and thus generate 991 error packets as described below.

18.4.4 Generation and Sending of User Interface Exception Packets

A packet that is correctly formatted will not produce an exception in the 980 to 984 range, but may still have invalid content that will generate an exception during further processing in the user-interface state machine.

When the DR1500AM encounters an exception during the user interface process, it generates a 990 exception packet if the command code is invalid and a 991 exception packet if a parameter is invalid. The three digits of the exception response following the ':' character indicate the decimal value of the command number that was being processed when the exception was detected.

18.4.5 Examples of User Interface Input Process Exception Packets

The following subsections give examples of input packets that cause exceptions in the user interface input process and the corresponding response packet output by the DR1500AM.

990 Command Code Exceptions

A 990 exception is reported when the user-interface input process receives a properly formatted packet with an invalid command number. For example, if the input packet were:

$008-198:123

The corresponding exception packet would be:

%010-990:198<CR-LF>

Here the exception is generated by the fact that 198 is not a valid command code. In the response packet, the “990” indicates that there was a command code error and the “198” indicates the command code value that was being attempted. All following characters generate internal 980 exceptions which are suppressed by the DR1500AM, thus effectively ignoring these characters.

In the above case, the corresponding DTMF response would be:

A010B990B198B#

991 Parameter Value Exceptions

A 991 exception is generated when the user-interface input process receives a properly formatted packet with a valid command code but one or more invalid parameter values. For example, if an input packet to set the clock calendar were of the form:

$026-026:12,32,2003,9,11,67,21

The corresponding exception packet would be:

%010-991:026<CR-LF>

In this example, the “set the clock calendar” expects input parameter values corresponding to the month, date, year, day-of-the-week, hour, minute, second. Here, the first parameter “12” for the month is processed correctly into an internal temporary variable, but the second parameter

“32” for the date is invalid and generates the exception.

In the response packet, the “991” indicates that there was a parameter value error and the “026” indicates the command code value that was being attempted. Note that the response packet is not structured to distinguish which parameter values were valid and which were not.

In the above case, the corresponding DTMF response would be:

A010B991B026B#

Specifically, in this example, the value “12” for the month is valid, the value “32” for the date is invalid, the value “2003” for the year is valid, the value “9” for the day-of-the-week is invalid, the value “11” for the hour is valid, the value “67” for the minute is invalid, and the value “21” for the second is valid. However, only the first error encountered, the invalid date, generates a “991” parameter value exception. All following characters generate internal 980 exceptions which are suppressed by the DR1500AM, thus effectively ignoring these characters.

Note that while some of the parameters may be processed by the DR1500AM into internal temporary variables, the actual command is never implemented once the exception is encountered. Specifically, for the example given, the clock calendar would remain unchanged.

18.4.6 Examples of Subtle Exception Packets

The following subsections give examples of input packets that would cause more subtle exceptions.

Incorrect Packet Length

A packet with an incorrect length can be parsed by the DR1500 in such a way that the command is processed in a perhaps unexpected way. An example using the “Create the Broadcast List” command is:

$009-005:98765

The corresponding response packet would be:

%012-005:09876<CR-LF>

Here the packet length of 9 truncates the packet after the “9876” making the packet completely valid. Since the internal exception generated by the unexpected trailing “5” is repressed, the control computer remains unaware that the DR1500AM has detected an exception. The only way to detect such exceptions is to examine the response packets and compare them with the expected values.

If the length in the example command had been 010 instead of 009, the command would generate a 991 exception due to '98765' being out of range of the valid input of the create broadcast list command.