



Advanced Simulation Technology inc.
500A Huntmar Park Drive
Herndon, Virginia 20170 U.S.A.
Tel. (703)471-2104 • Fax. (703)471-2108
www.asti-usa.com

ASTi

Hand-Held Terminal

Operator Interface User Guide

Rev. C

ASTi Hand-Held Terminal Operator Interface User Guide

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**ASTi
500 A Huntmar Park Drive
Herndon, VA 20170**

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INTRODUCTION

The ASTi Hand Held Terminal system provides a highly flexible solution to multi-operator radio simulation requirements. This user guide describes the major system concepts and operation, and guides the user through the options available for system customization provided by the configuration and initialization commands.

A typical system will consist of an ASTi DACS chassis equipped with a Time Division Multiplex (TDM) card, a number of Remote Interface Units (RIUs), and a number of Hand Held Terminal units (HHTs). Each RIU can support two HHTs. One HHT is required per operator; the maximum basic system configuration supports 16 operators.

The HHT unit provides the operator interface to the simulated radios. The functionality is designed to provide an intuitive display interface into a multi-radio environment and provide access to the key parameters of the individual radios themselves. The radio environment may simply function as a self-contained system with each HHT local to others on the system, or it may be networked to inter-operate with other systems and devices using DIS standards. In either case, the system functionality is identical.

The system is supplied with a preconfigured model to support the purchased number of operators and radios. Custom configuration to a particular user application is available as a purchase option (contact ASTi for details), or may be performed by a suitably experienced user, aided by the content of this User Guide and the Model Builder software documentation. A sample initialization file is included with each system and is intended to act as a template for user-specific applications. Users are encouraged to become familiar with the format and content of this file.

The remainder of this document covers system overview and set-up, operating concepts, keypad operation, and HHT file commands.

CHAPTER 1: HARDWARE OVERVIEW AND SETUP

Set-up Instructions

Use Figure 1 on the following page as a reference to view the main physical components of the system, which consist of an ASTi DACS chassis equipped with a TDM DSP card, a number of RIUs with power supplies, and a number of Hand Held Terminal units complete with cables. The numbers supplied for the various units will vary according to the user requirement. In order to complete the system, cables to interconnect the RIUs, and operator headsets will be required. These may be user-supplied or purchased from ASTi.

The RIUs are connected in daisy-chain fashion, with the first cable originating at the DACS TDM card connecting to the first RIU. The next cable links the first RIU to the second, and so on, with the last RIU being connected back to the DACS TDM card, completing the loop. Therefore, the TDM card and each RIU should have two cables connected, running from one to the next. It is not important as to which TDM socket is used for the "in" or "out" connections. Each RIU is powered by a small switching power supply. Note that the system will continue to function with one or more RIUs powered down, as long as all data cables remain connected.

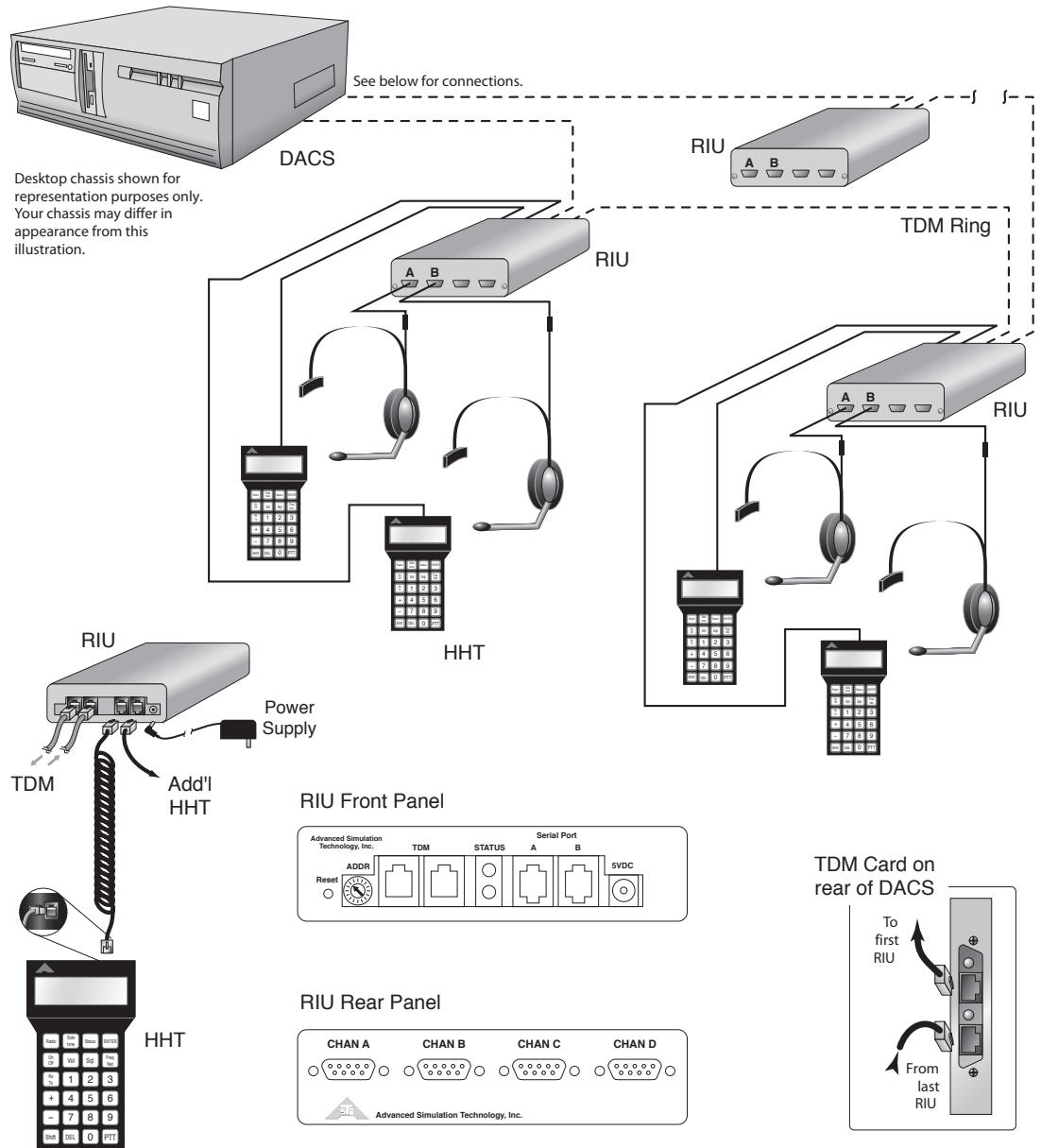
Each RIU must be uniquely identified by setting an address via the rotary address switch on the front panel. The system maps RIU #1 to handle system operators 1 and 2, RIU #2 to handle operators 3 and 4 and so on.

Note: If two or more RIUs are inadvertently set to the same address, the system will not function correctly; only the first RIU on the loop that has the duplicate address will be recognized.

The HHT units are connected to the serial port connections on the RIU. For RIU #1, channel A connects operator 1, channel B connects operator 2, and so on for subsequent RIUs.

Analog audio signals are kept to a minimum within this architecture, since all information is converted from digital to analog by the RIU units. The only analog signals are those between the RIUs and the operator headsets. Each RIU can accommodate two headsets, one per HHT operator. These must be connected to the RIU rear panel connections identified as CHAN A and CHAN B, for operators 1 and 2, respectively.

Figure 1: Typical Hardware Configuration



Notes:

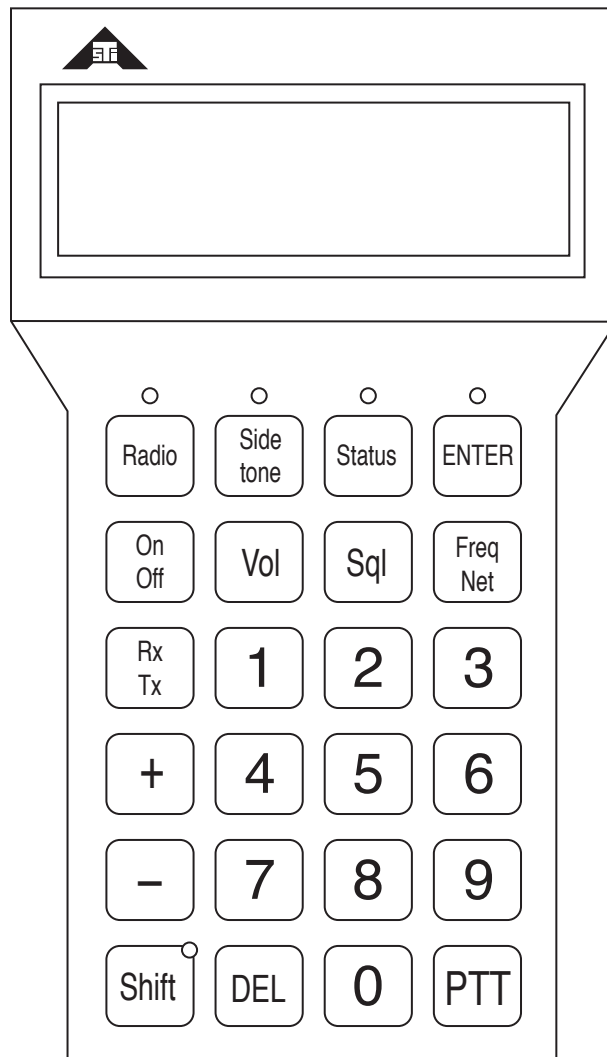
- RIU # is set via rotary address switch on the front of the RIU.
- Model is set up as follows:

RIU1: Serial Port A = HHT#1, Chan. A = Operator 1 audio in/out
 Serial Port B = HHT#2, Chan. B = Operator 2 audio in/out

RIU2: Serial Port A = HHT#3, Chan. A = Operator 3 audio in/out
 Serial Port B = HHT#4, Chan. B = Operator 4 audio in/out

•••

RIU8: Serial Port A = HHT#15, Chan. A = Operator 15 audio in/out
 Serial Port B = HHT#16, Chan. B = Operator 16 audio in/out

Figure 2: Hand Held Terminal

Actual length is 7 5/8"

CHAPTER 2: OPERATING CONCEPTS

Applicability

This Guide applies to the following ASTi equipment:

- ASTi systems with Hand-Held Terminal connections to Remote Interface Units (RIUs) running Model Builder version 4.03b or later.

The Virtual Radio Environment

The Hand-Held Terminal (HHT) provides operator interface to the virtual radio environment communications model. The HHT's functionality and the virtual radio environment simulation are resident local to the system.

The virtual radio environment and HHT functionality are capable of supporting up to 16 operators and 16 radios.

Each operator may connect to all 16 radios (default), or a selected subset of radios (assigned by a start-up configuration file). This allows modeling of real world situations where more than one operator has access to the same radio(s).

The concept of a radio in the virtual environment is analogous to a real radio transceiver. An operator may select frequency or net number, squelch, and secure mode operation for any radio to which he has access. If a radio is shared by separate operators, changes made to the simulated radio by one operator will be reflected on both his own, and the other operators' displays. When more than one operator transmits on the same radio simultaneously, each will hear the other's transmission, just as in the real world.

Each operator may individually set the volume of each radio to which he has access. Additionally, each operator can individually select receive, receive/transmit, or neither for each radio. In the virtual environment, radio transceivers are always ON unless the radio frequency is set to zero. Operator Rx and Rx/Tx selection simply routes the audio to and from the appropriate radio.

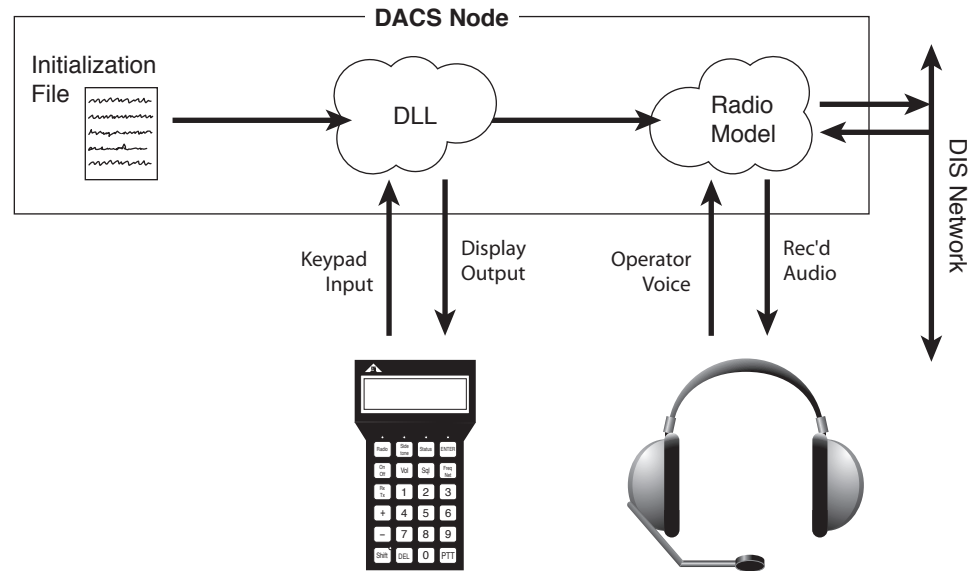
The ASTi radio environment simulates many of the real-world features of a radio such as power and range calculations, over-the-horizon effects on signal, etc. In the event that the user is experiencing difficulty with reception, he is advised to check the quality of reception in the simulated environment before concluding that there are DIS network or other equipment problems.

Operation System Basics

This section provides an overall concept of how the system works.

The Hand-Held Terminal operator interface is a generic, all-purpose interface for the radio to be simulated, yet its operation is identical to that of a high-fidelity, simulated radio panel.

Figure 3: HHT Operation Overview



The only "brains" that the HHT contains is an interface unit (in place of the radio's front panel) which bundles the keypad input information, and updates the panel displays based on the information received from the model.

Within the DACS processing node is a Dynamic Link Library (dll) which interprets the information from the HHT. A state machine running in the dll is where the HHT's functionality resides. In addition to receiving and sending information to/from the HHT, the dll also passes information into the radio modeling environment.

The radio modeling environment is part of the Model Builder software running on the DACS. The radio models are all-purpose, reconfigurable communications simulations. Control parameters--such as volume, squelch, frequency, etc.--can be set from several different sources (different HHTs, configuration or initialization files, etc.). The radio environment is all-purpose in that it is immaterial to the radio model as to the source of this information. The same radio model can be interfaced to a multitude of panel simulation types without requiring a different radio model for each type of radio being simulated.

At model start-up, an initialization file sends information to the dll which, in turn, passes information to the panel and radio model. These include parameters such as the default frequency, squelch and volume to be used for each radio, as well as the HHT's default display output. Each radio and operator station can be programmed with a different set of parameters. Configuration & initialization file commands are covered in detail in Appendix A.

Terminal Operating Concepts

When powered on or reset, the panel displays the Status Page. This page presents information relating to the overall radio environment. The top line of the display contains an identifier for the panel which can be assigned at startup through an initialization file (more information about configuration and initialization file parameters can be found in Appendix A). If an identifier is not assigned, the display will default to “Operator: 1” for the first panel with each following panel numbered sequentially.

The second line of the display contains a line of digits representing the radio number of the symbols directly beneath it in the Rx and Tx status lines. Radio numbers start from one (1) and go to nine (9) for the first nine radios then zero (0) through six (6) for radios ten through sixteen. This line also indicates radio activity. When the operator is receiving a signal, the digit corresponding to the transmitting radio number changes to an asterisk (*).

Along the bottom two lines of the display are the Rx and Tx status lines. Each radio controlled by the panel is represented by a symbol showing its current state. A radio selected for receive and transmit is represented by an R in the Rx status line and a T in the Tx line. A radio not selected is represented by a period (.). When in secure mode, the transmit and receive representations change to an S.

Figure 4: HHT Main Status Page

```

a) Operator: 1
b)   1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
c) Rx: .R...R...S..S...
d) Tx: .....T.....S...

```

a) Identifier, b) Radio Designation,
c) Receive Status, d) Transmit Status

The panel has two modes: Master and Shared. To toggle between the two modes, press “Shift” followed by “Status” on the terminal.

In Shared Mode each operator can modify the following parameters:




- Specific Radio Bus State and Volume
- Overall Volume and Sidetone Level
- Secure or non-secure radio operation

In Master Mode each operator can modify the following parameters:

- Frequency and Squelch of Radio Transceivers (Note: This will effect all the shared users of that radio.)
- Specific Radio Bus State and Volume
- Overall Volume and Sidetone Level
- Secure or non-secure radio operation

Note: It is possible, via initialization file commands, to prevent specific operators from accessing master mode, and to initialize specific operators in either mode. For details, see Appendix A.

The panel logic is designed so the entry is ignored if an operator uses a key that is not a logical part of the entry sequence.

To modify a value the operator can either enter the data numerically, or press  or  to ramp the value up or down, followed by  to indicate that the desired value is attained.

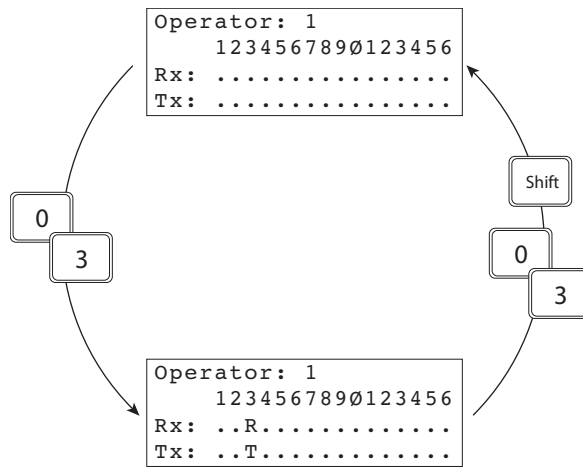
CHAPTER 3: KEYPAD OPERATION

Hot Key Concepts

This Main Status Page mode employs a "hot key" concept to access the most frequently required functions:

- To select a particular radio to Transmit and Receive, press the two-digit number (e.g., 01, 02, 15, etc.) of the radio from the Status Page. To turn off a Transmit/Receive radio, press **Shift** followed by the two-digit radio number.

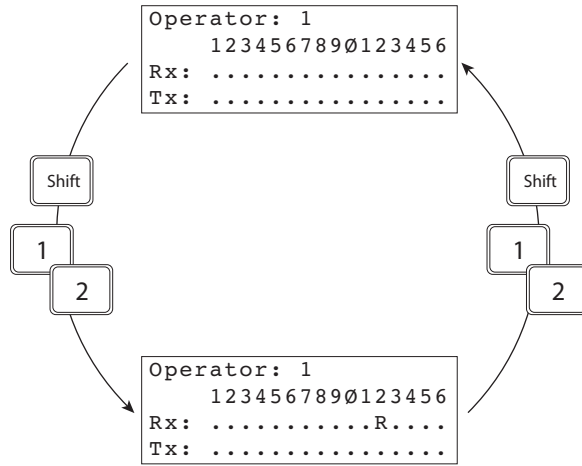
Figure 5: Hot Key Operation Rx/Tx



Note: Use of the hot key method for selection of transmit status selects only a single radio for transmission at any one time. Using the method described in the "Shared Mode Controls" section below, an operator may select multiple radios for simultaneous transmission.

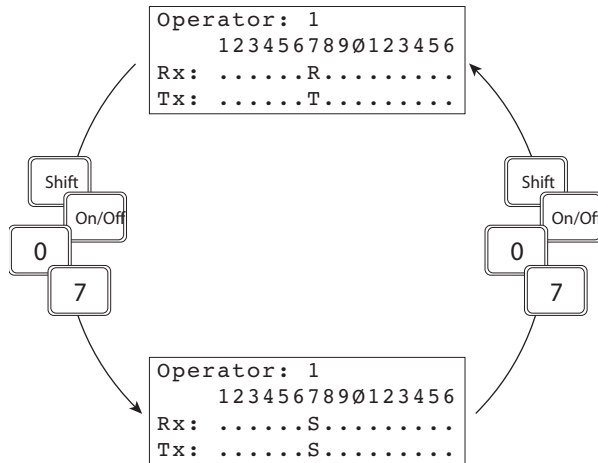
- To select additional radios to be monitored in the Receive-Only mode, press **Shift** followed by the two-digit radio number. To turn off a Receive-Only radio, press **Shift** followed by the two-digit radio number again.

Figure 6: Hot Key Operation Rx-only



- To toggle the “Secure/Non-Secure” mode of a particular radio, press **Shift** then **On/Off** then the two-digit radio number.

Figure 7: Hot Key Operation Secure On/Off



Shared Mode Controls





In Shared mode, the operator can set his overall volume level. From the main Status screen, press  then either press the numeric key 0-9 for the desired volume, or ramp up or down using  and  followed by .

Figure 8: Operator Volume Page

```
Operator: 1
Volume: 5
```








The operator can also adjust his sidetone. From the main Status screen, press  then either press the numeric key 0-9 for the desired sidetone, or ramp up or down using  and  followed by .

Figure 9: Operator Sidetone Page

```
Operator: 1
Sidetone: 5
```

The operator can also select a particular radio for transmission and any series of radios for passive monitoring. This can be accomplished most simply by use of the “hot keys” as described earlier. An alternative method is to use ,  and  keys while in the Radio Status page.



Pressing  will bring up the Radio Status page. The radio displayed will default to the last radio selected by a hot key sequence or the first radio if a hot key sequence has not been used.

Figure 10: Radio Status Page (Shared Mode)

```
Radio: 01
Status: OFF
Volume: 5
```

Pressing  from this screen will toggle the mode of that radio (shown in the “Status” field) between OFF (silent) and RX.

Pressing

Rx
Tx

 will toggle the mode of that radio between RX and RX_TX.

Also from the Radio Status Page, the radio may be toggled between Secure/Non-Secure modes by pressing

Shift

 followed by

On
Off

.

Shared Mode Controls (Overview)

Figure 11: Shared Mode Operation (Main Status Page)

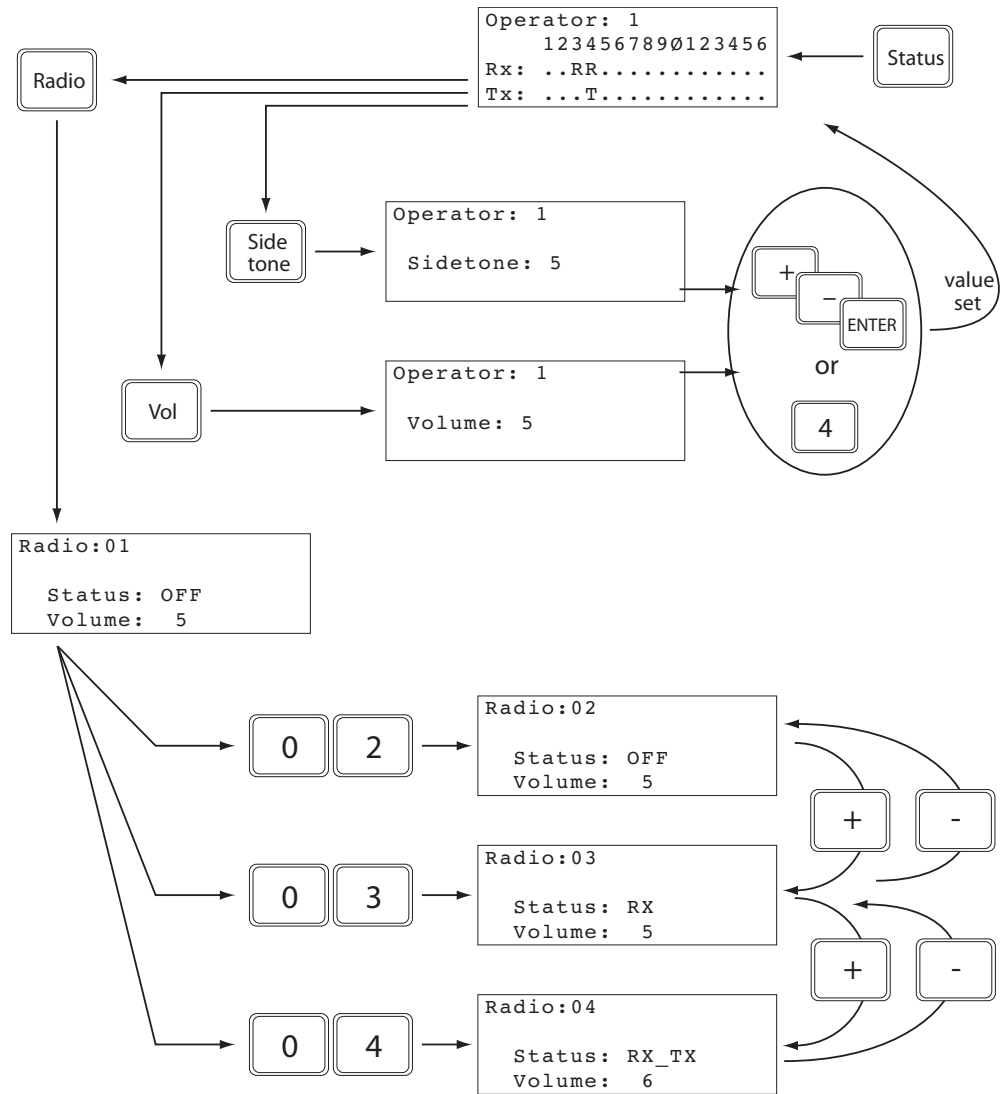
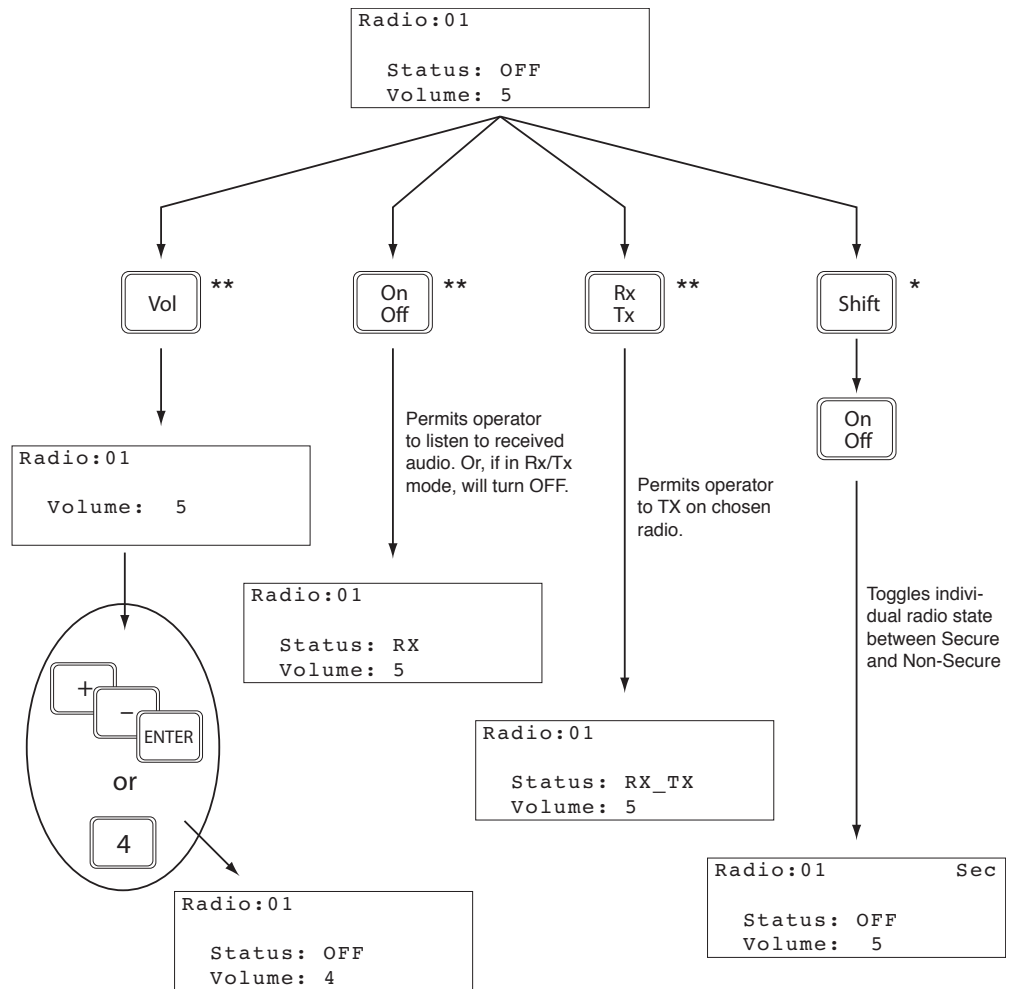


Figure 12: Shared Mode Operation (Radio Status Page)



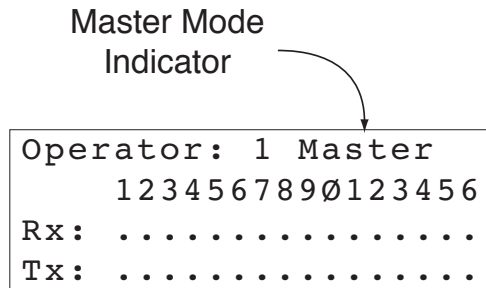
* This control affects operation of the simulated radio.

** This control affects how individual operator audio is routed (and its level) to/from a simulated radio.

Master Mode Controls

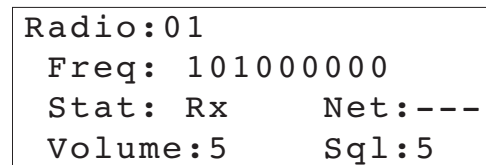
To enter Master mode, press **Shift** then **Status** from the Main Status Page. The display shows "Master" at the top of the screen beside the panel identifier.

Figure 13: Main Status Page Displaying Master Mode



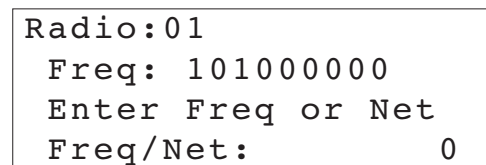
When in Master mode, the operator may review or change the frequency and the squelch value of the various radios connected to their Hand Held Terminal unit. This is accomplished by pressing **Radio** followed by a numeric key sequence 01 through 16 to represent the radio head to be modified.

Figure 14: Radio Status Page (Master Mode)



To modify that radio's frequency, press **Freq/Net**. Enter the desired frequency in Hz using the 0-9 keys and press **ENTER**. To return to the Main Status page, press **Status**.

Figure 15: Changing Frequency or Net (Master Mode)

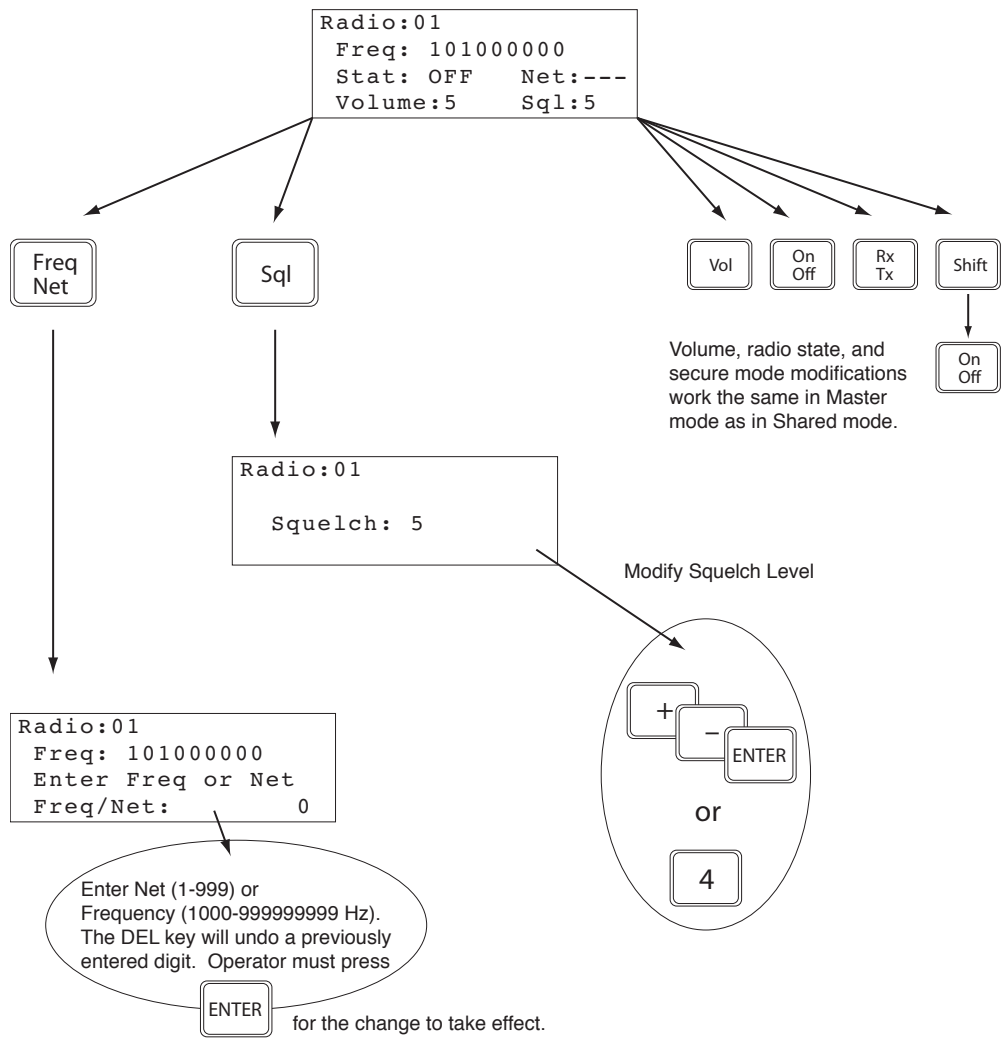


Users may select a predefined Net instead of entering the frequency. Net numbers begin at one (1) and can be as high as 999, depending on the system configuration. A radio may be limited to selecting "nets only" via initialization file commands. In this case, the user will be prompted to enter a net number only. To enter a Net, enter the Net number (1-999) and press **ENTER**.

In Master mode, the operator may also adjust the Receive and Transmit status of the various radios, their "Secure/Non-Secure" modes, as well as the overall Volume and Sidetone. These procedures are the same as described in the "Shared Mode Controls."

Master Mode Controls (Overview)

Figure 16: Master Mode Operation (Radio Status Page Level)



APPENDIX A: HHT FILE COMMANDS

The information contained in Appendix A pertains only to those systems running Model Builder version 4.xx **without** a separate Model Server platform.

Configuration Overview

The Model Builder software requires a number of specified parameters to operate correctly. For the most part, these parameters can be changed, allowing you to configure your communications environment to better fit your application.

Configuration File Commands

Model Builder starts by loading the contents of the default.cfg file. In addition to the command lines described here, the user should also reference the Model Builder Reference Manual/User's Guide for an explanation of the available DIS configuration commands.

DIS configuration commands should be added to the “default.cfg” file, not an initialization (.ini) file.

The default.dfg file may be edited using a DOS-based editor. Type “edit default.cfg” at the c:\mbuilder\user\models prompt.

To have the model and supporting state machine software load and run correctly, the following commands must be included in the “default.cfg” file.

Command 1

DLL1 = <filename.dll>,<filename.ini>,<# of HHTs>

<filename.dll> is the .dll file containing the code for running the HHT state machines.

<filename.ini> is the initialization file that sets radio parameters and individual operator characteristics. This file is covered in more detail in the next section of this appendix, “Initialization File Commands”.

<#of HHTs> is the number of Hand-Held Terminals to be supported by the .dll file.

Example:

DLL1 = dialogue.dll, dialog1.ini, 8

Model Builder will: 1) use the HHT state machines contained within the *dialogue.dll* file, 2) load the contents of the *dialog1.ini* initialization file, and 3) support 8 Hand-Held Terminal units.

Command 2

CELL:PATHS = default.pth

This command specifies the flow of information to and from the software model and to and from the Hand-Held Terminals via the TDM card and Remote Interface Units (RIUs). This file is factory-configured to support the maximum number of operators. **Do not edit the default.pth file unless specifically instructed by ASTi.**

Command 3**MODEL1 = <filename.mdl>**

This specifies which model to load at Model Builder start-up.

<filename.mdl> will be in **xryo.mdl** format, where **x** is the number of radios, and **y** is the number of operators.

Check in the c:\mbuilder\user\models directory for a list of available models. The model filename that is referenced in the command line must be present in this directory when Model Builder is launched, or the simulation will not run. Model Builder will load, but it will not contain any of the necessary objects needed to support user interface and DIS communications.

Example:

MODEL1 = 4r4o.mdl

This will load a 4 radio, 4 operator model upon start-up.

Command 4**MODEL_RATE = <value>**

<value> is the number which determines, in hertz, how fast the DACS will service the network, 60Hz works well for most applications. However, the maximum value is 100, and the minimum value is 24.

A higher model rate is better, especially in a heavy-traffic environment, but too high a model rate can overload the system.

Refer to the Model Builder Reference Manual/User's Guide for techniques to optimize system performance.

Example:

MODEL_RATE = 60

Command 5**DIS = ON**

(default = OFF)

If you are conducting radio communications in a DIS environment, this command must be enabled. Refer to the Model Builder Reference Manual/User's Guide for further information about setting IP addresses, UDP ports, and assigning site and host values.

Command 6**CELL = ON**

(default = OFF)

This command enables cell communication in Model Builder necessary for HHT support.

Initialization File Commands

These options are available to tailor the configuration of the hand-held terminals to your requirements. There is not a particular order required; however, if an option is duplicated, only the last value will be used.

For each of the available options, the common parameters are defined as follows:

<operator #>: an integer 1 through N, where N is the number of operator positions provided with the system.

<operator radio #>: an integer 1 through N, where N is the number of radios available on the system. The number refers to the radio number as seen by the operator. This may or may not match the system radio numbers depending upon the use of the radio mapping option.

<system radio #>: an integer 1 through N, where N is the number of radios available on the system. The number refers to the radio number as seen by the system.

TERMINAL:OPER_IDENT = <operator #>,<identifier>

This option sets the identifier shown on the status page of each operator's terminal.

<identifier>: a text string up to 12 characters in length containing ASCII letters or numbers. Note that spaces (ASCII character 32) in the string will be removed. However, the underscore character (ASCII character 245) may be used for clarity. If a value is not specified, the identifier will default to "Operator: 1", "Operator: 2", etc.

Example:

```
TERMINAL:OPER_IDENT = 2, ASW_OPERATOR
```

Sets Operator 2's terminal identifier to the string "ASW_OPERATOR".

TERMINAL:OPER_MAXRADIOS = <operator #>,<number of radios>

This option sets the number of radios available to an operator.

<number of radios>: an integer 1 through N, where N is the number of radios available on the system.

Example:

```
TERMINAL:OPER_MAXRADIOS = 4, 6
```

Sets Operator 4's terminal to display only radios 1 through 6.

TERMINAL:OPER_RADIOMAP = <operator #>,<operator radio #>,<system radio #>

This option maps the system radios onto the operator radio positions. If the values are not specified, the operator radios are matched to the system radios.

Example:

```
TERMINAL:OPER_RADIOMAP = 1, 3, 12
```

Sets Operator 1's radio number 3 to use the system radio number 12.

TERMINAL:OPER_RADIO_MODE = <operator #>,<operator radio #>,<radio mode>

This option sets the initial operating mode for a radio on the operator terminal.

<radio mode>: One of three valid modes: OFF, RX, or RX_TX. OFF disables the operator's ability to initially access the radio (although it does not deactivate the system radio), RX sets the operator to receive only, and RX_TX enables both send and receive.

Example:

```
TERMINAL:OPER_RADIO_MODE = 2, 1, RX
```

Sets Operator 2's radio number 1 to "Receive-Only" mode.

TERMINAL:OPER_RADIO_VOL = <operator #>,<operator radio #>,<volume>

This option sets the initial volume level of the specified radio for the given operator.

<volume>: An integer in the range of 0 to 9 where 9 is full volume. If the value is not specified for a particular radio, the volume defaults to a setting of 5.

Example:

TERMINAL:OPER_RADIO_VOL = 1, 4, 2

Sets Operator 1's radio number 4 to volume level 2.

TERMINAL:OPER_SYSTEM_MODE = <operator #>,<terminal mode>,<lock flag>

This option sets the initial operating mode for an operator's terminal to either MASTER or OPERATOR mode. MASTER mode allows control of system radio nets, frequencies, and squelch levels. The lock flag controls the operator's ability to switch between MASTER and OPERATOR mode from the terminal.

<terminal mode>: MASTER or OPERATOR

<lock flag>: LOCK or UNLOCK

If the mode or lock state is not specified, the system defaults to OPERATOR and UNLOCK.

Example:

TERMINAL:OPER_SYSTEM_MODE = 2, MASTER, UNLOCK

Sets Operator 2's terminal to MASTER mode, operator may switch between Master and Operator modes.

TERMINAL:OPER_VOL_ST = <operator #>,<volume>,<sidetone>

This option sets the initial volume and sidetone volume for the operator station.

<volume>: an integer in the range of 0 through 9 where 9 is full volume.

<sidetone>: an integer in the range of 0 through 9.

Example:

TERMINAL:OPER_VOL_ST = 4, 5, 4

Sets Operator 4's overall volume to 5 and sidetone volume to 4.

If the values are not specified, the system defaults to a volume and sidetone setting of 5 for each.

TERMINAL:SYSTEM_NET = <system net #>,<frequency>

This option creates a mapping from the system net number to the given frequency (in hertz).

<system net #>: an integer in the range of 0 to 999.

<frequency>: an integer greater than zero.

Example:

TERMINAL:SYSTEM_NET = 12, 31200000

Sets system Net 12 to 31.2 MHz

TERMINAL:SYSTEM_NETS_ONLY = <system radio #>

Restricts operator entries to nets only on the specified radio. If the radio number is omitted, all radios will be set to Nets-Only entry.

TERMINAL:RADIO_NETOFFSET_LIMIT = <system radio #>, <net offset>, <net limit>

Provides the system radio with an offset into the Net table and a limit on the number of Nets available.

<net offset>: an integer in the range of 0 to 999.

<net limit>: an integer in the range of 1 to 1000.

Note: (net offset + net limit) ≤ 1000

Example:

```
TERMINAL:RADIO_NETOFFSET_LIMIT = 11, 100, 10
```

This applies an offset of 100 to all nets entered for system radio 11. Also limits the nets selected to nets 0 through 9. For an operator entry of Net 3, the radio frequency will be set to the frequency defined for Net 103.

TERMINAL:RADIO_IDENT = <system radio #>, <identifier>

Sets the identifier shown for the system radio. The identifier text string may be up to 15 characters in length. If the names are not assigned, the individual radios appear as “Radio: 01”, “Radio: 02”, etc.

Example:

```
TERMINAL:RADIO_IDENT = 3, UHF_1
```

This sets System Radio 3's identifier to “UHF_1”.

TERMINAL:RADIO_FREQ_SQL = <system radio #>, <frequency>, <sqlch>

This option sets the initial values for the frequency and sqlch on the system radios.

<frequency>: an integer greater than zero.

<sqlch>: an integer in the range of 0 through 9.

Example:

```
TERMINAL:RADIO_FREQ_SQL = 12, 121000000, 4
```

Sets system radio 12's frequency to 121MHz and its sqlch to 4.

If the values are not specified, the system defaults Radio 1 to 101MHz, Radio 2 to 102MHz, and so on to Radio 16 at 116MHz.

TERMINAL:RADIO_SECURE = <system radio #>,<SECURE>,<LOCK>

Sets the specified radio to secure or clear mode and optionally locks it in that mode.

<SECURE>: Text string of either “SECURE” or “NON-SECURE” setting the radio mode.

<LOCK>: Optional string used to prevent the operators from switching the radio mode.

If the values are not specified, the radios default to non-secure, and are unlocked. Operators will be able to switch the radio from secure to non-secure mode using the appropriate key sequences.

Example:

```
TERMINAL:RADIO_SECURE = 4, SECURE
```

```
TERMINAL:RADIO_SECURE = 5, NON-SECURE, LOCK
```

Sets radio 4 to Secure mode (if supported). Operator is allowed to switch modes. Sets radio 5 to Non-Secure. Operator cannot switch to Secure mode.

TERMINAL:OPER_TEST_MODE = <operator #>,<mode>

This option starts the given operator terminal unit in test display mode. This is intended to aid in system setup and fault finding. To exit test mode at the operator terminal unit, press

Shift followed by DEL.

<mode>: Text string of either “ON” or “OFF”.

Example:

```
TERMINAL:OPER_TEST_MODE = 2, ON
```

Sets operator 2's terminal to start up in test mode.

DIS Parameters

The following commands allow initialization of DIS parameters for systems configured for DIS operation. Note that these values will need to be “attached” to the radio entities within a model using the **Entity** object. See the Model Builder Reference Manual for further information.

TERMINAL:RADIO_EXERCISE_ID = <radio #>,<exercise #>

This option allows the DIS exercise number ID to be set up for the given radio.

<exercise>: An integer in the range of 1 to 255.

Example:

```
TERMINAL:RADIO_EXERCISE_ID = 1, 222
```

Sets radio 1's DIS exercise number to 222.

TERMINAL:RADIO_DIS_ID = <radio #>,<DIS ID>

This option allows the DIS radio ID to be set up.

<DIS ID>: An integer in the range 1 to 65535.

Example:

```
TERMINAL:RADIO_DIS_ID = 4, 15
```

Sets radio 4's DIS radio ID to 15.

TERMINAL:RADIO_SITE_HOST = <radio #>,<site #>,<host #>

This option allows the DIS host and site numbers to be specified for the given radio.

<site #>: An integer in the range 1 to 65535.

<host #>: An integer in the range 1 to 65535.

Example:

TERMINAL:RADIO_SITE_HOST = 3, 200, 300

Sets radio 3's DIS site ID to 200 and DIS host ID to 300.

TERMINAL:RADIO_ENTITY_ID = <radio #>,<entity #>

This option allows the DIS entity ID number to be assigned to the specified radio.

<entity #>: An integer in the range 1 to 65535.

Example:

TERMINAL:RADIO_ENTITY_ID = 2, 112

Sets radio 2's DIS entity ID to 112.

TERMINAL:ACTIVITY_SYMBOL = <number>

This option allows any ASCII character to be used as the radio activity indicator.

<number>: An integer in the range 30 to 255.

Example:

TERMINAL:ACTIVITY_SYMBOL=35

Sets the radio activity indicator symbol to "#" (35 in ASCII = #)

If the value is not specified, the symbol defaults to an asterisk (*).

Command Error Checking

A basic level of error checking is performed on the content of the initialization file. While this is not exhaustive, it is intended to capture misspelled commands, invalid data, or missing data.

Error messages include:

Operator number invalid in line <num> of <filename> file

This identifies that a supplied operator number is incorrect, and gives the line number and filename (of the file it is using) to read the values.

Op <num>: Invalid number of radios - set to one

Identifies that an attempt was made to define the number of radios available to an operator as 0 (zero) or negative. The system defaults the number of radios available to that operator to 1.

Op <num>: Invalid number of radios - set to 16

Identifies that an attempt was made to define more than the system maximum capability of 16 radios to a certain operator. The system forces the number to 16.

Op <num>: Missing data value in line <num> of <filename> file.

Identifies that a required data value for a particular operator command is not supplied, hence invalidating the command line. The line number and filename of the file in use are identified to aid fault finding.

Op <num>: Data value in line <num> of <filename> file non-valid

Identifies that a supplied data value for a particular operator command is not valid, and usually indicates the specified value is out of range. The line number and filename of the file in use are identified to aid fault finding.

Missing data value in line <num> of <filename> file

Identifies that a required data value is not specified, hence invalidating the command line. The line number and filename of the file in use are identified to aid fault finding.

Data value in line <num> of <filename> file non-valid

Identifies that a supplied data value for a command is not valid, and usually indicates the specified value is out of range. The line number and filename of the file in use are identified to aid fault finding.

Invalid line <num> in <filename> file

Identifies that a line, while being recognized as a Hand Held Terminal command, is not understood, usually due to a misspelling or other syntactic error. The line number and filename of the file in use are identified to aid fault finding.

Op <num>: Radio <num> is mapped more than once

Identifies that a specified radio has been mapped to more than one operator radio for the same operator. This is not strictly an error, but is likely to cause operator confusion and is strongly discouraged.

Frequency initialized for radio <num> defined as NETS ONLY

Identifies that a command has initialized the identified radio to use a frequency value, and has been initialized as a “net numbers only” radio. This is not strictly an error, but is likely to cause operator confusion and is strongly discouraged.

Net no. initialized for radio <num> exceeds net limit

Identifies that a command line has initialized the specified radio to a net number in excess of an initialized net limit value. The assigned net number will be set to the defined limit value.

APPENDIX B: SAMPLE APPLICATION

The following example is intended to help you understand the features of the Hand Held Terminal product that assists in solving real-world communication training problems. This sample application will walk you through the problem analysis phase, the allocation of system resources, and, finally, understanding the use of the configuration and initialization file commands to implement a system that meets your requirements.

Also included is a brief look at the file that controls the flow of data between the system Model, state machine, and Hand Held Terminal units. The state machine software controls how the Hand Held Terminal units behave.

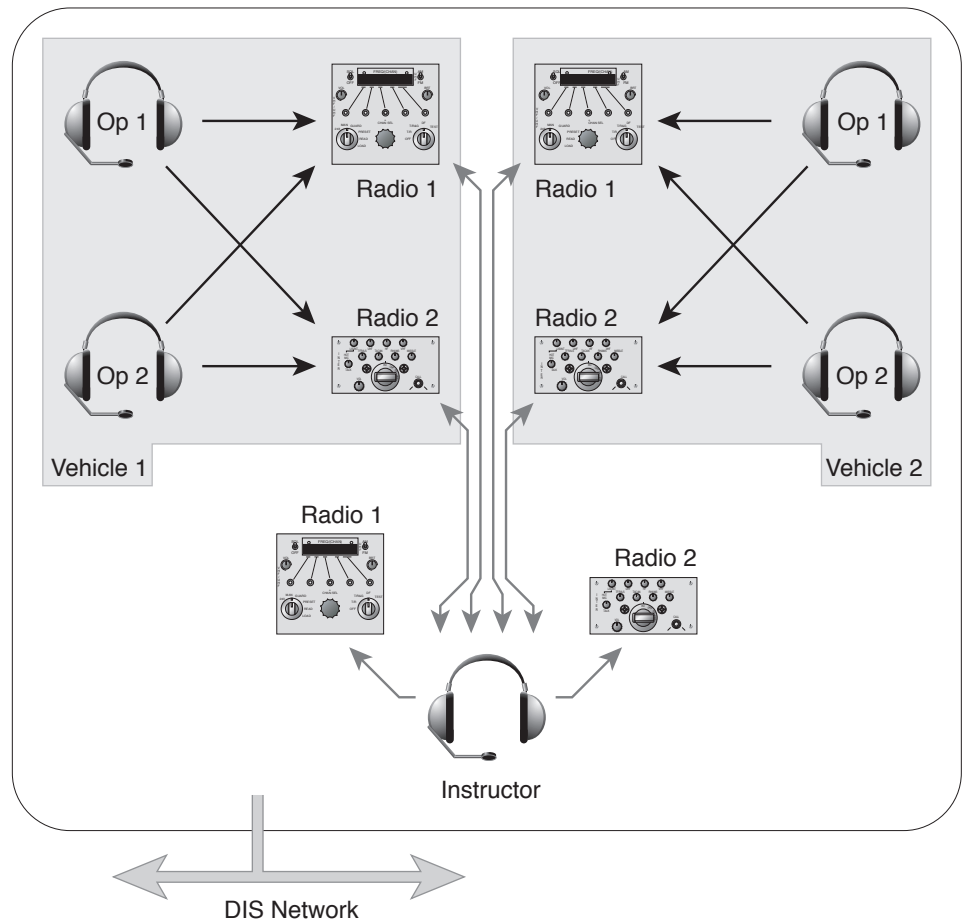
System Requirements

Let us imagine the following requirements exist:

- Training is required in the procedures and protocols between two twin seat vehicles and an instructor.
- The radio communications must also be capable of being connected to a DIS network to allow the training system to communicate with other DIS devices.
- Physical simulation of the vehicle communications panels is not required.
- Each vehicle is equipped with two radios that are shared between the operators.
- The instructor requires the ability to monitor all operator radios and also controls two radios for his own transmissions.

Of the radios fitted to the vehicles:

- One allows the user to select only 1 of 5 net numbers that, within the radio, select pre-programmed frequencies
- The other is a standard frequency input radio, but also has a cipher secure mode of operation that is user selectable.

Figure 1: Sample Application Configuration

System Solution

This system provides a cost effective means of achieving radio simulation training, and indeed supports the full fidelity of radio modeling available within the Model Builder software, while allowing user customization of the facilities made available to each operator on the system. The following examines how a system would be configured to meet the requirement given above.

This system requires five Hand Held Terminal units (one per person). The total system requirement is for six simulated radios, however, not all operators on the system should have access to all radios.

In fact, only the instructor has access to all six radios, since the operators in each simulated vehicle only have access to that vehicle's two radios. It is already clear that—in order to present the correct resources to the various members of the training environment—it is necessary to customize the configuration for each Hand Held Terminal unit (HHT). This is the purpose of the commands used in the configuration (e.g., DEFAULT.CFG) and initialization (e.g., DIALOGUE.INI) files.

We now need to consider the concept of the “System” and “Operator” radio. With reference to our sample problem, there are six System Radios. However, the vehicle operators only have two Operator Radios per simulated vehicle. We may choose to allocate the System Radios as follows:

- System Radio 1 : Vehicle 1, Radio 1
- System Radio 2 : Vehicle 1, Radio 2
- System Radio 3 : Vehicle 2, Radio 1
- System Radio 4 : Vehicle 2, Radio 2
- System Radio 5 : Instructor, Radio 1
- System Radio 6 : Instructor, Radio 2

The operators in Vehicle 2 will use only System Radios 3 and 4. However, it would be confusing to the operator to select radios numbered in this fashion. Therefore, the concept of radio mapping is used.

The system allows the radios displayed on the operators' HHTs to be mapped to any of the System Radios. So for our example, the display for the Vehicle 2 units would show two radios available as Radio 1 and Radio 2; however, the system, when initialized correctly, will map the displayed radios to use System Radio 3 and System Radio 4, respectfully. The following diagrams illustrate the concept.

Figure 2: System without Radio Mapping (Default Configuration)

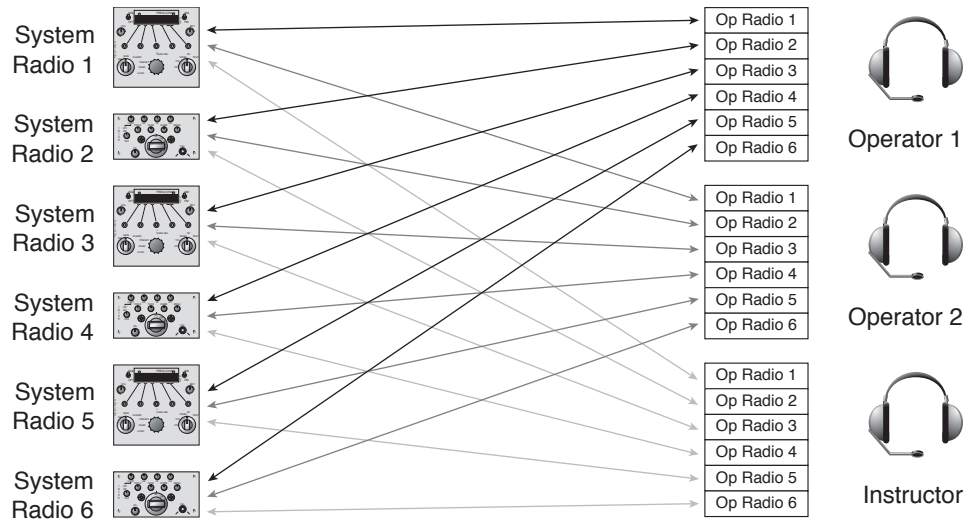
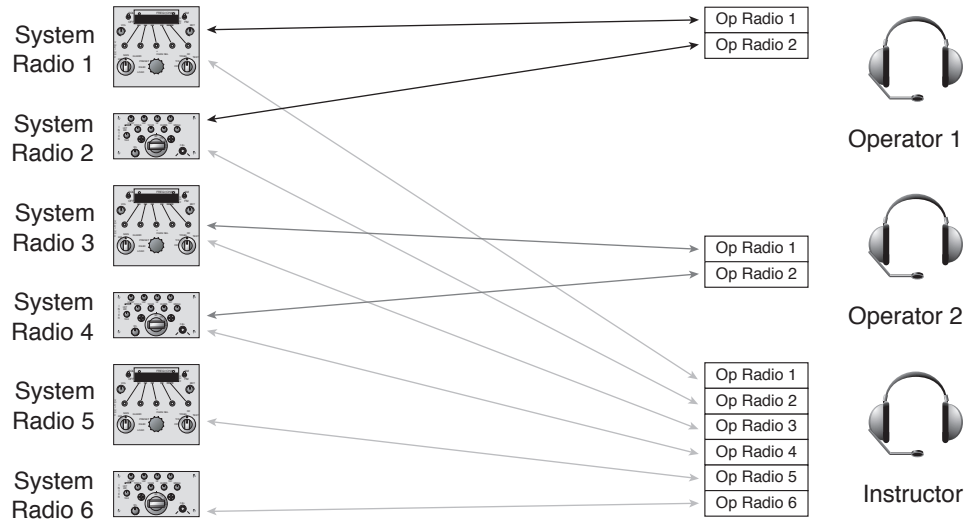


Figure 3: System using Radio Mapping (Required Configuration)



The problem is now essentially broken down, so it is now appropriate that the commands used in the configuration and initialization files are examined. These files are required to allow the system to function properly.

Configuration File For Sample Problem

The following is the actual text file (named “default.cfg”) that would be used in our example. Lines that begin with a semicolon (;) serve as comment lines in the configuration file and are neither read nor processed by the system. ASTi recommends that you make use of comment lines regularly to help organize your files.

```
DLL1=DIALOGUE.DLL,DIALOGUE.INI,5
; - This command specifies that the Dialogue product state machine be used,
; - that the initialization commands are to be found in the file called
; - DIALOGUE.INI and that there are five hand held terminals connected to
; - the system.
;
CELL:PATHS=DEFAULT.PTH
; - This command specifies the file that the system uses to control data flow
; - around the system. See later for sample file as applicable to the example.
;
MODEL1=6R_50.MDL
; - This line specifies the simulation model that will be run. In this case
; - the assumption is that a model designed to support six radios and five
; - operators has been created. If the system was originally shipped in this
; - configuration a model will have been supplied to support these resources.
;
MODEL_RATE=60
; - This line defines that the model will run at a 60Hz iteration rate which
; - is typical.
;
DIS=ON
; - This line specifies that the radios will function in DIS mode. See the
; - Model Builder Reference Manual for additional parameters that must be
; - set up to enable correct operation.
;
CELL=ON
; - This line specifies that the system will be enabled to support cell data.
```

Initialization File For Sample Problem

The following is the actual text file (named “dialogue.ini”) that would be used in our example. Lines that begin with a semicolon (;) serve as comment lines in the initialization file and are neither read nor processed by the system. ASTi recommends that you make use of comment lines regularly to help organize your files.

```

;
;----- Hand Held Terminal 1 Initialization Commands -----
;
TERMINAL:OPER_IDENT=1,VEHICLE1_OP1
; - Hand held terminal 1 will be identified as “VEHICLE1_OP1”.
TERMINAL:OPER_MAXRADIOS=1,2
; - Sets hand held terminal 1 to support 2 radios.
; - N.B. There is no need to map the radios for the operators of Vehicle 1
; - since the radios allocated for use by this are system radios 1 and 2.
;
;----- Hand Held Terminal 2 Initialization Commands -----
;
TERMINAL:OPER_IDENT=2,VEHICLE1_OP2
; - Hand held terminal 2 will be identified as “VEHICLE1_OP2”.
TERMINAL:OPER_MAXRADIOS=2,2
; - Sets hand held terminal 2 to support 2 radios.
;
;----- Hand Held Terminal 3 Initialization Commands -----
;
TERMINAL:OPER_IDENT=3,VEHICLE2_OP1
; - Hand held terminal 3 will be identified as “VEHICLE1_OP2”.
TERMINAL:OPER_MAXRADIOS=3,2
; - Sets hand held terminal 3 to support 2 radios.
TERMINAL:OPER_RADIOMAP=3,1,3
TERMINAL:OPER_RADIOMAP=3,2,4
; - Sets hand held terminal 3’s radio 1 to use system radio 3 and sets hand
; - held terminal 3’s radio 2 to use system radio 4. Radio 3 and 4 are mapped.
;
;----- Hand Held Terminal 4 Initialization Commands -----
;
TERMINAL:OPER_IDENT=4,VEHICLE2_OP2
; - Hand held terminal 4 will be identified as “VEHICLE1_OP2”.
TERMINAL:OPER_MAXRADIOS=4,2
; - Sets hand held terminal 4 to support 2 radios.
TERMINAL:OPER_RADIOMAP=4,1,3
TERMINAL:OPER_RADIOMAP=4,2,4
; - Sets hand held terminal 4’s radio 1 to use system radio 3 and sets hand
; - held terminal 3’s radio 2 to use system radio 4. Radio 3 and 4 are mapped.
;
;----- Hand Held Terminal 5 Initialization Commands -----
;
TERMINAL:OPER_IDENT=5,INSTRUCTOR
; - Hand held terminal 5 will be identified as “INSTRUCTOR”.
TERMINAL:OPER_MAXRADIOS=5,6
; - Sets hand held terminal 5 to support 6 radios.
; - N.B. No radio mapping is required for the instructor position since all
; - radios are required to be available for use.
;

```

```

;----- Radio Initialization Commands -----
;
; - Nets 1-5 are pre-set to select specific frequencies
TERMINAL:SYSTEM_NET=1,121000000
TERMIANL:SYSTEM_NET=2,122000000
TERMINAL:SYSTEM_NET=3,123000000
TERMINAL:SYSTEM_NET=4,124000000
TERMINAL:SYSTEM_NET=5,125000000
;
TERMINAL:RADIO_IDENT=1,VEHICLE1_RADIO1
; - Sets system radio 1's display name to be "VEHICLE1_RADIO1"
TERMINAL:RADIO_IDENT=2,VEHICLE1_RADIO2
; - Sets system radio 2's display name to be "VEHICLE1_RADIO2"
TERMINAL:RADIO_IDENT=3,VEHICLE2_RADIO1
; - Sets system radio 3's display name to be "VEHICLE2_RADIO1"
TERMINAL:RADIO_IDENT=4,VEHICLE2_RADIO2
; - Sets system radio 4's display name to be "VEHICLE2_RADIO2"
TERMINAL:RADIO_IDENT=5,INSTR_RADIO1
; - Sets system radio 5's display name to be "INSTR_RADIO1"
TERMINAL:RADIO_IDENT=6,INSTR_RADIO2
; - Sets system radio 6's display name to be "INSTR_RADIO2"
;
TERMINAL:SYSTEM_NETS_ONLY=1
TERMINAL:SYSTEM_NETS_ONLY=3
; - The radio 1 on each vehicle is defined as being only capable of selecting
; - net numbers. Note: due to mapping, system radio 3 corresponds to vehicle
; - 2's radio 1.
;
TERMINAL:RADIO_NETOFFSET_LIMIT=1,0,5
TERMINAL:RADIO_NETOFFSET_LIMIT=3,0,5
; - These commands apply an offset of 0 (no offset) and a limit of nets 1-5
; - to system radios 1 and 3. Note: again due to mapping, system radio 3
; - corresponds to vehicle 2's radio 1.
;
TERMINAL:RADIO_SECURE=1,NON_SECURE,LOCK
TERMINAL:RADIO_SECURE=3,NON_SECURE,LOCK
; - These commands prevent system radios 1 and 3 from being put into secure
; - mode (i.e. these radios do not have secure capability). Note: other system
; - radios are capable of secure operation.
;

```

The DEFAULT.PTH File

This file is responsible for determining the routing of data between the components that comprise the system. The information contained herein is included for completeness. ***This file SHOULD NOT BE MODIFIED unless under direct instruction from ASTi.***

Path File For Sample Problem

```

; *****
; Set up data cell Tx/Rx paths to RIU Serial Port for
; HHT display and key presses -> Operators 1 - 5
; *****
;
; Operator1 HHT Connects To: RIU1 (Address 1), Serial Port A
path:add = dll1, vpi:1, vci:1, prt:1 <> dsp1, riu:1, hha:1
;
; Operator2 HHT Connects To: RIU1 (Address 1), Serial Port B
path:add = dll1, vpi:1, vci:2, prt:1 <> dsp1, riu:1, hhb:1
;
; Operator3 HHT Connects To: RIU2 (Address 2), Serial Port A
path:add = dll1, vpi:1, vci:3, prt:1 <> dsp1, riu:2, hha:1
;
; Operator4 HHT Connects To: RIU2 (Address 2), Serial Port B
path:add = dll1, vpi:1, vci:4, prt:1 <> dsp1, riu:2, hhb:1
;
; Operator5 HHT Connects To: RIU3 (Address 3), Serial Port A
path:add = dll1, vpi:1, vci:5, prt:1 <> dsp1, riu:3, hha:1
;
; *****
; Set up data TX path from state machine to model for
; operator control parameters - operators 1 - 5
;
; R# buffer selected in model control objects must map to rxc:#
; See HHT and Dialogue State Machine documentation for ICD
; *****
path:add = dll1, vpi:1, vci:1, prt:2 > mdl1, sys, con, rxc:1
path:add = dll1, vpi:1, vci:2, prt:2 > mdl1, sys, con, rxc:2
path:add = dll1, vpi:1, vci:3, prt:2 > mdl1, sys, con, rxc:3
path:add = dll1, vpi:1, vci:4, prt:2 > mdl1, sys, con, rxc:4
path:add = dll1, vpi:1, vci:5, prt:2 > mdl1, sys, con, rxc:5
;
; *****
; GLOBAL RETURN DATA TO MODEL BUILDER
; Set up data TX path from state machine to model for radio
; state parameters - radios 1 - 16 (N.B. These are required even
; though only 6 radios are available in this instance of the Model)
;
; R# buffer selected in model control objects must map to rxc:#
; See HHT and Dialogue State Machine documentation for ICD
; *****
;
; This rather unusual mapping is a legacy from the old
; dialog state machine.

```

```

;
; Radio data passed in the first 4 cells
path:add = dll1, vpi:1, vci:1, prt:10 > mdl1, sys, con, rxc:17
path:add = dll1, vpi:1, vci:1, prt:11 > mdl1, sys, con, rxc:18
path:add = dll1, vpi:1, vci:1, prt:12 > mdl1, sys, con, rxc:19
path:add = dll1, vpi:1, vci:1, prt:13 > mdl1, sys, con, rxc:20
; DIS initialization parameters use the next 8 cells
path:add = dll1, vpi:1, vci:1, prt:14 > mdl1, sys, con, rxc:21
path:add = dll1, vpi:1, vci:1, prt:15 > mdl1, sys, con, rxc:22
path:add = dll1, vpi:1, vci:1, prt:16 > mdl1, sys, con, rxc:23
path:add = dll1, vpi:1, vci:1, prt:17 > mdl1, sys, con, rxc:24
path:add = dll1, vpi:1, vci:1, prt:18 > mdl1, sys, con, rxc:25
path:add = dll1, vpi:1, vci:1, prt:19 > mdl1, sys, con, rxc:26
path:add = dll1, vpi:1, vci:1, prt:20 > mdl1, sys, con, rxc:27
path:add = dll1, vpi:1, vci:1, prt:21 > mdl1, sys, con, rxc:28
;
; *****
; Send Global MB data to DLL
; 1 cell.
; Bytes 16-31 are LED controls for HHT 1-16
; Bytes 0-15 are the activity indicators for Radios 1-16
; *****
;
path:add = mdl1, sys, con, txc:1 > dll1, vpi:1, vci:1, prt:10

```


APPENDIX C: INTERFACE CONTROL DEFINITION (ICD)

The following ICD is for a 16 radio / 16 operator model running under Model Builder version 4.03a21 or later. If you require an ICD for a different configuration, please contact ASTi at (703)471-2104.

Name	Description	Type	Pkt	Offset	Size
Sys_Volume_01	System Volume Control for Terminal #1	In_Int	R1	0	1 bytes
Sys_Sidetone_01	System Sidetone Control for Terminal #1	In_Int	R1	1	1 bytes
PTT_Termin_01	Press to Talk for Terminal #1	In_Bool	R1	2 bit0 (x01)	
RX_Status_A_01	Receive Status A for Terminal #1	In_Bit8			
	Bit0		R1	4 bit 0 (x01)	
	Bit1		R1	4 bit 1 (x02)	
	Bit2		R1	4 bit 2 (x04)	
	Bit3		R1	4 bit 3 (x08)	
	Bit4		R1	4 bit 4 (x10)	
	Bit5		R1	4 bit 5 (x20)	
	Bit6		R1	4 bit 6 (x40)	
	Bit7		R1	4 bit 7 (x80)	
RX_Status_B_01	Receive Status B for Terminal #1	In_Bit8			
	Bit0		R1	5 bit 0 (x01)	
	Bit1		R1	5 bit 1 (x02)	
	Bit2		R1	5 bit 2 (x04)	
	Bit3		R1	5 bit 3 (x08)	
	Bit4		R1	5 bit 4 (x10)	
	Bit5		R1	5 bit 5 (x20)	
	Bit6		R1	5 bit 6 (x40)	
	Bit7		R1	5 bit 7 (x80)	
TX_Status_A_01	Transmit Status A for Terminal #1	In_Bit8			
	Bit0		R1	6 bit 0 (x01)	
	Bit1		R1	6 bit 1 (x02)	
	Bit2		R1	6 bit 2 (x04)	
	Bit3		R1	6 bit 3 (x08)	
	Bit4		R1	6 bit 4 (x10)	
	Bit5		R1	6 bit 5 (x20)	
	Bit6		R1	6 bit 6 (x40)	
	Bit7		R1	6 bit 7 (x80)	
TX_Status_B_01	Transmit Status B for Terminal #1	In_Bit8			

Name	Description	Type	Pkt	Offset	Size
	Bit0		R1	7 bit 0 (x01)	
	Bit1		R1	7 bit 1 (x02)	
	Bit2		R1	7 bit 2 (x04)	
	Bit3		R1	7 bit 3 (x08)	
	Bit4		R1	7 bit 4 (x10)	
	Bit5		R1	7 bit 5 (x20)	
	Bit6		R1	7 bit 6 (x40)	
	Bit7		R1	7 bit 7 (x80)	
LED_Control_01	LED Control for Terminal #1	Out_Int	T1	16	1 bytes
Vol_Op1_Radio1	Volume Control for Radio #1	In_Int	R1	8	1 bytes
Vol_Op1_Radio2	Volume Control for Radio #2	In_Int	R1	9	1 bytes
Vol_Op1_Radio3	Volume Control for Radio #3	In_Int	R1	10	1 bytes
Vol_Op1_Radio4	Volume Control for Radio #4	In_Int	R1	11	1 bytes
Vol_Op1_Radio5	Volume Control for Radio #5	In_Int	R1	12	1 bytes
Vol_Op1_Radio6	Volume Control for Radio #6	In_Int	R1	13	1 bytes
Vol_Op1_Radio7	Volume Control for Radio #7	In_Int	R1	14	1 bytes
Vol_Op1_Radio8	Volume Control for Radio #8	In_Int	R1	15	1 bytes
Vol_Op1_Radio9	Volume Control for Radio #9	In_Int	R1	16	1 bytes
Vol_Op1_Radio10	Volume Control for Radio #10	In_Int	R1	17	1 bytes
Vol_Op1_Radio11	Volume Control for Radio #11	In_Int	R1	18	1 bytes
Vol_Op1_Radio12	Volume Control for Radio #12	In_Int	R1	19	1 bytes
Vol_Op1_Radio13	Volume Control for Radio #13	In_Int	R1	20	1 bytes
Vol_Op1_Radio14	Volume Control for Radio #14	In_Int	R1	21	1 bytes
Vol_Op1_Radio15	Volume Control for Radio #15	In_Int	R1	22	1 bytes
Vol_Op1_Radio16	Volume Control for Radio #16	In_Int	R1	23	1 bytes
Sys_Volume_02	System Volume Control for Terminal #2	In_Int	R2	0	1 bytes
Sys_Sidetone_02	System Sidetone Control for Terminal #2	In_Int	R2	1	1 bytes
PTT_Termin_02	Press to Talk for Terminal #2	In_Bool	R2	2 bit0 (x01)	
RX_Status_A_02	Receive Status A for Terminal #2	In_Bit8			
	Bit0		R2	4 bit 0 (x01)	
	Bit1		R2	4 bit 1 (x02)	
	Bit2		R2	4 bit 2 (x04)	
	Bit3		R2	4 bit 3 (x08)	
	Bit4		R2	4 bit 4 (x10)	
	Bit5		R2	4 bit 5 (x20)	
	Bit6		R2	4 bit 6 (x40)	

Name	Description	Type	Pkt	Offset	Size
	Bit7		R2	4 bit 7 (x80)	
RX_Status_B_02	Receive Status B for Terminal #2	In_Bit8			
	Bit0		R2	5 bit 0 (x01)	
	Bit1		R2	5 bit 1 (x02)	
	Bit2		R2	5 bit 2 (x04)	
	Bit3		R2	5 bit 3 (x08)	
	Bit4		R2	5 bit 4 (x10)	
	Bit5		R2	5 bit 5 (x20)	
	Bit6		R2	5 bit 6 (x40)	
	Bit7		R2	5 bit 7 (x80)	
TX_Status_A_02	Transmit Status A for Terminal #2	In_Bit8			
	Bit0		R2	6 bit 0 (x01)	
	Bit1		R2	6 bit 1 (x02)	
	Bit2		R2	6 bit 2 (x04)	
	Bit3		R2	6 bit 3 (x08)	
	Bit4		R2	6 bit 4 (x10)	
	Bit5		R2	6 bit 5 (x20)	
	Bit6		R2	6 bit 6 (x40)	
	Bit7		R2	6 bit 7 (x80)	
TX_Status_B_02	Transmit Status B for Terminal #2	In_Bit8			
	Bit0		R2	7 bit 0 (x01)	
	Bit1		R2	7 bit 1 (x02)	
	Bit2		R2	7 bit 2 (x04)	
	Bit3		R2	7 bit 3 (x08)	
	Bit4		R2	7 bit 4 (x10)	
	Bit5		R2	7 bit 5 (x20)	
	Bit6		R2	7 bit 6 (x40)	
	Bit7		R2	7 bit 7 (x80)	
LED_Control_02	LED Control for Terminal #2	Out_Int	T1	17	1 bytes
Vol_Op2_Radio1	Volume Control for Radio #1	In_Int	R2	8	1 bytes
Vol_Op2_Radio2	Volume Control for Radio #2	In_Int	R2	9	1 bytes
Vol_Op2_Radio3	Volume Control for Radio #3	In_Int	R2	10	1 bytes
Vol_Op2_Radio4	Volume Control for Radio #4	In_Int	R2	11	1 bytes
Vol_Op2_Radio5	Volume Control for Radio #5	In_Int	R2	12	1 bytes
Vol_Op2_Radio6	Volume Control for Radio #6	In_Int	R2	13	1 bytes
Vol_Op2_Radio7	Volume Control for Radio #7	In_Int	R2	14	1 bytes

Name	Description	Type	Pkt	Offset	Size
Vol_Op2_Radio8	Volume Control for Radio #8	In_Int	R2	15	1 bytes
Vol_Op2_Radio9	Volume Control for Radio #9	In_Int	R2	16	1 bytes
Vol_Op2_Radio10	Volume Control for Radio #10	In_Int	R2	17	1 bytes
Vol_Op2_Radio11	Volume Control for Radio #11	In_Int	R2	18	1 bytes
Vol_Op2_Radio12	Volume Control for Radio #12	In_Int	R2	19	1 bytes
Vol_Op2_Radio13	Volume Control for Radio #13	In_Int	R2	20	1 bytes
Vol_Op2_Radio14	Volume Control for Radio #14	In_Int	R2	21	1 bytes
Vol_Op2_Radio15	Volume Control for Radio #15	In_Int	R2	22	1 bytes
Vol_Op2_Radio16	Volume Control for Radio #16	In_Int	R2	23	1 bytes
Sys_Volume_03	System Volume Control for Terminal #3	In_Int	R3	0	1 bytes
Sys_Sidetone_03	System Sidetone Control for Terminal #3	In_Int	R3	1	1 bytes
PTT_Termin_03	Press to Talk for Terminal #3	In_Bool	R3	2 bit0 (x01)	
RX_Status_A_03	Receive Status A for Terminal #3	In_Bit8			
	Bit0		R3	4 bit 0 (x01)	
	Bit1		R3	4 bit 1 (x02)	
	Bit2		R3	4 bit 2 (x04)	
	Bit3		R3	4 bit 3 (x08)	
	Bit4		R3	4 bit 4 (x10)	
	Bit5		R3	4 bit 5 (x20)	
	Bit6		R3	4 bit 6 (x40)	
	Bit7		R3	4 bit 7 (x80)	
RX_Status_B_03	Receive Status B for Terminal #3	In_Bit8			
	Bit0		R3	5 bit 0 (x01)	
	Bit1		R3	5 bit 1 (x02)	
	Bit2		R3	5 bit 2 (x04)	
	Bit3		R3	5 bit 3 (x08)	
	Bit4		R3	5 bit 4 (x10)	
	Bit5		R3	5 bit 5 (x20)	
	Bit6		R3	5 bit 6 (x40)	
	Bit7		R3	5 bit 7 (x80)	
TX_Status_A_03	Transmit Status A for Terminal #3	In_Bit8			
	Bit0		R3	6 bit 0 (x01)	
	Bit1		R3	6 bit 1 (x02)	
	Bit2		R3	6 bit 2 (x04)	
	Bit3		R3	6 bit 3 (x08)	
	Bit4		R3	6 bit 4 (x10)	

Name	Description	Type	Pkt	Offset	Size
	Bit5		R3	6 bit 5 (x20)	
	Bit6		R3	6 bit 6 (x40)	
	Bit7		R3	6 bit 7 (x80)	
TX_Status_B_03	Transmit Status B for Terminal #3	In_Bit8			
	Bit0		R3	7 bit 0 (x01)	
	Bit1		R3	7 bit 1 (x02)	
	Bit2		R3	7 bit 2 (x04)	
	Bit3		R3	7 bit 3 (x08)	
	Bit4		R3	7 bit 4 (x10)	
	Bit5		R3	7 bit 5 (x20)	
	Bit6		R3	7 bit 6 (x40)	
	Bit7		R3	7 bit 7 (x80)	
LED_Control_03	LED Control for Terminal #3	Out_Int	T1	18	1 bytes
Vol_Op3_Radio1	Volume Control for Radio #1	In_Int	R3	8	1 bytes
Vol_Op3_Radio2	Volume Control for Radio #2	In_Int	R3	9	1 bytes
Vol_Op3_Radio3	Volume Control for Radio #3	In_Int	R3	10	1 bytes
Vol_Op3_Radio4	Volume Control for Radio #4	In_Int	R3	11	1 bytes
Vol_Op3_Radio5	Volume Control for Radio #5	In_Int	R3	12	1 bytes
Vol_Op3_Radio6	Volume Control for Radio #6	In_Int	R3	13	1 bytes
Vol_Op3_Radio7	Volume Control for Radio #7	In_Int	R3	14	1 bytes
Vol_Op3_Radio8	Volume Control for Radio #8	In_Int	R3	15	1 bytes
Vol_Op3_Radio9	Volume Control for Radio #9	In_Int	R3	16	1 bytes
Vol_Op3_Radio10	Volume Control for Radio #10	In_Int	R3	17	1 bytes
Vol_Op3_Radio11	Volume Control for Radio #11	In_Int	R3	18	1 bytes
Vol_Op3_Radio12	Volume Control for Radio #12	In_Int	R3	19	1 bytes
Vol_Op3_Radio13	Volume Control for Radio #13	In_Int	R3	20	1 bytes
Vol_Op3_Radio14	Volume Control for Radio #14	In_Int	R3	21	1 bytes
Vol_Op3_Radio15	Volume Control for Radio #15	In_Int	R3	22	1 bytes
Vol_Op3_Radio16	Volume Control for Radio #16	In_Int	R3	23	1 bytes
Sys_Volume_04	System Volume Control for Terminal #4	In_Int	R4	0	1 bytes
Sys_Sidetone_04	System Sidetone Control for Terminal #4	In_Int	R4	1	1 bytes
PTT_Termin_04	Press to Talk for Terminal #4	In_Bool	R4	2 bit0 (x01)	
RX_Status_A_04	Receive Status A for Terminal #4	In_Bit8			
	Bit0		R4	4 bit 0 (x01)	
	Bit1		R4	4 bit 1 (x02)	
	Bit2		R4	4 bit 2 (x04)	

Name	Description	Type	Pkt	Offset	Size
	Bit3		R4	4 bit 3 (x08)	
	Bit4		R4	4 bit 4 (x10)	
	Bit5		R4	4 bit 5 (x20)	
	Bit6		R4	4 bit 6 (x40)	
	Bit7		R4	4 bit 7 (x80)	
RX_Status_B_04	Receive Status B for Terminal #4	In_Bit8			
	Bit0		R4	5 bit 0 (x01)	
	Bit1		R4	5 bit 1 (x02)	
	Bit2		R4	5 bit 2 (x04)	
	Bit3		R4	5 bit 3 (x08)	
	Bit4		R4	5 bit 4 (x10)	
	Bit5		R4	5 bit 5 (x20)	
	Bit6		R4	5 bit 6 (x40)	
	Bit7		R4	5 bit 7 (x80)	
TX_Status_A_04	Transmit Status A for Terminal #4	In_Bit8			
	Bit0		R4	6 bit 0 (x01)	
	Bit1		R4	6 bit 1 (x02)	
	Bit2		R4	6 bit 2 (x04)	
	Bit3		R4	6 bit 3 (x08)	
	Bit4		R4	6 bit 4 (x10)	
	Bit5		R4	6 bit 5 (x20)	
	Bit6		R4	6 bit 6 (x40)	
	Bit7		R4	6 bit 7 (x80)	
TX_Status_B_04	Transmit Status B for Terminal #4	In_Bit8			
	Bit0		R4	7 bit 0 (x01)	
	Bit1		R4	7 bit 1 (x02)	
	Bit2		R4	7 bit 2 (x04)	
	Bit3		R4	7 bit 3 (x08)	
	Bit4		R4	7 bit 4 (x10)	
	Bit5		R4	7 bit 5 (x20)	
	Bit6		R4	7 bit 6 (x40)	
	Bit7		R4	7 bit 7 (x80)	
LED_Control_04	LED Control for Terminal #4	Out_Int	T1	19	1 bytes
Vol_Op4_Radio1	Volume Control for Radio #1	In_Int	R4	8	1 bytes
Vol_Op4_Radio2	Volume Control for Radio #2	In_Int	R4	9	1 bytes
Vol_Op4_Radio3	Volume Control for Radio #3	In_Int	R4	10	1 bytes

Name	Description	Type	Pkt	Offset	Size
Vol_Op4_Radio4	Volume Control for Radio #4	In_Int	R4	11	1 bytes
Vol_Op4_Radio5	Volume Control for Radio #5	In_Int	R4	12	1 bytes
Vol_Op4_Radio6	Volume Control for Radio #6	In_Int	R4	13	1 bytes
Vol_Op4_Radio7	Volume Control for Radio #7	In_Int	R4	14	1 bytes
Vol_Op4_Radio8	Volume Control for Radio #8	In_Int	R4	15	1 bytes
Vol_Op4_Radio9	Volume Control for Radio #9	In_Int	R4	16	1 bytes
Vol_Op4_Radio10	Volume Control for Radio #10	In_Int	R4	17	1 bytes
Vol_Op4_Radio11	Volume Control for Radio #11	In_Int	R4	18	1 bytes
Vol_Op4_Radio12	Volume Control for Radio #12	In_Int	R4	19	1 bytes
Vol_Op4_Radio13	Volume Control for Radio #13	In_Int	R4	20	1 bytes
Vol_Op4_Radio14	Volume Control for Radio #14	In_Int	R4	21	1 bytes
Vol_Op4_Radio15	Volume Control for Radio #15	In_Int	R4	22	1 bytes
Vol_Op4_Radio16	Volume Control for Radio #16	In_Int	R4	23	1 bytes
Sys_Volume_05	System Volume Control for Terminal #5	In_Int	R5	0	1 bytes
Sys_Sidetone_05	System Sidetone Control for Terminal #5	In_Int	R5	1	1 bytes
PTT_Termin_05	Press to Talk for Terminal #5	In_Bool	R5	2 bit0 (x01)	
RX_Status_A_05	Receive Status A for Terminal #5	In_Bit8			
	Bit0		R5	4 bit 0 (x01)	
	Bit1		R5	4 bit 1 (x02)	
	Bit2		R5	4 bit 2 (x04)	
	Bit3		R5	4 bit 3 (x08)	
	Bit4		R5	4 bit 4 (x10)	
	Bit5		R5	4 bit 5 (x20)	
	Bit6		R5	4 bit 6 (x40)	
	Bit7		R5	4 bit 7 (x80)	
RX_Status_B_05	Receive Status B for Terminal #5	In_Bit8			
	Bit0		R5	5 bit 0 (x01)	
	Bit1		R5	5 bit 1 (x02)	
	Bit2		R5	5 bit 2 (x04)	
	Bit3		R5	5 bit 3 (x08)	
	Bit4		R5	5 bit 4 (x10)	
	Bit5		R5	5 bit 5 (x20)	
	Bit6		R5	5 bit 6 (x40)	
	Bit7		R5	5 bit 7 (x80)	
TX_Status_A_05	Transmit Status A for Terminal #5	In_Bit8			
	Bit0		R5	6 bit 0 (x01)	

Name	Description	Type	Pkt	Offset	Size
	Bit1		R5	6 bit 1 (x02)	
	Bit2		R5	6 bit 2 (x04)	
	Bit3		R5	6 bit 3 (x08)	
	Bit4		R5	6 bit 4 (x10)	
	Bit5		R5	6 bit 5 (x20)	
	Bit6		R5	6 bit 6 (x40)	
	Bit7		R5	6 bit 7 (x80)	
TX_Status_B_05	Transmit Status B for Terminal #5	In_Bit8			
	Bit0		R5	7 bit 0 (x01)	
	Bit1		R5	7 bit 1 (x02)	
	Bit2		R5	7 bit 2 (x04)	
	Bit3		R5	7 bit 3 (x08)	
	Bit4		R5	7 bit 4 (x10)	
	Bit5		R5	7 bit 5 (x20)	
	Bit6		R5	7 bit 6 (x40)	
	Bit7		R5	7 bit 7 (x80)	
LED_Control_05	LED Control for Terminal #5	Out_Int	T1	20	1 bytes
Vol_Op5_Radio1	Volume Control for Radio #1	In_Int	R5	8	1 bytes
Vol_Op5_Radio2	Volume Control for Radio #2	In_Int	R5	9	1 bytes
Vol_Op5_Radio3	Volume Control for Radio #3	In_Int	R5	10	1 bytes
Vol_Op5_Radio4	Volume Control for Radio #4	In_Int	R5	11	1 bytes
Vol_Op5_Radio5	Volume Control for Radio #5	In_Int	R5	12	1 bytes
Vol_Op5_Radio6	Volume Control for Radio #6	In_Int	R5	13	1 bytes
Vol_Op5_Radio7	Volume Control for Radio #7	In_Int	R5	14	1 bytes
Vol_Op5_Radio8	Volume Control for Radio #8	In_Int	R5	15	1 bytes
Vol_Op5_Radio9	Volume Control for Radio #9	In_Int	R5	16	1 bytes
Vol_Op5_Radio10	Volume Control for Radio #10	In_Int	R5	17	1 bytes
Vol_Op5_Radio11	Volume Control for Radio #11	In_Int	R5	18	1 bytes
Vol_Op5_Radio12	Volume Control for Radio #12	In_Int	R5	19	1 bytes
Vol_Op5_Radio13	Volume Control for Radio #13	In_Int	R5	20	1 bytes
Vol_Op5_Radio14	Volume Control for Radio #14	In_Int	R5	21	1 bytes
Vol_Op5_Radio15	Volume Control for Radio #15	In_Int	R5	22	1 bytes
Vol_Op5_Radio16	Volume Control for Radio #16	In_Int	R5	23	1 bytes
Sys_Volume_06	System Volume Control for Terminal #6	In_Int	R6	0	1 bytes
Sys_Sidetone_06	System Sidetone Control for Terminal #6	In_Int	R6	1	1 bytes
PTT_Termin_06	Press to Talk for Terminal #6	In_Bool	R6	2 bit0 (x01)	

Name	Description	Type	Pkt	Offset	Size
RX_Status_A_06	Receive Status A for Terminal #6	In_Bit8			
	Bit0		R6	4 bit 0 (x01)	
	Bit1		R6	4 bit 1 (x02)	
	Bit2		R6	4 bit 2 (x04)	
	Bit3		R6	4 bit 3 (x08)	
	Bit4		R6	4 bit 4 (x10)	
	Bit5		R6	4 bit 5 (x20)	
	Bit6		R6	4 bit 6 (x40)	
	Bit7		R6	4 bit 7 (x80)	
RX_Status_B_06	Receive Status B for Terminal #6	In_Bit8			
	Bit0		R6	5 bit 0 (x01)	
	Bit1		R6	5 bit 1 (x02)	
	Bit2		R6	5 bit 2 (x04)	
	Bit3		R6	5 bit 3 (x08)	
	Bit4		R6	5 bit 4 (x10)	
	Bit5		R6	5 bit 5 (x20)	
	Bit6		R6	5 bit 6 (x40)	
	Bit7		R6	5 bit 7 (x80)	
TX_Status_A_06	Transmit Status A for Terminal #6	In_Bit8			
	Bit0		R6	6 bit 0 (x01)	
	Bit1		R6	6 bit 1 (x02)	
	Bit2		R6	6 bit 2 (x04)	
	Bit3		R6	6 bit 3 (x08)	
	Bit4		R6	6 bit 4 (x10)	
	Bit5		R6	6 bit 5 (x20)	
	Bit6		R6	6 bit 6 (x40)	
	Bit7		R6	6 bit 7 (x80)	
TX_Status_B_06	Transmit Status B for Terminal #6	In_Bit8			
	Bit0		R6	7 bit 0 (x01)	
	Bit1		R6	7 bit 1 (x02)	
	Bit2		R6	7 bit 2 (x04)	
	Bit3		R6	7 bit 3 (x08)	
	Bit4		R6	7 bit 4 (x10)	
	Bit5		R6	7 bit 5 (x20)	
	Bit6		R6	7 bit 6 (x40)	
	Bit7		R6	7 bit 7 (x80)	

Name	Description	Type	Pkt	Offset	Size
LED_Control_06	LED Control for Terminal #6	Out_Int	T1	21	1 bytes
Vol_Op6_Radio1	Volume Control for Radio #1	In_Int	R6	8	1 bytes
Vol_Op6_Radio2	Volume Control for Radio #2	In_Int	R6	9	1 bytes
Vol_Op6_Radio3	Volume Control for Radio #3	In_Int	R6	10	1 bytes
Vol_Op6_Radio4	Volume Control for Radio #4	In_Int	R6	11	1 bytes
Vol_Op6_Radio5	Volume Control for Radio #5	In_Int	R6	12	1 bytes
Vol_Op6_Radio6	Volume Control for Radio #6	In_Int	R6	13	1 bytes
Vol_Op6_Radio7	Volume Control for Radio #7	In_Int	R6	14	1 bytes
Vol_Op6_Radio8	Volume Control for Radio #8	In_Int	R6	15	1 bytes
Vol_Op6_Radio9	Volume Control for Radio #9	In_Int	R6	16	1 bytes
Vol_Op6_Radio10	Volume Control for Radio #10	In_Int	R6	17	1 bytes
Vol_Op6_Radio11	Volume Control for Radio #11	In_Int	R6	18	1 bytes
Vol_Op6_Radio12	Volume Control for Radio #12	In_Int	R6	19	1 bytes
Vol_Op6_Radio13	Volume Control for Radio #13	In_Int	R6	20	1 bytes
Vol_Op6_Radio14	Volume Control for Radio #14	In_Int	R6	21	1 bytes
Vol_Op6_Radio15	Volume Control for Radio #15	In_Int	R6	22	1 bytes
Vol_Op6_Radio16	Volume Control for Radio #16	In_Int	R6	23	1 bytes
Sys_Volume_07	System Volume Control for Terminal #7	In_Int	R7	0	1 bytes
Sys_Sidetone_07	System Sidetone Control for Terminal #7	In_Int	R7	1	1 bytes
PTT_Termin_07	Press to Talk for Terminal #7	In_Bool	R7	2 bit0 (x01)	
RX_Status_A_07	Receive Status A for Terminal #7	In_Bit8			
	Bit0		R7	4 bit 0 (x01)	
	Bit1		R7	4 bit 1 (x02)	
	Bit2		R7	4 bit 2 (x04)	
	Bit3		R7	4 bit 3 (x08)	
	Bit4		R7	4 bit 4 (x10)	
	Bit5		R7	4 bit 5 (x20)	
	Bit6		R7	4 bit 6 (x40)	
	Bit7		R7	4 bit 7 (x80)	
RX_Status_B_07	Receive Status B for Terminal #7	In_Bit8			
	Bit0		R7	5 bit 0 (x01)	
	Bit1		R7	5 bit 1 (x02)	
	Bit2		R7	5 bit 2 (x04)	
	Bit3		R7	5 bit 3 (x08)	
	Bit4		R7	5 bit 4 (x10)	
	Bit5		R7	5 bit 5 (x20)	

Name	Description	Type	Pkt	Offset	Size
	Bit6		R7	5 bit 6 (x40)	
	Bit7		R7	5 bit 7 (x80)	
TX_Status_A_07	Transmit Status A for Terminal #7	In_Bit8			
	Bit0		R7	6 bit 0 (x01)	
	Bit1		R7	6 bit 1 (x02)	
	Bit2		R7	6 bit 2 (x04)	
	Bit3		R7	6 bit 3 (x08)	
	Bit4		R7	6 bit 4 (x10)	
	Bit5		R7	6 bit 5 (x20)	
	Bit6		R7	6 bit 6 (x40)	
	Bit7		R7	6 bit 7 (x80)	
TX_Status_B_07	Transmit Status B for Terminal #7	In_Bit8			
	Bit0		R7	7 bit 0 (x01)	
	Bit1		R7	7 bit 1 (x02)	
	Bit2		R7	7 bit 2 (x04)	
	Bit3		R7	7 bit 3 (x08)	
	Bit4		R7	7 bit 4 (x10)	
	Bit5		R7	7 bit 5 (x20)	
	Bit6		R7	7 bit 6 (x40)	
	Bit7		R7	7 bit 7 (x80)	
LED_Control_07	LED Control for Terminal #7	Out_Int	T1	22	1 bytes
Vol_Op7_Radio1	Volume Control for Radio #1	In_Int	R7	8	1 bytes
Vol_Op7_Radio2	Volume Control for Radio #2	In_Int	R7	9	1 bytes
Vol_Op7_Radio3	Volume Control for Radio #3	In_Int	R7	10	1 bytes
Vol_Op7_Radio4	Volume Control for Radio #4	In_Int	R7	11	1 bytes
Vol_Op7_Radio5	Volume Control for Radio #5	In_Int	R7	12	1 bytes
Vol_Op7_Radio6	Volume Control for Radio #6	In_Int	R7	13	1 bytes
Vol_Op7_Radio7	Volume Control for Radio #7	In_Int	R7	14	1 bytes
Vol_Op7_Radio8	Volume Control for Radio #8	In_Int	R7	15	1 bytes
Vol_Op7_Radio9	Volume Control for Radio #9	In_Int	R7	16	1 bytes
Vol_Op7_Radio10	Volume Control for Radio #10	In_Int	R7	17	1 bytes
Vol_Op7_Radio11	Volume Control for Radio #11	In_Int	R7	18	1 bytes
Vol_Op7_Radio12	Volume Control for Radio #12	In_Int	R7	19	1 bytes
Vol_Op7_Radio13	Volume Control for Radio #13	In_Int	R7	20	1 bytes
Vol_Op7_Radio14	Volume Control for Radio #14	In_Int	R7	21	1 bytes
Vol_Op7_Radio15	Volume Control for Radio #15	In_Int	R7	22	1 bytes

Name	Description	Type	Pkt	Offset	Size
Vol_Op7_Radio16	Volume Control for Radio #16	In_Int	R7	23	1 bytes
Sys_Volume_08	System Volume Control for Terminal #8	In_Int	R8	0	1 bytes
Sys_Sidetone_08	System Sidetone Control for Terminal #8	In_Int	R8	1	1 bytes
PTT_Termin_08	Press to Talk for Terminal #8	In_Bool	R8	2 bit0 (x01)	
RX_Status_A_08	Receive Status A for Terminal #8	In_Bit8			
	Bit0		R8	4 bit 0 (x01)	
	Bit1		R8	4 bit 1 (x02)	
	Bit2		R8	4 bit 2 (x04)	
	Bit3		R8	4 bit 3 (x08)	
	Bit4		R8	4 bit 4 (x10)	
	Bit5		R8	4 bit 5 (x20)	
	Bit6		R8	4 bit 6 (x40)	
	Bit7		R8	4 bit 7 (x80)	
RX_Status_B_08	Receive Status B for Terminal #8	In_Bit8			
	Bit0		R8	5 bit 0 (x01)	
	Bit1		R8	5 bit 1 (x02)	
	Bit2		R8	5 bit 2 (x04)	
	Bit3		R8	5 bit 3 (x08)	
	Bit4		R8	5 bit 4 (x10)	
	Bit5		R8	5 bit 5 (x20)	
	Bit6		R8	5 bit 6 (x40)	
	Bit7		R8	5 bit 7 (x80)	
TX_Status_A_08	Transmit Status A for Terminal #8	In_Bit8			
	Bit0		R8	6 bit 0 (x01)	
	Bit1		R8	6 bit 1 (x02)	
	Bit2		R8	6 bit 2 (x04)	
	Bit3		R8	6 bit 3 (x08)	
	Bit4		R8	6 bit 4 (x10)	
	Bit5		R8	6 bit 5 (x20)	
	Bit6		R8	6 bit 6 (x40)	
	Bit7		R8	6 bit 7 (x80)	
TX_Status_B_08	Transmit Status B for Terminal #8	In_Bit8			
	Bit0		R8	7 bit 0 (x01)	
	Bit1		R8	7 bit 1 (x02)	
	Bit2		R8	7 bit 2 (x04)	
	Bit3		R8	7 bit 3 (x08)	

Name	Description	Type	Pkt	Offset	Size
	Bit4		R8	7 bit 4 (x10)	
	Bit5		R8	7 bit 5 (x20)	
	Bit6		R8	7 bit 6 (x40)	
	Bit7		R8	7 bit 7 (x80)	
LED_Control_08	LED Control for Terminal #8	Out_Int	T1	23	1 bytes
Vol_Op8_Radio1	Volume Control for Radio #1	In_Int	R8	8	1 bytes
Vol_Op8_Radio2	Volume Control for Radio #2	In_Int	R8	9	1 bytes
Vol_Op8_Radio3	Volume Control for Radio #3	In_Int	R8	10	1 bytes
Vol_Op8_Radio4	Volume Control for Radio #4	In_Int	R8	11	1 bytes
Vol_Op8_Radio5	Volume Control for Radio #5	In_Int	R8	12	1 bytes
Vol_Op8_Radio6	Volume Control for Radio #6	In_Int	R8	13	1 bytes
Vol_Op8_Radio7	Volume Control for Radio #7	In_Int	R8	14	1 bytes
Vol_Op8_Radio8	Volume Control for Radio #8	In_Int	R8	15	1 bytes
Vol_Op8_Radio9	Volume Control for Radio #9	In_Int	R8	16	1 bytes
Vol_Op8_Radio10	Volume Control for Radio #10	In_Int	R8	17	1 bytes
Vol_Op8_Radio11	Volume Control for Radio #11	In_Int	R8	18	1 bytes
Vol_Op8_Radio12	Volume Control for Radio #12	In_Int	R8	19	1 bytes
Vol_Op8_Radio13	Volume Control for Radio #13	In_Int	R8	20	1 bytes
Vol_Op8_Radio14	Volume Control for Radio #14	In_Int	R8	21	1 bytes
Vol_Op8_Radio15	Volume Control for Radio #15	In_Int	R8	22	1 bytes
Vol_Op8_Radio16	Volume Control for Radio #16	In_Int	R8	23	1 bytes
Sys_Volume_09	System Volume Control for Terminal #9	In_Int	R9	0	1 bytes
Sys_Sidetone_09	System Sidetone Control for Terminal #9	In_Int	R9	1	1 bytes
PTT_Termin_09	Press to Talk for Terminal #9	In_Bool	R9	2 bit0 (x01)	
RX_Status_A_09	Receive Status A for Terminal #9	In_Bit8			
	Bit0		R9	4 bit 0 (x01)	
	Bit1		R9	4 bit 1 (x02)	
	Bit2		R9	4 bit 2 (x04)	
	Bit3		R9	4 bit 3 (x08)	
	Bit4		R9	4 bit 4 (x10)	
	Bit5		R9	4 bit 5 (x20)	
	Bit6		R9	4 bit 6 (x40)	
	Bit7		R9	4 bit 7 (x80)	
RX_Status_B_09	Receive Status B for Terminal #9	In_Bit8			
	Bit0		R9	5 bit 0 (x01)	
	Bit1		R9	5 bit 1 (x02)	

Name	Description	Type	Pkt	Offset	Size
	Bit2		R9	5 bit 2 (x04)	
	Bit3		R9	5 bit 3 (x08)	
	Bit4		R9	5 bit 4 (x10)	
	Bit5		R9	5 bit 5 (x20)	
	Bit6		R9	5 bit 6 (x40)	
	Bit7		R9	5 bit 7 (x80)	
TX_Status_A_09	Transmit Status A for Terminal #9	In_Bit8			
	Bit0		R9	6 bit 0 (x01)	
	Bit1		R9	6 bit 1 (x02)	
	Bit2		R9	6 bit 2 (x04)	
	Bit3		R9	6 bit 3 (x08)	
	Bit4		R9	6 bit 4 (x10)	
	Bit5		R9	6 bit 5 (x20)	
	Bit6		R9	6 bit 6 (x40)	
	Bit7		R9	6 bit 7 (x80)	
TX_Status_B_09	Transmit Status B for Terminal #9	In_Bit8			
	Bit0		R9	7 bit 0 (x01)	
	Bit1		R9	7 bit 1 (x02)	
	Bit2		R9	7 bit 2 (x04)	
	Bit3		R9	7 bit 3 (x08)	
	Bit4		R9	7 bit 4 (x10)	
	Bit5		R9	7 bit 5 (x20)	
	Bit6		R9	7 bit 6 (x40)	
	Bit7		R9	7 bit 7 (x80)	
LED_Control_09	LED Control for Terminal #9	Out_Int	T1	24	1 bytes
Vol_Op9_Radio1	Volume Control for Radio #1	In_Int	R9	8	1 bytes
Vol_Op9_Radio2	Volume Control for Radio #2	In_Int	R9	9	1 bytes
Vol_Op9_Radio3	Volume Control for Radio #3	In_Int	R9	10	1 bytes
Vol_Op9_Radio4	Volume Control for Radio #4	In_Int	R9	11	1 bytes
Vol_Op9_Radio5	Volume Control for Radio #5	In_Int	R9	12	1 bytes
Vol_Op9_Radio6	Volume Control for Radio #6	In_Int	R9	13	1 bytes
Vol_Op9_Radio7	Volume Control for Radio #7	In_Int	R9	14	1 bytes
Vol_Op9_Radio8	Volume Control for Radio #8	In_Int	R9	15	1 bytes
Vol_Op9_Radio9	Volume Control for Radio #9	In_Int	R9	16	1 bytes
Vol_Op9_Radio10	Volume Control for Radio #10	In_Int	R9	17	1 bytes
Vol_Op9_Radio11	Volume Control for Radio #11	In_Int	R9	18	1 bytes

Name	Description	Type	Pkt	Offset	Size
Vol_Op9_Radio12	Volume Control for Radio #12	In_Int	R9	19	1 bytes
Vol_Op9_Radio13	Volume Control for Radio #13	In_Int	R9	20	1 bytes
Vol_Op9_Radio14	Volume Control for Radio #14	In_Int	R9	21	1 bytes
Vol_Op9_Radio15	Volume Control for Radio #15	In_Int	R9	22	1 bytes
Vol_Op9_Radio16	Volume Control for Radio #16	In_Int	R9	23	1 bytes
Sys_Volume_10	System Volume Control for Terminal #10	In_Int	R10	0	1 bytes
Sys_Sidetone_10	System Sidetone Control for Terminal #10	In_Int	R10	1	1 bytes
PTT_Termin_10	Press to Talk for Terminal #10	In_Bool	R10	2 bit0 (x01)	
RX_Status_A_10	Receive Status A for Terminal #10	In_Bit8			
	Bit0		R10	4 bit 0 (x01)	
	Bit1		R10	4 bit 1 (x02)	
	Bit2		R10	4 bit 2 (x04)	
	Bit3		R10	4 bit 3 (x08)	
	Bit4		R10	4 bit 4 (x10)	
	Bit5		R10	4 bit 5 (x20)	
	Bit6		R10	4 bit 6 (x40)	
	Bit7		R10	4 bit 7 (x80)	
RX_Status_B_10	Receive Status B for Terminal #10	In_Bit8			
	Bit0		R10	5 bit 0 (x01)	
	Bit1		R10	5 bit 1 (x02)	
	Bit2		R10	5 bit 2 (x04)	
	Bit3		R10	5 bit 3 (x08)	
	Bit4		R10	5 bit 4 (x10)	
	Bit5		R10	5 bit 5 (x20)	
	Bit6		R10	5 bit 6 (x40)	
	Bit7		R10	5 bit 7 (x80)	
TX_Status_A_10	Transmit Status A for Terminal #10	In_Bit8			
	Bit0		R10	6 bit 0 (x01)	
	Bit1		R10	6 bit 1 (x02)	
	Bit2		R10	6 bit 2 (x04)	
	Bit3		R10	6 bit 3 (x08)	
	Bit4		R10	6 bit 4 (x10)	
	Bit5		R10	6 bit 5 (x20)	
	Bit6		R10	6 bit 6 (x40)	
	Bit7		R10	6 bit 7 (x80)	
TX_Status_B_10	Transmit Status B for Terminal #10	In_Bit8			

Name	Description	Type	Pkt	Offset	Size
	Bit0		R10	7 bit 0 (x01)	
	Bit1		R10	7 bit 1 (x02)	
	Bit2		R10	7 bit 2 (x04)	
	Bit3		R10	7 bit 3 (x08)	
	Bit4		R10	7 bit 4 (x10)	
	Bit5		R10	7 bit 5 (x20)	
	Bit6		R10	7 bit 6 (x40)	
	Bit7		R10	7 bit 7 (x80)	
LED_Control_10	LED Control for Terminal #10	Out_Int	T1	25	1 bytes
Vol_Op10_Radio1	Volume Control for Radio #1	In_Int	R10	8	1 bytes
Vol_Op10_Radio2	Volume Control for Radio #2	In_Int	R10	9	1 bytes
Vol_Op10_Radio3	Volume Control for Radio #3	In_Int	R10	10	1 bytes
Vol_Op10_Radio4	Volume Control for Radio #4	In_Int	R10	11	1 bytes
Vol_Op10_Radio5	Volume Control for Radio #5	In_Int	R10	12	1 bytes
Vol_Op10_Radio6	Volume Control for Radio #6	In_Int	R10	13	1 bytes
Vol_Op10_Radio7	Volume Control for Radio #7	In_Int	R10	14	1 bytes
Vol_Op10_Radio8	Volume Control for Radio #8	In_Int	R10	15	1 bytes
Vol_Op10_Radio9	Volume Control for Radio #9	In_Int	R10	16	1 bytes
Vol_Op10Radio10	Volume Control for Radio #10	In_Int	R10	17	1 bytes
Vol_Op10Radio11	Volume Control for Radio #11	In_Int	R10	18	1 bytes
Vol_Op10Radio12	Volume Control for Radio #12	In_Int	R10	19	1 bytes
Vol_Op10Radio13	Volume Control for Radio #13	In_Int	R10	20	1 bytes
Vol_Op10Radio14	Volume Control for Radio #14	In_Int	R10	21	1 bytes
Vol_Op10Radio15	Volume Control for Radio #15	In_Int	R10	22	1 bytes
Vol_Op10Radio16	Volume Control for Radio #16	In_Int	R10	23	1 bytes
Sys_Volume_11	System Volume Control for Terminal #11	In_Int	R11	0	1 bytes
Sys_Sidetone_11	System Sidetone Control for Terminal #11	In_Int	R11	1	1 bytes
PTT_Termin_11	Press to Talk for Terminal #11	In_Bool	R11	2 bit0 (x01)	
RX_Status_A_11	Receive Status A for Terminal #11	In_Bit8			
	Bit0		R11	4 bit 0 (x01)	
	Bit1		R11	4 bit 1 (x02)	
	Bit2		R11	4 bit 2 (x04)	
	Bit3		R11	4 bit 3 (x08)	
	Bit4		R11	4 bit 4 (x10)	
	Bit5		R11	4 bit 5 (x20)	
	Bit6		R11	4 bit 6 (x40)	

Name	Description	Type	Pkt	Offset	Size
	Bit7		R11	4 bit 7 (x80)	
RX_Status_B_11	Receive Status B for Terminal #11	In_Bit8			
	Bit0		R11	5 bit 0 (x01)	
	Bit1		R11	5 bit 1 (x02)	
	Bit2		R11	5 bit 2 (x04)	
	Bit3		R11	5 bit 3 (x08)	
	Bit4		R11	5 bit 4 (x10)	
	Bit5		R11	5 bit 5 (x20)	
	Bit6		R11	5 bit 6 (x40)	
	Bit7		R11	5 bit 7 (x80)	
TX_Status_A_11	Transmit Status A for Terminal #11	In_Bit8			
	Bit0		R11	6 bit 0 (x01)	
	Bit1		R11	6 bit 1 (x02)	
	Bit2		R11	6 bit 2 (x04)	
	Bit3		R11	6 bit 3 (x08)	
	Bit4		R11	6 bit 4 (x10)	
	Bit5		R11	6 bit 5 (x20)	
	Bit6		R11	6 bit 6 (x40)	
	Bit7		R11	6 bit 7 (x80)	
TX_Status_B_11	Transmit Status B for Terminal #11	In_Bit8			
	Bit0		R11	7 bit 0 (x01)	
	Bit1		R11	7 bit 1 (x02)	
	Bit2		R11	7 bit 2 (x04)	
	Bit3		R11	7 bit 3 (x08)	
	Bit4		R11	7 bit 4 (x10)	
	Bit5		R11	7 bit 5 (x20)	
	Bit6		R11	7 bit 6 (x40)	
	Bit7		R11	7 bit 7 (x80)	
LED_Control_11	LED Control for Terminal #11	Out_Int	T1	26	1 bytes
Vol_Op11_Radio1	Volume Control for Radio #1	In_Int	R11	8	1 bytes
Vol_Op11_Radio2	Volume Control for Radio #2	In_Int	R11	9	1 bytes
Vol_Op11_Radio3	Volume Control for Radio #3	In_Int	R11	10	1 bytes
Vol_Op11_Radio4	Volume Control for Radio #4	In_Int	R11	11	1 bytes
Vol_Op11_Radio5	Volume Control for Radio #5	In_Int	R11	12	1 bytes
Vol_Op11_Radio6	Volume Control for Radio #6	In_Int	R11	13	1 bytes
Vol_Op11_Radio7	Volume Control for Radio #7	In_Int	R11	14	1 bytes

Name	Description	Type	Pkt	Offset	Size
Vol_Op11_Radio8	Volume Control for Radio #8	In_Int	R11	15	1 bytes
Vol_Op11_Radio9	Volume Control for Radio #9	In_Int	R11	16	1 bytes
Vol_Op11Radio10	Volume Control for Radio #10	In_Int	R11	17	1 bytes
Vol_Op11Radio11	Volume Control for Radio #11	In_Int	R11	18	1 bytes
Vol_Op11Radio12	Volume Control for Radio #12	In_Int	R11	19	1 bytes
Vol_Op11Radio13	Volume Control for Radio #13	In_Int	R11	20	1 bytes
Vol_Op11Radio14	Volume Control for Radio #14	In_Int	R11	21	1 bytes
Vol_Op11Radio15	Volume Control for Radio #15	In_Int	R11	22	1 bytes
Vol_Op11Radio16	Volume Control for Radio #16	In_Int	R11	23	1 bytes
Sys_Volume_12	System Volume Control for Terminal #12	In_Int	R12	0	1 bytes
Sys_Sidetone_12	System Sidetone Control for Terminal #12	In_Int	R12	1	1 bytes
PTT_Termin_12	Press to Talk for Terminal #12	In_Bool	R12	2 bit0 (x01)	
RX_Status_A_12	Receive Status A for Terminal #12	In_Bit8			
	Bit0		R12	4 bit 0 (x01)	
	Bit1		R12	4 bit 1 (x02)	
	Bit2		R12	4 bit 2 (x04)	
	Bit3		R12	4 bit 3 (x08)	
	Bit4		R12	4 bit 4 (x10)	
	Bit5		R12	4 bit 5 (x20)	
	Bit6		R12	4 bit 6 (x40)	
	Bit7		R12	4 bit 7 (x80)	
RX_Status_B_12	Receive Status B for Terminal #12	In_Bit8			
	Bit0		R12	5 bit 0 (x01)	
	Bit1		R12	5 bit 1 (x02)	
	Bit2		R12	5 bit 2 (x04)	
	Bit3		R12	5 bit 3 (x08)	
	Bit4		R12	5 bit 4 (x10)	
	Bit5		R12	5 bit 5 (x20)	
	Bit6		R12	5 bit 6 (x40)	
	Bit7		R12	5 bit 7 (x80)	
TX_Status_A_12	Transmit Status A for Terminal #12	In_Bit8			
	Bit0		R12	6 bit 0 (x01)	
	Bit1		R12	6 bit 1 (x02)	
	Bit2		R12	6 bit 2 (x04)	
	Bit3		R12	6 bit 3 (x08)	
	Bit4		R12	6 bit 4 (x10)	

Name	Description	Type	Pkt	Offset	Size
	Bit5		R12	6 bit 5 (x20)	
	Bit6		R12	6 bit 6 (x40)	
	Bit7		R12	6 bit 7 (x80)	
TX_Status_B_12	Transmit Status B for Terminal #12	In_Bit8			
	Bit0		R12	7 bit 0 (x01)	
	Bit1		R12	7 bit 1 (x02)	
	Bit2		R12	7 bit 2 (x04)	
	Bit3		R12	7 bit 3 (x08)	
	Bit4		R12	7 bit 4 (x10)	
	Bit5		R12	7 bit 5 (x20)	
	Bit6		R12	7 bit 6 (x40)	
	Bit7		R12	7 bit 7 (x80)	
LED_Control_12	LED Control for Terminal #12	Out_Int	T1	27	1 bytes
Vol_Op12_Radio1	Volume Control for Radio #1	In_Int	R12	8	1 bytes
Vol_Op12_Radio2	Volume Control for Radio #2	In_Int	R12	9	1 bytes
Vol_Op12_Radio3	Volume Control for Radio #3	In_Int	R12	10	1 bytes
Vol_Op12_Radio4	Volume Control for Radio #4	In_Int	R12	11	1 bytes
Vol_Op12_Radio5	Volume Control for Radio #5	In_Int	R12	12	1 bytes
Vol_Op12_Radio6	Volume Control for Radio #6	In_Int	R12	13	1 bytes
Vol_Op12_Radio7	Volume Control for Radio #7	In_Int	R12	14	1 bytes
Vol_Op12_Radio8	Volume Control for Radio #8	In_Int	R12	15	1 bytes
Vol_Op12_Radio9	Volume Control for Radio #9	In_Int	R12	16	1 bytes
Vol_Op12Radio10	Volume Control for Radio #10	In_Int	R12	17	1 bytes
Vol_Op12Radio11	Volume Control for Radio #11	In_Int	R12	18	1 bytes
Vol_Op12Radio12	Volume Control for Radio #12	In_Int	R12	19	1 bytes
Vol_Op12Radio13	Volume Control for Radio #13	In_Int	R12	20	1 bytes
Vol_Op12Radio14	Volume Control for Radio #14	In_Int	R12	21	1 bytes
Vol_Op12Radio15	Volume Control for Radio #15	In_Int	R12	22	1 bytes
Vol_Op12Radio16	Volume Control for Radio #16	In_Int	R12	23	1 bytes
Sys_Volume_13	System Volume Control for Terminal #13	In_Int	R13	0	1 bytes
Sys_Sidetone_13	System Sidetone Control for Terminal #13	In_Int	R13	1	1 bytes
PTT_Termin_13	Press to Talk for Terminal #13	In_Bool	R13	2 bit0 (x01)	
RX_Status_A_13	Receive Status A for Terminal #13	In_Bit8			
	Bit0		R13	4 bit 0 (x01)	
	Bit1		R13	4 bit 1 (x02)	
	Bit2		R13	4 bit 2 (x04)	

Name	Description	Type	Pkt	Offset	Size
	Bit3		R13	4 bit 3 (x08)	
	Bit4		R13	4 bit 4 (x10)	
	Bit5		R13	4 bit 5 (x20)	
	Bit6		R13	4 bit 6 (x40)	
	Bit7		R13	4 bit 7 (x80)	
RX_Status_B_13	Receive Status B for Terminal #13	In_Bit8			
	Bit0		R13	5 bit 0 (x01)	
	Bit1		R13	5 bit 1 (x02)	
	Bit2		R13	5 bit 2 (x04)	
	Bit3		R13	5 bit 3 (x08)	
	Bit4		R13	5 bit 4 (x10)	
	Bit5		R13	5 bit 5 (x20)	
	Bit6		R13	5 bit 6 (x40)	
	Bit7		R13	5 bit 7 (x80)	
TX_Status_A_13	Transmit Status A for Terminal #13	In_Bit8			
	Bit0		R13	6 bit 0 (x01)	
	Bit1		R13	6 bit 1 (x02)	
	Bit2		R13	6 bit 2 (x04)	
	Bit3		R13	6 bit 3 (x08)	
	Bit4		R13	6 bit 4 (x10)	
	Bit5		R13	6 bit 5 (x20)	
	Bit6		R13	6 bit 6 (x40)	
	Bit7		R13	6 bit 7 (x80)	
TX_Status_B_13	Transmit Status B for Terminal #13	In_Bit8			
	Bit0		R13	7 bit 0 (x01)	
	Bit1		R13	7 bit 1 (x02)	
	Bit2		R13	7 bit 2 (x04)	
	Bit3		R13	7 bit 3 (x08)	
	Bit4		R13	7 bit 4 (x10)	
	Bit5		R13	7 bit 5 (x20)	
	Bit6		R13	7 bit 6 (x40)	
	Bit7		R13	7 bit 7 (x80)	
LED_Control_13	LED Control for Terminal #13	Out_Int	T2	28	1 bytes
Vol_Op13_Radio1	Volume Control for Radio #1	In_Int	R13	8	1 bytes
Vol_Op13_Radio2	Volume Control for Radio #2	In_Int	R13	9	1 bytes
Vol_Op13_Radio3	Volume Control for Radio #3	In_Int	R13	10	1 bytes

Name	Description	Type	Pkt	Offset	Size
Vol_Op13_Radio4	Volume Control for Radio #4	In_Int	R13	11	1 bytes
Vol_Op13_Radio5	Volume Control for Radio #5	In_Int	R13	12	1 bytes
Vol_Op13_Radio6	Volume Control for Radio #6	In_Int	R13	13	1 bytes
Vol_Op13_Radio7	Volume Control for Radio #7	In_Int	R13	14	1 bytes
Vol_Op13_Radio8	Volume Control for Radio #8	In_Int	R13	15	1 bytes
Vol_Op13_Radio9	Volume Control for Radio #9	In_Int	R13	16	1 bytes
Vol_Op13Radio10	Volume Control for Radio #10	In_Int	R13	17	1 bytes
Vol_Op13Radio11	Volume Control for Radio #11	In_Int	R13	18	1 bytes
Vol_Op13Radio12	Volume Control for Radio #12	In_Int	R13	19	1 bytes
Vol_Op13Radio13	Volume Control for Radio #13	In_Int	R13	20	1 bytes
Vol_Op13Radio14	Volume Control for Radio #14	In_Int	R13	21	1 bytes
Vol_Op13Radio15	Volume Control for Radio #15	In_Int	R13	22	1 bytes
Vol_Op13Radio16	Volume Control for Radio #16	In_Int	R13	23	1 bytes
Sys_Volume_14	System Volume Control for Terminal #14	In_Int	R14	0	1 bytes
Sys_Sidetone_14	System Sidetone Control for Terminal #14	In_Int	R14	1	1 bytes
PTT_Termin_14	Press to Talk for Terminal #14	In_Bool	R14	2 bit0 (x01)	
RX_Status_A_14	Receive Status A for Terminal #14	In_Bit8			
	Bit0		R14	4 bit 0 (x01)	
	Bit1		R14	4 bit 1 (x02)	
	Bit2		R14	4 bit 2 (x04)	
	Bit3		R14	4 bit 3 (x08)	
	Bit4		R14	4 bit 4 (x10)	
	Bit5		R14	4 bit 5 (x20)	
	Bit6		R14	4 bit 6 (x40)	
	Bit7		R14	4 bit 7 (x80)	
RX_Status_B_14	Receive Status B for Terminal #14	In_Bit8			
	Bit0		R14	5 bit 0 (x01)	
	Bit1		R14	5 bit 1 (x02)	
	Bit2		R14	5 bit 2 (x04)	
	Bit3		R14	5 bit 3 (x08)	
	Bit4		R14	5 bit 4 (x10)	
	Bit5		R14	5 bit 5 (x20)	
	Bit6		R14	5 bit 6 (x40)	
	Bit7		R14	5 bit 7 (x80)	
TX_Status_A_14	Transmit Status A for Terminal #14	In_Bit8			
	Bit0		R14	6 bit 0 (x01)	

Name	Description	Type	Pkt	Offset	Size
	Bit1		R14	6 bit 1 (x02)	
	Bit2		R14	6 bit 2 (x04)	
	Bit3		R14	6 bit 3 (x08)	
	Bit4		R14	6 bit 4 (x10)	
	Bit5		R14	6 bit 5 (x20)	
	Bit6		R14	6 bit 6 (x40)	
	Bit7		R14	6 bit 7 (x80)	
TX_Status_B_14	Transmit Status B for Terminal #14	In_Bit8			
	Bit0		R14	7 bit 0 (x01)	
	Bit1		R14	7 bit 1 (x02)	
	Bit2		R14	7 bit 2 (x04)	
	Bit3		R14	7 bit 3 (x08)	
	Bit4		R14	7 bit 4 (x10)	
	Bit5		R14	7 bit 5 (x20)	
	Bit6		R14	7 bit 6 (x40)	
	Bit7		R14	7 bit 7 (x80)	
LED_Control_14	LED Control for Terminal #14	Out_Int	T1	29	1 bytes
Vol_Op14_Radio1	Volume Control for Radio #1	In_Int	R14	8	1 bytes
Vol_Op14_Radio2	Volume Control for Radio #2	In_Int	R14	9	1 bytes
Vol_Op14_Radio3	Volume Control for Radio #3	In_Int	R14	10	1 bytes
Vol_Op14_Radio4	Volume Control for Radio #4	In_Int	R14	11	1 bytes
Vol_Op14_Radio5	Volume Control for Radio #5	In_Int	R14	12	1 bytes
Vol_Op14_Radio6	Volume Control for Radio #6	In_Int	R14	13	1 bytes
Vol_Op14_Radio7	Volume Control for Radio #7	In_Int	R14	14	1 bytes
Vol_Op14_Radio8	Volume Control for Radio #8	In_Int	R14	15	1 bytes
Vol_Op14_Radio9	Volume Control for Radio #9	In_Int	R14	16	1 bytes
Vol_Op14Radio10	Volume Control for Radio #10	In_Int	R14	17	1 bytes
Vol_Op14Radio11	Volume Control for Radio #11	In_Int	R14	18	1 bytes
Vol_Op14Radio12	Volume Control for Radio #12	In_Int	R14	19	1 bytes
Vol_Op14Radio13	Volume Control for Radio #13	In_Int	R14	20	1 bytes
Vol_Op14Radio14	Volume Control for Radio #14	In_Int	R14	21	1 bytes
Vol_Op14Radio15	Volume Control for Radio #15	In_Int	R14	22	1 bytes
Vol_Op14Radio16	Volume Control for Radio #16	In_Int	R14	23	1 bytes
Sys_Volume_15	System Volume Control for Terminal #15	In_Int	R15	0	1 bytes
Sys_Sidetone_15	System Sidetone Control for Terminal #15	In_Int	R15	1	1 bytes
PTT_Termin_15	Press to Talk for Terminal #15	In_Bool	R15	2 bit0 (x01)	

Name	Description	Type	Pkt	Offset	Size
RX_Status_A_15	Receive Status A for Terminal #15	In_Bit8			
	Bit0		R15	4 bit 0 (x01)	
	Bit1		R15	4 bit 1 (x02)	
	Bit2		R15	4 bit 2 (x04)	
	Bit3		R15	4 bit 3 (x08)	
	Bit4		R15	4 bit 4 (x10)	
	Bit5		R15	4 bit 5 (x20)	
	Bit6		R15	4 bit 6 (x40)	
	Bit7		R15	4 bit 7 (x80)	
RX_Status_B_15	Receive Status B for Terminal #15	In_Bit8			
	Bit0		R15	5 bit 0 (x01)	
	Bit1		R15	5 bit 1 (x02)	
	Bit2		R15	5 bit 2 (x04)	
	Bit3		R15	5 bit 3 (x08)	
	Bit4		R15	5 bit 4 (x10)	
	Bit5		R15	5 bit 5 (x20)	
	Bit6		R15	5 bit 6 (x40)	
	Bit7		R15	5 bit 7 (x80)	
TX_Status_A_15	Transmit Status A for Terminal #15	In_Bit8			
	Bit0		R15	6 bit 0 (x01)	
	Bit1		R15	6 bit 1 (x02)	
	Bit2		R15	6 bit 2 (x04)	
	Bit3		R15	6 bit 3 (x08)	
	Bit4		R15	6 bit 4 (x10)	
	Bit5		R15	6 bit 5 (x20)	
	Bit6		R15	6 bit 6 (x40)	
	Bit7		R15	6 bit 7 (x80)	
TX_Status_B_15	Transmit Status B for Terminal #15	In_Bit8			
	Bit0		R15	7 bit 0 (x01)	
	Bit1		R15	7 bit 1 (x02)	
	Bit2		R15	7 bit 2 (x04)	
	Bit3		R15	7 bit 3 (x08)	
	Bit4		R15	7 bit 4 (x10)	
	Bit5		R15	7 bit 5 (x20)	
	Bit6		R15	7 bit 6 (x40)	
	Bit7		R15	7 bit 7 (x80)	

Name	Description	Type	Pkt	Offset	Size
LED_Control_15	LED Control for Terminal #15	Out_Int	T1	30	1 bytes
Vol_Op15_Radio1	Volume Control for Radio #1	In_Int	R15	8	1 bytes
Vol_Op15_Radio2	Volume Control for Radio #2	In_Int	R15	9	1 bytes
Vol_Op15_Radio3	Volume Control for Radio #3	In_Int	R15	10	1 bytes
Vol_Op15_Radio4	Volume Control for Radio #4	In_Int	R15	11	1 bytes
Vol_Op15_Radio5	Volume Control for Radio #5	In_Int	R15	12	1 bytes
Vol_Op15_Radio6	Volume Control for Radio #6	In_Int	R15	13	1 bytes
Vol_Op15_Radio7	Volume Control for Radio #7	In_Int	R15	14	1 bytes
Vol_Op15_Radio8	Volume Control for Radio #8	In_Int	R15	15	1 bytes
Vol_Op15_Radio9	Volume Control for Radio #9	In_Int	R15	16	1 bytes
Vol_Op15Radio10	Volume Control for Radio #10	In_Int	R15	17	1 bytes
Vol_Op15Radio11	Volume Control for Radio #11	In_Int	R15	18	1 bytes
Vol_Op15Radio12	Volume Control for Radio #12	In_Int	R15	19	1 bytes
Vol_Op15Radio13	Volume Control for Radio #13	In_Int	R15	20	1 bytes
Vol_Op15Radio14	Volume Control for Radio #14	In_Int	R15	21	1 bytes
Vol_Op15Radio15	Volume Control for Radio #15	In_Int	R15	22	1 bytes
Vol_Op15Radio16	Volume Control for Radio #16	In_Int	R15	23	1 bytes
Sys_Volume_16	System Volume Control for Terminal #16	In_Int	R16	0	1 bytes
Sys_Sidetone_16	System Sidetone Control for Terminal #16	In_Int	R16	1	1 bytes
PTT_Termin_16	Press to Talk for Terminal #16	In_Bool	R16	2 bit0 (x01)	
RX_Status_A_16	Receive Status A for Terminal #16	In_Bit8			
	Bit0		R16	4 bit 0 (x01)	
	Bit1		R16	4 bit 1 (x02)	
	Bit2		R16	4 bit 2 (x04)	
	Bit3		R16	4 bit 3 (x08)	
	Bit4		R16	4 bit 4 (x10)	
	Bit5		R16	4 bit 5 (x20)	
	Bit6		R16	4 bit 6 (x40)	
	Bit7		R16	4 bit 7 (x80)	
RX_Status_B_16	Receive Status B for Terminal #16	In_Bit8			
	Bit0		R16	5 bit 0 (x01)	
	Bit1		R16	5 bit 1 (x02)	
	Bit2		R16	5 bit 2 (x04)	
	Bit3		R16	5 bit 3 (x08)	
	Bit4		R16	5 bit 4 (x10)	
	Bit5		R16	5 bit 5 (x20)	

Name	Description	Type	Pkt	Offset	Size
	Bit6		R16	5 bit 6 (x40)	
	Bit7		R16	5 bit 7 (x80)	
TX_Status_A_16	Transmit Status A for Terminal #16	In_Bit8			
	Bit0		R16	6 bit 0 (x01)	
	Bit1		R16	6 bit 1 (x02)	
	Bit2		R16	6 bit 2 (x04)	
	Bit3		R16	6 bit 3 (x08)	
	Bit4		R16	6 bit 4 (x10)	
	Bit5		R16	6 bit 5 (x20)	
	Bit6		R16	6 bit 6 (x40)	
	Bit7		R16	6 bit 7 (x80)	
TX_Status_B_16	Transmit Status B for Terminal #16	In_Bit8			
	Bit0		R16	7 bit 0 (x01)	
	Bit1		R16	7 bit 1 (x02)	
	Bit2		R16	7 bit 2 (x04)	
	Bit3		R16	7 bit 3 (x08)	
	Bit4		R16	7 bit 4 (x10)	
	Bit5		R16	7 bit 5 (x20)	
	Bit6		R16	7 bit 6 (x40)	
	Bit7		R16	7 bit 7 (x80)	
LED_Control_16	LED Control for Terminal #16	Out_Int	T1	31	1 bytes
Vol_Op16_Radio1	Volume Control for Radio #1	In_Int	R16	8	1 bytes
Vol_Op16_Radio2	Volume Control for Radio #2	In_Int	R16	9	1 bytes
Vol_Op16_Radio3	Volume Control for Radio #3	In_Int	R16	10	1 bytes
Vol_Op16_Radio4	Volume Control for Radio #4	In_Int	R16	11	1 bytes
Vol_Op16_Radio5	Volume Control for Radio #5	In_Int	R16	12	1 bytes
Vol_Op16_Radio6	Volume Control for Radio #6	In_Int	R16	13	1 bytes
Vol_Op16_Radio7	Volume Control for Radio #7	In_Int	R16	14	1 bytes
Vol_Op16_Radio8	Volume Control for Radio #8	In_Int	R16	15	1 bytes
Vol_Op16_Radio9	Volume Control for Radio #9	In_Int	R16	16	1 bytes
Vol_Op16Radio10	Volume Control for Radio #10	In_Int	R16	17	1 bytes
Vol_Op16Radio11	Volume Control for Radio #11	In_Int	R16	18	1 bytes
Vol_Op16Radio12	Volume Control for Radio #12	In_Int	R16	19	1 bytes
Vol_Op16Radio13	Volume Control for Radio #13	In_Int	R16	20	1 bytes
Vol_Op16Radio14	Volume Control for Radio #14	In_Int	R16	21	1 bytes
Vol_Op16Radio15	Volume Control for Radio #15	In_Int	R16	22	1 bytes

Name	Description	Type	Pkt	Offset	Size
Vol_Op16Radio16	Volume Control for Radio #16	In_Int	R16	23	1 bytes
Freq_Radio_1	Frequency Control for Radio #1	In_Int	R17	0..3	4 bytes
SqLch_Radio_1	Squelch Level Control for Radio #1	In_Int	R17	5	1 bytes
Secure_Radio_1	Secure On/Off for Radio #1	In_Bool	R17	6 bit0 (x01)	
ActOut_Radio_1	RX/TX Activity State Ouput Radio #1	Out_Bool	T1	0 bit0 (x01)	
Freq_Radio_2	Frequency Control for Radio #2	In_Int	R17	10..13	4 bytes
SqLch_Radio_2	Squelch Level Control for Radio #2	In_Int	R17	15	1 bytes
Secure_Radio_2	Secure On/Off for Radio #2	In_Bool	R17	16 bit0 (x01)	
ActOut_Radio_2	RX/TX Activity State Ouput Radio #2	Out_Bool	T1	1 bit0 (x01)	
Freq_Radio_3	Frequency Control for Radio #3	In_Int	R17	20..23	4 bytes
SqLch_Radio_3	Squelch Level Control for Radio #3	In_Int	R17	25	1 bytes
Secure_Radio_3	Secure On/Off for Radio #3	In_Bool	R17	26 bit0 (x01)	
ActOut_Radio_3	RX/TX Activity State Ouput Radio #3	Out_Bool	T1	2 bit0 (x01)	
Freq_Radio_4	Frequency Control for Radio #4	In_Int	R17	30..33	4 bytes
SqLch_Radio_4	Squelch Level Control for Radio #4	In_Int	R17	35	1 bytes
Secure_Radio_4	Secure On/Off for Radio #4	In_Bool	R17	36 bit0 (x01)	
ActOut_Radio_4	RX/TX Activity State Ouput Radio #4	Out_Bool	T1	3 bit0 (x01)	
Freq_Radio_5	Frequency Control for Radio #5	In_Int	R18	0..3	4 bytes
SqLch_Radio_5	Squelch Level Control for Radio #5	In_Int	R18	5	1 bytes
Secure_Radio_5	Secure On/Off for Radio #5	In_Bool	R18	6 bit0 (x01)	
ActOut_Radio_5	RX/TX Activity State Ouput Radio #5	Out_Bool	T1	4 bit0 (x01)	
Freq_Radio_6	Frequency Control for Radio #6	In_Int	R18	10..13	4 bytes
SqLch_Radio_6	Squelch Level Control for Radio #6	In_Int	R18	15	1 bytes
Secure_Radio_6	Secure On/Off for Radio #6	In_Bool	R18	16 bit0 (x01)	
ActOut_Radio_6	RX/TX Activity State Ouput Radio #6	Out_Bool	T1	5 bit0 (x01)	
Freq_Radio_7	Frequency Control for Radio #7	In_Int	R18	20..23	4 bytes
SqLch_Radio_7	Squelch Level Control for Radio #7	In_Int	R18	25	1 bytes
Secure_Radio_7	Secure On/Off for Radio #7	In_Bool	R18	26 bit0 (x01)	
ActOut_Radio_7	RX/TX Activity State Ouput Radio #7	Out_Bool	T1	6 bit0 (x01)	
Freq_Radio_8	Frequency Control for Radio #8	In_Int	R18	30..33	4 bytes
SqLch_Radio_8	Squelch Level Control for Radio #8	In_Int	R18	35	1 bytes
Secure_Radio_8	Secure On/Off for Radio #8	In_Bool	R18	36 bit0 (x01)	
ActOut_Radio_8	RX/TX Activity State Ouput Radio #8	Out_Bool	T1	7 bit0 (x01)	
Freq_Radio_9	Frequency Control for Radio #9	In_Int	R19	0..3	4 bytes
SqLch_Radio_9	Squelch Level Control for Radio #9	In_Int	R19	5	1 bytes
Secure_Radio_9	Secure On/Off for Radio #9	In_Bool	R19	6 bit0 (x01)	

Name	Description	Type	Pkt	Offset	Size
ActOut_Radio_9	RX/TX Activity State Ouput Radio #9	Out_Bool	T1	8 bit0 (x01)	
Freq_Radio_10	Frequency Control for Radio #10	In_Int	R19	10..13	4 bytes
SqLch_Radio_10	Squelch Level Control for Radio #10	In_Int	R19	15	1 bytes
Secure_Radio_10	Secure On/Off for Radio #10	In_Bool	R19	16 bit0 (x01)	
ActOut_Radio_10	RX/TX Activity State Ouput Radio #10	Out_Bool	T1	9 bit0 (x01)	
Freq_Radio_11	Frequency Control for Radio #11	In_Int	R19	20..23	4 bytes
SqLch_Radio_11	Squelch Level Control for Radio #11	In_Int	R19	25	1 bytes
Secure_Radio_11	Secure On/Off for Radio #11	In_Bool	R19	26 bit0 (x01)	
ActOut_Radio_11	RX/TX Activity State Ouput Radio #11	Out_Bool	T1	10 bit0 (x01)	
Freq_Radio_12	Frequency Control for Radio #12	In_Int	R19	30..33	4 bytes
SqLch_Radio_12	Squelch Level Control for Radio #12	In_Int	R19	35	1 bytes
Secure_Radio_12	Secure On/Off for Radio #12	In_Bool	R19	36 bit0 (x01)	
ActOut_Radio_12	RX/TX Activity State Ouput Radio #12	Out_Bool	T1	11 bit0 (x01)	
Freq_Radio_13	Frequency Control for Radio #13	In_Int	R20	0..3	4 bytes
SqLch_Radio_13	Squelch Level Control for Radio #13	In_Int	R20	5	1 bytes
Secure_Radio_13	Secure On/Off for Radio #13	In_Bool	R20	6 bit0 (x01)	
ActOut_Radio_13	RX/TX Activity State Ouput Radio #13	Out_Bool	T1	12 bit0 (x01)	
Freq_Radio_14	Frequency Control for Radio #14	In_Int	R20	10..13	4 bytes
SqLch_Radio_14	Squelch Level Control for Radio #14	In_Int	R20	15	1 bytes
Secure_Radio_14	Secure On/Off for Radio #14	In_Bool	R20	16 bit0 (x01)	
ActOut_Radio_14	RX/TX Activity State Ouput Radio #14	Out_Bool	T1	13 bit0 (x01)	
Freq_Radio_15	Frequency Control for Radio #15	In_Int	R20	20..23	4 bytes
SqLch_Radio_15	Squelch Level Control for Radio #15	In_Int	R20	25	1 bytes
Secure_Radio_15	Secure On/Off for Radio #15	In_Bool	R20	26 bit0 (x01)	
ActOut_Radio_15	RX/TX Activity State Ouput Radio #15	Out_Bool	T1	14 bit0 (x01)	
Freq_Radio_16	Frequency Control for Radio #16	In_Int	R20	30..33	4 bytes
SqLch_Radio_16	Squelch Level Control for Radio #16	In_Int	R20	35	1 bytes
Secure_Radio_16	Secure On/Off for Radio #16	In_Bool	R20	36 bit0 (x01)	
ActOut_Radio_16	RX/TX Activity State Ouput Radio #16	Out_Bool	T1	15 bit0 (x01)	
Radio_01_ex_ID	Radio 01 exercise ID from Dialogue DLL	In_Int	R21	0..3	4 bytes
Radio_01_ID	Radio 01 ID from Dialogue DLL	In_Int	R21	4..7	4 bytes
Radio_01_siteID	Radio 01 site ID from Dialogue DLL	In_Int	R21	8..11	4 bytes
Radio_01_hostID	Radio 01 host ID from Dialogue DLL	In_Int	R21	12..15	4 bytes
Radio_01_ent_ID	Radio 01 entity ID from Dialogue DLL	In_Int	R21	16..19	4 bytes
Radio_02_ex_ID	Radio 02 exercise ID from Dialogue DLL	In_Int	R21	20..23	4 bytes
Radio_02_ID	Radio 02 ID from Dialogue DLL	In_Int	R21	24..27	4 bytes

Name	Description	Type	Pkt	Offset	Size
Radio_02_siteID	Radio 02 site ID from Dialogue DLL	In_Int	R21	28..31	4 bytes
Radio_02_hostID	Radio 02 host ID from Dialogue DLL	In_Int	R21	32..35	4 bytes
Radio_02_ent_ID	Radio 02 entity ID from Dialogue DLL	In_Int	R21	36..39	4 bytes
Radio_03_ex_ID	Radio 03 exercise ID from Dialogue DLL	In_Int	R22	0..3	4 bytes
Radio_03_ID	Radio 03 ID from Dialogue DLL	In_Int	R22	4..7	4 bytes
Radio_03_siteID	Radio 03 site ID from Dialogue DLL	In_Int	R22	8..11	4 bytes
Radio_03_hostID	Radio 03 host ID from Dialogue DLL	In_Int	R22	12..15	4 bytes
Radio_03_ent_ID	Radio 03 entity ID from Dialogue DLL	In_Int	R22	16..19	4 bytes
Radio_04_ex_ID	Radio 04 exercise ID from Dialogue DLL	In_Int	R22	20..23	4 bytes
Radio_04_ID	Radio 04 ID from Dialogue DLL	In_Int	R22	24..27	4 bytes
Radio_04_siteID	Radio 04 site ID from Dialogue DLL	In_Int	R22	28..31	4 bytes
Radio_04_hostID	Radio 04 host ID from Dialogue DLL	In_Int	R22	32..35	4 bytes
Radio_04_ent_ID	Radio 04 entity ID from Dialogue DLL	In_Int	R22	36..39	4 bytes
Radio_05_ex_ID	Radio 05 exercise ID from Dialogue DLL	In_Int	R23	0..3	4 bytes
Radio_05_ID	Radio 05 ID from Dialogue DLL	In_Int	R23	4..7	4 bytes
Radio_05_siteID	Radio 05 site ID from Dialogue DLL	In_Int	R23	8..11	4 bytes
Radio_05_hostID	Radio 05 host ID from Dialogue DLL	In_Int	R23	12..15	4 bytes
Radio_05_ent_ID	Radio 05 entity ID from Dialogue DLL	In_Int	R23	16..19	4 bytes
Radio_06_ex_ID	Radio 06 exercise ID from Dialogue DLL	In_Int	R24	20..23	4 bytes
Radio_06_ID	Radio 06 ID from Dialogue DLL	In_Int	R23	24..27	4 bytes
Radio_06_siteID	Radio 06 site ID from Dialogue DLL	In_Int	R23	28..31	4 bytes
Radio_06_hostID	Radio 06 host ID from Dialogue DLL	In_Int	R23	32..35	4 bytes
Radio_06_ent_ID	Radio 06 entity ID from Dialogue DLL	In_Int	R23	36..39	4 bytes
Radio_07_ex_ID	Radio 07 exercise ID from Dialogue DLL	In_Int	R24	0..3	4 bytes
Radio_07_ID	Radio 07 ID from Dialogue DLL	In_Int	R24	4..7	4 bytes
Radio_07_siteID	Radio 07 site ID from Dialogue DLL	In_Int	R24	8..11	4 bytes
Radio_07_hostID	Radio 07 host ID from Dialogue DLL	In_Int	R24	12..15	4 bytes
Radio_07_ent_ID	Radio 07 entity ID from Dialogue DLL	In_Int	R24	16..19	4 bytes
Radio_08_ex_ID	Radio 08 exercise ID from Dialogue DLL	In_Int	R24	20..23	4 bytes
Radio_08_ID	Radio 08 ID from Dialogue DLL	In_Int	R24	24..27	4 bytes
Radio_08_siteID	Radio 08 site ID from Dialogue DLL	In_Int	R24	28..31	4 bytes
Radio_08_hostID	Radio 08 host ID from Dialogue DLL	In_Int	R24	32..35	4 bytes
Radio_08_ent_ID	Radio 08 entity ID from Dialogue DLL	In_Int	R24	36..39	4 bytes
Radio_09_ex_ID	Radio 09 exercise ID from Dialogue DLL	In_Int	R25	0..3	4 bytes
Radio_09_ID	Radio 09 ID from Dialogue DLL	In_Int	R25	4..7	4 bytes
Radio_09_siteID	Radio 09 site ID from Dialogue DLL	In_Int	R25	8..11	4 bytes

Name	Description	Type	Pkt	Offset	Size
Radio_09_hostID	Radio 09 host ID from Dialogue DLL	In_Int	R25	12..15	4 bytes
Radio_09_ent_ID	Radio 09 entity ID from Dialogue DLL	In_Int	R25	16..19	4 bytes
Radio_10_ex_ID	Radio 10 exercise ID from Dialogue DLL	In_Int	R25	20..23	4 bytes
Radio_10_ID	Radio 10 ID from Dialogue DLL	In_Int	R25	24..27	4 bytes
Radio_10_siteID	Radio 10 site ID from Dialogue DLL	In_Int	R25	28..31	4 bytes
Radio_10_hostID	Radio 10 host ID from Dialogue DLL	In_Int	R25	32..35	4 bytes
Radio_10_ent_ID	Radio 10 entity ID from Dialogue DLL	In_Int	R25	36..39	4 bytes
Radio_11_ex_ID	Radio 11 exercise ID from Dialogue DLL	In_Int	R26	0..3	4 bytes
Radio_11_ID	Radio 11 ID from Dialogue DLL	In_Int	R26	4..7	4 bytes
Radio_11_siteID	Radio 11 site ID from Dialogue DLL	In_Int	R26	8..11	4 bytes
Radio_11_hostID	Radio 11 host ID from Dialogue DLL	In_Int	R26	12..15	4 bytes
Radio_11_ent_ID	Radio 11 entity ID from Dialogue DLL	In_Int	R26	16..19	4 bytes
Radio_12_ex_ID	Radio 12 exercise ID from Dialogue DLL	In_Int	R26	20..23	4 bytes
Radio_12_ID	Radio 12 ID from Dialogue DLL	In_Int	R26	24..27	4 bytes
Radio_12_siteID	Radio 12 site ID from Dialogue DLL	In_Int	R26	28..31	4 bytes
Radio_12_hostID	Radio 12 host ID from Dialogue DLL	In_Int	R26	32..35	4 bytes
Radio_12_ent_ID	Radio 12 entity ID from Dialogue DLL	In_Int	R26	36..39	4 bytes
Radio_13_ex_ID	Radio 13 exercise ID from Dialogue DLL	In_Int	R27	0..3	4 bytes
Radio_13_ID	Radio 13 ID from Dialogue DLL	In_Int	R27	4..7	4 bytes
Radio_13_siteID	Radio 13 site ID from Dialogue DLL	In_Int	R27	8..11	4 bytes
Radio_13_hostID	Radio 13 host ID from Dialogue DLL	In_Int	R27	12..15	4 bytes
Radio_13_ent_ID	Radio 13 entity ID from Dialogue DLL	In_Int	R27	16..19	4 bytes
Radio_14_ex_ID	Radio 14 exercise ID from Dialogue DLL	In_Int	R27	20..23	4 bytes
Radio_14_ID	Radio 14 ID from Dialogue DLL	In_Int	R27	24..27	4 bytes
Radio_14_siteID	Radio 14 site ID from Dialogue DLL	In_Int	R27	28..31	4 bytes
Radio_14_hostID	Radio 14 host ID from Dialogue DLL	In_Int	R27	32..35	4 bytes
Radio_14_ent_ID	Radio 14 entity ID from Dialogue DLL	In_Int	R27	36..39	4 bytes
Radio_15_ex_ID	Radio 15 exercise ID from Dialogue DLL	In_Int	R28	0..3	4 bytes
Radio_15_ID	Radio 15 ID from Dialogue DLL	In_Int	R28	4..7	4 bytes
Radio_15_siteID	Radio 15 site ID from Dialogue DLL	In_Int	R28	8..11	4 bytes
Radio_15_hostID	Radio 15 host ID from Dialogue DLL	In_Int	R28	12..15	4 bytes
Radio_15_ent_ID	Radio 15 entity ID from Dialogue DLL	In_Int	R28	16..19	4 bytes
Radio_16_ex_ID	Radio 16 exercise ID from Dialogue DLL	In_Int	R28	20..23	4 bytes
Radio_16_ID	Radio 16 ID from Dialogue DLL	In_Int	R28	24..27	4 bytes
Radio_16_siteID	Radio 16 site ID from Dialogue DLL	In_Int	R28	28..31	4 bytes
Radio_16_hostID	Radio 16 host ID from Dialogue DLL	In_Int	R28	32..35	4 bytes

Name	Description	Type	Pkt	Offset	Size
Radio_16_ent_ID	Radio 16 entity ID from Dialogue DLL	In_Int	R28	36..39	4 bytes