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1 Introduction

1.1 Purpose

The purpose of this document is to describe how to setup the Local Area Augmentation System (LAAS) Host Simulator (LHS). The additional purpose of this document is to provide a brief description of how to operate the LAAS Host Simulator. The LAAS Host Simulator will also be referred to as LHS.

1.2 Scope

The LAAS Host Simulator User Manual describes the requirements for the Personal Computer (PC) used to control a LAAS receiver and a LAAS transmitter. This document also describes how to configure the ComputerBoards, Inc. CIO-CTR05 Counter I/O ISA card. In addition this document provides a brief description of how to operate the LHS.

1.3 System Overview

The LAAS Host Simulator system consists of the following equipment:

- Intel compatible PC with monitor, keyboard, and two serial ports
- A ComputerBoards, Inc. CIO-CTR05 Counter I/O ISA card that plugs into the PC bus
- Any of the following receiver/transmitter configurations:
 - One LAAS transmitter
 - One LAAS receiver
 - One LAAS receiver and one LAAS transmitter
- Interface Box with power supply
- Shielded RS-232 cables to connect LHS PC to Interface Box and shielded RS-232 cables to connect Interface Box to a LAAS receiver and a LAAS transmitter

The LHS is used to demonstrate that a LAAS receiver and a LAAS transmitter can be commanded by and report status to a controlling PC. In addition the LHS is used to demonstrate that LAAS messages can be transmitted in various time slots and received and reported to the controlling PC.

1.4 Document Overview

This document is comprised of 5 major sections including: an introduction to the document, a list of referenced documents, a description of the hardware needed for operation of the LAAS Host Simulator, a description of how to operate and how to configure the LAAS Host Simulator, and a list of acronyms and abbreviations. The Introduction section provides a general overview of this document and the LAAS Host Simulator. The Applicable Documents section provides a reference list of documents that provide supporting information to the contents of this document. The Hardware Requirements section lists the system requirements for the PC used in the LAAS Host Simulator system, a brief description of the CIO-CTR05 Counter I/O ISA card, and a brief description of the Interface Box that connects the LAAS Host Simulator to the LAAS receiver and the LAAS transmitter. The Operation section describes how to connect the cables from the PC to the Interface Box and from the Interface Box to the LAAS receiver and the LAAS transmitter, the files necessary for operation of the LAAS Host Simulator and their placement, and a brief



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explanation of configuration options. The Acronyms and Abbreviation section provides an alphabetized list of acronyms and abbreviations used within this document.



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2 Applicable Documents

2.1 Government Documents

The following documents form a part of this specification to the extent specified herein.

SPECIFICATIONS

Federal

none

STANDARDS

Military

none

OTHER PUBLICATIONS

Handbook

none

2.2 Non-Government Documents

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the documents referenced herein and the contents of this specification, the contents of this specification shall be considered a superseding requirement.

SPECIFICATIONS

none

STANDARDS

none

OTHER PUBLICATIONS

none

Technical society and technical association specification standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal Agencies.



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2.3 Harris Corporation RF Communications Division Documents

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the documents referenced herein and the contents of this specification, the contents of this specification shall be considered a superseding requirement.

SPECIFICATIONS

none

STANDARDS

none

OTHER PUBLICATIONS

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LAAS Host Simulator Test Plan



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3 LAAS Host Simulator Hardware Requirements

The LAAS Host Simulator needs the following hardware:

- An Intel (or equivalent) based PC
- ComputerBoards, Inc. CIO-CTR05 Counter I/O ISA card
- An Interface Box with power supply
- A LAAS VHF Extended Dynamic Range Receiver or a LAAS VHF receiver
- A LAAS VHF Transmitter
- A cable to connect the Counter I/O ISA card to the Interface Box
- Shielded RS-232 cables to connect the PC COM ports to the Interface Box
- Shielded RS-232 cables to connect the Interface Box to the LAAS receiver and the LAAS transmitter
- The adapter cabling shown in Appendix C may be used to allow the connection of the LAAS Host Simulator to the VDR-2205 hardware platform used for the LAAS Enhanced Sensitivity Receiver

The following sections provide a brief description of the PC System Requirements, a brief description of CIO-CTR05 Counter I/O ISA card and a brief description of the purpose of the Interface Box. The other items listed above will not be described because these items do not require any specific setup or their purpose is self explanatory.

3.1 PC System Requirements

Windows 95 running in DOS mode (not a DOS window)

(Note: The LAAS Host Simulator may run under Win98, but has not been tested.)

16 Megabytes of RAM

One available ISA slot

IRQ7 available

Two serial ports available (COM1, COM2)

Pentium @ 133 MHz (or equivalent)

3.2 ComputerBoards CIO-CTR05 Counter I/O ISA card

To meet the control requirements of the LAAS receiver and LAAS transmitter, a Counter I/O ISA card manufactured by ComputerBoards, Inc. is installed in the PC. This is a half-length card, and occupies one ISA slot. The default location of the card in the PC I/O space is 0x300. This may be changed by reconfiguring jumpers on the card. An interrupt generated by the Counter I/O card is mapped to IRQ7. This IRQ is normally associated with the parallel port of the PC. This Counter I/O ISA card is used to generate the simulated Global Positioning System (GPS) time marks used by the LAAS receiver and the LAAS transmitter.

3.3 Interface Box

The LHS communicates to the LAAS receiver and the LAAS transmitter via two serial ports, COM1 and COM2. All signals from the PC (COM ports and Counter I/O card) are routed through an interface box before going to the LAAS receiver and the LAAS transmitter. This interface box serves two purposes, it shifts the RS-232 and TTL signal levels to RS-422 signal levels, and it routes the Counter I/O ISA card signals as required by the LAAS Host Simulator.



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4 Operation of the LAAS Host Simulator

4.1 Connecting LAAS Receiver and LAAS Transmitter to LAAS Host Simulator PC

Refer to Appendix D for a pictorial representation of how the LAAS Host Simulator PC is connected to the LAAS receiver and the LAAS transmitter.

Plug cables into the following ports on the LAAS Host Simulator PC:

- The Counter I/O ISA card cable into the Counter I/O ISA card connector
- A shielded RS-232 cable into COM 1
- A shielded RS-232 cable into COM 2

Plug the cables from the LAAS Host Simulator PC into the Interface Box as follows:

- Plug the unconnected end of the Counter I/O ISA Card cable into the connector labeled TIMER CARD
- Plug the unconnected end of the COM 1 cable into the connector labeled COM 1 (TX)
- Plug the unconnected end of the COM 2 cable into the connector labeled COM 2 (RX)

Plug cables into the following connectors on the Interface Box:

- Plug a shielded RS-232 cable into the connector labeled J1 (RX)
- Plug a shielded RS-232 cable into the connector labeled J1 (TX)
- Plug a shielded RS-232 cable into the connector labeled J2 (RX)
- Plug a shielded RS-232 cable into the connector labeled J2 (TX)

Plug the cables from the Interface Box into the LAAS Transmitter as follows:

- Plug the unconnected end of the J1 (TX) cable into the port labeled J2 DATA I/O
- Plug the unconnected end of the J2 (TX) cable into the port labeled J3 GPS TIME MARK

Presently there are two receivers that support the LAAS Receiver Command Protocol, the “standard product” LAAS receiver and the LAAS Extended Sensitivity Receiver.

If the LHS will be used with the “standard product” LAAS receiver perform the following steps to plug the cables from the Interface Box to the LAAS Receiver:

- Plug the unconnected end of the J1 (RX) cable into the port labeled J2 DATA I/O
- Plug the unconnected end of the J2 (RX) cable into the port labeled J3 GPS TIME MARK

If the LHS will be used with the LAAS Extended Sensitivity Receiver, perform the following steps to plug the cables from the Interface Box to the LAAS Extended Sensitivity Receiver:

- Obtain an adapter connector as described in Appendix C or an equivalent adapter connector and plug the 25 pin D-Connector into the port labeled J3 DATA I/O
- Plug the unconnected end of the J1 (RX) cable into the 9 pin D-Connector labeled DATA I/O



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- Plug the unconnected end of the J2 (RX) cable into the 9 pin D-Connector labeled GPS TIME MARK

This completes the connecting of the LAAS Receiver and the LAAS Transmitter to the LAAS Host Simulator.

4.2 File Placement

The LAAS Host Simulator consists of the following three (3) files:

- hostlaas.exe - application
- hostlaas.cfg - configuration file for LAAS Host Simulator (address of Counter I/O ISA card and calibration constant for crystal oscillator on the Counter I/O ISA card)
- laashelp.txt - online help text file

The above listed files must be installed in a common directory.

4.3 How to configure and execute the LAAS Host Simulator

The LAAS Host Simulator is a DOS program, therefore the PC used to execute this program must be booted as a DOS machine. The following configuration is required to be done:

- change the line labeled **address=value** to the address of the Counter I/O card, this only has to be done if the address of the Counter I/O card is not 0x300, because the LAAS Host Simulator defaults to an address of 0x300
- change the line labeled **CountsPerSecond=value** to the value determined by executing the procedure described in Section 4.4 of this document, in order to generate accurate time marks

4.3.1 Installing the Counter I/O ISA card

Perform the following steps to install the Counter I/O ISA card:

1. Set the address of the Counter I/O ISA card to 0x300 unless it is known that this address conflicts with a card already installed in the PC. If so, pick one of the other valid addresses, set the Counter I/O card to that address and update the **address=** line in the LHS configuration to the selected address.
2. Set the IRQ to be used by the Counter I/O card to 7.
3. Set the number of wait states to no wait states.
4. Remove the cover from the PC.
5. Identify an empty ISA slot that provides enough room on the outside of the cabinet to plug a cable into the D-connector located on the Counter I/O ISA card.
6. Install the Counter I/O ISA card into the empty ISA slot.
7. Replace the cover on the PC.

4.3.2 Determining if the Counter I/O ISA card is properly installed

From the directory containing the files listed in Section 4.2, type in the following command from the DOS prompt:

hostlaas



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After typing the above line, on the monitor there should be two windows displayed, one window consisting of 25 lines and one window consisting of 1 line. The window with 25 lines should have some text displayed, this is the window where the command acknowledgments from the LAAS radios and status reported by the LAAS radios is displayed. The 1 line window is where commands for the LAAS Host Simulator are typed.

To determine if the Counter I/O ISA card is installed correctly perform the following steps:

1. After connecting the system together as described in section 4.1, start the LAAS Host Simulator and type in the following command:
rpe 1
2. The LAAS transmitter should power on.
3. If the LAAS transmitter does not power on, then check that all of the cables are plugged in correctly and that all of the cables are connected securely.
4. After checking the cables type in the following command:
rpe 1
5. If the LAAS transmitter does not power on, repeat the steps in the section 4.3.1 using another valid address for the Counter I/O ISA card.
6. Repeat steps 1 through 5 of this procedure until the LAAS transmitter powers on or all valid addresses have been tried. If all valid addresses have been tried and the LAAS transmitter has not powered on then the Counter I/O ISA card may not be working.

4.3.3 Determining if the LAAS Host Simulator can communicate with the LAAS radios

To determine if the LAAS Host Simulator can communicate with the LAAS radios, perform the following steps:

1. After connecting the system together, as described in section 4.1, start the LAAS Host Simulator and type in the following commands:
rpe 1
bit v
2. The BIT/Status for both the LAAS receiver and the LAAS transmitter should be displayed.
3. If BIT/Status for both the LAAS receiver and the LAAS transmitter is not displayed, then check that all of the cables are plugged in correctly and that all of the cables are connected securely. Also check that the LAAS receiver and the LAAS transmitter are powered on.
4. After checking the cables type in the following command:
bit 1
5. The BIT/Status for both the LAAS receiver and the LAAS transmitter should be displayed.
6. If BIT/Status for both the LAAS receiver and the LAAS transmitter is not displayed then the PC may have a bad serial port.

4.4 Calibrating Counter I/O ISA card

The Counter I/O ISA card has a 50 PPM crystal oscillator that is used as the time base for the simulated GPS 1 pulse per second signal. The counters are configured to give one microsecond resolution. This equates to a possible error of 50 microseconds over a one second period. The configuration file for the LAAS Host Simulator contains a calibration parameter that can be set to reduce this error. Note that the long term aging characteristics of the crystal oscillator may require that this value be adjusted occasionally to maintain the desired accuracy.



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The calibration consists of accurately measuring the simulated GPS signal period and determining the error (in microseconds) from one second. The CountsPerSecond entry of the configuration file should then be changed by that number. The default value of CountsPerSecond is 16960, which will provide a nominal 1 PPS simulated GPS signal given an ideal crystal oscillator.

For example, if the simulated GPS period is measured and determined to be 0.999977 seconds (23 microseconds less than one second), and the CountsPerSecond parameter is currently set to 16960, the new value for CountsPerSecond would be 16983, to increase the period by 23 microseconds. The entry in the configuration file would be:

CountsPerSecond=16983

The simulated GPS signal may be measured between pins 4 and 5 of the connector labeled J2(TX) on the Interface Box. The LAAS Host Simulator program must be running, the Counter I/O ISA Card cable must be connected, and the Interface Box must be powered to make this measurement.

4.5 Explanation of Collecting Block Failure Rate Statistics to a File Command

The **bfr** command allows a second command line argument which is used to log the test results to a file.

When used, the following statistics are written to the file (in the order displayed):

- a. Received Counter
- b. Missed Burst
- c. Total Missed Bursts
- d. CRC Status (0 – CRC is valid, 1 – CRC is invalid)
- e. Total Messages with CRC error
- f. FEC Status (0 – FEC was not used, 1 – FEC was used)
- g. Signal Strength (dBm)

To access this option enter the following command:

bfr value filename where
value is the size of the message (ex. 222)
filename is the name of the file to which the statistics are written (ex. test)

filename has the following constraints:

- a. the file is written to the directory where the LAAS Host Simulator is executing
- b. the file extension of bfr is added to the entered filename
- c. the file name is limited to 8 characters, if more than 8 characters are entered, the entered file name is truncated to 8 characters
- d. if file name entered is identical to a file already in the directory, then the existing file is overwritten.

To close this file (this also stops the BFR test) enter the following command:



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bfr 0



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5 Alphabetical Listing of Acronyms and Abbreviations

Abbreviation	Meaning
BFR	Block Failure Rate
GPS	Global Positioning System
I/O	Input/Output
IRQ	Interrupt ReQuest
ISA	Industry Standard Architecture
LAAS	Local Area Augmentation System
LHS	LAAS Host Simulator
PC	Personal Computer
RAM	Random Access Memory
TTL	Transistor-Transistor Logic
VHF	Very High Frequency



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Appendix A – Help File Text

bit [0/1] [r/t] [v/h] [s] [c]

Requests the current BIT/Status from the receiver, transmitter, or both.

With no argument requests BIT/Status from both the receiver and transmitter and displays the response in hex or verbose format.

[0] disable automatic requests (nominally occur at 1 request per second)

[1] enable automatic requests (nominally occur at 1 request per second)

[r] command or option affects receiver only

[t] command or option affects transmitter only

[v] verbose (text description of response, 'sticky', i.e. applies to all subsequent requests until explicitly changed)

[h] hex (response shown as hex characters, 'sticky')

[s] suppress display of the BIT/Status response. Normally the response to the automatic request is displayed. This suppresses that display, this state is cleared by issuing a "bit v" or "bit h" command

[c] send the BIT/Status Clear message to the transmitter or receiver (or both)

txt q [s] b 1-249 [s] f file 0

Commands the transmitter to start or stop a message transmission sequence.

q [s] The message data transmitted is:

"The quick brown fox jumped over the lazy dog 0123456789",0xD

b 1-249 [s] The message data is the 511 BER data

f file The message data is the 511 BER data, fil = filename of file containing transmission slots for Data Message and which slots to send the message from the LAAS Host Simulator to the transmitter

0 Stops a continuous transmission started by txt q, txt b, or txt f

[s] Single Message Transmission (defaults to continuous)

bfr 0, 6-222 [filename] d [0/1]

Commands the transmitter to start or stop transmitting a message that contains 511 BER message data. Displays message transmission statistics.

0 Terminate Block Failure Rate test

6-222 The message data contains selected number of bytes of 511 BER message data



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filename Limited to 8 characters, extension of bfr added to
inputted filename

Collects the following statistics to the inputted filename (in the order listed):
received sequence number, missed bursts, accumulated missed bursts, CRC status (0-no error,
1-CRC error), accumulated CRC errors, FEC status (0-not used, 1-used), and received signal
strength (dBm)

d 0 Disables BFR statistics display

d 1 Enables display of BFR statistics and displays last result

dps [38400/57600/76800] [O/E/N]

Allows the user to change the baud rate and the parity of the serial ports in use by the application.

With no argument displays the current data port settings.

[19200] - set the baud rate for both ports to 19,200
(This option added for debugging only!)

[38400] - set the baud rate for both serial ports to 38,400

[57600] - set the baud rate for both serial ports to 57,600

[76800] - set the baud rate for both serial ports to 76,800

[O] - set the parity for both serial ports to Odd

[E] - set the parity for both serial ports to Even

[N] - set the parity for both serial ports to None

(Note: the data bit count is fixed at 8 bits, and the stop bits are fixed at 1.)

err [0] t MessageNumber r MessageNumber

This command is used to cause a command message sent from the LHS to a receiver or transmitter to have 1 fewer byte or 1 more byte than specified by the ICD. In addition this command can be used to corrupt the CRC of a Data Message. The chosen corruption (1 fewer byte, 1 more byte, or corrupted CRC) will occur the next time the command or Data Message is sent and only the next time. This command does not create a permanent corruption of a command or Data Message.

[0] Clear all errors

t [1-18, 20] Transmitter only. 1 through 9 creates the selected command message with 1 fewer byte than specified in the ICD. 10 through 18 creates the selected command message with 1 more byte than specified in the ICD. 20 creates a Data Message with a corrupted CRC.



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r [1-12] Receiver only. 1 through 6 creates the selected command message with 1 fewer byte than specified in the ICD. 7 through 12 creates the selected command message with 1 more byte than specified in the ICD.

int frq pwr slt [v]

Initializes the transmitter to the entered arguments.

frq [1-400] Sets the Assigned Channel field of the Initialization Message to the entered value

pwr [0-20] Sets the Assigned Power field of the Initialization Message to the entered value

slt [1-ff] Bit field representing the assigned time slots. There are 8 assignable time slots. This bit field represents the 8 slots, with the LSB the earliest time slot (Assigned Time Slot 1). The bit in each position of the argument should be set to one if the corresponding slot is assigned, and to 0 if it is not assigned. A value of 0 is not allowed as input, but is the default value.

[v] Display command response in verbose format

inr frq [v]

Initializes the receiver to the entered argument.

frq [1-400] Sets the Assigned Channel field of the Initialization Message to the entered value

[v] Display command response in verbose format

mod [x/s/n] [t/r] [v]

Reports/sets the current mode of the receiver, transmitter, or both.

With no argument displays the current mode of the transmitter and receiver in hex format

[x] Send a Mode Control Command Message to reset [t] transmitter, [r] receiver, or both

[s] Send a Mode Control Command Message to set [t] transmitter, [r] receiver, or both to standby

[n] Send a Mode Control Command Message to set [t] transmitter, [r] receiver or both to normal

[v] Display the response in verbose format. The verbose switch is not sticky and applies only to the current request

[r] Display the current mode of the receiver in hex format

[t] Display the current mode of the transmitter in hex format



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mon [0-8] [v/h]

Controls the display of data from the receiver and provides a second method of controlling the display of BIT/Status responses from both the transmitter and receiver.

With no arguments displays the current enable/disable status of displaying of data from the receiver and BIT/Status responses.

[0-8] 0 = all BIT/Status and data display disabled

1 = Enable the transmitter BIT/Status response display

2 = Enable the receiver BIT/Status response display

3 = Enable both the receiver and transmitter BIT/Status display

4 = Enable display of transmitter and receiver BIT/Status responses and all the fields of the receiver data message with the exception of the data itself

5 = Enable display of all the fields of the receiver data message with the exception of the data itself

6 = Enable display of the data field of the receiver data message

7 = all BIT/Status, Data Message fields & data displays enabled

8 = Enable displaying of valid acknowledgement messages

[v] Display response in verbose format

[h] Display response in hex format

bcr [t/r]

Sends a Bit Clear Request to the receiver, transmitter or both.

With no argument sends a BIT/Status Clear Command Message to both the receiver and the transmitter and displays the response in hex.

[t] Sends a BIT/Status Clear Command Message to the transmitter and displays the response in hex

[r] Sends a BIT/Status Clear Command Message to the receiver and displays the response in hex

urm t/r [0-249] [v]

Sends an unrecognized message to the receiver or the transmitter.

t [0-249] Sends a message with the Message ID 0xFF to the transmitter having a Message Data of length [0-249]

r [0-249] Sends a message with the Message ID 0xFF to the receiver having Message Data of length [0-249]

[v] Display command response in verbose format



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mra [0] [s/r]

This command allows adjustment of the rate of data messages sent to from the LAAS Host Simulator to the transmitter.

With no argument, displays the current skip value and the current message rate value.

[0] Sets the message rate to be synchronized to the Transmitter Time Mark

[s] Displays a menu allowing the user to select the SKIP value to be set (Range 0 - 255)

[r] Displays a menu allowing the user to select the Message Rate to be set (Range -25 to 25 (mS))

rpe [0/1]

Remote Power Enable, controls the turning on and turning off of the transmitter.

No argument displays the current state of the remote power enable line

[0] Turns the transmitter off

[1] Turns the transmitter on

sdc [0/1] [v]

Displays the current power source and allows changing the current power source.

No argument displays the response to the current power source request in hex format

[0] Sends a command message to switch the transmitter to the AC power source

[1] Sends a command message to switch the receiver to the DC power source

[v] Display command response in verbose format

cwt 0/1 [v]

Enables/disables the transmission of a constant waveform.

0 Stops the transmission of the CW signal

1 Starts the transmission of the CW signal. The current frequency and power settings are to be used



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[v] Display command response in verbose format

tce t/r [v]

Sends a TCXO Adjustment Enable message to the receiver or the transmitter.

t Send a TCXO Adjustment Enable Command Message to the transmitter

r Send a TCXO Adjustment Enable Command Message to the receiver

[v] Display command response in verbose format

tcd t/r 0/1 [v]

Sends a TCXO Adjustment Direction message to the receiver or the transmitter.

t Send a TXCO Adjustment Direction Command Message to the transmitter

r Send a TXCO Adjustment Direction Command Message to the receiver

0 Decrease the frequency

1 Increase the frequency

[v] Display command response in verbose format

ver

Displays the version of the LHS, receiver software (DSP and MICRO), receiver hardware, transmitter software (DSP and MICRO), and transmitter hardware (PA and PS)

An example printout:

```
LHS 23
TX DSP 10
TX MICRO 11
TX PA 11
TX PS 20
RX DSP 20
RX MICRO 11
```



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tme [t/r] 0/1

Time Mark Enable control.

Not selecting t or r enables/disables time marks for both the receiver and the transmitter.

[t] Enable/Disable transmitter time mark

[r] Enable/Disable receiver time mark

0 Disables time mark

1 Enables time mark

tmp [0] t/r

Time Mark Period control.

t Menu for adjusting the time mark period of the transmitter is displayed

r Menu for adjusting the time mark period of the receiver is displayed

[0] Selects "perfect" time mark period setting for both the transmitter and the receiver

t 0 Sets "perfect" time mark period for the transmitter

r 0 Sets "perfect" time mark period for the receiver

tmo [0]

Receiver Time Mark Offset

With no arguments, displays a menu which allows the user to change the time mark offset for the Receiver.

[0] Sets the receiver time mark offset back to zero (i.e. perfect synchronization with the transmitter time mark signal)

cls

This command causes the application to clear the screen.



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exit

This command causes the application to terminate.

log [start/stop/reset/filename] [filename.ext]

Control the logging of data.

With no arguments, terminates data logging.

[start] Begin logging all transmitted and received data to a data log file named "LOGFILE.TXT". Data is appended to the existing log file if one exists, else a new file is created.

[stop] Terminate data logging

[reset] Causes the log file to be deleted and, if logging is currently enabled a new log file is created

[filename.ext] logfile.txt Sets the logging file name to "logfile.txt"

scrn 0/1

Set the number of rows displayed on the screen. This command clears the screen and repositions the cursor to the top line of the screen.

0 Set number of lines on screen to 25

1 Set number of lines on screen to 50

tick [0/1]

Causes a single character, a '-', to be displayed once per second.

With no arguments, displays whether the tick option is enabled or disabled.

0 disables this option

1 enables this option

show [text]

Causes the text following the command "show" to be displayed on the screen. This text is displayed in Light Grey.



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run filename.ext

Causes the application to read "filename.ext" and accept commands from this file as though they were typed in on the command line.

pause 0/1

This command stops the displaying of data or re-enables the displaying of data on the screen.

- 1 Stops all data display activity
- 0 Re-enables data display activity.

flag [v/h/s/d] [0/1]

Displays/Controls the states of the "Sticky" flags.

With no command parameters this command displays the enable/disable state of all of the "Sticky" flags.

- v Verbose Flag
- h Hexidecimal Display Flag
- s Show Bit/Status Flag
- d Debug Flag (much debug data displayed)

- 0 Disabled
- 1 Enabled

txmsg xx xx xx xx xx xx xx

Causes the message described by "xx xx xx xx xx xx xx" to be sent to the Transmitter. The message is made up of 1 or more hexadecimal bytes shown above as "xx". A message is made up of a series of 2 character ASCII/hex characters, each representing a byte of data. For example:

txmsg aa 55 01 01 f0 0f

rxmsg xx xx xx xx xx xx xx

Causes the message described by "xx xx xx xx xx xx xx" to be sent to the Receiver. The message is made up of 1 or more hexadecimal bytes shown above as "xx". A message is made up of a series of 2 character ASCII/hex characters, each representing a byte of data. For example:

rxmsg aa 55 01 01 f0 0f



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Appendix B HOSTLAAS.CFG file / description of entries

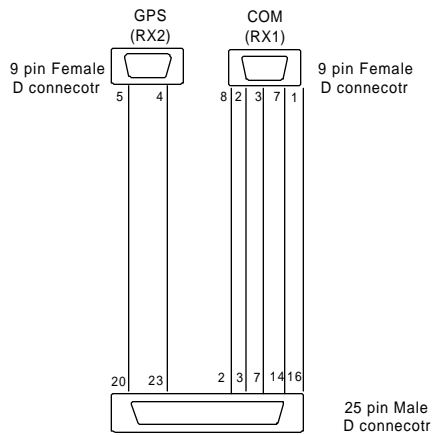
See document titled Configuration Data, LAAS Host Simulator, document number 00-6406A01.



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Appendix C Adapter for LAAS Extended Sensitivity Receiver

2205 receiver



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Appendix D Connecting LHS to LAAS receiver and LAAS transmitter

