AEROFLEX

GPSG-1000 GPS/Galileo Positional Simulator

Remote Command Manual

GPSG-1000

GPS/Galileo Positional Simulator

Remote Programming Manual

PUBLISHED BY
Aeroflex

Original Issue	June 2013
Issue 2	Dec 2014
Issue 3	Feb 2015

10200 West York / Wichita, Kansas 67215 U.S.A. / (316) 522-4981 / FAX (316) 524-2623

Subject to Export Control, see Cover Page for details.

Preface

ABOUT THIS MANUAL

This manual contains the following:

- Identifies conventions used in the manual;
- Describes common remote commands;
- Lists remote commands for the GPSG-1000.

NOMENCLATURE STATEMENT

The GPSG-1000 Configurable Automated Test Set is the official nomenclature for the test sets currently included in the GPSG-1000 Series. In this manual, GPSG-1000, unit or Test Set, refers to all GPSG-1000 models unless otherwise indicated.

INTENDED AUDIENCE

This manual is intended for personnel familiar with the use of remote command language. Review the GPSG-1000 Operation Manual prior to using the Test Set.

TEST SET REQUIREMENTS

Refer to the GPSG-1000 Operation Manual for information on the following:

- Safety Precautions
- Power Requirements
- Performance Specifications
- Repacking/Shipping Test Set

THIS PAGE INTENTIONALLY LEFT BLANK.

Table of Contents

Chapter 1 - Introduction

Chapter 2 - Common Remote Commands

Chapter 3 - Help Remote Commands

Chapter 4 - General Remote Commands

Chapter 5 - Calibration Remote Commands

Chapter 6 - Diagnostic Remote Commands

Chapter 7 - File Remote Commands

Chapter 8 - RX Remote Commands

Chapter 9 - Route Remote Commands

Chapter 10 - Setup Remote Commands

Chapter 11 - Simulation Remote Commands

Chapter 12 - SV PRN Remote Commands

Chapter 13 - Waypoint Remote Commands

Chapter 14 - Remote Command Example Scenarios

THIS PAGE INTENTIONALLY LEFT BLANK.

List of Remote Commands

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 1 - Introduction

1.1 INTRODUCTION

This chapter contains basic information for GPSG-1000 remote operation. Refer to the GPSG-1000 Operation Manual for general Test Set operation.

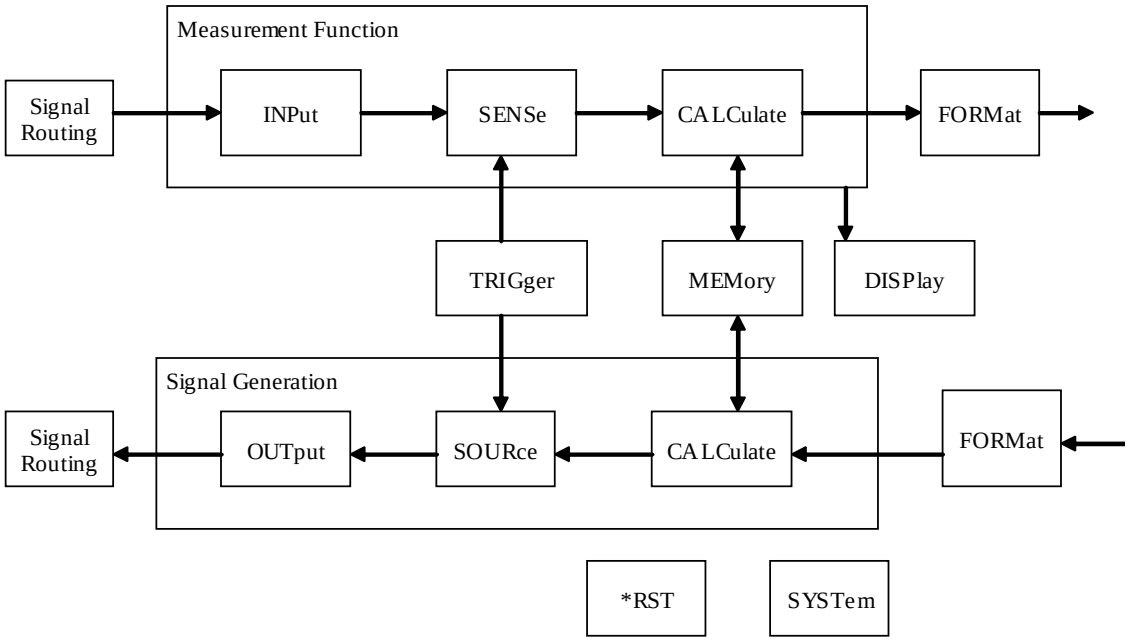
1.2 GENERAL INFORMATION

The GPS-1000 has the ability to be remotely controlled using the SCPI (Standard Commands for Programmable Instruments) communications protocol. SCPI is an instrument command language that promotes consistency, from the remote programming standpoint, between instruments of the same class and between instruments with the same functionality. SCPI is hardware independent and the commands are very verbose and easy to learn.

This document describes the detailed information for operating the GPS-1010 in the remote operation mode, including configuration of the remote controller, syntactic meanings of the command set, and descriptions of the parameters used by the command set.

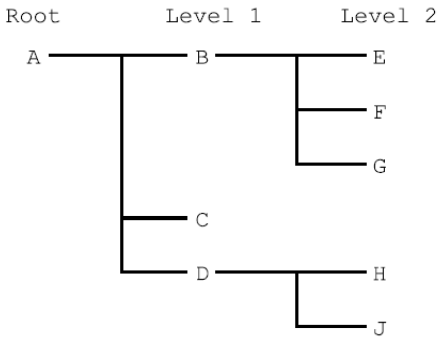
1.3 SCPI STRUCTURE

SCPI starts with a high-level block diagram of the functions of an instrument. Each functional block is broken down into smaller block diagrams. SCPI contains a hierarchy of commands called a subsystem that maps directly to the hierarchy of the block diagram.



All SCPI commands are based on a hierarchical tree structure consisting of keywords and parameters. Associated commands are grouped together under a common node in the hierarchy.

In the command tree the command on the left (A) is the root command. A tree pointer is used to decode the SCPI commands. On power up the pointer is at the root command



All SCPI commands are terminated by a line feed (0x0A). After termination the pointer is returned to the root.

1.4 COMMAND GUIDELINES

The following guidelines should be followed when writing remote commands.

1.4.1 Command Short and Long Form

The elements of compound and query headers have a long and a short form, as defined by SCPI. Either the long or the short form may be entered as a command; other abbreviations are not permissible.

The short form is marked by upper case letters, the long form corresponds to the complete word. Uppercase and lowercase identify short form and long form only; GPSG-1000 remote commands are not case sensitive.

Queries always return the short form, or a numeric response in cases where the command provides a choice of numeric or character data.

1.4.1.A Case Sensitivity

As indicated in the section titled Command Short and Long Form, GPSG-1000 remote commands are not case sensitive. Upper and lowercase characters are completely interchangeable. There is no conflict between milli (m) and mega (M) as both cannot be applied to the same data.

Example:

AFCounter1:AVERage 100 is interpretted the same as AFC1:AVER 100

1.4.2 Command Punctuation

1.4.2.A Arrow Brackets < >

Text within angle brackets represents an actual value that needs to be inserted in the command string. For example, <n> or <x> indicate a variable that must be inserted in the command at this point.

Example:

AFCounter<n>:AVERage 100

<n> must be defined with a valid value as follows: AFCounter1:AVERage 100

1.4.2.B Choice Indicator

The vertical bar (|) separates a choice of parameters or commands.
For example, 0 | 1 means '0 or 1.'

1.4.2.C Square Brackets [ ]

Square brackets [ ] indicate optional variables that do not need to be included in the command string, such as units of measurement.

1.4.2.D Colon

A colon moves the current path down one level in the command tree. For example the colon in SYSTEM:MODE specifies MODE is one level below SYSTEM. When the colon is the first character of a command, it specifies that it is a root level command, e.g. :SYSTEM specifies that SYSTEM is a root level command.

1.4.2.E Semicolon

A semicolon separates two commands in the same message without changing the command pointer.

For example, referencing the tree above:

:A:B:E;F;G

This is the same as sending the three messages:

:A:B:E

:A:B:F

:A:B:G

1.4.2.F Commas

If a command requires more than one parameter, you must use a comma to separate adjacent parameters. Commas do not affect the command pointer. To execute a command the full path to it must be specified.

e.g. :SYSTEM:FADING:STATe ON

would turn fading on for simulation. Note that there must be a space between the command and the parameters.

SCPI commands are not case sensitive. Also, the command may have a short form. The short form is identified using upper case letters. In the above example :STAT is the short form of :STATe

In addition some node can be default node and these keywords are optional when using the command, the instrument will process the command to have the same effect whether the option node is omitted or not. This is denoted in throughout this manual by square brackets [].

1.4.3 Program Headers

Program headers are keywords that identify the command. There are two types of headers, common command and instrument control. Instruments do not distinguish between upper and lower case.

The common command syntax is:

*<PROGRAM MNEMONIC>

These are used to control and extract data from the instrument. The instrument control syntax is:

:<MNEMONIC>

:<MNEMONIC><PARAMETER>

Most SCPI commands can be queried. A query is a command header with a question mark (?) appended to it. When a query command is received, the current settings associated with the command are placed into the output buffer. Execution of the query will have no effect on the operation of the instrument

Queries have the syntax:

*<PROGRAM MNEMONIC>? For common command

:<MNEMONIC>? For instrument control

The parameter field of a command can contain several different types of data. These are explained in the subsections below.

If "ERR" is displayed on the front panel, it indicates that the system has encountered an error condition. The errors can be read by issuing the following command:

:SYSTem:ERRor?

The response consists of an error number followed by a string that describes the error. When the Error Queue is empty the instrument responds with:

0,"No error"

Querying the error clears the storage location in the error buffer.

Command	Description
*CLS	Clears the status and event registers.
*ESE	Standard Event Status Enable Register.
*ESE?	Returns the Standard Event Status Enable Register.
*ESR?	Returns the contents of the Standard Events Status.
*IDN?	Return Identity.
*OPC	Set bit 0 of the Standard Event Status Register when it completes all pending operations.
*OPC?	Output ‘1‘ when pending operations complete.
*OPT?	Identify any reportable device options.*
*RST	System Reset.
*SRE	Service Request Enable.
*SRE?	Returns contents of Service Request Enable.
*STB?	Status Byte Register.
*TST?	Self Test.*
*WAI	Wait until all pending operations complete.

* Not supported.

1.5 PROGRAM DATA ELEMENTS

GPSG-1000 Remote programming commands use the following data program elements:

1.5.1 Character Program Data (CPD)

Character Program Data is used to define a parameter best described as a short alpha or alphanumeric string.

Example:

AUD1
DEMod

1.5.2 Numeric Program Data

GPSG-1000 Remote programming commands use the following numeric program elements:

1.5.2.A Integer

Variable is numeric and does not contain a defined decimal point.

Example:

10
175

1.5.2.B Decimal

Variable is numeric and does contain a defined decimal point.

Example:

12.5
825.0625

1.5.2.C Binary

Variable is in binary format. Binary values are preceded with #b or #B.

Example:

#B1010
#B10101111

1.5.2.D Hexadecimal

Variable is in hexadecimal format. Hexadecimal values are preceded with #h or #H.

Example:

#H3E8
#H1D4C

1.5.3 String Program Data

String program data consists of a number of ASCII characters enclosed in quotes. Use either pairs of single (ASCII 39) or double (ASCII 34) quotes, but do not mix single and double in a string. A quote within a string must be enclosed within an extra pair of quotes.

Example:

'This string contains the word ' 'Hello' ' '

is interpreted as

This string contains the word 'Hello'

and

"This string contains the word " "Hello" " "

is interpreted as

This string contains the word "Hello"

1.5.3.A Hex-string

Uses characters 0-9 and A-F to produce hex pairs representing values from 0 to 255. There are no white spaces within the string.

1.5.3.B ASCII-string

Example:

"Script File Test 1" which refers to the file being loaded.

1.6 PROGRAM RESPONSE ELEMENTS

GPSG-1000 Remote programming commands use the following formats for response data:

1.6.1 Character Response Data (CRD)

Variable is returned as a short alpha or alphanumeric string.

Example:

DEM
AUD1

1.6.2 Numeric Response Data

GPSG-1000 Remote programming commands use the following numeric response elements:

1.6.2.A Integer

Variable is numeric and does not contain a defined decimal point.

Example:

10
175

1.6.2.B Decimal

Variable is numeric and does contain a defined decimal point.

Example:

12.5
825.0625

1.6.2.C Binary

Variable is in binary format. Binary values are preceded with #b or #B.

Example:

#B1010
#B10101111

1.6.2.D Hexadecimal

Variable is in hexadecimal format. Hexadecimal values are preceded with #h or #H.

Example:

#H3E8
#H1D4C

1.6.3 String Response Data

This takes a similar form to String Program Data except that the delimiting character is always a double quote (“ASCII34”).

1.6.3.A Hex-string

Returns characters 0-9 and A-F to produce hex pairs representing values within specified parameter range. There are no white spaces within the string.

1.6.3.B ASCII-string

Example:

“Call in progress.”

1.7 COMMAND TYPES

1.7.1 Set/Query Commands

The majority of the commands used within the GPSG-1000's remote command structure support set and query functionality.

1.7.1.A Set Commands

Set commands define a parameter.

Example:

GPS:SETup:CouplerCABle <couplerCable>

The Setup Coupler Cable command sets the coupler cable loss value for the unit.

1.7.1.B Query Commands

Query commands use the same command structure as the set command, but contain a '?' at the end of the command string instead of a variable.

Example:

GPS:SET:CARRier L2
GPS:SET:CARRier?

The Set Carrier command returns the GPS carrier frequency to be used during the simulation.

1.7.2 Action Only Commands

Action only commands initiate a specific function or action. These commands do not require parameters and can not be queried. Typical use of Action Only commands is to clear average or peak readings and to move markers on the instrument tiles and measurement graph tiles.

Example:

GPS:CAL:RLCV:ABORt

The Calibration Level Abort command aborts the currently in progress level Calibration.

1.7.3 Query Only Commands

Query only commands return information only. These commands do not define parameters. Measurement query commands or status commands are the main use of query only commands. All query commands must include a '?' at the end of the command string.

Example:

GPS:SIM:TIMe?

Query command returns the simulation time.

Some commands that are used to define a parameter can also be used as a query command by adding a '?' to the end of the command.

Example:

GPS:SIM:LATitude <latitude> sets the Latitude for a static simulation.

GPS:SIM:LATitude? returns the Latitude for a static simulation.

NOTE	Query response always returns short form. For example, VARiable and FIXed are returned as VAR and FIX.

1.8 UNITS

The GPSG Unit can be put into one of four different unit modes: SI, IMPERIAL, AERO/SI, AERO/IMPERIAL. When a session is started, “SI” units will be selected by default.

1.8.1 Supported Units

The following units are currently supported:

Distance: IN, FT, YD, MI, NMI, M, KM, CM, MM

Speed: FT/MIN, FT/SEC, MPH, KT, M/S, KM/H

Climb Rate: FT/MIN, FT/SEC, MPH, KT, M/S, KM/H, M/MIN

Acceleration: M/S2, FT/S2

1.8.2 SI Units

The default units for measurement when the system is set to SI are:

Distance = M

Speed = KM/H

Climb Rate = M/MIN

Acceleration = M/S2

1.8.3 Default Imperail Units

The default units for measurement when the system is set to SI are:

Distance = FT

Speed = MPH

Climb Rate = FT/MIN

Acceleration = FT/S2

1.8.4 Aeronautical Units

When an aeronautical mode is selected, the speed unit is:

Speed = KT

1.9 BEGINNING A SESSION

To begin a session, telnet into the GPSG-1000 as follows using port 5025. For example, if the GPSG-1000 has an IP address of 192.168.0.0, the command to begin a session would be:

telnet 192.168.0.0 5025

Chapter 2 - Common Remote Commands

2.1 INTRODUCTION

This chapter lists Common Remote Command functions supported for the GPSG-1000.

2.2 COMMON REMOTE COMMANDS

The following are IEEE mandated Remote Commands supported by the GPSG-1000.

2.2.1 *CLS

Parameters:	none
Description:	Clear Status clears the Standard Event Status Register, the Error Queue, the Operation Status Event Register and the Questionable Status Event Register.
Example:	*CLS *Clear the status reporting structure.*

2.2.2 *ESE

Parameters:	mask
Valid values:	mask: integer. Valid values are 0 to 255. Values outside range are rejected and an error generated.
Description:	The Standard Event Status Enable command sets the Standard Event Status Enable Register. This is an eight bit register.
Example:	*ESE 1 *Set the Standard Event Status Enable Register to 1 (00000001 in binary). This will allow OPC (Operation Complete) messages generated by the instrument to be reported in the Event Summary Bit. (OPC is issued by the instrument when an overlapped command completes and a *OPC command has been received).*

2.2.3 *ESE?

Parameters:	none
Response:	mask
Returned values:	mask: integer. Values are in the range 0 to 255.
Description:	Read the Standard Event Status Enable Register. This is an eight bit register.
Example:	*ESE?

2.2.4 *ESR?

Parameters:	none
Response:	register contents
Returned values:	register contents: integer. Values are in the range 0 to 255.
Description:	Read the value of the Standard Event Status Register. This is an eight bit register.
Example:	*ESR?

2.2.5 *IDN?

Parameters:	none
Response:	Instrument Identification
Returned values:	Instrument Identification: string
Description:	The Identification Query command allows information about the instrument to be read. The Instrument Identification is split into four fields: Manufacturer Model Serial number Software Issue No. Software build date Manufacturer returns 'AEROFLEX' Model returns the instrument model number GPSG-1000. Serial number is in the form sssssssss (10 digits) where s is an ASCII digit in the range 0 to 9. Software Issue No. is in the form n.n.n where n are ASCII digits in the range 0 to 9.
Example:	*IDN? *Read information on the instrument.*
Example response:	AEROFLEX, GPSG-1000, 104000139, 2.5.0, 201409091525

2.2.6 *OPC

Parameters:	none
Description:	The Operation Complete command sets the Operation Complete bit in the Standard Event Status Register when execution of all overlapped commands have completed. This command is really only useful after an overlapped command when it will indicate when that command has been completed. Other (non-overlapped) commands can be executed whilst the overlapped command is still being executed. If there is more than one overlapped command being executed, the Operation Complete bit will only be set once all of the overlapped commands complete. *OPC should be the final <PROGRAM MESSAGE UNIT> of the <PROGRAM MESSAGE>.
Example:	*OPC Since there are no overlapped commands in the instrument, the Operation Complete bit will be set in the Standard Event Status Register immediately.

2.2.7 *OPC?

Parameters:	none
Response:	operation complete
Returned values:	operation complete: integer. Value is 1
Description:	The Operation Complete Query returns a '1' when all overlapped commands have completed. This command is really only useful after an overlapped command when it will indicate when that command has been completed. *OPC? should be the final <QUERY MESSAGE UNIT> of the <PROGRAM MESSAGE>.
Example:	*OPC? *Since there are no overlapped commands in the instrument, the value '1' will be placed in the output queue immediately*.

2.2.8 *RST

Parameters:	none
Description:	Reset the instrument. This command places the instrument in its default state. This is the same state as when the instrument is first powered on. Appendix A lists reset settings and which parameters are not reset.
Example:	*RST *Reset instrument to known state.*

2.2.9 *SRE

Parameters:	mask
Valid values:	mask: integer. Valid values are 0 to 255. Values outside range are rejected and an error generated.
Description:	Set the Service Request Enable Register. This is an eight bit register.
Example:	*SRE 32 *Set the Service Request Enable Register to 32 (0010 0000 in binary) to enable service requests when the Standard Event Status Register Summary Bit is set.*

2.2.10 *SRE?

Parameters:	none
Response:	mask
Returned values:	mask: integer. Values are in the range 0 to 255.
Description:	Read the Service Request Enable Register. This is an eight bit register.
Example:	*SRE?

2.2.11 *STB?

Parameters:	none
Response:	status byte
Returned values:	status byte: integer. Values are in the range 0 to 255.
Description:	Read the Status Byte Register. This is an eight bit register. Bit 6 of the register contains the Master Summary Status. See Appendix A for details.
Example:	*STB?

2.2.12 *WAI

Parameters:	none
Description:	The Wait to Continue command inhibits execution of a command until the execution of all overlapped commands has been completed. This command is really only useful after an overlapped command when it will hold off further commands until that command has been completed. If there is more than one overlapped command being executed, the next command will be held off until all of the overlapped commands complete.
Example:	*WAI *Since there are no overlapped commands in the instrument, *WAI will complete immediately.*

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 3 - Help Remote Commands

3.1 HELP COMMANDS

The GPS Help commands are:

GPS:? ALL	Lists all available RCI Commands by section
GPS:? GEN	Lists the general section of RCI Commands
GPS:? CAL	Lists the calibration section of RCI Commands
GPS:? DIAG	Lists the diagnostics section of RCI Commands
GPS:? FILE	Lists the file section of RCI Commands
GPS:? GPSR	Lists the GPS RX section of RCI Commands
GPS:? ROUTE	Lists the route section of RCI Commands
GPS:? SET	Lists the setup section of RCI Commands
GPS:? SIM	Lists the simulation section of RCI Commands
GPS:? SVPRN	Lists the SV PRN section of RCI Commands
GPS:? WAYP	Lists the waypoint section of RCI Commands

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 4 - General Remote Commands

4.1 INTRODUCTION

This chapter contains general commands that control the GPSG-1000.
GPS is a command prefix only and not a command itself.

4.1.1 GPS:SYST:CPAS <“oldpassword”>,<“newpassword”>

Description	Changes the system password for the unit.
Parameters	<oldpassword>, <newpassword>
Type	Each password is an string with a maximum of 80 characters.
Example	GPS:SYST:CPAS “old”

4.1.2 GPS:STAT?

Description	Returns the contents of the status bar of the system (status, warning and error messages).
Parameters	NA
Return Value	String containing status bar information.
Example Return	“Jan 4 22:12:03 2015, System clock set to GPS time”

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 5 - Calibration Remote Commands

5.1 INTRODUCTION

This chapter contains commands that control the GPSG-1000 calibration. GPS is a command prefix only and not a command itself.

5.2 GPS:CALIBRATION:RFCV

The set of RFCV commands controls GPS RF Calibration. GPS:RFCV is a command prefix only and not a command itself.

5.2.1 GPS:CAL:RFCV:VALue?

Description	Queries the currently set RF Frequency Calibration Value.
Alias	VAL
Return Value	0 to 4095 or -1 if calibration has not started.
Example Return	0

5.2.2 GPS:CAL:RFCV:VALue <value>

Description	Sets the RF Frequency Calibration Values.
Parameters	Value
Type	int32
Range	0 to 4095
Alias	VAL
Return Value	NA
Example	GPS:CAL:RFCV:VAL 5

5.2.3 GPS:CAL:RFCV:ABORt

Description	Aborts the currently in progress RF Frequency Calibration. If the current calibration is aborted, any previously stored frequency calibration value from a completed calibration is used by the system.
Alias	ABOR
Return Value	NA

5.2.4 GPS:CAL:RFCV:DONE

Description	Stores the RF Frequency Calibration value and exits the calibration session.
Alias	DONE
Return Value	NA

5.2.5 GPS:CAL:RFCV:STARt <"password">

Description	Starts RF Frequency Calibration.
Parameters	password
Type	Password is a string with a maximum of 80 characters.
Alias	STAR
Return Value	NA
Example	GPS:CAL:RFCV:STAR “password”

5.3 GPS:CALIBRATION:RLCV

The set of RLCV commands controls GPS Level Calibration. GPS:RLCV is a command prefix only - this is not a command itself.

5.3.1 GPS:CAL:RLCV:ABORt

Description	Aborts the currently in progress level Calibration. If the current calibration is aborted, any previously stored level calibration values from a completed calibration are used by the system.
Alias	ABOR
Return Value	NA

5.3.2 GPS:CAL:RLCV:DONE?

Description	Returns whether or not a level calibration has been done.
Alias	DONE?
Return Value	Date and Time of completion of last calibration.
Example Return	“Mon Mar 19 21:18:21 2013”

5.3.3 GPS:CAL:RLCV:DONE

Description	Stores the RF level Calibration Frequency Values, and exits the calibration routine.
Alias	DONE
Return Value	NA

5.3.4 GPS:CAL:RLCV:STARt <"password">

Description	Starts an RF level Calibration.
Parameters	password
Type	Password is a string with a maximum of 12 characters.
Alias	STAR
Return Value	NA
Example	GPS:CAL:RLCV:STAR “Password”

5.3.5 GPS:CAL:RLCV:VALue?

Description	Queries the currently set RF level Calibration Value.
Alias	VAL?
Return Value	Value of currently set RF level calibration value in dB.
Example Return	-1

5.3.6 GPS:CAL:RLCV:VALue <value>

Description	Sets the RF level Calibration Values.
Parameters	value
Type	real64
Alias	VAL
Example	GPS:CAL:RLCV:VAL 10.0

5.3.7 GPS:CAL:RLCV:NEXT

Description	Proceeds to the previous step of the calibration. Will display text to explain to the user what is necessary to be done for that calibration step.
Alias	NEXT

5.3.8 GPS:CAL:RLCV:PREV

Description	Proceeds to the previous step of the calibration. Will display text to explain to the user what is necessary to be done for that calibration step.
Alias	PREV

5.3.9 GPS:CAL:RLCV:STATus?

Description	Returns the calibration status and/or current instructions.
Alias	STATus?
Return Value	String containing the current status of the calibration
Example Return	“Ready”

Chapter 6 - Diagnostic Remote Commands

6.1 INTRODUCTION

The set of Diagnostics commands controls diagnostics. GPS:DIAG is a command prefix only and not a command itself. Aliases are DIAGnostics or DIAG.

6.1.1 GPS:DIAG:AMPLitude<amplitude>

Description	Sets the RF amplitude of the system. Note that the level available on the output is dependent on the port being used (see level information listed by available ports in Range item below).
Parameters	amplitude
Type	real64
Range	Direct Port -155 to -93 in 1 dB increments Coupler Port -130 to -68 in 1 dB increments
Default	0
Alias	AMPL
Example	GPS:DIAG:AMPL -71

6.1.2 GPS:DIAG:AMPLitude?

Description	Returns the amplitude set by the GPS:DIAG:AMPLITUDE command.
Alias	AMPL?
Return Value	String containing the amplitude in dBm.
Example Return	-93

6.1.3 GPS:DIAG:DOPPler <amplitude>

Description	Sets the Doppler Error (Hz) on the diagnostic RF output signal. . Note that a stationary satellite is simulated during diagnostics mode, so the Doppler shift will be fixed.
Parameters	amplitude
Type	real64
Range	-5000 to 5000 Hz in 1 Hz increments
Default	0
Alias	DOPP
Return Value	NA
Example	GPS:DIAG:DOPP 11

6.1.4 GPS:DIAG:DOPPler?

Description	Returns the Doppler Error chosen in the diagnostic mode. Note that a stationary satellite is simulated during diagnostics mode, so the Doppler shift will be static.
Alias	DOPP?
Return Value	String containing Doppler level in Hz.
Example Return	3000

6.1.5 GPS:DIAG:ExtREF <diagExtRef>

Description	Enables the external 10 MHz reference output.
Parameters	diagExtRef
Type	enum
Values	OFF | ON
Alias	EREF
Return Value	NA
Example	GPS:DIAG:EREF OFF

6.1.6 GPS:DIAG:ExtREF?

Description	Displays the state of the external 10 MHz reference output.
Alias	EREF?
Return Value	String containing the state of the external reference.
Example Return	OFF

6.1.7 GPS:DIAG:FREQuency <freq>

Description	Sets the frequency [1176.45 .. 1575.42 MHz] of the diagnostic RF output.
Parameters	freq
Type	enum
Values	1176 | 1207 | 1227 | 1278 | 1575
Alias	FREQ
Return Value	NA
Example	GPS:DIAG:FREQ 1207

6.1.8 GPS:DIAG:FREQuency?

Description	Displays the frequency of the diagnostic RF output.
Alias	FREQ?
Return Value	String containing the value of the current diagnostic frequency.
Example Return	1176

6.1.9 GPS:DIAG:LogAMP?

Description	Displays the RF amplitude value being read by the internal log amp detector. The value returned is read from an intermediate circuit, and is not representative of the unit's final output level.
Alias	LAMP?
Return Value	String containing the value read by the internal logamp detector followed by dBm or "No reading" if no reading is available.
Example Return	"-46.8 dBm"

6.1.10 GPS:DIAG:MODe <mode>

Description	Sets the diagnostic Mode RF output type (CW, Modulated or Off) of the RF diagnostic output.
Parameters	mode
Type	enum
Values	OFF | CW | MODULATED
Default	OFF
Alias	MOD
Return Value	NA
Example	GPS:DIAG:MOD CW

6.1.11 GPS:DIAG:MODe?

Description	Returns the current Mode (CW, Modulated, or Off) of the RF diagnostic output.
Aliases	MODE? | MOD?
Return Value	String containing the current mode of the RF diagnostic output.
Example Return	OFF

6.1.12 GPS:DIAG:PLLLockstatus?

Description	Returns the status (Lock/Unlock) of the PLL LO Lock detector circuit. This signal should always indicate 'locked' except for short periods directly after the unit's output frequency has just been changed.
Aliases	PLLLockstatus? | PLLL?
Return Value	String containing the status of the LO PLL lock detector circuit.
Example Return	1 (locked) or 0 (unlocked)

6.1.13 GPS:DIAG:PLLlock800status?

Description	Returns the status (Lock/Unlock) of the 800 MHz PLL lock detector circuit. This signal should always indicate 'locked' unless there has been a failure within the unit.
Aliases	PLLlock800status? | PLL8? | PLL800?
Return Value	String containing the status of the 800 MHz PLL lock detector circuit.
Example Return	1 (locked) or 0 (unlocked)

6.1.14 GPS:DIAG:PLLlockeXternalstatus?

Description	Returns the status (Lock/Unlock) of the External Reference PLL. This signal should indicate 'locked' if the reference source of the unit has been set to external, and a valid 10 MHz reference source has been connected to the 'REF IN' connector of the unit.
Aliases	PLLlockeXternalstatus? | PLLX?
Return Value	String containing the status of the External Reference PLL lock detector circuit.
Example Return	1 (locked) or 0 (unlocked)

6.1.15 GPS:DIAG:PLllockeXternalRefdetec?

Description	Returns the status (Lock/Unlock) of the External 10 MHz PLL Ref Detector circuit. This signal should indicate 'locked' if a valid 10 MHz reference source has been connected to the 'REF IN' connector of the unit.
Aliases	PLllockeXternalRefdetect? | PLXR?
Return Value	String containing the status of the External Reference PLL lock detector circuit.
Example Return	1 (locked) or 0 (unlocked)

6.1.16 GPS:DIAG:RSRC <source>

Description	Sets 10 MHz reference source for the system. If INT is selected, the internal oscillator will be used as the system reference. If EXT is selected the 10 MHz source connected to the REF IN port of the system will be used as the system reference.
Parameters	source
Type	enum
Values	INT | EXT
Default	INT
Alias	RSRC
Return Value	NA
Example	GPS:DIAG:RSRC INT

6.1.17 GPS:DIAG:RSRC?

Description	Returns the status of the reference source for the system. If INT is returned, the internal oscillator is being used as the system reference. If EXT is returned the 10 MHz source connected to the REF IN port of the system is being used as the system reference.
Alias	RSRC?
Return Value	String containing the current mode of the RF diagnostic output.
Example Return	INT

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 7 - File Remote Commands

7.1 INTRODUCTION

The set of File commands controls the File page. GPS:FILE is a command prefix only and not a command itself. Alias is FIL.

7.2 GPS:FILE:ALMANAC

The set of ALMANAC commands controls the almanac files. GPS:FILE:ALMANAC is a command prefix only - this is not a command itself. Alias is ALM.

7.2.1 GPS:FILe:ALM:CLeaRall

Description	Clears all the user entered almanacs from the unit, the default almanac shipped with the unit will not be affected.
Alias	CLEARALL l CLR
Return Value	NA

7.2.2 GPS:FILe:ALM:FileLiST?

Description	Returns the filenames of the almanacs currently in the unit's drive space.
Alias	FLST?
Return Value	String containing a list of all of the almanac files in the unit.
Example Return	"Week495.alm Week685.alm Week686.alm Week687.alm"

7.2.3 GPS:FILe:ALM:FileNAMe?

Description	Returns the filename of the almanac currently loaded into the unit's memory for use during a simulation.
Alias	FNAM?
Return Value	String containing the file name of the currently loaded almanac file or "Default Almanac" for the default almanac.
Example Return	"Week 574.alm : Week 574"

7.2.4 GPS:FILe:ALM:LOAD <"filename">

Description	Loads the given almanac file for use in simulation. The almanac must have been previously loaded into the drive space of the unit before it can be used. **Note:** This command cannot be used while a simulation is in progress.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Alias	LOAD
Return Value	NA
Example	GPS:FIL:ALM:LOAD "almanac.alm"

7.2.5 GPS:FILe:ALM:REMove <"filename">

Description	Deletes the given Almanac file from the drive space of the unit. **Note:** Once the file has been deleted it cannot be recovered.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Alias	REM
Return Value	NA
Example	GPS:FIL:ALM:REM "almanac.alm"

7.2.6 GPS:FILe:ALM:RELoad

Description	Loads the almanac gathered by the internal GPS receiver of the unit into the unit's memory for use in a simulation, or to be saved into an almanac file.
Alias	REL
Return Value	NA

7.2.7 GPS:FILe:ALM:DEFault

Description	Loads the system default almanac for use.
Alias	DEF
Return Value	NA

7.2.8 GPS:FILe:ALM:IMPort

Description	Copies files from a USB device attached to the system to the internal drive space of the unit.
Alias	IMP
Return Value	NA

7.2.9 GPS:FILe:ALM:EXPort

Description	Copies files from the internal drive space of the unit to a USB device attached to the system.
Alias	EXP
Return Value	NA

7.3 GPS:FILE:ROUTE

The set of ROUTE commands controls the route files. GPS:FILE:ROUTE is a command prefix only - this is not a command itself. Alias is ROUT.

7.3.1 GPS:FILe:ROUT:CLeaRall

Description	Clears all user entered routes from the unit, the default route shipped with the unit will not be affected. Note, once deleted the routes cannot be recovered.
Alias	CLEARALL I CLR
Return Value	NA

7.3.2 GPS:FILe:ROUT:DEFaults

Description	Loads the default route shipped with the unit into the route page for use during a dynamic mode simulation.
Alias	DEF
Return Value	NA

7.3.3 GPS:FILe:ROUT:FileLiST?

Description	Returns the filenames of the routes currently in the unit's drive space.
Alias	FLST?
Return Value	String containing a list of all of the route files in the unit.
Example Return	"105th_st.rte rw18.rte 1051.rte WellsvilleKS.rte"

7.3.4 GPS:FILe:ROUT:FileNAMe?

Description	Returns the filename of the route currently loaded into the unit's memory, and available for a dynamic simulation. If a route has been entered but not saved "Default Route" will be returned.
Alias	FNAM?
Return Value	String containing the route name.
Example Return	route.rte

7.3.5 GPS:FILe:ROUT:LOAD <"filename">

Description	Loads the given route file into memory where it is available for a dynamic simulation.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Alias	LOAD
Return Value	NA
Example	GPS:FIL:ROUT:LOAD "route.rte"

7.3.6 GPS:FILe:ROUT:REMove <"filename">

Description	Removes the given Route file from the drive space of the unit. The file cannot be recovered once it has been deleted.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Alias	REM
Return Value	NA
Example	GPS:FIL:ROUT:REM "route.rte"

7.3.7 GPS:FILe:ROUT:SAVe <"filename">

Description	Saves the route in the unit's memory to the given filename in the drive space of the unit.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Alias	SAV
Return Value	NA
Example	GPS:FIL:ROUT:SAV "route1.rte"

7.3.8 GPS:FILe:ROUT:IMPort

Description	Copies files from a USB device attached to the system to the internal drive space of the unit.
Alias	IMP
Return Value	NA

7.3.9 GPS:FILe:ROUT:EXPort

Description	Copies files from the internal drive space of the unit to a USB device attached to the system.
Alias	EXP
Return Value	NA

7.4 GPS:FILE:SETTINGS

The set of SETTINGS commands controls the settings files. GPS:FILE:SETTINGS is a command prefix only and not a command itself. Alias is SETT.

7.4.1 GPS:FILe:SET:CLeaRall

Description	Clears all saved settings files from the unit's drive space. The deleted settings files cannot be recovered. The default settings file will not be deleted.
Alias	CLEARALL I CLR
Return Value	NA

7.4.2 GPS:FILe:SET:DEFault

Description	Loads the default settings file from the unit's drive space into the units memory for use during a simulation.
Alias	DEF
Return Value	NA

7.4.3 GPS:FILe:SET:FileLiST?

Description	Returns the filenames of the settings files currently in the unit's drive space.
Alias	FLST?
Return Value	String containing a list of all of the settings files in the unit.
Example Return	"myconfig"

7.4.4 GPS:FILe:SET:FileNAMe?

Description	Returns the filename of the current settings file in the unit's memory. "Default Settings" for the default settings, or "Powerup Settings" for the powerup settings.
Alias	FNAM?
Return Value	String containing the filename of the settings file currently in the unit's memory. Note that if the default settings file is in use, the return is a null.
Example Return	"myfile"

7.4.5 GPS:FILe:SET:LOAD <"filename">

Description	Loads the given settings file from the unit's drive space into the unit's memory for use in a simulation.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Alias	LOAD
Return Value	NA
Example	GPS:FIL:SET:LOAD "settings.set"

7.4.6 GPS:FILe:SET:REMove <"filename">

Description	Removes the given settings file from the drive space of the unit. Files that have been deleted from the unit cannot be recovered. The default settings file cannot be removed.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Alias	REM
Return Value	NA
Example	GPS:FIL:SET:REM "settings.set"

7.4.7 GPS:FILe:SET:SAVe <"filename">

Description	Saves the settings in the unit's memory to the given filename in the drive space of the unit.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Alias	SAV
Return Value	NA
Example	GPS:FIL:SETTSAV "settings.set"

7.4.8 GPS:FILe:SET:IMPort

Description	Copies files from a USB device attached to the system to the internal drive space of the unit.
Alias	IMP
Return Value	NA

7.4.9 GPS:FILe:SET:EXPort

Description	Copies files from the internal drive space of the unit to a USB device attached to the system.
Alias	EXP
Return Value	NA

7.5 GPS:FILE:KML

The set of KML commands controls the KMLfiles. GPS:FILE:KML is a command prefix only and not a command itself.

7.5.1 GPS:FILe:KML:CLeaRall

Description	Clears all saved KML files from the unit.
Alias	CLEARALL l CLR
Return Value	NA

7.5.2 GPS:FILe:KML:FileLiST?

Description	Returns the filenames of the KML files currently in the unit's drive space.
Alias	FLST?
Return Value	String containing the filenames of the KMLfiles in the unit.
Example Return	"Garmin 303B.kml KC_to_WIC_Power_TST.kml"

7.5.3 GPS:FILe:KML:FileNAMe?

Description	Returns the filename of the KML file currently loaded in the unit's memory for use during a simulation.
Alias	FNAM?
Return Value	String containing the filename of the currently loaded KML file.
Example Return	"KC_to_WIC_Power_TST.kml"

7.5.4 GPS:FILe:KML:LOAD <"filename">

Description	Loads the given KML file for use in a simulation. The KML must have been previously loaded into the drive space of the unit before it can be used. **Note:** This command cannot be used while a simulation is in progress.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Alias	LOAD
Return Value	NA
Example	GPS:FILE:KML:LOAD “KC_to_WIC_Power_TST.kml”

7.5.5 GPS:FILe:KML:MaxVELocity <velocity>

Description	Sets the maximum velocity for the KML conversion.
Parameters	velocity
Type	int32
Range	0 to 1118 Mph or 0 to 1800 Km/h
Alias	MVEL
Return Value	NA
Example	GPS:FILE:KML:MVEL 54

7.5.6 GPS:FILe:KML:MaxVELocity?

Description	Displays the current KML maximum velocity.
Alias	MVEL?
Type	String containing the maximum velocity.
Example Return	54

7.5.7 GPS:FILe:KML:SamplingTIMe <rate>

Description	Set the sampling rate of the KML conversion.
Parameters	rate
Type	enum
Values	1 Hz l 2 Hz l 4 Hz l 5 Hz
Alias	STIM
Return Value	NA
Example	GPS:FILE:KML:STIME 4 Hz

7.5.8 GPS:FILe:KML:SamplingTIMe?

Description	Displays the current KML sampling rate.
Alias	STIM?
Return Value	String containing the sampling rate.
Example Return	4 Hz

7.5.9 GPS:FILe:KML:MinTurnRadius <radius>

Description	Sets the minimum turn radius for the KML conversion.
Parameters	radius
Type	int32
Range	0 to 328081 ft or 0 to 99999 m
Alias	MTR
Return Value	NA
Example	GPS:FILE:KML:MTR 100

7.5.10 GPS:FILe:KML:MinTurnRadius?

Description	Displays the current KML minimum turn radius.
Alias	MTR?
Return Value	String containing the minimum turn radius.
Example Return	100

7.5.11 GPS:FILe:KML:REMove <“filename”>

Description	Deletes the given KML file from the drive space of the unit. **Note:** Once the file has been deleted it cannot be recovered.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Range	0 to 328081 ft or 0 to 99999 m
Alias	REM
Return Value	NA
Example	GPS:FILE:KML:REM “KC_TO_WIC_Power_TST.kml”

7.6 GPS:FILE:NMEA

The set of NMEA commands controls the NMEA and GDT files. GPS:FILE:NMEA is a command prefix only and not a command itself.

7.6.1 GPS:FILe:NMEA:CLeaRall

Description	Clears all saved NMEA files from the unit's drive space. The deleted files cannot be recovered.
Alias	CLEARALL I CLR
Return Value	NA

7.6.2 GPS:FILe:NMEA:FileLiST?

Description	Returns the filenames of the NMEA files in the drive space of the unit.
Alias	FLST?
Return Value	String containing the filenames of the NMEA files in the unit.
Example Return	"myfile.nme Test.nme"

7.6.3 GPS:FILe:NMEA:FileNAMe?

Description	Returns the filename of the current NMEA or GDT file in the unit's memory.
Alias	FNAM?
Return Value	String containing the filename of the NMEA or GDT file currently in the unit's memory, or an empty string if no file is loaded.
Example Return	"myfile.gdt"

7.6.4 GPS:FILe:NMEA:LOAD <"filename">

Description	Loads the given NMEA or GDT file from the unit's drive space into the unit's memory for use in a trajectory simulation.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Alias	LOAD
Return Value	NA
Example	GPS:FIL:NMEA:LOAD "myfile.gdt"

7.6.5 GPS:FILe:NMEA:IMPort

Description	Copies files from a USB device attached to the system to the internal drive space of the unit.
Alias	IMP
Return Value	NA

7.6.6 GPS:FILe:NMEA:EXPort

Description	Copies files from the internal drive space of the unit to a USB device attached to the system.
Alias	EXP
Return Value	NA

7.6.7 GPS:FILe:NMEA:DEFault

Description	Loads the default NMEA file from the unit's drive space into the units memory for use during a simulation.
Alias	DEF
Return Value	NA

7.7 GPS:FILE:WAYP

The set of WAYP commands controls waypoint files

7.7.1 GPS:FILe:WAYP:IMPort

Description	Imports user waypoint information from an attached USB device into the waypoint table.
Alias	IMP
Return Value	NA

7.7.2 GPS:FILe:WAYP:EXPort

Description	Exports user waypoint information from the waypoint table to an attached USB device.
Alias	EXP
Return Value	NA

7.7.3 GPS:FILe:WAYP:CLeaR

Description	Clears all user loaded waypoints from the waypoint table.
Alias	CLR
Return Value	NA

Chapter 8 - RX Remote Commands

8.1 INTRODUCTION

The set of RX commands controls the GPS Receiver. GPS:GPSRX is a command prefix only and not a command itself. Aliases are GPSRX and GPSR.

8.2 GPS:GPSRX

The set of GPSRX commands controls the GPS Receiver Information Window. GPS:GPSRX is a command prefix only - this is not a command itself. Alias is INFO

8.2.1 GPS:GPSR:AlmanacSTatus?

Description	Returns the status of the download of the almanac data in the internal receivers memory. This information is downloaded from the satellites in the GPS constellation. The status returned indicates the number of satellites for which almanac data has been downloaded.
Aliases	ALMANACSTATUS? | AST?
Return Value	String containing the status of the almanac information in the unit's internal receiver memory.
Example Return	"Not loaded"

8.2.2 GPS:GPSR:ActiveSATellite?

Description	Returns a list of the satellites being actively tracked by the unit's internal GPS receiver.
Aliases	ASATELLITE? | ASAT?
Return Value	0 if no satellites are being tracked by the receiver, otherwise the return consists of an integer representing the number of satellites being tracked followed by the integer pairs of the satellite number and satellite power of each satellite being tracked as read by the receiver.
Example Return	11,13,38,16,48,32,51,14,39,6,32,29,38,30,53,20,49,31,51,23, 45,1,35

8.2.3 GPS:GPSR:ALTitude?[unit]

Description	Returns the altitude of the unit as indicated by the unit's internal GPS receiver.
Alias	ALT?
Return Value	Returned if no satellites are being tracked by the receiver, otherwise the return is a string containing the altitude.
Example Return	337.85000000000000002274

8.2.4 GPS:GPSR:FIX?

Description	Returns the position fix status reported by the internal receiver.
Return Value	"No position fix" is returned if the receiver has not determined a position, otherwise the return consists of a string indicating the type of fix 2D or 3D.
Example Return	"3D solution"

8.2.5 GPS:GPSR:CurrentTIMe?

Description	Returns the GPS time and date indicated by the unit's internal GPS receiver.
Alias	CTIM?
Return Value	A string containing the date and time from the internal GPS receiver.
Example Return	"15-Feb-2009 01:40:29"

8.2.6 GPS:GPSR: LATitude?

Description	Returns the Latitude of the unit as indicated by the unit's internal GPS receiver.
Alias	LAT?
Return Value	0 is returned if the receiver has not determined a position, otherwise the return consists of a string indicating the units latitude in decimal degrees.
Example Return	39.56785299999997053

8.2.7 GPS:GPSR: LONGitude?

Description	Returns the Longitude of the unit as indicated by the unit's internal GPS receiver.
Alias	LONG?
Return Value	0 is returned if the receiver has not determined a position, otherwise the return consists of a string indicating the units longitude in decimal degrees.
Example Return	-94.7543727999999998733

8.2.8 GPS:GPSR: RECeiver<receiver>

Description	Sets the type of receiver to be used as a data source . Note, receiver type UUT is currently disabled.
Parameters	receiver
Type	enum
Values	INTERNAL | UUT
Default	INTERNAL
Alias	REC
Return Value	NA
Example	GPS:GPSRX: REC INTERNAL

8.2.9 GPS:GPSR:RECeiver?

Description	Returns the type of receiver to be used as a data source . Note, receiver type UUT is currently disabled.
Alias	REC?
Return Value	String containing the name of the current GPS data source.
Example Return	INTERNAL

8.2.10 GPS:GPSR:RELoad

Description	Forces the receiver to load the latest almanac from the GPS constellation. Note that the receiver may take several minutes to load the almanac. The progress of the almanac load can be monitored by queries through the GPS:GPSR:AlmanacSTatus? command.
Alias	REL
Return Value	NA

8.2.11 GPS:GPSR:RESet

Description	Forces a reset of the internal GPS receiver of the system. Note that upon reset the system will return a date of February 14, 2009 just prior to midnight until it has acquired a new time and position fix.
Alias	RES
Return Value	NA

8.2.12 GPS:GPSR:SPeeD?

Description	Returns the velocity at which the unit is traveling through space as reported by the internal receiver.
Return Value	String indicating the speed of the unit.
Example Return	0.0360000000

8.2.13 GPS:GPSR:RTRJ

Description	Uses the internal GPS receiver to record an NMEA data file indicating the GPS time, position, and velocity of the unit. The data will be recorded at a 1 Hz rate, and will be recorded into the internal drive space. The file created during the recording process will have a name format as follows mmddyyyy_hhmmss.nme. A 3D fix is required to enable recording.
Alias	RTRJ
Return Value	NA

8.2.14 GPS:GPSR:RTRJ?

Description	Returns the status of the record trajectory command. If a trajectory file is currently being recorded the unit will return “Recording”, if a recording is not currently in progress “Not Recording” will be returned.
Return Value	String indicating the status of the trajectory file recording command.
Example Return	“Not Recording”

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 9 - Route Remote Commands

9.1 INTRODUCTION

The set of Route commands controls the GPS Routes. GPS:ROUTE is a command prefix only and not a command itself. Alias is ROUT.

9.2 GPS:ROUT:ADD

The set of Addition commands controls adding GPS Routes. GPS:ROUT:ADD is a command prefix only and not a command itself. Alias is ADD.

9.2.1 GPS:ROUT:ADD:POINt <"name">, <latitude>, <longitude>, <altitude> [unit], <climb rate> [unit], <speed> [unit], <acceleration> [unit], <turn radius> [iuit]

Description	Adds a custom point to the route currently in the unit's memory for use in a dynamic simulation.

Parameter	name
Type	Name is a string with a maximum of 80 characters.

Parameter	latitude
Type	real64
Range	-90.0000 to 90.0000 deg

Parameter	longitude
Type	real64
Range	-180.0000 to 180.0000 deg

Parameter	altitude
Type	real64
Range	-3281 to 100000 ft

Parameter	climb rate
Type	real64
Range	-5905.512 to 5905.512 ft/min

Parameter	speed
Type	real64
Range	0 to 1150.003 MPH

Parameter	acceleration
Type	real64
Range	-328.084 to 328.084 ft/sec/sec

Parameter	turning radius
Type	real64
Range	0 to 328083.990 ft

Alias	POIN
Return Value	NA
Example	GPS:ROUT:ADD:POIN "Kansas City Intl",39.2976,-94.7139,312,500,500,100,25

9.2.2 GPS:ROUT:ADD:WAYPoint <"name">, <climb rate> [unit], <speed> [unit], <acceleration> [unit], <turn radius> [unit]

Description	Adds a waypoint to the route from the unit's permanent waypoint database. The waypoint must be selected by referencing ICAO code as indicated in the existing waypoint database.

Parameters	name
Type	Name is a string with a maximum of 80 characters.

Parameters	climb rate
Type	real64
Range	-5905.512 to 5905.512 ft/min

Parameters	speed
Type	real64
Range	0 to 1150.003 MPH

Parameters	acceleration
Type	real64
Range	-328.084 to 328.084 ft/sec/sec

Parameters	turning radius
Type	real64
Range	0 to 328083.990 ft

Alias	WAYP
Return Value	NA
Example	GPS:ROUT:ADD:WAYP “SFO””,500,500,100,5000

9.2.3 GPS:ROUT:DELete <row: [1..100]>

Description	Deletes the specified row number from the route that is currently loaded in the unit's memory for use in a dynamic simulation. If a row is deleted in the middle of a route, all of the rows below it will move up one row.
Parameters	row
Type	Integer
Range	1 to 9,999
Alias	DEL
Return Value	NA
Example	GPS:ROUT:DEL 1

9.2.4 GPS:ROUT:DISPlay? <row: [1..100]>

Description	Displays the specified row number in the route currently in the unit's memory.
Parameters	row
Type	Integer
Range	1 to 9,999
Alias	DISP?
Return Value	A string containing the route point information for the row requested in the command.
Example Return	"1,Kansas City Intl,39.2976,-94.7139,312.7,5.08,44.704,9.8,3048"
Example	GPS:ROUT:DISP? 41

9.2.5 GPS:ROUT:EDIT <row: [1..100]>, <"name">, <latitude>, <longitude>, <altitude> [unit], <climb rate> [unit], <speed> [unit], <acceleration> [unit], <turn radius> [unit]

Description	Edits the data contained within an existing route point of the route that is currently loaded in the unit's memory for use in a dynamic simulation. All parameters must be included in the command.

Parameters	row
Type	integer
Range	1 to 10000

Parameters	name
Type	Name is a string with a maximum of 80 characters.

Parameters	latitude
Type	real64
Range	-90.0000 to 90.0000 deg

Parameters	longitude
Type	real64
Range	-180.0000 to 180.0000 deg

Parameters	altitude
Type	real64
Range	-3281 to 100000 ft

Parameters	climb rate
Type	real64
Range	-5905.512 to 5905.512 ft/min

Parameters	speed
Type	real64
Range	0 to 1150.003 MPH

Parameters	acceleration
Type	real64
Range	-328.084 to 328.084 ft/sec/sec

Parameters	turning radius
Type	real64
Range	0 to 328083.990 ft

Alias	EDIT
Return Value	NA
Example	GPS:ROUT:EDIT 1,"Kansas City Intl",39.2976,-94.7139,312,500,500,100,25

9.2.6 GPS:ROUT:FILe?

Description	Displays filename of the route currently loaded in the unit's memory for use in a dynamic simulation.
Alias	FIL?
Return Value	A string containing the filename of the route currently loaded in memory.
Example Return	"Test.rte"

9.2.7 GPS:ROUT:LIST?

Description	Displays the complete list of points in the route. The first line of the return value lists the objects available in the return; NAME, LATITUDE etc. See the example return value below.
Alias	LIST?
Return Value	A string containing the list of points in the route currently loaded in memory.
Example Return	“1,Kansas City Intl,392976,-94.7139,312.7,5.08,44.704,9.8,3048 2,Emporia KS,38.4081,-96,1869,3048,5.08,44.704,9.8,3048 3,Wichita Mid Continent,37.6499,-97.4331,406.3,5.08,44.704,9.8,3048”

9.2.8 GPS:ROUT:LOAD "route filename"

Description	Loads the given route file from the unit’s drive space into the unit’s memory for use in a dynamic simulation.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Alias	LOAD
Return Value	NA
Example	GPS:ROUT:LOAD “route1.rte”

9.2.9 GPS:ROUT:REMove"route filename"

Description	Removes the given route file from the unit's drive space. The route file cannot be recovered once it is deleted. The default route cannot be deleted from the unit.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Alias	REM
Return Value	NA
Example	Example:GPS:ROUT:REM "route1.rte"

9.2.10 GPS:ROUT:SAVe "route filename"

Description	Saves the route unto the unit's drive space with the given filename.
Parameters	filename
Type	Filename is a string with a maximum of 80 characters.
Alias	SAV
Return Value	NA
Example	GPS:ROUT:SAV "route1.rte"

9.2.11 GPS:ROUT:VALiDate

Description	Validates the currently route that is loaded in the unit's memory for use in a dynamic simulation. The result of the validation command can be queried from the unit using the GPS:STAT? command. The route is validated based on the current motion model selected for use.
Alias	VALD
Return Value	See Description

9.2.12 GPS:ROUT:CLeaR

Description	Clears the current route from the system.
Alias	CLR

9.2.13 GPS:ROUT:LOOP <loop>

Description	Enables looping of Routes.
Parameters	loop
Type	enum
Alias	LOOP
Return Value	NA
Example	GPS:ROUT:LOOP ON

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 10 - Setup Remote Commands

10.1 INTRODUCTION

The set of Setup commands controls the GPS Setup. GPS:SET is a command prefix only and not a command itself. Alias is SET.

10.1.1 GPS:SET:CARRier <carriertype >

Description	Sets the GPS carrier frequency to be used during the simulation. Note, only one carrier frequency can be active at a time. The last carrier frequency selected will be the active carrier. This parameter cannot be changed when a simulation is in progress.
Parameters	carriertype
Type	enum
Values	L1/E1 | L2 | L2C | L5/E5 | L1C
Alias	CARR
Return Value	NA
Example	GPS:SET:CARR L2

10.1.2 GPS:SET:CARRier?

Description	Returns the GPS carrier frequency to be used during the simulation. This command can be used while the simulation is running.
Alias	CARR?
Return Value	A string indicating the current carrier frequency output.
Example Return	L1

10.1.3 GPS:SETup:CouplerCABle <couplerCable>

Description	Sets the coupler cable loss value for the unit. Values are accepted to the nearest 0.1 db. Loss values less than 1 db will be offset by the unit with small increases in the unit's output power level, while whole values entered will be subtracted from the maximum output power of the unit. For example, if a cable loss of 2.5 db is entered, the unit power will be increased by 0.5 db, and the maximum power output will decrease by 2 db. This parameter cannot be changed when a simulation is in progress.
Parameters	couplerCable
Type	real64
Range	0.0 to 12.0
Aliases	CCABLE | CCAB
Return Value	GPS:SET:CCAB 5.5

10.1.4 GPS:SETup:CouplerCABle?

Description	Displays the coupler cable loss value entered into the unit. Loss values less than 1 db are offset by the unit with small increases in the unit's output power level, while whole values entered are subtracted from the maximum output power of the unit. For example, if a cable loss of 2.5 db is entered, the unit power will be increased by 0.5 db, and the maximum power output will decrease by 2 db.
Aliases	CCABLE? | CCAB?
Return Value	A string indicating the coupler cable loss entered into the unit.
Example Return	5.5

10.1.5 GPS:SET:CaRrierGPs <carriertype >

Description	Sets the GPS carrier frequency to be used during the simulation. **Note:** only one carrier frequency can be active at a time. The last carrier frequency selected will be the active carrier. This parameter cannot be changed when a simulation is in progress.
Parameters	carriertype
Type	enum
Values	L1 l L1C l L2 l L2C l L5
Alias	CRGP
Return Value	NA
Example	GPS:SET:CRGP L5

10.1.6 GPS:SET:CaRrierGAl <carriertype >

Description	Sets the Galileo carrier frequency to be used during the simulation. **Note:** only one carrier frequency can be active at a time. The last carrier frequency selected will be the active carrier. This parameter cannot be changed when a simulation is in progress.
Parameters	carriertype
Type	enum
Values	E1l E5; E5a
Alias	CRGA
Return Value	NA
Example	GPS:SET:CRGA E5

10.1.7 GPS:SET:CaRrierGG <carriertype >

Description	Sets the GPS+Galileo carrier frequency to be used during the simulation. **Note:** only one carrier frequency can be active at a time. The last carrier frequency selected will be the active carrier. This parameter cannot be changed when a simulation is in progress.
Parameters	carriertype
Type	enum
Values	L1/E1 l L5/E5
Alias	CRGG
Return Value	NA

10.1.8 GPS:SET:CLOCk<clocktype >

Description	Sets the type of clock source used by the system for the start time of the GPS simulation. If USER is selected, the start time is set using the GPS:SET:TIME command. If GPSRX is selected the start time is obtained from the internal GPS receiver module if a GPS signal is available. This parameter cannot be changed when a simulation is in progress.
Parameters	clocktype
Type	enum
Values	GPSRX | USER
Alias	CLOC
Return Value	NA
Example	GPS:SET:CLOC USER

10.1.9 GPS:SET:CLOCk?

Description	Returns the clock type being used by the system as the source for the simulated GPS time.
Alias	CLOC?
Type	String containing one of the following clock types GPSRX or USER
Example Return	USER

10.1.10 GPS:SET:CouplerLOSs <couplerloss>

Description	Sets the coupler loss value for the unit. Values are accepted to the nearest 0.1 db. Loss values less than 1 db will be offset by the unit with small increases in the unit's output power level, while whole values entered will be subtracted from the maximum output power of the unit. For example, if a cable loss of 2.5 db is entered, the unit power will be increased by 0.5 db, and the maximum power output will decrease by 2 db. This parameter cannot be changed when a simulation is in progress.
Parameters	couplerCable
Type	real64
Range	0.0 to 40.0
Aliases	CLOSS | CLOS
Return Value	NA
Example	GPS:SET:CLOS 12.2

10.1.11 GPS:SET:CouplerLOSs?

Description	Displays the coupler Loss.
Aliases	CLOSS? | CLOS?
Type	String containing the coupler loss value.
Example Return	30.3

10.1.12 GPS:SET:CuRrentMotionModel <model>

Description	Sets the current motion model. . The motion model selection is used tolimit the velocity and accelerations allowed in routes used in the dynamic simulation mode. This parameter cannot be changed when a simulation is in progress.
Parameters	model
Type	enum
Values	PEDESTRIAN | AUTOMOTIVE | MARINE | LOW_PERFORMANCE_AIRCRAFT | HIGH_PERFORMANCE_AIRCRAFT | CUSTOM | UNLIMITED
Alias	CRMM
Return Value	NA
Example	GPS:SET:CRMM PEDESTRIAN

10.1.13 GPS:SET:CuRrentMotionModel?

Description	Returns the current motion model that has been selected. The motion model selection is used to limit the velocity and accelerations allowed in routes used in the dynamic simulation mode.
Alias	CRMM?
Type	String containing one of the following model types PEDESTRIAN, AUTOMOTIVE, MARINE, LOW_PERFORMANCE_AIRCRAFT, HIGH_PERFORMANCE_AIRCRAFT, CUSTOM or UNLIMITED
Example Return	LOW_PERFORMANCE_AIRCRAFT

10.1.14 GPS:SET:DATe <date_value_string>

Description	Sets the simulation date. This date value will be used as the starting GPS date of the simulation if USER clock source has been selected. This parameter cannot be changed when a simulation is in progress.
Parameters	date_value_string
Type	string
Description	“mm/dd/yyyy”
Alias	DAT
Return Value	NA
Example	GPS:SET:DATE “03/12/2012”

10.1.15 GPS:SET:DATe?

Description	Returns the date entered for use by the system as the starting date of the GNSS simulation when USER is defined as the time and date source.
Alias	DAT?
Type	String containing the date of the start of the simulation.
Example Return	“Aug 22 2010”

10.1.16 GPS:SET:DigitalNOiSe <digital_noise>

Description	Turns the digital noise of the system output on and off. Digital noise is generally only used when the system is directly connected to a receiver. If a coupler is used with the system, the digital noise should be left off. This parameter cannot be changed when a simulation is in progress.
Parameters	digital_noise
Type	enum
Value	OFF or ON
Default	0
Alias	DNOS
Return Value	NA
Example	GPS:SET:DNOS OFF

10.1.17 GPS:SET:DigitalNOiSe?

Description	Displays the status of the digital noise output of the system, on or off.
Alias	DNOS?
Type	String containing the status of the digital noise output, ON or OFF
Example Return	ON

10.1.18 GPS:SET:DirectCABle <directCable>

Description	Sets the loss value for a coax cable connected to the direct port of the system. Values are accepted to the nearest 0.1 db. Loss values less than 1 db will be offset by the unit with small increases in the unit's output power level, while whole values entered will be subtracted from the maximum output power of the unit. For example, if a cable loss of 2.5 db is entered, the unit power will be increased by 0.5 db, and the maximum power output will decrease by 2 db. This parameter cannot be changed when a simulation is in progress.
Parameters	directCable
Type	real64
Range	0.0 to 12.0
Default	0
Aliases	DCABLE | DCAB
Return Value	NA
Example	GPS:SET:DCAB 4.7

10.1.19 GPS:SET:DirectCABle?

Description	Displays the direct cable loss.
Aliases	DCABLE? | DCAB?
Type	String containing the direct cable loss value.
Example Return	2.4

10.1.20 GPS:SET:ExtREF <extRef>

Description	Enables or disables the External 10 MHz Reference Output from the system REF OUT port.
Parameters	extRef
Type	enum
Value	OFF | ON
Aliases	ExtREF | EREF
Return Value	NA
Example	GPS:SET:EREF OFF

10.1.21 GPS:SET:ExtREF?

Description	Displays the status of External 10 MHz Reference Output, ON or OFF.
Aliases	ExtREF? | EREF?
Type	String containing the status of the external reference output, ON or OFF.
Example Return	OFF

10.1.22 GPS:SET:FADing <fading>

Description	Sets the current fading model being used by the system. The model selection should generally follow the type of motion model selected for the simulation run. More information on the effect of the fading model on the RF output of the system can be found in the user's manual. This parameter cannot be changed when a simulation is in progress.
Parameters	fading
Type	enum
Value	NONE | STATIC | PEDESTRIAN | VEHICLE | AIRCRAFT
Default	NONE
Alias	FAD
Return Value	NA
Example	GPS:SET:FAD STATIC

10.1.23 GPS:SET:FADing?

Description	Displays the current fading model being used by the system..
Alias	FAD?
Type	String containing the type of fading model in use by the system, NONE, STATIC, PEDESTRIAN, VEHICLE or AIRCRAFT.
Example Return	NONE

10.1.24 GPS:SET:GNSS <gnss>

Description	Sets the type(s) of navigation satellite system constellation being simulated by the unit, GPS, Galileo, or Galileo and GPS. This parameter cannot be changed when a simulation is in progress.
Parameters	gnss
Type	enum
Value	GPS | GALILEO | GAL+GPS
Default	GPS
Alias	GNSS
Return Value	NA
Example	GPS:SET:GNSS GAL+GPS

10.1.25 GPS:SET:GNSS?

Description	Displays the type(s) of navigation satellite system constellation being simulated by the unit, GPS, Galileo, or Galileo and GPS.
Alias	GNSS?
Type	String Containing the GNSS system being simulated, GPS, GAL or BOTH.
Example Return	GPS

10.1.26 GPS:SET:MaxLATeralacceleration <acceleration> [unit]

Description	Sets the Maximum Lateral or Normal Acceleration (the type of acceleration effected by the entry depends on the motion model in use) for the motion model currently in use by the system for simulations. This parameter cannot be changed when a simulation is in progress.
Parameters	param
Type	real64
Value	'Maximum value dependent on motion model in use.
Alias	MLAT
Return Value	NA
Example	GPS:SET:MLAT 98.22

10.1.27 GPS:SET:MaxLATeralacceleration? [unit]

Description	Displays the Maximum Lateral or Normal Acceleration for the motion model currently in use by the system.
Alias	MLAT?
Type	String containing the value of the Lateral or Normal Acceleration.
Example Return	289.37

10.1.28 GPS:SET:MaxLONgitudinalacceleration <acceleration> [unit]

Description	Sets the Maximum Longitudinal Acceleration for the motion model currently in use by the system for simulations. This parameter cannot be changed when a simulation is in progress.
Parameters	param
Type	real64
Value	Maximum value dependent on motion model in use.
Alias	MLON
Return Value	NA
Example	GPS:SET:MLON 100.50

10.1.29 GPS:SET:MaxLONgitudinalacceleration? [unit]

Description	Displays the Maximum Longitudinal Acceleration for the motion model currently in use by the system for simulations.
Alias	MLON?
Type	String containing the value of the Longitudinal Acceleration.
Example Return	160.761

10.1.30 GPS:SET:MaxVELocity <velocity> [unit]

Description	Sets the Maximum Velocity for the motion model currently in use by the system for simulations. This parameter cannot be changed when a simulation is in progress.
Parameters	param
Type	real64
Value	Maximum velocity depends on current motion model in use.
Alias	MVEL
Return Value	NA
Example	GPS:SET:MVEL 9.9

10.1.31 GPS:SET:MaxVELocity? [unit]

Description	Returns the Maximum Velocity for the motion model currently in use by the system for simulations.
Alias	MVEL?
Type	String containing the value of the velocity.
Example Return	10

10.1.32 GPS:SET:PositionSouRCe <src>

Description	Sets the position source of the latitude, longitude and altitude used by the system during a static mode simulation. The USER selection uses data entered manually by the user. The GPS selection uses data retrieved by the GPS receiver internal to the system. This parameter cannot be changed when a simulation is in progress.
Parameters	src
Type	enum
Values	USER | GPS
Default	USER
Alias	PSRC
Return Value	NA
Example	GPS:SET:PSRC GPS

10.1.33 GPS:SET:PositionSouRCe?

Description	Returns the current position source of the latitude, longitude and altitude used by the system during a static mode simulation. The USER selection indicates the data in use was entered manually by the user. The GPS selection indicated the data in use was retrieved by the GPS receiver internal to the system.
Alias	PSRC?
Type	String containing the position source.
Example Return	USER

10.1.34 GPS:SET:PRNSignal <prn>

Description	Sets the PRN Signal type used during the simulation, VARIABLE or FIXED. If fixed is chosen, the output levels of the satellites will all be at the same relative level. If variable is chosen, the output levels of the satellites will be at levels that vary depending on the azimuth and elevation of the satellites to the simulation point. This parameter cannot be changed when a simulation is in progress.
Parameters	prn
Type	enum
Values	VARIABLE | FIXED
Alias	PRNS
Return Value	NA
Example	GPS:SET:PRNS FIXED

10.1.35 GPS:SET:PRNSignal?

Description	Displays the PRN Signal type type used during the simulation, VARIABLE or FIXED. If fixed is returned, the output levels of the satellites will all be at the same relative level. If variable is returned, the output levels of the satellites will be at levels that vary depending on the azimuth and elevation of the satellites to the simulation point.
Alias	PRNS?
Type	String containing the PRN Signal type.
Example Return	FIXED

10.1.36 GPS:SET:ReferenceSouRCe <sysRef>

Description	Sets the Reference Source of the 10 MHz oscillator of the system. If INT is selected the internal oscillator will be free running. If EXT is selected the internal oscillator will be slaved to the reference source connected to the REF IN port of the system. This parameter cannot be changed when a simulation is in progress.
Parameters	sysRef
Type	enum
Values	INTERNAL | INT | EXTERNAL | EXT
Alias	RSRC
Return Value	NA
Example	GPS:SET:RSRC INTERNAL

10.1.37 GPS:SET:ReferenceSouRCe?

Description	Displays the Reference Source of the 10 MHz oscillator of the system. If INTERNAL is returned the internal oscillator is free running. If EXTERNAL is returned the internal oscillator is slaved to the reference source connected to the REF IN port of the system.
Alias	RSRC?
Type	This gets the Reference Source of the 10 MHz oscillator of the system. If INTERNAL is returned the internal oscillator is free running. If EXTERNAL is returned the internal oscillator is slaved to the reference source connected to the REF IN port of the system.
Example Return	INT

10.1.38 GPS:SET:RFLeVel <rfLevel>

Description	Sets the RF Level output of the system to either the Coupler or Direct port of the system, whichever is currently in use.
Parameters	rfLevel
Type	real64
Range	Rf Level (-68 to -130 for Coupler and -93 to -155 for Direct). Note: if coupler loss, coupler cable loss, or direct cable loss value have been entered the ranges for the coupler and direct outputs will be offset by the integer values of the loss totals.
Alias	RFLV
Return Value	NA
Example	GPS:SET:RFLV -94

10.1.39 GPS:SET:RFLeVel?

Description	Displays the RF Level output of the system to either the Coupler or Direct port of the system, whichever is currently in use.
Alias	RFLV?
Type	String containing the RF level of the output.
Example Return	-130

10.1.40 GPS:SET:RFPoRt <rfPort>

Description	Sets the RFPort which the RF output will be present. If using a coupler, or if output values greater than -93 dBm are desire the coupler port should be used, otherwise use the direct port of the system. This parameter cannot be changed when a simulation is in progress.
Parameters	rfPort
Type	enum
Values	DIRECT | COUPLER
Alias	RFPR
Return Value	NA
Example	GPS:SET:PORT DIRECT

10.1.41 GPS:SET:RFPoRt?

Description	Displays the RF Port which the RF output will be present.
Alias	RFPR?
Type	String containing the RF port the RF output will be present DIRECT or COUPLER.
Example Return	COUPLER

10.1.42 GPS:SET:SBAS <status>

Description	Sets the status of the space based augmentation system (SBAS) signal. If OFF is selected, the SBAS signal will not be present on the output. If AUTO is selected, the system will select the SBAS satellite signals to generate dependent on the location of the simulation. This parameter cannot be changed when a simulation is in progress.
Parameters	status
Type	enum
Values	AUTO | OFF
Return Value	NA
Example	GPS:SET:SBAS AUTO

10.1.43 GPS:SET:SBAS?

Description	Displays the status of the space based augmentation system (SBAS) signal. If OFF is selected, the SBAS signal will not be present on the output. If AUTO, the system will select the SBAS satellite signals to generate dependent on the location of the simulation.
Type	String containing the status of the SBAS signal, OFF or AUTO.
Example Return	OFF

10.1.44 GPS:SET:SimulationTYPe <simType>

Description	Sets the type of GPS Simulation the system will generate. If static mode is chosen the system will generated a signal that will appear as a stationary point in space by the attached receiver. If dynamic mode is chosen the system will generate a signal that will appear as movement by the attached receiver. The movement will be dictated by the route entered into the system. If trajectory mode is chosen the system will generate a signal that will appear as movement by the attached receiver. The movement will be dictated by the trajectory file (NMEA or GDT) loaded into the system. This parameter cannot be changed when a simulation is in progress.
Parameters	simType
Type	enum
Values	STATIC | DYNAMIC | TRAJECTORY
Default	STATIC
Alias	STYP
Return Value	NA
Example	GPS:SET:STYP DYNAMIC

10.1.45 GPS:SET:SimulationTYPe?

Description	Returns the type of GPS Simulation the system will generate. If static mode is returned the system will generated a signal that will appear as a stationary point in space by the attached receiver. If dynamic mode is returned the system will generate a signal that will appear as movement by the attached receiver. The movement will be dictated by the route entered into the system. If trajectory mode is returned the system will generate a signal that will appear as movement by the attached receiver. The movement will be dictated by the trajectory file (NMEA or GDT) loaded into the system.
Alias	STYP?
Type	String containing the status of the simulation type STATIC, DYNAMIC or TRAJECTORY.
Example Return	STATIC

10.1.46 GPS:SET:SplitterLOSs <splitterloss>

Description	Sets the splitter loss value for the unit. Values are accepted to the nearest 0.1 db. Loss values less than 1 db will be offset by the unit with small increases in the unit's output power level, while whole values entered will be subtracted from the maximum output power of the unit. For example, if a cable loss of 2.5 db is entered, the unit power will be increased by 0.5 db, and the maximum power output will decrease by 2 db. This parameter cannot be changed when a simulation is in progress.
Parameters	splitterloss
Type	real64
Range	0.0 to 10.0
Alias	SLOS
Return Value	NA
Example	GPS:SET:SLOS 12.2

10.1.47 GPS:SET:SplitterLOSs?

Description	Returns the splitter loss value for the unit. Values are accepted to the nearest 0.1 db. Loss values less than 1 db will be offset by the unit with small increases in the unit's output power level, while whole values entered will be subtracted from the maximum output power of the unit. For example, if a cable loss of 2.5 db is entered, the unit power will be increased by 0.5 db, and the maximum power output will decrease by 2 db.
Alias	SLOS?
Type	String containing the splitter loss value for the system.
Example Return	2.2

10.1.48 GPS:SET:TIMe <time_value_string>

Description	Sets the time used as the GPS time at the start of a simulation when the system clock source is set to user time. This parameter cannot be changed when a simulation is in progress.
Parameters	time_value_string
Type	string
Range	hh:mm:ss, using 24-hr clock
Alias	TIM
Return Value	NA
Example	GPS:SET:TIM “12:34:31”

10.1.49 GPS:SET:TIMe?

Description	Displays the time being used as the GPS time at the start of a simulation given the system is set to use user time.
Alias	TIM?
Type	String containing the GPS start time of the simulation (hh:mm:ss).
Example Return	“12:10:02"

10.1.50 GPS:SET:TriggerSouRCe <src>

Description	Returns the source of the trigger to use to start the simulation. If AUTO is selected the simulation will begin once the simulation configuration has completed, without further user intervention. If EXTERNAL is selected the simulation will begin when a trigger signal has been sent to the system through the auxiliary port trigger input line. The system must be allowed to become fully configured before the trigger pulse is sent. The trigger is 3.3 volt compatible and must be driven with a push pull source. This parameter cannot be changed when a simulation is in progress.
Parameters	src
Type	enum
Values	AUTO | EXTERNAL
Default	AUTO
Alias	TSRC
Return Value	NA
Example	GPS:SET:TSRC EXTERNAL

10.1.51 GPS:SET:TriggerSouRCe?

Description	Sets the source of the trigger to use to start the simulation. If AUTO is returned the simulation will begin once the simulation configuration has completed, without further user intervention. If EXTERNAL is returned the simulation will begin when a trigger signal has been sent to the system through the auxiliary port trigger input line. The system must be allowed to become fully configured before the trigger pulse is sent.
Alias	TSRC
Type	String containing the trigger source used to start the simulation.
Example Return	AUTO

10.1.52 GPS:SET:UNITs <units>

Description	Sets the units that data will be displayed on the unit, or returned to the user through the remote command interface. Allowable unit settings are SI, Imperial, Aero/SI or Aero/Imperial.
Parameters	units
Type	enum
Values	IMPERIAL | METRIC | AERO/IMPERIAL | AERO/SI
Default	0 (IMPERIAL)
Alias	UNIT
Return Value	NA
Example	GPS:SET:UNIT METRIC

10.1.53 GPS:SET:UNITs?

Description	Returns the units that the system is set to display data in, or return data to the user through the remote command interface.
Alias	UNIT?
Type	String containing the unit for system data SI, IMPERIAL, AERO/SI or AERO/IMPERIAL.
Example Return	SI

10.1.54 GPS:SET:MotionModelDEfault

Description	Resets all Motion Models to the default factory settings.
Alias	MMDE
Return Value	NA

10.2 GPS:SET:CHANNELS

The set of Setup commands controls the GPS Setup Channels. GPS:SETUP:CHANNEL is a command prefix only and not a command itself. Alias is CHAN.

10.2.1 GPS:SET:CHAN:APPLy

Description	Applies the channel settings. The execution of this command should follow the execution of the combination of the following commands GPS:SET:CHANNELS:DUAL:GAL, GPS:SET:CHANNELS:DUAL:GPS and GPS:SET:CHANNELS:DUAL:SBAS**;** or the execution of the command GPS:SET:CHANNELS:SINGLE. This must be done for the channel settings to take effect. To confirm that the allocation has been successful the GPS:STAT? query command should be executed, which will return the time the command was executed along with the command status. This command cannot be initiated when a simulation is in progress.
Alias	APPL
Return Value	NA

10.2.2 GPS:SET:CHAN:AVAILable?

Description	Returns the number of total available channels.
Alias	AVAL
Return Value	String containing the number of channels available on the unit.
Example Return	12

10.2.3 GPS:SET:CHAN:GNSS?

Description	Returns the number of channels allocated to GNSS in single mode.
Alias	GNSS?
Type	String containing the number of channels.
Example Return	12

10.2.4 GPS:SET:CHAN:GNSS <numchan>

Description	Sets the number of channels allocated to GNSS satellites when a single mode simulation is started.
Parameters	numchan
Type	integer
Range	1 to 11
Alias	GNSS
Return Value	NA
Example	GPS:SET:CHAN:GNSS 6

10.2.5 GPS:SET:CHAN:SBAS?

Description	Returns the number of channels allocated to SBAS in single mode.
Alias	SBAS?
Type	String containing the number of channels.
Example Return	2

10.2.6 GPS:SET:CHAN:SBAS <numchan>

Description	Sets the number of channels allocated to SBAS satellites when a single mode simulation is started.
Parameters	numchan
Type	integer
Range	1 to 4
Alias	SBAS
Return Value	NA
Example	GPS:SET:CHAN:SBAS 6

10.3 GPS:SET:CHANNELS:DUAL

The set of Setup commands controls the GPS Setup Dual Channels. GPS:SETUP:CHANNELS:DUAL is a command prefix only and not a command itself. Alias is DUAL.

10.3.1 GPS:SET:CHAN:DUAL:DEFault

Description	Sets the channel allocation to the default allocation. The default allocation is three GPS, three Galileo and no SBAS satellites.
Alias	DEF
Return Value	NA

10.3.2 GPS:SET:CHAN:DUAL:GAL?

Description	Returns the number of channels allocated to Galileo.
Alias	GAL?
Type	Integer
Example Return	2

10.3.3 GPS:SET:CHANDUAL:GAL <numchan>

Description	Sets the number of channels allocated to Galileo satellites when a simultaneous GPS and Galileo simulation is started. The total number of satellites available for allocation to SBAS, GPS and Galileo satellites is either 6 or 12 depending on the options enabled on the system.
Parameters	numchan
Type	integer
Range	1 to 11
Alias	GAL
Return Value	NA
Example	GPS:SET:CHAN:DUAL:GAL 6

10.3.4 GPS:SET:CHAN:DUAL:GPS?

Description	Returns the number of channels allocated to GPS satellites when a dual mode simulation is active. A dual mode simulation simulates both GPS and Galileo constellation signals simultaneously.
Alias	GPS?
Type	String containing the number of channels.
Example Return	2

10.3.5 GPS:SET:CHAN:DUAL:GPS <numchan>

Description	Sets the number of channels allocated to GPS satellites when a dual mode simulation has been selected. A dual mode simulation simulates both GPS and Galileo constellation signals simultaneously. The total number of satellites available for allocation to SBAS, GPS and Galileo satellites is either 6 or 12 depending on the options enabled on the system.
Parameters	numchan
Type	integer
Range	1 to 11
Alias	GPS
Return Value	NA
Example	GPS:SET:CHAN:DUAL:GPS 6

10.3.6 GPS:SET:CHAN:DUAL:SBAS?

Description	Returns the number of channels allocated to SBAS satellites when a dual mode simulation has been selected. A dual mode simulation simulates both GPS and Galileo constellation signals simultaneously.
Alias	SBAS?
Type	String containing the number of channels.
Example Return	2

10.3.7 GPS:SET:CHAN:DUAL:SBAS <numChan>

Description	Sets the number of channels allocated to SBAS satellites when a dual mode simulation has been selected. A dual mode simulation simulates both GPS and Galileo constellation signals simultaneously. The total number of satellites available for allocation to SBAS, GPS and Galileo satellites is either 6 or 12 depending on the options enabled on the system.
Parameters	numChan
Type	integer
Range	0 to 2
Alias	SBAS
Return Value	NA
Example	

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 11 - Simulation Remote Commands

11.1 INTRODUCTION

The set of Setup commands controls the GPS Simulation. GPS:SIMULATION is a command prefix only and not a command itself. Alias is SIM.

11.1.1 GPS:SIM:ALTitude <altitude> [unit]

Description	Sets the Altitude to be used by the system in a static mode simulation, when user input has been selected. This parameter cannot be changed when a simulation is in progress.
Parameters	altitude
Type	real64
Range	-3,281 to 100,000 ft
Alias	ALT
Return Value	NA
Example	GPS:SIM:ALT 500

11.1.2 GPS:SIM:ALTitude? [unit]

Description	Returns the Altitude to be used by the system in a static mode simulation, when user inputs have been selected.
Alias	ALT?
Type	String containing the altitude.
Example Return	1043.2779999997

11.1.3 GPS:SIM:AltitudeRATe? [unit]

Description	Returns the current Altitude rate being simulated by the system in a dynamic mode simulation.
Alias	ARAT?
Type	String containing the altitude rate.
Example Return	1000

11.1.4 GPS:SIM:DATe?

Description	Displays the current simulation date being simulated by the system in a static, dynamic or trajectory mode simulation.
Alias	DAT?
Type	String containing the date formatted as mm/dd/yyyy, or an empty string if no simulation has been run.
Example Return	"11/20/2010"

11.1.5 GPS:SIM:DistanceToGo?

Description	Displays the remaining distance for the current leg of a dynamic simulation.
Alias	DTG?
Type	String containing the distance to go.
Example Return	23600.8

11.1.6 GPS:SIM:ElapsedTIMe?

Description	Displays the elapsed time since the start of a static, dynamic, or trajectory simulation.
Alias	ETIM?
Type	String containing the elapsed time of a simulation formatted as hh:mm:ss. or an empty string if no simulation has been run.
Example Return	"00:02:29"

11.1.7 GPS:SIM:ExtREF?

Description	Returns the status, enabled (ON) or disabled (OFF) of the external 10 MHz reference output from the system REF OUT port.
Alias	EREF?
Type	String containing the status of the external reference output, ON or OFF.
Example Return	OFF

11.1.8 GPS:SIM:FROM?

Description	Displays the last route point the simulation has passed through during a dynamic simulation.
Alias	FROM?
Type	String containing the last route point through which the simulation has passed.
Example Return	"Exiby"

11.1.9 GPS:SIM:HEADing?

Description	Displays the heading for the body in motion while dynamic or trajectory simulations are running.
Alias	HEAD?
Type	String containing the heading of the body in motion, 0 to 360 degrees.
Example Return	"180°"

11.1.10 GPS:SIM:LATitude <latitude>

Description	Sets the Latitude for a static simulation if user entry is selected as the entry method. This parameter cannot be executed when a simulation is in progress.
Parameters	latitude
Type	real64
Range	90,00.0000,N to 90,00.0000,S
Alias	LAT
Return Value	NA
Example	GPS:SIM:LAT 45.3458

11.1.11 GPS:SIM:LATitude?

Description	Returns the Latitude for a static, dynamic or trajectory simulation while the simulation is running; returns the user entered latitude for a static simulation if the system is in static mode; or returns the last latitude position of the body in motion if the simulation is stopped and is in dynamic or trajectory mode.
Alias	LAT?
Type	String containing the simulation latitude in decimal degrees.
Example Return	37.034199999999

11.1.12 GPS:SIM:LONGitude <longitude>

Description	Sets the Longitude for a static simulation if user entry is selected as the entry method. This parameter cannot be executed when a simulation is in progress.
Parameters	longitude
Type	real64
Range	180,00.0000,E to 180,00.0000,W
Alias	LONG
Return Value	NA
Example	GPS:SIM:LONG 105,45.8912,W

11.1.13 GPS:SIM:LONGitude?

Description	Returns the Longitude for a static, dynamic or trajectory simulation while the simulation is running; returns the user entered longitude for a static simulation if the system is in static mode; or returns the last longitude position of the body in motion if the simulation is stopped and is in dynamic or trajectory mode.
Alias	LONG?
Type	String containing the simulation longitude in decimal degrees.
Example Return	-97.4300000000002369

11.1.14 GPS:SIMU:SPeeD? [unit]

Description	Displays the Simulation's current speed of the body in motion when dynamic or trajectory simulations are being run.
Alias	SPD?
Type	String containing the speed of the body in motion.
Example Return	2.88

11.1.15 GPS:SIM:TIMe?

Description	Displays the simulation time. If the simulation is running, the time returned is the current GPS simulation time, and will be constantly updating. If the simulation is stopped the time will be the last simulated GPS time, or the time entered into the system for the next user time mode simulation.
Alias	TIM?
Type	String containing the GPS simulation time, hh:mm:ss.
Example Return	"01:38:08"

11.1.16 GPS:SIM:TO?

Description	Displays the next waypoint along the simulated path of the body in motion. This command is valid for dynamic mode simulations only.
Alias	TO?
Type	String containing the next waypoint along the simulated path.
Example Return	"Wichita Mid Continent"

11.1.17 GPS:SIM:ToggleRUN

Description	Toggles (starts/stops) the simulation. Note that the same command is used to start and stop the simulation. If an external trigger is used to start the simulation, this command will configure the simulation for the run, but the external trigger will be needed to start the progression of the GPS clock.
Range	NA
Alias	TRUN
Return Value	NA

11.1.18 GPS:SIM:ToggleRUN?

Description	Toggles queries the run state (running/stopped) of the simulation.
Alias	TRUN?
Type	String containing the run state of the simulation, Running or Stopped.
Example Return	"Running"

11.2 GPS:SIMULATION:GALILEO

The set of Galileo commands controls the Galileo. GPS:SIMULATION:GALILEO is a command prefix only and not a command itself. Alias is GAL.

11.2.1 GPS:SIM:GAL:ADVisory?

Description	Displays the Galileo advisory string which tells the user which services are active for the selected simulation.
Alias	ADV?
Type	String containing the Galileo advisory message.
Example Return	"I/NAV, Pseudo-G/NAV"

11.2.2 GPS:SIM:GAL:CARRier?

Description	Displays the Galileo carrier identifier currently being used during the simulation. This is only valid for Galileo and combination Galileo/ GPS simulations.
Alias	CARR?
Type	String containing the Galileo advisory message.
Example Return	E1

11.2.3 GPS:SIM:GAL:PRN?

Description	Displays the list of Galileo satellites active during the current running simulation.
Alias	PRN?
Type	String containing the list of active Galileo satellites.
Example Return	"17, 19, 22, 27, 29, 30"

11.2.4 GPS:SIM:GAL:VisibleSVS?

Description	Returns the number of visible Galileo satellites that are available in the constellation to be simulated. Note that this number may be higher than the number of satellites actually being simulated by the system.
Alias	VSVS?
Type	String containing the number of Galileo satellites that are available for simulation.
Example Return	"8"

11.3 GPS:SIMULATION:GPS

The set of Galileo commands controls the Simulation GPS section. GPS:SIMULATION:GPS is a command prefix only and not a command itself. Alias is GPS.

11.3.1 GPS:SIM:GPS:ADVisory?

Description	Displays the GPS advisory string which tells the user which services are active for the selected simulation.
Alias	ADV?
Type	String containing the GPs advisory message.
Example Return	"SoL"

11.3.2 GPS:SIM:GPS:CARRier?

Description	Displays the GPS carrier identifier currently being used during the simulation. This is only valid for GPS and combination Galileo/GPS simulations.
Alias	CARR?
Type	String containing the GPS carrier identifier, L1/E1, L5/E5, L1, L1C, L2, L2C, or L5.
Example Return	L2C

11.3.3 GPS:SIM:GPS:PRN?

Description	Displays the list of GPS satellites active during the current running simulation.
Alias	PRN?
Type	String containing the list of active GPS satellites.
Example Return	"17, 19, 22, 27, 29, 30"

11.3.4 GPS:SIM:GPS:VisibleSVS?

Description	Displays the number of visible GPS satellites that are available in the constellation to be simulated. Note that this number may be higher than the number of satellites actually being simulated by the system.
Alias	VSVS?
Type	String containing the number of GPS satellites that are available for simulation.
Example Return	"8"

11.4 GPS:SIMULATION:SBAS

The set of SBAS commands controls the Simulation SBAS satellites. GPS:SIMULATION:SBAS is a command prefix only and not a command itself. Alias is SBAS.

11.4.1 GPS:SIM:SBAS:SBAS?

Description	Displays the status of the Satellite Based Augmentation System (SBAS), either OFF or AUTO. If OFF is returned, no signal will be available for the SBAS system, if AUTO is returned the system will generate an SBAS signal if one is available at the location of the simulated position.
Alias	SBAS?
Type	String containing the status of the SBAS system signal, OFF or AUTO.
Example Return	"OFF"

11.4.2 GPS:SIM:SBAS:VisibleSVS?

Description	Displays the number of currently visible SBAS satellites at the latitude and longitude position currently being simulated. Note that if the SBAS system is off a value of 0 will be returned.
Alias	VSVS?
Type	String containing the number of SBAS satellites visible.
Example Return	"2"

11.4.3 GPS:SIM:SBAS:PRN?

Description	Displays the list of SBAS satellites active during the current running simulation.
Alias	PRN?
Type	String containing the list of active SBAS satellites.
Example Return	"135:LM RPS-1 (WAAS);138:LM RPS-2(WAAS)"

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 12 - SV PRN Remote Commands

12.1 INTRODUCTION

The set of SV PRN commands controls the SV PRN. GPS:SVPR is a command prefix only and not a command itself. Alias is SVPR.

12.2 GPS:SVPR:GALILEO

The set of Galileo commands controls the Galileo. GPS:SVPR:GALILEO is a command prefix only and not a command itself. Alias is GAL.

12.2.1 GPS:SVPR:GAL:LIST?

Description	Returns the list of Galileo satellites visible during the simulation, along with pertinent data regarding the status of the satellite such as the SV number, the elevation and azimuth of the SV relative to the current simulated position, the SV heath, deltas to the satellite power entered by the user, the health of the SV, Doppler offsets to the SV entered by the user code/carrier incoherence entered by the user, step errors to the SV entered by the user, whether the SV has been selected by the system to be available to be simulated and whether the SV is actually being included in the output signal of the simulation.
Alias	LIST?
Type	String containing the status of each of the Galileo satellites available for simulation by the system in the following format: SV#, Elevation,Azimuth,Health,RFLevel,Doppler,Corr,Step,Select,Sim'd
Example Return	"1,78.4365,80.7553,-155,0,0,0,0,3600,Good,ON,ON 2,78.437,39.0273,-155,0,0,0,0,3600,Good,ON,ON 4,77.3168,-43.5812,-155,0,0,0,0,3600,Good,ON,ON 5,37.9087,-52.7295,-155,0,0,0,0,3600,Good,ON,ON 6,43.0506,114.533,-155,0,0,0,0,3600,Good,ON,ON 11,17.4713,66.388,-155,0,0,0,0,3600,Good,ON,ON 16,52.3643,71.2753,-155,0,0,0,0,3600,Good,ON,ON 19,30.6131,160.573,-155,0,0,0,0,3600,Good,ON,ON 20,48.4585,156.509,-155,0,0,0,0,3600,Good,ON,ON 21,32.8382,162.97,-155,0,0,0,0,3600,Good,ON,ON 32,25.0999,-122.07,-155,0,0,0,0,3600,Good,ON,ON"

12.2.2 GPS:SVPR:GAL:SATellite? <svnumber>

Description	Returns information about the Galileo satellite requested by the user which includes pertinent data regarding the status of the satellite such as the SV number, the elevation and azimuth of the SV relative to the current simulated position, the SV heath, deltas to the satellite power entered by the user, the health of the SV, Doppler offsets to the SV entered by the user code/carrier incoherence entered by the user, step errors to the SV entered by the user, whether the SV has been selected by the system to be available to be simulated and whether the SV is actually being included in the output signal of the simulation.
Parameters	svnumber (satellite number for which data is being modified)
Type	integer
Alias	SAT?
Example	GPS:SVPR:GAL:SAT 4
Return Type	String containing the status of the Galileo satellite requested in the following format: SV#, Elevation,Azimuth,Health,RFLevel,Doppler,Corr,Step,Select,Sim'd
Example Return	“2,78.437,39.0273,155,0,0,0,0,3600,Good,ON,ON”

12.2.3 GPS:SVPR:GAL:SATellite <svNumber>, <select>, <satelliteHealth>, <doppler>, <incoherence>, <ampOffset>, <stepError>, <duration>

Description	Modifies the status of a Galileo satellite that is currently being simulated by the system. The parameters that can be modified are selection status, satellite health status, Doppler offset, code/carrier incoherence, satellite power and position step error.

Parameters	svnumber
Type	int32

Parameters	Select
Type	enum

Parameters	satelliteHealth
Type	enum

Parameters	doppler
Type	int32

Parameters	incoherence
Type	real64

Parameters	ampOffset
Type	real64

Parameters	stepError
Type	real64

Alias	SAT
Range	1 to 36 (selects the satellite to be modified)
Example	GPS:SVPR:GAL:SAT 1,ON,GOOD,0,0,0,0

12.3 GPS:SVPR:GPS

The set of GPScommands controls the GPS. GPS:SVPR:GPS is a command prefix only and not a command itself. Alias is GPS.

12.3.1 GPS:SVPR:GPS:LIST?

Description	Returns the list of GPS satellites visible during the simulation, along with pertinent data regarding the status of the satellite such as the SV number, the elevation and azimuth of the SV relative to the current simulated position, the SV heath, deltas to the satellite power entered by the user, the health of the SV, Doppler offsets to the SV entered by the user code/carrier incoherence entered by the user, step errors to the SV entered by the user, whether the SV has been selected by the system to be available to be simulated and whether the SV is actually being included in the output signal of the simulation.
Alias	LIST?
Type	String containing the status of each of the GPS satellites available for simulation by the system in the following format: SV#, Elevation,Azimuth,Health,RFLevel,Doppler,Corr,Step,Select,Sim'd
Example Return	"SV# Elevation Azimuth Health RFLevel Doppler Corr Step Select Sim'd "1,78.4365,80.7553,-155,0,0,0,0,3600,Good,ON,ON 2,78.437,39.0273,-155,0,0,0,0,3600,Good,ON,ON 4,77.3168,-43.5812,-155,0,0,0,0,3600,Good,ON,ON 5,37.9087,-52.7295,-155,0,0,0,0,3600,Good,ON,ON 6,43.0506,114.533,-155,0,0,0,0,3600,Good,ON,ON 11,17.4713,66.388,-155,0,0,0,0,3600,Good,ON,ON 16,52.3643,71.2753,-155,0,0,0,0,3600,Good,ON,ON 19,30.6131,160.573,-155,0,0,0,0,3600,Good,ON,ON 20,48.4585,156.509,-155,0,0,0,0,3600,Good,ON,ON 21,32.8382,162.97,-155,0,0,0,0,3600,Good,ON,ON 32,25.0999,-122.07,155,0,0,0,0,3600,Good,ON,ON"

12.3.2 GPS:SVPR:GPS:SATellite? <sv number>

Description	Returns information about the of GPS satellite requested by the user which includes pertinent data regarding the status of the satellite such as the SV number, the elevation and azimuth of the SV relative to the current simulated position, the SV heath, deltas to the satellite power entered by the user, the health of the SV, Doppler offsets to the SV entered by the user code/carrier incoherence entered by the user, step errors to the SV entered by the user, whether the SV has been selected by the system to be available to be simulated and whether the SV is actually being included in the output signal of the simulation.
Parameters	svnumber (satellite number for which data is being modified)
Type	integer
Alias	SAT?
Example	GPS:SVPR:GPS:SAT? 5
Return Type	String containing the status of the GPS satellite requested in the following format: SV#, Elevation,Azimuth,Health,RFLevel,Doppler,Corr,Step,Select,Sim'd
Example Return	“2,78.437,39.0273,-155,0,0,0,0,3600,Good,ON,ON”

12.3.3 GPS:SVPR:GPS:SATellite <sv number>, <select>, <health>, <doppler>, <incoherence>, <amp Offset>, <step error>, <duration>

Description	Modifies the status of a GPS satellite that is currently being simulated by the system. The parameters that can be modified are selection status, satellite health status, Doppler offset, code/carrier incoherence, satellite power and position step error. All parameters must be included in command.

Parameters	svNumber
Type	int32

Parameters	Select
Type	enum

Parameters	satelliteHealth
Type	enum

Parameters	sdoppler
Type	real64

Parameters	incoherence
Type	real64

Parameters	ampOffset
Type	real64

Parameters	stepError
Type	real64

Alias	SAT
Range	1 to 32 (selects the satellite to be modified)
Example	GPS:SVPR:GPS:SAT 1,ON,GOOD,0,0,0,0

THIS PAGE INTENTIONALLY LEFT BLANK.

Chapter 13 - Waypoint Remote Commands

13.1 INTRODUCTION

The set of Waypoint commands controls the Waypoints. GPS:WAYPoint is a command prefix only and not a command itself. Alias is WAYPoint or WAYP.

13.1.1 GPS:WAYP:CLeaR

Description	Clears out the waypoint database of any user entered waypoints. Waypoints that are included with the default database will not be affected by this command.
Return Value	NA

13.1.2 GPS:WAYP:DELete <code>

Description	Deletes the requested user entered waypoint . When a waypoint is deleted it cannot be recovered. Waypoints that are included with the default database will not be affected by this command.
Parameters	code
Type	Code is a string with a maximum of 80 characters.
Aliases	DELete | DEL
Parameter	Waypoint code
Return Value	NA
Example	GPS:WAYP:DEL “MCI”

13.1.3 GPS:WAYP:DISPlay? <code>

Description	Displays the waypoint information for the requested code. The example return below indicates the values returned.
Aliases	DISPlay? | DISP?
Parameters	code
Type	Code is a string with a maximum of 80 characters.
Parameter	Waypoint code
Return Type	String containing the waypoint information for the waypoint code requested in the following format: Code,ICAO Code,Name,City,State,Latitude,Longitude,Altitude
Example Return	"SFO,KSFO,San Francisco Intl,San Francisco,,37.619,-122.375,3.96242.31"
Example	GPS:WAYP:DISP? "MCI"

13.1.4 GPS:WAYP:EDIT <code>, <icaoCode>, <name>, <city>, <state>, <latitude>, <longitude>, <altitude> [unit]

Description	Edits an existing waypoint. Note that only user entered waypoints can be edited, so this command generally will follow the GPS:WAYP:NEW command. All parameters must be included in command.

Parameters	Code
Type	Code is a string with a maximum of 80 characters.

Parameters	icaoCode
Type	IcaoCode is a string with a maximum of 80 characters.

Parameters	name
Type	Name is a string with a maximum of 80 characters.

Parameters	city
Type	City is a string with a maximum of 80 characters.

Parameters	state
Type	State is a string with a maximum of 80 characters.

Parameters	latitude
Type	real64
Range	-90.0000 to 90.0000 deg

Parameters	longitude
Type	real64
Range	-180.0000 to 180.0000 deg

Parameters	altitude
Type	real64
Range	-3,281 to 100,000 ft

Alias	EDIT
Example	GPS:WAYP:EDIT “ABC”,”ABCD”,”New Waypoint”,”NewCity”,”SomeState”,44.4567,55.6789,1234

13.1.5 GPS:WAYP:NEW <Code>, <icaoCode>, < name>, <city>, <state>, <latitude>, <longitude>, <altitude> [unit]

Description	Appends a new waypoint to the end of the list. All parameters must be included in command.

Parameters	Code
Type	Code is a string with a maximum of 80 characters.

Parameters	icaoCode
Type	IcaoCode is a string with a maximum of 80 characters.

Parameters	name
Type	Name is a string with a maximum of 80 characters.

Parameters	city
Type	City is a string with a maximum of 80 characters.

Parameters	state
Type	State is a string with a maximum of 80 characters.

Parameters	latitude
Type	real64
Range	-90.0000 to 90.0000 deg

Parameters	longitude
Type	real64
Range	-180.0000 to 180,0000deg

Parameters	altitude
Type	real64
Range	-3,281 to 100,000ft

Alias	NEW
Example	GPS:WAYP:EDIT “ABC”,”ABCD”,”New Waypoint”,”NewCity”,”SomeState”,44.4567,55.6789,1234

13.1.6 GPS:WAYP:LIST?

Description	Displays a list of all of the waypoints in the waypoint database.
Alias	LIST?
Return Type	String containing the waypoint list in the following format: Code,ICAO Code,Name,City,State,Latitude,Longitude,Altitude
Example Return	"RUH,OERK,King Khaled Intl,Riyadh,,24.9576,46.6988,624.535 SAL,MSLP,El Salvador Intl,San Salvador,,13.4409,-89.0557,30.7848 SAN,KSAN,San Diego Intl,San Diego,,32.7336,-117.19,5.1816"

13.1.7 GPS:WAYP:USE <code>

Description	Uses a waypoint (i.e. fills in the latitude, longitude and latitude on the simulation page) in the waypoint database. This command is only valid if a static mode simulation has been selected.
Parameters	code
Type	String
Return Value	NA
Example	GPS:WAYP:USE "MCI"

Chapter 14 - Remote Command Example Scenarios

14.1 STARTING A NEW STATIC SIMULATION

For a basic static simulation, set the output port selection, output power, carrier frequency, simulation time source,simulation time/date, simulation position source, simulation type to static, set up the latitude, longitude and altitude, then start the simulation. Note that the status of some commands has been assumed to be in their intended state, such as the motion model, digital noise, fading etc.; so the commands to change or check their status have not been included in the example.

The commands are:

1. GPS:SETUP:RFPORT DIRECT
2. GPS:SET:RFLV -120
3. GPS:SET:CARR L1/E1
4. GPS:SET:CLOC USER
5. GPS:SET:TIM “11:11:11”
6. GPS:SET:DAT “04/14/2013”
7. GPS:SET:PSRC “USER”
8. GPS:SET:STYP STATIC
9. GPS:SIM:LAT 4.444
10. GPS:SIM:LONG 102.4533
11. GPS:SIM:ALT 900
12. GPS:SIM:TRUN

14.2 LOADING A SPECIFIC ALMANAC FILE FOR SIMULATION

To run a simulation with a specific almanac, one would do the following RCI command to load in the file desired (In this example, I picked Week648.alm, which is what a filename would look like for any almanac loaded using the GPSRX Page). This load would be done before starting the simulation.

GPS:FILE:ALM:LOAD “Week648.alm”

14.3 STARTING A NEW DYNAMIC SIMULATION

For a basic dynamic simulation, one would set the output port selection, the output power, the carrier frequency, the simulation time source, the simulation time/date, the simulation position source, the simulation type is set to dynamic, then a route is created by adding route points. After the setup has been completed the simulation is started. In this example after creating the route points we will also save the route to a file. Note that the status of some commands has been assumed to be in their intended state, such as the motion model, digital noise, fading etc.; so the commands to change or check their status have not been included in the example. The commands are listed below.

1. GPS:SETUP:RFPORT DIRECT
2. GPS:SET:RFLV -120
3. GPS:SET:CARR L1/E1
4. GPS:SET:CLOC USER
5. GPS:SET:TIM “11:11:11”
6. GPS:SET:DAT “04/14/2013”
7. GPS:SET:PSRC “USER”
8. GPS:SET:STYP DYNAMIC
9. GPS:ROUT:ADD:WAYP “SFO”,500,500,100,5000
10. GPS:ROUT:ADD:WAYP “LAX”,500,500,100,5000
11. GPS:ROUT:ADD:WAYP “SAN”,500,500,100,5000
12. GPS:ROUT:SAV “California”
13. GPS:SIM:TRUN

14.4 STARTING A NEW TRAJECTORY SIMULATION

For a trajectory simulation, the output port is selected, the output power is set, the carrier frequency is selected, the simulation type is set to trajectory, then a trajectory file is loaded in memory, and then the simulation is started. In this example the trajectory file is named ‘short.nme’. Note that the simulation time and position information is derived from the NMEA or GDT data file, so the commands to set the time, date or position of the simulation are unneeded. Note that the proper almanac file must be loaded for the week in which the NMEA or GDT data file was recorded for the simulated satellite constellation to match the real constellation at the time of the recording. Note that the status of some commands has been assumed to be in their intended state, such as the motion model, digital noise, fading etc.; so the commands to change or check their status have not been included in the example. The commands are listed below.

1. GPS:SETUP:RFPORT DIRECT
2. GPS:SET:RFLV -120
3. GPS:SET:CARR L1/E1
4. GPS:SET:STYPE TRAJECTORY
5. GPS:FILE:NMEA:LOAD “short.nme”
6. GPS:SIM:TRUN

14.5 STOPPING A NEW TRAJECTORY SIMULATION

To stop a simulation, the GPS:SIM:TRUN command is sent a second time. This command is a “Toggle Run” command which just toggles the state of the simulation, so if the simulation is stopped, it starts, and vice versa, if it is running, it stops.

THIS PAGE INTENTIONALLY LEFT BLANK.

As we are always seeking to improve our products, the information in this document gives only a general indication of the product capacity, performance and suitability, none of which shall form part of any contract. We reserve the right to make design changes without notice.

CHINA / Beijing	Tel: [+86] (10) 6539 1166	Fax: [+86] (10) 6539 1778
CHINA / Shanghai	Tel: [+86] (21) 5109 5128	Fax: [+86] (21) 6457 7668
FINLAND	Tel: [+358] (9) 2709 5541	Fax: [+358] (9) 804 2441
FRANCE	Tel: [+33] 1 60 79 96 00	Fax: [+33] 1 60 77 69 22
GERMANY	Tel: [+49] 8131 2926-0	Fax: [+49] 8131 2926-130
HONG KONG	Tel: [+852] 2832 7988	Fax: [+852] 2834 5364
INDIA	Tel: [+91] (0) 80 4115 4501	Fax: [+91] (0) 80 4115 4502
JAPAN	Tel: [+81] 3 3500 5591	Fax: [+81] 3 3500 5592
KOREA	Tel: [+82] (2) 3424 2719	Fax: [+82] (2) 3424 8620
SCANDINAVIA	Tel: [+45] 9614 0045	Fax: [+45] 9614 0047
***SINGAPORE**	Tel: [+65] 6873 0991	Fax: [+65] 6873 0992
UK / Cambridge	Tel: [+44] (0) 1763 262277	Fax: [+44] (0) 1763 285353
***UK / Stevenage**	Tel: [+44] (0) 1438 742200 Freephone: 0800 282388	Fax: [+44] (0) 1438 727601
***USA**	Tel: [+1] (316) 522 4981 Toll Free: 800 835 2352	Fax: [+1] (316) 522 1360

* Indicates Regional Sales/Service Center

AEROFLEX

Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven, customer-focused.