

GPSRKXLV A11XLV-G Serial Interface Reference

Operational Description

This manual covers two products a GPSRKXLV a GPS repeater and A11XLV-G. The GPSRKXLV is a GPS repeater that operates in the L band and is designed primarily for retransmission of GPS signals.

The A11XLV-G is a digitally controlled L band amplifier designed primarily for amplification of GPS signals.

It can also be used as a general purpose L band amplifier if the filter[s] are omitted or the signal of interest is within the filter's[s] band pass.

Both of these devices have a built in GPS receiver that measures the power on the output connector so that the GPS signal level from the device can be known exactly.

These devices are controlled either by push buttons on the front panel and/or via an optional serial port interface.

This document provides the information to control the devices via the optional serial port.

Serial Port Configuration

The serial port comes configured from the factory set to operate at 9600,N,8,1 ONLY!! And will not operate at any other setting.

There is no hardware handshaking. (so all that is need is RX,TX & GND)

Some functions are only available via a serial port control e.g. setting the antenna current fault threshold level.

Port Hardware

The RS232 connector is a female DB9 wired as DCE (Data Communications Equipment). Pin 2 RX (output) Pin3 TX (input), pin 5 GND, Pin 9 (Power +6.3VDC **Optional)

Modes of Serial Port Operation

The control of the unit via the serial port is generally accomplished in one of two ways command mode or terminal mode.

Terminal mode

One can connect to the device using a standard terminal device or a more likely scenario a computer utilizing some terminal emulation software such as Hyperterm, Terra Term, Kermit etc.

The unit can be operated with the down arrow keys and the enter keys in exactly the same manor as if one were pressing the buttons on the front panel of the device by navigating the menus and using the up, down arrow keys and enter key or equivalent esc sequences. The device will echo the text to the serial port and in most case it will be the same as the front panel LCD or it will be more verbose.

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Note the letter “D” & “d” will also function as the down arrow key and the letter “U” & “u” will function as the up arrow key.

The terminal ESC sequences ESC[B] or 0x1B and then a 0x41 will function as an up arrow key.

The terminal ESC sequences ESC[A] or 0x1B and then a 0x41 will function as an up arrow key.

(If there are any dinosaurs reading this these are VT100 terminal escape sequences)

Command Mode

In command mode the unit can be controlled or operated by sending specific commands as opposed to navigating menus via key strokes.

Though there is nothing stopping a user from sending individual key strokes i.e. characters programmatically and navigating menus it is not needed or recommended.

A command set is provided to execute functions directly so the unit can be controlled by a machine or computer as in an automatic test setup.

Command Format

The commands are in the format where the first character is always an asterisk followed by a three letter command (case insensitive) followed by an equal sign and any required numeric or character data.

All commands must be terminated by a carriage return character i.e. 0x0d.

For example to set the attenuation level the command is ‘*ATT=00’

Where 00 is some value between 0 and 63. (Note leading zeros are required for all numeric values e.g. attenuation level of one is ‘*ATT=01 not ‘*ATT=1’

This will set the level of attenuation directly with out having to navigate the menu system.

If the command was accepted the device will echo a prompt plus the three letter command and the equal sign and any numeric value that accompanied the command plus an OK.

If the command ‘*ATT=63’ is accepted then the device will echo GPSS>ATT=63 OK (note the asterisk is not echoed!!!)

If the command was not accepted then the device will only echo the prompt GPSS>

Command	Description	Range	Default	Comments
*CON=	Places the device into calibration mode or removes it from calibration mode	0-1	0	Places the device into cal mode where the control loop is broken so the *RFG=, *ATT=, *GTN= commands will not be over ruled/over ridden by the control loop. This command is not to be mistaken with *CAL command which actually will performs a calibration
*CAL=	Initiates a calibration	-65.00 to -86.00	NA	This initiates a

				calibration. The format is a *CAL=XX.XX where XX is the signal level at the output connector the range is -86 to -65 the negative sign is omitted as all numbers in the range will be negative. The unit must first be placed in cal mode with the *CON= command for this command to work and the signal level at the output connector must be measured with the calibration receiver. To obtain the XX.XX level.
*ATT=	Set attenuation level	00-63		This sets the level of the attenuator which sets the over all gain (positive or negative) of the device from input to output. Note: it accomplishes the same thing as the RFG command. Attenuation is a positive number so no leading plus or minus sign is needed. Note: Unless in cal mode the control loop will over ride this command.
*RFG=	Set amplifier Gain	-23 to +40	+40	This sets the over all gain of the device just as the ATT command does Plus or minus sign and leading zeros are required. Note: Unless in cal mode the control loop will over ride this command.
*CNT=	Set the contrast level	40-90	55	Default is mid range contrast..... to my eye
*BRT=	Set the LCD back light level	0020-1000	1000	Default is maximum brightness. The back

				light won't work unless you have the external power option. The back light LEDs draw too much current to operate from GPS receiver supplied current so the back light LEDs are not connected unless you have external power option.
*SSN=	Set serial number		A00000	Six characters where first character is an alpha followed by five numeric characters This command is provided for documentation purposes only. Do not change the serial number it is used only to track any technical support issues such as firmware upgrades. The serial number does not affect operation of the device in any way!!!!
*ANT=	Turn on/off power to antenna	0-1	1	For this command to function we assume you have an onboard power supply providing power to the antenna. Even if you do have an on board power supply if the RF input is DC blocked then enabling this won't provide power to the antenna. If you have no onboard power supply then turning this off will not remove power to the antenna either.
*AFH=	Antenna current fault high threshold	0512-1023	XXXX	This sets the high level current fault threshold level i.e. any level

				above this value will cause a fault and remove power from the antenna. In the fault state the unit will retry by applying power to the antenna and testing for a fault every sixty seconds for N number of times to see if the fault has been removed. If the antenna fault detect has not been enabled then setting this will have no effect.
*AFL=	Antenna current fault low threshold	0000-0511	XXXX	This sets the low level current fault threshold level i.e. any level below this value will cause a fault and remove power from the antenna. In the fault state the unit will retry by applying power to the antenna and testing for a fault every sixty seconds for N number of times to see if the fault has been removed. If the antenna fault detect has not been enabled then setting this will have no effect.
*ODT=	Oscillation Detect Threshold	0000-1023	XXXX	This sets the RF power level detector threshold RF input power above this level will cause a fault, power will be removed from the antenna (if you are providing power with the power supply option) The unit will not retry! User intervention (pressing a button or sending an equivalent character on the serial

				port) is required to reset an oscillation detect fault!!
*GTN=	Set GPS Attenuation Level	00-31	XX	Controls the signal level seen by the GPS receiver. Note: Unless in cal mode the control loop will over ride this command.
*DSN	Returns Serial Number	A00000	ANNNNN	Returns serial number Serial number is alpha numeric with the first char alpha followed by five numeric digits e.g. "B12345" the return string will include the command and OK e.g. "DSN=A12345 OK"
*AVD=	Returns Antenna Voltage	N/A	00.00	Returns the antenna voltage. Format returned is two digits and two decimal places e.g. AVD=05.45 OK
*CLV=	Returns the signal average strength from the GPS receiver	N/A	-XX.X	Returns the average signal strength of the constellation. In canyon mode it returns the satellite with the strongest signal strength.
*CAN=	Places the device in Canyon mode	0-1	0	In canyon mode the device uses the single strongest satellite signal to set the output signal level. Note: When the receiver is initializing i.e. it is in mode 1 or acquisition mode it also uses the single strongest satellite signal to set the output signal level. If the device is not in canyon mode then whilst in mode 2 it uses an average of the three strongest satellite signals. In mode 3 it uses an average of the

				<p>4 strongest satellite signals. These measurements whether from a single satellite or three strongest or four strongest satellite signal are averaged three times before they are used to adjust the output power level. If in canyon mode the device will report on the serial port as part of the power level i.e. main menu report. There will also be a percent sign in the third character of the first line LCD display to denote if the device is in canyon mode.</p>
*VER=	Returns Software version	000 - 999	NA	Three digit software revision