# *AT11DV/A11XLV*

# *Serial Interface Reference*

## Operational Description

The AT11DV is a digitally controlled variable attenuator that operates in the L band and is designed primarily for attenuation of GPS signals. It can also be used as a general purpose L band attenuator.

The A11XLV 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.

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

The devices share much of the same basic hardware (configured differently) and the same software (configured differently).

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

### Modes of Serial Port Operation

The serial port comes configured from the factory set to operate at 9600,N,8,1 only. It will not operate at any other setting.
There is no hardware handshaking required. (All that is need is RX, TX & GND)
Some functions are only available via a serial port control, for example, setting the antenna current fault threshold level.
The control of the unit via the serial port is generally accomplished in one of two ways: Terminal mode or Command mode.

### 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)

### 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.
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 |
|---|---|---|---|---|
| *ATT= | Set attenuation level | 00-63 | 0 | |
| *RFG= | Set amplifier Gain | -23-+40 | +40 | Plus or minus sign and leading zeros are required |
| *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 |

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| | | | | 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. |
| *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 conversely 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. |
| *AFL= | Antenna current fault low threshold | 0000-0511 | XXXX | This sets the low level current fault threshold level i.e. any level |

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| | | | | 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. |
| *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 the serial command equivalent) is required to reset an oscillation detect fault!! |
| *GTN= | Set GPS Attenuation Level | 00-31 | XX | Documentation purposes only! GPS Attenuator is not loaded on the AT11XLV or the A11XLV but the code is part of the general attenuator[s] control code |
| *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” |
| *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 |