

# ***NV-A4D SERIAL CONTROL PROTOCOL***

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Revision 0.4  
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## *SERIAL PORT PINOUTS – 3.5mm stereo jack*

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Tip: A4D RECEIVE from System Controller  
Ring: A4D TRANSMIT to System Controller  
Sleeve: Common ground.

## *SERIAL PORT PARAMETERS*

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RS232, RTS/CTS or software flow control (XON/XOFF) NOT required, 9600 baud, 8N1 protocol.

## *RULES OF PROTOCOL*

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- (1) In this document, actual characters in a string are presented in **bold** type.
- (2) All numerical fields are coded as ASCII digit characters.
- (3) Each Command string is STARTED with an ASCII “\*” character and terminated by a <CR> character (0D hexadecimal). Each response string issued by the A4D will START with an ASCII “#” and be terminated with a <CR> character (0D hexadecimal).
- (4) If a command has an error in it (does not adhere to exact command syntax), the A4D will respond with a “#?<CR>” string.
- (5) Whenever queuing multiple commands to the A4D, the host program should pause for 50 milliseconds between commands to prevent buffer overruns.

## *NUVO POWER-ON STATE*

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- (1) Each zone is OFF until ON command is received.
- (2) Each zone's settings will be as last set by zone keypad combinations indicated and as stored in microcontroller non-volatile memory. Factory default settings prior to any initiated zone keypad changes are:
  - A. BASS+0 (Bass FLAT)
  - B. TREB+0 (Treble FLAT)
  - C. GRP0 (SOURCE GROUPING OFF)If these zone settings are overridden by the commands that follow in this document, the overridden values are volatile. In other words, these parameters will return to the last manual settings stored in non-volatile memory upon cycling power on the A4D Main Unit.
- (3) For the first four seconds after power-on, a series of non-control related characters will be issued. These are necessary queries to a program that may be running on a connected PC for the purpose of firmware field upgrades. They should be ignored by the host control system.

## *NOTES*

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The commands in this document are a subset of the commands for the NV-E6D. The following E6D commands have been omitted in the A4D:

\*IRSETSR, \*IRSETDF, \*SxIR56SET, \*SxIR38SET  
\*ALLV+, \*ALLV-, \*ALLVHLD, \*Z0xVHLD

The following commands behave slightly differently between the E6D and the A4D:

\*Z0xVOL+, Z0xVOL-

## COMMAND/RESPONSE DESCRIPTIONS

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### Zone CONnect Status Request

COMMAND: \*Z0xCONSR<CR>

x = zone # from 1 – 4

COMMAND: \*Z0xSTATUS<CR>

RESPONSE: #Z0xPWRppp,SRCS,GRPt,VOL-yy<CR>

ppp = 'ON' (two characters) or  
'OFF' (three characters)

s = source # from 1 – 4

t = 1 if source group is on, 0 if  
source group is off

yy = level below max volume in  
dB: -00 to -79 dB (include lead  
0 for all single-digit values

yy = "MT" if in mute state

yy = "XM" if external mute is  
being held active

This response will also be issued in response to pressing the on/off, volume, or source keys on a keypad.

NOTE – the response will be issued if a source key is pressed on a zone that is powered off even though the key press has no effect on the system. It will be output at every increment during a volume ramp initiated by holding a volume up or volume down key on a keypad. It will also be issued at every increment of a volume ramp commanded by the \*Z0xVOL++<CR> and \*Z0xVOL--<CR> commands (see below).

The mute value will be asserted if a \*Z0xMTON<CR> command has been received, OR if the volume is commanded downward all the way to the lowest possible point (volume off). An active external mute input, however, will always override other volume response values with the "EXTMON" response.

### Zone SETtings Status Request

COMMAND: \*Z0xSETSR<CR>

x = zone # from 1 to 4

RESPONSE: #Z0x,BASSyy,TREByy,GRPq

x = zone # from 1 to 4

yy = EQ level, dB, -8 to +0 (flat)  
to +8 in 1 dB increments

q = 0 if source group is on, 1 if  
source group is off (this follows  
DIP switch definition)

### Zone ON

COMMAND: \*Z0xON<CR>

x = zone # from 1 to 4

RESPONSE: Same as for \*Z0xCONSR<CR>

### Zone OFF

COMMAND: \*Z0xOFF<CR>

x = zone # from 1 to 4

RESPONSE: Same as for \*Z0xCONSR<CR>

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**Zone ON/OFF**

Toggles the specified zone on and off. This is the same as pushing the power button on the zone's keypad.

COMMAND: \*Z0xONOFF<CR>

RESPONSE: Same as for \*Z0xCONSR<CR>

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**ALL OFF**

COMMAND: \*ALLOFF<CR>

RESPONSE: #ALLOFF<CR>

This response is also issued when all off is pressed on any keypad

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**ALL Mute ON**

COMMAND: \*ALLMON<CR>

RESPONSE: #ALLMON<CR>

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**ALL Mute OFF**

COMMAND: \*ALLMOFF<CR>

RESPONSE: #ALLMOFF<CR>

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**Zone SouRCe**

COMMAND: \*Z0xSRCp<CR>

x = zone # from 1 to 4

p = source # from 1 to 4

RESPONSE: Same as for \*Z0xCONSR<CR>

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**Zone VOLume**

COMMAND: \*Z0xVOLyy<CR>

x = zone # from 1 to 4

yy = level below max volume in dB: -00 to -78 dB (include lead 0 for all single-digit values)

RESPONSE: Same as for \*Z0xCONSR<CR>

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**Zone VOLume +**

Increase zone volume by 1 dB

COMMAND: \*Z0xVOL+<CR>

x = zone # from 1 to 4

RESPONSE: Same as for \*Z0xCONSR<CR>

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**Zone VOLume -**

Decrease zone volume by 1 dB

COMMAND: \*Z0xVOL-<CR>

x = zone # from 1 to 4

RESPONSE: Same as for \*Z0xCONSR<CR>

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**Zone MuTe ON**

COMMAND: \*Z0xMTON<CR>

x = zone # from 1 to 4

RESPONSE: Same as for \*Z0xCONSR<CR>

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**Zone MuTe OFF**

COMMAND: \*Z0xMTOFF<CR>

x = zone # from 1 to 4

RESPONSE: Same as for \*Z0xCONSR<CR>

Returns zone output to currently connected source at previous volume setting

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**Zone BASS**

COMMAND: \*Z0xBASSyyy<CR>

x = zone # from 1 to 4

yyy = EQ level, dB, -12 to +0 (flat) to +12 in 2 dB increments

x = zone # from 1 to 4

RESPONSE: Same as for \*Z0xSETSR<CR>

NOTE: This command overrides a non-volatile bass setting made on zone keypad using the specified combination of pressing the source 1 button while holding down the mute button. However, returning to the bass setting mode using the keypad will return the unit to the last setting made on the keypad; the serially set value will not be represented on the indicator lamps or preserved.

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**Zone TREBLE**COMMAND: **\*Z0xTREByyy<CR>**

x = zone # from 1 to 4

yyy = EQ level, dB, -12 to +0  
(flat) to +12 in 2 dB incrementsRESPONSE: Same as for **\*Z0xSETSR<CR>**

NOTE: This command overrides a non-volatile treble setting made on zone keypad using the specified combination of pressing the source 2 button while holding down the mute button. However, returning to the treble setting mode using the keypad will return the unit to the last setting made on the keypad; the serially set value will not be represented on the indicator lamps or preserved.

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**Zone source GRouP ON**COMMAND: **\*Z0xGRPON<CR>**

x = zone # from 1 to 4

RESPONSE: Same as for **\*Z0xSETSR<CR>**

NOTE: This command overrides a non-volatile group setting made on zone keypad using the specified combination of pressing the source 3 button while holding down the mute button. The serially set value will not be preserved if power on the system is cycled.

NOTE: Units with firmware version less than 1.02 use \*Z0xG1 instead of \*Z0xGRPON

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**Zone source GRouP OFF**COMMAND: **\*Z0xGRPOFF<CR>**

x = zone # from 1 to 4

RESPONSE: Same as for **\*Z0xSETSR<CR>**

NOTE: Units with firmware version less than 1.02 use \*Z0xG0 instead of \*Z0xGRPOFF

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**VERsion**

Firmware version query

COMMAND: **\*VER<CR>**RESPONSE: **#MPU\_A4D\_vx.yy<CR>**

x = major version number

yy = minor version number

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**EXTernal Mute ON**

Issued whenever the external mute first activates (closure to ground) and 0 whenever the external mute de-activates (open connection to ground).

RESPONSE: **#EXTMON<CR>**

NOTE – there is no command associated with this response; it is always initiated by a change at the external mute input.

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**EXTernal Mute OFF**

Issued whenever external mute de-activates (open connection to ground)

RESPONSE: **#EXTMOFF<CR>**

NOTE – there is no command associated with this response; it is always initiated by a change at the external mute input.