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Research & Development
NetAmp TCP/IP Control Specification

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Command Overview

The TCP/IP Control Protocol will enable a third party device to control all the features of the NetAmp using TCP/IP commands sent to the NetAmp IP address and port (default 9760).

The basic command will be structured as below.

Header	Command	Zone	Parameter	Value	ETX
$	Command	Zone	Parameter	Value	CR LF

The **Header** will be "$"

The **Command** will be within the following scope:

Command	Type	Description	
s	Set	Sent to NetAmp	
g	Get	In this command the "value" is omitted	
r	Response	Sent by NetAmp	

The **Zone** will be within the following scope:

Value	Description
1	Command only applies to zone 1
2	Command only applies to zone 2

The **Parameter** will be within the following scope:

Parameter	Description
src	Source
vol	Volume
mxv	Max Volume
bas	Bass
tre	Treble
bal	Balance main (Left/Right)
znn	Zone Name
sn1	Source 1 Name
sn2	Source 2 Name
sn3	Source 3 Name
snl	Source Local Name
sm3	Source MAC Address 3
sm4	Source MAC Address 3a
gpv	Get parameter values
gpn	Get parameter names
lim	Local Input Module

The **value** associated with each command type is detailed below:

Parameter	Value	Command Description	Notes
src	off	NetAmp enters standby	
src	on	NetAmp exits standby	NetAmp selects last playing source
src	1	Source 1 select	Exits standby playing source 1
src	2	Source 2 select	Exits standby playing source 2
src	3	Source 3 select	Exits standby playing source 3
src	loc	Local source select	Exits standby playing source Local
vol	+	Increment volume	Range is 0 to 30 (incl). See note 1
vol	-	Decrement volume	Range is 0 to 30 (incl). See note 1
vol	0 to 30	Absolute volume level	Range is 0 to 30 (incl)
vol	mute	Mute	
vol	moff	Un-mute	
mxv	0 to 30	Absolute max-volume level	Range is 0 to 30 (incl)
bas	+	Increment bass	Range is -7 to +7 (incl). See note 1
bas	-	Decrement bass	Range is -7 to +7 (incl) . See note 1
bas	-7 to +7	Absolute bass level	Range is -7 to +7 (incl)
tre	+	Increment treble	Range is -7 to +7 (incl) . See note 1
tre	-	Decrement treble	Range is -7 to +7 (incl) . See note 1
tre	-7 to +7	Absolute treble level	Range is -7 to +7 (incl)
bal	+	Increment balance	Range is -15 to +15 (incl) . See note 1
bal	-	Decrement balance	Range is -15 to +15 (incl) . See note 1
bal	-15 to +15	Absolute balance level	Range -15 to +15 (incl)
znn	<name>	Set zone name	0-16 chars. No leading space permitted.
sn1	<name>	Set source name 1	0-16 chars. No leading space permitted.
sn2	<name>	Set source name 2	0-16 chars. No leading space permitted.
sn3	<name>	Set source name 3	0-16 chars. No leading space permitted.
snl	<name>	Set source name local	0-16 chars. No leading space permitted.
sm3	<name>	Set source 3 MAC Address	17 chars format xx:xx:xx:xx:xx:xx
sm4	<name>	Set source 3 MAC Address	17 chars format xx:xx:xx:xx:xx:xx
lim	a	LIM source analogue	Exits auto switching and selects analogue input
lim	d	LIM source digital	Exits auto switching and selects digital input
lim	1	LIM source automatic	Returns LIM to auto switching mode

Notes:

1   If an up/down command is issued and the unit is at maximum/minimum limit already, then the <u>actual</u> maximum or minimum value is returned within the response (i.e. 0 or 30 respectively for volume).

When a command is issued to the NetAmp the unit will action any requests and return a response with the result of the action performed. A 'Response' command is never initiated by the NetAmp without a corresponding command.

If the command is a 'Set' command the unit will action the request and return a response with the result if successful. If the request has been successful the response will be the same as the request, albeit with an "r" as the command response.

If a 'Get' command is issued then the unit will simply return the current applicable value.

Error Response

If a 'set' or 'get' command is issued that is unrecognised by the NetAmp or the action is not completed successfully for whatever reason, the response will be "$rxError\r\n":

$	r	x	Error

"NetAmp FIND" and "NetAmp DHCP Reset" using UDP packets

The NetAmp has the ability to respond to UDP broadcast packets sent through Port 30303.

The payload of the UDP packet decides the action of the NetAmp, as detailed below.

UDP Command: "FIND"

Sending a 'discovery' broadcast UDP packet through 30303 causes the respective numbered (or all NetAmps) to respond with the information response list, below.

Send example: UDP payload data as follows   ->   "IPNetAmp:**X**:FIND:"

Where '**X**' is the NetAmp 'logical' number, in the range 1 – 12.

Or, where '**X**' is sent as '**0**' all NetAmp's will respond.

Response: UDP payload reply as below:

"IPNetAmp\r\n**C**\r\n**H**\r\n**L**\r\n**1**\r\n**2**\r\n**FIND**\r\n**B**\r\n**M**\r\n**IP**\r\n"

Information response list:-

Where '**C**'	is the 'memory changed' checksum	(for now H=C)
Where '**H**'	is the hashed 'memory changed' checksum	(for now H=C)
Where '**L**'	is the NetAmp's 'logical' number that has responded (range 1 - 12).	
Where '**1**'	is the Room Type ID zone 1.	
Where '**2**'	is the Room Type ID zone 2.	
Where '**FIND**'	is the packet identifier.	
Where '**B**'	is the NetAmp's NetBIOSName.	
Where '**M**'	is the NetAmp's MAC address.	

Where '**IP**'   is the NetAmp's IP address.

UDP Command: Set DHCP & Reset   (not yet tested)

Sending a "Set DHCP & Reset" UDP packet through 30303 causes the respective number NetAmp (or all NetAmp's) to reset their network configuration to DHCP, and perform a hard reset.

This action effectively forces a (default) DHCP configuration and reboots the NetAmp so it obtains a new dynamic address from the network router/switch.

"Reset All" command: UDP payload data as follows -> "IPNetAmp:**00-00-00-00-00-00**:DHCP:"

Response: UDP payload data as follows -> "IPNetAmp\r\n**X**\r\n DHCP\r\n OK\r\n "   **(TODO)**

"Reset selected" command: UDP payload data as follows -> "IPNetAmp:**nn-nn-nn-nn-nn-nn**:DHCP:"

Response: UDP payload data as follows -> "IPNetAmp\r\n**X**\r\n DHCP\r\n R\r\n "   **(TO DO)**

Where '**X**' is the NetAmp 'logical' number that has responded, in the range 1 up to 12.

Where '**nn-nn-nn-nn-nn-nn**' is the respective NETAmp's MAC Address (typically having been discovered using the 'discover' command) that you want to address.

Interface Commands

Source Select Commands

Used to 'get' and 'set' source select information.

Examples:

Select Source 1 on Zone 1	command response	-> "$s1src1/r/n" -> "$r1src1/r/n"	See Note
Select Source 3 on Zone 2	command response	-> "$s2src3/r/n" -> "$r2src3/r/n"	See Note
Get selected source on Zone 2	command response	-> "$g2src/r/n" -> "$r2src1/r/n"	
Select Local Source on Zone 2	command response	-> "$s2srcloc/r/n" -> "$r2srcloc/r/n"	See Note
Get selected source on Zone 1	command response	-> "$g1src/r/n" -> "$r1srcloc/r/n"	

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Note:

If in standby, NetAmp turns on this source.

Volume Commands

Volume commands use the values 0 – 30 (inclusive) as the active range.

This volume level range is internally mapped within the NetAmp so that the full volume step range of the 'NJW preamp/selector' is utilised (typically 0 – 50).

Examples:

Zone 1 volume increment	command	-> "$s1vol+/r/n"	
	response	-> "$r1vol5/r/n"	(volume now at level 5)
Zone 2 volume decrement	command	-> "$s2vol-/r/n"	
	response	-> "$r2vol12/r/n"	(volume now at level 12)
Zone 2 volume get	command	-> "$g2vol/r/n"	
	response	-> "$r2vol11/r/n"	(volume at level 11)
Zone 1 volume mute	command	-> "$s1mute/r/n"	
	response	-> "$r1mute/r/n"	

Notes:

If volume was muted: sending a "vol+", "volX" or "moff" un-mutes the selected muted zone. NetAmp replies with a "moff" response and then a "volX" response.

Max Volume Command

Volume uses the values 0 – 30 (inclusive) as the active range.

The Max Volume command limits the upper value to which the volume can be set to within each zone.

Examples:

Zone 1 max volume	command	-> "$s1mxv20/r/n"	
	Response	-> "$r1mxv20/r/n"	(max volume now at level 20)
Zone 2 max volume	command	-> "$s2mxv25/r/n"	
	Response	-> "$r2mxv25/r/n"	(max volume now at level 25)

Bass Commands

Bass commands use the values -7 through +7 (inclusive) as the active range, which maps directly to the range of the 'NJW preamp". Bass commands are essentially the same format as for volume.

Examples:

Zone 1 bass increment	command	-> "$s1bas+/r/n"	
	response	-> "$r1bas-2/r/n"	(bass now at level -2)

Zone 2 bass increment	command	-> "$s2bas+/r/n"	
	response	-> "$r2bas7/r/n"	(bass now at level 7)
Zone 2 bass get	command	-> "$g2bas/r/n"	
	response	-> "$r2bas4/r/n"	(when at level 4)

Treble Commands

Treble commands use the values -7 through +7 (inclusive) as the active range, which maps directly to the range of the 'NJW preamp". Treble commands are exactly the same format as for bass.

Examples:

Zone 1 treble increment	command	-> "$s1tre+/r/n"	
	response	-> "$r1tre4/r/n"	(treble now at level 4)
Zone 2 treble increment	command	-> "$s2tre+/r/n"	
	response	-> "$r2tre-6/r/n"	(treble now at level -6)
Zone 2 treble get	command	-> "$g2tre/r/n"	
	response	-> "$r2tre-2/r/n"	(when at level -2)

Balance Commands (Left/Right control)

Balance (L/R) command uses the values -15 through +15 (inclusive) as the active range, which maps directly to the range of the 'NJW preamp" to control Left/Right balance.

Examples:

Zone 1 balance increment	command	-> "$s1bal+/r/n"	
	response	-> "$r1bal-1/r/n"	(balance at level -1)
Zone 2 balance increment	command	-> "$s2bal+/r/n"	
	response	-> "$r2bal-15/r/n"	(balance at level -15)
Zone 2 balance get	command	-> "$g2bal/r/n"	
	response	-> "$r2bal-2/r/n"	(when at balance level -2)

Zone Name Commands

Used to 'get' and 'set' zone name information.
Maximum length of zone name can be 16 characters.
Minimum length of zone name is 4 characters, without a leading space.

Examples:

Zone 1 get 'ZoneName'	command	-> "$g1znn/r/n"
	response	-> "$r1znnKITCHEN/r/n"
Zone 2 get 'ZoneName'	command	-> "$g2znn/r/n"
	response	-> "$r2znnLOUNGE/r/n"

| Zone 1 set 'ZoneName' | command | -> "$s1znnBEDROOM/r/n" |
| | response | -> "$r1znnBEDROOM/r/n" |

Local Source Name Commands

Used to 'get' and 'set' local source name information.

Maximum length of source name can be 16 characters.
Minimum length of source name is 4 characters, without a leading space.

Examples:

| Local Source on Zone 1 'get' | command | -> "$g1snl/r/n" |
| | response | -> "$r1snlTELEVISION/r/n" |

| Local Source on Zone 2 'set' | command | -> "$s2snlTELEVISION/r/n" |
| | response | -> "$r2snlTELEVISION/r/n" |

Source Name Commands

Used to 'get' and 'set' global source name information.

Maximum length of source name can be 16 characters.
Minimum length of source name is 4 characters, without a leading space.

Examples:

| Source 1 get 'Source Name' | command | -> "$gXsn1/r/n" |
| | response | -> "$rXsn1IPOD/r/n" |

| Source 3 get 'Source Name' | command | -> "$gXsn3/r/n" |
| | response | -> "$rXsn3CD PLAYER/r/n" |

| Source 2 set 'Source Name' | command | -> "$sXsn2BLU RAY PLAYER/r/n" |
| | response | -> "$rXsn2BLU RAY PLAYER/r/n" |

Notes:

"$g**X**sn**Y**/r/n"   **X** represents zone and is a 'don't care' for this command.
                             Y represents the source name number in the range 1 thru 4 inclusive.

Source MAC Address Commands

Used to 'get' and 'set' source MAC address information.

Mac address must 17 characters in the format: **xx:xx:xx:xx:xx:xx**
Mac addresses are only supported for input source "3" and input source "3a".

Examples:

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Source 3 get 'Source MAC'	command	-> "$gXsn3/r/n"
	response	-> "$rXsn300:04:A3:00:00:01/r/n"
Source 3a get 'Source MAC'	command	-> "$gXsn4/r/n"
	response	-> "$rXsn400:04:A3:00:00:02/r/n"

Notes:

"$g**X**sn**Y**/r/n"   **X** represents zone and is a 'don't care' for this command.
                                        Y represents the source name number in the range 1 thru 4 inclusive.

Standby Commands

To switch the NetAmp zones in/out of standby mode:

Examples:

Zone 1 - Enter Standby	command	-> "$s1srcoff/r/n"	
	response	-> "$r1srcoff/r/n"	
Zone 2 - Exit Standby	command	-> "$s2srcon/r/n"	See note 1
	response	-> "$r2src1/r/n"	
Exit Standby	command	-> "$sXsrc1/r/n"	See note 2
	command	-> "$sXsrc2/r/n"	
	command	-> "$sXsrc3/r/n"	
	command	-> "$sXsrcloc/r/n"	

Zone number 'X' can be '1' or '2' for this command. Each zone has a separate standby mode.

Notes:

1   Command $sXsrcon turns NetAmp on and selects last source.
2   Commands $sXsrc1, $sXsrc2, $sXsrc3, $sXsrcloc turn NetAmp on and switches to selected source.

Get Parameter Value Commands

The gpv command has no value but initiates multiple responses from the Netamp from one command. The Netamp will respond with current source selection, current volume, volume status (fixed or variable), balance, bass and treble.

Examples:

Zone 1 – Get parameter values	command	-> "$g1gpv/r/n"
	response	-> "$r1src3/r/n"
		-> "$r1vol20/r/n"
		-> "$r1volvar/r/n"
		-> "$r1bal0/r/n"
		-> "$r1bas3/r/n"
		-> "$r1tre7/r/n"

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Get Parameter Name Commands

The gpn command has no value but initiates multiple responses from the Netamp from one command. The Netamp will respond with zone name, source 1 name, source 2 name, source 3 name, source 3a name and local source name.

Examples:

Zone 1 – Get parameter names	command	-> "$g1gpn/r/n"
	response	-> "$r1znnKitchen/r/n"
		-> "$r1sn1AirPlay/r/n"
		-> "$r1sn2DISABLED/r/n"
		-> "$r1sn3NetMusic/r/n"
		-> "$r1sn4NetMusic/r/n"
		-> "$r1snlTV/r/n"

Local Input Module (LIM) Commands

The factory default is set so that the LIM auto switches between digital and analogue inputs, digital taking priority. The LIM can be forced to switch to any of the two inputs and thus exiting automatic mode. The command must include the correct zone address, as there is a LIM for both zones.

Examples:

Set zone 1 LIM to analogue input	command	-> "$s1lima/r/n"
	response	-> "$r1lima/r/n"
Set zone 1 LIM to digital input	command	-> "$s1limd/r/n"
	response	-> "$r1limd/r/n"

END