

USER MANUAL

Protocol 3000 Reference Guide

Version 3.0 (User)

Revision History

Rev	Author	Date	Changes
1.01	M Tal	27/11/11	Rewrite sections 2.1-2.2
1.02	M Tal	1/12/11	Rewrite sections 2.3-2.5
1.03	E Litvak	1/12/11	Rewrite sections 2.6-2.7 Added section 4.2
1.04	M Tal	4/12/11	Rewrite section 2.8 Some fixes
1.05	E Litvak	21/12/11	Commands edited: #LDEDID, #LDFW, #GEDID Commands added: #CPEDID, #GEDID-EXT Added Section 4 Added section 1.5
1.06	E Litvak	27/12/11	Commands added: #SIGNAL, #SIGNAL?, #DISPLAY, #DISPLAY? Edited section 3.1
1.07	F Strauss	18/1/12	Reformat and correct
1.08	F Strauss	5/2/12	Commands added: BAUD, BAUD?, GEDID-INF, GEDID-EXT-INF, IREN, IREN?, FPGA-VER?, LDFPGA, TMSRV, TMSRV?, NTDNS, NTDNS?, layer, TMLOC?, RGB? Result and error codes Device specific commands: MV-6, VP-81SID, PIP-4 Appendix entry: CRC calculation
1.09	C Hoyzer	22/10/13	Added new commands from the following documents: FC-2xETH P3K Commands to Add Protocol 3000 Matrix 1.8 Protocol 3001 - Multiviewers and more 1.10 TP577-X1 new commands VS-62D additional commands VS-88HFS protocol
2.2	R Bernstein	22/10/13	Moved new commands to Section 2 Sorted commands and tables alphabetically Removed index Added parameter table Section 6 Added cross references to parameter table
2.3	R Bernstein	27/10/13	Added signal validation table Removed CMD short columns Attended to factory and debug commands
2.4	R Bernstein	28/10/13	Repaired cross-references
2.5	F Strauss	17/02/14	Added index, reformatted
2.6	N Aharon	28/04/14	Commands removed: TMSRV, TMSRV?, TMLOC, TMLOC? Commands added: TIME-SRV, TIME-SRV?, TIME-LOC, TIME-LOC? Commands edited: AV-SW-TIMEOUT
2.7	F Strauss	12/05/14	Extensive reformatting Commands added: VID-PATTERN, VID-PATTERN?, TUNNEL-CTRL, KLINK-INF, KLINK-CLS, MTX-MODE, MTX-MODE?
2.8	F Strauss	20/05/14	Factory commands separated, added missing commands
2.9	F Strauss	28/05/14	Commands added: DPSW-STATUS?, EQ-LVL, MIC-GAIN, MIX-LVL, IMAGE-PROP, SCLR-AS, SCLR-AUDIO-DELAY, SCLR-PCAUTO, SHOW-OSD
2.10	F Strauss	11/8/14	Command removed: NTDNS Commands added: LOCK-EDID, VFRZ, VIEW-MOD
2.11	F Strauss	13/5/15	Commands added: TEST-FREQ, MIC-DELAY Commands edited: AV-SW-TIMEOUT, VID-RES, VMUTE, STEREO, TLK, DEF-RES Command moved: VIEW-MOD Parameter table added: 5.11 Video/Audio Signal Changes Sections added: Step-in, EDID Handling

Rev	Author	Date	Changes
2.12	F Strauss	27/5/15	<p>Section added: IR command section 12</p> <p>Commands added: IR-SND, IR-STOP, VGA-PHASE, REMOTE-INFO?, STANDBY</p> <p>Parameter tables added: 6.28 IR Transmit Status, 5.2 Video Port Type</p>
2.12	F Strauss	29/9/15	New template
2.13	F Strauss	21/4/16	<p>Commands added: AUD-SWAP, MIC-TLK, IR-LEARN, EDID-CS, GPIO-CFG, GPIO-STATE, GPIO-STEP, GPIO-THR, GPIO-VOLT, RELAY-STATE, COM-ROUTE, COM-ROUTE-ADD, COM-ROUTE-REMOVE, ETH TUNNEL, MENU-CMD, AUDIO-ONLY, AUDIO-LVL-RANGE, PORT-TYPE</p> <p>Commands edited: AUD-LVL, FCT-SN, SN?, WND-BRD, INFO-PRST</p> <p>Parameter tables added: 6.29 IR Status</p> <p>Parameter tables edited: 6.18 EDID Color Space</p> <p>Changes: IR Command section changed to I/O Gateways</p>
3.0	F Strauss	26/7/17	<p>Section added: I/O Gateways, Streamer, Extended Protocol 3000</p> <p>Commands added: TLK, HW-TEMP?, GPIO-CFG, GPIO-STATE, GPIO-STEP, GPIO-THR, GPIO-VOLT, RELAY-STATE, IR-LEARN, PORT-TYPE, LOCK-FP, TEST-MODE, NET-DNS, BEACON-INFO, MENU-CMD, AUDIO-ONLY, AUDIO-LVL-RANGE, PORT-LOCK, FEATURE-LIST, X-LONG-REACH, MATRIX-STATUS, PORT-DIRECTION, PORT-RES-TYPE, PORTS-LIST, SIGNALS-LIST, X-ROUTE, GENLOCK-MODE, GENLOCK-TIME-MICROSEC, PRST-LOCK, VMUTE, LOG-TAIL, KDS-ACTION, KDS-EN, KDS-PROT?, KDS-METHOD?, KDS-CONN, KDS-MOD?, KDS-GOP?, KDS-BR?, KDS-FR?, KDS-OP-STAT?, KDS-ACTIVE-CLNT?, KDS-AUD, KDS-LATENCY, EQ-FREQ, EQ-Q, AUD-STANDBY, AUD-IN-CONF, AUD-CLIP, AUD-FILTER, AUD-CH-LINK, AUD-HI-Z, AUD-MONO-MODE, MODULE-TYPE, MODULE-VER, GLOBAL-POE, LOG-TAIL?, PORTS-LIST?, PRST-LOCK, SIGNALS-LIST?, X-AV-SW-MODE, X-LABEL, X-PORT-SELECT, X-PORT-SELECT-LIST?, MATRIX-STATUS?, X-AFV, X-MTX-SET-INPUT, X-PRIORITY, X-ROUTE, X-AUD-ONLY, X-LONG-REACH, X-MUTE, X-PATTERN, X-PATTERNS-LIST?, X-SET-FOLLOWERS, X-AUD-LVL, X-MIC-TYPE, KDS-STAT, KDS-SCALE, X-FOLLOWERS-SW-MODE, EDID-DC, NET-CONFIG, X-AUD-LVL-RANGE, X-SIGNAL</p> <p>Commands edited: BUILD-DATE?, ROUTE, UART, HDCP-STAT?, VMUTE, DEF-RES, VID-RES, UART, GPIO-xxx, COMM-ROUTE, COMM-ROUTE-ADD, AUD-LVL, CPEDID</p> <p>Commands removed: ETH-GET-SOC?, ETH-SOC-REP, KLINK_CLS, KLINK_INF</p> <p>Parameter tables added: Video Mute, Menu Navigation, Embedding Status, Port Types, Feature Id, Module Type, Module Status, Channel Number, Equalizer Types, Standby Mode, Filter Types, Hi-Z Voltage, Mono Output, Streamer Decoder Scaling Mode, Deep Color, Input Signal Status</p> <p>Parameter tables edited: EDID Source, Feature Id, Color Space, EDID Audio Capabilities, Video/Audio Signal Changes</p> <p>Changes: COM-ROUTE, COM-ROUTE-ADD, COM-ROUTE-REMOVE, ETH-TUNNEL moved to I/O Gateways, X commands distributed to respective sections, link added to X command definition section</p> <p>Other: Bracket explanation added, Error codes updated, transferred to A4 template, command names made H3 for easier finding, index removed</p>

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Protocol 3000 Syntax

With Kramer Protocol 3000 you can control a device from any standard terminal software (for example, the Windows® HyperTerminal Application) or from TCP/UDP clients connected to default TCP port 5000 or UDP port 50000 (port numbers can be changed by the user). RS-232/RS-485 communications protocol uses a data rate of 115200 bps, no parity, 8 data bits, and 1 stop bit.

The Kramer Protocol 3000 syntax uses the following delimiters:

- **CR** = Carriage return (ASCII 13 = 0x0D)
- **LF** = Line feed (ASCII 10 = 0x0A)
- **SP** = Space (ASCII 32 = 0x20)

Some commands have short name syntax in addition to long name syntax to enable faster typing. The response is always in long syntax.

The Protocol 3000 syntax is in the following format:

- Host Message Format:

Start	Address (optional)	Body	Delimiter
#	<i>Device_id@</i>	Message	CR

- **Simple Command** – Command string with only one command without addressing:

Start	Body	Delimiter
#	Command SP <i>Parameter_1,Parameter_2,...</i>	CR

- **Command String** – Formal syntax with command concatenation and addressing:

Start	Address	Body	Delimiter
#	<i>Device_id@</i>	Command_1 <i>Parameter1_1,Parameter1_2,...</i> Command_2 <i>Parameter2_1,Parameter2_2,...</i> Command_3 <i>Parameter3_1,Parameter3_2,...</i> ...	CR

- Device Message Format:

Start	Address (optional)	Body	Delimiter
~	<i>Device_id@</i>	Message	CR LF

- Device Long Response – Echoing command:

Start	Address (optional)	Body	Delimiter
~	<i>Device_id@</i>	Command SP [<i>Param1,Param2 ...</i>] result	CR LF

Command Terms


Protocol 3000 commands are structured according to the following:

- **Command** – A sequence of ASCII letters (A–Z, a–z and –). A command and its parameters must be separated by at least one space.
- **Parameters** – A sequence of alphanumeric ASCII characters (0–9, A–Z, a–z and some special characters for specific commands). Parameters are separated by commas.
- **Message string** – Every command entered as part of a message string begins with a message starting character and ends with a message closing character.



A string can contain more than one command.
Commands are separated by a pipe (|) character.

The maximum string length is 64 characters.

- **Message starting character:**
 - # – For host command/query
 - ~ – For device response
 - **Device address** – K-NET Device ID followed by @(optional, K-NET only)
 - **Query sign** – ? follows some commands to define a query request
 - **Message closing character:**
 - CR – Carriage return for host messages (ASCII 13)
 - CR LF – Carriage return for device messages (ASCII 13) and line-feed (ASCII 10)
 - **Command chain separator character** – Multiple commands can be chained in the same string. Each command is delimited by a pipe character (|). When chaining commands, enter the message starting character and the message closing character only at the beginning and end of the string.
-  Spaces between parameters or command terms are ignored. Commands in the string do not execute until the closing character is entered. A separate response is sent for every command in the chain.
- **Brackets** - Reserved characters '[' and ']' that define a list of parameters as in [a,b,c,d].

Entering Commands

You can directly enter all commands using a terminal with ASCII communication software, such as HyperTerminal, Hercules, etc. Connect the terminal to the serial, Ethernet, or USB port on the Kramer device. To enter CR, press the Enter key. (LF is also sent but is ignored by the command parser).

For commands sent from some non-Kramer controllers such as Crestron, some characters require special coding (such as, /X###). Refer to the controller manual.

Bidirectional Definition

All commands are bidirectional. That is, if the device receives the code, it performs the instruction. If the instruction is performed (due to a keystroke operation on the front panel or IR controller) these codes are sent to the PC or other RS-232 / Ethernet / USB controller.

Command Chaining

Multiple commands can be chained in the same string. Each command is delimited by a pipe character ('|'). When chaining commands, enter the **message starting character** and the **message closing character** once only, at the beginning of the string and at the end. Commands in the string do not execute until the closing character is entered. A separate response is sent for every command in the chain.

Maximum String Length

64 characters (except for special commands that are defined in the command syntax description).

Extended Protocol 3000

In addition to the standard Protocol 3000 syntax, newer Kramer products use extended syntax to improve user experience and provide easier deployment and configuration.

For products with many ports and of different types, the extended syntax describes commands and their parameters in a more intuitive, user-friendly format.

To identify devices supporting extended commands, use the `#HELP` command to list all supported commands. Commands that begin with the prefix 'X-' use extended Protocol 3000 syntax. Extended commands use Port ID (see [Port ID Format](#)) and Signal ID (see [Signal ID Format](#)) instead of the old port naming parameters.

Port ID Format

The port ID is composed of three fields separated by a dot '.' (`<direction_type>.<port_type>.<port_index>`), where:

- `<direction_type>` – specifies the direction of the port (see [Direction Types](#))
- `<port_type>` – identifies the port type (see [Port Types](#))
- `<port_index>` – is a port index that always matches the port number printed on the front or rear panel of the product

Examples:

`IN.SDI.1` (refers to SDI input port 1)

`OUT.HDMI.4` (refers to HDMI output port 4)

`BOTH.RS232.2` (refers to bidirectional RS-232 port 2)

Direction Types

The string representation is not case sensitive.

String	Meaning
IN	Input port
OUT	Output port
BOTH	Bi-directional port where the direction has no meaning

Port Types

The string representation is not case sensitive.

String	Meaning
HDMI	HDMI port
HDBT	HDBaseT port
SDI	Any serial digital SDI port
ANALOG_AUDIO	Any balanced or unbalanced audio ports
AMPLIFIED_AUDIO	Any analog outputs defined as amplified audio
MIC	Any microphone port including a balanced audio input port divided into left/right
RS232	Local control port used for data control
IR	Local IR input
USB_A	Local USB port of type-A (client)
USB_B	Local USB port of type-B (host)

Signal ID Format

The signal ID is composed of three fields separated by a dot '.'

(<port_id>.<signal_type>.<index>), where:

- <port_id> – Indicates the port ID, as described in [Port ID Format](#)
- <signal_type> – Indicates the type of signal, as described in [Extended Signal Types](#)
- <index> – Indicates a specific channel number when there are multiple channels of the same type

Signal ID: <port_id>.<signal_type>.<index>

also means: <<direction_type>.<port_type>.<index>>.<signal_type>.

<channel_index>

Examples:

IN.HDMI.1.VIDEO.1 (refers to video channel 1 of HDMI input port 1)

OUT.HDBT.1.AUDIO.1 (refers to audio channel 1 of HDBaseT output port 1)

Extended Signal Types

The string representation is non-case sensitive.

String	Meaning
VIDEO	Video signal of the port
AUDIO	Audio signal of the port
RS232	Data signal of the port (relevant for HDBT and RS-232 ports for example)
IR	IR signal of the port (relevant for HDBT and IR ports for example)
USB	USB signal of the port (relevant for HDBT and USB_A/B ports for example)

Examples

To understand the advantages of the extended Protocol 3000 syntax, compare the standard `MUTE` and `VMUTE` command syntax with the extended `X-MUTE` command syntax.

`MUTE` and `VMUTE` are dedicated commands to mute audio and video respectively. Both commands receive the index of the output to mute as a parameter. Two separate commands are used to mute different signal types and neither command enable muting the inputs and not the outputs.

However, the `X-MUTE` command can mute audio and/or video on either inputs or outputs:

- Mute video on output 1: `#X-MUTE OUT.HDMI.1.VIDEO.1`
- Mute audio on output 1: `#X-MUTE OUT.HDMI.1.AUDIO.1`
- Mute video on input 1: `#X-MUTE IN.HDMI.1.VIDEO.1`
- Mute audio on input 1: `#X-MUTE IN.HDMI.1.AUDIO.1`

The name of the action remains the same and what it affects is passed in parameters.

In another example, the `#ROUTE` command is extended by the command `#X-ROUTE`:

- To route a video signal to HDBT output #4 from HDMI input #1:
`#X-ROUTE OUT.HDBT.4.VIDEO.1,IN.HDMI.1.VIDEO.1`
`~01@X-ROUTE OUT.HDBT.4.VIDEO.1,IN.HDMI.1.VIDEO.1`
- To route an audio signal to analog output #1 from the HDMI input #1:
`#X-ROUTE OUT.ANALOG_AUDIO.1.AUDIO.1,IN.HDMI.1.AUDIO.1`
`~01@X-ROUTE OUT.ANALOG_AUDIO.1.AUDIO.1,IN.HDMI.1.AUDIO.1`

Other Rules

In routing commands, first specify the target output(s), then the source input.

Example: `#X-ROUTE OUT.ANALOG_AUDIO.1.AUDIO.1, IN.HDMI.1.AUDIO.1`

Brackets '[' and ']' are reserved Protocol 3000 characters that define a list of parameters as in [a,b,c,d].

Example: to route video input 3 to outputs 1,4,6,7: `ROUTE 1, [1,4,6,7], 3<cr>`

Example illustrating brackets and commas:

`#SIGNALS-LIST?`

`~01@SIGNALS-LIST`

`[IN.SDI.1.VIDEO.1, IN.SDI.2.VIDEO.1, IN.SDI.3.VIDEO.1, IN.SDI.4.VIDEO.1, IN.SDI.5.V
IDEO.1, IN.SDI.6.VIDEO.1, IN.SDI.7.VIDEO.1, IN.SDI.8.VIDEO.1, OUT.SDI.1.VIDEO.1, OUT
.SDI.2.VIDEO.1, OUT.SDI.3.VIDEO.1, OUT.SDI.4.VIDEO.1, OUT.SDI.5.VIDEO.1, OUT.SDI.6.
VIDEO.1, OUT.SDI.7.VIDEO.1, OUT.SDI.8.VIDEO.1]`

Protocol 3000 Commands

This section lists and describes all the commands of Protocol 3000.

- [System Commands - Mandatory](#)
- [System Commands](#)
- [File System Commands](#)
- [Authentication Commands](#)
- [Switching/Routing Commands](#)
- [Video Commands](#)
- [Audio Commands](#)
- [Communication Commands](#)
- [Multiviewer/Scaler Commands](#)
- [EDID Handling Commands](#)
- [Step-in Commands](#)
- [I/O Gateway Commands](#)
- [Streamer Commands](#)

System Commands - Mandatory

All devices running Protocol 3000 use these commands.

Command	Description	Type	Permission
#	Protocol handshaking	System-mandatory	End User
BUILD-DATE?	Get device build date	System-mandatory	End User
FACTORY	Reset to factory default configuration	System-mandatory	End User
HELP	Get command list	System-mandatory	End User
MODEL?	Get device model	System-mandatory	End User
PROT-VER?	Get device protocol version	System-mandatory	End User
RESET	Reset device	System-mandatory	Administrator
SN?	Get device serial number	System-mandatory	End User
VERSION?	Get device firmware version	System-mandatory	End User

#

Command Name		Permission	Transparency
Set:	#	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Protocol handshaking	#	CR
Get:	-	-	-
Response			
~nn@SPOKCR LF			
Parameters			
Response Triggers			
Notes			
Validates the Protocol 3000 connection and gets the machine number Step-in master products use this command to identify the availability of a device			

BUILD-DATE?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	BUILD-DATE?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get device build date	#BUILD-DATE? <input type="text"/>	
Response			
~nn@BUILD-DATE _{SP} date _{SP} time _{CR LF}			
Parameters			
date - Format: YYYY/MM/DD where YYYY = Year, MM = Month, DD = Day			
time - Format: hh:mm:ss where hh = hours, mm = minutes, ss = seconds			
Response Triggers			
Notes			

FACTORY

Command Name		Permission	Transparency
Set:	FACTORY	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Reset device to factory default configuration	#FACTORY <code>CR</code>	
Get:	-	-	
Response			
~ <code>nn</code> @FACTORY <code>SP</code> OK <code>CR LF</code>			
Parameters			
Response Triggers			
Notes			
This command deletes all user data from the device. The deletion can take some time. Your device may require powering off and powering on for the changes to take effect.			

HELP

Command Name		Permission	Transparency
Set:	-	-	-
Get:	HELP	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get command list or help for specific command	2 options: 1. #HELP _{CR} 2. #HELP _{SP} command_name _{CR}	
Response			
1. Multi-line: ~ _{nn} @Device available protocol 3000 commands: _{CR LF} command, _{SP} command... _{CR LF} To get help for command use: HELP (COMMAND_NAME) _{CR LF} 2. Multi-line: ~ _{nn} @HELP _{SP} command: _{CR LF} description _{CR LF} USAGE: usage _{CR LF}			
Parameters			
Response Triggers			
Notes			

MODEL?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	MODEL?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get device model	#MODEL? _{CR}	
Response			
~ _{nn} @MODEL _{SP} <i>model_name</i> _{CR LF}			
Parameters			
<i>model_name</i> - string of up to 19 printable ASCII chars			
Response Triggers			
Notes			
This command identifies equipment connected to Step-in master products and notifies of identity changes to the connected equipment. The Matrix saves this data in memory to answer REMOTE-INFO requests			

PROT-VER?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	PROT-VER?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get device protocol version	#PROT-VER? <div></div>	
Response			
~ <div></div> @PROT-VER _{SP} 3000:version _{CR LF}			
Parameters			
version - XX.XX where X is a decimal digit			
Response Triggers			
Notes			

RESET

Command Name		Permission	Transparency
Set:	RESET	Administrator	Public
Get:	-	-	-
Description		Syntax	
Set:	Reset device	#RESET <code>CR</code>	
Get:	-	-	
Response			
~ <code>nn</code> @RESET <code>SP</code> OK <code>CR LF</code>			
Parameters			
Response Triggers			
Notes			
To avoid locking the port due to a USB bug in Windows, disconnect USB connections immediately after running this command. If the port was locked, disconnect and reconnect the cable to reopen the port.			

SN?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	SN?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get device serial number	#SN? <div>CR</div>	
Response			
~nn@SN <div>SP</div> serial_number <div>CR LF</div>			
Parameters			
serial_number - 14 decimal digits, factory assigned			
Response Triggers			
Notes			

VERSION?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	VERSION?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get firmware version number	#VERSION? <div>CR</div>	
Response			
~nn@VERSION <div>SP</div> firmware_version <div>CR LF</div>			
Parameters			
firmware_version - XX.XX.XXXX where the digit groups are: major.minor.build version			
Response Triggers			
Notes			

System Commands

Command	Description	Type	Permission
AV-SW-MODE	Set/get auto switch mode	System	End user
AV-SW-TIMEOUT	Set/get auto switching timeout	System	End user
BAUD	Set/get protocol serial port baud rate	System	End User
DISPLAY?	Get output HPD status	Switch	End User
DPSW-STATUS?	Get the DIP-switch status	System	End User
FEATURE-LIST	Get feature state according to feature ID	System	End User
FPGA-VER?	Get current FPGA version	System	End User
GLOBAL-POE	Set global power over Ethernet ON/OFF Get global power over Ethernet status	System	End User
HDCP-MOD	Set/get HDCP mode	System	Administrator
HDCP-STAT?	Get HDCP signal status	System	End user
HW-TEMP?	Get temperature of a specific region of the hardware	System	End user
IDV	Set visual indication from device	System	End User
IN-FIRST-IN	Device notification	System	End User
IN-LAST-OUT	Device notification	System	End User
INFO-IO?	Get in/out count	System	End User
INFO-PRST?	Get maximum preset count	System	End User
IREN	Set/get IR interface state	System	End User
LABEL	Set/get input/output label	System	End User
LDFPGA	Load new FPGA file	System - Packets	Administrator
LDFW	Load new firmware file	System	End User Internal SW
LOCK-FP	Set/get front panel lock	System	Administrator
LOG-TAIL?	Get the last “n” lines of message logs	System	End User
MACH-NUM	Set machine number	System	Administrator
MODULE-TYPE	Set/set module type	System	End User
MODULE-VER	Get module version	System	End User
NAME	Set/get machine (DNS) name	System	Administrator
NAME-RST	Reset machine name to factory default (DNS)	System	Administrator
P2000	Switch to Protocol 2000	System	End User
PORT-DIRECTION	Set port direction for video port	System	End User
PORTS-LIST?	Get the port list of this machine	System	End User
POWER-SAVE	Set/get power save mode	System	Administrator
PRI0	Set/get input priority	System	Administrator
PRIORITY	Set/get priority for all channels	System	Administrator
PRST-AUD?	Get audio connections from saved preset	System	End User
PRST-LOCK	Set/get a preset as read-only	System	End User
PRST-LST?	Get saved preset list	System	End User
PRST-RCL	Recall saved preset list	System	End User
PRST-STO	Store current connections to preset	System	End User
PRST-VID?	Get video connections from saved preset	System	End User
SIGNAL?	Get input signal status	System	End User
SIGNALS-LIST?	Get signal ID list of this machine	System	End User
STANDBY	Set/get standby mode	System	End User
TIME	Set/get device time and date	System	Administrator
TIME-LOC	Set/get local time offset from UTC/GMT	System	End User

Command	Description	Type	Permission
X-AV-SW-MODE	Set/get auto-switch mode per output	System	End User
X-FOLLOWERS-SW-MODE	Set/get auto-switch mode for a layer of followers for a given input signal	Switching/routing	End User
X-LABEL	Set/get the port label	System	End User
X-MTX-SET-INPUT	Set/get auto switching input signals group per output	Routing	End User
X-PORT-SELECT	Select/get ID from selectable ports group	System	End User
X-PORT-SELECT-LIST?	Get selected id of selectable ports groups of all available groups.	System	End User
X-PRIORITY	Set/get auto switching input signals group & priorities per output	Routing	End User
X-SET-FOLLOWERS	Set/get followers list of a given input signal	Video	End User
X-SIGNAL?	Get input signal status	System	End User

AV-SW-MODE

Command Name		Permission	Transparency
Set:	AV-SW-MODE	End user	Public
Get:	AV-SW-MODE?	End user	Public
Description		Syntax	
Set:	Set input auto switch mode (per output)	#AV-SW-MODE _{SP} /layer,output_id,mode _{CR}	
Get:	Get input auto switch mode (per output)	#AV-SW-MODE? _{SP} /layer,output_id _{CR}	
Response			
~nn@AV-SW-MODE _{SP} /layer,output_id,mode _{CR LF}			
Parameters			
layer – see Layer Enumeration output_id - 1....num of system outputs mode - 0 - manual 1 - priority switch 2 - last connected switch			
Response Triggers			
Notes			

AV-SW-TIMEOUT

Command Name		Permission	Transparency
Set:	AV-SW-TIMEOUT	End User	Public
Get:	AV-SW-TIMEOUT?	End User	Public
Description		Syntax	
Set:	Set auto switching timeout	#AV-SW-TIMEOUT _{SP} <i>action,time_out</i> _{CR}	
Get:	Get auto switching timeout	#AV-SW-TIMEOUT? _{SP} <i>action</i> _{CR}	
Response			
~ _{NN} @AV-SW-TIMEOUT _{SP} <i>action,time_out</i> _{CR}			
Parameters			
<i>action</i> - see Video/Audio Signal Changes			
<i>time_out</i> - timeout in seconds			
Response Triggers			
Notes			

BAUD

Command Name		Permission	Transparency
Set:	BAUD	Administrator	Public
Get:	BAUD?	Administrator	Public
Description		Syntax	
Set:	Set protocol serial port baud rate	#BAUD _{SP} <i>baud_rate</i> _{CR}	
Get:	Get protocol serial port baud rate (Option 1 - for current baud rate, Option 2 - for list of supported baud rates)	Option 1: #BAUD? _{CR}	
		Option 2: #BAUD? _{SP} <i>baud_param</i> _{CR}	
Response			
~ _{NN} @BAUD _{SP} <i>baud_rate</i> _{CR LF}			
Option 1: ~ _{NN} @BAUD _{SP} <i>current_baud_rate</i> _{CR LF}			
Option 2: ~ _{NN} @BAUD _{SP} <i>baud_rate1,baud_rate2,...</i> _{CR LF}			
Parameters			
<i>baud_rate</i> - 9600 / 115200 / else - new baud rate to set			
<i>current_baud_rate</i> - 9600 / 115200 / else - current protocol serial port baud rate			
<i>baud_param</i> - 0 - get the list of supported baud rates			
<i>baud_rate1, baud_rate2, ...</i> - list of supported baud rates			
Response Triggers			
Notes			
The new defined baud rate is stored in the EEPROM and used when powering up			
Default baud rate is 115200 (on factory reset)			
Only works with devices supporting this command (if <i>ERR 002</i> is returned, the default baud rate is used)			

DISPLAY?

Command Name		Permission	Transparency
Set:	-	-	-
Get	DISPLAY?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get output HPD status	#DISPLAY? _{SP} _{out_id} _{CR}	
Response			
~ _{nn} @DISPLAY _{SP} _{out_id,status} _{CR LF}			
Parameters			
<i>out_id</i> - output number			
<i>status</i> - HPD status according to signal validation (see Signal Validation)			
Response Triggers			
After execution, response is sent to the com port from which the Get was received			
Response is sent after every change in output HPD status ON to OFF			
Response is sent after every change in output HPD status OFF to ON and ALL parameters (new EDID, etc.) are stable and valid			
Notes			

DPSW-STATUS?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	DPSW-STATUS?	End User	Public
Description		Syntax	
Set:	-	-	
Get :	Get the DIP-switch state	# DPSW-STATUS? _{SP} _{dp_sw_id} _{CR}	
Response			
~ _{nn} @DPSW-STATUS? _{SP} _{dp_sw_id, status} _{CR LF}			
Parameters			
<i>dp_sw_id</i> - 1....num of DIP switches <i>status</i> - 0: up 1: down			
Response Triggers			
Notes			

FEATURE-LIST?

Command Name		Permission	Transparency
Set:	–	–	–
Get:	FEATURE-LIST?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get feature state according to the feature ID	# FEATURE-LIST? [SP] [id] [CR]	
Response			
~ [nn] @FEATURE-LIST [SP] [id,enable] [CR LF]			
Parameters			
<i>id</i> - see Feature ID			
<i>enable</i> - disable (0), enable (1)			
Response Triggers			
Notes			

FPGA-VER?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	FPGA-VER?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get current FPGA version	#FPGA-VER? [SP] [id] [CR]	
Response			
~ [nn] @FPGA-VER [SP] [id,expected_ver,actual_ver] [CR LF]			
Parameters			
<i>id</i> - FPGA id			
<i>expected_ver</i> - expected FPGA version for current firmware			
<i>actual_ver</i> - actual FPGA version			
Response Triggers			
Notes			

GLOBAL-POE

Command Name		Permission	Transparency
Set:	GLOBAL-POE	End User	Public
Get:	GLOBAL-POE?	End User	Public
Description		Syntax	
Set:	Set global power over Ethernet ON/OFF	#GLOBAL-POE _{SP} state _{CR LF}	
Get:	Get power over Ethernet state	#GLOBAL-POE? _{CR LF}	
Response			
Get: ~ _{nn} @GLOBAL-POE _{SP} state _{CR LF}			
Parameters			
state – ON/OFF (not case sensitive)			
Response Triggers			
Notes			
This is an Extended Protocol 3000 command			
Example			
#GLOBAL-POE ON			
~01@GLOBAL-POE ON			
#GLOBAL-POE?			
~01@GLOBAL-POE ON			

HDCCP-MOD

Command Name		Permission	Transparency
Set:	HDCCP-MOD	Administrator	Public
Get:	HDCCP-MOD?	End User	Public
Description		Syntax	
Set:	Set HDCCP mode	#HDCCP-MOD _{SP} inp_id,mode _{CR}	
Get:	Get HDCCP mode	#HDCCP-MOD? _{SP} stage_id _{CR}	
Response			
Set / Get: ~nn@HDCCP-MOD _{SP} stage_id,mode _{CR LF}			
Parameters			
inp_id - input number (1.. max number of inputs) mode - HDCCP mode (see HDCCP Types) stage_id - number of chosen stage (1.. max number of inputs/outputs)			
Response Triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received Response is sent to all com ports after execution if HDCCP-MOD was set by any other external control device (button press, device menu and similar) or HDCCP mode changed			
Notes			
Set HDCCP working mode on the device input: HDCCP supported - HDCCP_ON [default] HDCCP not supported - HDCCP OFF HDCCP support changes following detected sink - MIRROR OUTPUT			

HDCP-STAT?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	HDCP-STAT?	End User	Public
Description		Syntax	
Set:	None	-	
Get:	Get HDCP signal status	#HDCP-STAT? _{SP} stage,stage_id _{CR}	
Response			
Set / Get: ~nn@HDCP-STAT _{SP} stage,stage_id,status _{CR LF}			
Parameters			
stage – input/output (see Stage)			
stage_id - number of chosen stage (1.. max number of inputs/outputs)			
status - signal encryption status - valid values ON/OFF (see HDCP Types)			
Response Triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received			
Response is sent to all com ports after execution if HDCP-STAT was set by any other external control device (button press, device menu and similar) or HDCP mode changed			
Notes			
On output – sink status			
On input – signal status			

HW-TEMP?

Command Name		Permission	Transparency
Set:	-	-	-
Get	HW-TEMP?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get temperature of a specific region of the hardware.	#HW-TEMP? _{SP} region_id _{CR}	
Response			
~nn@HW-TEMP _{SP} region_id,temperature _{CR LF}			
Parameters			
region_id – ID of the region for which to get the temperature 0 – first CPU			
temperature – temperature in Celsius of the HW region, rounded down to the closest integer			
Response Triggers			
After execution, response is sent to the com port from which the Get was received			
Notes			
There is no “Set” command. The Get command is not available for all parts of the hardware, and is device specific			

IDV

Command Name		Permission	Transparency
Set:	IDV	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Set visual indication from device	#IDV <code>CR</code>	
Get:	-	-	
Response			
~nn@IDV <code>SP</code> OK <code>CR LF</code>			
Parameters			
Response Triggers			
Notes			
Using this command, some devices can light a sequence of buttons or LEDs to allow identification of a specific device from similar devices			

IN-FIRST-IN

Command Name		Permission	Transparency
Set:	-	End User	Public
Get:	-	End User	Public
Description		Syntax	
Set:	-	-	
Get:	-	-	
Response			
~nn@IN-FIRST-IN _{CR LF}			
Parameters			
Response Triggers			
Notes			
This is a notification from the device. This notification may be tracked in order to act upon it.			

IN-LAST-OUT

Command Name		Permission	Transparency
Set:	-	End User	Public
Get:	-	End User	Public
Description		Syntax	
Set:	-	-	
Get:	-	-	
Response			
~nn@IN-LAST-OUT _{CR LF}			
Parameters			
Response Triggers			
Notes			
This is a notification from the device. This notification may be tracked in order to act upon it.			

INFO-IO?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	INFO-IO?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get in/out count	#INFO-IO? <div></div>	
Response			
~ <div></div> <div></div> @INFO-IO? <div></div> IN <div></div> <div></div> inputs_count,OUT <div></div> outputs_count <div></div> <div></div>			
Parameters			
inputs_count - number of inputs in the unit			
outputs_count - number of outputs in the unit			
Response Triggers			
Notes			

INFO-PRST

Command Name		Permission	Transparency
Set:	-	-	-
Get:	INFO-PRST	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get maximum preset count	#INFO-PRST _{CR}	
Response			
~nn@INFO-PRST _{SP} VID _{SP} preset_video_count,AUD _{SP} preset_audio_count _{CR LF}			
Parameters			
preset_video_count - maximum number of video presets in the unit			
preset_audio_count - maximum number of audio presets in the unit			
Response Triggers			
Notes			
In most units, video and audio presets with the same number are stored and recalled together by commands #PRST-STO and #PRST-RCL			

IREN

Command Name		Permission	Transparency
Set:	IREN	End User	Public
Get:	IREN?	End User	Public
Description		Syntax	
Set:	Set IR interface state	#IREN <code>SP</code> <code>enable</code> <code>CR</code>	
Get:	Get IR interface state	#IREN? <code>CR</code>	
Response			
~ <code>nn</code> @IREN <code>SP</code> <code>enable</code> <code>CR LF</code>			
Parameters			
<code>enable</code> - 0 - disable IR interface 1 - enable IR interface			
Response Triggers			
Notes			

LABEL

Command Name		Permission	Transparency
Set:	LABEL	End User	Public
Get:	LABEL?	End User	Public
Description		Syntax	
Set:	Set input/output label	# LABEL _{SP} stage,stage_id,switch,label _{CR}	
Get:	Get input/output label	# LABEL? _{SP} stage_id _{CR}	
Response			
~nn@LABEL _{SP} stage,stage_id,switch,label _{CR LF}			
Parameters			
stage – see Stage stage_id – input/ output number switch – on/off (enable/disable) custom label label – custom label string			
Response Triggers			
Notes			

LDFPGA

Command Name		Permission	Transparency
Set:	LDFPGA	Internal SW	Public
Get:	-	-	-
Description		Syntax	
Set:	Load new FPGA file	Step 1: #LDFPGA _{SP} size _{SP} CRC fpga_id,force _{CR} Step 2: If ready was received, send FPGA_DATA	
Get:	-	-	
Response			
Response 1: ~nn@LDFPGA _{SP} size _{SP} READY _{CR LF} or ~nn@LDFW _{SP} ERRnn _{CR LF}			
Response 2: ~nn@LDFPGA _{SP} size _{SP} OK _{CR LF}			
Parameters			
<i>size</i> -size of firmware data that is sent <i>CRC</i> - FPGA file CRC (see appendix) <i>fpga_id</i> - FPGA ID (if there are more than one). Default - 1 <i>force</i> – 1, ignore CRC calculation FPGA_DATA - *.rbf file in protocol packets (see Packet Protocol Structure)			
Response Triggers			
Notes			
See Protocol Packet reference in Packet Protocol Structure . Use this command in dedicated SW application			

LDFW

Command Name		Permission	Transparency
Set:	LDFW	Internal SW	Public
Get:	-	-	-
Description		Syntax	
Set:	Load new firmware file	Step 1: #LDFW _{SP} <u>size</u> _{CR} Step 2: If ready was received, send <u>FIRMWARE_DATA</u>	
Get:	-	-	
Response			
Response 1: ~ <u>nn</u> @LDFW _{SP} <u>size</u> _{SP} READY _{CR LF} or ~ <u>nn</u> @LDFW _{SP} ERRnn _{CR LF}			
Response 2: ~ <u>nn</u> @LDFW _{SP} <u>size</u> _{SP} OK _{CR LF}			
Parameters			
<u>size</u> - size of firmware data that is sent			
<u>FIRMWARE_DATA</u> - HEX or KFW file in protocol packets (see Packet Protocol Structure)			
Response Triggers			
Notes			
In most devices firmware data is saved to flash memory, but the memory does not update until receiving the “UPGRADE” command and is restarted. See Protocol Packet reference in Packet Protocol Structure . Use this command in dedicated SW application			

LOCK-FP

Command Name		Permission	Transparency
Set:	LOCK-FP	End User	Public
Get:	LOCK-FP?	End User	Public
Description		Syntax	
Set:	Lock the front panel	#LOCK-FP _{SP} Lock/Unlock _{CR}	
Get:	Get the front panel lock state	#LOCK-FP? _{CR}	
Response			
~nn@LOCK-FP _{SP} Lock/Unlock _{CR LF}			
Parameters			
Lock/Unlock – 0 (unlock), 1 (lock)			
Response Triggers			
Notes			
In NT-52N, this command includes the <i>PortNumber</i> (1-2) parameter			

LOG-TAIL?

Command Name		Permission	Transparency
Set:	–	–	–
Get:	LOG-TAIL?	End User	Public
Description		Syntax	
Set:	–	–	
Get:	Get the last “n” lines of message logs	#LOG-TAIL? _{SP} <i>line_num</i> _{CR LF}	
Response			
Get: ~ _{nn} @LOG-TAIL? _{CR LF} Line content #1 _{CR LF} Line content #2 _{CR LF} Etc...			
Parameters			
<i>Line_num</i> : optional, default <i>line_num</i> is 10			
Response Triggers			
Notes			
Used for advanced troubleshooting. Helps find error root causes and gets details not displayed in the error code number.			
Example			
#NAME %66yy ~01@NAME %66yy ERR 003 #LOG-TAIL? 1 2015-09-14 09:13:12:566 ERROR P3K_Common_Cmd Invalid name character %(37) - only alphanumeric and hyphen are allowed			

MACH-NUM

Command Name		Permission	Transparency
Set:	MACH-NUM	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Set machine number	#MACH-NUM _{SP} machine_number _{CR}	
Get:	-	-	
Response			
~nn@MACH-NUM _{SP} machine_number _{CR LF}			
Parameters			
machine_number - new device machine number			
Response Triggers			
Notes			
Some devices do not set the new machine number until the device is restarted Some devices can change the machine number only from DIP-switches			

MODULE-TYPE

Command Name		Permission	Transparency
Set:	MODULE -TYPE	End User	Public
Get:	MODULE -TYPE?	End User	Public
Description		Syntax	
Set:	Set module type	#MODULE-TYPE _{SP} <i>m_id,m_type</i> _{CR}	
Get:	Get module type	#MODULE-TYPE? _{SP} <i>m_id</i> _{CR}	
Response			
~ _{nn} @ MODULE-TYPE _{SP} <i>m_id,m_type,status</i> _{CR LF}			
Parameters			
<i>m_id</i> – module id (slot number) <i>m_type</i> – module type (refer module types table – device specific) <i>status</i> – module status (refer module status table - device specific)			
Response Triggers			
Notes			
Some devices do not set the new machine number until the device is restarted Some devices can change the machine number only from DIP-switches			

MODULE-VER

Command Name		Permission	Transparency
Set:	MODULE - VER	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	-	-	
Get:	Get module version	#MODULE- VER? _{SP} _{m_id} _{CR}	
Response			
~ _{nn} @ MODULE-VER _{SP} _{m_id} ,FW_version _{CR LF}			
Parameters			
<i>m_id</i> – module id (slot number)			
<i>FW_version</i> – XX.XX.XXXX where the digit groups are: major.minor.build version			
Response Triggers			
Notes			
Some devices do not set the new machine number until the device is restarted			
Some devices can change the machine number only from DIP-switches			

NAME

Command Name		Permission	Transparency
Set:	NAME	Administrator	Public
Get:	NAME?	End User	Public
Description		Syntax	
Set:	Set machine (DNS) name	#NAME _{SP} <i>machine_name</i> _{CR}	
Get:	Get machine (DNS) name	#NAME? _{CR}	
Response			
Set: ~ _{nn} @NAME _{SP} <i>machine_name</i> _{CR LF}			
Get: ~ _{nn} @NAME? _{SP} <i>machine_name</i> _{CR LF}			
Parameters			
<i>machine_name</i> - string of up to 15 alpha-numeric chars (can include hyphen, not at the beginning or end)			
Response Triggers			
Notes			
The machine name is not the same as the model name. The machine name is used to identify a specific machine or a network in use (with DNS feature on)			

NAME-RST

Command Name		Permission	Transparency
Set:	NAME-RST	Administrator	Public
Get:	-	-	-
Description		Syntax	
Set:	Reset machine (DNS) name to factory default	#NAME-RST <code>[CR]</code>	
Get:	-	-	
Response			
~nn@NAME-RST <code>[SP]</code> OK <code>[CR LF]</code>			
Parameters			
Response Triggers			
Notes			
Factory default of machine (DNS) name is “KRAMER ” + 4 last digits of device serial number			

P2000

Command Name		Permission	Transparency
Set:	P2000	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Switch to Protocol 2000	#P2000	
Get:	-	-	
Response			
~nn@P2000OK			
Parameters			
Response Triggers			
Notes			
Available only for devices that support Protocol 2000 Protocol 2000 has a command to switch back to an ASCII protocol like Protocol 3000			

PORT-DIRECTION

Command Name		Permission	Transparency
Set:	PORT-DIRECTION	End User	Public
Get:	PORT-DIRECTION?	End User	Public
Description		Syntax	
Set:	Set port direction for video port	#PORT-DIRECTION _[SP] <i>port_index,direction</i> _[CR LF]	
Get:	Get port direction for video port	#PORT-DIRECTION? _[SP] <i>port_index,direction</i> _[CR LF]	
Response			
Set / Get: ~nn@PORT-DIRECTION _[SP] <i>port_index,direction</i> _[CR LF]			
Parameters			
<i>port_index</i> - port number from the front panel (1-n)			
<i>direction</i> - input (IN), output (OUT)			
Response Triggers			
Notes			
This command defines the direction of a bidirectional port. Then routing is possible between them, use X-ROUTE as following: #X-ROUTE OUT.SDI.5,IN.SDI.1 ~01@X-ROUTE OUT.SDI.5.VIDEO.1,IN.SDI.1.VIDEO.1			
Example			
Set: #PORT-DIRECTION 5,OUT			

PORTS-LIST

Command Name		Permission	Transparency
Set:	–	–	–
Get:	PORTS-LIST?	End User	Public
Description		Syntax	
Set:	–	–	
Get:	Get the port list of this machine	#PORTS-LIST? 	
Response			
~nn@PORTS-LIST [<i>port_id</i> ,...] 			
Parameters			
<i>port_id</i> – see Port ID Format			
Response Triggers			
Notes			
The response is returned in one line and terminated with 			
The response format lists port IDs separated by commas.			
This is an Extended Protocol 3000 command			
Examples			
#PORTS-LIST?			
~01@PORTS-LIST			
[IN.SDI.1,IN.SDI.2,IN.SDI.3,IN.SDI.4,OUT.SDI.5,OUT.SDI.6,OUT.SDI.7,OUT.SDI.8]			

POWER-SAVE

Command Name		Permission	Transparency
Set:	POWER-SAVE	Administrator	Public
Get:	POWER-SAVE?	End User	Public
Description		Syntax	
Set:	Set power save mode	#POWER-SAVE <code>[SP]</code> <code>mode</code> <code>[CR]</code>	
Get:	Get power save mode	#POWER-SAVE? <code>[CR]</code>	
Response			
~ <code>[nn]</code> @POWER-SAVE <code>[SP]</code> <code>mode</code> <code>[CR LF]</code>			
Parameters			
Set <i>mode</i> – 0/OFF - deactivates power saving mode, 1/ON - activates power saving mode			
Get <i>mode</i> – OFF when power saving mode is not active, ON when power saving mode is active			
Response Triggers			
Notes			

PRIO

Command Name		Permission	Transparency
Set:	PRIO	Administrator	Public
Get	PRIO?	Administrator	Public
Description		Syntax	
Set:	Set input priority	#PRIO _{SP} input_id,prio _{CR}	
Get:	Get input priority	#PRIO? _{SP} input_id _{CR}	
Response			
~nn@PRIO _{SP} input_id,prio _{CR LF}			
Parameters			
input_id - window number setting new source			
prio - assigned priority (1.. max priority)			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received			
After execution, response is sent to all com ports if PRIO was set by any other external control device (button press, device menu and similar)			
Notes			
The PRIO max value may vary for different devices			

PRIORITY

Command Name		Permission	Transparency
Set:	PRIORITY	Administrator	Public
Get:	PRIORITY?	Administrator	Public
Description		Syntax	
Set:	Set input priority	# PRIORITY _{SP} layer,PRIORITY1, PRIORITY2... PRIORITYn _{CR}	
Get:	Get input priority	# PRIORITY?layer _{CR}	
Response			
~nn@PRIORITY _{SP} layer,PRIORITY1, PRIORITY2... PRIORITYn _{CR LF}			
Parameters			
layer – see Layer Enumeration PRIORITY1 - priority of first input PRIORITYn- priority of input n			
Response Triggers			
Notes			
WP-577VH – layer parameter is not used			

PRST-AUD?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	PRST-AUD?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get audio connections from saved preset	#PRST-AUD? _[SP] <i>preset,out</i> _[CR] #PRST-AUD? _[SP] <i>preset,*</i> _[CR]	
Response			
~ _[nn] @PRST-AUD _[SP] <i>preset, in>out</i> _[CR LF]			
~ _[nn] @PRST-AUD _[SP] <i>preset, in>1, in>2, in>3,...</i> _[CR LF]			
Parameters			
<i>preset</i> - preset number <i>n</i> - input number or '0' if output is disconnected > - Connection character between in and out parameters <i>out</i> - Output number or '*' for all outputs			
Response Triggers			
Notes			
In most units, video and audio presets with the same number are stored and recalled together by commands #PRST-STO and #PRST-RCL			

PRST-LOCK

Command Name		Permission	Transparency
Set:	PRST-LOCK	End User	Public
Get:	PRST-LOCK?	End User	Public
Description		Syntax	
Set:	Set a preset as read-only	#PRST-LOCK _[SP] <i>preset_Index,mode</i> _[CR LF]	
Get:	Get the preset read-only status	#PRST-LOCK? _[SP] <i>preset_Index</i> _[CR LF]	
Response			
Set / Get: ~ _[nn] @PRST-LOCK _[SP] <i>preset_Index,mode</i> _[CR LF]			
Parameters			
<i>preset_Index</i> - preset number (1–n) <i>mode</i> - ON, OFF			
Response Triggers			
Notes			
Prevents users from overriding the preset by mistake			
Examples			
#PRST-LOCK? 1 ~01@PRST-LOCK 1,OFF #PRST-LOCK? 2 ~01@PRST-LOCK 2,OFF #PRST-LOCK 2,ON ~01@PRST-LOCK 2,ON #PRST-LOCK? 2 ~01@PRST-LOCK 2,ON			

PRST-LST?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	PRST-LST?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get saved preset list	#PRST-LST? <div></div>	
Response			
~ <div></div> @PRST-LST <div></div> <i>preset,preset,...</i> <div></div> <div></div>			
Parameters			
<i>preset</i> - preset number			
Response Triggers			
Notes			
In most units, video and audio presets with the same number are stored and recalled together by commands #PRST-STO and #PRST-RCL			

PRST-RCL

Command Name		Permission	Transparency
Set:	PRST-RCL	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Recall saved preset list	#PRST-RCL ^[SP] <i>preset</i> ^[CR]	
Get:	-	-	
Response			
~ ^[nn] @PRST-RCL ^[SP] <i>preset</i> ^[CR LF]			
Parameters			
<i>preset</i> - preset number			
Response Triggers			
Notes			
In most units, video and audio presets with the same number are stored and recalled together by commands #PRST-STO and #PRST-RCL			

PRST-STO

Command Name		Permission	Transparency
Set:	PRST-STO	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Store current connections, volumes and modes in preset	#PRST-STO _[SP] <i>preset</i> _[CR]	
Get:	-	-	
Response			
~ _[nn] @PRST-STO _[SP] <i>preset</i> _[CR LF]			
Parameters			
<i>preset</i> - preset number			
Response Triggers			
Notes			
In most units, video and audio presets with the same number are stored and recalled together by commands #PRST-STO and #PRST-RCL			

PRST-VID?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	PRST-VID?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get video connections from saved preset	#PRST-VID? [SP] <i>preset,out</i> [CR] #PRST-VID? [SP] <i>preset,*</i> [CR]	
Response			
~ [nn] @PRST-VID [SP] <i>preset,in>out</i> [CR LF] ~ [nn] @PRST-VID [SP] <i>preset,in>1,in>2,in>3,...</i> [CR LF]			
Parameters			
<i>preset</i> - preset number <i>in</i> - input number or '0' if output disconnected > - connection character between in and out parameters <i>out</i> - output number or '*' for all outputs			
Response Triggers			
Notes			
In most units, video and audio presets with the same number are stored and recalled together by commands #PRST-STO and #PRST-RCL			
Examples			
Store current audio and video connections, volumes and modes to preset 5	#PRST-STO 5 [CR]	~PRST-STO 5 [CR LF]	
Recall audio and video connections from preset 3	#PRCL 3 [CR]	~PRST-RCL 3 [CR LF]	
Show source of video output 2 from preset 3	#PRST-VID? 3,2 [CR]	~PRST-VID 3, 4>2 [CR LF]	

SIGNAL?

Command Name		Permission	Transparency
Set:	-	-	-
Get	SIGNAL?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get input signal status	#SIGNAL? _{SP} <i>inp_id</i> _{CR}	
Response			
~ _{NN} @SIGNAL _{SP} <i>inp_id,status</i> _{CR LF}			
Parameters			
<i>inp_id</i> - input number <i>status</i> - signal status (see Input Signal Status)			
Response Triggers			
After execution, a response is sent to the com port from which the Get was received Response is sent after every change in input signal status ON to OFF, or OFF to ON			
Notes			

SIGNALS-LIST

Command Name		Permission	Transparency
Set:	–	–	–
Get:	SIGNALS-LIST?	End User	Public
Description		Syntax	
Set:	–	–	
Get:	Get signal ID list of this machine	#SIGNALS-LIST? <div>CR LF</div>	
Response			
~ <div>NN</div> @SIGNALS-LIST <div>SP</div> [<i>signal_id</i> ,...] <div>CR LF</div>			
Parameters			
<i>signal_id</i> – see Signal ID Format			
Response Triggers			
Notes			
<p>The response is returned in one line and terminated with <div>CR LF</div></p> <p>The response format lists signal IDs separated by commas.</p> <p>This is an Extended Protocol 3000 command</p>			
Examples			
#SIGNALS-LIST? ~01@SIGNALS-LIST [IN.SDI.1.VIDEO.1,IN.SDI.2.VIDEO.1,IN.SDI.3.VIDEO.1,IN.SDI.4.VIDEO.1, IN.SDI.5.VIDEO.1,IN.SDI.6.VIDEO.1,IN.SDI.7.VIDEO.1,IN.SDI.8.VIDEO.1, OUT.SDI.1.VIDEO.1,OUT.SDI.2.VIDEO.1,OUT.SDI.3.VIDEO.1,OUT.SDI.4.VIDEO.1, OUT.SDI.5.VIDEO.1,OUT.SDI.6.VIDEO.1,OUT.SDI.7.VIDEO.1,OUT.SDI.8.VIDEO.1]			

STANDBY

Command Name		Permission	Transparency
Set:	STANDBY	End User	Public
Get:	STANDBY?	End User	Public
Description		Syntax	
Set:	Set standby mode	# STANDBY _{SP} on_off _{CR}	
Get:	Get standby mode status	# STANDBY? _{CR}	
Response			
~nn@STANDBY _{SP} value _{CR LF}			
Parameters			
value – OFF 0, ON 1 (see On/Off)			
Response Triggers			
Notes			

TIME

Command Name		Permission	Transparency
Set:	TIME	Administrator	Public
Get:	TIME?	End User	Public
Description		Syntax	
Set:	Set device time and date	#TIME _{SP} day_of_week,date,time _{CR}	
Get:	Get device time and date	#TIME? _{CR}	
Response			
~nn@TIME _{SP} day_of_week, date, time _{CR LF}			
Parameters			
day_of_week - one of {SUN,MON,TUE,WED,THU,FRI,SAT} date - format: DD-MM-YYYY. time - format: hh:mm:ss			
Response Triggers			
Notes			
The year must be 4 digits The device does not validate the day of week from the date Time format - 24 hours Date format - Day, Month, Year			

TIME-LOC

Command Name		Permission	Transparency
Set:	TIME-LOC	End User	Public
Get:	TIME-LOC?	End User	Public
Description		Syntax	
Set:	Set local time offset from UTC/GMT	#TIME-LOC _{SP} UTC_off,DayLight _{CR}	
Get:	Get local time offset from UTC/GMT	#TIME-LOC? _{CR}	
Response			
~nn@TIME-LOC _{SP} UTC_off,DayLight _{CR LF}			
Parameters			
UTC_off - offset of device time from UTC/GMT (without daylight time correction) DayLight - 0 - no daylight saving time, 1 - daylight saving time			
Response Triggers			
Notes			
If the time server is configured, device time calculates by adding UTC_off to UTC time (that it got from the time server) + 1 hour if daylight savings time is in effect TIME command sets the device time without considering these settings			

X-AV-SW-MODE

Command Name		Permission	Transparency
Set:	X-AV-SW-MODE	End User	Public
Get:	X-AV-SW-MODE?	End User	Public
Description		Syntax	
Set:	Set auto-switch mode per output	#X-AV-SW-MODE <code>[SP]</code> output_signal_id,mode <code>[CR LF]</code>	
Get:	Get auto-switch mode	#X-AV-SW-MODE? <code>[SP]</code> output_signal_id <code>[CR LF]</code>	
Response			
Get: ~nn@X-AV-SW-MODE <code>[SP]</code> output_signal_id,mode <code>[CR LF]</code>			
Parameters			
output_signal_id - see Signal ID Format mode – 0 manual, 1 priority, 2 last connected,			
Response Triggers			
Notes			
This is an Extended Protocol 3000 command			
Example			
#X-AV-SW-MODE OUT.HDMI.2.VIDEO.1,2 ~01@X-AV-SW-MODE OUT.HDMI.2.VIDEO.1,2 #X-AV-SW-MODE? OUT.HDMI.2.VIDEO.1 ~01@X-AV-SW-MODE OUT.HDMI.2.VIDEO.1,2			

X-FOLLOWERS-SW-MODE

Command Name		Permission	Transparency
Set:	X-FOLLOWERS-SW-MODE	End User	Public
Get:	X-FOLLOWERS-SW-MODE?	End User	Public
Description		Syntax	
Set:	Set auto-switch mode for a layer of followers for a given input signal.	#X-FOLLOWERS-SW-MODE _{SP} <i>input_signal_id,layer,strategy</i> <div>CR LF</div>	
Get:	Get auto-switch mode for a layer of followers for a given input signal.	#X-FOLLOWERS-SW-MODE? _{SP} <i>input_signal_id,layer</i> <div>CR LF</div>	
Response			
Get: ~nn@X-FOLLOWERS-SW-MODE _{SP} <i>input_signal_id, layer, strategy</i> <div>CR LF</div>			
Parameters			
<i>Input_signal_id</i> – see Signal ID Format <i>layer</i> – see Port Types <i>strategy</i> – 0 (manual), 1 (priority)			
Response Triggers			
Notes			
This is an Extended Protocol 3000 command			
Example			
#X-FOLLOWERS-SW-MODE IN.HDMI.1.VIDEO.1,AUDIO,1 ~01@ X-FOLLOWERS-SW-MODE IN.HDMI.1.VIDEO.1,AUDIO,1			

X-LABEL

Command Name		Permission	Transparency
Set:	X-LABEL	End User	Public
Get:	X-LABEL?	End User	Public
Description		Syntax	
Set:	Set the port label	#X-LABEL ^[] port_id,label_text ^[CR LF]	
Get:	Get the port label	#X-LABEL? ^[] port_id ^[CR LF]	
Response			
~ ^[nn] @X-LABEL ^[] port_id,label_text ^[CR LF]			
Parameters			
port_id - see Port ID Format			
label_text – ASCII characters without space			
Notes			
Labels are used commonly by WEB pages			
This is an Extended Protocol 3000 command			
Examples			
#X-LABEL OUT.HDMI.5,LG-28D			
~01@X-LABEL OUT.HDMI.5,LG-28D			

X-MTX-SET-INPUT

Command Name		Permission	Transparency
Set:	X-MTX-SET-INPUT	End User	Public
Get:	X-MTX-SET-INPUT?	End User	Public
Description		Syntax	
Set:	Set auto switching input signals group per output	#X-MTX-SET-INPUT _[SP] input_signal_id,[signal_id,...] _[CR LF]	
Get:	Get auto switching input signals group per output	#X-MTX-SET-INPUT? _[SP] input_signal_id _[CR LF]	
Response			
Get: ~nn@X-MTX-SET-INPUT _[SP] input_signal_id,[signal_id,...] _[CR LF]			
Parameters			
input_signal_id - see Signal ID Format			
list of signal_ids - see Signal ID Format			
Response Triggers			
Notes			
<p>The order of the inputs in the list is fixing implicitly the priority of each input in case the user choose later “Priority” auto switching strategy.</p> <p>The highest priority is 1, then 2 etc.. in the decreasing order.</p> <p>X-MTX-SET-INPUTS can be used to define the Group list for “Priority” auto-switching strategy.</p> <p>X-MTX-SET-INPUTS override X-PRIORITY configuration. Auto switching group list is common for all Auto switching strategies (last connected/ priority).</p> <p>This syntax uses the new convention of using brackets to define a list of fields “[]”</p> <p>This is an Extended Protocol 3000 command</p>			
Example			
#X-MTX-SET-INPUTS OUT.HDMI.1.VIDEO.1, [IN.HDMI.1.VIDEO.1, IN.HDMI.3.VIDEO.1] ~01@X-MTX-SET-INPUTS OUT.HDMI.1.VIDEO.1, [IN.HDMI.1.VIDEO.1, IN.HDMI.3.VIDEO.1]			
#X-MTX-SET-INPUTS? OUT.HDMI.1.VIDEO.1 ~01@X-MTX-SET-INPUTS OUT.HDMI.1.VIDEO.1, [IN.HDMI.1.VIDEO.1, IN.HDMI.3.VIDEO.1]			

X-PORT-SELECT

Command Name		Permission	Transparency
Set:	X-PORT-SELECT	End User	Public
Get:	X-PORT-SELECT?	End User	Public
Description		Syntax	
Set:	Select ID from selectable ports group	#X-PORT-SELECT ^[SP] group_name,selected_id ^[CR LF]	
Get:	Get selected ID of selectable ports group	#X-PORT-SELECT? ^[SP] group_name ^[CR LF]	
Response			
Get: ~ ^[nn] @X-PORT-SELECT ^[SP] group_name,selected_id, [option_id:[port_id,...,port_id],...,option_id:[port_id,...,port_id]] ^[CR LF]			
Parameters			
<i>group_name</i> – These are predefined groups names, related to a specific product. For example, in VS-88UT group names are: IN.AUDIO.1, ..., IN.AUDIO.4, IN.VIDEO.5,..., IN.VIDEO.8 <i>selected_id</i> – Currently selected option ID. <i>option_id</i> – Each option has an ID. Only one option may be selected at the same time. When a specific option is selected, all related port-id members become selected and all port-id members from other, unselected options, become unselected.			
Response Triggers			
Notes			
User may query group names using command: #X-PORT-SELECT-LIST? This command is designed to be used by machines and not by users. This command is used for feature auto-discovery mechanism. This is an Extended Protocol 3000 command			
Example			
#x-port-select? IN.AUDIO.1 ~01@X-PORT-SELECT IN.AUDIO.1,0,[0:[IN.ANALOG_AUDIO.1],1:[IN.MIC.1,IN.MIC.2]] #x-port-select? IN.VIDEO.5 ~01@X-PORT-SELECT IN.VIDEO.5,1,[0:[IN.HDMI.5],1:[IN.HDBT.5]]			

X-PORT-SELECT-LIST?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	X-PORT-SELECT-LIST?	End User	Public
Description		Syntax	
Get:	Get selected id of selectable ports groups of all available groups.	# X-PORT-SELECT-LIST? CR LF	
Response			
Get: ~ nn @X-PORT-SELECT-LIST? SP [[group_name,selected_id,[option_id:[port_id,...,port_id],...,option_id:[port_id,...,port_id]], ..., [group_name,selected_id,[option_id:[port_id,...,port_id],...,option_id:[port_id,...,port_id]]] CR LF			
Parameters			
Look at – #x-port-select command parameters description.			
Response Triggers			
Notes			
User may query group names using command: #X-PORT-SELECT-LIST? This is an Extended Protocol 3000 command			
Example			
#x-port-select-list? ~01@X-PORT-SELECT-LIST [[IN.AUDIO.1,0,[0:[IN.ANALOG_AUDIO.1],1:[IN.MIC.1,IN.MIC.2]]],[IN.AUDIO.2,0,[0:[IN.ANALOG_AUDIO.2],1:[IN.MIC.3,IN.MIC.4]]],[IN.AUDIO.3,0,[0:[IN.ANALOG_AUDIO.3],1:[IN.MIC.5,IN.MIC.6]]],[IN.AUDIO.4,0,[0:[IN.ANALOG_AUDIO.4],1:[IN.MIC.7,IN.MIC.8]]],[IN.VIDEO.5,1,[0:[IN.HDMI.5],1:[IN.HDBT.5]]],[IN.VIDEO.6,0,[0:[IN.HDMI.6],1:[IN.HDBT.6]]],[IN.VIDEO.7,0,[0:[IN.HDMI.7],1:[IN.HDBT.7]]],[IN.VIDEO.8,0,[0:[IN.HDMI.8],1:[IN.HDBT.8]]]]			

X-PRIORITY

Command Name		Permission	Transparency
Set:	X-PRIORITY	End User	Public
Get:	X-PRIORITY?	End User	Public
Description		Syntax	
Set:	Set auto switching input signals group & priorities per output	#X-PRIORITY _[SP] signal_id,[signal_id,...] _[CR LF]	
Get:	Get auto switching input signals group priorities per output	#X-PRIORITY? _[SP] signal_id _[CR LF]	
Response			
Get: ~ _[nn] @X-PRIORITY _[SP] master_signal_id,[signal_id,...] _[CR LF]			
Parameters			
<i>master_signal_id</i> - see Signal ID Format			
<i>list of signal_ids</i> - see Signal ID Format			
Response Triggers			
Notes			
<p>The order of the inputs in the list is fixing the order to the priority. The highest priority is 1, then 2 etc..</p> <p>X-PRIORITY is also defining implicitly the video inputs group list for Last-connected auto switching strategy.</p> <p>X-PRIORITY override X-MTX-SET-INPUTS configuration.</p> <p>Auto switching group list is common for all Auto switching strategies (last connected/ priority)</p> <p>This syntax uses the new convention of using brackets to define a list of fields “[]”</p> <p>This is an Extended Protocol 3000 command</p>			
Example			
<pre>#X-PRIORITY OUT.HDMI.7.VIDEO.1, [IN.HDMI.1.VIDEO.1, IN.HDMI.2.VIDEO.1, IN.HDMI.3.VIDEO.1] ~01@X-PRIORITY OUT.HDMI.7.VIDEO.1, [IN.HDMI.1.VIDEO.1,IN.HDMI.2.VIDEO.1,IN.HDMI.3.VIDEO.1] #X-PRIORITY? OUT.HDMI.7.VIDEO.1 ~01@X-PRIORITY OUT.HDMI.7.VIDEO.1, [IN.HDMI.1.VIDEO.1,IN.HDMI.2.VIDEO.1,IN.HDMI.3.VIDEO.1]</pre>			

X-SET-FOLLOWERS

Command Name		Permission	Transparency
Set:	X-SET-FOLLOWERS	End User	Public
Get:	X-SET-FOLLOWERS?	End User	Public
Description		Syntax	
Set:	Set followers list for a given input signal	#X-SET-FOLLOWERS _[SP] <i>signal_id</i> , <i>[signal_id,...]</i> _[CR LF]	
Get:	Get followers list of a given input signal	#X-SET-FOLLOWERS? _[SP] <i>signal_id</i> _[CR LF]	
Response			
~ _[nn] @X-SET-FOLLOWERS _[SP] <i>signal_id</i> , <i>[signal_id,...]</i> _[CR LF]			
Parameters			
<i>signal_id</i> - see Signal ID Format			
Response Triggers			
Notes			
This syntax uses the new convention of using brackets to define a list of fields “[]”			
This is an Extended Protocol 3000 command			
Example			
#X-SET-FOLLOWERS IN.HDMI.2.VIDEO.1, [IN.HDMI.1.AUDIO.1, IN.HDMI.2.AUDIO.1] ~01@X-SET-FOLLOWERS IN.HDMI.2.VIDEO.1, [IN.HDMI.1.AUDIO.1, IN.HDMI.2.AUDIO.1] #X-SET-FOLLOWERS? IN.HDMI.2.VIDEO.1 ~01@X-SET-FOLLOWERS IN.HDMI.2.VIDEO.1, [IN.HDMI.1.AUDIO.1, IN.HDMI.2.AUDIO.1]			

X-SIGNAL

Command Name		Permission	Transparency
Set:	–	–	–
Get	X-SIGNAL?	End User	Public
Description		Syntax	
Set:	–	–	
Get:	Get input signal status	#SIGNAL? _{SP} <i>inp_id</i> _{CR}	
Response			
~ _{nn} @SIGNAL _{SP} <i>inp_id</i> , <i>status</i> _{CR LF}			
Parameters			
<i>inp_id</i> – input signal ID format.			
<i>status</i> – see Input Signal Status			
Response Triggers			
Notes			
This is an Extended Protocol 3000 command			
Example			
# X-SIGNAL? IN.HDMI.1.VIDEO.1			
~01@ X-SIGNAL? IN.HDMI.1.VIDEO.1,1			

File System Commands

Command	Description	Type	Permission
DEL	Delete file	File System	Administrator
DIR	List files in device	File System	Administrator
FORMAT	Format file system	File System	Administrator
FS-FREE?	Get file system free space	File System	Administrator
GET	Get file	File System	Administrator

DEL

Command Name		Permission	Transparency
Set:	DEL	Administrator	Public
Get:	-	-	-
Description		Syntax	
Set:	Delete file	#DEL <code> </code> <code>file_name</code> <code> </code>	
Get:			
Response			
~nn@DEL <code> </code> <code>file_name</code> <code> </code>			
Parameters			
<code>file_name</code> - name of file to delete (file names are case-sensitive)			
Response Triggers			
Notes			

DIR

Command Name		Permission	Transparency
Set:	DIR	Administrator	Public
Get:	-	-	-
Description		Syntax	
Set:	List files in device	#DIR <code>CR</code>	
Get:	-	-	
Response			
Multi-line: ~ <code>nn</code> @DIR <code>CR LF</code> <code>file_name</code> <code>TAB</code> <code>file_size</code> <code>SP</code> bytes <code>SP</code> ID: <code>SP</code> <code>file_id</code> <code>CR LF</code> <code>TAB</code> <code>free_size</code> <code>SP</code> bytes. <code>CR LF</code>			
Parameters			
<code>file_name</code> - name of file <code>file_size</code> - file size in bytes. A file can take more space on device memory <code>file_id</code> - internal ID for file in file system <code>free_size</code> - free space in bytes in device file system			
Response Triggers			
Notes			

FORMAT

Command Name		Permission	Transparency
Set:	FORMAT	Administrator	Public
Get:	-	-	-
Description		Syntax	
Set:	Format file system	#FORMAT <code>CR</code>	
Get:	-	-	
Response			
~ <code>nn</code> @FORMAT <code>SP</code> OK <code>CR LF</code>			
Parameters			
Response Triggers			
Notes			
Response could take several seconds until formatting completes			

FS-FREE?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	FS-FREE?	Administrator	Public
Description		Syntax	
Set:	-	-	
Get:	Get file system free space	#FS-FREE? <div>CR</div>	
Response			
~nn@FS_FREE <div>SP</div> free_size <div>CR LF</div>			
Parameters			
free_size - free size in device file system in bytes			
Response Triggers			
Notes			

GET

Command Name		Permission	Transparency
Set:	-	-	-
Get:	GET	Administrator	Public
Description		Syntax	
Set:	-	-	
Get:	Get file	#GET _{SP} <i>file_name</i> _{CR}	
Response			
Multi-line:			
~ _{NN} @GET _{SP} <i>file_name,file_size</i> _{SP} READY _{CR LF} <i>contents</i>			
~ _{NN} @GET _{SP} <i>file_name</i> _{SP} OK _{CR LF}			
Parameters			
<i>file_name</i> - name of file to get contents <i>contents</i> - byte stream of file contents <i>file_size</i> - size of file (device sends it in response to give user a chance to get ready)			
Response Triggers			
Notes			

Authentication Commands

Command	Description	Type	Permission
LOGIN	Set/get protocol permission	Authentication	Not Secure
LOGOUT	Cancel current permission level	Authentication	Not Secure
PASS	Set/get password for login level	Authentication	Administrator
SECUR	Set/get current security state	Authentication	Administrator

LOGIN

Command Name		Permission	Transparency
Set:	LOGIN	Not Secure	Public
Get:	LOGIN?	Not Secure	Public
Description		Syntax	
Set:	Set protocol permission	#LOGIN _{SP} login_level,password _{CR}	
Get:	Get current protocol permission level	#LOGIN? _{CR}	
Response			
Set: ~nn@LOGIN _{SP} login_level,password _{SP} OK _{CR LF} or ~nn@LOGIN _{SP} ERR _{SP} 004 _{CR LF} (if bad password entered) Get: ~nn@LOGIN _{SP} login_level _{CR LF}			
Parameters			
login_level - level of permissions required (End User or Admin) password - predefined password (by PASS command). Default password is an empty string			
Response Triggers			
Notes			
For devices that support security, LOGIN allows to the user to run commands with an End User or Administrator permission level In each device, some connections allow logging in to different levels. Some do not work with security at all Connection may logout after timeout The permission system works only if security is enabled with the “SECUR” command			

LOGOUT

Command Name		Permission	Transparency
Set:	LOGOUT	Not Secure	Public
Get:	-	-	-
Description		Syntax	
Set:	Cancel current permission level	#LOGOUT <code>[CR]</code>	
Get:	-	-	
Response			
~ <code>[nn]</code> @LOGOUT <code>[SP]</code> OK <code>[CR LF]</code>			
Parameters			
Response Triggers			
Notes			
Logs out from End User or Administrator permission levels to Not Secure			

PASS

Command Name		Permission	Transparency
Set:	PASS	Administrator	Public
Get:	PASS?	Administrator	Public
Description		Syntax	
Set:	Set password for login level	#PASS _{SP} login_level,password _{CR}	
Get:	Get password for login level	#PASS? _{SP} login_level _{CR}	
Response			
~nn@PASS _{SP} login_level,password _{CR LF}			
Parameters			
login_level - level of login to set (End User or Administrator).			
password - password for the login_level. Up to 15 printable ASCII chars			
Response Triggers			
Notes			
The default password is an empty string			

SECUR

Command Name		Permission	Transparency
Set:	SECUR	Administrator	Public
Get:	SECUR?	Not Secure	Public
Description		Syntax	
Set:	Start/stop security	#SECUR _{SP} security_mode _{CR}	
Get:	Get current security state	#SECUR? _{CR}	
Response			
~nn@SECUR _{SP} security_mode _{CR LF}			
Parameters			
security_mode – 1/ON - enables security, 0/OFF - disables security			
Response Triggers			
Notes			
The permission system works only if security is enabled with the “SECUR” command			

Switching/Routing Commands

Note: Use the **ROUTE** command in preference to legacy AUD, VID, and AV commands (see below).

Command	Description	Type	Permission
AFV	Set/get audio follow video mode	Switching	End User
AUD	Set/get audio switch state	Switching	End User
AV	Switch audio and video	Switching	End User
MATRIX-STATUS	Get routing status of all output ports	Routing	End User
MENU-CMD	Set menu navigation	Routing	End User
MTX-MODE	Set/get auto-switch mode	Switching	End User
ROUTE	Set/get layer routing	Routing	End User
VID	Set/get video switch state	Switching	End User
X-AFV	Set/get output audio follow video mode	Routing	End User
X-AUD-LVL-RANGE?	Get the range of audio level in the product	Routing	End User
X-ROUTE	Set/get routing status to matrix	Switching/routing	End User

AFV

Command Name		Permission	Transparency
Set:	AFV	End User	Public
Get:	AFV?	End User	Public
Description		Syntax	
Set:	Set audio follow video/audio breakaway mode	#AFV _{SP} afv_mode _{CR}	
Get:	Get audio follow video mode status	#AFV? _{CR}	
Response			
~nn@AFV _{SP} afv_mode _{CR LF}			
Parameters			
afv_mode - front panel AFV mode 0/afv - sets the unit to the audio-follow-video switching mode 1/brk - sets the unit to the audio breakaway switching mode			
Response Triggers			
Notes			
When the unit moves from breakaway to audio follow video switching mode, all audio switch settings reset according to the video switch settings.			

AUD

Command Name		Permission	Transparency
Set:	AUD	End User	Public
Get:	AUD?	End User	Public
Description		Syntax	
Set:	Set audio switch state	#AUD <code>[SP]</code> <code>in>out, in>out,...</code> <code>[CR]</code>	
Get:	Get audio switch state	#AUD? <code>[SP]</code> <code>out</code> <code>[CR]</code>	
		#AUD? <code>[SP]</code> <code>*</code> <code>[CR]</code>	
Response			
Set: ~ <code>[nn]</code> @AUD <code>[SP]</code> <code>in>out</code> <code>[CR LF]</code> ~ <code>[nn]</code> @AUD <code>[SP]</code> <code>in>out</code> <code>[CR LF]</code>			
Get: ~ <code>[nn]</code> @AUD <code>[SP]</code> <code>in>out</code> <code>[CR LF]</code> ~ <code>[nn]</code> @AUD <code>[SP]</code> <code>in>1,in>2,...</code> <code>[CR LF]</code>			
Parameters			
<code>in</code> - input number or '0' to disconnect output > - connection character between in and out parameters <code>out</code> - output number or '*' for all outputs			
Response Triggers			
Notes			
When AFV switching mode is active, this command also switches video and unit replies with command ~AV			

AV

Command Name		Permission	Transparency
Set:	AV	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Switch audio and video	#AV <code>SP</code> <i>in>out, in>out,...</i> <code>CR</code>	
Get:	-	-	
Response			
~ <code>nn</code> @AV <code>SP</code> <i>in>out,in>out,...</i> <code>CR LF</code>			
Parameters			
<i>in</i> - input number or '0' to disconnect output > - connection character between in and out parameters <i>out</i> - output number or '*' for all outputs			
Response Triggers			
Notes			

MATRIX-STATUS?

Command Name		Permission	Transparency
Set:	-	–	–
Get:	MATRIX-STATUS?	End User	Public
Description		Syntax	
Set:	–	–	
Get:	Get routing status of all output ports	#MATRIX-STATUS?	<div>CR LF</div>
Response			
Multi-line: ~ <div>nn</div> @MATRIX-STATUS <div>SP</div> [<i>[OUT_signal_id,IN_signal_id],...</i>] <div>CR LF</div>			
Parameters			
<i>OUT_signal_id</i> - see Signal ID Format			
<i>IN_signal_id</i> - see Signal ID Format			
Response Triggers			
Notes			
This syntax uses the new convention of using brackets to define a list of fields “[]”			
Example			
<pre>#MATRIX-STATUS? ~01@MATRIX-STATUS [[OUT.SDI.5.VIDEO.1,IN.SDI.1.VIDEO.1], [OUT.SDI.6.VIDEO.1,IN.SDI.1.VIDEO.1]], [OUT.SDI.7.VIDEO.1,IN.SDI.4.VIDEO.1], [OUT.SDI.8.VIDEO.1,IN.SDI.1.VIDEO.1] , [OUT.SDI.3.VIDEO.1,IN.SDI.1.VIDEO.1], [OUT.SDI.4.VIDEO.1,IN.SDI.2.VIDEO.1]]]</pre>			

MENU-CMD

Command Name		Permission	Transparency
Set:	MENU-CMD	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Switch audio and video	# MENU-CMD [SP] <i>param</i> [CR]	
Get:	-	-	
Response			
~nn@MENU-CMD [SP] <i>param</i> [CR LF]			
Parameters			
<i>param</i> – See Menu Navigation			
Response Triggers			
Notes			
This command emulates menu navigation			

MTX-MODE

Command Name		Permission	Transparency
Set:	MTX-MODE	End User	Public
Get:	MTX-MODE?	End User	Public
Description		Syntax	
Set:	Set auto-switch mode	# MTX-MODE _{SP} output_id,mode _{CR}	
Get :	Get auto-switch mode	# MTX-MODE? _{SP} output_id _{CR}	
Response			
~nn@MTX-MODE _{SP} output_id,mode _{CR}			
Parameters			
output_id - 1....num of system outputs			
mode - 0 - manual, 1 - auto priority, 2 - auto last connected			
Response Triggers			
After execution, a response is sent to the com port from which the Set/Get was received			
After execution, a response is sent to all com ports if MTX-MODE was set by any other external control device (button press, WEB, device menu and similar)			
Notes			
Not recommended for new devices			

ROUTE

Command Name		Permission	Transparency
Set:	ROUTE	End User	Public
Get:	ROUTE?	End User	Public
Description		Syntax	
Set:	Set layer routing	#ROUTE _{SP} /layer,dest,src _{CR}	
Get:	Get layer routing	#ROUTE? _{SP} /layer,dest _{CR}	
Response			
~nn@ROUTE _{SP} /layer,dest,src _{CR LF}			
Parameters			
layer – see Layer Enumeration			
dest - * - ALL			
x - disconnect, otherwise destination id			
src - source id			
Response Triggers			
Notes			
This command replaces all other routing commands			

VID

Command Name		Permission	Transparency
Set:	VID	End User	Public
Get:	VID?	End User	Public
Description		Syntax	
Set:	Set video switch state	#VID[in>out]	
Get:	Get video switch state	#VID?[in]out	
Response			
Set: ~nn@VID[in>out]			
Get: ~nn@VID[in]out			
Parameters			
<i>in</i> - input number or '0' to disconnect output > - connection character between in and out parameters <i>out</i> - output number or '*' for all outputs			
Response Triggers			
Notes			
The GET command identifies input switching on Step-in clients The SET command is for remote input switching on Step-in clients (essentially via by the Web) This is a legacy command. New Step-in modules support the ROUTE command			

X-AFV

Command Name		Permission	Transparency
Set:	X-AFV	End User	Public
Get:	X-AFV?	End User	Public
Description		Syntax	
Set:	Set output audio follow video mode	#X-AFV _{SP} signal_id,mode _{CR LF}	
Get:	Get output audio follow video mode	#X-AFV? _{SP} signal_id _{CR LF}	
Response			
Get: ~ _{nn} @X- AFV _{SP} signal_id,mode _{CR LF}			
Parameters			
signal_id - see Signal ID Format mode – OFF, ON, (not case sensitive)			
Response Triggers			
Notes			
This is an Extended Protocol 3000 command			
Example			
#X-AFV OUT.HDMI.1.VIDEO.1,ON ~01@X-AFV OUT.HDMI.1.VIDEO.1,ON #X-AFV? OUT.HDMI.1.VIDEO.1 ~01@X-AFV OUT.HDMI.1.VIDEO.1,ON			

X-ROUTE

Command Name		Permission	Transparency
Set:	X-ROUTE	End User	Public
Get:	X-ROUTE?	End User	Public
Description		Syntax	
Set:	Send routing command to matrix	#X-ROUTE _[SP] OUT_signal_id,IN_signal_id _[CR LF]	
Get:	Get routing status	#X-ROUTE? _[SP] OUT_signal_id _[CR LF]	
Response			
Set / Get: ~nn@X-ROUTE _[SP] OUT_signal_id,IN_signal_id _[CR LF]			
Parameters			
OUT_signal_id – see Signal ID Format			
IN_signal_id – see Signal ID Format			
Response Triggers			
Notes			
It is recommended to use the command #SIGNALS-LIST? to get the list of all signal IDs available in the system and which can be used in this command			
Video 1 is the default port in this command and is implied even if not written:			
#X-ROUTE OUT.SDI.5, IN.SDI.1 is interpreted as:			
#X-ROUTE OUT.SDI.5.VIDEO.1, IN.SDI.1.VIDEO.1			
This is an Extended Protocol 3000 command			
Examples			
#X-ROUTE OUT.SDI.5.VIDEO.1, IN.SDI.1.VIDEO.1			
~01@X-ROUTE OUT.SDI.5.VIDEO.1, IN.SDI.1.VIDEO.1			
#X-ROUTE? OUT.SDI.5.VIDEO.1			
~01@X-ROUTE OUT.SDI.5.VIDEO.1, IN.SDI.1.VIDEO.1			
Reduced form :			
#X-ROUTE OUT.SDI.5, IN.SDI.1			
~01@X-ROUTE OUT.SDI.5.VIDEO.1, IN.SDI.1.VIDEO.1			

Video Commands

Command	Description	Type	Permission
BCKGRND	Set/get screen background color	Video	End User
DEF-RES	Set/get custom defined scaled video output resolution to "VIC" index	Video	Administrator
DETAIL-TIMING	Set/get detail timing parameters	Video	End User
GENLOCK-MODE	Set/get genlock sync	Video	End User
GENLOCK-TIME-MICROSEC	Set/get genlock delay in microseconds	Video	End User
GNLCK	Set/get genlock state	Video	End User
H-PHASE	Set/get H-phase	Video	End User
PORT-RES-TYPE	Set/get dual/single mode for video ports	Video	End User
SIG-TYPE	Set/get signal type on input/output	Video	End User
VFRZ	Set/get output freeze	Video	End User
VGA-PHASE	Set/get ADC (VGA) sampling phase	Video	End User
VID-PATTERN	Set/get test pattern on output	Video	End User
VID-RES	Set/get output resolution	Video	End User
VMUTE	Set/get video on output mute	Video	End User
X-LONG-REACH	Set/get extra range (long reach) for SDI ports	Video	End User
X-MUTE	Set/get mute ON/OFF on a specific signal.	Video/audio	End User
X-PATTERN	Set/get a pattern on a specific output signal.	Video	End User
X-PATTERNS-LIST?	Get pattern indexes available per signal ID and usable in the command X-PATTERN	Video	End User

BCKGRND

Command Name		Permission	Transparency
Set:	BCKGRND	End User	Public
Get	BCKGRND?	End User	Public
Description		Syntax	
Set:	Set screen background color	#BCKGRND _{SP} ColSpaceType,p1,p2,p3 _{CR}	
Get:	Get screen background color	#BCKGRND? _{CR}	
Response			
~ _{CR} @BCKGRND _{SP} ColSpaceType,p1,p2,p3 _{CR LF}			
Parameters			
ColSpaceType - define color space in use (see Color Space) p1,p2,p3 - according to color space value: RGB - R,G,B YCbCr - Y,Cb,Cr			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received After execution, response is sent to all com ports if BCKGRND was set by any other external control device (button press, device menu and similar)			
Notes			

DEF-RES

Command Name		Permission	Transparency
Set	DEF-RES	Administrator	Public
Get	DEF-RES?	End User	Public
Description		Syntax	
Set:	Set custom defined scaled video output resolution to ID index	#DEF-RES _{SP} <i>Table_id,Width,Height,Htotal,VTtotal,HSyncW,HSyncBackPorch,VSynW,VSynBackPorch,FrRate,Interlaced</i> _{CR}	
Get:	Get custom defined video resolution	#DEF-RES? _{SP} <i>Table_id,stage,stage_id</i> _{CR}	
Response			
~ _{nn} @DEF-RES _{SP} <i>Table_id,Width,Height,Htotal,VTtotal,HSyncW,HSyncBackPorch,VSynW,VSynBackPorch,FrRate,Interlaced</i> _{CR LF}			
Parameters			
<i>Table_id</i> - index in resolution table (see Video Resolutions). Valid indexes for SET are 100-104 only <i>Custom resolution parameters</i> - by name (self-explanatory), numeric value <i>Interlaced</i> - interlaced/progressive according to On/Off ("ON" - I, "OFF" - P) <i>Stage</i> - input/output (see Stage) <i>Stage_id</i> - number of chosen stage (1...max number of inputs/outputs)			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received After execution, response is sent to all com ports if DEF-RES was set by any other external control device (button press, device menu and similar)			
Notes			
If a requested custom resolution is not defined, yet is in the device, it returns ERR _{SP} 003 (out of range) Only indexes 100-104 are valid for custom defined resolution In Get command when sending: index 0 - device replies with detailed info of native resolution index 255 - device replies with detailed info of current resolution			

DETAIL-TIMING

Command Name		Permission	Transparency
Set:	DETAIL-TIMING	End User	Public
Get:	DETAIL-TIMING?	End User	Public
Description		Syntax	
Set:	Set detail timing parameters	#DETAIL-TIMING _{SP} <i>param,channel,value</i> _{CR}	
Get:	Get detail timing parameters	#@DETAIL-TIMING? _{SP} <i>param,channel</i> _{CR LF}	
Response			
Set / Get: ~ _{nn} @DETAIL-TIMING _{SP} <i>param, channel, value</i> _{CR LF}			
Parameters			
<i>param</i> – See Detail Timing <i>channel</i> - input number <i>value</i> - video parameter in Kramer units, minus sign precedes negative values ++ increase current value, -- decrease current value			
Response Triggers			
Notes			

GENLOCK-MODE

Command Name		Permission	Transparency
Set:	GENLOCK-MODE	End User	Public
Get:	GENLOCK-MODE?	End User	Public
Description		Syntax	
Set:	Set genlock sync	#GENLOCK-MODE <code>SP</code> <i>mode</i> <code>CR LF</code>	
Get:	Get genlock mode	#GENLOCK-MODE? <code>CR LF</code>	
Response			
Set / Get: ~ <code>nn</code> @GENLOCK-MODE <code>SP</code> <i>mode</i> <code>CR LF</code>			
Parameters			
<i>mode</i> - ON, OFF (not case sensitive)			
Response Triggers			
Notes			
This command synchronizes the routing action with sync frames. Routing does not occur until a sync frame is detected and delay is defined in the GENLOCK-TIME-MICROSEC command. This mode affects the whole system and is not configurable per output/input.			
Examples			
#GENLOCK-TIME-MICROSEC? ~01@GENLOCK-TIME-MICROSEC 100 #GENLOCK-TIME-MICROSEC 20 ~01@GENLOCK-TIME-MICROSEC 20 #GENLOCK-MODE ON ~01@GENLOCK-MODE ON #GENLOCK-MODE? ~01@GENLOCK-MODE ON			

GENLOCK-TIME-MICROSEC

Command Name		Permission	Transparency
Set:	#GENLOCK-TIME-MICROSEC	End User	Public
Get:	#GENLOCK-TIME-MICROSEC?	End User	Public
Description		Syntax	
Set:	Set genlock delay in microseconds	#GENLOCK-TIME-MICROSEC _[SP] <i>value</i> _[CR]	
Get:	Get genlock delay in microseconds	#GENLOCK-TIME-MICROSEC? _[SP] <i>value</i> _[CR]	
Response			
Set / Get: ~nn@GENLOCK-TIME-MICROSEC _[SP] <i>value</i> _[CR LF]			
Parameters			
<i>value</i> – time in microseconds			
Response Triggers			
Notes			
Configures the maximum delay in microseconds between arrival of a picture frame and its routing is executed			
Examples			
#GENLOCK-TIME-MICROSEC? ~01@GENLOCK-TIME-MICROSEC 100 #GENLOCK-TIME-MICROSEC 20 ~01@GENLOCK-TIME-MICROSEC 20			

GNLCK

Command Name		Permission	Transparency
Set:	GNLCK	Administrator	Public
Get:	GNLCK?	End User	Public
Description		Syntax	
Set:	Set genlock source and mode	#GNLCK _[SP] <i>out,in,type</i> _[CR]	
Get:	Get genlock source, mode and status	#GNLCK? _[SP] <i>out</i> _[CR]	
Response			
Set / Get: ~nn@GNLCK _[SP] <i>out,in,status</i> _[CR LF]			
Parameters			
<i>out</i> - output number (1 .. max number of outputs) <i>in</i> - input number (1... max number of inputs) <i>type</i> - genlock type (see Genlock Types) <i>status</i> - genlock status (ON/OFF) (see On/Off)			
Response Triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received After execution, response is sent to all com ports if GNLCK was set for any other external control device (button press, device menu and similar) or genlock status changed			
Notes			

H-PHASE

Command Name		Permission	Transparency
Set:	H-PHASE	End User	Public
Get:	H-PHASE?	End User	Public
Description		Syntax	
Set:	Set H-phase	#H-PHASE _{SP} stage, channel,value _{CR}	
Get:	Get H-phase	#H-PHASE? _{SP} stage,channel _{CR}	
Response			
Set / Get: ~nn@H-PHASE _{SP} stage, channel,value _{CR LF}			
Parameters			
<i>stage</i> - 'IN, 'OUT' or numeric value of present video processing stage For example: '1' for input value, '2' for output <i>channel</i> - input or output number <i>value</i> - video parameter in Kramer units, minus sign precedes negative values ++ increase current value, -- decrease current value			
Response Triggers			
Notes			

PORT-RES-TYPE

Command Name		Permission	Transparency
Set:	PORT-RES-TYPE	End User	Public
Get:	PORT-RES-TYPE?	End User	Public
Description		Syntax	
Set:	Set dual/single mode for video ports	#PORT-RES-TYPE _{SP} <i>port_index,res_type</i> _{CR LF}	
Get:	Get port resolution type	#PORT-RES-TYPE? _{SP} <i>port_index,res_type</i> _{CR LF}	
Response			
Set / Get: ~nn@PORT-RES-TYPE _{SP} <i>port_index,mode</i> _{CR LF}			
Parameters			
<i>port_index</i> - input or output number (1-n)			
<i>mode</i> - single, dual			
Response Triggers			
Notes			
Dual mode routes both signals as a pair. Two responses are returned to the Get command. When muting or selecting extra-range mode, both inputs/output of the pair are affected.			
Example			
#PORT-RES-TYPE? 8 ~01@PORT-RES-TYPE 8,SINGLE #PORT-RES-TYPE 8,DUAL ~01@PORT-RES-TYPE 8,DUAL ~01@PORT-RES-TYPE 7,DUAL			

SIG-TYPE

Command Name		Permission	Transparency
Set:	SIG-TYPE	End User	Public
Get	SIG-TYPE?	End User	Public
Description		Syntax	
Set:	Set signal type on input/output	#SIG-TYPE _{SP} stage, stage_id,type _{CR}	
Get:	Get signal type on input/output	#SIG-TYPE? _{SP} stage,stage_id _{CR}	
Response			
~nn@SIG-TYPE _{SP} stage,stage_id,type _{CR LF}			
Parameters			
stage - input/output (see Stage) stage_id - number of chosen stage (1.. max number of inputs/outputs) type - signal type (see Signal Type)			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received After execution, response is sent to all com ports if SIG-TYPE was set by any other external control device (button press, device menu and similar)			
Notes			
“Set” command is not available for all devices (refer to device specifications)			

VFRZ

Command Name		Permission	Transparency
Set:	VFRZ	End User	Public
Get	VFRZ?	End User	Public
Description		Syntax	
Set:	Set freeze on selected output	#VFRZ <code>[SP]</code> <code>out_id</code> , <code>freeze_flag</code> <code>[CR]</code>	
Get:	Get output freeze status	#VFRZ? <code>[SP]</code> <code>out_id</code> <code>[CR]</code>	
Response			
~ <code>[nn]</code> @VFRZ <code>[SP]</code> <code>win_num</code> , <code>freeze_flag</code> <code>[CR LF]</code>			
Parameters			
<code>out_id</code> -output number <code>freeze_flag</code> - see On/Off			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received After execution, response is sent to all com ports if VFRZ was set by any other external control device (button press, device menu and similar)			
Notes			

VGA-PHASE

Command Name		Permission	Transparency
Set:	VGA-PHASE	End User	Public
Get	VGA-PHASE?	End User	Public
Description		Syntax	
Set:	Set ADC (VGA) sampling phase	#VGA-PHASE _{SP} <i>channel,value</i> _{CR}	
Get:	Get ADC (VGA) sampling phase	#VGA-PHASE? _{SP} <i>channel</i> _{CR}	
Response			
~ _{nn} @VGA-PHASE _{SP} <i>channel,value</i> _{CR LF}			
Parameters			
<i>channel</i> - input number <i>value</i> - phase parameter in LSB units ++ increase current value -- decrease current value			
Response Triggers			
Notes			
Response answers with absolute value after decreasing or increasing value			

VID-PATTERN

Command Name		Permission	Transparency
Set:	VID-PATTERN	End User	Public
Get:	VID-PATTERN?	End User	Public
Description		Syntax	
Set:	Set test pattern on output	#VID-PATTERN _{SP} output_id,pattern_id _{CR}	
Get :	Get test pattern on output	#VID-PATTERN? _{SP} output_id _{CR}	
Response			
~nn@VID-PATTERN _{SP} output_id,pattern_id _{CR}			
Parameters			
output_id - 1....num of system outputs			
pattern_id - 1...num of system patterns			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received			
After execution, response is sent to all com ports if VID-PATTERN was set by any other external control device (button press, WEB, device menu and similar)			
Notes			

VID-RES

Command Name		Permission	Transparency
Set:	VID-RES	End User	Public
Get	VID-RES?	End User	Public
Description		Syntax	
Set:	Set output resolution	#VID-RES _{SP} stage,stage_id,is_native,resolution _{CR}	
Get:	Get output resolution	#VID-RES? _{SP} stage,stage_id,is_native _{CR}	
Response			
~nn@VID-RES _{SP} stage,stage_id,is_native,resolution _{CR LF}			
Parameters			
stage - input/output (see Stage)			
stage_id - number of chosen stage (1... max number of inputs/outputs)			
is_native - native resolution flag (see On/Off)			
resolution - resolution index (see Video Resolutions)			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received			
After execution, response is sent to all com ports if VID-RES was set by any other external control device (button press, device menu and similar)			
Notes			
“Set” command is only applicable for stage=Output			
“Set” command with is_native=ON sets native resolution on selected output (resolution index sent = 0).			
Device sends as answer actual VIC ID of native resolution			
“Get” command with is_native=ON returns native resolution VIC, with is_native=OFF returns current resolution			
To use “custom resolutions” (entries 100-105 In View Modes), define them using the DEF-RES command			

VMUTE

Command Name		Permission	Transparency
Set:	VMUTE	End User	Public
Get:	VMUTE?	End User	Public
Description		Syntax	
Set:	Set enable/disable video on output	#VMUTE _[SP] output_id,flag _[CR]	
Get:	Get video on output status	#VMUTE? _[SP] output_id _[SP CR]	
Response			
Set / Get: ~nn@VMUTE _[SP] output_id, flag _[CR LF]			
Parameters			
output_id - 1...n num of system outputs			
flag - See Video Mute			
Response Triggers			
Notes			
Video mute parameter 2 (blank picture) is not supported			

X-LONG-REACH

Command Name		Permission	Transparency
Set:	X-LONG-REACH	End User	Public
Get:	X-LONG-REACH?	End User	Public
Description		Syntax	
Set:	Set extra range (long reach) mode for SDI ports	#X-LONG-REACH ^[SP] <i>port_id</i> , <i>state</i> ^[CR LF]	
Get:	Get extra range (long reach) state configuration on any port	#X-LONG-REACH? ^[SP] <i>port_id</i> ^[CR LF]	
Response			
Get: ~ ^[nn] @X-LONG-REACH ^[SP] <i>port_id</i> , <i>state</i> ^[CR LF]			
Parameters			
<i>port_id</i> - see Port ID Format			
<i>state</i> – OFF, ON (not case sensitive)			
Response Triggers			
Notes			
Some devices support extra range (long reach) mode, used in HDBT and SDI applications.			
Use the command #PORTS-LIST? to list all port IDs available in the system			
This is an Extended Protocol 3000 command			
Example			
#X-LONG-REACH IN.SDI.1,OFF			
~01@X-LONG-REACH IN.SDI.1,OFF			
#X-LONG-REACH? IN.SDI.1			
~01@X-LONG-REACH IN.SDI.1,OFF			

X-MUTE

Command Name		Permission	Transparency
Set:	X-MUTE	End User	Public
Get:	X-MUTE?	End User	Public
Description		Syntax	
Set:	Set mute ON/OFF on a specific signal.	#X-MUTE _{SP} signal_id,state _{CR LF}	
Get:	Get mute ON/OFF state on a specific signal.	#X-MUTE? _{SP} signal_id _{CR LF}	
Response			
Get: ~nn@X-MUTE _{SP} signal_id,state _{CR LF}			
Parameters			
signal_id – see Signal ID Format			
state – OFF, ON (not case sensitive)			
Response Triggers			
Notes			
<p>This command is designed to Mute a Signal. This means that it could be applicable on any type of signal. Could be audio, video and maybe IR, USB or data if this capability is supported by the product.</p> <p>This is an Extended Protocol 3000 command</p>			
Example			
<pre>#x-mute OUT.HDMI.1.VIDEO.1,ON ~01@X-MUTE OUT.HDMI.1.VIDEO.1,ON #x-mute? OUT.HDMI.1.VIDEO.1 ~01@X-MUTE OUT.HDMI.1.VIDEO.1,ON #x-mute OUT.ANALOG_AUDIO.1.AUDIO.1,OFF ~01@X-MUTE OUT.ANALOG_AUDIO.1.AUDIO.1,OFF #x-mute? OUT.ANALOG_AUDIO.1.AUDIO.1 ~01@X-MUTE OUT.ANALOG_AUDIO.1.AUDIO.1,OFF</pre>			

X-PATTERN

Command Name		Permission	Transparency
Set:	X-PATTERN	End User	Public
Get:	X-PATTERN?	End User	Public
Description		Syntax	
Set:	Set a pattern on a specific output signal.	# X-PATTERN _[SP] signal_id,pattern_id _[CR LF]	
Get:	Get selected pattern on a specific output signal.	# X-PATTERN? _[SP] signal_id _[CR LF]	
Response			
Get: ~nn@X-PATTERN _[SP] signal_id,pattern_id _[CR LF]			
Parameters			
signal_id – see Signal ID Format pattern_id – if 0, means pattern is OFF, if greater then 0, it is a pattern index. Pattern list may be retrieved using command: #PATTERNS-LIST?			
Response Triggers			
Notes			
<p>This command is designed to enable pattern on any signal. commonly pattern makes sense for video, but on some products audio pattern is also supported. In the future, data pattern will be also supported to generate some data on RS232 lines.</p> <p>This is an Extended Protocol 3000 command</p>			
Example			
#X-PATTERN OUT.HDMI.1.VIDEO.1,1 ~01@X-PATTERN OUT.HDMI.1.VIDEO.1,1 #X-PATTERN OUT.ANALOG_AUDIO.1.AUDIO.1,1 ~01@X-PATTERN OUT.ANALOG_AUDIO.1.AUDIO.1,1 #X-PATTERN? OUT.ANALOG_AUDIO.1.AUDIO.1 ~01@X-PATTERN OUT.ANALOG AUDIO.1.AUDIO.1,1			

X-PATTERNS-LIST?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	X-PATTERNS-LIST?	End User	Public
Description		Syntax	
Set:	N/A	-	
Get:	Get pattern indexes available per signal ID and usable in the command X-PATTERN	#X-PATTERNS-LIST? [SP] <i>signal_id</i> [CR LF]	
Response			
Get: ~ [nn] @X-PATTERNS-LIST [SP] <i>signal_id</i> [CR LF]			
Parameters			
<i>signal_id</i> – see Signal ID Format			
Response Triggers			
Notes			
Not all products support patterns for all layers. This list can be usable into X-PATTERN			
This is an Extended Protocol 3000 command			
Example			
<pre>#X-PATTERNS-LIST? IN.HDMI.1.VIDEO.1 ~01@PATTERNS-LIST IN.HDMI.1.VIDEO.1,[[0:OFF],[1:4 Blue squares],[2:4 B&W squares],[3:Gray color],[4:Vertical lines],[5:Horizontal Lines],[6:White Line with horizontal moving],[7:Colors bars - dark],[8:Colors bars - bright],[9:Gray gradient]] #X-PATTERNS-LIST? IN.ANALOG_AUDIO.1.AUDIO.1 ~01@PATTERNS-LIST IN.ANALOG_AUDIO.1.AUDIO.1,[[0:OFF],[1:FR100HZ],[2:FR200HZ],[3:FR400HZ],[4:FR1000H Z],[5:FR6000HZ],[6:FR10000HZ],[8:DO],[9:RE],[10:MI],[11:FA],[12:SOL],[13:LA],[14: SI]]</pre>			

Audio Commands

These commands are used by audio devices running Protocol 3000.

Command	Description	Type	Permission
AUD-CH-LINK	Set/get link between master configuration and slave/state	Audio	End user
AUD-CLIP?	Get clipping status	Audio	End user
AUD-DELAY	Set/get audio delay level	Audio	End user
AUD-EMB	Set/get audio in video embedding status	Audio	End user
AUD-FILTER	Set/get filter/state	Audio	End user
AUD-HI-Z?	Get High Z status	Audio	End user
AUD-IN-CONF	Set/get threshold and time	Audio	End user
AUD-LVL	Set/get audio level in specific amplifier stage	Audio	End User
AUD-LVL-RANGE	Set/get audio level min/max range	Audio	End User
AUD-MIX	Set/get mixer level	Audio	End User
AUD-MONO-MODE	Set/get output select state when audio in HI-Z mode only	Audio	End User
AUD-ONLY	Set/get audio only mode	Audio	End User
AUD-SIGNAL?	Get audio input signal status	Audio	End user
AUD-STANDBY	Set/get standby mode/state	Audio	End user
AUD-SWAP	Set/get audio output swap	Audio	End user
BALANCE	Set/get balance level	Audio	End User
BASS	Set/get audio bass level	Audio	End User
EQ-FREQ	Set/get equalizer center	Audio	End User
EQ-LVL	Set/get equalization level	Audio	End User
EQ-Q	Set/get Q level	Audio	End User
LOUDNESS	Set/get audio loudness	Audio	End User
MIC-DELAY	Set/get delay for microphone output	Audio	End User
MIC-GAIN	Set/get microphone gain	Audio	End User
MIC-TLK	Set/get microphone talkover parameters	Audio	End User
MIDRANGE	Set/get audio midrange level	Audio	End User
MIX	Set/get audio mix	Audio	End User
MIX-LVL	Set/get mixing level of selected output	Audio	End User
MUTE	Set/get audio mute	Audio	End User
STEREO	Set/get stereo audio	Audio	End User
TEST-FREQ	Set/get signal generator frequency	Audio	End User
TLK	Set/get audio talkover mode status	Audio	End User
TREBLE	Set/get audio treble level	Audio	End User
X-AUD-LVL	Set/get audio level of a specific signal	Audio	End User
X-AUD-LVL-RANGE	Get the range of audio level in the product.	Audio	End User
X-AUD-ONLY	Set/get audio only mode	Audio	End User
X-MIC-TYPE	Set/get microphone type	Audio	End User
X-MUTE	Set/get mute ON/OFF on a specific signal.	Video/audio	End User

AUD-CH-LINK

Command Name		Permission	Transparency
Set:	AUD-CH-LINK	End User	Public
Get	AUD-CH-LINK?	End User	Public
Description		Syntax	
Set:	Set link between master configuration and slave	# AUD-CH-LINK _{SP} Ch1,Ch2,LinkState _{CR}	
Get:	Get the configuration link state	# AUD-CH-LINK?Ch1 _{CR}	
Response			
~nn@AUD-CH-LINK _{SP} Ch1,Ch2,LinkState _{CR LF}			
Parameters			
Ch1 - master			
Ch2 - slave			
LinkState – enable 1, disable 0			
Response Triggers			
Notes			
Response if no link - AUD-CH-LINK 1,1,0			
Response if link - AUD-CH-LINK 1,2,1			

AUD-CLIP?

Command Name		Permission	Transparency
Set:	-	-	-
Get	AUD- CLIP?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get clipping status	#AUD-CLIP? <i>Channel</i> 	
Response			
~ @AUD-CLIP <i>Channel</i> ,ClipStatus 			
Parameters			
<i>Channel</i> – number of channel			
<i>ClipStatus</i> – clipping detected 1, clipping not detected 0			
Response Triggers			
Notes			

AUD-DELAY

Command Name		Permission	Transparency
Set:	AUX-DELAY	End User	Public
Get	AUX-DELAY?	End User	Public
Description		Syntax	
Set:	Set audio delay value	#AUX-DELAY _{SP} out_channel,delay_value _{CR}	
Get:	Get audio delay value	#AUX-DELAY? _{SP} out_channel _{CR}	
Response			
~nn@AUD-SIGNAL _{SP} inp_id,status _{CR LF}			
~nn@AUX-DELAY _{SP} out_channel,delay_value _{CR LF}			
Parameters			
out_channel - output number or 0 / 1 / 2 for left / right / both			
delay_value - audio parameter in Kramer units, minus sign precedes negative values			
++ increase current value			
-- decrease current value			
Response Triggers			
Notes			

AUD-EMB

Command Name		Permission	Transparency
Set:	AUD-EMB	End User	Public
Get:	AUD-EMB?	End User	Public
Description		Syntax	
Set:	Set audio in video embedding status	#AUD-EMB _{SP} <i>in,out,status</i> _{CR}	
Get:	Get audio in video embedding status	#AUD-EMB? _{SP} <i>in,out</i> _{CR}	
Response			
Set/Get: ~ _{NN} @AUD-EMB _{SP} <i>in,out,status</i> _{CR LF}			
Parameters			
<i>in</i> - audio input to be embedded number (1... max number of inputs)			
<i>out</i> - video output to embed into number (1 .. max number of outputs)			
<i>status</i> – see Embedding Status			
Response Triggers			
Response is sent to the com port from which the Set (before execution)/Get command was received After execution, response is sent to all com ports if AUD-EMB was set by any other external control device (button press, device menu and similar)			
Notes			

AUD-FILTER

Command Name		Permission	Transparency
Set:	AUD-FILTER	End User	Public
Get	AUD-FILTER	End User	Public
Description		Syntax	
Set:	Set filter	#AUD-FILTER _[SP] Channel,FilterType,Freq,State _[CR]	
Get:	Get filter state	#AUD-FILTER? _[SP] Channel _[CR]	
Response			
~nn@AUD-FILTER _[SP] Channel,FilterType,Freq,State _[CR LF]			
Parameters			
<i>Channel</i> - number of channel			
<i>FilterType</i> - filter type (see Filter Types)			
<i>Freq</i> - filter frequency (see Equalizer Frequency)			
<i>State</i> - on 1, off 0			
Response Triggers			
Notes			

AUD-HI-Z

Command Name		Permission	Transparency
Set:	AUD-HI-Z	End User	Public
Get	AUD-HI-Z?	End User	Public
Description		Syntax	
Set:	Set High Z state	#AUD-HI-Z? _[CR] <i>Channel</i> _[SP] <i>HiZState</i> , <i>HiZVolt</i> _[CR]	
Get:	Get High Z status	#AUD-HI-Z? _[CR]	
Response			
~nn@AUD-HI-Z _[SP] <i>Channel</i> , <i>HiZState</i> , <i>HiZVolt</i> _[CR LF]			
Parameters			
<i>Channel</i> – number of channel			
<i>HiZState</i> – Hi-Z state high 1, Hi-Z state low 0			
<i>HiZVolt</i> – Hi-Z volt level see Hi-Z Voltage . Optional, active only in high state			
Response Triggers			
Notes			
Active only when state is high. Ignore everything else.			

AUD-IN-CONF

Command Name		Permission	Transparency
Set:	AUD-IN-CONF	End User	Public
Get	AUD-IN-CONF?	End User	Public
Description		Syntax	
Set:	Set threshold and time to indicate when signal is presents or not.	#AUD-IN-CONF _[SP] Channel,ThresholdDbLevel,TrigTimeDelay _[CR]	
Get:	Get threshold and time	#AUD-IN-CONF? _[CR] Channel	
Response			
~nn@AUD-IN-CONF _[SP] Channel,ThresholdDbLevel,TrigTimeDelay _[CR LF]			
Parameters			
Channel – number of channel (see Audio Channel)			
ThresholdDbLevel – input level indicating when a signal is not present, range -100 to 0dB			
TrigTimeDelay - time delay indicating a signal is not present, 5 to 12 seconds			
Response Triggers			
Notes			

AUD-LVL

Command Name		Permission	Transparency
Set:	AUD-LVL	End User	Public
Get:	AUD-LVL?	End User	Public
Description		Syntax	
Set:	Set volume level	#AUD-LVL _[SP] <i>stage,channel,volume,mutebehavior</i> _[CR]	
Get:	Get volume level	#AUD-LVL? _[SP] <i>stage,channel</i> _[CR]	
Response			
~nn@AUD-LVL _[SP] <i>stage,channel,volume</i> _[CR LF]			
Parameters			
<i>stage</i> – 0 for input processing and 1 for the output processing (see Stage) <i>channel</i> – number of channel (see Audio Channel) <i>volume</i> – volume level -80db to 10dB <i>mutebehavior</i> – optional, 1 means that when changing the volume it does not affect the mute state			
Response Triggers			
Notes			

AUD-LVL-RANGE

Command Name		Permission	Transparency
Set:	AUD-LVL-RANGE	End User	Public
Get:	AUD-LVL-RANGE?	End User	Public
Description		Syntax	
Set:	Set audio level min and max range	# AUD-LVL-RANGE _{SP} stage,channel,min_val,max_val _{CR}	
Get:	Get audio level min and max range	# AUD-LVL-RANGE? _{SP} stage,channel _{CR}	
Response			
~nn@AUD-LVL-RANGE _{SP} stage,channel,min_val,max_val _{CR LF}			
Parameters			
stage - input, output (see Stage) channel - input or output number min_val - minimal available audio level max_val - maximum available audio level			
Response Triggers			
Notes			
In most devices min and max audio level is a function of HW implementation and the SET command is usually not implemented			

AUD-MIX

Command Name		Permission	Transparency
Set:	AUD-MIX	End User	Public
Get:	AUD- MIX?	End User	Public
Description		Syntax	
Set:	Set mixer level	#AUD-MIX _{SP} channel,knob,level _{CR}	
Get:	Get mixer level	#AUD-MIX? _{SP} channel,knob _{CR}	
Response			
~nn@AUD-MIX _{SP} channel,knob,level _{CR LF}			
Parameters			
<i>channel</i> - number of channel (see Audio Channel)			
<i>knob</i> - mixer knob number (1, 2)			
<i>level</i> - mixer level, -80 to 10dB			
Response Triggers			
Notes			

AUD-MONO-MODE

Command Name		Permission	Transparency
Set:	AUD-MONO-MODE	End User	Public
Get	AUD-MONO-MODE?	End User	Public
Description		Syntax	
Set:	Set output select state when audio in HI-Z mode only	#AUD-MONO-MODE <code>[SP]</code> <i>MonoMode</i> <code>[CR]</code>	
Get:	Get output select state when audio in HI-Z mode only	#AUD-MONO-MODE? <code>[CR]</code>	
Response			
~ <code>[nn]</code> @AUD-MONO-MODE <code>[SP]</code> <i>MonoMode</i> <code>[CR LF]</code>			
Parameters			
<i>MonoMode</i> – The mono output mode (see Mono Output)			
Response Triggers			
Notes			
These commands are active only when the state is HI-Z, otherwise an error is returned. To set, the <i>MonoMode</i> parameter must be used.			

AUD-ONLY

Command Name		Permission	Transparency
Set:	AUD-ONLY	End User	Public
Get:	AUD-ONLY?	End User	Public
Description		Syntax	
Set:	Enable/Disable audio only mode	#AUD-ONLY _{SP} <i>channel,mode</i> _{CR}	
Get:	Get audio only mode status	#AUD-ONLY? _{CR}	
Response			
~nn@AUD-ONLY _{SP} <i>channel,mode</i> _{CR LF}			
Parameters			
<i>channel</i> - output number <i>mode</i> - audio only mode (see On/Off)			
Response Triggers			
Notes			

AUD-SIGNAL

Command Name		Permission	Transparency
Set:	-	-	-
Get	AUD-SIGNAL?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get audio input signal status	# AUD-SIGNAL? _{SP} <i>inp_id</i> _{CR}	
Response			
~ _{NN} @AUD-SIGNAL _{SP} <i>inp_id,status</i> _{CR LF}			
Parameters			
Inp_id - input number (1 .. max input number) status - 0 - OFF (no signal) 1 - ON (signal present)			
Response Triggers			
After execution, response is sent to the com port from which the Get was received Response is sent to all com ports if audio status state was changed on any input			
Notes			

AUD-STANDBY

Command Name		Permission	Transparency
Set:	AUD-STANDBY	End User	Public
Get	AUD-STANDBY?	End User	Public
Description		Syntax	
Set:	Set standby mode	#AUD-STANDBY _{SP} StandbyMode,TimeDelay _{CR}	
Get:	Get standby mode state	#AUD-STANDBY? _{CR}	
Response			
~ _{NN} @AUD-STANDBY _{SP} StandbyMode,TimeDelay _{CR LF}			
Parameters			
StandbyMode – see Standby Mode			
TimeDelay - time delay (5, 10, or 15min) moving to standby mode.			
Response Triggers			
Notes			
Active only in auto mode			

AUD-SWAP

Command Name		Permission	Transparency
Set:	AUD-SWAP	End User	Public
Get:	AUD-SWAP?	End User	Public
Description		Syntax	
Set:	Set audio output swap	#AUD-SWAP _{SP} swap_mode _{CR}	
Get:	Get audio output swap status	#AUD-SWAP? _{CR}	
Response			
~nn@AUD-SWAP _{SP} swap_mode _{CR LF}			
Parameters			
swap_mode – 0 = OFF, 1 = ON			
Response Triggers			
Notes			

BALANCE

Command Name		Permission	Transparency
Set:	BALANCE	End User	Public
Get:	BALANCE?	End User	Public
Description		Syntax	
Set:	Set balance level	#BALANCE _{SP} channel,balancelevel _{CR}	
Get:	Get balance level	#BALANCE? _{SP} channel _{CR}	
Response			
~nn@BALANCE _{SP} channel,balance_level _{CR LF}			
Parameters			
<i>channel</i> - output number (see Audio Channel) <i>balancelevel</i> - audio parameter in Kramer units, minus sign precedes negative values ++ increase current value -- decrease current value			
Response Triggers			
Notes			

BASS

Command Name		Permission	Transparency
Set:	BASS	End User	Public
Get:	BASS?	End User	Public
Description		Syntax	
Set:	Set audio bass level	#BASS _{SP} <i>channel</i> , <i>bass_level</i> _{CR}	
Get:	Get audio bass level	#BASS? _{SP} <i>channel</i> _{CR}	
Response			
~ _{NN} @BASS _{SP} <i>channel</i> , <i>bass_level</i> _{CR LF}			
Parameters			
<i>channel</i> - input or output number			
<i>bass_level</i> - audio parameter in Kramer units, minus sign precedes negative values			
++ increase current value			
-- decrease current value			
Response Triggers			
Notes			

EQ-FREQ

Command Name		Permission	Transparency
Set:	EQ-FREQ	End User	Public
Get	EQ-FREQ?	End User	Public
Description		Syntax	
Set:	Set equalizer frequency	#EQ- FREQ _{SP} Stage,Channel,EqType,EqFreq _{CR}	
Get:	Get equalizer frequency	#EQ- FREQ? _{SP} Stage,Channel,EqType _{CR}	
Response			
~nn@EQ- FREQ _{SP} Stage,Channel,EqType,EqFreq _{CR LF}			
Parameters			
<i>Stage</i> – 0 for input processing and 1 for the output processing – see Stage			
<i>Channel</i> – channel number			
<i>EqType</i> - see Equalizer Types			
<i>EqFreq</i> – equalizer center frequency (see Equalizer Frequency)			
Response Triggers			
Notes			

EQ-LVL

Command Name		Permission	Transparency
Set:	EQ-LVL	End User	Public
Get:	EQ-LVL?	End User	Public
Description		Syntax	
Set:	Set equalization level	#EQ-LVL _{SP} Stage,Channel,EqType,Level _{CR}	
Get :	Get equalization level	#EQ-LVL? _{SP} Stage,Channel,EqType _{CR}	
Response			
~nn@EQ-LVL _{SP} Stage,Channel,EqType,Level _{CR LF}			
Parameters			
Stage – 0 for input processing and 1 for the output processing – see stage table			
Channel – number of channel			
EqType – see Equalizer Types			
Level –equalizer level (±15DB for the PA-120Z project)			
Response Triggers			
Notes			

EQ-Q

Command Name		Permission	Transparency
Set:	EQ-Q	End User	Public
Get	EQ-Q?	End User	Public
Description		Syntax	
Set:	Set Q level	#EQ-Q _[SP] Channel,EqType,Q_level _[CR]	
Get:	Get Q level	#EQ-Q? _[SP] Channel,EqType _[CR]	
Response			
~ _[nn] @EQ-Q _[SP] Channel,EqType,Q_level _[CR LF]			
Parameters			
<i>Channel</i> – channel number (see Equalizer Types)			
<i>Q_level</i> – Q level, 0 to 15			
Response Triggers			
Notes			

LOUDNESS

Command Name		Permission	Transparency
Set:	LOUDNESS	End User	Public
Get:	LOUDNESS?	End User	Public
Description		Syntax	
Set:	Set audio loudness	#LOUDNESS _{SP} channel,loudness _{CR}	
Get:	Get audio loudness	#LOUDNESS? _{SP} channel _{CR}	
Response			
~nn@LOUDNESS _{SP} channel,loudness _{CR LF}			
Parameters			
channel - input or output number			
loudness - 0 or OFF / 1 or ON			
Response Triggers			
Notes			

MIC-DELAY

Command Name		Permission	Transparency
Set:	MIC-DELAY	End User	Public
Get:	MIC-DELAY?	End User	Public
Description		Syntax	
Set:	Set delay for microphone output.	# MIC-DELAY _{SP} <i>id</i> , <i>delay</i> _{CR}	
Get:	Get delay for microphone output.	# MIC-DELAY? _{SP} <i>id</i> _{CR}	
Response			
~ _{NN} @MIC-DELAY _{SP} <i>id</i> , <i>delay</i> _{CR LF}			
Parameters			
<i>Id</i> - MIC id			
<i>Delay</i> - 0-85ms			
Response Triggers			
Notes			

MIC-GAIN

Command Name		Permission	Transparency
Set:	MIC-GAIN	End User	Public
Get:	MIC-GAIN?	End User	Public
Description		Syntax	
Set:	Set the microphone gain	# MIC-GAIN _{SP} P1,P2 _{CR}	
Get :	Get the microphone gain	# MIC-GAIN? _{SP} P1 _{CR}	
Response			
Set / Get : ~nn@MIC-GAIN _{SP} P1,P2 _{CR LF}			
Parameters			
P1 - Input number, for VP-553 always 0			
P2 - level – 0 to 100			
Response Triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed			
Notes			
Sets the microphone input audio gain			

MIC-TLK

Command Name		Permission	Transparency
Set:	MIC-TLK	End User	Public
Get:	MIC-TLK?	End User	Public
Description		Syntax	
Set:	Set mic talkover parameters	# MIC-TLK _{SP} <i>channel,P1,value</i> _{CR}	
Get:	Get mic talkover parameters	# MIC-TLK? _{SP} <i>channel,P1</i> _{CR}	
Response			
~ _{nn} @MIC-TLK _{SP} <i>channel,P1,value</i> _{CR LF}			
Parameters			
<i>channel</i> – output channel number			
<i>P1</i> – parameter setting – see Audio Channel			
<i>value</i> – P1 value (in corresponding to P1 units)			
Response Triggers			
Notes			

MIDRANGE

Command Name		Permission	Transparency
Set:	MIDRANGE	End User	Public
Get:	MIDRANGE?	End User	Public
Description		Syntax	
Set:	Set audio midrange level	#MIDRANGE _{SP} channel,midrange_level _{CR}	
Get:	Get audio midrange level	#MIDRANGE? _{SP} channel _{CR}	
Response			
~nn@MIDRANGE _{SP} channel,midrange_level _{CR LF}			
Parameters			
<i>channel</i> - input or output number			
<i>midrange_level</i> - audio parameter in Kramer units, minus sign precedes negative values			
++ increase current value			
-- decrease current value			
Response Triggers			
Notes			

MIX

Command Name		Permission	Transparency
Set:	MIX	End User	Public
Get:	MIX?	End User	Public
Description		Syntax	
Set:	Set audio MIX	#MIX _{SP} channel,mix_mode _{CR}	
Get:	Get audio MIX	#MIX? _{CR}	
Response			
~nn@MIX _{SP} channel,mix_mode _{CR LF}			
Parameters			
channel - output number mix_mode - OFF 0, ON 1			
Response Triggers			
Notes			

MIX-LVL

Command Name		Permission	Transparency
Set:	MIX-LVL	End User	Public
Get:	MIX-LVL?	End User	Public
Description		Syntax	
Set:	Set mixing level of selected output	# MIX-LVL _{SP} P1,P2 _{CR}	
Get :	Get mixing level of selected output	# MIX-LVL? _{SP} P1 _{CR}	
Response			
Set / Get : ~nn@MIX-LVL _{SP} P1,P2 _{CR LF}			
Parameters			
P1 - output number			
P2 – mixing level - 0 to 100			

Response Triggers
Response is sent to the com port from which the Set (before execution) / Get command was received After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed
Notes
Sets the mixing level between the audio of the selected video In and the selected AUX audio channel

MUTE

Command Name		Permission	Transparency
Set:	MUTE	End User	Public
Get:	MUTE?	End User	Public
Description		Syntax	
Set:	Set audio mute	#MUTE _{SP} channel,mute_mode _{CR}	
Get:	Get audio mute	#MUTE? _{SP} channel _{CR}	
Response			
~nn@MUTE _{SP} channel,mute_mode _{CR LF}			
Parameters			
channel - output number mute_mode - OFF 0, ON 1			
Response Triggers			
Notes			

STEREO

Command Name		Permission	Transparency
Set:	STEREO	End User	Public
Get:	STEREO?	End User	Public
Description		Syntax	
Set:	Set stereo audio	#STEREO _{SP} channel,stereo_mode _{CR}	
Get:	Get stereo audio	#STEREO? _{SP} channel, _{CR}	
Response			
~nn@STEREO _{SP} channel,stereo_mode _{CR LF}			
Parameters			
channel - output number			
stereo_mode - OFF 0, ON 1			
Response Triggers			
Notes			

TEST-FREQ

Command Name		Permission	Transparency
Set:	TEST-FREQ	End User	Public
Get:	TEST-FREQ?	End User	Public
Description		Syntax	
Set:	Sets signal generator frequency	#TEST_FREQ _{SP} <i>frequency</i> _{CR}	
Get:	Gets signal generator frequency	#TEST_FREQ? _{SP}	
Response			
~nn@TEST_FREQ _{SP} <i>frequency</i> _{CR LF}			
Parameters			
<i>frequency</i> - 20-24000Hz			
Response Triggers			
Notes			

TLK

Command Name		Permission	Transparency
Set:	TLK	End User	Public
Get:	TLK?	End User	Public
Description		Syntax	
Set:	Set audio talkover mode status	#TLK _{SP} <i>channel,talkover_mode</i> _{CR}	
Get:	Get audio talkover mode status	#TLK? _{SP} <i>channel</i> _{CR}	
Response			
~nn@TLK _{SP} <i>channel,talkover_mode</i> _{CR LF}			
Parameters			
<i>channel</i> – input or output number depending on the device 1=scaler			
<i>talkover_mode</i> – 0 (off), 1 (mixer), 2 (talkover), 3 (mic)			
Response Triggers			
Notes			

TREBLE

Command Name		Permission	Transparency
Set:	TREBLE	End User	Public
Get:	TREBLE?	End User	Public
Description		Syntax	
Set:	Set audio treble level	#TREBLE <code> </code> <code>channel,treble_level</code> <code> </code>	
Get:	Get audio treble level	#TREBLE? <code> </code> <code>channel</code> <code> </code>	
Response			
~ <code>nn</code> @TREBLE <code> </code> <code>channel,treble_level</code> <code> </code>			
Parameters			
<i>channel</i> - input or output number			
<i>treble_level</i> - audio parameter in Kramer units, minus sign precedes negative values			
++ increase current value			
-- decrease current value			
Response Triggers			
Notes			

X-AUD-LVL

Command Name		Permission	Transparency
Set:	X-AUD-LVL	End User	Public
Get:	X-AUD-LVL?	End User	Public
Description		Syntax	
Set:	Set audio level of a specific signal	#X-AUD-LVL _{SP} signal_id,audio_level _{CR LF}	
Get:	Get audio level of a specific signal	#X-AUD-LVL? _{SP} signal_id _{CR LF}	
Response			
Get: ~nn@X-AUD-LVL _{SP} signal_id,audio_level _{CR LF}			
Parameters			
signal_id – see Signal ID Format			
audio_level – audio level in dB (range between -60 to +30) depending of the ability of the product			
Response Triggers			
Notes			
This is an Extended Protocol 3000 command			
Example			
#X-AUD-LVL OUT.ANALOG_AUDIO.1.AUDIO.1,-10			
~01@X-AUD-LVL OUT.ANALOG_AUDIO.1.AUDIO.1,-10			
#X-AUD-LVL? OUT.ANALOG_AUDIO.1.AUDIO.1			
~01@X-AUD-LVL OUT.ANALOG_AUDIO.1.AUDIO.1,-10.00			

X-AUD-LVL-RANGE

Command Name		Permission	Transparency
Set:	–	–	–
Get:	X-AUD-LVL-RANGE?	End User	Public
Description		Syntax	
Set:	–	–	–
Get:	Get the range of audio level in the product.	#X-AUD-LVL-RANGE? [SP] <i>analog_output_id</i> [CR LF]	
Response			
Get: ~ [nn] @X-AUD-LVL-RANGE [SP SP] <i>analog_output_id</i> , <i>audio_level_range</i> [CR LF]			
Parameters			
<i>analog_output_id</i> – analog output signal ID			
Response Triggers			
Notes			
This is an Extended Protocol 3000 command			
Example			
#X-AUD-LVL-RANGE? OUT.ANALOG_AUDIO.1.AUDIO.1 ~01@ X-AUD-LVL-RANGE? OUT.ANALOG_AUDIO.1.AUDIO.1, [-83,24]			

X-AUD-ONLY

Command Name		Permission	Transparency
Set:	X-AUD-ONLY	End User	Public
Get:	X-AUD-ONLY?	End User	Public
Description		Syntax	
Set:	Set audio only mode, where a black pattern is shown and Audio is played over HDMI	# X-AUD-ONLY ^[SP] <i>signal_id</i> , <i>mode</i> ^[CR LF]	
Get:	Get audio only mode	# X-AUD-ONLY? ^[SP] <i>signal_id</i> ^[CR LF]	
Response			
~ ^[nn] @ X-AUD-ONLY ^[SP] <i>signal_id</i> , <i>mode</i> ^[CR LF]			
Parameters			
<i>signal_id</i> - see Signal ID Format			
<i>mode</i> – OFF, ON (not case sensitive)			
Response Triggers			
Notes			
This is an Extended Protocol 3000 command			
Example			
#X-AUD-ONLY OUT.HDMI.2.VIDEO.1,ON ~01@X-AUD-ONLY OUT.HDMI.2.VIDEO.1,ON #X-AUD-ONLY? OUT.HDMI.2.VIDEO.1 ~01@X-AUD-ONLY OUT.HDMI.2.VIDEO.1,ON			

X-MIC-TYPE

Command Name		Permission	Transparency
Set:	X-MIC-TYPE	End User	Public
Get:	X-MIC-TYPE?	End User	Public
Description		Syntax	
Set:	Set microphone type	# X-MIC-TYPE _[SP] port_id,mic_type _[CR LF]	
Get:	Get microphone type	# X-MIC-TYPE? _[SP] port_id _[CR LF]	
Response			
Get: ~ _[nn] @X-PATTERN _[SP] signal_id,pattern_id _[CR LF]			
Parameters			
port_id – see Signal ID Format			
mic_type – DYNAMIC/CONDENSER (not case sensitive)			
Response Triggers			
Notes			
This is an Extended Protocol 3000 command			
Example			
#x-mic-type IN.MIC.1,DYNAMIC ~01@X-MIC-TYPE IN.MIC.1,DYNAMIC #x-mic-type? IN.MIC.1 ~01@X-MIC-TYPE IN.MIC.1,DYNAMIC			

X-MUTE

Command Name		Permission	Transparency
Set:	X-MUTE	End User	Public
Get:	X-MUTE?	End User	Public
Description		Syntax	
Set:	Set mute ON/OFF on a specific signal.	#X-MUTE _{SP} signal_id,state _{CR LF}	
Get:	Get mute ON/OFF state on a specific signal.	#X-MUTE? _{SP} signal_id _{CR LF}	
Response			
Get: ~nn@X-MUTE _{SP} signal_id,state _{CR LF}			
Parameters			
signal_id – see Signal ID Format			
state – OFF, ON (not case sensitive)			
Response Triggers			
Notes			
<p>This command is designed to Mute a Signal. This means that it could be applicable on any type of signal. Could be audio, video and maybe IR, USB or data if this capability is supported by the product.</p> <p>This is an Extended Protocol 3000 command</p>			
Example			
#x-mute OUT.HDMI.1.VIDEO.1,ON ~01@X-MUTE OUT.HDMI.1.VIDEO.1,ON			
#x-mute? OUT.HDMI.1.VIDEO.1 ~01@X-MUTE OUT.HDMI.1.VIDEO.1,ON			
#x-mute OUT.ANALOG_AUDIO.1.AUDIO.1,OFF ~01@X-MUTE OUT.ANALOG_AUDIO.1.AUDIO.1,OFF			
#x-mute? OUT.ANALOG_AUDIO.1.AUDIO.1 ~01@X-MUTE OUT.ANALOG_AUDIO.1.AUDIO.1,OFF			

Communication Commands

These commands are used by network devices running Protocol 3000.

Command	Description	Type	Permission
BEACON-INFO?	Get beacon information	Communication	End User
ETH-PORT	Set/get Ethernet port protocol	Communication	Administrator
NET-DHCP	Set/get DHCP mode	Communication	Administrator
NET-DNS?	Get DNS name server	Communication	End User
NET-GATE	Set/get gateway IP	Communication	Administrator
NET-IP	Set/get IP address	Communication	Administrator
NET-MAC?	Get MAC address	Communication	End User
NET-MASK	Set/get subnet mask	Communication	Administrator
TIME-SRV	Set/get time server	Communication	Administrator
UART	Set/get com port configuration	Communication	Administrator
UDP-TOUT	Set/get UDP client timeout	Communication	Administrator

BEACON-INFO?

Command Name		Permission	Transparency
Set:	–	–	–
Get:	BEACON-INFO?	End User	Public
Description		Syntax	
Set:	–	–	
Get:	Get beacon information, including IP address, UDP control port, TCP control port, MAC address, model, name	#BEACON-INFO? [SP] port_id [CR]	
Response			
~ [nn] @BEACON-INFO [SP] port_id,ip_string,udp_port,tcp_port,mac_address,model,name [CR LF]			
Parameters			
port_id - ID of the Ethernet port ip_string - dot-separated representation of the IP address udp_port - UDP control port tcp_port - TCP control port mac_address - dash-separated mac address model - device model name - device name			
Response Triggers			
After execution, notification is sent containing beacon information			
Notes			
There is no Set command. Get command initiates a notification.			

ETH-PORT

Command Name		Permission	Transparency
Set:	ETH-PORT	Administrator	Public
Get:	ETH-PORT?	End User	Public
Description		Syntax	
Set:	Set Ethernet port protocol	#ETH-PORT _{SP} portType,ETHPort _{CR}	
Get:	Get Ethernet port protocol	#ETH-PORT? _{SP} portType _{CR}	
Response			
~nn@ETH-PORT _{SP} portType,ETHPort _{CR LF}			
Parameters			
portType - TCP/UDP ETHPort - TCP/UDP port number			
Response Triggers			
Notes			

NET-CONFIG

Command Name		Permission	Transparency
Set:	NET-CONFIG	End User	Public
Get:	NET-CONFIG?	End User	Public
Description		Syntax	
Set:	Set a network configuration.	#NET-CONFIG <code> </code> <code>id,ip,net_mask,gateway</code> <code> </code>	
Get:	Get a network configuration.	#NET-CONFIG? <code> </code> <code>id</code> <code> </code>	
Response			
Get: ~nn@NET-CONFIG <code> </code> <code> </code> <code>id,ip,net_mask,gateway</code> <code> </code>			
Parameters			
<i>id</i> – network ID			
<i>ip</i> – network IP			
<i>net_mask</i> – network mask			
<i>gateway</i> – network gateway			
Response Triggers			
Notes			
Example			
# NET-CONFIG 1,192.168.113.10,255.255.0.0,192.168.0.1			
~01@ NET-CONFIG 1,192.168.113.10,255.255.0.0,192.168.0.1			

NET-DHCP

Command Name		Permission	Transparency
Set:	NET-DHCP	Administrator	Public
Get:	NET-DHCP?	End User	Public
Description		Syntax	
Set:	Set DHCP mode	#NET-DHCP _{SP} mode _{CR}	
Get:	Get DHCP mode	#NET-DHCP? _{CR}	
Response			
~nn@NET-DHCP _{SP} mode _{CR LF}			
Parameters			
mode - 0 - Do not use DHCP. Use the IP set by the factory or using the IP set command 1 - Try to use DHCP. If unavailable, use IP as above			
Response Triggers			
Notes			
Connecting Ethernet to devices with DHCP may take more time in some networks To connect with a randomly assigned IP by DHCP, specify the device DNS name (if available) using the command “NAME”. You can also get an assigned IP by direct connection to USB or RS-232 protocol port if available For proper settings consult your network administrator			

NET-DNS?

Command Name		Permission	Transparency
Set:	–	–	–
Get:	NET-DNS?	End User	Public
Description		Syntax	
Set:	–	–	
Get:	Get DNS name server	#NET-DNS? _{SP} <i>dns_id</i> _{CR}	
Response			
~nn@NET-DNS _{SP} <i>dns_id</i> , <i>ip</i> _{CR LF}			
Parameters			
<i>dns_id</i> – ID of the DNS name server to retrieve, indexing starts at “0”			
<i>lip</i> – IP address of the DNS server			
Response Triggers			
After execution, response is sent to the com port that sent the Get command			
Notes			
There is no “Set” command. Use NET-CONFIG to setup network, including DNS name servers. If <i>dns_id</i> is out of the defined DNS range, Err=03 is returned. If no <i>dns_id</i> is defined, Err 03 is returned for any <i>dns_id</i> .			

NET-GATE

Command Name		Permission	Transparency
Set:	NET-GATE	Administrator	Public
Get:	NET-GATE?	End User	Public
Description		Syntax	
Set:	Set gateway IP	#NET-GATE _{SP} <i>ip_address</i> _{CR}	
Get:	Get gateway IP	#NET-GATE? _{CR}	
Response			
~nn@NET-GATE _{SP} <i>ip_address</i> _{CR LF}			
Parameters			
<i>ip_address</i> - format: xxx.xxx.xxx.xxx			
Response Triggers			
Notes			
A network gateway connects the device via another network and maybe over the Internet. Be careful of security problems. For proper settings consult your network administrator			

NET-IP

Command Name		Permission	Transparency
Set:	NET-IP	Administrator	Public
Get:	NET-IP?	End User	Public
Description		Syntax	
Set:	Set IP address	#NET-IP _{SP} <i>ip_address</i> _{CR}	
Get:	Get IP address	#NET-IP? _{CR}	
Response			
~nn@NET-IP _{SP} <i>ip_address</i> _{CR LF}			
Parameters			
<i>ip_address</i> - format: xxx.xxx.xxx.xxx			
Response Triggers			
Notes			
For proper settings consult your network administrator			

NET-MAC?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	NET-MAC?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get MAC address	#NET-MAC? <div></div>	
Response			
~ <div></div> @NET-MAC <div></div> mac_address <div></div>			
Parameters			
mac_address - Unique MAC address. Format: XX-XX-XX-XX-XX-XX where X is hex digit			
Response Triggers			
Notes			

NET-MASK

Command Name		Permission	Transparency
Set:	NET-MASK	Administrator	Public
Get:	NET-MASK?	End User	Public
Description		Syntax	
Set:	Set subnet mask	#NET-MASK _{SP} net_mask _{CR}	
Get:	Get subnet mask	#NET-MASK? _{CR}	
Response			
~nn@NET-MASK _{SP} net_mask _{CR LF}			
Parameters			
net_mask - format: xxx.xxx.xxx.xxx			
Response Triggers			
The subnet mask limits the Ethernet connection within the local network For proper settings consult your network administrator			
Notes			

TIME-SRV

Command Name		Permission	Transparency
Set:	TIME-SRV	Administrator	Public
Get:	TIME-SRV?	End User	Public
Description		Syntax	
Set:	Set time server	#TIME-SRV _[SP] <i>mode,time_server_IP,time_server_Sync_Hour</i> _[CR]	
Get:	Get time server	#TIME-SRV? _[CR]	
Response			
~nn@TIME-SRV _[SP] <i>mode,time_server_ip,time_server_Sync_Hour,server_status</i> _[CR LF]			
Parameters			
<i>mode</i> - 0 - OFF, 1 - ON <i>time_server_ip</i> - time server IP address <i>time_server_Sync_Hour</i> - hour in day for time server sync <i>server_status</i> – ON/OFF			
Response Triggers			
Notes			
This command is needed for setting UDP timeout for the current client list			

UART

Command Name		Permission	Transparency
Set:	UART	Administrator	Public
Get:	UART?	End User	Public
Description		Syntax	
Set:	Set com port configuration	# UART _[SP] COM_Num,baud_rate,data_bits,parity,stop_bits,serial_type, 485_term _[CR]	
Get:	Get com port configuration	# UART? _[SP] COM_Num _[CR]	
Response			
Set:		~nn@UART _[SP] COM_Num,baud_rate,data_bits,parity,stop_bits,serial_type,485_term _[CR LF]	
Get:		~nn@UART? _[SP] COM_Num,baud_rate,data_bits,parity,stop_bits,serial_type,485_term _[CR LF]	
Parameters			
COM_Num - 1-n (machine dependent) baud_rate - 9600 - 115200 data_bits - 5-8 parity - 0-4 (see Parity Types) stop_bits - 1/1.5/2 serial_type - 232/485 (see Serial Types) 485_term - 1/0 (optional - this exists only when serial_type is 485)			
Response Triggers			
Notes			
In the FC-2x the serial port is selectable to RS-232 or RS-485 (usually serial port 1). If Serial is configured when RS-485 is selected, the RS-485 UART port automatically changes The command is backward compatible, meaning that if the extra parameters do not exist, FW goes to RS-232. Stop_bits 1.5 is only relevant for 5 data_bits.			

UDP-TOUT

Command Name		Permission	Transparency
Set:	UDP-TOUT	Administrator	Public
Get:	UDP-TOUT?	End User	Public
Description		Syntax	
Set:	Set UDP client timeout	#UDP-TOUT _{SP} <i>timeout_value,timeout_mode</i> _{CR}	
Get:	Get UDP client timeout	#UDP-TOUT? _{CR}	
Response			
~ _{nn} @UDP-TOUT _{SP} <i>timeout_value,timeout_mode</i> _{CR LF}			
Parameters			
<i>timeout_value</i> - 0 - 43200 sec (0 - 12H)			
<i>timeout_mode</i> - 0 - 3 (NO_TOUT / PROTOCOL_PORTS_ONLY / ALL_PORTS)			
Response Triggers			
Notes			
This command is needed for setting UDP timeout client current client list			

Multiviewer/Scaler Commands

Command	Description	Type	Permission
BEZEL	Set bezel on/off, H/V correction	Multiviewer	End User
BRIGHTNESS	Set/get window brightness	Multiviewer	End User
CONTRAST	Set/get window contrast	Multiviewer	End User
CRDT	Set/get window size and position	Multiviewer	End User
IMAGE-PROP	Set/get the image size	Multiviewer	End User
OVRL	Set/get text overlay parameters	Multiviewer	End User
OVRLBK	Set/get text overlay background parameters	Multiviewer	End User
OVRLTXT	Set/get overlay text	Multiviewer	End User
SCLR-AS	Set/get auto-sync features	Multiviewer	End User
SCLR-AUDIO-DELAY	Set audio delay for selected audio output	Multiviewer	End User
SCLR-PCAUTO	Trigger the Auto Adjust feature of the PC input	Multiviewer	End User
SHOW-OSD	Set/get OSD display	Multiviewer	End User
VIEW-MOD	Set/get layer display mode	Multiviewer	End User
W-ACTIVE	Set/get active window	Multiviewer	End User
WND-BRD	Set/get window border	Multiviewer	End User
W-COLOR	Set/get window color intensity	Multiviewer	End User
W-ENABLE	Set/get window visibility	Multiviewer	End User
W-FRZ	Set/get freeze on selected window	Multiviewer	End User
W-HUE	Set/get window hue value	Multiviewer	End User
W-LAYER	Set/get window overlay order OR Set/get ALL window overlay order	Multiviewer	End User
W-POS	Set/get window position	Multiviewer	End User
W-SATURATION	Set/get window saturation	Multiviewer	End User
W-SHARP	Set/get window sharpness value	Multiviewer	End User
W-SRC	Set/get window source	Multiviewer	End User
W-ZOOM	Set/get windows zoom	Multiviewer	End User

BEZEL

Command Name		Permission	Transparency
Set:	BEZEL	End User	Public
Get	BEZEL?	End User	Public
Description		Syntax	
Set:	Set bezel On/Off, H/V correction	#BEZEL ^[] _{SP} <i>id,type,switch,H,V</i> ^[] _{CR}	
Get:	Get bezel switch, H/V correction status	#BEZEL ^[] _{SP} <i>id</i> ^[] _{CR}	
Response			
~ ^[] _{nn} @BEZEL ^[] _{SP} <i>id,type,switch,H,V</i> ^[] _{CR LF}			
Parameters			
<i>id</i> - window id (for VP-444, use 1) <i>type</i> – 0-current H/V value, 1-max. H/V value <i>switch</i> - enable/disable bezel correction (see On/Off) <i>H,V</i> – horizontal, vertical correction values			
Response Triggers			
Notes			

BRIGHTNESS

Command Name		Permission	Transparency
Set:	BRIGHTNESS	End User	Public
Get	BRIGHTNESS?	End User	Public
Description		Syntax	
Set:	Set window brightness	#BRIGHTNESS _{SP} win_num,value _{CR}	
Get:	Get window brightness	#BRIGHTNESS? _{SP} win_num _{CR}	
Response			
~nn@BRIGHTNESS _{SP} win_num,value _{CR LF}			
Parameters			
win_num - window number setting brightness			
value - brightness value			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received			
After execution, response is sent to all com ports if BRIGHTNESS was set by any other external control device (button press, device menu and similar)			
Notes			
Value limits can vary for different devices			
Value is a property of input connected to current window. Changing window input source might cause changes in this value (refer device definitions)			

CONTRAST

Command Name		Permission	Transparency
Set:	CONTRAST	End User	Public
Get	CONTRAST?	End User	Public
Description		Syntax	
Set:	Set window contract	#CONTRAST _{SP} win_num,value _{CR}	
Get:	Get window contract	#CONTRAST? _{SP} win_num _{CR}	
Response			
~nn@CONTRAST _{SP} win_num,value _{CR LF}			
Parameters			
win_num - window number setting contrast			
value - contrast value			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received			
After execution, response is sent to all com ports if CONTRAST was set by any other external control device (button press, device menu and similar)			
Notes			
Value limits can vary for different devices			
Value is a property of input connected to current window. Changing the window input source might cause changes in this value (refer to device definitions)			

CRDT

Command Name		Permission	Transparency
Set:	CRDT	End User	Public
Get	CRDT?	End User	Public
Description		Syntax	
Set:	Set window size and position	#CRDT _{SP} win_num,x0,y0,x1,y1 _{CR}	
Get:	Get window size and position	#CRDT? _{SP} win_num _{CR}	
Response			
Set:		~nn@CRDT _{SP} win_num,x0,y0,x1,y1[result] _{CR LF}	
Get:		~nn@CRDT _{SP} win_num,x0,y0,x1,y1 _{CR LF}	
Parameters			
Set: win_num - 1-4; x0,y0 - top-left coordinate, x1, y1 - bottom-right coordinate			
Get:			
x0,x1 <=180			
y0,y1 <=144(for PAL)			
y0,y1 <= 120(for NTSC)			
win_num = 1-4 or 0 (for output window)			
Response Triggers			
Notes			

IMAGE-PROP

Command Name		Permission	Transparency
Set:	IMAGE-PROP	End User	Public
Get:	IMAGE-PROP?	End User	Public
Description		Syntax	
Set:	Set the image size	# IMAGE-PROP _{SP} P1 _{CR}	
Get :	Get the image size	# IMAGE-PROP? _{SP} P1,...,P6 _{CR}	
Response			
Set / Get : ~ _{nn} @IMAGE-PROP _{SP} P1,P2... _{CR LF}			
Parameters			
P1 - scaler number - 1-Scaler1, 2-Scaler2			
P2 - status – See Video Mute			
Response Triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed			
Notes			
Sets the image properties of the selected scaler			

OVRL

Command Name		Permission	Transparency
Set:	OVRL	End User	Public
Get	OVRL?	End User	Public
Description		Syntax	
Set:	Set text overlay parameters	#OVRL _{SP} stage,stage_id,mode,r,g,b,alpha _{CR}	
Get:	Get text overlay parameters	#OVRL? _{SP} stage,stage_id _{CR}	
Response			
~nn@OVRL _{SP} stage,stage_id,mode,r,g,b,alpha _{CR LF}			
Parameters			
<i>stage</i> - input/output (see Stage) <i>stage_id</i> - number of chosen stage (1.. max number of inputs/outputs) <i>mode</i> - show/ hide text overlay string (see On/Off) <i>r</i> - red component value (0-255) <i>g</i> - green component value (0-255) <i>b</i> - blue component value (0-255) <i>alpha</i> - alpha value (0-255)			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received After execution, response is sent to all com ports if OVRL was set by any other external control device (button press, device menu and similar)			
Notes			

OVRLBK

Command Name		Permission	Transparency
Set:	OVRLBK	End User	Public
Get	OVRLBK?	End User	Public
Description		Syntax	
Set:	Set text overlay background parameters	#OVRLBK _{SP} stage,stage_id,r,g,b,alpha _{CR}	
Get:	Get text overlay background parameters	#OVRLBK? _{SP} stage,stage_id _{CR}	
Response			
~nn@OVRLBK _{SP} stage,stage_id,r,g,b,alpha _{CR LF}			
Parameters			
stage - input/output - see Stage stage_id - number of chosen stage (1.. max number of inputs/outputs) r - red component value (0-255) g - green component value (0-255) b - blue component value (0-255) alpha - alpha value (0-255)			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received After execution, response is sent to all com ports if OVRLBK was set by any other external control device (button press, device menu and similar)			
Notes			

OVRLTXT

Command Name		Permission	Transparency
Set:	OVRLTXT	End User	Public
Get	OVRLTXT?	End User	Public
Description		Syntax	
Set:	Set overlay text	#OVRLTXT _{SP} stage,stage_id,type,size,x,y,string _{CR}	
Get:	Get overlay text	#OVRLTXT? _{SP} stage,stage_id _{CR}	
Response			
~nn@OVRLTXT _{SP} stage,stage_id,type,size,x,y,string _{CR LF}			
Parameters			
<i>stage</i> - input/output (see Stage) <i>stage_id</i> - number of chosen stage (1.. max number of inputs/outputs) <i>type</i> - font type (only 0 supported currently, TBD) <i>size</i> - font size (see Font Size) for values <i>x</i> - horizontal alignment (0 - Left, 1- Centered, 2- Right) <i>y</i> - vertical alignment (0 - Top, 1- Centered, 2- Bottom) <i>string</i> - tile text (up to 10 characters)			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received After execution, response is sent to all com ports if OVRLTXT was set by any other external control device (button press, device menu and similar)			
Notes			

SCLR-AS

Command Name		Permission	Transparency
Set:	SCLR-AS	End User	Public
Get:	SCLR-AS?	End User	Public
Description		Syntax	
Set:	Set auto-sync features	# SCLR-AS _{SP} P1,P2 _{CR}	
Get :	Get auto-sync features	# SCLR-AS? _{SP} P1 _{CR}	
Response			
Set / Get : ~nn@SCLR-AS _{SP} P1,P2.... _{CR LF}			
Parameters			
P1 - scaler Number – 1-Scaler1, 2-Scaler2 P2 - 0, 1 or 2 (0=off; 1=fast; 2=slow)			
Response Triggers			
The auto-sync feature determines whether the outputs are turned off when no video is detected on the selected input			
Notes			
Sets the auto sync features for the selected scaler			

SCLR-AUDIO-DELAY

Command Name		Permission	Transparency
Set:	SCLR-AUDIO-DELAY	End User	Public
Get:	SCLR-AUDIO-DELAY?	End User	Public
Description		Syntax	
Set:	Set the scaler audio delay	# SCLR-AUDIO-DELAY ^[SP] P1,P2 ^[CR]	
Get :	Get the scaler audio delay	# SCLR-AUDIO-DELAY? ^[SP] P1 ^[CR]	
Response			
Set / Get : ~nn@SCLR-AUDIO-DELAY ^[SP] P1,P2 ^[CR LF]			
Parameters			
P1 - audio output number – 0-audio out, 1-Scaler1, 2-Scaler2			
P2 - delay – See Audio Delay			
Response Triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed			
Notes			
Sets the audio delay for the selected audio output			

SCLR-PCAUTO

Command Name		Permission	Transparency
Set:	SCLR-PCAUTO	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Set PC auto sync of scaler	# SCLR-PCAUTO _{SP} P1,P2 _{CR}	
Get :	-	-	
Response			
~nn@SCLR-PCAUTO _{SP} P1,P2... _{CR LF}			
Parameters			
P1 - scaler Number – 1-Scaler1, 2-Scaler2			
P2 - No/Yes (“Yes” triggers the Auto-scan function. When complete, the unit returns to the “No” state)			
Response Triggers			
The auto adjust feature is implemented every time P2 is set to “Yes”			
Notes			
Trigger the Auto Adjust feature of PC input			

SHOW-OSD

Command Name		Permission	Transparency
Set:	SHOW-OSD	End User	Public
Get:	SHOW-OSD?	End User	Public
Description		Syntax	
Set:	Set the OSD of selected channel	# SHOW-OSD _{SP} <i>id,switch</i> _{CR}	
Get :	Get the OSD of selected channel	# SHOW-OSD? _{SP CR}	
Response			
~ _{nn} @SHOW-OSD _{SP} <i>id,switch</i> _{CR LF}			
Parameters			
<i>id</i> – channel number			
<i>switch</i> - On/Off – See On/Off			
Response Triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received After execution, response is sent to all com ports if SHOW-OSD was set any other external control device (button press, device menu and similar) or genlock status was changed			
Notes			

VIEW-MOD

Command Name		Permission	Transparency
Set:	VIEW-MOD	End User	Public
Get:	VIEW-MOD?	End User	Public
Description		Syntax	
Set:	Set view mode	#VIEW-MOD <code>[SP]</code> mode <code>[CR]</code>	
Get :	Get view mode	#VIEW-MOD? <code>[SP]</code>	
Response			
~ <code>[nn]</code> @VIEW-MOD <code>[SP]</code> ,mode <code>[CR LF]</code>			
Parameters			
mode – See View Modes			
Response Triggers			
Notes			

W-ACTIVE

Command Name		Permission	Transparency
Set:	W-ACTIVE	End User	Public
Get	W-ACTIVE?	End User	Public
Description		Syntax	
Set:	Set active window	#W-ACTIVE _{SP} win_num _{CR}	
Get:	Get active window	#W-ACTIVE? _{CR}	
Response			
~nn@W-ACTIVE _{SP} win_num _{CR LF}			
Parameters			
win_num - window number setting active			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received After execution, response is sent to all com ports if W-ACTIVE was set by any other external control device (button press, device menu and similar)			
Notes			

WND-BRD

Command Name		Permission	Transparency
Set:	WND-BRD	End User	Public
Get	WND-BRD?	End User	Public
Description		Syntax	
Set:	Enable/disable window border	#WND-BRD _{SP} <i>win_num,enable</i> _{CR}	
Get:	Get window border status	#WND-BRD? _{SP} <i>win_num</i> _{CR}	
Response			
~ _{NN} @WND-BRD _{SP} <i>win_num,enable</i> _{CR LF}			
Parameters			
<i>win_num</i> – Window number to enable/disable			
<i>enable</i> – 1, disable 0			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received			
After execution, response is sent to all com ports if WND-BRD was set by any other external control device (button press, device menu and similar)			
Notes			

W-COLOR

Command Name		Permission	Transparency
Set:	W-COLOR	End User	Public
Get	W-COLOR?	End User	Public
Description		Syntax	
Set:	Set window color intensity	#W-COLOR _{SP} <i>win_num,value</i> _{CR}	
Get:	Get window color intensity	#W-COLOR? _{SP} <i>win_num</i> _{CR}	
Response			
~ _{nn} @W-COLOR _{SP} <i>win_num,value</i> _{CR LF}			
Parameters			
<i>win_num</i> - window number setting contrast <i>value</i> - color intensity value			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received After execution, response is sent to all com ports if W-COLOR was set by any other external control device (button press, device menu and similar)			
Notes			
<i>Value</i> limits can vary for different devices Depending on used color space, device firmware might make a translation from <i>value</i> to RGB/YCbCr... Value is a property of input connected to current window. Changing window input source might cause changes in this value (refer to device definitions)			

W-ENABLE

Command Name		Permission	Transparency
Set:	W-ENABLE	End User	Public
Get:	W-ENABLE?	End User	Public
Description		Syntax	
Set:	Set window visibility	#W-ENABLE _{SP} <i>win_num,enable_flag</i> _{CR}	
Get:	Get window visibility status	#W-ENABLE? _{SP} <i>win_num</i> _{CR}	
Response			
~ _{nn} @W-ENABLE _{SP} <i>win_num,enable_flag</i> _{CR LF}			
Parameters			
<i>win_num</i> - window number to enable/disable			
<i>enable_flag</i> - See On/Off			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received			
After execution, response is sent to all com ports if W-ENABLE was set by any other external control device (button press, device menu and similar)			
Notes			

W-FRZ

Command Name		Permission	Transparency
Set:	W-FRZ	End User	Public
Get	W-FRZ?	End User	Public
Description		Syntax	
Set:	Set freeze on selected window	#W-FRZ _{SP} <i>win_num,freeze_flag</i> _{CR}	
Get:	Get window freeze status	#W-FRZ? _{SP} <i>win_num</i> _{CR}	
Response			
~ _{NN} @W-FRZ _{SP} <i>win_num,freeze_flag</i> _{CR LF}			
Parameters			
<i>win_num</i> - window number to enable/disable			
<i>freeze_flag</i> - see On/Off			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received			
After execution, response is sent to all com ports if W-FRZ was set by any other external control device (button press, device menu and similar)			
Notes			

W-HUE

Command Name		Permission	Transparency
Set:	W-HUE	End User	Public
Get	W-HUE?	End User	Public
Description		Syntax	
Set:	Set window hue value	#W-HUE <code>[SP]</code> <code>win_num,value</code> <code>[CR]</code>	
Get:	Get window hue value	#W-HUE? <code>[SP]</code> <code>win_num</code> <code>[CR]</code>	
Response			
~ <code>[nn]</code> @W-HUE <code>[SP]</code> <code>win_num,value</code> <code>[CR LF]</code>			
Parameters			
<code>win_num</code> - window number setting contrast			
<code>value</code> - hue value			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received			
After execution, response is sent to all com ports if W-HUE was set by any other external control device (button press, device menu and similar)			
Notes			
Value limits can vary for different devices			
Value is a property of input connected to current window. Changing window input source might cause changes in this value (refer device definitions)			

W-LAYER

Command Name		Permission	Transparency
Set:	W-LAYER	End User	Public
Get	W-LAYER?	End User	Public
Description		Syntax	
Set 1:	Set window overlay order	#W-LAYER _{SP} win_num,value _{CR}	
Set 2:	Set all window overlay order	#W-LAYER _{SP} 0xFF,value1,value2, ...,valueN _{CR}	
Get 1:	Get window overlay order	#W-LAYER? _{SP} win_num _{CR}	
Get 2:	Get all window overlay order	#W-LAYER? _{SP} 0xFF _{CR}	
Response			
Set 1/Get 1: ~nn@W-LAYER _{SP} win_num, value _{CR LF}			
Set 2/Get 2: ~nn@W-LAYER _{SP} 0xFF,value1,value2,...valueN _{CR LF}			
Parameters			
win_num - window number setting layer			
value - overlay order number			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received			
After execution, response is sent to all com ports if W-LAYER was set by any other external control device (button press, device menu and similar)			
Notes			
In case of overlays order list, number of expected layers is maximum number of windows in device			

W-POS

Command Name		Permission	Transparency
Set:	W-POS	End User	Public
Get:	W-POS?	End User	Public
Description		Syntax	
Set:	Set window position	#W-POS _{SP} <i>win_num,x0,y0,width,height</i> _{CR}	
Get:	Get window position	#W-POS? _{SP} <i>win_num</i> _{CR}	
Response			
~ _{NN} @W-POS _{SP} <i>win_num,x0,y0,width,height</i> _{CR LF}			
Parameters			
<i>win_num</i> - window number setting window position			
<i>x0,y0</i> - origin coordinate			
<i>width</i> - window width			
<i>height</i> - window height			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received			
After execution, response is sent to all com ports if W-POS was set by any other external control device (button press, device menu and similar)			
Notes			

W-SATURATION

Command Name		Permission	Transparency
Set:	W- SATURATION	End User	Public
Get:	W- SATURATION?	End User	Public
Description		Syntax	
Set:	Set window saturation	# W-SATURATION _{SP} <i>win_id,value</i> _{CR}	
Get:	Get window saturation	# W-SATURATION? _{SP} <i>win_id</i> _{CR}	
Response			
~ _{nn} @W-SATURATION _{SP} <i>win_id,value</i> _{CR LF}			
Parameters			
<i>win_id</i> – window/output picture id <i>value</i> – saturation value (0-100)			
Response Triggers			
Notes			

W-SHARP

Command Name		Permission	Transparency
Set :	W-SHARP	User	Public
Get:	W-SHARP?	User	Public
Description		Syntax	
Set:	Set window sharpness value	#W-SHARP _{SP} <i>win_num,value</i> _{CR}	
Get:	Get window sharpness value	#W-SHARP? _{SP} <i>win_num</i> _{CR}	
Response			
~ _{nn} @W-SHARP _{SP} <i>win_num,value</i> _{CR LF}			
Parameters			
<i>win_num</i> - window number to set sharpness <i>value</i> - sharpness value			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received After execution, response is sent to all com ports if W-POS was set by any other external control device (button press, device menu and similar)			
Notes			
<i>Value</i> limits can vary for different devices <i>Value</i> is a property of input connected to current window. Changing window input source might cause changes in this value (refer device definitions)			

W-SRC

Command Name		Permission	Transparency
Set :	W-SRC	User	Public
Get	W-SRC?	User	Public
Description		Syntax	
Set:	Set window source	#W-SRC _{SP} <i>win_num,src</i> _{CR}	
Get:	Get window source	#W-SRC? _{SP} <i>win_num</i> _{CR}	
Response			
~ _{NN} @W-SRC _{SP} <i>win_num,src</i> _{CR LF}			
Parameters			
<i>win_num</i> - window number to set new source			
<i>src</i> – input source to connect to window (1... max input number)			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received			
After execution, response is sent to all com ports if W-SRC was set by any other external control device (button press, device menu and similar)			
Notes			
<i>src</i> limits can vary for different devices			

W-ZOOM

Command Name		Permission	Transparency
Set:	W-ZOOM	End User	Public
Get	W-ZOOM?	End User	Public
Description		Syntax	
Set:	Set window zoom	#W-ZOOM _{SP} <i>win_num,scale</i> _{CR}	
Get:	Get window zoom	#W-ZOOM? _{SP} <i>win_num</i> _{CR}	
Response			
~ _{NN} @W-ZOOM _{SP} <i>win_num,scale</i> _{CR LF}			
Parameters			
<i>win_num</i> - window number setting new source			
<i>scale</i> - zoom scale in percentage			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received			
After execution, response is sent to all com ports if W-ZOOM was set by any other external control device (button press, device menu and similar)			
Notes			

EDID Handling Commands

Command	Description	Type	Permission
CPEDID	Copy EDID data from the output to the input EEPROM	EDID Handling	End User
EDID-AUDIO	Set/get audio capabilities for EDID	EDID Handling	End User
EDID-CS	Set/get EDID defined color space	EDID Handling	End User
GEDID	Set/get EDID data	EDID Handling	End User
LDEDID	Load EDID data	EDID Handling	End User
LOCK-EDID	Lock last read EDID	EDID Handling	End User

CPEDID

Command Name		Permission	Transparency
Set:	CPEDID	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Copy EDID data from the output to the input EEPROM	#CPEDID _{SP} src_type,src_id,dst_type,dest_bitmap _{CR} or #CPEDID _{SP} src_type,src_id,dst_type,dest_bitmap,safe_mode _{CR}	
Get:	-	-	
Response			
~nn@CPEDID _{SP} src_stg,src_id,dst_type,dest_bitmap _{CR LF} ~nn@CPEDID _{SP} src_stg,src_id,st_type,dest_bitmap,safe_mode _{CR LF}			
Parameters			
<i>src_type</i> - EDID source type (usually output) (see EDID Source) <i>src_id</i> - number of chosen source stage (1.. max number of inputs/outputs) <i>dst_type</i> - EDID destination type (usually input) (see EDID Source) <i>dest_bitmap</i> - bitmap representing destination IDs. Format: XXXX...X, where X is hex digit. The binary form of every hex digit represents corresponding destinations. Setting '1' says that EDID data has to be copied to this destination <i>safe_mode</i> - 0 - device accepts the EDID as is without trying to adjust 1 - device tries to adjust the EDID (default value if no parameter is sent)			
Response Triggers			
Response is sent to the com port from which the Set was received (before execution)			
Notes			
Destination bitmap size depends on device properties (for 64 inputs it is a 64-bit word) Example: bitmap 0x0013 means inputs 1,2 and 5 are loaded with the new EDID In certain products <i>Safe_mode</i> is an optional parameter. See the HELP command for its availability			

EDID-AUDIO

Command Name		Permission	Transparency
Set:	EDID-AUDIO	End User	Public
Get:	EDID-AUDIO?	End User	Public
Description		Syntax	
Set:	Set audio capabilities for EDID	# EDID-AUDIO <code>SP</code> <i>mode</i> <code>CR</code>	
Get :	Get audio capabilities for EDID	# EDID-AUDIO? <code>SP CR</code>	
Response			
~ <code>nn</code> @EDID-AUDIO <code>SP</code> <i>mode</i> <code>CR LF</code>			
Parameters			
<i>mode</i> – audio block added to EDID (see EDID Audio Capabilities)			
Response Triggers			
Notes			

EDID-CS

Command Name		Permission	Transparency
Set:	EDID-CS	End User	Public
Get:	EDID-CS?	End User	Public
Description		Syntax	
Set:	Set EDID color space	# EDID-CS _{SP} <i>id, ColSpace</i> _{CR}	
Get :	Get EDID color space	# EDID-CS? _{SP} <i>id</i> _{CR}	
Response			
~ _{nn} @EDID-CS _{SP} <i>id, ColSpace</i> _{CR LF}			
Parameters			
<i>id</i> – channel number			
<i>ColSpace</i> – color space (see Color Space)			
Response Triggers			
Notes			
Set command might change the current EDID			

EDID-DC

Command Name		Permission	Transparency
Set:	EDID-DC	End User	Public
Get:	EDID-DC?	End User	Public
Description		Syntax	
Set:	Force removal of deep color on EDID or leaving it as in the original EDID.	# EDID-DC _[SP] input_id,remove_deep_color _[CR LF]	
Get:	Get the input's deep color removal status.	# EDID-DC? _[SP] input_id _[CR LF]	
Response			
Get: ~nn@ EDID-DC _[SP SP] input_id,remove_deep_color _[CR LF]			
Parameters			
input_id – the input ID where the EDID deep color changes take place			
remove_deep_color – see EDID Deep Color			
Response Triggers			
Notes			
Example			
#EDID-DC 1,1			
~01@ EDID-DC 1,1			

GEDID

Command Name		Permission	Transparency
Set:	GEDID	Administrator	Public
Get:	GEDID?	End User	Public
Description		Syntax	
Set:	Set EDID data from device	#GEDID <code>[SP]</code> <i>stage,stage_id</i> <code>[CR]</code>	
Get:	Get EDID support on certain input/output	#GEDID? <code>[SP]</code> <i>stage,stage_id</i> <code>[CR]</code>	
Response			
Set: Multi-line response: ~ <code>[nn]</code> @GEDID <code>[SP]</code> <i>stage,stage_id,size</i> <code>[CR LF]</code> EDID_data <code>[CR LF]</code> ~ <code>[nn]</code> @GEDID <code>[SP]</code> <i>stage,stage_id</i> <code>[SP]</code> OK <code>[CR LF]</code> Get: ~ <code>[nn]</code> @GEDID <code>[SP]</code> <i>stage,stage_id,size</i> <code>[CR LF]</code>			
Parameters			
<i>stage</i> - input/output (see EDID Source) <i>stage_id</i> - number of chosen stage (1.. max number of inputs/outputs) <i>size</i> - EDID data size. For Set, size of data to be sent from device, for Get, 0 means no EDID support			
Response Triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received			
Notes			
For Get, size=0 means EDID is not supported For old devices that do not support this command. ~ <code>[nn]</code> @ERR 002 <code>[CR LF]</code> is received			

LDEDID

Command Name		Permission	Transparency
Set:	LDEDID	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Write EDID data from external application to device	Multi-step syntax (see following steps)	
Get:	None	None	
Communication Steps (Command and Response)			
Step 1: #LDEDID _[SP] <i>dst_type,dest_bitmask,size,safe_mode</i> _[CR]			
Response 1: ~ _[nn] @LDEDID _[SP] <i>dst_type,dest_bitmask,size,safe_mode</i> _[SP] READY _[CR LF] or ~ _[nn] @LDEDID _[SP] ERR _[nn] _[CR LF]			
Step 2: If ready was received, send <u>EDID_DATA</u>			
Response 2: ~ _[nn] @LDEDID _[SP] <i>dst_type,dest_bitmask,size,safe_mode</i> _[SP] OK _[CR LF] or ~ _[nn] @LDEDID _[SP] ERR _[nn] _[CR LF]			
Parameters			
<i>dst_type</i> - EDID destination type (usually input) (see EDID Source)			
<i>dest_bitmask</i> - bitmap representing destination IDs. Format: 0x ^{*****} , where * is ASCII presentation of hex digit. The binary presentation of this number is a bit mask for destinations. Setting '1' means EDID data has to be copied to this destination			
<i>size</i> - EDID data size			
<i>safe_mode</i> - 0 - Device accepts the EDID as is without trying to adjust			
1 - Device tries to adjust the EDID			
<u>EDID_DATA</u> - data in protocol packets (see Packet Protocol Structure)			
Response Triggers			
Response is sent to the com port from which the Set (before execution)			
Notes			
When the unit receives the LDEDID command it replies with READY and enters the special EDID packet wait mode. In this mode the unit can receive only packets and not regular protocol commands.			
If the unit does not receive correct packets for 30 seconds or is interrupted for more than 30 seconds before receiving all packets, it sends timeout error ~ _[nn] @LDEDID _[SP] ERR01 _[CR LF] and returns to the regular protocol mode. If the unit received data that is not a correct packet, it sends the corresponding error and returns to the regular protocol mode.			
See Protocol Packet reference in Packet Protocol Structure			

LOCK-EDID

Command Name		Permission	Command Name
Set:	LOCK-EDID	End User	End User
Get:	LOCK-EDID?	End User	End User
Description		Syntax	
Set:	Lock last read EDID	#LOCK-EDID _{SP} <i>input_id,lock_mode</i> _{CR}	
Get :	Get EDID lock state	#LOCK-EDID? _{SP} <i>input_id</i> _{CR}	
Response			
~ _{nn} @LOCK-EDID _{SP} <i>input_id,lock_mode</i> _{CR LF}			
Parameters			
<i>input_id</i> - 1....num of system inputs			
<i>lock_mode</i> - 0/OFF - unlocks EDID, 1/ON - locks EDID (see On/Off)			
Response Triggers			
Notes			

Step-in Commands

Command	Description	Type	Permission
BTN	Set/get module state	Step-in	End User
PROG-ACTION	Set/get step-in button action list	Step-in	End User
STEPIN-CP?	Get module STEP-IN capabilities	Step-in	End User

BTN

Command Name		Permission	Transparency
Set:	BTN	User	Public
Get:	BTN?	User	Public
Description		Syntax	
Set:	Set module state	#BTN _{SP} <i>button_num</i> , <i>mode</i> _{CR}	
Get:	Get module state	#BTN? _{SP} <i>button_num</i> _{CR}	
Response			
~ _{NN} @BTN _{SP} <i>button_num</i> , <i>mode</i> _{CR LF}			
Parameters			
<i>button_num</i> – button number (0...n) <i>mode</i> – 0 – mute 1 – active 255 (0xFF) – pending (request step in) (Get command only) In case of ECHO notification, the mode is replaced by the input # of the Step-in client and does not mean the status of the button. An ECHO-ED notification happens only when a button becomes active			
Response Triggers			
Notes			
After a SET command, LEDs show the button status: mute – button LED off active – button LED on pending – button LED flashing The Step-in master uses this command to get the actual status and identify if the device is in pending Step-in request. In reply to the Step-in request, the Step-in master updates the button status by sending set to activate and configures the Step-in action. Other Step-in clients are set to mute.			

PROG-ACTION

Command Name		Permission	Transparency
Set:	PROG-ACTION	End user	Public
Get:	PROG-ACTION?	End user	Public
Description		Syntax	
Set:	Set step-in button action bitmap	# PROG-ACTION _{SP} <i>type,port_id,button_id,actions_bitmap</i> _{CR}	
Get:	Get step-in button action bitmap	# PROG-ACTION? _{SP} <i>port_type,port_id,button_id</i> _{CR}	
Response			
~ _{nn} @PROG-ACTION _{SP} <i>port_type,port_id,button_id,actions_bitmap</i> _{CR LF}			
Parameters			
<i>port_type</i> - input/output (see Stage) <i>port_id</i> – see Port ID Format <i>button_id</i> - external programmable button ID <i>actions_bitmap</i> – bitmap representing actions to perform after receiving <i>button_id</i> . format: XXXX...X, where X is a hex digit. The binary form of every hex digit represents actions from the table (see Software Programmed). Setting ‘1’ says that the corresponding action must be executed			
Response Triggers			
Notes			
Programs matrix action as a response for external event (programmable button pressed)			

STEPIN-CP?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	STEPIN-CP?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get module Step-in capabilities	# STEPIN-CP? _{CR}	
Response			
~ _{nn} @STEPIN-CP _{SP} capabilities,num_of_inputs,num_of_cntl_btn _{CR LF}			
Parameters			
capabilities – 1 - module supports Step-in 0 - module doesn't support Step-in num_of_inputs - number of video inputs for remote switching num_of_cntl_btn - number of control buttons to program in master device type1, type2... typeN – input type according to num_of_inputs, see Video Port Type			
Response Triggers			
Notes			
If a module does not support step-in it might respond with an error “command not supported”.			

I/O Gateway Commands

Command	Description	Type	Permission
COM-ROUTE	Set/get tunneling port routing	I/O Gateway	Administrator
COM-ROUTE-ADD	Add communication route tunnel connection	I/O Gateway	Administrator
COM-ROUTE-REMOVE	Remove communication route tunnel connection	I/O Gateway	Administrator
ETH-TUNNEL?	Get opened tunnel parameters	I/O Gateway	Administrator
GPIO-CFG	Set/get HW GPIO configuration	I/O Gateway	End User
GPIO-STATE	Set/get HW GPIO state	I/O Gateway	End User
GPIO-STEP	Set/get HW GPIO step	I/O Gateway	End User
GPIO-THR	Set/get HW GPIO threshold voltage	I/O Gateway	End User
GPIO-VOLT?	Get HW GPIO voltage level	I/O Gateway	End User
IR-LEARN	Send IR learning command	I/O Gateway	End User
IR-SND	Send IR command to port	I/O Gateway	End User
IR-STOP	Send IR stop command to port	I/O Gateway	End User
PORT-LOCK	Set/get the port lock state	I/O Gateway	End User
PORT-TYPE	Set/get the port type	I/O Gateway	End User
RELAY-STATE	Set/get relay state	I/O Gateway	End User

COM-ROUTE

Command Name		Permission	Transparency
Set:	–	–	–
Get:	COM-ROUTE?	End User	Internal
Description		Syntax	
Set:	Set tunneling port routing	#COM-ROUTE _{SP} COM_Num,portType,ETHPort,ETH_rep_en,TCP_keep_alive_timing _{CR}	
Get:	Get tunneling port routing	#COM-ROUTE? _{SP} COM_Num _{CR}	
Response			
~nn@COM-ROUTE _{SP} COM_Num,portType,ETHPort,ETH_rep_en,TCP_keep_alive_timing _{CR LF}			
Parameters			
COM_Num – machine dependent, * (get all route tunnels) portType - TCP/UDP (see Port Types) ETHPort - TCP/UDP port number ETH_rep_en - 1 - COM port sends replies to new clients. 0 - COM port does not send replies to new clients TCP_keep_alive_timing - 0-3600 seconds - every x seconds the device sends an empty string to TCP client ("0")			
Response Triggers			
Notes			
This command sets tunneling port routing. Every com port can send or receive data from the ETH port. All com ports can be configured to the same ETH port.			

COM-ROUTE-ADD

Command Name		Permission	Transparency
Set:	COM-ROUTE-ADD	Administrator	Internal
Get:	-	-	-
Description		Syntax	
Set:	Add a communication route tunnel connection	#COM-ROUTE-ADD ^[SP] <i>ComNum,PortType,EthPort,EthRepEn,Timeout</i> ^[CR]	
Get:	-	-	
Response			
~ ^[nn] @COM-ROUTE-ADD ^[SP] <i>ComNum,PortType,EthPort,EthRepEn,Timeout</i> ^[CR LF]			
Parameters			
<i>COM_Num</i> - machine dependent <i>portType</i> - TCP/UDP (see Port Types) <i>ETHPort</i> - TCP/UDP port number <i>ETH_rep_en</i> - 1 - COM port sends replies to new clients. 0 - COM port does not send replies to new clients <i>Timeout</i> - Keep alive timeout in seconds (1 to 3600)			
Response Triggers			
Notes			

COM-ROUTE-REMOVE

Command Name		Permission	Transparency
Set:	COM-ROUTE-REMOVE	Administrator	Internal
Get:	-	-	-
Description		Syntax	
Set:	Remove a communication route tunnel connection	#COM-ROUTE-ADD _{SP} ComNum _{CR}	
Get:	-	-	
Response			
~nn@COM-ROUTE-REMOVE _{SP} ComNum _{CR LF}			
Parameters			
Com_Num – machine dependent			
Response Triggers			
Notes			

ETH-TUNNEL?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	ETH-TUNNEL?	Administrator	Internal
Description		Syntax	
Set:			
Get:	Get an open tunnel parameters	# ETH-TUNNEL? _{SP} <i>TunnelId</i> _{CR}	
Response			
~ _{nn} @ETH-TUNNEL _{SP} <i>TunnelId,ComNum,PortType,EthPort,EthIp,RemotPort,EthRepEn,Wired</i> _{CR LF}			
Parameters			
<i>TunnelId</i> – tunnel ID number, * (get all open tunnels) <i>ComNum</i> – UART number <i>portType</i> – TCP/UDP (see Port Types) <i>ETHPort</i> – TCP/UDP port number <i>EthIp</i> – client IP address <i>RemotPort</i> – remote port number <i>EthRepEn</i> – 1 = COM port sends replies to new clients. 0 = COM port does not send replies to new clients <i>Wired</i> – 1 = wired connection, 0 = not wired connection			
Response Triggers			
Notes			

GPIO-CFG

Command Name		Permission	Transparency
Set:	GPIO-CFG	End User	Public
Get:	GPIO-CFG?	End User	Public
Description		Syntax	
Set:	Set HW GPIO configuration	#GPIO-CFG _{SP} <i>HwGpioNumber,HwGpioType,HwGpioDir,Pullup</i> _{CR}	
Get:	Get HW GPIO configuration	#GPIO-CFG _{SP} <i>HwGpioNumber</i> _{CR}	
Response			
~ _{nn} @GPIO-CFG _{SP} <i>HwGpioNum,HwGpioType,HwGpioDir</i> _{CR LF}			
Parameters			
<i>HwGpioNum</i> – hardware GPIO number (1-n) <i>HwGpioType</i> – hardware GPIO type (0=analog, 1=digital) <i>HwGpioDir</i> – hardware GPIO direction (0=input, 1=output) <i>Pullup</i> – enable/disable pull-up (0=disable, 1=enable)			
Response Triggers			
Notes			

GPIO-STATE

Command Name		Permission	Transparency
Set:	GPIO-STATE	End User	Public
Get:	GPIO-STATE?	End User	Public
Description		Syntax	
Set:	Set HW GPIO state	#GPIO-STATE _{SP} HwGpioNumber,HwGpioState _{CR}	
Get:	Get HW GPIO state	#GPIO-STATE _{SP} HwGpioNumber _{CR}	
Response			
~nn@GPIO-STATE _{SP} HwGpioNum,HwGpioState _{CR LF}			
Parameters			
HwGpioNum – hardware GPIO number (1-n)			
HwGpioState – hardware GPIO state – See note below			
Response Triggers			
Notes			
GPIO-STATE? can only be sent in digital out mode and the answer is 0=Low, 1=High. In all other modes an error message is sent			
The device uses this command to notify the user of any change regarding the step and voltage in:			
In digital mode the answer is 0 (low), 1 (high)			
In analog mode the answer is 0 to 100			

GPIO-STEP

Command Name		Permission	Transparency
Set:	GPIO-STEP	End User	Public
Get:	GPIO-STEP?	End User	Public
Description		Syntax	
Set:	Set HW GPIO step	#GPIO-STEP _{SP} <i>HwGpioNumber,Step</i> _{CR}	
Get:	Get HW GPIO step	#GPIO-STEP _{SP} <i>HwGpioNumber</i> _{CR}	
Response			
~ _{nn} @GPIO-STEP _{SP} <i>HwGpioNumber,NumOfStep,CurrentStep</i> _{CR LF}			
Parameters			
<i>HwGpioNum</i> – HW GPIO number (1-n)			
<i>NumOfStep</i> – the configuration step – See note below			
<i>CurrentStep</i> – the actual step depending on the measured voltage			
Response Triggers			
Notes			
In digital mode the response is 2			
In analog mode the response is 1 to 100			
In other modes an error is returned			

GPIO-THR

Command Name		Permission	Transparency
Set:	GPIO-THR	End User	Public
Get:	GPIO-THR?	End User	Public
Description		Syntax	
Set:	Set HW GPIO voltage levels	#GPIO-THR _{SP} <i>HwGpioNumber,LowLevel,HighLevel</i> _{CR}	
Get:	Get HW GPIO voltage levels	#GPIO-THR? _{SP} <i>HwGpioNumber</i> _{CR}	
Response			
~ _{nn} @GPIO-THR _{SP} <i>HwGpioNumber,LowLevel,HighLevel</i> _{CR LF}			
Parameters			
<i>HwGpioNum</i> – hardware GPIO number (1-n) <i>LowLevel</i> – voltage 500 to 28000 millivolts <i>HighLevel</i> – voltage 2000 to 30000 millivolts			
Response Triggers			
Notes			

GPIO-VOLT?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	GPIO-VOLT?	End User	Public
Description		Syntax	
Set:			
Get:	Get voltage levels of HW GPIO	GPIO-VOLT? _{SP} <i>HwGpioNumber</i> _{CR}	
Response			
~ _{nn} @GPIO-VOLT _{SP} <i>HwGpioNumber, Voltage</i> _{CR LF}			
Parameters			
<i>HwGpioNum</i> – hardware GPIO number (1-n) <i>Voltage</i> – voltage 0 to 30000 millivolts			
Response Triggers			
Notes			
This command is not available in digital out mode			

IR-LEARN

Command Name		Permission	Transparency
Set:	IR-LEARN	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Send IR learning command	# IR-LEARN _[SP] <i>CommandName,Timeout</i> _[CR]	
Get:	-	-	
Response			
~ _[nn] @IR-LEARN _[SP] <i>CommandName,IR_Status</i> _[CR LF]			
Parameters			
<i>CommandName</i> – String: IR command name limited to 15 chars. Controlling device must send the correct name (white space or commas forbidden)			
<i>Timeout</i> – Timeout in seconds (1 to 60)			
<i>IR_Status</i> – See IR Status			
Response Triggers			
Notes			

IR-SND

Command Name		Permission	Transparency
Set:	IR-SND	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Send IR command to port	#IR-SND _[SP] <i>PortNum,Cmdid,CmdName,Repeat,TotalPackages,PackageNum,<pronto command...></i> _[CR]	
Get:	-	-	
Response			
~nn@IR-SND _[SP] <i>PortNum,Cmdid,CmdName,Status</i> _[CR LF]			
Parameters			
<i>Port_Num</i> – [1..4] IR port transmitting the command. ‘*’ broadcasts to all ports			
<i>Cmd_id</i> – serial number of command for flow control and response commands from device			
<i>CmdName</i> – command name (length limit 15 chars)			
<i>Repeat</i> – number of times the IR command is transmitted (limited to 50; repeats > 50 are truncated to 50), default = 1			
<i>Total_packages</i> – number of messages the original command was divided into, default = 1			
<i>Package_num</i> – chunk serial number (only valid when <i>Total_packages</i> >1)			
<i>Pronto command</i> – Pronto format command (in HEX format, no leading zeros, no ‘0x’ prefix)			
<i>Status</i> – 0=no error (see IR Status)			
Response Triggers			
Notes			

IR-STOP

Command Name		Permission	Transparency
Set:	IR-STOP	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Send IR stop command to port	#IR-STOP _{SP} PortNum,Cmdid,CmdName _{CR}	
Get:	-	-	
Response			
~nn@IR-STOP _{SP} PortNum,Cmdid,CmdName,Status _{CR LF}			
Parameters			
Port_Num – [1..4] IR port transmitting the command. '*' broadcasts to all ports			
Cmd_id – serial number of command for flow control and response commands from device			
CommandName – a string, the alias of the IR command. The controlling device is responsible for sending the correct name			
Status – 0=no error (see IR Status)			
Response Triggers			
Notes			

PORT-LOCK

Command Name		Permission	Transparency
Set:	PORT-LOCK	End User	Public
Get:	PORT-LOCK?	End User	Public
Description		Syntax	
Set:	Set the port lock	# PORT-LOCK _{SP} <i>PortNumber</i> , <i>LockState</i> _{CR}	
Get:	Get the port lock state	# PORT-LOCK? _{SP} <i>PortNumber</i> _{CR}	
Response			
~nn@PORT-LOCK _{SP} <i>PortNumber</i> , <i>LockState</i> _{CR LF}			
Parameters			
<i>PortNumber</i> - port number (1-n)			
<i>LockState</i> - lock (1), unlock (0)			
Response Triggers			
Notes			

PORT-TYPE

Command Name		Permission	Transparency
Set:	PORT-TYPE	End User	Public
Get:	PORT-TYPE?	End User	Public
Description		Syntax	
Set:	Change the port type	# PORT-TYPE _{SP} PortNumber,PortType,485Term _{CR}	
Get:	Get the port type	# PORT-TYPE ? _{SP} PortNumber _{CR}	
Response			
~nn@PORT-TYPE _{SP} PortNumber,PortType,485Term _{CR LF}			
Parameters			
PortNumber - Port number (1-n)			
PortType - See Port Types			
485Term - 485 termination state: enable (1), disable (0)			
Response Triggers			
Notes			
485Term is effective only when the port type is UART			

RELAY-STATE

Command Name		Permission	Transparency
Set:	RELAY-STATE	End User	Public
Get:	RELAY-STATE?	End User	Public
Description		Syntax	
Set:	Set relay state	#RELAY-STATE _{SP} RelayNumber,RelayState _{CR}	
Get:	Get relay state	#RELAY-STATE? _{SP} RelayNumber _{CR}	
Response			
~nn@RELAY-STATE _{SP} RelayNum,RelayState _{CR LF}			
Parameters			
RelayNumber – relay number (1-2)			
RelayState – relay state 0 (open), 1 (close)			
Response Triggers			
Notes			

Streamer Commands

Command	Description	Type	Permission
KDS-ACTION	Set/get streamer action	Streamer	Administrator
KDS-ACTIVE-CLNT?	Get number of clients connected to the encoder in RTSP	Streamer	Administrator
KDS-AUD	Set/get audio source/destination	Streamer	Administrator
KDS-BR?	Get bitrate	Streamer	Administrator
KDS-CONN	Set/get streaming connection parameters	Streamer	Administrator
KDS-EN	Set/get streamer encoding method	Streamer	Administrator
KDS-FR?	Get framerate	Streamer	Administrator
KDS-GOP?	Get GOP size	Streamer	Administrator
KDS-LATENCY	Set/get network latency estimated in RTP jitter buffer	Streamer	Administrator
KDS-METHOD?	Get streaming method	Streamer	Administrator
KDS-MOD?	Get streamer working mode	Streamer	Administrator
KDS-OP-STAT?	Get streaming operational status	Streamer	Administrator
KDS-PROT?	Get streaming protocol	Streamer	Administrator
KDS-SCALE	Set/get scaling mode	Streamer	Administrator

KDS-ACTION

Command Name		Permission	Transparency
Set:	KDS-ACTION	End User	Public
Get:	KDS-ACTION?	End User	Public
Description		Syntax	
Set:	Set action to perform by encoder/decoder	#KDS-ACTION <code>[SP]</code> <i>action</i> <code>[CR]</code>	
Get:	Get last action (state) performed by encoder/decoder	#KDS-ACTION? <code>[CR]</code>	
Response			
~ <code>[nn]</code> @KDS-ACTION <code>[SP]</code> <i>action</i> <code>[CR LF]</code>			
Parameters			
<i>action</i> - action (state) for encoder/decoder (see Streamer Action)			
Response Triggers			
Notes			

KDS-ACTIVE-CLNT?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	KDS-ACTIVE-CLNT?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get number of clients connected to the encoder in RTSP	#KDS-ACTIVE-CLNT? <div>CR</div>	
Response			
~ <div>nn</div> @KDS-ACTIVE-CLNT <div>SP</div> value <div>CR LF</div>			
Parameters			
value - number of clients connected to the encoder in RTSP			
Response Triggers			
Notes			

KDS-AUD

Command Name		Permission	Transparency
Set:	KDS-AUD	End User	Public
Get:	KDS-AUD?	End User	Public
Description		Syntax	
Set:	Set audio source/destination	#KDS-AUD _{SP} <i>mode</i> _{CR}	
Get:	Get audio source/destination	#KDS-AUD? _{CR}	
Response			
~ _{nn} @KDS-AUD _{SP} <i>mode</i> _{CR LF}			
Parameters			
<i>mode</i> - encoder/decoder audio mode (see Streamer Audio Encoder and Streamer Audio Decoder)			
Response Triggers			
Notes			

KDS-BR?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	KDS-BR?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get bit rate	#KDS-BR? CR	
Response			
~ nn @KDS-BR SP <i>value</i> CR LF			
Parameters			
<i>value</i> – bit rate in kbps			
Response Triggers			
Notes			
Available only in encoders where encoding method is H264 (see KDS-EN command)			

KDS-CONN

Command Name		Permission	Transparency
Set:	KDS-CONN	End User	Public
Get:	KDS-CONN?	End User	Public
Description		Syntax	
Set:	Set streaming connection parameters	#KDS-CONN _{SP} P1,P2,P3 _{CR}	
Get:	Get current streaming connection parameters	#KDS-CONN? _{CR}	
Response			
~nn@KDS-CONN _{SP} P1,P2,P3 _{CR LF}			
Parameters			
P1,P2,P3 -			

KDS-EN

Command Name		Permission	Transparency
Set:	KDS-EN	End User	Public
Get:	KDS-EN?	End User	Public
Description		Syntax	
Set:	Set encoding method to encoder/decoder	#KDS-EN _{SP} <i>method</i> _{CR}	
Get:	Get current encoding method of encoder/decoder	#KDS-EN? _{CR}	
Response			
~ _{nn} @KDS-EN _{SP} <i>method</i> _{CR LF}			
Parameters			
<i>method</i> - encoder/decoder encoding method see Streamer Encoding			
Response Triggers			
Notes			
Not all the devices implement the Set command as it can be changed/set using another method. For example: automatic method detection by decoder. Refer device UM for details			

KDS-FR?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	KDS-FR?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get frame rate	#KDS-FR? <div>CR</div>	
Response			
~ <div>nn</div> @KDS-FR _{SP} <i>value</i> <div>CR LF</div>			
Parameters			
<i>value</i> – frame rate in frames per second			
Response Triggers			
Notes			
Available only in encoders where encoding method is MJPEG (see KDS-EN command)			

KDS-GOP?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	KDS-GOP?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get GOP size	#KDS-GOP? <div></div> <div>CR</div>	
Response			
~ <div>nn</div> @KDS-GOP <div>SP</div> <i>value</i> <div>CR LF</div>			
Parameters			
<i>value</i> - GOP Size			
Response Triggers			
Notes			
Available only in encoders where encoding method is H264 (see KDS-EN command)			

KDS-LATENCY

Command Name		Permission	Transparency
Set:	KDS-LATENCY	End User	Public
Get:	KDS-LATENCY?	End User	Public
Description		Syntax	
Set:	Set RTP jitter latency in ms	#KDS-LATENCY _{SP} value _{CR}	
Get:	Get RTP jitter latency	#KDS-LATENCY? _{CR}	
Response			
~nn@KDS-LATENCY _{SP} value _{CR LF}			
Parameters			
value - n (milliseconds) decoder only. Add latency in the RTP jitter buffer to allow re-ordering of the packet on time. Increases video quality in bad rendering of video.			
Response Triggers			
Notes			
Default value is 10ms. Increase this value if video is rendered with artifacts			

KDS-METHOD?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	KDS- METHOD?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get current streaming method of encoder/decoder	#KDS-METHOD? <div></div>	
Response			
~nn@KDS-METHOD <div></div> method <div></div> <div></div>			
Parameters			
method - streaming method (see IP Streaming Type)			
Response Triggers			
Notes			
Available only when RTP Streaming Protocol is configured (See KDS-PROT command) Not all the devices implement the Set command as it can be changed/set using another method. For example: automatic method detection by decoder, refer device UM for details			

KDS-MOD?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	KDS-MOD?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get device current working mode	#KDS-MOD? <div></div>	
Response			
~nn@KDS-MOD _{SP} mode _{CR LF}			
Parameters			
mode - device working mode (see Streamer Work Mode)			
Response Triggers			
Notes			
Working mode is a superset of many encoding and streaming parameters. When setting a new mode, the device notifies about all changed parameters to connected control clients			

KDS-OP-STAT?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	KDS-OP-STAT?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get streaming operational status	#KDS-OP-STAT? <input type="checkbox"/>	
Response			
~nn@KDS-OP-STAT _{SP} value _{CR LF}			
Parameters			
value – see Streaming Operational Status			
Response Triggers			
Notes			

KDS-PROT?

Command Name		Permission	Transparency
Set:	-	-	-
Get:	KDS-PROT?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get current streaming protocol of encoder/decoder	#KDS-PROT? <div></div> <div>CR</div>	
Response			
~nn@KDS-PROT <div></div> <div>SP</div> protocol <div></div> <div>CR LF</div>			
Parameters			
protocol - encoder/decoder streaming protocol (see Streamer Encoding)			
Response Triggers			
Notes			
Not all the devices implement the Set command as it can be changed/set using another method.For example: automatic method detection by decoder. Refer device UM for details			

KDS-SCALE

Command Name		Permission	Transparency
Set:	KDS-SCALE	End User	Public
Get:	KDS-SCALE?	End User	Public
Description		Syntax	
Set:	Set scaling mode	#KDS-SCALE _{SP} value _{CR}	
Get:	Get scaling mode	#KDS-SCALE? _{CR}	
Response			
~nn@KDS-SCALE _{SP} value,mode _{CR LF}			
Parameters			
Value – 0, 1 (see Streamer Decoder Scaling Mode)			
Mode – a string that indicates the actual resolution mode on the display, for example “S:1920x1080p-60”			
Response Triggers			
Notes			
This function is meaningful only for the decoder After setting this parameter, reboot the decoder to activate Scaling is only supported from resolutions: up-scaled 720p to 1080p, and down-scaled 1080p to 720p			

Messages and Codes

Device Initiated Messages

Command	Syntax
Start message	~nn@Protocol Start _{CR LF}
Switcher actions:	
Audio-video channel has switched (AFV mode)	~nn@AV _{SP} in>out _{CR LF}
Video channel has switched (breakaway mode)	~nn@VID _{SP} in>out _{CR LF}
Audio channel has switched (breakaway mode)	~nn@AUD _{SP} in>out _{CR LF}

Result and Error Codes

Syntax

In case of an error, the device responds with an error message. The error message syntax:

~NN@ERR XXX<CR><LF> - when general error, no specific command

~NN@CMD ERR XXX<CR><LF> - for specific command

NN - machine number of device, default = 01

XXX - error code

Error Codes

Error Name	Error Code	Description
P3K_NO_ERROR	0	No error
ERR_PROTOCOL_SYNTAX	1	Protocol syntax
ERR_COMMAND_NOT_AVAILABLE	2	Command not available
ERR_PARAMETER_OUT_OF_RANGE	3	Parameter out of range
ERR_UNAUTHORIZED_ACCESS	4	Unauthorized access
ERR_INTERNAL_FW_ERROR	5	Internal FW error
ERR_BUSY	6	Protocol busy
ERR_WRONG_CRC	7	Wrong CRC
ERR_TIMEOUT	8	Timeout
ERR_RESERVED	9	(Reserved)
ERR_FW_NOT_ENOUGH_SPACE	10	Not enough space for data (firmware, FPGA...)
ERR_FS_NOT_ENOUGH_SPACE	11	Not enough space - file system
ERR_FS_FILE_NOT_EXISTS	12	File does not exist
ERR_FS_FILE_CANT_CREATED	13	File can't be created
ERR_FS_FILE_CANT_OPEN	14	File can't open
ERR_RESERVED_1	15	(Reserved)
ERR_RESERVED_2	16	(Reserved)
ERR_RESERVED_3	17	(Reserved)
ERR_RESERVED_4	18	(Reserved)
ERR_RESERVED_5	19	(Reserved)
ERR_RESERVED_6	20	(Reserved)
ERR_PACKET_CRC	21	Packet CRC error
ERR_PACKET_MISSED	22	Packet number isn't expected (missing packet)
ERR_PACKET_SIZE	23	Packet size is wrong
ERR_RESERVED_7	24	(Reserved)
ERR_RESERVED_8	25	(Reserved)
ERR_RESERVED_9	26	(Reserved)
ERR_RESERVED_10	27	(Reserved)
ERR_RESERVED_11	28	(Reserved)
ERR_RESERVED_12	29	(Reserved)
ERR_EDID_CORRUPTED	30	EDID corrupted
ERR_NON_LISTED	31	Device specific errors
ERR_SAME_CRC	32	File has the same CRC – no changed
ERR_WRONG_MODE	33	Wrong operation mode
ERR_NOT_CONFIGURED	34	Device/chip was not initialized

Packet Protocol Structure

The packet protocol is designed to transfer large amounts of data, such as files, IR commands, EDID data, etc.

Using the Packet Protocol

To use the packet protocol:

1. Send a command: LDRV, LOAD, IROUT, LDEDID
2. Receive Ready or ERR###
3. If Ready:
 - Send a packet
 - Receive OK on the last packet
 - Receive OK for the command
4. Packet structure:
 - Packet ID (1, 2, 3...) (2 bytes in length)
 - Length (data length + 2 for CRC) - (2 bytes in length)
 - Data (data length -2 bytes)
 - CRC - 2 bytes

01	02	03	04	05...	
Packet ID		Length		Data	CRC

5. Response:

~NNNNSP**OK**CR LF

Where NNNN is the received packet ID in ASCII hex digits.

Calculating the CRC

The polynomial for the 16-bit CRC is:

CRC-CCITT: $0x1021 = x^{16} + x^{12} + x^5 + 1$

Initial value: 0000

Final XOR Value: 0

For a code example, see:

http://sanity-free.org/133/crc_16_ccitt_in_csharp.html

CRC example:

Data = "123456789"

Result => 0x31C3

Parameters

On/Off

Number	Value
0	Off
1	On

Stage

Number	Value
0	Input
1	Output
2	(Reserved)
3	(Reserved)

Signal Type

Number	Value
0	No signal
1	DVI
2	HDMI
3	DisplayPort
4	HDBaseT
5	SDI
6	VGA
7	Follow output
8	DGKat

Input Signal Status

Number	Value
0	No signal
1	There is a signal

Genlock Types

Number	Value
0	Free run
1	Digital
2	Analog

Video Port Type

Number	Value
0	Undefined
1	DVI
2	HDMI
3	DisplayPort
4	HDBaseT
5	SDI
6	VGA
7	DGKat

Video Resolutions

VIC Number	Video Resolution
0	No Signal (for input) / Native - EDID (for output)
1	640x480p@59.94Hz/60Hz
2	720x480p@59.94Hz/60Hz
3	720x480p@59.94Hz/60Hz
4	1280x720p@59.94Hz/60Hz
5	1920x1080i@59.94Hz/60Hz
6	720(1440)x480i@59.94Hz/60Hz
7	720(1440)x480i@59.94Hz/60Hz
8	720(1440)x240p@59.94Hz/60Hz
9	720(1440)x240p@59.94Hz/60Hz
10	2880x480i@59.94Hz/60Hz
11	2880x480i@59.94Hz/60Hz
12	2880x240p@59.94Hz/60Hz
13	2880x240p@59.94Hz/60Hz
14	1440x480p@59.94Hz/60Hz
15	1440x480p@59.94Hz/60Hz
16	1920x1080p@59.94Hz/60Hz
17	720x576p@50Hz
18	720x576p@50Hz
19	1280x720p@50Hz
20	1920x1080i@50Hz
21	720(1440)x576i@50Hz
22	720(1440)x576i@50Hz
23	720(1440)x288p@50Hz
24	720(1440)x288p@50Hz
25	2880x576i@50Hz
26	2880x576i@50Hz
27	2880x288p@50Hz
28	2880x288p@50Hz
29	1440x576p@50Hz
30	1440x576p@50Hz
31	1920x1080p@50Hz
32	1920x1080p@23.97Hz/24Hz
33	1920x1080p@25Hz
34	1920x1080p@29.97Hz/30Hz
35	2880x480p@59.94Hz/60Hz
36	2880x480p@59.94Hz/60Hz
37	2880x576p@50Hz
38	2880x576p@50Hz

VIC Number	Video Resolution
39	1920x1080i@50Hz
40	1920x1080i@100Hz
41	1280x720p@100Hz
42	720x576p@100Hz
43	720x576p@100Hz
44	720(1440)x576i@100Hz
45	720(1440)x576i@100Hz
46	1920x1080i@119.88/120Hz
47	1280x720p@119.88/120Hz
48	720x480p@119.88/120Hz
49	720x480p@119.88/120Hz
50	720(1440)x480i@119.88/120Hz
51	720(1440)x480i@119.88/120Hz
52	720x576p@200Hz
53	720x576p@200Hz
54	720(1440)x576i@200Hz
55	720(1440)x576i@200Hz
56	720x480p@239.76/240Hz
57	720x480p@239.76/240Hz
58	720(1440)x480i@239.76/240Hz
59	720(1440)x480i@239.76/240Hz
60	1280x720p@23.97Hz/24Hz
61	1280x720p@25Hz
62	1280x720p@29.97Hz/30Hz
63	1920x1080p@119.88/120Hz
64	1920x1080p@100Hz
65-100	(Reserved)
100	Custom resolution 1
101	Custom resolution 2
102	Custom resolution 3
103	Custom resolution 4
104	Custom resolution 5
104-254	(Reserved)

Video Mute

Number	Value
0	Video enabled
1	Video disabled
2	Blank picture

Color Space

Number	Value
0	RGB
1	YCbCr 4:2:2
2	YCbCr 4:4:4
3	All
4	Automatic/original config

Image Properties

Number	Value
0	Overscan
1	Full
2	Best fit
3	Panscan
4	Letterbox
5	Underscan 2
6	Underscan 1

View Modes

Number	Value
0	PIP off (matrix)
1	PIP on (dual PIP)
2	Preview (not applicable)
3	Quad
4	Video wall
5	POP

Custom Resolution

Number	Value
0	Width
1	Height
2	HTotal
3	VTotat
4	HSync width
5	HSync back porch
6	VSynx width
7	VSynx back porch
8	Frame rate
9	Interlaced (0)/Progressive (1)

Detail Timing

Number	Value
1	H-De-Start
2	H-De-Total
3	H-Total
4	V-De-Start
5	V-De-Total
6	Auto-DE-adjust
7	Auto-PHASE-adjust

Video/Audio Signal Changes

Number	Value
0	Video signal lost
1	New video signal detected
2	Audio signal lost
3	Audio signal detected
4	Disable 5V on video output if no input signal detected
5	Video cable unplugged
6	Audio cable unplugged
7	Video signal lost for signal routed as a result of a manual override action

Font Size

Number	Value
0	Small
1	Medium
2	Large

Layer Enumeration

Number	Value
1	Video
2	Audio
3	Data
4	IR
5	USB

Software Programmed

Number	Value
0	Do nothing
1	Step-in out 1
2	Step-in out 2
...	...
128	Step-in out 128
129	Echo to controller

EDID Source

Number	Value
0	Input
1	Output
2	Default EDID
3	Custom EDID

EDID Audio Capabilities

Number	Value
0	Auto
1	LPCM 2CH
2	LPCM 6CH
3	LPCM 8CH
4	Bitstream
5	HD

EDID Color Space

Number	Value
0	auto
1	RGB
2	RGB + YUV444
3	RGB + YUV422
4	RGB + YUV444 + YUV422

EDID Deep Color

Number	Value
0	Don't change
1	Remove deep color

Signal Validation

Number	Value
0	Signal or sink is not valid
1	Signal or sink is valid
2	Sink and EDID is valid

Port Types

Number	Value
0	RS-232
1	RS-232X
2	RS-485
3	Relay
4	IR
5	GPIO

Ethernet Port Types

Number	Value
1	UDP
2	TCP

HDCP Types

Number	Value
0	HDCP Off
1	HDCP On
2	Follow input
3	Mirror output ("MAC mode")

Parity Types

Number	Value
0	No
1	Odd
2	Even
3	Mark
4	Space

Serial Types

Number	Value
0	232
1	485

Audio Signal Types

Number	Value
0	No info
1	PCM
2	AC-3
3	MPEG1
4	MP3
5	MPEG2
6	AAC LC
7	DTS
8	ATRAC
9	DSD
10	E-AC-3
11	DTS-HD
12	MLP
13	DST
14	WMA Pro

Frequency Number

Number	Value
0	120
1	200
3	500
4	1200
5	3000
6	7500
8	12000

Audio Level

Number	Value
0	-10dB
20	0dB
40	+10dB

Audio Delay

Number	Value
0	Off
1	10ms
2	20ms
3	30ms
4	40ms
5	50ms
6	60ms
7	70ms
8	80ms
9	Auto

Audio Channel

Number	Value
1	Master
2	Secondary

Talkover

Number	Value
0	Depth (0-100%)
1	Trigger (db)
2	Attack Time (ms)
3	Hold time (ms)
4	Release time (ms)

Embedding Status

Number	Value
0	Analog
1	Embedded
2	Auto

Equalizer Types

Number	Value
0	Bass
1	Middle
2	Treble

Equalizer Frequency

Number	Treble	Middle	Bass
0	10K Hz	500 Hz	60 Hz
1	12.5K Hz	1K Hz	80 Hz
2	15K Hz	1.5K Hz	100 Hz
3	17.5K Hz	2.5K Hz	200 Hz

Standby Mode

Number	Value
0	Off
1	Delayed – auto mode
2	Standby mode

Filter Types

Number	Value
0	High pass filter
1	Low pass filter
2	Band pass filter

Hi-Z Voltage

Number	Value
0	70 volt
1	100 volt
0xff	Ignore

Mono Output

Number	Value
0	output is "stereo mix to mono" -- both left and right mix to one channel
1	output is "left to mono" – duplicate left channel information to the right and play both

IR Status

Number	Value
0	Sent
1	Stop
2	Done
3	Busy
4	Wrong Parameter
5	Nothing to Stop
6	Start
7	Timeout
8	Error

Menu Navigation

Number	Value
1	Menu
2	OK/Enter
3	Esc
4	Up
5	Down
6	Right
7	Left

Feature ID

Number	Value
1	Maestro
2	Room controller

Test Results

Number	Value
0	OK
1	Failed (general)
2.....N	Device specific failed error code

Streamer Action

Number	Value
0	OK
1	Failed (general)
2.....N	Device specific failed error code

Streamer Encoding

Number	Value
0	H.264
1	MJPEG

Streamer Audio Encoder

Number	Value
0	HDMI input
1	Analog input
2	None

Streamer Audio Decoder

Number	Value
0	HDMI output
1	Analog output
2	Both
3	None

IP Streaming Type

Number	Value
1	Unicast

Streamer Work Mode

Number	Value	Availability
3	HIGH_QUALITY	Both Encoder and Decoder.

Streaming Operational Status

Number	Value
0	Running
1	Not_running/stop
2	Error

Streamer Decoder Scaling Mode

Number	Value
0	Pass Thru
1	Scaling

Module Type

Number	Value
0	Undefined
1	Reserved
2	Reserved

Module Status

Number	Value
0	OK
1	Unknown error
2	No communication
3	Module missing
4	Reserved
5	Reserved