

KIT-400R: Protocol 3000

Commands

Kramer devices can be operated using Kramer Protocol 3000 commands sent via serial or Ethernet ports.

Understanding Protocol 3000

Protocol 3000 commands are a sequence of ASCII letters, structured according to the following.

- **Command format:**

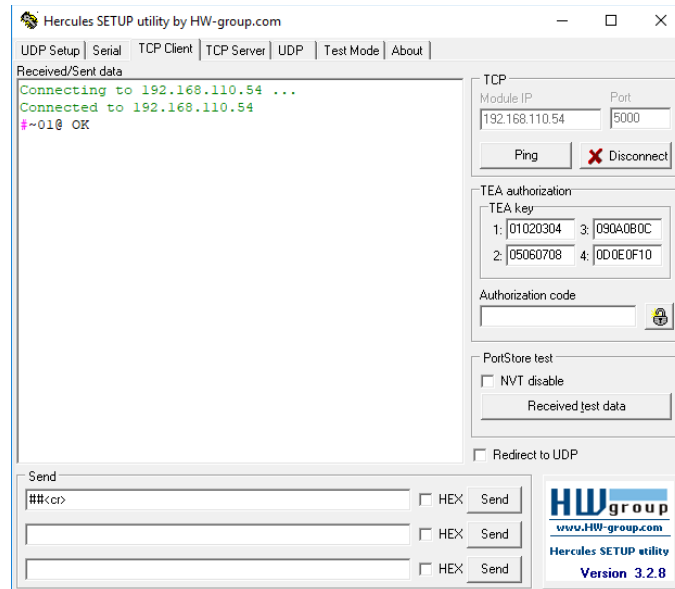
Prefix	Command Name	Constant (Space)	Parameter(s)	Suffix
#	Command	_	Parameter	<CR>

- **Feedback format:**


Prefix	Device ID	Constant	Command Name	Parameter(s)	Suffix
~	nn	@	Command	Parameter	<CR><LF>

- **Command parameters** – Multiple parameters must be separated by a comma (,). In addition, multiple parameters can be grouped as a single parameter using brackets ([and]).
- **Command chain separator character** – Multiple commands can be chained in the same string. Each command is delimited by a pipe character (|).
- **Parameters attributes** – Parameters may contain multiple attributes. Attributes are indicated with pointy brackets (<...>) and must be separated by a period (.).







The command framing varies according to how you interface with **KIT-400R**. The following figure displays how the # command is framed using terminal communication software (such as Hercules):



Protocol 3000 Commands

Function	Description	Syntax	Parameters/Attributes	Example
#	Protocol handshaking.  Validates the Protocol 3000 connection and gets the machine number. Step-in master products use this command to identify the availability of a device.	COMMAND #<CR> FEEDBACK ~nn@_ok<CR><LF>		#<CR>
AUD-LVL	Set volume level.	COMMAND #AUD-LVL_<io_mode>,<io_index>,<vol_level><CR> FEEDBACK ~nn@AUD-LVL_<io_mode>,<io_index>,<vol_level><CR><LF>	io_mode – Input/Output 1 – Output io_index – Number that indicates the specific input or output port: 1 vol_level – Volume level 0 to 100 ++ (increase current value by 1dB); -- (decrease current value by 1dB)	Set audio level to 50: #AUD-LVL_1,1,50<CR>
AUD-LVL?	Get volume level.	COMMAND #AUD-LVL?_<io_mode>,<io_index><CR> FEEDBACK ~nn@AUD-LVL_<io_mode>,<io_index>,<vol_level><CR><LF>	io_mode – Input/Output 1 – Output io_index – Number that indicates the specific input or output port: 1 vol_level – Volume level 0 to 100	Get audio output level #AUD-LVL?_1,1<CR>
AV-SW-MODE	Set input auto switch mode (per output).	COMMAND #AV-SW-MODE_<layer_type>,<out_index>,<connection_mode><CR> FEEDBACK ~nn@AV-SW-MODE_<layer_type>,<out_index>,<connection_mode><CR><LF>	layer_type – Number that indicates the signal type: 1 – Video out_index – Number that indicates the specific output: 1 connection_mode – Connection mode 0 – manual 1 – priority switch 2 – last connected switch	Set input auto switch mode (per output) to Manual: #AV-SW-MODE_1,1,0<CR>
AV-SW-MODE?	Get input auto switch mode (per output).	COMMAND #AV-SW-MODE?_<layer_type>,<out_index><CR> FEEDBACK ~nn@AV-SW-MODE_<layer_type>,<out_index>,<connection_mode><CR><LF>	layer_type – Number that indicates the signal type: 1 – Video out_index – Number that indicates the specific output: 1 connection_mode – Connection mode 0 – manual 1 – priority switch 2 – last connected switch	Get the input audio switch mode: #AV-SW-MODE?_1,1<CR>
CEC	Set display to ON/OFF	COMMAND #CEC_<state><CR> FEEDBACK ~nn@CEC_<state><CR><LF>	state – CEC state 0 – Off 1 – On	Set display to OFF via CEC: #CEC-ON<CR>
CEC-PASS	Set CEC device bypass.	COMMAND #CEC-PASS_<state><CR> FEEDBACK ~nn@CEC-PASS_<state><CR><LF>	state – CEC state 0 – Off 1 – On	Bypass device: #CEC-PASS_1<CR>


Function	Description	Syntax	Parameters/Attributes	Example
BUILD-DATE?	Get device build date.	COMMAND #BUILD-DATE?_<CR> FEEDBACK ~nn@BUILD-DATE_date,time<CR><LF>	date – Format: YYYY/MM/DD where YYYY = Year MM = Month DD = Day time – Format: hh:mm:ss where hh = hours mm = minutes ss = seconds	Get the device build date: #BUILD-DATE?<CR>
CPEDID	Copy EDID data from the output to the input EEPROM. ⓘ 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 Safe_mode is an optional parameter. See the HELP command for its availability.	COMMAND #CPEDID_edid_io,src_id,edid_io,dest_bitmap<CR> or #CPEDID_edid_io,src_id,edid_io,dest_bitmap,safe_mode<CR> FEEDBACK ~nn@CPEDID_edid_io,src_id,edid_io,dest_bitmap<CR><LF> ~nn@CPEDID_edid_io,src_id,edid_io,dest_bitmap,safe_mode<CR><LF>	edid_io – EDID source type (usually output) 0 – Output src_id – Number of chosen source stage For HDBT: 1 – Def. 1080P 2 – Def. 4K2K(3G) 3 – Def. 4K2K(3G-4:2:0) 4 – User1 5 – User2 6 – Output For HDMI: 1 – Def. 1080P 2 – Def. 4K2K(3G) 3 – Def. 4K2K(3G-4:2:0) 4 – Def. 4K2K(6G) 5 – User1 6 – User2 7 – Output edid_io – EDID destination type (usually input) 0 – Input dest_bitmap – Bitmap representing destination IDs. Format: XXXX...X, where X is hex digit. The binary form of every hex digit represents corresponding destinations. 0x01 – for HDBT. 0x02 – for HDMI safe_mode – Safe mode 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)	Copy the EDID data from the Output 1 (EDID source) to the Input: #CPEDID_1,1,0,0x1<CR> Copy the EDID data from the default EDID source to the Input: #CPEDID_2,0,0,0x1<CR>
DISPLAY?	Get output HPD status.	COMMAND #DISPLAY?_out_index<CR> FEEDBACK ~nn@DISPLAY_out_index,status<CR><LF>	out_index – Number that indicates the specific output: 1 status – HPD status according to signal validation 0 – Signal or sink is not valid 1 – Signal or sink is valid	Get the output HPD status of Output 1: #DISPLAY?_1<CR>
HDCP-MOD	Set HDCP mode. ⓘ Set HDCP working mode on the device input: HDCP supported - HDCP_ON [default]. HDCP not supported - HDCP OFF. HDCP support changes following detected sink - MIRROR OUTPUT. When you define 3 as the mode, the HDCP status is defined according to the connected output in the following priority: OUT 1, OUT 2. If the connected display on OUT 2 supports HDCP, but OUT 1 does not, then HDCP is defined as not supported. If OUT 1 is not connected, then HDCP is defined by OUT 2.	COMMAND #HDCP-MOD_in_index,mode<CR> FEEDBACK ~nn@HDCP-MOD_in_index,mode<CR><LF>	in_index – Number that indicates the specific input: 1 – HDBT Input 2 – HDMI Input 1-N (N= the total number of inputs) mode – HDCP mode: 0 – HDCP Off 1 – HDCP On	Set the HDBT input HDCP-MODE of HDBT input to Off: #HDCP-MOD_1,0<CR>
HDCP-MOD?	Get HDCP mode. ⓘ Set HDCP working mode on the device input: HDCP supported - HDCP_ON [default]. HDCP not supported - HDCP OFF. HDCP support changes following detected sink - MIRROR OUTPUT.	COMMAND #HDCP-MOD?_in_index<CR> FEEDBACK ~nn@HDCP-MOD_in_index,mode<CR><LF>	in_index – Number that indicates the specific input: 1 – HDBT Input 2 – HDMI Input 1-N (N= the total number of inputs) mode – HDCP mode: 0 – HDCP Off 1 – HDCP On	Get the input HDCP-MODE of HDMI input: #HDCP-MOD?_2<CR>

Function	Description	Syntax	Parameters/Attributes	Example
HELP	Get command list or help for specific command.	COMMAND #HELP<CR> #HELP_<cmd_name><CR> FEEDBACK 1. Multi-line: ~nn@Device_<cmd_name>,<cmd_name>.<CR><LF> To get help for command use: HELP (COMMAND_NAME)<CR><LF> ~nn@HELP_<cmd_name><CR><LF> description<CR><LF> USAGE:usage<CR><LF>	cmd_name – Name of a specific command	Get the command list: #HELP<CR> To get help for AV-SW-TIMEOUT: HELP_<av-sw-timeout><CR>
MODEL?	Get device model.  This command identifies equipment connected to KIT-400R and notifies of identity changes to the connected equipment. The Matrix saves this data in memory to answer REMOTE-INFO requests.	COMMAND #MODEL?_<CR> FEEDBACK ~nn@MODEL_<model_name><CR><LF>	model_name – String of up to 19 printable ASCII chars	Get the device model: #MODEL?_<CR>
MUTE	Set audio mute.	COMMAND #MUTE_<out_index>,<mute_mode><CR> FEEDBACK ~nn@MUTE_<out_index>,<mute_mode><CR><LF>	out_index – Number that indicates the specific output: 1 mute_mode – On/Off 0 – Off 1 – On	Set the output to mute: #MUTE_1,1<CR>
MUTE?	Get audio mute.	COMMAND #MUTE?_<out_index><CR> FEEDBACK ~nn@MUTE_<out_index>,<mute_mode><CR><LF>	out_index – Number that indicates the specific output: 1 mute_mode – On/Off 0 – Off 1 – On	Get mute status of the output #MUTE_1?<CR>
PROT-VER?	Get device protocol version.	COMMAND #PROT-VER?_<CR> FEEDBACK ~nn@PROT-VER_3000:version<CR><LF>	version – XX.XX where X is a decimal digit	Get the device protocol version: #PROT-VER?_<CR>
RELAY-STATE	Set relay state.	COMMAND #RELAY-STATE_<relay_id>,<state><CR> FEEDBACK ~nn@RELAY-STATE_<relay_id>,<state><CR><LF>	relay_id – Relay number: 1 state – Relay state 0 – (open) 1 – (close)	Set relay 1 to closed: #RELAY-STATE_1,1<CR>
RELAY-STATE?	Get relay state.	COMMAND #RELAY-STATE?_<relay_id><CR> FEEDBACK ~nn@RELAY-STATE_<relay_id>,<relay_state><CR><LF>	relay_id – Relay number 1 relay_state – Relay state 0 – (open) 1 – (close)	Get relay state: #RELAY-STATE?_1<CR>
RESET	Reset device.  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.	COMMAND #RESET<CR> FEEDBACK ~nn@RESET_<ok><CR><LF>		Reset the device: #RESET<CR>
ROUTE	Set layer routing.  This command replaces all other routing commands.	COMMAND #ROUTE_<layer_type>,<out_index>,<in_index><CR> FEEDBACK ~nn@ROUTE_<layer_type>,<out_index><CR><LF>	layer_type Layer Enumeration 1 – Video out_index 1,* – Output * – Output in_index – Source id 1 – HDBT Input 2 – HDMI Input	Route HDBT to the output: #ROUTE_1,1,1<CR>
ROUTE?	Get layer routing.  This command replaces all other routing commands.	COMMAND #ROUTE?_<layer_type>,<out_index><CR> FEEDBACK ~nn@ROUTE_<layer_type>,<out_index>,<in_index><CR><LF>	layer_type Layer Enumeration 1 – Video out_index 1 – Output * – Output in_index – Source id 1 – HDBT Input 2 – HDMI Input	Get the layer routing: #ROUTE?_1<CR>
SCLR-AS	Set auto-sync features.  Sets the auto sync features for the selected scaler.	COMMAND #SCLR-AS_<scaler_index>,<sync_speed><CR> FEEDBACK ~nn@SCLR-AS_<scaler_index>,<sync_speed><CR><LF>	scaler_index – Scaler Number: 1 – Scaler sync_speed – 0, 1 or 2 0 – off 1 – fast 2 – slow	Set auto-sync features: #SCLR-AS_1,1<CR>
SCLR-AS?	Get auto-sync features.  Gets the auto sync features for the selected scaler.	COMMAND #SCLR-AS?_<scaler_index><CR> FEEDBACK ~nn@SCLR-AS_<scaler_index>,<sync_speed><CR><LF>	scaler_index – Scaler Number: 1 – Scaler sync_speed – 0, 1 or 2 0 – off 1 – fast 2 – slow	Get auto-sync features: #SCLR-AS?_1<CR>

Function	Description	Syntax	Parameters/Attributes	Example
SCLR-AUDIO-DELAY	Set the scaler audio delay. ① Sets the audio delay for the selected audio output.	COMMAND #SCLR-AUDIO-DELAY_<scaler_index>,delay<CR> FEEDBACK ~nn@SCLR-AUDIO-DELAY_<scaler_index>,delay<CR><LF>	scaler_index – Audio output number 1 – Scaler delay – 0 – Off 1 – 40ms 2 – 110ms 3 – 150ms	Set the scaler audio delay to 40ms: #SCLR-AUDIO-DELAY_1,1<CR>
SCLR-AUDIO-DELAY?	Get the scaler audio delay. ① Gets the audio delay for the selected audio output.	COMMAND #SCLR-AUDIO-DELAY?_<scaler_index><CR> FEEDBACK ~nn@SCLR-AUDIO-DELAY_<scaler_index>,delay<CR><LF>	scaler_index – Audio output number 1 – Scaler delay – 0 – Off 1 – 40ms 2 – 110ms 3 – 150ms	Get the scaler audio delay: #SCLR-AUDIO-DELAY?_1<CR>
SIGNAL?	Get input signal status.	COMMAND #SIGNAL?_<in_index><CR> FEEDBACK ~nn@SIGNAL_<in_index>,status<CR><LF>	in_index – Number that indicates the specific input: 1 – HDBT Input 2 – HDMI Input status – Signal status according to signal validation: 0 – Off (signal or sink is not valid) 1 – On (signal or sink is valid)	Get the input signal lock status of IN 1: #SIGNAL?_1<CR>
SN?	Get device serial number.	COMMAND #SN?_<CR> FEEDBACK ~nn@SN_<serial_num><CR><LF>	serial_num – 14 decimal digits, factory assigned	Get the device serial number: #SN?_<CR>
VERSION?	Get firmware version number.	COMMAND #VERSION?_<CR> FEEDBACK ~nn@VERSION_<firmware_version><CR><LF>	firmware_version – XX.XX.XXXX where the digit groups are: major.minor.build version	Get the device firmware version number: #VERSION?_<CR>
VFRZ	Set freeze on selected output.	COMMAND #VFRZ_<out_index>,freeze_flag<CR> FEEDBACK ~nn@VFRZ_<out_index>,freeze_flag<CR><LF>	out_index – Number that indicates the specific output: 1 freeze_flag – On/Off 0 – Off 1 – On	Set freeze on the output: #VFRZ_1,1<CR>
VFRZ?	Get output freeze status.	COMMAND #VFRZ?_<out_index><CR> FEEDBACK ~nn@VFRZ_<out_index>,freeze_flag<CR><LF>	out_index – Number that indicates the specific output: 1 freeze_flag – On/Off 0 – Off 1 – On	Get output freeze status: #VFRZ?_1<CR>
VID-RES	Set output resolution. ① “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. To use “custom resolutions” (entries 100-105 In View Modes), define them using the DEF-RES command.	COMMAND #VID-RES_<io_mode>,<io_index>,is_native,resolution<CR> FEEDBACK ~nn@VID-RES_<io_mode>,<io_index>,is_native,resolution<CR><LF>	io_mode – Input/Output 1 – Output io_index – 1 is_native – Native resolution flag 0 – Off 1 – On resolution – Resolution index: 0 – NATIVE 1 – 640x480 60 2 – 800x600 60 3 – 1024x768 60 4 – 1280x768 60 5 – 1280x800 60 6 – 1280x1024 60 7 – 1360x768 60 8 – 1400x1050 60 9 – 1440x900 60 10 – 1600x1200 60 11 – 1680x1050 60 12 – 1920x1200 60 RB 13 – 2560x1600 60 RB 14 – 1920x1080 60 15 – 1280x720 60 16 – 2048x1080 50 17 – 2048x1080 60 18 – 2560x1440 60 RB 19 – 3440x1440 30 20 – 3440x1440 60 21 – 720x480P 60 22 – 720x576P 50 23 – 1280x720P 50 24 – 1280x720P 60 25 – 1920x1080P 24 26 – 1920x1080P 25 27 – 1920x1080P 30 28 – 1920x1080P 50 29 – 1920x1080P 60 30 – 2560x1080P 50 31 – 2560x1080P 60 32 – 3840x2160P 24 33 – 3840x2160P 25 34 – 3840x2160P 30 35 – 3840x2160P 50 36 – 3840x2160P 60	Set output resolution: #VID-RES_1,1,1,1<CR>

Function	Description	Syntax	Parameters/Attributes	Example
VID-RES?	<p>Get output resolution.</p> <p>ⓘ "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.</p>	<p>COMMAND</p> <pre>#VID-RES?_io_mode,io_index,is_native<CR></pre> <p>FEEDBACK</p> <pre>~nn@VID-RES?_io_mode,io_index,is_native,resolution<CR><LF></pre>	<p>io_mode – Input/Output</p> <p>0 – Input</p> <p>1 – Output</p> <p>io_index – Number that indicates the specific input or output port: 1-N (N= the total number of input or output ports)</p> <p>is_native – Native resolution flag</p> <p>0 – Off</p> <p>1 – On</p> <p>resolution – Resolution index:</p> <p>0 – NATIVE</p> <p>1 – 640x480 60</p> <p>2 – 800x600 60</p> <p>3 – 1024x768 60</p> <p>4 – 1280x768 60</p> <p>5 – 1280x800 60</p> <p>6 – 1280x1024 60</p> <p>7 – 1360x768 60</p> <p>8 – 1400x1050 60</p> <p>9 – 1440x900 60</p> <p>10 – 1600x1200 60</p> <p>11 – 1680x1050 60</p> <p>12 – 1920x1200 60 RB</p> <p>13 – 2560x1600 60 RB</p> <p>14 – 1920x1080 60</p> <p>15 – 1280x720 60</p> <p>16 – 2048x1080 50</p> <p>17 – 2048x1080 60</p> <p>18 – 2560x1440 60 RB</p> <p>19 – 3440x1440 30</p> <p>20 – 3440x1440 60</p> <p>21 – 720x480P 60</p> <p>22 – 720x576P 50</p> <p>23 – 1280x720P 50</p> <p>24 – 1280x720P 60</p> <p>25 – 1920x1080P 24</p> <p>26 – 1920x1080P 25</p> <p>27 – 1920x1080P 30</p> <p>28 – 1920x1080P 50</p> <p>29 – 1920x1080P 60</p> <p>30 – 2560x1080P 50</p> <p>31 – 2560x1080P 60</p> <p>32 – 3840x2160P 24</p> <p>33 – 3840x2160P 25</p> <p>34 – 3840x2160P 30</p> <p>35 – 3840x2160P 50</p> <p>36 – 3840x2160P 60</p>	<p>Set output resolution:</p> <pre>#VID-RES?_1,1,1<CR></pre>
VMUTE	<p>Set enable/disable video on output.</p> <p>ⓘ Video mute parameter 2 (blank picture) is not supported.</p>	<p>COMMAND</p> <pre>#VMUTE_out_index,flag<CR></pre> <p>FEEDBACK</p> <pre>~nn@VMUTE_out_index,flag<CR><LF></pre>	<p>out_index – Number that indicates the specific output: 1</p> <p>flag – Video Mute</p> <p>0 – Video disabled+5V low</p> <p>1 – Video enabled +5V high</p> <p>2 – Blank picture + 5V high</p>	<p>Disable the video output:</p> <pre>#VMUTE_1,0<CR></pre>
VMUTE?	<p>Get video on output status.</p> <p>ⓘ Video mute parameter 2 (blank picture) is not supported.</p>	<p>COMMAND</p> <pre>#VMUTE?_out_index<CR></pre> <p>FEEDBACK</p> <pre>~nn@VMUTE_out_index,flag<CR><LF></pre>	<p>out_index – Number that indicates the specific output: 1-N (N= the total number of outputs)</p> <p>flag – Video Mute</p> <p>0 – Video enabled</p> <p>1 – Video disabled</p> <p>2 – Blank picture</p>	<p>Get video on output status:</p> <pre>#VMUTE?_1<CR></pre>
X-AUD-LVL	<p>Set audio level of a specific signal.</p> <p>ⓘ This is an Extended Protocol 3000 command.</p>	<p>COMMAND</p> <pre>#X-AUD-LVL_<direction_type>.<port_format>.<port_index>.<signal_type>.<index>,audio_level<CR></pre> <p>FEEDBACK</p> <pre>~nn@X-AUD-LVL_<direction_type>.<port_format>.<port_index>.<signal_type>.<index>,audio_level<CR><LF></pre>	<p>The following attributes comprise the signal ID:</p> <ul style="list-style-type: none"> ▪ <direction_type> – Direction of the port: <ul style="list-style-type: none"> o OUT – Output ▪ <port_format> – Type of signal on the port: <ul style="list-style-type: none"> o HDMI o ANALOG_AUDIO ▪ <port_index> – The port number as printed on the front or rear panel:1 ▪ <signal_type> – Signal ID attribute: <ul style="list-style-type: none"> o AUDIO ▪ <index> – Indicates a specific channel number when there are multiple channels of the same type <p>audio_level – Audio level (range between 0 to +100) depending of the ability of the product</p>	<p>Set the output audio level to 10:</p> <pre>#X-AUD-LVL_out.hdmi.1.audio.1,10<CR></pre>

Function	Description	Syntax	Parameters/Attributes	Example
X-AUD-LVL?	<p>Get audio level of a specific signal.</p> <p>i This is an Extended Protocol 3000 command.</p>	<p>COMMAND</p> <pre>#X-AUD-LVL?_<direction_type>.<port_format>.<port_index>.<signal_type>.<index><CR></pre> <p>FEEDBACK</p> <pre>~nn@X-AUD-LVL_<direction_type>.<port_format>.<port_index>.<signal_type>.<index>,audio_level<CR><LF></pre>	<p>The following attributes comprise the signal ID:</p> <ul style="list-style-type: none"> ▪ <direction_type> – Direction of the port: <ul style="list-style-type: none"> o OUT – Output ▪ <port_format> – Type of signal on the port: <ul style="list-style-type: none"> o HDMI o ANALOG_AUDIO ▪ <port_index> – The port number as printed on the front or rear panel: 1 ▪ <signal_type> – Signal ID attribute: <ul style="list-style-type: none"> o AUDIO ▪ <index> – Indicates a specific channel number when there are multiple channels of the same type <p>audio_level – Audio level (range between 0 to +100) depending of the ability of the product</p>	<p>Get the audio level of a specific signal:</p> <pre>#X-AUD-LVL?_out.hdmi.1.audio.1<CR></pre>
X-ROUTE	<p>Send routing command to matrix.</p> <p>i 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.</p> <p>Video 1 is the default port in this command and is implied even if not written:</p> <pre>#X-ROUTE_out.sdi.5,in.sdi.1<CR></pre> <p>is interpreted as:</p> <pre>#X-ROUTE_out.sdi.5.video.1,in.sdi.1.video.1<CR></pre> <p>This is an Extended Protocol 3000 command.</p>	<p>COMMAND</p> <pre>#X-ROUTE_<direction_type>.<port_type>.<port_index1>.<signal_type1>.<index1>,<direction_type2>.<port_type2>.<port_index2>.<signal_type2>.<index2><CR></pre> <p>FEEDBACK</p> <pre>~nn@X-ROUTE_<direction_type>.<port_type>.<port_index1>.<signal_type1>.<index1>,<direction_type2>.<port_type2>.<port_index2>.<signal_type2>.<index2><CR><LF></pre>	<p>The following attributes comprise the signal ID:</p> <ul style="list-style-type: none"> ▪ <direction_type> – Direction of the port: <ul style="list-style-type: none"> o IN – Input o OUT – Output ▪ <port_format> – Type of signal on the port: <ul style="list-style-type: none"> o HDMI o HDBT ▪ <port_index> – The port number as printed on the front or rear panel: <ul style="list-style-type: none"> 1–HDMI Output 1–HDBT Input 2–HDMI Input ▪ <signal_type> – Signal ID attribute: <ul style="list-style-type: none"> o VIDEO ▪ <index> – Indicates a specific channel number when there are multiple channels of the same type: 1 	<p>Route HDBT IN to HDMI OUT:</p> <pre>#X-ROUTE_out.hdmi.1.video.1,in.hdbt.1.video.1<CR></pre>
X-ROUTE?	<p>Get routing status.</p> <p>i 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.</p> <p>VIDEO.1 are the default <signal_type> and <index> in this command and are implied even if not written:</p> <pre>#X-ROUTE_out.sdi.5,in.sdi.1<CR></pre> <p>is interpreted as:</p> <pre>#X-ROUTE_out.sdi.5.video.1,in.sdi.1.video.1<CR></pre> <p>This is an Extended Protocol 3000 command.</p>	<p>COMMAND</p> <pre>#X-ROUTE?_<direction_type>.<port_type>.<port_index1>.<signal_type1>.<index1><CR></pre> <p>FEEDBACK</p> <pre>~nn@X-ROUTE_<direction_type>.<port_type>.<port_index1>.<signal_type1>.<index1>,<direction_type2>.<port_type2>.<port_index2>.<signal_type2>.<index2><CR><LF></pre>	<p>The following attributes comprise the signal ID:</p> <ul style="list-style-type: none"> ▪ <direction_type> – Direction of the port: <ul style="list-style-type: none"> o IN – Input o OUT – Output ▪ <port_format> – Type of signal on the port: <ul style="list-style-type: none"> o HDMI o HDBT ▪ <port_index> – The port number as printed on the front or rear panel: <ul style="list-style-type: none"> 1–HDMI Output 1–HDBT Input 2–HDMI Input ▪ <signal_type> – Signal ID attribute: <ul style="list-style-type: none"> o VIDEO ▪ <index> – Indicates a specific channel number when there are multiple channels of the same type: 	<p>Get the routing status:</p> <pre>#X-ROUTE?_out.hdmi.1.video.1<CR></pre>

Function	Description	Syntax	Parameters/Attributes	Example
X-SIGNAL?	Get input signal status.  This is an Extended Protocol 3000 command.	COMMAND #X-SIGNAL? <direction_type>. <port_format>. <port_index>. <signal_type>. <index><CR> FEEDBACK ~nn@X-SIGNAL_ <direction_type>. <port_format>. <port_index>. <signal_type>. <index>, status<CR><LF>	The following attributes comprise the signal ID: <ul style="list-style-type: none"> ▪ <direction_type> – Direction of the port: <ul style="list-style-type: none"> ○ IN – Input ○ OUT – Output ○ BOTH – Bi-directional (e.g. for RS-232) ▪ <port_format> – Type of signal on the port: <ul style="list-style-type: none"> ○ HDMI ○ HDBT ○ ANALOG_AUDIO ○ AMPLIFIED_AUDIO ○ TOS ○ SPDIF ○ MIC ○ RS-232 ○ IR ○ USB_A ○ USB_B ▪ <port_index> – The port number as printed on the front or rear panel ▪ <signal_type> – Signal ID attribute: <ul style="list-style-type: none"> ○ VIDEO ○ AUDIO ○ ARC ○ RS232 ○ IR ○ USB ▪ <index> – Indicates a specific channel number when there are multiple channels of the same type status – Input Signal Status 0 – No signal 1 – There is a signal	Get input signal status: #X-SIGNAL_in.hdmi.1.video.1<CR> ~01@X-SIGNAL_in.hdmi.1.video.1,1<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_FEATURE_NOT_SUPPORTED	15	Feature is not supported
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