



Protocol Commands

MODEL:

VP-440X

4K Presentation Switcher Scaler

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Protocol 3000

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:**

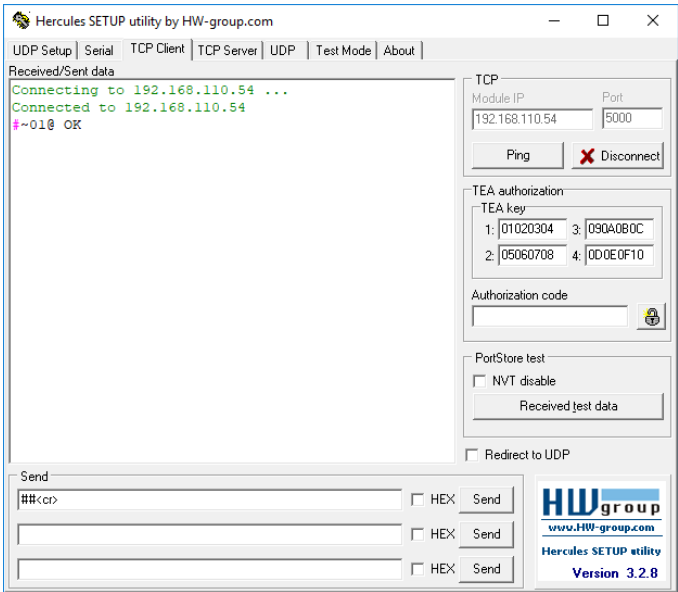
Prefix	Command Name	Constant (Space)	Parameter(s)	Suffix
#	Command	_	Parameter	<CR>

- **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 the VS-88UT. 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. ① 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-EMB	Set audio in video embedding status.	COMMAND #AUD-EMB_in_index,out_index,emb_mode<CR> FEEDBACK ~nn@AUD-EMB_in_index,out_index,emb_mode<CR><LF>	in_index – Number that indicates the specific input: 0– HDMI 1 1– HDMI 2 2– HDMI 3 3– HDMI 4 out_index – 0 emb_mode – Embedding status 0– Analog 1– Embedded 2– Auto	Set audio in video embedding status for input 3 and output 1 to analog: #AUD-EMB_2,0,0<CR>
AUD-EMB?	Get audio in video embedding status.	COMMAND #AUD-EMB?_in_index,out_index<CR> FEEDBACK ~nn@AUD-EMB_in_index,out_index,emb_mode<CR><LF>	in_index – Number that indicates the specific input: 0– HDMI 1 1– HDMI 2 2– HDMI 3 3– HDMI 4 out_index – 0 emb_mode – Embedding status 0– Analog 1– Embedded 2– Auto	Get audio in video embedding status for input 2: #AUD-EMB?_1,1<CR>
AUDIO-BYPASS	Bypass audio IN-OUT processing or set to DSP	COMMAND #AUDIO-BYPASS_state <CR> FEEDBACK ~nn@AUDIO-BYPASS_state<CR><LF>	state – Audio Processing status: 0– DSP 1– Bypass	Set audio processing status to DSP: #AUDIO-BYPASS_0<CR>
AUDIO-BYPASS?	Get audio IN-OUT processing status.	COMMAND #AUDIO-BYPASS?_state<CR> FEEDBACK ~nn@AUDIO-BYPASS_state<CR><LF>	state – Audio Processing status: 0– DSP 1– Bypass	Get threshold and time for channel 1: #AUDIO-BYPASS?_state<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 0– Input 1– Output io_index – Number that indicates the specific input or output port. for input: 0– HDMI 1 1– HDMI 2 2– HDMI 3 3– HDMI 4 2– PC For output: 0 vol_level – Volume level 0 to 100; ++ (increase current value by 1dB); -- (decrease current value by 1dB)	Set AUDIO IN 2 level to 50: #AUD-LVL_0,1,50<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 0– Input 1– Output io_index – Number that indicates the specific input or output port. for input: 0– HDMI 1 1– HDMI 2 2– HDMI 3 3– HDMI 4 4– PC For output: 0 vol_level – Volume level 0 to 100; ++ (increase current value by 1dB); -- (decrease current value by 1dB)	Get AUDIO OUT level #AUD-LVL?_1,0<CR>
BASS	Set audio bass level.	COMMAND #BASS_io_index,bass_level<CR> FEEDBACK ~nn@BASS_io_index,bass_level<CR><LF>	io_index – 1 bass_level – 0-30	Set audio bass level to 5: #BASS_1,5<CR>
BASS?	Get audio bass level.	COMMAND #BASS?_io_index<CR> FEEDBACK ~nn@BASS_io_index,bass_level<CR><LF>	io_index – 1 bass_level – 0-30	Get audio bass level: #BASS?_1<CR>
BUILD-DATE?	Get device build date.	COMMAND #BUILD-DATE?_date,time<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>

Function	Description	Syntax	Parameters/Attributes	Example
CEC	Set display to ON/OFF	COMMAND #CEC_state<CR> FEEDBACK ~nn@CEC_state_OK<CR><LF>	state – CEC state 0 – Off 1 – On	Set display to ON via CEC: #CEC_ON<CR>
CEC-PASS	Set display ON/OFF.	COMMAND #CEC-PASS_state<CR> FEEDBACK ~nn@CEC-PASSw_state<CR><LF>	state – CEC state 0 – Off 1 – On	Set display status to off: #CEC-PASS_0<CR>
CEC-PASS?	Get display status.	COMMAND #CEC-PASS?_<CR> FEEDBACK ~nn@CEC-PASSw_state<CR><LF>	state – CEC state 0 – Off 1 – On	Get display status: #CEC-PASS?_<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 – HDMI 2 – HDBT status – HPD status according to signal validation 0 – Signal or sink is not valid 1 – Signal or sink is valid 2 – Sink and EDID is valid	Get the output HPD status of HDMI output: #DISPLAY?_1<CR>
DPSW-STATUS?	Get the DIP-switch state.	COMMAND #DPSW-STATUS?_dip_id<CR> FEEDBACK ~nn@DPSW-STATUS_dip_id, status<CR><LF>	dip_id – 0 status – Up/down 0 – Up 1 – Down	get the DIP-switch status: #DPSW-STATUS?_0<CR>
EQ-LVL	Set equalization level.	COMMAND #EQ-LVL_io_mode, eq_type, eq_level<CR> FEEDBACK ~nn@EQ-LVL_io_mode, io_index, eq_type, eq_level<CR><LF>	io_mode – 1 eq_type – Equalizer Types [Hz]: 120 200 500 1200 3000 7500 12000 eq_level – Equalizer level (-10dB to 10dB): 0 to 40	Set 200Hz EQ level to 12: #EQ-LVL_1,200,12<CR>
EQ-LVL?	Get equalization level.	COMMAND #EQ-LVL?_io_mode, io_index, eq_type<CR> FEEDBACK ~nn@EQ-LVL_io_mode, io_index, eq_type, eq_level<CR><LF>	io_mode – 1 eq_type – Equalizer Types [Hz]: 120 200 500 1200 3000 7500 12000 eq_level – Equalizer level (-10dB to 10dB): 0 to 40	Get 120Hz EQ level: #EQ-LVL?_1,120<CR>
ETH-PORT	Set Ethernet port protocol. ⓘ If the port number you enter is already in use, an error is returned. The port number must be within the following range: 0-(2 ¹⁶ -1).	COMMAND #ETH-PORT_port_type, port_id<CR> FEEDBACK ~nn@ETH-PORT_port_type, port_id<CR><LF>	port_type – TCP/UDP port_id – TCP/UDP port number (0 – 65535)	Set the Ethernet port protocol for TCP to port 12457: #ETH-PORT_0,12457<CR>
ETH-PORT?	Get Ethernet port protocol.	COMMAND #ETH-PORT?_port_type<CR> FEEDBACK ~nn@ETH-PORT_port_type, port_id<CR><LF>	port_type – TCP/UDP TCP UDP port_id – TCP / UDP port number (0 – 65535)	Get the Ethernet port protocol for UDP: #ETH-PORT?_1<CR>
FACTORY	Reset device to factory default configuration. ⓘ 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.	COMMAND #FACTORY<CR> FEEDBACK ~nn@FACTORY_ok<CR><LF>		Reset the device to factory default configuration: #FACTORY<CR>

Function	Description	Syntax	Parameters/Attributes	Example
HDCP-MOD	<p>Set HDCP mode.</p> <p>ⓘ Set HDCP working mode on the device input:</p> <p>HDCP supported - HDCP_ON [default].</p> <p>HDCP not supported - HDCP OFF.</p> <p>HDCP support changes following detected sink - MIRROR OUTPUT.</p> <p>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.</p>	<p>COMMAND</p> <pre>#HDCP-MOD?_io_mode,io_index,mode<CR></pre> <p>FEEDBACK</p> <pre>~nn@HDCP-MOD_io_mode,io_index,mode<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.</p> <p>for input:</p> <p>1– HDMI 1</p> <p>2– HDMI 2</p> <p>3– HDMI 3</p> <p>4– HDMI 4</p> <p>For output: 1</p> <p>mode – HDCP mode:</p> <p>for input:</p> <p>0– HDCP Off</p> <p>1– Auto</p> <p>For output:</p> <p>2– Follow in</p> <p>3– Follow out</p>	<p>Set the input HDCP-MODE of IN 1 to Off:</p> <pre>#HDCP-MOD_0,1,0<CR></pre>
HDCP-MOD?	<p>Get HDCP mode.</p> <p>ⓘ Set HDCP working mode on the device input:</p> <p>HDCP supported - HDCP_ON [default].</p> <p>HDCP not supported - HDCP OFF.</p> <p>HDCP support changes following detected sink - MIRROR OUTPUT.</p>	<p>COMMAND</p> <pre>#HDCP-MOD?_io_mode,io_index<CR></pre> <p>FEEDBACK</p> <pre>~nn@HDCP-MOD_io_mode,io_index,mode<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.</p> <p>for input:</p> <p>1– HDMI 1</p> <p>2– HDMI 2</p> <p>3– HDMI 3</p> <p>4– HDMI 4</p> <p>For output: 1</p> <p>mode – HDCP mode:</p> <p>for input:</p> <p>0– HDCP Off</p> <p>1– Auto</p> <p>For output:</p> <p>2– Follow in</p> <p>3– Follow out</p>	<p>Get the input HDCP-MODE of HDMI 1:</p> <pre>#HDCP-MOD?_0,1<CR></pre>
HELP	<p>Get command list or help for specific command.</p>	<p>COMMAND</p> <pre>#HELP<CR></pre> <pre>#HELP_cmd_name<CR></pre> <p>FEEDBACK</p> <p>1..ulti-line:</p> <pre>~nn@Device_cmd_name,,cmd_name<CR><LF></pre> <p>To get help for command use: HELP (COMMAND_NAME)<CR><LF></p> <pre>~nn@HELP_cmd_name:<CR><LF></pre> <pre>description<CR><LF></pre> <pre>USAGE:usage<CR><LF></pre>	<p>cmd_name – Name of a specific command</p>	<p>Get the command list:</p> <pre>#HELP<CR></pre> <p>To get help for AV-SW-TIMEOUT:</p> <pre>HELP_av-sw-timeout<CR></pre>
IMAGE-PROP	<p>Set the image size.</p> <p>ⓘ Sets the image properties of the selected scaler.</p>	<p>COMMAND</p> <pre>#IMAGE-PROP_scaler_id,video_mode<CR></pre> <p>FEEDBACK</p> <pre>~nn@IMAGE-PROP_scaler_id,video_mode.<CR><LF></pre>	<p>scaler_id – Scaler number – 1</p> <p>video_mode – Status</p> <p>0– Over scan</p> <p>1– Full</p> <p>2– Best fit</p> <p>3– Pan scan</p> <p>4– Letter box</p> <p>5– Under 2</p> <p>6– Under 1</p> <p>7– Follow in</p>	<p>Set the image size to Best fit:</p> <pre>#IMAGE-PROP_1,2<CR></pre>
IMAGE-PROP?	<p>Get the image size.</p> <p>ⓘ Gets the image properties of the selected scaler.</p>	<p>COMMAND</p> <pre>#IMAGE-PROP?_scaler_id<CR></pre> <p>FEEDBACK</p> <pre>~nn@IMAGE-PROP_scaler_id,video_mode<CR><LF></pre>	<p>scaler_id – Scaler number – 1</p> <p>video_mode – Status</p> <p>0– Over scan</p> <p>1– Full</p> <p>2– Best fit</p> <p>3– Pan scan</p> <p>4– Letter box</p> <p>5– Under 2</p> <p>6– Under 1</p> <p>7– Follow in</p>	<p>Get the image size:</p> <pre>#IMAGE-PROP?_1<CR></pre>
LOCK-FP	<p>Lock the front panel.</p> <p>ⓘ In NT-52N, this command includes the PortNumber (1-2) parameter.</p>	<p>COMMAND</p> <pre>#LOCK-FP_lock/unlock<CR></pre> <p>FEEDBACK</p> <pre>~nn@LOCK-FP_lock/unlock<CR><LF></pre>	<p>lock/unlock – On/Off</p> <p>0– Off unlocks EDID</p> <p>1– On locks EDID</p>	<p>Unlock front panel:</p> <pre>#LOCK-FP_0<CR></pre>
LOCK-FP?	<p>Get the front panel lock state.</p> <p>ⓘ In NT-52N, this command includes the PortNumber (1-2) parameter.</p>	<p>COMMAND</p> <pre>#LOCK-FP?_<CR></pre> <p>FEEDBACK</p> <pre>~nn@LOCK-FP_lock/unlock<CR><LF></pre>	<p>lock/unlock – On/Off</p> <p>0– Off unlocks EDID</p> <p>1– On locks EDID</p>	<p>Get the front panel lock state:</p> <pre>#LOCK-FP?<CR></pre>
LOUDNESS	<p>Set audio loudness.</p>	<p>COMMAND</p> <pre>#LOUDNESS_io_index,enabled<CR></pre> <p>FEEDBACK</p> <pre>~nn@LOUDNESS_io_index,enabled<CR><LF></pre>	<p>io_index – 1</p> <p>enabled – On/Off</p> <p>0– Off</p> <p>1– On</p>	<p>Set audio loudness:</p> <pre>#LOUDNESS_1,1<CR></pre>

Function	Description	Syntax	Parameters/Attributes	Example
LOUDNESS?	Get audio loudness.	COMMAND #LOUDNESS?_io_index<CR> FEEDBACK ~nn@LOUDNESS_io_index,enabled<CR><LF>	io_index – 1 enabled – On/Off 0 – Off 1 – On	Get audio loudness: #LOUDNESS?_1<CR>
MIC-GAIN	Set the microphone gain.  Sets the microphone input audio gain.	COMMAND #MIC-GAIN_mic_id,level<CR> FEEDBACK ~nn@MIC-GAIN_mic_id,level<CR><LF>	mic_id – 0 level – Level – 0 to 100 ++ (increase current value); -- (decrease current value)	Set the microphone gain to 10: #MIC-GAIN_1,10<CR>
MIC-GAIN?	Get the microphone gain.  Gets the microphone input audio gain.	COMMAND #MIC-GAIN?_mic_id<CR> FEEDBACK ~nn@MIC-GAIN_mic_id,level<CR><LF>	mic_id – 0 level – Level – 0 to 100 ++ (increase current value); -- (decrease current value)	Get the microphone gain: #MIC-GAIN?_0<CR>
MIC-TLK	Set mic talkover parameters.	COMMAND #MIC-TLK_out_index,mic_index,value<CR> FEEDBACK ~nn@MIC-TLK_out_index,mic_index,value<CR><LF>	out_index – 0 mic_index – Parameter setting 0 – Depth 1 – Trigger 2 – Attack time 3 – Hold time 2 – Release time value – MIC_INDEX value Depth – 0–100 [%] Trigger – 0–100 (-60dB–40dB) Attack time / Hold time / Release time – 0–200 (0–20sec)	Set mic depth to 20%: #MIC-TLK_0,0,20<CR>
MIC-TLK?	Get mic talkover parameters.	COMMAND #MIC-TLK?_out_index,mic_index<CR> FEEDBACK ~nn@MIC-TLK_out_index,mic_index,value<CR><LF>	out_index – 0 mic_index – Parameter setting 0 – Depth 1 – Trigger 2 – Attack time 3 – Hold time 2 – Release time value – MIC_INDEX value Depth – 0–100 [%] Trigger – 0–100 (-60dB–40dB) Attack time / Hold time / Release time – 0–200 (0–20sec)	Get mic attack time: #MIC-TLK?_0,2<CR>
MODEL?	Get device model.  This command identifies equipment connected to VP-440X 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: 0 mute_mode – On/Off 0 – Off 1 – On	Set Output to mute: #MUTE_0,1<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: 0 mute_mode – On/Off 0 – Off 1 – On	Get mute status of output #MUTE_0?<CR>
NAME	Set machine (DNS) name.  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).	COMMAND #NAME_machine_name<CR> FEEDBACK ~nn@NAME_machine_name<CR><LF>	machine_name – String of up to 15 alpha-numeric chars (can include hyphen, not at the beginning or end)	Set the DNS name of the device to room-442: #NAME_room-442<CR>
NAME?	Get machine (DNS) name.  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).	COMMAND #NAME?_<CR> FEEDBACK ~nn@NAME_machine_name<CR><LF>	machine_name – String of up to 15 alpha-numeric chars (can include hyphen, not at the beginning or end)	Get the DNS name of the device: #NAME?_<CR>
NAME-RST	Reset machine (DNS) name to factory default.  Factory default of machine (DNS) name is "KRAMER_" + 4 last digits of device serial number.	COMMAND #NAME-RST<CR> FEEDBACK ~nn@NAME-RST_ok<CR><LF>		Reset the machine name (S/N last digits are 0102): #NAME-RST_kramer_0102<CR>

Function	Description	Syntax	Parameters/Attributes	Example
NET-DHCP	<p>Set DHCP mode.</p> <p>i Only 1 is relevant for the mode value. To disable DHCP, the user must configure a static IP address for the device.</p> <p>Connecting Ethernet to devices with DHCP may take more time in some networks.</p> <p>To connect with a randomly assigned IP by DHCP, specify the device DNS name (if available) using the NAME command. You can also get an assigned IP by direct connection to USB or RS-232 protocol port, if available.</p> <p>For proper settings consult your network administrator.</p> <p>i For Backward compatibility, the id parameter can be omitted. In this case, the Network ID, by default, is 0, which is the Ethernet control port.</p>	<p>COMMAND</p> <pre>#NET-DHCP_<id>dhcp_state<CR></pre> <p>FEEDBACK</p> <pre>~nn@NET-DHCP_<id>dhcp_state<CR><LF></pre>	<p>dhcp_state –</p> <p>0 – Do not use DHCP. Use the IP set by the factory or using the net-ip or net-config command.</p> <p>1 – Try to use DHCP. If unavailable, use the IP set by the factory or using the net-ip or net-config command.</p>	<p>Enable DHCP mode #NET-DHCP_1<CR></p>
NET-DHCP?	<p>Get DHCP mode.</p> <p>i For Backward compatibility, the id parameter can be omitted. In this case, the Network ID, by default, is 0, which is the Ethernet control port.</p>	<p>COMMAND</p> <pre>#NET-DHCP?_<id><CR></pre> <p>FEEDBACK</p> <pre>~nn@NET-DHCP_<id>dhcp_mode<CR><LF></pre>	<p>dhcp_mode –</p> <p>0 – Do not use DHCP. Use the IP set by the factory or using the net-ip or net-config command.</p> <p>1 – Try to use DHCP. If unavailable, use the IP set by the factory or using the net-ip or net-config command.</p>	<p>Get DHCP mode : #NET-DHCP?_<id><CR></p>
NET-GATE	<p>Set gateway IP.</p> <p>i A network gateway connects the device via another network and maybe over the Internet. Be careful of security issues. For proper settings consult your network administrator.</p>	<p>COMMAND</p> <pre>#NET-GATE_<id>ip_address<CR></pre> <p>FEEDBACK</p> <pre>~nn@NET-GATE_<id>ip_address<CR><LF></pre>	<p>ip_address – Format: xxx.xxx.xxx.xxx</p>	<p>Set the gateway IP address to 192.168.0.1: #NET-GATE_192.168.000.001<CR></p>
NET-GATE?	<p>Get gateway IP.</p> <p>i A network gateway connects the device via another network and maybe over the Internet. Be aware of security problems.</p>	<p>COMMAND</p> <pre>#NET-GATE?_<id><CR></pre> <p>FEEDBACK</p> <pre>~nn@NET-GATE_<id>ip_address<CR><LF></pre>	<p>ip_address – Format: xxx.xxx.xxx.xxx</p>	<p>Get the gateway IP address: #NET-GATE?_<id><CR></p>
NET-IP	<p>Set IP address.</p> <p>i For proper settings consult your network administrator.</p>	<p>COMMAND</p> <pre>#NET-IP_<id>ip_address<CR></pre> <p>FEEDBACK</p> <pre>~nn@NET-IP_<id>ip_address<CR><LF></pre>	<p>ip_address – Format: xxx.xxx.xxx.xxx</p>	<p>Set the IP address to 192.168.1.39: #NET-IP_192.168.001.039<CR></p>
NET-IP?	<p>Get IP address.</p>	<p>COMMAND</p> <pre>#NET-IP?_<id><CR></pre> <p>FEEDBACK</p> <pre>~nn@NET-IP_<id>ip_address<CR><LF></pre>	<p>ip_address – Format: xxx.xxx.xxx.xxx</p>	<p>Get the IP address: #NET-IP?_<id><CR></p>
NET-MAC?	<p>Get MAC address.</p> <p>i For backward compatibility, the id parameter can be omitted. In this case, the Network ID, by default, is 0, which is the Ethernet control port.</p>	<p>COMMAND</p> <pre>#NET-MAC?_<id><CR></pre> <p>FEEDBACK</p> <pre>~nn@NET-MAC_<id>,mac_address<CR><LF></pre>	<p>id – Network ID—the device network interface (if there are more than one). Counting is 0 based, meaning the control port is '0', additional ports are 1,2,3....</p> <p>mac_address – Unique MAC address. Format: XX-XX-XX-XX-XX-XX where X is hex digit</p>	<p>#NET-MAC?_<id><CR></p>
NET-MASK	<p>Set subnet mask.</p> <p>i For proper settings consult your network administrator.</p>	<p>COMMAND</p> <pre>#NET-MASK_<id>net_mask<CR></pre> <p>FEEDBACK</p> <pre>~nn@NET-MASK_<id>net_mask<CR><LF></pre>	<p>net_mask – Format: xxx.xxx.xxx.xxx</p>	<p>Set the subnet mask to 255.255.0.0: #NET-MASK_255.255.000.000<CR></p>
NET-MASK?	<p>Get subnet mask.</p>	<p>COMMAND</p> <pre>#NET-MASK?_<id><CR></pre> <p>FEEDBACK</p> <pre>~nn@NET-MASK_<id>net_mask<CR><LF></pre>	<p>net_mask – Format: xxx.xxx.xxx.xxx</p>	<p>Get the subnet mask: #NET-MASK?_<id><CR></p>
PROT-VER?	<p>Get device protocol version.</p>	<p>COMMAND</p> <pre>#PROT-VER?_<id><CR></pre> <p>FEEDBACK</p> <pre>~nn@PROT-VER_<id>3000:version<CR><LF></pre>	<p>version – XX.XX where X is a decimal digit</p>	<p>Get the device protocol version: #PROT-VER?_<id><CR></p>

Function	Description	Syntax	Parameters/Attributes	Example
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>,<in_index><CR><LF>	layer_type Layer Enumeration 1 – Video+Audio out_index – 1 in_index – Source id 1 – HDMI 1 2 – HDMI 2 3 – HDMI 3 4 – HDMI 4 5 – PC	Route video HDMI 2 to the output: #ROUTE_<1,1,2><CR>
ROUTE?	Get layer routing. ❗ This command replaces all other routing commands.	COMMAND #ROUTE?_<layer_type>,<scaler><CR> FEEDBACK ~nn@ROUTE_<layer_type>,<out_index>,<in_index><CR><LF>	layer_type Layer Enumeration 1 – Video+Audio out_index – 1 in_index – Source id 1 – HDMI 1 2 – HDMI 2 3 – HDMI 3 4 – HDMI 4 5 – PC	Get the layer routing: #ROUTE?_<1,1><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 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 sync_speed – 0, 1 or 2 0 – off 1 – fast 2 – slow	Get auto-sync features: #SCLR-AS?_<1><CR>
SCLR-AUDIO-DELAY	Set the scaler audio delay. ❗ 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 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. ❗ 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 delay – 0 – Off 1 – 40ms 2 – 110ms 3 – 150ms	Get the scaler audio delay: #SCLR-AUDIO-DELAY?_<1><CR>
SCLR-PCAUTO	Set PC auto sync of scaler. ❗ Trigger the Auto Adjust feature of PC input.	COMMAND #SCLR-PCAUTO_<scaler_index>,<auto_scan><CR> FEEDBACK ~nn@SCLR-PCAUTO_<scaler_index>,<auto_scan><CR><LF>	scaler_index – Scaler Number 1 auto_scan – 1 (“Yes” triggers the Auto-scan function. When complete, the unit returns to the “No” state)	Set PC auto sync of scaler: #SCLR-PCAUTO_<1,1><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 – HDMI 1 2 – HDMI 2 3 – HDMI 3 4 – HDMI 4 status – Signal status according to signal validation: 0 – Off 1 – On	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>
TEST-MODE	Perform device test according to defined test parameters. ❗ This command starts device test procedure.	COMMAND #TEST-MODE<CR> FEEDBACK ~nn@TEST-MODE_<result><CR><LF>	result – Test Results 0 – OK 1 – Failed (general) 2 to N – Device specific failed error code	Perform device test according to defined test parameters: #TEST-MODE<CR>
TLK	Set audio talkover mode status.	COMMAND #TLK_<io_index>,<talkover_mode><CR> FEEDBACK ~nn@TLK_<io_index>,<talkover_mode><CR><LF>	io_index – 1 talkover_mode – Talkover mode 0 – Off 1 – Mixer 2 – Talkover 3 – Mic only	Set audio talkover mode to Mixer: #TLK_<1,1><CR>
TLK?	Get audio talkover mode status.	COMMAND #TLK?_<io_index><CR> FEEDBACK ~nn@TLK_<io_index>,<talkover_mode><CR><LF>	io_index – 1 talkover_mode – Talkover mode 0 – Off 1 – Mixer 2 – Talkover 3 – Mic only	Get audio talkover mode status: #TLK?_<1><CR>

Function	Description	Syntax	Parameters/Attributes	Example
TREBLE	Set audio treble level.	COMMAND #TREBLE_<io_index>,treble_level<CR> FEEDBACK ~nn@TREBLE_<io_index>,treble_level<CR><LF>	io_index – 1 bass_level – 0-30	Set audio treble level to 10: #TREBLE_1,10<CR>
TREBLE?	Get audio treble level.	COMMAND #TREBLE?_<io_index><CR> FEEDBACK ~nn@TREBLE_<io_index>,treble_level<CR><LF>	io_index – 1 bass_level – 0-30	Get audio treble level: #TREBLE?_1<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 selected 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. ⓘ “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 – Output 1 – Output io_index – Number that indicates the specific input or output port: 1. is_native – 0 resolution – Resolution index 200=Native 201=640x480 202=800x600 203=1024x768 204=1280x768 205=1360x768 206=1280x720 207=1280x800 208=1280x1024 209=1440x900 210=1400x1050 211=1680x1050 212=1600x1200 213=1920x1080 214=1920x1200 215=2560x1600 216=2560x1440 217=480p 218=576p 219=720p50 220=720p60 221=1080p24 222=1080p25 223=1080p30 224=1080p50 225=1080p60 226=4k24 227=4k25 (HDMI only) 228=4k30 (HDMI only) 229=4k50 230=4k60	Set output resolution to 4k24: #VID-RES_1,1,1,226<CR>

Function	Description	Syntax	Parameters/Attributes	Example
VID-RES?	Get output 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.	COMMAND #VID-RES?_io_mode,io_index,is_native<CR> FEEDBACK ~nn@VID-RES?_io_mode,io_index,is_native,resolution<CR><LF>	io_mode – Output 1 – Output io_index – Number that indicates the specific input or output port: 1. is_native – 0 resolution – Resolution index 200=Native 201=640x480 202=800x600 203=1024x768 204=1280x768 205=1360x768 206=1280x720 207=1280x800 208=1280x1024 209=1440x900 210=1400x1050 211=1680x1050 212=1600x1200 213=1920x1080 214=1920x1200 215=2560x1600 216=2560x1440 217=480p 218=576p 219=720p50 220=720p60 221=1080p24 222=1080p25 223=1080p30 224=1080p50 225=1080p60 226=4k24 227=4k25 (HDMI only) 228=4k30 (HDMI only) 229=4k50 230=4k60	Get output resolution: #VID-RES?_1,1,0<CR>
VMUTE	Set enable/disable video on output. ⓘ Video mute parameter 2 (blank picture) is not supported.	COMMAND #VMUTE_out_index,flag<CR> FEEDBACK ~nn@VMUTE_out_index,flag<CR><LF>	out_index – Number that indicates the specific output: 1. flag – Video Mute 0 – Off 1 – On	Disable the video on the output: #VMUTE_1,0<CR>
VMUTE?	Get video on output status. ⓘ Video mute parameter 2 (blank picture) is not supported.	COMMAND #VMUTE?_out_index<CR> FEEDBACK ~nn@VMUTE_out_index,flag<CR><LF>	out_index – Number that indicates the specific output: 1. flag – Video Mute 0 – Off 1 – On	Get video on output status: #VMUTE?_1<CR>

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_TIMEDOUT	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