HW-OMNI-E4521
HW-OMNI-D4511
HW-OMNI-E4111/WP
HW-OMNI-D4111

OmniStream®

CLI & JSON/WebSocket API Command Reference

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Version Information

This document provides a complete CLI (Telnet/SSH/RS-232) and JSON/WebSocket API command reference for the OmniStream product line.

Version	Date	Notes
1.0	*August 2026*	OmniStream CLI and JSON/WebSocket API command reference. Covers HW-OMNI-E4521, HW-OMNI-D4511, HW-OMNI-E4111/WP (AT-OMNI-111/WP), and HW-OMNI-D4111 (AT-OMNI-121). Includes new commands added August 2026 and deprecated command notices.
1.1	*October 2026*	IPDHCPUSB no longer accepts off; use IpStaticUsb to set a static address on the USB network interface. Quick Reference updated to match.

Product Applicability

This document applies to the following OmniStream products:

New Product	Legacy Product	Description	Type
HW-OMNI-E4521	-	OmniStream+ Dual-Channel 4K/UHD Encoder	Encoder
HW-OMNI-D4511	-	OmniStream+ Dual-Channel 4K/UHD Decoder	Decoder
HW-OMNI-E4111/WP	AT-OMNI-111/WP	OmniStream Single-Channel Wall Plate Encoder	Encoder
HW-OMNI-D4111	AT-OMNI-121	OmniStream Single-Channel Decoder	Decoder

Note: The HW-OMNI-E4521 and HW-OMNI-D4511 have no legacy part numbers. The HW-OMNI-E4111/WP and HW-OMNI-D4111 replace the AT-OMNI-111/WP and AT-OMNI-121 respectively. Legacy OmniStream products (AT-OMNI-512 / AT-OMNI-521) are no longer sold and are not covered in this document.

CLI Command Quick Reference

Commands are sent via Telnet (port 23 with NVT support, port 2323 without NVT), SSH (port 22), or RS-232. Commands are not case-sensitive. Each command must be terminated with a carriage return (0x0d). Allow at least 500 ms between commands.

● indicates the command is supported on that device category (Encoder or Decoder). [New] indicates commands added August 2026. [Dep] indicates deprecated commands. Model-specific exceptions are noted in the Description column.

Command	Encoder	Decoder	Description
Shared Commands (Encoder and Decoder)			
8021xMode	●	●	Set 802.1x authentication mode for the specified interface.
AnalogAudioGain	●	●	Set analog audio gain level for the specified input. [New]
Broadcast	●	●	Enable or disable broadcast mode.
EnableAES67	●	●	Enable or disable AES67 audio on the specified session/output.
FrontPanelLock	●	●	Lock or unlock front-panel buttons.
HDCPSet	●	●	Set HDCP version for the specified HDMI input or output.
Help	●	●	Display list of available commands, or help for a specific command.
Identify	●	●	Flash front-panel LED indicators for 10 seconds.
IPCFG	●	●	Display IP configuration for the specified interface.
IPCfgUsb	●	●	Display IP configuration for the USB network interface. (E4521/D4511 only)
IPDHCP	●	●	Enable or disable DHCP on the specified interface.
IPDHCPUSB	●	●	Enable DHCP on the USB network interface. (E4521/D4511 only)
IPLogin	●	●	Enable or disable login authentication for Telnet/NVT.
IPPort	●	●	Set the Telnet listening port for the specified interface.
IPQuit	●	●	Exit the CLI session.
IPStatic	●	●	Set a static IP address for the specified interface.
IpStaticUsb	●	●	Set a static IP address on the USB network interface and enable it. (E4521/D4511 only)
IPTimeout	●	●	Set the session timeout interval in seconds.
License	●	●	Install a license key, or display installed licenses.
Mclear	●	●	Reset the unit to an empty configuration.
Mreset	●	●	Reset the unit to factory-default settings.
Quit	●	●	Exit the CLI session.
Reboot	●	●	Reboot the unit.
SerialBaud	●	●	Set the baud rate for the specified serial port.
SerialData	●	●	Set the number of data bits for the specified serial port.
SerialParity	●	●	Set the parity bit for the specified serial port.
SerialPort	●	●	Set the serial port assignment.
SerialStop	●	●	Set the number of stop bits for the specified serial port.

Command	Encoder	Decoder	Description
SetCmd	●	●	Specify an RS-232 command string.
SlateLogo	●	●	Set the slate logo for the specified HDMI input/output.
SlateMode	●	●	Set the slate mode for the specified HDMI input/output.
Temperature	●	●	Display system and die temperature.
Type	●	●	Display the device type.
UsbPairing	●	●	Manage USB pairing between encoder and decoder. [New] (E4521/D4511 only)
Version	●	●	Display the firmware version.
Encoder Commands			
AudioDestIP	●		Set the destination audio IP address for the specified session.
AudioDestPort	●		Set the destination audio port for the specified session.
AudioEnable	●		Enable or disable audio for the specified session.
AudioSapAlways	●		Enable or disable AES67 SAP transmission even without a source.
AudioSource	●		Set the HDMI audio source for the specified session.
AuxBidirectional	●		Enable bidirectional data transfer on the Aux channel.
AuxDestIP	●		Set the destination IP address for the auxiliary channel.
AuxDestPort	●		Set the destination port for the auxiliary channel.
AuxEnable	●		Enable or disable the auxiliary channel.
AuxListenPort	●		Set the auxiliary channel listening port.
AuxSource	●		Set the serial port source for the specified session.
DisplayBtn	●		Send a display command to the specified HDMI input. (E4521 only)
EDIDMSet	●		Set the EDID for the specified HDMI input.
EncGroup	●		Enable, disable, or activate sessions within an encoder group.
EncoderBitDepth	●		Set the bit depth for the specified encoder.
EncoderBitRate	●		Set the encoder bit rate in Mbps. (E4521 only)
EncoderInput	●		Set the input source for the specified encoder.
EncoderScaler	●		Set the scaler resolution for the encoder. (E4111/WP only)
EncoderSubSample	●		Set chroma subsampling for the specified encoder. (E4521 only)
Input	●		Display signal presence and set input source for the specified HDMI input. (E4521 only)
InputAudioSource	●		Set the audio source for the specified HDMI input. [New]
InputAutoSwitch	●		Set automatic input switching mode. [New] (E4521 only)
InputBtn	●		Switch input via front-panel INPUT button. (E4521 only)
SessionScramble	●		Enable or disable session scrambling (SSH only).
SessionScrambleKey	●		Set the session scrambling key (SSH only).
VideoDestIP	●		Set the video destination IP address for the specified session.
VideoDestPort	●		Set the video destination port for the specified session.

Command	Encoder	Decoder	Description
VideoEnable	●		Enable or disable video for the specified session.
VideoEncoder	●		Set the encoder input for the specified session.
VideoFECColumns	●		Set the number of FEC columns for the specified session. (E4521 only)
VideoFECEnable	●		Enable or disable FEC for the specified session. (E4521 only)
VideoFECRows	●		Set the number of FEC rows for the specified session. (E4521 only)
VolumeBtn	●		Send volume-up or volume-down command. (E4521 only)
Decoder Commands			
[Dep] AnalogPowerEnable		●	[Deprecated] Previously enabled/disabled analog power for HDMI output.
[Dep] AnalogPowerStatus		●	[Deprecated] Previously displayed analog power state of HDMI output.
AudioActiveInput		●	Display the active audio input for the specified HDMI output. (D4511 only)
AudioActiveStatus		●	Display the audio status for the specified HDMI output. (D4511 only)
AudioBackupInput		●	Set the backup audio input for the specified HDMI output.
AudioBackupMode		●	Set the backup audio mode for the specified HDMI output.
AudioInput		●	Set the audio input for the specified HDMI output.
AudioMute		●	Enable or disable muting on the specified HDMI output.
AudioToBackup		●	Switch the active audio input to the backup audio input.
AudioToPrimary		●	Switch the active audio input to the primary audio input.
AudioVolume		●	Set the output volume on the specified HDMI output. (D4511 only)
AuxDecodeInput		●	Set the auxiliary input for the specified HDMI output. (D4511 only)
Descramble		●	Enable or disable descrambling on the specified HDMI output (SSH only).
DescrambleKey		●	Set the descrambling key for the specified HDMI output (SSH only).
FastSwitching		●	Enable or disable Fast Switching on the decoder.
IPInputEnable		●	Enable or disable the specified IP input.
IPInputFilterAddr		●	Set the filter IP address(es) for the specified IP input.
IPInputFilterMode		●	Set the filter mode (include/exclude) for the specified IP input.
IPInputInterface		●	Set the network interface for the specified IP input.
IPInputMulticast		●	Set the multicast IP address for the specified IP input.
IPInputPort		●	Set the listening port for the specified IP input.
MultiviewBackground		●	Set the multiview background color.
MultiviewSubframeConfig		●	Set anchor point, offsets, and z-order for a multiview subframe.
MultiviewSubframeInput		●	Assign an ip_input to the specified multiview subframe.
SapEnable		●	Enable or disable the Session Announcement Protocol (SAP).
SapInput		●	Set the SAP input state for the specified input. [New]
SapSessionList		●	Display the list of available SAP sessions for the specified input. [New]
SerialDestEnable		●	Enable or disable bidirectional data flow for the specified serial port.
SerialDestIP		●	Set the destination IP address for the bidirectional serial port.

Command	Encoder	Decoder	Description
SerialDestPort		●	Set the destination port for the bidirectional serial port.
SerialInput		●	Set the input port for the specified serial port.
SerialInterface		●	Set the network interface for the specified serial port.
SerialMode		●	Set the serial mode for the specified serial port.
TrigCEC		●	Trigger a CEC command on the specified HDMI output.
TrigRS232		●	Trigger an RS-232 command on the specified RS-232 port.
VideoActiveInput		●	Display the active video input for the specified HDMI output.
VideoActiveStatus		●	Display the video status of the specified HDMI output.
VideoAspect		●	Set the aspect ratio for the specified HDMI output.
VideoBackupInput		●	Set the backup video input for the specified HDMI output.
VideoBackupMode		●	Set the backup video mode for the specified HDMI output.
VideoInput		●	Set the video input for the specified HDMI output.
VideoRes		●	Set the video resolution of the specified HDMI output.
VideoToBackup		●	Assign the active video input as the backup video input.
VideoToPrimary		●	Assign the active video input as the primary video input.
VideoWallArray		●	Set the video wall size in rows and columns.
VideoWallEnable		●	Enable or disable the video wall for the specified HDMI output.
VideoWallPos		●	Set the video wall position in rows and columns.
VideoWallSize		●	Set the total video wall size in pixels, inches, or millimeters.

CLI Commands

The following sections list all CLI commands organized by applicability. Commands are not case-sensitive.

Shared Commands (Encoder and Decoder)

The following commands are available on both encoder and decoder units (applicability varies — see individual entries for model-specific restrictions).

8021xMode

Sets the 802.1x mode for the specified interface. Specify sta to display the current setting. Connecting a device to a network without an active RADIUS server will result in the device not functioning until the expected message is returned.

`8021xModeX Y`

Parameter	Description	Range
X	Interface	0, 1
Y	Mode	none, PEAP/MSCHAPv2, EAP-TLS, sta

Example:

```
8021xMode1 EAP-TLS
```

Feedback:

```
8021xMode1 EAP-TLS set
```

AnalogAudioGain

New command added August 2026.

Sets the analog audio gain level for the specified input. Specify sta to display the current setting.

`AnalogAudioGainX Y`

Parameter	Description	Range
X	Input	1, 2
Y	Gain level	-103 ... +24 dB, sta

Example:

```
AnalogAudioGain1 -103
```

Feedback:

```
AnalogAudioGain1 -103 set
```

Broadcast

Enables or disables broadcast mode. Specify sta to display the current setting.

`Broadcast X`

Parameter	Description	Range
X	State	on, off, sta

Example:
```
Broadcast on
```
Feedback:
```
Broadcast on set
```

EnableAES67

Enables or disables AES67 audio on the specified session (encoder) or HDMI output (decoder). Specify sta to display the current setting.

`EnableAES67X Y`

Parameter	Description	Range
X	Session (encoder) or HDMI output (decoder)	Integer (encoder); 1, 2 (decoder)
Y	State	on, off, sta

Example:
```
EnableAES672 on
```
Feedback:
```
EnableAES672 on set
```

FrontPanelLock

Locks or unlocks the buttons on the front panel. When locked, the LED backlight on each button will be disabled. Specify sta to display the current setting.

`FrontPanelLock X`

Parameter	Description	Range
X	Status	lock, unlock, sta

Example:
```
FrontPanelLock lock
```
Feedback:
```
FrontPanelLock lock set
```

HDCPSet

Sets the version of HDCP for the specified HDMI input or output. Specify sta to display the current setting. To disable HDCP, specify none or off.

`HDCPSetX Y`

Parameter	Description	Range
X	HDMI input or output	1, 2
Y	HDCP version	none/off, 1.4, 2.2, sta

Example:
```
HDCPSet1 2.2
```
Feedback:
```
HDCPSet1 2.2 set
```

Help

Displays the list of available commands. To obtain help on a specific command, enter this command followed by the name of the command.

`Help X`

Parameter	Description	Range
X	Command name (optional)	Command name

Example:
```
help
```
Feedback:
```
Help, Quit, IPTimeout, IPQuit, ...
```

Identify

Flashes the LED indicators on the front panel of the unit for 10 seconds.

`Identify`

Example:
```
Identify
```
Feedback: *(none)*

IPCFG

Displays the IP configuration for the specified interface.

`IPCFGX`

Parameter	Description	Range
X	Interface	1, 2

Example:
```
IPCFG1
```
Feedback:
```
IP Addr: 10.0.1.110
Netmask: 255.255.255.0
Gateway: 10.0.1.1
IP Port: 23
```

IPCfgUsb

This command is only available on HW-OMNI-E4521 and HW-OMNI-D4511.

Displays the IP configuration for the USB network interface.

`IPCfgUsb`

Example:
```
IPCfgUsb
```
Feedback:
```
IP Addr: 192.168.2.156
Netmask: 255.255.255.0
Gateway: 192.168.2.249
```

IPDHCP

Enables or disables DHCP on the specified interface. Specify sta to display the current setting.

`IPDHCPX Y`

Parameter	Description	Range
X	Interface	1, 2
Y	Mode	on, off, sta

Example:
```
IPDHCP1 on
```
Feedback:
```
IPDHCP1 on set
```

IPDHCPUSB

This command is only available on HW-OMNI-E4521 and HW-OMNI-D4511.

Enables DHCP on the USB network interface. Specify sta to display the current setting. Set to static using the IpStaticUsb command.

`IPDHCPUSB X`

Parameter	Description	Range
X	State	on, sta

Example:
```
IPDHCPUSB sta
```
Feedback:
```
IPDHCPUSB off
```

IPLogin

Enables or disables login authentication for Telnet and/or NVT. Specify sta to display the current setting. If authentication is enabled on one interface and disabled on the other, a value of mixed will be returned.

`IPLoginX Y`

Parameter	Description	Range
X	Interface	1, 2
Y	Mode	on, off, sta

Example:
```
IPLogin on
```
Feedback:
```
IPLogin on set
```

IPPort

Sets the Telnet listening port for the specified interface. Specify sta to display the current setting.

`IPPortX Y`

Parameter	Description	Range
X	Interface	1, 2
Y	Port	0 ... 65535, sta

Example:
```
IPPort1 2323
```
Feedback:
```
IPPort1 2323 set
```

IPQuit

Exits the CLI session.

`IPQuit`

Example:
```
IPQuit
```
Feedback: *(none)*

IPStatic

Sets the static IP address for the specified interface. Once set, the network mode is automatically set to Static. Include a space between each address argument.

`IPStaticW X Y Z`

Parameter	Description	Range
W	Interface	1, 2
X	IP address	0 ... 255 (per octet)
Y	Subnet mask	0 ... 255 (per octet)
Z	Gateway	0 ... 255 (per octet)

Example:

```
IPStatic1 192.168.11.154 255.255.255.0 192.168.11.1
```

Feedback:

```
IPStatic1 192.168.11.154 255.255.255.0 192.168.11.1 set
```

IpStaticUsb

This command is only available on HW-OMNI-E4521 and HW-OMNI-D4511.

Sets a static IP address on the USB network interface and enables it. Include a space between each address parameter.

`IpStaticUsb X Y Z`

Parameter	Description	Range
X	IP address	0 ... 255 (per octet)
Y	Subnet mask	0 ... 255 (per octet)
Z	Gateway	0 ... 255 (per octet)

Example:

```
IpStaticUsb 192.168.2.189 255.255.255.0 192.168.2.249
```

Feedback:

```
IpStaticUsb 192.168.2.189 255.255.255.0 192.168.2.249 set
```

IPTimeout

Sets the session timeout interval in seconds.

`IPTimeout X`

Parameter	Description	Range
X	Time interval (seconds)	Integer value

Example:
```
IPTimeout 5000
```
Feedback:
```
IPTimeout 5000 set
```

License

Installs the specified license key. Execute this command without an argument to display the installed licenses.

`License X:Y`

Parameter	Description	Range
X	Key type	String
Y	Key value	String

Example:
```
License 4K:e5d533...
```
Feedback:
```
License 4K:e5d533... set
```

Mclear

Resets the unit to an empty configuration.

`Mclear`

Example:
```
Mclear
```
Feedback: *(none)*

Mreset

Resets the unit to factory-default settings.

`Mreset`

Example:
```
Mreset
```
Feedback: *(none)*

Quit

Exits the CLI session.

`Quit`

Example:
```
Quit
```
Feedback: *(none)*

Reboot

Reboots the unit.

`Reboot`

Example:
```
Reboot
```
Feedback: *(none)*

SerialBaud

Sets the baud rate for the specified serial port. Specify sta to display the current setting.

`SerialBaudX Y`

Parameter	Description	Range
X	Serial port	1, 2
Y	Baud rate	9600, 19200

Example:
```
SerialBaud1 19200
```
Feedback:
```
SerialBaud1 19200 set
```

SerialData

Sets the number of data bits for the specified serial port. Specify sta to display the current setting.

`SerialDataX Y`

Parameter	Description	Range
X	Serial port	1, 2
Y	Data bits	6, 7, 8

Example:
```
SerialData1 7
```
Feedback:
```
SerialData1 7 set
```

SerialParity

Sets the parity bit for the specified serial port. Specify sta to display the current setting.

`SerialParityX Y`

Parameter	Description	Range
X	Serial port	1, 2
Y	Parity bit	none, odd, even, mark, space, sta

Example:
```
SerialParity1 none
```
Feedback:
```
SerialParity1 none set
```

SerialPort

Sets the serial port assignment for the specified port. Specify sta to display the current setting.

SerialPortX Y

Parameter	Description	Range
X	Serial port	1, 2
Y	Port assignment	not used, serial_port1, serial_port2, sta

Example:
```
SerialPort1 serial_port1
```
Feedback:
```
SerialPort1 serial_port1 set
```

SerialStop

Sets the number of stop bits for the specified serial port. Specify sta to display the current setting.

SerialStopX Y

Parameter	Description	Range
X	Serial port	1, 2
Y	Stop bits	1, 1.5, 2, sta

Example:
```
SerialStop2 1
```
Feedback:
```
SerialStop2 1 set
```

SetCmd

Specifies the command to be sent over RS-232. The command data must be enclosed in brackets and should be terminated with a carriage-return (\r).

SetCmd X[Y]

Parameter	Description	Range
X	Command trigger	on, off, vol+, vol-
Y	RS-232 command string	String (hex bytes)

Example:
```
SetCmd on[a6 00 00 10 32 4a....]
```
Feedback:
```
SetCmd on[a6 00 00 10 32 4a....] set
```

SlateLogo

Sets the slate logo for the specified HDMI input or output. The second parameter is the name given to the logo when it was uploaded to the unit. Specify sta to display the current setting.

SlateLogoX Y

Parameter	Description	Range
X	HDMI input or output	1, 2
Y	Slate logo name	String, sta

Example:
```
SlateLogo1 test
```
Feedback:
```
SlateLogo1 test set
```

SlateMode

Sets the slate mode for the specified HDMI input or output. Specify sta to display the current setting.

SlateModeX Y

Parameter	Description	Range
X	HDMI input or output	1, 2
Y	Mode	off, auto, manual, sta

Example:
```
SlateMode1 manual
```
Feedback:
```
SlateMode1 manual set
```

Temperature

Displays the system and die temperature in both Fahrenheit and Celsius.

Temperature

Example:
```
Temperature
```
Feedback:
```
System temperature: 114.80 F (46.00 C)
Die temperature: 147.83 F (64.35 C)
```

Type

Displays the device type.

`Type`

Example:

```
Type
```

Feedback:

```
at-omni-112
```

UsbPairing

This command is only available on HW-OMNI-E4521 and HW-OMNI-D4511. New command added August 2026.

Manages USB pairing between the encoder and decoder. Specify sta to display the current USB pairing status.

`UsbPairing X Y`

Parameter	Description	Range
X	Action	sta, list, pair, unpair
Y	IP address of device to pair/unpair	x.x.x.x (required for pair/unpair)

Example:

```
UsbPairing pair 192.168.2.101
```

Feedback:

```
UsbPairing pair 192.168.2.101 set
```

Version

Displays the firmware version. The optional argument provides additional version information.

`VersionX`

Parameter	Description	Range
X	Version type (optional)	software, fpga

Example:

```
Version
```

Feedback:

```
2.0.0
```

Encoder Commands

The following commands are available on encoder units only (HW-OMNI-E4521 and/or HW-OMNI-E4111/WP). See individual entries for model-specific restrictions.

AudioDestIP

Sets the destination audio IP address for the specified session. Specify sta to display the current setting.

`AudioDestIPX Y`

Parameter	Description	Range
X	Session	1, 2
Y	IP address	0 ... 255 (per octet)

Example:

```
AudioDestIP1 192.168.11.10
```

Feedback:

```
AudioDestIP1 192.168.11.10 set
```

AudioDestPort

Sets the destination audio port for the specified session. Specify sta to display the current setting.

`AudioDestPortX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	Port	0 ... 65535

Example:

```
AudioDestPort1 1100
```

Feedback:

```
AudioDestPort1 1100 set
```

AudioEnable

Enables or disables audio for the specified session. The number of available sessions varies between units. Specify sta to display the current setting.

`AudioEnableX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	State	on, off, sta

Example:
```
AudioEnable2 on
```
Feedback:
```
AudioEnable2 on set
```

AudioSapAlways

Enables or disables the transmission of AES67 SAP audio information on the specified session. When set to on, SAP stream information will be sent even if there is no source present. Specify sta to display the current setting.

AudioSapAlwaysX Y

Parameter	Description	Range
X	Session	1 ... 6
Y	State	on, off, sta

Example:
```
AudioSapAlways4 on
```
Feedback:
```
AudioSapAlways4 on set
```

AudioSource

Sets the HDMI audio source for the specified session. Specify sta to display the current setting.

AudioSourceX Y

Parameter	Description	Range
X	Session	1 ... 6
Y	HDMI audio source	1, 2, sta

Example:
```
AudioSource4 2
```
Feedback:
```
AudioSource4 2
```

AuxBidirectional

Enables bidirectional data transfer on the Aux channel (IR/RS-232) for the specified session. Specify sta to display the current setting.

AuxBidirectionalX Y

Parameter	Description	Range
X	Session	1 ... 6
Y	State	on, off, sta

Example:
```
AuxBidirectional1 on
```
Feedback:
```
AuxBidirectional1 on set
```

AuxDestIP

Sets the destination IP address for the auxiliary channel for the specified session. Specify sta to display the current setting.

`AuxDestIPX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	IP address	0 ... 255 (per octet)

Example:
```
AuxDestIP3 192.168.11.154
```
Feedback:
```
AuxDestIP3 192.168.11.154 set
```

AuxDestPort

Sets the destination port for the auxiliary channel for the specified session. Specify sta to display the current setting.

`AuxDestPortX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	Port	0 ... 65535

Example:
```
AuxDestPort2 2000
```
Feedback:
```
AuxDestPort2 2000 set
```

AuxEnable

Enables or disables the auxiliary channel for the specified session. Specify sta to display the current setting.

`AuxEnableX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	State	on, off, sta

Example:
```
AuxEnable1 on
```
Feedback:
```
AuxEnable1 on set
```

AuxListenPort

Sets the auxiliary channel listening port for bidirectional control for the specified session. Specify sta to display the current setting.

`AuxListenPortX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	Port	0 ... 65535

Example:
```
AuxListenPort2 1204
```
Feedback:
```
AuxListenPort2 1204 set
```

AuxSource

Sets the serial port source for the specified session. Specify sta to display the current setting.

`AuxSourceX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	Serial port	1, 2

Example:
```
AuxSource1 2
```
Feedback:
```
AuxSource1 2 set
```

DisplayBtn

This command is only available on HW-OMNI-E4521.

Sends the specified display command to the desired HDMI input.

`DisplayBtnX Y`

Parameter	Description	Range
X	HDMI input	1, 2
Y	Command	on, off, toggle

Example:
```
DisplayBtn1 on
```
Feedback:
```
DisplayBtn1 on set
```

EDIDMSet

Sets the EDID for the specified HDMI input. Specify list to display available EDID settings. The available settings depend on the current system mode. Specify sta to display the current setting.

`EDIDMSetX Y`

Parameter	Description	Range
X	HDMI input	1, 2
Y	EDID name or argument	EDID name, list, sta

Example:
```
EDIDMSet1 1080p 2ch
```
Feedback:
```
EDIDMSet1 1080p 2ch set
```

EncGroup

Enables or disables sessions within an encoder group. No space should exist between the command and the first parameter (the session). enable = adds the session to the encoder group; disable = removes it; active = adds and makes it the active session.

`EncGroupX Y`

Parameter	Description	Range
X	Session	Integer value
Y	Action	enable, disable, active

Example:
```
EncGroup1 enable
```
Feedback:
```
EncGroup1 enable set
```

EncoderBitDepth

Sets the bit depth for the specified encoder. Specify sta to display the current setting.

`EncoderBitDepthX Y`

Parameter	Description	Range
X	Encoder	1, 2
Y	Bit depth	8, 10, 12

Example:
```
EncoderBitDepth1 10
```
Feedback:
```
EncoderBitDepth1 10 set
```

EncoderBitRate

This command is only available on HW-OMNI-E4521.

Sets the bit rate for the specified encoder in megabits-per-second (Mbps). Recommended bandwidth: 450 Mbps for 1080p60, 900 Mbps for 4K/UHD. Setting below these values results in lower-quality video. Specify sta to display the current setting.

`EncoderBitRateX Y`

Parameter	Description	Range
X	Encoder	1, 2
Y	Bit rate (Mbps)	15 ... 900, sta

Example:
```
EncoderBitRate1 450
```
Feedback:
```
EncoderBitRate1 450 set
```

EncoderInput

Sets the input for the specified encoder. Specify sta to display the current setting.

`EncoderInputX Y`

Parameter	Description	Range
X	Encoder	1, 2
Y	Input	HDMI1, HDMI2, VidGen1, VidGen2, sta

Example:
```
EncoderInput2 HDMI1
```
Feedback:
```
EncoderInput2 HDMI1 set
```

EncoderScaler

This command is only available on HW-OMNI-E4111/WP.

Sets the scaler resolution for the specified encoder. Specify sta to display the current setting and the list of supported values. Specify a resolution to enable scaling, or none to disable.

`EncoderScalerX Y`

Parameter	Description	Range
X	Encoder	1, 2
Y	Scaler resolution	Supported resolution string, none, sta

Example:

```
EncoderScaler1 1920x1080
```

Feedback:

```
EncoderScaler1 1920x1080 set
```

EncoderSubSample

This command is only available on HW-OMNI-E4521.

Sets the chroma subsampling value for the specified encoder. Specify sta to display the current setting.

`EncoderSubSampleX Y`

Parameter	Description	Range
X	Encoder	1, 2
Y	Subsampling value	444, 422, 420, sta

Example:

```
EncoderSubSample1 420
```

Feedback:

```
EncoderSubSample1 420 set
```

Input

This command is only available on HW-OMNI-E4521.

Displays whether or not a signal exists on the specified HDMI input, and sets or displays the input source. Specify sta to display the current setting.

`InputX Y`

Parameter	Description	Range
X	HDMI input	1, 2
Y	Input source	auto, hdmi, usbc, sta

Example:
```
Input1 sta
```
Feedback:
```
Cable present: yes
Input auto switch: on
Active input: HDMI 1
```

InputAudioSource

New command added August 2026.

Sets the audio source for the specified HDMI input. Specify sta to display the current setting.

`InputAudioSourceX Y`

Parameter	Description	Range
X	HDMI input	1, 2
Y	Audio source	hdmi, analog, sta

Example:
```
InputAudioSource1 analog
```
Feedback:
```
InputAudioSource1 analog set
```

InputAutoSwitch

This command is only available on HW-OMNI-E4521. New command added August 2026.

Sets the automatic input switching mode for the HW-OMNI-E4521. Specify sta to display the current setting.

`InputAutoSwitchX Y`

Parameter	Description	Range
X	HDMI input	1, 2
Y	State	sta, on usbc, on hdmi, off

Example:
```
InputAutoSwitch1 on hdmi
```
Feedback:
```
InputAutoSwitch1 on hdmi set
```

InputBtn

This command is only available on HW-OMNI-E4521.

Sets the input by emulating the front-panel INPUT button. Specify tog to toggle to the opposite input.

`InputBtnX`

Parameter	Description	Range
X	Input	1, 2, tog

Example:
```
InputBtn 1
```
Feedback:
```
InputBtn 1 set
```

SessionScramble

This command is only available through SSH.

Enables or disables scrambling for the specified session. Specify sta to display the current setting.

`SessionScrambleX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	State	on, off, sta

Example:
```
SessionScramble1 on
```
Feedback:
```
SessionScramble1 on set
```

SessionScrambleKey

This command is only available through SSH.

Sets the scrambling key for the specified session. Specify sta to display the current setting.

`SessionScrambleKeyX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	Key	String, sta

Example:
```
SessionScrambleKey2 df3d7cdc88584f23
```
Feedback:
```
SessionScrambleKey2 df3d7cdc88584f23 set
```

VideoDestIP

Sets the video destination IP address for the specified session. Specify sta to display the current setting.

`VideoDestIPX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	IP address	0 ... 255 (per octet)

Example:
```
VideoDestIP1 226.0.0.1
```
Feedback:
```
VideoDestIP1 226.0.0.1 set
```

VideoDestPort

Sets the video destination IP port for the specified session. Specify sta to display the current setting.

`VideoDestPortX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	Port	0 ... 65535

Example:
```
VideoDestPort2 1000
```
Feedback:
```
VideoDestPort2 1000 set
```

VideoEnable

Enables or disables video for the specified session. The session range differs between single-channel and dual-channel encoders. Specify sta to display the current setting.

`VideoEnableX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	State	on, off, sta

Example:
```
VideoEnable2 off
```
Feedback:
```
VideoEnable2 off set
```

VideoEncoder

Sets the encoder input for the specified session. Specify sta to display the current setting.

`VideoEncoderX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	Encoder input	1, 2

Example:
```
VideoEncoder1 2
```
Feedback:
```
VideoEncoder1 2 set
```

VideoFECColumns

This command is only available on HW-OMNI-E4521.

Sets the number of FEC columns for the specified session. Specify sta to display the current setting.

`VideoFECColumnsX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	FEC columns	Integer

Example:
```
VideoFECColumns1 4
```
Feedback:
```
VideoFECColumns1 4 set
```

VideoFECEnable

This command is only available on HW-OMNI-E4521.

Enables or disables Forward Error Correction (FEC) for the specified session. Specify sta to display the current setting.

`VideoFECEnableX Y`

Parameter	Description	Range
X	Session	1 ... 6
Y	State	on, off, sta

Example:
```
VideoFECEnable1 on
```
Feedback:
```
VideoFECEnable1 on set
```

VideoFECRows

This command is only available on HW-OMNI-E4521.

Sets the number of FEC rows for the specified session. Specify sta to display the current setting.

`VideoFECRowsX Y`

Parameter	Description	Range
X	Session	1 ... 6

Parameter	Description	Range
Y	FEC rows	Integer

Example:
```
VideoFECRows1 4
```
Feedback:
```
VideoFECRows1 4 set
```

VolumeBtn

This command is only available on HW-OMNI-E4521.

Sends the volume-up or volume-down command. Volume is incremented or decremented by 1 each time the command is executed.

`VolumeBtn X`

Parameter	Description	Range
X	Volume	up, down

Example:
```
VolumeBtn up
```
Feedback:
```
VolumeBtn up
```

Decoder Commands

The following commands are available on decoder units only (HW-OMNI-D4511 and/or HW-OMNI-D4111). See individual entries for model-specific restrictions.

[Deprecated] AnalogPowerEnable

[Deprecated] — This command is no longer active and will return "Deprecated" when called. Retained for reference only.

This command has been deprecated. It was previously used to enable or disable the analog power for the specified HDMI output.

`AnalogPowerEnableX Y`

Parameter	Description	Range
X	HDMI output	1, 2
Y	State	on, off, sta

Example:

```
AnalogPowerEnable1 on
```

Feedback:

```
Deprecated
```

[Deprecated] AnalogPowerStatus

[Deprecated] — This command is no longer active and will return "Deprecated" when called. Retained for reference only.

This command has been deprecated. It was previously used to display the power state of the specified HDMI output port.

`AnalogPowerStatusX`

Parameter	Description	Range
X	HDMI output	1, 2

Example:

```
AnalogPowerStatus1
```

Feedback:

```
Deprecated
```

AudioActiveInput

This command is only available on HW-OMNI-D4511.

Displays the active audio input for the specified HDMI output.

`AudioActiveInputX`

Parameter	Description	Range
X	HDMI output	1, 2

Example:
```
AudioActiveInput1
```
Feedback:
```
AudioActiveInput1 3
```

AudioActiveStatus

This command is only available on HW-OMNI-D4511.

Displays the audio status for the specified HDMI output.

`AudioActiveStatusX`

Parameter	Description	Range
X	HDMI output	1, 2

Example:
```
AudioActiveStatus1
```
Feedback:
```
AudioActiveStatus1 Inactive
```

AudioBackupInput

Sets the backup audio input for the specified HDMI output. Specify sta to display the current setting.

`AudioBackupInputX Y`

Parameter	Description	Range
X	HDMI output	1, 2
Y	Audio backup input	1 ... 16, sta

Example:
```
AudioBackupInput1 4
```
Feedback:
```
AudioBackupInput1 4 set
```

AudioBackupMode

Sets the backup audio mode for the specified HDMI output. Specify sta to display the current setting.

`AudioBackupModeX Y`

Parameter	Description	Range
X	HDMI output	1, 2
Y	Mode	off, join active, join always, sta

Example:
```
AudioBackupMode2 join active
```
Feedback:
```
AudioBackupMode2 join active set
```

AudioInput

Sets the audio input for the specified HDMI output. Specify sta to display the current setting.

`AudioInputX Y`

Parameter	Description	Range
X	HDMI output	1, 2
Y	Audio input	1 ... 16, sta

Example:
```
AudioInput1 3
```
Feedback:
```
AudioInput1 3 set
```

AudioMute

Enables or disables muting on the specified HDMI output. Specify sta to display the current setting.

`AudioMuteX Y`

Parameter	Description	Range
X	HDMI output	1, 2
Y	State	on, off, sta

Example:
```
AudioMute1 on
```
Feedback:
```
AudioMute1 on set
```

AudioToBackup

Switches the active audio input for the specified HDMI output to the backup audio input. The audio backup must first be set using AudioBackupMode.

`AudioToBackupX`

Parameter	Description	Range
X	HDMI output	1, 2

Example:
```
AudioToBackup1
```
Feedback:
```
AudioToBackup1 set
```

AudioToPrimary

Switches the active audio input for the specified HDMI output to the primary audio input. The audio backup must first be set using AudioBackupMode.

AudioToPrimaryX

Parameter	Description	Range
X	HDMI output	1, 2

Example:
```
AudioToPrimary1
```
Feedback:
```
AudioToPrimary1 set
```

AudioVolume

This command is only available on HW-OMNI-D4511.

Sets the output volume on the specified HDMI output. Specify sta to display the current setting.

AudioVolumeX Y

Parameter	Description	Range
X	HDMI output	1, 2
Y	Level	0 ... 15, sta

Example:
```
AudioVolume2 10
```
Feedback:
```
AudioVolume2 10 set
```

AuxDecodeInput

This command is only available on HW-OMNI-D4511.

Sets the auxiliary input for the specified HDMI output. Specify sta to display the current setting.

AuxDecodeInputX Y

Parameter	Description	Range
X	HDMI output	1, 2
Y	Input	1 ... 16, sta

Example:
```
AuxDecodeInput1 7
```
Feedback:
```
AuxDecodeInput1 7 set
```

Descramble

This command is only available through SSH.

Enables or disables descrambling on the specified HDMI output. Specify sta to display the current setting.

`DescrambleX Y`

Parameter	Description	Range
X	HDMI output	1, 2
Y	State	on, off, sta

Example:
```
Descramble1 on
```
Feedback:
```
Descramble1 on set
```

DescrambleKey

This command is only available through SSH.

Sets the descrambling key for the specified HDMI output. Specify sta to display the current setting.

`DescrambleKeyX Y`

Parameter	Description	Range
X	HDMI output	1, 2
Y	Key	String, sta

Example:
```
DescrambleKey1 e39f2de467ce7c9c
```
Feedback:
```
DescrambleKey1 e39f2de467ce7c9c set
```

FastSwitching

Enables or disables Fast Switching on the decoder. Specify sta to display the current setting.

`FastSwitchingX Y`

Parameter	Description	Range
X	HDMI output	1, 2
Y	State	on, off, sta

Example:
```
FastSwitching1 on
```
Feedback:
```
FastSwitching1 on set
```

IPInputEnable

Enables or disables the specified IP input. Specify sta to display the current setting.

`IPInputEnableX Y`

Parameter	Description	Range
X	IP input	1 ... 16
Y	State	on, off, sta

Example:
```
IPInputEnable1 off
```
Feedback:
```
IPInputEnable1 off set
```

IPInputFilterAddr

Sets the filter address(es) for the specified IP input. Use a comma delimiter to specify multiple IP addresses. IP addresses cannot be multicast addresses. Specify sta to display the current setting.

`IPInputFilterAddrX Y`

Parameter	Description	Range
X	IP input	1 ... 16
Y	IP address(es)	0 ... 255 (per octet), sta

Example:
```
IPInputFilterAddr1 192.168.11.100, 192.168.11.58
```
Feedback:
```
IPInputFilterAddr1 192.168.11.100, 192.168.11.58 set
```

IPInputFilterMode

Sets the mode for filter addresses on the specified IP input. Specify sta to display the current setting.

`IPInputFilterModeX Y`

Parameter	Description	Range
X	IP input	1 ... 16
Y	Mode	include, exclude, sta

Example:
```
IPInputFilterMode1 exclude
```
Feedback:
```
IPInputFilterMode1 exclude set
```

IPInputInterface

Sets the network interface for the specified IP input. Specify sta to display the current setting.

`IPInputInterfaceX Y`

Parameter	Description	Range
X	IP input	1 ... 16
Y	Interface	eth1, eth2, sta

Example:
```
IPInputInterface1 eth2
```
Feedback:
```
IPInputInterface1 eth2 set
```

IPInputMulticast

Sets the multicast IP address for the specified IP input. The multicast address must be specified in dot-decimal notation. Specify sta to display the current setting.

`IPInputMulticastX Y`

Parameter	Description	Range
X	IP input	1 ... 16
Y	IP address	0 ... 255 (per octet), sta

Example:
```
IPInputMulticast1 226.0.0.10
```
Feedback:
```
IPInputMulticast1 226.0.0.10 set
```

IPInputPort

Sets the listening port for the specified IP input. The input range differs between single-channel and dual-channel decoders. Specify sta to display the current setting.

`IPInputPortX Y`

Parameter	Description	Range
X	IP input	1 ... 16
Y	Port	0 ... 65535, sta

Example:
```
IPInputPort1 2012
```
Feedback:
```
IPInputPort1 2012 set
```

MultiviewBackground

Sets the multiview background color. The multiview# keyword must be included before specifying all other parameters. No space before the multiview# keyword and the first argument. Spaces within the multiview name must be replaced with #. Specify sta after the room name to display the current background color.

`MultiviewBackground multiview#W X Y Z`

Parameter	Description	Range
W	Multiview name (spaces replaced with #)	String (cannot be "multiview")
X	Red component	0 ... 255
Y	Green component	0 ... 255
Z	Blue component	0 ... 255

Example:
```
MultiviewBackground multiview#Overflow#Room 20 20 30
```
Feedback:
```
MultiviewBackground multiview#Overflow#Room 20 20 30 set
```

MultiviewSubframeConfig

Sets the anchor point, offsets, and z-order for the specified multiview subframe. The multiview# keyword must be included before specifying all other parameters.

`MultiviewSubframeConfig multiview#U V W X Y Z`

Parameter	Description	Range
U	Multiview name	String
V	Subframe identifier	main, left, right, top_left, top_middle, top_right, bottom_left, bottom_middle, bottom_right, middle_left, middle_right
W	Anchor point	topleft, topright, bottomleft, bottomright, center
X	X offset	Integer
Y	Y offset	Integer
Z	Z-order	1 ... 8

Example:
```
MultiviewSubframeConfig multiview#Overflow#Room top_left topleft 0 0 2
```
Feedback:
```
MultiviewSubframeConfig multiview#Overflow#Room top_left topleft 0 0 2 set
```

MultiviewSubframeInput

Assigns an ip_input to the specified multiview subframe. The multiview# keyword must be included before specifying all other parameters. Spaces within the multiview name must be replaced with #.

`MultiviewSubframeInput multiview#U V W`

Parameter	Description	Range
U	Multiview name	String
V	Subframe identifier	main, left, right, top_left, top_middle, top_right, bottom_left, bottom_middle, bottom_right, middle_left, middle_right
W	IP input number	1 ... 16

Example:
```
MultiviewSubframeInput multiview#Overflow#Room bottom_left 1
```
Feedback:
```
MultiviewSubframeInput multiview#Overflow#Room bottom_left 1 set
```

SapEnable

Enables or disables the Session Announcement Protocol (SAP). Specify sta to display the current setting.

`SapEnable X`

Parameter	Description	Range
X	State	on, off, sta

Example:
```
SapEnable on
```
Feedback:
```
SapEnable on set
```

SapInput

New command added August 2026.

Sets the SAP input state for the specified input. Specify sta to display the current setting.

`SapInputX Y`

Parameter	Description	Range
X	Input	1, 2
Y	State	on, off, sta

Example:

```
SapInput1 off
```

Feedback:

```
SapInput1 off set
```

SapSessionList

New command added August 2026.

Displays the list of available SAP sessions for the specified input.

`SapSessionListX sta`

Parameter	Description	Range
X	Input	1, 2

Example:

```
SapSessionList1 sta
```

Feedback:

```
[list of available SAP sessions]
```

SerialDestEnable

Enables or disables bidirectional data flow for the specified serial port. Specify sta to display the current setting.

`SerialDestEnableX Y`

Parameter	Description	Range
X	Serial port	1, 2
Y	State	on, off, sta

Example:

```
SerialDestEnable1 on
```

Feedback:

```
SerialDestEnable1 on set
```

SerialDestIP

Sets the destination IP address for the bidirectional serial port. Specify sta to display the current setting.

SerialDestIPX Y

Parameter	Description	Range
X	Serial port	1, 2
Y	IP address	0 ... 255 (per octet)

Example:

```
SerialDestIP1 226.0.0.10
```

Feedback:

```
SerialDestIP1 226.0.0.10 set
```

SerialDestPort

Sets the destination port for the bidirectional serial port. Specify sta to display the current setting.

SerialDestPortX Y

Parameter	Description	Range
X	Serial port	1, 2
Y	Port	0 ... 65535, sta

Example:

```
SerialDestPort1 2000
```

Feedback:

```
SerialDestPort1 2000 set
```

SerialInput

Sets the input port for the specified serial port. Specify sta to display the current setting.

SerialInputX Y

Parameter	Description	Range
X	Serial port	1, 2
Y	Port	1 ... 12, sta

Example:

```
SerialInput1 1
```

Feedback:

```
SerialInput1 1 set
```

SerialInterface

Sets the network interface for the specified serial port. Specify sta to display the current setting.

`SerialInterfaceX Y`

Parameter	Description	Range
X	Serial port	1, 2
Y	Interface	eth1, eth2, sta

Example:

```
SerialInterface1 eth2
```

Feedback:

```
SerialInterface1 eth2 set
```

SerialMode

Sets the serial mode for the specified serial port. Specify sta to display the current setting.

`SerialModeX Y`

Parameter	Description	Range
X	Serial port	1, 2
Y	Mode	cli, tcpproxy, output, sta

Example:

```
SerialMode2 tcpproxy
```

Feedback:

```
SerialMode2 tcpproxy set
```

TrigCEC

Triggers a CEC command on the specified HDMI output.

`TrigCECX Y`

Parameter	Description	Range
X	HDMI output	1, 2
Y	Command	on, off, vol+, vol-

Example:

```
TrigCEC2 vol+
```

Feedback:

```
TrigCEC2 vol+ set
```

TrigRS232

Triggers the RS-232 command on the specified RS-232 port.

`TrigRS232X Y`

Parameter	Description	Range
X	RS-232 port	1, 2
Y	Command	on, off, vol+, vol-

Example:

```
TrigRS2321 vol-
```

Feedback:

```
TrigRS2321 vol-
```

VideoActiveInput

Displays the active video input for the specified HDMI output.

`VideoActiveInputX`

Parameter	Description	Range
X	HDMI output	1, 2

Example:

```
VideoActiveInput1
```

Feedback:

```
VideoActiveInput1 1
```

VideoActiveStatus

Displays the status of the specified HDMI output. If no video input is detected, Inactive is returned.

`VideoActiveStatusX`

Parameter	Description	Range
X	HDMI output	1, 2

Example:

```
VideoActiveStatus1
```

Feedback:

```
VideoActiveStatus1 active
```

VideoAspect

Sets the aspect ratio for the specified HDMI output. Specify sta to display the current setting.

VideoAspectX Y

Parameter	Description	Range
X	HDMI output	1, 2
Y	Aspect ratio	keep, fullscreen, 16:9, 16:10, 4:3, sta

Example:

```
VideoAspect1 16:10
```

Feedback:

```
VideoAspect1 16:10 set
```

VideoBackupInput

Sets the backup video input for the specified HDMI output. Specify sta to display the current setting.

VideoBackupInputX Y

Parameter	Description	Range
X	HDMI output	1, 2
Y	IP input	1 ... 16, sta

Example:

```
VideoBackupInput1 7
```

Feedback:

```
VideoBackupInput1 7 set
```

VideoBackupMode

Sets the backup mode for the specified HDMI output. Specify sta to display the current setting.

VideoBackupModeX Y

Parameter	Description	Range
X	HDMI output	1, 2
Y	Mode	off, join active, join always, sta

Example:

```
VideoBackupMode1 join active
```

Feedback:

```
VideoBackupMode1 join active set
```

VideoInput

Sets the video input for the specified HDMI output. Specify sta to display the current setting. Note: the argument "multiview name" requires the actual name of the multiview to be entered.

`VideoInputX Y`

Parameter	Description	Range
X	HDMI output	1, 2
Y	Input source	ip_input1 ... ip_input16, notused, generator, multiview name, sta

Example:

```
VideoInput2 ip_input3
```

Feedback:

```
VideoInput2 ip_input3 set
```

VideoRes

Sets the video resolution of the specified HDMI output. Specify sta to display the current setting. Specify Input to pass through without scaling. Specify auto to use the EDID of the sink device.

`VideoResX Y`

Parameter	Description	Range
X	HDMI output	1, 2
Y	Output resolution	Auto, Input, 4096x2160, 3840x2160, 1920x1200, 1920x1080, 1680x1050, 1600x900, 1440x900, 1280x1024, 1280x800, 1280x720, 1024x768, sta

Example:

```
VideoRes2 1920x1080
```

Feedback:

```
VideoRes2 1920x1080 set
```

VideoToBackup

Assigns the active video input as the backup video input for the specified HDMI output.

`VideoToBackup X`

Parameter	Description	Range
X	HDMI output	1, 2

Example:
```
VideoToBackup 2
```
Feedback:
```
VideoToBackup 2 set
```

VideoToPrimary

Assigns the active video input as the primary video input for the specified HDMI output.

`VideoToPrimary X`

Parameter	Description	Range
X	HDMI output	1, 2

Example:
```
VideoToPrimary 2
```
Feedback:
```
VideoToPrimary 2 set
```

VideoWallArray

Sets the video wall size in rows and columns for the specified HDMI output. Specify sta in place of the second and third parameters to display the current setting.

`VideoWallArrayX Y Z`

Parameter	Description	Range
X	HDMI output	1, 2
Y	Video wall rows	Integer
Z	Video wall columns	Integer

Example:
```
VideoWallArray1 2 2
```
Feedback:
```
VideoWallArray1 2 2 set
```

VideoWallEnable

Enables or disables the video wall for the specified HDMI output. Specify sta to display the current setting.

`VideoWallEnableX Y`

Parameter	Description	Range
X	HDMI output	1, 2
Y	State	on, off, sta

Example:
```
VideoWallEnable1 on
```
Feedback:
```
VideoWallEnable1 on set
```

VideoWallPos

Sets the video wall position in rows and columns for the specified HDMI output. Specify sta in place of the second and third parameters to display the current setting.

VideoWallPosX Y Z

Parameter	Description	Range
X	HDMI output	1, 2
Y	X position	Integer
Z	Y position	Integer

Example:
```
VideoWallPos1 1 1
```
Feedback:
```
VideoWallPos1 1 1 set
```

VideoWallSize

Sets the total video wall size for the specified HDMI output. Units can be specified in pixels, inches, or millimeters. Specify sta to display the current setting.

VideoWallSizeW X Y Z

Parameter	Description	Range
W	HDMI output	1, 2
X	Width	Integer
Y	Height	Integer
Z	Unit of measurement	pixels, inches, millimeters

Example:
```
VideoWallSize1 80 80 inches
```
Feedback:
```
VideoWallSize1 80 80 inches set
```

JSON/WebSocket API

OmniStream can be configured and monitored using an API designed around JSON over WebSocket. This document provides an introduction to how to use this protocol to interact with the device.

The JSON API offers a structured way to retrieve and manipulate the configuration of OmniStream devices. The configuration is organized into a number of different configuration nodes, which can be individually retrieved using 'config_get' calls and individually changed using 'config_set' calls. For operations which do not fit neatly into this paradigm (such as rebooting the device) the JSON API also offers the 'method' call.

WebSocket

The API uses WebSocket as a transport layer. The WebSocket layer provides full-duplex, reliable message-oriented communication.

Each request consists of a JSON object, sent as a WebSocket message. Each request will get a single message and a JSON object as a reply. The API makes no use of WebSocket subprotocols.

The lifetime of the connection has no meaning within the protocol. It's possible to send multiple requests within a single connection, or to set up a new WebSocket connection for each request. For efficiency reasons it's recommended to keep the WebSocket connection open and send multiple requests using the same connection, but this is not mandatory.

There are two WebSocket channels available on the device, one for setting and getting configuration items (ws://<IP>/wsapp/) and the other for getting notifications (ws://<IP>/notifications/), where IP corresponds to the IP address of the device. It is also possible to communicate in TLS by using wss://<IP>/wsapp/ for configuration updates and wss://<IP>/notifications/ for receiving notifications.

See https://www.rfc-editor.org/rfc/rfc6455.txt for the WebSocket specification.

See http://www.ecma-international.org/publications/files/ECMA-ST/ECMA-404.pdf for the JSON specification.

Authentication

In order to identify the user and determine if he/she is allowed to perform the requested action, every request must contain the username and password of the user. Each request, regardless of type, must contain a 'username' and a 'password' field.

User Roles

Each user is assigned a role when it is created. This role determines what the user is allowed or not allowed to do. There are two roles: 'administrator' and 'operator'.

The 'administrator' user is allowed to do everything. The 'operator' user can query the status of the device, but cannot make changes. Users with the 'administrator' role can make any change on the device (using 'config_get', 'config_set', or 'method' calls). Users with the 'operator' role can only execute 'config_get' calls. Any 'config_set' or 'method' call will be rejected.

Error Handling

Every reply from the device, regardless of type, will include an 'error' field. If this is set to true the request failed. In that case an 'error_message' field will also be present and details the reason for the failure.

For example, if the request did not contain a correct username/password the reply might look like this:

Request:

```
{
  "config_get": "hdmi_input",
  "password": "",
  "username": "admin"
}
```

Reply:

```
{
  "error": true,
  "error_message": "Invalid username/password"
}
```

Messages

config_get

The 'config_get' call is used to retrieve information from the device. It takes only a single parameter: the name of the configuration node to retrieve.

Request:

```
{
  "config_get": "auth",
  "password": "3243F6A8885",
  "username": "admin"
}
```

Reply:

```
{
  "config": [{
    "passwordHash": "$6$7r0hBdwSSfSdl0kZ$UjGmDw6kEgpR3zpQLJ.GOXfF5/",
    "role": "administrator",
    "username": "admin"
  },
  {
    "passwordHash": "$6$YvpiJ2NaW1fF6zKW$rEv0qlgOwiAhNyB.Bgzcf6DCa/",
    "role": "operator",
    "username": "operator"
  }],
  "error": false
}
```

The requested information can be found in the 'config' field. The structure of the reply depends on the requested node.

config_set

Configuration changes are made through the 'config_set' call.

The 'config_set' call has two important fields: 'name' gives the name of the configuration node to change; the 'config' field has the configuration (as a JSON object or list) to apply.

The content of the 'config' node shares the same structure as the content of the 'config' node in the reply to the 'config_get' call, except that it does not include the read-only fields.

Request:

```
{
  "config_set": {
    "config": [{
      "enabled": true,
      "interface": "eth1",
      "multicast_address": "230.0.0.1",
      "name": "ip_input0",
      "port": 5004
    },
    {
      "enabled": true,
      "interface": "eth1",
      "multicast_address": "230.0.0.2",
      "name": "ip_input1",
      "port": 5008
    }],
    "name": "ip_input"
  },
  "password": "3243F6A8885",
  "username": "admin"
}
```

Reply:

```
{
  "error": false
}
```

Not all fields must be specified in the request. Omitted fields are not modified. In other words, it is possible to make a 'config_set' call which only modifies a single field by only including that field.

Note that some fields are mandatory in the request so that the device is able to determine which configuration should be changed. For example, the 'ip_input' node consists of a list of ip_input objects. Each object is identified by its name, so the 'name' field must always be present. If omitted, the device would be unable to determine which ip_input object to modify.

The following example disables a single ip_input without modifying any of its other fields:

Request:

```
{
  "config_set": {
    "config": [{
      "enabled": true,
      "name": "ip_input0"
    }],
    "name": "ip_input"
  },
  "password": "3243F6A8885",
  "username": "admin"
}
```

Reply:

```
{
  "error": false
}
```

If the 'name' field is omitted, then an error is returned.

Request:

```
{
  "config_set": {
    "config": [{
      "enabled": true
    }],
    "name": "ip_input"
  },
```

```
  "password": "3243F6A8885",
  "username": "admin"
}
```


Reply:


```
{
  "error": true,
  "error_message": "IP Input not found"
}
```


All changes made are automatically saved. There's no need to take any further action to ensure that the changes will remain after a reboot. Note that there is a small delay between making the change and having it saved persistently. It is always safe to restart the device using the 'reboot' method call. This persists any pending configuration changes before restarting the device.

Short Description of Main Nodes

The 'config_get' and 'config_set' calls are used to respectively retrieve and push configuration parameters from/to the device. The configuration nodes are fully described in the 'schema.json' file. The following table lists the main nodes available (the reference list is found in schema.json). The main nodes are used to configure or retrieve information of the device.

Nodes	Short description	Target
systeminfo	General system information.	Both
timezone	The timezones available on the system.	Both
hdmi_input	Array with description of HDMI input port(s); one port per element.	Encoder
video_generator	A list of video generators available on this system.	Both
audio_generator_format	General audio generator settings. Read/write.	Both
audio_generator	A list of audio generators available on this system.	Both
edids	Array with EDID of the displays.	Decoder
hdmi_output	Array with description of HDMI output port(s); one port per element.	Decoder
vc2_encoder	Array with description of VC-2 encoder(s); one encoder per element.	Encoder
j2k_encoder	Reserved for future use.	Encoder
sessions	Array with description of session(s), consisting of video, audio, and/or aux streams; one session per element.	Encoder
ip_input	Describes an ip_input, which is a single video, audio, or aux input stream.	Decoder
net	Deprecated node.	Both
net_v2	Array with description of network interface(s); one interface per element.	Both
serial_port	Array of hardware configuration of serial port(s); one port per element.	Both
serial	Array of configuration of serial port(s); one port per element.	Both

Nodes	Short description	Target
encodercommands	Array of configuration of command(s); one command per element.	Encoder
decodercommands	Array of configuration of command(s); one command per element.	Decoder
logo_library	Array of configuration of command(s); one command per element.	Both
logo_insertion	Array of configuration of logo insertion(s).	Both
text_insertion	Array of configuration of text insertion(s).	Both
alarms	Array with alarm(s); one alarm entry per element.	Both
users	Array of definition(s) of user; one user per element.	Both
packetdropper	Array of configuration of packetdropper(s); one dropper per element.	Encoder
ptp	Array of configuration of PTP.	Both
license	Configuration of licenses.	Both

Sub-node Descriptions

Besides the definition of main nodes, the JSON schema also includes definition of nodes within the main nodes:

Nodes	Short description
timezone	The timezones available on the system
audio_generator_format	Configuration of format for audio generator
edid	The EDID of the display device. Read-only
stream	Configuration of network stream (video, audio or aux)
sap	Configuration of SAP announcement
sap_stream	The video stream information
sap_listener	Received SAP sessions
command	Configuration of serial or CEC command
alarm	Alarm entry, indicating when an alarm was raised or cleared
video_status	Status of video activity
audio_status	Status of audio activity
scrambling	Configuration of stream scrambling
backup_ip_input	Backup input configuration
feature	Information on licensed feature

Methods

The 'method' call is generally used to make changes on the device which may not be persistent. For example, it's used to reboot the device, reset it to its factory defaults, or to request the list of available config nodes for a 'config_get' call.

The 'method' call includes an object whose name determines the action to be performed. The fields inside the object can be considered the arguments to the method call. The 'method' JSON object must contain exactly one sub-object.

Request:

```
{
  "method": {
    "introspect": {
      "type": "config_get"
    }
  },
  "password": "3243F6A8885",
  "username": "admin"
}
```

Reply:

```
{
  "error": false,
  "reply": [
    "alarms",
    "audio",
    "auth",
    "commands",
    "hdmi_input",
    "net",
    "packetdropper",
    "serial",
    "serial_port",
    "sessions",
    "systeminfo",
    "encoder"
  ]
}
```

Note that some calls, like 'factory_reset' or 'reboot', reboot the device, so the WebSocket connection is closed by the device before a reply is sent.

The following table lists the available methods. The reference list can be found in the api-schema.json file, available on the Atlona web site.

Method	Short Description
reboot	Reboot the device
get_debug_info	Generate a debug file and return a URL indicating where it can be found
get_debug_info2	Get specific debug info
introspect	Enumerate the available config_set/config_get nodes or method calls
factory_reset	Reset the device to factory defaults and reboot
export_config	Export the current configuration
import_config	Import a new configuration

Method	Short Description
import_config_file	Import a new configuration from an uploaded file
list_config	List the available configurations
trigger_command	Trigger a command
trigger_serial	Trigger a command on serial port (Decoder only)
trigger_cec	Trigger a CEC command on the specified HDMI port (Decoder only)
backup	Trigger a change to backup or reversion to primary
identify	Cause the device to emit an "identify" notification
clear_alarms	Clear all of the inactive alarms
add_license	Add a new license to the device
upgrade	Give the name of the file returned by the web server after it was POSTed
add_logo	Add a logo on top of the video stream
delete_logo	Remove a logo previously uploaded on the device
add_command	Add a new command to the device
delete_command	Delete a command from the device
add_encodergroup_member	Add a member to the encoder group of a session
activate_encodergroup	Activate an encoder group of a session
delete_encodergroup_member	Delete a member from the encoder group of a session
add_edid	Add a new EDID on the device
delete_edid	Delete an EDID from the device
usb_export	USB export
usb_unexport	Removes the specified USB export
usb_bind	Gadget name in which the binding should be added
usb_unbind	Gadget name in which the binding should be removed
add_vlan	Adds a VLAN interface
del_vlan	Name of the VLAN interface to delete

Asynchronous Use

Optionally each request, of any type, may also include an 'id' field with an arbitrary string as value. This string is selected by the client, and returned in the 'id' field of the reply. This is useful for asynchronous implementations as it allows them to match the reply with the request.

Request:

```
{
```

```
  "id": "foo",
  "config_set": {
    "config": [{
      "enabled": true,
      "name": "ip_input0"
    }],
    "name": "ip_input"
  },
  "password": "3243F6A8885",
  "username": "admin"
}
```

Reply:

```
{
  "error": false,
  "id": "foo"
}
```

The device does not parse or alter the value of the 'id' field. It can be set to any value. Ensuring its uniqueness across requests is the responsibility of the client.

Formal Specification

The formal specification of the JSON structures can be retrieved from the device. There are two JSON Schema files:

- http://<IP>/schema/api_schema.json
- http://<IP>/schema/schema.json

The first defines the structure of the 'config_set', 'config_get', and 'method' calls and refers to the second for the structure of configuration returned by 'config_get' or set by 'config_set' requests.

See http://json-schema.org/ for more information about JSON schema definitions.

Examples

The devices use WebSocket and JSON API for their configuration. On the host side there are a lot of possibilities for implementing a client that can communicate with the device. For instance, during the development we used Python as programming language (https://www.python.org/) for a proof of concept. The following code has been tested with Python version 2.7.

```
import os
import sys
import simplejson  # pip install simplejson
import websocket   # pip install websocket-client

BOARD_IP = "192.168.1.203"
url = "ws://{}/wsapp/".format(BOARD_IP)
ws = websocket.WebSocket()
ws.connect(url)
request = {}
request["username"] = "admin"
request["password"] = "3243F6A8885"
request["config_get"] = "systeminfo"
json_request = simplejson.dumps(request, sort_keys=True, indent=4 * ' ')
ws.send(json_request)
reply = ws.recv()
print "Reply:", reply
```

When executed (and a device is connected on the network with the expected IP address), the result would be similar to the following:

```
{
  "config": {
    "datetime": "1970-01-01T05:08:24.000UTC",
    "description": "",
    "detailedfirmwareversion": "SW: trunk.3568, FPGA: 1.0 (r3573)",
    "firmwareversion": "trunk",
    "hostname": "DUT-001",
    "location": "",
    "model": "decoder",
    "ntpserver": "",
    "temperature": 37.5,
    "type": "Decoder",
    "uptime": 18504
  },
  "error": false
}
```


The following sections provide examples of JSON requests for setting or getting parameters from a device.

First Contact with a Device

To retrieve info on the system, the JSON request is:


```
{
  "config_get": "system_info",
  "password": "3243F6A8885",
  "username": "admin"
}
```


Getting Information on an HDMI Input Port

To retrieve info on the HDMI input port(s) of an encoder, the JSON request is:


```
{
  "config_get": "hdmi_input",
  "password": "3243F6A8885",
  "username": "admin"
}
```


Getting Information on an HDMI Output Port

To retrieve info on the HDMI output port(s) of a decoder, the JSON request is:


```
{
  "config_get": "hdmi_output",
  "password": "3243F6A8885",
  "username": "admin"
}
```


Configuring an Encoder

1. Verify that the HDMI input ports have been enabled.

2. Configure the video encoder:


```
{
  "config_set": {
    "name": "vc2",
    "config": [{
      "name": "vc2_encoder1",
      "bitrate": 700,
      "input": "hdmi_input1"
    },
    {
      "name": "vc2_encoder2",
```

```
      "bitrate": 700,
      "input": "hdmi_input2"
    }]
  },
  "password": "3243F6A8885",
  "username": "admin"
}
```

3. Configure the session:

```
{
  "config_set": {
    "name": "sessions",
    "config": [{
      "name": "session1",
      "interface": "eth1",
      "video": {
        "encoder": "vc2_encoder1",
        "stream": {
          "enabled": true,
          "destination_address": "226.0.1.10",
          "destination_port": 5004
        }
      },
      "audio": {
        "encoder": "hdmi_input1",
        "stream": {
          "enabled": true,
          "destination_address": "226.0.1.11",
          "destination_port": 5008
        }
      },
      "scrambling": {
        "enabled": true,
        "key": "CAFE7070800800FFD00D0001BABADEDEBABE0007CAFECAFE"
      },
      "sap": {
        "enabled": true,
        "name": "Demo_1",
        "description": "Demo stream session",
        "originator": "Encoder1",
        "frequency": 10
      }
    }]
  },
  "password": "3243F6A8885",
  "username": "admin"
}
```

Configuring a Decoder

1. Configure the IP inputs:

```
{
  "config_set": {
    "name": "ip_input",
    "config": [{
      "name": "ip_input1",
      "enabled": true,
      "interface": "eth1",
      "port": 5004,
      "multicast": { "address": "226.0.1.10" }
    },
    {
      "name": "ip_input2",
      "enabled": true,
      "interface": "eth1",
      "port": 5008,
```

```
      "multicast": { "address": "226.0.1.11" }
    },
    {
      "name": "ip_input3",
      "enabled": false,
      "interface": "eth1",
      "port": 5012,
      "multicast": { "address": "" }
    },
    {
      "name": "ip_input4",
      "enabled": true,
      "interface": "eth2",
      "port": 5004,
      "multicast": { "address": "226.0.2.10" }
    },
    {
      "name": "ip_input5",
      "enabled": true,
      "interface": "eth2",
      "port": 5008,
      "multicast": { "address": "226.0.2.11" }
    },
    {
      "name": "ip_input6",
      "enabled": false,
      "interface": "eth2",
      "port": 5012,
      "multicast": { "address": "" }
    }]
  },
  "password": "3243F6A8885",
  "username": "admin"
}
```

2. Configure the HDMI outputs:

```
{
  "config_get": "hdmi_output",
  "password": "3243F6A8885",
  "username": "admin"
}
```

Getting Notifications

To retrieve a list of notifications, the JSON request is:

```
{
  "config_get": "notifications",
  "password": "3243F6A8885",
  "username": "admin"
}
```

Notifications

It is possible to obtain notifications from the device through a WebSocket which is located at the following address: ws://<IP>/notifications. A notification is emitted when a settings change occurs or when an event occurs.

Three types of notification can be emitted on the WebSocket:

1. Alarm notification — for instance, due to a bad configuration, the following alarm is emitted when one tries to stream HDCP content when scrambling is disabled:

```
{
  "alarm": {
```

```
    "active": true,
    "description": "Input hdmi_input1 is HDCP encrypted, but this stream is not scrambled",
    "name": "HDCP encrypted input (video) on session1",
    "timestamp": "1970-01-01T18:49:59.000UTC"
  }
}
```

2. Configuration update notification — a change in the settings happened. For instance, one does a config_set of the session parameters:

```
{
  "config_update": {
    "name": "session"
  }
}
```

Another example is when one of the HDMI sources is connected or disconnected from the encoder:

```
{
  "config_update": {
    "name": "hdmi_input1"
  }
}
```

3. Identify notification — a request for the device to identify itself:

```
{
  "identify": {}
}
```

Firmware Upgrades

The upgrade of a device is performed with a .vpup2 file. First, the .vpup2 file must be uploaded to the device. This is done with an upload request through HTTP to the following address: http://__device_IP_address__/upload.

In the reply of this request the local name of the .vpup2 file is provided. In a second step a JSON request must be sent over the WebSocket. The request should contain the local name returned by the HTTP server:

```
{
  "upgrade": "__local_name_of_vpup_file__",
  "password": "3243F6A8885",
  "username": "admin"
}
```

Rebooting OmniStream

To reboot OmniStream, the JSON request is:

```
{
  "method": {
    "reboot": {}
  },
  "password": "3243F6A8885",
  "username": "admin"
}
```