epiphan video

Pearl-2
Pearl Mini

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- A description of the problem
- Details about your video or audio source (type, connection, resolution, refresh rate, etc.)
- Product serial number
- Product firmware version (using the admin interface)
- Product LED lights

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Start here

Welcome, and thank you for buying an Epiphan Video Pearl system. This API guide provides the information you need to successfully setup and operate Pearl-2™ and Pearl Mini™ using the APIs, including:

- About RS-232 / serial port commands
- HTTP/HTTPS API

The API integrations section contains what you need to know about using these APIs with your Pearl system.

The Configuration keys for third party APIs section provides the detailed API keys.

Throughout this API guide, the term Pearl system is used to refer to both Pearl-2 and Pearl Mini. Specific references are used when it's necessary to distinguish between the different models.

This guide assumes that all feature add-ons for Pearl-2 are activated. Features or tasks that only apply when a feature add-on is activated is indicated in the text.

For information about available Crestron control modules, see https://www.epiphan.com/pearl-video-capture-for-crestron-systems/

API integrations

We offer HTTP/HTTPS and RS-232 APIs for integrators wanting to control a Pearl system using third party tools.

Topics include:

- About RS-232 / serial port commands
- About HTTP/HTTPS commands

For the third party API configuration keys, see Configuration keys for third party APIs.

About RS-232 / serial port commands

Your Pearl system has an RS-232 / serial port control interface for integration with existing control room and board room equipment.

Important considerations

- Each command sent over RS-232 must be terminated with a line feed (LF) character (ASCII code 10). Make sure that your software adds the line feed to each command.

- Ensure your terminal program is configured for UTF-8, which is required if any data includes non ASCII characters.

- For values with spaces, enclose the value in quotation marks. For empty values, use empty quotation marks with nothing between.

- You must always follow a SET command in RS-232 with the SAVECFG command. Otherwise the new configuration setting(s) will not take effect. See the SET examples that follow.

- The `publish_enabled` on/off command does not work on multiple publish destinations and only starts/stops the first instance.

- Pearl Mini requires an RS-232 to USB serial adapter cable (not included).

For a complete list of supported SET and GET parameters, see Configuration keys for third party APIs. To connect the RS-232 cable and configure RS-232, see Connect and configure the RS-232 port

The following examples show how to use RS-232 commands to control your system:

To start recording on channel 2:

```
START.2
```

To stop recording on channel 2:

```
STOP.2
```

To start recording on all channels and recorders:

```
START
```

To get the value of the frame size (resolution) for channel 2:

```
GET.2.framesize
```

To set the frame size (resolution) on channel 2, enclose the parameter in quotes to preserve the spaces:

> SET.2.framesize="640 x 480"
> SAVECFG

To enable broadcasting audio on channel 2:

> SET.2.audio=on
> SAVECFG

To disable broadcasting audio on channel 2:

> SET.2.audio=""
> SAVECFG

Connect and configure the RS-232 port

To connect your control equipment to Pearl-2, you need a standard RS-232. For Pearl Mini, use a null-modem cable and a USB to RS-232 serial adapter cable (not included). Only certain adapter chipsets are supported. We recommend this adapter cable from Startech.

To connect the serial port cable:

1. Attach the RS-232 cable to the control interface.

2. For Pearl-2, connect the RS-232 cable to the back of the system.

3. For Pearl Mini, connect the USB to RS-232 serial adapter to the null-modem cable and then connect the USB to RS-232 serial adapter to any of the USB ports on the system.

The only configuration available for the serial port is flow control. Flow control changes the rate of data transfer over the cable. Some communication settings are static and cannot be changed. The static settings are:

- Baud rate set at 19200

- Parity set to none

- Stop bits set to one

To configure serial port flow control:

1. Login to the Admin panel as **admin**, see Connect to the Admin panel.

2. From the Configuration menu, click **Serial Port** . The serial port configuration page opens.

3. Select **Hardware**, **Software**, or **None** from the drop-down menu.

Table 1 *Serial Port Flow Control Options*

Label	Description / Options
Hardware	A hardware handshake is used for flow control, which is also called RTS / CTS flow control. See the manual for your control terminal to check if a hardware handshake is needed.
Software	A software handshake that uses XON/XOFF characters to control the flow of data. See the manual for your control terminal to check if a software handshake is needed.
None	No flow control is used. Only select this if your control terminal doesn't use a handshake.

4. Click **Apply**.

Controlling your Pearl system with RS-232

You can use the null-modem cable and your control terminal software to issue commands to your Pearl system, such as when to start or stop recording, and to retrieve or set the value of certain parameters.

> **STOP** Each command sent over RS 232 must be terminated with a line feed (LF) character (ASCII code 10). Make sure that your software adds the line feed to each command.

Some commands require a *channel* or *recorder* name as an argument. In those commands, the channel or recorder name is separated from the command name by a period. The channel name value can be either the name or the index of the recorder or channel. Use of the index is recommended.

A channel's index number is located in the Channels Menu using the Admin panel. The channel index number turns red to indicate it is recording. For example, to address this channel using RS-232 commands, use the index **1**.
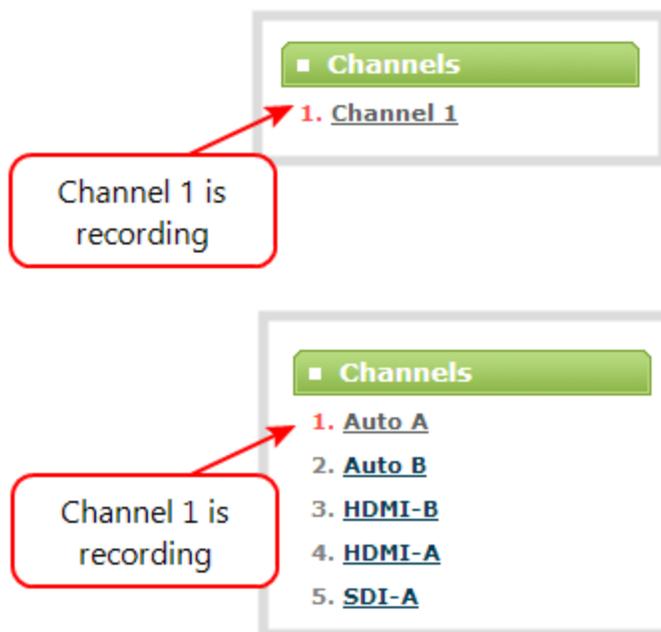
For recorders, combine the recorder's number with the prefix **m**. In the following example, the second recorder's index is 2. To address this recorder using RS-232 commands, use the index **m2**.
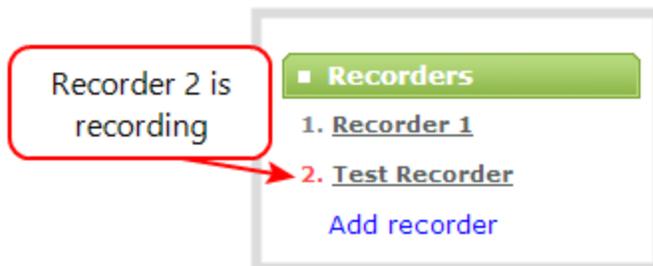
The following table describes the supported RS-232 commands.

Table 2 *Supported RS-232 Commands*

Command Name	Description
Recording Commands	
START.*<channel>* START.*<recorder>*	Starts recording for the provided channel or recorder. This can alternatively be accomplished with the following set commands: SET.*<channel>*.rec_enabled=on SAVECFG If the channel is already recording, the current recording is continued.
START	Starts recording for all channels and recorders. There is no RS-232 command to restart recording. If recording is already active when the start command is issued, the recording continues.
STOP.*<channel>* STOP.*<recorder>*	Stops recording for the provided channel or recorder. This can alternatively be accomplished with the following set commands: SET.*<channel>*.rec_enabled="" SAVECFG
STOP	Stops recording for all channels and recorders.
SNAPSHOT.*<channel>*	Takes a snapshot image of the current channel (supported only if the channel is configured to use the Motion JPEG codec). Snapshots are saved with recording files on the system.

Command Name	Description
SNAPSHOT	Takes a snapshot image of all channels configured with the Motion JPEG codec. Snapshots are saved with recording files on the system.
Configuration Commands (see Configuration keys for third party APIs for available keys)	
GET.*<channel>.<key>* GET.*<recorder>.<key>*	Gets the saved value of a given parameter for the specified channel or recorder.
SET.*<channel>.<key>* SET.*<recorder>.<key>*	Sets the value of a given parameter for the specified channel or recorder. The value is not saved until the SAVECFG command is sent.
Global Variable Commands	
VAR.GET.*<name>*[1]	Gets the specified global variable, where *<name>* is the unique name for each variable.
VAR.SET. *<name>*[2]*=<value>*	Saves the global variable modified by the SET command, where *<name>* is the unique name for each variable and *<value>* is the text/character content stored in each variable. Example: `VAR.SET.gpsvar0=N103 68201 W765 29712` where *<name>* is **gpsvar0** and *<value>* is **N103 68201 W765 29712**.
Status Commands	
STATUS.*<channel>* STATUS.*<recorder>*	Reports the recording status of the specified channel or recorder. Status is one of: • RUNNING • STOPPED • UNINITIALIZED
STATUS	Reports the recording status of each channel and recorder. Status is one of: • RUNNING • STOPPED • UNINITIALIZED

Command Name	Description
FREESPACE	Reports the free storage space, in bytes.
RECTIME.*<channel>* RECTIME.*<recorder>*	Reports the elapsed recording time in seconds for the current file on the specified channel or recorder.
RECTIME	Reports the elapsed recording time in seconds for the current file on each channel.

[1]Variable *<name>* can be up to 32 alphanumerical characters long including underscores. Name must start with a letter or underscore.

[2]If the equal sign "=" is omitted, VAR.SET assigns an empty value.

Pearl-2 returns a status change message whenever changes are made.

Table 3 *RS-232 Status Changed Messages*

Command Name	Description
STATUS.*<channel>* *<status>*	Provides the status of the recording service for the channel as either: • Running • Stopped • Uninitialized The Uninitialized status is sent when there is an internal error. Check the system for more details.

Global variable RS-232 commands for custom layouts

You can use RS-232 commands to create global variables embedded in a custom layout as responsive text overlay elements. See Add a text overlay for information about adding a global variable into a custom layout.

Important considerations

- Each system variable must have its own unique name.

- System variable names and variable values are case sensitive.

- Each variable name must start with a letter or underscore and can be up to 32 alphanumeric characters length, including underscores.

- Setting an empty variable name clears the variable value.

- Ensure your terminal program is configured for UTF-8; otherwise, any special characters used in the RS-232 global variable command will cause the RS-232 command string to be ignored.

- There is a limit of 1024 total unique system variables per system.

- System variables can be used in text labels across any number of channels.

- System variables are considered volatile data and are erased when the Pearl system reboots.

- You can set only one variable at a time using the RS-232 SET command.

- Quotes are not ignored. For example, the following RS-232 SET commands are different:

    - VAR.SET.myname=some value

    - VAR.SET.myname="some value"

RS-232 GET / SET variables – syntax and examples

A get command retrieves a variable using the syntax **VAR.SET.<name>**, where *<name>* is the unique name for each variable up to 32 alphanumerical characters long including underscores. Name must start with a letter or underscore.

RS-232 GET example:

```
Example: VAR.gpsvar1
```

A set command saves a variable value using the syntax **VAR.SET.<name>=<value>**, where *<name>* is the unique variable name, and *<value>* can be up to 32 alphanumerical characters including underscores.

RS-232 SET example:

```
Example: VAR.SET.gpsvar1=N103 68201 W765 29712
```

If *<value>* contains spaces, quotes must not be used.

To erase a previously set variable, set the value with an empty space

If the equal sign "=" is omitted, VAR.SET assigns an empty value.

About HTTP/HTTPS commands

Your Pearl system has an HTTP API interface. You can swap the HTTP for HTTPS in the URL without affecting the API commands. The HTTP/HTTPS API is used for configuration and control by third party applications or scripts that send commands as a series of URLs. Commands are sent to one of two URLs and specify the target configuration item.

Some commands require a *channel* or *recorder* name as an argument. A channel's index is found by looking at the Channels list in the Admin panel. In the following example, the channel with index 1 is currently recording (its index number is red). To address this channel using http commands, use the index **channel1**.
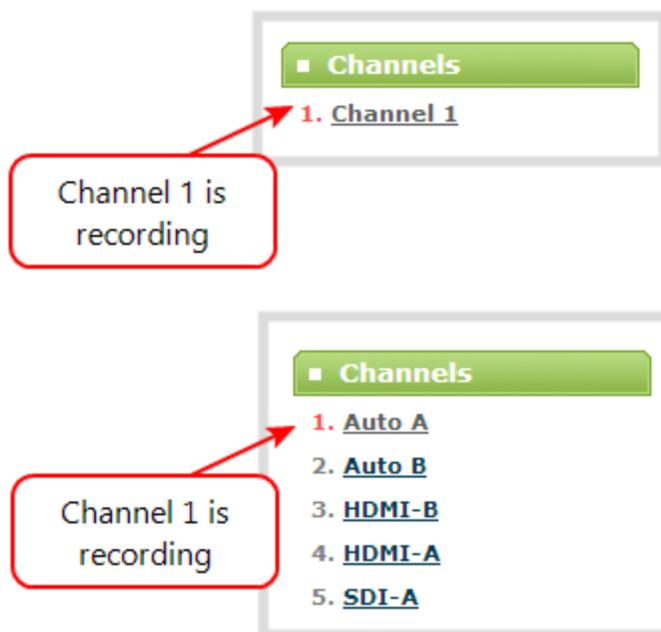
For recorders, combine the recorder's number with the prefix **m**, as in *channelm*. In the following example, the second recorder's index is 2. To access this recorder using http commands, use the index **channelm2**.
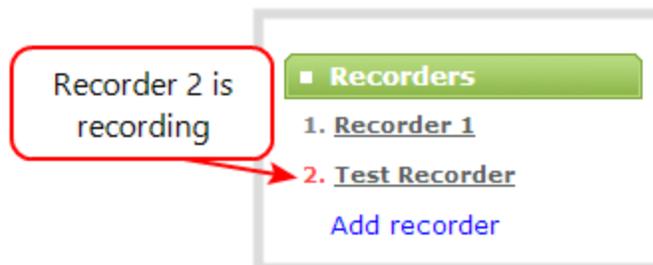
Sample Get configuration settings:

http://*<address>*/admin/channel*<N>*/**get_params.cgi**?*key*

or

https://*<address>*/admin/channel*<N>*/**get_params.cgi**?*key*

For recorders, add 'm' before the recorder number (i.e. channelm1 for recorder 1), for example:

http://*<address>*/admin/channelm*<N>*/**get_params.cgi**?*key*

Sample Set configuration settings:

http://*<address>*/admin/channel*<N>*/**set_params.cgi**?key=*value*

or

https://*<address>*/admin/channel*<N>*/**set_params.cgi**?key=*value*

For recorders, add 'm' before the recorder number (i.e. channelm1 for recorder 1), for example:

http://*<address>*/admin/channelm*<N>*/**set_params.cgi**?*key*

Where *<address>* is the IP address of the Pearl system, channel*<N>* is the channel number (i.e. *channel2* for channel number two), and channelm*<N>* is for recorders (i.e. *channelm2* for recorder two), *key* is the configuration key for the item being checked or changed (see Configuration keys for third party APIs), and *value* is the value to set for the configuration item.

The following examples show how to use wget to exercise some of the supported HTTP/HTTPS commands. You can substitute *https* for *http* in the urls.

For values with spaces, encode space as %20. i.e.: set_params.cgi?framesize=640%20x%20480

The examples assume a system IP address of 192.30.23.45 and admin password is pass123.

To get the type of stream being published and frame size for channel 1:

> wget --http-user=admin --http-passwd=pass123 http://192.30.23.45/admin/channel1/get_
> params.cgi?publish_type&framesize

To set the publish stream type to RTMP Push (6) and at the title "System Stream" for channel 2:

> wget --http-user=admin --http-passwd=pass123 http://192.30.23.45/admin/channel2/set_
> params.cgi?publish_type=6&title=System%20Stream

To start recording on channel 2:

> wget --http-user=admin --http-passwd=pass123 http://192.30.23.45/admin/channel2/set_
> params.cgi?rec_enabled=on

To stop recording on channel 2:

> wget --http-user=admin --http-passwd=pass123 http://192.30.23.45/admin/channel2/set_
> params.cgi?rec_enabled=""

To start recording on recorder 2:

> wget --http-user=admin --http-passwd=pass123 http://192.30.23.45/admin/channelm2/set_
> params.cgi?rec_enabled=on

Multiple requests

You can include multiple key/value pairs in a single command by separating the statements with *&*. For example, the key for product name is **product_name** and the key for firmware version is **firmware_version**.

The command to request both the product name and the firmware version is:

> http://*<address>*/admin/channel1/get_params.cgi?product_name&firmware_version

To turn off publishing (i.e. set to 0) and set the bitrate (vbitrate) to 256,000:

> http://*<address>*/admin/channel1/set_params.cgi?publish_type=0&vbitrate=256K

> You can substitute *https* for *http* in the urls.

Third party applications like wget

If you're using a third party application like wget to send commands to your Pearl system, always include the admin username and password when viewing or setting configuration items.

Specify your Pearl system's IP address, password and the key(s) or value(s) you want to query using the following syntax. Note that your system may require use of single quotes around the password to handle special characters such as exclamation marks. You can substitute *https* for *http* in the urls.

> get_param using wget:
>
> wget --http-user=admin --http-passwd=*<password>* http://*<address>*/admin/channel*<N>*/get_params.cgi?*<key>*[&*<key>*]

> set_param using wget:
>
> wget --http-user=admin --http-passwd=*<password>* http://*<address>*/admin/channel*<N>*/set_params.cgi?*<key>*=*<value>*[&*<key>*=*<value>*]

Where *<address>* is the IP address of the Pearl system, channel*<N>* is the channel number (i.e. *channel2* for channel number two), *key* is the configuration key for the item being checked or changed (see Configuration keys for third party APIs), and *value* is the value to set for the configuration item.

Global variable HTTP commands for custom layouts

Pearl-2 can create global variables using HTTP commands embedded in custom layout as responsive text overlay elements. See Add a text overlay for information about adding a global variable into a custom layout. You cannot substitute *https* for *http* in the global variable HTTP commands.

Important considerations for global custom layout variables

- Each system variable must have its own unique name
- System variable names and variable values are case sensitive

- Each variable name must start with a letter or underscore sign and is followed by any combination of letters, digits and underscore characters [A-Za-z_0-9]{0,32} to a limit of 32 total characters (note that saving an empty string to a variable will clear the variable value)

- There is a limit of 1024 total unique system variables per system.

- System variables can be used in text labels across any number of channels.

- System variable commands can be issued at a frequency of 5 per second, and up to 6 variables may be set in a single command (for example, variables "gpsvar1", "gpsvar2" and "gpsvar3" can be updated in a single command, five times per second). After issuing a set command, all channels using the specified variable(s) are updated. The frequency of commands issued is not influenced by the number of channels on your Pearl system.

- System variables are considered volatile data and are erased when your Pearl system reboots.

Set variables – syntax and example

A set command saves a value to a variable, where *<address>* is the IP address of the Pearl system, *name* is the unique name for each variable, and *value* is the text/character content stored in each variable.

You can set multiple variables at the same time by separating each variable with an "&".

To "set" variables, use the following syntax:

> **http://*<address>*/admin/set_variables.cgi?*name1=value1*[&*nameN=valueN*]**
>
> For values with spaces, encode space as %20. (i.e.: set_variables.cgi?name1=640%20x%20480)
>
> To erase a previously set variable, simply set the variable's name with an empty space.

```
Example: "http://192.168.0.129/admin/set_
variables.cgi?gpsvar1=N103%2068201%20W765%2029712&gpsvar2=S490%2018731%
20E756%2019890&gpsvar3=N123%2046891%20W345%2065431&gpsvar4=S767%2033410
%20E770%2004513"

sets:
"gpsvar1" to "N103 68201 W765 29712"
"gpsvar2" to "S490 18731 E756 19890"
"gpsvar3" to "N123 46891 W345 65431"
"gpsvar4" to "S767 33410 E770 04513"
```

Get variables – syntax and example

A get command returns the value of a variable called *name*. You can return multiple variables at the same time by separating each variable with an "&".

To "get" a variable or a list of specific variablesx:

http://<*address*>/admin/get_variables.cgi?*name1*[&*nameN*]

```
Example: "http://192.168.0.129/admin/get_variables.cgi?gpsvar1"

returns:
"gpsvar1=N103 68201 W765 29712"
```

To "get" a list of **all** variables saved to the Pearl system:

http://<address>/admin/get_variables.cgi

```
Example: "http://192.168.0.129/admin/get_variables.cgi"

returns:
"gpsvar1=N103 68201 W765 29712
gpsvar2=S490 18731 E756 19890
gpsvar3=N123 46891 W345 65431
gpsvar4=S767 33410 E770 04513"
```

To learn how to use global variables as text overlays in custom channels, see Add a text overlay .

Configuration keys for third party APIs

Using HTTP/HTTPS or RS-232, you can send query and configuration commands to your Pearl system. For the RS-232 and HTTP/HTTPS syntax, see About RS-232 / serial port commands and About HTTP/HTTPS commands.

> **STOP** Using a "SET" command in RS-232 must always follow with the "SAVECFG" command for the new configuration setting(s) to take effect.

When setting keys to values with spaces, use the following syntax.

For RS-232, enclose in quotes:

SET.2.framesize="640 x 480"

For HTTP/HTTPS, encode each space:

%20: set_params.cgi?framesize=640%20x%20480

The following categories of API keys are supported:

- System-level settings keys (read-only)
- System-level settings keys (read/write)
- System-level custom layout keys (read/write)
- Touch screen settings keys (read/write)
- Recording configuration keys
- HTTP server configuration keys
- IP-based access control configuration keys
- UPnP configuration keys
- Broadcast configuration keys
- Channel encoder configuration keys
- Channel layout configuration keys
- Audio configuration keys

- Stream publishing configuration keys

- RTSP Announce configuration keys (Publish type 2)

- RTP/UDP configuration keys (Publish type 3)

- MPEG-TS configuration keys (Publish types 4 and 5)

- RTMP push configuration keys (Publish type 6 and 7)

- Content metadata configuration keys

You can also see the list of supported keys when you browse to the following URL, where *<address>* is the IP address of your Pearl system:

```
http://<address>/admin/http_api.cgi
```

System-level settings keys (read-only)

The following read-only system-level setting keys are supported. The channel number can be omitted from the command when requesting the value for these keys.

Table 4 *Supported Read-Only System-level Settings configuration keys*

Key	Values	Description
firmware_version	String, including the text FIRMWARE_VERSION=.	The system's firmware version. The value is read-only.
mac_address	String	The system's mac address. Useful for debugging. The value is read-only.
product_name	String	The product's name. Useful to confirm you are communicating with the right product or for debugging purposes. The value is read-only.
vendor	Epiphan Video	Name of the vendor. The value is always "Epiphan Video". The value is read-only.

System-level settings keys (read/write)

The following read/write system-level setting keys are supported. The channel number can be omitted from the command when requesting the value for these keys.

Table 5 *Supported Read/Write System-level Settings configuration keys*

Key	Values	Description
frmcheck_ enabled	on empty string ("")	Enables or disables automatic firmware update checking. To enable firmware update checking, set to on. To disable firmware update checking, set to an empty string ("").
description	string	To give this system a name in the Epiphan discovery utility, specify a description string.

System-level custom layout keys (read/write)

The following read/write system-level custom layout keys are supported.

Table 6 *Supported read/write system-level custom layout keys*

Key	Values	Description
name	Any combination of letters, digits and underscore characters [A-Za-z_0-9]{0,32} to a limit of 32 total characters	Each unique name key contains a variable value. Used for dynamic overlay text in custom layouts (see About HTTP/HTTPS commands and Add a text overlay)

Touch screen settings keys (read/write)

The following configuration keys are supported for modifying the touch screen configuration. The channel number can be omitted from the command when requesting or setting the value for these keys.

Table 7 *Supported Touch Screen Settings configuration keys*

Key	Values	Description
touchscreen_backlight	integer(0...255)	Specify the touchscreen backlight level.

Key	Values	Description
touchscreen_enabled	on empty string ("")	Enables or disables the touch screen. To enable the touch screen, set to on. To disable the touch screen, set to an empty string ("").
touchscreen_info	on empty string ("")	Enables or disables system information from the touch screen. To enable system info from the touch screen, set to on. To disable system info from the touch screen, set to an empty string ("").
touchscreen_preview	on empty string ("")	Enables or disables channel preview on the touch screen. To enable preview on the touch screen, set to on. To disable preview on the touch screen, set to an empty string ("").
touchscreen_recordctl	on empty string ("")	Enables or disables recording control from the touch screen. To enable recording from the touch screen, set to on. To disable recording from the touch screen, set to an empty string ("").
touchscreen_settings	on empty string ("")	Enables or disables settings changes from the touch screen. To enable settings changes from the touch screen, set to on. To disable settings changes from the touch screen, set to an empty string ("").
touchscreen_timeout	integer	Specify the time in seconds before the touchsreen times out. For no timeout, use 0.

Recording configuration keys

The following recording settings are supported. Specify the channel or recorder you want to configure.

Table 8 *Supported Recording configuration keys*

Key	Values	Description
rec_enabled	on empty string ("")	Enables or disables recording. To enable recording, set to on. To disable recording, set to an empty string ("").
rec_format	avi	Specifies the format of the saved file. (mp4 is used for the

Key	Values	Description
	mov mp4 mp4f ts	progressive mp4 file format, mp4f for fragmented)
rec_prefix	string	Specifies a prefix for the recorded filenames.
rec_sizelimit	integer	Specifies the file size limit, in kilobytes (kB).
rec_timelimit	string (no quotes) hh:mm:ss	Specifies the time limit before a new recording file is created. For example, for 3 hour recordings, use 3:00:00
rec_upnp	on off	Specifies whether or not recordings should be available over UPnP.

HTTP server configuration keys

The following settings are supported for configuration of the local HTTP server on your Pearl system.

Table 9 *Supported HTTP Server configuration keys*

Key	Values	Description
http_port	integer	Specifies the HTTP server port.
http_sport	integer	Specifies the HTTP server SSL port (HTTPS port).
http_usessl	on empty string ("")	Enables or disables HTTPS (SSL Server) To enable SSL, set to on. To disable SSL, set to an empty string ("").

IP-based access control configuration keys

The following settings are supported for configuring allowed and denied IP addresses for the Pearl system (not individual channels). See Restrict viewers by IP address for more information about Allow and Deny lists.

Table 10 *Supported IP-Based Access configuration keys*

Key	Values	Description
allowips	string: comma-separated list of	Specifies the IP addresses to permit access. To restrict access, provide a list of permitted IP addresses.

Key	Values	Description
	IP addresses and/or ranges. empty string("")	To clear allowed IP restriction, set to an empty string ("").
denyips	string: comma-separated list of IP addresses and/or ranges. empty string("")	Specifies the IP addresses to deny access. To restrict access, provide a list of denied IP addresses. To clear denied IP restriction, set to an empty string ("").

UPnP configuration keys

The following settings are supported for UPnP streaming.

Table 11 *Supported UPnP Streaming configuration keys*

Key	Values	Description
share_archive	on empty string ("")	Enables sharing of recorded files via UPnP. To enable sharing files over UPnP, set to on. To disable sharing files over UPnP, set to an empty string ("").
share_livestreams	on empty string ("")	Enables sharing of the live stream via UPnP. To enable stream sharing over UPnP, set to on. To disable stream sharing over UPnP, set to an empty string ("").
server_name	string	Specifies the UPnP server name. To use the system name, set to an empty string ("").

Broadcast configuration keys

The following settings for streaming to viewers (broadcasting) are supported, including stream access control settings.

Table 12 *Supported Broadcast configuration keys*

Key	Values	Description
bcast_disabled	on empty string ("")	Enables or disables the broadcast. To disable broadcast, set to on.

Key	Values	Description
		To enable broadcast, set to empty string ("").
rtsp_port	1000...65535, but not 5557	Specifies the port for RTSP streaming. Note port 5557 is used for network discovery and cannot be used for streaming.
streamport	1000...65535, but not 5557	Specifies the port used for streaming. Note port 5557 is used for network discovery and cannot be used for streaming.
ac_override	on empty string ("")	Overrides the global stream access settings or uses global stream access settings. To use global stream access settings, set to empty string (""). To override global stream access settings and use local viewer access permtions, set to on.
ac_viewerpwd	string	Specifies the password for Viewers.
ac_allowips	integer	Displays a list of the allowed IP addresses for live streams
ac_denyips	integer	Displays a list of the denied IP addresses for live streams

Channel encoder configuration keys

The following encoder settings are supported for each channel. For more information on individual items listed, see Configure encoding.

Table 13 *Supported channel encoder configuration keys*

Key	Values	Description
autoframesize	on empty string ("")	Enables or disables use of the current signal's resolution as the frame size. Is switched to off if a frame size is manually specified. To use current signal's frame size, set to on. To specify frame size directly, set to empty string ("").
codec	h.264 mjpeg	Specifies the stream codec.
fpslimit	1-60	Specifies the frame per second limit. Set to your desired limit.
framesize	wxh	Specifies the frame (width by height) size in pixels.

Key	Values	Description
	for example: 640x480, 720x400, 1024x768, 1920x1080	Set to desired size. Choose from the list in the UI or set a custom value of your choosing up to the maximum output resolution supported by the Pearl system.
slicemode	on empty string ("")	Enables or disables H.264 slicing for RTP. To enable slicing, set to on. To disable slicing, set to empty string ("").
vbitrate	Integer	Gets or changes the video bitrate in kbps.
vbufmode	1 (low delay) 2 (storage)	Specifies the broadcast compression level. For low delay when streaming, specify 1. For best results or recording, set to 2.
vencpreset	0 (Software) 5 (Hardware Accelerated)	Specifies a video encoding preset. For software, set to 0. For hardware acceleration (recommended), set to 5
vkeyframeinterval	integer	Interval time in seconds between key frames in the encoded stream.
vprofile	66 77 100	Specifies the h.264 video profiles. For Baseline profile, select 66. For Main profile, select 77. For High profile, select 100.
qvalue	0...100	Specifies quality for M-JPEG videos.

Channel layout configuration keys

To work with layouts, you need to know the integer identifier of the layout. To find your layout's identifier, select the layout using the Admin panel and look for the identifier in the browser's url.
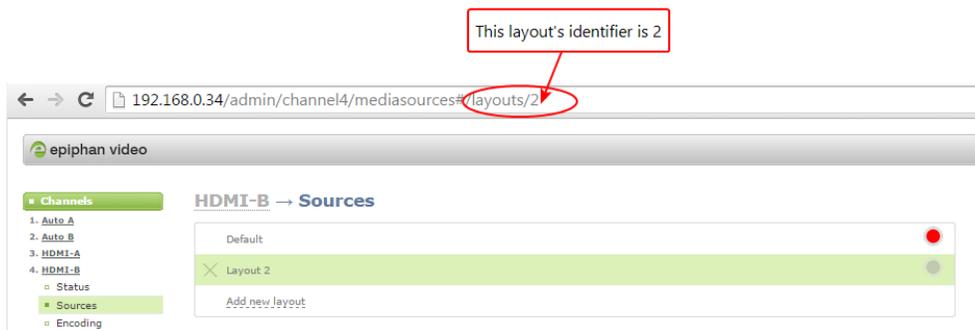
Table 14 *Supported channel layout configuration keys*

Key	Values	Description
active_layout	integer	Specifies which layout is currently active for the specified channel.

Audio configuration keys

The following audio configuration keys are supported. For more information on individual items listed, see Configure audio encoding.

Table 15 *Supported Audio configuration keys*

Key	Values	Description
audio	on empty string ("")	Enables or disables audio for the stream. To enable audio, set to on. To disable audio, set to an empty string ("").
audiobitrate	32 64 96 112 128 160 192	Specifies the audio bitrate for the stream. Not applicable for PCM audio codecs.
audiochannels	1 (mono) 2 (stereo)	Specifies the number of audio channels. For mono, set to 1. For stereo, set to 2.
audiopreset	CODECS: pcm_s161e (PCM)	Specifies an audio code preset in the format CODEC;RATE.

Key	Values	Description
	libmp3lame (MP3) libfacc (AAC) RATES: 16000 (AAC only) 22050 44100 48000	i.e. libfaac;22050

Stream publishing configuration keys

The system supports the following stream publishing settings. For more information on publishing the stream, see What is streaming?.

Table 16 *Supported Stream Publishing configuration keys*

Key	Values	Description
publish_enabled	on off / any other value	Starts or stops streaming to CDN servers (RTSP, RTMP type streaming). See Stream to a CDN. To turn streaming on, set to on. To turn streaming off, set to off or to any other value.
publish_type	0 (do not publish) 2 (RTSP Announce) 3 (multicast RTP/UDP) 4 (multicast MPEG-TS over UDP) 5 (multicast MPEG-TS over RTP/UDP) 6 (RTMP push)	Specifies the type of stream publishing, if any.

RTSP Announce configuration keys (Publish type 2)

The following settings are supported when the publish type is set to RTSP Announce. For more information on RTSP and these settings, see Set up a stream using RTSP announceWhat is streaming?.

Table 17 *Supported RTSP Announce configuration keys*

Key	Values	Description
rtsp_url	string	Specifies the RTSP server announce URL.
rtsp_transport	tcp udp or empty string ("")	Specifies the RTSP transport, either tcp or udp. Use udp or "" for udp transport Use tcp for tcp transport.
rtsp_username	string	Specifies the username for the RTSP server.
rtsp_password	string	Specifies the password for the RTSP server.

RTP/UDP configuration keys (Publish type 3)

The following settings are supported when the publish type is set to RTP/UDP. For more information on RTP/UDP and these settings, see What is streaming?.

Table 18 *Supported RTP/UDP configuration keys*

Key	Values	Description
unicast_address	string (IP address)	Specifies the unicast/multicast address.
unicast_aport	1000...65535, but not 5557	Specifies the UDP port for RTP/UDP audio streaming. Note port 5557 is used for network discovery and cannot be used for streaming.
unicast_vport	1000...65535, but not 5557	Specifies the UDP port for RTP/UDP video streaming. Note port 5557 is used for network discovery and cannot be used for streaming.

MPEG-TS configuration keys (Publish types 4 and 5)

The following settings are supported when the publish type is set to MPEG-TS and for associated SAP distribution. For more information on MPEG-TS and these settings, see What is streaming?Viewing with Session Announcement Protocol (SAP).

Table 19 *Supported MPEG-TS and SAP configuration keys*

Key	Values	Description
unicast_address	string (IP address)	Specifies the unicast/multicast address.
unicast_mport	1000...65535, but not 5557	Specifies the UDP port for MPEG-TS streaming. Note port 5557 is used for network discovery and cannot be used for streaming.
sap	on empty string ("")	Enables sharing of recorded files via SAP. To enable sharing files over SAP, set to on. To disable sharing files over SAP, set to an empty string ("").
sap_channel_no	integer	Specifies the SAP channel number.
sap_group	string	Specifies the SAP group name.
sap_ip	string	Specify the SAP annoucement IP.

RTMP push configuration keys (Publish type 6 and 7)

The following settings are supported when the publish type is set to RTMP Push. For more information on RTMP and these settings, see Set up a stream using RTMP or RTMPS push and What is streaming?.

Table 20 *Supported RTMP Push Configuration Keys*

Key	Values	Description
rtmp_url	string	Specifies the RTMP server URL.
rtmp_stream	string	Specifies the RTMP stream name, as configured with the CDN.
rtmp_username	string	Specifies the username for the RTMP server.
rtmp_password	string	Specifies the password for the RTMP server.

Content metadata configuration keys

The following keys are available for configuration of the content's metadata.

Table 21 *Supported Content Metadata Configuration Keys*

Key	Values	Description
author	string	Specifies the name of the author for the stream/recording. Refer to description above on handling white space (spaces) in the string.
comment	string	Specifies a comment for the stream/recording. Refer to description above on handling white space (spaces) in the string.
copyright	string	Specifies the copyright for the streaming/recording. Refer to description above on handling white space (spaces) in the string.
title	string	Specifies the title for the stream/recording. Refer to description above on handling white space (spaces) in the string. (This string can be displayed by certain viewing applications by looking at the stream's metadata information.)

What's new and release history

Release 4.12.1

The initial publication of the *Pearl System API Guide* aligns with Pearl-2 and Pearl Mini firmware release 4.12.1, which does not include any API changes from the previous release of the Pearl firmware.

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