



Manufacturer: Epiphan Video
Model: Pearl-2, Pearl Mini, Pearl Nano, Pearl Nexus
Device Type: Video Production System

CONTACT SUPPORT:

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NOTES:	Support: https://www.epiphan.com/support/ (website chat and community forum also available). When reporting device communication issues, include the module debug log (Enable_Debug high, Debug_Level = 5). Module developed for Epiphan Video by ClearAlan Inc.

GENERAL INFORMATION

SIMPLWINDOWS NAME:	Epiphan Pearl v1.0.0
CATEGORY:	Video Recorder / Streaming Encoder
VERSION:	v1.0.0
SUMMARY:	This module controls Epiphan Pearl video production systems (Pearl-2, Pearl Mini, Pearl Nano and Pearl Nexus) through the Pearl HTTP/HTTPS REST API. It provides recording and streaming control per channel, recorder and publisher status, layout switching, input and output status (signal, resolution, audio levels, routing), preview images, CMS scheduled-event control (Kaltura, Panopto, YuJa, Opencast, Epiphan Edge, Echo360 and generic container CMS), device presets, stream management, system and storage monitoring, and device and network information. The module detects the connected model, so one module serves every Pearl model. Connection type: TCP/IP (Ethernet) – HTTP on port 80 (default) or HTTPS on port 443 (configurable).
GENERAL NOTES:	Once Enable is latched high, the module manages the connection on its own: it reconnects automatically if the connection is lost and polls the device regularly so



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	changes made outside the control system are reflected on the module outputs. When setting connection details at runtime, latch Enable high after the values are set. Module capacity: up to 8 recorders, 8 channels (each with up to 5 publishers and 10 layouts), 25 inputs, 5 outputs, 10 presets, and 10 scheduled and 10 past events. Not all signals apply to every model; for example, the Pearl Nano supports a single channel, no multitrack recorders and no Web Graphics inputs. Preview images (channels, layouts, inputs, outputs) are fetched every 5 seconds when enabled and hosted on the processor web server. Generating previews is CPU-intensive for the Pearl, so enable only what is needed and check the Pearl CPU load during commissioning. Optional helper modules are included to support the demo program: Construct Text Field Debouncer, Epiphan Pearl Event List Sorting, Epiphan Pearl Input List Sorting and Epiphan Pearl Touchpanel Preview URL Helper. See Appendix C. Two demonstration programs are provided, identical except for their target rack: Demo_EpiphanPearl_4_series and Demo_EpiphanPearl_3_series, with the Crestron Construct (CH5) UI project Demo_EpiphanPearl.ch5z. Load the UI as an HTML5 Web XPanel or on any 10" x60, x70 or x80 series touch screen at IP ID 03. See the appendices at the end of this document for a quick start guide, technical tips (model differences and preview image setup), the complementary modules and troubleshooting.
CRESTRON HARDWARE REQUIRED:	Crestron 3-Series or 4-Series control processor. Developed and tested on a CP3 and a CP4. A 4-Series processor is recommended when preview images and Web XPanels are both required.
SETUP OF CRESTRON HARDWARE:	The module is supported on 3-Series and 4-Series processors. On 3-Series processors, firmware 1.8001 or newer is recommended and is required for preview images. Preview images on a CH5 touch screen: 4-Series: run "userpageauth off" from an SSH console on the processor. 3-Series: run "userpageauth off" and "ssl off", then "reboot". Disabling SSL disables Web XPanels and the processor setup web UI on 3-Series processors. See Appendix B for details. The processor requires IP connectivity to the Pearl on the configured HTTP or HTTPS port.
VENDOR FIRMWARE:	Pearl firmware 4.24.4 (tested on Pearl-2 and Pearl Nano); Pearl Mini and Pearl Nexus are also supported. Echo360 and generic container CMS features require firmware 4.24.6 or later. Earlier firmware versions may work but are not supported.
VENDOR SETUP:	1. Assign the Pearl an IP address (or DNS-resolvable hostname) reachable from the processor and enter it in the IP Address or HostName parameter. 2. Enter the Pearl username and password in the module parameters. The default username is "admin"; the password is set on first login to the Pearl web UI. An admin account is recommended so that all functions are available. 3. For HTTPS, enable "Secure connection (HTTPS)" on the Pearl web UI Security



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	page and set the module UseHttps parameter to Yes. If the HTTP/HTTPS port has been changed on the Pearl, set the module Port to match. 4. For event functions, configure the CMS provider on the Pearl.
CABLE DIAGRAM:	No serial control cable is required. Control is over TCP/IP Ethernet. Connect the Pearl primary Ethernet port to the same IP network as the Crestron processor (Cat5e or better patch cable to a network switch). Protocol: HTTP REST API on TCP port 80 (default) or HTTPS on TCP port 443 (configurable).

CONTROL:

<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Enable	D	Latch this signal high to enable the IP connection. The module will disconnect and stop all activity on a trailing edge.
Connection		
Connection.UseHttps	D	Configures the module to use HTTPS to communicate with the device on a rising edge. Will supersede the setting on the parameter field. HTTPS communication must be enabled on the Pearl to use HTTPS.
Connection.UseHttp	D	Configures the module to use HTTP to communicate with the device on a rising edge. Will supersede the setting on the parameter field. HTTPS communication must not be enabled (this is the default) on the Pearl to use HTTP.
Connection.UseHttpOrHttps.Toggle	D	Toggles between using using HTTPS or HTTP to communicate with the device on a rising edge.
Connection.Username	S	The username used by the module to connect to the device. Will supersede the value on the parameter field.
Connection.Password	S	The password field used by the module to connect to the device. Will supersede the value on the parameter field.



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CONTROL:

<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Connection.IP_Address	S	The IP address (or hostname) of the device. Will supersede the value on the parameter field. If using hostnames, ensure the DNS setup on the AV network will resolve the hostname/FQDN properly.
Connection.Port	A	The port of the driver used for communication represented as an analog signal. Will supersede the value on the parameter field.
Connection.Port_String	S	The port of the driver used for communication represented a serial signal. Will supersede the value on the parameter field.

Recorders

At the time of writing, the Epiphan Pearl has a recorder assigned to each channel configured on the device. Recorders 1-N are the recorders used for channels 1-N on the device. Recorder numbers N+1 and onwards are multitrack recorders, if the device has been configured to use them. This can cause some signal duplication with the recorder controls available in the Channel: section below, but allows for the greatest flexibility should the relationship between recorders and channels change in the future.

The module supports a maximum of 8 recorders between those assigned to a channel and multitrack recorders. Should your application have a need for more than this, please contact Epiphan with a feature request to have support for more added.

Recorder.Prefix	S	Specifies the prefix for all recording names. To remove prefix, simply send an empty string (ex: "")
Recorder[1-8].Recording.Start	D	Start recording on the specified recorder on a rising edge.
Recorder[1-8].Recording.Stop	D	Stop recording on the specified recorder on a rising edge.
Recorder[1-8].Recording.Toggle	D	Toggle the recording state between started and stopped for the specified recorder on a rising edge.



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CONTROL:

<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Channel [1-8]		
<i>This module supports a maximum of 8 channels, with a maximum of 5 publishers configured for each channel and 10 layouts for each channel. Note that by default, a channel has no publishers configured, and only 1 layout. Some Pearl models only support 1 channel and 1 layout on that channel; see the Technical Tips appendix towards the end of this document for details about this.</i> <i>Should your application have a need for more than this, please contact Epiphan about having support for more added.</i>		
Channel[1-8].Preview.Enable	D	Latch high to enable retrieving preview images for the channel from the Pearl device. This specifically enables the preview image for the live channel, not any of the channel layouts themselves. Preview images are retrieved every 5 seconds from the device for each preview image item enabled. Generating preview images is a computationally expensive for the Epiphan Pearl device. Epiphan recommends minimizing the amount of preview images being generated where possible. It is recommended to review the CPU load metrics indicated by the Epiphan Pearl webpage during a "worst case" scenario while commissioning the system to determine if the device is still operating within its limits during this scenario. For more details about preview images, consult the Technical Tips appendix at the end of this document.
Channel[1-8].Recording.Start	D	Start recording for the specified channel on a rising edge.
Channel[1-8].Recording.Stop	D	Stop recording for the specified channel on a rising edge.
Channel[1-8].Recording.Toggle	D	Toggle the recording state between started and stopped for the specified channel on a rising edge.
Channel[1-8].AllStreams.Start	D	Starts the stream on all configured publishers for the channel on a rising edge.
Channel[1-8].AllStreams.Stop	D	Stops the stream on all configured publishers for the channel on a rising edge.
Channel[1-8].AllStreams.Toggle	D	Toggles all configured publishers' streaming state for the channel on a rising edge. In scenarios where not all publishers for the channel are started/stopped, the first configured publisher status is used to indicate the state to toggle to.



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Channel[1-8].Publisher[1-5].Start	D	Starts the stream on the specified publisher for the channel on a rising edge.
Channel[1-8].Publisher[1-5].Stop	D	Stops the stream on the specified publisher for the channel on a rising edge.
Channel[1-8].Publisher[1-5].Toggle	D	Toggles the stream between started and stopped on the specified publisher for the channel on a rising edge.
Channel[1-8].Layout.Select	A	Changes the active layout on the specified channel. The first layout in the list is layout number 1.
Channel[1-8].Layout[1-10].Select	D	Changes the active layout for the specified channel on a rising edge.
Channel[1-8].Layout[1-10].Preview.Enable	D	Latch high to enable retrieving preview images for the specified layout for the channel from the Pearl device. Preview images are retrieved every 5 seconds from the device for each preview image item enabled. Generating preview images is a computationally expensive for the Epiphan Pearl device. Epiphan recommends minimizing the amount of preview images being generated where possible. It is recommended to review the CPU load metrics indicated by the Epiphan Pearl webpage during a "worst case" scenario while commissioning the system to determine if the device is still operating within its limits during this scenario. For more details about preview images, consult the Technical Tips appendix at the end of this document.



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CONTROL:

Signal/Function Name

D,S,A Digital, Serial, Analog signal property definition.

Inputs

An Epiphan Pearl has a varying number of inputs depending on the model and its configuration. Although the physical inputs such as an SDI, HDMI, or XLR cables connected to the device are fixed in number, the device can be configured for a number of network inputs received directly from the AV network, such as NDI, RTSP, SRT, etc streaming media. Inputs that scrape a web page are also available (the "web graphics" term describes these inputs). To account for a wide variety of use cases, the module supports 25 inputs in total regardless of their type.

The number of network inputs supported by each device is not unlimited. Please consult other documentation provided by Epiphan for limitations on the number of network streams that can be configured for a device.

As before, should your application have a need for more inputs on the module than 25, please contact Epiphan with a feature request about having support for more added.

Input[1-25].Preview.Enable

D

Latch high to enable retrieving preview images for the specified input from the Pearl device. Preview images are retrieved every 5 seconds from the device for each preview image item enabled.

Generating preview images is a computationally expensive for the Epiphan Pearl device. Epiphan recommends minimizing the amount of preview images being generated where possible.

It is recommended to review the CPU load metrics indicated by the Epiphan Pearl webpage during a "worst case" scenario while commissioning the system to determine if the device is still operating within its limits during this scenario. For more details about preview images, consult the Technical Tips appendix at the end of this document.



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CONTROL:

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Outputs		
Output[1-5].Preview.Enable	D	Latch high to enable retrieving preview images for the specified output from the Pearl device. Preview images are retrieved every 5 seconds from the device for each preview image item enabled. Generating preview images is a computationally expensive for the Epiphan Pearl device. Epiphan recommends minimizing the amount of preview images being generated where possible. It is recommended to review the CPU load metrics indicated by the Epiphan Pearl webpage during a "worst case" scenario while commissioning the system to determine if the device is still operating within its limits during this scenario. For more details about preview images, consult the Technical Tips appendix at the end of this document.

CMS Kaltura

For the CMS signals described below, each set of them are only applicable when the CMS provider has been configured in the Pearl for that specific provider. This ensures it's clear what certain providers do and don't allow.

Cms.Kaltura.CurrentEvent.ExtendBy5Minutes	D	Extends the current event by 5 minutes on the rising edge.
Cms.Kaltura.CurrentEvent.ExtendBy10Minutes	D	Extends the current event by 10 minutes on the rising edge.
Cms.Kaltura.CurrentEvent.ExtendBy15Minutes	D	Extends the current event by 15 minutes on the rising edge.
Cms.Kaltura.CurrentEvent.ExtendDuration	A	Specifies the duration, in seconds, to extend the event by when the CurrentEvent.ExtendBySpecifiedDuration signal is used.
Cms.Kaltura.CurrentEvent.ExtendBySpecifiedDuration	D	Extends the event by the number of seconds indicated by the CurrentEvent.ExtendDuration signal on the rising edge.
Cms.Kaltura.CurrentEvent.Stop	D	Stops the current event on the rising edge



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Cms.Kaltura.NextEvent.Start	D	Starts the next scheduled event on the rising edge Note: the current event should be stopped before the next scheduled event is started. If an event is still running, triggering the start of the next event with this signal will not do anything.
Cms.Kaltura.CreateEvent.Username	S	Set the username used to create an ad-hoc event with the Kaltura CMS provider.
Cms.Kaltura.CreateEvent.Title	S	Set the title of the ad-hoc event you wish to create
Cms.Kaltura.CreateEvent.Duration\$	S	Set the duration of the event to create, as a number of minutes. The input signal must be a whole number greater than zero. If the input cannot be converted to a number, the CreateEvent.Create.Message signal will contain a message explaining this.
Cms.Kaltura.CreateEvent.Duration	A	Set the duration for the event you wish to create (in minutes)
Cms.Kaltura.CreateEvent.SelectLive	D	Set the type of event to create as "Live"
Cms.Kaltura.CreateEvent.SelectVodLive	D	Set the type of event as a "Live" and "VOD" type.
Cms.Kaltura.CreateEvent.SelectVod	D	Set the type of event to create as "VOD".
Cms.Kaltura.CreateEvent.Create.Go	D	Create the event based on the above parameters specified by their corresponding signals on a rising edge.
CMS Panopto		
Cms.Panopto.CurrentEvent.ExtendBy5Minutes	D	Extends the current event by 5 minutes on the rising edge.
Cms.Panopto.CurrentEvent.ExtendBy10Minutes	D	Extends the current event by 10 minutes on the rising edge.
Cms.Panopto.CurrentEvent.ExtendBy15Minutes	D	Extends the current event by 15 minutes on the rising edge.



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<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Cms.Panopto.CurrentEvent.ExtendDuration	A	Specifies the duration, in seconds, to extend the event by when the CurrentEvent.ExtendBySpecifiedDuration signal is used.
Cms.Panopto.CurrentEvent.ExtendBySpecifiedDuration	D	Extends the event by the number of seconds indicated by the CurrentEvent.ExtendDuration signal on the rising edge.
Cms.Panopto.CurrentEvent.Stop	D	Stops the current event on the rising edge
Cms.Panopto.CurrentEvent.Play Pause.Toggle	D	Toggles the play/pause state of the current event on a rising edge.
Cms.Panopto.CurrentEvent.Play	D	Un-pauses the current event on a rising edge
Cms.Panopto.CurrentEvent.Pause	D	Pauses the current event on a rising edge
Cms.Panopto.NextEvent.Start	D	Starts the next scheduled event on the rising edge Note: the current event should be stopped before the next scheduled event is started. If an event is still running, triggering the start of the next event with this signal will not do anything.
Cms.Panopto.CreateEvent.Title	S	Set the title of the ad-hoc event you wish to create
Cms.Panopto.CreateEvent.Duration\$	S	Set the duration of the event to create, as a number of minutes. The input signal must be a whole number greater than zero. If the input cannot be converted to a number, the CreateEvent.Create.Message signal will contain a message explaining this.
Cms.Panopto.CreateEvent.Duration	A	Set the duration for the event you wish to create (in minutes)
Cms.Panopto.CreateEvent.SelectLive	D	Set the type of event to create as "Live"
Cms.Panopto.CreateEvent.SelectVod	D	Set the type of event to create as "VOD".
Cms.Panopto.CreateEvent.Create.Go	D	Create the event based on the above parameters specified by their corresponding signals on a rising edge.



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CMS YuJa		
Cms.YuJa.CurrentEvent.ExtendBy5Minutes	D	Extends the current event by 5 minutes on the rising edge.
Cms.YuJa.CurrentEvent.ExtendBy10Minutes	D	Extends the current event by 10 minutes on the rising edge.
Cms.YuJa.CurrentEvent.ExtendBy15Minutes	D	Extends the current event by 15 minutes on the rising edge.
Cms.YuJa.CurrentEvent.ExtendDuration	A	Specifies the duration, in seconds, to extend the event by when the CurrentEvent.ExtendBySpecifiedDuration signal is used.
Cms.YuJa.CurrentEvent.ExtendBySpecifiedDuration	D	Extends the event by the number of seconds indicated by the CurrentEvent.ExtendDuration signal on the rising edge.
Cms.YuJa.CurrentEvent.Stop	D	Stops the current event on the rising edge
Cms.YuJa.CurrentEvent.Play Pause.Toggle	D	Toggles the play/pause state of the current event on a rising edge.
Cms.YuJa.CurrentEvent.Play	D	Un-pauses the current event on a rising edge
Cms.YuJa.CurrentEvent.Pause	D	Pauses the current event on a rising edge
Cms.YuJa.NextEvent.Start	D	Starts the next scheduled event on the rising edge Note: the current event should be stopped before the next scheduled event is started. If an event is still running, triggering the start of the next event with this signal will not do anything.
CMS Opencast		
Cms.Opencast.CurrentEvent.ExtendBy5Minutes	D	Extends the current event by 5 minutes on the rising edge.
Cms.Opencast.CurrentEvent.ExtendBy10Minutes	D	Extends the current event by 10 minutes on the rising edge.
Cms.Opencast.CurrentEvent.ExtendBy15Minutes	D	Extends the current event by 15 minutes on the rising edge.



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<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Cms.Opencast.CurrentEvent.ExtendDuration	A	Specifies the duration, in seconds, to extend the event by when the CurrentEvent.ExtendBySpecifiedDuration signal is used.
Cms.Opencast.CurrentEvent.ExtendBySpecifiedDuration	D	Extends the event by the number of seconds indicated by the CurrentEvent.ExtendDuration signal on the rising edge.
Cms.Opencast.CurrentEvent.Stop	D	Stops the current event on the rising edge
Cms.Opencast.CurrentEvent.Play Pause.Toggle	D	Toggles the play/pause state of the current event on a rising edge.
Cms.Opencast.CurrentEvent.Play	D	Un-pauses the current event on a rising edge
Cms.Opencast.CurrentEvent.Pause	D	Pauses the current event on a rising edge
Cms.Opencast.NextEvent.Start	D	Starts the next scheduled event on the rising edge Note: the current event should be stopped before the next scheduled event is started. If an event is still running, triggering the start of the next event with this signal will not do anything.
Cms.Opencast.CreateEvent.Title	S	Set the title of the ad-hoc event you wish to create
Cms.Opencast.CreateEvent.Duration\$	S	Set the duration of the event to create, as a number of minutes. The input signal must be a whole number greater than zero. If the input cannot be converted to a number, the CreateEvent.Create.Message signal will contain a message explaining this.
Cms.Opencast.CreateEvent.Duration	A	Set the duration for the event you wish to create (in minutes)
Cms.Opencast.CreateEvent.Create.Go	D	Create the event based on the above parameters specified by their corresponding signals on a rising edge.
CMS Epiphan Edge		
Cms.EpiphanEdge.CurrentEvent.Stop	D	Stops the current event on the rising edge



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Cms.EpiphanEdge.NextEvent.Start	D	Starts the next scheduled event on the rising edge Note: the current event should be stopped before the next scheduled event is started. If an event is still running, triggering the start of the next event with this signal will not do anything.
CMS Echo360		
Cms.Echo360.CurrentEvent.ExtendBy5Minutes	D	Extends the current event by 5 minutes on the rising edge.
Cms.Echo360.CurrentEvent.ExtendBy10Minutes	D	Extends the current event by 10 minutes on the rising edge.
Cms.Echo360.CurrentEvent.ExtendBy15Minutes	D	Extends the current event by 15 minutes on the rising edge.
Cms.Echo360.CurrentEvent.ExtendDuration	A	Specifies the duration, in seconds, to extend the event by when the CurrentEvent.ExtendBySpecifiedDuration signal is used.
Cms.Echo360.CurrentEvent.ExtendBySpecifiedDuration	D	Extends the event by the number of seconds indicated by the CurrentEvent.ExtendDuration signal on the rising edge.
Cms.Echo360.CurrentEvent.Stop	D	Stops the current event on the rising edge
Cms.Echo360.CurrentEvent.Play Pause.Toggle	D	Toggles the play/pause state of the current event on a rising edge.
Cms.Echo360.CurrentEvent.Play	D	Un-pauses the current event on a rising edge
Cms.Echo360.CurrentEvent.Pause	D	Pauses the current event on a rising edge
Cms.Echo360.NextEvent.Start	D	Starts the next scheduled event on the rising edge Note: the current event should be stopped before the next scheduled event is started. If an event is still running, triggering the start of the next event with this signal will not do anything.
Cms.Echo360.CreateEvent.Title	S	Set the title of the ad-hoc event you wish to create



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Cms.Echo360.CreateEvent.Duration\$	S	Set the duration of the event to create, as a number of minutes. The input signal must be a whole number greater than zero. If the input cannot be converted to a number, the CreateEvent.Create.Message signal will contain a message explaining this.
Cms.Echo360.CreateEvent.Duration	A	Set the duration for the event you wish to create (in minutes)
Cms.Echo360.CreateEvent.SelectLive	D	Set the type of event to create as "Live"
Cms.Echo360.CreateEvent.SelectVod	D	Set the type of event to create as "VOD".
Cms.Echo360.CreateEvent.Create.Go	D	Create the event based on the above parameters specified by their corresponding signals on a rising edge.
CMS GenericContainer		
<i>As of firmware 4.24.6, Epiphan added Echo360 as a CMS provider. It runs in a "container" and thus supports a common CMS feature set that any other CMS provider wishing to use the "containerized" CMS system on the Pearl. To support that future need, the "generic container" CMS type was added to the module as well, which supports all "containerized" CMS system types.</i>		
Cms.GenericContainer.CurrentEvent.ExtendBy5Minutes	D	Extends the current event by 5 minutes on the rising edge.
Cms.GenericContainer.CurrentEvent.ExtendBy10Minutes	D	Extends the current event by 10 minutes on the rising edge.
Cms.GenericContainer.CurrentEvent.ExtendBy15Minutes	D	Extends the current event by 15 minutes on the rising edge.
Cms.GenericContainer.CurrentEvent.ExtendDuration	A	Specifies the duration, in seconds, to extend the event by when the CurrentEvent.ExtendBySpecifiedDuration signal is used.
Cms.GenericContainer.CurrentEvent.ExtendBySpecifiedDuration	D	Extends the event by the number of seconds indicated by the CurrentEvent.ExtendDuration signal on the rising edge.
Cms.GenericContainer.CurrentEvent.Stop	D	Stops the current event on the rising edge
Cms.GenericContainer.CurrentEvent.Play Pause.Toggle	D	Toggles the play/pause state of the current event on a rising edge.



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Cms.GenericContainer.CurrentEvent.Play	D	Un-pauses the current event on a rising edge
Cms.GenericContainer.CurrentEvent.Pause	D	Pauses the current event on a rising edge
Cms.GenericContainer.NextEvent.Start	D	Starts the next scheduled event on the rising edge Note: the current event should be stopped before the next scheduled event is started. If an event is still running, triggering the start of the next event with this signal will not do anything.
Cms.GenericContainer.CreateEvent.Title	S	Set the title of the ad-hoc event you wish to create
Cms.GenericContainer.CreateEvent.Duration\$	S	Set the duration of the event to create, as a number of minutes. The input signal must be a whole number greater than zero. If the input cannot be converted to a number, the CreateEvent.Create.Message signal will contain a message explaining this.
Cms.GenericContainer.CreateEvent.Duration	A	Set the duration for the event you wish to create (in minutes)
Cms.GenericContainer.CreateEvent.SelectLive	D	Set the type of event to create as "Live"
Cms.GenericContainer.CreateEvent.SelectVod	D	Set the type of event to create as "VOD".
Cms.GenericContainer.CreateEvent.Create.Go	D	Create the event based on the above parameters specified by their corresponding signals on a rising edge.
Events		
Event.Upcoming.Start	D	Starts the next scheduled event on the rising edge Note: the current event should be stopped before the next scheduled event is started. If an event is still running, triggering the start of the next event with this signal will not do anything.
Event.Current.Stop	D	Stops the current event on the rising edge
Event.Current.Resume	D	Un-pauses the current event on a rising edge



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Event.Current.Pause	D	Pauses the current event on a rising edge
Event.Current.ExtendBy5Minutes	D	Extends the current event by 5 minutes on the rising edge.
Event.Current.ExtendBy10Minutes	D	Extends the current event by 10 minutes on the rising edge.
Event.Current.ExtendBy15Minutes	D	Extends the current event by 15 minutes on the rising edge.
Event.Current.ExtendDuration	A	Specifies the duration, in seconds, to extend the event by when the ExtendBySpecifiedDuration signal is used.
Event.Current.ExtendBySpecifiedDuration	D	Extends the event by the number of seconds indicated by the ExtendDuration signal on the rising edge.
Event.Create.Title	S	Set the title of the ad-hoc event you wish to create
Event.Create.Username	S	Set the username for the CMS provider related to the event you wish to create
Event.Create.Password	S	Set the username for the CMS provider related to the event you wish to create
Event.Create.Folder	S	Set the folder used for the ad-hoc event you wish to create
Event.Create.Duration\$	S	Set the duration of the event to create, as a number of minutes. The input signal must be a whole number greater than zero. If the input cannot be converted to a number, the CreateEvent.Create.Message signal will contain a message explaining this.
Event.Create.Duration	A	Set the duration for the event you wish to create (in minutes)
Event.Create.Type	A	Set the type of ad-hoc event to create, where: 1 = Vod 2 = Live 3 = VodLive



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 Model: Pearl-2, Pearl Mini, Pearl Nano, Pearl Nexus
 Device Type: Video Production System

CONTROL:

<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Event.Create	D	Create the event based on the above parameters specified by their corresponding signals on a rising edge.
ScheduledEvent[1-10].Start	D	Start the specified scheduled event.
Presets		
Preset[1-10]	D	Triggers the corresponding device preset on the rising edge. The first preset is preset number 1.
Preset.Recall	A	Set an analog value to recall a specified preset. The first preset is preset number 1. Note: Recalling a preset may reboot the Pearl device, depending on the configured scope of the preset. Confirm this during the commissioning stage of the project to avoid potential disruptions or negative UX.
System		
System.Reboot	D	Reboots the device on a rising edge
System.FactoryReset	D	Factory resets the device on a rising edge
System.Shutdown	D	Shuts down the device on a rising edge.
System.Disk.External.SafelyEject	D	Safely ejects the SD card from the device on the rising edge.



Manufacturer: Epiphan Video
 Model: Pearl-2, Pearl Mini, Pearl Nano, Pearl Nexus
 Device Type: Video Production System

CONTROL:

<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Debug		
Debug_Level	A	Indicates the debug level verbosity. There are 5 values that can be used. In order of increasing verbosity: 0 – “Fatal” – Typically, no debug messages except for rare occasions. 1 – “Error” – All the above, and includes debug messages that indicate that something has gone wrong that cannot be handled normally and are impacting normal operation. 2 – “Warning” – All of the above, and includes debug messages that indicate something out of the ordinary or an error that might impact normal operations, but in many cases can be ignored or handled by the module. 3 – “Information” – All of the above, and includes debug messages with information about normal operation. 4 – “Debug” – All of the above, and includes debug messages with information about normal module operation, sequencing, and processing of data to and from the device. 5 – “Verbose” – All available debug messages are included in the output. Importantly, this level includes all REST communications to and from the device. Be prepared to enable/disable logging for a short window or capture the output of the text console to a file for later use. The debug output will be very difficult to follow in real time.
Enable_Debug	D	Latch this signal to enable debug messages to be printed to the text console of the Crestron 3- or 4-series appliance, or the error log in the case of a Crestron virtual control application. These debug messages are also available on the Debug.Message signal as described below for use within the SIMPL program.
Stream Management		
<i>The stream management signals can add or modify publishers for each channel.</i>		
Stream.Management.Select_Channel	A	Selects a channel for the Add_[X]_Stream signals below
Stream.Management.Select_Stream	A	Selects a stream for the [X]_New_Stream_Settings signals
Stream.Management.Add_RTSP_Stream	D	Adds a new publisher with an RTSP Stream on the channel specified by the Select_Channel join
Stream.Management.Add_RTMP_Stream	D	Adds a new publisher with an RTMP Stream on the channel specified by the Select_Channel join



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CONTROL:

<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Stream.Management.Add_RTPUDP_Stream	D	Adds a new publisher with an RTP-UDP Stream on the channel specified by the Select_Channel join
Stream.Management.Add_MPEG-TS_RTP_Stream	D	Adds a new publisher with an MPEG-TS RTP Stream on the channel specified by the Select_Channel join
Stream.Management.Add_MPEG-TS_UDP_Stream	D	Adds a new publisher with an MPEG-TS UDP Stream on the channel specified by the Select_Channel join
Stream.Management.RTSP_New_Stream_Settings	D	When triggered, modifies the stream settings of the selected channel and stream using the data provided in the RTSP management signals below.
Stream.Management.RTSP_Single_Touch	D	Sets the single touch property. Low = false, High = true
Stream.Management.RTSP_Stream_URL	S	Sets the stream URL.
Stream.Management.RTSP_Transport	A	Sets the transport type. 0 = tcp, 1 = udp, any other value will default to tcp.
Stream.Management.RTSP_Username	S	The stream username.
Stream.Management.RTSP_Password	S	The stream password.
Stream.Management.RTMP_New_Stream_Settings	D	When triggered, modifies the stream settings of the selected channel and stream using the data provided in the RTMP management signals below.
Stream.Management.RTMP_Single_Touch	D	Sets the single touch property. Low = false, High = true
Stream.Management.RTMP_Stream_URL	S	Sets the stream URL.
Stream.Management.RTMP_Stream_Name	S	Sets the stream name.
Stream.Management.RTMP_Username	S	The stream username.
Stream.Management.RTMP_Password	S	The stream password.
Stream.Management.RTP_UDP_New_Stream_Settings	D	When triggered, modifies the stream settings of the selected channel and stream using the data provided in the RTMP management signals below.



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CONTROL:

<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Stream.Management.RTP_UDP_Address	S	Sets the stream address.
Stream.Management.RTP_UDP_Video_Port	A	Sets the stream video port.
Stream.Management.RTP_UDP_Audio_Port	A	Sets the stream audio port.
Stream.Management.MPEG-TS_UDP_New_Stream_Settings	D	When triggered, modifies the stream settings of the selected channel and stream using the data provided in the MPEG-TS UDP management signals below.
Stream.Management.MPEG-TS_UDP_Address	S	Sets the stream address.
Stream.Management.MPEG-TS_UDP_Port	A	Sets the stream port.
Stream.Management.MPEG-TS_UDP_Sap	D	Use SAP announcement. High = true, Low = false.
Stream.Management.MPEG-TS_UDP_Sap_Ip	S	Sets the SAP IP address.
Stream.Management.MPEG-TS_UDP_Sap_Channel	S	Sets the SAP Channel.
Stream.Management.MPEG-TS_UDP_Sap_Play_Group	S	Sets the SAP Play Group.
Stream.Management.MPEG-TS_RTP_New_Stream_Settings	D	When triggered, modifies the stream settings of the selected channel and stream using the data provided in the MPEG-TS RTP management signals below.
Stream.Management.MPEG-TS_RTP_Address	S	Sets the stream address.
Stream.Management.MPEG-TS_RTP_Port	A	Sets the stream port.
Stream.Management.MPEG-TS_RTP_Sap	D	Use SAP announcement. High = true, Low = false.
Stream.Management.MPEG-TS_RTP_Sap_Ip	S	Sets the SAP IP address.
Stream.Management.MPEG-TS_RTP_Sap_Channel	S	Sets the SAP Channel.
Stream.Management.MPEG-TS_RTP_Sap_Play_Group	S	Sets the SAP Play Group.



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FEEDBACK:

Connection

Connection.UseHttps.Feedback	D	A high value indicates that the control system will attempt to communicate via HTTPS.
Connection.UseHttp.Feedback	D	A high value indicates that the control system will attempt to communicate via HTTP.
Connection.Connected	D	A high value indicates the control system has connected to the Pearl and is able to communicate properly with the REST API on the device.
Connection.Connection_Status	S	A string value from the module to display an accurate connection status from the control system to the peripheral.
Connection.Username.Feedback	S	The username used by the module to connect with the device.
Connection.Password.Feedback	S	The (unmasked) password used by the module to connect with the device.
Connection.IP_Address.Feedback	S	The IP address or hostname used by the module to connect with the device.
Connection.Port.Feedback	A	The TCP port number used by the module to communicate with the REST API, represented as an analog signal.
Connection.Port_String.Feedback	S	The TCP port number used by the module to communicate with the REST API, represented as a serial signal.

Recorders

Recorder.Count.Feedback	A	Indicates the number of recorders configured on the unit. A recorder is assigned for each channel configured on the device, as well as for each multitrack recorder configured. This will only display the recorders on the device, not the maximum number of recorders available.
Recorder[1-8].IsAvailable	D	A high value indicates a recorder at that index is configured on the device. Use this for conditional behavior depending on how many recorders are configured to display controls or take action accordingly.



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FEEDBACK:

Recorder[1-8].Name	S	Indicates the user-configurable recorder name for the recorder. If the recorder is associated with a channel, this will be the user-configurable name for the channel instead.
Recorder[1-8].State	S	Indicates the recorder state as a user-friendly description. Values: "Disabled", "Starting", "Started", "Stopped", "Error"
Recorder[1-8].State.Feedback	A	Specifies the recorder state as an analog value, where: 0 = Disabled 1 = Starting 2 = Started 3 = Stopped 4 = Error In normal operation, the "Started" and "Stopped" values are observed when using the Recording.Start and Recording.Stop signals.
Recorder[1-8].Duration	S	Specifies the current duration the recording has been active in a hh:mm:ss format.
Recorder[1-8].IsMultiSource.Feedback	D	A high value indicates the recorder is a multitrack recorder.
Recorder[1-8].IsRecording.Feedback	D	A high value specifies if the recorder has started recording (corresponds with the "Started" value for State above).
Recorder[1-8].IsRecording.Feedback*	D	The complement of "IsRecording.Feedback" to show that the recorder is not recording
Channels		
Channel.Count.Feedback	A	Specifies the number of channels configured on the unit. This will only display the channels on the device, not the maximum number of channels available.
Channel [1-8]		
Channel[1-8].IsAvailable	D	A high value indicates a channel at that index is configured on the device. Use this for conditional behavior depending on how many recorders are configured to display controls or take action accordingly.
Channel[1-8].Name	S	Indicates the user-configurable name for the channel



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FEEDBACK:

Channel[1-8].PreviewUrl	S	Indicates the preview URL for the channel. This is provided in a format that is not a complete URL, rather it describes the path of the resource for the preview image on the Crestron processor webserver that the module is running on. See the Technical Tips appendix towards the end of this document that describes how the processor must be configured and how to build the full URL to pass to the user interface.
Channel[1-8].Recording.Feedback	D	A high value specifies if the recorder has started recording (corresponds with the "Started" value for Recorder.State below).
Channel[1-8].Recording.Feedback*	D	The complement of "Recording.Feedback" to show that the channel is not recording
Channel[1-8].Recorder.State	S	Indicates the channel recorder state as a user-friendly description. Values: "Disabled", "Starting", "Started", "Stopped", "Error"
Channel[1-8].Recorder.State.Feedback	A	The analog value to represent the recorder state of the channel, where: 0 = Disabled 1 = Starting 2 = Started 3 = Stopped 4 = Error
Channel[1-8].Recorder.Duration	S	Specifies the current duration the channel recorder has been active in hh:mm:ss format.
Channel[1-8].AllStreams.Active.Feedback	D	A high value indicates all publishers are currently streaming for the channel
Channel[1-8].AllStreams.Active.Feedback*	D	The complement of "AllStreams.Active.Feedback" to show that all streams are not active
Channel[1-8].Publisher.Count	A	Indicates the number of publishers configured for the channel.
Channel[1-8].Publisher[1-5].IsAvailable	D	Indicates a publisher at index n is configured and available to use.
Channel[1-8].Publisher[1-5].StreamingType	S	Displays the streaming type of publisher (n) on the specified channel as a user-friendly name.



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FEEDBACK:

Channel[1-8].Publisher[1-5].StreamingType.Feedback	A	Specifies the streaming type of publisher (n) on the specified channel, where: 0 = Unknown 1 = RTSP 2 = RTMP 3 = WowzaStreamingCloud 4 = OriginalLiveStream 5 = RTP_UDP_Push 6 = MPEG_TS_UDP 7 = MPEG_TS_RTP
Channel[1-8].Publisher[1-5].StreamingState	S	Displays the streaming state of publisher (n) on the specified channel as a user-friendly description.
Channel[1-8].Publisher[1-5].StreamingState.Feedback	A	Indicates the publishers state as an analog value, where: Unknown/Publisher not configured = 0 Starting = 1 Listening = 2 Started = 3 Stopped = 4 Error = 5
Channel[1-8].Publisher[1-5].StreamName	S	Displays the user-configurable name for publisher(n) of the specified channel
Channel[1-8].Publisher[1-5].StreamDuration	S	Displays the streaming duration time of publisher (n) on the specified channel in hh:mm:ss format.
Channel[1-8].Layout.Count	A	Indicates the number of layouts configured for the specified channel.
Channel[1-8].Layout[1-10].IsAvailable	D	A high value indicates a layout at that index is configured for the specified channel.
Channel[1-8].Layout.ActiveLayoutName	S	Displays the user-configured name of the active layout for the specified channel.
Channel[1-8].Layout.Selected.Feedback	A	Indicates the active layout on the channel. The first layout in the list is layout number 1.
Channel[1-8].Layout[1-10].Selected.Feedback	D	A high value indicates that the layout on the specified channel is active.



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FEEDBACK:

Channel[1-8].Layout[1-10].PreviewUrl	S	The preview URL string of the layout on the specified channel. This is provided in a format that is not a complete URL, rather it describes the path of the resource for the preview image on the Crestron processor webserver that the module is running on. See the Technical Tips appendix towards the end of this document that describes how the processor must be configured and how to build the full URL to pass to the user interface.
Channel[1-8].Layout[1-10].Name	S	Displays the user-configured name of the specified layout on the channel.
Channel[1-8].AudioLevel.Left	A	The left audio channel level for the specified Epiphan Pearl channel. Values 0-100. The values 0-100 are mapped to -60 to 0 dB internally in a linear fashion.
Channel[1-8].AudioLevel.Right	A	The right audio channel level for the specified Epiphan Pearl channel. Values 0-100. The values 0-100 are mapped to -60 to 0 dB internally in a linear fashion.
Inputs		
Input.Count.Feedback	A	The total number of inputs on the device. A sum of all of the physical inputs present (including audio-only inputs) and the configured network inputs. (Max Size = 25)
Input[1-25].IsAvailable	D	A high value indicates an input at the index is available on the module.
Input[1-25].Name	S	Displays the user-configurable name for the input.
Input[1-25].Type	S	Indicates the input type as a user-friendly name. Values used are "None", "Embedded", "Usb", "Rtsp", "Ndi", "Srt", "WebGraphics".



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FEEDBACK:

Input[1-25].Type.Feedback	A	Indicates the type of input for the input. Values: 0 – “None” (no input present at this index) 1 – “Embedded”. All physical inputs (HDMI, SDI, XLR audio, etc) on the device are indicated as this type 2 – USB 3 – RTSP 4 – NDI 5 – SRT 6 – Web Graphics
Input[1-25].PreviewUrl	S	The preview URL string for the input. This is provided in a format that is not a complete URL, rather it describes the path of the resource for the preview image on the Crestron processor webserver that the module is running on. See the Technical Tips appendix towards the end of this document that describes how the processor must be configured and how to build the full URL to pass to the user interface.
Input[1-25].IsAudio.Feedback	D	A high value indicates the input supports audio. For streaming media or physical connectors where audio is configurable or negotiated (such as with HDMI), this value will be high if the input can support audio, not necessarily if audio is currently present/transmitting. Audio-only inputs will have this value as high but correspondingly IsVideo.Feedback will be low.
Input[1-25].IsVideo.Feedback	D	A high value indicates the input supports video.
Input[1-25].HasSignal.Feedback	D	A high value indicates the input is receiving a valid signal. For HDMI/SDI inputs, this indicates a valid video signal is being transmitted from the source. For network inputs, it indicates a stream is actively being received over the network. Audio-only inputs are indicated with a high value on this signal if an audio signal is valid on the connecting cable above a threshold determined by the Epiphan Pearl itself.
Input[1-25].HasSignal.Feedback*	D	Complement of “HasSignal.Feedback” to indicate that specified input does not have a signal



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FEEDBACK:

Input[1-25].Resolution	S	Displays the video resolution value of the specified input provided by the Epiphan Pearl. When no active source is connected to the input is connected the value of this signal is "No Signal". Audio-only inputs with no associated resolution will cause the value of this signal to be "active" when HasSignal.Feedback is high, and "No Signal" otherwise. If there is signal present but the module cannot obtain resolution information, a value of "N/A" is used for this signal.
Input[1-25].AudioLevel.Left	A	The left audio channel level for the specified Epiphan Pearl input. Values 0-100. The values 0-100 are mapped to -60 to 0 dB internally in a linear fashion.
Input[1-25].AudioLevel.Right	A	The right audio channel level for the specified Epiphan Pearl input. Values 0-100. The values 0-100 are mapped to -60 to 0 dB internally in a linear fashion.
Outputs		
Output.Count.Feedback	A	The number of total outputs present on the device. (Max Size = 5)
Output[1-5].IsAvailable	D	A high value specifies if the output at the corresponding index on the module is available.
Output[1-5].Name	S	Indicates the user-configurable friendly name of the specified output.
Output[1-5].Type	S	Indicates the type of output as a friendly text value. Note that at the current time, only Epiphan Pearl devices with HDMI outputs are available. Until future devices offer other output formats, this value will always be "HDMI".
Output[1-5].Type.Feedback	A	Displays the output type, where: 1 = HDMI Note that at the current time, only Epiphan Pearl devices with HDMI outputs are available. Until future devices offer other output formats, this value will always be 1.



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FEEDBACK:

Output[1-5].PreviewUrl	S	The preview URL string for the output. This is provided in a format that is not a complete URL, rather it describes the path of the resource for the preview image on the Crestron processor webserver that the module is running on. See the Technical Tips appendix towards the end of this document that describes how the processor must be configured and how to build the full URL to pass to the user interface.
Output[1-5].HasSignal.Feedback	D	A high value indicates the output sink is connected and receiving a valid signal from the Pearl. For HDMI outputs, this indicates a valid video signal is being transmitted to the sink connected on the output.
Output[1-5].HasSignal.Feedback*	D	Complement of "HasSignal.Feedback" to indicate that specified output does not have a signal
Output[1-5].IsAudio.Feedback	D	A high value indicates the output supports audio.
Output[1-5].IsVideo.Feedback	D	A high value indicates the output supports video. Note that at the current time, only Epiphan Pearl devices with HDMI outputs are available. Until future devices offer other output formats, this value will always be high.
Output[1-5].Resolution	S	Displays the resolution for the video signal on the specified output. If no sink is present on the output, then the value of this signal will be "Disconnected".
Output[1-5].ResolutionAndRate	S	Displays the resolution and rate value of the specified output. If no sink is present on the output, then the value of this signal will be "Disconnected".



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FEEDBACK:

Output[1-5].Source	A	The active source for the specified output. The source numbering/order is the same as what is available on the web UI when selecting the source for the output. The first three are neither channels or inputs, but rather built in: 0 – No source 1 – Local Console 2 – Multiviewer Following this are the channels configured on the device, and then the inputs available/configured. So, the rest of the source list numbering might look something like: 3 – Channel: Channel A 4 – Channel: Channel B 5 – Input: HDMI-A 6 – Input: HDMI-B 7 – Input: HDMI-4K-A 8 – Input: HDMI-4K-B 9 – Input: SDI-4K-A 10 – Input: SDI-4K-B 11 – Input: USB-A 12 – Input: USB-B
Output[1-5].Source.Name	S	Displays the user-configurable friendly name of the channel, input, or item routed to the output. The exact string will be as they are presented in the list of sources for the output on the web UI:
CMS Kaltura		
Cms.Kaltura.IsAvailable	D	When high, indicates that the configured CMS provider on the Pearl device is Kaltura
Cms.Kaltura.CurrentEvent.IsAvailable	D	When high, indicates that current event information is available
Cms.Kaltura.CurrentEvent.Title	S	Indicates the title of the current event
Cms.Kaltura.CurrentEvent.StartTime	S	Indicates the start time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.Kaltura.CurrentEvent.EndTime	S	Indicates the end time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM



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FEEDBACK:

Cms.Kaltura.CurrentEvent.TimeUntilEventEnds	S	A string that indicates how much time is left in the current event. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Cms.Kaltura.CurrentEvent.CanExtend	D	Feedback value to indicate that the current event has capabilities to extend its time
Cms.Kaltura.NextEvent.IsAvailable	D	A high value indicates that information on the next event is available
Cms.Kaltura.NextEvent.Title	S	The title of the next scheduled event.
Cms.Kaltura.NextEvent.StartTime	S	Indicates the start time of the next scheduled event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.Kaltura.NextEvent.TimeUntilEventStarts	S	A string that indicates the time remaining until the next event starts. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Cms.Kaltura.NextEvent.CanStart	D	A feedback value of high indicates that the next scheduled event can be started
Cms.Kaltura.CreateEvent.Create.Success	D	Indicates the last created event using this module was created successfully. Will briefly pulse on success.
Cms.Kaltura.CreateEvent.Create.Error	D	Indicates the last created event using this module was not created successfully. Will briefly pulse on an error occurring, and the error message indicated by the Pearl (or internally by the module itself) is present on the CreateEvent.Create.Message signal.
Cms.Kaltura.CreateEvent.Create.Message	S	The error message generated by the Epiphan Pearl device or by the module internally if the event could not be created successfully.
Cms.Kaltura.CreateEvent.SelectLive.Feedback	D	A high value indicates that a "Live" event type will be created.
Cms.Kaltura.CreateEvent.SelectVodLive.Feedback	D	A high value indicates that the event created will be both the "VOD" and "Live" type.



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FEEDBACK:

Cms.Kaltura.CreateEvent.SelectVod.Feedback	D	A high value indicates that a "VOD" event type will be created.
CMS Panopto		
Cms.Panopto.IsAvailable	D	When high, indicates that the configured CMS provider on the Pearl device is Panopto
Cms.Panopto.CurrentEvent.IsAvailable	D	When high, indicates that current event information is available
Cms.Panopto.CurrentEvent.Title	S	Indicates the title of the current event
Cms.Panopto.CurrentEvent.StartTime	S	Indicates the start time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.Panopto.CurrentEvent.EndTime	S	Indicates the end time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.Panopto.CurrentEvent.TimeUntilEventEnds	S	A string that indicates how much time is left in the current event. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Cms.Panopto.CurrentEvent.IsRunning	D	A feedback value to indicate that the current event is running
Cms.Panopto.CurrentEvent.IsPaused	D	A feedback value to indicate that the current event is paused
Cms.Panopto.CurrentEvent.CanExtend	D	A feedback value to indicate that the current event has capabilities to extend its time
Cms.Panopto.NextEvent.IsAvailable	D	A high value indicates that information on the next scheduled event is available
Cms.Panopto.NextEvent.Title	S	The title of the next scheduled event.
Cms.Panopto.NextEvent.StartTime	S	Indicates the start time of the next scheduled event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM



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FEEDBACK:

Cms.Panopto.NextEvent.TimeUntilEventStarts	S	A string that indicates the time remaining until the next event starts. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Cms.Panopto.NextEvent.CanStart	D	A feedback value of high indicates that the next scheduled event can be started
Cms.Panopto.CreateEvent.Create.Success	D	Indicates the last created event using this module was created successfully. Will briefly pulse on success.
Cms.Panopto.CreateEvent.Create.Error	D	Indicates the last created event using this module was not created successfully. Will briefly pulse on an error occurring, and the error message indicated by the Pearl (or internally by the module itself) is present on the CreateEvent.Create.Message signal.
Cms.Panopto.CreateEvent.Create.Message	S	The error message generated by the Epiphan Pearl device or by the module internally if the event could not be created successfully.
Cms.Panopto.CreateEvent.SelectLive.Feedback	D	A high value indicates that a "Live" event type will be created.
Cms.Panopto.CreateEvent.SelectVod.Feedback	D	A high value indicates that a "VOD" event type will be created.
CMS YuJa		
Cms.YuJa.IsAvailable	D	When high, indicates that the configured CMS provider on the Pearl device is YuJa
Cms.YuJa.CurrentEvent.IsAvailable	D	When high, indicates that current event information is available
Cms.YuJa.CurrentEvent.Title	S	Indicates the title of the current event
Cms.YuJa.CurrentEvent.StartTime	S	Indicates the start time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.YuJa.CurrentEvent.EndTime	S	Indicates the end time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM



Manufacturer: Epiphan Video
 Model: Pearl-2, Pearl Mini, Pearl Nano, Pearl Nexus
 Device Type: Video Production System

FEEDBACK:

Cms.YuJa.CurrentEvent.TimeUntilEventEnds	S	A string that indicates how much time is left in the current event. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Cms.YuJa.CurrentEvent.IsRunning	D	A feedback value to indicate that the current event is running
Cms.YuJa.CurrentEvent.IsPaused	D	A feedback value to indicate that the current event is paused
Cms.YuJa.CurrentEvent.CanExtend	D	A feedback value to indicate that the current event has capabilities to extend its time
Cms.YuJa.NextEvent.IsAvailable	D	A high value indicates that information on the next event is available
Cms.YuJa.NextEvent.Title	S	The title of the next scheduled event.
Cms.YuJa.NextEvent.StartTime	S	Indicates the start time of the next scheduled event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.YuJa.NextEvent.TimeUntilEventStarts	S	A string that indicates the time remaining until the next event starts. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Cms.YuJa.NextEvent.CanStart	D	A feedback value of high indicates that the next scheduled event can be started
CMS Opencast		
Cms.Opencast.IsAvailable	D	When high, indicates that the configured CMS provider on the Pearl device is Opencast
Cms.Opencast.CurrentEvent.IsAvailable	D	When high, indicates that current event information is available
Cms.Opencast.CurrentEvent.Title	S	Indicates the title of the current event



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 Model: Pearl-2, Pearl Mini, Pearl Nano, Pearl Nexus
 Device Type: Video Production System

FEEDBACK:

Cms.Opencast.CurrentEvent.StartTime	S	Indicates the start time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.Opencast.CurrentEvent.EndTime	S	Indicates the end time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.Opencast.CurrentEvent.TimeUntilEventEnds	S	A string that indicates how much time is left in the current event. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Cms.Opencast.CurrentEvent.IsRunning	D	A feedback value to indicate that the current event is running
Cms.Opencast.CurrentEvent.IsPaused	D	A feedback value to indicate that the current event is paused
Cms.Opencast.CurrentEvent.CanExtend	D	A feedback value to indicate that the current event has capabilities to extend its time
Cms.Opencast.NextEvent.IsAvailable	D	A high value indicates that information on the next event is available
Cms.Opencast.NextEvent.Title	S	The title of the next scheduled event.
Cms.Opencast.NextEvent.StartTime	S	Indicates the start time of the next scheduled event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.Opencast.NextEvent.TimeUntilEventStarts	S	A string that indicates the time remaining until the next event starts. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Cms.Opencast.NextEvent.CanStart	D	A feedback value of high indicates that the next scheduled event can be started



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FEEDBACK:		
Cms.Opencast.CreateEvent.Create.Success	D	Indicates the last created event using this module was created successfully. Will briefly pulse on success.
Cms.Opencast.CreateEvent.Create.Error	D	Indicates the last created event using this module was not created successfully. Will briefly pulse on an error occurring, and the error message indicated by the Pearl (or internally by the module itself) is present on the CreateEvent.Create.Message signal.
Cms.Opencast.CreateEvent.Create.Message	S	The error message generated by the Epiphan Pearl device or by the module internally if the event could not be created successfully.
CMS Epiphan Edge		
Cms.EpiphanEdge.IsAvailable	D	When high, indicates that the configured CMS provider on the Pearl device is Epiphan Edge
Cms.EpiphanEdge.CurrentEvent.IsAvailable	D	When high, indicates that current event information is available
Cms.EpiphanEdge.CurrentEvent.Title	S	Indicates the title of the current event
Cms.EpiphanEdge.CurrentEvent.StartTime	S	Indicates the start time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.EpiphanEdge.CurrentEvent.EndTime	S	Indicates the end time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.EpiphanEdge.CurrentEvent.TimeUntilEventEnds	S	A string that indicates how much time is left in the current event. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Cms.EpiphanEdge.NextEvent.IsAvailable	D	A high value indicates that information on the next scheduled event is available
Cms.EpiphanEdge.NextEvent.Title	S	The title of the next scheduled event.



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FEEDBACK:

Cms.EpiphanEdge.NextEvent.StartTime	S	Indicates the start time of the next scheduled event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.EpiphanEdge.NextEvent.TimeUntilEventStarts	S	A string that indicates the time remaining until the next event starts. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Cms.EpiphanEdge.NextEvent.CanStart	D	A feedback value of high indicates that the next scheduled event can be started
CMS Echo360		
Cms.Echo360.IsAvailable	D	When high, indicates that the configured CMS provider on the Pearl device is Echo360.
Cms.Echo360.CurrentEvent.IsAvailable	D	When high, indicates that current event information is available
Cms.Echo360.CurrentEvent.Title	S	Indicates the title of the current event
Cms.Echo360.CurrentEvent.StartTime	S	Indicates the start time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.Echo360.CurrentEvent.EndTime	S	Indicates the end time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.Echo360.CurrentEvent.TimeUntilEventEnds	S	A string that indicates how much time is left in the current event. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Cms.Echo360.CurrentEvent.IsRunning	D	A feedback value to indicate that the current event is running
Cms.Echo360.CurrentEvent.IsPaused	D	A feedback value to indicate that the current event is paused



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FEEDBACK:

Cms.Echo360.CurrentEvent.CanExtend	D	A feedback value to indicate that the current event has capabilities to extend its time
Cms.Echo360.NextEvent.IsAvailable	D	A high value indicates that information on the next scheduled event is available
Cms.Echo360.NextEvent.Title	S	The title of the next scheduled event.
Cms.Echo360.NextEvent.StartTime	S	Indicates the start time of the next scheduled event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.Echo360.NextEvent.TimeUntilEventStarts	S	A string that indicates the time remaining until the next event starts. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Cms.Echo360.NextEvent.CanStart	D	A feedback value of high indicates that the next scheduled event can be started
Cms.Echo360.CreateEvent.Create.Success	D	Indicates the last created event using this module was created successfully. Will briefly pulse on success.
Cms.Echo360.CreateEvent.Create.Error	D	Indicates the last created event using this module was not created successfully. Will briefly pulse on an error occurring, and the error message indicated by the Pearl (or internally by the module itself) is present on the CreateEvent.Create.Message signal.
Cms.Echo360.CreateEvent.Create.Message	S	The error message generated by the Epiphan Pearl device or by the module internally if the event could not be created successfully.
Cms.Echo360.CreateEvent.SelectLive.Feedback	D	A high value indicates that a "Live" event type will be created.
Cms.Echo360.CreateEvent.SelectVod.Feedback	D	A high value indicates that a "VOD" event type will be created.
CMS GenericContainer		
Cms.GenericContainer.IsAvailable	D	When high, indicates that the configured CMS provider on the Pearl device is Panopto
Cms.GenericContainer.CurrentEvent.IsAvailable	D	When high, indicates that current event information is available



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FEEDBACK:

Cms.GenericContainer.CurrentEvent.Title	S	Indicates the title of the current event
Cms.GenericContainer.CurrentEvent.StartTime	S	Indicates the start time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.GenericContainer.CurrentEvent.EndTime	S	Indicates the end time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.GenericContainer.CurrentEvent.TimeUntilEventEnds	S	A string that indicates how much time is left in the current event. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Cms.GenericContainer.CurrentEvent.IsRunning	D	A feedback value to indicate that the current event is running
Cms.GenericContainer.CurrentEvent.IsPaused	D	A feedback value to indicate that the current event is paused
Cms.GenericContainer.CurrentEvent.CanExtend	D	A feedback value to indicate that the current event has capabilities to extend its time
Cms.GenericContainer.NextEvent.IsAvailable	D	A high value indicates that information on the next scheduled event is available
Cms.GenericContainer.NextEvent.Title	S	The title of the next scheduled event.
Cms.GenericContainer.NextEvent.StartTime	S	Indicates the start time of the next scheduled event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Cms.GenericContainer.NextEvent.TimeUntilEventStarts	S	A string that indicates the time remaining until the next event starts. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.



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FEEDBACK:

Cms.GenericContainer.NextEvent.CanStart	D	A feedback value of high indicates that the next scheduled event can be started
Cms.GenericContainer.CreateEvent.Create.Success	D	Indicates the last created event using this module was created successfully. Will briefly pulse on success.
Cms.GenericContainer.CreateEvent.Create.Error	D	Indicates the last created event using this module was not created successfully. Will briefly pulse on an error occurring, and the error message indicated by the Pearl (or internally by the module itself) is present on the CreateEvent.Create.Message signal.
Cms.GenericContainer.CreateEvent.Create.Message	S	The error message generated by the Epiphan Pearl device or by the module internally if the event could not be created successfully.
Cms.GenericContainer.CreateEvent.SelectLive.Feedback	D	A high value indicates that a "Live" event type will be created.
Cms.GenericContainer.CreateEvent.SelectVod.Feedback	D	A high value indicates that a "VOD" event type will be created.
Events		
Cms.Provider.Type.Feedback	A	The analog value corresponding to the configured CMS provider on the device, where: 0 = Unknown (provider cannot be categorized or is yet to be determined) 1 = None – No provider is configured 2 = Generic Container – A container-based CMS provider that cannot be specifically identified 3 = Kaltura 4 = Panopto 5 = Opencast 6 = YuJa 7 = Epiphan Edge 8 = Echo360
Cms.Enabled.Feedback	D	If high, indicates that a CMS provider is configured and event/CMS functions are available
Event.Upcoming.CanStart	D	A feedback value of high indicates that the next scheduled event can be started
Event.Upcoming.Title	S	The title of the next scheduled event.
Event.Upcoming.StartTime	S	Indicates the start time of the next scheduled event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM



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FEEDBACK:

Event.Upcoming.EndTime	S	Indicates the end time of the next scheduled event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Event.Upcoming.Status	S	Indicates the status of the next scheduled event (Scheduled, Running, Paused, Finished)
Event.Upcoming.Tags	S	Displays the tags tied to the upcoming event
Event.Upcoming.TimeUntilEventStarts	S	A string that indicates the time remaining until the next event starts. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Event.Upcoming.Status.Feedback	A	A numerical value to indicate the next scheduled event status, where: 0 = None 1 = Scheduled 2 = Running 3 = Paused 4 = Finished 5 = Skipped
Event.Current.Stopped.Feedback	D	Indicator to set the current event has stopped
Event.Current.Is.Running	D	Indicator to set the current indicator is running
Event.Current.Is.Paused	D	Indicator to set the current indicator has paused
Event.Current.CanStop	D	A feedback value to indicate that the current event has capabilities to stop the current event
Event.Current.CanPause	D	A feedback value to indicate that the current event has capabilities to pause the current event
Event.Current.CanExtend	D	A feedback value to indicate that the current event has capabilities to extend the current event
Event.Current.CanResume	D	A feedback value to indicate that the current event has capabilities to resume the current event



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FEEDBACK:

Event.Current.Title	S	Indicates the title of the current event
Event.Current.StartTime	S	Indicates the start time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Event.Current.EndTime	S	Indicates the end time of the current event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
Event.Current.Status	S	Indicates the status of the current event (Scheduled, Running, Paused, Finished)
Event.Current.Tags	S	Displays the tags tied to the current event
Event.Current.TimeUntilEventEnds	S	A string that indicates how much time is left in the current event. The format is HH:mm:ss. If the duration is greater than 24 hours, then the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
Event.Current.Status.Feedback	A	A numerical value to represent the event status, where: 0 = None 1 = Scheduled 2 = Running 3 = Paused 4 = Finished 5 = Skipped
Event.Create.Success	D	Indicates the last created event using this module was created successfully. Will briefly pulse on success.
Event.Create.Error	D	Indicates the last created event using this module was not created successfully. Will briefly pulse on an error occurring, and the error message indicated by the Pearl (or internally by the module itself) is present on the CreateEvent.Create.Message signal.
Event.Create.ErrorMessage	S	The error message generated by the Epiphan Pearl device or by the module internally if the event could not be created successfully.



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FEEDBACK:

ScheduledEvent.Count.Feedback	A	Indicates the number of scheduled events provided by the module Currently, this is the count of scheduled events provided by the Pearl API. Should you need a way to filter the scheduled events for the list of scheduled events provided by the module, please contact Epiphan with the appropriate feature request.
ScheduledEvent[1-10].Title	S	Title of the specified event
ScheduledEvent[1-10].StartTime	S	Indicates the start time of the specified event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
ScheduledEvent[1-10].EndTime	S	Indicates the end time of the specified event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
ScheduledEvent[1-10].Status	S	Displays the output status of the specified event (Scheduled, Running, Paused, Finished)
ScheduledEvent[1-10].Tags	S	Displays the tags tied to the specified event
ScheduledEvent[1-10].Status.Feedback	A	A numerical value to represent the specified event's status, where: 0 = None 1 = Scheduled 2 = Running 3 = Paused 4 = Finished 5 = Skipped
PastEvent.Count.Feedback	A	The number of past events today. Past events are all events that have been completed. The "current" event is not included in the list of past events.
PastEvent[1-10].Title	S	Title of the specified event



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FEEDBACK:

PastEvent[1-10].StartTime	S	Indicates the start time of the specified event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
PastEvent[1-10].EndTime	S	Indicates the end time of the specified event, as a local date and time. The format is MM/dd/yyyy hh:mm:ss AM PM, ie 5/1/2021 6:32:06 PM
PastEvent[1-10].Status	S	Displays the output status of the specified event (Scheduled, Running, Paused, Finished)
PastEvent[1-10].Tags	S	Displays the tags tied to the specified event
PastEvent[1-10].Status.Feedback	A	A numerical value to represent the specified event's status, where: 0 = None 1 = Scheduled 2 = Running 3 = Paused 4 = Finished 5 = Skipped
Presets		
Preset.Count.Feedback	A	A value indicating the number of device presets configured.
Preset.Recall.WillReboot	D	Pulsed if the recently recalled preset will reboot the Epiphan Pearl.
Preset.Recall.Success	D	Pulsed if the recently recalled preset was recalled successfully
Preset.Recall.Error	D	Pulsed if the recently recalled preset could not be recalled.
Preset.Recall.Message	S	In the event there was an error recalling the preset, an associated error message. Otherwise a status message related to the recently called preset.
Preset[1-10].Feedback	D	A high value indicates this preset was the last preset recalled.
Preset.Recalled.Feedback	A	The value of the last preset recalled
Preset[1-10].Name	S	The display name of the preset.



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FEEDBACK:		
Preset[1-10].Description	S	The description text of the preset.
System		
System.Uptime	S	Displays how long the device has been online. The format is HH:mm:ss. If the duration is greater than 24 hours, than the amount of days are included, and the format for example would be "1 day 12:34:56" to describe a timespan of 36 hours, 34 minutes and 56 seconds.
System.CpuLoad.High.Feedback	D	Indicates that the CPU usage for the Pearl is above a threshold deemed by Epiphan as "high"
System.CpuLoad	S	Displays the current CPU load as a percentage.
System.CpuTemp	S	Displays the current temperature of the CPU, in degrees Celsius
System.CpuTemp.Threshold	S	Displays the threshold temperature of the CPU above which Epiphan deems high.
System.Disk.Internal.FreeSpace	S	Displays the free disk space available in the device's internal storage as Mebibytes (220 bytes or 1,024 kibibytes). Ie. "280678 MiB"
System.Disk.Internal.FreeSpace.Percent	A	Displays the percentage of free space from the total in the device's internal storage of the total as analog value from 0 to 65535 (0% to 100%).
System.Disk.Internal.UsedSpace	S	Displays the free disk space available in the device's internal storage as Mebibytes (220 bytes or 1,024 kibibytes). Ie. "280678 MiB"
System.Disk.Internal.UsedSpace.Percent	A	Displays the percentage of used space from the total in the device's internal storage of the total as analog value from 0 to 65535 (0% to 100%).
System.Disk.Internal.TotalSpace	S	Displays the total disk space available in the device's internal storage as Mebibytes (220 bytes or 1,024 kibibytes). Ie. "280678 MiB"



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FEEDBACK:

System.Disk.Internal.UsagePercent	S	Displays the percentage of used space on the device's internal storage as a string. ie. "67%"
System.Disk.External.Connected.Feedback	D	A high value indicates external storage is present
System.Disk.External.State.Feedback	A	Analog feedback value of the current state, where: 0 = None (not yet determined or external storage not supported) 1 = Ready 2 = No Device 3 = Device Detected 4 = Device Detected, Read Only 5 = Device Formatting
System.Disk.External.State	S	Indicates the current state of the external storage as a user-friendly string.
System.Disk.External.FreeSpace	S	Displays the free disk space available in the device's external storage as Megabytes (220 bytes or 1,024 kibibytes). ie. "280678 MiB"
System.Disk.External.FreeSpace.Percent	A	Displays the percentage of free space from the total in the device's external storage of the total as analog value from 0 to 65535 (0% to 100%).
System.Disk.External.UsedSpace	S	Displays the free disk space available in the device's external storage as Megabytes (220 bytes or 1,024 kibibytes). ie. "280678 MiB"
System.Disk.External.UsedSpace.Percent	A	Displays the percentage of used space from the total in the device's external storage of the total as analog value from 0 to 65535 (0% to 100%).
System.Disk.External.TotalSpace	S	Displays the total disk space available in the device's external storage as Megabytes (220 bytes or 1,024 kibibytes). ie. "280678 MiB"
System.Disk.External.UsagePercent	S	Displays the percentage of used space on the device's external storage as a string. ie. "67%"



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FEEDBACK:

Device		
Device.Name.Feedback	S	Reports back the user-defined device name for the Pearl Device
Device.UserDescription	S	Reports back user defined identity parameter
Device.UserLocation	S	Reports back user defined identity parameter
Device.SerialNumber	S	Reports back the connected device serial number
Device.Firmware.Version	S	Reports back the connected device firmware version
Device.Firmware.Revision	S	Reports back the connected device firmware revision
Device.Firmware.FullString	S	Concatenation of firmware version and revision
Device.ProductID	S	Reports back the device Product ID
Device.ProductName	S	Reports back the device Product Name
Network		
<i>The network parameters on the string output signals on the module described below correspond to the primary ethernet port. If a need arises for this information to be available on the module for a USB NIC connected to the Pearl as well, please submit the appropriate feature request to Epiphan.</i>		
Device.Network.IPAddress.Feedback	S	Reports back the connected device's IP Address
Device.Network.Netmask.Feedback	S	Reports back the connected device's subnet mask
Device.Network.Gateway.Feedback	S	Reports back the connected device's gateway address
Device.Network.DNS.Feedback	S	Reports back the connected device's DNS address
Device.Network.MAC.Address.Feedback	S	Reports back the connected device's MAC address
Debug		
Debug_Level_Feedback	A	Indicates the current debug level setting. Unless set by the programmer using this module, this value defaults to 3, which is the "Information" debug level.
Debug.Message	S	Last reported debug message from the module.



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FEEDBACK:

Stream Management

Stream.Management.Error_Message	S	Displays any error messages generated by the stream settings operations.
Error.Pulse	D	Pulses briefly when a user-friendly error message unrelated to any of the other error message output signals is generated on Error.Message as described below
Error.Message	S	Text indicating the latest user-friendly error message. Use in conjunction with Error.Pulse to indicate to users an error has occurred or to send the error message elsewhere within the program.

PARAMETERS:

IP Address Or HostName	S	IP address or hostname for connection. If specifying this value at runtime is needed, the IP_Address signal can be used to replace this value.
Port	A	Default Port for connection If specifying this value at runtime is needed, the Port signal can be used to replace this value.
Username	S	Default username for connection If specifying this value at runtime is needed, the Username signal can be used to replace this value.



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PARAMETERS:

Password	S	Default password for connection If specifying this value at runtime is needed, the Password signal can be used to replace this value.
UseHttps	A	Choose whether HTTPS or HTTP is used to connect with the Pearl. If specifying this value at runtime is needed, the UseHttps or UseHttp signal can be used to replace this value.

TESTING:

OPS USED FOR TESTING:	CP4 – firmware v2.8006.00284 CP3 – firmware v1.8001.5761.25659
SIMPL WINDOWS USED FOR TESTING:	SIMPL Windows 4.32 (build 4.3200.02) SIMPL+ 4.06 (build 4.0600.00)
DEVICE DB USED FOR TESTING:	200.465 (build 200.46500.001.00)
CRES DB USED FOR TESTING:	228.55 (build 228.5500.001.00)
SYMBOL LIBRARY USED FOR TESTING:	1243 (Symlib2.tio / iodev.tio, 07/06/2026)
SAMPLE PROGRAM:	Demo_EpiphanPearl_4_series.lpz (4-Series) Demo_EpiphanPearl_3_series.lpz (3-Series) Demo_EpiphanPearl.ch5z (Crestron Construct UI)
REVISION HISTORY:	v1.0.0 – 2026-08-22 – Initial Release (SP & TA) v1.0.0 – 2026-10-14 – Documentation updated for submission to the Crestron Application Market (signal names, types and descriptions aligned with the module). Documentation update only; module unchanged at v1.0.0. (SP)



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Model: Pearl-2, Pearl Mini, Pearl Nano, Pearl Nexus
Device Type: Video Production System

APPENDIX A: QUICK START GUIDE

- 1) Ensure the IP Address or HostName parameter contains the IP address of the Epiphan Pearl.
- 2) Ensure the Username and Password fields have been set correctly. The default username is "admin" and the password is set on first login to the Pearl web UI.
- 3) In your program, latch the "Enable" signal when you would like the module to initiate the connection with the device. The module manages the connection to the device on its own; it will attempt to reconnect to the API if the connection is broken and regularly polls the device to ensure external changes in device state are reflected on the output signals of the module accordingly.
- 4) As previously mentioned, the module is the same for each model of Epiphan Pearl. Not all signals are applicable to all models. Consult the Technical Tips appendix below for an in-depth explanation of which signals do not apply to all Epiphan Pearl modules.
- 5) Should difficulties arise with connecting to the device, consult the troubleshooting steps in the appendix below.



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APPENDIX B: TECHNICAL TIPS AND TRICKS

Using the module – different device models, same module

There are (at the time of writing) 4 models of Epiphan Pearl: the Pearl Nano, Pearl Mini, Pearl-2, and Pearl Nexus. Each has a different amount of physical I/O and processing capability to support networked media and streaming media. However, the same Epiphan Pearl module has been designed to work with each model. This is for a few reasons:

- 1) Future compatibility – new product releases can be supported faster, and changes to existing products may be supported immediately depending on the nature of the change.
- 2) Ease of use within the program – no need to switch module versions for different models of Epiphan Pearl. Allows for greater flexibility when using the same program across multiple different AV systems that may have different needs.

As the Pearl product series has many features, this module is quite large. This section will address differences between the models and how they relate to the use of this module within your SIMPL Windows program.

Pearl-2

The Pearl-2 is the flagship product from Epiphan and supports all features offered by this module. It doesn't have a hard limit on the number of network inputs or the number of channels (Epiphan recommends a maximum of 6 channels). Any number of network inputs can be configured, provided there is enough processing power available.

The number of physical inputs can vary as well depending on if the 4K license feature is used.

The Pearl-2 will always have two outputs. It will have at least 10 inputs if the 4K license feature is active:

- HDMI-A
- HDMI-B
- HDMI-4K-A
- HDMI-4K-B
- SDI-4K-A
- SDI-4K-B
- Analog-A Audio
- Analog-B Audio
- USB-A
- USB-B

The Pearl-2 supports all of the CMS providers supported by the module.

Pearl Mini

The Mini is a middle ground between the flagship Pearl-2 and Pearl Nano. Like the Pearl-2, there is no hard limit to the number of channels, but a maximum of 3 channels is recommended by Epiphan. It has much less physical inputs than the Pearl-2 as it does not support 4K. The number of network inputs, like the Pearl-2, is not hard-limited by the device web UI. Any number can be configured without issue provided there is enough processing power available.

The Pearl Mini will always have one output. It will have at least 6 inputs:

- HDMI-A
- HDMI-B



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- SDI
- Analog Audio
- USB-A
- USB-B

The Pearl Mini supports all of the CMS providers supported by the module.

Pearl Nexus

The Nexus is extremely similar to the Epiphan Mini, except for its physical 1RU formfactor. From a programming perspective, it can be treated mostly the same way. Consult the Pearl Mini section above for the number of channels, inputs, outputs, and other things to expect.

Pearl Nano

The largest difference is found with the Pearl Nano. As it only supports a single channel, the Pearl Nano does not support multitrack recorders, and the only recorder available is the one tied to its single channel.

The Pearl Nano will always have one channel, one recorder (linked to the channel) and one output. It will have at least 4 inputs:

- HDMI
- SDI
- XLR/RCA Audio-Only input
- USB Audio-Only

In addition to these 4 video and audio inputs, a limit of one network input can be configured. Web Graphics inputs are not supported by the Nano.

The Pearl Nano supports all of the CMS providers supported by the module.

Preview images

To work around limitations the Crestron Construct image object has and CH5 bugs at the time of writing around the touchpanel prompting for image credentials when running a Crestron Construct CH5 UI; the Epiphan Pearl module will fetch the preview image every 5 seconds for the inputs, outputs, channels, and channel layouts when enabled and host them internally on the processor's own web server.

This bypasses the need for image authentication and having to accept the self-signed certificate the images are hosted with when using HTTPS connections. This also allows for user interfaces to access preview images if the user interface is on a different network segment than the Epiphan Pearl in the case that Isolation Mode is required for the processor.

The output of the Epiphan Pearl module for the preview image will look something like this:

`/cws/epiphan/S-2.1.1:S-1/channel/1/preview.jpeg`

The full URL in your browser to download the image or for an image object on your UI will be something like this:

`http://10.0.10.55/cws/epiphan/S-2.1.1:S-1/channel/1/preview.jpeg`

As the Crestron processor may have multiple network interfaces, the touchpanel may have a different network address it accesses the processor on as part of the full URL when fetching the preview image. The touchpanel could be connected to the control subnet, on a network the Crestron processor has its LAN NIC connected with, etc. The "Epiphan Pearl Touchpanel Preview Url Helper" module described in the Complementary Modules appendix above can help format the output from the module as a full URL.

Additionally, the following steps are necessary to ensure the preview images work on a Crestron touchpanel running a CH5 project:



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Crestron 4-series processors:

1. Users must run the `userpageauth off` command in an ssh console on the processor to allow the preview images to be served to the touchpanel without authentication
 - If authentication is required for the image, it will not work for Crestron Construct image objects, nor will it work for the Crestron Construct video object in mjpeg mode
 - If authentication is required for the image on a panel running a UI made in VTPro-e, it will work, but it will prompt for the credentials for each new image loaded. This is not a desirable experience.

Crestron 3-Series processors:

1. Ensure the processor is on a firmware version newer than or equal to 1.8001
 - Firmware versions older than 1.8001 have been observed to have problems with the CWS service.
 - As the image is served using the Crestron Web Services (CWS) running on the Crestron processor, it is strongly recommended to use a firmware version past 1.8001.
2. Run the `userpageauth off` command as you would for a 4-series processor.
3. Run the `ssl off` command.
 - On a Crestron 3-series product, only processors without SSL enabled will serve the image without performing a 302 redirect to an https URL. Any 3-series processor past firmware version approx. 1.603 will have SSL enabled by default.
 - This step is not required for 4-series processors as the web server on a 4-series processor will not force a redirect to use HTTPS when specifying HTTP in the URL.
 - Please also note that when `ssl` is disabled on a 3-series processor, web XPanels will not work for the processor, as well as the setup web UI hosted on the processor. Therefore, it is recommended that SSL only be disabled if preview images are required and web xpanels are not required. Should these both be a requirement, a 4-series Crestron processor is recommended.
 - This step is not strictly required if your user interface is running a VTPro-e project, but still recommended. Keep in mind that users will be prompted to accept the self-signed certificate for each preview image shown on the panel, and they will be required to do this on a regular basis. This is not great UX, and therefore turning SSL off is the recommendation regardless.
4. Run the `reboot` command to apply the SSL change
 - Warning: This will cause the processor to reboot, interrupting the running program.



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APPENDIX C: COMPLEMENTARY MODULES

Construct Text Field Debouncer

This module is included in the demo program to work around behavior and bugs with the Crestron construct text field. It is not required to be used in your program and is purely to support the demo program.

<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Inputs		
Enable_Debug	D	Latch this signal to enable console debugging
String.input[*]	S	Text coming in from textfield object
Parameters		
Debounce Time	A	The delayed time for the unchanged text input to send its value to its respective output.
Outputs		
String.output[*]	S	Return text from input field after debounced

Epiphan Pearl Event List Sorting

This module is built to support the demo program. It is not required for use in your program if you don't need it.

The purpose of this helper module is to take the scheduled and past event signal lists provided by the Pearl and concatenate the Title, Start Time, and End time for the scheduled and past events and outputs them as one serial signal in a format suitable for the demo program UI.

<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Inputs		
Scheduled_Event_Count	A	Number of scheduled events coming out of the Pearl module
Past_Event_Count	A	Number of past events coming out of the Pearl module
Past_Event_Title[*]	S	Title of the past event (limit = 10)
Past_Event_Start_Time[*]	S	Start time of the past event (limit = 10)
Past_Event_End_Time[*]	S	End time of the past event (limit = 10)



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<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Scheduled_Event_Title[*]	S	Title of today's scheduled event (limit = 10)
Scheduled_Start_Time[*]	S	Start time of today's scheduled event (limit = 10)
Scheduled_End_Time[*]	S	End time of today's scheduled event (limit = 10)
Outputs		
UI_Scheduled_Event_Count	A	Adjusts the count of Schedule_Event_Count, to tie into the UI list. If there are no scheduled events, it will create a "No Scheduled Events" entry
UI_Past_Event_Count	A	Adjusts the count of Past_Event_Count to tie into the UI list. If there are no scheduled events, it will create a "No Past Events" entry.
Scheduled_Event_Text[*]	S	Merges the Title, Start Time and End Time of the scheduled event
Past_Event_Text[*]	S	Merges the Title, Start Time and End Time of the past event

Epiphan Pearl Input List Sorting

This helper module supports the demo program by taking the input[x] signals and sorting them into sub-lists for the demo program categorized as video, audio-only, and network inputs. It is not required that you use this module in your own program.

<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Inputs		
Input_Has_Signal[*]	D	From core module of the "HasSignal.Feedback" value
Input_Is_Audio[*]	D	From core module of the "isAudio.Feedback" value
Input_Is_Video[*]	D	Native list from core module of the "isVideo.Feedback" value
Video_Input_Preview_Enable[*]	D	UI trigger to enable image URL preview of physical input source onto UI
Network_Input_Preview_Enable[*]	D	UI trigger to enable image URL preview of network input source onto UI
Input_Type_Feedback[*]	A	From core module of the "Type.Feedback" value



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<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Input_AudioLevel_Left[*]	A	From the core module "AudioLevel.Left" value
Input_AudioLevel_Right[*]	A	From the core module "AudioLevel_Right" value
Input_Name[*]	S	From the core module "Name" value
Input_Type[*]	S	From the core module "Type" value
Input_Preview_Url[*]	S	From the core module "Preview_Url" value
Input_Resolution[*]	S	From the core module "Resolution" value
Outputs		
Input_Preview_Enabled[*]	D	Triggers the "Preview.Enable" value to the core module
Video_Input_Has_Signal[*]	D	Filtered out list for physical video inputs having signal
Video_Input_Available[*]	D	Filtered out list for physical video inputs available
Video_Input_Is_Audio [*]	D	Filtered out list for physical inputs being audio types
Audio_Input_Has_Signal[*]	D	Filtered out list for physical audio inputs having signal
Audio_Input_Available[*]	D	Filtered out list for physical audio inputs available
Network_Input_Has_Signal[*]	D	Filtered out list for network inputs having signal
Network_Input_Available[*]	D	Filtered out list for network inputs available
Network_Input_Is_Audio[*]	D	Filtered out list for network inputs being audio types
Video_Input_Count_Feedback[*]	A	Number of physical video inputs
Audio_Input_Count_Feedback[*]	A	Number of physical audio inputs
Network_Input_Count_Feedback[*]	A	Number of network inputs
Video_Input_AudioLevel_Left[*]	A	Filtered out list for physical video inputs left audio track
Video_Input_AudioLevel_Right[*]	A	Filtered out list for physical video inputs right audio track



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<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Audio_Input_AudioLevel_Left[*]	A	Filtered out list for physical audio inputs left audio track
Audio_Input_AudioLevel_Right[*]	A	Filtered out list for physical audio inputs right audio track
Network_Input_AudioLevel_Left[*]	A	Filtered out list for network inputs left audio track
Network_Input_AudioLevel_Right[*]	A	Filtered out list for network inputs right audio track
Video_Input_Name[*]	S	Filtered out physical video input names
Video_Input_Type[*]	S	Filtered out physical video input types
Video_Input_Preview_Url[*]	S	Filtered out physical video input's preview URL feed
Video_Input_Resolution[*]	S	Filtered out physical video input's resolution
Audio_Input_Name[*]	S	Filtered out physical audio input names
Audio_Input_Type[*]	S	Filtered out physical audio input types
Audio_Input_Preview_Url[*]	S	Filtered out physical audio input's preview URL feed
Audio_Input_Resolution[*]	S	Filtered out physical audio input's resolution
Network_Input_Name[*]	S	Filtered out network input names
Network_Input_Type[*]	S	Filtered out network input types
Networ _Input_Preview_Url[*]	S	Filtered out network input's preview URL feed
Network_Input_Resolution[*]	S	Filtered out network input's resolution

Epiphan Pearl Touchpanel Preview URL helper

This helper module is utilized to take the various "preview url" output signals from the module and process them into a full URL that the corresponding touchpanel will be able to access on the Crestron processor's web server. One instance of this helper module is typically needed for each touchpanel IP ID, although if a set of touchpanels are always guaranteed to be on the same network segment, then the outputs from this module can be sent to all touchpanels in that set.



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To work around limitations the Crestron Construct image object has and bugs at the time of writing around the touchpanel prompting for image credentials when running a Crestron Construct CH5 UI, the Epiphan Pearl module will fetch the preview image for the inputs, outputs, channels, and channel layouts when enabled and host them internally on the processors own web server. This bypasses the need for image authentication and having to accept the self-signed certificate the images are hosted with when using HTTPS connections. See the Technical Tips appendix towards the end of this document for a full explanation on configuring the processor properly for preview images.

As the Crestron processor may have multiple network interfaces, the touchpanel may have a different network address it accesses the processor as part of the full URI when fetching the preview image. This module uses the indicated network address for the touchpanel and matches it up with the appropriate network address for the processor, and then outputs the full, formatted preview URL to send to the image object on your UI to fetch the preview image from the processor.

Using this helper module in conjunction with the core module is not required should you wish to duplicate its functionality in a way that fits your own workflow better, but it is recommended for most scenarios.

<u>Signal/Function Name</u>	<u>D.S.A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Inputs		
Processor.Custom.Address	S	An optional signal specifying the processor IP address or hostname to use when formatting the full URL of the preview image on the processor. This module automatically detects the network interfaces on the processor (LAN, Control subnet, USB network interface) and is able to determine the IP address of those interfaces automatically. Should an address be required that is not any of those three, such as if there is a port forward or NAT in use, than this signal must be used.
Touchpanel.Address	S	Tie IP address feedback signal of the appropriate device extender for the Crestron touchpanel you are using this module for to this signal input. The module will use this address to attempt to match the IP address scheme with the appropriate address of the LAN, control subnet, or USB network interface when generating the full URL on the output of the module for the corresponding input URL stub. If the Processor.Custom.Address signal is used, this signal is ignored. If the user interface does not have a device extender indicating the touchpanel IP address, (such as with an XPanel), then this signal can be left blank (use the // signal), and the processor IP address to use can be specified directly with the Processor.Custom.Address signal.
PreviewUrl.Unformatted[*]	S	These inputs should be tied to the output of the various Preview URL signals on the core Epiphan Pearl module.



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<u>Signal/Function Name</u>	<u>D,S,A</u>	<u>Digital, Serial, Analog signal property definition.</u>
Outputs		
Touchpanel.PreviewUrl.Formatted[*]	S	This list of outputs is the fully formatted URL for the preview image used for that touchpanel, taken from the corresponding PreviewUrl.Unformatted[*] signal. Tie this to the dynamic image object's URL source signal that shows the preview image.



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APPENDIX D: TROUBLESHOOTING

A secure connection to the device is required

An IT group or 3rd party may require all devices on the network for the AV system use encrypted communications. The Epiphan Pearl does support HTTPS connections, by default on port 443, although it can be changed to a different port if desired.

Set the UseHttps parameter on the module to “Yes” or use the UseHttps Input signal to indicate HTTPS connections are to be used by the module. Then ensure the Pearl has been configured to use Https. Navigate to the Security page on the web UI and ensure the “Secure connection” checkbox is checked:

When HTTPS is enabled on the Pearl, the module must be set to use https when connecting. If the HTTPS port used has been changed on this web page, ensure the Port being used by the module to connect on is changed accordingly as well.

Cannot connect to the device

Depending on how the system has been commissioned, there are a few things to check:

1) Is the username and password correct?

Access the Pearl web UI by entering its IP address (or hostname if the network has been setup with an appropriate DNS configuration) in a web browser. The browser will prompt for a username and password – this can allow you to confirm if the username and password are valid. This same username and password can be used with the Epiphan Pearl module.

An admin user is recommended to be input to the module, as all functions are guaranteed to be available.



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2) Is the port and connection mode being used by the module correct?

The module uses HTTP REST requests to communicate with the device. This is, by default, using HTTP port 80, but it is configurable. If it has been changed, the port value used by the module must match the "HTTP Port" or "HTTPS Port" field on the web UI and the "use https" value used by the module must match the state of the "Secure connection (HTTPS)" checkbox, seen on the "Security" page shown in the section above.

3) Is the Pearl able to communicate with the module?

The Connection.Connected signal indicates that regular communication is occurring with the Pearl and the username and password are correct. If you are sure the username, password, and port are set correctly, it is necessary to review if communication is occurring at all between the device and the module.

Enable debugging on the module at a "Verbose" level and view the output using Toolbox or an SSH client. Reviewing the output of the debug messages, especially if the logs are set to "verbose" will indicate quickly if communication is occurring properly between the Epiphan Pearl and the module. Regular operation will see REST requests exchanged between the module and the pearl every few seconds and periodically many times a second.

If many "Error" messages are seen indicating a connection refusal or a timeout, this may indicate an issue with the AV network configuration. Troubleshoot this accordingly.

Once network configuration has been confirmed to not be an issue, if there is still an issue with device communications, please open a Support ticket with Epiphan, and include the debug logs captured, if available.