



By



# Liberty IPEX6000 Arranger Series Crestron Driver

## 1 - Release Notes

**Category:** Distribution System

**Current version:** 2.0.0

**Crestron hardware required:** Any ethernet-enabled series 3/4 processor

**IPEX6000 Arranger Series Software Version :** 4.3.6

**IPEX6000 Arranger Series Control Server :** 3.4.0.1

**IPEX6000 Arranger Series setup:** The switcher should be installed, configured and tested according to Liberty documentation prior to integration with this driver.

## 2 - Introduction

This driver has been designed to provide control of the Liberty IPEX6000 Arranger Series series of Switchers via an IP connection.

NOTE Before setting the driver, please make sure that the Liberty IPEX6000 Arranger Series is correctly setup.

We have provided a simple demo program and Vision tools XPanel design, showing how the product can be used. We'd recommend running this program prior to integrating into your custom site to confirm that the IPEX6000 Arranger Series has been setup and the module can communicate correctly.

## 3 - Driver Installation and Configuration

### 3.1 - Modules Format

The modules have been provided as a Simpl# module (.usp and .ush), embedded within a SimplWindows module (.umc).

A demo file has also been provided in a .smw format to allow for easy copy-and-paste integration into your project, demonstrating the system configuration options: Touch panels have been provided for X-Panels. These are purely for demonstration / evaluation of the module, and are not intended for direct integration into your project.

### 3.2 - SIMPL Windows Configuration

In SIMPL Windows, click **File** > **Open** and navigate to your .smw program file. The module should appear in your **Program View**.

Select **Central Control Module** in the **Program View**, then click the **Configure** button in the toolbar to select the model of your Crestron processor.

To configure the driver, navigate to the .umc files. Refer to section '5' in this document.

## 4 - Device Configuration

Configure your device as per the manufacturer's instructions. This can be found on the Liberty website here: [https://secure.libertycable.com/images/articles/Digi\\_IP\\_6000\\_and\\_Arranger\\_Installation.pdf](https://secure.libertycable.com/images/articles/Digi_IP_6000_and_Arranger_Installation.pdf)

## 5 - Driver Configuration

The Liberty IPEX6000 Arranger Series controller must be configured with an IP address in the same range as the Crestron processor in order for the two to communicate.

In order to map between the physical Liberty IPEX6000 Arranger Series devices and virtual port numbers it is necessary to assign Alias names to the devices.

By conventions these will be 'TX1', 'RX1' etc, designation Input / Output device and port number.

**Out of the box, the Liberty IPEX6000 Arranger Series devices will not have these Alias names configured, so it is necessary to configured these as a first step.**

Note that the name must comply with the following conventions: For Transmitter (input) devices:

TX[number]\_[name] models - IPEX6001 - IPEX6001U-WP - IPEX-USB2-H\*

For Receiver (output) devices: RX[number]\_[name] models - IPEX6002 - IPEX6002U-WP-W - IPEX-USB2-H\*

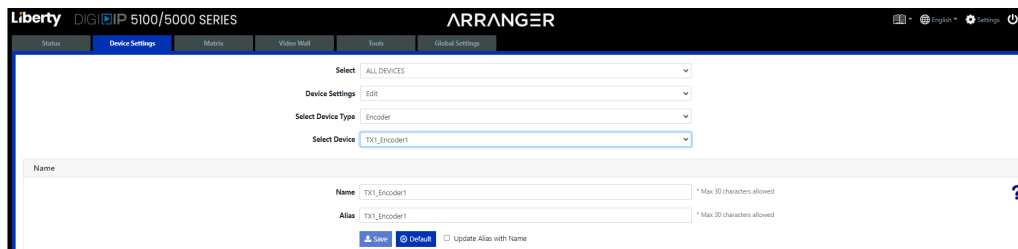
\*Limited functionality.

For Transceiver (output/Input) devices: TX[number]/TXName/\_RX[number]/RXName] the input and output order can be reversed models - IPEX600TC-C

It is important that each name begins with “TX” or “RX”, which is then followed by the input or output number. You must then add a underscore ( ) followed by an appropriate description for the device (note that no spaces are allowed).

To configure the Alias Names go to the Web Interface of IPEX6000 Arranger Series

select the Device settings Tab Select desired device and change both name and alias to the correct format



**IMPORTANT - All TX NUMBER and RX NUMBER must be unique regardless on Model**

- TX1-SOURCE1
- RX1-Display

would be ok but

- TX1-SOURCE1
- TX1-SOURCE2

Would not be ok

## 5.1 - Features

The Crestron driver consists of a Communication.umc which Communicates to the IPEX6000 Arranger Series Control Box. Separate helper modules control switching, Video Wall Presets, Device Configuration, Device Control and passthrough controls. These helper modules are connected via serial signals to the Communication.umc Note you only need to use the helper.umc's that are required for your install

UMC Modules:

SingleSwitch - perform a switch on the index of the output, the analog value will be the requested input. The switch is executed through a change event. This helper can be connected to, Video and Audio(Analog & Digital) switch signals MultiSwitch - this works in a similar way to the SingleSwitch helper but does not executed on change, to perform the switch(s) the synchronise digital signal needs to

be pulsed. this helper allows you to setup many switches before performing an execute. IRSend – functionality to send IR Codes (Pronto and Global Cache formats) to transmitters and receivers. Command will execute on a signal change and is connected to the IR signal in the Communication.umc SerialSend – functionality to send serial commands to the transmitters and receivers. Commands will execute on a signal change and is connected to the Serial signal in the Communication.umc VideoWall - This helper is designed to recall Preset already created on the Liberty IPEX6000 Arranger Series Web interface

## 5.2 - Installation

The driver is designed to treat the Liberty IPEX6000 Arranger Series as a Av Matrix Switch with static inputs and outputs.

Enter the IP of the IPEX6000 Arranger Series device in your parameters. If there is a failure connect, first ensure that your device and the Crestron processor are both connected to the same network. If this does not resolve the issue, consult the manual provided by Liberty.

### 5.2.1 - Comms Driver

#### 5.2.1.1 - Comms Driver Overview

The comms driver communicates with the Liberty IPEX6000 Arranger Series and display the connection status and alias firendly Names.

#### 5.2.1.2 - Module Arguments

The module has a number of configurable parameters to aid in the setup process:

Parameter Name	Description
<b>ip_address</b>	(IP-drivers only) Specify the IP address of the IPEX6000 Arranger Series.
<b>port</b>	(IP-drivers only) Specify the IP port of the IPEX6000 Arranger Series. The default value for this is 23.
<b>poll time</b>	Enter the time (seconds) over which the driver should poll the IPEX6000 Arranger Series. 30d = 30 seconds.

#### 5.2.1.3 - Inputs

Signal Type	Input Name	Description
<b>STRING</b>	<b>Custom_Command</b>	Override to send a custom message directly to the IPEX6000 Arranger Series.

#### 5.2.1.4 - Outputs

Signal Type	Input Name	Description
<b>DIGITAL</b>	<b>CONNECTION_STATE</b>	Feedback on the connection state to the IPEX6000 Arranger Series High = Connected, Low = Disconnected.
<b>STRING</b>	<b>CONNECTION_STATUS</b>	A readable name of the current connection state, eg (Connected, Disconnected)
<b>STRING</b>	<b>CONFIGURATION_STATUS</b>	If the system is configured correctly the output will be the discovered number of input and output devices, however if one of the alias names is configured incorrectly this alias ID will be displayed with a message, this signal it is only meant for installers to help configure the system
<b>STRING</b>	<b>OUTPUTNAME[x]</b>	Displays the friendly name of the output, example - If the alias name is "OUT1_BEDROOM" then "OUTPUT_NAME1" will display BEDROOM.
<b>STRING</b>	<b>INPUTNAME[x]</b>	Displays the friendly name of the input, example - If the alias name is "IN1_DVD" then "INPUT_NAME1" will display DVD.
<b>STRING</b>	<b>ICRON_OUTPUTNAME[x]</b>	Displays the friendly name of the USB extender hosts, example - If the alias name is "REX1_BEDROOM" then "OUTPUT_NAME1" will display BEDROOM.
<b>STRING</b>	<b>ICRON_INPUTNAME[x]</b>	Displays the friendly name of the USB extender Client, example - If the alias name is "LEX1_DVD" then "INPUT_NAME1" will display DVD.

## 5.2.2 - Single Switch

### 5.2.2.1 - Single Switch Driver OverView

This module is designed for single switching, where a user would like to switch an input to an output on one occasion, it's recommended where a user would want to do many switches at the same time that the installer uses the multi switch module instead. Single switch module will take longer for the commands to process.

There is a list of outputs indexed by the output number, the value you add to this index would be the desired input. this module processes commands on change events (which an output values changes that command is performed)

#### 5.2.2.2 - Module Arguments

Parameter Name	Description
<b>Switch Type</b>	There are four types of switches this module can handle, video, audio analogue, audio digital USB, and USB Extender. Make sure separate digital audio switching is selected in the Liberty IPEX6000 Arranger Series web interface under the matrix tabs.

Must sure you use the correct USB switching depending on the type of device.

#### 5.2.2.3 - Inputs

Signal Type	Input Name	Description
<b>ANALOG</b>	<b>OUTPUT[x]</b>	Insert the digital input number for the desired switch to that output

#### 5.2.2.4 - Outputs

Signal Type	Input Name	Description
<b>ANALOG</b>	<b>OUTPUT_STATUS[x]</b>	Provides the current input value for that output

### 5.2.3 - MultiSwitch

#### 5.2.3.1 - MultiSwitch Driver OverView

The MultiSwitch module is designed to perform many switches at the same time. Unlike the single switch module which is performed on a change the MultiSwitch module requires a trigger(digital signal) to be send for the module to synchronise.

#### 5.2.3.2 - Module Arguments

Parameter Name	Description
<b>Switch Type</b>	There are four types of switches this module can handle, video, audio analogue, audio digital, USB and USB_EXTENDER. Make sure separate digital audio switching is selected in the Liberty IPEX6000 Arranger Series web interface under the matrix tabs.

Must sure you use the correct USB switching depending on the type of device.

#### 5.2.3.3 - Inputs

Signal Type	Input Name	Description
<b>DIGITAL</b>	<b>SYNCHRONISE</b>	Once you have set all the desired inputs to their desired outputs pulse the SYNCHRONISE digital signal from the switches to be performed.
<b>ANALOG</b>	<b>OUTPUT[x]</b>	Insert the digital input number for the desired switch to that output

#### 5.2.3.4 - Outputs

Signal Type	Outputs Name	Description
<b>ANALOG</b>	<b>OUTPUT_STATUS[x]</b>	Provides the current input value for that output

### 5.2.3 - ConfigureRX\_CEC

#### 5.2.3.1 - ConfigureRX\_CEC Driver OverView

This module allows CeC commands to pass through the switch to the designated receiver output, the module executes the command on a change signal.

#### 5.2.3.2 - Module Arguments

None

#### 5.2.3.3 - Inputs

Signal Type	Input Name	Description
<b>STRING</b>	<b>CECHEX[x]</b>	Insert the hex for the desired CEC output or input

#### 5.2.3.4 - Outputs

None

### 5.2.4 - HotPlug

#### 5.2.4.1 - HotPlug Driver OverView

This module indicates if a device is online or offline, the Module also indicates if there is a valid signal coming into the HDMI port

#### 5.2.4.2 - Module Arguments

None

#### 5.2.4.3 - Inputs

None

#### 5.2.4.4 - Outputs

Signal Type	Outputs Name	Description
DIGITAL	INPUTDETECT[x]	high = HDMI Signal Detected, Low = No Signal Detected
DIGITAL	OUTPUTDETECT[x]	high = HDMI Signal Detected, Low = No Signal Detected
DIGITAL	INPUTONLINE[x]	high = Device Online, Low = Device Offline
DIGITAL	OUTPUTONLINE[x]	high = Device Online, Low = Device Offline

#### 5.2.4 - IRSend

##### 5.2.5.1 - IRSend Driver OverView

This module allows IR to pass through the switch to the designated receiver or Transmitter, the module executes the command on a change signal.

##### 5.2.5.2 - Module Arguments

None

##### 5.2.5.3 - Inputs

Signal Type	Input Name	Description
STRING	IR_TX[x]	Insert the IR Code for the desired input, Value is the Hex IR Code
STRING	IR_RX[x]	Insert the IR Code for the desired Output, Value is the Hex IR Code

##### 5.2.5.4 - Outputs

None

#### 5.2.5 - LoadPreset

##### 5.2.5.1 - LoadPreset Driver OverView

This module is designed to recall a preset for a video wall or multi view layout. Installers will need to create these presets using the web interface. To recall the preset you will need the preset name you saved, note these names are case sensitive This command is executed through a trigger (Digital signal) event

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##### 5.2.5.2 - Module Arguments



None

#### 5.2.5.3 - Inputs

Signal Type	Input Name	Description
<b>DIGITAL</b>	<b>TRIGGER</b>	Once you have added the correct preset name, pulse this signal to perform the action
<b>STRING</b>	<b>PRESET_NAME</b>	Insert desired preset name

#### 5.2.5.4 - Outputs

None

### 5.2.6 - SerialComms

#### 5.2.6.1 - SerialComms Driver OverView

This module allows Serial to pass through the switch to the designated receiver or Transmitter, the module executes the command on a change signal. You will need to set the serial settings through the web interface as they are unable to be set through the API

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#### 5.2.6.2 - Module Arguments

None

#### 5.2.6.3 - Inputs4

Signal Type	Input Name	Description
<b>STRING</b>	<b>SERIAL_TX[x]</b>	Insert the Serial String for the desired input, Value is the Hex IR Code
<b>STRING</b>	<b>SERIAL_RX[x]</b>	Insert the Serial String for the desired Output, Value is the Hex IR Code

#### 5.2.6.4 - Outputs

Signal Type	Input Name	Description
<b>STRING</b>	<b>SERIAL_TX[x]_RESPONSE</b>	Serial data from the input connected device to the switch
<b>STRING</b>	<b>SERIAL_RX[x]_RESPONSE</b>	Serial data from the output connected device to the switch

## 5.3 - Config Modules

These modules are designed to configure the receivers resolution type when doing switching in the matrix, if these are not set correctly no switching will take place.

The Decoder's output Video Mode can be set from here as either Fast, Sync or Sync (scale). Video Mute status and color can also be set from here. This mute feature is only supported when the Decoder is in a display mode other than Sync (scale). Digital audio mute timeout can also be adjusted if required. This is the amount of time in milliseconds the HDMI audio is muted after a join is made to prevent audio popping. Some displays require longer than others to prevent audible noise during a join. The default is 600 with a range from 0 to 5000. HDMI Output (Decoder)

### 5.3.1 - ConfigFast

#### 5.3.1.1 - ConfigFast Driver OverView

##### 5.3.1.2 - Module Arguments

Signal Type	Input Name	Description
LIST	MODE	Serial data from the input connected device to the switch

##### 5.3.1.3 - Inputs

Signal Type	Input Name	Description
DIGITAL	OUTPUT[x]	Set to 1 to configure for that Receiver.

##### 5.3.1.4 - Outputs

None

### 5.3.2 - ConfigHdmi

#### 5.3.2.1 - ConfigHdmi Driver OverView

website here:

[https://secure.libertycable.com/images/articles/Digi\\_IP\\_6000\\_and\\_Arranger\\_Installation.pdf](https://secure.libertycable.com/images/articles/Digi_IP_6000_and_Arranger_Installation.pdf)

##### 5.3.2.2 - Module Arguments

Signal Type	Input Name	Description
LIST	ASPECT	List of aspect
LIST	FORMAT	List of Formats

##### 5.3.2.3 - Inputs

Signal Type	Input Name	Description
DIGITAL	OUTPUT[x]	Set to 1 to configure for that Receiver.

#### 5.3.2.4 - Outputs

None

### 5.3.3 - ConfigSync

#### 5.3.3.1 - ConfigSync Driver OverView

website here:

[https://secure.libertycable.com/images/articles/Digi\\_IP\\_6000\\_and\\_Arranger\\_Installation.pdf](https://secure.libertycable.com/images/articles/Digi_IP_6000_and_Arranger_Installation.pdf)

#### 5.3.3.2 - Module Arguments

Signal Type	Input Name	Description
LIST	FORMAT	List of Formats

#### 5.3.3.3 - Inputs

Signal Type	Input Name	Description
DIGITAL	OUTPUT[x]	Set to 1 to configure for that Receiver.

#### 5.3.3.4 - Outputs

None

### 5.3.4 - ConfigSyncScale

#### 5.3.4.1 - ConfigSyncScale Driver OverView

#### 5.3.4.2 - Module Arguments

Signal Type	Input Name	Description
LIST	FORMAT	List of Formats

#### 5.3.4.3 - Inputs

Signal Type	Input Name	Description
DIGITAL	OUTPUT[x]	Set to 1 to configure for that Receiver.

#### 5.3.4.4 - Outputs

None

### 5.3.4 - ConfigSyncScale

**5.3.4.1 - ConfigSyncScale Driver OverView**

**5.3.4.2 - Module Arguments**

Signal Type	Input Name	Description
LIST	FORMAT	List of Formats

**5.3.4.3 - Inputs**

Signal Type	Input Name	Description
DIGITAL	OUTPUT[x]	Set to 1 to configure for that Receiver.

**5.3.4.4 - Outputs**

None

**5.3.5 - Reboot**

**5.3.5.1 - ConfigSync Driver OverView**

used to reboot the selected device(s)

**5.3.5.2 - Module Arguments**

None

**5.3.5.3 - Inputs**

Signal Type	Input Name	Description
DIGITAL	REBOOT_ALL_DEVICES	pulse to reboot all devices.
DIGITAL	REBOOT_ALL_OUTPUTS	pulse to reboot all receiver.
DIGITAL	REBOOT_ALL_INPUTS	pulse to reboot all transmitters.
DIGITAL	OUTPUT[x]	pulse to reboot receiver Number.
DIGITAL	INPUT[x]	pulse to reboot transmitters Number.

**5.3.3.4 - Outputs**

None

**5.3.6 - Video Mute**

**5.3.6.1 - ConfigSync Driver OverView**

used to Mute the video the selected output This mute feature is only supported when the Decoder is in a display mode other than Sync

### 5.3.6.2 - Module Arguments

None

### 5.3.6.3 - Inputs

Signal Type	Input Name	Description
<b>DIGITAL</b>	<b>MUTE_ON_[x]</b>	pulse to Mute at receiver Number.
<b>DIGITAL</b>	<b>MUTE_OFF_[x]</b>	pulse to unMute at receiver Number.

### 5.3.6.4 - Outputs

Signal Type	Input Name	Description
<b>DIGITAL</b>	<b>MUTE_IS_ON_[x]</b>	1 = muted 0 = muted at receiver Number.

## 5.3.7 - decoder audio source

### 5.3.7.1 - ConfigSync Driver OverView

The 3.5mm analog audio jack of a Decoder can output analog audio either from the HDMI or Analog sources.To de-embed the HDMI audio select HDMI otherwise the analog audio source of an Encoder will be used.

### 5.3.7.2 - Module Arguments

None

### 5.3.7.3 - Inputs

Signal Type	Input Name	Description
<b>DIGITAL</b>	<b>HDMI_SYNC_MODE[x]</b>	pulse to set to HDMI SYNC at receiver Number.
<b>DIGITAL</b>	<b>HDMI_DOWNMIX_AUDIO[x]</b>	pulse to set to HDMI Downmix at receiver Number.
<b>DIGITAL</b>	<b>HDMI_MULTICHANNEL_AUDIO[x]</b>	pulse to set to HDMI Multi channel at receiver Number.
<b>DIGITAL</b>	<b>ANALOG_STEREO[x]</b>	pulse to set to analog stereo at receiver Number.

### 5.3.7.4 - Outputs

None

## 6 - Troubleshooting

### 6.1 - IP drivers

- Confirm the Ethernet switch used by the Liberty unit is correctly uplinked to the same network as the Crestron processor.
- Confirm that the correct IP address is defined in the Crestron parameters for the IPEX6000 Arranger Series control interface.
- Confirm that correct Port is entered (default is 23).
- Check the Liberty IPEX6000 Arranger Series can be pinged from the control system controller. If the ping fails check your network configuration and cabling.