Liberty

By

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Liberty IPEX5100 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

IPEX5100 Arranger Series Software Version : 4.3.6

IPEX5100 Arranger Series Control Server : 3.4.0.1

IPEX5100 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 IPEX5100 Arranger Series series of Switchers via an IP connection.

NOTE Before setting the driver, please make sure that the Liberty IPEX5100 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 IPEX5100 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/Getting_Started_DigiIP_5000_5100_Series_Arranger.pdf

5 - Driver Configuration

The Liberty IPEX5100 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 IPEX5100 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 IPEX5100 Arranger Series devices will not have these Alias names configured, so it is necessary to configured these as a first step.

By conventions these will be [TX/RX][Virtual Port Number]_[Port Friendly Name]
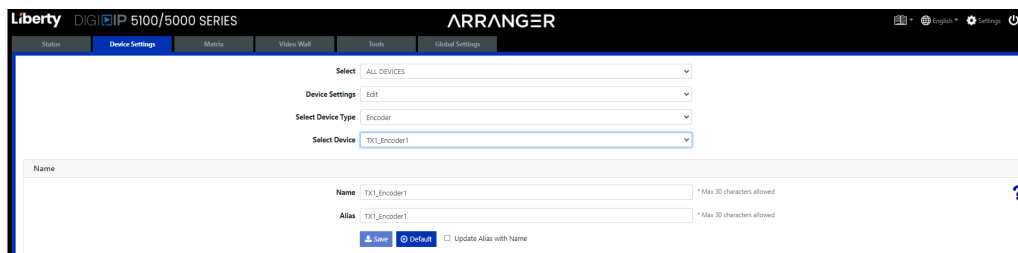
Note that the name must comply with the following conventions: For Transmitter (input) devices: TX[number]_[name] models - IPEX5101 - IPEX5101U-WP - IPEX-USB2-H*

For Receiver (output) devices: RX[number]_[name] models - IPEX5002 - IPEX-USB2-H*

*Limited functionality. 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 IPEX5100 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 IPEX5100 Arranger Series Control Box. Separate helper modules control

- Switching
- Video Wall Presets
- Device Configuation
- Device Control
- passthrough controls

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 IPEX5100 Arranger Series Web interface

5.2 - Installation

The driver is designed to treat the Liberty IPEX5100 Arranger Series as a Av Matrix Switch with static inputs and outputs.

Enter the IP of the IPEX5100 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 commutates with the Liberty IPEX5100 Arranger Series and display the connection status and alias friendly Names.

5.2.1.2 - Module Arguments

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

Parameter Name	Description
ip_address	(IP-drivers only) Specify the IP address of the IPEX5100 Arranger Series.
port	(IP-drivers only) Specify the IP port of the IPEX5100 Arranger Series. The default value for this is 23.
poll time	Enter the time (seconds) over which the driver should poll the IPEX5100 Arranger Series. 30d = 30 seconds.

### 5.2.1.3 - Inputs

Signal Type	Input Name	Description
STRING	**Custom_Command**	Override to send a custom message directly to the IPEX5100 Arranger Series.

5.2.1.4 - Outputs

Signal Type	Input Name	Description
DIGITAL	CONNECTION_STATE	Feedback on the connection state to the IPEX5100 Arranger Series High = Connected, Low = Disconnected.
STRING	CONNECTION_STATUS	A readable name of the current connection state, eg (Connected, Disconnected)
STRING	CONFIGURATION_STATUS	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
STRING	OUTPUT*NAME*[x]	Displays the friendly name of the output, example - If the alias name is "OUT1_BEDROOM" then "OUTPUT_NAME1" will display BEDROOM.
STRING	INPUT*NAME*[x]	Displays the friendly name of the input, example - If the alias name is "IN1_DVD" then "INPUT_NAME1" will display DVD.
STRING	ICRON_OUTPUT*NAME*[x]	Displays the friendly name of the USB extender hosts, example - If the alias name is "REX1_BEDROOM" then "OUTPUT_NAME1" will display BEDROOM.
STRING	ICRON_INPUT*NAME*[x]	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

Figure shows the Matrix Page on the Liberty IPEX5100 Arranger Series Single Switch with affect this option
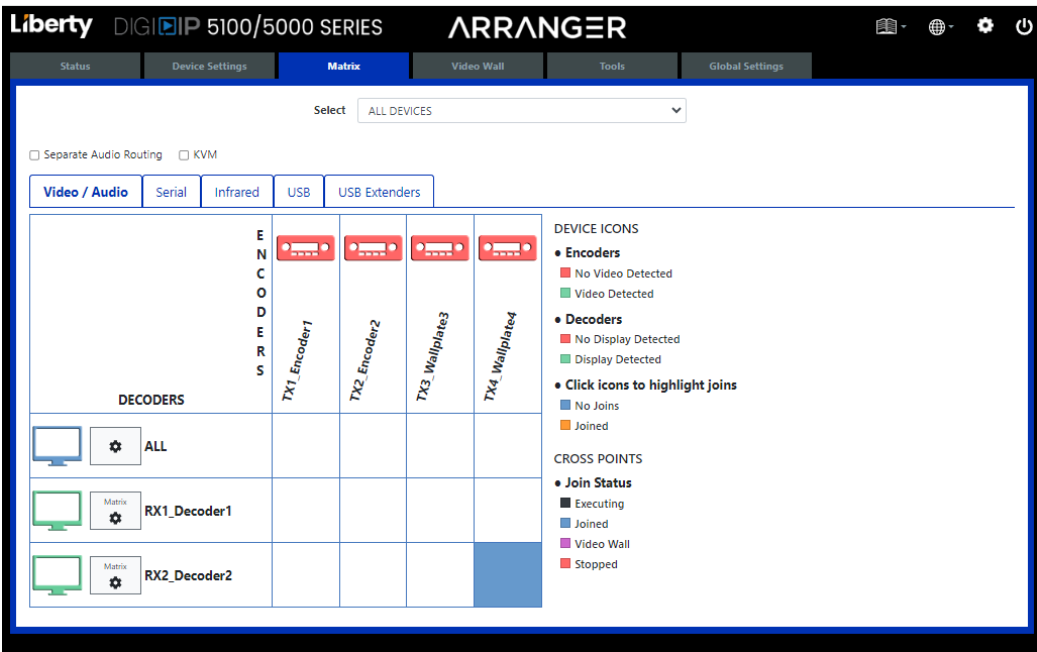
5.2.2.1 - Single Switch Driver OverView

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
Switch Type	There are five types of switches this module can handle, video, audio analogue, audio digital, USB and USB External . Make sure separate digital audio switching is selected in the Liberty IPEX5100 Arranger Series web interface under the matrix tabs.
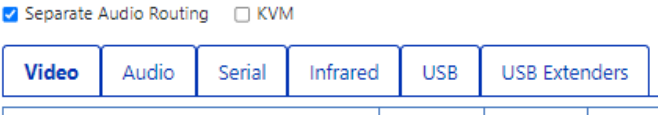
5.2.2.3 - Inputs

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

5.2.2.4 - Outputs

Signal Type	Input Name	Description
ANALOG	**OUTPUT_STATUS[x]**	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
Switch Type	There are four types of switches this module can handle, video, audio analogue, audio digital, USB and USB External. Make sure separate digital audio switching is selected in the Liberty IPEX5100 Arranger Series web interface under the matrix tabs.

5.2.3.3 - Inputs

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

5.2.3.4 - Outputs

Signal Type	Outputs Name	Description
ANALOG	**OUTPUT_STATUS[x]**	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
STRING	**CEC*HEX*[x]**	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	**INPUT*DETECT*[x]**	high = HDMI Signal Detected, Low = No Signal Detected
DIGITAL	**OUTPUT*DETECT*[x]**	high = HDMI Signal Detected, Low = No Signal Detected
DIGITAL	**INPUT*ONLINE*[x]**	high = Device Online, Low = Device Offline
DIGITAL	**OUTPUT*ONLINE*[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

5.2.5.2 - Module Arguments

None

5.2.5.3 - Inputs

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

5.2.6.2 - Module Arguments

Makesure the Serial Setting are set correctly in the 5100 web interface, Makesure Protocol is set to HEX.

5.2.6.3 - Inputs

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

5.2.6.4 - Outputs

Signal Type	Input Name	Description
STRING	**SERIAL_TX[x]_RESPONSE**	Serial data from the input connected device to the switch
STRING	**SERIAL_RX[x]_RESPONSE**	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). Digitial 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 - Resolution

5.3.2.1 - Resolution Driver OverView

website here:
https://secure.libertycable.com/images/articles/Getting_Started_DigiIP_5000_5100_Series_Arranger.pdf

5.3.2.2 - Module Arguments

Signal Type	Input Name	Description
LIST	RESOLUTION	List of aspect

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 - Volume

5.3.3.1 - Volume Driver OverView

The 3.5mm analog audio output jack of a decoder is an output of embedded HDMI audio volume control

5.3.3.2 - Volume Arguments

Signal Type	Input Name	Description
LIST	VOLUME STEP	the number the volume of increase or decrease when a single pulse of the volume is pressed

5.3.3.3 - Inputs

Signal Type	Input Name	Description
DIGITAL	**VOLUME STEP UP[x]**	set volume of the output to a range of 0 to 65555.
DIGITAL	**VOLUME STEP DOWN[x]**	ramp volume increase by **VOLUME STEP**
ANALOG	**VOLUME SET[x]**	ramp volume decrease by **VOLUME STEP**

5.3.3.4 - Outputs

Signal Type	Input Name	Description
ANALOG	**CURRENT VOLUME[x]**	Current volume of the output in range 0 to 65555.
STRING	**NATIVE VOLUME[x]**	Current volume of the output in range 0 to 100.
STRING	**PRESET VOLUME[x]**	Current volume of the output in range 0 to 100.

5.3.4 - Reboot

5.3.4.1 - Driver OverView

used to reboot the selected device(s)

5.3.4.2 - Module Arguments

None

5.3.4.3 - 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.

5.3.4.4 - Outputs

None

5.3.5 - Video Mute

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 ##### 5.3.5.1 - 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	MUTE_ON_[x]	pulse to Mute at receiver Number.
DIGITAL	MUTE_OFF_[x]	pulse to unMute at receiver Number.

5.3.5.4 - Outputs

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

5.3.6 - Encoder audio source

5.3.6.1 - Driver OverView

to configure the 3.5mm analog audio output jack of an encoder. By default the audio output is set to HDMI embedded audio, 2 channel only.

- AUTO - Will automatically switch between the analog audio input on the encoder and the HDMI 2 channel embedded audio.
- HDMI - Sets audio output to HDMI 2 channel embedded audio.
- ANALOG - Sets 3.5mm audio input on encoder as the default output.

5.3.6.2 - Module Arguments

None

5.3.6.3 - Inputs

Signal Type	Input Name	Description
DIGITAL	AUTO[x]	pulse to set to auto at transmitter Number.
DIGITAL	HDMI[x]	pulse to set to HDMI at transmitter Number.
DIGITAL	ANALOG[x]	pulse to set to analog at transmitter Number.

5.3.6.4 - 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 IPEX5100 Arranger Series control interface.

- Confirm that correct Port is entered (default is 23).

- Check the Liberty IPEX5100 Arranger Series can be pinged from the control system controller. If the ping fails check your network configuration and cabling.