AVProEdge MXNet 10G controller

Crestron Driver User Guide

Driver developed by

Contents

GENERAL INFORMATION

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CATEGORY:	Video and Audio Distribution
SUMMARY:	AVPro Edge MXNet 10G is a driver by Janus Technology for configuring and controlling the MXNet AVoIP system from AVPro Edge MXNet provides scalable AVoIP distribution from small to very large (hundreds of sources and displays) systems, whilst also providing a rich feature set including video wall functionality.
GENERAL NOTES:	NOTE Before setting the driver, please make sure that the AvPro Edge MXNet 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 MX Net has been setup and the module can communicate correctly. The Crestron driver consists of a Communication.umc which Communicates to the MXNet Control Box. Separate helper modules control switching, creating and controlling a Video Wall, favourites (saving and recalled switch configuration) 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 Helpers:** **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, Combined, Video and audio switch signals in the Communication.umc **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. **Favourite** - allows you to save and recall part or all of a switch configuration and is connected to the FAVOURITES signal in the Communication.umc **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 **SerialSettings –** functionality to set serial settings on transmitter and receiver. You can set different settings across the transmitters and receivers by having more than one instance of this helper.umc. The settings are sent by pulsing "SEND_SETTINGS". the module is connected to the SERIAL_SETTINGS signal in the Communication.umc **VideoWall -** This helper is designed to create and manage **ONE** video wall (You will need One instance of the helper per wall) and is connected to the FAVOURITES signal in the Communication.umc. **Configure TX Audio Type –** setting the different Audio Types on individual Transmitters, execute on pulse **Configure TX EDID -** setting the different Edid Modes on individual Transmitters, execute on pulse **Configure RX CEC -** For using CEC controls on individual Receivers to control Displays, On and Off are executed on pulse, CEC Hex are executed on the serial changing.

	Configure RX OSD - For Turning OSD **on** and **off** on individual Receivers, On and Off are executed on pulse.
	Configure RX RESOLUTION - For setting the different Resolutions on individual Receivers, execute on pulse
	Display Light - For Turning the front LEDs **On**, **off and flashing** on individual Receivers and Transmitters and are executed.
CRESTRON HARDWARE REQUIRED:	Any Ethernet-enabled processor – need to be a 3 Series or higher
SETUP OF CRESTRON HARDWARE:	Connect the Crestron processor to the same subnet as the MXNet controller.
VENDOR FIRMWARE:	This module has been tested with MXnet, running API version Controller: V2.03 Encoders: V3.33 Decoders: V3.32 / V4.18
VENDOR SETUP:	The MX Net controller must be configured with a static IP address in the same range as the Crestron processor in order for the two to communicate: 1. Choose the Controller Settings tab. 2. Enter the static IP address information into the Connection section, and click Apply. In order to map between the physical MXNet devices, and virtual port numbers it is necessary to assign Alias names to the devices. By conventions these will be 'IN1', 'OUT1' etc, designation Input / Output device and port number. Out of the box, the MXNet devices will not have these Alias names configured, so it is necessary to configured these as a first step. The following Functions are provided in the driver to assist in configuration of the matrix, and made accessible from the supplied test panel: Note that the name must comply with the following conventions: For Transmitter (input) devices: IN[number]-[name] For Receiver (output) devices: OUT[number]-[name] It is important that each name begins with "IN" or "OUT", which is then followed by the input or output number. You must then add a hyphen (-) followed by an appropriate description for the device (note that no spaces are allowed). For example, in the screenshot above, the first input is named IN1-BluRayPlayer.

MODULE DEFINITIONS

Comms Modules

Handles all the requests coming in from the helper.umc and contains useful digital signals to reconfigure the system.

CONTROL (COMMS):		
COMBINED_SWITCH	S	Command received from COMBINED switching module
VIDEO_SWITCH	S	Command received from Single and MultiSwitch module for video
AUDIO_SWITCH	S	Command received from Single and MultiSwitch module for Audio
VIDEO_WALL	S	Command received from VIDEO WALL module
FAVOURITES	S	Command received from FAVOURITES switching module
SERIAL_SETTINGS	S	Command received from SERIAL_SETTINGS module
IR	S	Command received from IR module
CUSTOM_COMMAND	S	Send a custom command to the MXNet
CONFIGURE_TX_DEVICES	S	Command received from **CONFIGURE_TX_DEVICES** module • ConfigureTX_AudioType • ConfigureTX_EDID • Configure_Display_Light
CONFIGURE_RX_DEVICES	S	Command received from **CONFIGURE_RX_DEVICES** module • RX_Resolution • ConfigureRX_OSD • ConfigureRX_CEC • Configure_Display_Light
REDISCOVER_UNITS	D	forces rediscovery of devices
REBOOT_ALL_DEVICES	D	reboots all devices
AUTO_CONFIGURE_ALIASES	D	automatically configures aliases. If any devices already have valid alias names configured, then these will remain unaltered. All other devices will be assigned alias names in ascending sequence, filling in any gaps in the numbering sequence.
CLEAR_ALL_ALIAS	D	resets configuration names to factory default. Note use with caution
STREAM_CONTROL	D	Controls whether Stream On/Off commands are sent when switching. • 0 – (default if not driven) Stream commands are not sent • 1 – Stream commands are sent when switching (Stream Off when Input 0 (Disconnect), Stream On in all other cases)

Partner: AvProEdge
Model: MxNet 10G
Device Type: AV Matrix

PARAMETERS (COMMS):		
IP ADDRESS	S	The IP address of the AVPro Edge MxNet controller.
PORT	INT	TCP Port number Defaults is (24)
POLL_TIME	SEC	Time between status requests, 0 = disable poll

FEEDBACK (COMMS):		
VIDEO_SWITCH_FEEDBACK	S	Message to be fed back into Video switch (helper) module
AUDIO_SWITCH_FEEDBACK	S	Message to be fed back into Audio switch (helper) module
HOT_PLUG_FEEDBACK	S	Message to be fed back into Hot Plug (helper) module
CONNECTED	D	High for Connected to the MXNet, Low for Disconnected
CONNECTION_STATE	S	Connection status description (Connected, Disconnected)
CONFIGURATION_STATUS	S	
[OUTPUT_NAME_x]	S	Alias name of OUTPUT_x minus the prefix Alias "OUT1-LivingRoom TV" will output "LivingRoom TV" on position 1 in the list
[INPUT_NAME_x]	S	Alias name of INPUT_x minus the prefix Alias "IN1-SkyBox" will output "SkyBox" on position 1 in the list

Note: the following Single- and Multi-switching helper modules can be used for video, audio, and combined TX/RX switching:

Partner: AvProEdge
Model: MxNet 10G
Device Type: AV Matrix

SINGLE SWITCH

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, Combined, Video and audio switch signals in the Communication.umc

CONTROL (SINGLE SWITCH):		
RX	S	Consumes COMMS feedback for switch to update statuses
[OUTPUT_x]	A	Assign input value for OUTPUT_x, switch will be performed on change

FEEDBACK (SINGLE SWITCH):		
TX	S	Feeds into [xxx_SWITCH] of COMMS module
[OUTPUT_STATUS_x]	A	Current Input value for the OUTPUT_x. Setting a Input of 0 Turns off the video stream.

MULTI SWITCH

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.

CONTROL (MULTI SWITCH):		
RX	S	Consumes COMMS feedback for switch to update statuses
SYNCHRONISE	D	Executes Outputs changes
[OUTPUT_x]	A	Assign input value for OUTPUT_x

FEEDBACK (MULTI SWITCH):		
TX	S	Command sent to COMMS module
[OUTPUT_STATUS_x]	A	Current Input value for the OUTPUT_x

VIDEO WALL

This helper is designed to create and manage ONE video wall (You will need One instance of the helper per wall) and is connected to the FAVOURITES signal in the Communication.umc.

CONTROL (VIDEO WALL):		
CREATE_VIDEO_WALL	D	Create a video wall using the specified parameters.
REMOVE_VIDEO_WALL	D	Remove all
[INPUT]	A	Specify an input to use as the source for the video wall.
SCREEN X	A	Screen Width, Height - the overall size of the television in mm (e.g. "600,550").
IMAGE X	A	Image Width, Height - the size of the actual screen in mm (e.g. "550,500").
SCREEN Y	A	
IMAGE Y	A	
SET BEZEL GAP SETTINGS	D	Execute the requested Bezel Settings.
LAYOUT	S	Set the layout name to recall. (use RECALL_LAYOUT to recall).
RECALL_LAYOUT	D	Recall the layout selected by name in the LAYOUT signal.
RECALL_MOSAIC_LAYOUT	D	Recall a mosaic layout which has been created on mentor.

PARAMETERS (VIDEO WALL):		
Wall Name	S	Choose a wall name (Name must be Unique)
Wall size	Dropdown	The video wall screen configuration selection from the following options 2x2, x2 (top-row inverted), 3x3
Outputs	S	The outputs that make up the video wall. These can be expressed as comma separated values, as a range, or as a combination of the two (so, for example, "1-4", "1,2,3,4" and "1,2-4" are all the same)

FEEDBACK (VIDEO WALL):		
VIDEOWALL_COMMANDS	S	Feeds into [VIDEOWALL] on COMMS module

SERIAL SETTINGS

functionality to set serial settings on transmitter and receiver. You can set different settings across the transmitters and receivers by having more than one instance of this helper.umc. The settings are sent by pulsing "SEND_SETTINGS". the module is connected to the SERIAL_SETTINGS signal in the Communication.umc

CONTROL (SERIAL SETTING):		
SEND SETTINGS	S	The serial settings to be sent

PARAMETERS (SERIAL SETTING):		
IN_PORT_NUMBERS	S	Transmitters to be set to this configuration these can be expressed as comma separated values, as a range, or as a combination of the two (so, for example, "1-4", "1,2,3,4" and "1,2-4" are all the same)
OUT_PORT_NUMBERS	S	Receives to be set to this configuration these can be expressed as comma separated values, as a range, or as a combination of the two (so, for example, "1-4", "1,2,3,4" and "1,2-4" are all the same)
BAUD_RATE	D	The baud rate
PARITY	D	The type of parity
DATABITS	D	The number of databits

FEEDBACK (SERIAL SETTING):		
SERIAL_SETTINGS	S	Feeds into [SERIAL_SETTINGS] on COMMS module

SERIAL Comms

functionality to send serial commands and receive serial feedback on the transmitters and receivers. You will need to add the COMMS module into your program for this to work, but all intermodule communication is handled internally and the installer will not need to do any connecting.

CONTROL (SERIAL):		
IN[x] to device	S	The serial string to be sent to device from the transmitter matching the prefix alias number
OUTx[x] to device	S	The serial string to be sent to device from the receiver matching the prefix alias number

FEEDBACK (SERIAL):		
IN[x] from device	S	The serial string received from a device coming from the matching transmitter with the prefix alias number
OUTxx[] from device	S	The serial string received from a device coming from the matching receiver with the prefix alias number

SEND IR

functionality to send IR Codes to the transmitters and receivers. Commands will execute on a signal change and is connected to the IR signal in the Communication.umc

CONTROL (IR):		
IR_TX_[x]	S	The IR string to be sent Example of string "0000 0068 0024 0000 0155 00b2 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0042 0015 0043 0015 0043 0015 0043 0015 0043 0015 0043 0015 0043 0015 0043 0016 0042 0016 0016 0016 0042 0016 0016 0015 0043 0016 0016 0015 0043 0016 0016 0016 0016 0015 0043 0016 0016 0016 0042 0015 0017 0015 0043 0016 0016 0015 0043 0016 062c 0156 0058 0016 07c5"
IR_RX_[x]	S	The IR string to be sent Example of string "0000 0068 0024 0000 0155 00b2 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0042 0015 0043 0015 0043 0015 0043 0015 0043 0015 0043 0015 0043 0015 0043 0016 0042 0016 0016 0016 0042 0016 0016 0015 0043 0016 0016 0015 0043 0016 0016 0016 0016 0015 0043 0016 0016 0016 0042 0015 0017 0015 0043 0016 0016 0015 0043 0016 062c 0156 0058 0016 07c5"

FEEDBACK (IR):		
IR_COMMAND	S	Command sent to Comms module

Configure TX AudioType
setting the different Audio Types on individual Transmitters, execute on pulse

CONTROL (Configure TX AudioType):		
HDMI x	D	Set Audio type to HDMI for the Transmitter x when pulsed
ANALOG x	D	Set Audio type to Analog for the Transmitter x when pulsed
AUTO x	D	Set Audio type to Auto for the Transmitter x when pulsed
AUTO 1 x	D	Set Audio type to Auto 1 for the Transmitter x when pulsed
AUTO 2 x	D	Set Audio type to Auto 2 for the Transmitter x when pulsed

FEEDBACK (Configure TX AudioType):		
CONFIGURE_TX_CMD	S	Command sent to Comms module

Configure TX EDID

For setting the different Edid Modes on individual Transmitters, execute on pulse

CONTROL (Configure TX EDID):		
1080P_2CH_x	D	Set EDID to 1080P 2CH for the Transmitter x when pulsed
1080P_6CH_x	D	Set EDID to 1080P 6CH for the Transmitter x when pulsed
1080P_3D_2CH_x	D	Set EDID to 1080P 3D 2CH for the Transmitter x when pulsed
1080P_3D_6CH_x	D	Set EDID to 1080P 3D 6CH for the Transmitter x when pulsed
4k30HZ_3D_2CH_x	D	Set EDID to 4k30HZ 3D 2CH for the Transmitter x when pulsed
4k30HZ_3D_6CH_x	D	Set EDID to 4k30HZ 3D 6CH for the Transmitter x when pulsed
4k30HZ_3D_8CH_x	D	Set EDID to 4k30HZ 3D 8CH for the Transmitter x when pulsed
1080P_2CH_HDR_x	D	Set EDID to 1080P 2CH HDR for the Transmitter x when pulsed
1080P_6CH_HDR_x	D	Set EDID to 1080P 6CH HDR for the Transmitter x when pulsed
1080P_3D_2CH_HDR_x	D	Set EDID to 1080P 3D 2CH HDR for the Transmitter x when pulsed
1080P_3D_6CH_HDR_x	D	Set EDID to 1080P 3D 6CH HDR for the Transmitter x when pulsed
4k30HZ_3D_2CH_HDR_x	D	Set EDID to 4k30HZ 3D 2CH HDR for the Transmitter x when pulsed
4k30HZ_3D_6CH_HDR_x	D	Set EDID to 4k30HZ 3D 6CH_HDR for the Transmitter x when pulsed
4k30HZ_3D_8CH_HDR_x	D	Set EDID to 4k30HZ 3D 8CH HDR for the Transmitter x when pulsed
1920X1200_2D_2CH_HDR_x	D	Set EDID to 1920X1200 2D 2CH HDR for the Transmitter x when pulsed
USER_EDID_x	D	Set EDID to USER EDID for the Transmitter x when pulsed

FEEDBACK (Configure TX EDID):		
CONFIGURE_TX_CMD	S	Command sent to Comms module

Configure TX CEC

For using CEC controls on individual Receivers to control Displays, On and Off are executed on pulse, CEC Hex are executed on the serial changing.

CONTROL (Configure TX CEC):		
TX_CEC_ON_x	D	Turn on display using CEC when pulsed
TX_CEC_OFF_x	D	Turn off display using CEC when pulsed
CEC_HEX_x	S	Send the Hex to the CEC on the TX, example CEC commands have been provided in the demo program.

FEEDBACK (Configure RX CEC):		
CONFIGURE_TX_CMD	S	Command sent to Comms module

Configure RX CEC

For using CEC controls on individual Receivers to control Displays, On and Off are executed on pulse, CEC Hex are executed on the serial changing.

CONTROL (Configure RX CEC):		
RX_CEC_ON_x	D	Turn on display using CEC when pulsed
RX_CEC_OFF_x	D	Turn off display using CEC when pulsed
CEC_HEX_x	S	Send the Hex to the CEC on the RX, example CEC commands have been provided in the demo program.

FEEDBACK (Configure RX CEC):		
CONFIGURE_RX_CMD	S	Command sent to Comms module

Configure RX OSD

For Turning OSD on and off on individual Receivers, On and Off are executed on pulse.

CONTROL (Configure RX OSD):		
RX_OSD_ON_x	D	Turn on OSD when pulsed
RX_OSD_OFF_x	D	Turn off OSD when pulsed

FEEDBACK (Configure RX OSD):		
CONFIGURE_RX_CMD	S	Command sent to Comms module

Configure RX Resolution

For setting the different Resolutions on individual Receivers, execute on pulse

CONTROL (Configure RX Resolution):		
280x720_50FPS_x	D	Set RX Resolution x to 280x720 50FPS when pulsed
280x720_60FPS_x	D	Set RX Resolution x to 280x720 60FPS when pulsed
920x1080_24FPS_x	D	Set RX Resolution x to 920x1080 24FPS when pulsed
920x1080_50FPS_x	D	Set RX Resolution x to 920x1080 50FPS when pulsed
920x1080_60FPS_x	D	Set RX Resolution x to 920x1080 60FPS when pulsed
840x2160_30FPS_x	D	Set RX Resolution x to 840x2160 30FPS when pulsed
PASSTHROUGH_x		Set RX Resolution x to Passthrough when pulsed

FEEDBACK (Configure RX Resolution):		
CONFIGURE_RX_CMD	S	Command sent to Comms module

Configure Display Light

For Turning the front LEDs On, off and flashing on individual Receivers and Transmitters and are executed.

CONTROL (Configure Display Light):		
LIGHT_ON_TX_1	D	normal operation, lights on for Transmitter x
LIGHT_ON_RX_1	D	normal operation, lights on for Receiver x
LIGHT_OFF_TX_1	D	lights off, useful in situations where the light may be visible in a darkened room for Transmitter x
LIGHT_OFF_RX_1	D	lights off, useful in situations where the light may be visible in a darkened room for Receiver x

FEEDBACK (Configure Display Light):		
CONFIGURE_TX_CMD	S	Command sent to Comms module
CONFIGURE_RX_CMD	S	Command sent to Comms module

Configure RX Display Image

Select a image to be displayed on the RX. Values between 0 and 5 are accepted.

CONTROL (Configure RX CEC):		
DISPLAY_IMAGE_x	A	Value of image to be selected

FEEDBACK (Configure RX CEC):		
CONFIGURE_RX_CMD	S	Command sent to Comms module

FAVOURITES

Allows you to save and recall part or all of a switch configuration and is connected to the FAVOURITES signal in the Communication.umc

CONTROL (FAVOURITES):		
Select_All	D	Select all outputs
Clear_All	D	De-select all outputs
[Output_x]	D	A selected output
[Create_Favourite_x]	D	Create a favourite for the outputs selected using SELECT_OUTPUT_x
[Recall_Favourite_x]	D	Recall a configuration for the outputs previously stored as a favourite

FEEDBACK (FAVOURITES):		
FAVOURITE	S	Command sent to Comms module
[Output_Feedback_x]	D	Feedback from selected output

HOT PLUG

Provides detection feedback for each input and output. This helper can be connected to HOT_PLUG_FEEDBACK signal in the Communication.umc

CONTROL (HOT PLUG):		
RX	S	Consumes COMMS feedback to update statuses

FEEDBACK (HOT PLUG):		
[INPUT_DETECT_x]	D	Hot plug status for input
[OUTPUT_DETECT_x]	D	Hot plug status for output