Description

This Crestron module controls IC Realtime Security DVR's and NVR's. It allows control of up to 6 HDMI outputs, RTSP and MJPEG streams, Alarm control, RTSP history playback, and control of up to 32 stream record modes.

Supported Processors

This module may be used with any 3-Series Crestron processor with Ethernet and an active internet connection. 2-Series and older processors are not supported.

Communication setup

This module uses SIMPL# to communicate with the NVR. To setup communications, enter the following information into the appropriate parameters in the module:

- DVR IP Address
- DVR HTTP Port Number – as defined in the NVR menu: SETUP -> NETWORK -> CONNECTION
- Username
- Password
- Dealer Name – Enter your company name. This is for reference only.
- Site Name - Enter your projects site name. This is for reference only.

Parameters

There are a variety of parameters that are setup by default to meet the needs of most NVR's. Your installation may require some modification of the default values for a successful deployment. Please review each parameter for accuracy, and each parameters description is listed below in the Parameters section.

Video Streaming to Touchpanels

Cameras need to be configured for each stream (RTSP or MJPEG). You can view and change each cameras resolution and bandwidth settings in the setup page of the device. Browse to the device, login and press SETUP -> REMOTE DEVICE -> ENCODE. For the best streaming performance on Crestron touchpanels, please review Crestron's Online Help ID 5195 for maximum resolution and frame rate.

For MJPEG streams, the touchpanel must support DIGEST Authentication. At the time of writing this document (12/04/2017) the only known panels that support DIGEST are the TSW-1052, TSW-1060, and Crestron for iPad. Please check with Crestron to ensure the panel you are working with supports DIGEST authentication if you plan to use MJPEG.

Module Activation

This module requires a momentary connection to an activation server. Activation will happen after Enable_module(latch_high) is latched high, and the module has successfully validated the NVR for authenticity. In most cases, once the module has been activated, it will not need to be reactivated. However, certain Crestron recovery procedures may require reactivation, which should occur automatically as long as the processor has internet access.

If your processor is not connected to the internet please contact IC Realtime for assistance.

Advanced Split Views(HDMI Video Output)

The most common split views are included on the module. In some instances, the required split view (single screen, quad, nine channel, etc) may need to be manually recalled. In these cases IC Realtime will provide you with the required Split and Group numbers to manually send to the NVR. To send a provided split video and group, initialize [channel1_advanced_views_split_number] and [channel1_advanced_views_group_number] with the provided information and then pulse [channel1_advanced_views_enter] to set the HDMI output to the desired view.

Inputs, Outputs, and Parameter Descriptions

Digital Inputs

enable_module(latch_high)	Latch this signal high after boot. Please do not use a 1. After latching high, the module will automatically attempt to communicate with the NVR and Activation Server. Upon successful activation, the [module_enabled_fb] output will be high indicating the module is ready to be used.
[stream_hdmi1_view]	Pulse to set the stream URL's to the HDMI1 view. Whatever is shown on the HDMI 1 output, will be rendered in the stream. The settings for the stream can be found in the NVR's menu, SETUP -> SYSTEM -> DISPLAY -> Zero-Channel.
[channelx_single_screen_x]	Pulse to change the desired HDMI outputs view.
[channel1_advanced_views_enter]	Pulse to change the desired HDMI channel's view as defined on [channel1_advanced_views_split_number] and [channel1_advanced_views_group_number].
[ptz_xxx_press]	Pulse or hold high to move the camera as defined by [ptz_camera_number] and [ptz_camera_pan-tilt_speed].
[ptz_zoom_xxx_press]	Pulse or hold high to zoom the camera as defined by [ptz_camera_number] and [ptz_camera_pan-tilt_speed].
[ptz_focus_xxx_press]	Pulse or hold high to focus the camera as defined by [ptz_camera_number] and [ptz_camera_pan-tilt_speed].
[ptz_iris_xxx_press]	Pulse or hold high to open or close the cameras iris as defined by [ptz_camera_number] and [ptz_camera_pan-tilt_speed].
[ptz_preset_store/recall/clear]	Pulse to store/recall/clear the preset as defined by [ptz_preset_number].
[alarm_trigger/release/schedulex]	Pulse to manually trigger the desired alarm.
[rtsp_start_playback]	Pulse to build the RTSP playback URL as defined by the start and stop date analog outputs.
[rtsp_set_start_date_xxx_+/-]	Pulse to increment or decrement the desired date for start playback date and times.
[rtsp_set_stop_date_xxx_+/-]	Pulse to increment or the desired date for stop playback date and times.
[get_camera_record_state]	Pulse to refresh the main and extra record mode states. The module will automatically query upon activation and after changes to inputs.

Analog Inputs

[streaming_camera_number]	Initialize to the desired camera number that the streaming URL should contain. Any change to this input will automatically update the stream URL's
[channelx_advanced_views_split_number]	Initialize to the desired Split View ID. See Advanced Views section above for more detail.
[channelx_advanced_views_group_number]	Initialize to the desired Split View group ID. See Advanced Views section above for more detail.
[ptz_camera_number]	Initialize to the camera to be controlled by [ptz_xxx_press] [ptz_zoom_xxx_press] [ptz_focus_xxx_press] [ptz_iris_xxx_press].
[ptz_camera_pan-tilt_speed]	Initialiaze to the spped at which [ptz_xxx_press] [ptz_zoom_xxx_press] [ptz_focus_xxx_press] [ptz_iris_xxx_press] occur. Valid ranges are 0d-255d however speeds vary by camera.
[preset_number]	Initialize to the preset number you wish to store, recall, or clear as defined by [ptz_camera_number]. Note that presets are contained in the camera and not in the NVR.
[rtsp_playback_camera_number]	Initialize to the desired camera channel to view camera history. Used un conjunction with [rtsp_set_stop_date_xxx_+/-], [rtsp_set_start_date_xxx_+/-], and [rtsp_start_playback].
[camerax_xxx_stream_record_mode_input]	Use to set the record state of a camera. 0d = Auto 1d = manual 2d = stop record. Any change of this input after [module_enabled_fb] is high, will be sent to the DVR, sent to the output of the module, and the module will automatically query the DVR 3 seconds after the last input change for that channels current status. Do not tie the same signal name to the output of the module.

Serial Inputs

No serial inputs are used in this module.

Digital Outputs

[module_enabled_fb]	High when the module has been able to successfully authenticate with the activation server.

Analog Outputs

[rtsp_date_start_xxx]	Analog output indicating the current start date and time for RTSP playback.
[rtsp_date_end_xxx]	Analog output indicating the current end date and time for RTSP playback.
[camerax_xxx_stream_record_mode_fb]	Analog output to indicate the cameras record state. 0d = Auto 1d = manual 2d = stop record. Do not tie same signal name to input of module.

Serial Outputs

[streaming_mjpeg_url$]	String indicating the MJPEG stream url. Typically tied to an embedded video object on touchpanel. Note that the sub stream must be set to MJPEG for MJPEG streaming to work. Used in conjunction with the MJPEG Streaming Port. This is typically 80d unless the HTTP port has been changed in the NVR configuration.
[streaming_rtsp_url$]	String indicating the RTSP stream url. Typically tied to an embedded video object on touchpanel. Used in conjunction with the RTSP subtype parameter, and RTSP Streaming Port parameter. This is typically 554d unless the RTSP port has been changed in the NVR configuration.
[streaming_dynamic_graphic_url$]	String indicating the camera snapshot url. Typically tied to a dynamic graphic object on touchpanel. This is typically 80d unless the HTTP port has been changed in the NVR configuration.
[streaming_wan_mjpeg_url$]	String indicating the WAN MJPEG stream url. Typically tied to an embedded video object on touchpanel. Note that the sub stream must be set to MJPEG for MJPEG streaming to work. Used in conjunction with the WAN MJPEG streaming port parameter.
[streaming_wan_rtsp_url$]	String indicating the WAN RTSP stream url. Typically tied to an embedded video object on touchpanel. Used in conjunction with the WAN RTSP subtype parameter.
[streaming_wan_dynamic_graphic_url$]	String indicating the WAN camera snapshot url. Typically tied to a dynamic graphic object on touchpanel. Used in conjunction with the WAN MJPEG streaming port parameter
[rtsp_playback_url$]	String indicating the playback RTSP stream. Typically tied to an embedded video object on touchpanel.

Parameters

NVR IP Address	Enter in the IP Address or hostname of the NVR.
NVR HTTP Port	Enter the NVR's HTTP port as found in the setup menu of the NVR.
Username	Enter the username of the account used to login to the NVR.
Password	Enter the password of the account used to login to the NVR.
Dealer Name	Enter your company's name. This is only used for activation reference.
Site Name	Enter the projects name. This is only used for activation reference.
Default PTZ Speed	Enter the default PTZ Speed. This is overridden if [ptz_camera_pan-tilt_speed] is initialized.
MJPEG Streaming Port	Enter the MJEPG streaming port. Typically this should be the same as the HTTP Port. Note that the sub stream must be set to MJPEG for MJPEG streaming to work.
RTSP Streaming Port	Enter the RTSP streaming port as found in the setup menu of the NVR.
RTSP Stream Subtype	Set to the stream (Main Stream or Sub Stream) you wish to retrieve video from. Ensure H.264 is enabled in the setup menu of the NVR for the desired channel. From the DVR web page, click SETUP -> Remote Device -> ENCODE to view the settings for each stream. Note that the main stream is type 0 or 00 and the sub stream is type 1 or 01.
Project Hostname	String used to build the hostname in [streaming_wan_mjpeg_url$], [streaming_wan_dynamic_graphic_url$], [streaming_wan_rtsp_url$] Additionally the WAN MJPEG streaming port, and WAN RTSP Streaming Port parameters below should be adjusted for your sites configuration.
WAN MJPEG streaming port	Integer used to build the port number in [streaming_wan_mjpeg_url$], and [streaming_wan_dynamic_graphic_url$]. Enter the WAN port for retrieving an MJPEG stream. Typically this would be the forwarded HTTP port number.
WAN RTSP Streaming Port	Integer used to build the port number in [streaming_wan_rtsp_url$] Enter the WAN port for retrieving an RTSP stream. This would be the forwarded RTSP that you have configured on the customers firewall.
Maximum number of cameras	Enter the maximum number of cameras for the NVR. This calculates the value to allow for the HDMI 1 view to be streamed. NVR8256 does not support the HDMI streaming view.
Use alternate MJPEG url	In some cases it may be necessary to use a legacy MJPEG url. Set to yes to use the legacy URL. Default value is No. [streaming_camera_number] should be initialized using index 1. i.e. you want to view camera channel 1, initialize to 1d.
Use index 0 for MJPEG stream	Set to Yes to camera index 0 for MJPEG streams. Set to No to use index 1. Default value is No. [streaming_camera_number] should be initialized using index 1. i.e. if you want to view camera channel 1, initialize to 1d.
Use index 0 for JPEG snapshot	Set to Yes to camera index 0 for JPEG snapshots. Set to No to use index 1. Default value is No. [streaming_camera_number] should be initialized using index 1. i.e. if you want to view camera channel 1, initialize to 1d.
Use index 0 for RTSP stream	Set to Yes to use camera index 0 for RTSP streams. Set to No to use index 1. Default value is No. [streaming_camera_number] should be initialized using index 1. i.e. if you want to view camera channel 1, initialize to 1d.
Use index 0 for HDMI output	Set to Yes to use HDMI channel index 0. Set to No to use index 1. Default value is No.
Use index 0 for HDMI output camera selections	Set to Yes to use camera index 0 when selecting cameras to view on the HDMI output. Set to No to use index 1. Default value is No..
Use alternate HDMI output split view commands	In some cases it may be necessary to use a legacy split view URL. Set to yes to use the legacy URL. Default value is No.

Use index 0 for PTZ camera selection	Set to Yes to use ptz camera index 0. Set to No to use index 1. Default value is No. [ptz_camera_number] should be initialized using index 1. i.e. you want to control camera channel 1, initialize to 1d.
Use alternate PTZ preset arguments	In some cases it may be necessary to use a legacy PTZ argument URL. Set to yes to use the legacy URL. Default value is No.
Use alternate PTZ speed arguments	In some cases it may be necessary to use a legacy PTZ speed argument URL. Set to yes to use the legacy URL. Default value is No.
Use index 0 for RTSP playback camera selection	Set to Yes to use camera index 0 for RTSP playback streams. Set to No to use index 1. Default value is No. [rtsp_playback_camera_number] should be initialized using index 1. i.e. if you want to view camera channel 1, initialize to 1d.

Testing Environment

CP3	v1.601.3935.27221
MC4	v2.4454.17318
TSW-1050	v1.501.0013
TSW-1052	v1.003.0020
TSW-1060	v1.002.0016
Crestron for iPad	V1.05.28
HVAR 16 Channel	3.210.KL05.0, Build Date: 08.25.2017
SIMPL Windows	4.14.20
Device Database	200.00.015.00
Crestron Database	200.00.004.00

Distribution Contents

ICRealtime_Demo_v4.0.smw	Demonstration Program
ICRealtime_v4.0.umc	Main User Module
ICRealtime_Engine_v4.0.usp	SIMPL+ for use inside main module
ICRealtime_Engine_v4.0.ush	SIMPL+ header file, for use inside main module
ICRealtimeEngine.clz	SIMPL# module for use in SIMPL+ module
ICRealtime_v4.0_Demo_TSW-1060.vtp	Demonstration TSW-1060 file
ICRealtime_DVR_v4.0_Demo_iPad.vtp	Demonstration Crestron App file
ICRealtime Module Help 4.0.pdf	This Help File

Revision History

[V4.0] 08-12-2020
-rewrite engine in SIMPL#.
-update to RTSP urls to have the credentials in the format of http://user:pass@...
-supports DIGEST Authentication and Basic Authentication.
-Module not affected by database 200 release.

[V3.2] 04-29-2020
-Updates to include 4 Series systems in system selection.
-Fix for 4 Series.

[V3.1] 04-06-2018
-resolved issue where module would stop sending commands if a command was sent while DVR was unreachable

[V3.0] 10-06-2017
-New command processor with DIGEST authentication. AUTH Basic not supported.

-New TCP/IP command queue engine.
-Added a number of parameters and updated defaults for most current API operation.
-Improved activation processor.
-Removed serial control.
-Updated module signal names.
-Removed support for legacy touchpanel streaming as legacy panels do not support DIGEST authentication
-Updated parameter names, set defaults to current builds of firmware moving forward.
-Added a number of debugging items to help with troubleshooting.

[V2.2] 4-20-2015
-Bug fixes for PTZ control
-Added support for Legacy Spilt View Commands. NVR's running software newer then S/W version 3.210 and Build date of 12-4-2015 use new commands. Older units use legacy commands.
-Added split and group inputs for uncommon video output split views.

[V2.1] 9-11-2015
-Removed Video output number
-Added digitals for all six video outputs.
-Reorganized TCP command groups on UMC.
-Added zero channel (streaming split view).
-Added record controls for both streams of 32 cameras.
-Added manual polling of current record state of 32 camera streams (main and sub).
-Added parameter to use Legacy PTZ commands.
-Added parameter for Maximum number of cameras for zero channel steam.
-Added parameter for legacy single screen views (used when cameras are offset by 1).
-Added parameter for legacy video output index (used when video outputs are offset by 1).

[V2.0] 6-24-2015
-added video output number
-added manual authentication method.

[v1.9] – 10-30-2014
-TCP commands now get sent into queue to help with saturated networks.
-added parameter for legacy TCP commands.
-SIMPL+ improvements
-fix for playback dates recalling the incorrect date
-Added queue count output
-Added clear queue digital input

[v1.8]
-Fix for authentication state during reboot or program reset.

[v1.7] – 4-7-2014
-More robust module authentication processor
-Fixed serial presets

[v1.6] – 10-17-2013

-Exposed HTTP port number as a parameter.
-Resolved issue with serial PTZ commands not sending the correct string.
-Fixed Serial PTZ speed commands.
-PTZ speed commands support 1-255
-Changes to automatic serial login.
-Module now watches for last serial PTZ mode and sends the appropriate string after login.
-Changes to demo program to reflect serial login.
-Changes to demo touchpanel.
-Changes to documentation.

[v1.5] – 10-15-2013
Internal Version

[v1.4] – 9-21-2013
-Changed parsing of DVR network information

[v1.3] - 9-13-2013
-Changes to Auth process
-Added TCP split mode screen controls
-Changed and added inputs for serial PTZ.

[V1.2] – 9-1-2013
-Added serial login processor and module now has a digital output and prompts when a user is logged in. If the output is high you must locally log out of the DVR. There are no commands to log the user out.

[V1.1] – 8-15-2013
- Changes to Auth process

[V1] – 4-23-2013
- Release candidate