

How-to Note: Integration Overview

[This note applies to all integration approved IC Realtime equipment including recorders and cameras]

[27-Jan-16]



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Materials needed



RS-232 Null Modem Cable



Cat5/6 cable



Laptop w/ a RS-232 port & a
RJ-45 NIC port



VGA/HDMI monitor



IC Realtime
DVR / NVR / IPC / IP PTZ



Home automation system

Overview

IC Realtime offers several approaches to home automation integration including control over RS-232 and IR as well as video streaming and control over IP.

Control over RS-232, IR, and IP allow for PTZ control over PTZ cameras attached HDMI/VGA outputs. Most equipment will allow control over the video outputs independent from each other, but not all.

IC Realtime's basic integration approach for streaming video is to go direct to the image source when possible. In analog systems, direct to the digital video recorder (DVR). In IP systems, direct to the cameras. This means we will not utilize any onboard POE switches on the network video recorder (NVR), the IP cameras (IPCs) will be directly on the network.

For proper integration, a minimum firmware version is required. This will ensure that the most recent commands are built-in.

For RS-232 & IR:

IC Realtime digital video recorders (DVRs) will need a minimum firmware version of ... or newer depending on the recorders model.

IC Realtime network video recorders (NVRs) will need a minimum firmware version of ... or newer depending on the recorders model.

For IP control and video streaming:

IC Realtime fixed IP cameras will need a minimum firmware build date of Feb. 2015 or newer depending on the camera model.

IC Realtime IP PTZ cameras will need a minimum firmware build date of Sept. 2014 or newer depending on the camera model.

IC Realtime network video recorders (NVRs) will need a minimum firmware version of ... or newer depending on the recorders model.

Control over RS-232

Step 1:

Physical Connections

1a: Connect your Display Output from the DVR to your Display Input or video switching device.

1b: Connect the RS-232 port of your DVR to the RS-232 port of your automation system controller with an RS-232 null modem cable.



RS-232 null modem cable

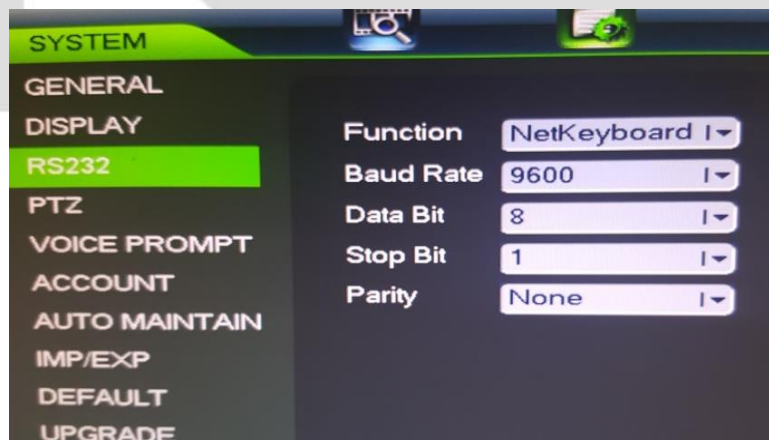
Step 2:

DVR Configuration

2a: Begin by logging into the recorder. With your mouse, left click once and you will be prompted to login. The default username and password is 'admin/admin'

2b: Once logged in to the DVR, navigate from the Main Menu -> Settings -> RS-232. You should see a menu as below.

2c: From the 'Function' pulldown at the top, choose the protocol titled 'NetKeyboard'. Specify your baudrate as '9600', Data Bits as '8', Stop Bits as '1', and Parity as 'None'. Click 'Save' to confirm your settings.



The RS-232 Menu of the Recorder

Control over RS-232 troubleshooting

The following is a test procedure to isolate the unit and test the commands directly. This will help determine if an issue is caused by the unit or the programming.

Step 1:

Physical Connections

1a: Connect your Display Output from the DVR to your Display Input or video switching device.

1b: Connect the RS-232 port of your DVR to the RS-232 port of your laptop with an RS-232 null modem cable.

Step 2:

DVR/NVR Configuration

2a: Begin by logging into the recorder. With your mouse, left click once and you will be prompted to login. The default username and password is 'admin/admin'

2b: Once logged in to the DVR, navigate from the Main Menu -> Settings -> RS-232. You should see a menu as below.

2c: From the 'Function' pulldown at the top, choose the protocol titled 'NetKeyboard'. Specify your baudrate as '9600', Data Bits as '8', Stop Bits as '1', and Parity as 'None'. Click 'Save' to confirm your settings.

Step 3:

Set the display to a quad view and log out of the unit (Right click => log out => log out menu user)

Step 4:

Install and launch a RS-232 monitor/terminal software like Accessport. Confirm the software settings are correct for your com port and at a baud rate of 9600.

Step 5:

Send the login command.

Login
0x90 0x08 0xfe 0x01 0x0f 0x02 0x00 0xa8

Step 6:

Test basic control of the unit.

The easiest test is to change the monitor view.

Single Screen 2:
the attached monitor should change from a quad view to a single screen view on camera #2

0x90 0x08 0x33 0x01 0x02 0x02 0x00 0xd0

Single Screen 1:
the attached monitor should change from a quad view to a single screen view on camera #1

0x90 0x08 0x33 0x01 0x01 0x02 0x00 0xcf

Step 7: Test PTZ control commands.

Enter PTZ mode

Begin P/T Mode

*This string requires an up and down keystroke

0x90	0x08	0x21	0x01	0x01	0x02	0x00	0xbd
0x90	0x08	0x21	0x00	0x01	0x02	0x00	0xbc

Take control of a camera

Cam

*This string requires only a down keystroke.

Camera #1 Example

0x90	0x08	0x36	0x01	0x01*	0x00	0x00	0xd0
------	------	------	------	-------	------	------	------

Up

*Speed 30 Example

0x90	0x08	0x0a	0x01	0x30*	0x00	0x00	0xd3*
------	------	------	------	-------	------	------	-------

Exit PTZ mode.

End P/T Mode

*This string requires an up and down keystroke

0x90	0x08	0x21	0x01	0x00	0x02	0x00	0xbc
0x90	0x08	0x21	0x00	0x00	0x02	0x00	0xbb

Confirm we still have normal control.

Single Screen 2

0x90	0x08	0x33	0x01	0x02	0x02	0x00	0xd0
------	------	------	------	------	------	------	------

Single Screen 1

0x90	0x08	0x33	0x01	0x01	0x02	0x00	0xcf
------	------	------	------	------	------	------	------

Step 8: Send the log out command.

Logout

0x90	0x08	0xff	0x01	0x0f	0x02	0x00	0xa9
------	------	------	------	------	------	------	------

If you experience any issues during this procedure, confirm that you are using a null modem cable and that the unit's settings are correct. If you are still experiencing issues, please contact technical support.

Control over IP

Control over IP does not require any additional setup. Just confirm that the desired control is available at the unit.

For HDMI/VGA control over recorders, the additional monitor outputs may need to be enabled in the recorder's display menu.

Recorders display menu & PTZ settings menu



Example 1 of a Recorders Display Menu



Example 2 of a Recorders Display Menu and PTZ Menu

Control over IP troubleshooting

Monitor output test string

Replace the IP address and send the command from a browser. This string is for VGA or HDMI 1 outputs to display a single view camera 1. The channel= portion identifies the video output, mode= specifies the split view, and group= specifies the corresponding camera group.

<http://192.168.1.199/cgi-bin/split.cgi?action=setMode&channel=0&mode=split1&group=0>

This string is for VGA/HDMI 1 outputs to display a 16 view with group 1 (cams 17-32).

<http://192.168.1.199/cgi-bin/split.cgi?action=setMode&channel=0&mode=split16&group=1>

PTZ control test string

Replace the IP address and send the command from a browser. This string is for channel 0 which is camera 1. Replace the channel with the correct PTZ channel. Arg1=5 is the speed setting.

Left start – You should see the PTZ start to move left.

<http://192.168.1.199/cgi-bin/ptz.cgi?action=start&channel=0&code=Left&arg1=5&arg2=0&arg3=0>

Left stop – You should see the PTZ stop moving left.

<http://192.168.1.199/cgi-bin/ptz.cgi?action=stop&channel=0&code=Left&arg1=5&arg2=0&arg3=0>

Additional testing

Confirm the IP and port numbers, confirm the channel number.
Default the unit, power cycle and test again.

If you are still experiencing issues, please contact technical support

Streaming video over IP

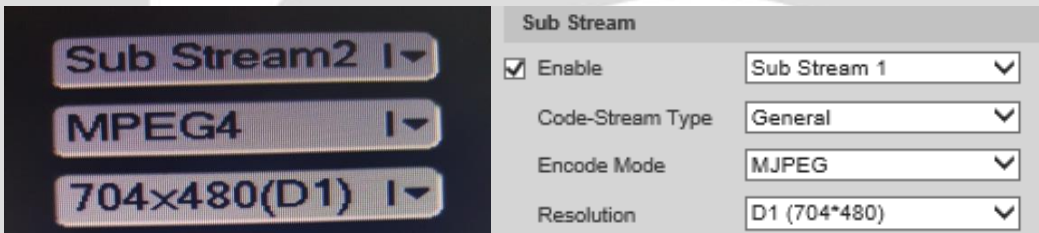
First the home automation system requirements need to be considered. Either H.264 or MJPG are available from the IC Realtime equipment. As of this writing, some home automation companies are able to use H.264, but most home automation systems still utilize MJPG streams.

For MJPG setup:

The firmware needs to be at the minimum required version to function correctly.

We configure the camera to use H.264 on the main stream for recording to the recorder (DVR/NVR/Software).

The 2nd stream (or extra stream) is configured to MJPG around D1 5fps 2MB streams, for the automation systems.



Left: Extra Stream settings at the recorder, Right: Extra stream settings via the web GUI

For H.264 setup:

H.264 over IP does not require any additional setup. Both streams are default on H.264. The desired resolution needs to be set in the devices encode menu.

Streaming video over IP troubleshooting

For MJPG setup

We can use the following command to test the device feed.

http://ip_add:http_port/cgi-bin/snapshot.cgi

http://ip_add:http_port/cgi-bin/mjpg/video.cgi?subtype=1

The subtype= is the stream 0 for main 1 for extra

If the main stream changes to MJPG, the firmware needs to be updated.

Ex. <http://192.168.1.199:80/cgi-bin/snapshot.cgi>

OR <http://192.168.1.199/cgi-bin/snapshot.cgi>

For H.264 setup

We can use the following command to test the device feed. Change the IP address and test the string with something like VLC.

Change the IP address and port to match the camera.

Main Stream

`rtsp://192.168.1.85:554/cam/realmonitor?channel=1&subtype=0`

With credentials included

`rtsp://admin:admin@192.168.1.85:554/cam/realmonitor?channel=1&subtype=0`

Extra Stream

`rtsp://192.168.1.85:554/cam/realmonitor?channel=1&subtype=1`

The subtype= is the stream 0 for main 1 for extra

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