IV-CAMFR-12-N-SLVR-1B and IV-CAMFR-12-SLVR-1B

1 Beyond AutoFramer™ Group Framing Camera, 12x Optical Zoom

Product Manual

Crestron Electronics, Inc.

The original language version of this document is U.S. English.
All other languages are a translation of the original document.

Contents

Overview

1 Beyond intelligent video technology brings an essential video conferencing solution into the Crestron® ecosystem. Enabling the best video experience for both in-room and remote attendees is vital to hybrid work and ensuring productive and effective collaboration. Technologies such as speaker tracking, group framing, and presenter tracking ensure that every person can be seen, no matter where they are, and provide the best view for the remote attendees.

> **NOTE:** The IV-CAMFR-12-N-SLVR-1B and IV-CAMFR-12-SLVR-1B are functionally similar. For simplicity within this documentation, 1 Beyond AutoFramer camera is used except where otherwise noted.

The 1 Beyond AutoFramer camera automatically frames all of the participants in the room and is ideal for small to medium sized conference rooms.

Features

Refer to the following sections for more information on the features provided by the 1 Beyond AutoFramer Camera.

Key features include:

- Automatically frames all meeting participants
- Optimizes the video frame as participants enter and exit the room
- Compatible with popular conferencing platforms such as Microsoft Teams® and Zoom Rooms™ software
- Connects directly to a codec or recording/streaming device with no external computer required
- High quality video supporting resolutions up to 1080p60
- Suitable for small to medium sized conference rooms
- Optional manual control for standard PTZ camera functionality
- Compatible with Automate™ multicamera systems
- Single Ethernet connection provides power (PoE+), monitoring, control, and NDI®|HX compatible video (NDI|HX is only supported on the IV-CAMFR-12-N-SLVR-1B.)

Automatic Optimal Framing

Autoframing technology eliminates the limitations of presets or the need to adjust the camera by automatically detecting and framing all meeting participants in the room. The 1 Beyond AutoFramer camera automatically adjusts as participants enter or leave the room and uses optimal framing to eliminate empty space when a room is not full.

Conferencing Compatibility

Optimize video conferencing, recording, or streaming by using the 1 Beyond AutoFramer camera camera with Microsoft Teams®, Zoom Rooms™, Cisco WebEx®, MediaSite®, or Panopto®. The camera includes 3G-SDI, DVI, and USB 3.0 video outputs for use with popular video conferencing codecs and capture appliances. The IV-CAMFR-12-N-SLVR-1B also supports NDI|HX video output.

High Quality Video

A high quality Sony Exmor® CMOS sensor enables the camera to output up to 1080p60 resolution video. The 1 Beyond AutoFramer camera works well in low light and in front of bright screens.

Flexible with a Variety of Room Sizes

The 1 Beyond AutoFramer camera is ideal for small to medium conference rooms with an optimal distance of 5 to 25 ft (2 to 8 m) between camera and subject. A wide field of view (72.5°) and 12x optical zoom also accommodate various room sizes.

Networked Power, Stream, and Control

Connect a single Ethernet cable to power (PoE+), monitor, set up, and control the 1 Beyond AutoFramer camera. The camera accepts standard VISCA commands or use a Crestron® control system. 1 Beyond Camera Manager Software is included for easy configuration from a computer on the network.

Optional Manual Control

With autoframing turned off, the camera operates like a standard PTZ camera and is controllable via USB, Serial, or IP.

Multicamera Capability with Automate Systems

Add the 1 Beyond AutoFramer camera to an Automate multicamera system. Automate can be set to autoswitch between multiple 1 Beyond cameras to focus on the active speaking participant. Incorporate popular microphones and DSPs to switch between the presenter and audience.

NDI|HX for High Quality Network Video

NDI|HX supports efficient and flexible IP configuration with other networked NDI-enabled devices. NDI|HX allows for easy installation and scalability with a single network pull. (NDI|HX is only supported on the IV-CAMFR-12-N-SLVR-1B.)

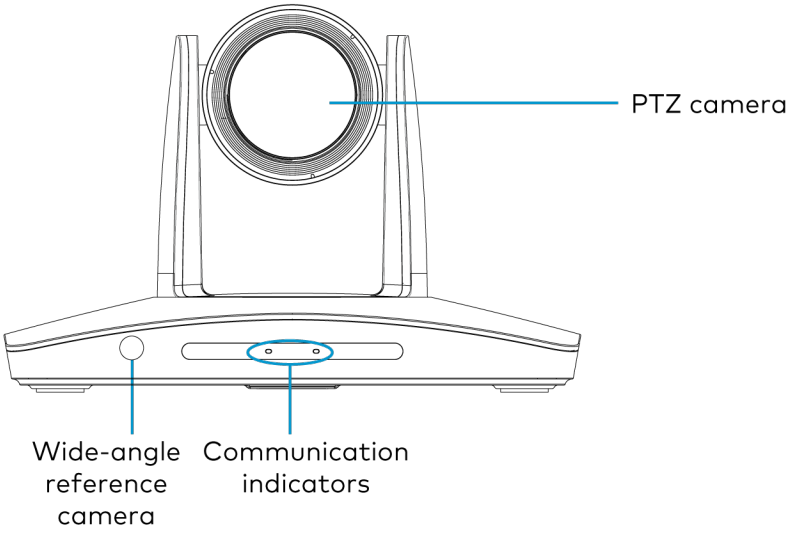
Mounting Options

Standard mounting holes make it easy to mount the camera to a wall mount (included).

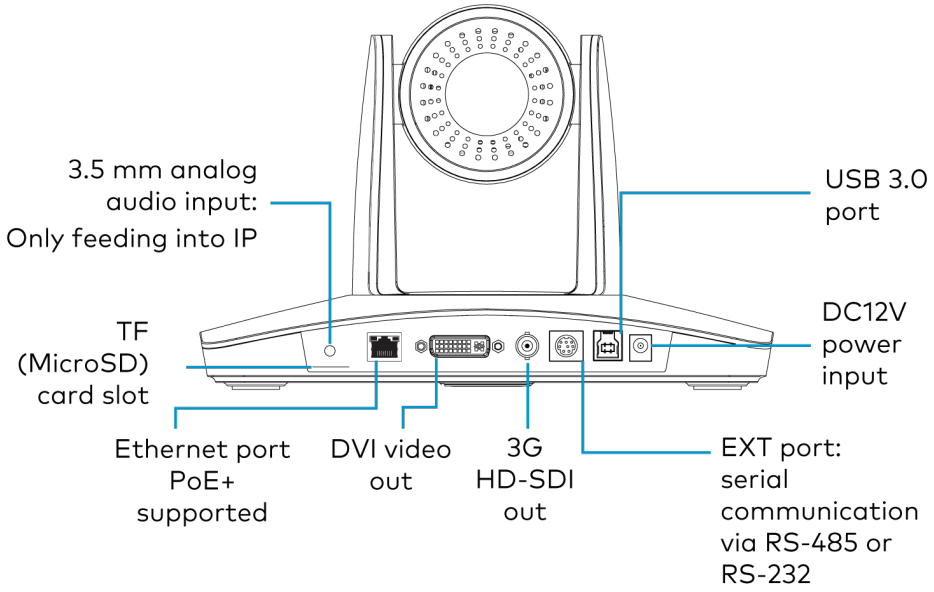
Physical Description

The camera provides the following connectors and indicators.

Front

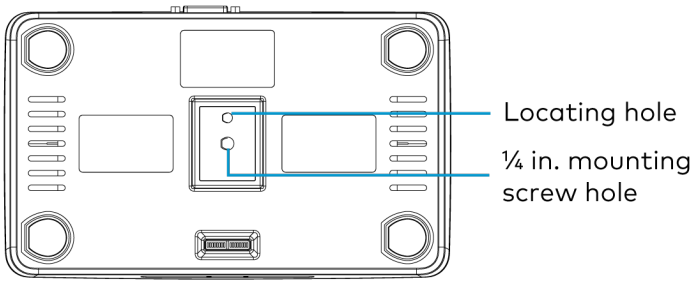


Rear



CAUTION: Do not remove the MicroSD card.

Bottom



1 Beyond Camera Manager Software

The 1 Beyond Camera Manager software is a central hub for configuring, monitoring, and controlling 1 Beyond IP cameras. The software enables 1 Beyond AutoFramer camera configuration and simultaneous monitoring of up to 4 video streams.

The 1 Beyond Camera Manager software provides the following features for the 1 Beyond AutoFramer camera.

- Discover 1 Beyond cameras on the network
- Upgrade camera firmware
- Modify camera network settings
- Modify camera RTMP (Real-Time Messaging Protocol) settings
- Set authentication credentials for the camera
- Modify general settings, such as the camera name
- Set a secondary connection to the camera from a control device (such as a touch screen)
- View up to 4 camera video streams (close-up or panorama) simultaneously
- Use the PTZ Lens controls to adjust the camera's pan, tilt, zoom, focus, and iris levels
- Create, recall, and delete camera presets
- Use the OSD (on-screen display) menu to adjust advanced settings
- Start and stop tracking for the camera
- Define tracking and blocking zones and adjust tracking parameters for the camera

CAUTION: The 1 Beyond Camera Manager software enables changing of critical camera settings that impact the camera's functionality and effectiveness. Ensure that all procedures in this document are followed carefully for optimal camera performance.

Specifications

Product specifications for the 1 Beyond AutoFramer Camera.

Optics and Processing

Image Sensor	1/2.8 in. Sony Exmor CMOS, 2.14MP
Recommended Range	5-25 ft from subject, 4-6 ft from ground
Focal Lens & Iris	Tracking Camera: f=3.9-46.8 mm, F1.6 - F2.8; Wide-Angle Camera: f=2.4 mm
Field of View	Tracking Camera: 72.5° - 6.3° Wide-Angle Camera: Horizontal 86° , Vertical 52°
Focus System	Tracking Camera: Auto, Manual, PTZ Push, One Push Wide-Angle Camera: Fixed
Minimum Illumination	0.5 Lux (30FPS)
Shutter Speed	1/1 - 1/10,000 sec
Gain	Tracking Camera: Auto, Manual Wide-Angle Camera: Auto
White Balance	Tracking Camera: Auto, Indoor, Outdoor, One Push, Manual Wide-Angle Camera: Auto
Exposure	Tracking Camera: Auto, Manual, Shutter Priority, Iris Priority, Brightness Priority Wide-Angle Camera: Auto
Number of Presets	Up to 256
Serial Control	RS-485, RS-232 (VISCA, PELCO-D), USB 3.0
IP Control Protocol	HTTP, RTP, TCP, UDP, ONVIF

Pan, Tilt, Zoom

Tilt/Pan Angle	Tracking Camera: Tilt: 30° - 90°, Pan: 170° - 170°; Wide-Angle Camera: N/A
Tilt/Pan Speed	Tracking Camera: Tilt: 0.1° - 90° /s, Pan: 0.1° - 120° /s; Wide-Angle Camera: N/A
Zoom	Tracking Camera: 12X Optical, 12X Digital; Wide-Angle Camera: N/A

Connectivity

Ethernet	RJ-45, 100Mb

Video

Signal Formats (HD)	1080p60/50/30/25, 1080i60/50, 720p60/50
IP Video Compression	H.264 (Dual stream)
Streaming	RTSP, RTMP

Streaming Resolution	Up to 1080p60, User-selectable framesize/framerate/bitrate

Audio

IP Audio Compression	AAC

Power

Power	12VDC, <30 W, PoE+
PoE+ Rating	25.5 W

> **NOTE:** To comply with the European Directive (CE), shielded CAT5e cable must be used as a minimum for PoE power.

Environmental

Temperature	32° to 104°F (0° to 40°C)

Construction

Mounting	1/4 in. threaded mount hole for 90° Wall Mount
Color	Silver
S/N	≥50dB

Dimensions

Dimensions	9.6 in. x 8.3 in. x 6.4 in. (244 mm x 211 mm x 163 mm)

Weight

2.64 lb (1.2 kg)

Note:

1. The IV-CAMFR-12-N-SLVR-1B and IV-CAMFR-12-SLVR-1B cameras include integrated circuits produced by HiSilicon (part numbers HI3516ARBCV100 and HI3516ARFCV200), a subsidiary of Huawei Technologies Company.

Installation

Use the following procedures to install the 1 Beyond AutoFramer camera.

NOTES: Observe the following points.

- Check the source power before powering on the camera. The AutoFramer can be powered via a 30 W PoE+ switch or with 12VDC. Under or overpowering the camera will cause damage and poor performance that may not be immediately visible. If using PoE+ switch, be sure the port is properly configured for 30 W. If using DC power and connecting to a network switch, be sure the port is not set for PoE.
- Do not power the camera with PoE+ and a power supply at the same time. Doing so may cause it to malfunction.
- Do not operate the camera beyond the specified temperature and humidity limits. Operating range of the camera is between 32°F - 104°F (0°C -40°C). Ambient humidity should be less than 95%RH.
- Do not remove any screws from the camera. There are no user-serviceable parts inside. Contact Crestron True Blue Support if the camera is damaged or malfunctioning.
- Do not aim the camera lens at the sun or extremely bright lights. Doing so can cause damage to the image sensor.
- Do not move the camera head manually. Doing so can cause damage to the camera and inner gear systems. Do not carry the camera by the head; always handle the camera by the base.
- Do not directly expose the camera to rain, water, or high moisture.
- This camera is for indoor use only.

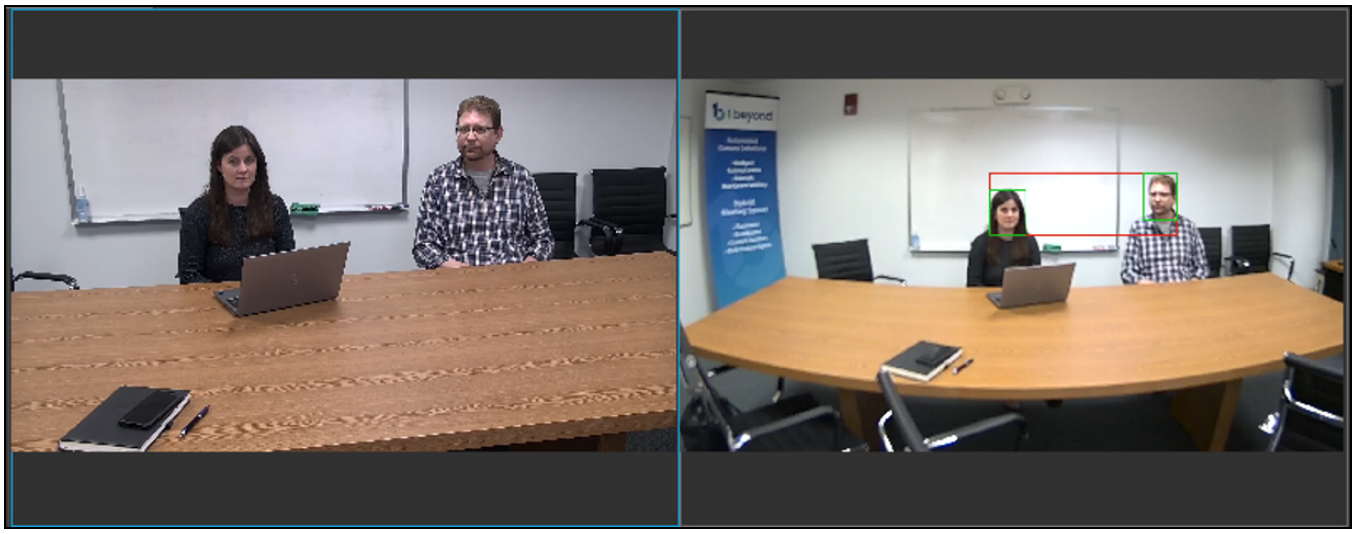
In the Box

Qty.	Description
1	IV-CAMFR-12-SLVR-1B, 1 Beyond AutoFramer Intelligent Camera, 12x Optical Zoom or IV-CAMFR-12-N-SLVR-1B, 1 Beyond AutoFramer Intelligent Camera, 12x Optical Zoom, NDI®|HX Driver Capable
	Additional Items
1	IR remote control
1	12VDC power adapter

Qty.	Description
1	RS-232 cable adapter
1	USB 3.0 cable
1	1 Beyond wall mount bracket, IVA-WMT-BRKT-1B
4	Mounting screws
4	Drywall anchors, plastic
1	Allen key, 4 mm
2	Washers, metal
2	Tripod-style screws, 1/4-20 UNC (ISO 1222:2010)

Mounting

Mount the camera to a tabletop or wall. The ideal framing range for the camera is 5 ft (2 m) to 25 ft (8 m) away from the people to be framed and 4 ft (1 m) to 6 ft (1.8 m) above the ground. Ensure the camera is mounted upright, leveled, and centered on the framing area. To ensure reliable framing, make sure the wide-angle camera has an unobstructed line of sight to participant faces.

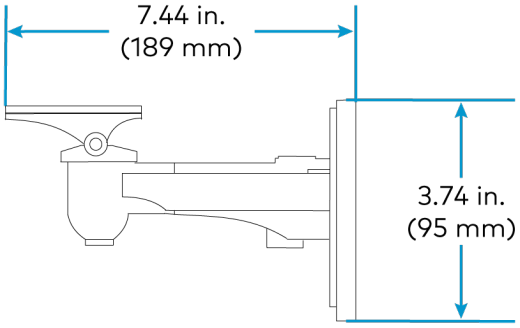


Mount to a Table

Place the camera on a flat and level surface. If the camera needs to be placed on an inclined surface, verify that the incline is no greater than 15° to ensure proper pan and tilt accuracy and to prevent the camera from falling.

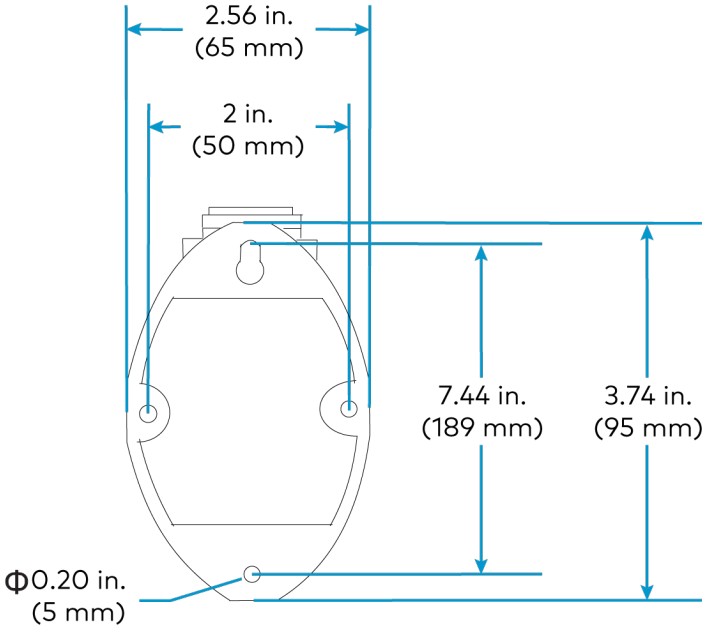
Mount to a Wall

Use the 1 Beyond Wall Mount Bracket to mount the camera below or next to a display used for video conferencing.



To mount the camera to a wall:

1. Following the diameter and position of the four installation holes on the bracket, drill four holes on the wall.
2. Use the included anchors, washers, and mounting screws to attach the bracket to the wall.
3. Use the included tripod-style screw to attach the camera on the wall mount.
4. Use the included Allen key to adjust the tilt function of the wall bracket.



CAUTION: Do not invert the camera.

Wiring

Network Connection

For the initial setup, a network connection with a minimum CAT5 Ethernet cable will be required. The camera can be connected to a router, a network switch, or directly to a host computer for configuration.

If powering the camera using PoE+ from a network switch, no further cabling is required for setup. However, it is recommended to use the 3G-SDI or USB 3.0 output for connecting to a conferencing or recording system to achieve the best possible video quality. For more information on compatible SDI to HDMI to USB converters, refer to Online Help 1001364.

Video Output

The SDI output provides a digital, uncompressed video feed at up to 1080p60. Using a 3G-SDI rated coax cable, connect the camera to a compatible capture device or reference monitor. SDI can also be converted to other display formats.

USB 3.0

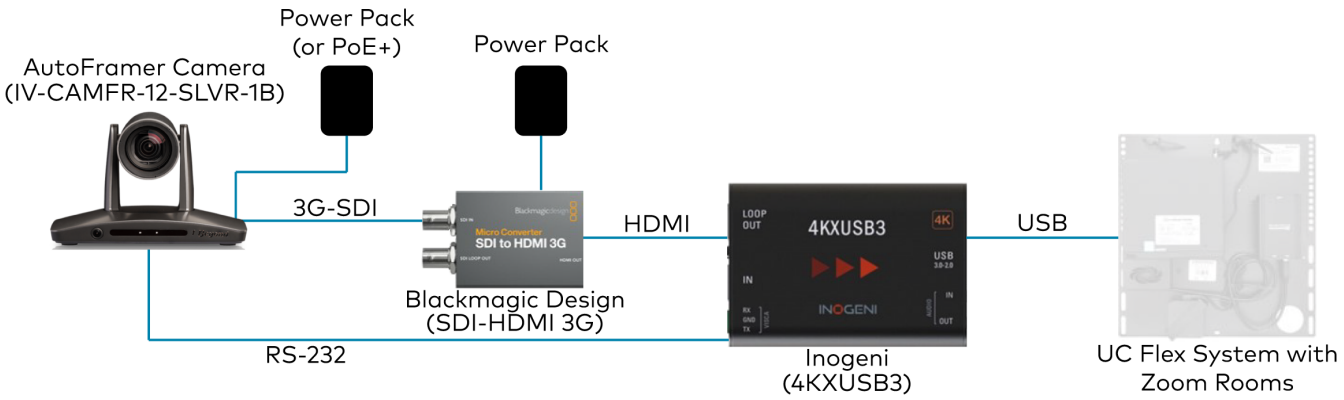
If desired, connect the camera to a computer using the included USB 3.0 cable. It will be detected by your operating system and become selectable in all applications supporting USB cameras.

> **NOTE:** This camera will not work properly when connected to a USB 2.0 port on your computer.

Zoom Rooms Installation

The 1 Beyond AutoFramer camera is compatible with Zoom Rooms® software. To utilize Zoom Rooms capabilities, the following items are required:

- 1 Beyond AutoFramer camera (IV-CAMFR-12-N-SLVR-1B or IV-CAMFR-12-SLVR-1B)
- RS-232 cable (included with the camera)
- 3G-SDI cable
- HDMI® cable (CBL-8K-HD-1.5)
- Inogeni™ 4KXUSB3 converter (includes Inogeni terminal block)
    - Firmware version 1.54 or higher. To update the firmware on the Inogeni 4KXUSB3 converter, refer to Inogeni's website.
- Blackmagic Design® Micro Converter SDI to HDMI 3G
- 1 Beyond AutoFramer camera firmware version 2.0.47. For more information on updating the firmware of the camera, refer to Upgrade Tab on page 31
- Zoom Rooms software firmware version 5.13 or higher. To update the firmware for Zoom Rooms software, refer to Zoom's website.



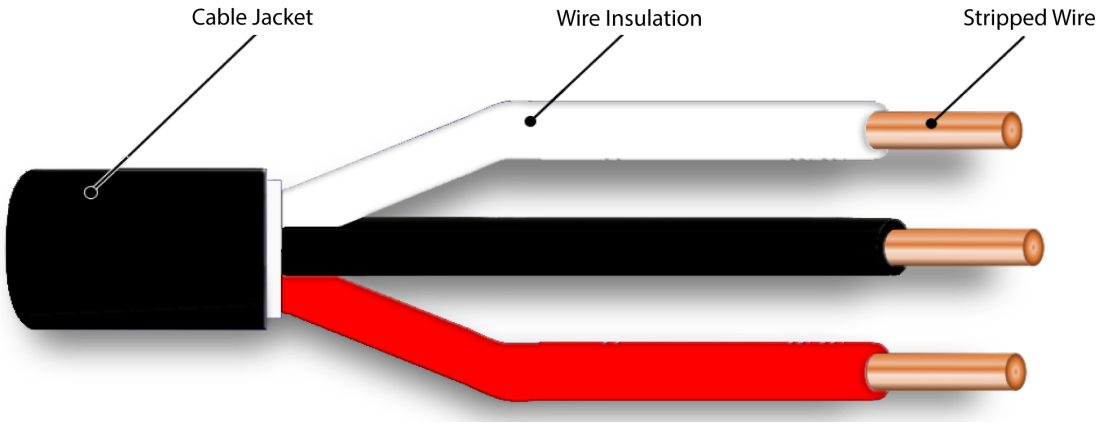
Complete the following procedure to connect the camera to a Zoom Rooms control system:

1. Set the resolution of the camera to 1080p, and the frame rate to 30. For more information about changing the resolution and frame rate of the camera, refer to Basic 1 Tab on page 45.
2. Connect the RS-232 mini-DIN (male) connector to the **RS-232** port located on the rear side of the camera.

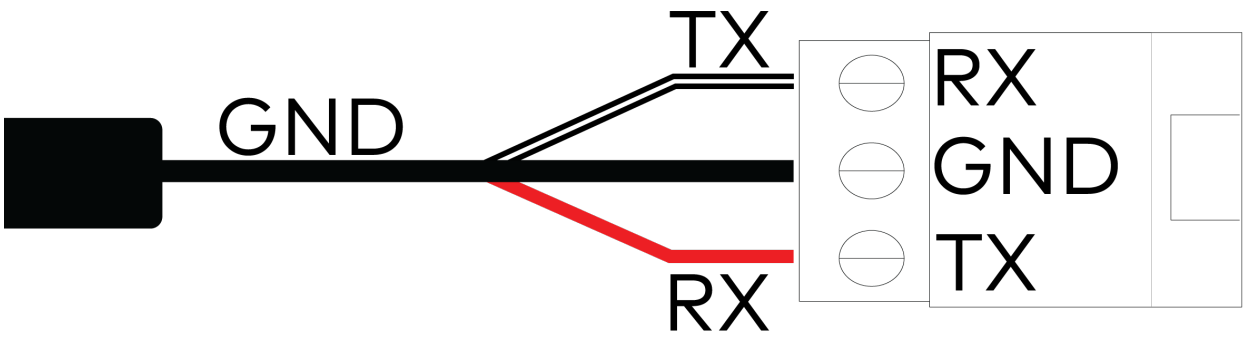
3. Use wire strippers to remove the other end of the RS-232 DB9 cable. Then, strip the RS-232 cable insulation to expose the three wires inside. The colored cables correspond to the following connections:
    - TX: White sleeved wire

      > **NOTE**: In some circumstances, the RS-232 DB9 cable will have a blue sleeved wire instead of the white sleeved wire. For the purposes of this procedure, the blue sleeved wire is identical to the white sleeved wire.

    - RX: Red sleeved wire
    - Ground: Black sleeved wire



4. Connect the TX (white sleeve) wire to the RX terminal on the Inogeni terminal block.
5. Connect the Ground (black sleeve) wire to the GND terminal on the Inogeni terminal block.
6. Connect the RX (red sleeve) wire to the TX terminal on the Inogeni terminal block.



7. Insert the Inogeni terminal block into the **VISCA** port on the Inogeni 4KXUSB3 converter.
8. Connect the 3G-SDI cable from the camera into the **SDI IN** port on the Blackmagic Design SDI to HDMI 3G converter.

> **NOTE**: Do not use the HDMI cable to cover long wiring distances. The 3G-SDI cable provides the best video output over long wiring distances.

9. Connect the HDMI cable from the Blackmagic Design Micro Converter SDI to HDMI 3G **HDMI OUT** port to the **HDMI INPUT** port on the Inogeni 4KXUSB3 converter.
10. Connect the USB 3.0 type-B cable to the Inogeni 4KXUSB3 **USB 3.0-2.0** port. Connect the USB 3.0 type-A end of the cable into the UC-Engine or other compatible Zoom Rooms system.

    > **NOTE:** Ensure that the camera and the Blackmagic Design Micro Converter SDI to HDMI 3G are receiving power as specified by the product requirements.

11. Select **Inogeni 4KXUSB3** as the camera source in Zoom Rooms.

The 1 Beyond AutoFramer camera will now have full compatibility with Zoom Rooms software.

1 Beyond Camera Manager System Requirements

Ensure the host computer running the 1 Beyond Camera Manager software meets the following system requirements.

- Windows® 10 OS or later
- Dual-core processor
- 4GB (or greater) memory
- 1GB (or greater) storage
- Ethernet or Wi-Fi™ Network connection to the local network

1 Beyond Camera Manager Initial Setup

Use the following procedures to set up the 1 Beyond Camera Manager software on a computer.

Install the Software

To install the 1 Beyond Camera Manager software:

> **NOTE:** Ensure the software is installed onto a computer that meets or exceeds the specifications described in 1 Beyond Camera Manager System Requirements on page 21.

1. Download the 1 Beyond Camera Manager installation package from www.crestron.com/Support/Resource-Library or from the 1 Beyond camera product pages on Crestron.com
2. Open the installer executable file and follow all prompts to install the software.

Configuration

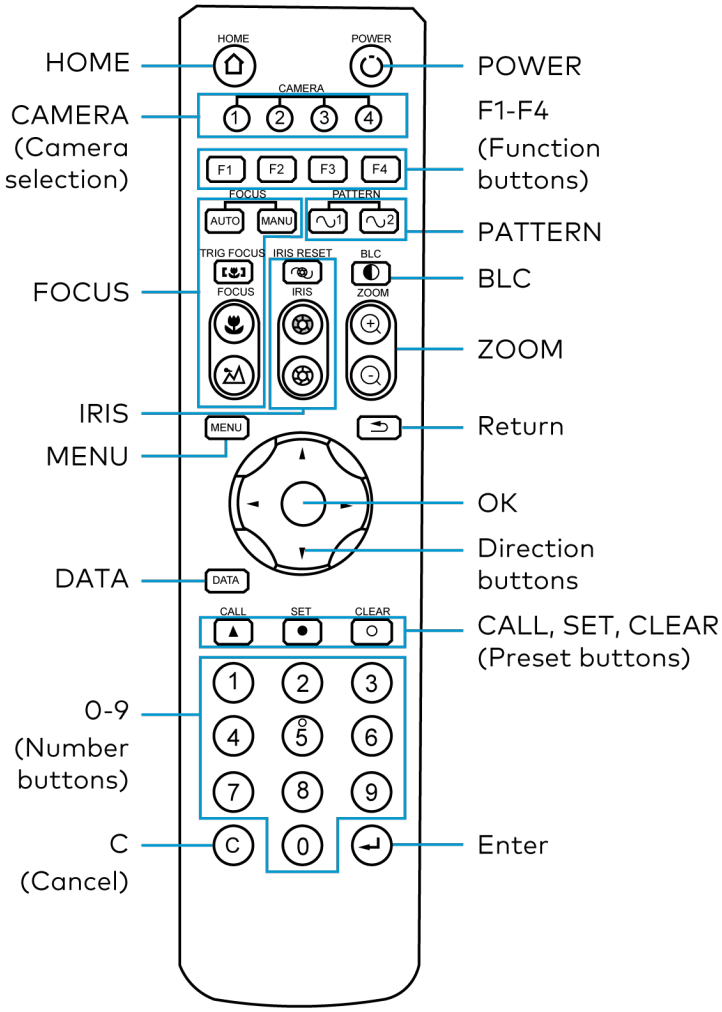
A one-time configuration is required to tailor the tracking parameters to your environment. Once configured, the camera will work autonomously, and the software will not be required for operation.

This section provides the following information:

- IR Remote Control
- 1 Beyond Camera Manager Software Configuration
- VISCA Commands

IR Remote Control

Use the IR remote to control the camera when tracking is turned off.

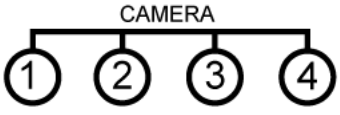


Home

Press ⌂ to move the camera back to the home position where pan, tilt, and zoom are at 0.

Camera Selection

Select one of four PTZ cameras (the 1 Beyond AutoFramer camera and three additional PTZ cameras (not included)) to control. The selected camera number lights when pressing any button.



Focus

- Press AUTO to switch to Auto Focus.
- Press MANU to switch to Manual Focus.
- Press to focus close.
- Press to focus far.
- Press to engage Auto Focus. Triggers Auto Focus until a preset is called. Auto Focus can also be triggered by activating Zoom.

Iris

- Press to reset the iris to default.
- Press to open the iris (brighten).
- Press to close the iris (darken).

Menu

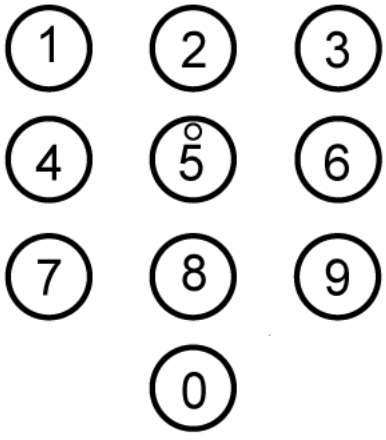
Press MENU to enter/exit OSD menu

Data

Press DATA to enable/disable display of pan, tilt, or zoom values.

0-9 (Number Buttons)

Input numbers for calling /storing presets.



C (Cancel)

Press C to cancel a number input or to return to the previous OSD menu

Power

Press ⏻ to put the camera into or out of standby mode.

F1-F4 (Function Buttons)

- **F1** enables Tracking.
- **F2** disables Tracking.
- **F3** and **F4** reserved for future use.

Pattern

Activates pattern 1 and/or 2.

- 1 Pattern-1 pans the camera 45° left & right.
- 2 Pattern-2 pans the camera 90° left & right.
  (Scanning uses the current zoom and tilt position.)

BLC

Press to ◐ activate/deactivate Backlight Compensation, which helps to properly expose subjects in front of a bright projection screen or window.

Zoom

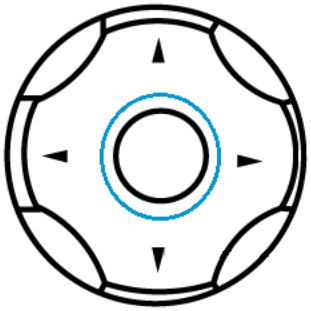
- Press ⊕ to zoom in.
- Press ⊖ to zoom out.

Return

Press to ⮌ return to the previous page of the OSD menu.

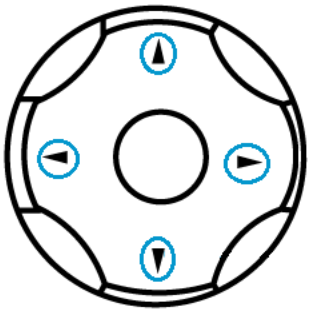
Ok

Press to confirm the menu selection.



Direction Buttons

Press to control pan or tilt operation or navigate the OSD menu.



Call, Set, Clear (Preset Buttons)

Press CALL, SET, or CLEAR following a number input to call, store, or erase a preset.

Examples:

- 95 + CALL calls preset 95.
- 75 + SET stores the current camera position as preset 75.
- 15 + CLEAR will delete preset 15.

Enter

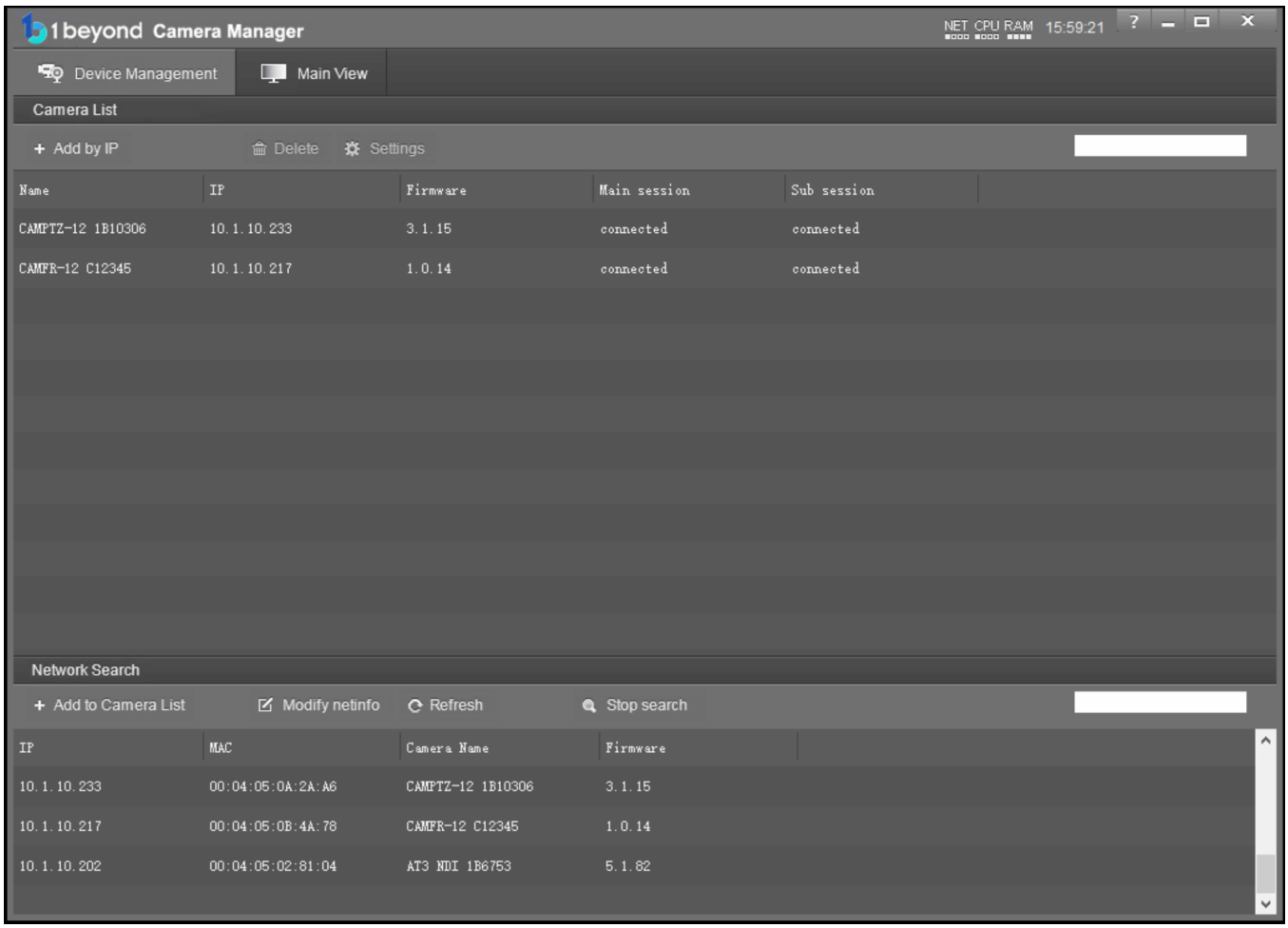
Press ↵ to confirm the menu selection.

1 Beyond Camera Manager Software Configuration

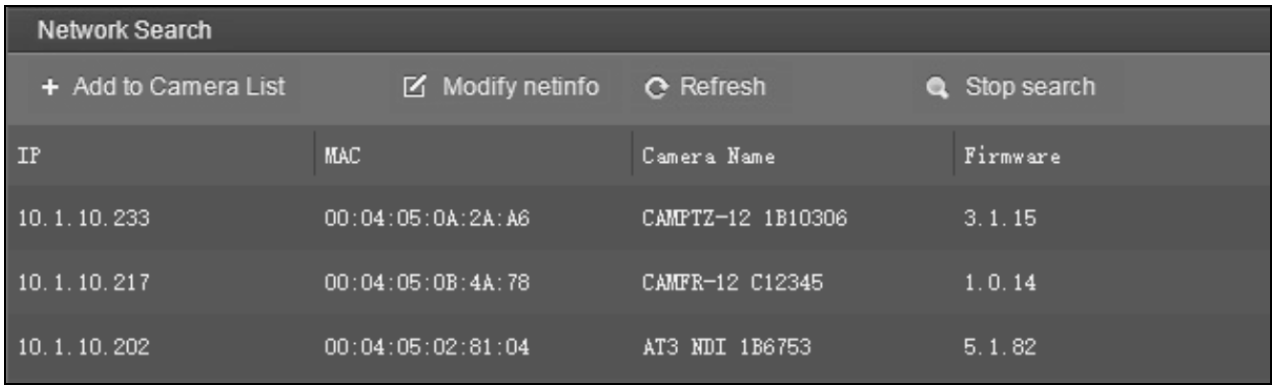
The 1 Beyond Camera Manager software is the central hub for configuring, monitoring, and controlling 1 Beyond IP cameras. It allows monitoring of up to four video streams simultaneously and lets you configure the latest 1 Beyond cameras.

Add to Camera List

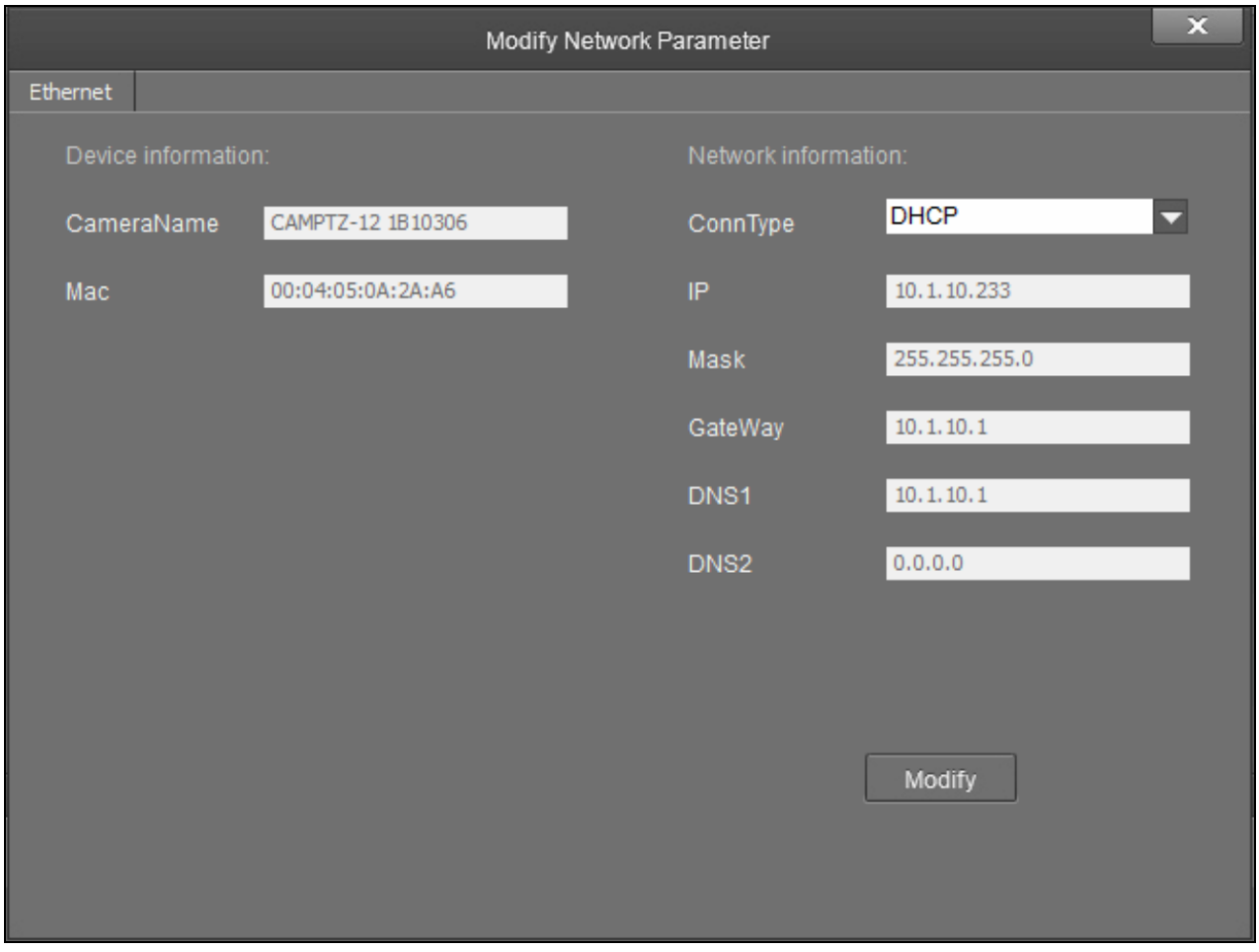
Once 1 Beyond Camera Manager software is installed on the host computer and the camera is connected to the network or directly via Ethernet, launch the software to start configuring the camera. Use the **Device Management** tab of the software to add the camera to the Camera List.



1. Click **Start Search** to start scanning the network for 1 Beyond cameras. The camera appears with its IP address, MAC Address, camera name (for example, CAMFR-12 and serial number), and firmware version displayed.



2. To change the camera's network settings to match your network's information, click **Modify netinfo** which will bring up the network settings panel.



3. Under **Network information**, confirm that the **ConnType** (Connection Type) is correct for how the camera is connected. Set it to either Static IP or DHCP.

   By default, the camera ships with the static IP address *192.168.18.77* and a subnet mask of *255.255.255.0*

   > **NOTES**:
   >
   > - If an Ethernet cable is connected directly to the computer running the 1 Beyond Camera Manager software, the computer's network port will need to be set to an address on the same subnet (for example, 192.168.18.78) in order to communicate with the camera.
   > - If the camera is connected to a network switch, the camera's IP address needs to be changed to DHCP or to a static address within the same subnet as the computer running the software.
   > - If the camera is set to **DHCP** for **ConnType**, it will receive its IP address dynamically from a network router. This option does not work when the camera is connected directly to the host computer for configuration.
   > - If the installation requires a different static address (for example, The IP address of the camera needs to be modified to match the subnet of the computer), enter the IP, Mask and Gateway info and then click **Modify**.

4. After modifying the IP address, click **Refresh** to update the camera list.
5. Select the camera and click **Add to Camera List**. The **Add** panel appears where you can verify that the camera's network settings are correct. By default, 1 Beyond cameras do not require any administrator credentials to be controlled. Once added, the camera will appear in your camera list.

View the Connection Status

When the 1 Beyond Camera manager software connects to a camera, the camera shows as connected in the **Main session** and **Sub session** columns. These columns indicate the camera's main and substreams connection status for IP (RTSP) video.

> **NOTE:** When the chosen camera is set to match your IP address, its status will read connected for both columns.

The following connection status messages can be shown for a camera:

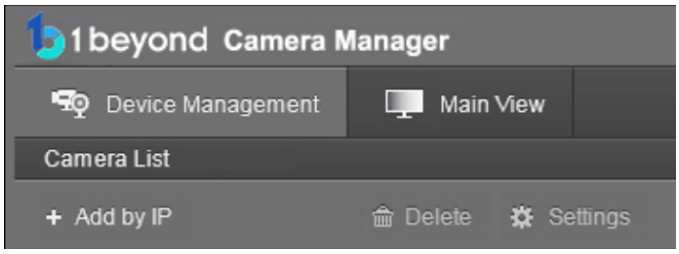
- **Connected**: The 1 Beyond Camera Manager software has received RTSP video streams from the camera and has connected to the camera.
- **Connection Failed**: The 1 Beyond Camera Manager software discovered the camera on the network, but video streams cannot be received. The camera is likely connected to a different subnet from the host computer.
- **Disconnected**: The camera is not currently accessible on the network.

> **NOTE:** When a camera is first connected to the network, it can take up to 30 seconds after powering the camera on for it to be discovered by the 1 Beyond Camera Manager software. This is because the camera performs a diagnostic routine prior to activating the video encoder.

Configure Camera Settings

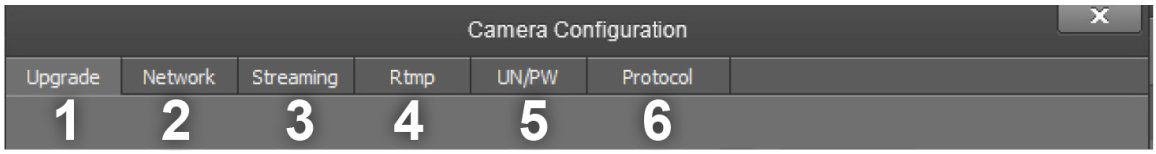
Once a camera has been added to the 1 Beyond Camera Manager software as described in Device Management, select **Settings** to configure general settings for the camera.

Camera Manager - Settings Button



Selecting **Settings** opens the **Camera Configuration** dialog box, which provides access to many of the camera's system settings.

Camera Configuration Dialog Box



The numbers in the preceding image correlate with the following functions.

1. **Upgrade**: Select this tab to upgrade the firmware on the camera.
2. **Network**: Select this tab to change the camera's network settings (similar to the **Modify Netinfo** function in the **Device Management** tab).
3. **Streaming**: Select this tab to customize the camera's IP video streams. The bit rate and encoding level of each stream can be adjusted manually.
4. **RTMP**: Select this tab to enter up to 4 URLs or IP addresses that can receive video streams from the camera.
5. **UN/PW**: Select this tab to change the camera name, to set authentication credentials for the camera, and to change the system time.
6. **Protocol**: Select this tab to configure the camera to be operated from a control device (such as a Crestron® touch screen).

Upgrade Tab

Select the **Upgrade** tab to perform a firmware update for the camera.

Upgrade Tab

To upgrade firmware, use the ellipses button (**...**) next to the **Upgrade File** field to navigate to and select the appropriate firmware file for the camera. After the file has been chosen, select **Upgrade** to initiate the firmware upgrade. The camera will restart automatically after the process is complete.

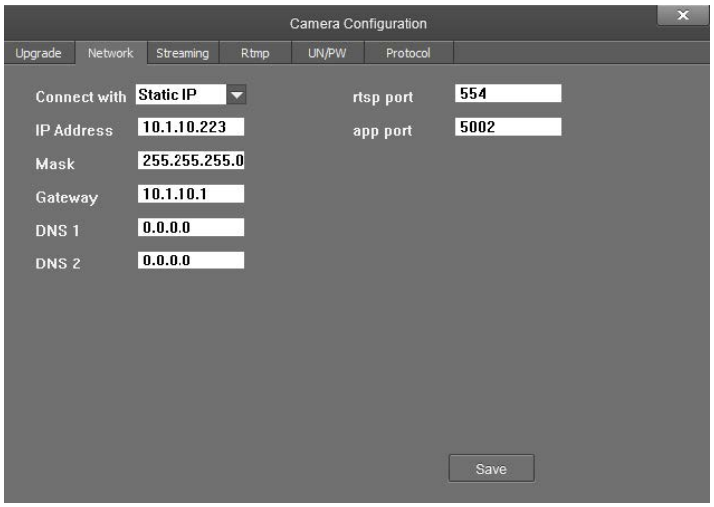
CAUTION: Note the following when performing a firmware upgrade:

- Before attempting to upgrade camera firmware, verify that you have received the appropriate firmware file for your camera model. Firmware files are specific to individual 1 Beyond camera models.
- Only use Crestron firmware files. Attempting to upgrade the device using third-party files may prevent the camera from functioning correctly.
- Do not disconnect the camera or attempt to control it while upgrading firmware. This may cause the firmware file to become corrupted and prevent the camera from functioning correctly.
- Only perform a firmware upgrade if recommended by Crestron True Blue Support during a support call.

Network Tab

Select the **Network** tab to modify the camera's network settings and to configure the port for the camera's IP video streams.

Network Tab



The following settings can be modified:

- **Connect with**: Use the drop-down menu to select whether the camera connects to the network over a static IP or dynamically over DHCP.
- **IP Address**: If **Connect with** is set to **Static IP**, set a static IP address for the camera.
- **Mask**: If **Connect with** is set to **Static IP**, set a static subnet mask address for the camera.
- **Gateway**: If **Connect with** is set to **Static IP**, set a static address for the default gateway router.
- **DNS 1**: If **Connect with** is set to **Static IP**, set a static primary DNS (Domain Name Server) lookup address.
- **DNS 2**: If **Connect with** is set to **Static IP**, set a static secondary DNS (Domain Name Server) lookup address.
- **rtsp port**: Set a port that will be used for the camera's RTSP video-over-IP streams. The default port for most cameras is 554 or 5000.
- **app port**: Set a port that will be used for communication between the 1 Beyond Camera Manager software and the camera.

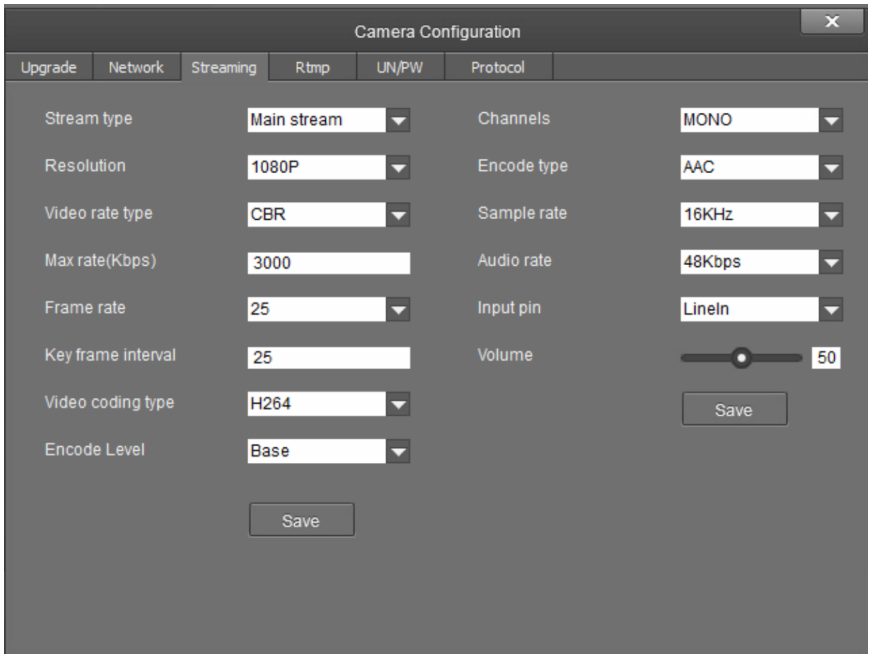
> **NOTE:** The **app port** value should not be changed unless instructed to do so by Crestron True Blue Support.

Select **Save** to save any changes made to these settings.

Streaming Tab

Select the **Streaming** tab to modify the camera's streaming settings.

Streaming Tab



The **Streaming** tab is used to adjust the properties of the native IP video streams that are encoded and transmitted by the camera. 1 Beyond Intelligent cameras can broadcast up to 4 simultaneous RTSP streams, while all other supported 1 Beyond cameras output 2 simultaneous streams. Each video stream can be configured individually.

The following settings can be modified:

- **Stream type**: Use the drop-down menu to select the stream that will be configured.
- **Resolution**: Use the drop-down menu to select the desired stream resolution independently of the camera's operating resolution.
- **Video rate type**: Use the drop-down menu to select whether the video will be encoded with constant or variable bit rate. Selecting variable bit rate causes reduced stream bit rate during static shots with little movement. The bit rate increases as motion increases.
- **Max rate[Kbps]**: Set the maximum bit rate of the video stream. The maximum supported value varies by camera model.

  > **NOTE:** For NDI-enabled 1 Beyond cameras, the **Max rate[Kbps]** setting controls the maximum bitrate of the camera's NDI stream.

- **Frame rate**: Use the drop-down menu to select the stream's frame rate. This value should always equal the camera's native frame rate.
- **Key frame interval**: Set the desired frame rate for the video stream. This value does not have to equal the camera's native frame rate.

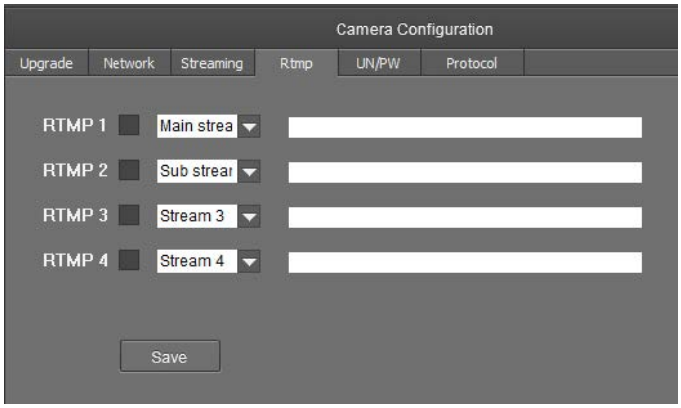
- **Video coding type**: Use the drop-down menu to select whether the video stream will use H.264 or H.265 encoding.
- **Encode Level**: Use the drop-down menu to select whether the video stream will use a low, base, or high-profile encoding type.
- **Channels**: Use the drop-down menu to select the audio channel type used for the camera's analog audio input.
- **Encode type**: Use the drop-down menu to select the encoding type for the camera's analog audio input.
- **Sample rate**: Use the drop-down menu to select the sampling rate for the camera's analog audio input.
- **Audio rate**: Use the drop-down menu to select the audio rate for the camera's analog audio input.
- **Input pin**: Use the drop-down menu to select the input type for the camera's analog audio input.
- **Volume**: Use the slider to set the default volume level for the camera's analog audio input.

Select **Save** under the video or audio settings to save any changes made to those settings, respectively.

RTMP Tab

Select the **RTMP** tab to modify the camera's RTMP (Real-Time Messaging Protocol) settings.

RTMP Tab



The **RTMP** tab is used to configure 1 Beyond cameras to broadcast video streams to RTMP destinations such as servers or web services. Up to 4 RTMP streams can be configured.

> **NOTE:** This feature will work only with RTMP destinations that do not require a stream key for authentication.

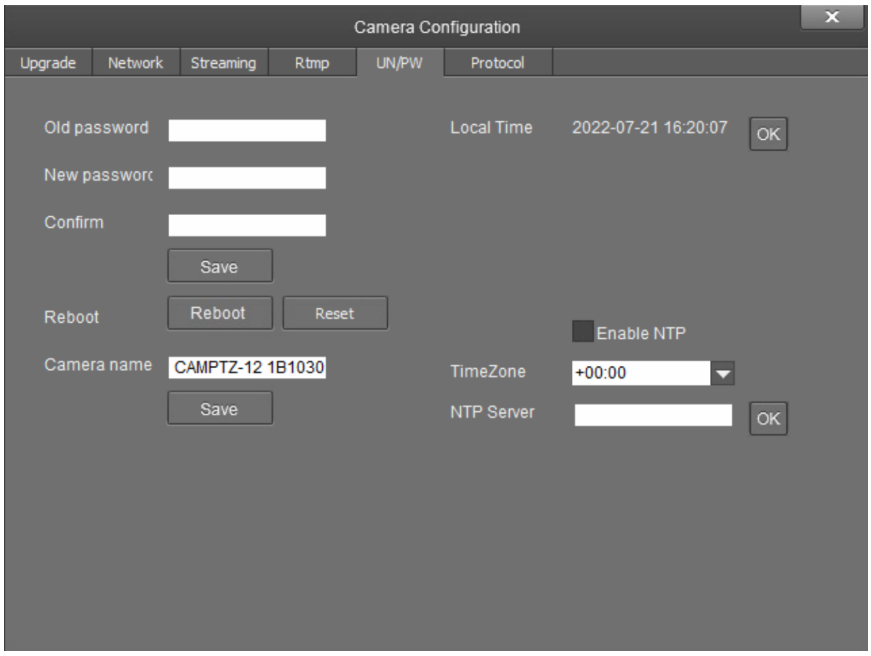
To configure the camera's video stream to RTMP destinations:

1. Select the check box next to a stream to activate it.
2. Set the stream type using the drop-down menu.
3. Enter the host name or IP address of the RTMP destination in the text field.
4. Select **Save** to save any changes made.

UN/PW Tab

Select the **UN/PW** tab to modify the camera name, authentication credentials, and other administrative settings.

UN/PW Tab



The following settings can be modified:

- Password settings
  - **Old password**: If applicable, enter the existing admin password set for the camera.
  - **New password**: Enter a new admin password for the camera.
  - **Confirm**: Enter the admin password specified in the **New password** field.
  - Select **Save** to change the password.

  CAUTION: Do not lose the admin password, as it cannot be reset if it is forgotten.

- **Reboot**
  - Select **Reboot** to restart the camera.
  - Select **Reset** to restore the camera to its factory default settings.

    CAUTION: Resetting a camera associated with an Automate™ VX camera switcher system will clear all camera presets.

- **Camera Name**: Enter a new camera name for identification and management purposes. By default, the camera name includes the device's serial number.
- **Local Time**: View the local time on the host computer. Select **OK** to refresh the time.
- **NTP Settings**

- Select the **Enable NTP** check box to synchronize the camera's internal clock to an external NTP (Network Time Protocol) server.

  > **NOTE:** Using an external NTP server requires a constant network connection for the camera.

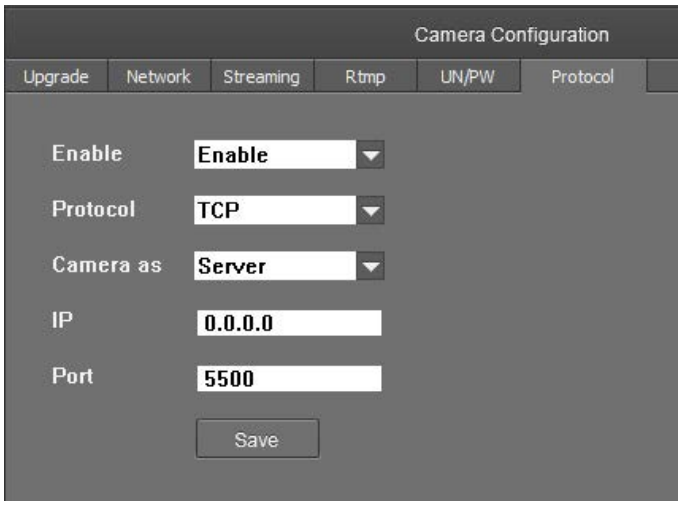
- **TimeZone**: Use the drop-down menu to set the time zone for the camera.
- **NTP Server**: Enter the URL or IP address of the external NTP server, then select **OK**.

Select **Save** to save any changes made to these settings.

Protocol Tab

Select the **Protocol** tab to set a secondary connection to the camera from a control device (such as a Crestron touch screen).

Protocol Tab



The following settings can be modified:

- **Enable**: Use the drop-down menu to turn the secondary connection on or off.

  > **NOTE:** For 1 Beyond Intelligent cameras, a secondary connection is turned off by default, as it is not required in most circumstances since port 5500 supports VISCA control over TCP.

- **Protocol**: Use the drop-down menu to select the communication protocol for the secondary connection.
- **Camera as**: Use the drop-down menu to select the role for the camera (such as server) for the secondary connection.
- **IP**: Enter the IP address for the secondary connection device. The default value of "0.0.0.0" should be retained for most setups.
- **Port**: Enter the port number for the secondary connection. The default value of "5500" should be retained for most setups.

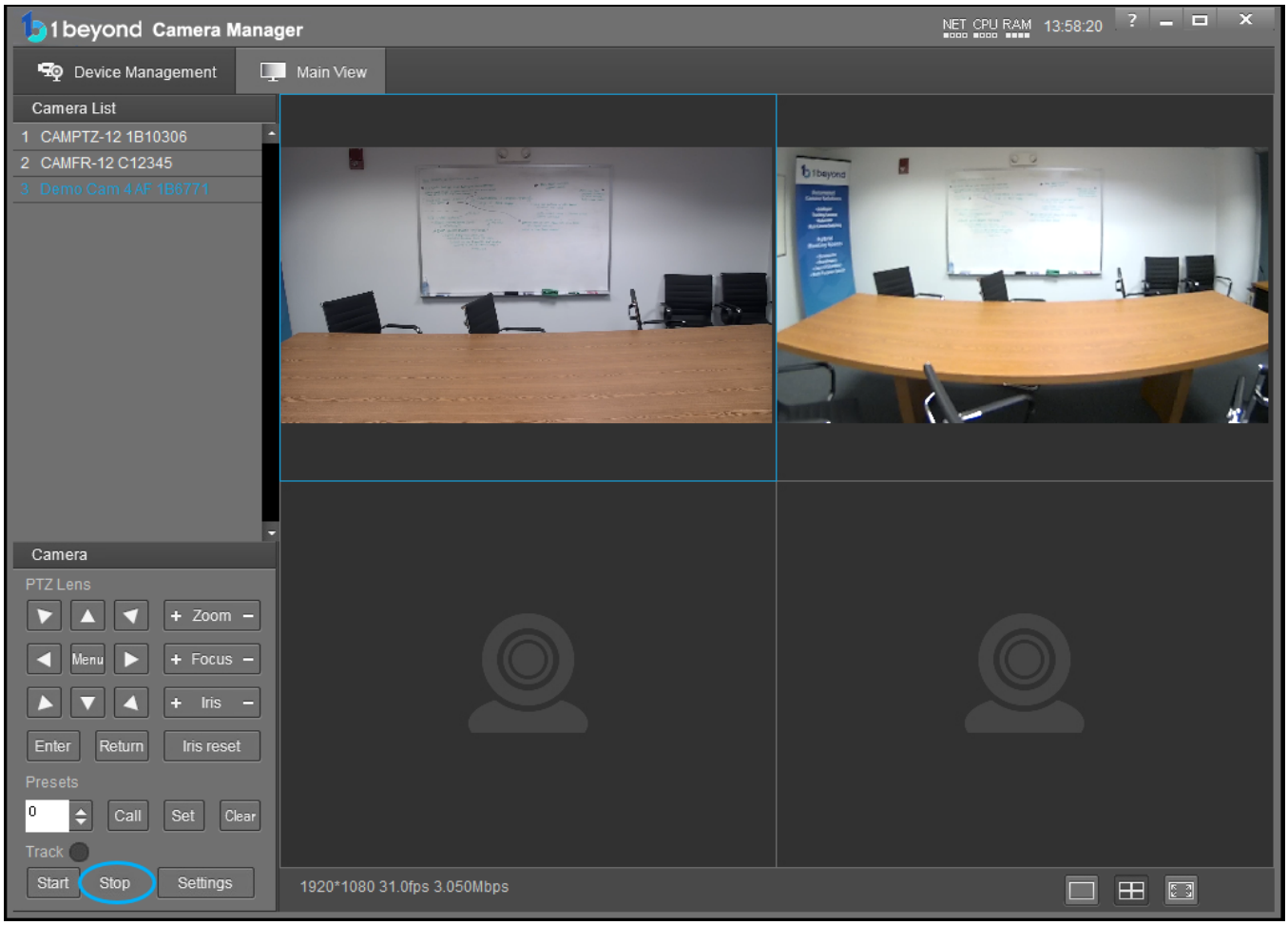
Select **Save** to save any changes made to these settings.

Access Video Feeds

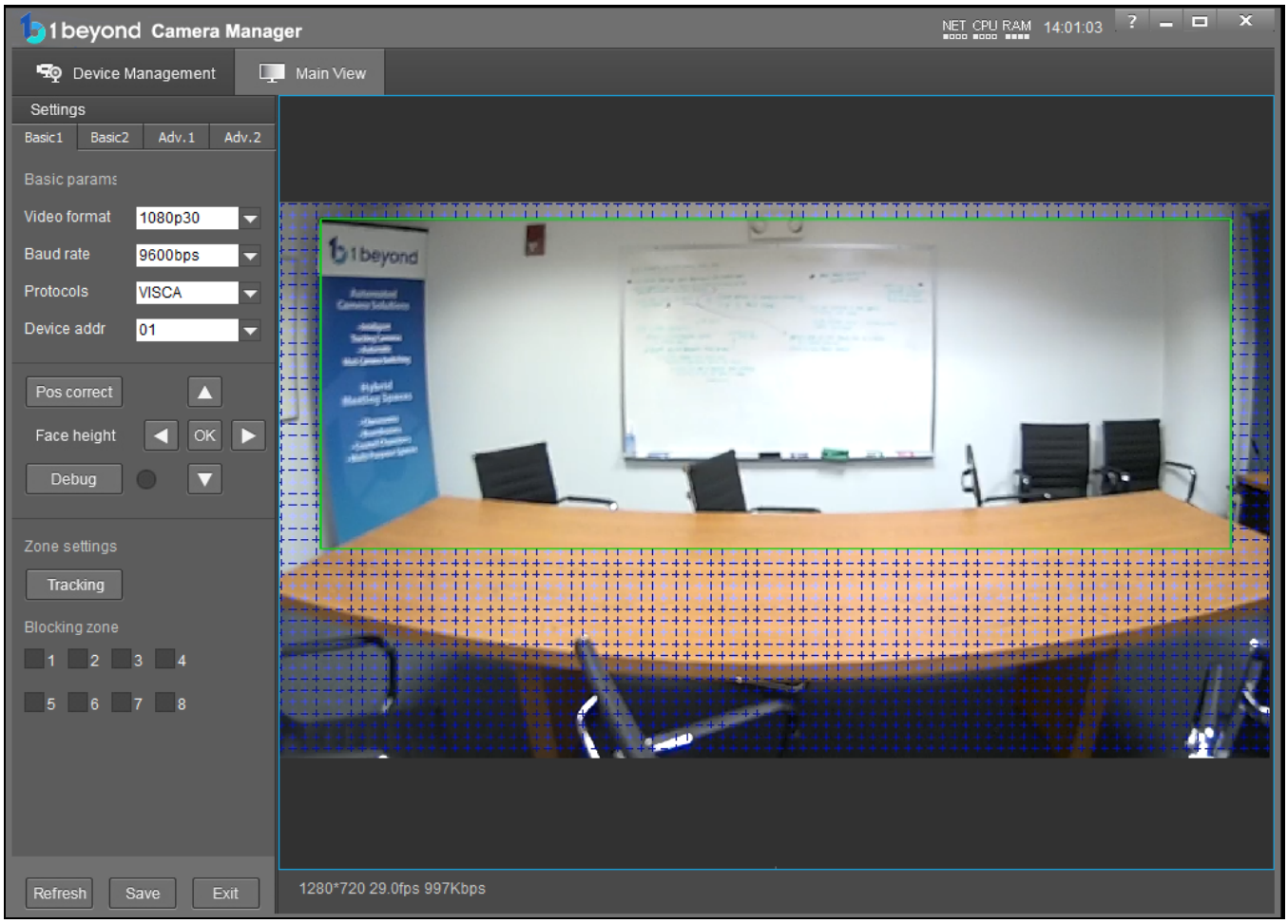
Proceed to the **Main View** tab to monitor the video feeds and begin setting up the tracking parameters. In the Camera List, right-click on the camera name and select **PTZ** and **Reference** to add the streams the multi view area. The PTZ and wide-angle cameras appear side-by-side.

Tracking Settings

Now that the camera is connected and streaming video to the host computer, click **Stop** in the lower left corner to stop tracking.



To access the camera's tracking properties, click **Settings**. The tracking settings panel opens and shows a full view of the wide-angle with the Tracking Zone shown as a green rectangle.



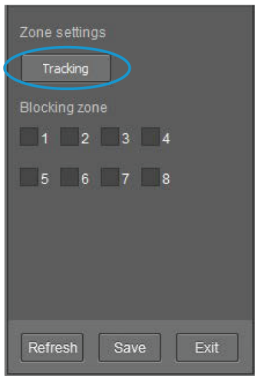
Set the Tracking Zone

Set the Tracking Zone to cover the entire area where participants will be present.

> **NOTE:** The camera does not auto-save settings. Make sure to save frequently during the setup process.

To draw a Tracking Zone:

1. Click **Tracking** in the lower half of the settings panel. The cursor will move into the video frame.
2. While holding down the left mouse button, drag the mouse to draw the tracking zone.
3. Let go of the left mouse button to release the cursor from the video frame.
4. Once the Tracking Zone is set, click **Save** to store the setting in the camera's memory.



Set the Blocking Zone

To ensure that the camera frames meeting participants reliably, Blocking Zones can be drawn within the Tracking Zone. This will prevent certain areas of the wide-angle camera's field of view from detecting faces. The camera allows up to 8 active Blocking Zones which can be drawn similarly to the Tracking Zone. To draw a Blocking Zone, click one of the 8 Blocking Zone check boxes and proceed to draw the zone by clicking and dragging over the video feed.

NOTES:

- Blocking Zones are only active within the Tracking Zone and will not have any effect outside of it.
- Blocking objects, such as displays, can prevent unwanted facial detection

PTZ Movement

Use the PTZ Lens arrow buttons to control the camera position and direction the camera's lens is facing.

To select the camera for control, first add it to the multiview section as described in 1 Beyond Camera Manager Software Configuration on page 27, and then select the video stream of the desired camera.

PTZ Controls

- Press the plus (+) or minus (-) button next to **Zoom** to zoom the camera in or out.
- Press the plus (+) or minus (-) button next to **Focus** to increase or decrease the camera focus.
- Press the plus (+) or minus (-) button next to **Iris** to increase or decrease the camera brightness.
- Use the **Iris** control to adjust exposure compensation by adding or subtracting exposure stops to or from the camera's autoexposure value. Select **Iris Reset** to reset the camera's exposure compensation.

> **NOTE:** By default, 1 Beyond cameras are configured to retrigger autofocus every time the camera is moved.

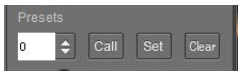
Camera Presets

Presets are important for PTZ camera operation, as they allow for the user to configure a variety of shots for instant recall at any time.

Create Presets

To create a camera preset, first move the camera using its PTZ controls as described in 1 Beyond Camera Manager Software Configuration on page 27 until the desired shot is achieved. Then, select a preset number to assign to the current shot from the **Presets** drop-down menu.

Presets Drop-Down Menu



Once the preset number has been selected, save the current shot by selecting **Set**.

Call Presets

To recall a previously saved preset, select the desired preset from the **Presets** drop-down menu, and then select **Call**.

Delete Presets

To delete a previously-saved preset, select the desired preset from the **Presets** drop-down menu, and then select **Clear**.

To delete all existing presets, select preset 96 from the **Presets** drop-down menu, and then select **Clear**. This action does not delete any reserved presets.

Reserved Presets

All 1 Beyond cameras have specific functions that assigned to certain presets, and these presets must not be overwritten for the camera to function properly. For more information, refer to the documentation for your 1 Beyond camera model.

Set Preset 0 (Optional)

After the camera's tracking properties are set, Preset 0 can be set. Preset 0 is the home position that the camera will return to when no meeting participants are within the camera's field of view. In most cases, this is a wide shot of the conference table.

To set Preset 0:

1. Exit the Tracking Settings by clicking in the lower left corner.
2. Use the PTZ controls to move the camera to achieve the desired shot.

3. Once satisfied with the shot, select preset number 0 from the Presets drop-down menu and click **Set**.

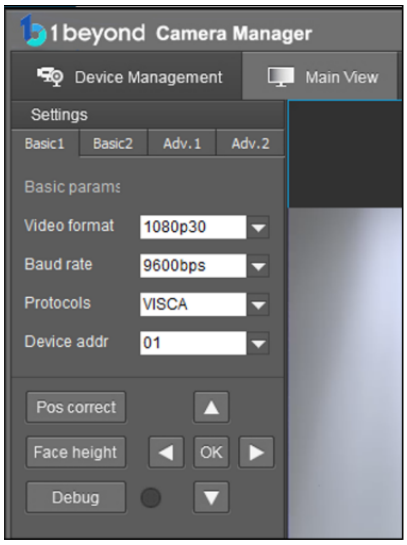
> **NOTE:** Do not overwrite Preset 0 since it serves as the camera's home position. Use presets 1 and higher if manual preset calling is desired.

Debug Mode

Now that the initial configuration is complete, performance can be verified by testing framing behavior in Debug Mode.

To activate Debug Mode:

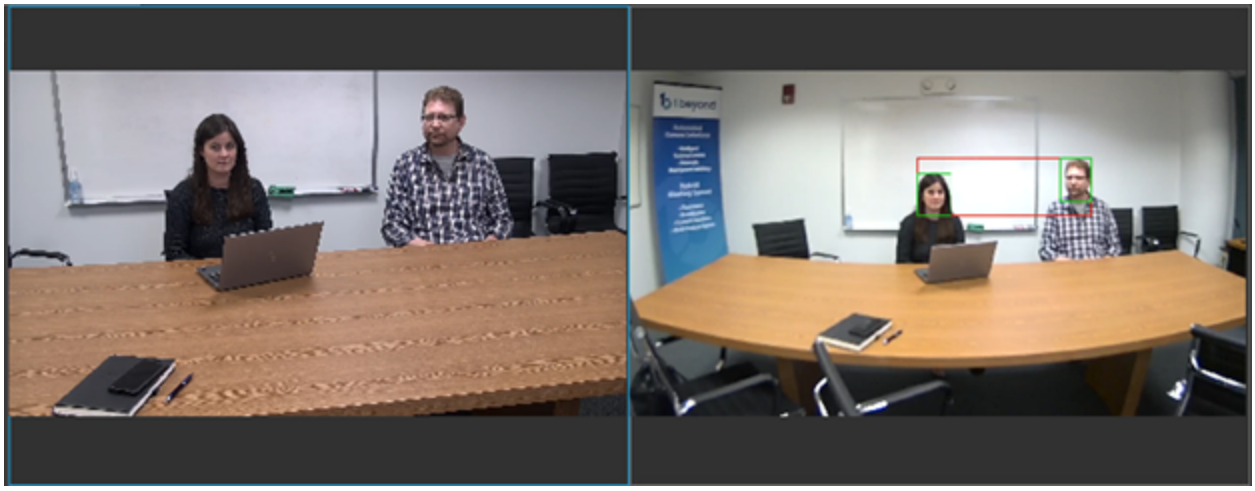
1. Navigate to the first tab of the Tracking settings.
2. Click **Debug** to turn Debug Mode on and off. The indicator to the right of the button turns green when the mode is on.



When using Debug Mode with a group of participants in a room, debug boxes will appear on the camera feed:

- Green debug box: This indicates facial detection.
- Red debug box: This indicates group framing.

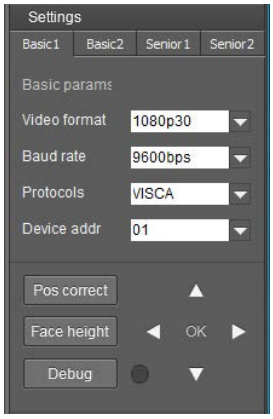
Use this mode to discover undesired facial detection or if some participants are not being detected. If needed, reconfigure the Tracking and Blocking zones or adjust the exposure and white balance to eliminate these issues.



Basic Settings

If tracking performance needs to be refined, the Advanced Settings provide options to fine-tune the camera's tracking behavior. Access these settings by clicking **Settings** in the Main View tab.

Basic 1 Tab



Video Format

Changes the camera's video resolution.

> **NOTE**: The resolution and frame rate of the IP video streams can be set independently. Refer to the 1 Beyond Camera Manager product manual on how to adjust the RTSP stream settings.

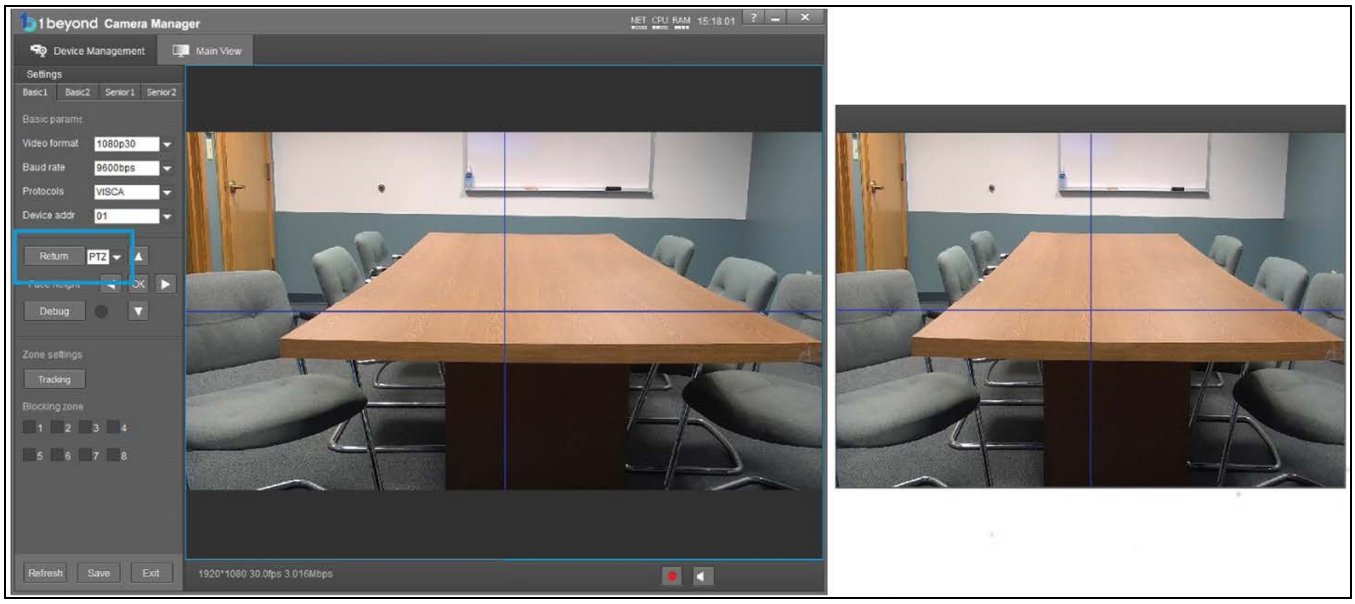
Baud Rate, Protocol, Device Address

These settings determine the baud rate, control protocol and device address for serial control via RS-485 or RS-232.

POS Correct

This option allows users to calibrate the PTZ tracking camera by using the wide-angle camera as a reference. To use this option:

1. Select **POS Correct**. A secondary window displaying the PTZ's video feed will appear.
2. Move the PTZ video feed window over so that both the wide-angle and PTZ camera feeds are visible simultaneously.
3. Use the PTZ control buttons in the Settings panel to move the PTZ so that the crosshairs in both camera feeds point at the same exact location. Placing an object in this location makes it easier to line up the PTZ.
4. Click **Return** to keep changes or press **Exit** to discard them.
5. Click **Save**.



Basic 2 Tab

The Basic 2 tab adjusts the camera's tracking behavior. Clicking **Reset** reverts these settings to the default values.

Tracking Sensitivity

Determines how quickly the camera adjusts to changes in the number and position of people in the room. 0 is the fastest and is recommended for most use cases.

Zoom Sensitivity

Zoom Limit

Determines the maximum amount of zoom the camera will apply to frame meeting participants that are sitting at the far-end of the room.

Target Lost Action

Select whether the camera returns to Preset 0, Preset 1, or stays in its current position when nobody is being tracked.

Power on State

Determines whether the camera tracks or stays static when it is powered on.

Advanced Settings

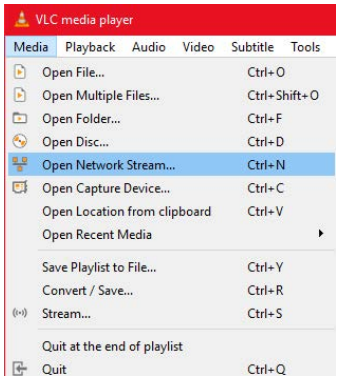
This settings tab contains network settings pertaining to control via external hardware or software. By default, the camera accepts TCP VISCA over IP control via TCP port 5500.

> **NOTE:** In order to maintain compatibility with 1 Beyond hardware and Crestron control modules, these settings should not be changed.

Monitor RTSP Streams

The RTSP IP video streams that are being broadcast by the camera can also be previewed and monitored in third-party apps like VLC Media Player® software. The following example demonstrates how to access the streams in the VLC® player.

1. Launch VLC player and click **Media** > **Open Network Stream**.



2. Select **Open Media** > **Network** (tab) and enter the RTSP URL using the following syntax:

rtsp://xx.xx.xx.xx:554/4.h264

Substitute "sub" for the secondary stream from the wide-angle camera or "3" / "4" for subsequent streams.

554 is the port number. If you have a different port set up for the RTSP stream, enter its number instead.

To learn how to adjust the bit rate and resolution settings for the camera's RTSP streams, refer to the 1 Beyond Camera Manager manual.

> **NOTE:** The VLC player induces noticeable latency when monitoring RTSP streams.

On-Screen (OSD) Menu

```
<MENU>
    VIDEO...
    EXPOSURE...
    COLOR...
    PAN TILT ZOOM...
    SYSTEM...
    STATUS...
    RESTORE DEFAULTS...
```

[▲▼] SELECT [OK] [⮌] NEXT

All 1 Beyond cameras feature an integrated on-screen menu which can be accessed by pressing **Menu** in the PTZ controller section of 1 Beyond Camera Manager or on the IR remote control. The menu is then displayed overlaid on the camera's PTZ video feed.

Here you can adjust various settings to tailor the camera's performance to the setup.

Navigate the menu using the directional buttons in the software. In the software, press **Enter** to confirm a menu selection, and use the left and right directional buttons to adjust the selected parameter.

To return to a previous menu page, press **Return**.

Pressing the **Menu** button on any control device while anywhere in the menus will close the menu entirely.

CAUTION: Always stop tracking before entering the OSD menu as it may cause random changes in system settings that can severely impact image quality.

NOTE: Restoring the settings to factory default will not reset Address, Protocol, Baud Rate, Video Format and Mount settings. Likewise, tracking settings will remain unaffected.

OSD Menu Tree

VIDEO	SHARPNESS	0 - 15	Increase / decrease video sharpening.
	BRIGHTNESS	0 - 14	Adjust video brightness.
	CONTRAST	0 - 14	Adjust video contrast
	GAMMA MODE	0 - 4	Adjust video gamma correction.
	2DNR LEVEL	OFF, 1 - 5	2D Noise Reduction level.
	3DNR LEVEL	OFF, 1 - 5	3D Noise Reduction level.
	WIDE DYNAMIC	OFF, 1-5	Adjust intensity of dynamic range extension.
	FV BRIGHTNESS	0 - 14	Adjust Wide-Angle Brightness.
	FV LDC LEVEL	OFF, 1 - 10	Set level of fisheye correction for wide-angle camera.

EXPOSURE	MODE	FULL AUTO	Automatically adjust exposure.
		MANUAL	Manually adjust exposure.
		SHUTTER PRI	Shutter priority mode.
		IRIS PRI	Iris priority mode.
		BRIGHT PRI	Brightness priority mode.
	EXP COMP	ON / OFF	Exposure compensation on / off.
	LEVEL	-7 - +7	Adjust level of exposure compensation.
	BLC	ON / OFF	Turn Back Light Compensation on / off.
	ANTI FLICKER	OFF / 50Hz / 60 Hz	Reduces flicker induced by 25p / 30p frame rates.
COLOR	WB MODE	AUTO	Fully automatic white balance.
		ATW	Auto-Tracing white balance mode.
		ONE PUSH	Trigger one-time WB adjustment.
		INDOOR	Best for warm lighting.
		OUTDOOR	Best for natural sunlight.
		MANUAL	Fully manual white balance adjustment.
		SODIUM LAMP	Best for sodium gas light.
		FLUO LAMP	Best for fluorescent light sources.
	R. / G. / B. GAIN	-7 - +7	Adjust color channel balance.
	SATURATION	0 - 14	Increase / decrease color saturation.
	HUE	0 - 14	Adjust hue for color tint compensation.
PAN TILT ZOOM	PAN / TILT SPEED	0 - 8	Adjust the speed of camera movement.
	PTZ TRIG AF	x1 - x12	Auto-focus after moving camera.
	RATIO SPEED	ON	Pan/Tilt speed relative to zoom ratio.
	POWER UP ACTION	HOME, PRESET 0-9	Preset the camera calls when powering on.

SYSTEM	ADDRESS	1 - 7	Choose cam address for serial comm.
	PROTOCOL	VISCA	Choose protocol for serial communication.
		PELCO-D	
		PELCO-P	
	BAUDRATE	2400 - 34800	Set baud rate for serial port.
	VIDEO FORMAT	720p50 - 1080p60	Change video resolution & frame rate.
	MOUNT MODE	STAND, CEILING	Chose how camera is mounted. Tracking does not work with ceiling mount.
	RS485 PORT	HALF-DUPLEX 1 / 2	Change Duplex setting for RS485 port.
	LANGUAGE	ENGLISH, CHINESE	Choose your OSD language.
STATUS	SHOWS SYSTEM SETTINGS		
RESTORE DEFAULTS	YES / NO		

Video Settings

The VIDEO menu adjusts various settings that can help adjust the camera's video output to your specific needs.

DNR – Digital Noise Reduction

The Sony Exmor image sensor in this camera offers integrated 2-step noise reduction that helps combat noise than can appear when the camera has to compensate for dim lighting.

2DNR is the first level of noise reduction. When on, up to five levels can be set. High levels of 2DNR should only be used in low-color settings.

3DNR offers dynamic noise reduction ideal for conferencing, streaming, and more. When on, up to five levels can be set. Setting the level too high might lead to "ghosting" when the camera is picking up fast movement or is being moved.

WIDE DYNAMIC

WDR (Wide Dynamic Range) is a technology that extends the camera's dynamic range to compensate for high contrast image content. This can improve visibility in settings with bright lights and dark shadows as it makes details in the dark parts of the image more easily discernible.

Fig 1: The entire dymanic range of a scene.

Fig 2: The dynamic range (shown in red) captured with WDR OFF. The area to the left is underexposed, and the area to the right is overexposed.

FV-BRIGHTNESS adjusts exposure compensation for the wide-angle camera. This can help improve motion detection in areas with low-contrast lighting. If bright lights are within the wide-angle camera's field of view, this setting also helps to properly expose the presentation area.

FV-LDC LEVEL - Full View Lens Distortion Correction

> **NOTE:** Do not adjust this setting unless instructed by Crestron True Blue Support as it might affect tracking and framing performance.

Exposure Settings

The **EXPOSURE** menu is used to adjust image brightness and the properties of the camera's automatic exposure adjustment features.

In **FULL AUTO**, the camera automatically adjusts gain (ISO), iris (aperture), shutter speed, and exposure compensation to maintain image brightness. Exposure settings can also be tailored to the needs of your venue using a variety of different parameter priority or manual modes.

SHUTTER PRI: Gain and shutter values are adjusted automatically while the shutter speed can be set manually.

IRIS PRI: Gain and iris values are adjusted automatically while Iris value can be set manually (in F-stops from 1.6 to 14).

BRIGHT PRI: Manually adjust the video brightness.

SMART: Set the smart Auto Exposure area (AREA 1~AREA4). When the camera reaches any of these areas, the camera automatically recalls a manual exposure setting. When the camera moves out of the area, the AE mode will default to AUTO.

EXP-COMP: Once EXP-COMP is set to ON, you will be able to set a level between -7 and +7 to darken or brighten the image.

BLC: Back Light Compensation can be activated if the background of the frame is a bright light source (for example, windows or a projection screen behind a presenter) to maintain proper exposure for foreground subjects.

ANTI FLICKER: Fluorescent light sources and computer displays can induce image flickering when outputting at frame rates of 25 or 30 fps. If you are outputting at either of these frame rates, set the **ANTI FLICKER** setting to twice that value (for example, 60 Hz for a 30 fps video signal).

White Balance

WHITE BALANCE adjusts the color levels of the camera image to reproduce what the human eye sees in any given lighting.

AUTO is recommended if the lighting conditions in your venue are influenced by weather changes or if you frequently use projections or colored lighting. Other settings are detailed in the **OSD Menu Tree** table above.

ONE PUSH is the most reliable way to achieve accurate static white balance. To perform a **ONE PUSH** white balance configuration:

1. Hold a pure white piece of paper in front or the camera lens at a distance where it is properly lit.
2. Select **ONE PUSH**, and press **OK**.
3. Continue holding the piece of paper for 10 seconds until the process is complete.

MANUAL mode allows you to set the levels for each color channel individually, whereas HUE can be used to compensate for any form of color tint that may be introduced by certain light sources.

Pan/Tilt/Zoom

PAN/TILT SPEED lets you adjust the speed of camera movement when controlled manually. The speed is fastest when in 1x zoom compared to longer focal lengths. For any given Pan/Tilt Speed setting, pressing the OK button on the remote control toggles between a faster and slower Pan/Tilt speed.

- High speed: 15° ~ 50° / sec
  (max. zoom ~ min. zoom)
- Low speed: 4° ~ 11° / sec
  (max. zoom ~ min. zoom)

PAN/TILT LIMIT: Use this setting to define a custom boundary for the camera's pan / tilt range adjustable in 1° increments (Default: OFF).

- UP: -30° ~ +90°
- DOWN: -30° ~ +90°
- LEFT: -170° ~ +170°
- RIGHT: -170° ~ +170°

D-ZOOM LIMIT: This sets the amount of digital zoom which extends the camera's optical zoom once it reaches its maximum.

> **NOTE:** Digital zoom may decrease image quality.
>
> Example: D-ZOOM LIMIT of X3 allows a total zoom range of up to 60x.

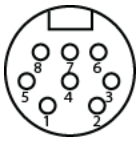
PTZ TRIG AF: When enabled, the autofocus is triggered whenever the camera tilts, pans, or zooms. We recommend you leave this setting enabled.

RATIO SPEED dynamically adjusts the speed of pan/tilt motion proportional to the amount of zoom. This way, the pan and tilt speed will be identical at any focal length.

POWER UP ACTION determines which of the first 9 presets the camera defaults to when powered on.

Serial Wiring

The EXT port contains pins for both RS-485 and RS-232 serial control. It is recommended to use RS-485 (not included) as it supports longer cable runs as well as connecting multiple cameras to a single terminal block.



Pin Number	Pin Definition
1	/
2	/
3	232 TXD
4	232 GND
5	232 RXD
6	232 GND
7	485 D+
8	485 D-

RS-232 cables are included with the camera.

Reserved Presets

To ensure backwards compatibility with various different control systems, some proprietary camera functions are mapped to fixed preset numbers and can be triggered by calling the associated preset.

These presets cannot be overwritten.

Preset Number	Function
80	Start tracking
81	Stop tracking
82	Enable NDI on NDI-enabled cameras
83	Disable NDI on NDI-enabled cameras
95	Open OSD Menu
96	Clear ALL User Presets
99	Reboot Camera
100	1920 x 1080p50
101	1920 x 1080p25
102	1920 x 1080i50

Preset Number	Function
103	1280 x 720p50
105	1920 x 1080p60
106	1920 x 1080p30
107	1920 x 1080i60
108	1280 x 720p60

VISCA Commands

1 Beyond PTZ cameras can be controlled using the VISCA protocol through either a serial (RS-232 / RS-485) or IP connection. By default, the port for IP control is set to 5500. For serial communication, make sure the baud rate of the controller is set to 9600 bps. Below is a comprehensive list of VISCA commands that can be used to control the cameras.

Start/Stop Tracking

To start or stop tracking on the 1 Beyond AutoFramer camera, call the following commands:

Command	Command Packet	Comments
Start tracking (Recall CAM_Memory 80)	8x 01 04 3F 02 50 FF	Call Preset 80, camera addr x
Stop tracking (Recall CAM_Memory 81)	8x 01 04 3F 02 51 FF	Call Preset 81, camera addr x

NOTE: These commands can only be used with AutoTracker, AutoFramer, Falcon, and Hawk cameras. Under no circumstances should presets 80 and 81 be overwritten on these cameras. Once configured, presets 0 and 1 must not be overwritten since these are used as references to adjust framing while tracking is active.

Privacy

The PTZ cameras can be tilted backwards for privacy when the camera is not in use. To tilt the PTZ cameras backwards, call the following commands:

Command	Command Packet	Comments
Tilt PTZ 1	81 01 06 01 12 0E 03 01 FF	Tilt PTZ 1 backwards

ACK / Completion Messages

	Command Message	Comments
ACK	z0 4y FF (y:Socket No.)	Returned when the command is accepted.
Completion	z0 5y FF (y:Socket No.)	Returned when the command has been executed.

Error Messages

	Command Message	Comments
Syntax Error	z0 60 02 FF	Returned when the command format is different or when a command with illegal command parameters is accepted.

	Command Message	Comments
Command Buffer Full	z0 60 03 FF	Indicates that two sockets are already being used (executing two commands) and the command could not be accepted when received.
Command Canceled	z0 6y 04 FF (y:Socket No.)	Returned when a command which is being executed in a socket specified by the cancel command is canceled. The completion message for the command is not returned.
No Socket	z0 6y 05 FF (y:Socket No.)	Returned when no command is executed in a socket specified by the cancel command, or when an invalid socket number is specified.
Command Not Executable	z0 6y 41 FF (y:Execution command Socket No. Inquiry command:0)	Returned when a command cannot be executed due to current conditions. For example, when commands controlling the focus manually are received during auto focus.

z = Device address + 8

Commands

Command Set	Command	Command Packet	Comments
AddressSet	Broadcast	88 30 01 FF	Address setting
IF_Clear	Broadcast	88 01 00 01 FF	I/F Clear
Command Cancel		8x 2p FF	p: Socket No. (=1or2)
CAM_Power	On	8x 01 04 00 02 FF	Power On/Off
	Off	8x 01 04 00 03 FF	
CAM_Zoom	Stop	8x 01 04 07 00 FF	
	Tele(Standard)	8x 01 04 07 02 FF	
	Wide(Standard)	8x 01 04 07 03 FF	
	Tele(Variable)	8x 01 04 07 2p FF	p: 0(Low)to 7 (High)
	Wide(Variable)	8x 01 04 07 3p FF	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	p,q,r,s: Zoom Position

Command Set	Command	Command Packet	Comments
CAM_Focus	Stop	8x 01 04 08 00 FF	
	Far(Standard)	8x 01 04 08 02 FF	
	Near(Standard)	8x 01 04 08 03 FF	
	Far(Variable)	8x 01 04 08 2p FF	p: 0(Low)to 7 (High)
	Near(Variable)	8x 01 04 08 3p FF	
	Direct	8x 01 04 48 0p 0q 0r 0s FF	p,q,r,s: Focus Position
	Auto Focus	8x 01 04 38 02 FF	AF On/Off
	Manul Focus	8x 01 04 38 03 FF	
	Auto/Manul	8x 01 04 38 10 FF	
	One Push Trigger	8x 01 04 18 01 FF	One Push AF Trigger
CAM_ ZoomFocus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	p,q,r,s: Zoom Position t,u,v,w: Focus Position
CAM_WB	Auto	8x 01 04 35 00 FF	Normal Auto
	Indoor	8x 01 04 35 01 FF	Indoor Mode
	Outdoor	8x 01 04 35 02 FF	Outdoor Mode
	One Push WB	8x 01 04 35 03 FF	One Push WB Mode
	Manual	8x 01 04 35 05 FF	Manual Control Mode
	One Push Trigger	8x 01 04 10 05 FF	One Push WB Trigger
CAM_RGain	Rest	8x 01 04 03 00 FF	Manual Control of R Gain
	Up	8x 01 04 03 02 FF	
	Down	8x 01 04 03 03 FF	
	Direct	8x 01 04 43 00 00 0p 0q FF	p,q: R Gain
CAM_BGain	Rest	8x 01 04 04 00 FF	Manual Control of B Gain
	Up	8x 01 04 04 02 FF	
	Down	8x 01 04 04 03 FF	
	Direct	8x 01 04 44 00 00 0p 0q FF	p,q: B Gain
CAM_AE	Full Auto	8x 01 04 39 00 FF	Automatic Exposure mode
	Manual	8x 01 04 39 03 FF	Manual Control mode
	Shutter Priority	8x 01 04 39 0A FF	Shutter Priority Automatic Exposure mode
	Iris Priority	8x 01 04 39 0B FF	Iris Priority Automatic Exposure mode
	Bright	8x 01 04 39 0D FF	Bright Mode (Manual control)

Command Set	Command	Command Packet	Comments
CAM_Shutter	Reset	8x 01 04 0A 00 FF	Shutter Setting
	Up	8x 01 04 0A 02 FF	
	Down	8x 01 04 0A 03 FF	
	Direct	8x 01 04 4A 00 00 0p 0q FF	p,q: Shutter Position
CAM_Iris	Reset	8x 01 04 0B 00 FF	Iris Setting
	Up	8x 01 04 0B 02 FF	
	Down	8x 01 04 0B 03 FF	
	Direct	8x 01 04 4B 00 00 0p 0q FF	p,q: Iris Position
CAM_Gain	Reset	8x 01 04 0C 00 FF	Gain Setting
	Up	8x 01 04 0C 02 FF	
	Down	8x 01 04 0C 03 FF	
	Direct	8x 01 04 4C 00 00 0p 0q FF	p,q: Gain Position
CAM_Bright	Reset	8x 01 04 0D 00 FF	Bright Setting
	Up	8x 01 04 0D 02 FF	
	Down	8x 01 04 0D 03 FF	
	Direct	8x 01 04 4D 00 00 0p 0q FF	p,q: Bright Position
CAM_ExpComp	On	8x 01 04 3E 02 FF	Exposure Compensation On/Off
	Off	8x 01 04 3E 03 FF	
	Reset	8x 01 04 0E 00 FF	Exposure Compensation Amount Setting
	Up	8x 01 04 0E 02 FF	
	Down	8x 01 04 0E 03 FF	
	Direct	8x 01 04 4E 00 00 0p 0q FF	p,q: ExpComp Position
CAM_Backlight	On	8x 01 04 33 02 FF	Back Light Compensation ON/OFF
	Off	8x 01 04 33 03 FF	
CAM_Aperture	Reset	8x 01 04 02 00 FF	Aperture Control
	Up	8x 01 04 02 02 FF	
	Down	8x 01 04 02 03 FF	
	Direct	8x 01 04 42 00 00 0p 0q FF	p,q: Aperture Gain
CAM_ PictureEffect	Off	8x 01 04 63 00 FF	Picture Effect Setting
	Neg.Art	8x 01 04 63 02 FF	
	B&W	8x 01 04 63 04 FF	

Command Set	Command	Command Packet	Comments
CAM_Memory	Reset	8x 01 04 3F 00 pp FF	pp: Memory Number (=0 to 255) Corresponds to 0 to 255 on the Remote.
	Set	8x 01 04 3F 01 pp FF	
	Recall	8x 01 04 3F 02 pp FF	
SYS_Menu	Off	8x 01 06 06 03 FF	Turns off the menu screen.
CAM_IDWrite		8x 01 04 22 0p 0q 0r 0s FF	p,q,r,s: Camera ID (=0000 to FFFF)
IR_Receive	On	8x 01 06 08 02 FF	IR receiver On/Off
	Off	8x 01 06 08 03 FF	
Information Display	On	8x 01 7E 01 18 02 FF	Operation status display On/Off
	Off	8x 01 7E 01 18 03 FF	
Pan-tiltDrive	Up	8x 01 06 01 VV WW 03 01 FF	VV: Pan speed 0 x01 (low speed) to 0 x18 (high speed)
	Down	8x 01 06 01 VV WW 03 02 FF	
	Left	8x 01 06 01 VV WW 01 03 FF	
	Right	8x 01 06 01 VV WW 02 03 FF	WW: Tilt Speed 0 x 01 (low speed) to 0 x14 (high speed)
	UpLeft	8x 01 06 01 VV WW 01 01 FF	
	UpRight	8x 01 06 01 VV WW 02 01 FF	
	DownLeft	8x 01 06 01 VV WW 01 02 FF	YYYY: Pan Position
	DownRight	8x 01 06 01 VV WW 02 02 FF	
	Stop	8x 01 06 01 VV WW 03 03 FF	ZZZZ: Tilt Position
	AbsolutePosition	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	RelativePosition	8x 01 06 03 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	Home	8x 01 06 04 FF	
	Reset	8x 01 06 05 FF	
Pan-tiltLimitSet	LimitSet	8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	W: 1 UpRight 0: DownLeft YYYY: Pan Limit Position ZZZZ: Tilt Position

Inquiry Commands

Inquiry Command	Command Packet	Inquiry Packet	Comments
CAM_PowerInq	8x 09 04 00 FF	y0 50 02 FF	On
		y0 50 03 FF	Off (Standby)
		y0 50 04 FF	Internal power circuit error

Inquiry Command	Command Packet	Inquiry Packet	Comments
CAM_ZoomPosInq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	p,q,r,s: Zoom Position
CAM_FocusModeInq	8x 09 04 38 FF	y0 50 02 FF	Auto Focus
		y0 50 03 FF	Manual Focus
CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	p,q,r,s: Focus Position
CAM_WBModeInq	8x 09 04 35 FF	y0 50 00 FF	Auto
		y0 50 01 FF	In Door
		y0 50 02 FF	Out Door
		y0 50 03 FF	One Push WB
		y0 50 05 FF	Manual
CAM_RGainInq	8x 09 04 43 FF	y0 50 00 00 0p 0q FF	p,q: R Gain
CAM_BGainInq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	p,q: B Gain
CAM_AEModeInq	8x 09 04 39 FF	y0 50 00 FF	Full Auto
		y0 50 03 FF	Manual
		y0 50 0A FF	Shutter Priority
		y0 50 0B FF	Iris Priority
		y0 50 0D FF	Bright
CAM_ShutterPosInq	8x 09 04 4A FF	y0 50 00 00 0p 0q FF	p,q: Shutter Position
CAM_IrisPosInq	8x 09 04 4B FF	y0 50 00 00 0p 0q FF	p,q: Iris Position
CAM_GainPosInq	8x 09 04 4C FF	y0 50 00 00 0p 0q FF	p,q: Gain Position
CAM_BrightPosInq	8x 09 04 4D FF	y0 50 00 00 0p 0q FF	p,q: Bright Position
CAM_ExpCompModeInq	8x 09 04 3E FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ExpCompPosInq	8x 09 04 4E FF	y0 50 00 00 0p 0q FF	p,q: ExpComp Position
CAM_BacklightModeInq	8x 09 04 33 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ApertureInq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	p,q: Aperture Gain

Inquiry Command	Command Packet	Inquiry Packet	Comments
CAM_PictureEffectModeInq	8x 09 04 63 FF	y0 50 00 FF	Off
		y0 50 02 FF	Neg.Art
		y0 50 04 FF	B&W
CAM_MemoryInq	8x 09 04 3F FF	y0 50 0p FF	p: Memory number last operated.
SYS_MenuModeInq	8x 09 06 06 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_IDInq	8x 09 04 22 FF	y0 50 0p 0q 0r 0s FF	p,q,r,s: Camera ID
CAM_VersionInq	8x 09 00 02 FF	y0 50 00 01 mn pq rs tu vw FF	m,n,p,q: Model Code (0504) r,s,t,u: ROM version v,w: Socket Number (=02)
Information Display	8x 09 7E 01 18 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
VideoSystemInq	8x 09 06 23 FF	y0 50 00 FF	1920 x1080i/60 60 Hz system
		y0 50 01 FF	1920 x1080p/30 60 Hz system
		y0 50 02 FF	1280 x720p/60 60 Hz system
		y0 50 03 FF	1280 x720p/30 60 Hz system
		y0 50 07 FF	1920 x1080p/60 60 Hz system
		y0 50 08 FF	1920 x1080i/50 50 Hz system
		y0 50 09 FF	1920 x1080p/25 50 Hz system
		y0 50 0A FF	1280 x720p/50 50 Hz system
		y0 50 0B FF	1280 x 720p/25 50 Hz system
		y0 50 0F FF	1920 x1080p/50 50 Hz system
IR_Receive	8x 09 06 08 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
Pan-tiltMaxSpeedI	8x 09 06 11 FF	y0 50 ww zz FF	ww = Pan Max Speed zz = Tilt Max Speed
Pan-tiltPosInq	8x 09 06 12 FF	y0 50 0w 0w 0w 0w 0z 0z 0z 0z FF	wwww = Pan Position zzzz = Tilt Position
Pan-tiltModeInq	8x 09 06 10 FF	y0 50 pq rs FF	p,q,r,s: Pan/Tilt Status

Zoom Ratio / Position (CAM_Zoom)

(CAM_Zoom Direct – p,q,r,s Zoom Position)

Optical Zoom Ratio	Optical Zoom Ratio
1x	0000
2x	1851
3x	22BE
4x	28F6
5x	2D45
6x	3086
7x	3320
8x	3549
9x	371E
10x	38B3
11x	3A12
12x	3B42
13x	3C47
14x	3D25
15x	3DDF
16x	3E7B
17x	3EFB
18x	3F64
19x	3FBA
20x	4000

Exposure Comp (CAM_ExpComp)

(CAM_ExpComp Direct – p,q ExpComp Position)

0E	+7	0000
0D	+6	1851
0C	+5	22BE
0B	+4	28F6
0A	+3	2D45
09	+2	3086
08	+1	3320
07	0	3549
06	-1	371E
05	-2	38B3
04	-3	3A12
03	-4	3B42
02	-5	3C47
02	-6	3D25
00	-7	4000

Troubleshooting

The following table provides troubleshooting information. If further assistance is required, contact Crestron True Blue Support.

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTIONS
No movement or video signal when powered on	Power supply failure	Check power supply output using a multimeter.
	Power adapter damaged	Replace faulty power adapter.
	Power not connected	Plug the provided 12V power supply into a wall outlet and connect the other end to the input on the camera.
No movement when powered on or mechanical noises during movement	Insufficient power is being supplied to the camera	Check and reconnect power supply.
	Mechanical failure	Contact Crestron True Blue Support.
Camera not showing in 1 Beyond Camera Manager	Incorrect IP settings	Check to confirm the camera's IP is set to match the IP settings of your connected computer. Default IP: 192.168.18.77.
	Cameras are not powered on or not powered properly.	Check camera power supply. If using PoE+, make sure your switch has sufficient remaining power availability to power cameras.
	Ethernet cable connected incorrectly or damaged.	Verify that the cable is fully inserted into the Ethernet port on the camera. If possible, use a cable tester to verify that the cable is working.
Camera shows "Connection Failed" in the camera list	Incorrect IP settings	Confirm the camera's IP is set to match the IP settings of the connected computer.
	Network usage is high	Close all other programs on the computer. Then, restart the 1 Beyond Camera Manager software.
		Confirm that the Ethernet and power cables are properly connected.
Connection status shows "Device Refusal".	Camera may have incorrect or corrupted firmware.	Contact Crestron True Blue Support.

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTIONS
Video feed not showing in 1 Beyond Camera Manager	Subnet setting of camera does not match your computer's.	Set the IP, gateway, and subnet mask of your camera to match your network scheme.
	RTSP Stream configured incorrectly	Enter the camera configuration menu from the Main View of 1 Beyond Camera Manager and adjust the resolution and bit rate of the PTZ stream.
Video Stream randomly turns gray	Video stream bit rate exceeds available network bandwidth.	Adjust bit rate of video streams until gray frames disappear.
	Video stream bit rate set higher than camera allows.	Reduce video stream bit rate.
Not controllable via serial controller	Wrong address / protocol / baud rate settings.	Open the OSD menu and view the STATUS page to verify if your settings match that on your control device.
	Wrong connection or a faulty RS-485/422/232 cable.	Check cable and reconnect.
Video loss during pan/tilt/zoom	Camera is powered insufficiently	Check output voltage of power supply and reconnect.
	Video cable is not connected properly	Replace with a working video cable or double check the stability of your existing connection.
Camera is not controllable when powered on	Wrong address/protocol /baud rate settings or a faulty serial cable	Open OSD to verify your settings are correct or check serial wiring. Check Advanced 2 settings.
	IR remote battery is low	Replace with new batteries.
Camera has yellow or blue tint	Auto white balance setting may not be ideal for the lighting environment	Set static or one-push white balance
Camera is tracking or framing off-axis	PTZ camera needs to be calibrated	Perform POS Correct
	Mechanical failure	

Resources

The following resources are provided for the IV-CAMFR-12-N-SLVR-1B and IV-CAMFR-12-SLVR-1B.

> **NOTE:** You may need to provide your Crestron.com web account credentials when prompted to access some of the following resources.

Crestron Support and Training

- Crestron True Blue Support
- Crestron Resource Library
- Crestron Online Help (OLH)
    - support.crestron.com/app/answers/detail/a_id/1001561
- Crestron Training Institute (CTI) Portal

Product Certificates

To search for product certificates, refer to support.crestron.com/app/certificates.

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change without notice.