IV-CAMFL-N-W-1B

1 Beyond Falcon™ Presenter Tracking Camera, ePTZ, 2x Digital Zoom, NDI®|HX Compatible

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 like 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.

The IV-CAMFL-N-W-1B is a powerful presenter tracking camera designed for small to medium size rooms. The IV-CAMFL-N-W-1B uses facial and motion detection to automatically track and frame the presenter. All the tracking intelligence is built into the camera – no external system is needed. The IV-CAMFL-N-W-1B camera supports a single Ethernet connection and provides power (PoE), monitoring, control, and NDI®|HX compatible video.

Features

Refer to the following sections for more information on the features provided by the Falcon IV-CAMFL-N-W-1B camera.

Key features include:

- Automatically tracks the presenter
- Uses advanced AI tracking technology
- Optimal for small to medium sized rooms
- Up to 1080p60 resolution output from a 4K ePTZ camera
- Locks on a single presenter, not distracted by others
- Single Ethernet connection provides power (PoE), monitoring, control, and NDI®|HX compatible video
- Smooth tracking and quiet operation
- Optional manual control for digital PTZ camera functionality

Smart Tracking

The camera tracks and frames a presenter up to 25 ft away without disruption from other moving objects or people. If the presenter leaves the tracking zone and another presenter walks in, the camera will begin tracking the second presenter. When no one is in the tracking zone, the camera returns to a specified home position.

Manual Control Options

Use VISCA over IP to control the camera with a Crestron® control system. 1B Cam Manager Software is included for easy configuration from a computer on the network.

High Quality Video

The camera uses a 4K full room view to intelligently and seamlessly track a presenter. A high quality CMOS sensor enables the camera to output up to 1080p60 resolution video.

Quiet, Fast Switching Between Presets

Up to 256 pan, tilt, and zoom combination presets can be configured. The camera will move digitally to the selected preset point. As the camera utilizes digital PTZ technology, switching between presets is soundless.

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.

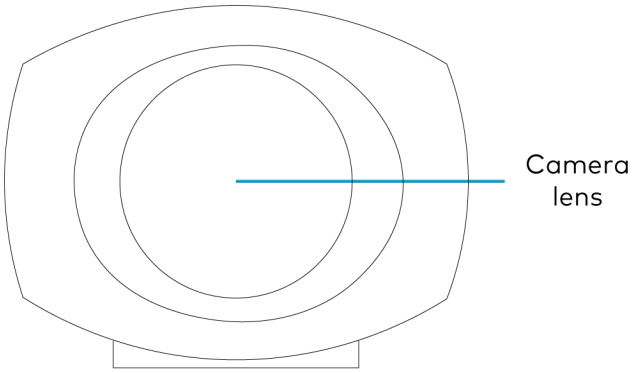
Optional Manual Control

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

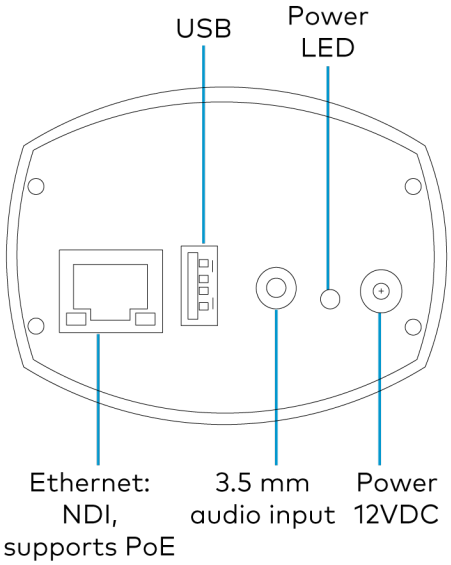
Physical Description

The camera provides the following connectors and indicators.

Front



Rear



Specifications

Product specifications for the Falcon IV-CAMFL-N-W-1B camera.

Optics and Processing

Image Sensor	1/2.5 in. CMOS, 8.57 megapixel
Focal Length & Iris	f=7.9 mm (ePTZ Camera)
Field of View	68° - 41° (ePTZ Camera)
Focus System	Fixed
Minimum Illumination	1 Lux
Shutter Speed	1/1 - 1/10,000 sec
Gain	Auto, Manual
White Balance	Auto, One Push, Manual
Exposure	Auto, Manual, Shutter Priority, Iris Priority
Number of Presets	Up to 256
Serial Control	PELCO-D, VISCA
Protocol	HTTP, TCP, UDP, ONVIF
Address	0 - 63

Pan, Tilt, Zoom

Zoom	2x Digital

Connectivity

Ethernet	RJ-45, 100Mb

Video

Video Outputs	NDI|HX over Ethernet
Signal Formats (HD)	1080p60/50/30/25, 1080i60/50, 720p60/50
IP Video Compression	H.265, H.264
Streaming	RTSP, RTMP
Streaming Resolution	Up to 1080p30 (Tracking Image-Dual Stream, Full View Image-Dual Stream)

Audio

IP Audio Compression	AAC
Audio Input	1x Line In

Power

Power	12VDC, <9 W, PoE
PoE Rating	15.4 W

Environmental

Temperature	32° to 104°F (0° to 40°C)

Construction

Mounting	2x 1/4 in. threaded mount hole
Recommended Mounting	Height: 7-12 ft, Distance: 15-25 ft
Color	White
S/N	≥50dB

Dimensions

Dimensions	5.87 in. x 2.99 in. x 2.28 in. (149 mm x 76 mm x 58 mm)

Weight

0.92 lb (0.42 kg)

Installation

Use the following procedures to install the Falcon IV-CAMFL-N-W-1B camera.

NOTES: Observe the following points.

- Check the source power before powering on the camera. The Falcon can be powered via a 9 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 a PoE switch, be sure the port is properly configured for 9 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's True Blue Support Team 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 directly expose the camera to rain, water, or high moisture.
- This camera is for indoor use only.

In the Box

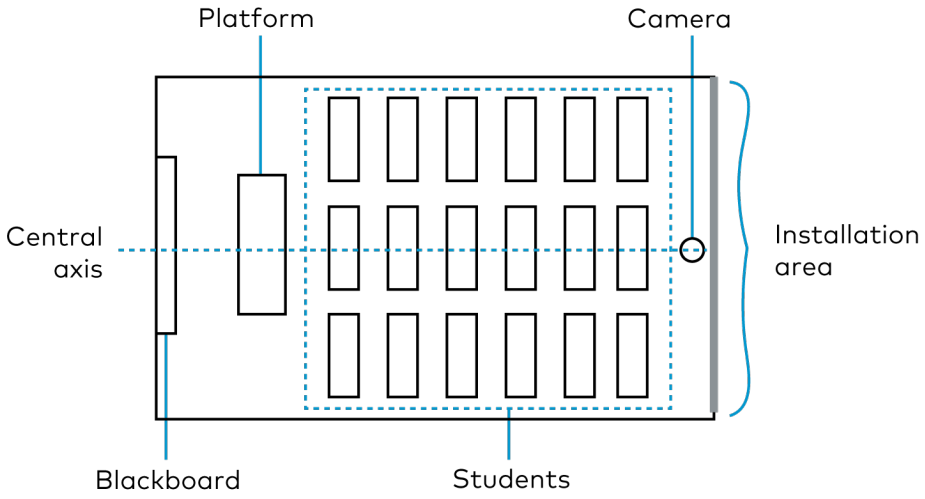
Qty.	Description
1	IV-CAMFL-N-W-1B, 1 Beyond Falcon™ Presenter Tracking Camera, ePTZ, 2x Digital Zoom, NDI®|HX Compatible
	Additional Items
1	12VDC 1A power adapter
1	Wall mount bracket
1	Mounting template
4	Mounting screws
4	Drywall anchors, plastic

Qty.	Description
1	Allen key, 5 mm
1	Tripod-style screws, 1/4-20 UNC (ISO 1222:2010)

Mounting

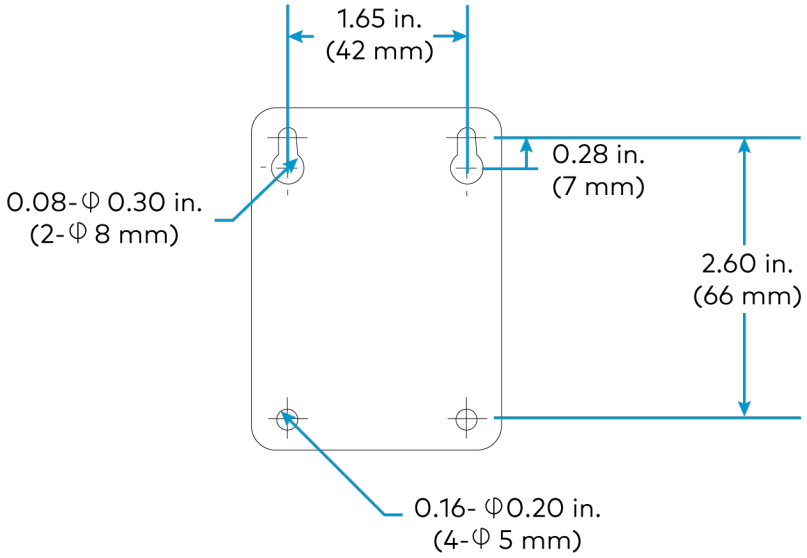
For the best possible tracking performance, observe the following mounting requirements.

- Mount the camera with a clear view of the area where the subject will be tracked.
- The camera should be mounted 15-25 ft (5-8 m) from the subject and at a height of 7-12 ft (2-4 m).
- The camera lens must be able to see the entire area that the subject will be tracked in as it is used by the tracking algorithm for motion and facial detection.
- Positioning the camera where the camera lens covers predominately the ceiling results in suboptimal tracking performance. If the room slants down, position the camera at a slant as well.
- Mount the camera as close as possible to the central axis of the area where the subject will be tracked. This is commonly the center of the back wall.

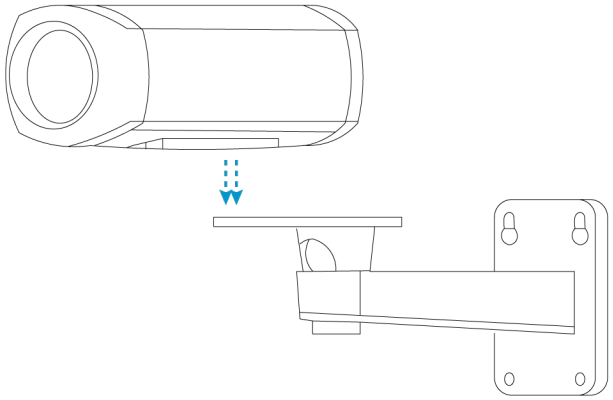


Use the included wall mount to install the camera.

1. Use the mounting template to drill four holes in the wall.
2. Use the four included mounting screws and anchors to attach the bracket to the wall.

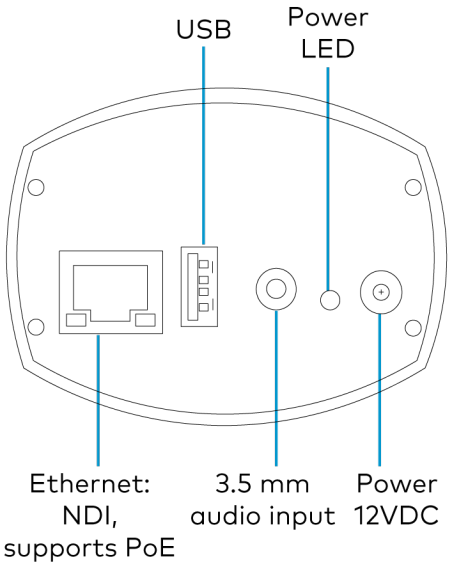


3. Use the two tripod-style screws to affix the camera to the bracket.
4. Tilt the camera no more than 30° forward to ensure optimum pan and tilt accuracy. Use the included Allen key to make adjustments to the tilt function of the bracket.



Wiring

Properly wire the camera with power, video, and control. Ethernet supports NDI®|HX and PoE. The audio input of the camera only feeds into the encoded IP stream. It is recommended to record/stream audio using a separate device.



Network Connection

A network connection enables easy configuration, control from any PC connected to the same network, and access to the camera's IP video streams for monitoring. Use a CAT5 or CAT6 cable to connect the camera to the network or directly to the host computer used for configuration.

The camera is shipped with a static IP address. The network connection can also be used for control VISCA commands over TCP/IP.

- Default IP address: 192.168.18.77
- Subnet Mask: 255.255.255.0

If an Ethernet cable is connected directly to a computer running the 1 Beyond Camera Manager software, the computer's network port must be set to an address on the same subnet (for example, 192.168.18.77) in order to communicate with the camera.

When configuring multiple cameras, connect them to the network individually and assign them each a unique IP address that conforms to your overall IP scheme.

PoE Power

With PoE compatibility, the camera allows control, monitoring, and power input using a single Ethernet cable. To power the camera from your network switch, make sure that it is a PoE

certified switch that can supply 9 W of power for each connected camera. Alternatively, a PoE injector can be used to inject power between the switch and camera.

DC Power

Power the camera using 12VDC or PoE, but not simultaneously. The camera cannot operate properly with less than 12VDC power. Since voltage drops over distance, the supplied 12V 1A power adapter is not sufficient if the power source is greater than 10 ft (3 m) from the camera.

WARNING: Providing too little or too much power can damage the camera. For PoE, make sure the network port is configured for 9 W. For DC power, be sure to supply 12V to the camera.

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:

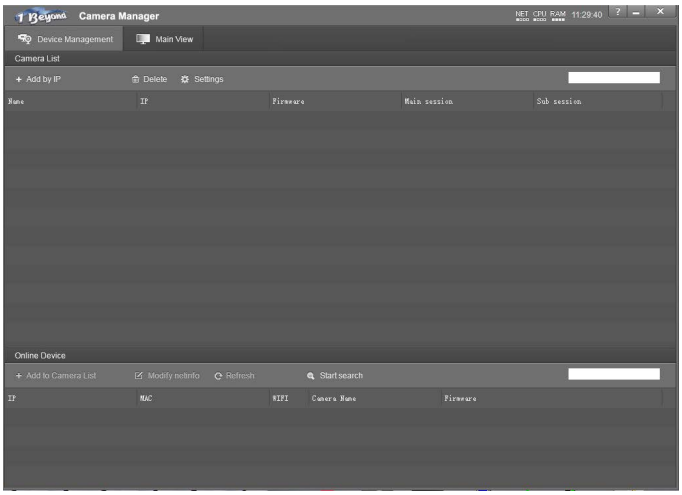
- Configuration via the 1 Beyond Camera Manager
- VISCA Commands

Configuration via the 1 Beyond Camera Manager

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

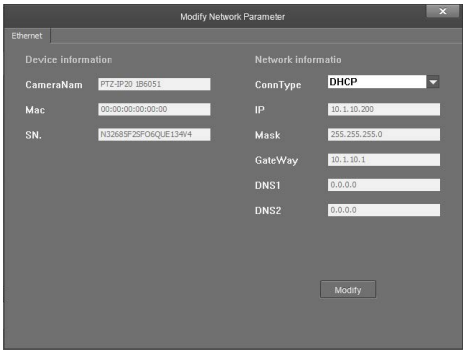
Once 1 Beyond Camera Manager is installed on the host computer and the camera is connected to the network or directly via Ethernet, launch the software to start configuring the camera. Use the **Device Management** tab of the software to add the camera to the Camera List.



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, Falcon and serial number), and firmware version displayed.

IP	MAC	WIFI	Camera Name	Firmware
10.1.10.46	00:04:05:01:84:F7	No	AT3 1B6341	5.0.08

2. To change the camera's network settings to match your network's IP scheme, 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. It can be set 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*.
   If the 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 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**. This brings up the **Add** panel 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.
   The camera should show as **connected** in both the **Close-Up** and **Panorama** columns, signifying that 1 Beyond Camera Manager is able to receive both IP video streams from the camera.
6. If the status reads *Connection Failed* or *Disconnect*, double-check the IP address of the camera and the computer to be sure they are on the same subnet so the two can communicate via IP.

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 **Close Up** and **Panorama** to add the streams the multi view area. The tracking shot and the full-room view 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 and to enable settings.

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

Set the Tracking Zone

Requirements:

- Set the Tracking Zone to contain the entire area where a presenter will move around. Draw the Tracking Zone so it fills a presenter's head and torso.
- Leave room on the left and right of the zones to allow the presenter to leave the zone and another presenter to enter.
- If the front row of audience seats covers some of the presentation area, don't include it in the Tracking Zone. Instead, draw it so that at least the torso and/or head of the presenter will be the only moving subjects in the Tracking Zone.

> **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 (Lecturer)** 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

Set Blocking Zones within the Tracking Zone to prevent projection screens, windows, or moving objects from triggering the camera's motion detection. Up to 8 blocking zones can be configured.

Guidelines:

- Blocking zones should cover the entire display or projection screen that falls within the tracking zone.
- Set the Blocking Zone so it does not block an entire section of the tracking zone, as this could potentially cause the camera to lose the presenter if they remain in the blocked area for too long.
- There should be space left in the Tracking Zone below the Blocking Zone so that motion can be tracked as the person walks in front of the display or window you are blocking.

To set up a Blocking Zone, click on one of the check boxes in the Blocking Zone area of the settings pane and draw the zone in your desired spot within the tracking zone. This process is identical to setting up the Tracking Zone.

Set Preset Zones

Preset Zones are specified zones that trigger static presets when a presenter enters the zone.

To set a Preset Zone:

1. Select a Preset Zone and draw an area in which a presenter will trigger a static preset such as a white board.
2. Select **Set** to configure the preset using the on-screen PTZ controller.

Set Presets 0 and 1

After the camera's tracking properties are set, set presets 0 and 1. These two presets serve as the camera's reference for how it frames a presenter and the shot it defaults to when nobody is presenting.

> NOTES:
>
> - Do not overwrite presets 0 and 1. They serve as the main reference point to determine the camera's tracking properties.
> - If the camera will be controlled using a 3rd party control system and presets need to recall different shots, use presets 2 and higher.

Preset 0 - The Home Position

Preset 0 is the shot that the camera will revert to when no presenter is detected or tracked. This preset should be set to a view of the entire presentation area.

Under some circumstances, it may not be preferential for the camera to zoom all the way out only to zoom in again once a presenter or speaker enters - for example when a podium shot is preferred. In this case, a tighter shot should be set for Preset 0.

To set Preset 0:

1. Navigate to the Main View tab.
2. To move the camera, use the arrow buttons and Zoom + / - in the PTZ controller section of 1 Beyond Camera Manager software.
3. To store Preset 0, select the number 0 from the drop-down menu and click **Set**.

Preset 1 - The Framing Reference

Preset 1 determines how tightly the camera frames a presenter while tracking and determines the maximum amount of zoom and upwards tilt-motion of the tracking shot. Have someone act as a subject to determine the optimum camera position and zoom in.

To set Preset 1:

1. Navigate to the Main View tab.
2. To move the camera, use the arrow buttons and Zoom + / - in the PTZ controller section of 1 Beyond Camera Manager software.

   Ensure the subject fits in the frame in the following situations:

   - The subject stands with outstretched arms.
   - The subject raises a hand (to simulate writing on a blackboard or gesturing).
   - Depending on the height of the subject, add enough headroom to allow taller presenters. The headroom defined in Preset 1 limits how far up the camera will tilt while tracking.
3. To store Preset 1, select the number 0 from the drop-down menu and click **Set**.

Adjust White Balance

As the lighting in presentation spaces can change frequently due to projectors, displays or windows, set the camera to static white balance in order to guarantee the most reliable tracking performance. Additional white balance settings are detailed in On-Screen (OSD) Menu on page 27.

The most reliable way to achieve accurate static white balance is to focus the camera on a white object like a white board or a white balance target and perform a One-Push white balance measurement.

1. Focus on a white object
   Pan / tilt / zoom until the white object fills the entire frame.
2. Open the OSD Menu
   Click the **Menu** button in the center of the PTZ controller to toggle the camera's on-screen menu. This menu will appear overlaid on top of the tracking shot/close up feed.

3. Enter COLORTONE Settings
   Using the down-arrow, navigate to the COLORTONE option and click **Enter** to confirm your selection.
4. Cycle to the **ONE PUSH** option using the right-arrow button and select **ONE PUSH TRIGGER** to initiate the white balance adjustment.

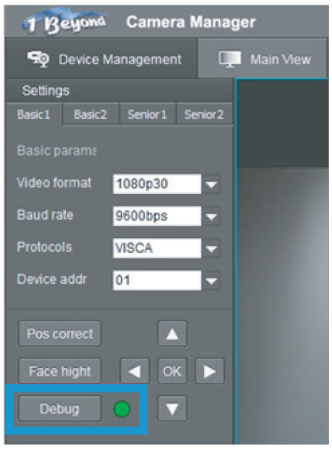
Adjusting Exposure

In challenging lighting conditions, adjusting exposure compensation might be necessary in order to guarantee optimum tracking performance.

1. Open OSD Menu
2. Enter EXPOSURE Settings
3. Adjust Exposure Settings to your liking.

Test and Refine Tracking Performance

Now that the initial configuration is complete, test tracking behavior using a stand-in presenter. Have the presenter walk around and monitor the camera to pinpoint any unwanted motion or incorrect framing.



To activate Debug mode:

1. In the first tab of the **Tracking (Lecturer)** settings, click the **Debug** button. The green indicator reflects whether this mode is turned on or off.
2. Once this mode is engaged and tracking starts, monitor the camera's motion and facial detection behavior.

If motion has been detected within the Tracking Zone, the full-room view feed will show a green box in that area of the frame.

The tracking shot moves to and zooms into the area where motion has occurred. As it is zooming in toward the position defined in Preset 1, the full-room view shows a red box around the presenter's face once it has been detected.

Use this mode to determine whether there are any dead zones within the Tracking Zone where the camera might lose the presenter's face or is unable to detect motion sufficiently.

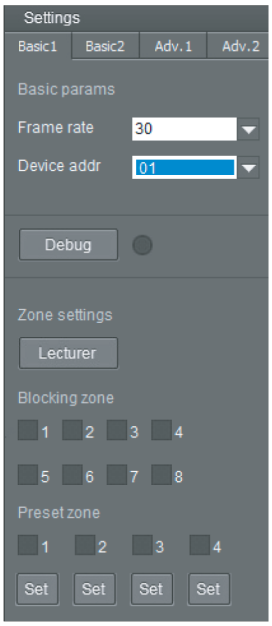
If needed, make changes to the setup of Tracking and Blocking zones or adjust exposure or white balance to eliminate these issues.

Advanced Settings

To fine-tune the camera, the 1 Beyond Camera Manager software offers more in-depth settings to help you tailor its tracking algorithm to your environment.

> **NOTE:** Do not adjust any of these settings before you have completed the basic configuration described in the previous section.

Basic 1 Tab



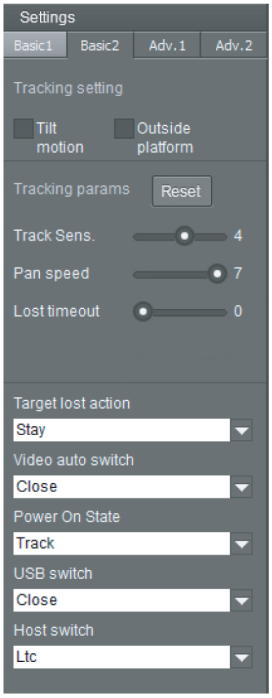
Frame Rate

Changes the camera's frame rate. The frame rate of the IP video streams can be set independently. Refer to the 1 Beyond Camera Manager manual on how to adjust the RTSP stream settings.

Device Address

This setting determines the device address.

Basic 2 Tab



Tilt Motion

When deactivated, the camera will not tilt up or down once locked onto a subject.

L / R of Zone (Outside Platform)

Determines whether the camera will keep tracking a subject that it has locked onto as they exit the Tracking Zone to the left or right. Note that this will not let people outside the Tracking Zone initiate tracking.

> **NOTE:** The following settings should only be changed by advanced users as they can severely affect tracking performance if set incorrectly. To restore the defaults, refer to the screenshot in Basic 2 Tab above.

Tracking Sensitivity

Determines how sensitive the camera is to motion that occurs within the tracking zone. Lower this setting if the camera gets distracted by lighting changes or shadows.

Pan Speed

This setting adjusts the speed of pan movement during tracking. This can be increased if presenters tend to be move active.

Lost Timeout

Defines how long the camera waits before returning to preset 0 once the subject has left the Tracking Zone.

Target Lost Action

Determines whether the camera returns to preset 0 or stays on preset 1 when no subject is being tracked.

Video AutoSwitch

Determines if the camera should switch to full room view when a presenter leaves tracking zone.

Power on State

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

USB Switch

Reserved for future use.

Host Switch

Reserved for future use.

Advanced 2 Tab

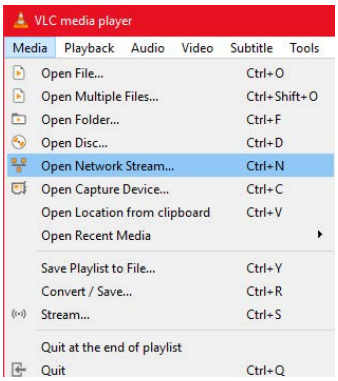
The Advanced 2 tab is used for adjusting settings pertaining to the way the camera will interface with 3rd party control systems.

By default, these settings are configured to ensure maximum compatibility with 1 Beyond Automate Systems. Only change these settings if required by your control system.

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.

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

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. The menu then displays overlaid on the camera's tracking shot/ Main View video output.

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

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.

> **WARNING:** 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>	IMAGE MODE	MODE1, MODE2, MODE3	
	EXPOSURE	1, 2, 3, 4, 5, 6, 7	
	SHARPNESS	1, 2, 3, 4, 5, 6, 7	
	2DNR LEVEL	OFF, 1, 2, 3, 4, 5, 6, 7	
	3DNR LEVEL	OFF, 1, 2, 3, 4, 5, 6, 7	
	ANTI-FLICKER	OFF, 60 HZ, 50 HZ	
	LDC LEVEL	OFF, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20	
	D-ZOOM LIMIT	X 1, X 1.5, X 2	
	BLC	ON, OFF	
<WHITE BALANCE>	MODE AUTO	R.GAIN	-7~+7
		G.GAIN	-7~+7
		B.GAIN	-7~+7
	ONE PUSH		
<SYSTEM>	MOUNT MODE	STAND,CEILING	
	DISPLAY MODE	SDI, NET	
	LANGUAGE	ENGLISH	
<STATUS>	ADDRESS	1	
	PROTOCOL	VISCA	
	BAUD RATE	9600	
	VIDEO FORMAT	1080P30	
	FIRMWARE VER	2.0.46	
<RESTORE DEFAULTS>			

Image Settings

The **IMAGE** menu is used to adjust the camera's video output settings to fit the environment.

SHARPNESS

Used to adjust image sharpness in terms of both focus and contrast.

BRIGHTNESS/CONTRAST/GAMMA

Used to adjust image brightness and the properties of the camera's automatic exposure adjustment features.

DNR – Digital Noise Reduction

The 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.

MIRROR/FLIP

Used to mirror or flip the image output.

Exposure

EXPOSURE toggles between 3 predefined modes to quickly adjust exposure levels.

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).

COLORTONE

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.

To perform a one-time 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.

WB-SENSITIVITY adjusts the camera's color sensitivity.

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
95	Open OSD Menu

VISCA Commands

1 Beyond PTZ cameras can be controlled using the VISCA protocol through 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

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 1 Beyond AutoTracker, AutoFramer, Falcon, Hawk, PTZ-IP12, and PTZ-IP20 cameras. Under no circumstances should you ever overwrite presets 80 and 81 on these cameras. Once configured, the end user must not overwrite presets 0 and 1 since these are used as references to adjust framing while tracking is active.

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 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.

	Command Message	Comments
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

Command Set	Command	Command Packet	Comments
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)
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

Command Set	Command	Command Packet	Comments
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	
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	

Command Set	Command	Command Packet	Comments
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

Inquiry Command	Command Packet	Inquiry Packet	Comments
CAM_ApertureInq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	p,q: Aperture Gain
CAM_ PictureEffectMode Inq	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

Inquiry Command	Command Packet	Inquiry Packet	Comments
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's True Blue Support Team.

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTIONS
No 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.
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.
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 Close Up.
Camera is not controllable when powered on	Wrong address/protocol /baud rate settings	Open OSD to verify your settings are correct.

Resources

The following resources are provided for the IV-CAMFL-N-W-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.

Related Documentation

1 Beyond Camera Manager Product Manual

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Crestron Electronics, Inc.
15 Volvo Drive, Rockleigh, NJ 07647
Tel: 888.CRESTRON
Fax: 201.767.7656
www.crestron.com

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