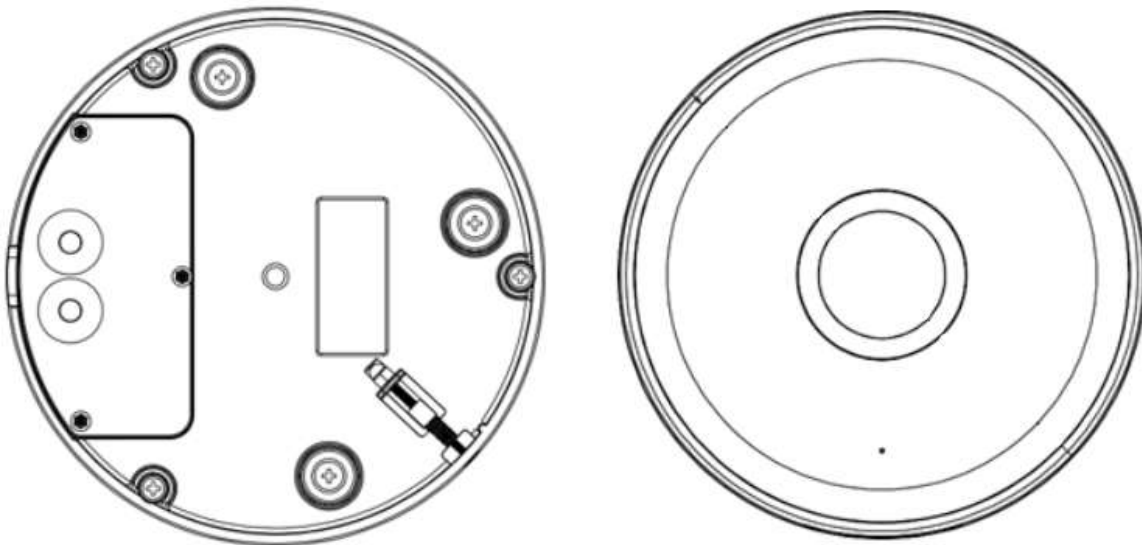


Illustra Pro Gen 4 12MP Fisheye camera Installation and Configuration Guide



Notice

Please read this manual thoroughly and save it for future use before attempting to connect or operate this unit.

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Overview

This Installation and Configuration Guide is a user manual which provides physical properties, installation, and configuration information of the cameras in Table 1 on Page 5.

Table 1 Product codes

Product Code	Model Name	Description
IPS12-F27-OIA4	Illustra Pro Gen4 12MP Fisheye camera	Illustra Pro Gen4 12MP Fisheye, indoor/outdoor, vandal, TDN, w/IR, TWDR

The first portion of this guide contains information pertaining specifically to the aforementioned cameras.

The second portion of this guide contains information regarding the Illustra User Web Interface and the web configuration of the aforementioned cameras. Refer to Configuration on page 25 for procedural information pertaining to camera configuration.

Illustra Pro Gen 4 12MP Fisheye camera

This chapter provides product features, installation procedures, and connection information regarding the camera.

Product overview

This chapter explains the installation of the camera. Product codes and description of the cameras are provided in Table 2 on page 6.

Table 2 Product code and description of the Pro Gen 4 12MP Fisheye camera

Product Code	Model Name	Description
IPS12-F27-OIA4	Illustra Pro Gen4 12MP Fisheye camera	Illustra Pro Gen4 12MP Fisheye, indoor/outdoor, vandal, TDN, w/IR, TWDR

Installation

In the box

Check everything in the packing box matches to the order form and the packing slip. In addition to this guide, items below are included in the packing box.

- 1 x Illustra Pro Gen4 12MP Fisheye Camera
- 1 x Flat bracket
- 1 x Safety wire
- 4 x Tapping screws and 4 x Plastic anchors
- 1 x Torx wrench
- 1 x 2 pin terminal block
- 1 x 8 pin terminal block
- 1 x Printed Quick Start Guide
- 1 x Mounting template sticker
- 1 x Mounting thread screw
- 1 x Waterproof rubber
- 4 x Standoffs (for use with the wall mount accessory)
- 4 x Phillips screws (for use with the wall mount accessory)
- 1 x Plastic adaptor plate (for use with the pendant cap accessory)
- 2 x M4 screws (for use with the pendant cap accessory)
- 4 x Phillips screws (for use with the pendant cap accessory)

Contact your dealer if any item is missing.

Installation tools

The following tools assist with installation:

- 1 x Screwdriver
- 1 x Torx wrench
- 1 x Drill
- 1 x Wire cutters

Quick reference

- Default IP: 192.168.1.168 (DHCP enabled)
- Default Username: admin
- Default Password: admin
- Power: IEEE 802.3af Class 3, PoE 48V DC / 11.89W or 24V AC / 11.77W

Checking appearance

When first unboxing, check whether if there is any visible damage to the appearance of the unit and its accessories. The protective materials used for the packaging should be able to protect the unit from most types of accidents during transportation. Remove the protective part of the unit when every item is checked in accordance with the list in Installation tools on page 7.

Figure 3 Pro Gen 4 12MP Fisheye rear / top-down views

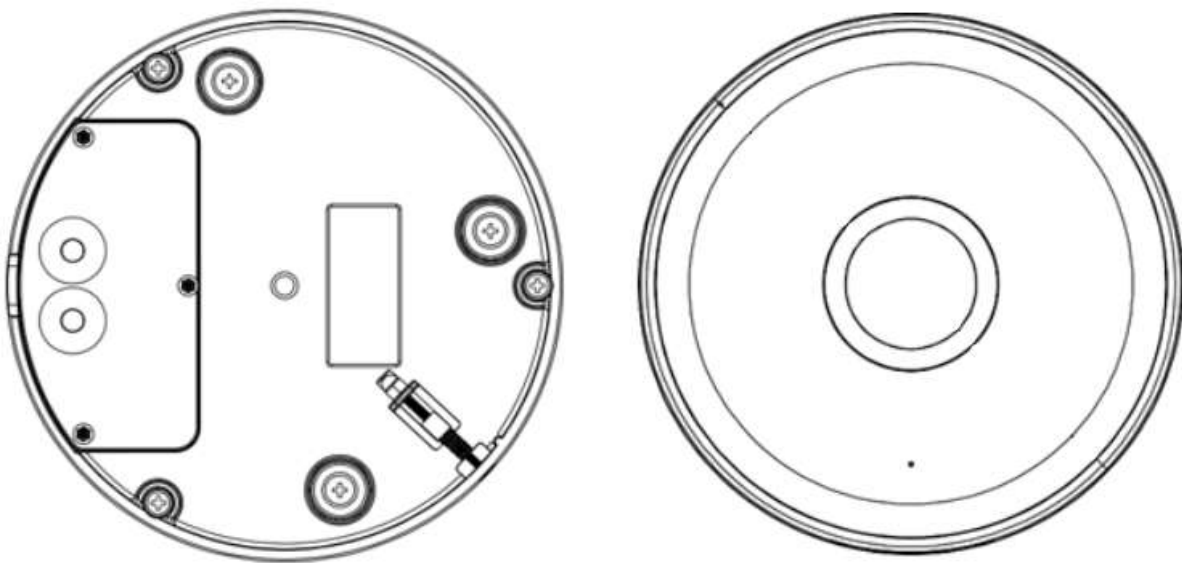


Figure 4 Camera Parts (Top-down view)

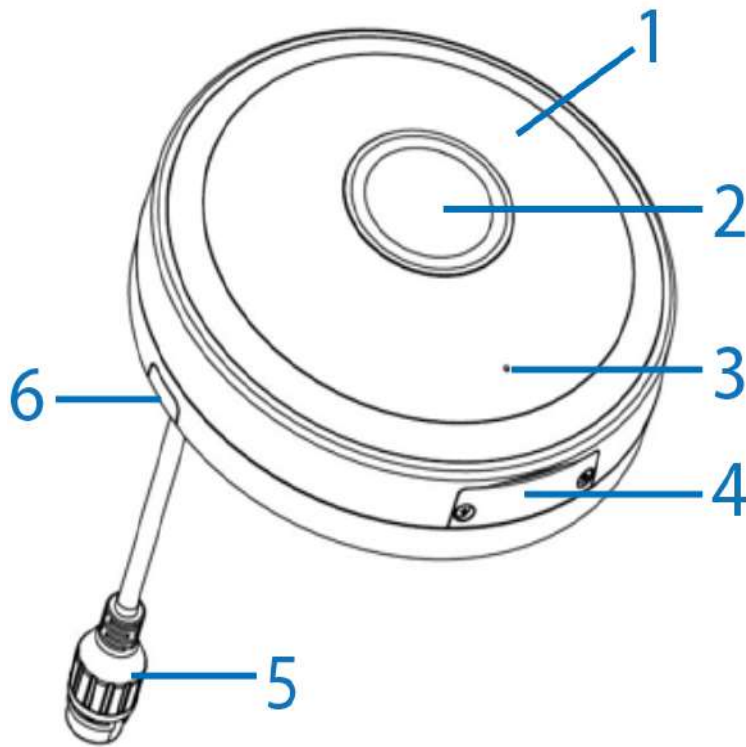


Figure 5 Camera Parts (Rear view)

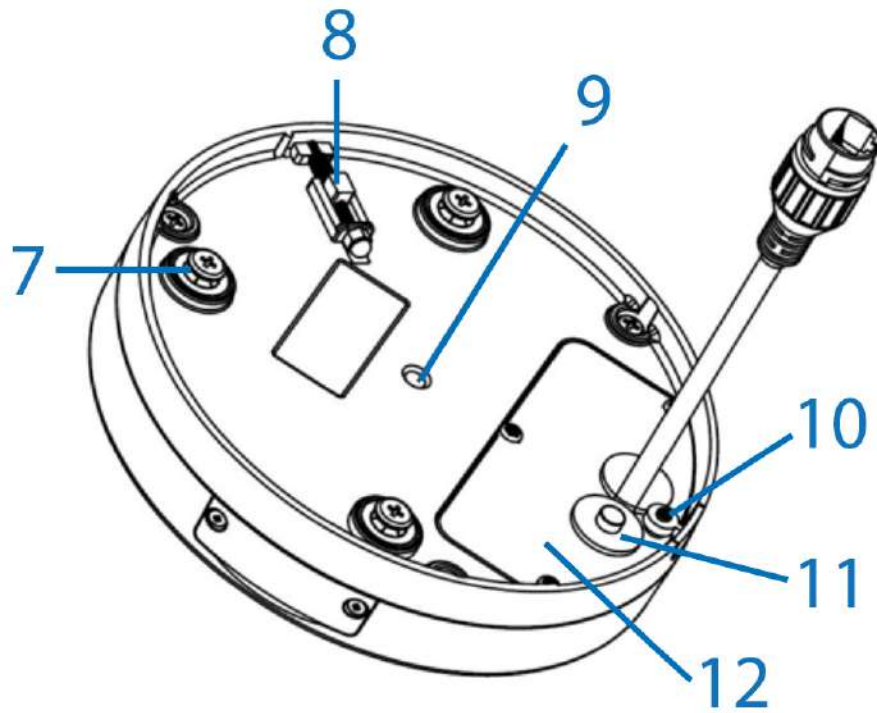


Table 6 Camera part descriptions

	Name	Description
1	Dome Cover	The upper dome-shape cover provides protection
2	Lens	The proprietary fisheye lens provides wide hemispheric view
3	Microphone vent	The hole for built-in microphone to receive audio input
4	SD Card cover	Unscrew the two screws to remove the cover and access the SD card cover
5	Pre-Fitted RJ45 cable	Insert an Ethernet cable into the PoE port on the RJ45 cable
6	Cable side entry hole	Cable route when using the cable side entry hole
7	Mounting screws	These three screws attach the camera to the flat bracket
8	Security lock	The security lock ensures that the camera is mounted securely onto the flat bracket
9	Safety wire screw	Remove this screw and insert it into the 'loop' on the safety wire, then securely attach the screw back into the camera
10	Side cap screw	Remove this screw when using the cable side entry cap
11	Waterproof rubber plug	Allows multiple cables to be threaded through the each of the two plugs to ensure waterproof protection
12	Rear cap cover	Remove the three screws to open the rear cap to access the camera buttons and connections

Note: The pre-fitted ethernet cable that comes with the camera can be removed if the installation requires the use of an existing network cable, or if additional cables are required. You must use the supplied rubber grommet with the cable to maintain the IP rating.

Figure 7 Camera buttons and connections

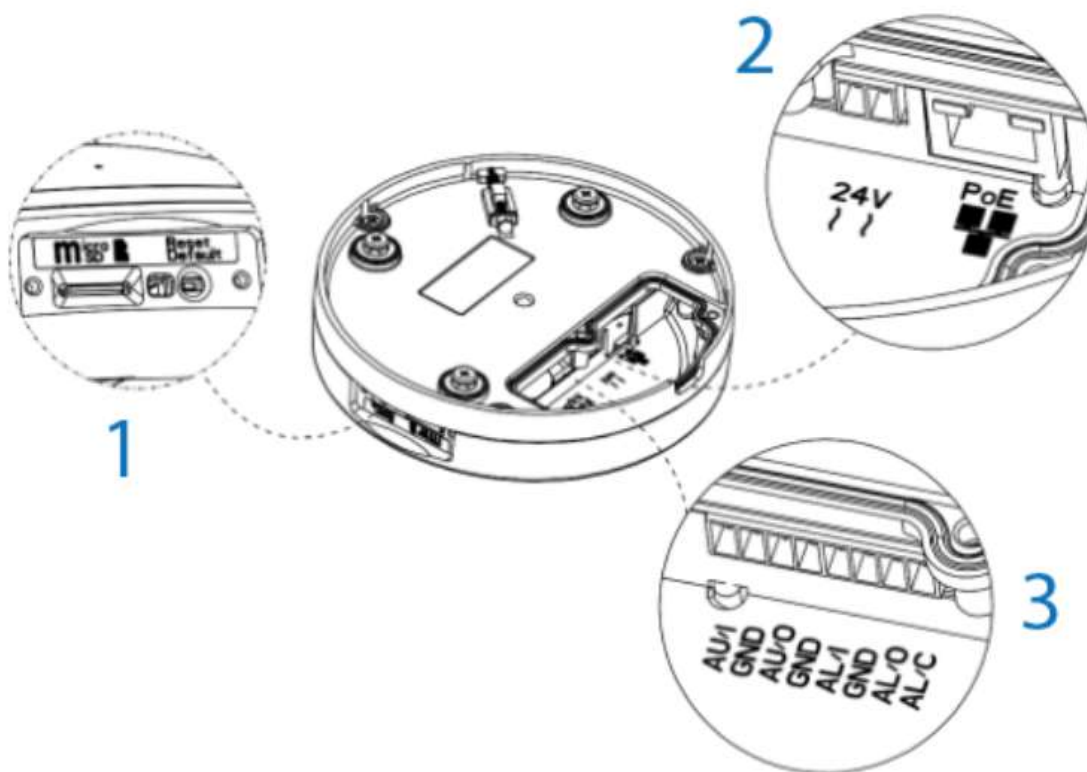
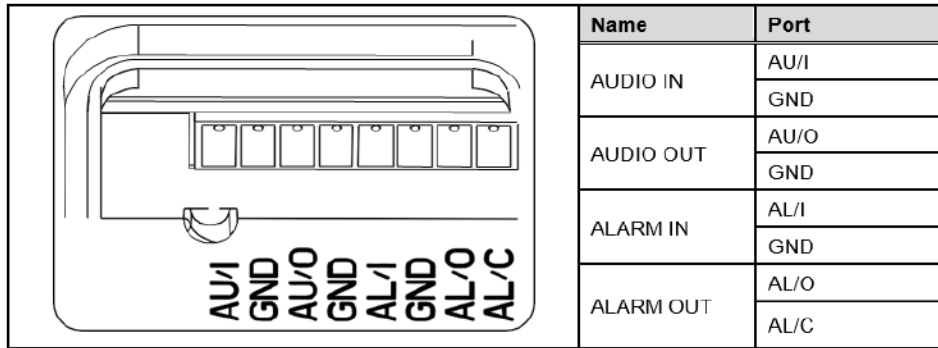


Table 8 Camera buttons and connections descriptions

	Name	Description
1	Reset & Default button	Press for less than 1 second to reboot the camera; pressing for 6 seconds to restore the camera to the factory default settings
	Micro SD Card Slot	Insert a micro SDHC / SDXC card (customer supplied) into the slot for recording and file storage.
2	RJ-45 PoE Port	Pre-fitted RJ-45 cable connection slot
	24 V AC Power Ports	To power on the camera, connect a 24 VAC power source to the corresponding 2-pin ports.
3	DI/DO Terminal Ports	Connect to several external devices for audio and alarm input / output functions, which can expand the usability of the camera for a variety of field applications. See Figure 5 for details on port definitions.

Figure 9 I/O port descriptions

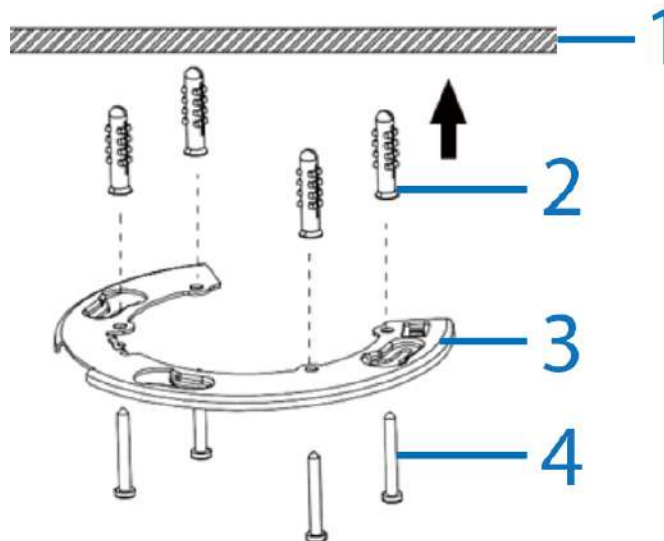


Note: The power supply terminal / adaptor for IO connectors and field wiring should comply with the Class 2 circuit standard to ensure safety from electrical fires and providing acceptable against electrical shock. The alarm out pin is a 30 VDC output signal with a maximum load of 1 A. The alarm in pin acts as a switch, which is either NO (Normal Open) or NC (Normal Closed).

Procedure 1 Mounting the camera to a surface

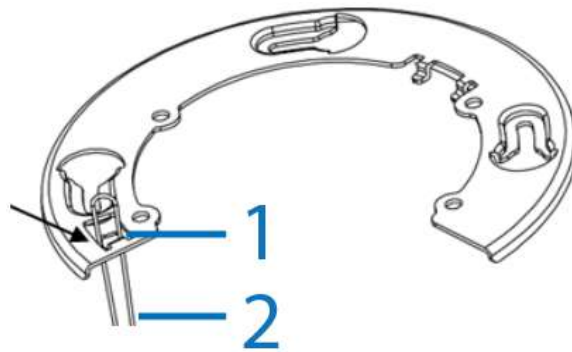
Step	Action
1	Place the mounting template sticker onto the surface.
2	On the surface (1) (Figure 10) drill four Ø 6mm holes and insert the four plastic screw anchors (2) (Figure 10) into the four Ø 6mm holes.
3	Hold the flat bracket (3) (Figure 10) up to the surface and align the four holes on the flat bracket with the four holes on the surface.

Figure 10 Installing the flat bracket to a surface



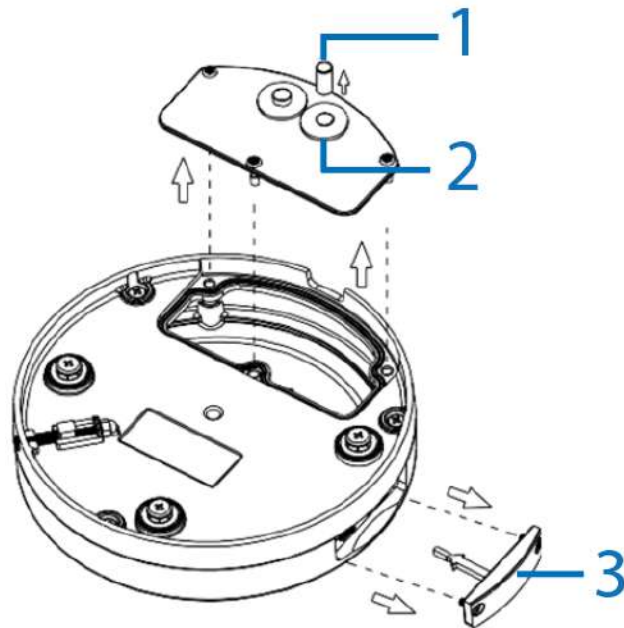
- 4 Insert the four screws (4) (Figure 6) into the four screw anchors and use the screwdriver to securely attach the flat bracket to the surface.
- 5 Insert the safety wire (1) (Figure 11) onto the 'hook' (2) (Figure 11) on the flat bracket.

Figure 11 Attaching the safety wire to the flat bracket



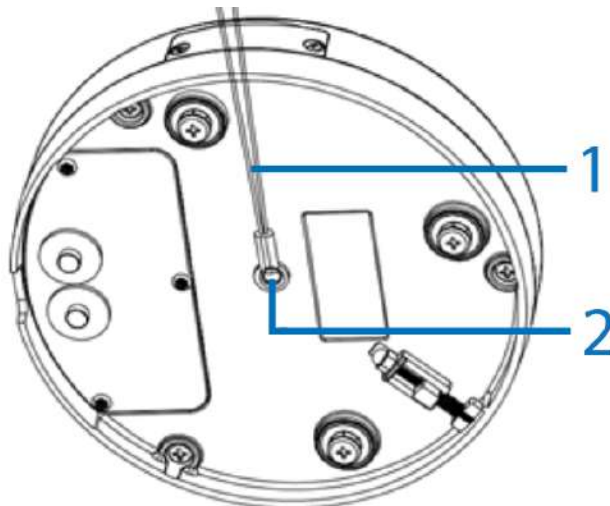
- 6 Use the screwdriver to remove the three screws on the camera rear cap cover (9) (Figure 5).
- 7 Connect the 24V AC cable to the 2-pin port on the camera.
OR
Connect the RJ-45 jack to a PoE compatible network device that supplies power through the ethernet cable.
- 8 Connect the audio and alarm cables to the 8-pin terminal. (See Figure 9).
- 9 You can route all cables through the two waterproof rubber holes on the rear cap (9) (Figure 5) or through cable side entry hole (5) (Figure 4).
 - a Remove the rubber plug (1) (Figure 12) and the two waterproof rubber inserts (2) (Figure 12) and then thread all cables through the waterproof rubber inserts. Ensure that the waterproof rubber inserts are inserted correctly back into the holes on the camera.
- OR**
 - a Remove the screw on the cable side entry cap (5) (Figure 4) and route all cables through the cable side entry slot.
- 10 Hold the rear cap up to the camera and align the three holes on the rear cap with the three holes on the camera.
- 11 Insert the three screws into the three holes and use a screwdriver to securely attach the rear cap cover to the camera.
- 12 **OPTIONAL:** Inserting a micro-SD card.
 - a Use the screwdriver to remove the two screws on the SD card slot cover (3) (Figure 12) and then insert a micro-SD card.
 - b Hold the SD card slot cover back up to the camera and align the two holes on the cover with the two holes on the camera.
 - c Insert the two screws into the two holes and use a screwdriver to securely attach the SD card cover to the camera.

Figure 12 Removing the rear cap cover



- 13 Use a screwdriver to remove the safety wire screw (2) (Figure 13) on the camera.
- 14 Insert the safety wire screw into the 'loop' at the end of the safety wire (1) (Figure 13) and then insert the screw back into the hole on the camera.
- 15 Use a screwdriver to securely attach the screw into the camera.

Figure 13 Attaching the safety wire to the camera



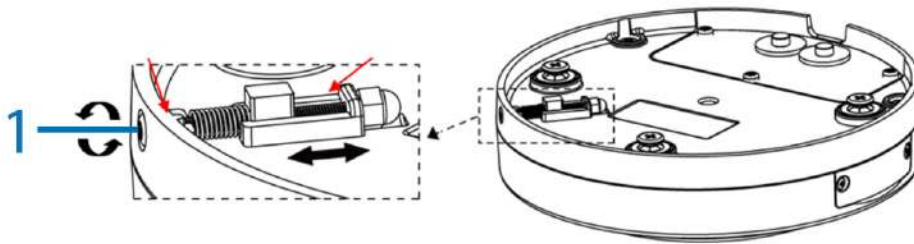
- 16 Hold the camera up to the flat bracket and insert the three screws on the camera (6) (Figure 5) up into the three holes in the flat bracket and then rotate the camera clockwise until it clicks into place on the flat bracket.

Note:The 'RED' dots on the camera and flat bracket must align up correctly.

Note:Rotate the camera counterclockwise to remove it from the flat bracket.

- 17 Use the torx wrench to rotate the security screw (1) (Figure 14) counterclockwise to securely attach the camera to the flat bracket.

Figure 14 Camera security screw



- End -

WARNINGS

- This camera operates at: IEEE 802.3af Class 3, PoE 48V DC / 11.89W or 24V AC / 11.77W.
- Installation and service should be performed only by qualified and experienced technicians and comply with all local codes and rules to maintain your warranty.
- We are NOT liable of any damage arising either directly or indirectly from inappropriate installation which is not depicted within this document.
- Wipe the camera with a dry soft cloth. For tough stains, slightly apply diluted neutral detergent and wipe with a dry soft cloth.
- Do not apply benzene or thinner to the camera, which may cause the surface to melt or lens fog.
- Avoid aligning the lens with extremely bright objects (e.g., light fixtures) for long periods of time.
- Although this camera is waterproof and suitable for both indoor and outdoor usages, do not immerse the camera into water.
- Avoid operating or storing the camera in the following locations:
 - Extremely humid, dusty, or hot/cold environments (recommended operating temperature: -40°F to +122°F/-40°C to +50°C).
 - Close to sources of powerful radio or TV transmitters.
 - Close to fluorescent lamps or objects with reflections.
 - Under unstable or flickering light sources.

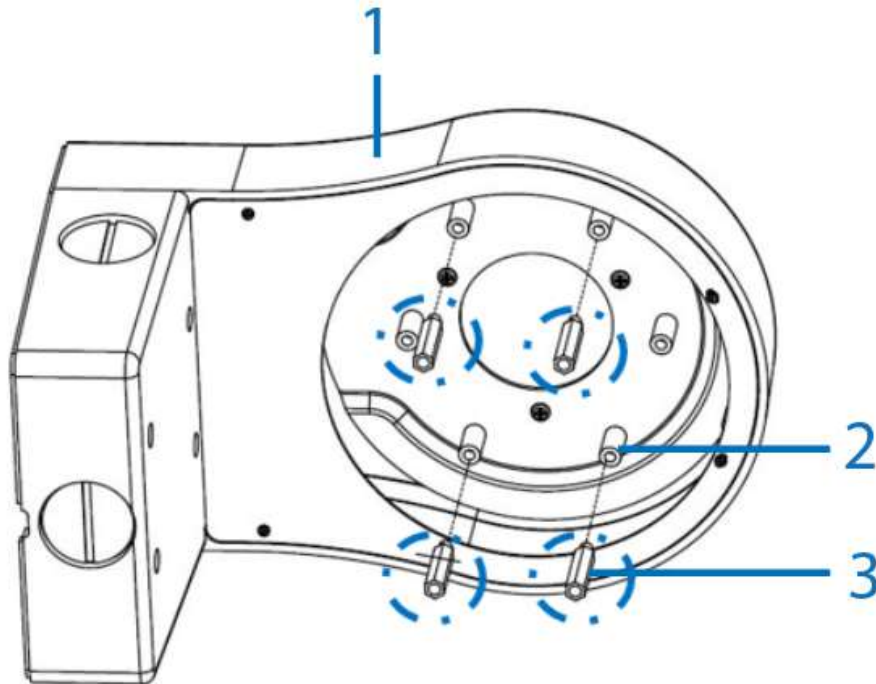
Procedure 2 Attaching the camera to a wall mount

You can attach the camera to a wall using one of the following wall mount accessories
IPSMDWALL3 or ADCiM6WALLWK.

Step	Action
------	--------

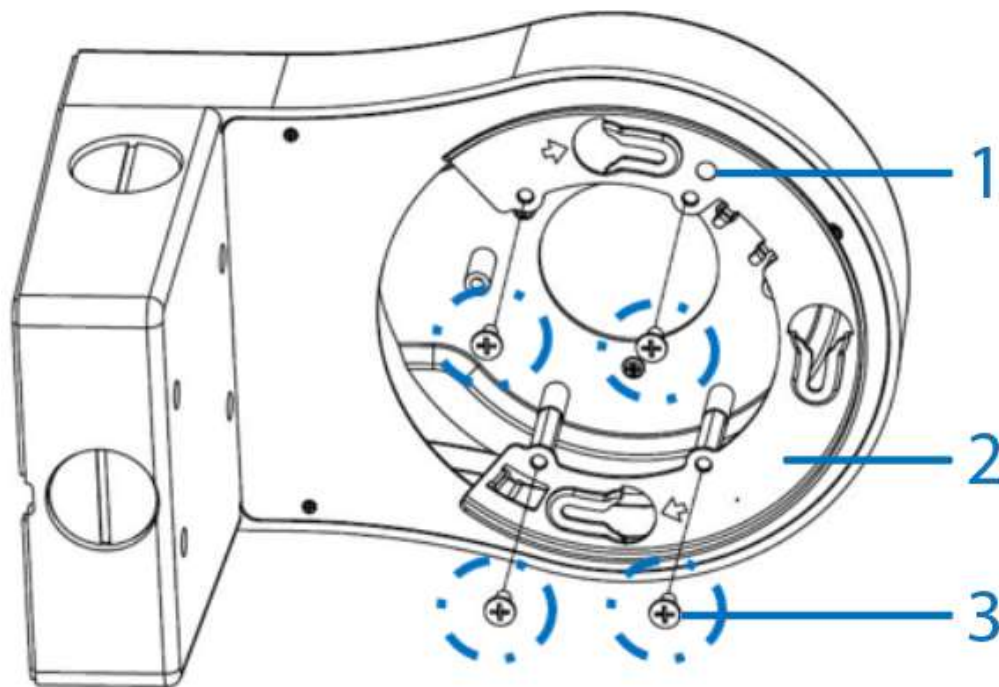
- 1 Insert the four standoffs (3) (Figure 15) that come in the box with the camera up into the four holes (2) (Figure 15) in the wall mount (1) (Figure 15).

Figure 15 Inserting the standoffs into the wall mount



- 2 Insert the flat bracket (2) (Figure 16) up into the wall mount and align the four holes on the flat bracket (1) (Figure 16) with the four holes on the four standoffs.
- 3 Insert the four screws (3) (Figure 16) into the four holes and use a screwdriver to securely attach the flat bracket to the wall mount.

Figure 16 Attaching the flat bracket to the wall mount



4 Continue at step 5 to 17 in the 'Mounting the Camera to a surface' procedure.

- End -

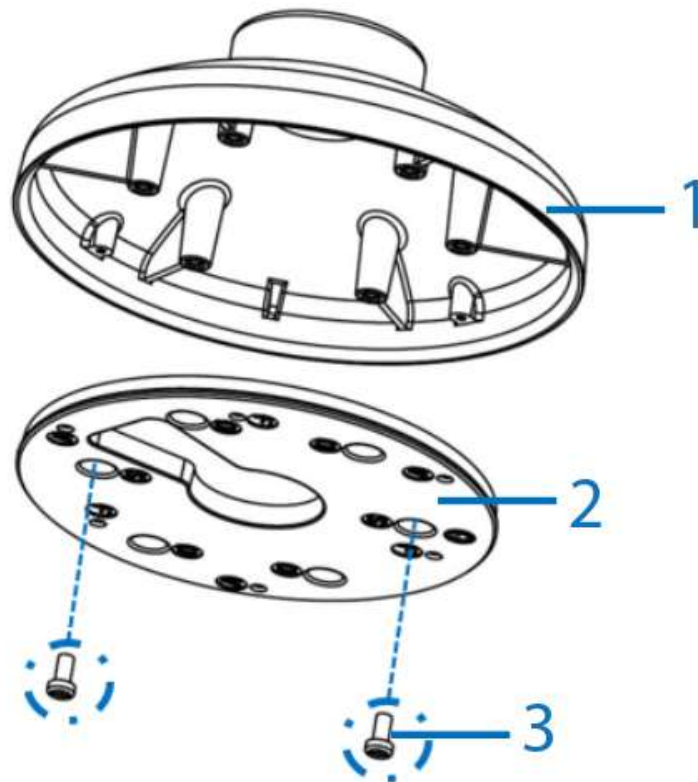
Procedure 3 Attaching the camera to a pendant cap

You can attach the camera to the following Pendant Cap accessory (ADCi6DPCAPOW).

Step	Action
-------------	---------------

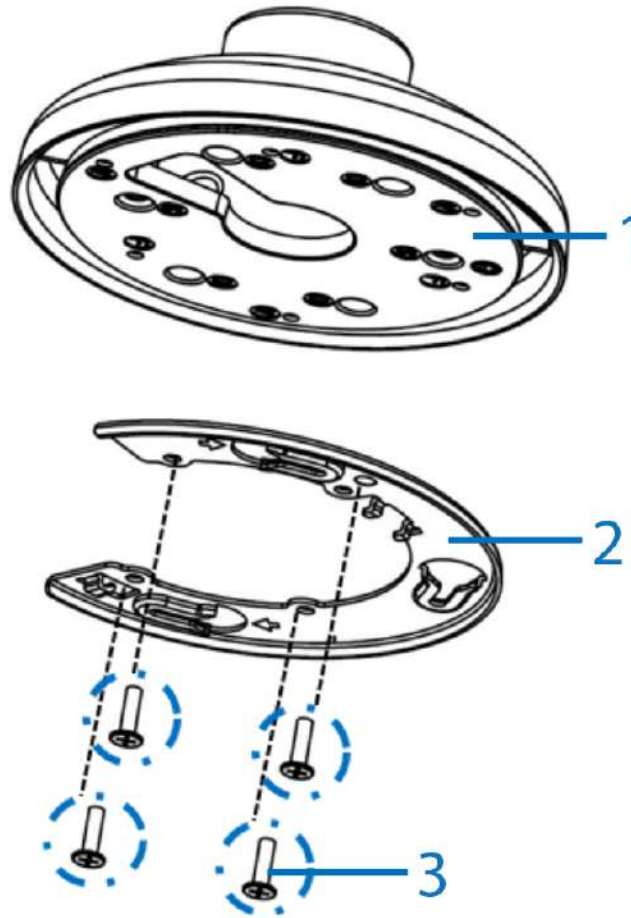
1	Hold the adaptor plate (2) (Figure 17) that comes in the box with the camera up into the pendant cap (1) (Figure 17).
---	---

Figure 17 Attaching the adaptor plate to the pendant cap



- 2 Align the two holes on the adaptor plate with the two holes on the pendant cap.
- 3 Insert the two screws (3) (Figure 17) into the two holes and use a screwdriver to securely attach the adaptor plate to the pendant cap.
- 4 Hold the flat bracket (2) (Figure 18) up to the adaptor plate (1) (Figure 18) and align the four holes on the flat bracket with the four holes on the adaptor plate.

Figure 18 Attaching the flat bracket to the adaptor plate



- 5 Insert the four screws (3) (Figure 18) into the two holes and use a screwdriver to securely attach the flat bracket to the adaptor plate.
- 6 Continue at step 5 to 17 in the 'Mounting the Camera to a surface' procedure.

- End -

Network Topology

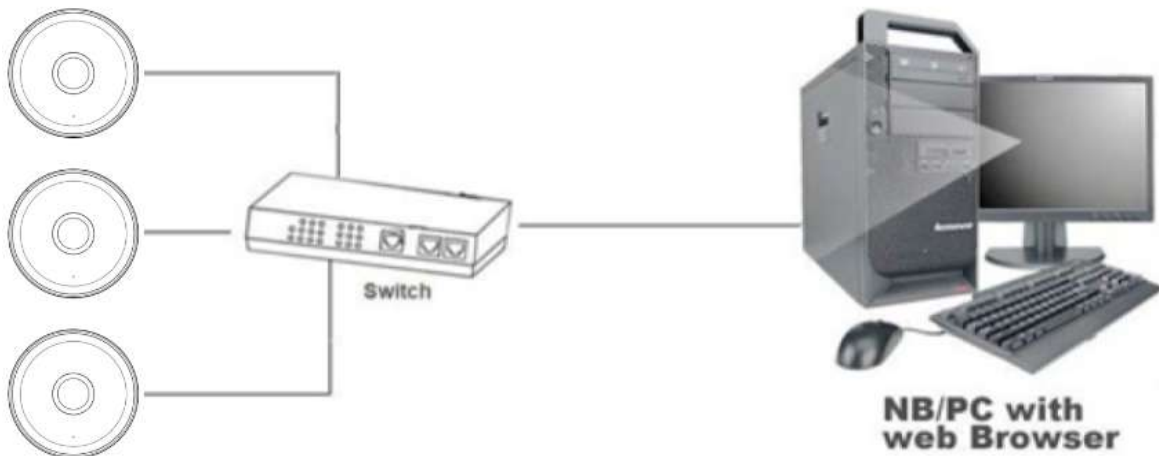
The camera delivers video images in real-time using the internet and intranet. It is equipped with an Ethernet RJ-45 network interface.

Pro Gen 4 12MP FisheyeCamera Topology

Figure 19 PG4 12MP Fisheye Camera Network Topology Type I.



Figure 20 PG4 12MP Fisheye Camera Network Topology Type II



Network Connection

Default IP Address

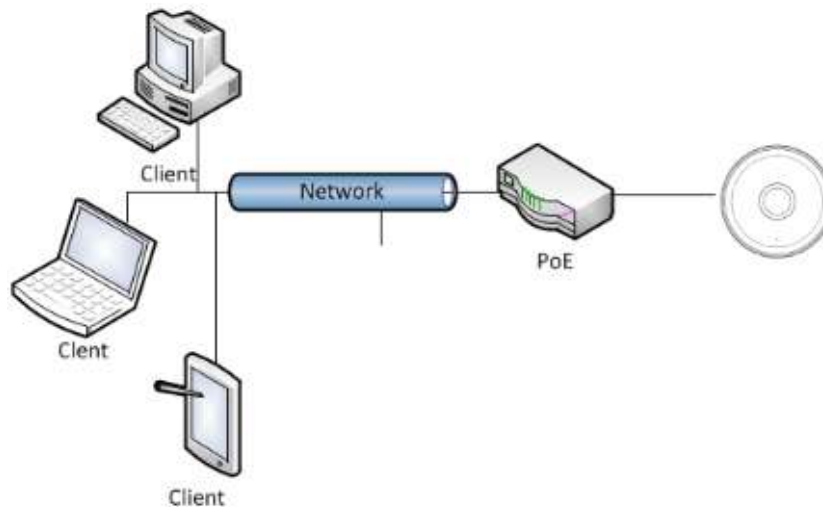
Since this is a network-based unit, an IP address must be assigned at the very first bootup. The default IP address of the unit is 192.168.1.168 and sub mask is 255.255.255.0.

However, if you have a DHCP server in your network, the unit obtains an IP address automatically from the DHCP server so that you do not need to change the IP address of the camera.

Note: If you assign the camera a Static IP address prior to DHCP being enabled, the camera first reboots for approximately 30 seconds and then remains accessible at its Static IP until it connects to a DHCP server.

- Connect to a PC directly: Directly connect the camera to a PC using a standard Ethernet cable. This requires POE switch or injector.
- Connecting a camera to a Local Area Network (LAN): To add the camera to an existing LAN, connect the camera to the POE hub or switch on your network.

Figure 21 Network connection diagram



Default camera settings

The following table describes the default camera settings.

Network Settings	Defaults
DHCP	Enabled
Static IP Address	192.168.1.168
Default Username	admin
Default Password	admin

Note: At first login the user is prompted to change the default username and password.

Procedure 4 Connecting from a computer

Step	Action
1	Ensure the camera and your computer are in the same subnet.
2	Check whether if the network is available between the unit and the computer by pinging the default IP address. <ol style="list-style-type: none"> a Start a command prompt. b Type "Ping 192.168.1.168". If the message "Reply from..." appears, it means the connection is available.
3	Start Internet Explorer and enter IP address: 192.168.1.168. A login window appears. In the window, enter the default user name: admin and password: admin to log in.

- End -

DHCP

On initial camera startup, and after a hardware factory reset, Dynamic Host Configuration Protocol (DHCP) is enabled by default and remains enabled until the camera receives either a DHCP address or is assigned a Static IP address.

Procedure 5 Enable DHCP

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the TCP/IP tab in the Basic Configuration menu.
3	Select the Enable DHCP check box to enable DHCP and disable manual settings.
4	Select Apply to save the settings.

The camera searches for a DHCP server. If one is found it connects to that server. If no connection is made to a DHCP server within two minutes, the camera goes to the default IP address 192.168.1.168, but continues to search for a DHCP address.

Note: If you assign the camera a Static IP address prior to DHCP being enabled, the camera first reboots for approximately 30 seconds and then remains accessible at its Static IP until it connects to a DHCP server.

- End -

Procedure 6 Disable DHCP

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the TCP/IP tab in the Basic Configuration menu.
3	Clear the Enable DHCP check box to disable DHCP and allow manual settings to be entered. The default setting is 'Enabled'.
4	If Enable DHCP has been disabled:

- a Enter the IPv4 Address in the **IPv4 Address** text box in the form xxx.xxx.xxx.xxx. The default setting is '192.168.1.168'
 - b Enter the Network Mask in the **Network Mask** text box xxx.xxx.xxx.xxx. The default setting is '255.255.255.0'
 - c Enter the Gateway IP address in **Gateway** text box xxx.xxx.xxx.xxx.
 - d Enter the Primary DNS Server in the **Primary DNS Server** text box xxx.xxx.xxx.xxx.
- 5 Select **Apply** to save the settings.

- End -

Managing cameras with the Illustra Connect tool

In addition to using the IE browser to access your camera, you can alternatively use the provided tool, Illustra Connect.

Illustra Connect is a management tool designed to manage your network cameras on the LAN. It can:

- help you find multiple network cameras
- set the IP addresses
- show connection status
- manage firmware upgrades
- bulk configuration

Refer to Configuration on page 25 for further information regarding using the Illustra Connect tool for configuring the cameras.

Procedure 7 Connecting to the camera using Illustra Connect

Note:

Illustra Connect can only discover devices on the same subnet as its host computer. Therefore, the camera and the computer being used to configure it must be on the same subnet.

Step	Action
1	Using a computer which is connected to the same network and subnet, install the Illustra Connect software. The Illustra Connect software and the Illustra Connect manual are available to download on www.illustracameras.com
2	When the installation is complete, run Illustra Connect. It searches the network and displays all compliant devices.
3	Select the camera you want to configure, locating it by its unique MAC address.
4	Right-click the camera and select Launch Web GUI Configuration. The camera Web User Interface displays.

- End -

Procedure 8 Connecting to the camera using the static IP address

Step	Action
1	The camera attempts to obtain an IP Address from the DHCP Server. When no DHCP Server is available the camera is assigned a Static IP address of 192.168.1.168.
2	Open Microsoft Internet Explorer and enter the URL of the camera as 192.168.1.168. The camera sign in page displays.

Note:

The computer you use to configure the camera must have an IP address on the same subnet.

- End -

Procedure 9 Logging on to the camera web user interface

Step	Action
1	When you select the camera, the sign in page displays. Select your preferred language from the drop-down menu.
2	Enter the username in the Username text box. The default username is admin.
3	Enter the password in the Password text box. The default password is admin.
4	Select Log in .

Note: The first time that you access the camera or after a factory reset the following two pop up windows are visible: A pop up window that requests the user to **Define a Host ID** and a pop up window that requests the user to select a **Security Type**. Please refer to the Define a Host ID section in Procedure 14 for further information on this.

5 The Live view page is visible. This displays the current view of the camera.

Note: When Standard security is selected and at first login the user is prompted to change the default password.

Note: When Enhanced security is selected and at first login the user is prompted to change the default username and password.

- End -

Procedure 10 Enabling the correct video orientation for a wall mounted camera

Step	Action
1	Log on to the camera web user interface.
2	Select Setup on the camera web user interface banner to display the setup menus.
3	Select the Picture Basic tab from the Basic Configuration menu.
4	Select the required Orientation setting: <ul style="list-style-type: none"> • Mirror • Flip
5	The video pane updates to display the new settings.

- End -

Configuration

The following sections explain the how you can configure the camera using the Web User Interface.

Security Mode Profiles for First Time Connection

The camera has features that allow for operation in a Standard Security mode or in an Enhanced Security mode.

When the camera is in Enhanced Security mode, you require a complex eight character Administrator password to make changes to these protocols.

Refer to Summary of Security Modes on page 26 for further information regarding the differences between Standard and Enhanced Security modes.

Accessing the Cameras Web User Interface

Use the following procedure to access the camera Web User Interface.

Procedure 11 Logging in to the Camera

Step	Action
1	Refer to Network Connection on page 20 for details on how to connect the camera to your network or computer.
2	When you select the camera, the sign in page displays.
3	Select your preferred language from the drop-down menu. The default language is English.
4	Enter the default username and password when prompted - Username: admin, Password: admin.
5	Click Log in . The camera Web User Interface displays. The first time that you access the camera, or after a factory reset, you are prompted to Define a Host ID and Select a Security Type . <ul style="list-style-type: none">• Define a Host ID: The admin user must enter a 6 character code for the Host ID that includes both letters and/or numbers. This unique password can be used to access the operating system files. The HostID is not stored on the camera for security reasons and must be presented to Illustra Technical Support when remote access to the operating system is required.• Select a Security Type: Standard Security or Enhanced Security.
6	If you select the Standard Security option, password change is mandatory.
<hr/> Note: Password complexity is set to require a minimum of 5 characters, 'admin' cant be used.	
7	If you select the Enhanced Security option, a default admin username and password change is mandatory.

Note: The password must meet the following requirements:

Be a minimum of eight characters long.

Have at least one character from each of the following character groups:

- Upper-case letters - ABCDEFGHIJKLMNOPQRSTUVWXYZ
-

-
- Lower-case letters - abcdefghijklmnopqrstuvwxyz
 - Numeric characters - 0123456789
 - Special characters - @ % + \ / ' ! # \$ ^ ? : , () { } [] ~ - _ `
-

Note: Once the above steps are complete, the Live view page is visible. This displays the current view of the camera.

- End -

Summary of Security Modes

Standard Security:

- A default admin password change is mandatory.
- Changes to communication protocols are available to all users with appropriate privileges.
- Passwords complexity is set to require minimum of any 5 characters, 'admin' cant be used.
- Authentication method is set to basic by default.

Enhanced Security:

- Unsecure Protocols are disabled by default until enabled by a user.
- When you select enhanced security you must change the default 'admin' username and password.
- Discovery protocols are disabled by default until enabled by a user.
- Changes in the protocols are only be available to a user with administrative privileges and require that user to reenter their password.
- Authentication method is set to Digest by default.
- HTTPS protocol is enabled by default.
- Passwords for all accounts will meet the following password complexity requirements:
 - Minimum characters: 8
 - The password cannot contain the username
 - Have at least one character from each of the following character groups:
 - Upper-case letters - ABCDEFGHIJKLMNOPQRSTUVWXYZ
 - Lower-case letters - abcdefghijklmnopqrstuvwxyz
 - Numeric characters - 0123456789
 - Special characters - @ % + \ / ' ! # \$ ^ ? : , () { } [] ~ - _ `
 - Changing protocols require an administrator to re-enter their password

Changing the Camera Web User Interface Language

Use the following procedure to change the language used in the camera Web User Interface.

Procedure 12 Change the Camera Web User Interface Language

Step	Action
1	Open the camera sign in page. If you are already logged in to the Web User Interface, select Log Off to display the sign in page.
2	Select your preferred language from the drop-down menu: <ul style="list-style-type: none">• English• Arabic• Czech• Danish• German• Spanish• French• Hungarian• Italian• Japanese• Korean• Dutch• Polish• Portuguese• Swedish• Turkish• Chinese Simplified• Chinese Traditional• Russian• Hindi The default language is English.
3	Enter the Username.
4	Enter the Password.
5	Select Log in.

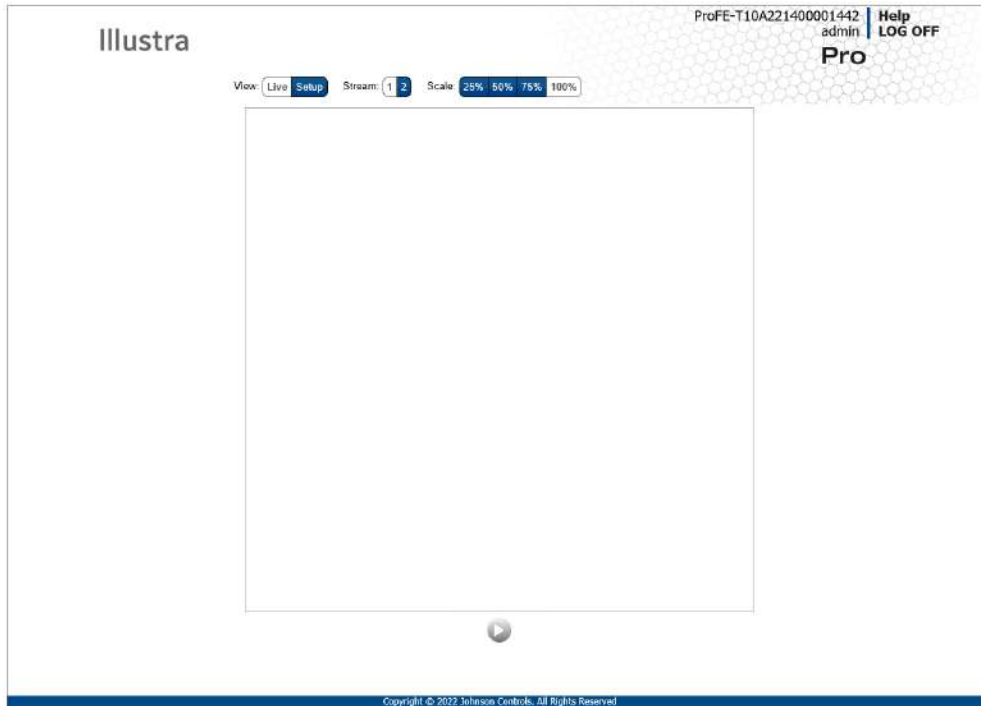
The camera web User Interface displays in the selected language.

- End -

Live menu

When you log in to the Illustra Web User Interface, the **Live** menu appears, as seen in Figure 22 on page 28.

Figure 22 Live menu page



Displaying the Live View Page

Display the live camera view page.

Procedure 13 Display Live View Page

Step	Action
1	Select Live in the Web User Interface banner. The Live view page displays.
2	Select a video stream from Stream to view.
3	Select a percentage from Scale to change the display size of the video pane: <ul style="list-style-type: none">• 25%• 50%• 75%• 100% The default setting is 100%.

- End -

Accessing the Setup Menus from Live View

Setup menus within the Web User Interface are restricted by user account access levels. Refer to Appendix A: User Account Access on page 1 for details on the features which are available to each role.

Procedure 14 Access Setup Menus from Live View

Step	Action
------	--------

1	On the Live menu, click the Setup tab.
---	--

Note:When an admin user logs in for the first time the Live menu displays. After this, on each login the Stream page on the Video menu displays.

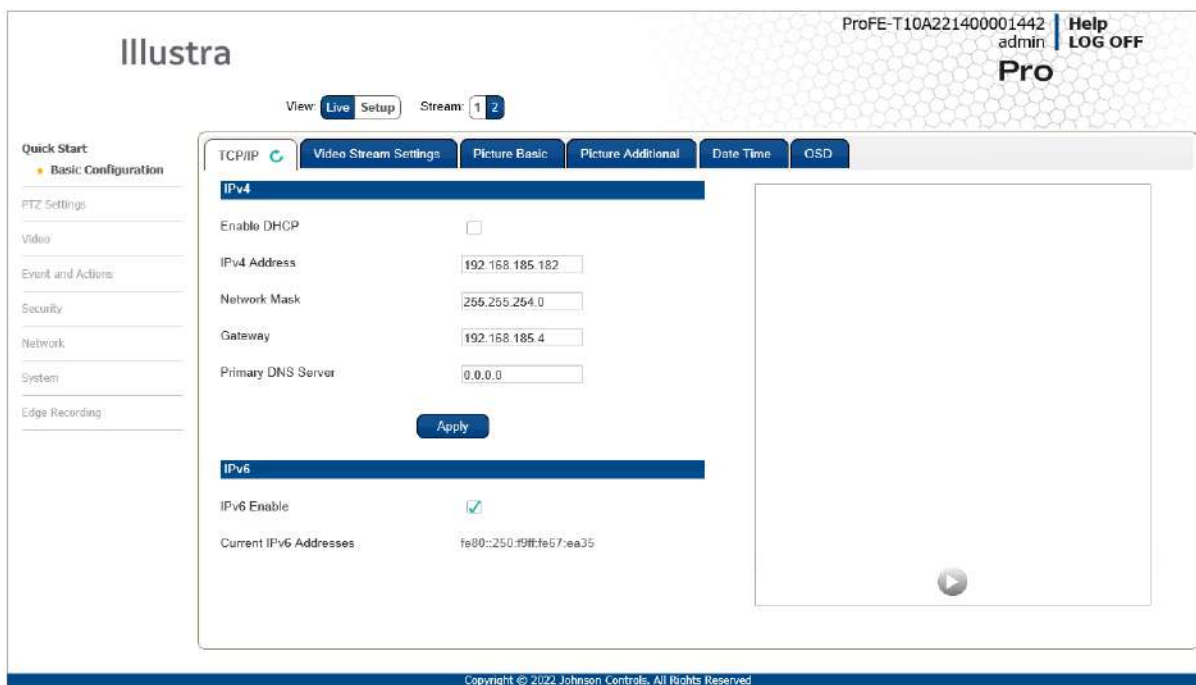
- End -

Quick Start Menu

When you select the Quick Start menu, the Basic Configuration Page displays, as shown in Figure 23 on page 30.

Note:When an admin user logs in for the first time the Basic Configuration page displays. After this, on each login the Video > Streams page displays.

Figure 23 Basic Configuration Menu



Basic Configuration

The **Basic Configuration** menu provides access to the most common features required when setting up a camera for the first time and is only available to an 'admin' user. The following tabs are displayed:

- TCP/IP
- Video Stream Settings
- Picture Basic
- Picture Additional
- Date Time
- OSD

TCP/IP

Configure the IPv4 and IPv6 network settings on the camera.

Note:When you perform a factory reset or reboot the unit searches for the last known IP address. If this is not available it reverts to the default IP address of 192.168.1.168. This could result in duplicate IP addresses. Refer to Quick Start Menu on page 30 for more information.

DHCP

On initial camera startup, and after a hardware factory reset, Dynamic Host Configuration Protocol (DHCP) is enabled by default and remains enabled until the camera receives either a DHCP address or is assigned a Static IP address.

Procedure 15 Enable DHCP

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the TCP/IP tab in the Basic Configuration menu.
3	Select the Enable DHCP check box to enable DHCP and disable manual settings.
4	Select Apply to save the settings.

The camera searches for a DHCP server. If one is found it connects to that server. If no connection is made to a DHCP server within two minutes, the camera goes to the default IP address 192.168.1.168, but continues to search for a DHCP address.

Note:If you assign the camera a Static IP address prior to DHCP being enabled, the camera first reboots for approximately 30 seconds and then remains accessible at its Static IP until it connects to a DHCP server.

- End -

Procedure 16 Disable DHCP

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the TCP/IP tab in the Basic Configuration menu.
3	Clear the Enable DHCP check box to disable DHCP and allow manual settings to be entered. The default setting is 'Enabled'.
4	If Enable DHCP has been disabled: <ol style="list-style-type: none"> a Enter the IPv4 Address in the IPv4 Address text box in the form xxx.xxx.xxx.xxx. The default setting is '192.168.1.168' b Enter the Network Mask in the Network Mask text box xxx.xxx.xxx.xxx. The default setting is '255.255.255.0' c Enter the Gateway IP address in Gateway text box xxx.xxx.xxx.xxx. d Enter the Primary DNS Server in the Primary DNS Server text box xxx.xxx.xxx.xxx.
5	Select Apply to save the settings.

- End -

IPv4

Configure the IPv4 network settings for the camera.

Procedure 17 Configure the IPv4 Settings

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the TCP/IP tab in the Basic Configuration menu.
3	Select the Enable DHCP check box to enable DHCP and disable manual settings. OR Clear Enable DHCP to disable DHCP and allow manual settings to be entered. The default setting is 'Enabled'.
4	If Enable DHCP has been disabled: a Enter the IPv4 Address in the IPv4 Address text box in the form xxx.xxx.xxx.xxx. The default setting is '192.168.1.168' b Enter the Network Mask in the Network Mask text box xxx.xxx.xxx.xxx. The default setting is '255.255.255.0' c Enter the Gateway IP address in Gateway text box xxx.xxx.xxx.xxx. d Enter the Primary DNS Server in the Primary DNS Server text box xxx.xxx.xxx.xxx.
5	Select Apply to save the settings.

- End -

IPv6

Enable or disable IPv6 on the camera.

Procedure 18 Enable/Disable IPv6

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the TCP/IP tab in the Basic Configuration menu.
3	Select the IPv6 Enable check box to enable IPv6 on the camera. OR Clear the IPv6 Enable check box to disable IPv6 on the camera. The default setting is 'Enabled'. If IPv6 is enabled the Link Local and DHCP address display beside 'Current IPv6 Addresses' if available.

- End -

Video Stream Settings

You can configure two video streams on the camera: Stream 1, Stream 2 and Stream 3.

Configuring the Web Video Stream

Adjust the settings for each video stream.

Procedure 19 Configure the Video Stream settings

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Video Streams Settings tab in the Basic Configuration menu.
3	Select either Stream 1, 2 or 3 from the Stream Number drop-down menu.
4	Select the required Codec from the drop-down list: <ul style="list-style-type: none"> • H264 • H265 • H264 IntelliZip • H265 IntelliZip • MJPEG The default setting is 'H264'.
<hr/> Note: When you select H264 you can set the Profile. If you do not select either of these options then continue at step 6 below.	
5	Select the required Profile from the drop-down list: <ul style="list-style-type: none"> • Main • High The default setting is 'Main'.
6	Select the required Resolution from the drop-down menu. The resolutions available depend on the type of camera sensor (megapixel). See the full 12MP Fisheye Streaming Combinations in Appendix C.
7	Use the slider bar to select the Frame Rate (fps) . The settings for the 2MP cameras are: <ul style="list-style-type: none"> • Stream 1 - 1 - 30 fps, default 30 fps. • Stream 2 - 1 - 30 fps, default is 30 fps. • Stream 3 - 1 - 30 fps, default is 30 fps.
<hr/> Note: FPS varies depending on other features - refer to the Release Notes for further information.	
8	If H264 or H265 has been selected in step 4 then you can adjust the GOP Length [1-60] . Use the slider bar to select the GOP Length [1-60] . The default setting is 30.
<hr/> Note: If H264 IntelliZip or H265 IntelliZip has been selected in step 4 then you can adjust the IntelliZip Max GOP Length [1-180]. Use the slider bar to select the IntelliZip Max GOP Length [1-180]. The default setting is 62.	

- 9 If MJPEG has been selected, MJPEG Quality is enabled. Use the slider bar to select the **MJPEG Quality**.

The default setting is 50.

OR

- 10 If H264 or H265 has been selected in step 4, Rate Control is enabled. Select the required **Rate Control** by selecting the radio buttons:

- **VBR (Variable Bit Rate)**
- **CBR (Constant Bit Rate)**
- **CVBR (Constrained Variable Bit Rate)**

The default setting is 'CVBR'.

- a If you select VBR, VBR Quality is enabled. Select the required **VBR Quality** from the drop-down menu. The default setting is High.

- **Highest**
- **High**
- **Medium**
- **Low**
- **Lowest**

OR

- b If you select CBR , CBR Bit Rate is enabled. Use the slider bar to select the **CBR Bit Rate**. The default setting is 4000.

OR

- c If you select CVBR, Max Bit Rate is enabled. Use the slider bar to select the **Max Bit Rate**. The default setting is 8000.

- End -


Picture Basic

Adjust the Exposure settings.

Exposure


Configure the exposure settings for the camera.

Procedure 20 Configure Exposure Settings

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Settings tab from the Basic Configuration menu.
3	Select  to start the video stream if it is not already active.
4	Select the Exposure Mode from the drop-down menu: <ul style="list-style-type: none"> • Auto • Manual • Shutter Priority
5	Select the Exposure Method from the drop-down menu: <ul style="list-style-type: none"> • Full Picture Weighted • Upper • Lower • Center Weighted • Spot • Left • Right <p>The default setting is center weighted.</p>
6	Select the Min Exposure (sec) from the drop-down menu. The default setting is 1/10000s.
7	Select the Max Exposure (sec) from the drop-down menu. The default setting is 1/7.5s.
8	Select the Exposure Offset (F-stops) from the drop-down menu. The default setting is 1/8s.
9	Select the Exposure Offset (F-Stops) from the drop-down menu. The default setting is 0.
10	Select the Max Gain (db) from the drop-down menu. The default setting is 45db.
11	Select Exposure (sec) from the drop down.
12	The Default is 1/30.
13	Select Manual Gain from the drop down.
14	The Default is 0db.
15	Select the Frequency radio button for either 50Hz or 60Hz . The default setting is 60Hz.
16	Select or clear the check box for Flickerless Mode . This feature is not selected by default. <ul style="list-style-type: none"> • When you select Flickerless Mode, the minimum and maximum exposure times are locked to 1/100 and 1/50 respectively (PAL) or 1/120 and 1/60 respectively (NTSC). This applies to all cameras referenced in this guide.

- End -

Procedure 21 Restore Exposure Defaults

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Settings tab from the Basic Configuration menu.
3	Select  to start the video stream if it is not already active.
4	Select Exposure Defaults to restore the default settings.

- End -

Picture Additional

Configure Wide Dynamic Range, Day Night Mode, and Picture Adjustments including Brightness, Contrast, White Balance, Saturation and Sharpness which displays in the video pane.

Wide Dynamic Range

Wide Dynamic Range (WDR) is a feature that supports the viewing of high contrast scenes that include both bright and low light areas in the same field of view (FOV).

WDR Level allows you to adjust the WDR level to favor a underexposed or overexposed image. By selecting the lower end of the control, the image is underexposed which provides more detail in areas of bright but less details in areas of darkness. Selecting the higher end of the control, the image is overexposed which provides more detail in the dark areas but less details in the bright areas.

A typical use for this feature would be viewing a scene with both indoor and outdoor lighting conditions simultaneously, for example, in a warehouse area with an open bay door.

Digital Wide Dynamic

Digital wide dynamic range, enhancing detail in darker areas.

Procedure 22 Disable/Enable Wide Dynamic Range (WDR)

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Additional tab from the Basic Configuration menu.
3	Select the required WDR from the drop-down list: <ul style="list-style-type: none">• True WDR: Two shutter wide dynamic range, to compensate for bright and dark areas in the scene.• Digital WDR: Digital wide dynamic range, enhancing detail in darker areas. The default setting is Off.
4	When you select DigitalWDR in step 3 then you can select the WDR level.
5	Select the WDR level from the drop-down menu.

- End -

Day Night Mode

IR/DayNight Mode utilizes a series of specific camera functions to dramatically enhance low light performance.

When needed, the True TDN mechanism removes an IR Cut Filter (IRCF) from in front of the images allowing the camera to see in black and white (BW) and utilize additional near-infrared energy found in many lighting sources like halogen, moonlight, etc.

This, along with slowing down another function, the shutter speed, significantly improves low light performance rendering clear images where none could be viewed previously.

IR Illuminator

When the camera is in B/W mode it can utilize or see near-IR illumination; something the human eye cannot do. This can be extremely powerful when the camera is paired with 850~950nm IR illuminators. With this combination a scene can be well lit with IR light that the camera can see but people cannot. This is great for areas where externally lighting is not allowed or there is a need for covert security.

Procedure 23 Enable / Disable IR Illuminator

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Additional from the Basic Configuration menu.
3	Select the Enable IR Illuminator check box to enable IR Illuminator. OR Clear the Enable IR Illuminator check box to disable IR Illuminator . The default setting is 'Disabled'.
- End -	

Day Night Mode

The camera provides a black-and-white (B/W) mode to improve camera performance when the light level falls below certain thresholds. This allows clear images to be obtained under low-light conditions.

Procedure 24 Configure Day Night Mode

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Additional from the Basic Configuration menu.
3	Select a Day Night Mode setting from the drop-down menu: <ul style="list-style-type: none"> • Auto Low- camera will adjust between BW and Color depending on light levels. • Auto Mid - camera give a good balance of Color and BW depending on the scene. • Auto High - increases the chance of switching to BW mode as light levels drop.

- **Manual** - a slider bar will display, the user can adjust the setting to suit the environment.
- **Forced Color** - enable full-time color mode.
- **Forced B&W** - enable full-time black and white mode.


The default setting is 'Auto Mid'.

- End -

Picture Adjustment

Adjust brightness, contrast and saturation of the image displayed on the video pane.

Procedure 25 Adjust the Brightness, Contrast and Saturation

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Additional tab from the Basic Configuration menu.
3	Select  to start the video stream if it is not already active. The video pane will display the current camera view.
4	Use the slider bars to adjust: <ul style="list-style-type: none"> • Brightness • Contrast • Saturation • Hue • Sharpness <p>The values range from 1% to 100%. The video pane updates to display the new settings.</p>

- End -

Procedure 26 Restore Picture Balance Defaults

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Settings tab from the Basic Configuration menu.
3	Select Defaults to restore the default settings. The default values are: <ul style="list-style-type: none"> • Brightness: 50% • Contrast: 50% • Saturation: 50% • Sharpness: 50% • Hue: 50%


- End -

White Balance

White balance, the ability to keep whites looking white, is normally compensated for automatically using the default Auto White Balance setting.


Manual White Balance is available when specific color temperature settings want to be set and preserved. This can be done using the red and blue slider adjustments set for optimal viewing.

Procedure 27 Configure Auto White Balance

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Additional tab from the Basic Configuration menu.
3	Select  to start the video stream if it is not already active. The video pane displays the current camera view.
4	Select the required White Balance from the drop-down menu: <ul style="list-style-type: none"> • Auto Normal Suitable for a normal range of lighting conditions • Manual: Adjustable red and blue balance • Auto Wide: Suitable for a wider than normal range of lighting conditions

- End -

Procedure 28 Manually Select White Balance

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Additional tab from the Basic Configuration menu.
3	Select  to start the video stream if it is not already active. The video pane displays the current camera view.
4	Select Manual from the White Balance drop-down menu. The Red and Blue slider bars display.
5	Use the slider bars to adjust the Red and Blue balance. The live video pane updates to display the new settings. The red and blue values range from 1% to 100%. If you change the configuration to Manual , the slider bar reads the real-time setting of the FOV.

- End -

Date / Time

Change the camera name and set the date and time.

Camera Name

The camera name displays on the Web User Interface banner and the on-screen display for the camera. This name also displays when using Illustra Connect or ONVIF.

Procedure 29 Change the Camera Name

Step	Action
1	Select Setup on the Web User Interface banner.
2	Select the Date/Time tab in the Basic Configuration menu.
3	Enter the name of the camera in the Camera Friendly Name text box.
- End -	

Date / Time

Set the date and time on the camera.

Procedure 30 Configuring the Date and Time

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Date/Time from the Basic Configuration menu.
3	Select the Time 24-hour check box to enable the 24-hour clock. Or Deselect the Time 24-hour check box to enable the 12-hour clock. The default setting is '24-hour'.
4	Select the Date Display Format from the drop-down menu: <ul style="list-style-type: none">• DD/MM/YYYY• MM/DD/YYYY• YYYY/MM/DD The default setting is 'DD/MM/YYYY'.
5	Select the Time Zone from the drop-down menu. The default setting is (GMT) GMT+0.
6	Select the Set Time setting by selecting the radio buttons: <ul style="list-style-type: none">• Manually• via NTP The default setting is 'Manually'.
7	If you select Manually in step 5: <ol style="list-style-type: none">a Select the Date (DD/MM/YYYY) using the drop-down menus.b Select the Time (HH:MM:SS) using the drop-down menus.
8	If you select via NTP in step 5:

- a Enter the **NTP Server Name** in the text box.

- End -

On-Screen Display (OSD)

Within OSD you can set enable or disable camera name and time display.

Procedure 31 Display or Hide the Camera Name OSD

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the OSD tab in the Basic Configuration menu.
3	In the Camera Name section, select the Enable check box to display the camera name in the OSD. OR In the Camera Name section, clear the Enable check box to hide the camera name in the OSD. The default setting is 'Disabled'.
4	In the Camera Name section, select the Location drop-down menu to select where the camera name is displayed on screen.

- End -

Procedure 32 Display or Hide the Camera Time OSD

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the OSD tab in the Basic Configuration menu.
3	In the Date Time section, select the Enable check box to display the camera name in the OSD. OR In the Date Time section, clear the Enable check box to hide the camera name in the OSD. The default setting is 'Disabled'.
4	In the Date Time section, select the Format drop-down menu to select if the date or time or both should be visible on screen. The default setting is 'Time'.

- End -

Procedure 33 Display or Hide the User Defined OSD

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the OSD tab in the Basic Configuration menu.
3	In the User Defined section, select the Enable check box to display the camera name in the OSD.

OR

In the **User Defined** section, clear the **Enable** check box to hide the camera name in the OSD.

The default setting is 'Disabled'.

4 Select a **Location** from the drop-down menu.

5 Enter a name in the **Name** field.

The OSD User Defined fields must comply with the following validation criteria:

- 0 - 24 characters
- Cannot begin or end with:
 - . (dot)
 - - (hyphen)
 - _ (underscore)
 - \ (backslash)
 - " (quotes)

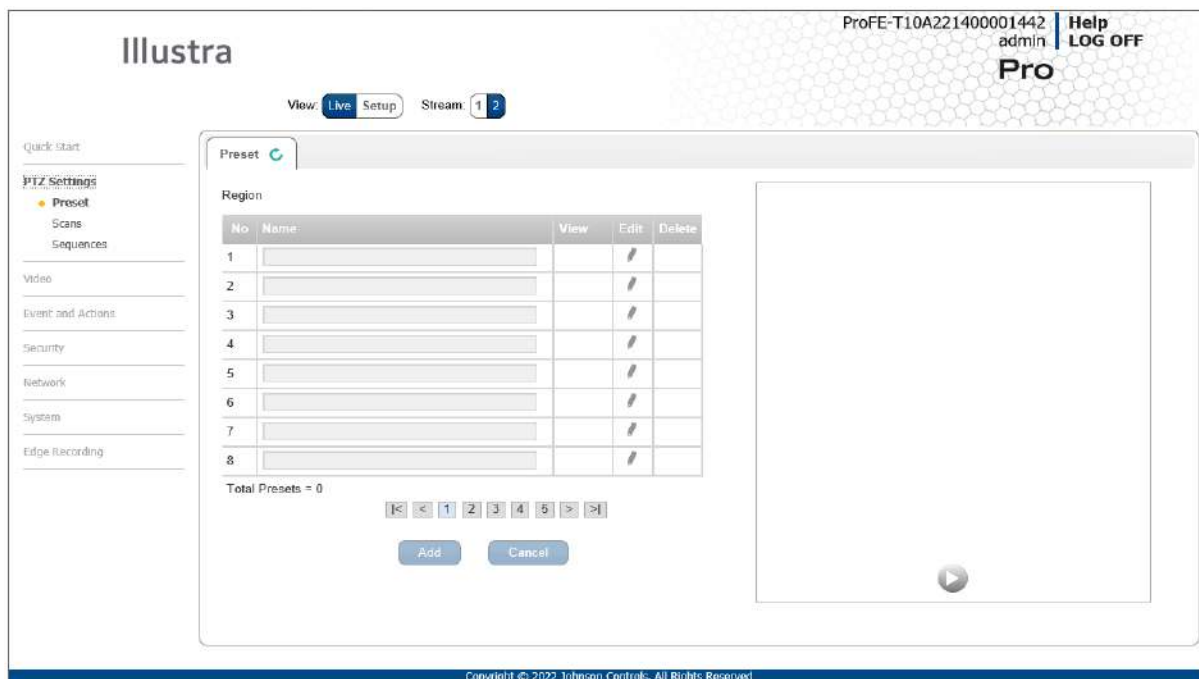
- End -

PTZ Settings Menu

When the video menu is selected, Figure 24 on page 43 PTZ Settings Menu will be displayed.

Note: This section is only applicable when 'Active Image' is selected as the image source.

Figure 24 PTZ Settings Menu



The PTZ Settings Menu provides access to the following camera settings and functions:

- Preset
- Scans
- Sequences

Preset

A Preset is a pre-positioned camera scene that you program using the pan, tilt and zoom options. Up to 96 presets can be programmed on the camera.

Adding a new Preset


Create a new preset position on the camera.

Procedure 34 Add a Preset

Step	Action
------	--------

- | | |
|---|--|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
| 2 | Select Presets from the PTZSettings menu. |


The Preset tab is displayed

- 3 Select  to start the video stream if it is not already active.
The video pane will display the current camera view.

- 4 Adjust the camera view as required.

- **Pan, Tilt and Zoom.**
- **Focus Mode (Auto or Manual Focus points).**

Preset can also store additional Picture Settings when Exposure Mode: Shutter Priority is selected. In this case Preset can save Exposure Offset and Exposure settings. These will then be changed accordingly with a preset call up.

- 5 In a numbered slot on the preset table, select  to add the new preset.

- 6 Enter the preset name in the **Preset Name** text box.

- 7 Select **Add** to save the preset.

OR

Select **Cancel**.



- End -

Viewing a Preset

View an existing preset position.

Procedure 35 View a Preset

Step	Action
------	--------

- | | |
|---|--|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
| 2 | Select Preset from the PTZSettings menu.
The Preset tab displays. |
| 3 | Select  to start the video stream if it is not already active.
The video pane will display the current camera view. |
| 4 | Select  to activate the corresponding preset.
The video pane will update to display the selected preset. The preset will display until interrupted by a camera command, pattern or scan. |

- End -




Editing a Preset

Edit an existing preset position.

Procedure 36 Edit an existing Preset

Step	Action
------	--------

- | | |
|---|--|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
|---|--|


- 2 Select **Preset** from the **PTZSettings** menu.
The Preset tab displays.
- 3 Select  to start the video stream if it is not already active.
The video pane will display the current camera view.
- 4 Select  to activate the corresponding preset.
The video pane will update to display the selected preset.
- 5 Select  to edit the corresponding preset.
- 6 Edit the preset name in the **Preset Name** text box if required.
- 7 Adjust the camera view as required.
 - **Pan, Tilt and Zoom**
 - **Focus Mode and Iris Mode**
- 8 The following camera controls can be saved as part of the preset and accessed via the Picture Settings menu:
 - **White Balance**
 - **Picture Balance**
 - **Wide Dynamic Range (WDR)**
 - **IR/DayNight**
 - **Shutter Limit**
- 9 Select **Add** to save the updated preset.
You will be prompted to confirm the update.
- 10 Select **OK** to save the changes.
OR
Select **Cancel**.

- End -

Deleting a Preset

Delete an existing preset position from the camera.

Procedure 37 Delete a Preset

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Preset from the PTZ Settings menu. The Preset tab displays.
3	Select  to delete the corresponding preset. You will be prompted to confirm the deletion.

Note: You cannot delete a preset while it is associated with another camera function. To remove the preset, refer to the associated camera function.

4	Select OK to confirm the deletion. OR Select Cancel .
---	---

- End -


Scans

A scan allows you to program left and right scan limits to automate surveillance activities. Once these scan limits are programmed, you can choose to run a smooth scan, stepped scan, or random scan. When active, the scan repeats until interrupted by a camera command, preset, pattern or alarm.

Setting Scan Limits

Set left and right scan limits on the camera.

Procedure 38 Set Scan Limits

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Scans from the PTZ Settings menu. The Scans tab displays.
3	Select  to start the video stream if it is not already active. The video pane will display the current camera view.
4	Adjust the camera view as required to locate the left scan limit.
5	Select Set Left to set the displayed position as the left limit.
6	Adjust the camera view as required to locate the right scan limit.
7	Select Set Right to set the displayed position as the right limit. The scan limits have been set and the selected scan will now run within the scan limits set.

- 8 Select the pause time for a Stepped Scan from the **Pause** drop-down menu.
The settings are 2-10. The default is 2.

- End -

Set Scan Limits to Default Settings

Return the camera to the default scan settings.

Procedure 39 Set Scan Limits to Default Settings



Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Scans from the PTZ Settings menu.
3	Select the Scans tab. The Scans tab displays.
4	Select Defaults . The scan limits will default to Left: 0 and Right: 359.

- End -

Activating a Scan

Activate a scan on the camera, this will run using the scan limits saved in Setting Scan Limits.

Procedure 40 Activate a Scan

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Scans from the PTZ Settings menu. The Scans tab displays.
3	Select  to start the video stream if it is not already active. The video pane will display the current camera view. (Before activating a scan, refer to the Set Scan Limits to Default Settings procedure).
4	Select  to activate the corresponding scan. <ul style="list-style-type: none">• Smooth -slowly pans between the left and right scan limits, starting at the left scan limit. When the right scan limit is reached, the scan reverses• Stepped -pans slowly, pausing briefly every 10° between the left and right scan limits. Once the right scan limit is reached, the scan reverses.• Random -pans randomly between the left and right scan limits. For example, the scan may start at 10°, then pan right 40° and pause, pan right 20° and pause, pan left 30° and pause, and pan right until it reaches the right scan limit.

- 5 The video pane will update to display the selected scan.
- 6 The scan will run continuously until interrupted by a camera command, pattern, preset or alarm.

- End -

Sequences

A Sequence is a sequential display of multiple camera Presets. Sequences provide a methodical and effective way to monitor multiple areas of interest by switching to different Presets automatically.

Sequences are created by identifying Preset views to include in the Sequence and specifying a dwell time that controls how long each Preset remains on-screen before switching to another Preset.

Up to 16 Sequences can be created, each with 16 steps (Presets)

Adding a Sequence

Create a new sequence on the camera using defined presets. Refer to Add a Preset on Page 123 if no presets have yet been added to the camera.

Procedure 41 Add a Sequence



Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus. If no presets have been created, refer to Add a Preset on Page 123 before continuing to the next step.
2	Select Sequences from the PTZ Settings menu.
3	Select the Add Sequence tab.
4	Enter the Sequence Name .
5	Select a preset from the Preset Name drop-down menu.
6	Enter a dwell time in seconds in the Dwell Time(sec) text box. The settings are 10-500.
7	Select Add . The preset is now listed as part of the sequence.
8	Repeat steps 5 to 7 to add further presets to the sequence.
Note: Up to 16 presets can be added to a sequence.	
9	Select Apply to save the sequence.

- End -

Activating a Sequence

Activate a selected sequence.

Procedure 42 Activate a Sequence



Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Sequences from the PTZ Settings menu. The Sequences tab displays.
3	Select  to start the video stream if it is not already active. The video pane will display the current camera view.
4	Select  to activate the corresponding sequence. The video pane will update to display the selected sequence. The sequence will run continuously until interrupted by a camera command, pattern, preset, scan or alarm.

- End -

Editing a Sequence

Edit an existing sequence.

Procedure 43 Edit a Sequence

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Sequences from the PTZ Settings menu. The Sequences tab displays.
3	Select  to edit the corresponding sequence. The sequence will open in the Edit Sequence tab.
4	Edit the sequence name in the Sequence Name text box if required.
5	Select  to edit the corresponding preset. The following can be edited: <ul style="list-style-type: none">• Preset Name: To add a new preset to the sequence, move to the next available free slot and select a preset from the Preset Name drop-down menu.• Dwell time
6	If required, select to remove the corresponding preset from the sequence.
7	Select Add to save the changes OR Select Cancel .
8	Select Apply to save the changes.


- End -

Deleting a Sequence

Delete an existing sequence.

Procedure 44 Delete a Sequence

Step	Action
------	--------

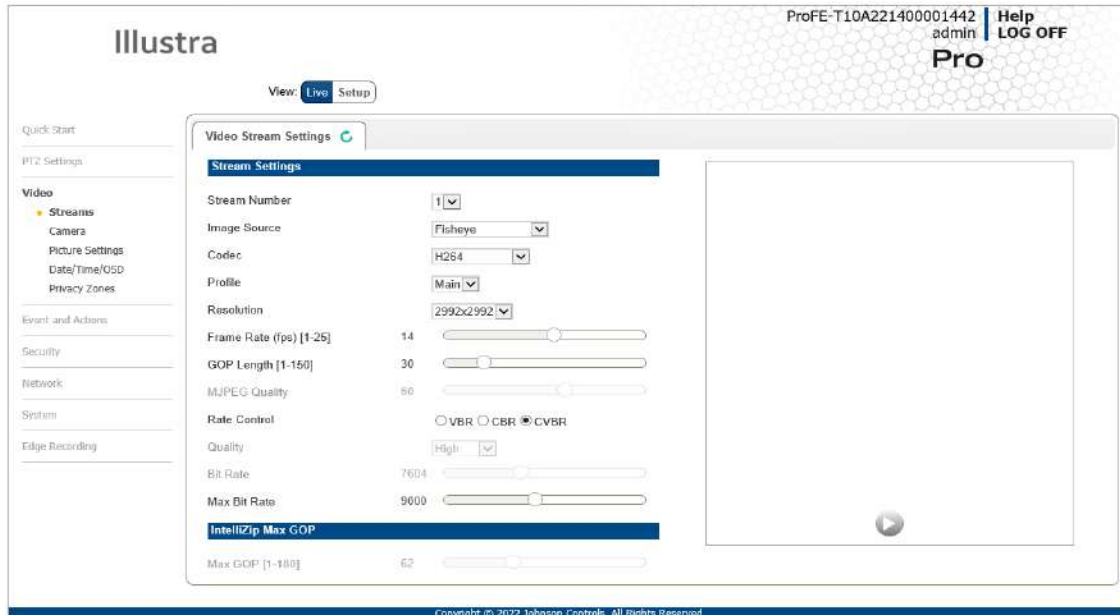
- | | |
|---|---|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
| 2 | Select Sequences from the PTZ Settings menu.
The Sequences tab displays. |
| 3 | Select  to delete the corresponding sequence.
You will be prompted to confirm the deletion. |
| 4 | Select OK to delete the sequence.
Or
Select Cancel . |

- End -

Video Menu

When you select the **Video** menu, the **Streams** page displays, as seen in Figure 25 on page 51.

Figure 25 Video Menu



The **Video** Menu provides access to the following camera settings and functions:

- Streams
- Camera
- Picture Settings
- Date / Time / OSD
- Privacy Zones

Streams

You can configure up to two independent video streams on the camera: Stream 1, Stream 2 and Stream 3.

Alarm Video

Edge Recording

Camera can directly record specific events (MD) directly to Micro SD card. User can chose either Stream 1, 2 or 3 to be recorded. When setting up motion detection on the camera, all streams can be used. Alarm Video is configured in the Edge Recording > Record Settings menu.

Integration with other Illustra API Clients

You can configure the three video streams through the Web User Interface, as detailed here, or through the Illustra API interface. Changes made to the streams through either method are applied and the video displays according to the configuration.

Opening the Web User Interface live video allows the stream to be shared with the Illustra API and will minimize the impact on camera resources.

Configuring the Video Stream

Adjust the settings for each video stream.

Procedure 45 Configure the Video Stream settings

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Streams in the Video menu.
3	Select either Stream 1, 2 or 3 from the Stream Number drop-down menu.
4	Select the required Codec from the drop-down list: <ul style="list-style-type: none"> • H264 • H265 • H264 IntelliZip • H265 IntelliZip • MJPEG The default setting is 'H264'.
<hr/> Note: When you select H264 or H264 IntelliZip you can set the Profile. If you do not select either of these options then continue at step 6 below.	
5	Select the required Profile from the drop-down list: <ul style="list-style-type: none"> • Main • High The default setting is 'Main'.
6	Select the required Resolution from the drop-down menu. The resolutions available depend on the type of camera sensor (megapixel). See the full 12MP Fisheye Streaming Combinations in Appendix C.
7	Use the slider bar to select the Frame Rate (fps) . The settings for the 2MP cameras are: <ul style="list-style-type: none"> • Stream 1 - 1 - 30 fps, default 30 fps. • Stream 2 - 1 - 30 fps, default is 30 fps. • Stream 3 - 1 - 30 fps, default is 30 fps.
<hr/> Note: FPS varies depending on other features - refer to the Release Notes for further information.	
8	If H264 or H265 has been selected in step 4 then you can adjust the GOP Length [1-60] . Use the slider bar to select the GOP Length [1-60] .

The default setting is 30.

Note: If H264 IntelliZip or H265 IntelliZip has been selected in step 4 then you can adjust the IntelliZip Max GOP Length [1-180]. Use the slider bar to select the IntelliZip Max GOP Length [1-180]. The default setting is 62.

- 9 If MJPEG has been selected, MJPEG Quality is enabled. Use the slider bar to select the **MJPEG Quality**.

The default setting is 50.

OR

- 10 If H264, H265, H264 IntelliZip or H265 IntelliZip has been selected in step 4, Rate Control is enabled. Select the required **Rate Control** by selecting the radio buttons:

- **VBR (Variable Bit Rate)**
- **CBR (Constant Bit Rate)**
- **CVBR (Constrained Variable Bit Rate)**

The default setting is 'CVBR'.

- a If you select VBR, VBR Quality is enabled. Select the required **VBR Quality** from the drop-down menu. The default setting is High.

- **Highest**
- **High**
- **Medium**
- **Low**
- **Lowest**

OR

- b If you select CBR, CBR Bit Rate is enabled. Use the slider bar to select the **CBR Bit Rate**. The default setting is 4000.

OR

- c If you select CVBR, Max Bit Rate is enabled. Use the slider bar to select the **Max Bit Rate**. The default setting is 8000.

- End -

Procedure 46 Configuring IntelliZip Max GOP

This feature only applies to H264+ IntelliZip or H265+ IntelliZip coded.

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Streams tab in the Video menu.
3	Use the slider bar to select the Max GOP range. Range available is 1-180.

- End -

Camera

The camera menu contains camera viewing options.

Dewarp

The dewarping feature corrects image distortions (i.e. non rectilinear appearance) caused by a fisheye lens. The user may choose to have a Fisheye stream or a stream that has already been dewarped directly from the camera.

Procedure 47 Enable Dewarping

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Camera from the Video menu. The Mounting tab displays. The camera provides a fisheye or a choice of dewarped streams, depending on the user's requirements. <ul style="list-style-type: none"> • Client (default) 3 independent streams. Streams of same Fisheye view. (Dewarp is managed by the connected Client where supported). • Edge Dewarp: A choice of 2 independently configurable streams. Stream 1 and 2 provide the following options, Fisheye, Panoramic, Combi/Quad, or Active image.
3	Select Save to save the settings.

- End -

Mounting View

The camera view setting can be switched from wall mounted or ceiling mounted according to how you have mounted the camera.

Procedure 48 Enable Camera view

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Camera from the Video menu. The Mounting tab displays.
3	Select the Ceiling checkbox to enable the ceiling mounted view OR Select the Wall checkbox to enable the wall mounted view.

- End -

Picture Settings


Picture Basic

Adjust the Exposure settings.

Exposure

Configure the exposure settings for the camera.

Procedure 49 Configure Exposure Settings


Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Settings tab from the Video menu.
3	Select  to start the video stream if it is not already active.
4	Select the Exposure Mode from the drop-down menu: <ul style="list-style-type: none">• Auto• Manual• Shutter Priority
5	Select the Exposure Method from the drop-down menu: <ul style="list-style-type: none">• Full Picture Weighted• Upper• Lower• Center Weighted• Spot• Left• Right

- The default setting is center weighted.
- 6 Select the **Min Exposure (sec)** from the drop-down menu.
The default setting is 1/10000s.
 - 7 Select the **Max Exposure (sec)** from the drop-down menu.
The default setting is 1/7.5s.
 - 8 Select the **Exposure Offset (F-stops)** from the drop-down menu.
The default setting is 1/8s.
 - 9 Select the **Exposure Offset (F-Stops)** from the drop-down menu.
The default setting is 0.
 - 10 Select the **Max Gain (db)** from the drop-down menu.
The default setting is 45db.
 - 11 Select **Exposure (sec)** from the drop down.
 - 12 The Default is 1/30.
 - 13 Select **Manual Gain** from the drop down.
 - 14 The Default is 0db.
 - 15 Select the **Frequency** radio button for either **50Hz** or **60Hz**.
The default setting is 60Hz.
 - 16 Select or clear the check box for **Flickerless Mode**.
This feature is not selected by default.
 - When you select **Flickerless Mode**, the minimum and maximum exposure times are locked to 1/100 and 1/50 respectively (PAL) or 1/120 and 1/60 respectively (NTSC). This applies to all cameras referenced in this guide.

- End -

Procedure 50 Restore Exposure Defaults

Step	Action
------	--------

- | | |
|---|---|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
| 2 | Select the Picture Settings tab from the Video menu. |
| 3 | Select  to start the video stream if it is not already active. |
| 4 | Select Exposure Defaults to restore the default settings. |

- End -

Picture Additional

Configure Wide Dynamic Range, Day Night Mode, and Picture Adjustments including Brightness, Contrast, White Balance, Saturation and Sharpness which displays in the video pane.

Wide Dynamic Range

Wide Dynamic Range (WDR) is a feature that supports the viewing of high contrast scenes that include both bright and low light areas in the same field of view (FOV).

WDR Level allows you to adjust the WDR level to favor a underexposed or overexposed image. By selecting the lower end of the control, the image is underexposed which provides more detail in areas

of bright but less details in areas of darkness. Selecting the higher end of the control, the image is overexposed which provides more detail in the dark areas but less details in the bright areas.

A typical use for this feature would be viewing a scene with both indoor and outdoor lighting conditions simultaneously, for example, in a warehouse area with an open bay door.

Digital Wide Dynamic

Digital wide dynamic range, enhancing detail in darker areas.

Procedure 51 Disable/Enable Wide Dynamic Range (WDR)

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Additional tab from the Video menu.
3	Select the required WDR from the drop-down list: <ul style="list-style-type: none">• True WDR: Two shutter wide dynamic range, to compensate for bright and dark areas in the scene.• Digital WDR: Digital wide dynamic range, enhancing detail in darker areas. The default setting is Off.
4	When you select DigitalWDR in step 3 then you can select the WDR level.
5	Select the WDR level from the drop-down menu.

- End -

Day Night Mode

IR/DayNight Mode utilizes a series of specific camera functions to dramatically enhance low light performance.

When needed, the True TDN mechanism removes an IR Cut Filter (IRCF) from in front of the images allowing the camera to see in black and white (BW) and utilize additional near-infrared energy found in many lighting sources like halogen, moonlight, etc.

This, along with slowing down another function, the shutter speed, significantly improves low light performance rendering clear images where none could be viewed previously.

IR Illuminator

When the camera is in B/W mode it can utilize or see near-IR illumination; something the human eye cannot do. This can be extremely powerful when the camera is paired with 850~950nm IR illuminators. With this combination a scene can be well lit with IR light that the camera can see but people cannot. This is great for areas where externally lighting is not allowed or there is a need for covert security.

Procedure 52 Enable / Disable IR Illuminator

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Additional from the Video menu.
3	Select the Enable IR Illuminator check box to enable IR Illuminator.
	OR

Clear the **Enable IR Illuminator** check box to disable **IR Illuminator**.

The default setting is 'Disabled'.

- End -

Day Night Mode

The camera provides a black-and-white (B/W) mode to improve camera performance when the light level falls below certain thresholds. This allows clear images to be obtained under low-light conditions.

Procedure 53 Configure Day Night Mode


Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Additional from the Video menu.
3	Select a Day Night Mode setting from the drop-down menu: <ul style="list-style-type: none"> • Auto Low- camera will adjust between BW and Color depending on light levels. • Auto Mid - camera give a good balance of Color and BW depending on the scene. • Auto High - increases the chance of switching to BW mode as light levels drop. • Manual - a slider bar will display, the user can adjust the setting to suit the environment. • Forced Color - enable full-time color mode. • Forced B&W - enable full-time black and white mode. The default setting is 'Auto Mid'.

- End -

Picture Adjustment

Adjust brightness, contrast and saturation of the image displayed on the video pane.

Procedure 54 Adjust the Brightness, Contrast and Saturation

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Additional tab from the Video menu.
3	Select  to start the video stream if it is not already active. The video pane will display the current camera view.
4	Use the slider bars to adjust: <ul style="list-style-type: none"> • Brightness • Contrast • Saturation

- **Hue**
- **Sharpness**

The values range from 1% to 100%. The video pane updates to display the new settings.

- End -

Procedure 55 Restore Picture Balance Defaults

Step	Action
------	--------

- | | |
|---|--|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
| 2 | Select the Picture Settings tab from the Video menu. |
| 3 | Select Defaults to restore the default settings. |

The default values are:

- **Brightness:** 50%
- **Contrast:** 50%
- **Saturation:** 50%
- **Sharpness:** 50%
- **Hue:** 50%

- End -


White Balance

White balance, the ability to keep whites looking white, is normally compensated for automatically using the default Auto White Balance setting.

Manual White Balance is available when specific color temperature settings want to be set and preserved. This can be done using the red and blue slider adjustments set for optimal viewing.


Procedure 56 Configure Auto White Balance

Step	Action
------	--------

- | | |
|---|--|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
| 2 | Select the Picture Additional tab from the Video menu. |
| 3 | Select  to start the video stream if it is not already active.
The video pane displays the current camera view. |
| 4 | Select the required White Balance from the drop-down menu: <ul style="list-style-type: none"> • Auto Normal Suitable for a normal range of lighting conditions • Manual: Adjustable red and blue balance • Auto Wide: Suitable for a wider than normal range of lighting conditions |

- End -

Procedure 57 Manually Select White Balance

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Picture Additional tab from the Video menu.
3	Select  to start the video stream if it is not already active. The video pane displays the current camera view.
4	Select Manual from the White Balance drop-down menu. The Red and Blue slider bars display.
5	Use the slider bars to adjust the Red and Blue balance. The live video pane updates to display the new settings. The red and blue values range from 1% to 100%. If you change the configuration to Manual , the slider bar reads the real-time setting of the FOV.

- End -

Date / Time

Change the camera name and set the date and time.

On-Screen Display (OSD)

Within OSD you can set enable or disable camera name and time display.

Camera Name

The camera name displays on the Web User Interface banner and the on-screen display for the camera. This name also displays when using Illustra Connect or ONVIF.

Procedure 58 Change the Camera Name

Step	Action
1	Select Setup on the Web User Interface banner.
2	Select Date/Time/OSD in the Video menu.
3	Enter the name of the camera in the Camera Friendly Name text box.

- End -

Date / Time / OSD

Set the date and time on the camera.

Procedure 59 Configuring the Date and Time

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Date/Time/OSD in the Video menu.
3	Select the Time 24-hour check box to enable the 24-hour clock.

Or

Deselect the **Time 24-hour** check box to enable the 12-hour clock.

The default setting is '24-hour'.

4 Select the **Date Display Format** from the drop-down menu:

- **DD/MM/YYYY**
- **MM/DD/YYYY**
- **YYYY/MM/DD**

The default setting is 'DD/MM/YYYY'.

5 Select the **Time Zone** from the drop-down menu.

The default setting is (GMT) GMT+0.

6 Select the **Set Time** setting by selecting the radio buttons:

- **Manually**
- **via NTP**

The default setting is 'Manually'.

7 If you select Manually in step 5:

- a Select the Date (**DD/MM/YYYY**) using the drop-down menus.
- b Select the Time (**HH:MM:SS**) using the drop-down menus.

8 If you select via NTP in step 5:

- a Enter the **NTP Server Name** in the text box.

- End -

Procedure 60 Display or Hide the Camera Name OSD

Step	Action
------	--------

1 Select **Setup** on the Web User Interface banner to display the setup menus.

2 Select **Date/Time/OSD** in the **Video** menu.

3 Select the **OSD** tab.

4 In the **Camera Name** section, select the **Enable** check box to display the camera name in the OSD.

OR

In the **Camera Name** section, clear the **Enable** check box to hide the camera name in the OSD.

The default setting is 'Disabled'.

5 In the **Camera Name** section, select the **Location** drop-down menu to select where the camera name is displayed on screen.

- End -

Procedure 61 Display or Hide the Camera Time OSD

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Date/Time/OSD in the Video menu.
3	Select the OSD tab.
4	In the Date Time section, select the Enable check box to display the camera name in the OSD. OR In the Date Time section, clear the Enable check box to hide the camera name in the OSD. The default setting is 'Disabled'.
5	In the Date Time section, select the Format drop-down menu to select if the date or time or both should be visible on screen. The default setting is 'Time'.

- End -

Procedure 62 Display or Hide the User Defined OSD

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Date/Time/OSD in the Video menu.
3	Select the OSD tab.
4	In the User Defined section, select the Enable check box to display the camera name in the OSD. OR In the User Defined section, clear the Enable check box to hide the camera name in the OSD. The default setting is 'Disabled'.
5	Select a Location from the drop-down menu.
6	Enter a name in the Name field. The OSD User Defined fields must comply with the following validation criteria: <ul style="list-style-type: none"> • 0 - 24 characters • Cannot begin or end with: <ul style="list-style-type: none"> • . (dot) • - (hyphen) • _ (underscore) • \ (backslash) • " (quotes)

- End -

Privacy Zones

Privacy Zones are “masked” sections of the camera’s viewing area. These masks prevent operators of the surveillance system who do not have access to the camera password from viewing these designated zones. Each zone has four sides, and the zones may overlap to form irregular shapes.


The apparent size of the Privacy Zone adjusts automatically as the zoom level is adjusted. Privacy Zones are useful for high security areas. For example, you might establish a privacy Zone around a safe’s combination, but still view people approaching or opening the safe.

Up to 8 rectangular privacy zones can be used on the camera.

Enabling or Disabling a Privacy Zone

Select a privacy zone to hide or display on the camera.

Procedure 63 Enable/Disable a Privacy Zone


Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Privacy Zones from the Video menu. The Privacy Zones tab displays.
3	Select  to start the video stream if it is not already active. The video pane displays the current camera view.
4	Select the Enabled check box to enable the privacy zone feature. OR Clear the Enabled check box to disable the privacy zone feature.
<hr/> Note: Disabling zones will not delete configured zones, it hides them from Live video. <hr/>	

- End -

Defining a Privacy Zone

Create a privacy zone on the camera.

Procedure 64 Define a Privacy Zone

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Privacy Zones from the Video menu.
3	Select  to start the video stream if it is not already active. The video pane displays the current camera view.
4	Enable Privacy zones as per procedure 59.
5	Select the desired colour for the Zone overlay.
6	Click on the edit pencil button. Click and drag on the camera picture to define an area for the privacy zone.
7	Release the mouse button.

The selected privacy area will turn yellow.

- 8 Select **Add** to save the current privacy zone.
- 9 To reselect an alternative area for the privacy zone select **Cancel** and repeat from step 4.


- End -

Deleting a Privacy Zone

Delete a privacy zone from the camera.

Procedure 65 Delete a Privacy Zone

Step	Action
------	--------

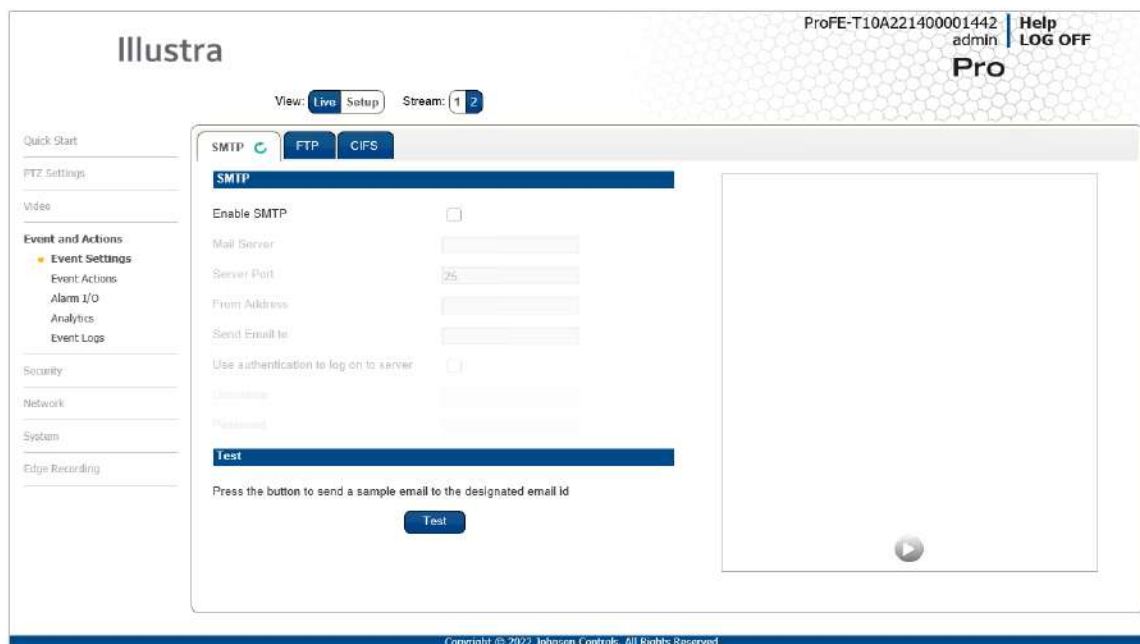
- | | |
|---|--|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
| 2 | Select Privacy Zones from the Video menu.
The Privacy zones tab displays. |
| 3 | Select  for the privacy zone that you want to delete. |
| 4 | Select Delete to delete the selected privacy zones. |
| 5 | You are prompted to confirm the deletion. |
| 6 | Select OK to confirm the deletion.
OR
Select Cancel . |

- End -

Events and Actions Menu

When you select the Events and Actions menu the Event Settings page displays, as seen in Figure 26 on page 65.

Figure 26 Events and Actions Menu



The Event Menu provides access to the following camera settings and functions:

- Event Settings
- Event Actions
- Alarm I / O
- Analytics
- Events Logs

Event Settings

Configure the SMTP, CIFS and FTP details required when setting Event Actions for analytic alerts.

SMTP

Configure the SMTP settings to allow e-mail alerts to be sent from the camera when an analytic alert is triggered. SMTP settings must be configured to enable email alerts when using analytics.

Procedure 66 Configure SMTP Settings

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Event Settings from the Events and Actions menu.
3	Select the SMTP tab.
4	Select the Enable SMTP check box to enable SMTP. Fields on the tab become available for entry of information. OR Clear the Enable SMTP check box to disable SMTP. The default setting is 'Disabled'.
<hr/> <p>Note:When in Enhanced Security mode, enabling SMTP requires the admin account password.</p> <hr/>	
5	Enter the IP Address of the mail server in the Mail Server text box.
6	Enter the server port in the Server Port text box. The default setting is '25'.
7	Enter the from email address in the From Address text box.
8	Enter the email address to send email alerts to in the Send Email to text box.
9	Select the Use authentication to log on to server check box to allow authentication details to be entered. OR Clear the Use authentication to log on to server to disable authentication. The default setting is 'Disabled'.
10	If 'Use authentication to log on to server' check box has been selected: <ol style="list-style-type: none"> a Enter the username for the SMTP account in the Username text box. b Enter the password for the SMTP account in the Password text box.

- End -

Procedure 67 Test the SMTP Settings

Step	Action
11	Select Setup on the Web User Interface banner to display the setup menus.
12	Select Event Settings from the Events and Actions menu.
13	Select the SMTP tab.
14	Select Test . A sample text file is sent to the specified SMTP destination to confirm that SMTP settings are correct.

- End -

FTP

Configure the FTP settings for the FTP server. This is required to send video files from triggered analytic alerts. FTP must be configured to enable FTP video alerts when using analytics. You can configure FTP settings through the **Network** menu.

Procedure 68 Configure FTP Server Settings

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Event Settings from the Events and Actions menu.
3	Select the FTP tab.
4	Select the Enable FTP check box to enable FTP. OR Clear the Enable FTP check box to disable FTP. The default setting is 'Enabled'.
<hr/> Note: When in Enhanced Security mode, enabling FTP requires the admin account password. <hr/>	
5	Enter the IP address of the FTP Server in the FTP Server text box.
6	Enter the FTP Port in the FTP Port text box.
7	Enter the FTP username in the Username text box.
8	Enter the FTP password in the Password text box.
9	Enter the FTP upload path in the Upload Path text box.
<hr/> Note: <hr/>	
Refer Test the SMTP Settings on page 66 to confirm that the FTP settings are working as expected.	
<hr/> <p style="text-align: center;">- End -</p> <hr/>	

File Transfer Rate

You can limit the File Transfer Rate and assign a max transfer rate to manage the amount of FTP bandwidth used.

Procedure 69 Configure the FTP Transfer Rate

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Event Settings from the Events and Actions menu.
3	Select the FTP tab.
4	Select the Limit Transfer Rate check box to limited the FTP transfer rate. OR Deselect the Limit Tranfer Rate check box to disable limited FTP transfer. The default setting is 'Enabled'.

- 5 Enter the Max Transfer Rate in the **Max Transfer Rate** (Kbps) textbox.

- End -

Test FTP Settings

Test the FTP settings that have been configured in Procedure 72 Configure FTP Server Settings.

Procedure 70 Test the FTP Settings

Step	Action
------	--------

- | | |
|---|---|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
| 2 | Select Event Settings from the Events and Actions menu. |
| 3 | Select the FTP tab. |
| 4 | Select Test .

A sample text file is sent to the specified FTP destination to confirm that FTP settings are correct. |

- End -

CIFS

The CIFS feature permits files generated from the camera such as alarm related video to be directed to network attached file storage via the Common Internet File System protocol. This supplements existing distribution methods such as FTP, SFTP and email.

Procedure 71 Configure CIFS Server Settings

Step	Action
------	--------

- | | |
|---|--|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
| 2 | Select CIFS from the Network menu. |
| 3 | Select the Enable check box to enable CIFS.

OR

Deselect the Enable check box to disable CIFS.

The default setting is 'Disabled'.

Note: When in Enhanced Security mode, enabling CIFS requires the admin account password. |
| 4 | Enter the network path in the Network Path text box.

Note: When entering the network path the following format should be used
'//<IP Address>/<folder name>' |
| 5 | Enter the domain name in the Domain Name in the text box. |
| 6 | Enter the username in the Username text box. |
| 7 | Enter the password in the Password text box. |

- End -

Event Actions

The camera can be commanded to carry out a specified operation when an analytic alert is triggered which are defined using event actions. Up to 5 event actions can be configured on the camera.

The event action can be used to configure any combination of the following actions:

- Record a clip to micro SD Card.
- Send an external alarm via email that includes alarm detail, where to retrieve the AVI video file and one JPEG picture of the event if recording MJPEG to micro SD Card. If MJPEG is not being recorded on micro SD Card, then no JPEG picture is sent.
- Send an AVI video file to a pre-configured external FTP server. The video file contains pre and post alarm video buffer.

Note:A micro SD Card must be inserted to enable recording and so that the camera can send FTP, CIFS and SMTP events. SMTP e-mails are sent without inserting a micro SD card but do not include snapshot images of the event trigger.

Creating an Event Action

Configure an event action which can be triggered by an analytic alert.

Procedure 72 Create an Event Action

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Event Actions from the Events and Actions menu.
3	Select an entry on the event actions list and enter an event action name in the Name text box.
4	Select the Record check box to enable the Record Settings.
5	Select the Email check box to send an e-mail to the email address configured in the Configure SMTP Settings procedure.
6	Select the FTP check box to send a video file to the FTP details configured in the Configure FTP Server Settings procedure.

Note:

1. If you select Record, the AVI clip is saved to the micro SD card and it has to be removed from the camera to view the video file.
 2. AVI clips can only be sent through FTP if a micro SD card has been installed and FTP has been selected.
 3. The selected pre and post event duration buffer is included in any video clips sent through FTP.
-

- End -

Editing a Event Action

Modify the details of an existing event action.

Procedure 73 Edit an Event Action

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Event Actions from the Events and Actions menu.
3	Select an entry on the event actions list, you can edit the following: <ul style="list-style-type: none"> • Name • Record - Enable/Disable • Email - Enable/Disable • FTP - Enable/Disable • CIFS - Enable/Disable
- End -	

Alarm I / O

The cameras provide one alarm input. By connecting alarm devices, such as smoke alarms, twilight sensors, or motion sensors to these inputs you can enhance the usability of your video surveillance system.

For 15 seconds after being triggered, any additional individual input changes on that alarm source are logged and do not generate any other action. This is to reduce the effect that any oscillating alarm source, such as if a door is simply vibrating in the wind, causing a series of alarms to be generated.

Input alarms are triggered upon change of state. Either from opened to closed or from closed to open. The camera reports the current state of each input alarms (open or closed) as well as an active or inactive status in the alarm configuration page. Active alarms are also be visible in the current faults page.

The triggering of any input alarm affects scheduled tasks and delay them until at least 30 seconds has passed since the last digital alarm input was triggered.

Alarm Actions

Upon triggering each alarm input can be configured to trigger a faulty action:

- Activate the digital output contact. This stays active until the alarm is acknowledged and cleared by an operator.
- Send an external alarm WS-Event that includes alarm details
- Send an external alarm through email that includes alarm detail, where to retrieve the AVI video file and one JPEG picture of the event if recording MJPEG to local storage. If MJPEG is not being recorded on local storage, then no JPEG picture is sent.
- Send an audio file through the unit. If a speaker has been connected to the audio output on the unit the file can be played as the alarm is triggered.
- Send an AVI video file to a pre-configured external FTP server. The video file contains pre and post alarm video buffer and audio if enabled and supported, as outlined above.

Note:

1. An active internal alarm only resets when the input state changes to “normal.” A manual reset is not available.
 2. A micro SD Card must be inserted to send an SMTP email, video files, audio and images from triggered alarms.
-

Procedure 74 Configure an Alarm

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus and then select Event and Actions .
2	Select Alarm I/O to view the alarm I/O tab.
3	Enter the alarm name in the Name text box.
4	Select the Enabled check box to enable the alarm. OR Clear the Enabled check box to disable to alarm.
5	Select when the alarm is required to be activated from the Normal drop-down menu. i.e. when the dry contact is open or closed.
6	Select the required configured fault action from the Action drop down menu.

- End -

Procedure 75 Enable/Disable an Alarm

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus and then select Event and Actions .
2	Select Alarm I/O to view the alarm I/O tab.
3	Select the Enabled check box to enable the corresponding alarm. OR Clear the Enabled check box to disable the corresponding alarm.

- End -

Enable or Disable Alarm Output

Alarm Output allows the alarm to activate a digital output as an action. For example, this digital output could be linked to an electrical device, i.e. a security light or siren.

Procedure 76 Enable/Disable Alarm Output

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus and then select Event and Actions .
2	Select Alarm I/O to view the alarm I/O tab.
3	Select the Output check box to enable alarm output. OR Clear the Output check box to disable alarm output.
- End -	

Procedure 77 Clearing Alarm Output

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus and then select Event and Actions .
2	Select Alarm I/O to view the alarm I/O tab.
3	Under Alarm Output , select the Apply button to Clear Active Output. The Alarm Output is cleared.
- End -	

Analytics

Analytics is a feature which detects and tracks objects in video. Analytics supported are Region of Interest, Motion Detection and Blur Detection.

Region of Interest (ROI)

A region of interest is a defined area of the camera view which considered to be higher priority than areas of non-interest. For example, in secure environments, areas of potential activity could be a specific door or window. They are specified by drawing a rectangular overlay on the video stream. The overlay is highlighted in green and an OSD is displayed outlining the size % for the x and y axis. Up to five regions of interest can be configured, all of which can be enabled / disabled.

Procedure 78 Configure a Region of Interest


Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Analytics from the Events and Actions menu. The ROI tab displays.
3	Use the drawing tools to draw the region of interest overlay on the video stream.
4	Enter the name of the region of interest in the Name text box.

- 5 Select the **Enabled** check box to enable the region of interest.
OR
Clear the **Enabled** check box to disable the region of interest.
- 6 Click **Add**. The region of interest is configured.

- End -

Procedure 79 Delete a Region of Interest

Step	Action
------	--------

- | | |
|---|--|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
| 2 | Select Analytics from the Events and Actions menu.
The ROI tab is displays. |
| 3 | Select  to delete the corresponding region of interest. |

- End -

Motion Detection

Motion detection enables you to define a region of interest in the camera's field of view which can be used to trigger an Event Action. Multiple areas of interest can be selected in the field of view but only one Event Action may be triggered.

Motion Detection Best Practices

To ensure you get the highest quality results when using Motion Detection on the camera it is recommended that you adhere to the following:

- An object exhibiting motion needs to be at least 8x8 pixels in size to be detected.
- The color of the object (in gray scale) should be approximately 10-15% different than the background.
- Exclude the Time Stamp region from motion detection, because the time stamp changes constantly and could register as motion.
- Try not to point cameras into sunlight, because high brightness prevents detection of movement of bright objects such as a person with a white shirt.
- Avoid areas with persistent motion, such as trees, blinking lights, or spinning signs, by using an appropriate region of interest.

Motion Detection Configuration Pane

The regions of interest within the camera's field of view are defined using the Motion Detection Configuration Pane. The regions of interest are set by drawing/highlighting an area on the pane. This is done by using the drawing tools on the Motion Detection Configuration Pane.

Creating a Motion Detection Alert

Create a motion detection alert on the camera.

The Motion Detection Alert feature supports up to three profiles in a Field of View (FOV). You can configure each profile with an individual sensitivity level and an event action.

Note:

- 1 If the motion detection video stream is changed after the region of interest has been drawn it is necessary to re-draw a new region.
- 2 If the stream settings are modified the motion detection is disabled and it is necessary to enable motion detection again if required.

Procedure 80 Create a Motion Detection Alert

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Analytics from the Events and Actions menu.
3	Select the Motion Detection tab.
4	Select the Enable motion detection check box to enable Motion Detection on the camera. OR Clear the Enable motion detection check box to disable Motion Detection on the camera.
5	Select the zone for detection in the Motion zone drop-down list.
6	Select the Enable motion zone check box to enable the zone for motion detection.
7	Select Edit in the Region configuration field.

Note: The user can configure three separate rules each with a different region, sensitivity and fault actions.

- 8 Use the drawing tools on the Motion Detection Configuration Pane to draw the region of interest on the pane. Multiple selections can be made.
- 9 Select the sensitivity from the **Sensitivity** drop-down menu:
 - **High**
 - **Medium**
 - **Low**
- 10 Select the fault action from the **Action** drop-down menu.
This fault action activates when motion is detected in the selected region of interest.
- 11 Select **Apply** to save the changes.

- End -

Enable or Disable a Motion Detection Alert

Motion detection can be turned on and turned off when required.

Procedure 81 Enable or Disable a Motion Detection Alert

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Analytics from the Events and Actions menu.
3	Select the Motion Detection tab. The Motion Detection Configuration pane displays.
4	Select the Enable motion detection checkbox to enable Motion Detection on the camera.

OR

Clear the **Enable motion detection** checkbox to disable Motion Detection on the camera.

5 Select **Apply** to save.

- End -

Blur Detection

The camera generates an alarm and then takes the action you specified during configuration when the Blur Detection feature is enabled and the camera detects incidents that make the video image blur, such as: redirection, blocking, or defocusing.

When you enable Blur detection, it has a polling period of roughly 1 minute.

A Blur Detection start fault is raised when blur has been detected at 60 successive polling periods of 1 second (up to 1 minute).

Procedure 82 Enable Blur Detection

Step	Action
------	--------

- | | |
|---|--|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
| 2 | Select Analytics from the Events and Actions menu. |
| 3 | Select the Blur Detection tab.
The Blur Detection Configuration pane displays. |
| 4 | Select the Enable Blur Detection checkbox to enable blur detection on the camera. |
| 5 | Select Apply to save. |

- End -

Event Logs

Event Log

When events are triggered the resulting alarms are displayed in the Event Log with the following information:

- **No.** - details the event index.
- **Event** - this is listed as 'Motion'.
- **Date created** - the time and date when the motion detection was triggered.
- **Event Stop** - indicates the date and time when the event stopped.
- **Component** - internal software component that raised the fault for a motion detection alert. This is listed as ANALYTICS.
- **Severity** - indicates how serious the fault is. Motion detection alerts list as 'Warning'.
- **Detail** - extra information that supplements the motion detection alert.
- **Delete** - remove the motion detection alert notification from the fault table.

Procedure 83 Display Event Log

Step	Action
------	--------

- | | |
|---|--|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
|---|--|

- 2 Select **Event Logs** from the **Events and Actions** menu. The Event Log tab displays. Triggered motion detection alerts display.

- End -

Procedure 84 Delete Current Events

- 1 Select **Setup** on the Web User Interface banner to display the setup menus.
- 2 Select **Event Logs** from the **Event and Actions** menu. The Event Logtab displays.
- 3 Select the corresponding **Delete** check box to mark the motion detection alert for deletion.
OR
Clear the corresponding **Delete** check box to keep the motion detection alert.

Note:You can select the **Select All** check box to mark all motion detection alerts displayed in the list for deletion.

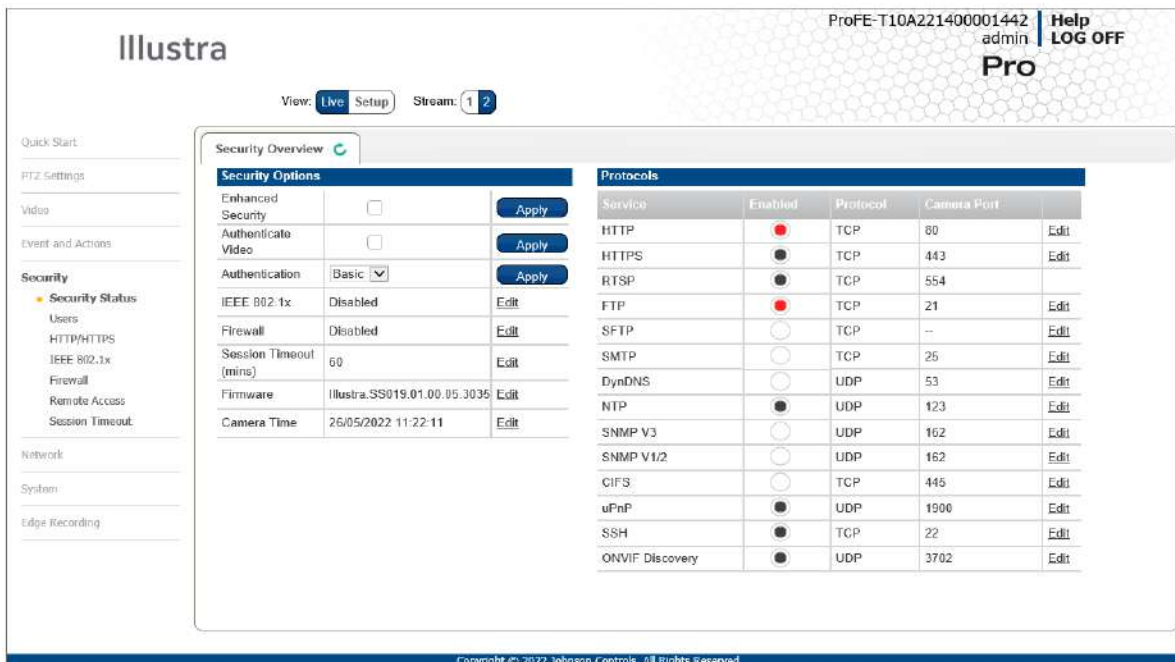
- 4 Select **Delete** to delete the selected motion detection alerts.
You are prompted to confirm the deletion.
- 5 Select **OK** to confirm the deletion.
OR
Select **Cancel**.

- End -

Security

When you select the **Security** menu, the **Security Status** page appears, as seen in Figure 27 on page 77.

Figure 27 Security menu



The Event Menu provides access to the following camera settings and functions:

- Security Status
- Users
- HTTP/HTTPS
- IEEE 802.1x
- Firewall
- Remote Access
- Session Timeout

Security Status

This section explains how to configure security features for the camera and modify the communication protocols that are used.

Enhanced Security

When you first log in to the Web User Interface, an overlay over the Live menu tab appears prompting you to choose either Standard or Enhanced Security mode. For more information regarding the requirements for Enhanced Security mode, refer to Summary of Security Modes on page 26.

Admin users can change the Security Mode of the camera from Standard Security to Enhanced Security.

Procedure 85 Enable Enhanced Security

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Security Status from the Security menu.
3	Select the Security Overview tab.
4	Check the Enable Enhanced Security check box and then the Apply button to enable enhanced security. A prompt appears asking you for your current password and the new password for the Enhanced Security feature. Your password must adhere to the minimum requirements for an Enhanced Security password as seen below. OR Clear the Enable Enhanced Security check box to disable enhanced security. Enhanced Security is disabled by default. The Security Warning dialog appears.
5	Enter the current password in the Current Password text box.
6	Enter the New Username in the New Username text box.
7	Enter the new password in the New Password text box. The password for enhanced security must meet the following requirements: <ul style="list-style-type: none"> • Be a minimum of eight characters long • Have at least one character from each of the following character groups: <ul style="list-style-type: none"> Upper-case letters Lower-case letters Numeric characters Special characters
8	Re-enter the new password in the Confirm Password text box.
9	Click Apply .

- End -

Procedure 86 Disable Enhanced Security Mode

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Security Status from the Security menu.
3	Select the Security Overview tab.
Note: When in Enhanced Security mode, changing the security mode requires the admin account password.	
4	Click Apply .
- End -	

Security Status

This section summarizes the communication protocols that are used and their status. The following communication protocols can be enabled: HTTP, FTP, Dyn DNS, SMTP, HTTPS, SNMP V1/2, SNMP V3, uPNP, and SFTP.

Security Overview

Procedure 87 Enable/Disable Communication Protocols

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Security Status from the Security menu.
3	Select the Security Overview tab.
4	Select the Edit button to configure the Protocol .
Note: When in Enhanced Security, enabling/disabling individual protocols requires the admin account password.	

Users

In this section you are able to add a user, change a user password and a delete user account. There are three levels of access: admin, operator and user.

Refer to Appendix A: User Account Access on page 1 for details on the features which are available to each role.

Note:The default Username is **admin** and the default Password is **admin**. To maintain security the password on the admin account is required to be changed on first log in.

View Current User Accounts

View a list of the current user accounts assigned to the camera.

Procedure 88 View User Accounts

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Users from the Security menu. The current user accounts assigned to the camera display.
- End -	

Add User

Add a new user account to allow access to the camera.

Procedure 89 Add a User

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Users from the Security menu.
3	Select the Add User tab.
4	Enter a User Name in the Name text box. The username must start with a letter and can be followed by any alphanumeric values (a-z, A-Z, 0-9) and the following special characters, underscore(_), dash(-), or dot(.)
5	Select a Role : <ul style="list-style-type: none"> • admin • operator • user Refer to Appendix A: User Account Access for details on the features which are available to each role.
6	Enter a password in the Password text box. The password for Standard Security must start with an alphanumeric character and is case sensitive, it can contain alphanumeric characters with a length of between 5 and 32 characters. The password for enhanced security must meet the following requirements: <ul style="list-style-type: none"> • Be a minimum of eight characters long. • The password cannot contain the username. • Have at least one character from each of the following character groups: <ul style="list-style-type: none"> • Upper-case letters - ABCDEFGHIJKLMNOPQRSTUVWXYZ • Lower-case letters - abcdefghijklmnopqrstuvwxyz • Numeric characters - 0123456789 • Special characters - @ % + \ / ' ! # \$ ^ ? : , () { } [] ~ - _ `
7	Enter the same password in the Confirm Password text box.
8	Select Apply to save the settings. The new user account appears in the Users list on the Users tab.

- End -

Changing the User Accounts Password

Change the password of an existing user account.

Procedure 90 Change User Password

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Users from the Security menu.
3	Select the Change Password tab.
4	Select the user account from the Name drop-down menu.
5	Enter the current password for the user account in the Current Password text box.
6	Enter the new password for the user account in the New Password text box. The password is case sensitive and can contain alphanumeric characters with a length of between 5 and 32 characters.
7	Enter the same new password in the Confirm New Password text box.
8	Select Apply to save the settings.


- End -

Delete a User Account

Delete a user account from the camera.

Note:The default 'admin' account cannot be deleted.

Procedure 91 Delete a User Account

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Users from the Security menu. The Users tab displays.
3	Select  to delete the corresponding user account. You will be prompted to confirm the deletion.
4	Select OK to delete. OR
5	Select Cancel .

- End -

HTTP / HTTPS

User can select the option to use HTTP, HTTPS or both. The camera automatically creates an SSL certificate file to use for HTTPS. It is possible to upload a custom SSL certificate if validation is

required.

Procedure 92 Specify HTTP Method

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select HTTP/HTTPS from the Security menu.
3	Select the HTTP Method using the radio buttons <ul style="list-style-type: none"> • HTTP • HTTPS • Both
- End -	

Procedure 93 Add a HTTPS Certificate

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select HTTP/HTTPS from the Security menu.
3	Click on the Upload button and navigate to the certificate location.
4	Select the file and select Open .
<p>Note:The camera only accepts .pem format certificates. The certificate must have the server certificate and private key combined and the private key must not be password protected.</p>	
<p>After the certificate has been uploaded the camera must be rebooted to take affect.</p>	
- End -	

Delete a HTTPS Certificate

If you delete the existing certificate it will be replaced by a temporary substitute. The current browser session will be lost and you will be required to log back in to the camera Web User Interface.

Procedure 94 Delete a HTTPS Certificate

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select HTTP/HTTPS from the Security menu.
3	Select Delete . The camera displays a “Restarting HTTPS Service” page with a progress bar showing the deletion progress.
4	When complete, the camera returns to the log in page.
- End -	

IEEE 802.1x

The IEEE 802.1x security feature provides port based network access control i.e. securing corporate networks from the attachment of unauthorized devices.

Authentication is carried out through use of the Extensible Authentication Protocol or EAP. Both PEAP and TLS methods are supported.

Procedure 95 Configure IEEE 802.1x Security

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select IEEE 802.1x from the Security menu. The EAP Settings tab displays.
3	Select the Enable IEEE802.1x check box to enable IEEE802.1x security . OR
4	Clear the Enable IEEE802.1x check box to disable IEEE802.1x security.
5	Select the EAPOL Version from the drop-down menu.
6	Select the EAP Method using the radio buttons.
7	Enter the EAP identity name in the EAP Identify textbox.
8	Select Upload to navigate to the CA Certificate location. The Choose file dialog displays.
9	Navigate to the location where the certificate has been saved. Select the file and select Open .
10	Select Upload . The upload process starts.
11	If PEAP is selected: a Enter the required PEAP Password . OR If TLS is selected - a Select Upload to navigate to the Client Certificate location. The Choose file dialog will be displayed. b Navigate to the location where the certificate has been saved. c Select the file and select Open . d Select Upload . The upload process starts. e Enter the required Private Key Password .

- End -

Firewall

Configure the Basic Filtering and Address Filtering for the firewall.

Basic Filtering

Enable or disable basic filtering for the camera this includes:

- ICMP (Internet Control Message Protocol) Blocking
- RP (Reverse Path) Filtering

Procedure 96 Enable/Disable Basic Filtering

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Firewall from the Security menu. The Basic Filtering tab displays.
3	Select the ICMP Blocking check box to enable ICMP blocking. OR Clear the ICMP Blocking check box to disable ICMP blocking. The default setting is 'Disabled'.
4	Select the RP Filtering check box to enable the RP filtering. OR Deselect the RP Filtering check box to disable. The default setting is 'Disabled'.

- End -

Address Filtering

Configure the IP or MAC addresses which are denied access to the camera.

Procedure 97 Enable/Disable and configure Address Filtering

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Firewall from the Security menu.
3	Select the Address Filtering tab.
4	Select Off to disable address filtering completely. OR Select Allow to allow address filtering for specified addresses OR Select Deny to deny address filtering for specific addresses. The default setting is 'Off'.
5	If address filtering has been set to Allow or Deny : <ol style="list-style-type: none"> Enter an IP or MAC Address to allow / deny in the IP or MAC Address text box in the following format xxx.xxx.xxx.xxx. <hr/> <p>Note:CIDR (Classless Inter-Domain Routing) is supported when using address filtering. If using a CIDR address use the following format xxx.xxx.xxx.xxx/xx.</p> <hr/> <ol style="list-style-type: none"> Select Add.
6	Select Apply to save the settings.

- End -

Editing an Address Filter

Edit an existing address filter.

Procedure 98 Edit an Address Filter


Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Firewall from the Security menu.
3	Select the Address Filtering tab.
4	Edit the IP or MAC Address in the IP or MAC Address text box.
5	Select Add to save the changes.

- End -

Deleting an Address Filter

Delete an existing address filter.

Procedure 99 Delete an Address Filter

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Firewall from the Security menu.
3	Select the Address Filtering tab.
4	Select  to delete the corresponding address filter.

- End -

Remote Access

SSH Enable

Enables Secure Shell access into the camera, if remote access is permitted by the camera network. This will also enable Tyco Security Products Level 3 Technical Support to diagnose any problems on the camera.

Note: It is recommended to keep SSH Enable disabled. This function should only be enabled this when it is requested by Tyco Security Products Level 3 Technical Support.

Procedure 100 Configure SSH

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Remote Access from the Security menu. The Remote Access tab displays.

- 3 Select the **SSH Enable** check box to enable SSH.
OR
Deselect **SSH Enable** check box to disable SSH.
The default setting is 'Disabled'.

- End -

ONVIF

The Web User Interface allows ONVIF functionality to be managed at a high level. ONVIF Discovery Mode and User Authentication can be enabled or disabled.

- ONVIF Discovery Mode allows enabling or disabling discovery of the camera via ONVIF.
- ONVIF User Authentication allows the camera to accept ONVIF commands from all users or only authenticated users. Enabling User Authentication ensures the camera will only execute commands from authenticated users.

The separation of Discovery Mode and User Authentication allows the camera to be set up in a configuration that suits requirements for the network and users. The preferred discovery method for the camera is Illustra Connect, and this utilizes ONVIF discovery. It is therefore recommended that ONVIF Discovery Mode is always enabled.

ONVIF Discovery Mode

Enable or disable ONVIF discovery on the camera.

Procedure 101 Enable/Disable ONVIF Discovery Mode

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Remote Access from the Security menu. The Remote Access tab displays.
3	Select the ONVIF Discovery Mode check box to enable ONVIF Discovery Mode. OR Deselect ONVIF Discovery Mode check box to disable ONVIF Discovery Mode. The default setting is 'Enabled'.

- End -

ONVIF User Authentication

To utilize ONVIF User Authentication, there must be at least one admin level user in the ONVIF service.

Note:When in Enhanced Security mode, editing ONVIF User Authentication requires the admin account password.

Procedure 102 Enable/Disable ONVIF User Authentication

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Remote Access from the Security menu.

The Remote Access tab displays.

- 3 Select the **ONVIF User Authentication** check box to enable ONVIF User Authentication.
OR
Deselect **ONVIF User Authentication** check box to disable ONVIF User Authentication.
The default setting is 'Enabled'.

- End -

UPnP Discovery

Enable or disable UPnP Discovery on the camera.

Procedure 103 Enable/Disable UPnP Discovery

Step	Action
------	--------

- 1 Select **Setup** on the Web User Interface banner to display the setup menus.
- 2 Select **Remote Access** from the **Security** menu.
The Remote Access tab displays.
- 3 Select the **UPnP Discovery** check box to enable UPnP Discovery.
OR
Deselect **UPnP Discovery** check box to disable UPnP Discovery.
The default setting is 'Enabled'.

- End -

Session Timeout

Session timeout specifies the number of minutes that a web session can remain idle before it is automatically terminated.

Procedure 104 Set a Session Timeout time

Step	Action
------	--------

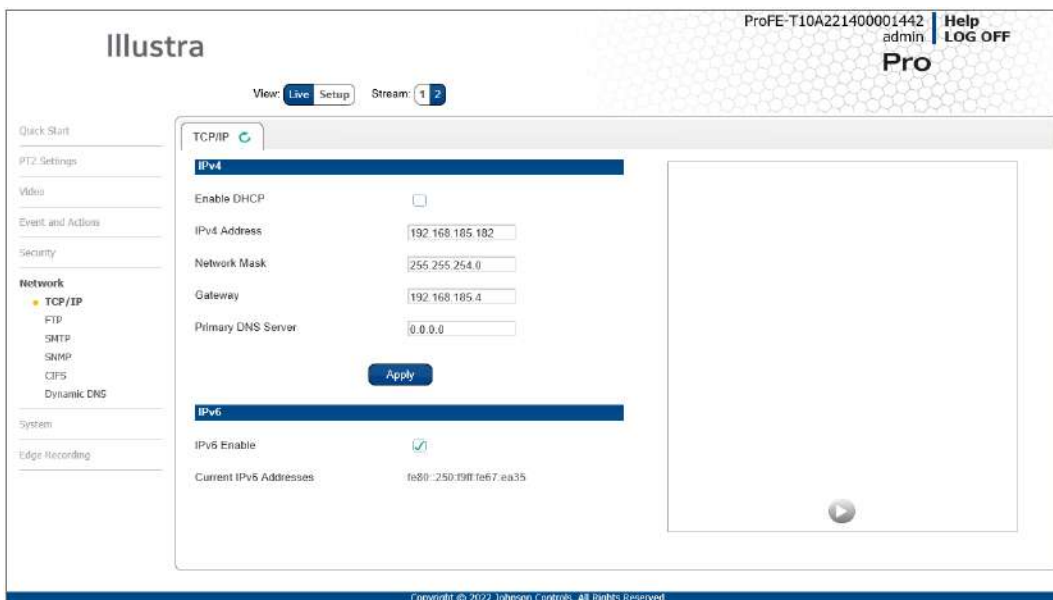
- 1 Select **Setup** on the Web User Interface banner to display the setup menus.
- 2 Select **Session Timeout** from the **Security** menu. The Session Timeout tab displays.
- 3 Use the slider bar to select the **Session Timeout (mins)**. The default setting is 15 minutes.

- End -

Network Menu

When you select the **Network** menu, the **TCP/IP** page displays, as seen in Figure 28 on page 88.

Figure 28 Network Menu



The Network Menu provides access to the following camera settings and functions:

- TCP/IP
- FTP
- SMTP
- SNMP
- CIFS
- Dynamic DNS

TCP/IP

Configure the IPv4 and IPv6 settings on the camera.

IPv4

Configure the IPv4 settings for the camera.

Note:When you perform a factory reset or reboot the unit searches for the last known IP address. If this is not available it reverts to the default IP address of 192.168.1.168. This could result duplicate IP addresses. Refer to Network Menu on page 88 for more information.

Procedure 105 Configure the IPv4 Settings

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select TCP/IP from the Network menu.
3	Select the Enable DHCP check box to enable DHCP and disable manual settings. OR Deselect Enable DHCP to disable DHCP and allow manual settings to be entered. The default setting is 'Disabled'.
4	If Enable DHCP has been disabled: <ol style="list-style-type: none"> Enter the IPv4 Address in the IPv4 Address text box in the form xxx.xxx.xxx.xxx. The default setting is '192.168.1.168' Enter the Network Mask in the Network Mask text box xxx.xxx.xxx.xxx. The default setting is '255.255.255.0' Enter the Gateway IP address in Gateway text box xxx.xxx.xxx.xxx. Enter the Primary DNS Server in the Primary DNS Server text box xxx.xxx.xxx.xxx.
5	Select Apply to save the settings.

- End -

IPv6

Enable IPv6 on the camera.

Procedure 106 Enable/Disable IPv6

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select TCP/IP from the Network menu.
3	Select the IPv6 Enable check box to enable IPv6 on the camera. OR Deselect the IPv6 Enable check box to disable IPv6 on the camera. The default setting is 'Enabled'. If IPv6 is enabled the Link Local and DHCP address displays beside 'Current IPv6 Addresses' if available.

- End -

FTP

Configure the FTP settings for the FTP server. This is required to send video files from triggered analytic alerts. FTP must be configured to enable FTP video alerts when using analytics.

Note: FTP settings can also be configured in the **Network** menu.

Procedure 107 Configure FTP Server Settings

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select FTP from the Network menu.
3	Select the Enable check box to enable FTP. OR Deselect the Enable check box to disable FTP. The default setting is 'Enabled'. <hr/> Note: When in Enhanced Security mode, enabling FTP requires the admin account password. <hr/>
4	If required, select the Secure FTP checkbox. The default setting is 'Disabled'.
5	Enter the IP address of the FTP Server in the FTP Server text box.
6	Enter the FTP port in the FTP Port text box. The default setting is 21.
7	Enter the FTP username in the Username text box.
8	Enter the FTP password in the Password text box.
9	Enter the FTP upload path in the Upload Path text box. <hr/> Note: When entering the upload path the following format should be used '//<name of ftp directory>/<folder>' <hr/>
<hr/> - End - <hr/>	

File Transfer Rate

You can limit the File Transfer Rate and assign a max transfer rate assigned to manage the amount of FTP bandwidth used.

Procedure 108 Configure the FTP Transfer Rate

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select FTP from the Network menu.
3	Select the FTP tab.
4	Select the Limit Transfer Rate check box to limit the FTP transfer rate. OR Clear the Limit Transfer Rate check box to disable limited FTP transfer. The default setting is 'Enabled'.
5	Enter the Max Transfer Rate in the Max Transfer Rate (Kbps) textbox. The default setting is 50.

- End -

Test FTP Settings

Test the FTP settings that have been configured correctly.

Procedure 109 Test the FTP Settings

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select FTP from the Network menu.
3	Select Test . A sample text file will be sent to the specified FTP destination to confirm that FTP settings are correct.

- End -

SMTP

Configure the SMTP settings to allow e-mail alerts to be sent from the camera when an analytic alert is triggered.

Note:SMTP settings must be configured to enable email alerts when using analytics.

Procedure 110 Configure SMTP Settings

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select SMTP from the Network menu. The SMTP tab displays.
3	Check the Enable SMTP check box to enable SMTP. Text boxes on the tab become available for entry.
	<hr/> Note: When in Enhanced Security mode, enabling SMTP requires the admin account password. <hr/>
4	Enter the IP Address of the mail server in the Mail Server text box.
5	Enter the server port in the Server Port text box. The default setting is '25'.
6	Enter the from email address in the From Address text box.
7	Enter the email address to send email alerts to in the Send Email to text box.
8	Select the Use authentication to log on to server check box to allow authentication details to be entered. OR Clear the Use authentication to log on to server to disable authentication. The default setting is 'Disabled'.
9	If 'Use authentication to log on to server' check box has been selected:

- a Enter the username for the SMTP account in the **Username** text box.
 - b Enter the password for the SMTP account in the **Password** text box.
- 10 Select **Apply** to save the settings.

- End -

Procedure 111 Test the SMTP Settings

Step	Action
------	--------

- | | |
|---|---|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
| 2 | Select Event Settings from the Events and Actions menu. |
| 3 | Select the SMTP tab. |
| 4 | Select Test . |
| | A sample text file is sent to the specified SMTP destination to confirm that SMTP settings are correct. |

- End -

SNMP

The camera introduces support for the Simple Network Management Protocol making it easier to manage on an IP network.

The SNMP support includes support for V2 and V3. Using V2 means no authentication is required to access the data and results are unencrypted. V3 offers enhanced encryption and authentication security features.

Procedure 112 Configure SNMP Settings

Step	Action
------	--------

- | | |
|---|---|
| 1 | Select Setup on the Web User Interface banner to display the setup menus. |
| 2 | Select SNMP from the Network menu. |
| 3 | Enter a location reference in the Location text box. |
| 4 | Enter an SNMP managing contact reference in the Contact text box. |
| 5 | If using V2 : <ul style="list-style-type: none"> a Select the Enable V2 checkbox. b Enter the authorized ID for reading SNMP data in the Read Community text box. c Enter the Trap Community. d Enter the Trap Address. e Select Apply. |
| | OR |
| | If using V3 : <ul style="list-style-type: none"> a Select the Enable V3 checkbox. b Enter the Read User. c Select the Security Level from the drop down menu: <ul style="list-style-type: none"> - noauth: No authentication / no encryption. |

- **auth**: Authentication / no encryption. A user password is required. It is symmetrically encrypted using either MD5 or SHA.
- **priv**: Authentication / encryption. A user password is required as is symmetrically encrypted using either MD5 or SHA. A data encryption password is required as is symmetrically encrypted using either DES or AES.

- d Select the **Authentication Type** using the radio buttons.
- e Enter the Authentication Password
- f Select the **EncryptionType** using the radio buttons.
- g Enter the **Encryption** Password
- h Select **Apply**.

- End -

CIFS

The CIFS feature permits files generated from the camera such as alarm related video to be directed to network attached file storage via the Common Internet File System protocol. This supplements existing distribution methods such as FTP, SFTP and email.

Procedure 113 Configure CIFS Server Settings

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select CIFS from the Network menu.
3	Select the Enable check box to enable CIFS. OR Deselect the Enable check box to disable CIFS. The default setting is 'Disabled'.
	Note: When in Enhanced Security mode, enabling CIFS requires the admin account password.
4	Enter the network path in the Network Path text box. Note: When entering the network path the following format should be used '//<IP Address>/<folder name>'
5	Enter the domain name in the Domain Name in the text box.
6	Enter the username in the Username text box.
7	Enter the password in the Password text box.

- End -

Heartbeat

Procedure 114 Enable/Disable Heartbeat

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select SNMP from the Network menu.
3	Select the Heartbeat tab.
4	Select the Enable Heartbeat check box to enable Heartbeat. OR Deselect the Enable Heartbeat check box to disable Heartbeat. The default setting is 'Disabled'.

- End -

Procedure 115 Enable select Heartbeat intervals

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select SNMP from the Network menu.
3	Select the Heartbeat tab.
4	Select the Enable Heartbeat check box to enable Heartbeat.
5	Use the slider bar to select the Heartbeat Interval (secs) .
6	The default setting is '60' seconds. The seconds range from 5 to 500.

- End -

Dynamic DNS

Dynamic DNS is supported for updating, in real time a changing IP address on the Internet to provide a persistent domain name for a resource that may change location on the network. RFC 2136 Dynamic Updates in the Domain Name System. In this situation the camera talks only to the DHCP server and the DHCP server is responsible for updating the DNS server. The camera sends its hostname to the DHCP server when requesting a new lease and the DHCP server updates the DNS records accordingly. This is suitable for an intranet style configuration where there is an internal DHCP and DNS service and the user wants only to access their camera within their own network.

By default, when making a DHCP request the camera transmits its hostname as part of the DHCP request. This option is not user configurable. The cameras hostname matches the configurable parameter "camera name" on the Web User Interface. Any DHCP request contains the cameras hostname for use of the DHCP server to forward to an appropriate DNS server.

Dynamic DNS

Configure the Dynamic DNS settings for the camera.

Procedure 116 Configure Dynamic DNS

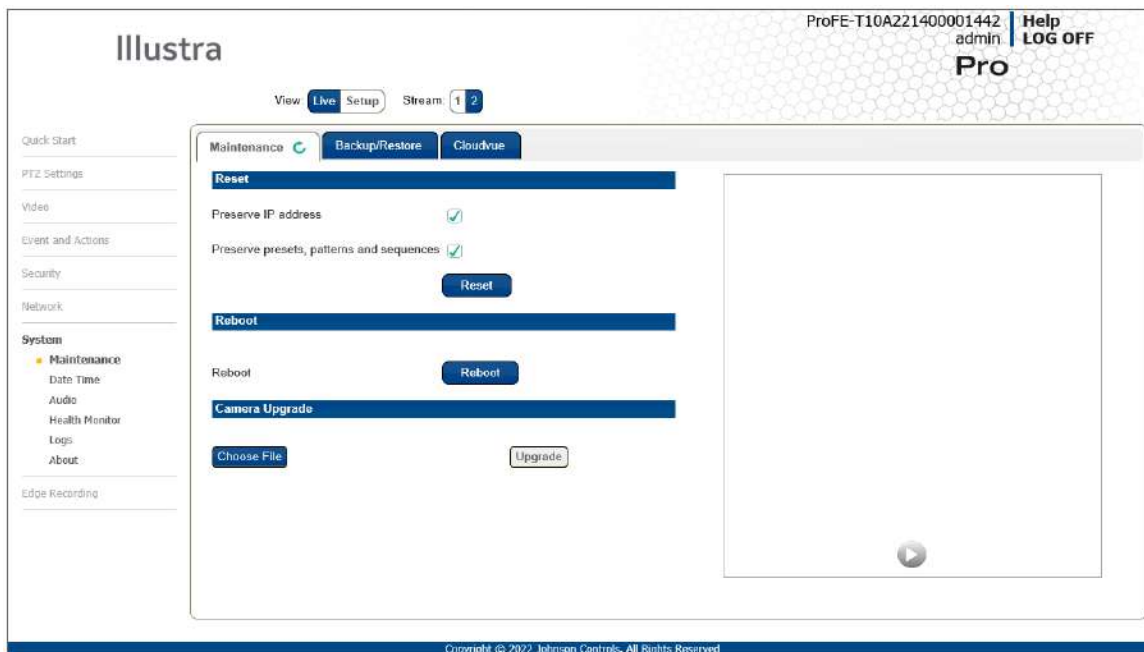
Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Dynamic DNS from the Network menu.
3	Select the Service Enable check box to enable Dynamic DNS. OR Deselect Service Enable check box to disable Dynamic DNS. The default setting is 'Disabled'.
4	If Service Enable has been enabled: a Enter the Camera Alias in the text box. b Select a Service Provider from the drop-down list: <ul style="list-style-type: none">• dyndns.org• easydns.com• no-ip.com• zerigo.com• dynsip.org• tzo.com c Enter a Username in the text box. d Enter a Password in the text box. e Enter Service Data in the text box.
5	Select Apply to save the settings.

- End -

System

When you open the **System** menu, the **Maintenance** page appears, as seen in Figure 29 on page 96.

Figure 29 System Menu



The System Menu provides access to the following camera settings and functions:

- Maintenance
- Date Time
- Audio
- Health Monitor
- Logs
- About

Maintenance

The Maintenance menu allows you to restore the camera settings to factory default, reboot the camera and apply a firmware upgrade.

Reset

To perform a physical reset of the camera, refer to the chapter regarding your camera model in this guide.

Note: Network settings can be retained if required.

Procedure 117 Resetting the Camera

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Maintenance from the System menu.
3	Select the Preserve IP address check box to retain the current network settings during the camera reset. OR Deselect the Preserve IP address check box to restore the default networking settings. The default setting is 'Enabled'.
4	Select Reset . You will be prompted to confirm the camera reset. <ul style="list-style-type: none"> • Select OK to confirm. The Web User Interface will display a “Camera Resetting” page with a progress bar showing the reboot progress. • When the camera is restarted it will take 2 - 3 minutes until it is online and ready to be accessed and controlled. OR Select Cancel .
5	The Log in page displays.

- End -

Reboot

To perform a physical reset of the camera, refer to the chapter regarding your camera model in this guide.

Procedure 118 Reboot the Camera

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Maintenance from the System menu.
3	Select Reboot . You will be prompted to confirm the camera reboot.
4	Select OK to confirm. The Web User Interface will display a “Camera Rebooting” page with a progress bar showing the reboot progress. When the camera is restarted it will take 2 - 3 minutes until it is online and ready to be accessed and controlled. OR Select Cancel .
5	The Log in page displays.

- End -

Camera Firmware Upgrade

The camera can be upgraded using firmware provided by Illustra. Alternatively, the camera can also be upgraded using Illustra Connect. Refer to the Illustra Connect User Guide for further information.

Note:All existing camera settings are maintained when the firmware is upgraded.



Caution

You should only use firmware that has been provided by Illustra. Using any other firmware may cause a malfunction and damage the camera.

Procedure 119 Upgrade Camera Firmware

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Maintenance from the System menu.
3	Select Choose File . The Choose file to Upload dialog displays.
4	Navigate to the location where the firmware file has been saved.
5	Select the firmware file then select the Open button.
6	Select Upgrade . The file transfer will begin. Do not disconnect power to the camera during the upgrade process. The camera restarts automatically after the updates have been completed, this can take from 1 to 10 minutes. The Log in page displays.

- End -

Backup/Restore

Backup camera data and restore from a previously saved data file. The data file can be saved to a specified location and used to restore the camera configuration.

Note:A saved backup data file created on a camera is camera specific and cannot be used to restore the settings on a different camera.

Procedure 120 Backup Camera Data

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Maintenance from the System menu.
3	Select the Backup/Restore tab.
4	Select Backup . You are prompted to save the backup file.
5	Select Save .

- End -

Procedure 121 Restore Camera from Backup

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Maintenance from the System menu.
3	Select the Backup/Restore tab.
4	Select Choose File . The Choose file to Upload dialog displays.
5	Navigate to the location where the firmware file has been saved.
6	Select the firmware file then select the Open button.
7	Select Upload . The file transfer begins. Do not disconnect power to the camera during the upgrade process. The camera restarts automatically after the updates have been completed, this can take from 1 to 10 minutes. The Log in page displays.

- End -

CloudVue

The Cloudvue feature implements Illustra Cameras to Cloudvue (C2C) from Cloudvue to provide a secure, scalable, cloud-based storage solution. Before you enable this feature, you need to install the mobile application. You can download the app from either the iOS App Store or the Google Play Store and then you can complete the registration using the app.

Procedure 122 Enabling Cloudvue integration

Note: If a Cloudvue server is not setup when enabling the Cloudvue feature then the camera may become inaccessible.

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Maintenance from the System menu.
3	Select the Cloudvue tab.
4	Select Apply .
5	Enter an administrator password to validate the request. <ul style="list-style-type: none"> • If the camera detects an Internet connection, it continues with the Cloudvue integration request. If an Internet connection is not detected an error displays and the request is rejected.
<p>Note: If an Internet connection is detected, a factory reset begins. This clears all previous user defined configurations including user management settings. The camera boots in Cloudvue mode and is only accessible using HTTPS. The password changes to a string of characters determined by the Cloudvue.</p>	
6	Refer to Cloudvue documentation and follow the procedure to add a camera to regain access.

- End -

Procedure 123 Resetting the camera to normal operation

Note: There are two procedures for resetting the camera, please select one.

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Maintenance from the System menu.
3	Select the Maintenance tab. This page displays two types of factory reset: a Factory Reset: Resets the camera and boots the camera in Illustra mode. b Cloudvue Reset: Resets the camera and boots the camera in Cloudvue mode.
4	If you do not have the credentials to perform a reset, you can perform a factory reset on the hardware itself by using the hardware reset button as detailed in the Product Overview of each camera.

- End -

Date / Time

Set the date and time on the camera.

Note:

Date and Time can also be configured in the **Quick Start** menu.

Procedure 124 Configuring the Date and Time

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Date/Time from the Basic Configuration menu.
3	Select the Time 24-hour check box to enable the 24-hour clock. Or Deselect the Time 24-hour check box to enable the 12-hour clock. The default setting is '24-hour'.
4	Select the Date Display Format from the drop-down menu: • DD/MM/YYYY • MM/DD/YYYY • YYYY/MM/DD The default setting is 'DD/MM/YYYY'.
5	Select the Time Zone from the drop-down menu. The default setting is (GMT) GMT+0.
6	Select the Set Time setting by selecting the radio buttons:

- **Manually**
- **via NTP**

The default setting is 'Manually'.

- 7 If you select Manually in step 5:
 - a Select the Date (**DD/MM/YYYY**) using the drop-down menus.
 - b Select the Time (**HH:MM:SS**) using the drop-down menus.
- 8 If you select via NTP in step 5:
 - a Enter the **NTP Server Name** in the text box.

- End -

Audio

You can configure the audio input, output, upload audio and stored audio clips, as well as configure Audio Video Synchronization on this tab.

Procedure 125 Configure Audio Input

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus and then select System .
2	Select the Input Source drop-down and select one of the following options: <ul style="list-style-type: none"> • Internal • External
3	Select the Audio from the System menu.
4	Select the Input Enable check box to enable the audio input settings. Or Clear the Input Enable check box to disable audio input settings. The default setting is 'Disabled'.
5	Use the slider bar to select the Input Volume . Values range from 1 to 100. The default setting is 72.

- End -

Procedure 126 Configuring Audio Output

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus and then select System .
2	Select the Audio from the System menu.
3	Select the Output Enable check box to enable the audio output settings. Or Deselect the Output Enable check box to disable audio input settings. The default setting is 'Disabled'.
4	If Output Enable has been enabled, use the slider bar to select the Output Volume. Values range from 1 to 100. The default setting is 50.

- End -

Configuring Stored Audio

When connected to an appropriate device, the unit is capable of playing back stored audio when an alarm has been triggered. A maximum of five audio files can be uploaded to the unit.

Note: Audio clips can only be used if a micro SD Card has been installed. Refer to the relevant Quick Reference Guide for information on installing the micro SD Card.

When uploading an audio file it must meet the following requirements:

- The filename cannot contain spaces.
- It must be a 'wav' file with a '.wav' extension.
- A single channel mono file with a bit depth of 16kHz.
- The sample rate must be 8kHz.
- The duration must be no longer than 20 seconds.

Procedure 127 Play Stored Audio

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus and then select System .
2	Select the Audio from the System menu.
3	Select the Audio Clips tab.
4	Select to play back the corresponding audio file.

- End -

Procedure 128 Upload an Audio File

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus and then select System .
2	Select the Audio from the System menu.
3	Select the Audio Clips tab.
4	Select Browse . The Choose file dialog displays.
5	Navigate to the location where the audio file has been saved. Select the audio file then select the Open button. When uploading an audio file it must meet the following requirements: <ul style="list-style-type: none"> • The filename cannot contain spaces. • It must be a 'wav' file with a '.wav' extension. • A single channel mono file with a bit depth of 16kHz. • The sample rate must be 8kHz. • The duration must be no longer than 20 seconds.
6	Select Upload .
7	You will be prompted to confirm that you would like to upload the audio file. Select OK to confirm the upload. Or Select Cancel .

- End -

Procedure 129 Delete a Stored Audio file

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus and then select System .
2	Select the Audio from the System menu.
3	Select the Audio Clips tab.
4	Select the corresponding Delete check box to mark the audio file for deletion. Or Deselect the corresponding Delete check box to keep the audio file.
5	Select the Select All check box to mark all audio files for deletion.
6	Select Delete to delete the selected audio files. You will be prompted to confirm the deletion.
7	Select OK to confirm the deletion. Or Select Cancel .

- End -

Health Monitor

The Health Monitor function provides visibility on the health status of popular device parameters. Each parameter can be enabled or disabled. The refresh frequency of the health monitor can be determined by selecting a duration from the Reporting Period drop-down menu.

Procedure 130 Configure Health Monitor Settings

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select the Health Monitor from the System menu.
3	Select the Recording Period from the drop-down menu.
4	Select the corresponding check box to enable health monitoring on a parameter. OR Clear the corresponding check box to disable health monitoring on a parameter. The default setting for all parameters is Enabled.

- End -

Logs

Information is provided on system logs created by the camera.

System Log

The system log gives the most recent messages from the `unix/var/log/messages` file. Information will include the following:

- Messages about system behavior such as process startup/shutdown.
- Warnings about recoverable problems that processes encounter.
- Error messages where processes encounter problems they cannot fix; note that this does not mean that the process will not continue to work, only that it encountered an issue it could do nothing about.

Procedure 131 Display System Log

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Logs from the System menu. The System Log tab displays.
3	Select Refresh to refresh the log for the most up-to-date information.
- End -	

Procedure 132 System Log Filter

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select Logs from the System menu. The System Log tab displays.
3	Enter the number of lines of the log file you would like to view in the Lines text box.
4	Enter the word or phrase that you would like to search for in the Filter text box.
5	Select Refresh to refresh the log for the most up-to-date information.
- End -	

About

The About menu provides the following camera information:

- Camera Name
- Model
- Product Code
- Manufacturing Date
- Serial Number
- MAC Address
- Firmware Version
- Hardware Version
- iAPI Version

Procedure 133 Display Model Information

Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select About from the System menu. The model tab displays.
- End -	

Procedure 134 Edit Camera Name

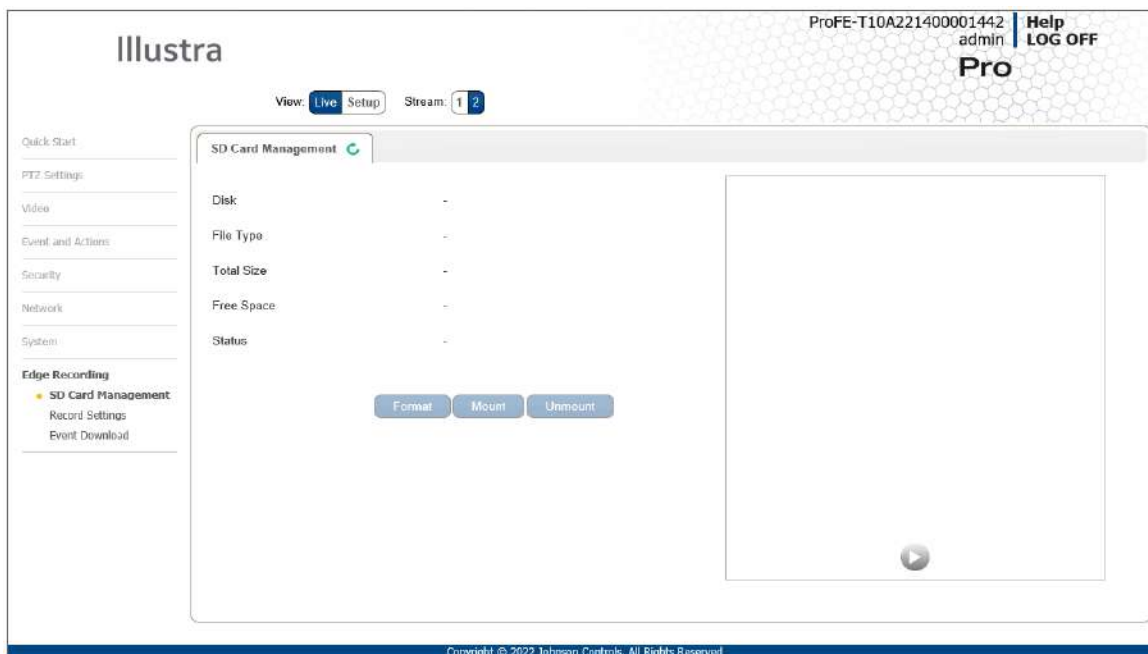
Step	Action
1	Select Setup on the Web User Interface banner to display the setup menus.
2	Select About from the System menu. The model tab displays.
3	Edit the name in the Camera Name textbox.

- End -

Edge Recording

When you select the **Edge Recording** menu, the **Micro SD Card Management** page appears, as seen in Figure 30 on page 107.

Figure 30 Edge Recording Menu



The Edge Recording Menu provides access to the following camera settings and functions:

- SD Card Management
- Record Settings
- Event Download

Micro SD Card Management

Edge recording provides the ability to save recorded video to a Micro SD Card. Video can be configured to be recorded based on an event. Without a Micro SD Card current faults notifications displayed on camera if an alarm is triggered. Using a Micro SD Card enables the following:

- Current faults notifications displayed on camera if an alarm is triggered.
- Video and screen shot are saved to the SD card.
- SMTP notifications can be sent.
- FTP uploads of video can be sent.

Inserting the Micro SD Card

When inserting a Micro SD Card it is essential that the camera is rebooted. The Micro SD Card should be mounted and unmounted through the Web User Interface. If you receive a 'Device is Busy' model you should wait and try again in a few minutes. If this does not work then it may be necessary to disable Motion Detection, FTP or any other process which may be using the Micro SD Card.

Note: Refer to the Quick Reference Guide supplied with the product for details on how to remove the housing assembly and gain access to the camera.

Procedure 135 Insert the Micro SD Card by powering down the Camera

Step	Action
1	Turn off the camera by disconnecting the power supply.
2	Insert the Micro SD card into the camera.
3	Reconnect the power supply and power up the camera.
- End -	

Procedure 136 Mount the Micro SD Card through the Web User Interface to reboot the Camera

Step	Action
1	Insert the Micro SD card into the camera.
2	Select Setup on the Web User Interface banner to display the setup menus.
3	Select SD Card Management menu from the Edge Recording menu.
4	Select Mount .
- End -	

Removing the Micro SD Card

If at any stage you need to remove the Micro SD card from the camera one of the following two procedures should be used:

- Remove the Micro SD Card by powering down the camera - Use this procedure if you do not have access to the Web User Interface and are unable to unmount the Micro SD card before removal.
- Unmount the Micro SD Card for Removal - Use this procedure when you are unable to access the power supply to the camera.

Note: Refer to the Quick Reference Guide supplied with the product for details on how to remove the housing assembly and gain access to the camera.

Procedure 137 Remove the Micro SD Card by powering down the Camera

1	Turn off the camera by disconnecting the power supply.
2	Remove the Micro SD card from the camera.
<hr/> <p>Note: AVI clips are not available on the camera until the Micro SD card has been inserted and the camera rebooted.</p> <hr/>	

- 3 Reconnect the power supply and power up the camera.

- End -

Procedure 138 Unmount the Micro SD Card for Removal

Step	Action
------	--------

- 1 Select **Setup** on the Web User Interface banner to display the setup menus.
- 2 Select **SD Card Management** menu from the **Edge Recording** menu.
- 3 Select **Unmount**.
You are prompted to confirm the unmounting.
- 4 Select **OK** to confirm.
OR
- 5 Select **Cancel**.
Remove the Micro SD card from the camera.
MP4 clips are not available on the camera until the Micro SD card has been inserted and mounted.

- End -

Record Settings

Select which video stream to use for alarm video and configure pre and post event durations for the playable video clip. The camera can record video generated from MD, face detection and events.

Procedure 139 Configure Record Settings

Step	Action
------	--------

- 1 Select **Setup** on the Web User Interface Banner to display the setup menus.
- 2 Select **Record Settings** from the **Edge Recording** menu.
- 3 Select **Enable Record** to allow the camera to create a playable video clip.
OR
Deselect **Enable Record** to disable the feature.
- 4 If **Enable Record** has been enabled:
 - a Select the required video stream from the Video drop-down menu.
Refer to Procedure 5-1 Configure the Video Stream Settings.
 - b Select the Post Event (secs) in seconds from the drop-down menu. Values range from 0 to 10.
The default setting is 5 seconds.
- 5 Select **Apply** to save.

- End -

Event Download

If an event action has record mode enabled, when triggered, the associated video is logged in the event download table where it can later be downloaded from an Micro SD Card using the specified upload protocol.

Note:An event action must have record mode enabled to be logged and downloaded. This is configured in **Event Actions** under the **Events and Actions** menu.

Appendix A: Using Media Player to View RTSP Streaming

Note: This appendix is provided for user instruction only. Tyco Security Products does not support or is not responsible for any error caused during the use of third party software used for RTSP playback.

Procedure 140 Viewing RTSP Stream through Media Player

Step	Action
------	--------

You can use Media Player to view live video in real time from the camera.

- 1 Select **Media** then **Open Network Stream**.
- 2 Enter the IP address of the camera stream in the **Network URL** text box in the following format to view Stream 1, 2 and 3:
 - **Stream 1:** rtsp://cameraip:554/videoStreamId=1
 - **Stream 2:** rtsp://cameraip:554/videoStreamId=2
 - **Stream 3:** rtsp://cameraip:554/videoStreamId=3For example: rtsp://192.168.1.168:554/videoStreamId=1
- 3 Select **Play**. The live video stream displays.

- End -

Appendix B: Stream Tables

Pro Gen 4 - 12MP Streaming Combinations

Table 31 Client dewarp stream table

Client Dewarp Mode						
Fisheye Streams (True WDR = OFF)						
Resolution	Aspect ratio	Codec	FPS	Single Fisheye Stream	Dual Fisheye Stream	Treble Fisheye Stream
9M	1:1	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	30	2992x2992	2992x2992 + 960x960 (accept all under this resolution)	2992x2992 + 640x640(accept all under this resolution) + 384x384 (accept all under this resolution)
4M	1:1	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	30	2048x2048	2048x2048 + 2048x2048 (accept all under this resolution)	2048x2048 + 2048x2048(accept all under this resolution) + 960x960 (accept all under this resolution)
Fisheye Streams (True WDR = ON)						
Resolution	Aspect ratio	Codec	FPS	Single Fisheye Stream	Dual Fisheye Stream	Treble Fisheye Stream
9M	1:1	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	25	2992x2992	2992x2992 + 960x960 (accept all under this resolution)	2992x2992 + 640x640(accept all under this resolution) + 384x384 (accept all under this resolution)
4M	1:1	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	25	2048x2048	2048x2048 + 2048x2048 (accept all under this resolution)	2048x2048 + 2048x2048(accept all under this resolution) + 960x960 (accept all under this resolution)

Edge Dewarp Mode					
Fisheye + Fisheye					
Resolution	Aspect ratio	Codec	FPS	Single Fisheye Stream	Fisheye + Fisheye
9M	1:1	H.264, H.265, H.264 Intellizip, H.265 Intellizip, MJPEG	30	2992x2992	2992x2992 + 960x960(accept all under this resolution)
4M	1:1	H.264, H.265, H.264 Intellizip, H.265 Intellizip, MJPEG	30	2048x2048	2048x2048 + 2048x2048(accept all under this resolution)
Fisheye + Wall Panorama					
Resolution	Aspect ratio	Codec	FPS	Single Fisheye Stream	Fisheye + Wall Panorama
9M	1:1	H.264, H.265, H.264 Intellizip, H.265 Intellizip, MJPEG	30	2992x2992	2992x2992 + 1280x720(accept all under this resolution)
4M	1:1	H.264, H.265, H.264 Intellizip, H.265 Intellizip, MJPEG	30	2048x2048	2048x2048 + 1920x1080(accept all under this resolution)
Fisheye + Active Image					
Resolution	Aspect ratio	Codec	FPS	Single Fisheye Stream	Fisheye + Active Image
9M	1:1	H.264, H.265, H.264 Intellizip, H.265 Intellizip, MJPEG	30	2992x2992	2992x2992 + 1280x720(accept all under this resolution)
4M	1:1	H.264, H.265, H.264 Intellizip, H.265 Intellizip, MJPEG	30	2048x2048	2048x2048 + 1920x1080(accept all under this resolution)

Edge Dewarp Mode					
Fisheye + Ceiling Panorama					
Resolution	Aspect ratio	Codec	FPS	Single Fisheye Stream	Fisheye + Ceiling Panorama
9M	1:1	H.264, H.265, H.264 Intellizip, H.265 Intellizip, MJPEG	30	2992x2992	2992x2992 + 1280x720(accept all under this resolution)
4M	1:1	H.264, H.265, H.264 Intellizip, H.265 Intellizip, MJPEG	30	2048x2048	2048x2048 + 2688x1512(accept all under this resolution)
Fisheye + Quad Image					
Resolution	Aspect ratio	Codec	FPS	Single Fisheye Stream	Fisheye + Quad Image
9M	1:1	H.264, H.265, H.264 Intellizip, H.265 Intellizip, MJPEG	30	2992x2992	2992x2992 + 1280x720(accept all under this resolution)
4M	1:1	H.264, H.265, H.264 Intellizip, H.265 Intellizip, MJPEG	30	2048x2048	2048x2048 + 2688x1512(accept all under this resolution)
Wall Panorama + Fisheye					
Resolution	Aspect ratio	Codec	FPS	Single Fisheye Stream	Fisheye + Fisheye
2M	16:9	H.264, H.265, H.264 Intellizip, H.265 Intellizip, MJPEG	30	1920x1080	1920x1080 + 2048x2048(accept all under this resolution)

Edge Dewarp Mode					
Wall Panorama + Wall Panorama					
Resolution	Aspect ratio	Codec	FPS	Single Wall Panorama	Wall Panorama + Wall Panorama
2M	16:9	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	30	1920x1080	1920x1080 + 1920x1080(accept all under this resolution)
Active Image + Fisheye					
Resolution	Aspect ratio	Codec	FPS	Single Active Image	Active Image + Fisheye
2M	16:9	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	30	1920x1080	1920x1080 + 1920x1080(accept all under this resolution)
Active Image + Active Image					
Resolution	Aspect ratio	Codec	FPS	Single Active Image	Active Image + Active Image
2M	16:9	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	30	1920x1080	1920x1080 + 1920x1080(accept all under this resolution)

Edge Dewarp Mode					
Ceiling Panorama + Fisheye					
Resolution	Aspect ratio	Codec	FPS	Single Ceiling Panorama	Ceiling Panorama + Fisheye
4M	16:9	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	30	2688x1512	2688x1512 + 2048x2048(accept all under this resolution)
2M	16:9	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	30	1920x1080	1920x1080 + 2048x2048(accept all under this resolution)
Ceiling Panorama + Ceiling Panorama					
Resolution	Aspect ratio	Codec	FPS	Single Fisheye Stream	Fisheye + Wall Panorama
9M	1:1	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	30	2688x1512	22688x1512 + 2048x2048(accept all under this resolution)
4M	1:1	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	30	1920x1080	1920x1080 + 1920x1080(accept all under this resolution)
Quad Image + Fisheye					
Resolution	Aspect ratio	Codec	FPS	Single Fisheye Stream	Fisheye + Active Image
4M	16:9	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	30	2688x1512	2688x1512 + 2048x2048(accept all under this resolution)
2M	16:9	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	30	1920x1080	1920x1080 + 2048x2048(accept all under this resolution)

Edge Dewarp Mode					
Quad Image + Fisheye					
Resolution	Aspect ratio	Codec	FPS	Single Ceiling Panorama	Ceiling Panorama + Fisheye
4M	16:9	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	30	2688x1512	2688x1512 + 2688x1512(accept all under this resolution)
2M	16:9	H.264 H.264 Intellizip H.265 H.265 Intellizip MJPEG	30	1920x1080	1920x1080 + 1920x1080(accept all under this resolution)

Note:MJPEG does not support resolution higher than 3M.

Note:All supported resolution (fisheye) as per the stream tables: 2992x2992 (9M) , 2048x2048(4M), 960x960, 640x640, 384x384.

Note:All supported resolution (dewarp) as per the stream tables: 2688x1512 (4M), 1920x1080 (2M), 1664x936, 1280x720, 1024x576, 640x360, 480x360, 384x288.

Note:Aspect ratio: Fisheye (1:1), Wall Panorama / Ceiling Panorama / Quad Image (16:9), Active Images (16:9 or 4:3)

Client Mode					
Stream	Codec	Resolution	Description	Max FPS	
				TWDR Off	TWDR 2x
Stream 1	h.264, h.264 Intellizip	2992x2992	(9MP) 1:1	30	25
	h.265 h.265 Intellizip	2048x2048	(4MP) 1:1	30	25
Stream 1	h.264, h.264 Intellizip	1408x1408	(2MP) 1:1	30	25
	h.265 h.265 Intellizip MJPEG				
Stream 2	h.264, h.264 Intellizip	2048x2048*	(4MP) 1:1	30	25
	h.265 h.265 Intellizip MJPEG	1408x1408*	1:1	30	25
		1072x1072*	1:1	30	25
		960x960*	1:1	30	25
		720x720*	1:1	30	25
		640 x 640	1:1	30	25
		480 x 480	1:1	30	25
384 x 384	1:1	30	25		
Stream 3	h.264, h.264 Intellizip h.265 h.265 Intellizip MJPEG	1072x1072**	1:1	30	25
		960x960**	1:1	30	25
		720x720**	1:1	30	25
		640 x 640**	1:1	30	25
		480 x 480**	1:1	30	25
		384 x 384	1:1	30	25

Note:* Stream 2 is restricted to 640x640 and below when Stream 1 is set to 2992x2992.

Note:** Stream 3 is restricted to 384x384 when Stream 1 is set to 2048x2048 or above.

Note: MJPEG does not support a resolution higher than 1408x1408.

Note: A maximum of 5 concurrent streams are supported by each camera, this includes shared streams

Edge Mode					
Stream	Codec	Resolution	Description	Max FPS	
				TWDR Off	TWDR 2x
Stream1	h.264, h.264 Intellizip, h.265 , h.265 Intellizip	2688x1512	(4MP)16:9	30	25
	h.264, h.264 Intellizip, h.265 , h.265 Intellizip	2048x1536	(3MP) 16:9	30	25
	h.264, h.264 Intellizip, h.265 , h.265 Intellizip, MJPEG	1920x1080	(1080p) 16:9	30	25
Stream2	h.264, h.264 Intellizip, h.265 , h.265 Intellizip	2688 x 1512	(4MP) 1:1	30	25
		2048x1536	(3MP) 16:9	30	25
		1920 x 1080	(1080p) 16:9	30	25
		1664x936	(PAL+) 16:9	30	25
	h.264, h.264 Intellizip	1600x1200	4:3	30	25
	h.265	1280 x 720	(qHD) 16:9	30	25
	h.265 Intellizip	1024 x 576	16:9	30	25
	MJPEG	960x544	16:9	30	25
		640 x 360	(nHD) 16:9	30	25
		480 x 360	4:3	30	25
		384x288	4:3	30	25

Note:A maximum of 5 concurrent streams are supported by each camera, this includes shared streams

Edge Mode Fisheye					
Stream	Codec	Resolution	Description	Max FPS	
				TWDR Off	TWDR 2x
Stream1	h.265, h.264, Intellizip	2992 x 2992	(9MP)1:1	30	25
		2976x2976	(9MP)1:1	30	25
		2048x2048	(4MP)1:1	30	25
	h.265, h.264, Intellizip MJPEG	1408x1408	(2MP)1:1	30	25
Stream2	h.265, h.264, Intellizip MJPEG	2048x2048	(4MP) 1:1	30	25
		1408x1408	(2MP)1:1	30	25
		960x960	1:1	30	25
		720x720	1:1	30	25
		640 x 640	1:1	30	25
		480 x 480	1:1	30	25
		384 x 384	1:1	30	25

Appendix C: Technical Specifications

The table below lists technical specifications of the Illustra Pro Gen 4 12MP Fisheye camera.

General Features	
Model Type	Illustra Pro Gen4 12MP Fisheye, indoor/outdoor, vandal, TDN, w/IR, TWDR
Model No.	IPS12-F27-OIA4
Camera Body Color	White RAL 9003
Vandal Resistant Rating	IK10 / Bubble IK07
Mechanical Features	
Dimensions	Φ150mm x57mm
Weight	0.7 KG
Pan Rotation Angle	NA
Tilt Angle	NA
Z-axis Rotation	NA
Housing Material	Aluminum Alloy
Bubble trim ring material	Aluminum Alloy
Other Housing Material	PC (Bubble)
Video Processor	
ROM/Flash Size	NAND 1GB
RAM Size	LPDDR4 2GB
RTC Hold Up Time	24 hours
Lens	
Design Type	Fixed Lens
Aperture Range	NA
Focal Length Range	1.6mm
Focal Means	1.6mm
Focal Type	Fixed
Focus Type	Fixed
Auto Focus	N/A
IR Correction	Optical corrected
Day/Night	True D/N with ICR
Horizontal Angle of View	180°

Vertical Angle of View	180°
Illuminator	
Wavelength	850 nm
IR Distance	15m
Smart IR	NA
Adaptive IR	NA
Power Supply	
Power Requirement	802.3afType 1 (15w) 24V AC
Current Draw Amps	PoE = 0.28A 24V AC = 1.5A
Wattage	PoE = 15W 24V AC = 11.77W
Line Frequency Range	N/A
Design tolerance	24VAC (22 to 30 VAC)
Video Codecs	
Frame Rate Range	1 to 30 fps
Maximum Resolution and Rate	2992x2992 @ 30fps (H.264/H.i76265)
Stream sharing	4 Streams
Video Imaging	
AEC weighting method	Full Upper Lower Center Spot Left Right Exposure Bit Mask
Exposure compensation offset range	-2 to +2 f-stops
Exposure range	1/10000 1/8000 1/4000 1/2500 1/2000 1/1000 1/800 1/500 1/400 1/250 1/200 1/120 1/60 1/30 1/15 1/7.5 1/4
Default maximum exposure	1/7.5 sec.
Default minimum exposure	1/10,000 sec.
White balance	Auto Normal / Manual / Auto Wide
Dynamic range method	True WDR
flicker less	50/60 Hz or OFF
I/O Interfaces	
Micro SD Card	Micro SD/SDHC/SDXC slot up to 512GB; Class 10 or higher; Card not included.

Alarm Inputs	1
Auxiliary Outputs	1
Video Output	Yes
IP Connector	RJ-45
LED Indicators	Green Led indicates connected *Yellow LED indicates active communication.
Reset Buttons	Recessed reset pushbutton for reboot & factory reset
Environmental	
Operating Temperature Range	-40°C to 50°C (-40°F to 122°F)
Start-up Temperature Range	-40°C to 60°C (-40°F to 140°F)
Water/Dust Intrusion	IP67, NEMA 4X
Operating humidity range	Up to 90% non-condensing
Storage temp. range	-40°C to 60°C (-40°F to 140°F)
Client Interfaces	
Browsers supported	Internet Explorer 11, Mozilla Firefox, Chrome, Safari, Microsoft Edge
Networking	
Languages supported	English (default), Arabic, Czech, Danish, German, Spanish, French, Hungarian, Italian, Korean, Japanese, Netherlands, Polish, Portuguese, Swedish, Turkish, Chinese Traditional, Chinese Simplified, Russian, Hindi.
Ethernet NIC	IEEE 802.1 10/100/1000, auto sensing, 1 x RJ45
Supported Protocols	ARP, DHCP, DNS, FTP, HTTP, HTTPS, ICMP, IGMP, IPv4/6, NTP, RTSP/RTCP/RTP, QoS, SMTP, SNMP v1/2c/3, TCP, TLS/TTLS, UDP, UPnP, 802.1X, Bonjour, SNMP v1/2c/3, DDNS, PPPoE
Base Protocol	TCP/IP - RFC4614
Internet Layer Addressing	IPv4 - RFC791 IPv6 - RFC2460
Transport Layer	TCP - RFC973 UDP - RFC768
Data Transmission	HTTP - RFC2616 FTP - RFC959 SFTP
Network Address Configuration	DHCP - RFC2131 Zeroconf - RFC3927 Static IP address
Time Synchronization	NTP - RFC1305

E-mail	SMTP - RFC5321 Authenticated SMTP - RFC4954
Authentication and Security	TLS - RFC5246 v1.2 HTTPS (HTTP over TLS) - RFC2818 WS-Security Certificate Management Multi-level password protection IP address filtering HTTPS encryption Enhanced Security Feature Supports: One-Click Security Hardening, User Access Log, Validate Complex Credentials, Disabling Unused Protocols IEEE 802.1x including: PEAP, EAP-TLS, EAPoL
Streaming	RTP - RFC3550 RTCP - RFC3550 RTSP - RFC2326 Unicast Streaming Multicast Streaming - RFC1112 level 1
Firmware Upgrade	Browser/illustra Connect/ONVIF

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12. Feedback. You may provide suggestions, comments, or other feedback (collectively, "Feedback") to JCI with respect to its products and services, including the Software. Feedback is voluntary and JCI is not required to hold it in confidence. JCI may use Feedback for any purpose without obligation of any kind. To the extent a license is required under your intellectual property rights to make use of the Feedback, you grant JCI an irrevocable, non-exclusive, perpetual, worldwide, royalty-free license to use the Feedback in connection with JCI's business, including enhancement of the Software, and the provision of products and services to JCI's customers.

13. Governing Law and Jurisdiction.

13.1 Governing Law. This Agreement is governed by and construed in accordance with the laws of the State of Wisconsin, as applied to agreements entered into and wholly performed within Wisconsin between Wisconsin residents. In the event the foregoing sentence is determined by a court of competent jurisdiction to not be enforceable or applicable to an action or proceeding brought by either party relating to or under this Agreement, the parties agree to the application of the laws of the country in which you entered into this Agreement to govern, interpret, and enforce all of your and JCI's respective rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Agreement, without regard to conflict of law principles. The United Nations Convention on Contracts for the International Sale of Goods does not apply to any such action or proceeding.

13.2 Jurisdiction. Any action or proceeding brought by either party hereto shall be brought only in a state or federal court of competent jurisdiction located in Milwaukee, Wisconsin and the parties submit to the in personam jurisdiction of such courts for purposes of any action or proceeding. In the event the foregoing sentence is determined by a court of competent jurisdiction to not be enforceable or applicable to an action or proceeding brought by either party relating to or under this Agreement, the parties agree all rights, duties, and obligations of the parties are subject to the courts of the country in which You entered into this Agreement.

14. General. This Agreement constitutes the entire understanding and agreement between the parties with respect to the transactions contemplated in this Agreement and supersedes all prior or contemporaneous oral or written communications with respect to the subject matter of this Agreement, all of which are merged in this Agreement. This Agreement shall not be modified, amended or in any way altered except by an instrument in writing signed by authorized representatives of both parties. In the event that any provision of this Agreement is found invalid or unenforceable pursuant to judicial decree, the remainder of this Agreement shall remain valid and enforceable according to its terms. Any failure by JCI to strictly enforce any provision of this Agreement will not operate as a waiver of that provision or any subsequent breach of that provision. The following provisions shall survive any termination or expiration of this Agreement: Sections 2 (Restrictions), 4 (Term and Termination), 6 (Fees and Taxes) (to the extent of any fees accrued prior to the date of termination), 9 (Limitation of Liability), 10 (Confidentiality), 11 (Feedback), 13 (Governing Law), 14 (General), and 16 (U.S. Government Rights). JCI may assign any of its rights or obligations hereunder as it deems appropriate. **IT IS EXPRESSLY UNDERSTOOD AND AGREED THAT IN THE EVENT ANY REMEDY HEREUNDER IS DETERMINED TO HAVE FAILED OF ITS ESSENTIAL PURPOSE, ALL LIMITATIONS OF LIABILITY AND EXCLUSIONS OF DAMAGES SET FORTH HEREIN SHALL REMAIN IN EFFECT.**

15. Export/Import. The Software is licensed for use in the specific country authorized by JCI. You may not export or import the Software to another country without JCI's written permission and

payment of any applicable country specific surcharges. You agree to comply fully with all relevant and applicable export and import laws and regulations of the United States and foreign nations in which the Software will be used ("Export/Import Laws") to ensure that neither the Software nor any direct product thereof are (a) exported or imported, directly or indirectly, in violation of any Export/Import Laws; or (b) are intended to be used for any purposes prohibited by the Export/Import Laws. Without limiting the foregoing, you will not export or re-export or import the Software: (a) to any country to which the United States or European Union has embargoed or restricted the export of goods or services or to any national of any such country, wherever located, who intends to transmit or transport the Software back to such country; (b) to any user who you know or have reason to know will utilize the Software in the design, development or production of nuclear, chemical or biological weapons; or (c) to any user who has been prohibited from participating in export transactions by any federal or national agency of the U.S. government or European Union. You will defend, indemnify, and hold harmless JCI and its affiliates and their respective licensors and suppliers from and against any and all damages, fines, penalties, assessments, liabilities, costs and expenses (including attorneys' fees and expenses) arising out of any your breach of this Section.

16. U.S. Government Rights. The Software is a "commercial item" as that term is defined at 48 CFR 2.101 (October 1995), consisting of "commercial computer software" and "commercial computer software documentation," as such terms are used in 48 CFR 12.212 (September 1995), and is provided to the U.S. Government only as a commercial end item. Consistent with 48 CFR 12.212 and 48 CFR 227.7202-1 through 227.7202-4 (June 1995), all U.S. Government End Users acquire the Software with only those rights set forth herein.

17. Electronic Acceptance. This Agreement may be accepted in electronic form (e.g., by an electronic or other means of demonstrating assent) and your acceptance will be deemed binding between the parties. Neither party may contest the validity or enforceability of this Agreement, including under any applicable statute of frauds, because it was accepted or signed in electronic form. Electronically maintained records when produced in hard copy form shall constitute business records and shall have the same validity as any other generally recognized business records.

PART 2 - Country Specific Terms

For licenses granted in the countries specified below, the following terms replace or modify the referenced terms in Part 1 and Part 3. All terms in Part 1 and Part 3 that are not changed by these amendments remain unchanged and in effect. This Part 2 is organized as follows:

13.1 Governing Law The phrase "the laws of the country in which You entered into this Agreement" in Section 13.1 (Governing Law) is replaced by the following language as it applies to the countries identified below:

Americas

Canada: the laws in the Province of Ontario;

Mexico: the federal laws of the Republic of Mexico;

United States, Anguilla, Antigua/Barbuda, Aruba, British Virgin Islands, Cayman Islands, Dominica, Grenada, Guyana, Saint Kitts and Nevis, Saint Lucia, Saint Maarten, and Saint Vincent and the Grenadines: the laws of the State of Wisconsin, United States;

Venezuela: the laws of the Bolivarian Republic of Venezuela;

Asia Pacific

Cambodia and Laos: the laws of the State of Wisconsin, United States;

Australia: the laws of the State or Territory in which the transaction is performed;

Hong Kong SAR and Macau SAR: the laws of Hong Kong Special Administrative Region ("SAR");

Taiwan: the laws of Taiwan;

Europe, Middle East, and Africa

Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Former Yugoslav Republic of Macedonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan: the laws of Austria;

Algeria, Andorra, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Madagascar, Mali, Mauritania, Mauritius,

Mayotte, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis and Futuna: the laws of France;

Estonia, Latvia, and Lithuania: the laws of Finland;

Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome and Principe, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, the United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe: the laws of England and Wales; and South Africa, Namibia, Lesotho, and Swaziland: the laws of the Republic of South Africa.

13.2 Jurisdiction The following provisions replace Section 13.2 (Jurisdiction) as it applies for those countries identified below: All rights, duties, and obligations are subject to the courts of the country in which You entered into this Agreement except that in the countries identified below all claims or proceedings arising out of or related to this Agreement, including summary proceedings, will be brought before and subject to the exclusive jurisdiction of the following courts of competent jurisdiction:

Americas

Argentina: the Ordinary Commercial Court of the city of Buenos Aires;

Brazil: the court of Rio de Janeiro, RJ;

Chile: the Civil Courts of Justice of Santiago;

Ecuador: the civil judges of Quito for executory or summary proceedings (as applicable);

Mexico: the courts located in Mexico City, Federal District;

Peru: the judges and tribunals of the judicial district of Lima, Cercado;

Uruguay: the courts of the city of Montevideo;

Venezuela: the courts of the metropolitan area of the city of Caracas;

Europe, Middle East, and Africa

Austria: the court of law in Vienna, Austria (Inner-City);

Algeria, Andorra, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, France, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Madagascar, Mali, Mauritania, Mauritius, Mayotte, Monaco, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis and Futuna: the Commercial Court of Paris;

Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome and Principe, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, the United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe: the courts of England and Wales;

South Africa, Namibia, Lesotho, and Swaziland: the High Court in Johannesburg;

Greece: the competent court of Athens;

Israel: the courts of Tel Aviv-Jaffa;

Italy: the courts of Milan;

Portugal: the courts of Lisbon;

Spain: the courts of Madrid; and

Turkey: the Istanbul Central Courts and Execution Directorates of Istanbul, the Republic of Turkey

13.3 Arbitration The following paragraph is added as a new Subsection 13.3 (Arbitration) as it applies for those countries identified below. The provisions of this Subsection 13.3 prevail over those of Subsection 13.2 (Jurisdiction) to the extent permitted by the applicable governing law and rules of procedure:

Asia Pacific

A. In Cambodia, India, Laos, Philippines, and Vietnam:

Disputes arising out of or in connection with this Agreement will be finally settled by arbitration which will be held in Singapore in accordance with the Arbitration Rules of Singapore International Arbitration Center ("SIAC Rules") then in effect. The arbitration award will be final and binding for the parties without appeal and will be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators will be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties will appoint a third arbitrator who will act as chairman of the proceedings. Vacancies in the post of chairman will be filled by the president of the SIAC. Other vacancies will be filled by the respective nominating party. Proceedings will continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator will be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings will be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Agreement prevails over any other language version.

B. In the People's Republic of China:

In case no settlement can be reached, the disputes will be submitted to China International Economic and Trade Arbitration Commission for arbitration according to the then effective rules of the said Arbitration Commission. The arbitration will take place in Beijing and be conducted in Chinese. The arbitration award will be final and binding on both parties. During the course of arbitration, this agreement will continue to be performed except for the part which the parties are disputing and which is undergoing arbitration.

C. In Indonesia:

Each party will allow the other reasonable opportunity to comply before it claims that the other has not met its obligations under this Agreement. The parties will attempt in good faith to resolve all

disputes, disagreements, or claims between the parties relating to this Agreement. Unless otherwise required by applicable law without the possibility of contractual waiver or limitation, i) neither party will bring a legal action, regardless of form, arising out of or related to this Agreement or any transaction under it more than two years after the cause of action arose; and ii) after such time limit, any legal action arising out of this Agreement or any transaction under it and all respective rights related to any such action lapse.

Disputes arising out of or in connection with this Agreement shall be finally settled by arbitration that shall be held in Jakarta, Indonesia in accordance with the rules of Board of the Indonesian National Board of Arbitration (Badan Arbitrase Nasional Indonesia or "BANI") then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the chairman of the BANI. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English and/or Indonesian language.

Europe, Middle East, And Africa

D. In Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Former Yugoslav Republic of Macedonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan:

All disputes arising out of this Agreement or related to its violation, termination or nullity will be finally settled under the Rules of Arbitration and Conciliation of the International Arbitral Center of the Federal Economic Chamber in Vienna (Vienna Rules) by three arbitrators appointed in accordance with these rules. The arbitration will be held in Vienna, Austria, and the official language of the proceedings will be English. The decision of the arbitrators will be final and binding upon both parties. Therefore, pursuant to paragraph 598 (2) of the Austrian Code of Civil Procedure, the parties expressly waive the application of paragraph 595 (1) figure 7 of the Code. JCI may, however, institute proceedings in a competent court in the country of installation.

E. In Estonia, Latvia, and Lithuania: All disputes arising in connection with this Agreement will be finally settled in arbitration that will be held in Helsinki, Finland in accordance with the arbitration laws of Finland then in effect. Each party will appoint one arbitrator. The arbitrators will then jointly appoint the chairman. If arbitrators cannot agree on the chairman, then the Central Chamber of Commerce in Helsinki will appoint the chairman.

Additional Country Specific Amendments

Canada

The following is added as a new Section 18:

For purposes of this Section 18, "Personal Data" refers to information relating to an identified or identifiable individual made available by one of the parties, its personnel or any other individual to the other in connection with this Agreement. The following provisions apply in the event that one party makes Personal Data available to the other:

a. General

i. Each party is responsible for complying with any obligations applying to it under applicable Canadian data privacy laws and regulations ("Laws").

ii. Neither party will request Personal Data beyond what is necessary to fulfill the purpose(s) for which it is requested. The purpose(s) for requesting Personal Data must be reasonable. Each party will agree in advance as to the type of Personal Data that is required to be made available.

b. Security Safeguards

i. Each party acknowledges that it is solely responsible for determining and communicating to the other the appropriate technological, physical and organizational security measures required to protect Personal Data.

ii. Each party will ensure that Personal Data is protected in accordance with the security safeguards communicated and agreed to by the other.

iii. Each party will ensure that any third party to whom Personal Data is transferred is bound by the applicable terms of this section.

iv. Additional or different services required to comply with the Laws will be deemed a request for new services.

c. Use

Each party agrees that Personal Data will only be used, accessed, managed, transferred, disclosed to third parties or otherwise processed to fulfill the purpose(s) for which it was made available.

d. Access Requests

i. Each party agrees to reasonably cooperate with the other in connection with requests to access or amend Personal Data.

ii. Each party agrees to reimburse the other for any reasonable charges incurred in providing each other assistance.

iii. Each party agrees to amend Personal Data only upon receiving instructions to do so from the other party or its personnel.

e. Retention

Each party will promptly return to the other or destroy all Personal Data that is no longer necessary to fulfill the purpose(s) for which it was made available, unless otherwise instructed by the other or its personnel or required by law.

f. Public Bodies Who Are Subject to Public Sector Privacy Legislation

If you are a public body subject to public sector privacy legislation, this Section 18 applies only to Personal Data made available to you in connection with this Agreement, and the obligations in this section apply only to **** you ****, except that: 1) section (b)(i) applies only to JCI; 2) sections (a)(i) and (d)(i) apply to both parties; and 3) section (d)(ii) and the last sentence in (a)(ii) do not apply.

Peru

9. Limitation of Liability

The following is added to the end of this Section 9 (Limitation of Liability):

Except as expressly required by law without the possibility of contractual waiver, you and JCI intend that the limitation of liability in this Section 9 (Limitation of Liability) applies to damages caused by all types of claims and causes of action. If any limitation on or exclusion from liability in this section is held by a court of competent jurisdiction to be unenforceable with respect to a particular claim or

cause of action, the parties intend that it nonetheless apply to the maximum extent permitted by applicable law to all other claims and causes of action. Additionally, in accordance with Article 1328 of the Peruvian Civil Code, the limitations and exclusions specified in this section will not apply to damages caused by JCI's willful misconduct ("dolo") or gross negligence ("culpa inexcusable").

United States of America

6. Fees; Taxes

The following is added to the end of Section 6 (Fees; Taxes)

For Software delivered electronically in the United States for which you claim a state sales and use tax exemption, you agree not to receive any tangible personal property (e.g., media and publications) associated with the electronic program. You agree to be responsible for any sales and use tax liabilities that may arise as a result of your subsequent redistribution of the Software after delivery by JCI.

14. General

The following is added to the end of Section 14 (General):

Each party waives any right to a jury trial in any proceeding arising out of or related to this Agreement.

Australia

6. Fees; Taxes

The following is added to the end of Section 6 (Fees; Taxes)

Notwithstanding the foregoing, if any government or authority imposes a duty, tax (other than income tax), levy, or fee, on this Agreement or on the Software itself, that is not otherwise provided for in the amount payable, you agree to pay it when JCI invoices you. If the rate of GST changes, you may adjust the charge or other amount payable to take into account that change from the date the change becomes effective.

7. Limited Warranty; Disclaimer

The following is added to the first paragraph of Section 7 (Limited Warranty; Disclaimer): Although JCI disclaims certain warranties, you may have certain rights under the Competition and Consumer Act 2010 or other legislation and are only limited to the extent permitted by the applicable legislation. If JCI is in breach of a condition or warranty implied by the Competition and Consumer Act 2010, JCI's liability is limited to the repair or replacement of the goods, or the supply of equivalent goods. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the goods are of a kind ordinarily obtained for personal, domestic or household use or consumption, then none of the limitations in this paragraph apply.

Hong Kong Sar, Macau Sar, and Taiwan

For licenses obtained in Taiwan and the special administrative regions, phrases throughout this Agreement containing the word "country" (for example, "the country in which you entered into this Agreement") are replaced with the following:

- a. In **Hong Kong SAR**: "Hong Kong SAR"
- b. In **Macau SAR**: "Macau SAR" except in the Governing Law clause (Section 11.1)
- c. In **Taiwan**: "Taiwan."

India

14. General

The following is added to the end of Section 14 (General):

If no suit or other legal action is brought, within three years after the cause of action arose, in respect of any claim that either party may have against the other, the rights of the concerned party in respect of such claim will be forfeited and the other party will stand released from its obligations in respect of such claim.

Indonesia

5. Term and Termination

The following is added to the end of Section 5 (Term and Termination):

Both parties waive the provision of article 1266 of the Indonesian Civil Code, to the extent the article provision requires such court decree for the termination of an agreement creating mutual obligations.

Japan

14. General

The following is added to the end of Section 14 (General):

Any doubts concerning this Agreement will be initially resolved between us in good faith and in accordance with the principle of mutual trust.

Malaysia

7. Limited Warranty; Disclaimer

The word "SPECIAL" in Section 7 is deleted.

New Zealand

7. Limited Warranty; Disclaimer

The following is added to the first paragraph of Section 7 (Limited Warranty; Disclaimer): Although JCI disclaims certain warranties, you may have certain rights under the Consumer Guarantees Act 1993 or other legislation which cannot be excluded or limited. The Consumer Guarantees Act 1993 will not apply in respect of any goods which JCI provides, if you require the goods for the purposes of a business as defined in that Act.

9. Limitation of Liability

The following is added to Section 9 (Limitation of Liability):

Where the Software is not obtained for the purposes of a business as defined in the Consumer Guarantees Act 1993, the limitations in this Section are subject to the limitations in that Act.

People's Republic of China

6. Fees; Taxes

The following is added to the end of Section 6 (Fees; Taxes)

All banking charges incurred in the People's Republic of China will be borne by you and those incurred outside the People's Republic of China will be borne by JCI.

9. Limitation of Liability

The following is added to the end of Section 9 (Limitation of Liability)

nothing in these Terms shall exclude any liability of JCI: (i) for the death of or injury to any person; (ii) for damage to property caused by wilful misconduct and/or gross negligence of JCI; (iii) for fraud or

fraudulent misrepresentation; or (iv) for any matter which it would be illegal for JCI to exclude or limit or attempt to exclude or limit its liability under PRC law.

Philippines

9. Limitation of Liability

The following replaces the first sentence of Section 9 (Limitation of Liability):

TO THE MAXIMUM EXTENT PERMITTED BY LAW, IN NO EVENT SHALL JCI AND AFFILIATES AND THEIR RESPECTIVE ITS SUPPLIERS AND VENDORS BE LIABLE TO YOU OR ANY THIRD PARTY FOR ANY SPECIAL, (INCLUDING NOMINAL AND EXEMPLARY DAMAGES), INCIDENTAL, CONSEQUENTIAL, PUNITIVE, INDIRECT DAMAGES, MORAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES WHICH SHALL INCLUDE, WITHOUT LIMITATION, DAMAGES FOR PERSONAL INJURY, LOST PROFITS, LOST DATA AND BUSINESS INTERRUPTION, ARISING OUT OF THE USE OR INABILITY TO USE THE SOFTWARE, EVEN IF THEY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Singapore

11. Data Collection and Use.

The following is added to the end of Section 11 (Data Collection and Use):

You have the right to request access to your personal information in the possession or under the control of JCI, and to request for corrections to be made on any errors in your personal information. Where possible, JCI will validate personal information provided using generally accepted practices and guidelines, for example, validating such personal information against pre-existing data held by JCI, or request to see supporting documentation before the personal information may be updated.

JCI will retain personal information we process on behalf of our customers for as long as needed to provide services to our customers. JCI may further retain and use this personal information as necessary to comply with our legal obligations, resolve disputes, maintain accurate accounting, financial and other operational records and enforce our agreements. You consent and authorize JCI to collect, use and retain information relating to your use of the Software and/or hardware in the manner set out above.

14. General

The following is added to the end of Section 14 (General):

Subject to the rights provided to JCI's suppliers and vendors provided in Section 9 (Limitation of Liability), a person who is not a party to this Agreement will have no right under the Contracts (Right of Third Parties) Act (Cap. 53B) to enforce any of its terms.

Taiwan

9. Limitation of Liability

The following is added to the end of Section 9 (Limitation of Liability):

To the extent required by applicable law, the words "AND THEIR RESPECTIVE SUPPLIERS AND VENDORS" are deleted.

European Union Member States

7. Limited Warranty; Disclaimer

The following is added to Section 7 (Limited Warranty; Disclaimer):

In the European Union ("EU"), consumers have legal rights under applicable national legislation governing the sale of consumer goods. Such rights are not affected by the provisions set out in this Section 7 (Limited Warranty; Disclaimer).

EU Member States And The Following Identified Countries

Iceland, Liechtenstein, Norway, Switzerland, Turkey, and any other European country that has enacted local data privacy or protection legislation similar to the EU model.

14. General

The following is added to the end of Section 14 (General): In the European Union ("EU"), consumers have legal rights under applicable national legislation governing the sale of consumer goods. Nothing in this Agreement shall in anyway whatsoever be intended to affect or in any way limit such rights, which remain in full force and effect.

A. Definitions – For the purposes of this Section 14 (General), the following additional definitions apply:

(1) **Business Contact Information** – business-related contact information disclosed by you to JCI, including names, job titles, business addresses, telephone numbers and email addresses of your employees and contractors. For Austria, Italy and Switzerland, Business Contact Information also includes information about you and your contractors as legal entities (for example, your revenue data and other transactional information).

(2) **Business Contact Personnel** – Your employees and contractors to whom the Business Contact Information related

(3) **Data Protection Authority** – The authority established by the Data Protection and Electronic Communications Legislation in the applicable country or, for non-EU countries, the authority responsible for supervising the protection of personal data in that country, or (for any of the foregoing) any duly appointed successor entity thereto.

(4) **Data Protection & Electronic Communications Legislation** – (i) the applicable local legislation and regulations in force implementing EU Directive 95/46/EC (on the protection of individuals with regard to the processing of personal data and on the free movement of such data) and of EU Directive 2002/58/EC (concerning the processing of personal data and the protection of privacy in the electronic communications sector), as amended or replaced from time to time (such as the General Data Protection Regulation, when and as applicable); or (ii) for non-EU countries, the legislation and/or regulations passed in the applicable country relating to the protection of personal data and the regulation of electronic communications involving personal data, including (for any of the foregoing) any statutory replacement or modification thereof.

JCI Group – Johnson Controls International, Plc, including Johnson Controls, Inc., its subsidiaries, and their respective Business Partners and subcontractors.

B. You authorize JCI:

(1) to process and use Business Contact Information within JCI Group in support of you and your business including the provision of support services, and for the purpose of furthering the business relationship between you and JCI Group, including, without limitation, contacting Business Contact Personnel (by email or otherwise) and marketing JCI Group products and services (the "Specified Purpose"); and

(2) to disclose Business Contact Information to other members of JCI Group in pursuit of the Specified Purpose only.

C. JCI agrees that all Business Contact Information will be processed in accordance with the Data Protection & Electronic Communications Legislation and will be used only for the Specified Purpose.

(1) To the extent required by the Data Protection & Electronic Communications Legislation, you represent that (a) you have obtained (or will obtain) any consents from (and has issued (or will issue) any notices to) the Business Contact Personnel as are necessary in order to enable JCI Group to process and use the Business Contact Information for the Specified Purpose.

(2) You authorize JCI to transfer Business Contact Information outside the European Economic Area, provided that the transfer is made on contractual terms approved by the Data Protection Authority or the transfer is otherwise permitted under the Data Protection & Electronic Communications Legislation.

Austria

9. Limitation of Liability

The following is added to the beginning of Section 9 (Limitation of Liability):

THE FOLLOWING LIMITATIONS AND EXCLUSIONS OF JCI'S LIABILITY DO NOT APPLY FOR DAMAGES CAUSED BY GROSS NEGLIGENCE OR WILLFUL MISCONDUCT. CIRCUMSTANCES MAY ARISE WHERE, BECAUSE OF A DEFAULT BY JCI IN THE PERFORMANCE OF ITS OBLIGATIONS UNDER THIS AGREEMENT OR OTHER LIABILITY, YOU ARE ENTITLED TO RECOVER DAMAGES FROM JCI.

The following is added to the end of Section 9 (Limitation of Liability):

THE LIMITATIONS AND EXCLUSIONS OF JCI'S LIABILITY DO NOT APPLY FOR DAMAGES CAUSED BY GROSS NEGLIGENCE OR WILLFUL MISCONDUCT.

The following words are deleted from Section 9 (Limitation of Liability): "(WHETHER IN CONTRACT, TORT (INCLUDING NEGLIGENCE), OR OTHERWISE)"

The following replaces the first sentence (second sentence after the above amendment) of Section 9 (Limitation of Liability):

"TO THE MAXIMUM EXTENT PERMITTED BY LAW, IN NO EVENT SHALL JCI AND AFFILIATES AND THEIR RESPECTIVE ITS SUPPLIERS AND VENDORS BE LIABLE TO YOU OR ANY THIRD PARTY FOR ANY INDIRECT DAMAGES OR CONSEQUENTIAL DAMAGES, WHICH SHALL INCLUDE, WITHOUT LIMITATION, DAMAGES FOR PERSONAL INJURY, LOST PROFITS, LOST DATA AND BUSINESS INTERRUPTION, ARISING OUT OF THE USE OR INABILITY TO USE THE SOFTWARE, EVEN IF THEY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES."

Belgium, France and Luxembourg

9. Limitation of Liability

The following replaces the Section 9 (Limitation of Liability) in its entirety:

"EXCEPT AS OTHERWISE PROVIDED BY MANDATORY LAW, JCI'S ENTIRE LIABILITY FOR ALL CLAIMS IN THE AGGREGATE FOR ANY DAMAGES AND LOSSES THAT MAY ARISE AS A CONSEQUENCE OF THE FULFILLMENT OF ITS OBLIGATIONS UNDER OR IN CONNECTION WITH THIS AGREEMENT OR DUE TO ANY OTHER CAUSE RELATED TO THIS AGREEMENT IS LIMITED TO THE COMPENSATION OF ONLY THOSE DAMAGES AND LOSSES PROVED AND ACTUALLY ARISING AS AN IMMEDIATE AND DIRECT CONSEQUENCE OF THE NON-FULFILLMENT OF SUCH OBLIGATIONS (IF JCI IS AT FAULT) OR OF SUCH CAUSE, FOR A MAXIMUM OF EUR 500,000 (FIVE HUNDRED THOUSAND EURO). THE ABOVE LIMITATION WILL NOT APPLY TO DAMAGES FOR BODILY INJURIES (INCLUDING DEATH) AND DAMAGES TO REAL PROPERTY AND TANGIBLE PERSONAL PROPERTY FOR WHICH JCI IS LEGALLY LIABLE. UNDER NO CIRCUMSTANCES IS JCI OR ANY OF ITS SUPPLIERS OR VENDORS LIABLE FOR ANY OF THE FOLLOWING, EVEN IF INFORMED OF THEIR POSSIBILITY:

1) LOSS OF, OR DAMAGE TO, DATA; 2) INCIDENTAL, EXEMPLARY OR INDIRECT DAMAGES, OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; AND / OR 3) LOST PROFITS, BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED SAVINGS, EVEN IF THEY ARISE AS AN IMMEDIATE CONSEQUENCE OF THE EVENT THAT GENERATED THE DAMAGES.

THE LIMITATION AND EXCLUSION OF LIABILITY HEREIN AGREED APPLIES NOT ONLY TO THE ACTIVITIES PERFORMED BY JCI BUT ALSO TO THE ACTIVITIES PERFORMED BY ITS SUPPLIERS AND VENDORS, AND REPRESENTS THE MAXIMUM AMOUNT FOR WHICH JCI AS WELL AS ITS SUPPLIERS AND VENDORS ARE COLLECTIVELY RESPONSIBLE.

France

6. Fee; Taxes

The following replaces the Section 6 (Fee; Taxes) in its entirety:

You will pay the fees, if any, associated with the Software. All amounts due hereunder shall be paid within thirty (30) days of the date of the invoice. Pursuant to article L. 441-6 of the French Commercial Code, late payment penalties as well as a fixed compensation for recovery costs of the amount of 40 Euros (forty Euros) are due in the event that the amounts due are paid after the due date, and this without the necessity of a reminder without prejudice to damages and other expenses that JCI has the right to claim. The late penalties due to, under the mentioned legislation, will be claimed by JCI at the rate equal to the interest rate applied by the European Central Bank to its most recent refinancing operation plus 10 percentage points.

All taxes, duties, fees and other governmental charges of any kind (including sales and use taxes, but excluding taxes based on the gross revenues or net income of JCI) that are imposed by or under the authority of any government or any political subdivision thereof on the fees for the Software shall be borne solely by you, unless you can evidence tax exemption and shall not be considered a part of a deduction from or an offset against such fees. If you lose tax exempt status, you will pay any taxes due as part of any renewal or payment.

You will promptly notify JCI if your tax status changes. You will pay all court costs, fees, expenses and reasonable attorneys' fees incurred by JCI in collecting delinquent fees.

11. Data Collection and Use

The following replaces the Section 11 (Data Collection and Use) in its entirety:

A. Definitions – For the purposes of this Section 11 (Data Collection and Use), the following additional definitions apply:

(1) **Data** – Data resulting from or otherwise relating to your use of the Software and/or hardware used in connection with the Software.

(2) **Data Protection Authority** – The authority established by the Data Protection and Electronic Communications Legislation in the applicable country or, for non-EU countries, the authority responsible for supervising the protection of personal data in that country, or (for any of the foregoing) any duly appointed successor entity thereto.

(3) **Data Protection & Electronic Communications Legislation** – (i) the applicable local legislation and regulations in force implementing the requirements of EU Directive 95/46/EC (on the protection of individuals with regard to the processing of personal data and on the free movement of such data) and of EU Directive 2002/58/EC (concerning the processing of personal data and the protection of privacy in the electronic communications sector), as amended or replaced from time to time; or (ii) for non-EU countries, the legislation and/or regulations passed in the applicable country relating to the protection of personal data and the regulation of electronic communications involving personal data, including (for any of the foregoing) any statutory replacement or modification thereof.

JCI Group – Johnson Controls International, Plc., including Johnson Controls, Inc., its subsidiaries, and their respective Business Partners and subcontractors.

B. You authorize JCI:

(1) to process and use your Data within JCI Group for purposes of providing you with service/product recommendations, benchmarking, energy monitoring, and maintenance and support (the "Specified Purpose");

(2) to disclose your Data to other members of JCI Group in pursuit of the Specified Purpose only;

(3) to de-identify your Data so that it does not identify you directly or by inference (the "De-Identified Data");

(4) to use the De-Identified Data for its business purposes, including improvement of the Software, research, product development, product improvement and provision of products and services to JCI's other customers (collectively, "JCI's Business Purposes");

(5) to use, copy, distribute, and otherwise exploit statistical and other data derived from your use of the De-Identified Data for JCI's Business Purposes.

C. JCI agrees that all Data will be processed in accordance with the Data Protection & Electronic Communications Legislation and will be used only for the Specified Purpose.

D. You authorize JCI to transfer Data outside the European Economic Area, provided that the transfer is made on contractual terms approved by the Data Protection Authority or the transfer is otherwise permitted under the Data Protection & Electronic Communications Legislation.

E. According to the Data Protection Act of January 6th, 1978, you have at any time, a right of access to and rectification of all of your personal data. If you wish to exercise this right and gain access to your personal data, please write to us via <https://www.johnsoncontrols.com/contact-us>. You may also oppose, for legitimate reasons, the processing of your personal data."

Italy

4. Metering devices

The following is added to Section 4 (Metering devices): The metering devices and passive restraints mentioned in this Section are those specified in the accompanying order document.

5. Term and termination

The following paragraph is deleted in its entirety from Section 5:

"In addition, either party may, in its sole discretion, elect to terminate this Agreement on written notice to the other party upon the bankruptcy or insolvency of the other party or upon the commencement of any voluntary or involuntary winding up, or upon the filing of any petition seeking the winding up of the other party."

The following wording is added to Section 5 (Term and termination): Without prejudice to the above, if no term is specified, either party shall have the right to terminate the Agreement at any time by giving the other Party a six months prior written notice.

11 Data Collection and Use

The following replaces the Section 11 (Data Collection and Use) in its entirety:

You acknowledge and agree the Software and/or hardware used in connection with the Software may collect data resulting from or otherwise relating to your use of the Software and/or hardware ("Data") for purposes of providing you with service/product recommendations, benchmarking, energy monitoring, and maintenance and support. JCI shall have the right and ability to use the De-Identified Data for its business purposes, including improvement of the Software, research, product

development, product improvement and provision of products and services to JCI's other customers (collectively, "JCI's Business Purposes"). JCI shall have the right to use the Data provided that: (i) the Data have been De-Identified by JCI, so that JCI does not identify You directly or by inference; the Data, as De-Identified, will be used in compliance with the applicable local legislation and regulations in force.

9. Limitation of Liability

The following replaces the Section 9 (Limitation of Liability) in its entirety:

"TO THE MAXIMUM EXTENT PERMITTED UNDER APPLICABLE LAW, JCI'S ENTIRE LIABILITY FOR ALL CLAIMS IN THE AGGREGATE FOR ANY DAMAGES AND LOSSES THAT MAY ARISE IN CONNECTION WITH THE FULFILLMENT OF ITS OBLIGATIONS UNDER OR IN CONNECTION WITH THIS AGREEMENT OR DUE TO ANY OTHER CAUSE RELATED TO THIS AGREEMENT IS LIMITED TO THE COMPENSATION OF ONLY THOSE DAMAGES AND LOSSES PROVED AND ACTUALLY ARISING AS AN IMMEDIATE AND DIRECT CONSEQUENCE OF THE NON-FULFILLMENT OF SUCH OBLIGATIONS (IF JCI IS AT FAULT) OR OF SUCH CAUSE, FOR A MAXIMUM OF EUR 500,000 (FIVE HUNDRED THOUSAND EURO). THE ABOVE LIMITATION WILL NOT APPLY TO DAMAGES FOR BODILY INJURIES (INCLUDING DEATH) AND DAMAGES TO REAL PROPERTY AND TANGIBLE PERSONAL PROPERTY FOR WHICH JCI IS LEGALLY LIABLE. SAVE IN CASE OF GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, UNDER NO CIRCUMSTANCES JCI OR ANY OF ITS SUPPLIERS OR VENDORS LIABLE FOR ANY OF THE FOLLOWING, EVEN IF INFORMED OF THEIR POSSIBILITY:

1) LOSS OF, OR DAMAGE TO, DATA; 2) INCIDENTAL, EXEMPLARY OR INDIRECT DAMAGES, OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; AND / OR 3) LOST PROFITS, BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED SAVINGS, EVEN IF THEY ARISE AS AN IMMEDIATE CONSEQUENCE OF THE EVENT THAT GENERATED THE DAMAGES.

THE LIMITATION AND EXCLUSION OF LIABILITY HEREIN AGREED APPLIES NOT ONLY TO THE ACTIVITIES PERFORMED BY JCI BUT ALSO TO THE ACTIVITIES PERFORMED BY ITS SUPPLIERS AND VENDORS, AND REPRESENTS THE MAXIMUM AMOUNT FOR WHICH JCI AS WELL AS ITS SUPPLIERS AND VENDORS ARE COLLECTIVELY RESPONSIBLE.

Germany

9. Limitation of Liability

The following replaces the Section 9 (Limitation of Liability) in its entirety:

1. JCI WILL BE LIABLE WITHOUT LIMIT FOR 1) LOSS OR DAMAGE CAUSED BY A BREACH OF AN EXPRESS GUARANTEE; 2) DAMAGES OR LOSSES RESULTING IN BODILY INJURY (INCLUDING DEATH); 3) DAMAGES CAUSED INTENTIONALLY OR BY GROSS NEGLIGENCE; AND 4) claims pursuant to the German Product Liability Act (Produkthaftungsgesetz, ProdHaftG)..

2. IN THE EVENT OF LOSS, DAMAGE AND FRUSTRATED EXPENDITURES CAUSED BY SLIGHT NEGLIGENCE OR IN BREACH OF ESSENTIAL CONTRACTUAL OBLIGATIONS (I.E. an obligation which must be fulfilled to enable a due performance of the AGREEMENT and on whose fulfilment YOU generally rely and may rely ON), JCI WILL BE LIABLE, REGARDLESS OF THE BASIS ON WHICH YOU ARE ENTITLED TO CLAIM DAMAGES FROM JCI (INCLUDING FUNDAMENTAL BREACH, NEGLIGENCE, MISREPRESENTATION, OR OTHER CONTRACT OR TORT CLAIM), PER CLAIM ONLY UP TO 500,000 EURO FOR THE PROGRAM THAT CAUSED THE LOSS OR DAMAGE. A NUMBER OF DEFAULTS WHICH TOGETHER RESULT IN, OR CONTRIBUTE TO, SUBSTANTIALLY THE SAME LOSS OR DAMAGE WILL BE TREATED AS ONE DEFAULT.

3. IN THE EVENT OF LOSS, DAMAGE AND FRUSTRATED EXPENDITURES CAUSED BY SLIGHT NEGLIGENCE, JCI WILL NOT BE LIABLE FOR INDIRECT OR CONSEQUENTIAL DAMAGES, EVEN IF JCI WAS INFORMED ABOUT THE POSSIBILITY OF SUCH LOSS OR DAMAGE. THIS LIMITATION SHALL NOT APPLY WHERE THE LOSS, DAMAGE AND FRUSTRATED EXPENDITURES WAS CAUSED BY A SLIGHT NEGLIGENT BREACH OF ESSENTIAL CONTRACTUAL OBLIGATIONS.

4. IN CASE OF DELAY ON JCI'S PART: 1) JCI WILL PAY TO YOU AN AMOUNT NOT EXCEEDING THE LOSS OR DAMAGE CAUSED BY JCI'S DELAY AND 2) JCI WILL BE LIABLE ONLY IN RESPECT OF THE RESULTING DAMAGES THAT YOU SUFFER, SUBJECT TO THE PROVISIONS OF ITEMS A AND B ABOVE.

14. General

The following is added to the end of Section 14 (General):

Any claims resulting from this Agreement are subject to a limitation period of three years, except as stated in Section 7 (Limited Warranty; Disclaimer) of this Agreement.

Ireland

7. Limited Warranty; Disclaimer

The following is added to Section 7 (Limited Warranty; Disclaimer):

Except as expressly provided in these terms and conditions, or Section 12 of the Sale of Goods Act 1893 as amended by the Sale of Goods and Supply of Services Act, 1980 (the "1980 Act"), all conditions or warranties (express or implied, statutory or otherwise) are hereby excluded including, without limitation, any warranties implied by the Sale of Goods Act 1893 as amended by the 1980 Act (including, for the avoidance of doubt, Section 39 of the 1980 Act).

United Kingdom

Agreement Structure

The following sentence is added:

Nothing in this paragraph shall be interpreted or construed as excluding or limiting the liability of any person for fraud or fraudulent misrepresentation.

2. Restrictions

The following is added at the end of point (iii):

(if it is necessary for You to decompile the Software, to obtain the information necessary to create an independent program which can be operated with the Software, You will inform JCI that this is the case and will allow JCI a reasonable opportunity to provide such information to You so that it is no longer necessary for You to carry out that decompilation)

9. Limitation of Liability

The following replaces the Section 9 (Limitation of Liability) in its entirety:

FOR THE PURPOSES OF THIS SECTION, A "DEFAULT" MEANS ANY ACT, STATEMENT, OMISSION OR NEGLIGENCE ON THE PART OF JCI IN CONNECTION WITH, OR IN RELATION TO, THE SUBJECT MATTER OF AN AGREEMENT IN RESPECT OF WHICH JCI IS LEGALLY LIABLE TO YOU, WHETHER IN CONTRACT OR IN TORT. A NUMBER OF DEFAULTS WHICH TOGETHER RESULT IN, OR CONTRIBUTE TO, SUBSTANTIALLY THE SAME LOSS OR DAMAGE WILL BE TREATED AS ONE DEFAULT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, IN NO EVENT SHALL JCI AND AFFILIATES AND THEIR RESPECTIVE ITS SUPPLIERS AND VENDORS BE LIABLE TO YOU OR ANY THIRD PARTY

FOR ANY SPECIAL, CONSEQUENTIAL, OR INDIRECT DAMAGES; OR WASTED MANAGEMENT TIME OR LOST PROFITS, BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED SAVINGS, WHICH SHALL INCLUDE, WITHOUT LIMITATION, DAMAGES FOR LOST PROFITS, LOST DATA AND BUSINESS INTERRUPTION, ARISING OUT OF THE USE OR INABILITY TO USE THE SOFTWARE, EVEN IF THEY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.. CIRCUMSTANCES MAY ARISE WHERE, BECAUSE OF A DEFAULT BY JCI IN THE PERFORMANCE OF ITS OBLIGATIONS UNDER THIS AGREEMENT OR OTHER LIABILITY, YOU ARE ENTITLED TO RECOVER DAMAGES FROM JCI. REGARDLESS OF THE BASIS ON WHICH YOU ARE ENTITLED TO CLAIM DAMAGES FROM JCI AND EXCEPT AS EXPRESSLY REQUIRED BY LAW WITHOUT THE POSSIBILITY OF CONTRACTUAL WAIVER, JCI'S ENTIRE LIABILITY FOR ANY ONE DEFAULT WILL NOT EXCEED THE AMOUNT OF ANY DIRECT DAMAGES, TO THE EXTENT ACTUALLY SUFFERED BY YOU AS AN IMMEDIATE AND DIRECT CONSEQUENCE OF THE DEFAULT, UP TO 500,000 EURO (OR THE EQUIVALENT IN THEN-PREVAILING LOCAL CURRENCY) FOR THE PROGRAM THAT IS THE SUBJECT OF THE CLAIM.

NOTWITHSTANDING THE ABOVE, NOTHING IN THIS AGREEMENT WILL OPERATE TO EXCLUDE OR RESTRICT A PARTY'S LIABILITY (IF ANY) TO THE OTHER: (i) FOR DEATH OR PERSONAL INJURY; (ii) FOR FRAUD OR FRAUDULENT MISREPRESENTATION; (iii) FOR BREACH OF ITS OBLIGATIONS ARISING UNDER SECTION 12 SALE OF GOODS ACT 1979; (iii) FOR BREACH OF ITS OBLIGATIONS ARISING UNDER SECTION 2 SUPPLY OF GOODS AND SERVICES ACT 1982; (iv) FOR BREACH OF ITS OBLIGATIONS ARISING UNDER SECTION 8 SUPPLY OF GOODS (IMPLIED TERMS) ACT 1973; OR (v) FOR ANY MATTER FOR WHICH IT IS NOT PERMITTED BY LAW TO EXCLUDE OR LIMIT, OR TO ATTEMPT TO EXCLUDE OR LIMIT, ITS LIABILITY.

Additional Country Specific Amendments

Spain

7. Limited Warranty; Disclaimer

Section 7 (limited warranty; disclaimer) is replaced with the following:

JCI warrants that (i) for a period of thirty (30) days from delivery initial delivery to you (the "Warranty Period"), the Software will operate in substantial conformity with its Documentation; and (ii) it shall use screening software to scan the Software prior to delivery for viruses, Trojan horses, and other malicious code. If, during the Warranty Period, you notify JCI of any non-compliance with the foregoing warranties, JCI will, in its discretion: (a) use commercially reasonable efforts to provide the programming services necessary to correct any verifiable non-compliance with the foregoing warranties; or (b) replace any non-conforming Software; or if neither of foregoing options is reasonably available to JCI, (c) terminate this Agreement in whole or in part, and refund to You the fees, if any, paid for the non-conforming Software (less depreciation calculated on a three (3)-year straight-line basis commencing on the date of initial delivery to you. JCI shall not be liable for failures caused by third party hardware and software (including your own systems), misuse of the Software, or your negligence or willful misconduct. EXCEPT AS PROVIDED IN THIS SECTION, THE SOFTWARE IS PROVIDED ON AN "AS AVAILABLE," "AS IS" BASIS. THIS WITHOUT PREJUDICE THAT JCI WILL BE LIABLE FOR ANY HIDDEN FAULTS OF THE PRODUCTS PROVIDED, AS WELL AS ANY DAMAGES ARISED AS A RESULT OF PROVIDING A PRODUCT THAT DO NOT CONFORM WITH JCI'S DESCRIPTION, AND/OR THAT IT IS USELESS FOR THE PURPOSES OF THIS AGREEMENT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, JCI AND ITS AFFILIATES, AND THEIR RESPECTIVE SUPPLIERS AND VENDORS DISCLAIM ALL OTHER WARRANTIES WITH RESPECT TO THE SOFTWARE, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, TITLE, MERCHANTABILITY, QUIET ENJOYMENT, QUALITY OF INFORMATION, AND FITNESS FOR A PARTICULAR PURPOSE. JCI AND AFFILIATES AND THEIR RESPECTIVE

ITS SUPPLIERS AND VENDORS DO NOT WARRANT THAT THE SOFTWARE WILL MEET YOUR REQUIREMENTS, OR THAT THE OPERATION OF THE SOFTWARE WILL BE UNINTERRUPTED OR ERROR-FREE, OR THAT DEFECTS IN THE SOFTWARE WILL BE CORRECTED. NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY JCI OR ANY OF ITS PERSONNEL OR AGENTS SHALL CREATE ANY ADDITIONAL JCI WARRANTIES OR IN ANY WAY INCREASE THE SCOPE OF JCI'S OBLIGATIONS HEREUNDER.

9. Limitation of liability

The following is added to the end of this section 9 (limitation of liability):

NOTHING IN THIS AGREEMENT SHALL EXCLUDE OR LIMIT EITHER PARTY'S LIABILITY FOR: (I) DEATH OR PERSONAL INJURY CAUSED BY NEGLIGENCE; (II) FRAUD OR DECEIT; (III) WILLFULLY COSTS DAMAGES OR (IV) ANY OTHER LIABILITY THAT CANNOT BE EXCLUDED BY APPLICABLE LAW.

11. Data Collection and Use

Section 11 (data collection and use) is modified in the following terms:

You acknowledge and agree that the Software and/or hardware used in connection with the Software may collect data resulting from or otherwise relating to your use of the Software and/or hardware ("Data"). You hereby agree that your Data will be incorporated into a data file controlled by JCI, for the purposes of providing you with service/product recommendations, benchmarking, energy monitoring, maintenance and support, as well as for any purposes related to the execution of this agreement. You may exercise your rights of access, rectification, cancellation and opposition by writing to JCI corporate address stated above, or by contacting us at <https://www.johnsoncontrols.com/contact-us>, accompanying the request with a copy of an official identifying document. JCI shall be the exclusive owner of all Data. JCI shall have the right to de-identify your Data so that it does not identify you directly or by inference (the "De-Identified Data"). JCI shall have the right and ability to use the De-Identified Data for its business purposes, including improvement of the Software, research, product development, product improvement and provision of products and services to JCI's other customers (collectively, "JCI's Business Purposes").

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