AVERTX

HD848IRM

4K OUTDOOR IP DOME CAMERA
WITH SMART ANALYTICS
User Manual

AVERTX

HD IP

AVX-HD848IRM 4K Outdoor IP Dome with Smart Analytics

Operations Manual

Manual Edition 37736AA – October 2021

The following words and symbols mark special messages throughout this guide:

WARNING: Text set off in this manner indicates that failure to follow directions could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

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IMPORTANT SAFEGUARDS

1. **Read Instructions**
   Read all of the safety and operating instructions before using the product.

2. **Retain Instructions**
   Save these instructions for future reference.

3. **Attachments / Accessories**
   Do not use attachments or accessories unless recommended by the appliance manufacturer as they may cause hazards, damage product and void warranty.

4. **Installation**
   Do not place or mount this product in or on an unstable or improperly supported location. Improperly installed product may fall, causing serious injury to a child or adult, and damage to the product. Use only with a mounting device recommended by the manufacturer or sold with the product. To ensure proper mounting, follow the manufacturer's instructions and use only mounting accessories recommended by manufacturer.

5. **Power source**
   This product should be operated only from the type of power source indicated on the marking label.

Precautions

Operating

- Before using, make sure power supply and others are properly connected.

- While operating, if any abnormal condition or malfunction is observed, stop using the camera immediately and then contact AvertX Customer Support.

Handling

- Do not disassemble or tamper with parts inside the camera.

- Do not drop or subject the camera to shock and vibration as this can damage camera.

- Care must be taken when you clean the clear lens cover. Scratches and dust will ruin the image quality of your camera. Do not use strong or abrasive detergents when cleaning the camera body. Use a dry cloth to clean the camera when it is dirty. In case the dirt is hard to remove, use a mild detergent and wipe the camera gently.

Installation and Storage

- Do not install the camera in areas of extreme temperatures in excess of the allowable range. -22°F ~ 140°F (-30° ~ 60°C)

- Avoid installing in humid or dusty places. The relative humidity must be below 95%.

- Avoid installing in places where radiation is present.

- Avoid installing in places where there are strong magnetic fields and electric signals.

- Avoid installing in places where the camera would be subject to strong vibrations.

- Never face the camera toward the sun. Do not aim at bright objects. Whether the camera is in use or not, never aim it at the sun or other extremely bright objects. Otherwise the camera may be damaged.

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REGULATION

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste in accordance with Directive 2002/96/EC. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By proper waste handling of this product you ensure that it has no negative consequences for the environment and human health, which could otherwise be caused if this product is thrown into the garbage bin. The recycling of materials will help to conserve natural resources.

For more details information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

Compliance is evidenced by written declaration from our suppliers, assuring that any potential trace contamination levels of restricted substances are below the maximum level set by EU Directive 2002/95/EC, or are exempted due to their application.

WARNING

DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE ENCLOSURE.

REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

CAUTION

CAUTION

TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

RISK OF ELECTRIC SHOCK
DO NOT OPEN

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Camera Default Settings

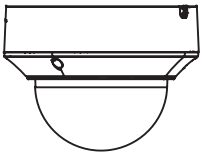| IP Address	192.168.51.2
Username	admin

Password	**This AvertX camera model does not have a default password**
	The admin user password can be set using the following methods:
	1. ProConnect recorders running software version 2.1 or newer will automatically set a new unique password by:
	   ➢ Connecting to the built-in PoE switch
	   ➢ Connecting to a network switch through the camera network port and selected then adding the camera in setup
	2. Connect to the camera directly through a Web Browser and follow the onscreen prompts.
	Use the Network Camera Manager (NCM) Utility.
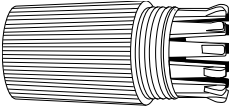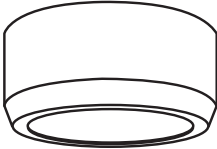
Product Features

- Person & Vehicle Analytics
- True WDR @ 8MP
- Smart IR Technology | Up to 131'
- 8MP | Up to 20FPS
- IP67 Ingress Protection Rating
- IK10 Impact Protection Rating
- Smart Compression
- Paintable Dome Cover

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GETTING STARTED

BOX CONTENTS

Before proceeding, please check that the box contains the items listed here. If any item is missing or has defects, do not install or operate the product and contact AvertX Support for assistance.

HD848IRM Camera	**Self-Tapping Mounting Screws**	**Plastic Anchors (includes extra)**
Quick Start Guide	**IP66 Cable Connector**	**Mounting Template**
T20 Torx Tool	**Paintable Dome Cover**	

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CAMERA OVERVIEW

Before installing or connecting the dome camera, please refer to this section and complete preparations for camera setup and all switch settings.

Camera Diagram
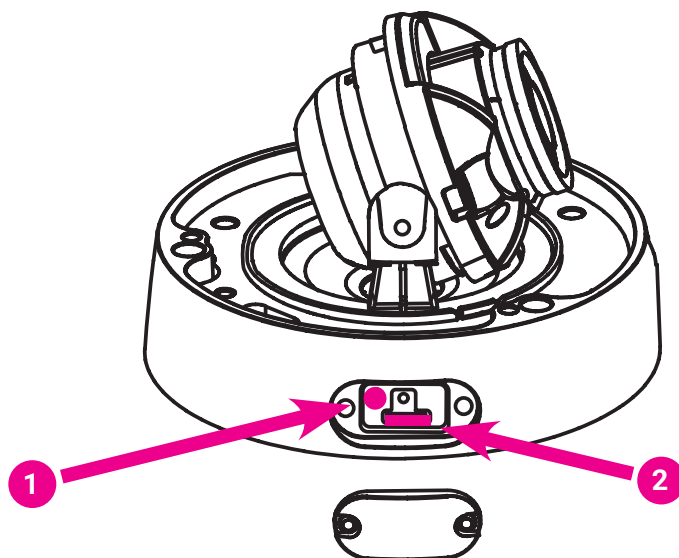
1	Reset Button	To restore the camera to factory defaults: 1. Disconnect power for 30 seconds. 2. Reconnect power and wait 30 seconds. 3. Press and hold the reset button for 20 seconds.
2	MicroSD Card Slot	Supports up to 512GB microSD card for Edge storage. **Do not add or remove the microSD card when the camera is powered on.**

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Cable Connection
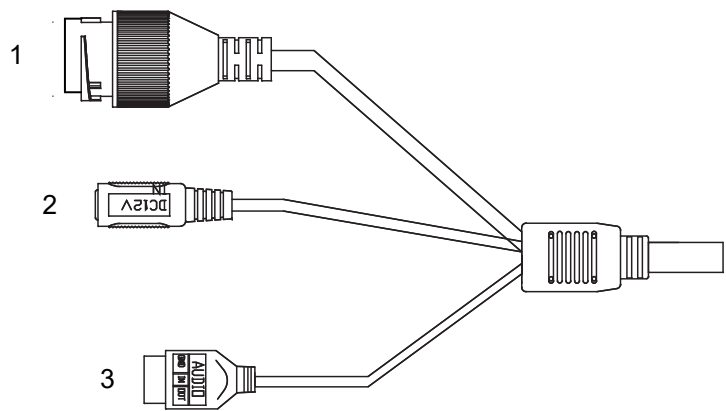
1	RJ-45	Data Connection
2	DC12V	Power Connection
3	Audio I/O	Ground
		Audio In
		Audio Out

Dimensions

5.8"

4.4"

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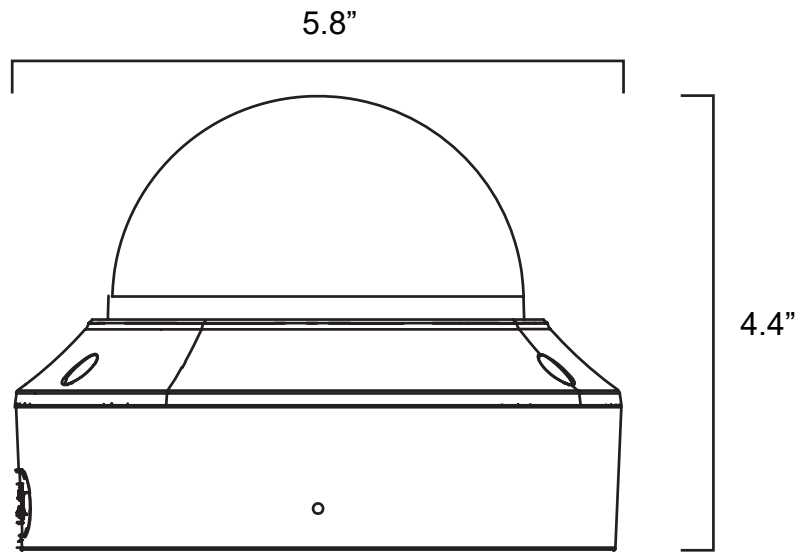
CONNECTING

BENCH TEST

AvertX recommends bench testing your camera(s) before installation. This will confirm that your camera is functioning correctly before it is installed and possibly out of reach.

To bench test your camera, attach the camera network connector to your recorder and test whether the camera is functioning correctly. Once the camera is connected to the recorder, test all functions to ensure proper operation.

If the camera will not connect or is not functioning correctly, do not install, and contact AvertX Support.

NETWORK CAMERA MANAGER

Network Camera Manager **(NCM)** is a software tool that allows you to quickly and easily connect and configure your AvertX IP cameras. This software allows you to assign IP addresses, configure video settings, and update firmware on multiple cameras at once.

NCM is pre-installed on all AvertX ProConnect recorders and is also available for download at **www.avertx.com/support** for installation on your personal computer or laptop.

Launch Network Camera Manager

Open the Settings menu, go to the **Cameras** page and click **Advanced** (located towards to top-middle on the page).

NOTICE: If you cannot connect to the camera you may need to change the camera's IP address to match your network settings.

Finding Network Devices

Click **Refresh** to reload the Device List.

To narrow your search by Camera Model or Network Location, use the Model Filter and Networks dropdowns.

Changing the IP Address

AvertX recorders will automatically apply a DHCP IP address. If you are not connecting the camera to an AvertX recorder or DHCP network, you must set a static IP address. NCM allows you to do this in the bottom left corner:

1.   Select the applicable camera.
2.   Enter the **IP address**, **Subnet Mask**, and **Gateway**.
3.   Click **Apply**.
4.   Wait 10 seconds and click **Refresh**.

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CONNECTING TO THE CAMERA

Connecting in a Web Browser

1. Type the IP address of the camera in a web browser.
    - OR -
   Use the **Network Camera Manager** software and locate the camera on the list, then click **Load** in the row of the desired camera.

1. Log in to the camera with the appropriate Username and Password.

Username and Password

IMPORTANT:	This AvertX camera model ships without a default password; the admin password is required to gain access or establish a connection.

The admin user password can be set using the following methods:

1. AvertX ProConnect recorders will check the camera for a password once connected.

   i. **If AvertX software does not detect a password, it will set the camera password to a secure text string of 8 to 16 characters** (Including upper-case letters, lower-case letters, digits and special characters (!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~ space)).

2. Network Camera Manager

3. Camera Web Browser

Connecting a Stream

AvertX IP cameras are optimized for use with AvertX ProConnect recorders, but you can also connect to your AvertX IP cameras using third party software like VLC media player (http://www.videolan.org).

All AvertX IP cameras are capable of delivering two RTSP streams over HTTP.

The RTSP stream URL format is as follows:

rtsp://**[USER]**:**[PASSWORD]**@**[IP ADDRESS]**:**[RTSP PORT]**/media/video**[STREAM]**

[USER] – This is the username to access your device

[PASSWORD] – This is the password to the user

[IP ADDRESS] – This is the IP address of your device

[RTSP PORT] – This is the RTSP port of your device; the default RTSP Port is 554

[STREAM] –

- Primary Stream: video1
- Sub-stream: video2

Example:

[USER]	admin
[PASSWORD]	1$S!9#6v$$$1
[IP ADDRESS]	192.168.51.51
[RTSP PORT]	554
[STREAM]	1

RTSP Stream URL - *rtsp://admin:1$S!9#6v$$$1@192.168.51.51:554/media/video1*

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LOGGING INTO THE WEB INTERFACE

The default static IP address of the camera is 192.168.51.2, and the default subnet mask is 255.255.255.0. DHCP is turned on by default. If a DHCP server is used in the network, the IP address of your camera will be assigned dynamically.

- Browse to the login page by entering the IP address of your camera in the address bar.
- Enter the **username** and **password**, and then click **Login**.
    - o Username: admin
    - o You will be prompted to change the password the first time you login.

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INSTALLING THE CAMERA

Wall and Ceiling Installation

1. Apply template sticker to desired camera location.

2. Drill anchor holes and 7/8" hole for cabling using included mounting template.

Note: The 7/8" cabling hole is not required if a mounting accessory is being used.

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3. Remove mounting template.

4. Insert anchors.

5. Connect network cable with included waterproof cable connector.

6. Remove the camera dome cover by removing 3 dome screws and lifting.

7. Attach the camera to the ceiling or wall with the included screws.

8. Adjust the camera to the desired angle.

   - The HD848IRM features 3-axis camera positioning: Tilt, Camera Rotation, and Lens Rotation.

   - Rotate the lens so the 0 mark is vertical relative to the horizon.

Note: Use the AvertX Connect app to view the camera while adjusting view.

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9. Replace the dome cover. To install, align screws to the holes. Tighten dome cover screws just enough for a good seal. Clean the dome with the included cleaning cloth.

10. Mount camera.

11. Install the camera cover and tighten the lock screw.

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Waterproof Cable Connector

This camera features an IP66-rated waterproof cable connector. For unprotected outdoor connections, screw the connector on the included ethernet camera cable onto the camera dongle. If your installation location does not require a waterproof connection, loosen and slide the connector back on the cable until it's out of the way.

Included Pieces:

|	
Thread Lock Cap	**Silicone Seal Ring**
RJ45 Enclosure	**Silicone "O" Ring**
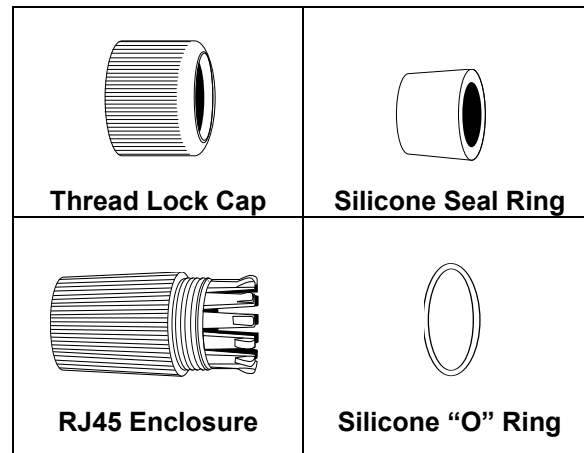
To Install the weather resistant cable connector:

1. Slide all pieces of the waterproof cable connector over the cable plug in this order:
- Thread Lock Cap
- Flexible silicone seal ring. You will need to stretch the silicone seal over the RJ-45 plug.

PRO TIP: Insert the flexible silicone seal ring onto the tip of a pair of needle nose pliers and stretch the seal over the RJ45 plug.

- RJ45 Enclosure
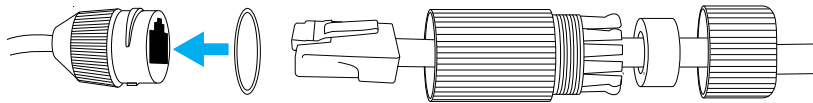
2. Stretch the small silicone "O" ring onto the camera dongle.
3. Connect the camera cable to the plug on the dongle. Screw the RJ45 Enclosure into the dongle.
4. Insert the flexible silicone seal into the "crown" section of the large plastic ring.
5. Screw the small plastic ring into the large plastic ring.

PRO TIP: To remove the RJ45 enclosure from the camera cable, tape down the locking tab on the RJ45 plug with electrical or office tape.

NOTICE: Do not attempt to disconnect the camera connection without loosening the smaller thread lock cap. Forcing the assembly will break the camera dongle and void the camera warranty.

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Cleaning the Dome and Lens Cover

The dome and lens cover of the AVX-HD848IRM are extremely durable but can be damaged if cleaned improperly.

To Clean the Dome and Lens Cover:

- To clean dust or loose dirt, use compressed air.
- To clean smudges or stuck on dirt, use warm water with a few drops of dish soap and a clean microfiber cloth.

CAUTION: Do not use solvents, paper towels, newspaper, or other rough materials to clean the dome cover. This can scratch the dome and lens cover and cause IR distortion.

Considerations for Infrared (IR) Lights

Environmental factors can limit the performance of night vision using IR illuminator lights. Infrared light behaves the same as visible light and will reflect off of bright or shiny objects and overexpose the image. The camera will adjust to properly expose the bright areas of the image, which may leave the dark areas obscured.

For best IR Night Vision performance:

Be aware of surfaces that can cause IR light to reflect into the camera.

- Reflective or light-colored surfaces and objects close to the camera can reflect IR light back into the camera.
  - Remove the reflective or light-colored surfaces.
  - Cover the reflecting surfaces with a non-reflective material (non-reflective tape, dark paint)
  - Mount the camera on a nearby wall using a mounting bracket.

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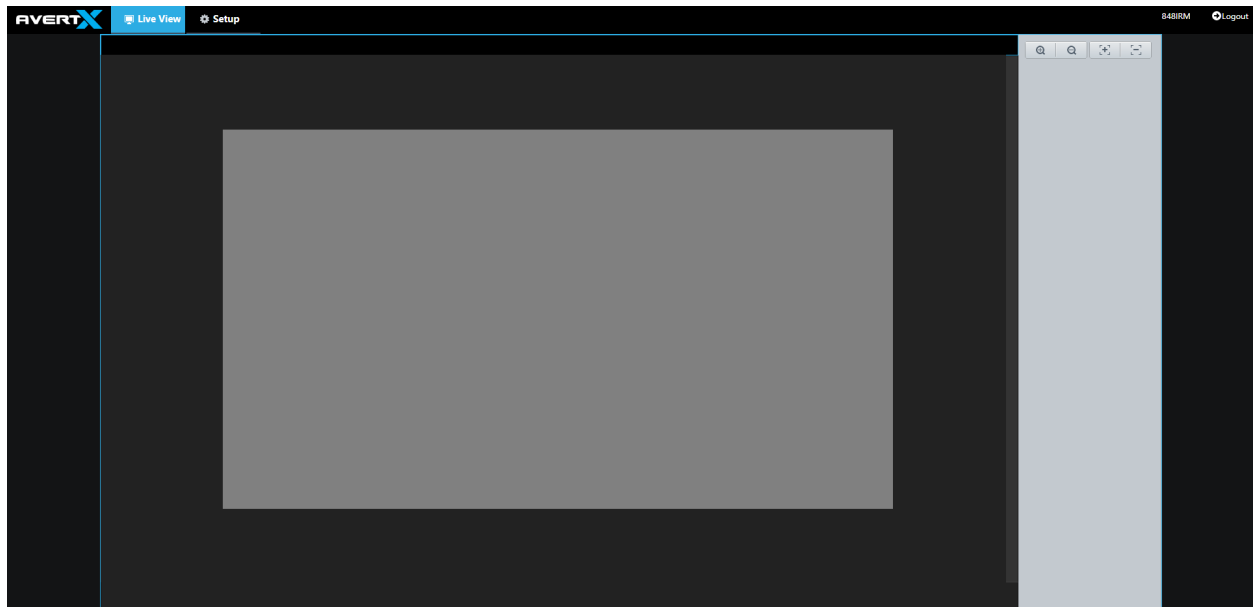
LIVE VIEW

Item	Description
Live View	Browse to Live View page to view live video
Setup	Browse to Setup options
Logout	Exit the device interface
Zoom+	Zoom in on camera image
Zoom-	Zoom out of camera image
Focus+	Sharpen camera image
Focus-	Defocus camera image

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BASIC CAMERA SETTINGS

Basic Info	
Basic Info	
Model	848IRM
IPv4 Network Info	172.30.42.136/255.255.248.0/172.30.40.1
MAC Address	4c:91:7a:b7:0c:ae
Version Info	
Firmware Version	IPC-B6203.3.15.C05569.NB.211015
Hardware Version	A
Boot Version	V2.0
Serial No.	210235TRV93218000002
Status	
System Time	2021/10/15 17:24:31
Operation Time	0 Day(s) 8 Hour(s) 54 Minute(s)
Intelligent Server 1	Offline
Intelligent Server 2	Online

Common Configuration

- Network
- Time
- On-Screen Display
- User

Refresh

Basic Info

Basic Information displays details about the camera. **Refresh** to update the display after any changes have been made that affect the listed information or status.

Common Configuration

Click shortcuts to other menu items: **Network**, **Time**, **On-Screen Display** or **User**.

Note: **Image**, **Video**, **Network,** and **Time** shortcuts are also available from the left-hand menu.

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NETWORK SETTINGS

NETWORK

Modify communication settings such as the IP address for the camera so that the camera can communicate with other devices.

Note: After you have changed the IP address, you need to use the new IP address to log in.

Note: The configurations of DNS (Domain Name System) server are applicable when the device is accessed by domain name.

Static Address

1. Click **Setup > Network Settings > Network**.
2. Select **Static** from the **DHCP/IP Static** drop-down list.
3. Enter the IP address, subnet mask, and default gateway address. Make sure that the IP address of the camera is unique in the network.
4. Click **Save**.

DHCP

The Dynamic Host Configuration Protocol (DHCP) is enabled by default when the camera is delivered. If a DHCP server is deployed in the network, the camera can automatically obtain an IP address from the DHCP server.
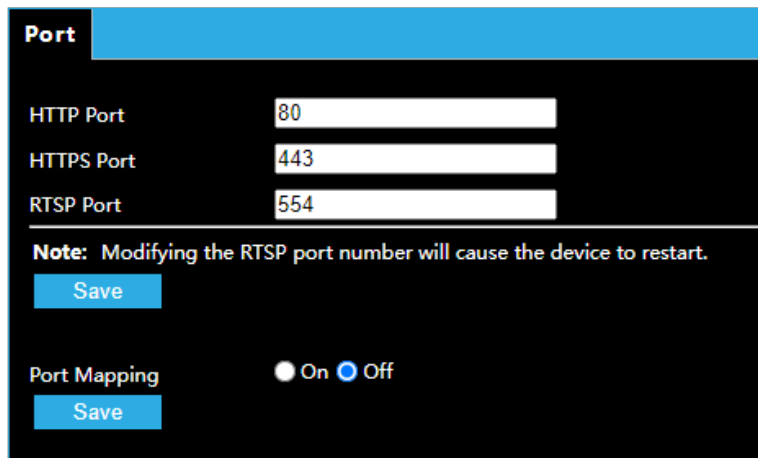
To manually configure DHCP, follow the steps below:

1. Click **Setup > Network Settings > Network**.
2. Select **DHCP** from the **DHCP/IP Static** drop-down list.
3. Click **Save**.

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IPv6

1. Click **Setup > Network Settings > Network**.

2. By default, the IPv6 is set to **Manual**.

3. Enter the IPv6 address, set the prefix length and default gateway. The IP address must be unique on the network.
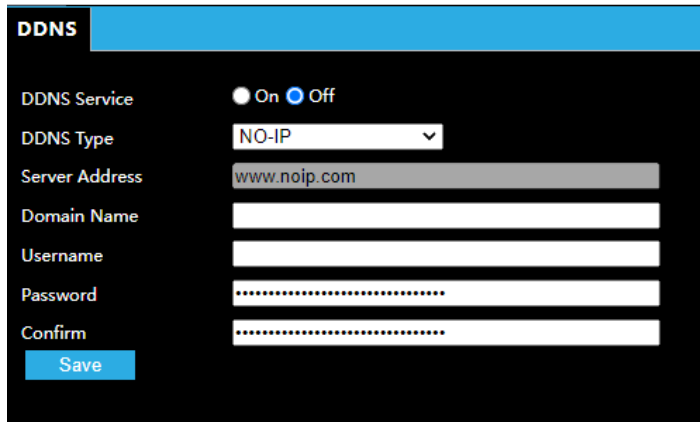
4. Click **Save**.

PORT

1. Click **Setup > Network Settings > Port**.

2. Configure relevant port numbers.

3. Click **Save**.

Port Mapping

1. Enable **Port Mapping** and select mapping type. If **Manual** is selected, then external ports must be configured (external IP is obtained automatically by the camera). If the configured port is occupied, then the **Status** will show Inactive.

2. Click **Save**.

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DDNS

DDNS (Dynamic Domain Name Service) is a service that allows a connection to an IP address using a hostname (URL) address instead of a numeric IP address. Most Internet Service Providers use Dynamic IP Addressing that frequently changes the public IP address of your internet connection; this means that when connecting to the camera over the internet, you need to know if your IP address has changed. DDNS automatically redirects traffic to your current IP address when using the hostname address.

1. Click **Setup > Network > DDNS**.
2. Enable DDNS Service.
3. Enter DDNS info provided by your DDNS provider.
4. Click **Save**.

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FTP

General

After the configuration of FTP, you will be able to upload snapshots from network cameras to a specified FTP server.

1. Click **Setup > Network > FTP**. Go to the **General** tab.

2. Configure the IP address, port number of the FTP server, the username and password of the upload account, enable **Upload Images** and **Overwrite Storage**, and then set the overwrite image threshold.

3. Set the path for saving snapshots on the FTP server and the file name format.

4. Click **Save**.

Video

After the configuration of FTP, you will be able to upload video from network cameras to a specified FTP server.

1. Click **Setup > Network > FTP**. Go to the Video tab.

2. Configure the IP address, port number of the FTP server, the username and password of the upload account, enable **Upload Video**, and then set the overwrite image threshold.

3. Set the path for saving video on the FTP server and the file name format.

4. Click **Save**.

E-MAIL

After the configuration of E-mail, when alarms are triggered, you will be able to send messages to the specified E-mail address.

The camera can send an e-mail via Simple Mail Transfer Protocol (SMTP) when a variety of events occur. SMTP is a protocol for sending e-mail messages between servers. SMTP is a relatively simple, text-based protocol, where one or more recipients of a message are specified, and the message text is transferred. Consult your email provider to get your SMTP server information.

Three accounts can be configured. Each set includes Account Name, Password and E-mail Address settings. For SMTP server, contact your network service provider for more specific information.

1. Click **Setup > Network > E-mail**.

2. Configure relevant parameters of the sender and the recipient The following table describes some major parameters.

Parameter	Description
TLS/SSL	When enabled, the e-mail will be encrypted using TLS (Transport Layer Security) or Secure Socket Layer (SSL) to protect privacy.
	First it tries to send through an SSL connection.If the SMTP server supports SSL, the e-mail will be sent through the SSL connection; otherwise, it tries to send using STARTTLS.
Attach Image	When enabled, the e-mail will contain 3 instant snapshots as attachment according to the Capture Interval.
Username/ Password	Username and password of the registration email address. The password allows the following special characters \ / : * ? ' " <>	% &

3. Click **Save**.

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STREAMING SETTINGS

VIDEO

You can set video parameters that your camera supports.

1. Click **Setup > Stream Settings > Video**.

2. Modify the settings as required. The following table describes some major parameters.

Parameter	Description
Video Compression	AvertX ProConnect software only supports H.264 compression.
Resolution	Set video resolution.
Frame Rate	Frame rate for encoding images. Unit: FPS (frame per second). *Note:* To ensure image quality the frame rate should not be greater than the reciprocal of shutter speed.
Bit Rate (Kbps)	Set video Bit Rate.
Bitrate Type	• **CBR:** Constant Bit Rate, which means that the camera transmits data at a constant data rate. • **VBR:** Variable Bit Rate, which means that the camera adjusts the bit rate dynamically according to image quality.

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Image Quality	When Encoding Mode is VBR, you can move the slider to adjust quality level for images. Moving the slider toward Bit Rate decreases the bit rate and may affect image quality. Moving the slider toward Quality increases the bit rate and improves image quality.
I Frame Interval	Interval at which an I frame is encoded. Normally, a shorter I frame interval offers better image quality but consumes more bandwidth.
GOP	Group Of Pictures in MPEG video encoding. This parameter specifies the order in which intra-frames (I frame) and inter-frames are arranged.
Smart Encoding	Set to Off or Basic Mode.
Smoothing	Set the extent of smoothing. Choosing Clear means disabling Smoothing. Moving the slider toward Smooth increases the level of smoothing but will affect image quality. Note: In a poor network environment, you can enable smoothing to get more fluent video.

3. Click **Save**.

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SNAPSHOT

1. Click **Setup > Streaming Settings > Snapshot**.

2. Select **On**, and then set resolution, most large and schedule as needed. Some parameters are described in the table below.

Parameter	Description
Snapshot Interval	Interval between two snapshots. For example, with Snapshot Interval set to 1 and Number of Snapshot set to 2, the camera will take 2 snapshots (take one first and then take another after 1 second).
Number to Snapshot	Currently 1, 2, and 3 snapshots are allowed.
Snapshot Mode	**Schedule:** You need to set a snapshot time, e.g., 19:12:00, which means the camera takes a snapshot at 19:12:00. **Repeat:** Allows you to set an interval (unit: sec). For example, according to the settings shown in the figure above, 60 seconds must elapse before the camera takes another two snapshots.

3. Click **Save**.

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AUDIO

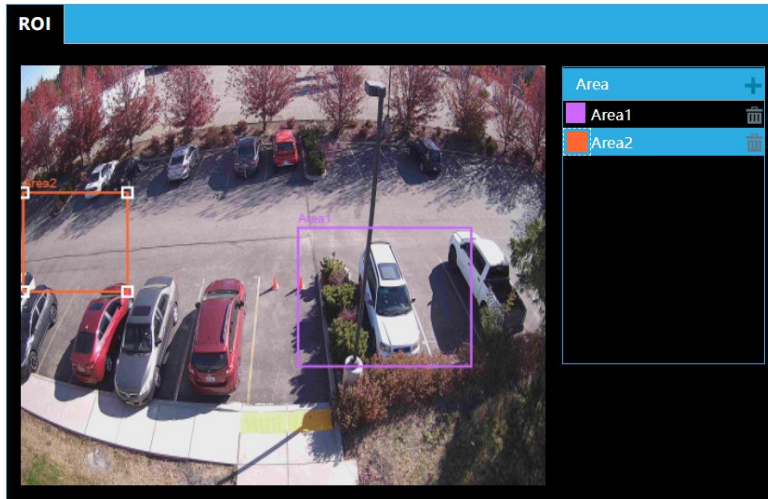1. Click **Setup > Streaming Settings > Audio**.

2. Modify the settings as required. The following table describes some major parameters.

Parameter	Description
Audio Input	No audio data will be encoded when **Off** is selected. *Note:* It is recommended to select **Off** if you do not need audio. This can improve device performance to some extent.
Access Mode	Currently only **Line/Mic**.
Input Volume	Slider adjusts input volume.
Audio Compression	Two options: G.711U, G.711A
Noise Suppression	Used to reduce noise in images. Noise suppression Is enabled by default.
Audio L	Enabled for the internal microphone by default.
Audio R	Enabled for line by default.

3. Click **Save**.

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ROI

When Region of Interest (ROI) is enabled, the system ensures image quality for ROI first if the bit rate is insufficient.

1. Click **Setup > Streaming Settings > ROI**.

2. Click ![+], and then drag the mouse to cover the intended part of the images. To delete, select the area and then click ![trash] .

MEDIA STREAM

You can display the established media streams from a camera. You may also set the camera so it transmits code streams by the UDP or TCP protocol to a specified IP address and port number. The settings can be saved and take effect after the camera is restarted.

> *Note:* Choosing a transport protocol based on your actual needs and network performance. Generally speaking, TCP enables better image quality than UDP but also causes higher latency.

1. Click **Setup > System Settings > Media Stream**.

Stream Profile	Protocol	Destination IP	Destination ...	Persistent	Status	+
Main Stream	TCP	172.30.42.106	58801	Disable	Streaming	🗑
Sub Stream	TCP	172.30.42.106	58794	Disable	Streaming	🗑
Main Stream	TCP	172.30.42.86	50930	Disable	Streaming	🗑
Sub Stream	TCP	172.30.42.86	50932	Disable	Streaming	🗑
Sub Stream	TCP	172.30.42.114	49694	Disable	Streaming	🗑
Main Stream	TCP	172.30.42.114	49693	Disable	Streaming	🗑
Sub Stream	TCP	172.30.42.183	52116	Disable	Streaming	🗑
Main Stream	TCP	172.30.42.183	54162	Disable	Streaming	🗑

Main Stream

Multicast Address: 0.0.0.0
Port: 0

Sub Stream

Multicast Address: 0.0.0.0
Port: 0

Save

2. Click ✚, select a stream type, and then set the IP address and port number of the unicast or multicast group for the decoding device that receives audio and video streams from the camera. If you want the device to establish the media stream that has been configured before automatically after the restart, select **Yes** for **Persistent**.

3. To delete a stream, click 🗑.

4. Click **Save** to complete the operations.

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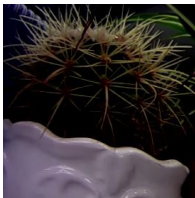# PICTURE SETTINGS

IMAGE

Image Enhancement

Note: You may move the sliders to adjust settings or enter values in the text boxes directly. Clicking **Default** will restore all the default image settings.

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1. Click **Setup > Picture Settings > Image**.
2. Use the sliders to change the settings. You may also enter values directly. The following table describes some major parameters.

Item	Description
Brightness	Set the degree of brightness of images. Low brightness High brightness
Saturation	Set the intensity of color in the image. Low saturation High saturation

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Contrast	Set the degree of difference between the blackest pixel and the whitest pixel. Low contrast High contrast
Sharpness	Contrast of boundaries of objects in an image. Low sharpness High sharpness
2D Noise Reduction	Reduce the noise of images. The function may cause image blurring.
3D Noise Reduction	Reduce the noise of images. The function may cause motion blur (or ghosting in some applications).
Image Rotation	Rotation of the image. Normal Flip Vertical Flip Horizontal 180° 90° Clockwise 90° Counter-clockwise

- To restore default settings in this area, click **Default**.

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Exposure

The default settings are used for common scenes. Keep the default settings unless a particular scene is required.

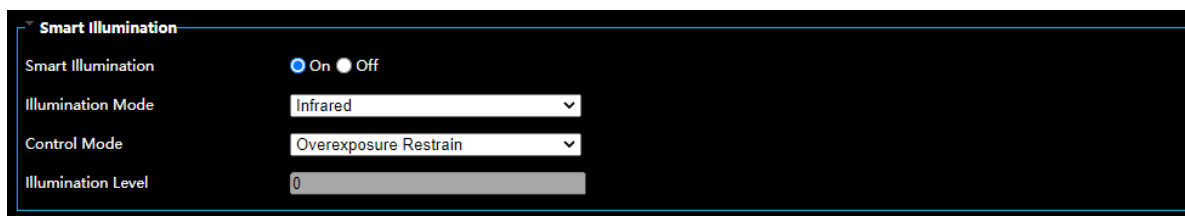1. Click **Setup > Image > Image** and then click **Exposure**.

2. Set the parameters as required. The following table describes some major parameters.

Parameter	Description
Exposure Mode	Select the correct exposure mode to achieve the desired exposure effect.
Shutter (s)	Shutter is used to control the light that comes into the lens. A fast shutter speed is ideal for scenes in quick motion. A slow shutter speed is ideal for scenes that change slowly. *Note:* You can set a shutter speed when Exposure Mode is set to Manual. If Slow Shutter is set to Off, the reciprocal of the shutter speed must be greater than the frame rate.
Gain (dB)	Control image signals so that the camera outputs standard video signals according to the light condition. *Note:* You can set this parameter only when Exposure Mode is set to Manual.
Slow Shutter	Improves image brightness in low light conditions.
Slowest Shutter	Set the slowest shutter speed that the camera can use during exposure. *Note:* You can set this parameter only when Slow Shutter is set to On.
Compensation	Adjust the compensation value as required to achieve the desired effects..
Metering Control	Set the way the camera measures the intensity of light. **Center-Weighted Average Metering**: Measure light mainly in the central part of images. **Evaluative Metering**: Measure light in the customized area of images.
Day/Night Mode	**Automatic**: The camera outputs the optimum images according to the light condition. In this mode, the camera can switch between night mode and day mode automatically. **Night**: The camera provides high-quality black and white images using the existing light **Day**: The camera provides high-quality color images using the existing light.
Day/Night Sensitivity	Light threshold for switching between day mode and night mode. A higher sensitivity means that the camera is more sensitive to the change of light and becomes more easily to switch between day mode and night mode. *Note:* You can set this parameter only when Day/Night Mode is set to Automatic.
Day/Night Switching(s)	Set the length of time before the camera switches between day mode and night mode after the conditions for switching are met. *Note:* You can set this parameter only when Day/Night Mode is set to Automatic.
WDR	Enable WDR to distinguish the bright and dark areas in the same image. *Note:* You can set this parameter only when Exposure Mode is set to Automatic, Indoor 50Hz, Indoor 60Hz and when Defog is disabled.

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WDR Level	After enabling the WDR function, you can improve the image by adjusting the WDR level.
	Note: Use level 7 or higher when there is a high contrast between the bright and dark areas of the scene. In the case of low contrast, it is recommended to disable WDR or use level 1-6.
Suppress WDR Stripes	When enabled, the camera can automatically adjust slow shutter frequency according to the frequency of light to minimize stripes that may appear in images.
WDR On Sensitivity	Adjust when WDR should turn on when WDR is set to Automatic.
WDR Off Sensitivity	Adjust when WDR should turn off when WDR is set to Automatic.

3. To restore the default settings, click **Default**.

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Smart Illumination

1. Click **Setup > Picture Settings > Image** and then click **Smart Illumination**.
2. Select the corresponding lighting type and then configure other parameters.

Parameter	Description
Lighting Type	• **Infrared**: The camera uses infrared light illumination. • **White Light**: The camera uses white light illumination. • **Dual Light**: The camera uses dual light illumination *Note:* When Control Mode is set to Manual, camera can set illumination level from 0~1000.
Control Mode	• **Global Mode**: The camera adjusts IR illumination and exposure to achieve balanced image effects. Some areas might be overexposed if you select this option. This option is recommended if monitored range and image brightness are your first priority. • **Overexposure Restrain**: The camera adjusts IR illumination and exposure to avoid regional overexposure. Some areas might be dark if you select this option. This option is recommended if clarity of the central part of the image and overexposure control are your first priority. • **Custom Level**: This mode allows you to manually control the intensity of IR illumination.
Illumination Level	Set the intensity level of the IR light. The greater the value, the higher the intensity. 0 means that the IR light is turned off. *Note:* You can set this parameter only when Control Mode is set to Manual.

3. Select the correct IR control mode and set the parameters.
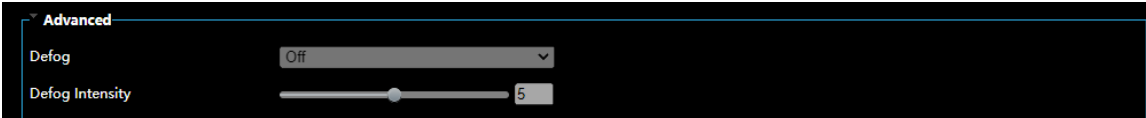4. To restore the default settings, click **Default**.

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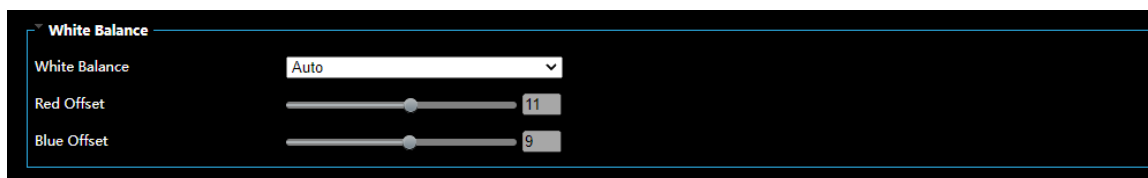
White Balance

White balance is the process of offsetting unnatural color cast in images under different color temperatures so as to output images that best suit human eyes.

1. Click **Setup > Picture Settings > Image** and then click **White Balance**.

2. Select a white balance mode as required. The following table describes some major parameters.

Parameter	Description
White Balance	Adjust the red or blue offset of the image: • **Auto/Auto2:** The camera adjusts the red and blue offset automatically according to the light condition (the color tends to be blue). If the images are still unnaturally red or blue in Auto mode, please try Auto2. • **Fine Tune:** Allow you to adjust the red and blue offset manually. • **Outdoor:** Suitable for outdoor environment with a relatively greater color temperature range. • **Locked:** Lock the current color temperature without change. • **Sodium Lamp:** The camera adjusts red and blue offset automatically according to the light condition (the color tends to be red).
Red Offset	Adjust the red offset manually. *Note:* You can set this parameter only when White Balance is set to Fine Tune.
Blue Offset	Adjust the blue offset manually. *Note:* You can set this parameter only when White Balance is set to Fine Tune.

3. To restore the default settings, click **Default**.

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Advanced

Use the defog function to adjust the clarity of images captured in fog or haze conditions.

1. Click Setup > Image > Image and then click Advanced.

   Note: You can set this parameter only when WDR is turned off.

   Only some camera models support optical defog. When **Defog** is set to **On**, defog intensity level 6-9 represent optical defog, and images change from color to black/white when defog intensity is set from level 5 to 6; if **Defog** is set to **Auto** and defog intensity level is somewhere between 6-9, images do not automatically change to black/white in light fog conditions; the camera automatically switches to optical defog only in heavy fog conditions.

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2. Enable the defog function and then select a level for the scene. Level 9 achieves the maximum defog effects, and level 1 achieves the minimum.

Defog On	Defog Off

3. To restore the default settings, click **Default**.

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ON-SCREEN DISPLAY

On Screen Display (OSD) is the text displayed on the screen with video images and may include time and other customized contents.

1. Click **Setup > Image > On-Screen Display**.

2. **Enable** the On-Screen Displays to appear on the camera image.
3. Choose the **Overlay OSD Content** from the dropdown menu.
4. Enter the **X-Axis** and **Y-Axis** to place the location of the OSD.
5. Customize the Display Style using the dropdowns for **Effect, Font Size, Min. Margin, Date Format** and **Time Format**.
6. Double-click the camera image to preview the On-Screen Display.

PRIVACY MASK

On certain occasions, you may need to set a mask area on the camera image to protect privacy, for example, the keyboard of an ATM machine. When PTZ changes its position or zooms, the Privacy Mask will be adjusted accordingly to protect the area all along.

1. Click **Setup > Image > Privacy Mask**.

2. Click **Add** to create a new a Privacy Mask and **Delete** to remove a Privacy Mask.

3. To mask a position, click the box to activate the mask and drag the borders of the box to set the intended position and range. Then drag the box to the intended position.
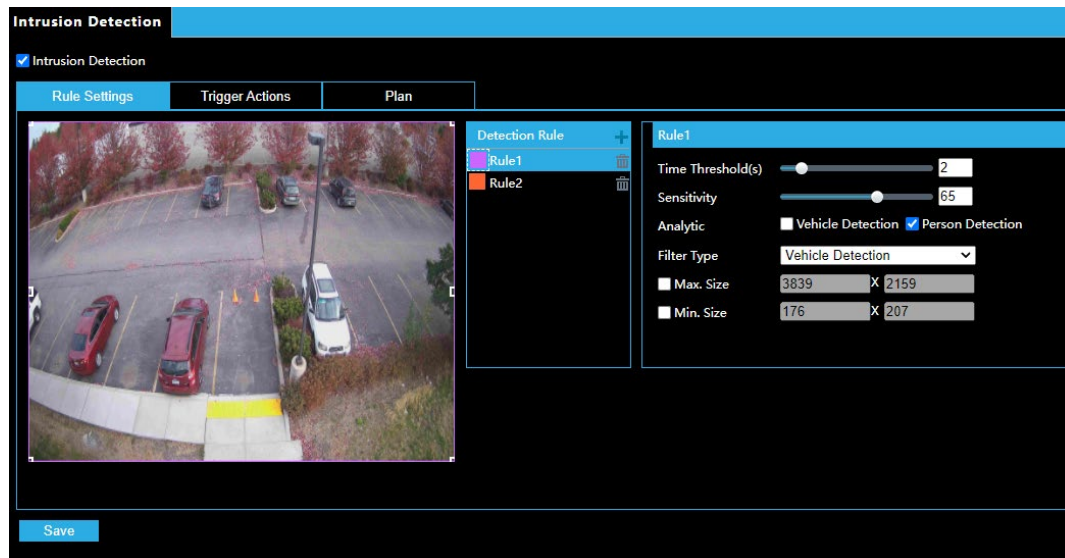
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ANALYTICS

INTRUSION DETECTION

Intrusion detection detects objects that enter a specified area in live video and triggers alarm when such an event is detected.

Rule Settings

1. Click **Setup > Analytics > Intrusion Detection**. Select the **Rule Settings** tab.

2. Check **Intrusion Detection** to enable.
3. In the **Detection Rule** area, click ➕ to add a new detection area. To delete a detection area, click 🗑 .
4. Drag the borders of the box to set the intended position and range.
5. Set **Time Threshold** and **Sensitivity** for the camera to decide whether to report an intrusion detection alarm.
   - **Time Threshold:** The minimum length of time that the intruder stays in the detection area before an alarm will be reported.
   - **Sensitivity:** Sensitivity of detection. A greater value means higher detection sensitivity.

   Note: Setting sensitivity too high will increase the likelihood of false alerts.

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6. Check either **Vehicle Detection** or **Person Detection**.
7. Choose the Vehicle Detection or Person Detection **Filter Type**.
8. Enable **Max. Size** or **Min. Size** to resize the filter detection box to a default size.
9. Click **Save**.

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Trigger Actions

1. Select the **Trigger Actions** tab.
2. Check the boxes to choose the actions that are triggered when a person or vehicle is detected.

Item	Description
Send Email	With Send E-mail selected, the camera will automatically send snapshots to the specified E-mail addresses when a person or vehicle is detected. *Note:* Make sure you have completed E-Mail Recipient configuration before using this function.
Upload Image (Original):	With Upload Image selected, the camera will automatically upload snapshots to the recorder when a person or vehicle is detected.
Record Video to SD Card	With Record Video to SD Card selected, the camera will automatically record video to the SD Card when a person or vehicle is detected. *Note:* Make sure you have completed Storage configuration before using this function.
Save Snapshot to SD Card	With Record Snapshot to SD Card selected, the camera will automatically save an image to the SD Card when a person or vehicle is detected. *Note:* Make sure you have completed Storage configuration before using this function.
Record Video to FTP Server	With Record Video to FTP Server selected, the camera will automatically upload video to the specified FTP server when a person or vehicle is detected. *Note:* Make sure you have completed FTP configuration before using this function.

3. Click **Save**.

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Plan

1. Select the **Plan** tab.

2. Click **Armed** or **Unarmed** and click the schedule to set when enabled Trigger Actions are effective.

3. Click **Edit**.

4. Set the start and end times during which Trigger Actions are effective. The time periods cannot overlap. The camera reports alarms during the specified period(s) only.

5. Select from Monday to Sunday and set up to four periods for each day or check the days and **Copy** to set the same schedule for multiple days.

6. Click **OK**.

7. Click **Save**.

Note: An intrusion detection schedule plan is used to define when the Trigger Actions under the Storage column are active. You will need to configure Macros to receive notifications for person and vehicle detection events.

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EVENT SETTINGS

ALARMS

You can schedule alarm reporting and set actions that can be triggered by other devices so that alarms and the triggered actions can be handled in time.

Alarm reporting can be scheduled for a motion detection alarm.

Rule Settings

Motion detection detects the object motion in a specified rectangular area during a period. You need to set a detection area, sensitivity of detection, object size, and history for the camera to decide whether to report a motion detection alarm when it detects motion.
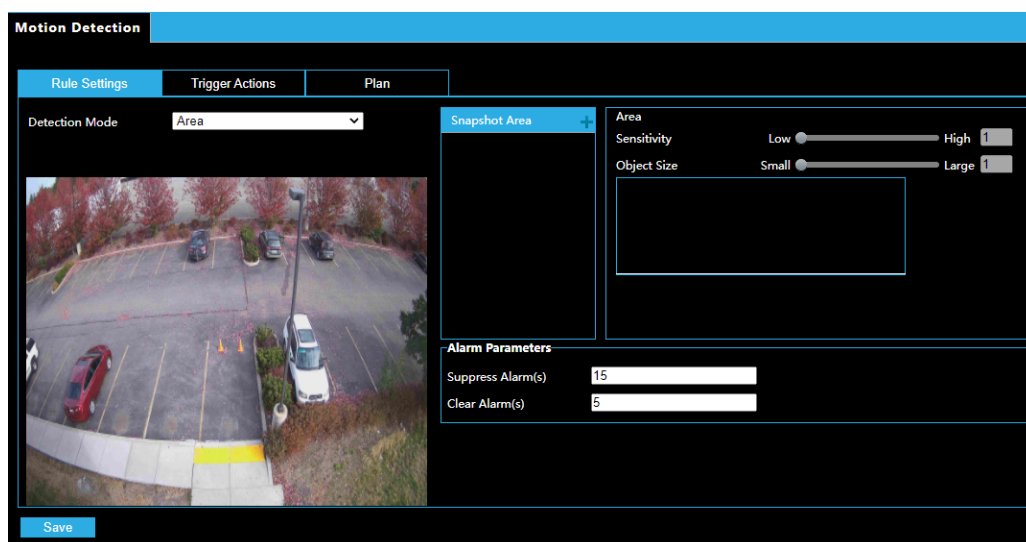
1. Click **Setup > Event Settings > Alarms**. Select the **Rule Settings** tab.

2. In the **Detection Mode: Area** image, click ✚ to add a new detection area. To delete a detection area, click 🗑 .

3. Click and drag the mouse to set a detection area.

4. Set the detection **Sensitivity** and **Object Size** for the camera to decide whether to report a motion detection alarm.

   - Moving the slider to the right increases detection sensitivity. When the extent of motion within the detection area exceeds the set object size, the camera reports an alarm.

   - **Object Size** specifies the minimum ratio of the object's size to the size of the total detection area before an alarm will be reported. That is to say, to detect motion of tiny objects, you need to draw a small box (detection area) in the actual motion area accordingly.

   - **Motion Detection** results are shown in real time. Red lines represent the raised motion detection alarms. The longer a line, the greater the extent of motion. The denser the lines, the greater the frequency of motion.

5. Set the alarm parameters for duration of alarms.

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Trigger Actions

1. Select the **Trigger Actions** tab.
2. Check the boxes to choose the actions that are triggered by a motion detection alarm.

Item	Description
Upload to FTP	With Upload to FTP selected, the camera will automatically upload snapshots to the specified FTP server when an alarm is triggered. *Note:* Make sure you have completed FTP configuration before using this function.
Send E-mail	With Send E-mail selected, the camera will automatically send snapshots to the specified E-mail address when an alarm is triggered. *Note:* Make sure you have completed E-Mail configuration before using this function.
Record Video to SD Card	With Record Video to SD Card selected, the camera will automatically record video to the SD Card when an alarm is triggered. *Note:* Make sure you have completed Storage configuration before using this function.
Save Snapshot to SD Card	With Record Snapshot to SD Card selected, the camera will automatically save an image to the SD Card when an alarm is triggered. *Note:* Make sure you have completed Storage configuration before using this function.
Record Video to FTP Server	With Record Video to FTP Server selected, the camera will automatically upload video to the specified FTP server when an alarm is triggered. *Note:* Make sure you have completed FTP configuration before using this function.

3. Click **Save**.

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Plan

1. Select the **Plan** tab.

2. Click **Armed** or **Unarmed** and click the schedule to set when an enabled Trigger Action is effective.

3. Click **Edit**.

4. Set the start and end times during which an enabled Trigger Event is effective. The time periods cannot overlap. The camera reports alarms during the specified period(s) only.

5. Select from Monday to Sunday and set up to four periods for each day or check the days and **Copy** to set the same schedule for multiple days.

6. Click **OK**.

7. Click **Save**.

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STORAGE SETTINGS

STORAGE

Edge storage is used to save video data and snapshots to the memory card directly. Edge storage is recommended when the camera is running in stand-alone mode.

The camera records live video repeatedly if manual storage is enabled.

1. Click **Setup > Storage Settings > Storage**.

2. To format the memory card, disable the storage function for the card first. Then click **Format** and then click **OK** to confirm the operation. The system will restart when the format is completed.

3. **Allocate Capacity** (in GB) for Video storage and Common Snapshot storage.

4. Select **Manual Storage**, **Planned Storage**, or **Off** for Video Storage Info.

   - If Planned Storage is selected, enter times on the schedule when Video is recorded to the Memory Card.

5. Select the **Stream** that video is saved from.

6. For **When Storage Full**, select to **Overwrite** to continue recording over old video or **Stop** to stop recording video when Memory Card is full.

7. Set time for **Post-Record(s)** to continue recording after the end of an alarm for alarm-triggered recordings.
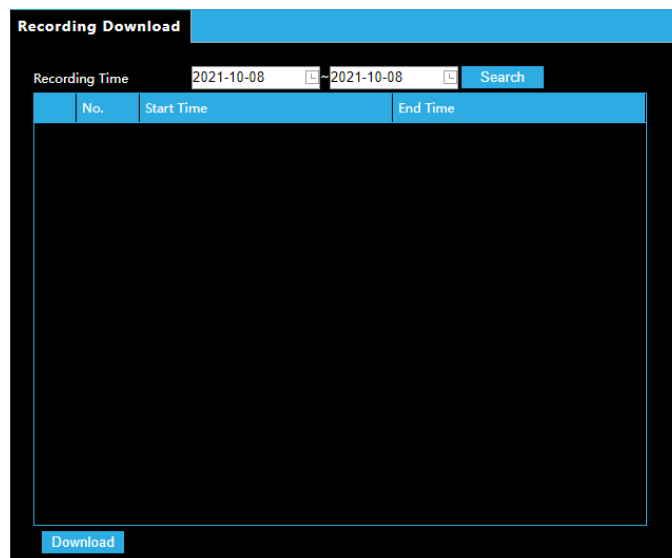
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SNAPSHOT DOWNLOAD

1. Select **Setup > Storage Settings > Snapshot Download**.
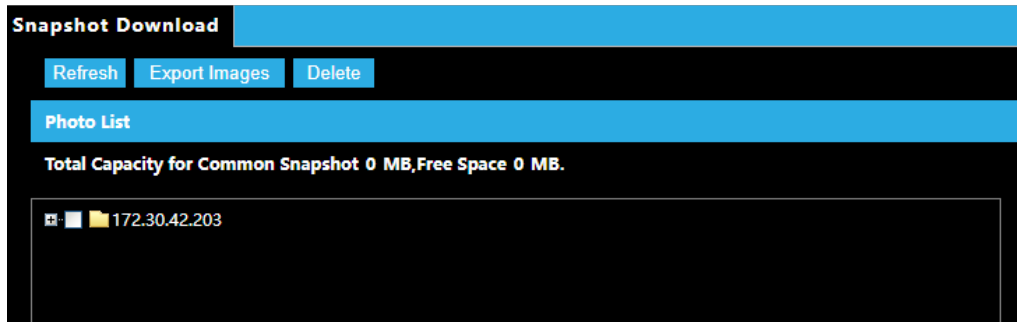
2. Open the file directory.
3. Click **Refresh** to display the most recently saved files.
4. Click **Export Images** to download.
5. Click **Delete** to delete files.

RECORDING DOWNLOAD

1. Select **Setup > Storage Settings > Recording Download**.

2. Click **Search**.
3. Search for video within a specified period. The results will be shown in a list.
4. Select your video and click **Download**.

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SECURITY SETTINGS

USER

There are two types of users in the system:

- **Administrator:** referred to as "admin" in this manual. The default name of the administrator is admin, which cannot be modified. Admin has full permission and can manage all users and devices. Only one admin user is allowed in the system.
- **Common User:** referred to as "user" in this manual. User only has permission to play live and recorded video. Up to 32 common users are allowed in the system.

You can add a user on the user management interface (under **Setup** > **Security Settings** > **User**).

After the user is added successfully, you can change the password by entering the new password or delete the user by clearing the username.

Note: Only admin can change passwords. Changing the username or password for a user when the user is still logged in will force the user to log out. The user must use the new username or password to log in.

- Only admin can add and delete users. Deleting a user when the user is still logged in will force the user to log out. A deleted user cannot log in.
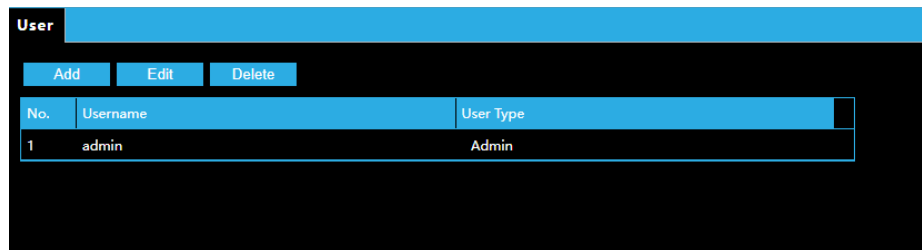
- Click **Add** to add a new user.
- Select a Username and click **Edit** to change a password.
- Select a Username and click **Delete** to remove a user.

NETWORK SECURITY

HTTPS

HTTPS allows secure connections between the IP Camera and web browser that protects camera settings or Username/Password info from snooping.

To use HTTPS, you are required to install a self-signed certificate or a Authority (CA) -signed certificate. The HTTPS certificate can be obtained by either creating and sending a certificate request to a CA or creating a self-signed HTTPS certificate

1. Click **Setup > Network > Port**.
2. Enter the port number in the **HTTPS Port** text box and then click **Save**.
3. Click **Setup > Security Settings > Network Security**.
4. Under **HTTPS**, select **On**. Uploading a custom SSL certificate is also supported to ensure security.
5. Click **Save**.

Next time you log in, enter the address in *https://IP:HTTPS port number* format, for example, https://192.168.0.250:443, to enter secure channel mode. If HTTPS uses a default port number, enter the address in *https://IP* directly.

Authentication

RTSP (Real Time Streaming Protocol) is an application layer protocol. To transmit and control the audio and video, set RTSP authentication on the Web interface.

1. Click **Setup** > **Security Settings** > **Network Security**.
2. Select an authentication mode and then click **Save**.
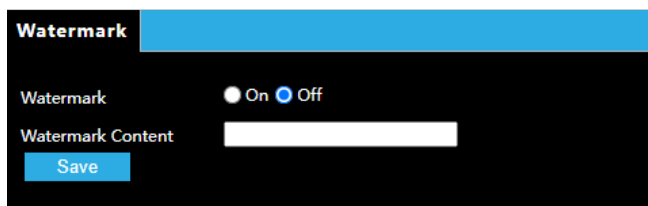
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IP Address Filtering

Use IP address filtering to allow or forbid access from specified IP address(es).

1. Click **Setup** > **Security Settings** > **Network Security**.
2. Select **On** to enable IP address filtering.
3. Select a filtering mode, and then add IP address(es).
4. Click **Save**.

VIDEO WATERMARK

You can set the video watermark for the camera to encrypt the video and protect it from being deleted or modified.

1. Click **Setup > Security Settings > Network Security > Watermark**.

2. Select **Enable** and set the watermark content.
3. Click **Save**.

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MAINTENANCE

TIME

You can use the following methods to adjust the system time of your device.

Manually Setting or Synchronizing the System Time

1. Click **Setup > Maintenance > Time**.

2. Select a synchronization mode.

3. Set the correct time zone and system time. You may also click **Sync with Computer Time** to synchronize the time settings of your camera with that of your PC.

4. Click **Save**.

Synchronizing with the NTP Server

1. Click **Setup > Maintenance > Time.**

2. Select **Sync with NTP Server**, and then enter the IP address of the NTP server and the camera's sync interval with the NTP server.

3. Click **Save**. The camera will periodically synchronize time with the NTP server.

Setting the DST

1. Click **Setup > Maintenance > Time**.

2. Select **On** under **DST**, set the start time, end time, and DST bias.

3. Click **Save**.

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MAINTENANCE

Software Upgrade

New versions of camera firmware is available periodically and can be found at
http://www.avertx.com/product-downloads/.

Note: Make sure the software upgrade file is available before starting the software upgrade.

1. Click **Setup > Maintenance > Maintenance**.

2. Under **Local Upgrade**, click **Browse** and select the correct upgrade file.

3. Click **Upgrade** and then confirm to start. The camera will restart automatically after the upgrade is completed.

Note: You must use the correct upgrade file for you camera. Otherwise, unexpected results may occur.

- The upgrade file is a ZIP file and must include all the necessary files.

- The boot program loads the operating system and then the system starts running. The upgrade boot program function is disabled by default, and only the camera will be upgraded to the latest version. If enabled, both the camera and the boot program are upgraded, and the operating system of the following new versions can be booted properly, and the camera can be upgraded conveniently.

- The device will restart after the upgrade is completed.

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Config Management

Export the current configurations of the camera and save them to the PC or an external storage medium. You can also quickly restore configurations by importing backup configurations stored on the PC or an external storage medium back to the camera.

CAUTION! After you perform the Default operation, all settings are restored to factory defaults, except the following: login password of the system administrator, network settings, and system time.

Make sure you import the correct configuration file for your camera. Otherwise, unexpected results may occur. The camera will restart when the configuration file is imported successfully.

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1. Click **Setup > Maintenance > Maintenance**.
2. To import configurations that you have backed up, click **Browse** next to the **Import** button and select the configurations you want to import, and then click **Import**. The result will be displayed.
3. To export configurations, click **Browse** next to the **Export** button, select the destination folder, and then click **Export**.
4. To restore default configurations, click **Default** and then confirm the operation. The device will restart and restore the default configurations.

Diagnosis Info

Diagnosis information includes logs and system configurations. You can export diagnosis information to your PC.

1. Click **Setup > Maintenance > Maintenance**.
2. In the **Export Diagnosis Info** area, click **Export**.

Device Restart

1. Click **Setup > Maintenance > Maintenance**.
2. Under **Device Restart**, click **Restart**. The device will restart after you confirm the operation.

CAUTION! Perform this operation with caution because restarting the system interrupts the ongoing service.

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LOG

The camera's log displays a searchable list of changes made to the system.

1. Set a **Time** range.
2. Narrow search by selecting a **Main Type**.
3. Click **Query**.
4. **Export** to download the result.

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Are any parts of this manual incomplete or unclear? Please let us know! Contact us at support@avertx.com with your comments.

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