9x0 Series Fixed IP Camera

Network Camera

User Manual

TKH GROUP · TKH SECURITY

SIQURA

Note: To ensure proper operation, please read this manual thoroughly before using the product and retain the information for future reference.

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Brand names

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Siqura accepts no liability for claims from third parties arising from improper use other than that stated in this manual.

Although considerable care has been taken to ensure a correct and suitably comprehensive description of all relevant product components, this manual may nonetheless contain errors and inaccuracies. We invite you to offer your suggestions and comments by email via t.writing@siqura.com. Your feedback will help us to further improve our documentation.

How to contact us

If you have any comments or queries concerning any aspect related to the product, do not hesitate to contact:

TKH Security B.V.	TKH Security LLC
Meridiaan 32	5340 Spectrum Drive, Suite C
2801 DA Gouda	Frederick, Maryland 21703
The Netherlands	United States of America

General	: +31 182 592 333	General	: +1 301 444 2200
Fax	: +31 182 592 123		
E-mail	: support@tkhsecurity.com	Email	: sales.us@tkhsecurity.com
WWW	: https://tkhsecurity.com		

Contents

Contents

1   About this manual

What's in this manual

This is version 1 of the user assistance provided for 910 Series, 920 Series, 950 series and 980 Series IP Camera, which includes BC910, BC920, BC950, BC980, FD910, FD920, FD950, FD980, BL950 and BL980. The manual gives you all the information you need to operate and configure the camera.

Where to find more information

Find additional manuals and the latest firmware for this product at tkhsecurity.com. We advise you to make sure that you have the latest version of this manual.

Who this manual is for

These instructions are for all users and administrators who will operate and/or configure the 910 Series, 920 Series, 950 series and 980 Series IP Camera, which includes BC910, BC920, BC950, BC980, FD910, FD920, FD950, FD980, BL950 and BL980.

What you need to know

You will have a better understanding of how the camera works if you are familiar with:

▸ Camera technologies
▸ CCTV systems and components
▸ Ethernet network technologies and Internet Protocol (IP)
▸ Windows environments
▸ Video, audio, data, and contact closure transmissions
▸ Video compression methods

Before you continue

Before you continue, read and obey all instructions and notes in this manual. Keep this manual with the original bill of sale for future reference and, if necessary, warranty service. When you unpack your product, make sure there are no missing or damaged items. If any item is missing, or if you find damage, do not install or operate this product. Ask your supplier for assistance.

Why specifications may change

We are committed to delivering high-quality products and services. The information given in this manual was current when published. As we continuously seek to improve our products and user experience, all features and specifications are subject to change without notice.

We like to hear from you!

Customer satisfaction is our first priority. We welcome and value your opinion about our products and services. Should you detect errors or inaccuracies in this manual, we would be grateful if you would inform us. Your feedback helps us to further improve our documentation.

2 Product overview

The 910, 920 and 980 series IP security camera range are fixed-site camera , providing easy-installation, easy configuration and high-quality images. With the latest H.265 encoding technology, new camera range delivers less data streaming but the same high-quality images. The camera has the capability to stream simultaneous quad-streaming in H.265, H.264 and MJPEG. Multiple combinations of encoding resolution gives high-flexibility to configure individually from encoding, resolution to frame rate. To compatible with various video management systems, the Open IP standards – ONVIF Profile S, Profile G and Profile T is fully integrated with cameras.

3 Web interface

The built-in web interface makes it easy to operate and configure the product over the network. This chapter describes the lay-out and features of the web interface.

The default web login username is Admin and the password is 1234.

In This Chapter

Use the horizontal menu at the top to navigate the web interface. Clicking a menu entry (i.e. a tab) opens a page:

- Home
- System
- Streaming
- Camera
- PTZ
- Logout

Availability of a tab depends on the model at hand. Webpages have a single-page layout or content is organized across a number of categories on the left. A category contains related commands and settings.

Home

On the Home page, you can monitor the live video of the targeted area in the live view pane.

System

The administrator can set the host name, system time, root password, network related settings, etc. in the System page.

Streaming

The administrator can configure video format, video compression, video OCX protocol, video frame rate and audio compression parameters in the Streaming page.

Camera

The Camera page is only available for the administrator and users who have been given the right of camera control. The Camera page gives access to camera parameters such as Exposure, White Balance, Sharpness, IR Function, Digital Zoom and WDR.

PTZ

The PTZ page is only available for the administrator and users who have been given the right of camera control. The page gives access to parameters such as Preset Point(s), Cruise Line(s), Auto Pan Path(s) and Sequence Line(s).

Logout

Select the Logout tab to log out and log in again with another username and password.

3.1   Home Page

Click the Home tab to open the Home page. The Home page includes a number of drop-down menus and function buttons. Sections 3.1.1 and 3.1.2 provide detailed information on these functions and buttons.
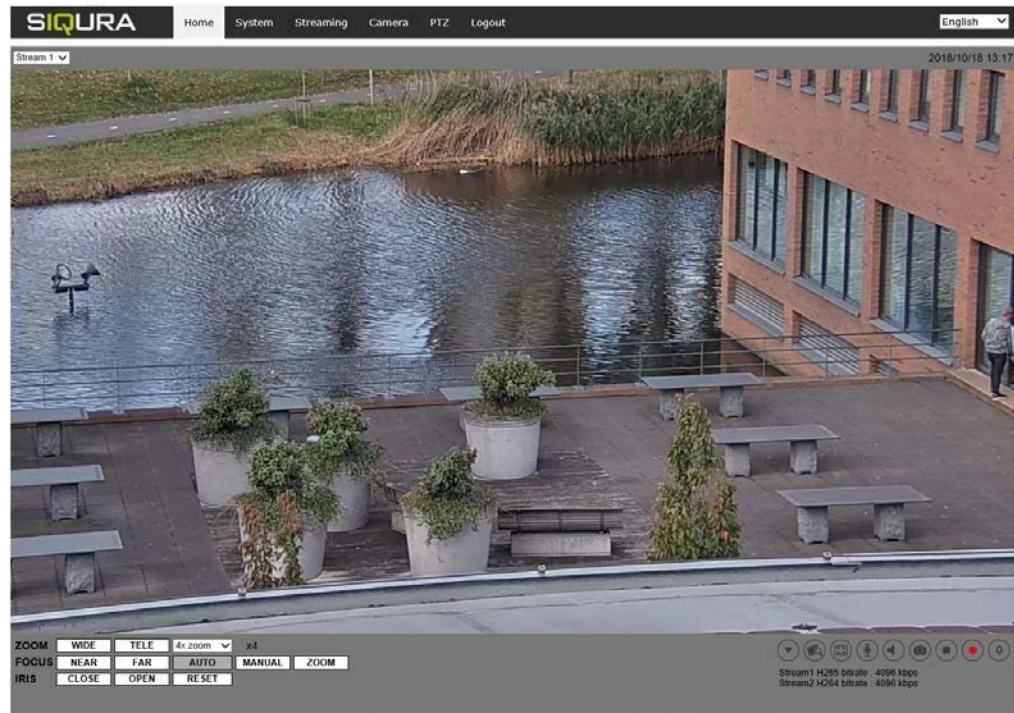
Home page

3.1.1   Function items on home page

Multiple Languages Support

Multiple languages are supported, including German, English, Spanish, French, Italian, Japanese, Portuguese, Russian, Simplified Chinese and Traditional Chinese for the viewer window interface. Click on the drop-down menu in the top-right corner of the Home page to select a language.

Display Stream Selection

Depending on the streaming setting, you can choose a stream to display from the drop-down list in the top-left corner of the Home page.

Camera Info

Double-click the live view in the live view pane and the camera info window will pop up. The pop-up window will provide basic information on the camera, such as its IP address, network status and video format.

Zoom Adjustment

Click **WIDE** or **TELE** to control zooming in and out. Or select any zoom level from the zoom adjustment drop-down menu.

Focus Adjustment
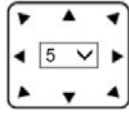
▶   Near / Far
    Click **MANUAL** first. Then, adjust the focus manually with the **NEAR** and **FAR** buttons.
▶   Auto Focus (Continuous AF)
    Click **AUTO** to enable the Auto Focus (AF) mode. In this mode, the camera will automatically and continuously keep in focus, regardless of any zoom or view changes.

▶ Manual
Click **MANUAL** to manually adjust the focus with the **NEAR** and **FAR** buttons.
▶ Zoom (Zoom Triggered AF)
Click **ZOOM** to activate the Auto Focus mode every time zoom is adjusted.

Iris Adjustment

Click **CLOSE** or **OPEN** to control the brightness of the image. Or click **RESET** to go back to the default value.

3.1.2 Function buttons on Home page

Button	Meaning
	Control panel (Open/Close)
PRESET 1 ˅ CRUISE 1 ˅ SEQUENCE 1 ˅	Control panel: Pan & tilt direction and speed control (left) Preset/Cruise/Sequence buttons (right)
	Video quality
	Full screen
	Talk (On/Off)
	Listen (On/Off)
	Snapshot
	Live view (Pause/Restart)
	Record (On/Off)
	Manual trigger (On/Off)
	Pointer

Function buttons

Control Panel

Click the **Control Panel** button to open (arrow down) and close (arrow up) the control panel.

▶ Pan & Tilt Direction and Speed Control
The Pan & Tilt Direction Control arrows allow you to pan and tilt the camera to the desired direction. You can set a number between 1 and 10 to set the pan/tilt speed of the camera from the drop-down list on the control panel. 1 is the slowest and 10 is the fastest speed.
▶ Run Preset / Cruise / Sequence
Go to the PTZ page (see section 3.5) to set the Preset, Cruise and Sequence parameters. Then select a Preset, Cruise and Sequence line from the drop-down list and the camera will start running.

Video Quality

Click the **Video Quality** button to show or hide the bitrate and compression of each stream.

Full Screen

Click the **Full Screen** button to set the image display size to full screen. Alternatively, right-click the live video pane and select **Fullscreen** to go full screen.

To exit full screen mode:

▸   click **Esc** on the keyboard, or
▸   double-click the live video pane, or
▸   right-click the live video pane and select **Normal view**.

Talk

The Talk function enables the local site to talk to the remote site. Click the button to switch the function on and off. Make sure to select the suitable transmission mode (Audio) on the Streaming page to enable this function.

Note: This function is only available for users who have been given the right to use it by the administrator. Refer to (section 3.2.2.1) for further details.

Listen

Click the **Listen** button to mute or activate audio. Make sure to select the suitable transmission mode (Audio) on the Streaming page to enable this function.

Note: This function is only available for users who have been given the right to use it by the administrator. See section 3.2.2.1 for more details.

Snapshot

Click the **Snapshot** button to automatically save JPEG snapshots to a designated place. The default storage location for snapshots is: C:\. For more details on changing the default storage location, refer to section 3.2.12.

Note: With operating system Windows 7 or higher, you must run Internet Explorer as an administrator to implement the snapshot function. To do so, right-click the Internet Explorer browser icon and select **Run As Administrator** to launch Internet Explorer.

Live View

Click the **Live View Pause** button to disable video streaming. The live video pane will turn black. Click the **Live View Restart** button to show the live video again.

Record

Click the **Record** button to record the live view and store the recording to a specific location on the local hard drive. The default storage location for the live view recording is: C:\. For more details on changing the default storage location, refer to section 3.2.12.

Note: With operating system Windows 7 or higher, you must run Internet Explorer as an administrator to implement the snapshot function. To do so, right-click the Internet Explorer browser icon and select **Run As Administrator** to launch Internet Explorer.

Manual Trigger

Click the **Manual Trigger** button to turn the manual trigger on and off. See section 3.2.8.5 for more details.

Pan/Tilt Control

You can implement pan/tilt control by moving the cursor to the live video pane, then left-click and drag the pan/tilt control pointer in any direction.

Optical Zoom Control

In Full Screen display mode, you can zoom in and out by scrolling the mouse wheel up and down.

Set Center Mode

Right-click the live video pane and select **Set Center Mode**. Now you can position the area of interest in the center of the live video pane by clicking on the point of interest. To leave the Set Center Mode, right-click the live video pane again and select **Set Emulated Joystick Mode**. In this mode you can control the camera direction by left-clicking and dragging the pointer in the live video pane.

3.2   System

Select the System tab to open the System page (see below).

System page

Note: The System page is only available for the administrator.

3.2.1   System

Select the System category on the left to set the System parameters.

Host Name

The Host name is used for camera identification. If the alarm function (see section 3.2.8) is enabled and set to send alarm messages by Mail/FTP, the host name entered here will be displayed in the alarm message.

Time Zone

Select the appropriate time zone (i.e. the time zone that corresponds with the location of the camera) from the drop-down menu.

Enable Daylight Saving Time

To enable Daylight Saving Time (DST), activate the check box and then specify the time offset and the DST duration. The format for time offset is [hh:mm:ss]. For instance, if the time offset is one hour, enter "01:00:00" in the field.

Time format

Choose a time format (yyyy/mm/dd or dd/mm/yyyy) from the drop-down menu. The date and time format displayed in the top right corner of the live video pane will be changed accordingly.

Sync with Computer Time

Select this option to synchronize the video date and time with the date and time of the PC.

Note: You must click the **Save** button to confirm the setting. Otherwise, the time will not be synchronized.

Manual

The administrator can set the video date and time manually. The format entered should match the format shown next to the entry fields.

Sync with NTP Server

Select this option to synchronize the camera clock with an NTP server. specify the server that you wish to synchronize with in the entry field. Then select an update interval from the drop-down menu. For more information about NTP, go to www.ntp.org.

Note: Synchronizing is done every time the camera boots up.

Click the **Save** button to confirm the setting.

3.2.2 Security

The Security category on the left gives access to the security parameters. The Security button has a drop-down menu with the following items:

▸ User
▸ HTTPS
▸ IP Filter
▸ IEEE 802.1X

3.2.2.1 User

Admin Password

The administrator can reset passwords. Enter the new password in the **Admin password** field and select **Confirm password.** The maximum length of a password is 14 characters. The input characters and/or numbers will be displayed as dots for security reasons. Click the **Save** button to confirm the changes. After the changes have been confirmed, the web browser will ask the administrator to re-login with the new password.

Note: The following characters are valid: A-Z, a-z, 0-9, !#$%&'-.@^_~.

Add User

The administrator can add new users:

1 Enter the new user's name in the **User name** field. A username can consist of up to 16 characters.
2 Enter the password in the **User password** field. A password can consist of up to 14 characters.
3 Check the following boxes to assign the right to:
   ▪ I/O access: This allows the user to view the live video when accessing the camera.
   ▪ Camera control: This allows the user to set parameters on the Camera and PTZ page.
   ▪ Talk/Listen: This allows the user at the local site (PC site) to communicate with, for instance, the administrator at the remote site.
4 Click the **Add** button to add the new user.
   The name of the new user will be displayed in the **User name** drop-down list under Manage User. Up to twenty user accounts can be added.

Manage user

▶ Delete user

Pull down the **User name** drop-down list and select the user that you wish to delete. Click the **Delete** button to remove the selected name.

▶ Edit user

Pull down the **User name** drop-down list and select the user you wish to edit. Click the **Edit** button and a pop-up window will appear. In this window you can enter a new user password and reset the user rights. Click the **Save** button to confirm the changes. Then click the **Close** button to complete the editing.

HTTP Authentication Setting

This parameter allows secured connections between the IP camera and the web browser by enforcing access controls to web resources. When users approach the web browser, they will be asked to provide a username and a password, which protects against snooping of camera settings or live streaming information. The following security modes are available:

▶ Basic

This mode can only provide basic protection for the connection security. There will still be a risk of password interception.

▶ Digest

Digest mode is a safer option for protection. The password is sent in an encrypted format to prevent it from being stolen.

Note: You must click the **Save** button to apply the setting.

Streaming Authentication Setting

This setting provides security against unauthorized users from getting streaming via the Real Time Streaming Protocol (RTSP). If the setting is enabled, users will be requested to enter a user name and password before viewing the live streams. The following security modes are available:

▶ Disable

If the disable mode is selected, there will be no security provided against unauthorized access. Users will not be asked to enter a user name and password for authentication.

▶ Basic

This mode can only provide basic protection for the live streams. There will still be the risk of password interception.

▶ Digest

Digest mode is a safer option for protection. The password is sent in an encrypted format to prevent it from being stolen.

Note: You must click the **Save** button to apply the setting.

3.2.2.2 HTTPS

HTTPS allows secure connections between the camera and the web browser using Secure Socket Layer (SSL) or Transport Layer Security (TLS), which protect camera settings or username and password information from snooping.

To use HTTPS on the camera, anHTTPS certificate must be installed. The HTTPS certificate can be obtained by either creating and sending a certificate request to a Certificate Authority (CA) or by creating a self-signed HTTPS certificate, as described below.

Create Self-signed Certificate

Before a CA-issued certificate is obtained, you can create and install a self-signed certificate first.

Click the **Create** button under *Create self-signed certificate* and provide the requested information to install a self-signed certificate for the camera. Refer to *Provide the Certificate Info*rmation below for more details.

Note: The self-signed certificate does not provide the same high level of security as a CA-issued certificate.

Install Signed Certificate

Click the **Create Certificate Request** button to create and submit a certificate request in order to obtain a signed certificate from a CA.

Provide the requested information in the create dialog. Refer to *Provide the Certificate Information* below for more details.

When the request is complete, the subject of the Created Request will be shown in the field. Click the **Properties** button below the Subject field, copy the PEM-formatted request and send it to the selected CA.

When the signed certificate is returned, install it by uploading the signed certificate.

Provide the Certificate Information

To create a Self-signed HTTPS Certificate or a Certificate Request to a CA, enter the information as requested.

	Create Self Signed Certificate	Create Certificate Request
Country	V	V
State or province	V	V
Locality	V	V
Organization	V	V
Organizational unit	V	V
Common name	V	V
Valid days	V	V

- ▸ Country
  Enter a two-letter code to indicate the country the certificate will be used in. For instance, enter **US** to indicate the United States.
- ▸ State or province
  Enter the local administrative region.
- ▸ Locality
  Enter other geographical information.
- ▸ Organization
  Enter the name of the organization to which the entity identified in **Common Name** belongs.
- ▸ Organization Unit
  Enter the name of the organizational unit to which the entity identified in **Common Name** belongs.
- ▸ Common Name
  Indicate the name of the person or other entity that the certificate identifies (often used to identify the website).
- ▸ Valid days
  Enter the period in days (1 to 9999) to indicate the valid period of certificate.

Click the **OK** button to save the Certificate Information after completing the setting.

3.2.2.3 Ip Filter

With IP Filter, you can allow or deny specific IP addresses to access the camera.

- ▸ Enable IP Filter
  Check the box to enable the IP Filter function. When enabled, the listed IP addresses (IPv4) in the **Filtered IP Addresse**s list box will be allowed/denied access to the camera.
  Select **Allow** or **Deny** from the drop-down list and click the **Apply** button to define the IP filter behavior.
- ▸ Add IP Address
  Enter an IP address in the blank space below the Filtered IP Address list and click the **Add** button. The newly-added address will be shown in the list. Up to 256 IP address entries can be specified.
  In addition, to filter a group of IP addresses, enter an address at the blank space, followed by a slash and a number ranging from 1 to 31, e.g. 192.168.2.81/30. The number after the slash denotes how many IP addresses will be filtered. For details, see the following example.

- Example: Filtering a group of consecutive IP addresses

  The steps below show what will be filtered when 192.168.2.81/30 is entered.

  Step 1: Convert 192.168.2.81 to binary numbers. The binary numbers are 11000000.10101000.00000010.01010001. Refer to Appendix B: IP Addresses from Decimal to Binary for converting the IP addresses to binary numbers. The number 30 after the slash refers to the first 30 digits of the binary numbers.

  Step 2: Convert a few IP addresses before and after 192.168.2.81 to binary numbers. Then compare their first 30 digits with the binary numbers of 192.168.2.81.

  1. Convert 192.168.2.80 to binary numbers. The binary numbers are 11000000.10101000.00000010.01010000. The first 30 digits are the same as the binary numbers of 192.168.2.81, thus 192.168.2.80 will be filtered.

  2. Convert 192.168.2.79 to binary numbers. The binary numbers are 11000000.10101000.00000010.01001111. The first 30 digits are different from the binary numbers of 192.168.2.81, thus 192.168.2.79 will not be filtered. This also means that the IP addresses before 192.168.2.79 will not be filtered. Therefore, you can stop converting the IP addresses before 192.168.2.79 to binary numbers.

  3. Repeat the procedure of (1.) with the IP addresses after 192.168.2.81. Stop when the situation in (2.) occurs. The 30th digit of the binary numbers of IP address 192.168.2.84 is different and will not be filtered.

As a result, the IP addresses 192.168.2.80 to 192.168.2.83 will be filtered when entering 192.168.2.81/30. The following table clearly shows the 30th digit of the binary numbers of IP addresses 192.168.79 and 192.168.84 are different from the others. Therefore, these two IP addresses will not be filtered.

IP addresses	Binary numbers
192.168.2.79	11000000.10101000.00000010.01001111
192.168.2.80	11000000.10101000.00000010.01010000
192.168.2.81	11000000.10101000.00000010.01010001
192.168.2.82	11000000.10101000.00000010.01010010
192.168.2.83	11000000.10101000.00000010.01010011
192.168.2.84	11000000.10101000.00000010.01010100

- Delete IP Address

  To remove an IP address from the **Filtered IP Address** list, select the address and click the **Delete** button.

3.2.2.4 IEEE 802.1X

The camera is allowed to access a network protected by 802.1X/EAPOL (Extensible Authentication Protocol over LAN).

Contact the network administrator to request for certificates, user IDs and passwords.

CA Certificate

The CA certificate is created by the Certification Authority for the purpose of validating itself. Upload the certificate to check the server's identity.

Client Certificate/ Private Key

Upload the Client Certificate and Private Key to authenticate the camera itself.

Settings

- Identity

  Enter the user identity associated with the certificate. Up to 16 characters can be used.

- Private Key Password

  Enter the password (maximum 16 characters) for user identity.

Enable IEEE 802.1X

Check the box to enable IEEE 802.1X.

Click the **Save** button to save the IEEE 802.1X/EAP-TLS setting.

3.2.3 Network

The Network category on the left gives access to the network parameters. The Network button has a drop-down menu with the following items:

▸ Basic
▸ QoS
▸ SNMP
▸ UpnP
▸ Diamond Protocol

3.2.3.1 Basic

The Basic page serves to configure a new IP address for the camera, to configure other network-related parameters and to activate an IPv6 address (if the network supports it).

General

The General menu allows you to configure a new IP address for the camera. To set up an IP address, find out the network type first by contacting the network provider. Then refer to the network type and follow the instructions to set up the IP address.

Note: If the network type is Point-to-Point Protocol over Ethernet (PPPoE), make sure to obtain the PPPoE username and password from the network provider.

▸ Get IP address automatically (DHCP):
Select this item and click the **Save** button. A note will appear indicating that the camera system will restart. Click the **OK** button and the camera system will be restarted. A new IP address will be assigned to the camera. Close the web browser and search the camera using the Siqura Device Manager tool, which can be downloaded at https://siqura.com. Refer to the steps below to connect the camera with the SDM2 software.

Note: Before searching the camera with the SDM2 tool, record the camera's MAC address, which can be found on the label or on the package container of the camera, for later use and identification in the future.

1 Run the SDM2 program.
2 After the SDM2 window has appeared, click the **Edit** and **Manual Scan for Devices** menu option to manually search for the camera based on the IP address, if known. All the found IP devices will be listed on the page automatically if the **Device auto detection** is enabled.
3 Find the camera by looking for its IP address.
4 Double-click or right-click and select **Open device web page** to access the camera through the web browser (IE Browser or Chrome recommended).
5 A prompt window requesting for a username and password will appear. Enter the username and the password to log in on the camera (default login username: Admin, password: 1234).

▸ Use fixed IP address:
Select this item and enter the new IP address, e.g. 192.168.7.123. Note that the entered IP address should be in the same LAN as the PC's IP address. Then go to the Default gateway (explained later) blank and change the setting, e.g. 192.168.7.254. Click the **Save** button to confirm the new setting. A note will be displayed indicating that the system will be restarted. Click the **OK** button and the system will restart. Wait for 15 seconds. The camera's IP address in the URL bar will be changed, and users have to log in again.
If a static IP address is used to connect the camera, you can access the camera by entering the IP address in the URL bar and pressing **Enter** on the keyboard. Alternatively, you can access the camera using the Siqura Device Manager tool, which can be downloaded at https://siqura.com. Refer to the steps below to connect the camera using the SDM2 software and its static IP address.

1 Run the SDM2 program.

2 After the SDM2 window has appeared, click the **Edit** and **Manual Scan for Devices** menu option to manually search for the camera based on the IP address, if known. All the found IP devices will be listed on the page automatically if the **Device auto detection** is enabled.

3 Find the camera by looking for its IP address.

4 Double-click or right-click and select **Open device web page** to access the camera through the web browser.

5 A prompt window requesting for a username and password will appear. Enter the username and the password to log in on the camera (default login username: Admin, password: 1234).

Configure the camera Networks settings:

▪ IP address

This is necessary for network identification.

▪ Subnet mask

This configures the address destination is in the same subnet. The default value is "255.255.255.0".

▪ Default gateway

Denotes the gateway used to forward frames to destinations in a different subnet. An invalid gateway setting will cause the transmission to destinations in a different subnet to fail.

▪ Primary DNS

Denotes the primary domain name server that translates hostnames into IP addresses.

▪ Secondary DNS

Denotes a secondary domain name server that backs up the primary DNS.

▸ Use PPPoE

For the PPPoE users, enter the PPPoE username and password in the relevant entry fields and click the **Save** button to complete the setting.

Advanced

Below follows a description of the camera's Web Server port, RTSP port, MJPEG over HTTP port and HTTPS port.

▸ Web Server port

The default web server port is 80. With the default web server port 80, you can simply enter the IP address of the camera in the URL bar of a web browser to connect the camera. If the web server port is changed to a port number other than 80, you have to enter the camera's IP address followed by a colon and the port number. For instance, a camera with IP address 192.168.0.100 and web server port 8080 can be connected by entering http://192.168.0.100:8080 in the URL bar.

▸ RTSP port

The default setting of RTSP port is 554. the RTSP port should be set to 554 or a value in the range of 1024 to 65535.

▸ MJPEG over HTTP port

The default setting of MJPEG over HTTP port is 8008. The MJPEG over HTTP port should be set to 8008 or a value in the range of 1024 to 65535.

▸ HTTPS port

The default setting of HTTPS port is 443. The HTTPS port should be set to 443 or a value in the range of 1024 to 65535.

Note: Make sure the port numbers set above are not the same; otherwise a network conflict may occur.

IPv6 Address Configuration

If the network supports IPv6, you can activate the **Enable IPv6** checkbox and click the **Save** button. An IPv6 address will appear beside **Address**, and you can use it to connect to the camera.

3.2.3.2 QoS

QoS allows for providing differentiated service levels for different types of traffic packets, which guarantees delivery of priority services, especially in the event of network congestion. By adapting the Differentiated Services (DiffServ) model, traffic flows are classified and marked with DSCP (DiffServ Codepoint) values, and will receive the corresponding forwarding treatment from DiffServ capable routers.

DSCP Settings

The DSCP value lies in the range of 0 to 63. The default DSCP value is 0, which means DSCP is disabled. The camera uses the following QoS Classes:

▸ VideoDSCP

The class consists of applications such as MJPEG over HTTP, RTP/RTSP and RTSP/HTTP.

▸ AudioDSCP

This setting is only available for cameras that support audio.

▸ ManagementDSCP

The class consists of HTTP traffic: web browsing.

Note: To enable this function, make sure the switches/routers in the network support QoS.

3.2.3.3 SNMP

With Simple Network Management Protocol (SNMP) support, the camera can be monitored and managed remotely by the network management system.

SNMP v1/ v2

▸ Enable SNMPv1/ v2

Select the SNMP version to use by checking the relevant box.

▸ Read Community

Specify the community name that has read-only access to all supported SNMP objects. The default value is "public".

▸ Write Community

Specify the community name that has read/write access to all supported SNMP objects (except read-only objects). The default value is "private".

Note: To enable the NTCIP Protocol function, make sure the SNMPv1 and SNMPv2 functions are enabled. Also, configure the Read and Write Community names to match the configured NTCIP settings of the VMS.

SNMP v3

SNMP v3 supports an enhanced security system that provides protection against unauthorized users and ensures the privacy of the messages. You will be requested to enter a security name, authenticatio**p**assword and encryption password while setting the camera connections in the network management system. With SNMP v3, the messages sent between the cameras and the network management system will be encrypted to ensure privacy.

▸ Enable SNMPv3

Activate the **Enable SNMP** checkbox.

▸ Security Name

The maximum length of the security name is 32 characters.

Note: Valid characters are A-Z, a-z, 0-9and!#$%&'-.@^_~.

▸ Authentication Type

There are two authentication types available: MD5 and SHA. Select **SHA** for a higher security level.

▸ Authentication Password

The minimum length of the authentication password is 8 characters. The entered characters and/or numbers will be displayed as dots for security reasons.

Note: Valid characters are A-Z, a-z, 0-9and!#$%&'-.@^_~.

▸ Encryption Type

There are two encryption types available: DES and AES. Select **AES** for a higher security level.

▸ Encryption Password

The minimum length of the encryption password is 8 characters and the maximum length is 512 characters. The entered characters and/or numbers will be displayed as dots for security reasons. The encryption password can also be left blank. However, the messages will not be encrypted to protect privacy.

Note: Valid characters areA-Z, a-z, 0-9and!#$%&'-.@^_~.

Traps for SNMP v1/ v2/ v3

Traps are used by the camera to send massages to a management system for important events or status changes.

▶   Enable Traps

Check the box to activate trap reporting.

▶   Trap address

Enter the IP address of the management server.

▶   Trap community

Enter the community to use when sending a trap message to the management system.

Trap Option

▶   Warm Start

A Warm Start SNMP trap signifies that the SNMP device, i.e. IP camera, performs a software reload.

Click the **Save** button to confirm the settings.

3.2.3.4   UpnP

UPnP Setting

▶   Enable UPnP

If UPnP is enabled and whenever the camera is presented to the LAN, the icons of the connected cameras will appear in **My Network Places** to allow for direct access.

> **Note:** To enable this function, make sure the UPnP component is installed on the computer. Refer to Appendix A: Install UPnP Components for the UPnP component installation procedure.

▶   Enable UPnP port forwarding

If UPnP port forwarding is enabled, the camera is allowed to automatically open the web server port on the router.

> **Note:** To enable this function, make sure that the router supports UPnP and that it is activated.

▶   Friendly name

Enter a name for the camera for identity.

Click the **Save** button to confirm the settings.

3.2.3.5   Diamond Protocol

To enable the Diamond protocol via IP communication, select the transport option, TCP or UDP, and configure the corresponding listening port number, to which the PTZ commands will be sent to the camera.

Before doing so, make sure that **Diamond Protocol** is selected in the PTZ > RS485 pane.

-    Enable PTZ commands over TCP: Enables Diamond commands via TCP.

o   Listening on Port: Port number used to send the PTZ commands via TCP.

-    Enable PTZ commands over UDP: Enables Diamond command via UDP.

o   Listening on Port: Port number used to send the PTZ commands via UDP.

To enable Diamond protocol via serial RS485, PTZ commands over TCP and UDP should be disabled.

3.2.4   DDNS

The DDNS category on the left gives access to the DDNS parameters. Dynamic Domain Name System (DDNS) allows a hostname to be constantly synchronized with a dynamic IP address. In other words, it allows those using a dynamic IP address to be associated with a static domain name so others can connect to it by name.

Enable DDNS

Check the box to enable DDNS.

Provider

Select a DDNS host from the provider list.

Host name

Enter the registered domain name in the field.

Username/E-Mail

Enter the username or E-mail required by the DDNS provider for authentication.

Password/Key

Enter the password or key required by the DDNS provider for authentication.

3.2.5   Mail

The Mail category on the left gives access to the Mail parameters. The administrator can send an E-mail via Simple Mail Transfer Protocol (SMTP) when an alarm is triggered. 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.

Two sets of SMTP can be configured. Parameters include SMTP Server, Account Name, Password and E-mail Address. Contact the network service provider for more specific information about the SMTP server.

3.2.6   FTP

The FTP category on the left gives access to the FTP parameters. The administrator can configure the camera to send the alarm messages to a specific File Transfer Protocol (FTP) site when an alarm is triggered. Alarm messages can be assigned to up to two FTP sites. Enter the FTP details, including server, server port, username, password and remote folder, in the relevant fields.

Click the **Save** button to confirm the settings.

3.2.7   HTTP

The HTTP category on the left gives access to the HTTP parameters. An HTTP Notification server can listen for the notification messages from the cameras by triggered events. Enter the HTTP details, including the server name (for instance, http://192.168.0.1/admin.php), username and password, in the relevant fields. Alarm triggered and Motion Detection notifications can be sent to the specified HTTP server.

Click the **Save** button.

Note: Refer to *Send HTTP notification for HTTP Notification* in section 3.2.8.1.

3.2.8   Events (Alarm Settings)

The Event category on the left gives access to the Event parameters.

When clicking the Event button, a drop-down menu will appear with the following items:

- ▶   Application
- ▶   Motion Detection
- ▶   Network Failure Detection
- ▶   Periodical Event
- ▶   Manual Trigger
- ▶   Audio Detection

3.2.8.1   Application

The camera has four alarm inputs and two relay outputs for connection with the alarm system to catch event images. Refer to the user manual or quick guide for the alarm I/O pin definitions to connect the alarm devices.

Alarm Switch

Select the alarm pin to be configured from the drop-down menu. The default setting for the Alarm Switch function is **Off**. Select **On** to enable the function. You can also activate the function in accordance with the schedule previously set in the Schedule setting pane. Select **By schedule** and click the **Please select…** button to choose the desired schedule from the drop-down menu.

Alarm Type

Select the alarm type, i.e. **Normal close** or **Normal open**, that corresponds with the alarm application.

Triggered Action (Multi-option)

The administrator can specify alarm actions to be taken in the event of an alarm. The following options are available:

▸ Enable Alarm Output 1/2
  Select these option to enable alarm relay outputs.
▸ Send Message by FTP/E-Mail
  Select this option to send an alarm message by FTP and/or E-mail when an alarm is triggered.
▸ Upload Image by FTP
  Select this option to assign an FTP site and configure various parameters. When the alarm is triggered, event images will be uploaded to the assigned FTP site. Note that to implement this function, one of the streams **must** be set as MJPEG; otherwise, this function will be grayed out and cannot be accessed.
  The Pre-trigger buffer function allows you to check what caused the trigger. The Pre-trigger buffer frame rate can be pre-determined. The Post-trigger buffer serves to upload a certain amount of images after the alarm input has been triggered.

Note: The pre-trigger buffer generally ranges from 1 to 20 frames. However, the range will change accordingly if the frame rate of MJPEG on the Streaming page (Video Configuration) is 6 or smaller.

Check the box **Continue image upload** to upload the triggered images during a certain period of time or continue uploading until the trigger is off. Select **Upload for __sec** and enter the duration (1 sec. to 99999 sec.) in the blank space. The images of the duration will be uploaded to FTP when the alarm input is triggered. Select **Upload while the trigger is active** to continue uploading images to FTP during the trigger active until the alarm is released. Set the Image frequency as the upload frame rate. Enter a value between 1 and 15 (frames per second).

Note: Make sure FTP configuration has been completed. See section 3.2.6 for more details.

▸ Upload Image by E-Mail
  Select this option to assign an E-mail address and configure various parameters. When the alarm is triggered, event images will be sent to the assigned E-mail address. Note that to implement this function, one of the streams **must** be set as MJPEG; otherwise, this function will be grayed out and cannot be accessed.
  The Pre-trigger buffer function allows you to check what caused the trigger. The Pre-trigger buffer frame rate can be pre-determined. The Post-trigger buffer serves to upload a certain amount of images after the alarm input has been triggered.

Note: The Pre-trigger buffer generally ranges from 1 to 20 frames. However, if the frame rate of MJPEG on the Streaming page (Video Configuration) is set to 6 or smaller, the range will change accordingly.

Check the box **Continue image upload** to upload the triggered images during a certain period of time or keep uploading until the trigger is off. Select **Upload for __sec** and enter the duration in the blank space (1 sec. to 99999 sec.). The images of the duration will be uploaded and sent via E-mail when the alarm input is triggered. Select **Upload while the trigger is active** to continue uploading images via E-mail during the trigger active until the alarm is released. Set the Image frequency as the upload frame rate. Enter a value between 1 and 15 (frames per second).

Note: Make sure SMTP configuration has been completed. See section 3.2.5 for more details.

▸ Send HTTP Notification
  Check this option, select the destination HTTP address and specify the parameters for event notifications by "Alarm" triggered. When an alarm is triggered, the notification can be sent to the specified HTTP server.

For instance, if the custom parameter is set to "action=1&group=2", and the HTTP server name is "http://192.168.0.1/admin.php", the notification will be sent to the HTTP server as "http://192.168.0.1/admin.php? action=1&group=2" when an alarm is triggered.

▸ Record Video Clip

Check this option and select a video recording storage type; SD Card or NAS (Network-Attached Storage). The alarm-triggered recording will be saved to the SD card or the NAS.

The pre-trigger buffer recording function allows you to check what happened to cause the trigger. The pre-trigger buffer time range is from 1 sec. to 3 sec. Select **Upload for __ sec** to set the recording duration (1 sec. to 99999 sec.) after an alarm is triggered. Select **Upload while the trigger is active** to record the triggered video until the trigger is off.

Note: Make sure that local recording (with SD card) or remote recording (with NAS) is activated so that this function can be implemented. See section 3.2.10 for more details.

▸ PTZ Function

Assign a camera function: Preset, Sequence, Autopan or Cruise, and specify a Function Line for the camera to perform when an alarm is triggered.

Note: See sections 3.5.1 to 3.5.4 for more details on Preset Point, Cruise Line, Autopan Path and Sequence Line set-ups.

If the selected function is **Preset**, you need to enter the dwell time (1 sec. to 256 sec.) in the corresponding field. When the alarm is triggered, the camera will go to the selected Preset Point and stay there for a user-defined period of time. As for other function modes, the camera will keep executing the specified function; to stop it, simply change the camera's status.

Note: The dwell time is only adjustable when Preset is selected. When the dwell time is up, the camera will go back to its trigger position and recheck the alarm pin status.

File Name

Enter a file name in the **File name** field, e.g. image.jpg, and select the desired file name format of the uploaded image:

▸ Add date/time suffix
File name: imageYYMMDD_HHNNSS_XX.jpg
Y: Year, M: Month, D: Day
H: Hour, N: Minute, S: Second
X: Sequence Number

▸ Add sequence number suffix (no maximum value)
File name: imageXXXXXXX.jpg
X: Sequence Number

▸ Add sequence number suffix up to # and then start over
File Name: imageXX.jpg
X: Sequence Number
The file name suffix will end at the number you set here. For example, if you set it to "10", the file name will start from 00, end at 10, and then start all over again.

▸ Overwrite
The original image at the FTP site will be overwritten by the newly uploaded file with a static filename.

Save

Click the **Save** button to confirm the settings.

3.2.8.2   Motion detection

The Motion Detection function allows the camera to detect suspicious motion and trigger alarms by comparing sampling pixels in the detection area of two consecutive live images. When the motion volume in the detected area reaches or exceeds the set sensitivity threshold value, the alarm will be triggered.

The function supports up to 4 sets of Motion Detection settings. Settings can be chosen from the Motion Detection drop-down menu.

Motion Detection

By default, the Motion Detection function for each Motion Detection setting is set to **Off**. Select **On** to enable Motion Detection. You can also activate the function in accordance with the schedule previously set in the Schedule setting pane (see section 3.2.11). Select **By schedule** and click the **Please select…** button to choose the desired schedule from the drop-down menu.

Motion Region Setup (Motion Region Paint)

The camera divides the detection area into 1200 (40x30) detection grids. You can draw the motion detection region using the paintbrush.

Check the **Enable brush** box and select the brush size: **1x1**, **3x3** or **5x5**. Then, left-click and drag the mouse cursor to draw the preferred detection region. To erase the drawn detection region, left-click and drag the mouse cursor on the colored grids.

Drawing a motion detection region

Motion Detection Setting

You can adjust various Motion Detection parameters in this section.

▸ Sampling pixel interval [1-10]
   This item is used to examine the differences between two frames. You can configure the interval of sampling pixel. The default value is 1. For instance, if you set the interval to 3, the IP camera system will take one sampling pixel from every 3 pixels of each row and each column in the detection area (see the figure below). The alarm will be triggered when differences are detected.
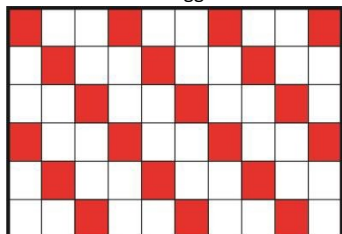
▸ Detection level [1-100]
   You can configure the detection level for each sampling pixel. The detection level indicates up to what level the camera will accept the differences between two sampling pixels. The smaller the value, the more minor motions it detects. The default level is 10.
▸ Sensitivity level [1-100]
   The default level is 80, which means that if 20% or more sampling pixels are detected to be different, the camera will detect motion. The higher the value, the more sensitive it is and the lower the red horizontal line in the motion indication window.

▸ Time interval (sec) [0-7200]
Denotes the interval between each detected motion. The default interval is 10.

Motion Indication Bar

When the Motion Detection function is activated and motion is detected, the signals will be displayed on the motion indication bar. The motion indication bar will turn green or red when motion is detected in the detection region.

Green indicates that motion is detected, but the motion does not exceed the threshold of the detection level and sensitivity level. No alarms will be triggered.
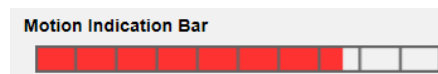
Motion Indication Bar

Red indicates that the motion detected exceeds the threshold of the detection level and the sensitivity level. The alarm will be triggered.

Motion Indication Bar

Triggered Action (Multi-option)

You can specify alarm actions to be taken when motion is detected. Available options are:

▸ Enable Alarm Output ½ (high/low)
Check this item and select the predefined type of alarm output to enable alarm relay output when motion is detected.

▸ Send Alarm Message by FTP/E-Mail
Select this item to send an alarm message by FTP and/or E-mail when motion is detected.

▸ Upload Image by FTP
Select this item to assign an FTP site and configure various parameters. When motion is detected, event images will be uploaded to the assigned FTP site. Note that to implement this function, one of the streams **must** be set as MJPEG; otherwise, this function will be grayed out and cannot be accessed.
The Pre-trigger buffer function allows you to check what caused the trigger. The Pre-trigger buffer frame rate can be pre-determined. The Post-trigger buffer serves to upload a certain amount of images after the motion event has occurred.

Note: The Pre-trigger buffer generally ranges from 1 to 20 frames. However, if the frame rate of MJPEG on the Streaming page (Video Configuration) is set to 6 or smaller, the range will change accordingly.

Check the **Continue image upload** box to upload the triggered images during a certain period of time or keep uploading until the trigger is off. Select **Upload for __sec** and enter the duration (1 sec. to 99999 sec.) in the blank space. The triggered images will be uploaded to FTP when the motion event occurs. Select **Upload during the trigger active** to continue uploading the images to FTP during the trigger active until the event stops. Set the Image frequency as the upload frame rate. Enter a value between 1 and 15 (frames per second).

Note: Make sure FTP configuration has been completed. See section 3.2.6 for more details.

▸ Upload Image by E-Mail
Select this option to assign an E-mail address and configure various parameters. When the alarm is triggered, event images will be sent to the assigned E-mail address. Note that to implement this function, one of the streams **must** be set as MJPEG; otherwise, this function will be grayed out and cannot be accessed.
The Pre-trigger buffer function allows you to check what caused the trigger. The Pre-trigger buffer frame rate can be pre-determined. The Post-trigger buffer serves to upload a certain amount of images after the alarm input has been triggered.

Note: The Pre-trigger buffer generally ranges from 1 to 20 frames. However, if the frame rate of MJPEG on the Streaming page (Video Configuration) is set to 6 or smaller, the range will change accordingly.

Check the box **Continue image upload** to upload the triggered images during a certain period of time or keep uploading until the trigger is off. Select **Upload for __sec** and enter the duration in the blank space (1 sec. to 99999 sec.). The images of the duration will be uploaded and sent via E-mail when the alarm input is triggered. Select **Upload while the trigger is active** to continue uploading images via E-mail during the trigger active until

the alarm is released. Set the Image frequency as the upload frame rate. Enter a value between 1 and 15 (frames per second).

Note: Make sure SMTP configuration has been completed. See section 3.2.5 for more details.

▸ Send HTTP Notification
Check this option, select the destination HTTP address and specify the parameters for event notifications by "Alarm" triggered. When an alarm is triggered, the notification can be sent to the specified HTTP server.
For instance, if the custom parameter is set to "action=1&group=2", and the HTTP server name is "http://192.168.0.1/admin.php", the notification will be sent to the HTTP server as "http://192.168.0.1/admin.php? action=1&group=2" when an alarm is triggered.

▸ Record Video Clip
Check this option and select a video recording storage type; SD Card or NAS (Network-Attached Storage). The alarm-triggered recording will be saved to the SD card or the NAS.
The pre-trigger buffer recording function allows you to check what happened to cause the trigger. The pre-trigger buffer time range is from 1 sec. to 3 sec. Select **Upload for __ sec** to set the recording duration (1 sec. to 99999 sec.) after an alarm is triggered. Select **Upload while the trigger is active** to record the triggered video until the trigger is off.

Note: Make sure that local recording (with SD card) or remote recording (with NAS) is activated so that this function can be implemented. See section 3.2.10 for more details.

File Name

Enter a file name in the **File name** field, e.g. image.jpg, and select the desired file name format of the uploaded image:

▸ Add date/time suffix
File name: imageYYMMDD_HHNNSS_XX.jpg
Y: Year, M: Month, D: Day
H: Hour, N: Minute, S: Second
X: Sequence Number
▸ Add sequence number suffix (no maximum value)
File name: imageXXXXXXX.jpg
X: Sequence Number
▸ Add sequence number suffix up to # and then start over
File Name: imageXX.jpg
X: Sequence Number
The file name suffix will end at the number you set here. For example, if you set it to "10", the file name will start from 00, end at 10, and then start all over again.
▸ Overwrite
The original image at the FTP site will be overwritten by the newly uploaded file with a static filename.

Save

Click the **Save** button to confirm the settings.

3.2.8.3 Network failure detection

Network Failure Detection allows the camera to periodically ping another IP device (e.g. NVR, VSS, Video Server) in the network and generates some actions in case a network failure occurs, for instance, a Video Server is somehow disconnected.

Since the camera is capable of implementing local recording (through SD card) or remote recording (via NAS) when a network failure occurs, it can serve as a back-up recording device for the surveillance system.

Detection Switch

The default setting for the Detection Switch function is **Off**. Select **On** to enable the function. You can also activate the function in accordance with the schedule time previously set in the Schedule settings page. Select **By schedule** and click the **Please select…** button to choose the desired schedule from the drop-down menu.

Detection Type

Enter the IP device address and the period of the ping. The camera will ping the IP device every *N* minute(s). If it fails up to **three times**, the alarm will be triggered automatically. Set a value between 1 and 99 (minutes).

Triggered Action (Multi-option)

You can specify alarm actions to be taken when a network failure is detected. Available options are:

▶ Enable Alarm Output 1 /2
  Select this option to enable alarm relay output.
▶ Send Alarm Message by FTP/E-Mail
  Select this option to send an alarm message by FTP and/or E-mail when an alarm is triggered.
▶ Record Video Clip
  Check the option and select a video recording storage type: SD Card or NAS (Network-Attached Storage). The alarm-triggered recording will be saved to the SD card.
  Pre-trigger buffer recording function allows you to check what happened to cause the trigger. The pre-trigger buffer time range is from 1 sec. to 3 sec. Select **Upload for __ sec** to set the recording duration (1 sec. to 99999 sec.) after the alarm is triggered. Select **Upload during the trigger active** to record the triggered video until the trigger is off.

> **Note:** Make sure that local recording (with SD card) or remote recording (with NAS) is activated so that this function can be implemented. See section 3.2.10 for more details.

Save

Click the **Save** button to confirm the settings.

3.2.8.4 Periodical event

The Periodical Event settings serve to configure the camera to upload images periodically to an FTP site or an E-mail address. For example, if the time interval is set to 60 seconds, the camera will upload images to the FTP site or the E-mail address every 60 seconds. The images to be uploaded are the images before and after the triggered moment. You can define the number of images to be uploaded in the *Triggered Action* section.

Periodical Event

The default setting for the Periodical Event function is **Off**. Select **On** to enable the function.

Time Interval

The default value of the time interval is 60 seconds. You can set a value between 60 and 3600 seconds.

Triggered Action

▶ Upload Image by FTP
  Select this option to assign an FTP site and configure various parameters. Images will be uploaded periodically to the assigned FTP site. Note that to implement this function, one of the streams **must** be set as MJPEG; otherwise, this function will be grayed out and cannot be accessed.
  The Pre-trigger buffer function defines the number of images to be uploaded before the triggered moment. The Post-trigger buffer function defines the number of images to be uploaded after the triggered moment.

> **Note:** The Pre-trigger buffer generally ranges from 1 to 20 frames. However, if he frame rate of MJPEG on the Streaming page (Video Configuration) is set to 6 or smaller, the range will change accordingly.
>
> **Note:** Make sure that FTP configuration has been completed. See section 3.2.6 for more details.

▶ Upload Image by E-Mail
  Select this option to assign an E-mail address and configure various parameters. Images will be uploaded periodically to the assigned E-mail address. Note that to implement this function, one of the streams **must** be set as MJPEG; otherwise, this function will be grayed out and cannot be accessed.
  The Pre-trigger buffer function defines the number of images to be uploaded before the triggered moment. The Post-trigger buffer function defines the number of images to be uploaded after the triggered moment.

Note: The Pre-trigger buffer generally ranges from 1 to 20 frames. However, if the frame rate of MJPEG on the Streaming page (Video Configuration) is set to 6 or smaller, the range will change accordingly.

Note: Make sure SMTP configuration has been completed. See section 3.2.5 for more details.

File Name

Enter a file name in the **File name** field, e.g. image.jpg, and select the desired file name format of the uploaded image:

▸ Add date/time suffix
   File name: imageYYMMDD_HHNNSS_XX.jpg
   Y: Year, M: Month, D: Day
   H: Hour, N: Minute, S: Second
   X: Sequence Number
▸ Add sequence number suffix (no maximum value)
   File name: imageXXXXXXX.jpg
   X: Sequence Number
▸ Add sequence number suffix up to # and then start over
   File Name: imageXX.jpg
   X: Sequence Number
   The file name suffix will end at the number you set here. For example, if you set it to "10", the file name will start from 00, end at 10, and then start all over again.
▸ Overwrite
   The original image in the FTP site will be overwritten by the newly uploaded file with a static filename.

Save

Click the **Save** button to confirm all settings.

3.2.8.5 Manual Trigger

With the Manual Trigger settings, the current image(s) or video can be uploaded to the assigned destination, such as an FTP site or an E-mail address. You can specify the triggered actions to be taken when the Manual Trigger button is switched to **On**. Below follows a description of the available options.

Manual Trigger

The default setting for the Manual Trigger function is **Off**. Select **On** to enable the function. After the Manual Trigger function has been enabled, click the **Manual Trigger** button on the Home page to start uploading data. Click again to stop uploading.

Triggered Action (Multi-option)

The administrator can specify alarm actions to be taken when an alarm occurs. Available options are:

▸ Enable Alarm Output 1/2
   Select these options to enable alarm relay outputs.
▸ Send Message by FTP/E-Mail
   Select this option to send an alarm message by FTP and/or E-mail when an alarm is triggered.
▸ Upload Image by FTP
   Select this option to assign an FTP site and configure various parameters. When the alarm is triggered, event images will be uploaded to the assigned FTP site. Note that to implement this function, one of the streams **must** be set as MJPEG; otherwise, this function will be grayed out and cannot be accessed.
   The Pre-trigger buffer function allows you to check what happened to cause the trigger. The Pre-trigger buffer frame rate can be pre-determined. The Post-trigger buffer serves to upload a certain amount of images after the alarm input is triggered.

Note: The Pre-trigger buffer generally ranges from 1 to 20 frames. However, if the frame rate of MJPEG on the Streaming page (Video Configuration) is set to 6 or smaller, the range will change accordingly.

Check the **Continue image upload** box to upload the triggered images during a certain period of time or keep uploading until the trigger is off. Select **Upload for __sec** and enter the duration (1 sec. to 99999 sec.) in the

blank space. The images of the duration will be uploaded to FTP when the alarm input is triggered. Select **Upload during the trigger active** to continue uploading the image to FTP during the trigger active until the alarm is released. Set the Image frequency as the upload frame rate. Enter a value between 1 and 15 (frames per second).

Note: Make sure that FTP configuration has been completed. See section 3.2.6 for more details.

▶ Upload Image by E-Mail
Select this option to assign an E-mail address and configure various parameters. When the alarm is triggered, event images will be sent to the assigned E-mail address. Note that to implement this function, one of the streams **must** be set as MJPEG; otherwise, this function will be grayed out and cannot be accessed.
The Pre-trigger buffer function allows you to check what happened to cause the trigger. The Pre-trigger buffer frame rate can be pre-determined. The Post-trigger buffer serves to upload a certain amount of images after alarm input is triggered.

Note: The Pre-trigger buffer generally ranges from 1 to 20 frames. However, if the frame rate of MJPEG on the Streaming page (Video Configuration) is set to 6 or smaller, the range will change accordingly.

Check the **Continue image upload** box to upload the triggered images during a certain period of time or keep uploading until the trigger is off. Select **Upload for __sec** and enter the duration (1 sec. to 99999 sec.) in the blank space. The images of the duration will be uploaded via E-mail when the alarm input is triggered. Select **Upload during the trigger active** to continue uploading the via E-mail during the trigger active until the alarm is released. Set the Image frequency as the upload frame rate. Enter a value between 1 and 15 (frames per second).

Note: Make sure that SMTP configuration has been completed. See section 3.2.5 for more details.

▶ PTZ Function
Assign a camera function (Preset, Sequence, Autopan or Cruise) and specify a Preset Point / Sequence Line / Autopan Path / Cruise Line for the camera to perform when an alarm occurs.

Note: See sections 3.5.1 to 3.5.4 for more details on Preset Point, Cruise Line, Autopan Path and Sequence Line set-ups.

If the selected function is Preset, you need to enter the dwell time (1 sec. to 256 sec.) in the corresponding field. When the alarm is triggered, the camera will go to the selected Preset Point and stay there for a user-defined period of time. As for other function modes, the camera will keep executing the specified function. To stop it, simply change the camera's status.

Note: The dwell time is only adjustable when Preset is selected. When the dwell time is up, the camera will go back to its trigger position and recheck the alarm pin status.

▶ Send HTTP notification
Check this option, select the destination HTTP address and specify the parameters for event notifications by "Alarm" triggered. When an alarm is triggered, the notification can be sent to the specified HTTP server.
For instance, if the custom parameter is set as "action=1&group=2", and the HTTP server name is "http://192.168.0.1/admin.php", the notification will be sent to the HTTP server as "http://192.168.0.1/admin.php? action=1&group=2" when an alarm is triggered.

▶ Record Video Clip
Check this option and select a video recording storage type: SD Card or NAS (Network-Attached Storage). The alarm-triggered recording will be saved to the SD card or the NAS.
The Pre-trigger buffer recording function allows you to check what happened to cause the trigger. The pre-trigger buffer time range is from 1 sec. to 3 sec. Select **Upload for __ sec** to set the recording duration (1 sec. to 99999 sec.) after an alarm is triggered. Select **Upload during the trigger active** to record the triggered video until the trigger is off.

Note: Make sure that local recording (with SD / SDHC card) or remote recording (with NAS) is activated so that this function can be implemented. See section 3.2.10 for more details.

File Name

Enter a file name in the **File name** field, e.g. image.jpg, and select the desired file name format of the uploaded image:

‣ Add date/time suffix

File name: imageYYMMDD_HHNNSS_XX.jpg

Y: Year, M: Month, D: Day

H: Hour, N: Minute, S: Second

X: Sequence Number

‣ Add sequence number suffix (no maximum value)

File name: imageXXXXXXX.jpg

X: Sequence Number

‣ Add sequence number suffix up to# and then start over

File Name: imageXX.jpg

X: Sequence Number

The file name suffix will end at the number you set here. For example, if you set it to "10", the file name will start from 00, end at 10, and then start all over again.

‣ Overwrite

The original image in the FTP site will be overwritten by the newly uploaded file with a static filename.

Save

Click the **Save** button to confirm all settings.

3.2.8.6 Audio Detection

The Audio Detection function allows the camera to detect audio and trigger alarms when audio volume in the detected area reaches or exceeds the determined sensitivity threshold value.

Note: The Audio Detection function is only available for models equipped with the Audio I/O function.

Audio Detection

The default setting for the Audio Detection function is **Off**. Select **On** to enable the function.

Audio Detection Setting

In this section, you can adjust Audio Detection parameters.

‣ Detection level [1-100]:

Denotes the detection level for each sampling volume. The smaller the value, the more sensitive it is. The default level is 10.

‣ Time interval (sec) [0-7200]:

Denotes the interval between each detected audio. The default interval is 10.

Triggered Action (Multi-option)

The administrator can specify alarm actions to be taken when audio is detected. Available options are:

‣ Enable Alarm Output 1/2

Select these options to enable alarm relay outputs.

‣ Send Alarm Message by FTP/E-Mail

Select this option to send an alarm message by FTP and/or E-mail when audio is detected.

‣ Upload Image by FTP

Select this option to assign an FTP site and configure various parameters. When audio is detected, event images will be uploaded to the assigned FTP site. Note that to implement this function, one of the streams **must** be set as MJPEG; otherwise, this function will be grayed out and cannot be accessed.

The Pre-trigger buffer function allows you to check what happened to cause the trigger. The Pre-trigger buffer frame rate can be pre-determined. ThePost-trigger buffer serves to upload a certain amount of images after an audio event has occurred.

Note: The Pre-trigger buffer generally ranges from 1 to 20 frames. However, if the frame rate of MJPEG on the Streaming page (Video Configuration) is set to 6 or smaller, the range will change accordingly.

Check the **Continue image upload** box to upload the triggered images during a certain period of time or continue uploading until the trigger is off. Select **Upload for __sec** and enter the duration (1 sec. to 99999 sec.)

in the blank space. The images of the duration will be uploaded to FTP when the audio event occurs. Select **Upload during the trigger active** to continue uploading images to FTP during the trigger active until the event stops. Set the Image frequency as the upload frame rate. Enter a value between 1 and 15 (frames per second).

Note: Make sure FTP configuration has been completed. See section 3.2.6 for more details.

▶ Upload Image by E-Mail
Select this option to assign an E-mail address and configure various parameters. When audio is detected, event images will be sent to the assigned E-mail address. Note that to implement this function, one of the streams **must** be set as MJPEG; otherwise, this function will be grayed out and cannot be accessed.
The Pre-trigger buffer function allows you to check what happened to cause the trigger. The Pre-trigger buffer frame rate can be pre-determined. The Post-trigger buffer serves to upload a certain amount of images after the audio event has occurred.

Note: The Pre-trigger buffer generally ranges from 1 to 20 frames. However, if the frame rate of MJPEG on the Streaming page (Video Configuration) is set to 6 or smaller, the range will change accordingly.

Check the **Continue image upload** box to upload the triggered images during a certain period of time or continue uploading until the trigger is off. Select **Upload for __ sec** and enter the duration (1 sec. to 99999 sec.) in the blank space. The images of the duration will be uploaded via E-mail when the audio event occurs. Select **Upload during the trigger active** to continue uploading the images via E-mail during the trigger active until the event stops. Set the Image frequency as the upload frame rate. Enter a value between 1 and 15 (frames per second).

Note: Make sure SMTP configuration has been completed. See section 3.2.5 for more details.

▶ Send HTTP Notification
Check this option, select the destination HTTP address and specify the parameters for event notifications by Audio Detection triggered. When an alarm is triggered, the notification can be sent to the specified HTTP server.
For instance, if the custom parameter is set as "action=1&group=2", and the HTTP server name is "http://192.168.0.1/admin.php", the notification will be sent to the HTTP server as "http://192.168.0.1/admin.php? action=1&group=2" when an alarm is triggered.

▶ Record Video Clip
Check this item and select a video recording storage type: SD Card or NAS (Network-Attached Storage). The Audio Detection recording will be stored on SD card or the NAS when audio is detected.
The Pre-trigger buffer recording function allows you to check what happened to cause the trigger. The pre-trigger buffer time range is from 1 sec. to 3 sec. Select **Upload for __ sec** to set the recording duration (1 sec. to 99999 sec.) after audio is triggered. Select **Upload during the trigger active** to record the triggered video until the trigger is off.

Note: Make sure that local recording (with SD card) or remote recording (with NAS) is activated so that this function can be implemented. See section 3.2.10 for more details.

File Name

Enter a file name in the **File name** field, e.g. image.jpg, and select the desired file name format of the uploaded image:

▶ Add date/time suffix
File name: imageYYMMDD_HHNNSS_XX.jpg
Y: Year, M: Month, D: Day
H: Hour, N: Minute, S: Second
X: Sequence Number
▶ Add sequence number suffix (no maximum value)
File name: imageXXXXXXX.jpg
X: Sequence Number
▶ Add sequence number suffix up to# and then start over
FileName: imageXX.jpg
X: Sequence Number
The file name suffix will end at the number you set here. For example, if you set it to "10", the file name will start from 00, end at 10, and then start all over again.

▶ Overwrite
   The original image in the FTP site will be overwritten by the newly uploaded file with a static filename.

Save

Click the **Save** button to confirm all Audio Detection settings.

3.2.9   Storage Management

The Storage management category on the left gives access to the Storage management parameters. The Storage management button has a drop-down menu with the following items:

▶ SD Card
▶ Network Share

3.2.9.1   SD Card

You can store local recordings of up to 128 GB to the SD card. This page shows the capacity information of the SD card and a recording list with all the recording files saved to the memory card. You can also format the SD card and implement automatic recording clean up on this page.

To implement SD card recording, go to the Recording page (refer to section 3.2.10) for activation.

Note: Format the SD card when you use it for the first time. Formatting will also be required when a memory card is being used on one camera and later transferred to another camera with a different software platform.

Note: It is not recommended to continuously (24/7) record with the SD card, as it may not be able to support long term continuous data read/write. Contact the manufacturer of the SD card for information about the card's reliability and life expectancy.

Device Information

When you insert the SD card, the card information such as the memory capacity and status will be shown in the *Device Information* section.

Recording Source

Select a video stream to set as the recording source. The default format of the video stream is H.264-1. Select a preferred stream from the drop-down list.

Click the **Save** button to confirm the settings.

Device Setting

Click the **Format** button to format the memory card. Two file systems are provided, **vfat** (default) and **ext4** (recommended). It is recommended to select **ext4** as the file system of the memory card for steady and better performance.

Disk Clean-up Setting

Check **Enable automatic disk cleanup** and specify the time **1~999 day(s) or 1~142 week(s)** and storage limits **1~99% full** to configure disk cleanup settings.

Click the **Save** button to confirm the settings.

Recording List

Each video file on the SD card will be listed in the Recording list. The maximum file size is 60 MB/per file.

When the recording mode is set to **Always** (consecutive recording) and SD card recording is also allowed to be enabled by events triggered, once events occur, the camera will immediately implement event recording to the memory card. After recording of the events, the camera will return to the regular recording mode.

▶ Remove
   To remove a file, select the file first, and then click the **Remove** button.

▸ Sort

Click the **Sort** button, and the files in the Recording list will be listed in name and date order.

The capital letter A / M / N / R / V / U at the beginning of the name denotes the type of recording (see below).

Initial	Recording type	Initial	Recording type
A	Alarm	R	Regular recording
M	Motion	V	Manual trigger
N	Network failure	U	Audio detection

▸ Download

To open/download a video clip, select the file first, and then click the **Download** button below the Recording list field. The selected file window will pop up. Click the AVI file to immediately play the video in the player or download it to a specific location.

3.2.9.2 Network Share (NAS)

You can store the recording videos to a network shared-folder or to the NAS (Network-Attached Storage). A NAS device is used for data storage and data sharing via the network. This page displays the capacity information of the network device and a recording list with all the recording files saved to the network device. You can also format the NAS and implement automatic recording cleanup on this page.

Device information

If a NAS is successfully installed, the device information such as the memory capacity and status will be shown in this section.

Storage setting

You can set the camera to send the alarm messages to a specific NAS site when an alarm is triggered. Enter the network device details, including the host (the IP of the NAS), share (the folder name of the NAS), username and password, in the relevant fields.

Click the **Save** button to confirm the settings.

Storage Tools

Click the **Format** button to format the NAS.

Recording Source

Select a video stream as the recording source. The default format of the video stream is **Stream** 1. Select the desired stream from the drop-down list.

Click the **Save** button to confirm the selection.

Disk clean-up setting

Check **Enable automatic disk cleanup** and specify the time **1~99 day(s) or 1~142 week(s)** and storage limits **1~99% full**.

Click the **Save** button to confirm the settings.

Recording List

Each video file on the Network Share will be listed in the Recording list. The maximum file size is 60 MB per file.

When the recording mode is set to **Always** (consecutive recording) and the NAS recording is also allowed to be enabled by events triggered, once events occur, the camera will immediately implement event recording to the memory card. After recording of the events, the camera will return to the regular recording mode.

▸ Remove

To remove a file, select the file first, and then click the **Remove** button.

‣ Sort

Click the **Sort** button, and the files in the Recording list will be listed in name and date order.

The capital letter A/M/N / R/ V/ U at the beginning of name denotes the sort of recording as below.

Initial	Recording type	Initial	Recording type
A	Alarm	R	Regular recording
M	Motion	V	Manual trigger
N	Network failure	U	Audio detection

‣ Download

To open/download a video clip, select the file first, and then click the **Download** button below the Recording list field. The selected file window will pop up. Click the AVI file to directly play the video in the player or download it to a specific location.

3.2.10   Recording

The Recording category on the left gives access to the Recording parameters. In the Recording pane, you can specify the recording schedule that fits the surveillance requirement.

Recording pane

Recording Storage

Select a recording storage type: SD Card or Network Share.

Enable Recording Schedule

Two schedule modes are available: **Always** and **Only during time frame**.

‣ Select **Always** to activate SD Card or Network Share Recording all the time.
‣ Select **Only during time frame** and select a schedule set from the time frame blank, check specific week days and set the start time (hour:minute) and time period (hour:minute) to activate recording at certain time frames. The duration time range is from 00:00 to 168:59.

Click the **Save** button to confirm the settings.

To delete a schedule, select it from the list and click the **Delete** button.

Disable Recording Schedule

Select **Disable** to terminate the recording function.

Click the **Save** button to confirm the selection.

3.2.11   Schedule

The schedule category on the left gives access to the Schedule parameters.

This schedule function allows you to set up schedules for features including Alarm Switch, Motion Detection and Network Failure Detection. The function supports up to 10 sets of time frames in the time frame list.

Schedule pane

Setting Schedules

1   Select a time frame from the time frame list.
2   Check the weekday boxes of the desired weekdays.
3   Select a time mode: **Day**, **Night or Time**. For the Time mode, specify the start time (hour:minute) and the time duration (hour:minute) to activate the schedule-triggered features. The time duration range is from 00:00 to 168:59.
4   (Optionally) Click the **Delete** button to delete a chosen period.
5   Click the **Save** button to save the settings.

Time Mode

▶   Day
    The camera profile will be loaded when IR cut filter is on.
▶   Night
    The camera profile will be loaded when IR cut filter is off.
▶   Time
    Denotes the start time and the time duration for the schedule.

> **Note:** You must select **By schedule** in the parameter setting page of each feature to enable the schedule function.

3.2.12 File Location (Snapshots and Web Recording)

The File Location category on the left gives access to the file location parameters.

You can specify a storage location on the PC or the hard drive for the snapshots and the live video recordings. The default location is: C:\.

After you have specified the location, click the **Save** button. All the snapshots and the web recordings will be saved to the designated location.

> **Note:** Make sure the selected file path contains valid characters such as letters and numbers.

> **Note:** With operating system Windows 7 or higher, you must run Internet Explorer as an administrator to implement the snapshot and web recording function. To do so, right-click the Internet Explorer browser icon and select **Run As Administrator** to launch Internet Explorer.

3.2.13 View Information

The View Information category on the left gives access to the view information parameters.

The View Information button has a drop-down menu with the following items:

▸ Log File
▸ User Information
▸ Parameter.

3.2.13.1 Log File

Click the Log File tab to view the system log file. The camera keeps a record of the system's behavior and information related to the camera. These log data can be exported for future use. Click the **Generate syslog** button. The *Save File As dialog* window will pop up. The default file name is named after the model name and the MAC address as "Model Name-MAC-log.tgz". Select the file destination and click the **Save** button to export the log data.

> **Note:** The *Save File As dialog* window may not show up immediately for the camera needs some time to process the log data.

3.2.13.2 User Information

Click this item to view the login information and rights of each user (See section 3.2.2).

User: 1:1:0:1

1:1:0:1= I/O access:Camera control:Talk:Listen (see section 3.2.2.1)

"1" denotes that the user has access to the function; whereas "0" indicates that no access for this user is allowed.

3.2.13.3 Parameters

Click this item to view the parameter settings of the entire camera system, such as Camera Settings, Mask Information and Network Information.

3.2.14 Factory Default

Follow the instructions on this page to reset the camera to the factory default settings, if needed.

Full Restore

Click the **Full Restore** button to recall the factory default settings. The camera system will restart in 30 seconds. The IP address will be restored to default. After the camera system has been restarted, reconnect the camera using the default IP address. The default IP address is **192.168.0.250**.

Partial Restore

Click the **Partial Restore** button to recall the factory default settings(excluding network settings). The camera system will restart in 30 seconds.Refresh the browser page after thecamera system has been restarted.

Note: The IP address will not be restored to default.

Reboot

Click the **Reboot** button and the camera system will restart without changing the current settings.Refresh the browser page after thecamera system has been restarted.

Hardware Reset

To perform a hardware reset to the factory default settings, press the **Default** button (see picture) while the camera is on and hold the button during 20 seconds. Once the camera starts spinning around, release the button and wait for the camera to boot before reconnecting.

Note: You will need to use the default IP address and login credentials to reconnect to the camera, once the hardware reset and booting process has been completed.

3.2.15   Software Version

The software version page displays the current software version and the pan/tilt/zoom mcu version.

3.2.16   Software Upgrade

Note: Make sure that the upgrade software file is available before performing a software upgrade. For an easier upgrade process, use the SDM2 tool available for download at https://siqura.com.

To perform a software upgrade:

1   Click the **Browse** button and locate the upgrade file, for example, "uImage_userland".

   Note: Do not change the name of the upgrade file, or the system will fail to find the file.

2   Select a file type from the drop-down list. In this case, select **uImage+userland.img**.
3   Click the **Upgrade** button.
   The system will prepare to start the software upgrade, after which an upgrade status bar will be displayed to show the upgrade process. After the upgrade process has been completed, the viewer will return to the Home page.
4   Close the video browser.
5   Click the Windows **Start** button and activate the Control Panel.
6   In the *Control Panel* window, double-click the **Add or Remove Programs** button. A window with the currently installed programs will pop up. Select **Siqura Viewer** in the list and click the **Remove** button to uninstall the existing Viewer.
7   Open a web browser and re-login to the camera.
   You will be prompted to download the Siqura Viewer. After the Siqura Viewer has been downloaded and installed, the live video will be available.

3.2.17   Maintenance

You can export configuration files to a specific location and retrieve data by uploading the configuration file to the camera.

Export Files

You can save the system settings by exporting a configuration file (.bin) to a specific location for future use. Click the **Export** button. The *File Download* window will pop up. Click the **Save** button and specify a location for saving the configuration file.

Upload Files

To upload a configuration file to the camera, click the **Browse** button to select the configuration file and then click the **Upload** button.

3.3 Streaming

The Streaming page includes the following categories on the left:

▸ Video Configuration
▸ Video Rotation
▸ Video Tekst Overlay
▸ Video OCX Protocol
▸ Audio

Streaming page

On the Streaming page, you can configure parameters such as the video resolution, video compression mode, video protocol and the audio transmission mode.

Note: The Streaming page can only be accessed by the administrator.

3.3.1 Video Configuration (Video Format & Resolution)

The Video Configuration category on the left gives access to the video configuration parameters.

Encoding

Select **Yes** from the drop-down menu to enable Stream 2~Stream 4 encoding. Or select **No** to disable the streaming encoding.

Encode Type

Available video resolution formats include H.265, H.264 and MJPEG. You can select the preferred encode type from the drop-down menu.

Resolution

Video format and resolution combinations will vary depending on the user configuration. The table below lists the default resolution of different camera models.

Megapixels	IP camera models	Default resolution
4M	Linear mode (50/60 fps)	H.265/H.264-2688x 1512(30/25fps) +
	HDR Mode (WDR 2 shutter)	H.265/H.264-800 x 600 (30/25fps)
3M	Linear mode (50/60 fps)	H.265/H.264-2048 x 1536 (30/25fps) +
	HDR mode (WDR 2 shutter)	H.265/H.264- 800 x 600 (30/25 fps)
2M	Linear mode (50/60 fps)	H.265/H.264-1920x 1080(30/25fps)+
	HDR mode (WDR 2 shutter)	H.265/H.264-1920 x 1080(30/25 fps)

Rate Control

There are three kinds of H.265/H.264 bit rate modes: CBR (Constant Bit Rate), VBR (Variable Bit Rate) and LBR (Low Bit Rate).

▸ CBR

The sent out video bitrate will be fixed and consistent to maintain the bandwidth.

▸ VBR

The video bitrate varies depending on the activity of the monitoring environment to achieve better image quality.

▸ LBR

LBR keeps the bitrate low and ensures superior image quality. To implement LBR control, setup the compression level and dynamic GOV for each streaming beforehand.

■ Compression

Based on the current application area and streaming bitrate, select the most suitable compression level: high, mid or low.

If you set the level to **High**, the bitrate will be reduced considerably. However, the image quality may be degraded at the same time.

If you set the level to **Low**, the bitrate will be kept low while the image quality remains high.

■ Dynamic GOV

Depending on the amount of motion in the application area, the GOV length of the video will be adjusted dynamically to reduce more bitrate, especially for scenes with minor changes. The length of Dynamic GOV ranges from **GOV Length** to **Max. GOV** (4094).

Select **Enabled** and set **Max. GOV**. Then, click the **Save** button.

If there is little or zero activity in the scene, set **Max. GOV** larger. The GOV length will be longer, resulting in a lower bitrate and bandwidth.

If there are constant dynamic changes in the scene, it is recommended to just adjust **GOV Length** and disable **Dynamic GOV**.

Click the **Save** button to confirm the settings.

Profile

You can set H.265/H.264 Profile to **High Profile** or **Main Profile,** depending on the compression needs. With the same bit rate, the higher the compression ratio, the better the image quality. The default setting is **Main Profile**.

Note: Make sure the higher compression ratio is supported by the system before setup.

Framerate

The framerate parameter serves to set the frames per second (fps), if necessary. The default setting of Stream 1 is 30 fps (NTSC) or 25 fps (PAL). The maximum framerate range of each stream will vary depending on the selected video resolution.

Note: A low framerate will decrease the video smoothness.

Bitrate

The default value of the H.265/H.264 bitrate for Stream 1/Stream 2 is **4096kbit/s**; for Stream 3/Stream 4 it is **2048 kbit/s**. Enter a value between 512 and 10240 kbps. The total bit rate should not exceed 26624 kbps.

GOV Length

You can set the GOV length to determine the frame structure (I-frames and P-frames) in a video stream to save bandwidth. Less bandwidth is needed if the GOV length is set to a high value. However, the shorter the GOV length, the better the video quality. The default value for Stream 1/Stream 2 is **50**; for Stream 3/Stream 4 this is **30**. Enter a value between 1 and 255.

Q (Quality) Factor (MJPEG Only)

The default value of MJPEG Q factor is **35**. Enter a value between 1 and 70.

Click the **Save** button to confirm the entry or click the **Reset** button to return to the previous values.

3.3.2   Video Rotation

Rotate Function

This parameter enables you to change the video display type. Available video rotation types include Mirror and 90/180/270 degree clockwise rotation:

▶   Mirror
Select **Yes** from the drop-down menu to flip the image horizontally.
▶   Rotate Type
Select **0**, **90**, **180** or **270** degrees from the drop-down menu to rotate the image accordingly.
Click the **Save** button to confirm the selections.

3.3.3   Video Text Overlay

Overlay Type

You can select up to three items out of the first four items below to be displayed on the live video pane.

▶   Include date & time
Check the box to enable date & time display on the live video pane. You can select the options **date**, **time**, or **date & time** from the drop-down menu and select the string align position (left or right).
▶   Include text string
Check the box to enable text string display on the live video pane. Type the text to be displayed in the entry field and select the string align position (left or right). The maximum length of the text string is 15 alphanumeric characters.
▶   Include subtitle
Check the box to enable subtitle display on the live video pane. Type the text to be displayed in the entry field and select the string align position (left or right). You can configure up to three subtitles. The maximum length of each subtitle is 54 alphanumeric characters.

> ▸ Include Image
> Check the box to enable image display on the live video pane. Select the alignment position (left or right) for the
> image from the drop-down list.
> ▸ Include azimuth
> Check the box to enable azimuth display on the live video pane and set the azimuth alignment position. Azimuth
> shows the pan/tilt degree and the shooting position of the camera, such as NE 050/00 ("NE" is the shooting
> position of the camera; "050" is the pan degree; "00" is the tilt degree.)

After you have selected an overlay type item, a video text overlay window will appear. Move the mouse cursor to the
center of the window, click and drag the window to change the display position. Then, click the **Set** button to confirm
the settings.

Text Overlay Setting

You can choose the Text Overlay Color (black, white, yellow, red, green, blue, cyan or magenta) and the Text Overlay
Size (small, medium or large) of the date&time, textstring or subtitle display.

Click the **Set** button to confirm the settings.

Image Overlay Setting

You can upload an image and set its transparency for display on the live video pane. The setting range of image
transparency is from 0 to 255. The lower the value, the more transparent the image will be. Save the image as an
8-bit BMP file. The length should be a multiple of 32, and the width should be a multiple of 4. The maximum
resolution of the image should not exceed 32768 pixels.

Click the **Set** button and the **Upload** button to confirm the settings.

3.3.4   Video OCX Protocol

The Video OCX Protocol category on the left gives access to the following video OCX protocol parameters:

> ▸ RTP over UDP, RTP over RTSP(TCP), RTSP over http or MJPEG over http, for streaming media over the network.
> ▸ Multicast Mode. Enter the required data (Multicast IP address, Multicast H.264-1 / H.264-2 / H.264-3 / H.264-4
> Video Port, Multicast MJPEG Video Port, Multicast Audio Port and Multicast TTL) in the relevant fields.

Click the **Save** button to confirm the settings.

3.3.5   Audio (Audio Mode and Bit Rate Settings)

The Audio category on the left gives access to the Audio parameters.

You can adjust the sound transmission mode, the audio gain levels and the audio bit rate, and enable sound
recording to the SD card.

Transmission Mode

> ▸ Full-duplex (Talk and Listen simultaneously)
> In the full-duplex mode, the local and remote sites can communicate with each other simultaneously, i.e. both
> sites can speak and listen to the other side at the same time.
> ▸ Half-duplex (Talk or Listen, not at the same time)
> In the half-duplex mode, the local and remote site can only talk or listen to the other site one at a time.
> ▸ Simplex (Talk only)
> In the talk-only simplex mode, the local and remote site can only talk to the other site.
> ▸ Simplex (Listen only)
> In the listen-only simplex mode, the local and remote site can only listen to the other site.
> ▸ Disable
> Select **Disable** to turn off the audio transmission function.

Server Gain Setting

Set the audio input/output gain levels for the sound amplification. The audio input gain value is adjustable from 1 to
10. The audio output gain value is adjustable from 1 to 6. To turn off the sound, set the audio gain to Mute.

Bit Rate

Selectable audio transmission bit rates include 16 kbps, 24 kbps, 32 kbps, 40 kbps, uLAW (64 kbps), ALAW (64 kbps), AAC (128 kbps), PCM (128 kbps), PCM (256 kbps), PCM (384 kbps) and PCM (768 kbps). Higher bit rates will offer a higher audio quality and require bigger bandwidth.

Click the **Save** button to confirm the selection.

Recording to Storage

Select **Enable** from the drop-down menu to enable storage of audio recording with video to the SD card or the NAS.

**Note:** If the chosen bit rate is not compatible with the player, there will be noise instead of audio during playback.

Click the **Save** button to confirm the setting.

3.4   Camera

The Camera page includes the following categories on the left:

- Exposure
- White Balance
- Picture Adjustment
- IR Function
- Noise Reduction
- WDR Function
- Image Stabilizer
- Digital Zoom
- Backlight
- Profile
- TV System
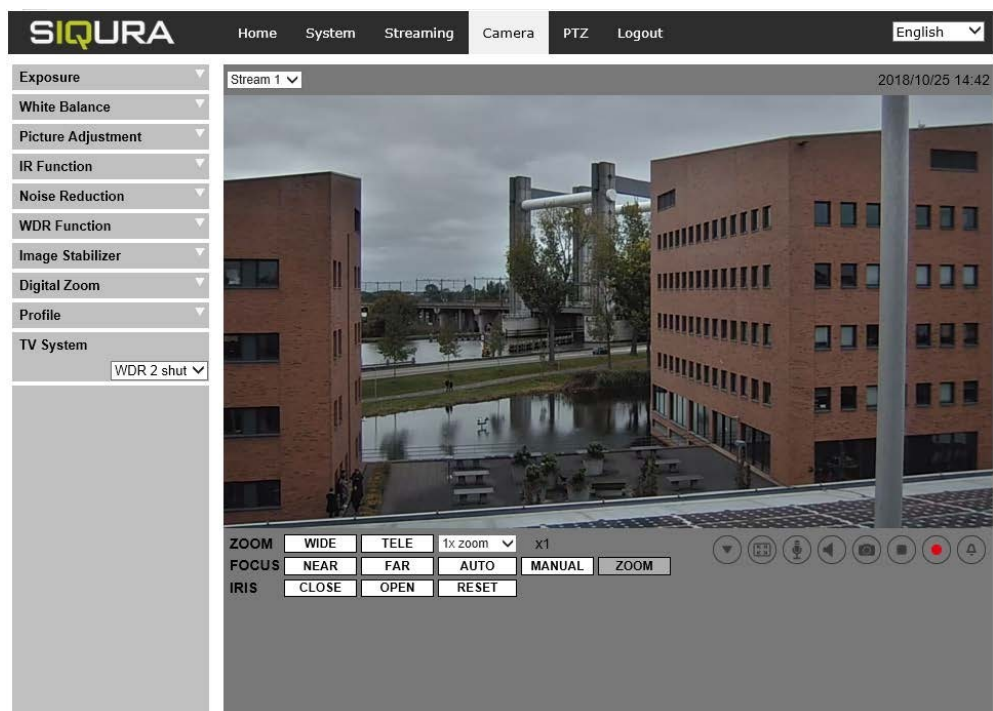
Camera page

3.4.1 Exposure

In the Exposure page, you can select the Full Auto mode or adjust the parameter of the P-Iris Priority, Iris Priority and Shutter Priority mode for optimized video output in accordance with the operating environment.

Auto Mode

▸　Max Gain

This parameter serves to set the maximum gain. The Max Gain ranges from 1 to 3. Select **Off** to disable the function. The default value is 3.

> **Note:** A higher max. gain may cause more image noises.

▸　Auto Iris

In this mode, the camera will automatically adjust the iris to suit the environment illumination.

The minimum shutter speed can be set from 1/30 to 1 sec. (NTSC) or 1/25 to 1/1.5 sec. (PAL). AGC (Auto Gain Control) will function automatically, depending on the light conditions of the object.

▸　P-Iris Priority Mode (Recommended)

■　Iris Size Setting

When you select **Auto Detect**, the camera will automatically detect the best iris size for the environment. Alternatively, you can manually adjust the iris size by selecting **Manual**. Click the plus and minus buttons to adjust the iris size.

■　Minimum Shutter Speed

The minimum shutter speed can be set from 1/30 to 1 sec. (NTSC) or 1/25 to 1/1.5 sec. (PAL).

▸　Iris Priority Mode

In this mode, the iris has priority in controlling the exposure. The value of iris is adjustable from 0 to 10 (Full Open=10). The minimum shutter speed range is configurable from 1/30 to 1 sec. (NTSC) or 1/25 to 1/1.5 sec. (PAL).

▸　Auto Shutter Mode

In this mode, the camera will automatically adjust the shutter speed and the iris size, depending on the light intensity. The minimum shutter speed can be set from 1/500 to 1 sec(NTSC) or 1/425 to 1/1.5 sec.(PAL).

▸　Shutter Priority Mode

In this mode, the shutter speed has priority in controlling the exposure. The range of the shutter speed is from 1/500 sec. to 1/30 sec. (NTSC) or 1/425 sec. to 1/25 sec. (PAL).

Manual Mode

In this mode, you can manually change the Shutter Speed, Iris Size, and Gain. The shutter speed range is from 1/10000 sec. to 1 sec. (NTSC) or from 1/10000 sec. to 1/1.5 sec. (PAL). The range of the iris size is from 0 to 10 (Full Open=10). The gain value range is from 1dB to 9dB. Select **Off** to disable the function.

3.4.2 White Balance

A camera needs to have a reference color temperature, which is a way of measuring the quality of a light source for calculating all the other colors. The unit for measuring this ratio is in degrees Kelvin (K). You can select one of the White Balance Control modes depending on the operating environment. The table below shows the color temperature of some light sources for reference.

Light sources	Color temperature in K
Cloudy sky	6,000 to 8,000
Noon sun and clear sky	6,500
Household lighting	2,500 to 3,000
75-watt bulb	2,820
Candle light	1,200 to 1,500

Auto Mode

The Auto Balance White mode is suitable for environments with a light source having a color temperature in the range of roughly 2700K to 7500K.

ATW Mode (Auto Tracing White Balance)

With the Auto Tracking White Balance function, the white balance in a scene will automatically be adjusted when the temperature color changes. The ATW Mode is suitable for environments with a light source having a color temperature in the range of roughly 2500K to 10000K.

One Push

With the One Push function, white balance is adjusted and fixed depending on the scene the camera sees at the moment. This function is suitable for light sources with any kind of color temperature and situations with minimal scene changes and continuous lighting. Follow these steps to set the white balance:

1   Point the camera to the monitoring area.
2   Select **One Push** in the White Balance setting menu.
3   Click the **Trigger** button to adjust the white balance.

Note: In this mode, the value of white balance will not change when the scene or the light source changes. You might have to re-adjust the white balance by clicking the **Trigger** button again when needed.

Manual Mode

In this mode, you can adjust the white balance manually by specifying the R gain and B gain. The range of R/B gain is from 0 to 127.

The following image displays the general color shifts of the scene when different Rgain / Bgain combinations are applied.

Changing white balance in manual mode

Click the check box to confirm the setting.

3.4.3   Picture Adjustment

Brightness

The brightness level of the images can be set to a value between -12 and +13.

Sharpness

The sharpness level of the images can be set to a value between +0 and +15. The edge of the objects is enhanced as the sharpness level increases.

Contrast

The contrast level of the images can be set to a value between -6 and +19.

Saturation

The saturation level of the images can be set to a value between -6 to and +19.

Hue

The hue level of the images can be set to a value between -12 and +13.

3.4.4 IR Function

Day/Night Function

This item serves to define the modes for the IR cut filter and IR LED lights.

▸ Auto Mode
In this mode, the camera will determine the occasion to remove the IR cut filter.
▸ Night Mode
Select this mode when the environment light level is low. The IR cut filter will be removed to enable the camera to deliver clear images in black and white.
▸ Day Mode
Select this mode to turn on the IR cut filter. The IR cut filter can filter out the IR light and enables the camera to deliver high quality images in color.
▸ Light Sensor Mode
IR LED lights will be turned on/off depending on the light sensor.
▸ Light On Mode
In this mode, IR LED lights will always be on.
▸ Light Off Mode
In this mode, IR LED lights will always be off.
▸ Smart Mode
In Smart mode, the camera will determine the occasion to remove the IR cut filter. The Smart mode mechanism can judge whether the main light source is from IR illumination. If the main light source is from IR illumination, the IR cut filter will be kept open (i.e. monochrome/night mode).

Day/Night Threshold

This item enables you to define when the camera should switch from day mode to night mode or vice versa. The camera will sense the surrounding brightness, and the threshold value represents the light level. If the camera detects that the light level has reached the threshold, it will automatically switch to Day/Night Mode. The level range is from 0 to 10 (darker = 0; brighter = 10).

▸ Night Mode to Day Mode
The lower the value, the earlier the camera switches to Day mode. The default value is 7.
▸ Day Mode to Night Mode
The higher the value, the earlier the camera switches to Night mode. The default value is 3.

Note: This function is only available if the camera is in Auto Mode.

IR Light Compensation

With the IR Light Compensation function, the camera can prevent the center object close to the camera from being too bright when IR LED lights are turned on.

IR Heating

With the IR Heating function, the IR LED will be turned on to heat up the camera under 14 degree Celsisus.
IR heating and IR function work independently.

3.4.5   Noise Reduction

The camera provides multiple Noise Reduction options for delivering optimized image quality, especially in extra low light conditions.

3DNR

With the 3D Noise Reduction function, the processor analyzes the differences between successive frames to adjust pixels and improve image quality. 3DNR generates better de-noising effects than 2DNR, but might create motion blur on moving objects in the field of view.

Different levels of 3DNR are provided, including Low, Mid and High. A higher level of 3DNR generates relatively enhanced noise reduction.

2DNR

With the 2D Noise Reduction function, the processor analyzes individual frames of video to eliminate environmental noise signals so that the highest quality image can be produced even in low light conditions.

Select **On** to turn on the 2DNR function. Select **Off** to turn off the 2DNR function.

ColorNR

In a dark environment or an environment with insufficient light and if the camera is in color mode, ColorNR (Color Noise Reduction) can eliminate color noise.

Three levels of ColorNR, including Low, Mid and High, are provided. A higher level of ColorNR generates relatively enhanced noise reduction.

3.4.6   WDR Function

The Wide Dynamic Range (WDR) function serves to solve high contrast or changing light issues to allow for enhanced video display.

Level options for the WDR function include Low, Mid and Hi. The higher the level, the wider the dynamic range. In this way, the camera can catch a greater scale of brightness.

3.4.7   Digital Zoom

Select **On** to enable the Digital Zoom function. Select **Off** to turn the function off.

3.4.8   Backlight

The Backlight function is available when the video format is set to **60fps** or **50fps** under TV System (see section 3.4.11).

Backlight Compensation prevents the center object from being too dark in surroundings where excessive light is behind the center object.

Select **On** to enable the Backlight function. Select **Off** to turn the function off.

3.4.9   Image Stabilizer

The Image Stabilizer function is only available when the video format is set as "WDR 2 Shutter" under TV System (see section 3.4.11). With the Image Stabilizer function, the camera can keep the image steady and suppress vibrating effects on images caused by external vibration. Follow these steps to activate the function:

1   Select **On** from the Stabilizer drop-down list to enable the Image Stabilizer function.

2   Select **On** from the Auto Calibration drop-down list to activate the Auto calibration function.

3   Alternatively, you can click the **Calibrate** button for manual calibration. Be sure to keep the camera stand still for 3 seconds for calibration accuracy.

To disable the Image Stabilizer function, select **Off** from the Stabilizer drop-down list.

Note: Do NOT use PTZ functions when activating manual calibration.

Note: The Digital Zoom function and the Privacy Mask-Zoom Factor function will be disabled when the Image Stabilizer function is activated.

3.4.10   Profile

The Camera Profile function allows you to configure the desired image parameters for specific environments with different time schedules. You can configure up to ten sets of camera parameters in the Camera tab. To enable this function, you must set up the schedules in advance. See section 3.2.11 for more details. Then, follow the steps below to set up a camera profile.

Camera Profile Setup

1   In the Camera tab, set the camera parameters, such as Exposure, White Balance, etc., excluding TV System.

2   Click **Profile** and the corresponding menu will be displayed. Select a number from the **Num** drop-down list.

3   Enter a name for the profile in the Name field.

4   Click the **Save** button below the Name field. The camera configuration is saved and applied to the profile.

5   Select a saved camera profile from the **Num** drop-down list.

6   Check the **By schedule** box. Check the desired schedule(s) from the Schedule drop-down list. Multiple schedules can be applied to one profile.

7   Click the **Save** button.

8   Repeat the above steps for the rest of the profiles.

Now, the camera will automatically switch profiles depending on the schedule.

Alternatively, you can manually select a number from the **Num** drop-down list. Click the **Load** button and the camera will apply the profile setting.

Note: If you wish to set the camera parameters to the factory default, select **Normal** from the **Num** drop-down list. The camera will start loading the default values.


3.4.11   TV System

Select the video format that matches the present TV system. The table below shows the available video formats of the Network Camera.

Video format	
NTSC	60 fps (Recommended)
	WDR 2 shutter
PAL	50 fps (Recommended)
	WDR 2 shutter

3.5   Pan Tilt

The Pan Tilt page is available to model with RS485 and includes the following categories on the left:

‣   Preset
‣   Sequence
‣   Privacy Mask
‣   RS485
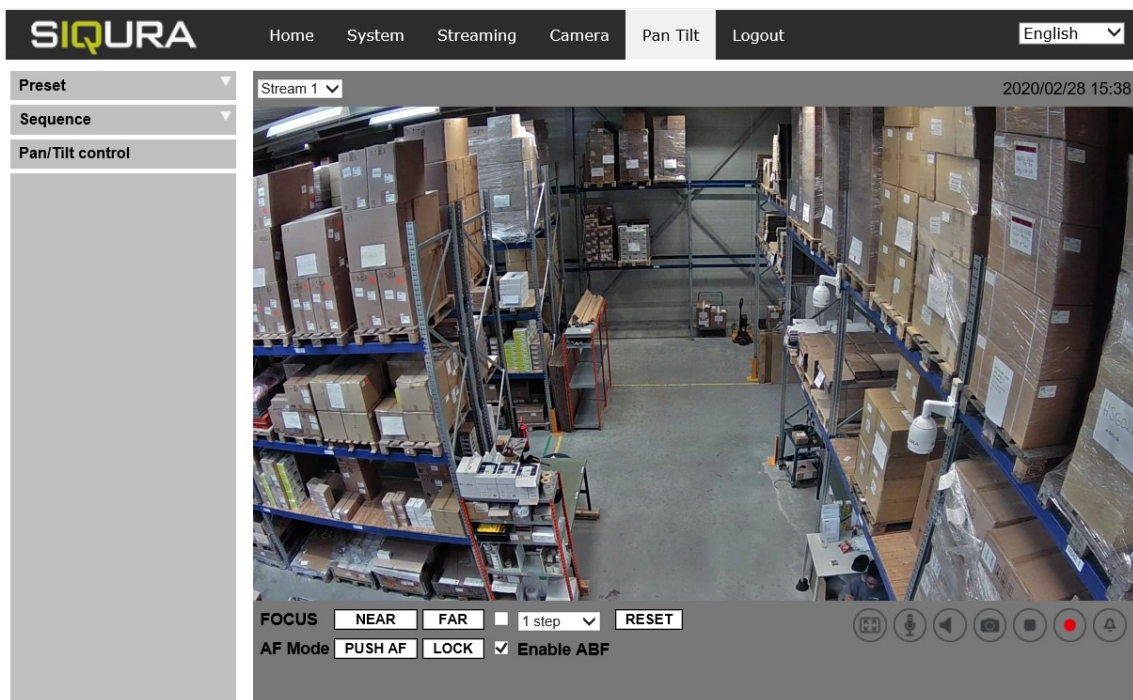
Pan Tilt page

3.5.1   Preset

The camera supports up to 256 Preset Points.

Preset Setting

Follow these steps to set up a Preset Point:

1   Move the cursor to the live view pane.
2   Left-click and drag the red pointer with the PTZ controls to the desired position and adjust the fine zoom / focus ratio.
3   Assign a number for the current position from the drop-down Number List (click the **PrePage** or **NextPage** button to go to number 1 to 256) and enter the descriptive name.
4   Click the **Set** button to save the settings.

Preset Go

To have the camera move to a specific preset position, select the Preset Point from the drop-down Preset list (click the **PrePage** or **NextPage** button to go to preset number 1 to 256). The camera will move to the target position.

3.5.2   Sequence

The camera supports a total of 8 Sequence Lines. Each Sequence Line consists of up to 64 Preset Points.

Note: Before setting this function, you must pre-define at least two Preset Points.

Sequence Setting

Click the **Edit** button of **Sequence Setting** to open the *Sequence setting* menu.

▸   Sequence Line

Select the number of the Sequence Line to be set from the drop-down list at the top of the Sequence setting menu.

▸   Sequential Preset Points Setting

Set the Preset Points of the configured Sequence Line one after the other. Select a Preset Point from the Name list for the specified number of the Preset Point and enter the Dwell Time (0 to 127) and the Speed (0 to 14) in the corresponding fields.

After setting the sequential Preset Points, click the Save button in the Sequence setting menu.

Sequence Run

Select the configured Sequence Line from the drop-down list and click the **Go** button. The camera will start moving forward each scene sequentially as programmed.

To view the camera executing a Sequence Line in full screen mode, move the cursor to the live view pane, right-click and left-click to select **Fullscreen**. You can now view the camera navigation in full screen.

To stop running the Sequence Line, simply move the cursor to the live view pane and move the camera in any direction.

3.5.3   Pan/Tilt Control

The Pan/Tilit Control page serves to activate the pan/tilt function and select the RS-485 protocol used by the Joystick/Keyboard.

RS-485 Protocol Type

With the correct RS-485 protocol selected, you can remotely control the pan/tilt function of the camera using a Joystick/Keyboard. Check the RS-485 protocol type of the Joystick/Keyboard. Then select the RS-485 protocol used by the Joystick/Keyboard from the drop-down list. The available protocols are **DSCP**, **PelcoD**, **PelcoP and Diamond**. After the protocol type has been selected, adjust the parameters from the drop-down lists on the right. Click **the Save** button to confirm the settings.

3.6   Logout

Select the **Logout** tab at the top of the page to open the *Login* window. This window enables you to log in with another username.

Appendix A: Install UpnP Components

Follow these instructions to install UPnP components on Windows Vista, Windows XP or Windows 7:

1   Open the Window s Control Panel and double-click **Add or Remove Programs**.
2   Click **Add/Remove Windows Components** in the *Add or Remove Programs* window.
3   Select **Networking Services** from the Components list in the *Windows Components Wizard* window and then click **Details**.
4   Select **UPnP User Interface** in the Networking Services' subcomponents list and then click **OK**.
5   Click **Next** in the *Windows Components Wizard* window.
6   Click **Finish** to complete the installation.

Appendix B: Addresses from decimal to binary

Follow the example below to convert IP addresses to binary numbers. Use the calculator on your computer (Start> All Programs> Accessories> Calculator) for conversion.

▸ For Windows XP and Windows Vista, click **View** on the calculator and click **Scientific**.
▸ For Windows 7 or above, click **View** on the calculator and click **Programmer**.

Then follow the steps in the following example to convert the IP addresses.

The example below shows how to convert 192.168.2.81 to binary numbers.

1 On the left of the calculator, select **Dec**. Then enter the first decimal number of the IP address, "192". Select **Bin** and the number will be converted to a binary number. Repeat the same procedure for the rest of the decimal numbers. Remember to select **Dec** before entering the next decimal number. If you don't, a decimal number cannot be entered. The table below shows the binary number of each decimal number.

Decimal numbers	Binary numbers
192	11000000
168	10101000
2	10
81	1010001

2 Each binary number should have eight digits. If a binary number does not have eight digits, add one or more 0's in front of it until it does. The binary number of each decimal number should be as follows.

Decimal numbers	Binary numbers
192	11000000
168	10101000
2	00000010
81	01010001

The binary numbers of IP address 192.168.2.81 are therefore 11000000.10101000.00000010.01010001.

Appendix C: JPG Picture Pull Authentication

Follow these instructions to enable/disable the required authentication for the JPG pictures pull function:

Configure one of the video stream to MJPEG in the camera and then use the Google Chrome browser to enter the below API command to enable or disable the required JPG picture pull authentication:

▶ API Command to Enable Required Authentication:

http://username:password@ip_address/cgi-bin/admin/param.cgi?action=update&Network.Authentication.Snapshot=enable

▶ Sample API command to Pull JPG picture with enabled authentication:

http://username:password@ip_address/video.jpg

▶ API Command to Disable Required Authentication:

http://username:password@ip_address/cgi-bin/admin/param.cgi?action=update&Network.Authentication.Snapshot=disable

▶ Sample API command to Pull JPG picture with disabled authentication:

http://ip_address/video.jpg

Appendix D: RTSP Video Streams URL

Use the following command to establish an RTSP video stream connection to each of the available video transmissions in the 9x0 Series Series camera:

rtsp://ip_address:port_number/streamx, where x corresponds to each stream channel 1 to 4.

▶ Example: Video stream 1
rtsp://10.1.55.180:554/stream1

▶ Example: Video stream 2
rtsp://10.1.55.180:554/stream2

▶ Example: Video stream 3
rtsp://10.1.55.180:554/stream3

▶ Example: Video stream 4
rtsp://10.1.55.180:554/stream4