Network / IP Camera Module
User's Guide

(Version 1.3)

Preface

Congratulations on your purchase of this product. Read this manual carefully and keep it in a safe place for any future reference.

About this manual

This user manual has been designed to help you make the most of your IP camera and its many features and functions. Information in this document has been carefully checked for accuracy; however, no guarantee is given to the correctness of the contents. The information in this document is subject to change without notice.

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Contact Information

Leopard Imaging Inc.

1130 Cadillac CT

Milpitas, CA 95035

Phone: (408) 263-0988

Fax: (408) 217-1960

Email: sales@leopardimaging.com

Technical Support: support@leopardimaging.com

Web site: www.leopardimaging.com

Contents

Introduction

This section covers unpacking your new IP camera Module, its key features, and basic technical information about the product. Refer to later chapters for information on setting up and configuring the product in more detail.

Package contents

The package should contain all the following contents. If anything is missing or appears damaged, contact your dealer immediately.

1. LNC IP Camera Module (1)
2. 12V DC Power Adapter (1)
3. User's Guide (1)
4. Mounting bracket (1)
5. Certificate and Warranty Card (1)

Optional Accessory:

1. Tripod Bracket

1. Product Introduction

1.1 Product outline

Leopard Imaging LNC IP camera is the next-generation IP Camera with different sensor boards from different manufacturers. It outputs full HD Video in H.264, MPEG-4, MJPEG and other video format at 30 frames per second, which makes clear images achievable even under high-contrast, low-light environment. The LNC IP Camera is ONVIF compliant and can be easily integrated into security systems.

1.2 Key features

- 1080P/720P Full HD video output at 30 frames per second
- Support single / dual / triple media streaming output
- Support face detection
- Support motion detection, alarm linkage
- Support image enhancement, low-light treatment
- Optional PoE support
- ONVIF Compliance
- Standard H.264, MPEG-4, MJPEG video compression format
- Standard G.711 audio compression format
- Support 1080P, 720P, D1 resolution
- Built-in Web Server, fully support monitor, configure and manage via IE
- Dynamic frame rate control, real-time audio and video on the Internet to ensure transmission
- Support the adjustment of image parameters

1.3 Technical Spec

	1080p	720p
Image Input		
Sensor	HD CMOS	
Day/Night	Auto Switch (Optional Feature)	
Active Pixels	About 200M	About 100M
e-shoot	1/2 to 1/10,000 s	
Image Enhance	Auto Gain, Auto Exposure, Auto White Balance	
Lens	Fix focus, IRIS support, C/CS mount lens suppot	
Image Process		
Resolution	1920x1080，1280x720，D1	1280x720，D1
Format	H.264, MPEG-4, JPEG	
Frame Rate	H264/MPEG-4: 30f/s	
Video Analytics		
Motion Detection	Support	
Face Detection	Support	
Audio		
Encoding	G.711	
Network		
Protocols	TCP/IP, ARP, ICMP, HTTP, FTP (client/server), SMTP, DHCP, DNS, NTP, RTP/RTCP	
Wireless	Support (Optional WIFI Module)	
Protocol	ONVIF	
Authentication	IEEE802.1X	
UPnP protocol	Support	
Zero configuration protocol	Support	
Interfaces		
Network	10BASE-T/100BASE-TX (RJ-45)	
Serial Port	RS-485 (PELCO D protocol)	
Extension Storage	SD card x 1	
Alarm In/Out	x1 Input，x1 Output	
External Audio Input	3.5MM Audio Input Interface	
External Audio Output	3.5MM Audio Output Interface	
Work Environment		
Weight	106gram	
Dimensions	113mm(L)*58mm(W)*32mm(H)	
Power Supply	PoE (Optional), DC12V	
Power Consuming	<3w	
Temperature	-20℃~ 45℃	
Humidity	10% ~ 80% no condense	
Video Management Software on PC		
OS	Microsoft Windows 98/2000/XP/Vista/Win7	
Browser	Internet Explorer6.0 or above	
Record Software	Milestone XProtect (3 rd party software, see Appendix 2）	

2. Product Views

Use the following illustrations to familiarize yourself with the camera and identify each of the parts.

2.1 User Interface

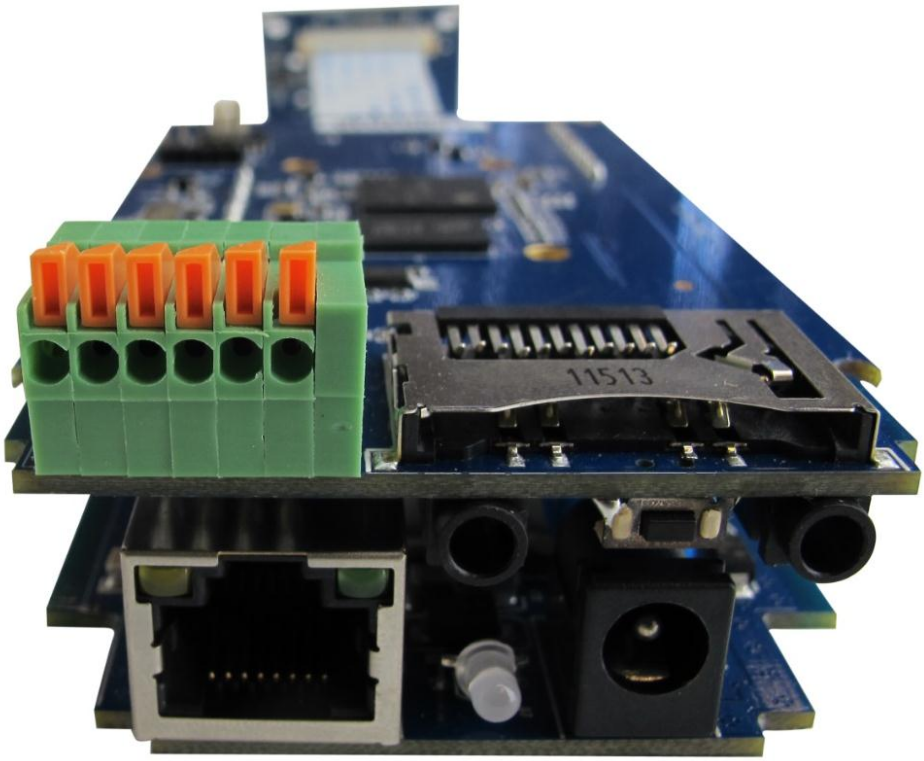


Figure 1: User Interface

Interface	Description
LAN	RJ45 LAN Connector
Power	Power Indicator
DC 12V	Power Input DC 12V/1A
A out	Audio output
A in	Audio input
SD Card	SD card slot
Mini USB	USB interface
AUTO IRIS	Auto iris lens contact, (Supports DC lens)
ANT	Wireless LAN interface

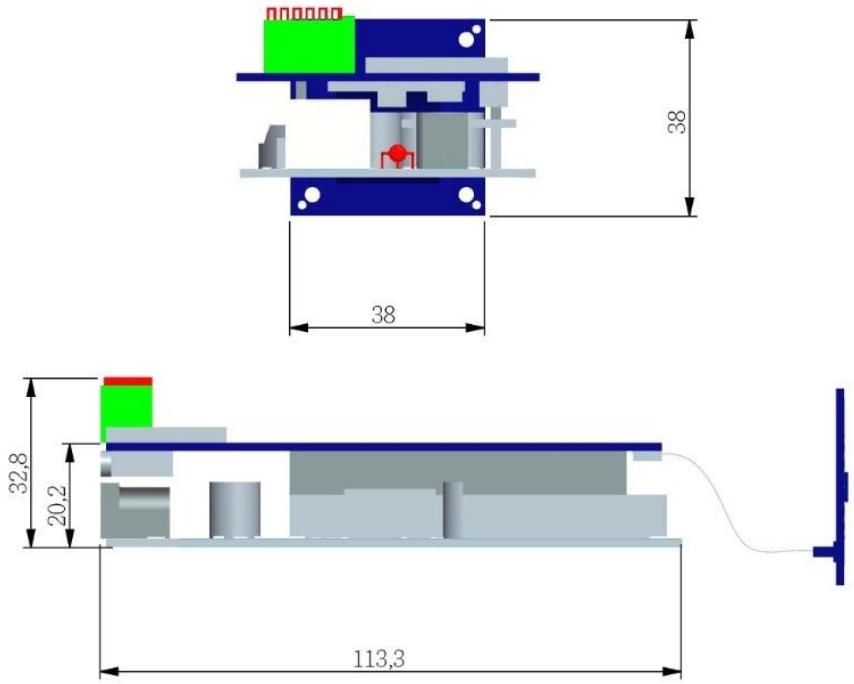
ALM out	Alarm output
ALM in	Alarm input (low level)
GND	Ground
RS485	RS485 control, left RS485(-), right RS485(+) . PTZ decoder can be connected to support multiple PTZ protocol.

2.2 Indicators

The following table provides a description of each of the LED indicators:

Power Indicator	Power LED
RJ45 TX/RX Indicator	LAN Green
RJ45 LINK Indicator	LAN Orange

2.3 Product Dimensions (mm)



3. System Installation

3.1 Operating Environment

The IP Camera video streaming can be viewed on a PC with Windows XP (or higher) OS via the TCP/IP protocol.

3.2 System installation

1. Connect the IP Camera to the network or directly to PC via Ethernet cable.
2. Connect the 12V DC Power to the camera.
3. Normally the "link" indicator (Orange) of the RJ45 connector will light up in about 5 seconds while the data indicator (Green) will start blinking. This indicates that the network connection of the IP Camera has been set up.

4. Internet Explorer

4.1 Preparation

1. To connect the Leopard IP Camera directly to a PC, the PC must be configured to be a DHCP server.

Below are the steps to set up this connection:

- Make sure the PC has the correct Operating system with UPnP installed and is connected to the IP Camera correctly. (Refer to Section 3)
- Connect the external power adapter.
- The DHCP server will assign an IP to the IP Camera and the camera will show up as a UPnP device.
- Refer to the UPnP device for the IP address of the camera or directly open the device; Enter the User name and password to access the preview of the IP Camera

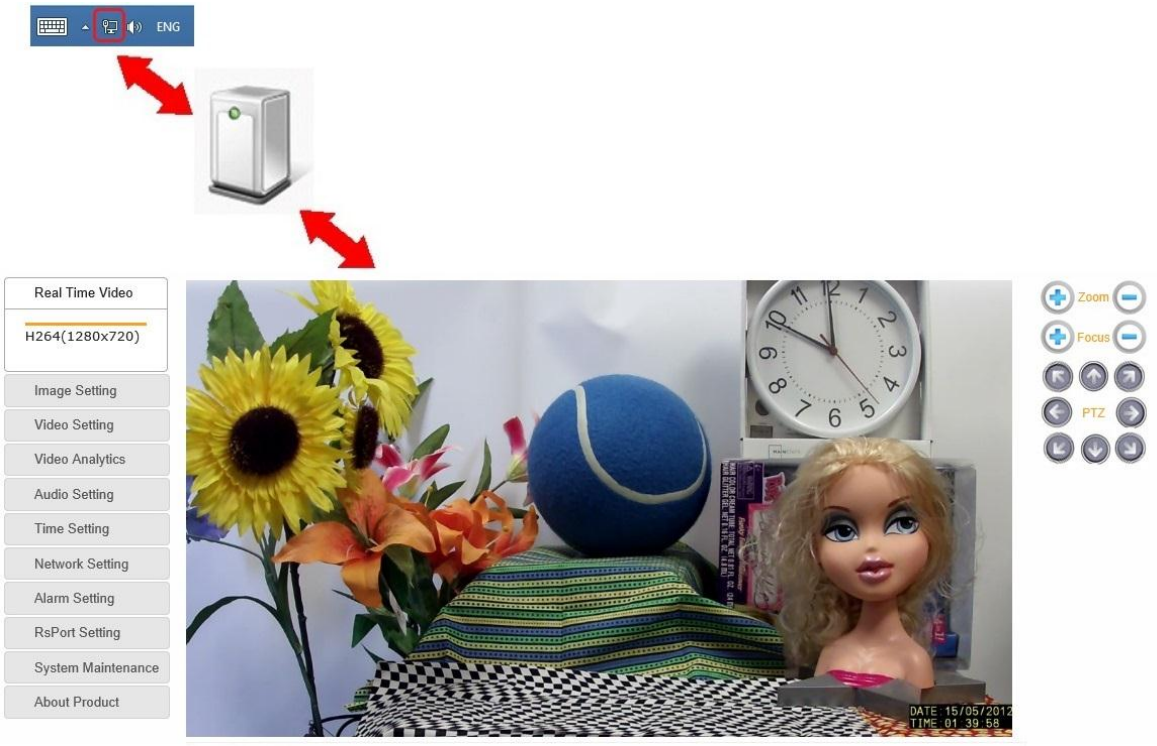
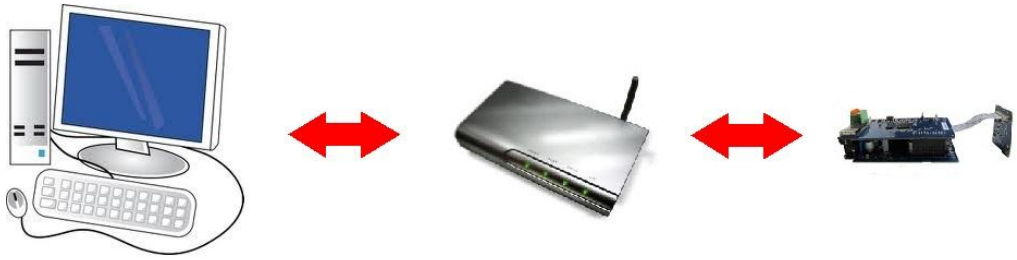


Figure 2: Connecting to Network

2. Connecting the IP Camera to a network:



To connect the IP Camera to a network via a Router:

- Make sure the client PC with correct OS is also connected to the same network.
- Connect the external Power to the IP Camera.
- The router will assign an IP address to the IP Camera.
- The IP Camera will show up on the PC as a UPnP device.

3. When browsing the IP Camera on the IE for the first time, please refer to Appendix 2 of the file Set up and Re-programming to install Add-on to get the IE interface.

4.2 Accessing the video preview

To access the video preview, please follow the steps below:

1. Click "UPnP", and you will get the following interface:

Figure 3: Login Interface

2. In order to complete the installation of the Control successfully through the browser, the version of IE must be upgraded to 6.0 or above.
3. Enter user Name: admin
4. Enter password: admin
5. Click "OK". You will the get to the video preview as show below:

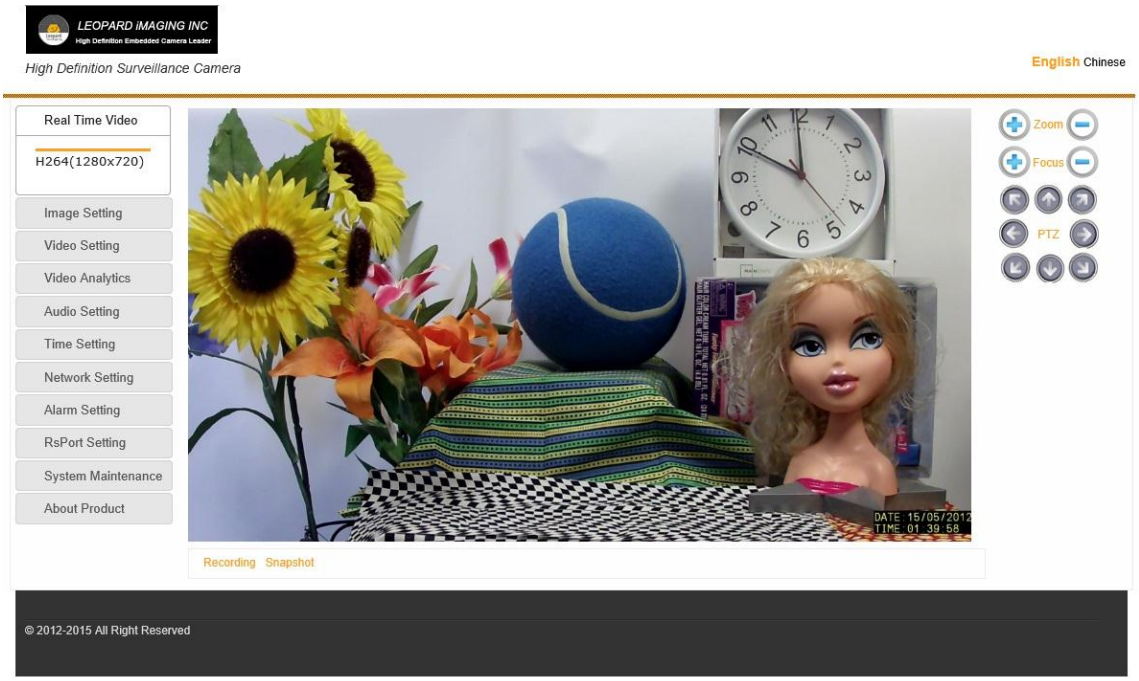


Figure 4: Live Video Interfaces

4.3 IE Interface Overview

The Window displays real-time video images, as shown in Figure 4.

The Client interface includes:

- Live video Preview.
- Navigation interface on the left part of the webpage, shown in Figure 5. These Interfaces will be introduced in detail in the following sections.

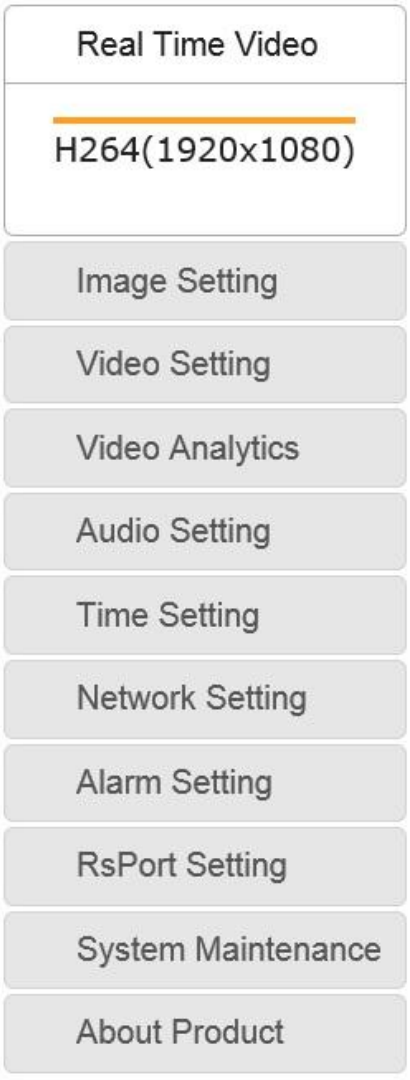


Figure 5: Navigation Interface

- PTZ interface on the right of the webpage.

Figure 6: PTZ Interface

❖ Recording and Snapshot

- Start recording: After click "Start recording", video will be saved to your PC; Click again, video recording will stop.
- Snapshot: After click "Snapshot", you will capture an image.

Figure 7: Recording and Snapshot

4.4 Settings

I. Image Setting

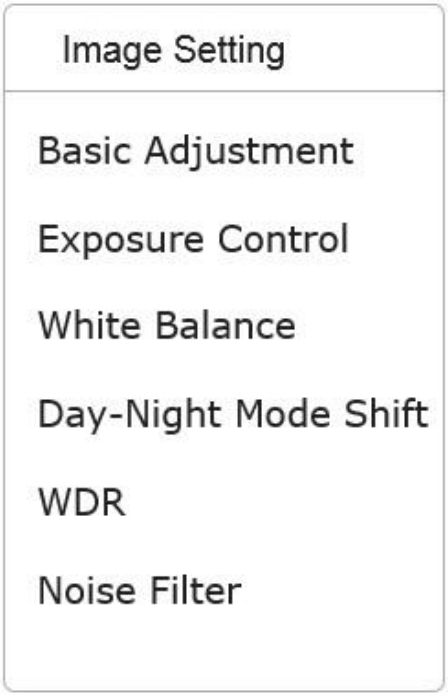


Figure 8: Image Setting

❖ Basic Adjustment

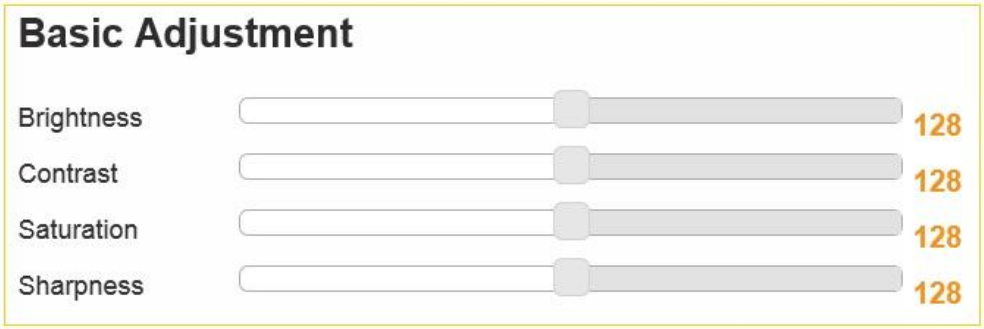


Figure 9: Basic Adjustment

- Brightness: Scroll bar to control brightness. (value ranges from 1 to 255)
- Contrast: Scroll bar to control contrast. (value ranges from 1 to 255)
- Saturation: Scroll bar to control saturation. (value ranges from 1 to 255)
- Sharpness: Scroll bar to control sharpness. (value ranges from 1 to 255)

❖ Exposure Control

- Auto Exposure

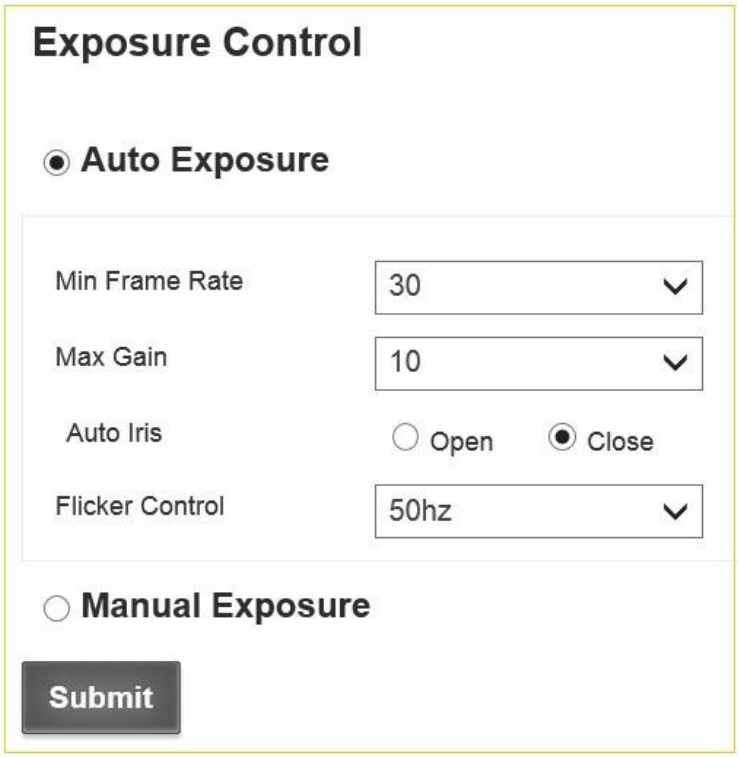


Figure 10: Auto Exposure

- Minimal Framerate: Use the pull-down list to choose the minimal framerate.
  - 30
  - 25
  - 15
  - 8
  - 1
- Max Gain: 1 ~ 10
- Auto Iris: ON / OFF
- Flicker Control: Use the pull-down list to choose the anti-flicker frequency
  - 60hz flicker
  - 50hz flicker

- Manual Exposure:

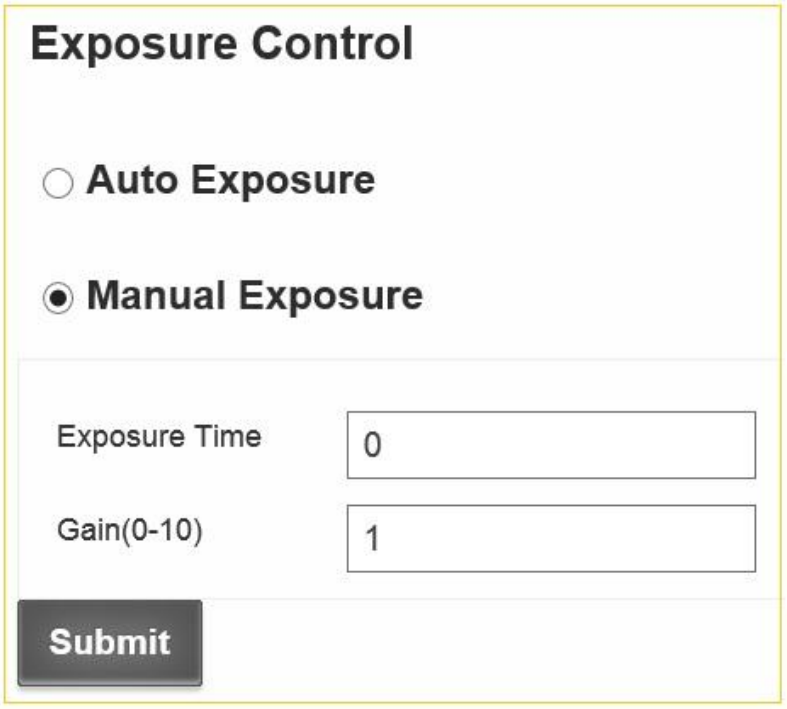


Figure 11: Manual Exposure

- Exposure Time
- Gain: 1 ~ 10

❖ White Balance: ON / OFF

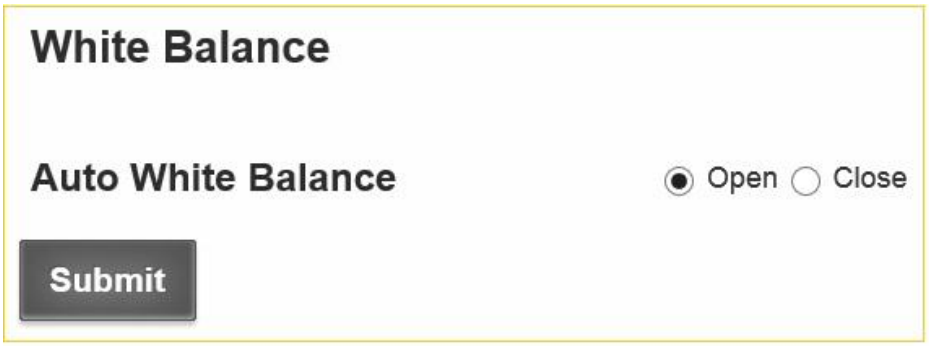


Figure 12: Auto White Balance

❖ Day Night Mode Setting

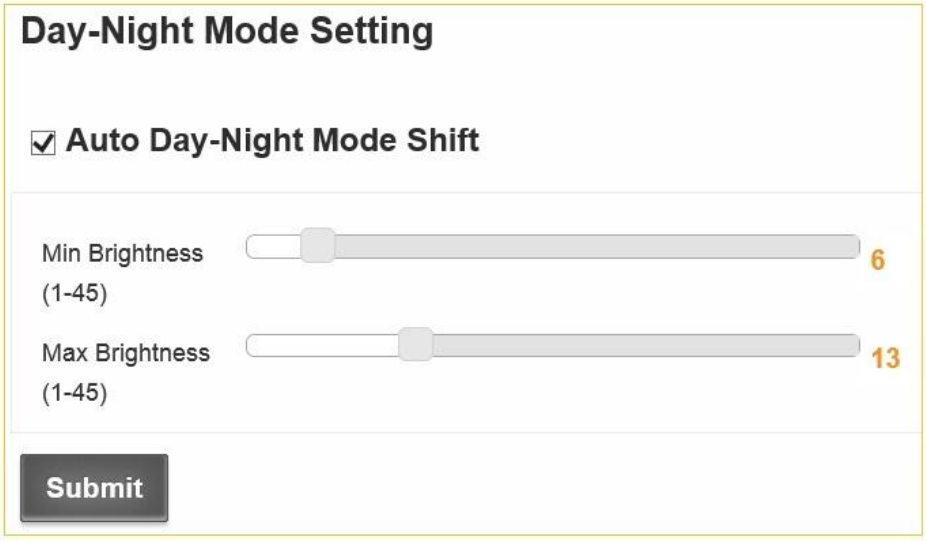


Figure 13: Auto Day-night mode shift

- Min Brightness(1- 45): when the brightness is lower than min, night mode will open
- Max Brightness(1- 45): when the brightness is higher than max, day mode will open

❖ WDR

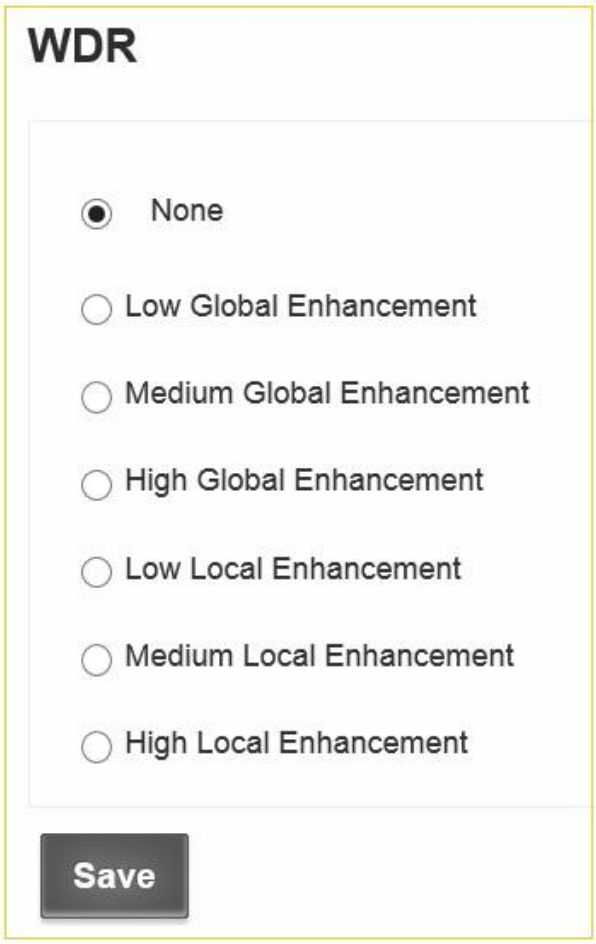


Figure 14: WDR

- None
- Low Global Enhancement
- Medium Global Enhancement
- High Global Enhancement
- Low Local Enhancement
- Medium Local Enhancement
- High Local Enhancement

❖ Noise Filter

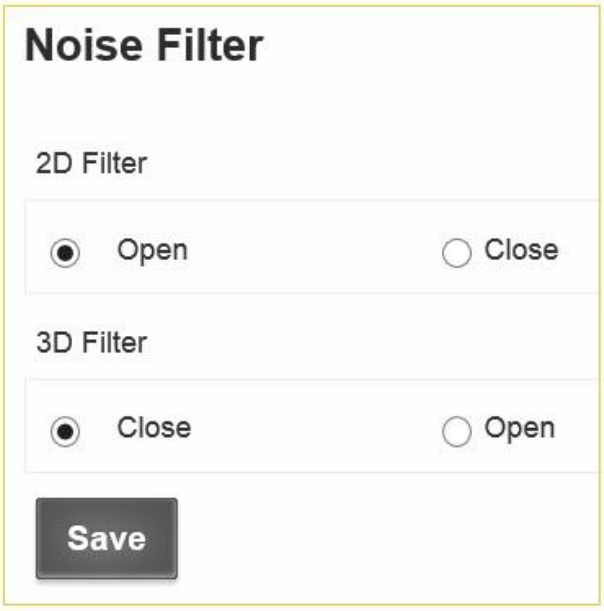


Figure 15: Noise Filter

- 2D Filter: ON / OFF
- 3D Filter: ON / OFF

II. Video Setting

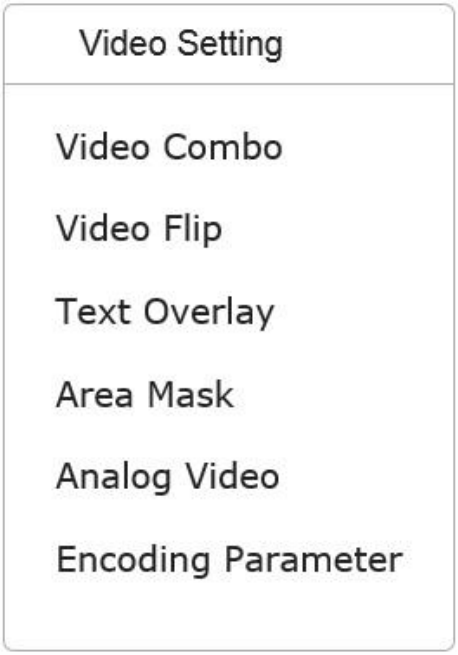


Figure 16: Video Setting

❖ Video Combo

- Main stream

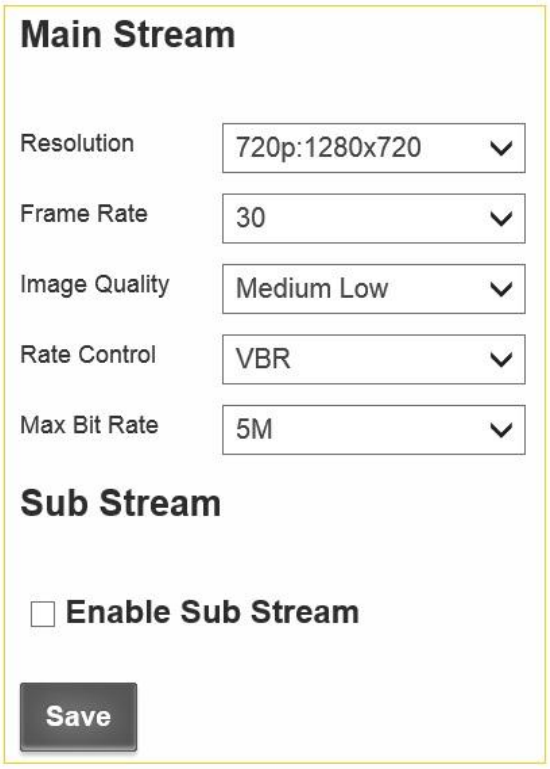


Figure 17: Main stream

  - Resolution:
    - 1080p: 1920x1080
    - 720p: 1280x720
    - SXVGA:1280x960
    - D1: 720x480
  - Framerate:
    - 30
    - 25
    - 16
    - 8
    - 1
  - Image Quality:
    - High
    - Medium High
    - Medium
    - Medium Low
    - Low
    - Very Low

- Rate Control
  - OFF
  - VBR
  - CBR
- Max Bit-rate
  - 5M
  - 4M
  - 3M
  - 2M
  - 1M

- Sub stream

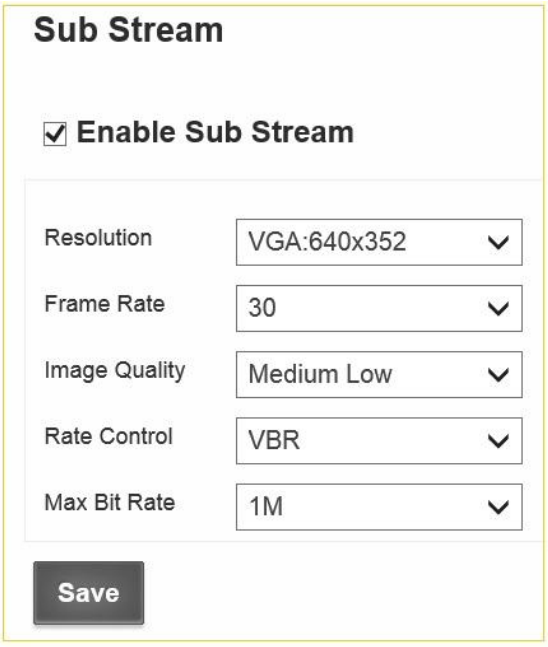


Figure 18: Sub stream

- Enable Sub stream: After Enable Sub stream, go to "Live video" and click the stream name to refresh it, you will get two steam names.

Click "All streams", you will get two live videos on the interface.

- Resolution:
  - 720p:1280x720
  - D1: 720x480
  - VGA: 640x352
  - QVGA: 320x192
- Framerate:
  - 30
  - 25
  - 16
  - 8
  - 1
- Image Quality:
  - High
  - Medium High
  - Medium
  - Medium Low
  - Low
  - Very Low
- Rate Control
  - OFF
  - VBR
  - CBR
- Max Bit-rate
  - 5M
  - 4M
  - 3M
  - 2M
  - 1M

❖ Mirror

Figure 19: Mirror

- OFF
- Horizontal
- Vertical
- Both

❖ Overlay Setting

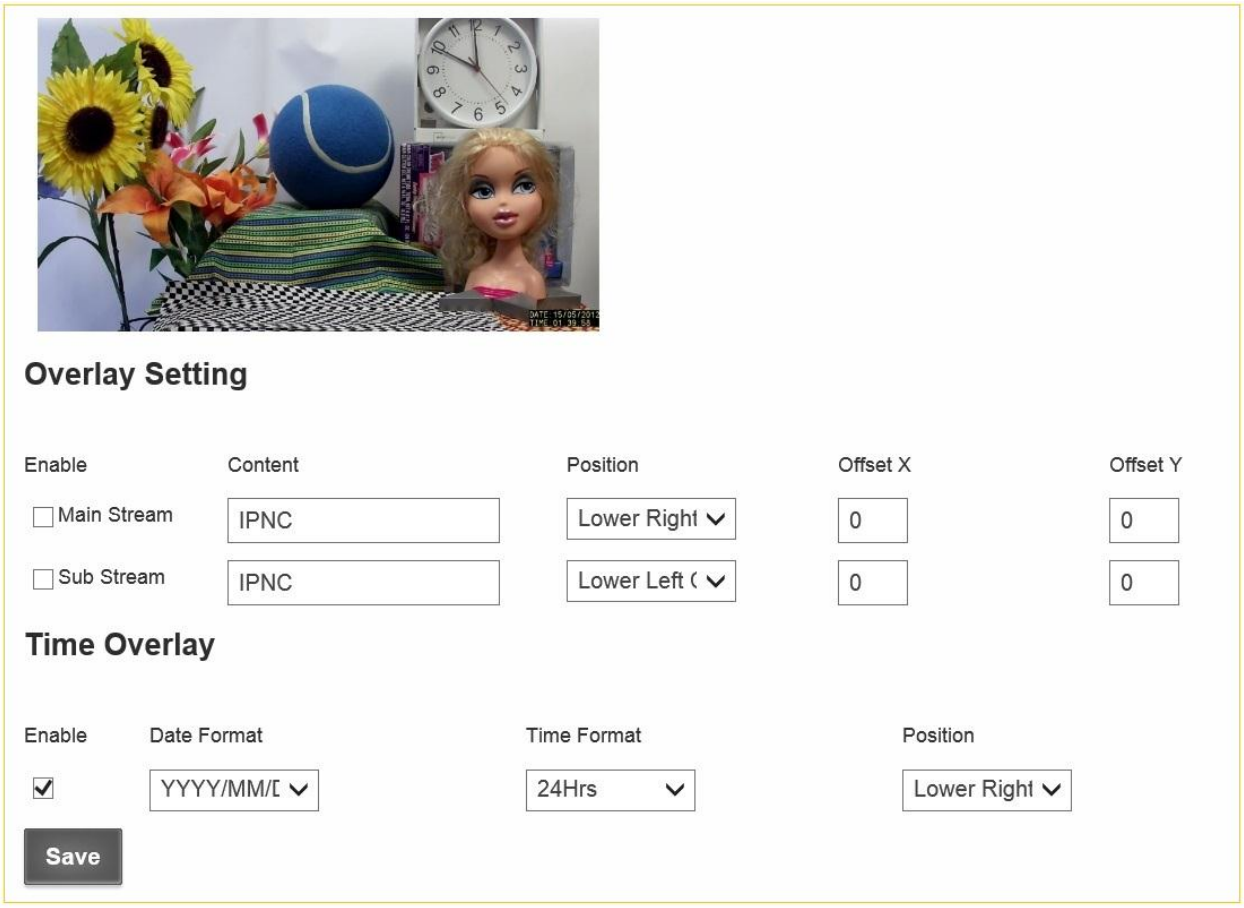


Figure 20: Overlay Setting

- Main stream overlay
  - Enable
  - Text
  - Position
    - Lower-left corner
    - Lower-right corner
    - Upper-left corner
    - Upper-right corner
  - Offset X
  - Offset Y
- Sub stream overlay
  - Enable
  - Text
  - Position
    - Lower-left corner
    - Lower-right corner
    - Upper-left corner
    - Upper-right corner

  - Offset X
  - Offset Y
- Time
  - Enable
  - Date Format
    - YYYY/MM/DD
    - MM/DD/YYYY
    - DD/MM/YYYY
  - Time Format
    - 12 Hrs
    - 24 Hrs
  - Position
    - Lower-left corner
    - Lower-right corner
    - Upper-left corner
    - Upper-right corner

❖ Area Mask

This Function is not supported in current version firmware.

❖ Analog Video

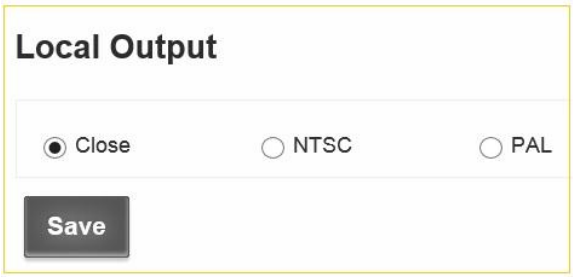


Figure 21: Analog Video

- OFF
- NTSC
- PAL

❖ Encoding Parameters

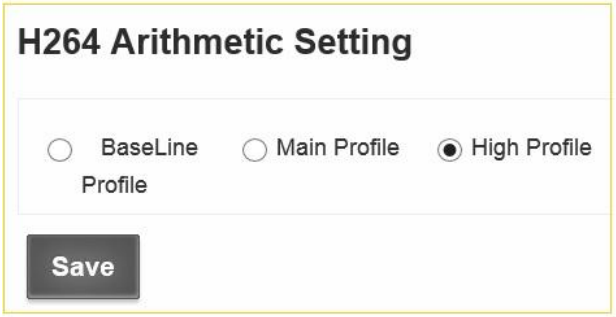


Figure 22: Encoding Parameters

- BaseLine Profile
- Main Profile
- High Profile

III. Video Analytics

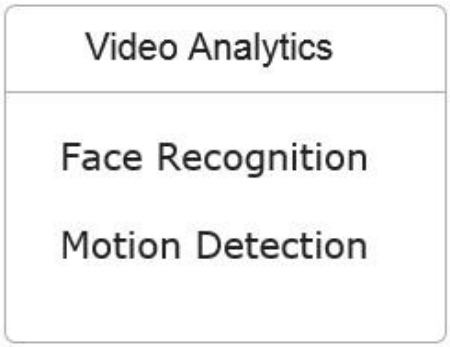


Figure 23: Video Analytics

❖ Face Detection

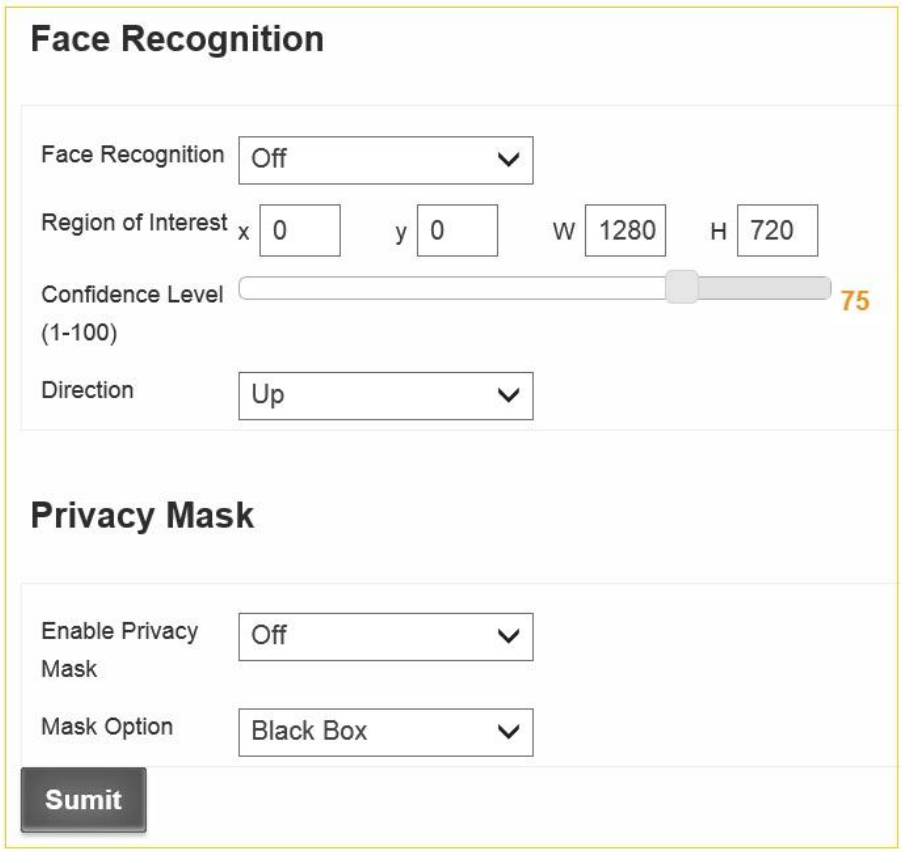


Figure 24: Face Detection

- Face Recognition
  - Face Detect

        - OFF
        - DETECT
        - ENHANCED DETECT
    - Region of Interest:
        - X: Enter the x-axis value of the starting pixel for ROI
        - Y: Enter the y-axis value of the starting pixel for ROI
        - W: Enter the width of the ROI
        - H: Enter the height of the ROI
    - Confidence Level: To adjust the accuracy of the face detection algorithm. The value ranges from 1 (lowest) to 100 (highest). The default value is 75.
    - Direction: To set the priority of detecting faces in the following directions
        - UP
        - LEFT
        - RIGHT
- Privacy Mask
    - Enable Privacy Mask: OFF / ON
    - Mask Option: Choose privacy mask pattern. The default value is Black Box.

❖ Motion Detection

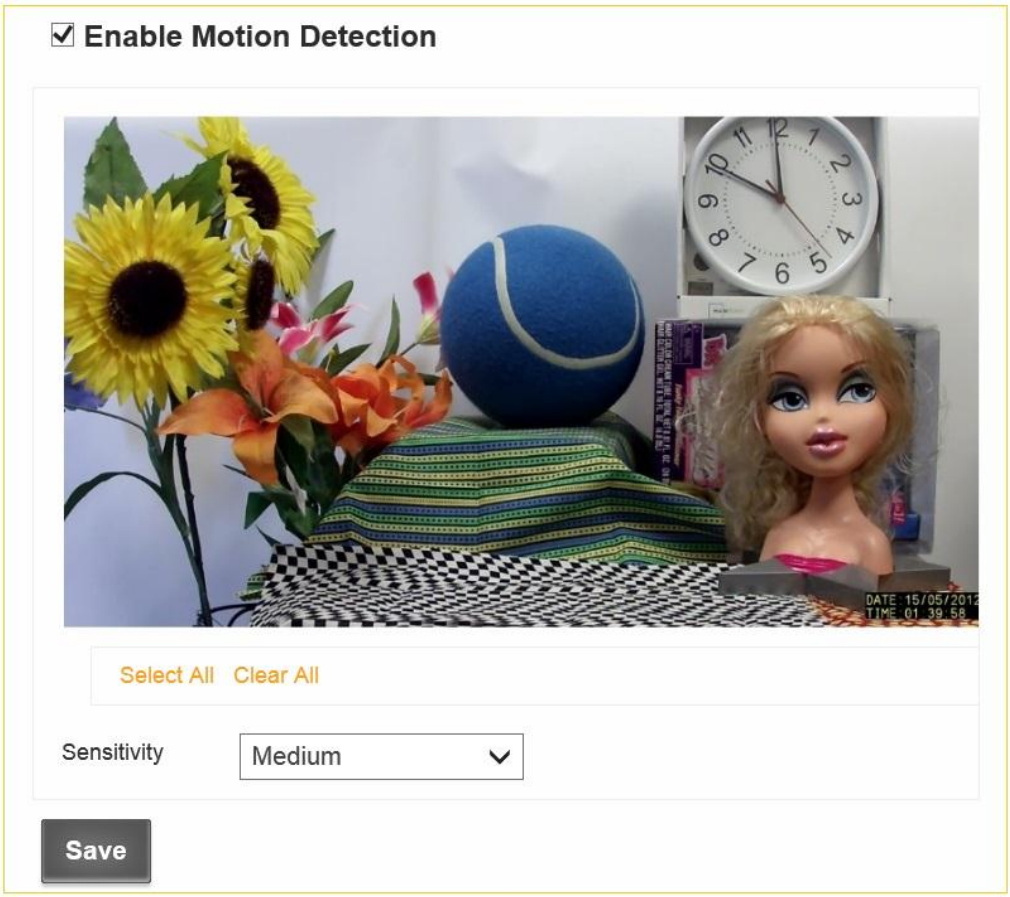


Figure 25: Motion Detection

- Click on the video interface or click "Select All" to select region of interest.
- Click "Clear All" to clear the region of interest.
- Sensitivity
  - Low
  - Medium
  - High

IV. Audio Setting

Figure 26: Audio Setting

❖ Audio Input

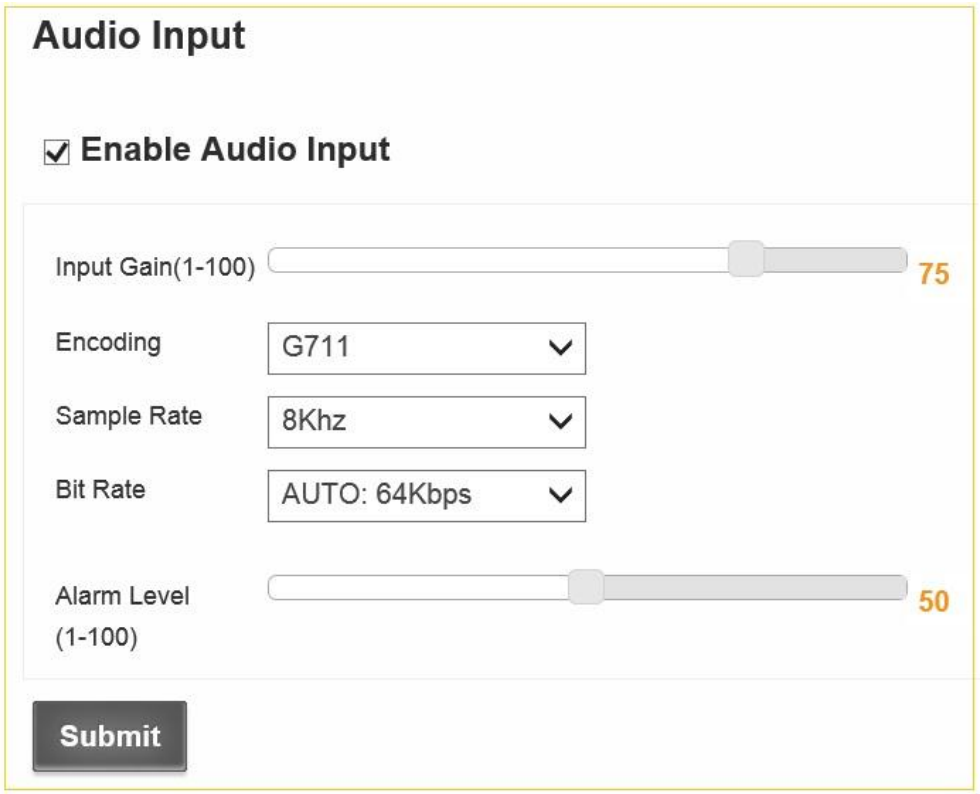


Figure 27: Audio Input

- Enable Audio Input
- Input Gain: Set the input gain to adjust the audio. The range is from 0 to 100, and the minimum value does not mute the camera.
- Encoding: Set the codec for encoding.
  - G711
  - AAC-LC
- Sample Rate
  - 8Khz
  - 16Khz
- Bit Rate: The IP Camera supports 64Kbps bit rate.
- Alarm Level: Use the scroll bar to adjust alarm level.

❖ Audio Output

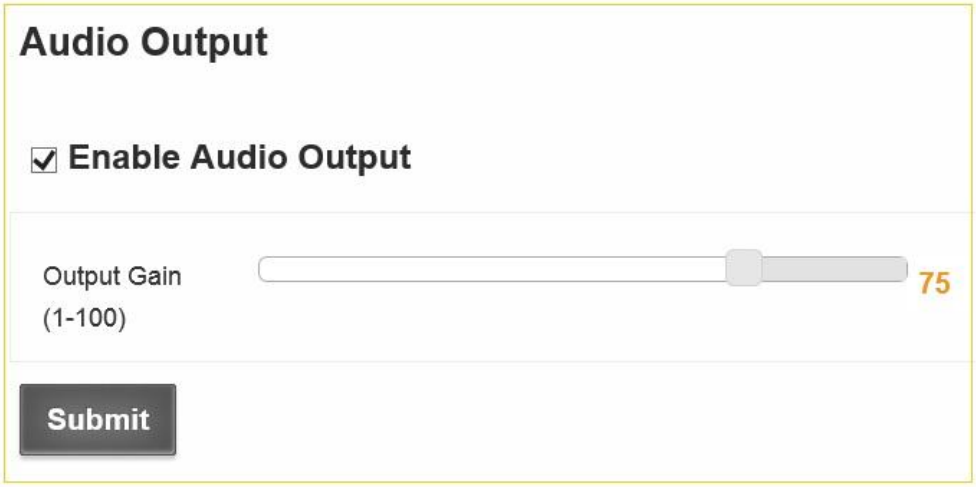


Figure 28: Audio Output

- Output Gain: Set the audio playback volume. The range is from 0 to 100

V. Time Setting

Figure 29: Time Setting

❖ Time Setting

Figure 30: Time Setting

- Time Zone
- Synchronize with computer time
- Synchronize with SNTP server

VI. Network Setting

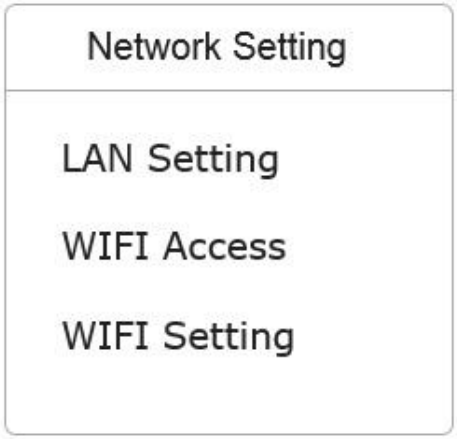


Figure 31: Network Setting

❖ LAN Setting

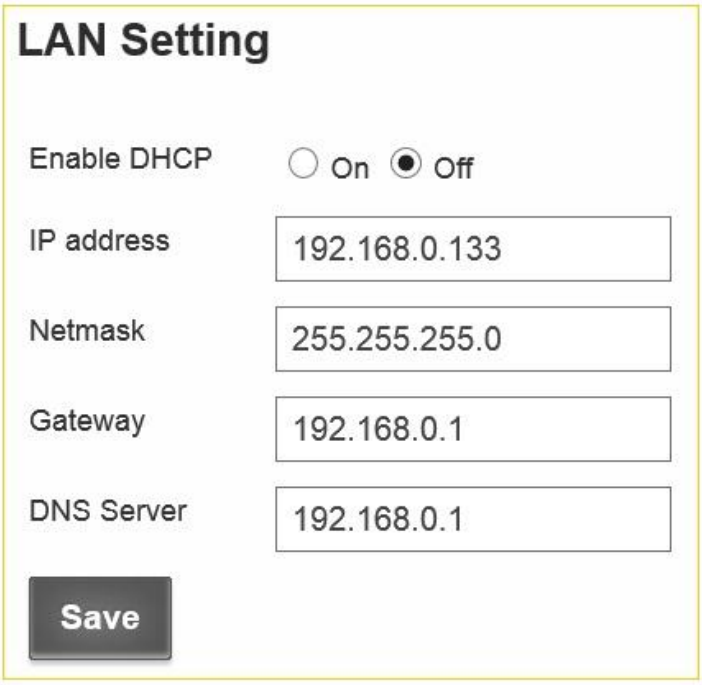


Figure 32: LAN Setting

- Enable DHCP: ON / OFF
- IP address: If you disable DHCP, you can set static IP address.
- Netmask
- Gateway
- DNS

❖ WIFI Access (Optional)

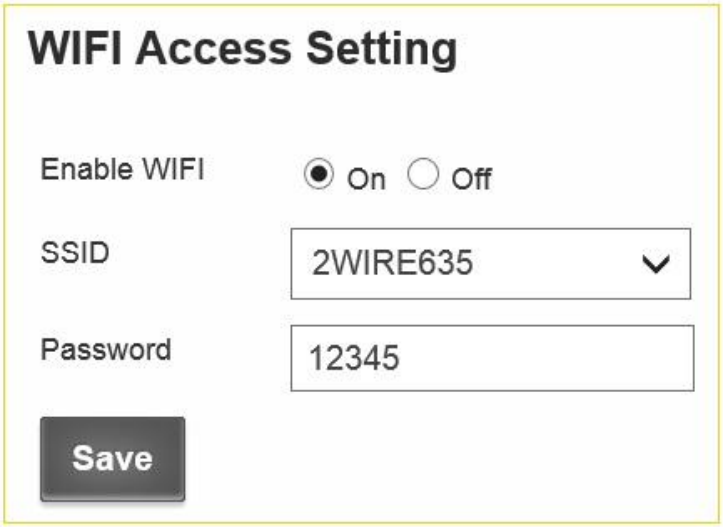


Figure 33: WIFI Access

- Enable WIFI: ON / OFF
- SSID: WIFI ID around the camera will be shown on the pull-down list.
- Password: The password of your Wireless network

❖ WIFI Setting (Optional)

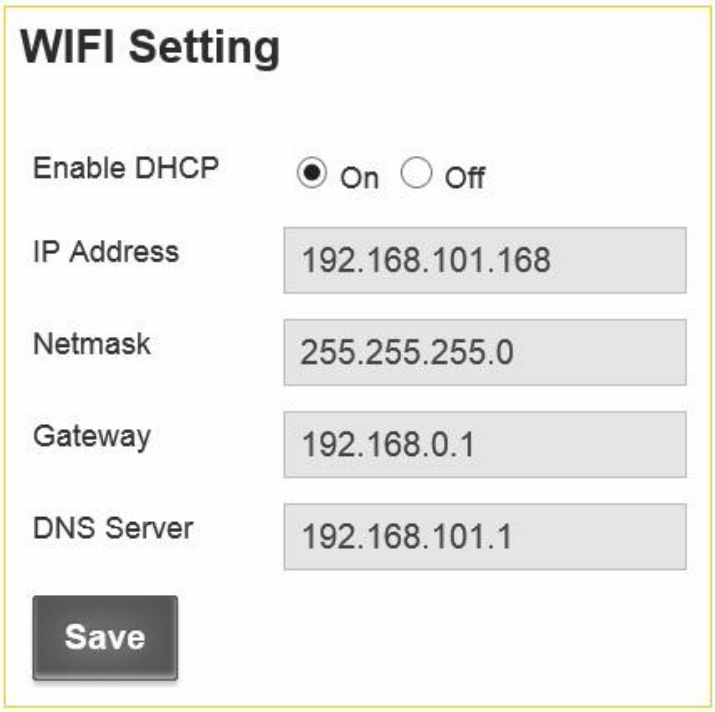


Figure 34: WIFI Setting

- Enable DHCP: ON / OFF
- IP address: If you disable DHCP, you can set static IP address.
- Netmask
- Gateway
- DNS

VII. Alarm Setting

Figure 35: Alarm Setting

❖ Alarm Input

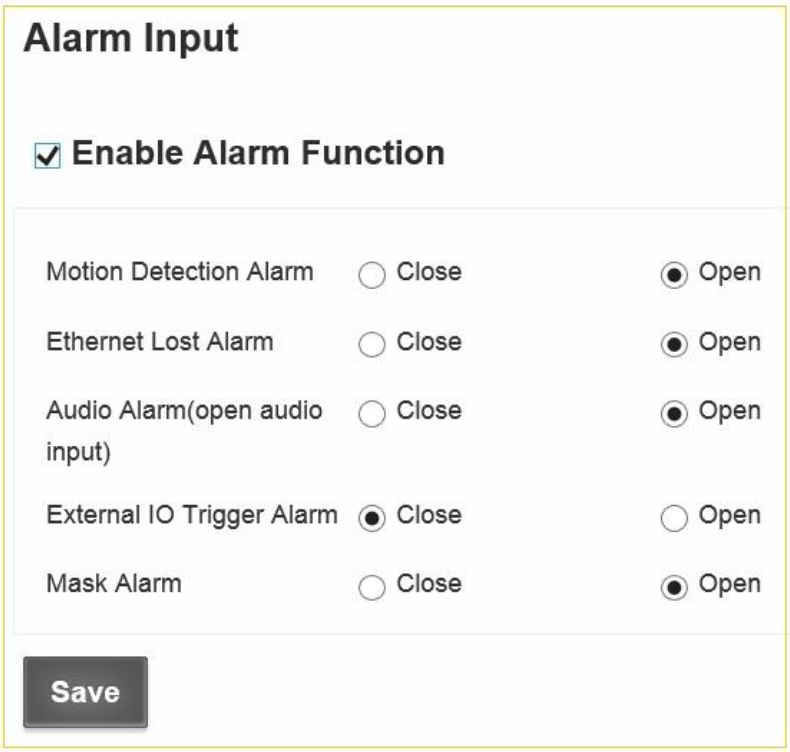


Figure 36: Alarm Input

- Enable Alarm
- Motion Detection
- Ethernet Lost
- Audio Alarm
- External Triggers
- Mask Alarm

❖ Alarm Process

Figure 37: Alarm Process

- Play Audio: OFF / ON
- Alarm Audio Type
  - Long delayed
  - Short sharp
- External I/O: OFF / ON

VIII. RsPort

Figure 38: RsPort

❖ RsPort Setting

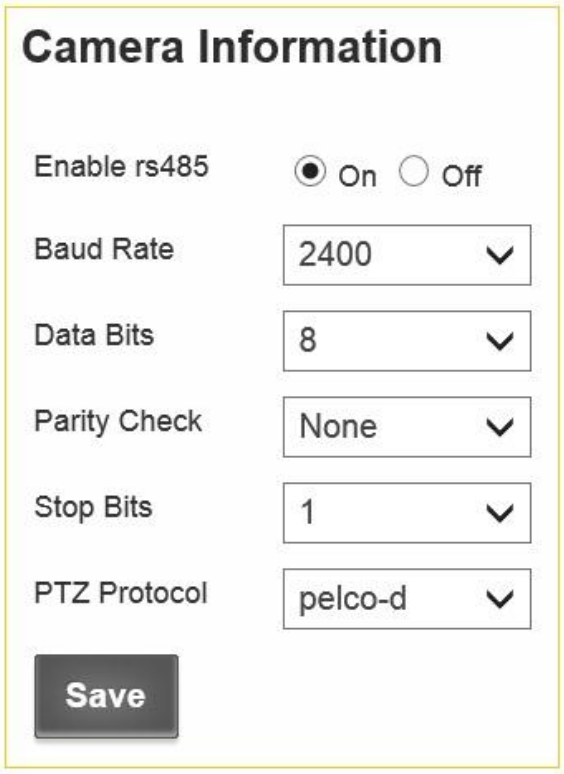


Figure 39: RsPort Setting

- Enable RS485: ON / OFF
- Baud Rate
  - 19200
  - 9600
  - 4800
  - 2400
  - 1200
- Data Bit
  - 8
  - 7
  - 6
  - 5
- Parity
  - None
  - Odd
  - Even
  - Space
- Stop Bits
  - 1
  - 2
- Protocol
  - Pelco-d
  - Pelco-e
  - Custom

IX. Maintenance

Figure 40: Maintenance

❖ Upgrading Firmware

Figure 41: Upgrading Firmware

- ❖ Restart Camera: Click "Restart" button to restart camera.
- ❖ Restore to factory settings: Click "Submit" button to reset the camera
- ❖ Event Log: You can check the system log in this section.
- ❖ Edit User

Figure 42: Edit User

- Add new user: Click "Add new user", you will get following window.

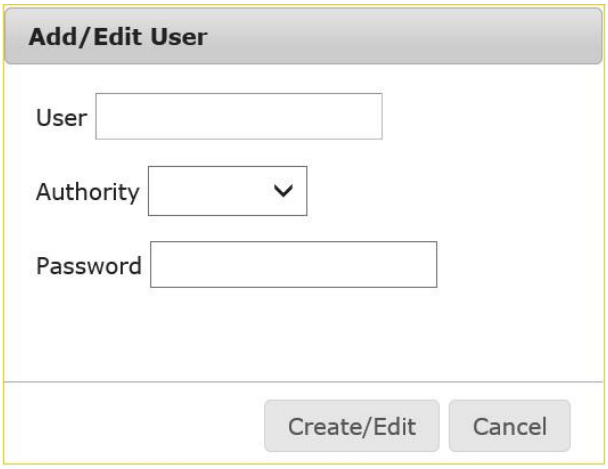


Figure 43: Add new user

  - User: Enter the new user name
  - Authority
    - Admin
    - Operator
    - Viewer
  - Password: Enter the password of new user
- Edit User: Click "Edit" to edit user
- Delete User: Click "Delete" to delete user

X. About Product

Figure 44: About Product

❖ Camera Info

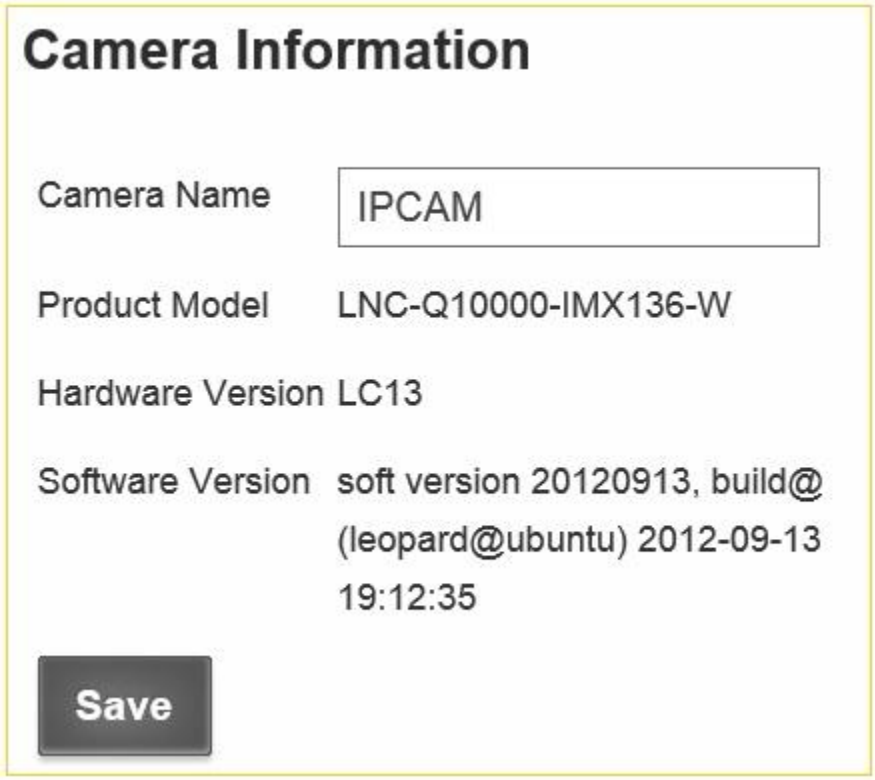


Figure 45: Support

- Camera Name
- Product Model
- Hardware Version
- Software Version

5. FAQ

5.1. Client software can not access the network video server:

- Possible Cause: No network connection
  - *Solution: Check the Ethernet cable first and then double check whether the problem is caused by a virus on the PC. Try to plug another device in the network to make sure the PC has network access.*
- Possible Cause: Incorrect IP address entered
  - *Solution: Double check the IP address from the server.*
- Possible Cause: There is an IP conflict
  - *Solution: Disconnect the video server and network. Connect video server and PC separately, then reset the IP address.*
- Possible Cause: IP addresses are in different subnets
  - *Solution: Check the server's IP address, subnet mask and gateway address settings.*
- Possible Cause: Unknown
  - *Solution: Restore to factory settings.*

5.2. The video server cannot be found by terminal configuration tool:

- Possible Cause: Check whether the network works
  - *Solution: 1.) Turn off firewall*
  - *Solution: 2.) If the device can be found, first check whether the network works. If the network works, but the network interface indicator is not a regular green light flashing, please contact our technical support engineer for equipment maintenance.*

Appendix

A1. How to enable the UPnP in Windows XP

To enable the UPnP Protocol on Windows XP, please refer to the link below from Microsoft Support:

http://support.microsoft.com/kb/941206

A2. Milestone XProtect

Milestone XProtect is a third-party software. You can try it free for 30 days and need to purchase a license if you wish to keep using it.

This guide just briefly illustrates the procedure to run LNC IP camera with Milestone XProtect. If you want more information, please refer to the user guide of Milestone XProtect, which will come with the software you download with the link below.

1. Download Milestone XProtect

Please use the following link to download Milestone XProtect

http://www.milestonesys.com/Support-and-Upgrades/Technical-Support/Self-Help/downloads/

There are different versions in the download list, and we use the Milestone XProtect Enterprise in this user guide.

2. Install Milestone XProtect

3. Run Milestone XProtect

After installation, you will get two icons on your desktop (**Milestone XProtect Management Application** and **Milestone XProtect Smart Client**).

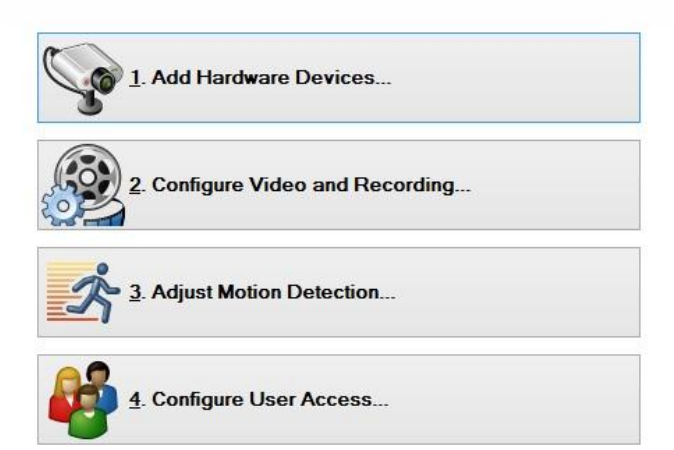
3.1 Run Management Application

Open **Milestone XProtect Management Application**.

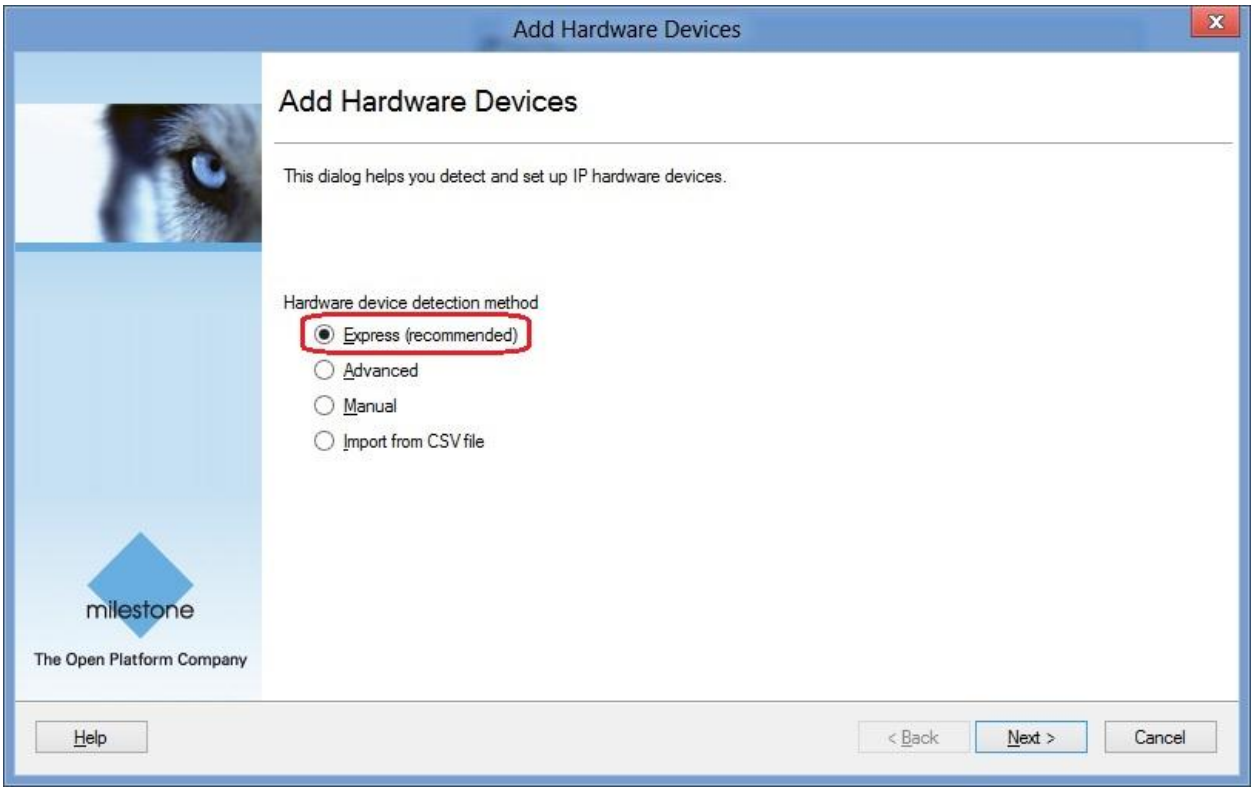
3.1.1 Add Hardware Device

When you get the interface, click **Add Hardware Device**.

Note: *Before this step, the IP camera must be running.*

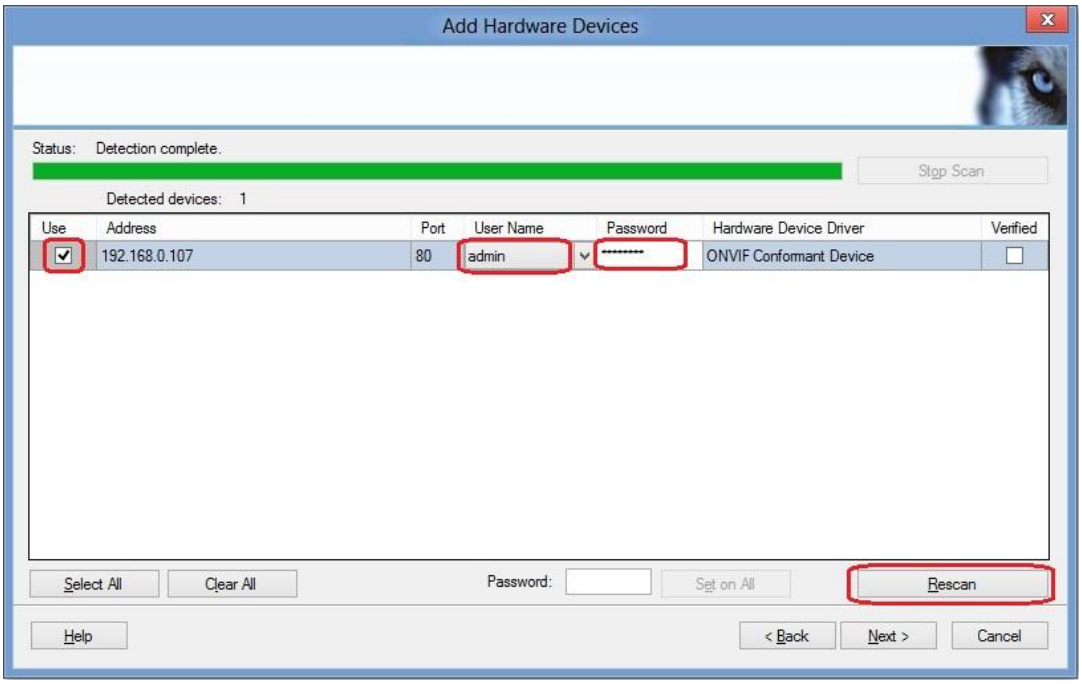


Then you will get the following window,



Select **Express** , then click **Next**.

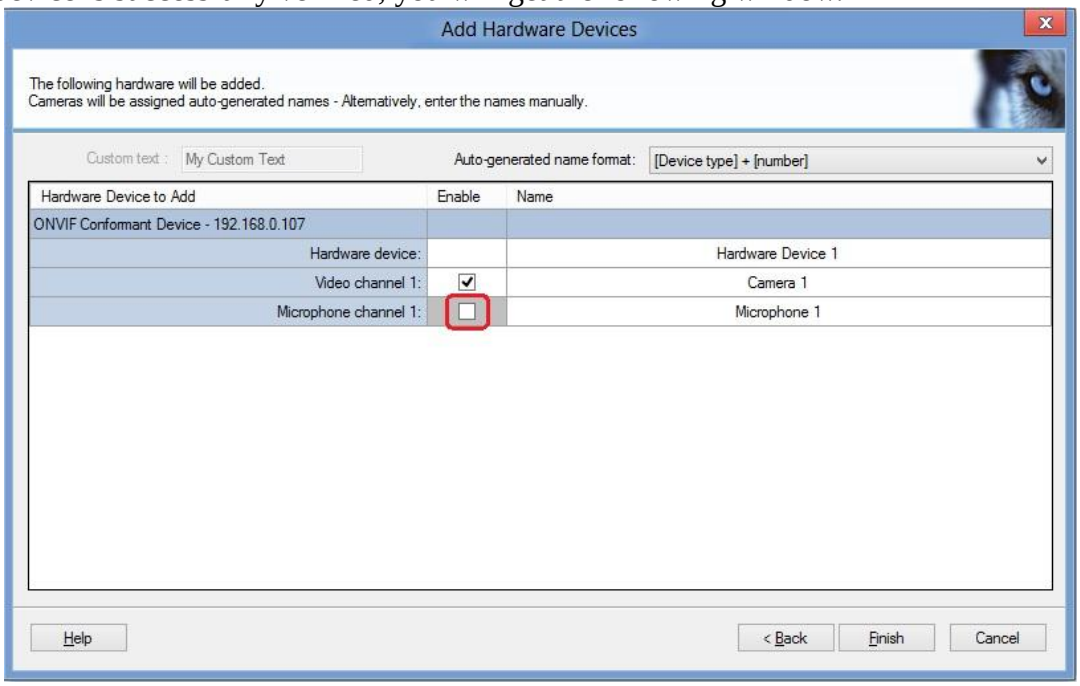
Note: *Please refer to the user guide of Milestone XProtect if you want to use other ways to add hardware device.*



After the auto-scan gets the device, please fill in **User Name** (admin) and **Password** (9999), then check **Use** and click **Next** to verify the hardware device.

Note: *If the auto-scan can not get the device, please click* ***Rescan*** *to scan it again, or you can also use other ways in last window to get the device.*

If the device is successfully verified, you will get the following window.

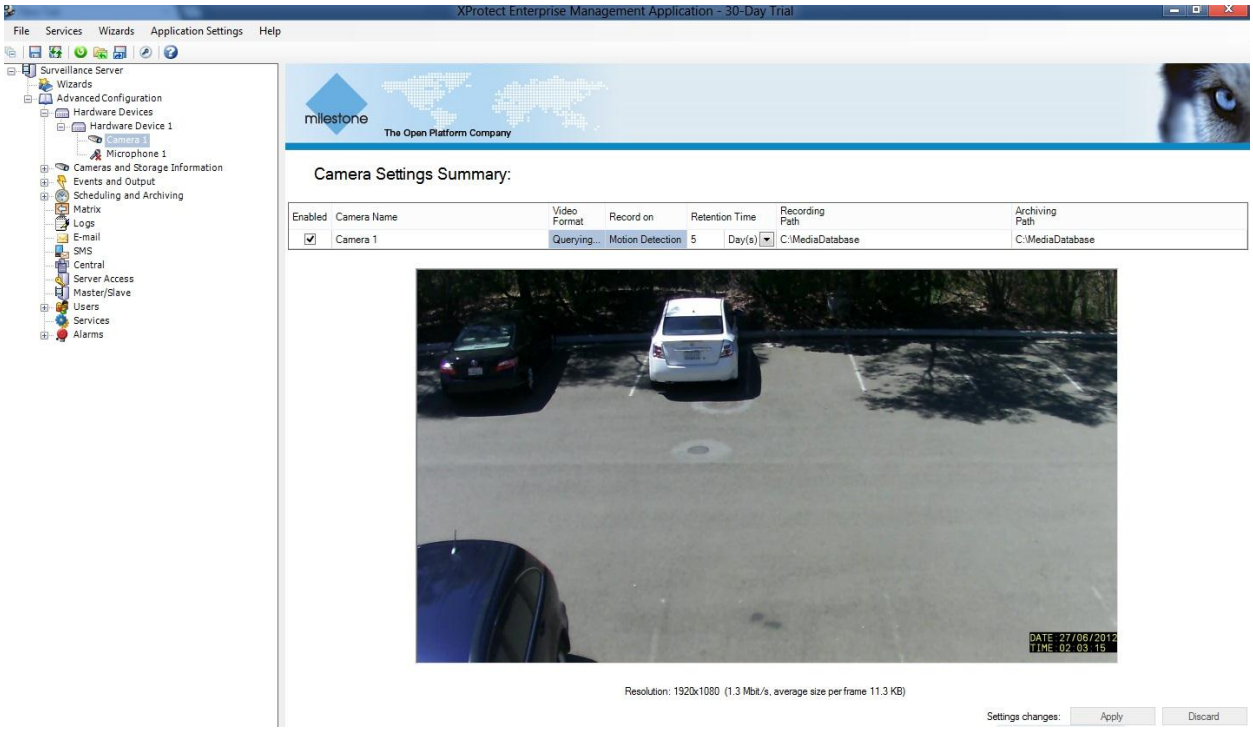


Uncheck the **Microphone channel**, then click **Finish** to add this device.

3.1.2 Manage the functions

In next window, go to **Advanced Configuration →Hardware Devices →Hardware Device # →Camera #** , after you click **Camera #**, you will get the live video.

Note: Hardware Device# *is the hardware device you just added, for example, Hardware device 1*
Camera # *is the video channel name you just added, for example, Camera 1.*



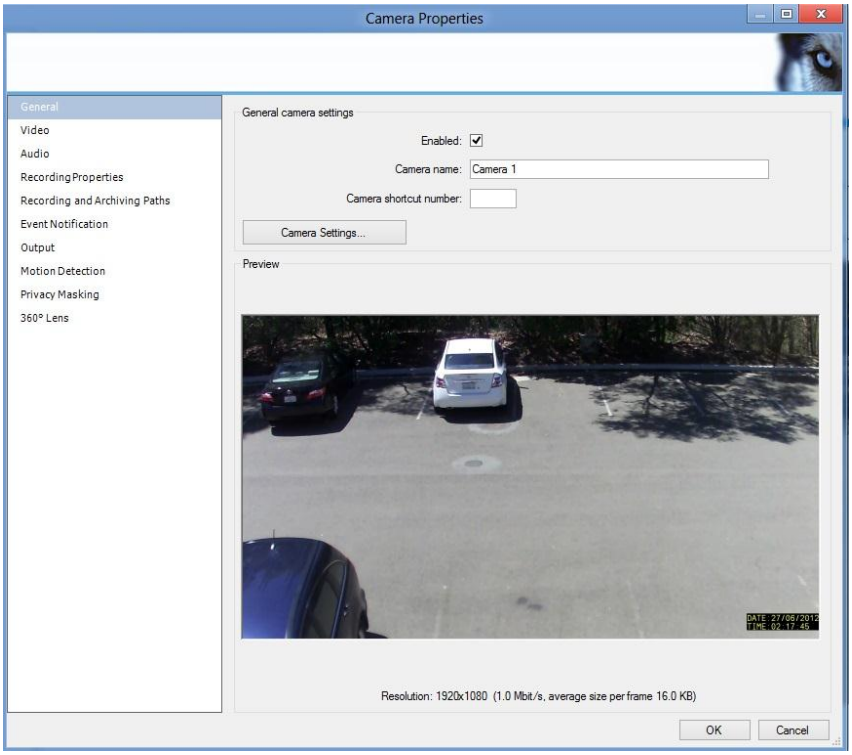
On the left side bar, there are many functions can be used.
Please refer to the user guide of Milestone XProtect for how to manage them.

Note: *Some of the functions may not be available in current IP camera version.*

3.1.3 Set camera properties

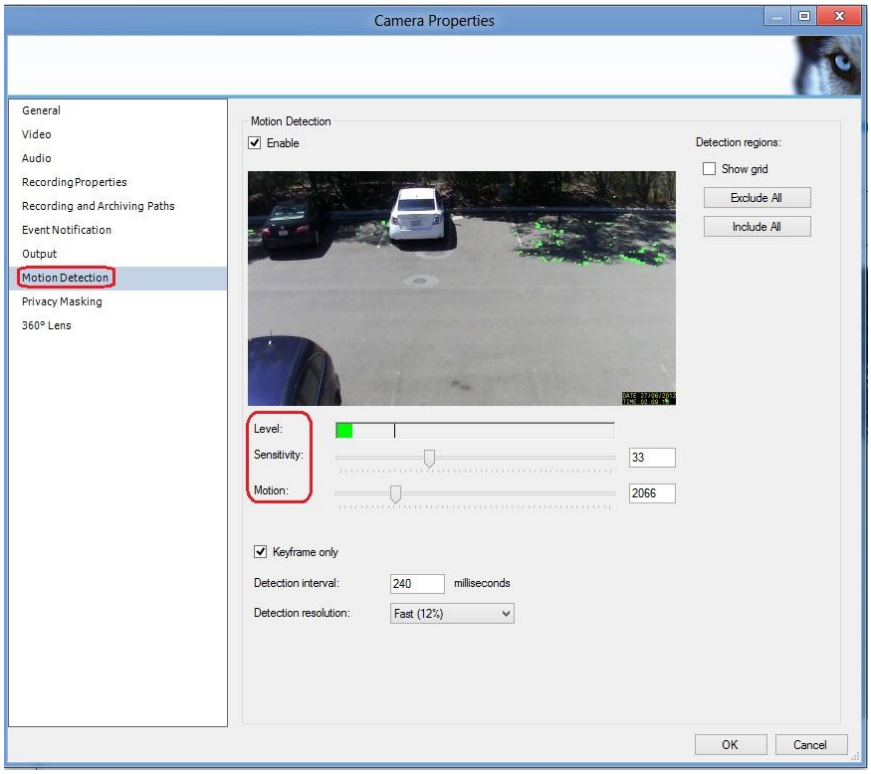
Right click **Camera # → Properties**.

In next window, you can set the properties of the camera.



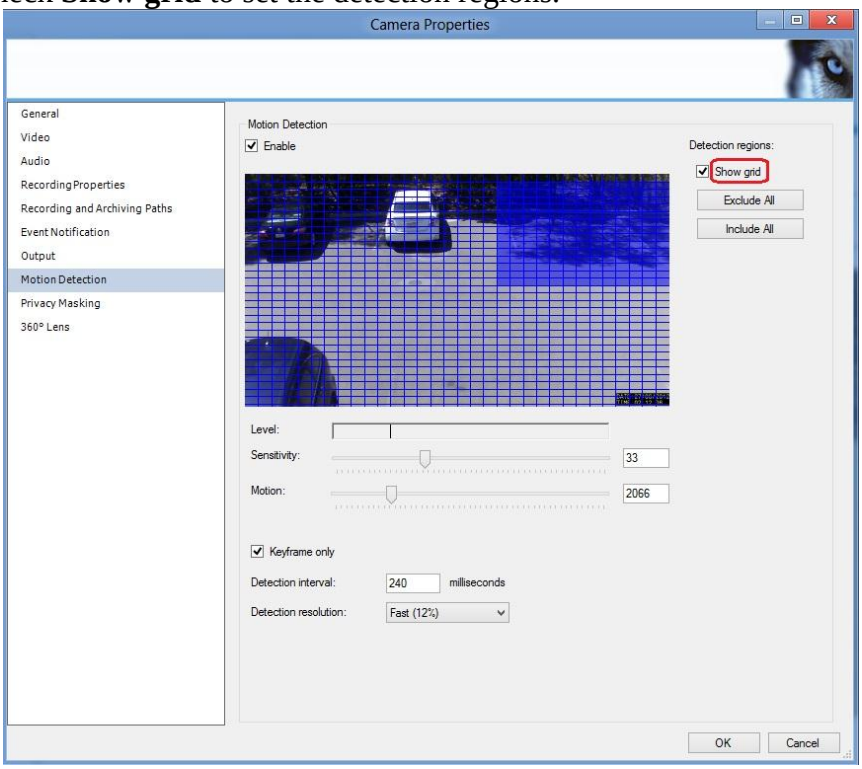
For example, you can set **Motion Detection** and **Privacy Masking.**

- Set **Motion Detection**.

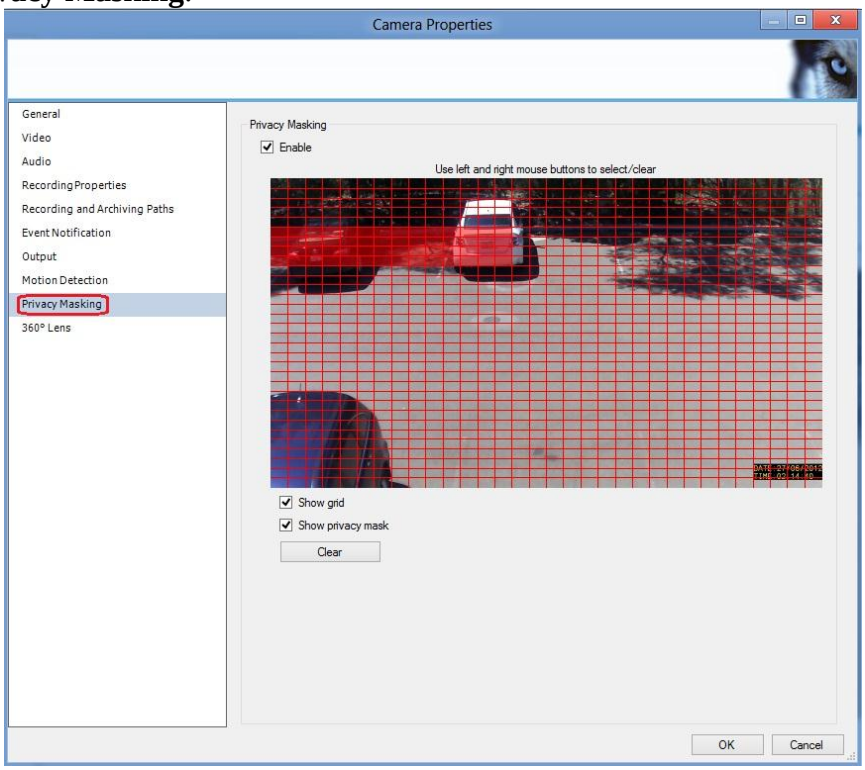


Sensitivity and **Motion** can be used to adjust the **level**.
When the green bar is over the line, the video from the camera will be recorded.

You can also check **Show grid** to set the detection regions.

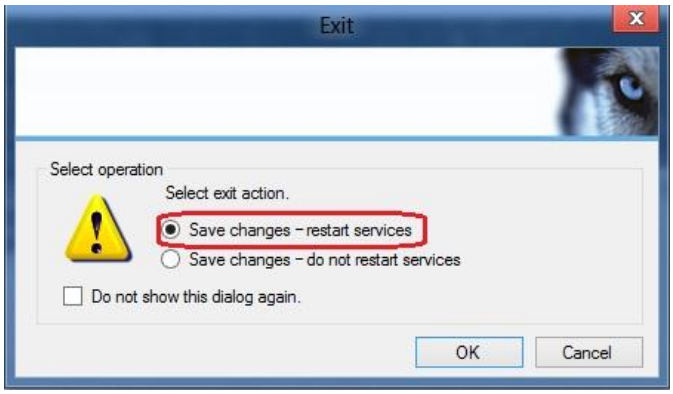


- Set **Privacy Masking**.



The blocks you select will be a black area in video you get from camera.
After you set the properties, click **OK** to save it.

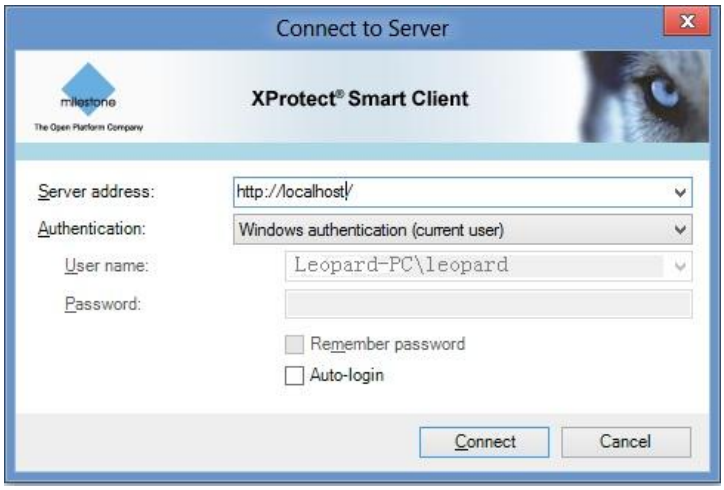
When you finish the configuration and close Management Application, you will get the following window.



Select **Save changes – restart services**, then click **OK**.

3.2 Run Smart Client

Open **Milestone XProtect Smart Client**.

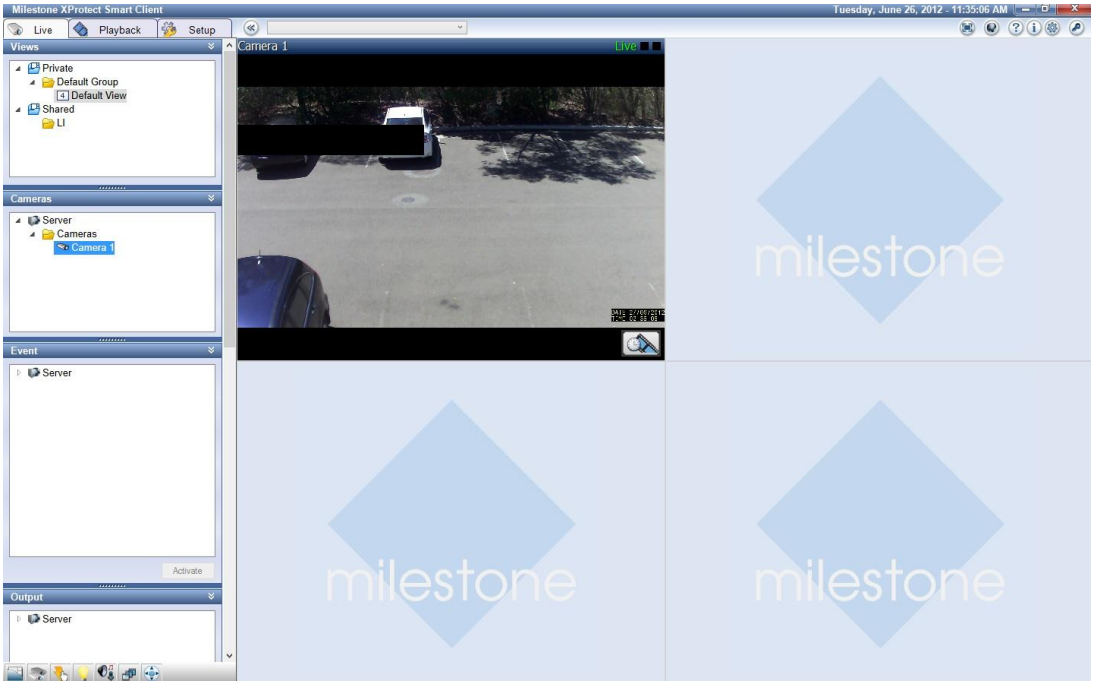


Click **Connect**.

Note: *If you use the default port 80, the* ***Server address*** *is* ***http://localhost/*** *; if you change the port, for example, change to 81, the* ***Server address*** *should be* ***http://localhost:81/ .***

3.2.1 Live Video

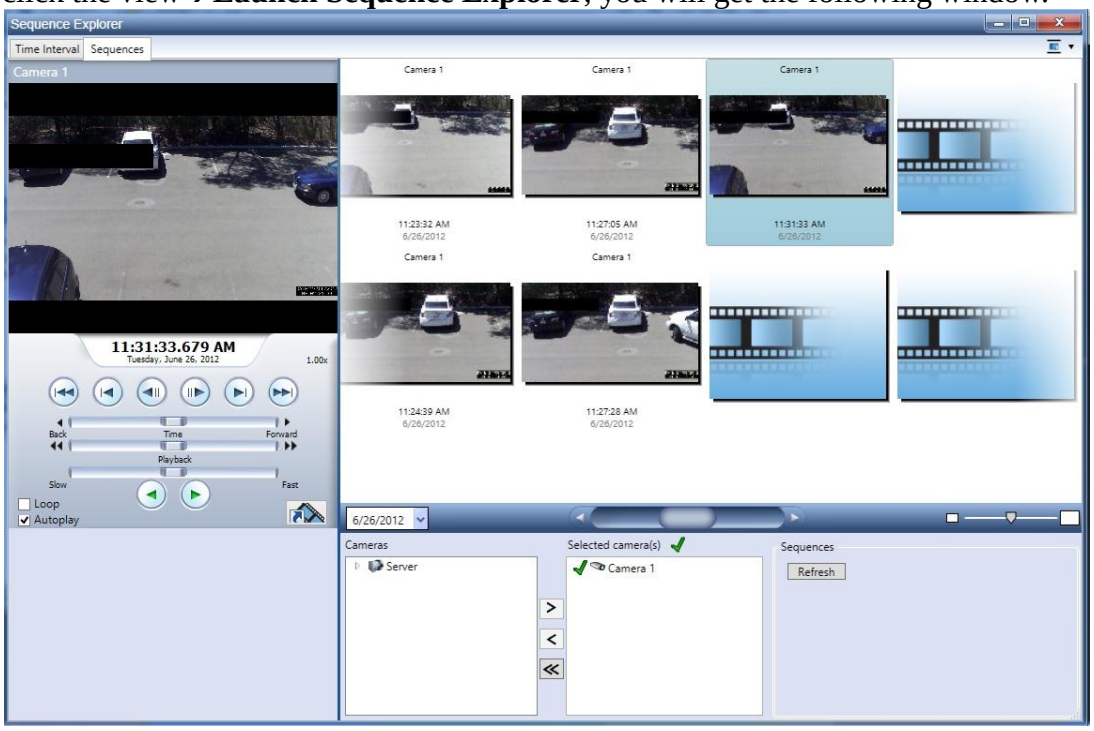
In next window, go to **Server → Cameras → Camera #.**
Select the required camera from the list, and drag the camera to the required position in the view.
You will see the live video from the camera.



3.2.2 Playback

If you want to playback the video, select **Playback** tab.

Right click the view→**Launch Sequence Explorer**, you will get the following window.



You can select the video which you want to playback.

Note: *If you want to know more about the functions and settings, please refer to the user guide of Milestone XProtect.*

Glossary

- **Alert**: An alert can be in the form of an e-mail or an ftp upload of an image, that occurs when a sensor is triggered, or motion is detected.

- **AVI**: Audio Video Interleaved. A Windows multimedia video format from Microsoft.

- **CIF**: Common Interface Format. A standard video resolution format used in video conferencing. CIF resolution is 352x288 and bit rate is 36.5 Mbps (at 30fps)

- **DHCP**: Dynamic Host Configuration Protocol. A system by which each piece of equipment on a network is allocated an address IP dynamically.

- **Ethernet**: The most widely used local area network (LAN) access method, defined by the IEEE as the 802.3 standard.

- **FTP**: File Transfer Protocol. A standard protocol designed for transferring files over a TCP/IP net-work.

- **IP**: Internet Protocol. The network layer protocol in the TCP/IP communications protocol suite (the "IP" in TCP/IP). IP contains a network address and allows messages to be routed to a different network or subnet.

- **LED:** Light Emitting Diode. A semiconductor device that emits light when a voltage is applied.

- **Motion detection**: Camera function that causes an alert to be triggered when movement is detected in the field of view.

- **Protocol:** Standards governing the transmission and reception of data.

- **Resolution:** Screen resolution is expressed as a matrix of dots. For example, the VGA resolution of 640x480 means 640 dots (pixels) across each of the 480 lines.

- **RJ-45:** Registered Jack 45. RJ-45 type connections are used in Ethernet devices.

- **SNTP**: Simple Network Time Protocol. A protocol that allows devices to update internal clocks using a standard source available on a network.

- **Static IP address:** A static IP address that is assigned manually and never changes.

- **TCP/IP**: Transmission Control Protocol/Internet Protocol. A communications protocol developed under contract from the U.S.

- **VGA:** Video Graphic Array. The video display standard for the PC.

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