Encoder Firmware
A1D-220-V3.11.13-NB

User's Manual

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1 INSTALLATION

1.1 Minimum System Requirements

The IP device provides access through an embedded web server. To access the device, your PC needs to meet minimum requirements to perform satisfactorily.

CPU	Pentinum 4 2.4GHz and above
Memory	256 MB or above
Operating System	Windows XP with SP2 or above. Windows Vista / Windows 2003 / Windows 7
	Internet Explorer 6.0 SP2 and above.
Video Resolution	SVGA or XGA with 1024x768 resolution

1.2 Preparation before setup

Our IP device provides access through Internet Explorer. You need to set up the network settings and the IP address for the IP device. Please make sure all connections are properly connected, then follow the procedures below.

1. Setup your PC network

The IP address for your PC must be within the same subnet as the IP device. You need to match the TCP/IP settings between PC and IP device before you can access it via IE.

2. Setup IP device's IP address

This IP device's IP address can be assigned manually or acquired automatically by network service (DHCP). If it acquires the IP address by using the DHCP service, please use the IP utility software bundled in the product CD to find the IP address for all IP devices.

1.2.1 Setup your PC network

To set up the network of IP device via a PC, you have to change the TCP/IP settings of the PC.

The following are the default network settings of IP device.

IP Address: 192.168.0.100
Subnet Mask: 255.255.255.0

To access the IP device, the IP address of the PC should match the address below.

IP Address: 192.168.0.xxx
Subnet Mask: 255.255.255.0

NOTE: xxx should be a number from 1 to 254 except 100, which is used by the IP device. Please also make sure that no two equipments use the same IP address in the same network.

The procedures below is the setup procedure on Windows XP. If you use operating system other than Windows XP, please refer to OS manuals for proper setup procedures.

- **STEP1**

  Start up your PC.

- **STEP2**

  Click the [Start] and select the "Control Panel"

- **STEP3**

Double-click the "Network and Internet connections" icon.

- **STEP4**

Double-click the "Network connections" icon

- **STEP5**

Click “Local Area Connections”, and then click “Change settings of this connection” in the network Task menu.

- **STEP6**

Click “Internet Protocol (TCP/IP)”, and then click the [Properties] button. If you have both IPv4 and IPv6, choose IPv4.

- **STEP7**

  Click the “Use the following IP address” radio button and enter the IP address and the subnet mask.

Please set the settings as below.

IP address: 192.168. 0.xxx
Subnet mask: 255.255.255. 0

(**NOTE**: xxx should be a number from 1 to 254 except 100, which is used by the IP device. Please also make sure that no two equipments use the same IP address in the same network..)

- **STEP8**

  Click the [OK] button and the window dialog box closes.

1.3 Configuring the IP device

This section describes how to configure the IP device. The administrator has unlimited access to all settings, while the normal user can only view live video. The IP device is configured under a standard browser (Microsoft Internet Explorer 6.0 or above).

Follow the procedures below to configure the IP device.

- **STEP1:** Open a browser

- **STEP2**: Enter the IP address of the IP device.

  The default IP address is "192.168.0.100"

The "Login Page" is now displayed as below

- **STEP3:** Enter account name (factory default: Admin) and password (factory default: 123456).

> **NOTE:** Internet Explorer 6.0 or above is highly recommended. You may download it from http://www.microsoft.com/windows/ie/downloads/default.mspx

- **STEP4**: Select the language of the IP device user interface. You can select from English, Traditional Chinese, Simplified Chinese, Japanese, Spanish, Italian, German, Portuguese, Czech, French, Finnish, Hungarian and Danish. This user interface setting will disappear once you log out, if you want to change the default user interface language, please change the setting of [Host setting] after login.

- **STEP5**: Click the Login button to login or click the Reset button

to re-enter account and password.

Once you log in successfuly, the “Video Display page” will be shown as below.

1.3.1 Video Display

1.3.1.1 Megapixel CMOS camera

This section tells you how to view live video via Internet Explorer.

- **STEP1**: Click the [Video Display] on the "Main Setup page".

  The "Video Display page" is displayed as below.

- **STEP2**: Check the ❶ [MPEG4/MJPEG] to select the Compression type. Once selected, the video server/IP camera will start to stream with the new compression method.

- **STEP3**: To display the full view on a limited screen size, click the ❷ [Scale Down] checkbox to scale down the SXGA(1280x1024)/ to 640 x 512, and 720P(1280x720) to 640 x 360 resolution.

- **STEP4**: Check the ❸ [Mute] checkbox to mute or play audio from the video server/IP camera.

- **STEP5**: Click the ❹ [Audio Out] checkbox to enable/disable audio transmission from this PC to IP device's audio out and change audio

out volume. Ex: With this function enabled you can speak to the people at the IP device site.

- **STEP6**: Click the ❺ [DO1] Button to trigger / untrigger DO function by DO1.
- **STEP7**: Click the ❻ [DO2] Button to trigger / untrigger DO function by DO2.
- **STEP8:** Click the ❼ [Quit] to exit the live view and return to "Main Setup page".

NOTE: If the streaming is disabled, you cannot see the live images here.

NOTE: For all network router/switches connected to this Camera/Video Server, be sure to use Auto Negotiation as the Network Connections Type. This will enable the whole network to always run at the highest possible speed.

1.3.1.2 PTZ or PT camera

This section tells you how to view live video via Internet Explorer. The PTZ function is available only to “root” user(Factory default: Admin /123456). Other users cannot see this command.

- **STEP1**: Click the [Video Display] on the “Main Setup page”.

  The “Video Display page” is displayed as below.

- **STEP2**: Check the ❶ [MPEG4/MJPEG] to select the Compression type. Once selected, the IP camera/video server will start to stream with the new compression method
- **STEP3**: Check the ❷ [Mute] c checkbox to mute or play audio from the video server/IP camera.
- **STEP4**: Click the ❸ [Audio Out] checkbox to enable/disable audio

transmission from this PC to the IP camera/video server's audio out and change audio out volume. Ex: With this function enabled you can speak to the people at the IP device site.

- **STEP5**: Click the ❹ [DO1] Button to trigger / untrigger DO function by DO1..
- **STEP6**: Click the ❺ [DO2] Button to trigger / untrigger DO function by DO2.
- **STEP7:** Click the ❻ [Quit] to exit the live view and return to "Main Setup page".
- **STEP7:** Click the ❼ [PTZ] to Show "PTZ Control Window".

NOTE: If the streaming is disabled, you cannot see the live images here.

NOTE: For all network router/switches connected to this Camera/Video Server, be sure to use Auto Negotiation as the Network Connections Type. This will enable the whole network to always run at the highest possible speed. Please also refer to Network Speed & Duplex settings in Host Setting section on Page 20 of this manual.

1.3.2 PTZ (PTZ Camera only)

Click the [PTZ] on the “Main Setup page” to show PTZ control panel in a separate pop up and enable mouse PTZ in the main live view window.Select a page in “PTZ Panel ” **There are three main pages: PTZ, Preset and Tour.** You also can control camera from preview display with mouse.

◆ **PTZ Page**

NOTE: For all PTZ settings, including Presets, Tour and basic settings, you will have to do ***Save and Reboot*** to write this into the camera. Camera will lose all unsaved settings upon reboot.

PTZ function Help

Parameters	Description
1 Page switch Button	Click these buttons to switch between “PTZ”, “Preset” and “Tour” pages
2 Pan Speed	Set the pan speed. 1 is slowest and 5 is fastest. This only affects Pan speed if user click on Control Panel. Mouse PTZ and auto-scan speeds are unaffected. Tilt and Zoom speed also only affect commands given from Control Panel.
3 Tilt Speed	Set the tilt speed from 1(slowest) to 5(fastest)

❹ Zoom Speed	Set the zoom speed from 2(slowest) to 7(fastest)
❺ Zoom	Click + button to zoom in, - button to zoom out.
❻ Auto Focus	Click check box to enable auto focus.(PTZ camera only)
❼ Focus	Click these buttons to adjust focus to near or far.
❽ PT Control	Click each button to do pan and tilt control.
❾ Home	Click this button to go to home position.
❿ Reset	Click this button to reset the pan/tilt/zoom function.
⓫ Auto-scan	Click to start continuous auto scan between left limit and right limit
⓬ Auto-scan Speed	Set the auto-scan speed from 1(slowest) to 5(fastest)
⓭ Auto Scan recovery	Click the check box to enable auto-scan recovery function IAny manual operation will interrupt camera autoscan. If there's no further manual operation for X seconds (recovery time), the camera will resume autoscan.
⓮ Recover time	Set the recovery time. Must be larger than 1.
⓯ Preset point	Click these buttons to move your camera to your desired preset points.

◆ **Preset Page**:

■**Preset Page Help**

Parameters	Description
❶ Preset Info	Show preset number and preset name. You can click to edit the preset name
❷ Set Preset	Click this button to save current preset name and PTZ position to this preset point
❸ Goto Preset	Click this button to go to the PTZ position memorized for this preset point.
❹ Delete Preset	Click to clear the preset point Information, including preset name and preset PTZ position.

◆ Tour Page

■**Tour Page Help**

Parameters	Description
❶ Tour Group ID	Select a tour group to start or to edit. There are 10 groups available
❷ Start Tour	Click to start the tour selected
❸ Edit/ Cancel	Click to edit or cancel the tour setting.
❹ Preset Name	Select a preset to be added in this preset tour
❺ Time	Enter the interval of time for the camera to stay in this preset point in this preset tour. This time includes the time it move from previous preset point to this preset point
❻ Add Preset Point	Click to add preset point in this preset tour
❼ Preset Point Select	Click to select preset point.
❽ Apply	Click to apply the tour setting.

❾ Move one earlier	Click to move this preset point one earlier in queue.
❿ Move one later	Click to move this preset point one later in queue.
⓫ Move to first	Click to move this preset point to the first in queue.
⓬ Move to last	Click to move this preset point to the last in queue.
⓭ Goto Preset	Click to go to the PTZ position for this preset point.
⓮ Preset Del	Click to remove the preset point from this preset tour. Note, the settings of this preset point will NOT be deleted

◆ **Mouse Control:**

You can click on the preview window to directly control Camera PTZ movements. The closer your cursors are to the edge, the faster the camera will move in Pan and Tilt. To Zoom in and out, move the cursor close to the center and click when the cursor changes to the + or – sign.

NOTE: This function is available only AFTER you click the "PTZ" and the "PTZ panel" is displayed.

■Mouse PTZ Help	
Parameters	Description
	Click area 1 to P/T with fast speed
	Click on area 2 to P/T with normal speed
	Click on area 3 to P/T with slow speed
	Click on area 4 to do zoom in.
	Click on area 5 to do zoom out.
Mouse wheel	Use mouse wheel to do zoom in and zoom out.

NOTE: Once you finish all settings, be sure to click the [Save Reboot] button. Otherwise, some settings may not take effect.

1.3.3 Host Setting

This section tells you how to setup IP device's host settings and LAN settings.

- **STEP1**: Click the [Host Setting] on the "Main Setup page".

The "Host setting page" is displayed as below.

- **STEP2**: Configure these settings with reference to the table below. If you are still unsure what to set, contact your system administrator.

■Host Setting

Parameters	Description
1 Host name	Enter a host name, and this host name will be shown when you use the IP utility or the SDK to search for the IP device.
2 Language	Select the language of default user-interface. Every user will see the default user-interface first when logging in.

■**Network link speed & duplex**

Parameters	Description
❺ WAN port	This item lets you select the network transmission speed of WAN port. You can select from 1. **Auto detect** (default setting) 2. **100Mbps / Full duplex** 3. **100Mbps / Half duplex** 4. **10Mbps / Full duplex** 5. **10Mbps / Half duplex**

■**ToS (Type of Service)**

Parameters	Description
❻ TOS priority	Select the TOS tag's priority to be added onto the streaming. You can select between 1. **Normal-Service** 2. **Minimize-Cost** 3. **Maximize-Reliability** 4. **Maximize-throughout** 5. **Minimize-Delay**

■**Port Mapping**

Parameters	Description
❼ HTTP port	Select the port for this IP device to use HTTP protocol.
❽ Search server port1	Select the first port on which software applications can find this IP device with. (e.g. IP utility).
❾ Search server port2	Select the second port on which software applications can find this IP device with. (e.g. IP utility).

- **STEP3**: Click the ❸ [Apply] button for each section to confirm the settings or click the ❹ [Reset] button to re-enter the parameters.

NOTE: Once you finish all settings, be sure to click the [Save Reboot] button. Otherwise, some settings may not take effect.

NOTE: For all network router/switches connected to this Camera/Video Server, be sure to use Auto Negotiation as the Network Connections Type. This will enable the whole network to always run at the highest possible speed. Please also refer to Network Speed & Duplex settings in Host Setting section on Page 20 of this manual.

1.3.4 WAN Setting

This section tells you how to setup IP device's WAN, DNS server and DDNS server settings.

- **STEP1**: Click the [WAN Setting] on the "Main Setup page".

  The "WAN setting page" is displayed as below

- **STEP2**: Configure these settings with reference to the table below. If you are still unsure what to set, contact your system administrator.

■**WAN Setting**

Parameters	Description
❶ Dynamic IP address	Click this to enable IP device's DHCP function. It will acquire its WAN port IP address from a DHCP server within the same network. (You must have a DHCP server in order to enable this function.)
❷ Static IP address	Click this to manually enter the IP device WAN port IP address. ❸**IP address**: Enter the WAN port IP address. ❹**Subnet mask**: Enter the subnet mask of WAN port. If IP address is changed, adjust the subnet mask accordingly. ❺**ISP gateway**: Enter the IP address of the gateway (the router).
❻ PPPoE	Click this when you connect IP device directly to the xDSL modem. ❼**User name**: Enter the user name of your xDSL account. ❽**Password**: Enter the password of your xDSL account. **Note**: You have to click the [Save Reboot] after you click the [Apply button] to let this IP device start xDSL connections.

■**DNS server Setting**

Parameters	Description
⓫ Primary DNS server	Defines the IP address of the primary DNS server. This is used for identifying this computer by name instead of IP address.
⓬ Secondary DNS server	The IP address of the secondary DNS server. It will be used once the primary DNS server fails.

■**DDNS server Setting**

Parameters	Description
⓭ DDNS type	Click this to enable IP device's DDNS function. DDNS function enables user to connect to this IP device by domain name even if its IP address is not static.
⓮ Service ISP	Click one of the DDNS service providers. You can visit their website to get a DDNS service account for this IP device.
⓯ Host name	Enter the host name of your DDNS service account. (ex: xxxx.dyndns.org)
⓰ User name	Enter the login user name for your DDNS service account.
⓱ Password	Enter the login password for your DDNS service account.

- **STEP3**: Click the ❾ [Apply] button for each section to confirm the settings or click the ❿ [Reset] button to re-enter the parameters.

NOTE: Once you finish all settings, be sure to click the [Save Reboot] button. Otherwise, some settings may not take effect.

NOTE: For all network router/switches connected to this Camera/Video Server, be sure to use Auto Negotiation as the Network Connections Type. This will enable the whole network to always run at the highest possible speed.

1.3.5 Date Setting

This section tells you how to setup IP device's date and time settings.

- **STEP1**: Click the [Date Setting] on the "Main Setup page".

  The "Date setting page" is displayed as below

- **STEP2**: Configure these settings with reference to the table below. If you are still unsure what to set, contact your system administrator.

■Date Setting

Parameters	Description
❶SNTP/NTP server	Click this to enable IP device's SNTP/NTP function. SNTP/NTP function enables this video to synchronize its time settings with a SNTP/NTP server. You can use this function to make sure all your IP devices' time is the same. Additionally, with our embedded digital-time-code in the streaming, you can tell the event sequence accurately. ❷**IP address**: Enter the IP address of the SNTP/NTP server. ❸**Sync time**: Select the time interval for this IP device to synchronize its time.
❹Set manually	Click this to manually setup the date & time. ❺**Date** : Select the date ❻**Time**: Select the time
❼Time zone	Select the time zone offset for local settings
❽Day Light Saving	❾Select Type 1 to specify daylight saving time by week

	number in a month; select Type 2 to specify daylight saving time by date. ⑩**Start Time** : Select the daylight savings start time. ⑪**End Time** : Select the daylight savings end time.

- **STEP3**: Click the ⑫ [Apply] button of each setting to confirm the settings or click the ⑬ [Reset] button to re-enter the parameters.

NOTE: Once you finish all settings, be sure to click the [Save Reboot] button. Otherwise, some settings may not take effect.

Manually set date and time will NOT be kept if device loses power.

1.3.6 Video Setting

This section tells you how to setup IP device's video and streaming settings.

- **STEP1**: Click the [Video Setting] on the "Main Setup page".

■Video setting

Parameters	Description
1 Camera name	The camera name is reserved for customer use.
2 Streaming Method	Select the streaming mode. 1. **TCP only** 2. **Multicast only**

	3. **RTP Over UDP** 4. **RTP Over Multicast** 5. **RTP Over UDP & Multicast**
❸ RTSP Authen Enable	Check box to enable RTP streaming's Account/Password authentication.
❹ RTP B2 Frame Enable	Check box to enable the B2 frame in RTP streaming
❺ Audio	Select to enable or disable the audio function.
❻ Input Sensitivity	Select HIGH or LOW of the audio input sensitivity
❼ Multicast IP	Select the multicast IP. Default settings is 228.5.6.1
❽ Multicast TTL	Select the multicast TTL. Default setting is 255.
❾ IGMP	This option appears only in Multicast. Enabling it will enable using IGMP membership to do multicast.
❿ Resolution	Select the video resolution of the IP device.
⓫ Frame rate mode	Select the frame rate mode. **Constant**: The streaming's frame rate remains constant at all conditions. **Variable**: The streaming frame rate will vary according to the amount of motion and change in the scene to maintain proper image quality.
⓬ Frame rate	Select the frame rate of the video streaming.
⓭ Encoder Type	Select the encoder's compression type. 1. MPEG4 2. MJPEG
⓮ Video Bitrates Mode	Select the video bitrate mode. **Constant Bit Rate**: The streaming's bitrate remains constant at all conditions. **Variable Bit Rate**:: The streaming bit rate will vary according to the amount of motion and change in the scene to maintain image quality.
⓯ Video Maximum Bitrate	Select the Maximum bitrate of the video streaming. If the bitrate limit is too low, actual frame rate may also be limited. Doing so will also disable Bit Rate setting below.
⓰ Bitrate	Select the bit rate of the video streaming. You can select from 28Kbps to 3Mbps. **Note**: Lower bit rate consumes less bandwidth but delivers lower quality images.High bit rate consumes more bandwidth but delivers higher quality images.
● Video Quality	This is only available when using Variable bit rate mode. Yo may choose among HIGH, MIDDLE and LOW. The quality will remain constsnt, while the bitrate will fluctuate.
● GOP Length	This is only available when using Variable Bit Rate mode. Normally there is one I frame and multiple P frames per second. I frames encode the full view, while P fram encode only the part that has changed. GOP length is the number of frames until the next I frame appears. Setting this to higher than normal frame rate (e.g. 8 fps when megapixel) will help reduce the bitrate requirements . This should not be used when the sene is vary dark, as video noise will render this function useless. Max is 60. Set to 0

	to automatically match with fps setting.
17 RTSP port	Select the port for this IP device to support RTSP
18 Video RTP Over Multicast	Enable/disable the multicast video streaming via RTP protocol
19 Audio RTP Over Multicast	Enable/disable the multicast audio streaming via RTP protocol
20 Video control port	Select the port through which software applications may control this IP device.
Video streaming port (TCP Only)	Select the port through which software applications may establish video streaming with this IP device.
Video multicast port (Multicast Only)	Select the port for this IP device to support video multicast function of the application program.
Serial Port Baud Rate	Select the Baud Rate setting of serial port.
Serial Port Control	Select the Control setting of serial port.

STEP2: Click the 21 [Apply] button to confirm the settings or click the 22 [Reset] button to re-enter the parameters.

1.3.7 Video Adjustment

This section tells you how to fine tune video display and setup Motion detection. To access this section, click [Video Adjust] on the “Main Setup page”. The “Video adjustment page” will display as below

This screen has three parts. The video window, the motion activity window and the settings area.

Video window ❶ show the live image from the IP device. The black bar above shows the current time. The motion detection regions, if enabled,

are also displayed here.

To the right of Video window is the Motion Activity window. The vertical blue bars show recent amount of activity detected in the selected motion region. The red line ❺ shows the trigger threshold for the Runtime MD profile, and the blue line❻ shows the threshold for the Event MD profile. If the activity is above the threshold currently used, an motion event will be triggered. This means that if this MD region is currently using Event MD profile, a motion will be trigger when activity climbs above the blue line, not the red line. For detail settings, please see *"Motion Detection Explained"* at the end of this section.

Motion detection: You can set motion detection for up to three regions that can overlap with each other. Each region has three parameters: sensitivity, trigger interval and threshold.

For parameters in each region, you may always use the same values, or you may switch between Runtime Profile and Event Profile via our Event handler. Please see sidebar for how to setup the proper values, and Events section (Page 32) on how to use Dual Motion Detection profile sets.

Follow these steps to setup Motion Detecion:

- **STEP 1**: Check this ⓭ box to enter Motion Setup mode. After you click on Motion Setup, the text on button will change to Apply, and greyed out info will now be editable.
- **STEP 2:** Check this ❼ box to enable Motion Detection
- **STEP 3:** Make sure you are editing the correct set of profile via the drop down list❽ (Choose Runtime MD Profile unless you are using alternative profiles through Event handler)

- **STEP 4**: Enable individual Motion Detection Region ❾ to show the Motion Detection Region on the video window. If some regions are not displayed on screen, just uncheck and check each box again.
- **STEP 5**: Setup the sensitivity ⓮, interval ⓯ and threshold ⓰ for each motion detection region. (See below box)
- **STEP 6**: When you are satisfied with the motion detection settings, click the [Apply] button to confirm the settings. Click [Reset] to restore previous settings.For settings about video brightness, saturation and contrast, just select from the dropdown list and see the result. You do not need to click apply.

NOTE: Once you finish all settings, be sure to click the [Save Reboot] button. Otherwise, some settings may not take effect.

Motion Detection Explained

Motion detection works by determine if the amount of motion in target region exceeds a predefined threshold. If the activity is above the threshold, it triggers motion detection.

Sensitivity: This value decides if a given pixel is considered to have "motion activity". For the same motion sequence, more pixels will be marked with "motion activity" under higher sensitivity. The IP devices are calibrated to provide good performance in normal scenes at sensitivity level 70. For scenes with little light, reduce sensitivity to prevent overreaction to background noise.

Threshold: Threshold decides how many "percent" of pixels in this scene needs to be marked as "changed" to trigger a motion event. A smaller threshold means camera will respond to movement by smaller items. Usually you don't want this value to be too close to zero, otherwise movement of extremely small objects or even natural background noise will trigger a motion event, creating false alarms. Default value is 10. Lower this to detect smaller objects, increase this to filter out small objects

Interval: The amount of time that must pass before another motion event can be detected. This is used to prevent the IP device from generating too many motion detection signals.

Night time / Noisy environments: In such cases, the background noise will be much greater than day time. So random noise will create some non-existent "motion activity". To avoide getting false alarms, please lower your sensitivity levels, and slightly reduce the threshold until you get a good balance.

Object Size: The size of object that may be detected is determined not only by threshold, but also by the motion detection region size. Generally, a smaller region will always be much more accurate and sensitive than a big region. Try to cover the scene with two or three MD regions, instead of using one to cover the whole screen.

1.3.8 Event

This section describes how to setup the Event Handler, which deals with how the IP device respond to situations. Each IP device can have a maximum of 10 Event Rules. Each rule includes one single trigger, and one or many responses. Several types of responses are available. And there are multiple external servers for the device to interact with.

When setting up Event Handler, there are three types of settings. Event Server, Event Configuration and Event Rules

Event Server

Type	Network Address	Ports	User Name
FTPd	10.1.1.17	21	Arturo
SMTP	smtp.test.com	25/110	Event@test.com
HTTPd 1	10.1.1.85	80	Admin
HTTPd 2	10.1.1.91	80	Admin

Event Configuration

- Digital I/O ports
- Notification messages
- Upload video/snapshot
- Send URL commands
- Go to a preset point

Event List

ID	Week Day	Start	Duration	Source	Action
1	1234567	00:00	24:00	MD1	MSG1,MSG2
2	12345	08:00	10:00	SCH	DO1
3	1234567	03:47	01:00	SCH	MSG1,MSG2,CMD1,CMD2
4	1234567	00:00	24:00	NONE	IMG1,CMD1
5	1234567	00:00	24:00	DI1	IMG1,GO,MD1
6	1234567	00:00	24:00	MD1,MD2,MD3	CMD1
7	1234567	00:00	24:00	NONE	NONE
8	1234567	00:00	24:00	NONE	NONE
9	1234567	00:00	24:00	NONE	NONE
10	1234567	00:00	24:00	NONE	NONE

Event Servers:

Event servers define whom the device may interact with. They can be other servers or devices on the network, or even the camera itself. **Event Configuration** sets up a list of what to tell the other party during interaction. **Event list** lays down the rules and conditions about when to initiate which responses from which triggers. ***The options available for Event rules are selected from the event servers and event configurations.***

Event servers are classified as FTP servers, SMTP servers and HTTP CGI servers.

FTP servers can receive snapshot or video uploads that are issued as part of the response from event handlers. You may setup one FTP server.

To setup FTP servers, make sure to enter ❶the network address, ❷ the FTP port, ❸ the User Name, ❹ Password, ❺Connection mode (Passive or Active) and ❻Connection time before timeout(in milliseconds). Click ❼[Apply] to use these settings or click ❽[Reset] to clear changes.

SMTP servers can send email upon request from the IP device. The email can be a simple subject and text email, or attached with snapshot / video. You may setup two SMTP servers. The device will first attempt to send the message via the Primary email SMTP server. If the first attempt fails(after the Max connecting time), then the device will attempt to send via the secondary SMTP server. If the device sends email successfully via the

primary SMTP server, then it will not use the secondary SMTP server.

To setup SMTP servers, make sure to ❶enable the SMTP account, ❷ choose the proper Authentication type (available types: None, Login, Plain, Cram MD5, Digest MD5 and PoP Relay), ❸ the User Name, ❹ Password, ❺ the email address displayed as sender (can be different than the user name), ❻SMTP server address, ❼SMTP Port number and ❽ Max Connection time before timeout (in seconds). Click ❾[Apply] to use these settings or click ❿[Reset] to clear changes.

HTTP CGI server CGI servers are programs that run on web sites or many devices. They can be custom programmed to perform a large variety of actions based upon the input. You can define which CGI server to connect to

here, and the user / password required to log into the target server. The actual message / command is setup in the Notification messages / URL commands section. You may define two separate CGI servers.

IP devices are also CGI servers. This means that IP devices can now issue commands to each other, which creates endless possibilities for highly coordinated response. The IP device can also give a loopback command to itself, in effect changing almost all possible settings dynamically. For detail on the commands used to control the cameras, please contact your customer representative.

An example will help you gain a better sense of how to utilize this unique function. Camera A is a fixed camera that looks at a corridor leading to the main hall. It has a motion detection window located near the point where the corridor arrives at the large hall. Camera B is a PTZ camera located in the hall, which is usually left on auto-tour patrol. When motion activity in the motion detection region triggers MD1 in Camera A, this then in turn activates an event rule in Camera A that gives out a command to Camera B. Camera B would then swivel to the preset point where the corridor leads into the entrance and switch to higher bit rate to temporarily provide clearer image. After the event ends, Camera B will go back to its normal routine in lower bit rate.

To setup HTTP CGI servers, make sure to ❶enable the HTTP CGI server, ❷ enter the user name, ❸ the password, ❹ Network address, ❺ port number and ❻Max connection time before timeout (in seconds). Click ❼[Apply] to use these settings or click ❽[Reset] to clear changes.

Event Configuration:

Event configurations are the responses to be performed when an event is triggered. For most types of responses, you can create several different preset responses, then mix and match in event rules. Some responses are not supported in all IP devices (e.g.: DO, PTZ). Event Motion Detection profile is also a triggerable response, but the parameters are defined through the Video Adjust page, not in Event page.

The configurable responses are classified as Digital I/O ports, Notification messages, Upload Image / Snapshot, Send URL Commands and go to PTZ Presets.

Digital I/O ports

Digital I/O ports (selected models only) read and control the voltage difference in the circuit, and respond to it. They are useful in connecting to a wide variety of devices. D/I is a trigger, while D/O is a response. Both are setup here. Both have a low voltage state and a high voltage state , noted as 0 and 1.

Trigger Interval: How does it work?

When a motion is detected or the device receives a DI trigger, usually users want the camera to stay on high alert for a minimum duration of time before returning to normal mode. This duration is controlled by setting the ***trigger interval*** value. During this time, the device will NOT respond to a second trigger. The device will stay in the triggered state for as long as the trigger continues to be effective. So the Trigger interval only limits the minimum amount of time the device will spend in the triggered state. Below are sample diagrams on trigger-response mechanism.

DI: To setup DI, please define the ❶Active level as 0 or 1. If the active level is set as 1, then camera will consider high voltage difference a trigger, which can be used to initiate other events. The event will end when the DI voltage goes back to 0. ❷Interval determines the minimum delay that must pass before the IP device will accept another trigger from DI (in seconds). 0 means there is no minimum delay limit.

DO: To setup DI, please define the ❸Active level as 0 or 1. If the active level is set as 1, then camera will change the output voltage to high when this response is activated by an event rule. The voltage will go back to low when the event ends. ❹Interval determines the minimum duration of each DO response(in seconds). DO will remain at the active level during this time, and if another event triggers DO before the end of the first DO, the second trigger will no take effect. 0 means there is no minimum duration.

Notification messages:

*Pre-requisites: **SMTP server / HTTP CGI server setup.**

Notification messages may be sent to either an email or a HTTP CGI server. If sent to an CGI server, it works the same as an URL command, but it does not allow a second message at end of event. You may configure up to three preset massages. You can configure a message, but disable it. This will allow you to keep the settings without using it, which will be useful in testing and troubleshooting.

To setup Notification Messages, make sure to ❶enable the message, then ❷determine what type of message to send (HTTP CGI or email).

If you are sending to CGI server, you need to enter the CGI path❸, the URL command itself ❹, and an optional message ❺.

If you are sending email❼, please enter the receipient address❽, the email subject❾, and the body message❿. Click ⓫ [Apply] to use these settings or click ⓬ [Reset] to clear changes.

Upload video/snapshot

*Pre-requisites: **SMTP server / FTP server / HTTP CGI server setup.**

IP devices may send video recording / snapshots to your chosen server upon event. Video will be in .RAW format, while snapshots will be .JPG files. You can define up to three group of settings to upload video/snapshot. Snapshots can be sent to FTP / HTTP CGI and via Email, while video can only be uploaded to FTP or HTTP CGI servers.

The parameters needed to setup this function are different for each task combination (snapshot / ftp or video / HTTP… etc), and are explained below:

Enable						UI
						Enable Video/Snapshot 1 ☑
Type	Snapshot			Video		Upload image type ◉ Snapshot ○ Video
Upload Image to	Email	FTP	CGI	FTP	CGI	Upload image to FTP Server
Upload Time	Y	Y	Y	Y	Y	Upload Time 3 (0~86400 seconds)
Image Rate	Y	Y	Y			Image Rate 0 (the # of images per upload time. 0 means the max. rate)
Pre Buffer				Y	Y	Pre-Buffer Time 0 (0~3 seconds)
File Name	Y	Y	Y	Y	Y	Image File Name Front_Door_%YYYY_%MM_%DD@%hh%mm%ss Refer to name rule description
Upload Path	*	Y	Y	Y	Y	Upload Path of Image File /Event_Snapshot/ Refer to name rule description
CGI Settings			Y		Y	CGI Settings including path of CGI program
Recipient address	Y					Receipt of E-Mail addresses Supervisor@test.com using ';' for multiple addresses
Subject	Y					Subject Front Door Snapshot

Enable Video/snapshot checkbox: this decides if this rule is in effect, or disabled. Sometimes it is useful to keep the settings, but not to enable it for troubleshooting purposes.

Type / Upload image to: these define the task at hand, and change the fields that needs to be filled out.

Upload Time : IP device will provide video/snapshots for the number of seconds here. It will stop uploading video/snapshot at the end of this period. If you have video management software recording from this camera at the same time, the normal recording through NVR will not be affected, and goes on through out the event period and afterwards. But the special upload session will end as the event ends.

Image Rate : This is used only by snapshots. This tells the camera how many snapshots it should attempt to capture during the Upload Time. If this value is set to 0, then the IP device will attempt to capture as many snapshots as possible. Depending upon the device loading, the number of snapshots taken may not reach the number you specified.

Pre Buffer: This is only used by video. If this is set to more than 0, then the IP device will start to buffer video in its internal memory. The maximum pre buffer is 3 seconds. When an event requires video upload, the IP device will first upload the video taken right before the event then keep uploading until it reaches the upload time.

File Name/ Upload Path: You will need to specify rule for file names and upload paths (upload path is not needed for Email. Just put a slash "/" in the field). The rules contain flexible parameters. A sample rule and corresponding filename will look like this:

Front_Door_%YYYY_%MM_%DD@%hh%mm%ss

Front_Door_2009_10_12@195037.JPG

Upload Path folders may also be named dynamically. For the IP device to create folders on FTP and HTTP CGI servers properly, your FTP/CGI account will need to have permission to create folders. For syntax on auto naming, please see online help or the inset box at the end of this section.

CGI settings : Some CGI servers may require special info and settings. Please refer to CGI server designer for this section. IP devices do not allow upload of Snapshots / Video into their embedded CGI servers.

Recipient Address / Subject: When uploading video/ snapshots via

email, these information are required.

Auto Naming Rules for Files and Folders:

To properly track images and videos, a well thought out naming rule is necessary. There are a number of automatic variables available to design a proper naming system, which may be used both on files and folders.

Symbol	Description	Example
%YYYY	4 digits for year	2009 for year 2009
%YY	the last 2 digits of 4 digits year	09 for year 2009
%MM	two digits for month. 01~12	01 for January
%DD	two digits for date. 01~31	01 for the 1st day of a month
%hh	two digits for hour. 00~23	
%mm	two digits for minute. 00~59	
%ss	two digits for second. 00~59	
%W	a space character. ' '	' '
%N	camera name	camera-1
%Y	File serial counter. It starts from 1 in every uploading task. The counter will be increased by 1 for next uploading file.	1,2,3,4,5,...

Example

1. Entrance-%YYYY-%MM-%DD@%hh%mm%ss for time 2009/06/05 22:50:30.

The full name is Entrance-2009-06-05@225030

2. X_%w-%N_TEST%Y for camera name is 'my-camera' and three successive uploaded files.

The full name of these three files are

X_ -my-camera_TEST1, X_ -my-camera_TEST2, X_ -my-camera_TEST3

Send URL commands

*Pre-requisites: **HTTP CGI server setup.**

URL commands can be sent to HTTP CGI servers upon event. This provides the possibility of highly intelligient response upon event. IP devices and many other devices also have embedded CGI servers that may be controlled.

When Event Handler sends an URL command, it will send one set of command when the event is trigged, and another as the event becomes inactive. Depending on the CGi design, the URL commands may be able to be stringed together, and multiple commands may be issued in a single line.

An example would be when the access control device at the entrance detects an entry, this device provides a DI signal to the PTZ camera, and triggers an event. This event then sends a loopback command to the PTZ Camera itself (by setting its own IP as the HTTP CGI server). The PTZ Camera then moves to a preset location, stays until the event is over, then

move back to another location. At the same time it moves to the preset location, it increases the bitrate from 750k to 3M, and the frame rate from 4 fps to 8 fps. The bitrate / fps changes are reverted at the end of event.

Go to a preset point (selected models only)

For PTZ cameras, there will be an extra option available. This will require the camera to move to a preset location. In this interface you will setup which preset point to go to, and how long do you want the camera to stay there.

At the end of event, the PTZ camera will return to the position right before the event. The difference between this and the PTZ via URL command scenario is that this only performs the PTZ move, without the ability to aggregate multiple other changes into the same trigger.

Be sure to do Save and Reboot after you've updated the event settings. Only then will the settings be commited to physical memory. You may lose the settings to power loss or other situations if you do not do this step.

Event Rules:

You may define a maximum of 10 Event rules, which will be shown in abbreviated form in the Event List panel. It will display under each Event ID, the days of the week it will be active, the start time and duration of the active period, the type of the source of trigger, and the actions used in the response. If the row is greyed out, this means the rule is currently not enabled and stays inactive.

Event List

ID	Week Day	Start	Duration	Source	Action
1	1234567	00:00	24:00	DI	GO|MSG|IMG|MD|CMD
2	12345	08:00	10:00	SCH	DO1
3	1234567	03:47	01:00	SCH	MSG1,MSG2,CMD1,CMD2
4	1234567	00:00	24:00	NONE	IMG1,CMD1
5	1234567	00:00	24:00	DI1	IMG1,GO,MD1
6	1234567	00:00	24:00	MD1,MD2,MD3	GO,CMD1

There are several parts to the the Event rule:

When is it active:

You may choose to enable the rule or not ❶. The settings will be kept in internal memory even if the event rule is disabled.Select the days in a weekly cycle ❷ in which this rule and schedule is active.

Determine the ❸start time and ❹duration of the active period. For example, a rule that lets motion detection trigger snapshot uploads to FTP would only take place after 19:00 each day for 12 hours. Outside of this time the rule will not be active.

Event Rule 3

❶ Enable ☐

❷ Cycle of Time ☑ Mon ☑ Tue ☑ Wed ☑ Thr ☑ Fri ☑ Sat ☑ Sun

❸ Start Time 00 : 00 Duration 24:00 ❹ (max. 168:00 hours)

❺ Triggered by Scheduled

How is it triggered:

Events may be triggered by several sources:

Schedule: The event will start at the start time noted in the weekly scheduler, and end after the duration is reached. The active period and the triggered period is one and the same.

DI: For selected models only, the IP device may be triggerd by Digital Input.

Motion: You may trigger the event if one or many Motion Detection regions encounter a motion trigger. Trigger from any of them will initiate the event. The duration of event will be the same as the MD trigger length , or the Trigger interval time, defined in the Motion Detection section on Vieo Adjust page.

Video Loss: This is available for video servers only. When the analog video in is lost, the video state will become “lost”, and return to “normal” only until device receives analog video signal. A common scenario is for Video Server to send email to administrator when video is lost, and activate DO signal to alarm that persists until the analog signal is restored.

Switch to Night mode: This is available to selected models only. When camera changes between day and night mode, the embedded event handler will notice this change, and may act upon this information.

Potential use include changing the motion detection profile to another set of Event MD parameters. By having two sets of parameters each optimized for day and night, this provide better overall accuracy in both day and night conditions. Some night time only MD regions may also be activated this way. The event period will end when the camera returns to day mode, which will then reset the camera to the original settings.

What responses will occur:

Digital Output(selected models only): This is an useful link to other devices. Click to include this in the response for this rule.

Send notification Message: Select from the three pre-defined messages which you've setup in the Event Configuration section. You may enable multiple messages at the same time. For sending Email, please limit the recipient to one per event rule. If you need to send email to more than one recipient, please use separate event rules triggered by the same trigger.

Upload video/snapshots: Select which of the event configurations to include in this response set. If you are sending email via upload video and sending notification message at the same time, the system will automatically merge the two emails into one. The subject and image will be based upon the Upload snapshot Event configuration enabled, but the message in the body text will be based upon the Notification messages.

In general, please stick to the "one email per event rule" limit for best performance.

Change Motion Detection profile: This will switch the profile of the selected Motion Detection region from Runtime profile to Event profile. The profile will return to runtime settings at the end of this event. You may program one motion detection region to be disabled at runtime, but enable it with event handler under some circumstances.

Change Day/Night Mode (Selected models only): For some models, you may force the Camera into Day or Night mode. The camera will return to its previous setting(whether auto or forced day/ night) upon the end of the event.

Send URL command: Select the URL command to include in the response set. Two different commands will be sent at the time when the event is triggered and untriggered.

Go to a preset point: if the device is a PTZ camera, and the Go to

Preset point Event Configuration is setup, then you may include this in the response section of the event rule. The camera will return to the position right before the event starts when the event is untriggered.

Be sure to do Save and Reboot after you've updated the event settings. Only then will the settings be commited to physical memory. You may lose the settings to power loss or other situations if you do not do this step.

1.3.9 Camera Setup (CMOS camera models)

This section tells you how to adjust the camera.

- **STEP1**: Click the [Camera Setup] on the “Main Setup page”.

The “Camera Setup page” is displayed as below

■Camera setting

Parameters	Description
❶ Video Flipping	Check this box to flip the video up-down
❷ Video Mirror	Check this box to mirror the video left-right
❸ Lens Compensation	Check this box to use best pre-set settings for bundled lens
❹ NightTime Gain Threshold	This value controls the level of light where camera switches into night mode. Increasing it will make camera switch to night mode at a darker illumination level.
❼ White Balance Mode	Select the white balance mode. After you set the parameter, you need to wait for 5~10seconds to see the

	final result. 1. AUTO : Auto white balance (default) 2. INDOOR1: Select the indoor white balance profile 1. 3. INDOOR2: Select the indoor white balance profile 2. 4. OUTDOOR1: Select the outdoor white balance profile 1. 5. OUTDOOR2: Select the outdoor white balance profile 2 6. HOLD CURRENT: Select this to let the IP camera automatically obtain a best white balance setting according to current environment. The IP camera will use this setting to adjust color. NOTE: This setting will be lost after you reboot the camera. 7. MANUAL: Select this to enable manual setting of the white balance. You will need to enter the R Gain and B gain setting below.
8 R Gain (Manual White balance mode only)	Add or decrease redness to the video when under Manual White Balance mode. (This function is only available in Manual White balance mode.)
9 B Gain (Manual White balance mode only)	Add or decrease blueness to the video when under Manual White Balance mode. (This function is only available in Manual White balance mode.)
10 Exposure mode	Select exposure mode to auto or manual. - Auto: The IP camera will adjust the exposure automatically. - Manual: (In Manual White balance mode only) Manually select the Exposure Gain and Shutter Speed below.
11 Exposure Gain	Select the Exposure Gain of the IP camera. The higher the value = brighter images.
12 Shutter Speed	Increase or decrease the shutter speed. The higher the value, the better the nighttime performance. Although higher values also causes motion to become blurry.
AGC Gain (In auto Exposure mode only)	When exposure mode is auto, IP camera will adjust its shutter speed according to AGC gain and the Maximum auto shutter speed. Higher AGC gain = brighter images.
13 Maximum Auto Shutter Speed (In auto Exposure mode only)	When exposure mode is auto, IP camera will adjust its shutter speed according to AGC gain and the Maximum auto shutter speed. This setting is to set the maximum shutter speed range of this camera.
14 Flickless Mode	Change settings between 60Hz or 50Hz, depending on the AC power type of your region.

STEP2: Click the 5 [Apply] button of each section to confirm the settings or click the 6 [Reset] button to re-enter the parameters.

1.3.10 Camera Setup (PTZ camera models)

- **STEP1**: Click the [Camera Setup] on the “Main Setup page”.

The “Camera Setup page” is displayed as below

■Camera setting

Parameters	Description
1 Video Flipping	Check this box to flip the video up-down
2 Video Mirror	Check this box to mirror the video left-right
3 BLC	Check this box to enable back light compensation.
4 White Balance Mode	Select the white balance mode. After you set the parameter, you need to wait for 5~10seconds to see the final result. 1. AUTO : Auto white balance (default) 2. HOLD CURRENT: Select this to let the IP camera automatically obtain a best white balance setting according to current environment. The IP camera will use this setting to adjust color. NOTE: This setting will be lost after you reboot the camera. 3. MANUAL: Select this to enable manual setting of the white balance.

❺ Exposure mode	Select exposure mode. - Auto: The IP camera will adjust the exposure automatically. - Shutter Priority: The IP camera will adjust the exposure by shutter priority first. - Iris Priority: The IP camera will adjust the exposure by Iris priority first. - Manual: Manually select the Exposure Gain and Shutter Speed below.
❻ AGC Gain	When exposure mode is auto, IP camera will adjust its shutter speed according to AGC gain and the Maximum auto shutter speed. Higher AGC gain = brighter images.
❾ Auto IRIS Level	Select the Iris level.
❿ Sense up Level	Select the sense up level.
⓫ Light Sensor Mode	Select light sensor mode. - Auto: The IP camera will automatically switch between day or night mode according to lighting level - Day: The IP camera will always stay in day mode. - Night: The IP camera will always stay in night mode.
⓬ NightTime Gain Threshold	This value controls the level of light where camera switches into night mode. Increasing it will make camera switch to night mode at a darker illumination level.

STEP2: Click the ❼ [Apply] button of each section to confirm the settings or click the ❽ [Reset] button to re-enter the parameters.

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1.3.11 User Account Management

This section tells you how to setup the accounts.

- **STEP1**: Click the [User account] on the "Main Setup page".

  The "Account management page" is displayed as below

- **STEP2**: Setup the account names and their respective passwords.

  There are ❶ 1 root (administrator) account ❷ and 10 common user accounts allowed. Root(administrator) account allows the user to watch the live view and modify all settings. The common user account only allows live video view, and cannot change settings.

- **STEP3**: Click the ❸ [Apply] button to confirm the settings or click the ❹ [Reset] button to re-enter the parameters.

NOTE: Once you finish all settings, be sure to click the [Save Reboot] button. Otherwise, some settings may not take effect.

1.3.12 System Info

This section tells you how to see the system information of this IP device including system information, WAN status and system log.

- **STEP1**: Click the [System info] on the "Main Setup page".

The “System information page” is displayed as below

- **STEP2**: View the information in the 3 columns. This information is very useful to understand the IP device status and to resolve any problem that might occur.

■System info

Column	Description
❶ System info	It shows the firmware version, MAC address, production ID, and factory default type of IP device.
❷ WAN status	It shows the WAN port’s IP address, netmask, gateway, DNS server, DDNS host and connection status.
❸ System log	It shows the system event log. This column is very useful as a diagnostic tool.

- **STEP3**: Click ❹ [Parameter List] where you may see all configurations of the IP device.

- **STEP4**: Click ❺ [Server Report] to export related information of the IP device while contacting your support channel.

1.3.13 Firmware Upgrade

This section tells you how to update IP device's firmware. You can always visit our web site for the latest firmware.

- **STEP1**: Click the [Firmware] on the "Main Setup page".

  The "Firmware upgrade page-1" is displayed as below

- **STEP2**: Click 1 [Apply] button. The ''firmware upgrade page-2" will be displayed as below.

■Firmware Upgrade

Parameters	Description
2 Firmware images file	You can upload the firmware images here. Click the [browse] to select the an image file and press Enter. You can always get the latest version at our website.
3 MD5 file	You can upload the MD5 file here. Click the [browse] to select an MD5 file and press Enter. You can always get the latest version at our website.

NOTE: The version of the firmware image and the MD5 file to be uploaded must be the same, otherwise, the firmware upgrading will fail and the IP device will continue using previous firmware version.

- **STEP3**: Click the 4 [Apply] button to start upgrading or click the [Reset] to re-select the files.

- **STEP4**: The upgrade process window shows a progress bar indicating upgrade status.

- **STEP5:** The upgrade is completed and the device will reboot now.

1.3.14 Profile

Profiles are sets of parameters that control how the image sensor behave. Sometimes profiles are fine-tuned again to suit a specific environment, or for generally better image. They are not updated as frequently as firmwares, and a good profile can stay in use for a very long time. Occasionally, you may wish to load a new profile pack into your camera. This section tells you how to upgrade IP Camera's Profile Pack.

- **STEP1**: Click the [Profile Pack] item.

The "Profile image upgrade" page is displayed as below

- **STEP2**: Click the [Browse] 1 Button and choose the proper profile pack file. You may get the latest profile pack from our website.
- Click [Apply] 2 button to start uploading.
- **STEP3**: The upgrade process window shows a progress bar indicating upgrade status.
- **STEP4:** Once profile is upgraded, device will reboot.

1.3.15 Factory Default

This section tells you how to load IP device's factory default setting.

- **STEP1**: Click the [Factory Default] on the "Main Setup page".

  The "Factory default setting page" is displayed as below

- **STEP2**: Click the [Apply] button to go to loading confirmation page or click the [Reset] button to exit to previous page.

- **STEP3**: A confirmation page will be displayed. Click the [Save Reboot] button to start loading factory default settings.

1.3.16 Save Reboot

This section tells you how to save all the settings and reboot this IP device. This is critical because some settings might not take effect before save and reboot.

- **STEP1**: Click the [Save and reboot] on the “Main Setup page”.

  The “Save and reboot page” is displayed as below.

- **STEP2**: The Action LED indicator will go off to indicate that the IP device is rebooting. After around 30 seconds, the Action LED will light up again to indicate that the reboot is completed.

1.3.17 Logout

This section tells you how to logout from the IP device. Be sure to logout this IP device once your setting is completed.

- **STEP1**: Click the [Logout] on the “Main Setup page”.

  You will logout and return to the “Login Page” displayed as below**.**