



E2864

CX200

Mimic CX200 Internet Camera



User Manual

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ASUS CX200 Internet Camera

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Chapter 1: Introduction

Section 1. Features

ASUS Mimic CX200 is a compact stand-alone web-server capable of remote video surveillance. It can be accessed from anywhere in the world via a standard browser by entering the IP Address, account and password. Each system can support an additional USB PC cameras be it regular, infra-red or pan-tilt. With its built-in web-server, ASUS Mimic CX200 can stream video images directly to the Internet without have to go through a computer.

ASUS Mimic CX200 features a Windows-based software that allows the user to archive streaming video directly to the hard-drive. The same software also allows the user to monitor multiple cameras on one screen.

Features:

- LCD display.
- Built-in Web Server
- Built-in Power over Ethernet (PoE)
- Built-in CMOS Camera
- Extra Mini USB Port for USB PC Camera
- Support Pan/Tilt and Infrared USB PC Camera (sold separately)
- 10/100Mbps Fast Ethernet Network Access
- Support Any Java-Enabled Web Browser
- LCD display shows the IP address, Subnet Mask and Gateway
- 32-Bit RISC CPU
- Support Up to 30 Remote Viewers for each camera
- Allow Up to 8 User Accounts and Passwords
- 5.3VDC 1A Maximum

- Operating Temperature: 0°C ~ 60°C; Operating Humidity: 10% ~ 90%
- Dimensions: 13mm x 70mm x 170mm
- Weight: 75g
- For Indoor Use. Protective housing required for outdoor use.
- Network Protocol: HTTP, TCP/IP, UDP, SMTP, PPPoE, Dynamic DNS, DNS Client, SNTP, BOOTP, DHCP, FTP, SNMP
- Support USB PC Camera with VIMICRO ZC0301 Plus processor built-in
- Resolution available: 640x480 (VGA), 352x288 (CIF), 320x240 (QVGA), 176x144 (QCIF), 160x120 (QQVGA).
- Frame Rate: Up to 15fps in 640x480, Up to 20fps in 320 x 240.
- Motion JPEG streaming video

Section 2. ASUS Mimic CX200 as a Remote Surveillance System

Once ASUS Mimic CX200 is installed, the user can check any of the connected PC cameras using a standard web browser. The user can monitor and control these cameras simply by entering the IP address shown on the LCD into a Browser.

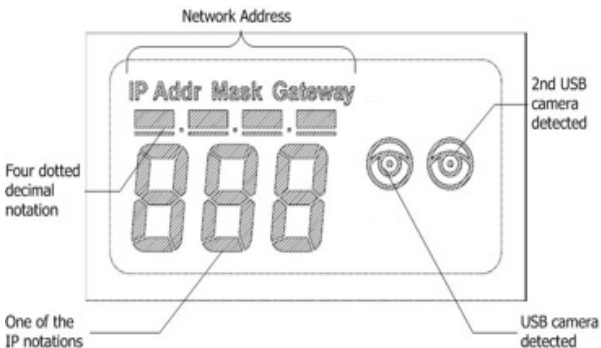


ASUS Mimic CX200 Network Diagram

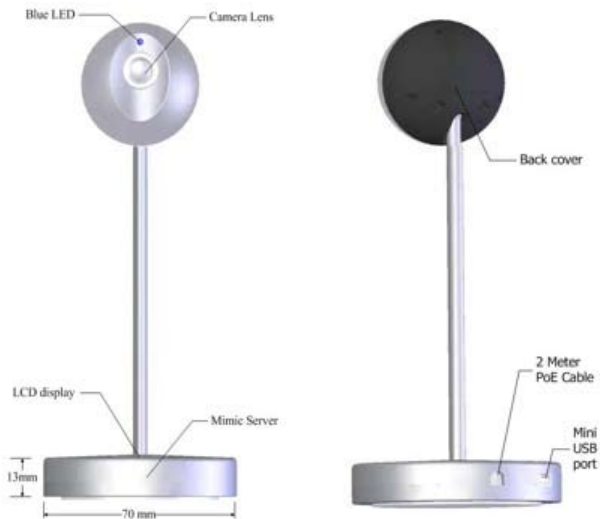
Section 3. Package Contents

ASUS Mimic CX200 package contain the following items:

1. ASUS Mimic CX200 IP camera
2. Quick Installation Guide
3. Utility CD containing:
 - a. Utility: to configure IP address, update the firmware, etc.
 - b. MultiMonitor: to monitor multiple ASUS Mimic CX200 cameras.
 - c. Time Server: Time adjustment utility.
 - d. Adobe Acrobat 5.0 Reader.
 - e. ASUS Mimic CX200 User Manual
 - f. Camera Windows Driver
4. Power adaptor



ASUS Mimic CX200 LCD displayed information



ASUS Mimic CX200 Front and Back view

Chapter 2: Hardware Installation

The following details the hardware installation procedure for ASUS Mimic CX200 IP camera.

Section 1. Installation Procedure (Without PoE Injector)

1. Connect the Power Adaptor to the mini USB port.




2. Connect the LAN cable to a router.



3. Wait a moment and the LCD will display the IP Address, Subnet and Gateway. Use a Browser to log into ASUS Mimic CX200 Web Interface.



The  icon on the LCD shows that a USB camera is connected.


1. Connect power and LAN cable into the PoE Data In port.



Next connect ASUS Mimic CX200 LAN cable to the PoE Data Out port.

2. Wait a moment and the LCD will display the IP Address, Subnet and Gateway. Use a Browser to log into ASUS Mimic CX200 Web Interface.



The  icon on the LCD shows that a USB camera is connected.

Chapter 3: Web Interface

Section 1. Introduction

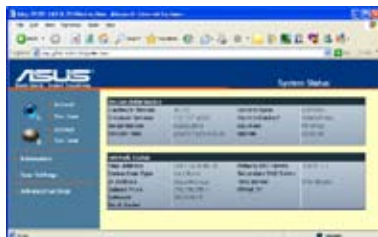
ASUS Mimic CX200 is designed to work without having to install any software. All the necessary functions are built-into the unit.

1. Once you have finished the hardware setup shown in Chapter 2, note down the IP address shown on the LCD
2. On a PC (located in the same LAN), open a Web Browser (eg.: Internet Explorer, Netscape, Mozilla Firefox or Opera)
3. Enter the IP Address as shown on the ASUS Mimic CX200 LCD display and press ENTER



Enter ASUS Mimic CX200 IP address

4. A login screen will appear. Enter the default Login. Click Apply to login.



ASUS Mimic CX200 Login screen

Section 2. Using the Web Interface

The ASUS Mimic CX200 webpage main menu is divided into two sections. The selection menu on the left and display menu on the right. The selection menu consists of the following options:

2.1 View Video

2.2 Information

2.3 Basic Settings

2.4 Advanced Settings



ASUS Mimic CX200 Main Menu

When using ASUS Mimic CX200 for the first time, check the following settings:

- Basic Settings Camera Settings ☐ Anti Flicker. Check that this is set to the correct lighting frequency. Change this to Outdoor if you intend to point the camera outside. Click Apply to save the configuration.
- Manually adjust the camera lens for best results.

2.1 To View Video

To view video from the connected camera, click on either ActiveX or Sun Java. Choose either Camera A or B to view the video.

By default the first USB camera connected to ASUS Mimic CX200 will be Camera A




ActiveX can only function in Windows platform. When using for the first time ActiveX plug-in will setup automatically on the client's computer. Click Install ActiveX Controls... to install. If this cannot be installed you will have to use Sun Java to view the video feed.

Using ActiveX Controls:

Once you click on camera A ActiveX the following window will appear.






Click the  button to start video recording.

The default directory is: C:\Windows\Temp\The video will be saved in the following format; CMV2006071 0123058.avi [CMV] [yyyy] [mm] [dd] [tthmmss].avi



To change the saved location and filename. Click  and the Save As window will pop up. Choose an alternate location or filename.



To change Video Codec, click .

Click Save to confirm changes.



Digital Zoom In, Digital Zoom Out



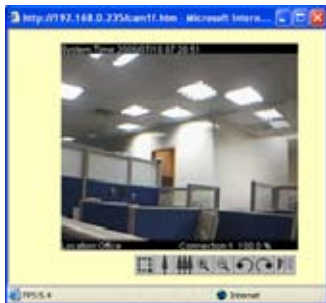
Rotate Left, Rotate Right



Flip the image vertically.

Using ActiveX Controls:

Once you click on camera A Sun Java the following window will appear.



Click this to Marquee an area and zoom into that area.



Click this to reduce the image resolution.



Click this to increase the image's resolution.



Click to digitally zoom in or out.



Click to rotate the image.



Flip the image vertically.

2.2 Information

The Information tab contains the following subsections:

2.2.1 System Status

2.2.2 Current Connections

2.2.3 Event Log

2.2.1 System Status

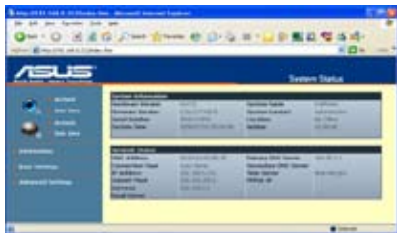
This webpage displays all the information relating to ASUS Mimic CX200.

i. System Information

This section shows general hardware information such as the Hardware and Firmware Version, the serial number, current / local System Time, the system name, contact, location and uptime.

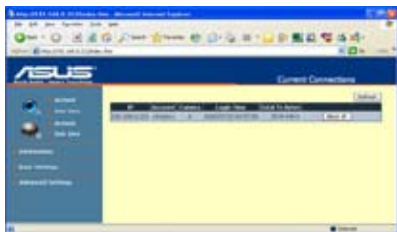
ii. System Information

This section shows the network information. The MAC Address is unique to each ASUS Mimic CX200 system.



ASUS Mimic CX200 System

2.2.2 Current Connections



The Current Connections page shows all the users currently viewing either Camera A or Camera B. It also lists the login time and total bytes received. The user has an option to block the IP or even disable the account of any errant viewer (An administrator privilege will be required for this feature).



If you do not have Administrator's privilege, the IP and Account details will be hidden.

IP	Account	Camera	Login Time	Total Tx Bytes	
***	*****	A	2006/08/18 03:55:32	17 M 369 K	<input type="button" value="Block IP"/>

Current Connections: When logged in with Operator Permission

Click Block IP to block or disable the account of any errant viewer.

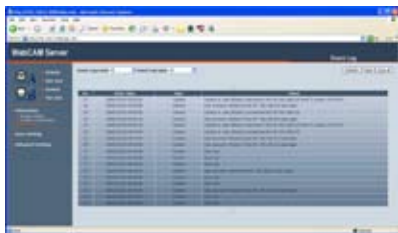
To unblock the IP goto Basic Settings ▢ Account Settings ▢ Blocked IP List and delete the blocked IP Address from the Blocked IP List.

2.2.3 Event Log

This section will keep a record of all events that occurred in ASUS Mimic CX200. The user can Refresh, Clear or Save the log file. There is also an option to sort the logs according to “Level” or “Type”. ASUS Mimic CX200 can log up to 2,000 events.



If you do not have Administrator privilege, the User Name and IP Address will be hidden. Example: Camera A: user ***** connected from IP: *.*.*.*



ASUS Mimic CX200 Event Log

2.3 Basic Settings

The following option allows the user to customize their unit.

2.3.1 Camera Settings

2.3.2 Network

2.3.3 Account Settings

2.3.1 Camera Settings

Use this section to set up the USB camera.

i. Setting up Camera A (or Camera B)



Individual Camera Configuration

Image Size

User can select the following image size:

- QQVGA (160*120),
- QCIF (176*144),
- QVGA (320*240),
- CIF (352*288),
- VGA (640*480).

Anti Flicker

Choose between Indoors 50Hz, 60Hz or Outdoors. For best results when directing the camera to bright sources / windows, select Outdoors.

Maximum Number of Connections (1-30)

Use this to limit the total number of users that can view this camera at the same time.

Location

Enter a suitable location / name for the camera.

Light Compensation

Choose Yes and ASUS Mimic CX200 will increase the lighting of the image. This is useful when monitoring indoors.

Choose No if you do not want ASUS Mimic CX200 to compensate for bright indoor lighting and view the images as is.

Color

Choose Yes for color and No for black and white display. Black and White display results in slightly faster FPS (Frames Per Second) video.

Camera Position

Use this option to right the image when ASUS Mimic CX200 is installed on the ceiling or wall. Select either; 0 degree (upright), 90, 180 (upside down), or 270 degree.

Pan Control

Use this function to reverse the Pan direction.

Tilt Control

Use this function to reverse the Tilt controls, if necessary.



If you do not choose the right frequency, the image will flicker or lines will appear on the images. Always click Apply to save any changes made. Otherwise, the changes will be lost.

2.3.2 Network

This option determines ASUS Mimic CX200 Network settings.

i. IP Address

By default, the IP address acquisition is set to using DHCP.

ASUS Mimic CX200 IP Address Settings

IP Address

This determines ASUS Mimic CX200 LAN IP address.

Subnet Mask

Enter ASUS Mimic CX200 Subnet Mask. The value is normally 255.255.255.0

Gateway

This item is to set ASUS Mimic CX200 Gateway.

To learn more about the above, see Appendix C: IP address, Subnet and Gateway

Obtain an IP address

This allows the user to choose either to set ASUS Mimic CX200 LAN IP address; manually, using DHCP (default) or using Bootp protocol.



Click Apply to confirm. ASUS Mimic CX200 will reboot. You MUST manually enter the NEW IP address in your Browser in order to open the Web Interface.

ii. DNS Server IP

Primary DNS Server IP

This item sets ASUS Mimic CX200 primary DNS Server IP address. This is the default DNS and cannot be edited.

Secondary DNS Server IP

Use this to set ASUS Mimic CX200 Secondary DNS Server IP address. ASUS Mimic CX200 will use the Secondary DNS Server IP address if the Primary DNS Server IP address is not working.

DNS Server IP	
Primary DNS Server IP	<input type="text" value="168.93.1.1"/>
Secondary DNS Server IP	<input type="text"/>

ASUS Mimic CX200 DNS Server IP

iii. Port Number

HTTP Port Number

This determines the LAN port from which the webpage is accessible thru your Router. By default the LAN port number is 80.

If this port is changed, say to 82, then <http://xxx.xxx.xxx.xxx:82> (where xxx.xxx.xxx.xxx is iCAMView LAN IP address as shown on the LCD) must be used in order to access ASUS Mimic CX200 web interface in LAN.

Communication to Camera Port Number

This determines the LAN port from which the video image is streamed thru your Router. By default the LAN port number is 9001.

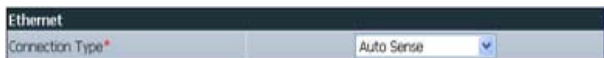
Port Number	
Http Port number*	<input type="text" value="80"/>
Communication to Camera Port number*	<input type="text" value="9001"/>

ASUS Mimic CX200 Port Settings

iv. Ethernet

Connection Type

This sets ASUS Mimic CX200 communication speed. By default, it is set to Auto Sense. ASUS Mimic CX200 will reboot, if this setting is changed.



ASUS Mimic CX200 Ethernet Settings

v. Dynamic DNS



ASUS Mimic CX200 Dynamic DNS Settings

Service Provider

ASUS Mimic CX200 can be configured to register it's current Dynamic IP with a Dynamic DNS provider. This allows the user to locate ASUS Mimic CX200 using a Domain Name. ASUS Mimic CX200 supports the following free DDNS service providers:

- dhs.org
- dyndns.org
- myddns.com
- zive.org

Click Update to get latest list of Service Providers.

In general, to register a Domain Name:

- a. Go to the DDNS provider website listed above.
- b. Register a new user account and password with the DDNS provider.
- c. Choose a Domain Name to point to your current Dynamic IP
- d. Enter information obtained in (b) and (c) into ASUS Mimic CX200 DDNS fields.

Domain Name

This is the Domain Name you have created from the above selected DDNS provider.

Login Name

This is the Login / Account name that you have created with the selected DDNS provider.

Login Password

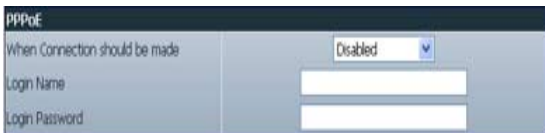
Enter the Password you have assigned to your DDNS Account.

Use Public IP to register

Choose Yes to ensure that ASUS Mimic CX200 uses the WAN / Public IP to register with the selected DDNS server.

vi. PPPoE

Use this option to allow ASUS Mimic CX200 to connect to the internet directly using your xDSL modem. Once set-up, ASUS Mimic CX200 will connect directly to the Internet without going through a router. The LCD will display the current WAN / Public IP instead of the LAN IP address.



ASUS Mimic CX200 PPPoE setting

When Connection should be made

Disabled: Default setting.

Connect always: ASUS Mimic CX200 will automatically dial up and maintain continuous connection.

Login Name

Enter the login name assigned by your ISP.

Login Password

Enter the password assigned by your ISP.

2.3.3 Account Settings

This webpage allow you to set up to Eight (8) different user accounts with different access permission level to ASUS Mimic CX200.

i. User Account

User Account					
User Name	Password	Permission	IP Filter	Max. FPS	Viewing Hour
		Administrator	****	Unlimited	Configure
		Operator	****	20	Configure
		Viewer	****	10	Configure
		No Access	****	10	Configure
		No Access	****	10	Configure
		No Access	****	10	Configure
		No Access	****	10	Configure
		No Access	****	10	Configure

User Account Settings

User Name

Assign a User Name / Account. The administrator can set up to 32 case sensitive character names.

Password

Assign a password to the account. The administrator can set up to 32 case sensitive passwords.

Permission

This sets the access level to individual user accounts.

Administrator:	An Administrator has full access including write permission to all menus and sub-sections. Only an Administrator can see the User Name and IP address fields or set the camera access Permit Hours to Operator or Viewer accounts.
Operator:	The user can access all menus, but does not have permission to amend the data fields.
Viewer:	The user can only view camera within the time specified in Permit Hours. The user does not have write permission, can only view Camera A/B and read the Information section.
No Access:	This disables either of the above two permission levels given to a user.



An Administrator account must be set before setting up either an Operator or Viewer account.

IP Filter

Use this feature to ensure that the user only login from the IP address specified here. Leave it as *.*.* to allow the user to login from any place.

Example:

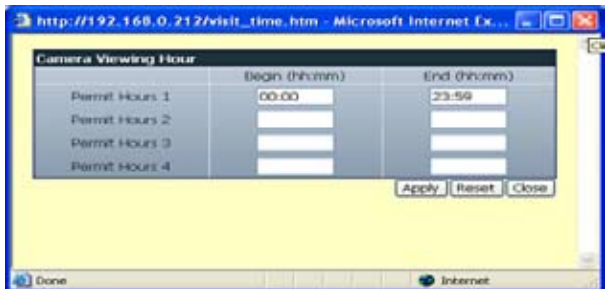
Entering 192.168.1.* will only allow User to access from 192.168.1.xxx IP addresses.

Max FPS

This allows the Administrator to limit the bandwidth allocated to each account. The Administrator can set a figure of 1 to Unlimited FPS (“frames per second”).

Viewing Hours

When the Permission level is set to either Operator or Viewer, the Administrator can set the time to which the camera can be viewed.



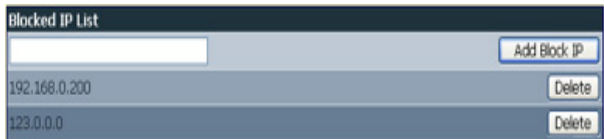
ASUS Mimic CX200 Permit Hours Configuration

Click Configure to set the hours. The Administrator can set up to 4 different Permit Hours (in 24hr format). Click Apply to save. Click Close to exit without saving.



The Reset button only revert the fields to initial values prior to any changes being made. If Apply has been clicked, it will not undo the changes.

ii. Block IP address



Blocked IP List

This allows the Administrator to block specific LAN IP address from accessing ASUS Mimic CX200. Enter the IP address in dotted decimal notation and click Add Block IP. The blocked LAN IP address will be listed at the bottom.

Click Delete to remove it from the list.

2.4 Advanced Settings

This section allows the Administrator to set up some of the features available in the server.

2.4.1 Event Notification

2.4.2 Motion Detection

2.4.3 Image Recording

2.4.4 Email / FTP

2.4.5 System Settings

2.4.6 About

2.4.1 Event Notification

This section determines the type of event that will be included if an email notification is sent by ASUS Mimic CX200.



Administrator privilege is required to configure this section.

i. Event Notification

A total of 8 email recipients can be assigned to receive notification.

ASUS Mimic CX200 Event Notification Page

Send Email

Select Yes to activate this feature. Default is No.

Email Server

A valid Email Server, User name and password must be setup for this feature to work. If this has not been setup, click Edit and to go to Email / FTP setup page. (see Section 2.4.4)



Email function can only work using standard Email Server and not Web based Email Server, such as yahoo.com

Email Address Book

The available Email addresses are listed here. See Section 2.4.4 on how to enter an Email address to the Address Book.

To add an email address click Edit. ASUS Mimic CX200 will ask you to save your configuration prior to leaving this page.

Recipients

Up to 8 valid email accounts can receive Email Notification. To add an email address to the recipient list, click <. To remove, click >.




Only Email addresses that are listed in the Email Address Book can be added.

Events

This section determines the events that the selected recipient/s will receive by email. There are three types of events; Information, Warning and Error. Click Select to select the list of events the recipients will be notified.

By default, all the events are selected but not confirmed. Click Apply to activate and confirm selection.

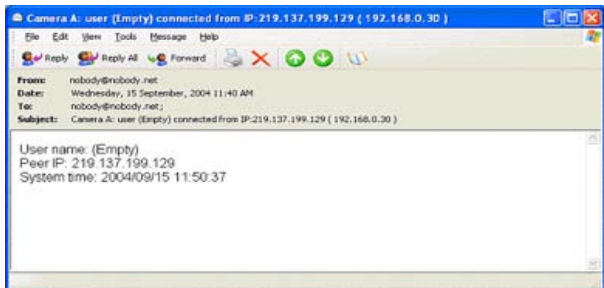
Click  to close the window and return to the Event Notification page.



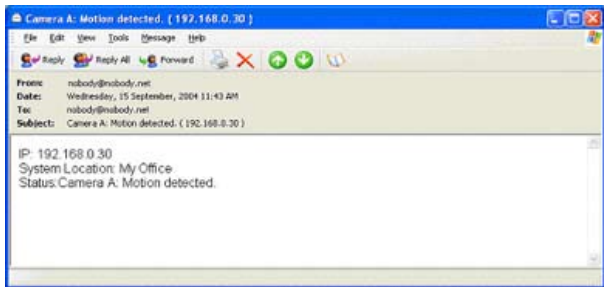


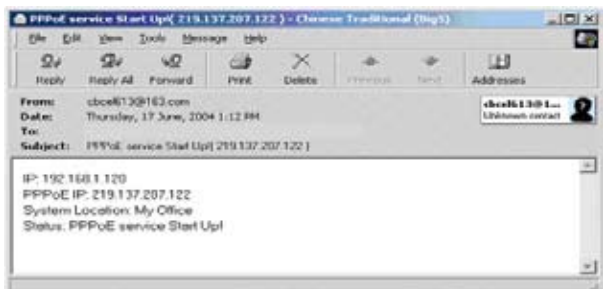
The Image Recording and Motion Detection notification function here will only send an email notification **WITHOUT** any picture attached. For email notification with images, the Administrator has to setup the Motion Detection page (see Section 2.4.2) and Image Recording page (see Section 2.4.3)

ASUS Mimic CX200 will email the following notification depending on which event was selected.



Event Notification: User Login Details (Date, Time, Camera & IP)





Event Notification: PPPoE Connect Successful with Public IP shown

2.4.2 Motion Detection

This page allows the Administrator to set Motion Detection functions for the cameras.

i. Camera A (or Camera B)



Motion Detection page

Enable

The Administrator has two options for Motion Detection;

- a. Always On or
- b. On Schedule, the Administrator can set up to 4 different time slots for motion detection.



Check that you have setup valid Email / FTP accounts first before proceeding with the rest of the configuration

Detection Sensitivity

This will determines the level of change before motion capture is triggered. A high percentage means a small change will trigger motion capture.

Send image every ... second(s)

Select either; 0.5, 1, 2, 3, 4 or 5 seconds.

Stop sending after ... email(s) or image idle for ... second(s)

ASUS Mimic CX200 will stop sending emails on the lower of the two conditions. The Administrator can set between 1, 3, 5, 7 and 10 seconds. Emails can be set from 1 to 99999 pieces or 0 for stop sending email only when image idle occurred.

Schedule

When the unit is set to On Schedule, the Administrator can configure the four preferred schedule time slots for motion detection. Time must be entered in 24hr format.

Send to FTP Server

Click Yes to activate. This option allows the administrator to send and store the motion detected images on a FTP site. This is useful for future reference and recording purpose.

ftp://<empty>/<folder>

This allows the Administrator to determine the folder where the Motion Detected files are stored. Enter a folder name in <folder>. Click Apply when done.



The folder name must be valid and has appropriate upload permissions. You must first enter a valid FTP address in Email / FTP page. Otherwise the ftp address field will be left <empty>. To setup the FTP server, see Section 2.4.4

System Defined / User Defined

The administrator can also determine to either have the system automatically assign the filenames for the pictures saved. Or manually assign the filename.

Filename ...

Specify a prefix filename for the motion detected JPG images. The default prefix is image_

Loop from ... to ...

This will determine the number of files in the sequence. Once the last file number is reached, it'll loop and replace the first file in the sequence with the most current image.

Digits ...

This will determine the number of digits assignable for the above sequence. The Administrator can choose to assign between 1 to 6 digits.



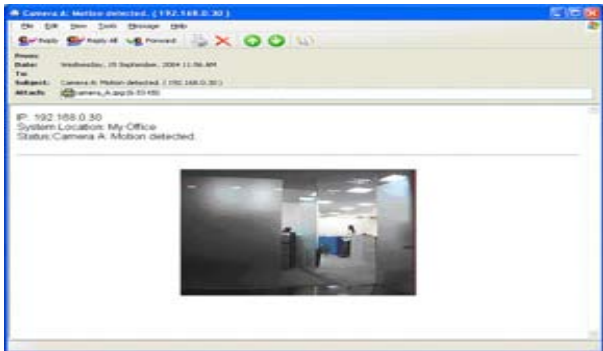
Click for an example.

Send Email

Select Yes to send an email when motion is detected.



The image size received by email / FTP depends on the resolution set in Basic Settings ▢ Camera Settings ▢ Image Size



Motion Detect Email Notification

Email Server: ...

The Email server will be shown here. If not, click Edit to go to the Email / FTP configuration page. Click on Motion Detection to return here. (See Section 2.4.4 on Email / FTP configuration)

Email Address Book

The available Email addresses are listed here. See Section 2.4.4 on how to add an Email address to the Address Book.

Recipient

The Administrator can determine who will receive email notification.

To add a recipient to the list, click <

To add all the recipients to the list, click <<

To remove a recipient from the list, click >

To remove all the recipients from the list, click >>

Click Apply to confirm and save the settings.

2.4.3 Image Recording

Image recording allows the user to receive a string of JPG images to either their email account or FTP account. The images will be sent over a predetermined interval.

i. Camera A (or Camera B)

The screenshot shows the 'Camera A' configuration page for image recording. It includes the following fields and controls:

- Enable:** A dropdown menu set to 'No'.
- Begin - End (hh:mm):** Two time selection boxes, the first showing '00:00' and the second showing '23:59'.
- Send image every:** A text box with '1' and the label 'minute(s)'.
- Send to FTP Server:** A dropdown menu set to 'No', followed by a text box containing 'ftp:// <Empty> /' and an 'Edit' button.
- Filename:** A dropdown menu set to 'System defined', followed by a text box containing 'image_', a dropdown menu set to '(*).jpg', a text box containing 'loop from 0', a text box containing 'to 9', and a dropdown menu set to 'digits 2'. There is also a help icon.
- Send Email:** A dropdown menu set to 'No', followed by a text box containing 'Email Server : <Empty>' and an 'Edit' button.
- Recipients:** A section header above a large empty white box.
- Email Address Book:** A section header above a large empty white box, with an 'Edit' button to its right.
- Navigation:** Four buttons in the center: '<<', '<', '>', and '>>'.

Image Recording webpage

Enable

Click Yes to activate this feature.

Begin – End (hh:mm)

The Administrator can determine up to 2 different time slots for Image Recording. The time is in 24hrs format.

Send image every ... minute(s)”

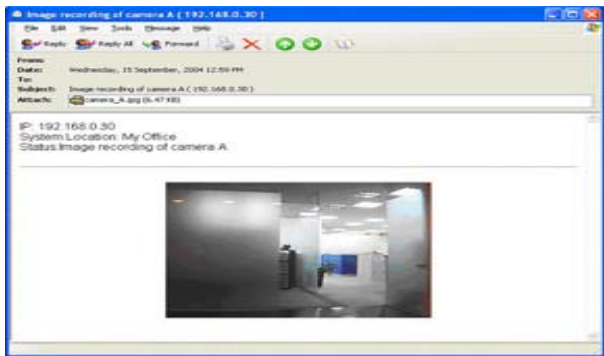
The Administrator can determine the interval (between 1 to 99 minutes) at which ASUS Mimic CX200 capture and send an image.

Send to FTP Server & Send Email

This is similar to the function available in Motion Detection page. Please refer to section 2.4.2 above for details.



The image size received by email / FTP from depends on the resolution set in Basic Settings ▢ Camera Settings ▢ Image Size



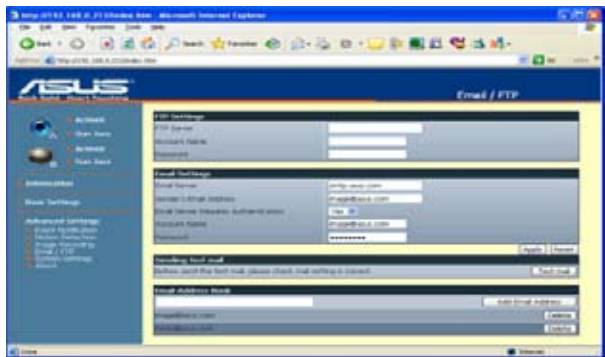
Email of Image Recorded

ftp://<empty>/<folder>

This allows the Administrator to determine the folder where the Motion Detected files are stored. Enter a folder name in <folder>. Click Apply when done.

2.4.4 E-mail / FTP

This webpage sets up the necessary Email and FTP server information. The Administrator will have to enter a valid Account Name and Password to the Email server and/or FTP server. These information has to be setup in order for Event Notification, Motion Detection and Image Recording function to work.



Email / FTP settings page

i. FTP Settings

FTP Server

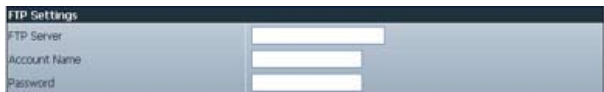
The Administrator will have to enter the full FTP server address here.

Account Name

Enter the FTP login account name here.

Password

Enter the account password. Click Apply to save the above settings.

A screenshot of the 'FTP Settings' window. It has a dark header bar with the title 'FTP Settings'. Below the header, there are three rows of labels and input fields: 'FTP Server' with a long text box, 'Account Name' with a medium text box, and 'Password' with a medium text box.

FTP settings

ii. Email Settings

A screenshot of the 'Email Settings' window. It has a dark header bar with the title 'Email Settings'. Below the header, there are five rows of labels and input fields: 'Email Server' with a long text box, 'Sender's Email Address' with a long text box, 'Email Server Requires Authentication' with a dropdown menu showing 'No', 'Account Name' with a medium text box, and 'Password' with a medium text box.

Email settings

E-mail Server

The Administrator will have to enter the Email server address here.



Email function can only work using standard Email Server and not Web based Email Server, such as yahoo.com

Sender's Email Address

Enter a valid email address where the Email will be sent from. Enter the full email address, example: image@asus.com

Email Server Requires Authentication

Select Yes to enter the Account name and Password field below.

Account Name

Enter the full account name, example; image@asus.com.

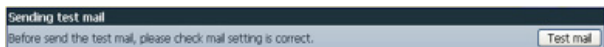
Password

Enter the password for the above account name. Click Apply to save the changes.



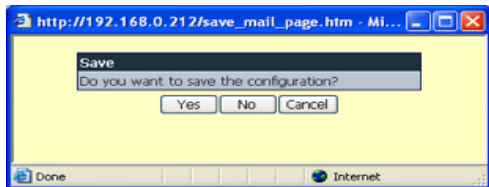
In most cases, Sender's Email Address and Account Name field is the same.

iii. Sending Test Mail



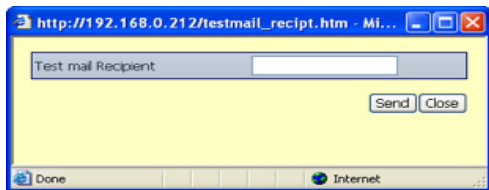
Sending a test mail

- Click Test Mail to check that the Email Setting has been correctly configured.



Saving configuration before sending a test mail

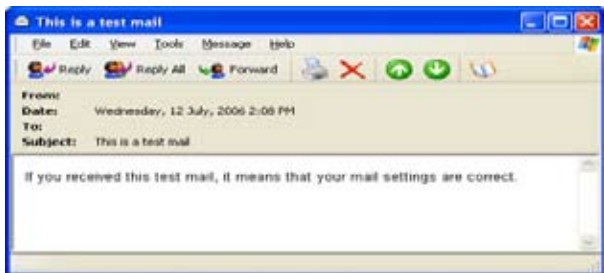
b. Click Yes to save configurations and proceed to the following window.



Test mail recipient email address

c. Enter the Test mail Recipient email address and click Send.

d. If the Test Mail is successful, the Recipient will receive the following email message.



Confirmation email

The administrator can also check Information ▢ Event Log for confirmation or failure.

No.	Date/Time	Type	Event
50	2006/07/12 06:13:09	Email	Test Mail has been sent.

Event Log: Test mail successful

No.	Date/Time	Type	Event
51	2006/07/12 06:16:41	Email	Failed to send test mail.

Event Log: Test mail failed

iv. Email Address Book

Email Address Book

image@asus.com	<input type="button" value="Delete"/>
mimic@asus.com	<input type="button" value="Delete"/>

E-mail Address Book Entry

Enter an Email address in the box provided and click Add Email Address. The listed emails will be available for use in Event Notification, Motion Detection and Image Recording webpage.

Up to 20 email addresses can be stored.

Click Delete to remove an Email address.

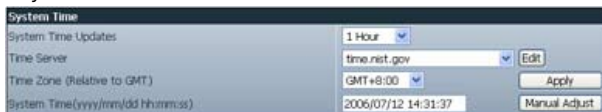
2.4.5 System Settings

This page allows the Administrator to set ASUS Mimic CX200 SNMP settings so it can be used by a NMS (Network Management System).



System Settings page

i. System Time



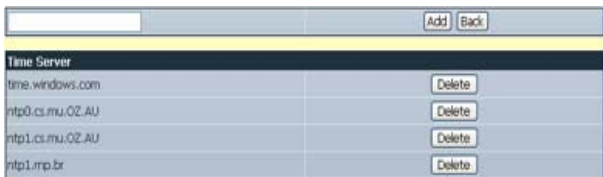
System Time Updates

The administrator can set an interval for time synchronization. Select either; 1, 3, 12 hours or 1, 10 & 30 days.

Time Server

Choose the nearest Time Server to your ASUS Mimic CX200 location. The Administrator can choose from the list of a maximum of 30 Time Servers.

To add a new Time Server the Administrator must first make space by deleting existing Time Servers from the list. Once this is done, the Add dialog box will appear as below. Click Back to return to the System Settings webpage.



Add Time Server dialog box

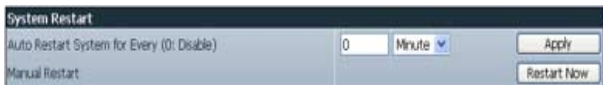
Time Zone (Relative to GMT)

Select the appropriate time zone. Click Apply to save changes.

System Time (yyyy/mm/dd hh:mm:ss)

This section is to manually set ASUS Mimic CX200 System Time. The format is pre-determined to: yyyy/mm/dd hh:mm:ss (in 24hr format). Click Manual Adjust to save the changes.

ii. System Restart



Auto Restart setting

Auto Restart System Every ...

The Administrator can choose to restart ASUS Mimic CX200 at certain intervals (choose between minutes and hours only). Click Apply to save any changes.

Manual Restart

Click Restart Now to restart the system immediately.

iii. LED Settings



The LED Setting window has a title bar 'LED Setting'. Below it is a label 'LED function' followed by a dropdown menu currently set to 'Enable'. To the right of the dropdown is an 'Apply' button.

LED function

This function is not applicable.

iv. SNMP Settings



The SNMP Settings window has a title bar 'SNMP Settings'. It contains three input fields at the top: 'System Name' with the value 'iCAMView', 'System Contact' with the value 'Administrator', and 'System Location' with the value 'My Office'. Below these is a table with four columns: 'Manager IP Address', 'Community', 'Permission', and 'Description'.

Manager IP Address	Community	Permission	Description
****	public	Read/Write	
****	public	No Access	
****	public	No Access	
****	public	No Access	
****	public	No Access	
****	public	No Access	
****	public	No Access	
****	public	No Access	

SNMP Settings

System Name

This is to give ASUS Mimic CX200 a name identifiable in a SNMP network.

System Contact

This is to give the Administrator an identity in the SNMP network.

System Location

This is to set ASUS Mimic CX200 SNMP location.

Manager IP Address

This set the LAN IP address where the administrator can manage ASUS Mimic CX200 from. It is valid for up to 8 different LAN IP addresses. To manage ASUS Mimic CX200 from any LAN IP addresses leave the field as *.*.*.*

Community

This is to set a Community name for NMS. The community name has to be the same as that set in NMS.

Permission

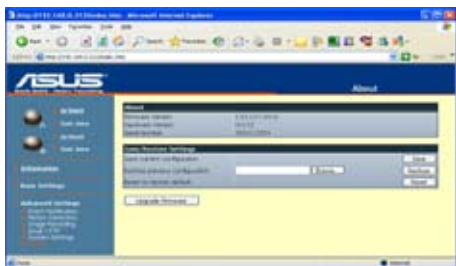
This is to set the Administrator's authority. Options are Read, Read/Write, and No Access.

Description

This is for an Administrator to make notes.

2.4.6 About

The administrator can use this section to check firmware information, save/restore settings, upgrade firmware and see manufacturer's details.

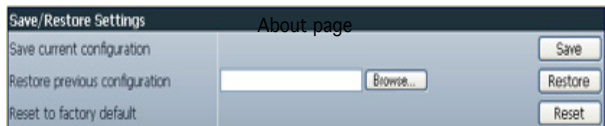


About page

i. About

This section gives crucial information about ASUS Mimic CX200 Firmware Version, Hardware Version and Serial Number.

ii. Save / Restore Settings



Save Current Configuration

Click Save to save the configuration to your PC. The text file will have a default format of YYYY_MMDD_####.cfg. The Administrator can change this, if necessary.

Restore Previous Configuration

This function is only available if a *.cfg configuration file has been saved earlier. Click Browse... to the location the file and click Restore.

Reset to factory default

This function will reset all settings to its default value.



ASUS Mimic CX200 will request for the master login and password. This is printed at the back of the unit.

Chapter 4: View Images Using PDA / PPC / mobile

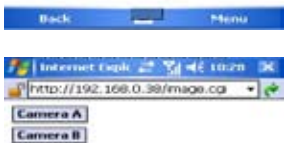
ASUS Mimic CX200 supports image viewing from a GRPS / WiFi enabled PDA / PPC / Symbian mobile device. To view the images;

a. Make sure that the PDA / PPC / Mobile unit is connected to LAN or Internet.

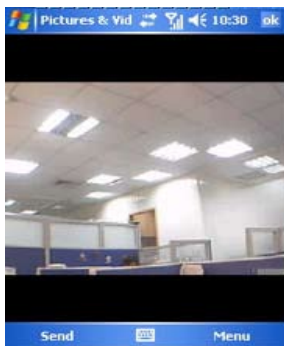
c. The following login page will appear. Enter the Login Name and Login Password if applicable. Otherwise, click Apply to proceed.



d. The following Camera Selection will appear. Click on either Camera A or Camera B.

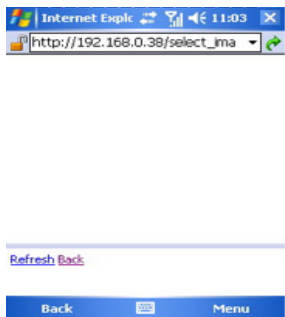


e. The default file name is showing_pda.jpg, click Save As... to change the file name or save location.



The downloaded image size depends on the resolution set in Basic Settings ▢ Camera Settings ▢ Image Size. Approximately: 6KB @ 320x240 vs. 17KB @ 640x480 resolution

f. The images are downloaded and displayed one at a time. Click Refresh to download the next image. Click Back to go to the camera page to select a different camera.



Chapter 5: Using the Utility

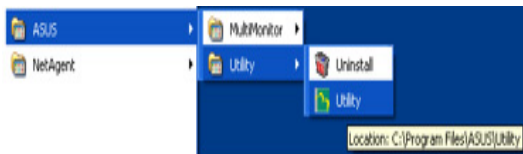
Section 1. Installation

1. Insert the enclosed Utility CD into the CD-ROM drive. The following menu will show up. Click on the buttons on the left to install the programs you want.



☒ **Utility** - This is a program that helps the user perform quick installation. It will detect the current configuration and take the user through the necessary network setup.

- a. Click the Utility button to commence installation.
- b. After the installation is completed, the Utility program will appear in Windows Start ▢ Utility. Click this to start the program.



☒ MultiMonitor - This is a windows based program designed to allow user to control a large number of ASUS Mimic CX200 IP camera located either in a LAN or WAN.

a. Click the MultiMonitor button to commence installation.

b. After the installation is completed, iMultiView program will appear in Windows Start ▢ All Programs ▢ ASUS ▢ MultiMonitor.



☒ Read User's Manual - Click to read ASUS Mimic CX200's User Manual. You will need Adobe Acrobat Reader v5.0 or higher.

☒ Adobe Acrobat Reader v5.0 - This will install Acrobat Reader v5.0 on your local hard drive.

☒ Sun Java / ActiveX - Install Sun Java for viewing the video image by Java, or install the OCX for viewing by ActiveX

Section 2. Using the Utility Program

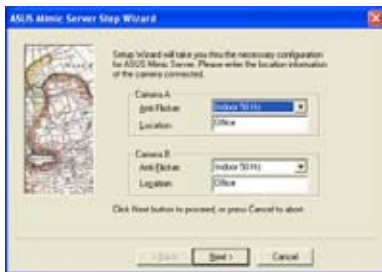
The Utility main menu is shown below. The selection menu is located on the left. The Serial Number, current Firmware and IP Address of every ASUS Mimic CX200 connected to the LAN will be displayed on the table to the right.



2.1 Setup Wizard

Click Setup Wizard to take you through the setup process.

1. Click to select the ASUS Mimic CX200 you want to configure on the right.
2. Click on Setup Wizard.
3. Enter the necessary camera configurations. Choose the appropriate frequency (Indoor 60 Hz, Indoor 50 Hz or Outdoor) to prevent flickering on the video feed. Enter a name for the camera in the Location box to identify the camera.



4. Click Next > to configure the Network Connection.



Obtain an IP address by DHCP

Choose this if you want your Router to assign an IP address to ASUS Mimic CX200.

Use the following IP Address

Choose this if you want to enter a fix IP address, Subnet Mask and Gateway for ASUS Mimic CX200. (Refer to Appendix C for explanation on IP Addresses)

Obtain an IP address by Bootp

Choose this if you want to allow ASUS Mimic CX200 to obtain an IP address using Bootp protocol.

5. Click Next > to proceed to xDSL/Cable modem setup.



Choose this if you want ASUS Mimic CX200 to connect directly to your xDSL line.

- a. Select Enable PPPoE connection
 - b. Enter your account and password details as provided by your internet service provider ("ISP").
 - c. ASUS Mimic CX200 will be able to dial-up automatically once setup is completed.
6. Click Next > to proceed with DDNS setup



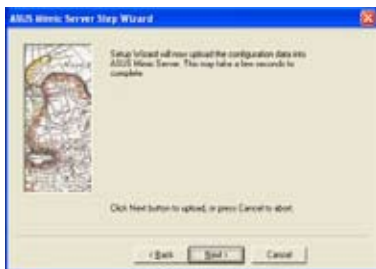
DDNS service allows you to assign a Domain Name to your Dynamic IP. This way, you will always be able to locate your device over the internet. (For more details see Chapter 4, Section 2.3.2, part v)

7. Click Next > to change your administrator account and password information.



An administrator account is necessary to ensure privacy. If you do not want to set one, clear the data in both fields. The fields are case sensitive.

8. Click Next > to confirm these configuration.



9. Click Next > to save and restart ASUS Mimic CX200 with the new configurations.



2.2 Launch Mimic CX200

Click Launch Mimic CX200 or double click the ASUS Mimic CX200 listed in the table to launch it.



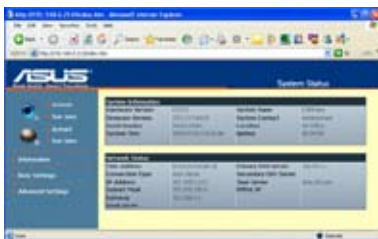
Click either one to Launch ASUS Mimic CX200 camera.

ASUS Mimic CX200 login screen will appear.



Key in the account name and password entered earlier. If you did not configure one, then just click Apply to login.

The ASUS Mimic CX200 webpage will appear. Click ActiveX beside Camera A to view the video images.



2.3 IP Configuration

This section allows you to configure the IP address for ASUS Mimic CX200. You do not have to edit this section if you have gone through Setup Wizard earlier.



Select the ASUS Mimic CX200 unit on the right display screen, and click IP Configuration.

This will bring up the following configuration window.

2.3.1 IP Address

Use this section to configure the IP Address of ASUS Mimic CX200.



Obtain an IP address by DHCP

Choose this if you want to assign a fixed IP address to ASUS Mimic CX200. This is the default setting.

Obtain an IP address by Bootp

Choose this if you want to allow ASUS Mimic CX200 to obtain an IP address using Bootp protocol.

Use the following IP Address

Choose this if you want to assign a fix IP address, Subnet Mask and Gateway for ASUS Mimic CX200. (Refer to Appendix C for explanation on IP Addresses)

2.3.2 Advanced (for password and HTTP configuration)

This section sets the Utility password. This security password prevents unauthorised access to devices through this Utility.



Device Password can only be set for ASUS Mimic CX200 from within the same LAN.



i. Device Password (when accessing from Utility)

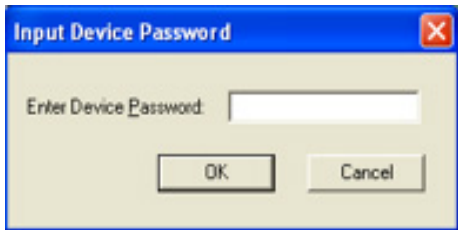
Use this to set an access password when accessing ASUS Mimic CX200 from this Utility. Once set, the IP Address will not be shown on the right display panel (see below).





If the Device Password is enabled, the IP Address will be hidden.

Once set, Utility will request for the Device Password when you try to click on either, Setup Wizard, Launch Mimic CX200 or IP Configuration button.



To remove the password,

- Select the ASUS Mimic CX200 unit from the Utility list.
- Click IP Configuration.
- Enter the unit's Device Password
- Go to Advanced ▢ Device Password and delete both the entries.
- Click OK to confirm.



If the password is lost, you must use the Master Password to reset the Password field.

ii. Management Protocol

This setting allows the administrator to determine the LAN HTTP access (web) to ASUS Mimic CX200 IP camera. For added security, the administrator can choose to use either the default open port 80 or other ports (between 1 to 65534).

Once the HTTP port number is set to another port (other than 80), the full LAN IP address must be entered in order to access the ASUS Mimic CX200 web interface.

Example:

If a value of say, 8080 is set as the HTTP port number, then enter `http://192.168.0.177:8080` in order to access ASUS Mimic CX200 web interface.

Uncheck to disable this function.

2.4 Upgrade Firmware

Click this to bring up the upgrade firmware dialog box.

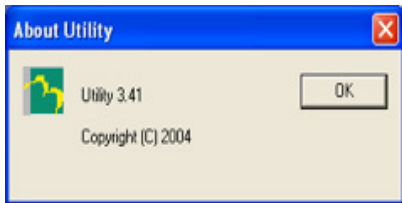
To check the internet for the latest firmware, click Next

Otherwise, check Upgrade the firmware with file saved on the local hard drive.

Click Browse to choose the location where the *.bin file is located.

2.5 About

Click this button to show the software and version details.



2.6 Refresh

Utility will automatically search for any ASUS Mimic CX200 IP cameras that are connected in the same LAN. It will periodically refresh this list to show the latest status. The user can do a manual search by clicking the Refresh.



Chapter 6: MultiMonitor

MultiMonitor is a program to manage multiple ASUS Mimic CX200. It is able to detect the IP address of all ASUS Mimic CX200 installed in LAN and list them for easy management. For units that are located on WAN, the administrator will have to manually add these in.

Section 1. Installing MultiMonitor

Click on setup.exe and follow the installation wizard

After installation, there will be a ASUS group in the Windows Start group

Click “MultiMonitor” “MultiMonitor for Windows” to start using MultiMonitor.



Section 2. Using MultiMonitor

When using MultiMonitor for the first time, it will ask you to enter the CD-Key. This can be found on the cover of the Utility CD.



Fill out the necessary information shown below and click Next >.

The screenshot shows the first step of the 'MultiMonitor register wizard'. It contains a list of seven fields for registration information: 1. Your Name/Company (filled with 'ASUS Engineering'), 2. Country (a dropdown menu showing 'select from list'), 3. Email Address, 4. Product Name (filled with 'MultiMonitor'), 5. Serial Number (filled with 'XXXXXXXXXXXXXXXXXXXX'), 6. Firmware version (filled with '3.00'), and 7. Comment (an empty text area). Below the fields, there is a line of text: 'Click Back to return to ID-4 key page, click Next button to send registration, or press Cancel to abort.' At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

The screenshot shows the second step of the 'MultiMonitor register wizard'. It contains the text: 'Connecting to register server, it might take a few minutes to complete. Please wait.' Below this, there is another line of text: 'Click Finish button to close registration.' At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

The screenshot shows the third step of the 'MultiMonitor register wizard'. It contains the text: 'The MultiMonitor register is completed successfully.' Below this, there is another line of text: 'Click Finish button to close registration.' At the bottom, there are three buttons: '< Back', 'Finish', and 'Cancel'.

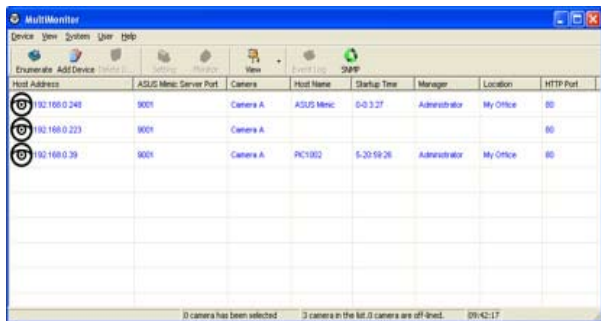
Click Finish and the MultiMonitor Logon window below will pop up. Just click OK to start using MultiMonitor.



The image shows a 'Logon' dialog box with a blue title bar and a red close button. It contains two input fields: 'Name' with the text 'Admin' and 'Password' which is empty. At the bottom are 'OK' and 'Cancel' buttons.



The default security Logon name is Admin, no password is set. To set a password, click User → Change Password ... → New Password



The image shows the main window of the MultiMonitor application. It has a menu bar (Device, View, System, User, Help) and a toolbar with icons for Enumerate, Add Device, Select Device, Setting, Monitor, View, Event Log, and SPP. Below the toolbar is a table with the following columns: Host Address, ASUS Mini Server Port, Camera, Host Name, Startup Time, Manager, Location, and HTTP Port.

Host Address	ASUS Mini Server Port	Camera	Host Name	Startup Time	Manager	Location	HTTP Port
192.168.0.248	9001	Camera A	ASUS Mini	0-0 3:27	Administrator	My Office	80
192.168.0.223	9001	Camera A					80
192.168.0.39	9001	Camera A	PC1002	5:20:59:26	Administrator	My Office	80


At the bottom of the window, there is a status bar that reads: 0 camera has been selected, 3 camera in the list, 0 camera are off-line, 09:42:17.

2.1 Device




Enumerate: Start MultiMonitor and press the “Enumerate” button, MultiMonitor will start a search for all the ASUS Mimic CX200 units on the network and list them in the main window.


Once detected, the following will show in the main window:

Host Address	ASUS Mimic Server Port	Camera	Host Name	Startup Time	Manager	Location	HTTP Port
 192.168.0.248	8001	Camera A	ASUS Mimic	0-0-27	Administrator	My Office	80

This shows that the camera is online and active.

Host Address	ASUS Mimic Server Port	Camera	Host Name	Startup Time	Manager	Location	HTTP Port
 192.168.0.248	8001	Camera A	ASUS Mimic	0-0-27	Administrator	My Office	80

This shows that ASUS Mimic CX200 is online but image can not be transmitted. Check and see if the UDP port setting is correct.

Host Address	ASUS Mimic Server Port	Camera	Host Name	Startup Time	Manager	Location	HTTP Port
 192.168.0.248	8001	Camera A	ASUS Mimic	0-0-28	Administrator	My Office	80

This shows that the camera is off-line and ASUS Mimic CX200 is not powered on.



Click  and the following page will show up:



a. Access by ASUS Mimic CX200 Server Address

Host Address:

Enter either the LAN IP (eg: 192.168.0.30) or Domain Name (eg: webcam.myddns.com) of ASUS Mimic CX200.

Remote Port:

This is ASUS Mimic CX200 UDP port.

b. Access by Image Server

Image Server Address:

Enter the Image Server Address if available.

Image Server Port:

Enter the Image Server UDP port, if available.

ASUS Mimic CX200 Server Name:

Enter a unique name for the server.

User Account

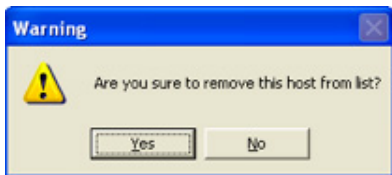
Enter the Image Server User account.

User Password

Enter the Image Server account password.



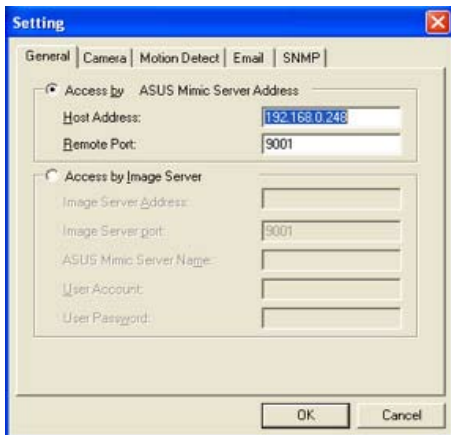
Click  and the following page will show up:



Highlight the ASUS Mimic CX200 to be deleted from MultiMonitor's list.
Click Yes to confirm deletion.



Click  and the following page will show up:



Display the current Camera settings.



Camera Select: Select either camera A or B

Account: If you have setup user account, the information must be entered here. Otherwise access will be denied.

Password: Enter the above account password.

Image Zoom: Resize the window to between 25% and 200%

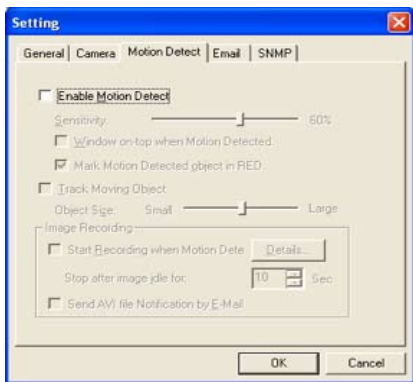
Camera Rotation: Use this function to keep the camera up-right.

Mirror the Image: To mirror the image.

Maximum frame per second: Select from 0.01 fps to a maximum of 30.00 fps. Default is set to 10.00 FPS.

Put Date/Time information on image: To have the date and time displayed on captured images.

Display the Motion Detection Settings.



Enable Motion Detect: Click the checkbox to enable Motion Detection.

This feature requires the Camera Window be active to work. Click “Monitor” to activate the Window.

Sensitivity: Choose from 0% to 100% (very sensitive)

Window on-top when Motion Detected: Automatically displays camera window on top of all other windows/applications once motion is detected.

Mark Motion Detected object in RED: Choose this option to highlight in RED which object is being tracked.

Track Moving Object: Choose this option to calibrate approximate size of object to be tracked.

Image Recording: Click “Start Recording when Motion Detected” to enable the feature. Click the “Details..” button for the following options:

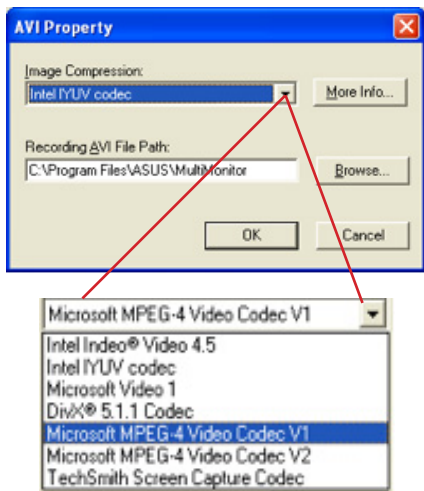


Image Compression: Choose from the list of available compressions.

Note: This list is dependent on the Codec that is available or already installed on the local PC. To record in MPEC-4, make sure you install or upgrade to Windows Media Player v10.

Recording AVI File Path Location where the file will be recorded to. By default, it is recorded to C:\Program Files\ASUS\MultiMonitor.

Click Browse to change the file location.

Stop after idle for: Set the value between 1 to 100 seconds

Send AVI file Notification by Email: Send an AVI file via email in the event any motion is detected.



Recorded files are save using the following file extension: avifile[three digit numerical sequence]. Use the Detail View to check the stop time. You can change the display view or add a new folder here.

Configure Settings for Email Notification



You will need to enter the correct Message Sender Information in order for ASUS Mimic CX200 to send emails.

Server Require Authentication

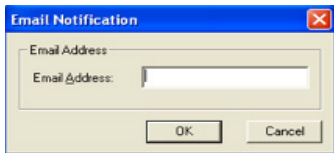
Click Settings... then enter your Account Name and Account Password.

Notified Email Address

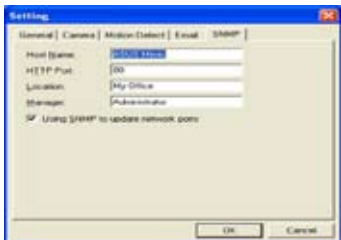
Click Add... and enter a new Email address below

Click Modify... to modify the entered Email Address

Click Delete to remove an email address from the notification list.



SNMP Settings



Host Name: Provide a Name to identify this device.

HTTP Port: Enter the HTTP port assigned for ASUS Mimic CX200. Default is 80, or check Basic Settings ▢ Networks ▢ Port Number.

Location: Provide a location for SNMP manager to track device.

Manager: Enter a manager's name for identification.

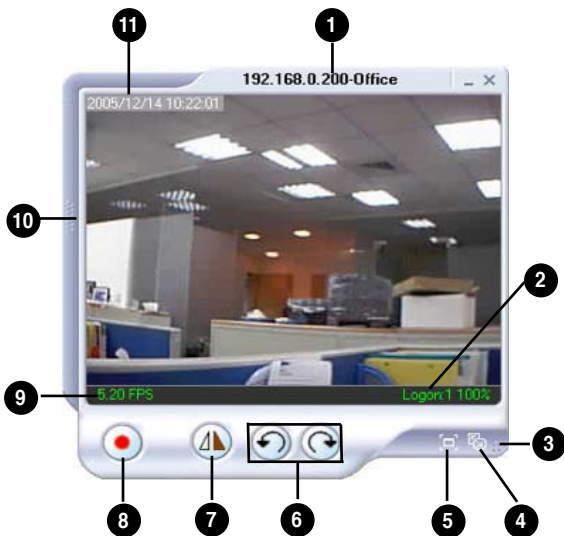
Using SNMP to update network ports

Check this box if you want MultiMonitor to automatically update the HTTP port as set in;


- Web Interface, Basic Settings ▢ Network ▢ Port Number ▢ HTTP port number or in
- Utility, IP Configuration ▢ Advanced ▢ Management Protocol

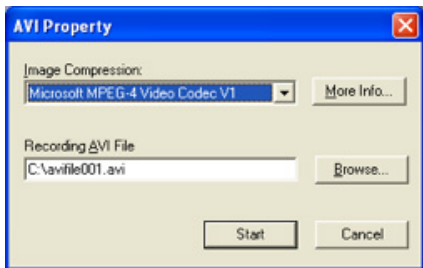



Click **Monitor** to view the radio stream and Highlight the ASUS Mimic CX200 unit in the main windows display.





1. Show the current IP and iCAMView name.
2. Show number of user viewing and current zoom level.
3. Click and drag to resize this window.
4. Click to switch to full screen or double click anywhere on the video screen.
5. Bring up the Settings option.
6. Rotate the image left or right.
7. Flip the image vertically.
8. Click to record the current video onto your local PC. See below for recording options.
9. Show current FPS.
10. Click to bring out zoom, resolution, direction and auto P/T controls. See below.
11. Show the current date and time.


Click  to record the current image on screen. A window will come up, click Start to start recording to the default file and location.




Click  to flip the image vertically.

Click  to bring up the Setting windows.

Click  or  to rotate left or right.


Click  to switch to full screen view. Double click anywhere to switch back to current view.

Click and drag  to resize the window and its contents.

 Date and Time display of live streaming video.

Click the left side of the viewing window to bring out more control features.



Click on  to active two functions:


a. Custom window zoom – use this to zoom to your chosen window size.

On the video window, LEFT click, hold and drag to the desired window zoom size. A thin line will outline the chosen window size.



Release and the program will zoom to the marquee area. Increase the resolution for a better image quality.



Click the depressed  button to go back to the original window size.

b. Custom update Window -- use this if you want to monitor only a specific area within the viewing window.

On the video window, RIGHT click, hold and drag to the desired window zoom size. A thin line will outline the chosen window size.



Release and a smaller window is shown. Video in this smaller window will be updated while those outside are 'frozen'.



Click the depressed button to go back to the original window size. Or use the horizontal zoom bar (see below).



Click and drag the green knob along the horizontal bar to zoom in an out. Zoom range from 1 time to 16 times.



Click and drag the green knob along the horizontal bar to change the current image resolution. Resolution range from 320x240 low/mid/high quality, to 640x480 low/mid/high quality.



Clicking once will cause the camera to pan left by 1 deg.

Click and hold and the camera will pan increasingly faster to the left.



Clicking once will cause the camera to pan right by 1 deg.
Click and hold and the camera will pan increasingly faster to the left.



Click once to tilt the camera up by 1 deg.
Click and hold and the camera will tilt increasingly faster upwards.



Click once to tilt the camera down by 1 deg.
Click and hold and the camera will tilt increasingly faster downwards.



Auto Pan (if camera which support this function)

2.2 View



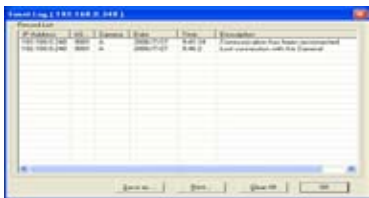
Switch between Large or Small icon view



2.3 System



Display the Event Log (IP address, Port, date, Time, description of event) of the selected ASUS Mimic CX200 unit.



Set the SNMP Parameter.

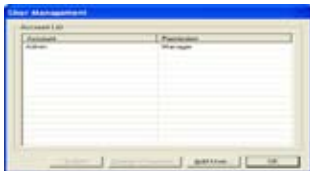


2.4 User

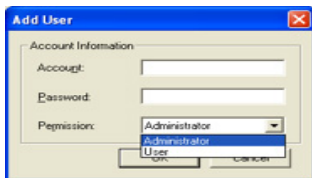
“Change Password...” Use this feature to change the User’s login password to MultiMonitor. Either Administrator or User can change their Account passwords.



“Account Management...” Use this section to Add, Delete or Change the Password of an Account.



Click “Add User...” There is no limit to the number of Account that can be added.



The first account is set to Administrator permission. This cannot be changed or deleted.

Account: Enter the preferred account name (max of 10 characters). The Account name cannot be edited.

Password: Enter a password (max of 10 characters). The password is case sensitive and can be left blank.

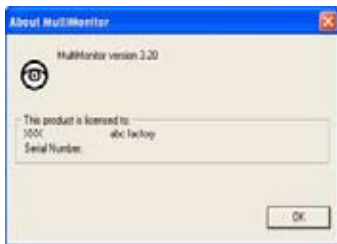
Permission: Choose Manager or User.

A Manager can change, see, add or delete any of the information in MultiMonitor.

A User is not able to Add, Delete or Change Settings of a camera.

2.5 Help

Help: Display MultiMonitor version, Copyright information and product service contact.



2.6 Drag-and-Drop Feature

MultiMonitor feature a “Drag-and-Drop to Desktop” function. Double click the icon on your desktop to immediately view the video. Useful when monitoring multiple cameras at a time.

Step 1:

Select the camera location of your choice.

Step 2:

Left click, hold and drag it onto the desktop.



Step 3:

Release the mouse button anywhere on the desktop and a new desktop icon is created there.



Step 4:

Double click on the icon on the desktop, to view the images.



Appendix A: Methods to Update ASUS Mimic CX200 Firmware

You can update ASUS Mimic CX200 firmware using any of the following methods.

Method 1: Through ASUS Mimic CX200 Web Page

(1) Enter the ASUS Mimic CX200 Web Page

(2) Go to “About”, click “update software” and you will be automatically linked for update.

Method 2: Using the Utility software

Appendix B: IP Address, Subnet and Gateway

This section discusses Communities, Gateways, IP Addresses and Subnet masking

Communities

A community is a string of printable ASCII characters that identifies a user group with the same access privileges. For example, a common community name is “public”.

For security purposes, the SNMP agent validates requests before responding. The agent can be configured so that only trap managers that are members of a community can send requests and receive responses from a particular community. This prevents unauthorized managers from viewing or changing the configuration of a device.

Gateways

Gateway, also referred to as a router, is any computer with two or more network adapters connecting to different physical networks. Gateways allow for transmission of IP packets among networks on an Internet.

IP Addresses

Every device on an Internet must be assigned a unique IP (Internet Protocol) address. An IP address is a 32-bit value comprised of a network ID and a host ID. The network ID identifies the logical network to which a particular device belongs. The host ID identifies the particular device within the logical network. IP addresses distinguish devices on an Internet from one another so that IP packets are properly transmitted.

IP addresses appear in dotted decimal (rather than in binary) notation. Dotted decimal notation divides the 32-bit value into four 8-bit groups, or octets, and separates each octet with a period. For example, 199.217.132.1 is an IP address in dotted decimal notation.

To accommodate networks of different sizes, the IP address has three divisions – Classes A for large, B for medium and C for small. The difference among the network classes is the number of octets reserved for the network ID and the number of octets reserved for the host ID.

Class	Value of First Octet	Network ID	Host ID	Number of Hosts
A	1-126	First octet	Last three octets	16,387,064
B	128-191	First two octets	Last two octets	64,516
C	192-223	First two octets	Last octet	254

Any value between 0 and 255 is valid as a host ID octet except for those values the InterNIC reserves for other purposes.

Value	Purpose
0, 255	Subnet masking
127	Loopback testing and interprocess communication on local devices
224-254	IGMP multicast and other special protocols.

Subnetting and Subnet Masks

Subnetting divides a network address into sub-network addresses to accommodate more than one physical network on a logical network.

For example:

A Class B company has 100 LANs (Local Area Networks) with 100 to 200 nodes on each LAN. To classify the nodes by its LANs on one main network, this company segments the network address into 100 sub-network addresses. If the Class B network address is 150.1.x.x, the address can be segmented further from 150.1.1.x through 150.1.100.x

A subnet mask is a 32-bit value that distinguishes the network ID from the host ID for different sub-networks on the same logical network. Like IP addresses, subnet masks consist of four octets in dotted decimal notation. You can use subnet masks to route and filter the transmission of IP packets among your sub-networks. The value “255” is assigned to octets that belong to the network ID, and the value “0” is assigned to octets that belong to the host ID.

For the example above, if you want all the devices on the sub-networks to receive each other’s IP packets, set the subnet mask to 255.255.0.0. If you want the devices on a single sub-network only to receive IP packets from other devices on its own sub-network, set the subnet mask to 255.255.255.0 for the devices on the sub-network.

Subnet Mask	Routing and Filtering
0.0.0.0	IP packets are transmitted to all devices.
255.0.0.0	IP packets are only transmitted to devices that are IP that’s first octet matches the sender’s IP address’s first octet.
255.255.0.0	IP packets are only transmitted to devices that are IP that’s first two octets match the sender’s IP address’s first two octets.
255.255.255.0	IP packets are only transmitted to devices that are IP that’s first three octets match the sender’s IP address’s first three octets.

Appendix C: Glossary

The Glossary section defines the terms used in this User Manual.

Term	Definition
Ethernet	Local Area Network technology, originally developed by Xerox Corporation, can link up to 1,024 nodes in a bus network. Ethernet provides raw data transfer in a rate of 10 megabits/sec. with actual throughputs in 2 to 3 megabits/sec. using a baseband (single-channel) communication technique. Ethernet uses carrier sense multiple access collision detection (CSMA/CD) that prevents network failures when two devices attempt to access the network at the same time. LAN hardware manufacturers use Ethernet protocol; their products may not be compatible.
Gateway	A computer that attaches to a number of networks and routes packets between them. The packets can be different protocols at the higher levels.
IP	Internet Protocol – The TCP/IP standard protocol defines the IP datagram as the unit of information passed across a network.
IP Address	Internet Protocol Address – A 32-bit address assigned to hosts participating in a TCP/IP network. The IP address consists of network and host portions. It is assigned to an interconnection of a host to a physical network.
MAC	Medium Access Control - The network layer between the physical and the data link layers. Specifically, the physical (hardware) address exists in this layer.
MIB	Management Information Base – The database, i.e. set of variables maintained by a gateway running SNMP

Term	Definition
NMS	Network Management Station
OID	Object Identifier – The variables defined in a MIB
Router	A computer that manages traffic between different network segments or different network topologies. It directs the destination IP address. The network media can be different, but the higher-level protocols must be the same.
SNMP	Simple Network Management Protocol – A standard protocol used to monitor IP hosts, networks, and gateways. SNMP defines a set of simple operations that can be performed on the OIDs of the MIBs managed by the monitored Agents. It employs the UDP/IP transport layer to move its object between the Agents and the NMS
TCP/IP	Transmission Control Protocol/ Internet Protocol – A protocol suite used by more than 15 million users with a UNIX association and widely used to link computers of different kinds.

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