IP CAMERA User's Guide
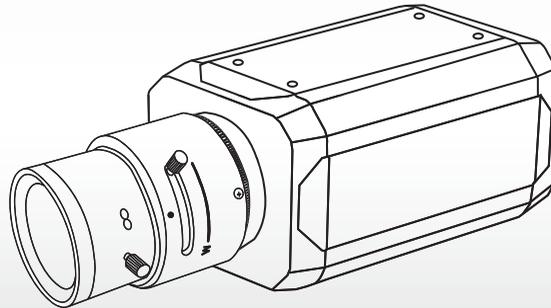
- *High quality H.264 Algorithm*
- *Full-duplex audio/video transmission*
- *30fps/25fps @ full D1 resolution*
- *1:N Multi-casting and relayed data transmission*
- *Real time monitoring/recording /playback through CMS*
- *viewer S/W and Internet Explorer*
- *De-Interlaced Video at 30fps*
- *Dynamic IP support with Dynamic DNS*
- *Power over Ethernet(PoE) support (optional)*

Safety Precaution

> We appreciate your purchasing IP camera series. Before installing the product, please read the following with care.

° Make sure to turn off the power before installing IP camera.

° Do not install under the direct sunlight or in dusty areas.

° Make sure to use the product within the temperature and humidity specified in the specification.

° Do not operate the product in presence of vibrations or strong magnetic fields.

° Do not put electrically conducting materials in the ventilation hole.

° Do not open the top cover of the product. It may cause a failure or electric shock on the components.

° To prevent from overheating, make sure to keep the distance at least 10cm from the ventilation hole.

° Check for proper voltage before connecting the power.

Table of Content

1. Introduction

1. About User Manual
The User Manual is to provide information on operation of the high quality Network Camera. In this guide, information on installation, operation, configuration of IP camera is written as well as how to trouble shoot in case problems arise.

2. Feature
IP camera is a network camera and a video and audio surveillance transmission system based on IP network through LAN, ADSL/VDSL, and Wireless LAN.

■ Video
- High-quality compression algorithm, H.264
- Compression in various resolution: CIF, Half-D1, D1
- Wide range of video transmission rate: 32kbps ~ 4Mbps
- Various transmission mode: CBR, VBR
- Motion detection

■ Audio
- Multi-transmission mode: Uni-direction (IP camera -> Client PC or Decoder, Client PC or Decoder -> IP camera), Bi-direction

■ Network
- Static IP and Dynamic IP(DHCP, PPPoE)
- One to one and one to many connection
- Multicasting
- Automatic transmit rate control according to network condition

■ Serial Data
- One serial ports (RS-485)
- Data pass-through mode: Serial data communication between IP camera – Decoder

■ Sensor and Alarm
- Connections to external sensor and alarm devices
- Event Alarm

■ User Interface
- System status display utilizing OSD(On Screen Display)
- System configuration using Internet Explorer

■ Reliability
- Reliable embedded system
- System recovery utilizing dual watch-dog functions

3. Part Names and Functions

■ Rear
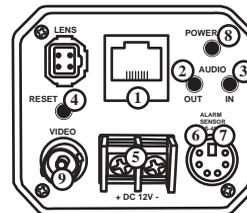
Connector	Function
1. LAN/802.3af	LAN port/802.3af PoE (Power over Ethernet)
2. AUDIO OUT	Audio output
3. AUDIO IN	Audio input
4. RESET Button	Reset button for network reset
5. POWER IN	DC 12V power input
6. SENSOR/ALARM	Sensor input/ Relay output
7. RS-485	Serial port. Support RS-485 protocol
8. POWER LED	Power LED
9. VIDEO OUT	Video output

4. System Connections
IP camera systems can be connected in either 1-to-1 fashion where one IP camera is connected one PC client or decoder system or 1-to-many fashion where one IP camera connected to many PC and decoder systems.

■ Topology
Generally, the IP camera and the PC & decoder are connected in 1-to-1 mode or 1-to-many connection is also supported.

■ 1:1 Connection (Unidirection)

Site   Remote Center

| IP camera | → | Decoder |

Site   Remote Center

| IP camera | → | PC |

Mostly used configuration is 1 to 1 connection. A IP camera is installed at a site where video images can be transmitted and a PC or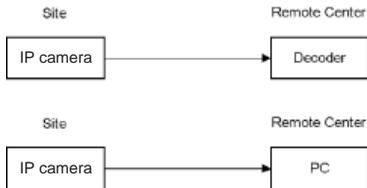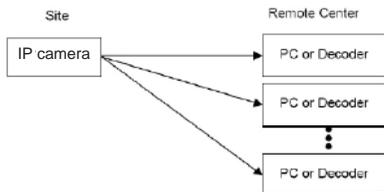 a decoder is installed at a center location to receive and view the video images on analog monitor. Audio and serial data are transferred in either direction.

■ 1:N Connection (Unidirection)

Site   Remote Center

IP camera	→	PC or Decoder
	→	PC or Decoder
	→	PC or Decoder

In this configuration, a site can be monitored from many remote center locations. Although up to 64 PCs or decoders can be connected to on IP camera, in the real network environment, network bandwidth can limit the maximum connections.

Functionally, the central monitoring system software can replace the decoder.

Multicast Mode
Within the network that supports multicasting, a large number of decoders can be used to receive video effectively from an IP camera using a single streaming of video and audio.

■ Relaying

Site   Center 1   Center 2

| IP camera | → | Decoder | → | Decoder |
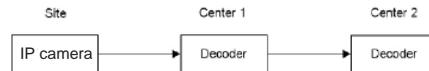
In this arrangement, video and audio can be retransmitted from a center to another center. The arrangement is useful when the network bandwidth to the site is limited while there are more than one center wanting to monitor the site.

■ Central Monitoring System

Site   Remote Center

| IP camera | → | CMS |

Site   Remote Center

| IP camera | → | Decoder | → | CMS |
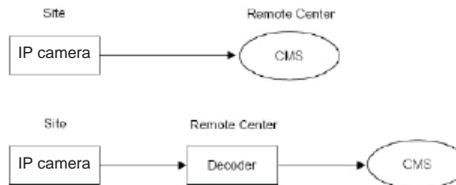
CMS (Central Monitoring System) is a Windows based remote monitoring program to access multiple IP camera for real-time monitoring or control of the encoders and connected cameras. Please refer to CMS User Manual for more information on CMS.

2. Installation

1. Connecting Network(LAN)
Connect LAN and there is a Video output to check video quality.

2. Connecting Audio
Audio is bi-directional in any configuration. If necessary, it can be configured to be in transmit-only, receive -only or bi-directional mode.
 - Connect audio input and output ports to audio devices accordingly.
 - Audio signal is in line level, therefore, microphone or speaker with amplification function should be used.

3. Connecting Serial Ports
The serial port(RS-485) in IP camera can be connected to external equipment such as PTZ receiver etc. Then, PC client can send PTZ commands to the external equipment via serial port. When a decoder system instead of PC client is connected to IP camera, the serial port of IP camera and that of the decoder system works in pass-through mode. That is, data at one port are delivered to the other port, vice versa.

4. Connecting Sensor and Alarm
Connect sensor and alarm devices to corresponding terminals accordingly.

5. Connecting Power
After confirming the power source, connect power adaptor and connect the 12VDC connector to the system. Soon the system will boot up to an operating mode.

6. Check if It Works
As soon as the power is supplied to the system, it will boot and, after about 30 seconds, the system will be ready for operation.

3. System Operation

1. Remote Video Monitoring
There are two ways to view the video once connections are made between the site and center system. In order for a proper operation, an IP address must be set accordingly and please refer to IP Manager in Chapter 4 or Remote Setting in Chapter 5 for a further details.

| Default ID : admin | Password : 1234 |

■Video Monitoring with Decoder System
Once the IP camera IP address is set in the remote IP address section of the decoder, the decoder system will connect to the IP camera and start receiving the video images. Normally, a monitor connected to the decoder will display video images.

■Video Monitoring using Internet Explorer
If an encoder's IP address in entered on the Internet Explorer, the system will ask for confirmation to install Active-X control. Once authorized, the Internet Explorer will start to display video images from the encoder as shown below.

http://192.168.10.100

2. Initialization of IP Address
If a system IP address is lost, the system can be reset to a known IP address using the reset button in the back side of the system:

 1) While system is in operation, press the reset button more than 5 seconds.
 2) The system will reboot automatically
 3) Once the system has been rebooted, IP address will be set to the following.
  - IP mode: Fixed IP
  - IP address: 192.168.10.100
  - Subnet mask: 255.255.255.0
  - Gateway : 192.168.10.1
  - Base port : 2222
  - Http port : 80

4. Using IP Manager

1. IP Manager Software
IP Manager is a program used for basic configuration, diagnostics and F/W upgrade of IP camera. IP Manager provides the following features. The IP camera is same role as server.
- Finding servers on the LAN and assigning IP address
- Monitoring server status: encoding/decoding, serial, sensor etc.
- Diagnostic function: PING, network bandwidth measurement, video/audio output port check, serial port check
- F/W upgrade

2. Server Registration and Removal
■ Server Registration
In order to manage servers using IP manager, the first step is to register the server. The following steps describe the way to register a server.

1) Select Add Server on Server menu.

Server	Tools	View	Help
Add Server			
Remove Server			
Modify Server Information			
Setup			
Viewer			

2) Enter information for connecting to the server at Add Server dialog.

Add Server

IP Discovery

Server Name Main gate
Connect Mode IP Address
IP Address 192 . 168 . 10 . 212
Domain Name
Port 2222
HTTP Port 80

Add   Cancel

If the server is registered on DDNS server, domain name can be used instead of IP address. When the IP address of the server is forgotten, it is possible to find the IP address of the server with IP Discovery function. (Please refer to IP Discovery section).

3) Press Add button.

■ Removal of a server
A server can be removed by the following steps.

1) Select the server to remove on Servers tab; Selected server is highlighted with blue color.
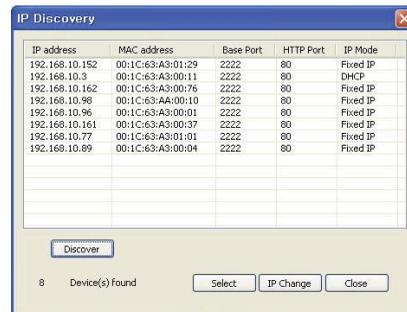2) Select Remove Server on Server menu.

Servers	Channels	Peripherals			
State		Name	IP/Domain Name	MAC Address	Model
☑	Trying connection	Main gate	192.168.10.212		
☑	Trying connection	Window 2	192.168.10.218		
☐	Disconnected	Lobby	192.168.10.207		

■ Modification of information for a server
Information for a server can be modified on the dialog invoked by selecting Modify Server Info on Server menu.

■ IP Discovery
Using IP Discovery function, all servers on the same LAN where the PC executing True Manager is located can be found. Furthermore, it is possible to change IP address of a server easily. IP Discovery dialog is invoked by pressing IP Discovery button on Add Server dialog, and it shows all IP camera systems on the same LAN.

IP Discovery

IP address	MAC address	Base Port	HTTP Port	IP Mode
192.168.10.152	00:1C:63:A3:01:29	2222	80	Fixed IP
192.168.10.3	00:1C:63:A3:00:11	2222	80	DHCP
192.168.10.162	00:1C:63:A3:00:76	2222	80	Fixed IP
192.168.10.98	00:1C:63:AA:00:10	2222	80	Fixed IP
192.168.10.96	00:1C:63:A3:00:01	2222	80	Fixed IP
192.168.10.161	00:1C:63:A3:00:37	2222	80	Fixed IP
192.168.10.77	00:1C:63:A3:01:01	2222	80	Fixed IP
192.168.10.89	00:1C:63:A3:00:04	2222	80	Fixed IP

Discover

8   Device(s) found   Select   IP Change   Close

If you press Select button after selecting a server, the information for the server is automatically entered on Add Server dialog. Pressing IP Change button after selecting a server invokes a dialog on which IP address of the server can be changed.

It is possible to change IP address of a server which has IP address of different subnet.

■ Grouping of servers
When there is large number of servers, it is convenient to manage servers in several groups. Using Add Group and Remove Group on Group menu, server group can be created and deleted. Modify Group menu is used to add servers to a group or to remove servers from a group.

3. Server Connection Management
■ Server connection
If the check box on the first column in Servers (or Channels/Peripheral) tab, IP Manager tries to connect to the server. If the server is running and the network to the server is normal, it will be connected immediately and State will be changed to Connected.

.... Check box to connect or disconnect server

If it fails to connect to the server due to server or network failure, State displays Trying connection. As soon as the server or network is recovered, it will be connected automatically. That is, IP Manager periodically retries connection to servers with check box checked.

■ Server disconnection
If the check box is unchecked, the connection to the server is released and State displays Disconnected.

4. Server Status Monitoring
■ Servers tab – General information
Servers tab shows general information for a connected server: MAC address, product model, system mode(Type) F/W version and startup time. This information comes only for connected servers.

■ Channels tab - Monitoring of video/audio channel state
Channels tab displays how of video channel and audio channel of servers are working.

Item	Displays
Ch	Channel No.
Conns	Number of clients connected to a server (including IP Manager)
Cam	Video loss status
Motion	Motion status
V-E(kbps)	Video encoding bitrate
V-E(fps)	Video encoding framerate
V-D(kbps)	Video decoding bitrate
V-D(fps)	Video decoding framerate
A-E(kbps)	Audio encoding bitrate
A-D(kbps)	Audio decoding bitrate

Depending on the system mode, items which are not relevant to the mode may display 0 always. For example, V-D(kbps) and V-D(fps) are always 0, if the system mode is Encoder.

■ Peripherals tab – Monitoring of serial, sensor and relay port
Peripherals tab displays the status of serial, sensor and relay port.

State	Server Name	COM1-TX	COM1-RX	COM2-TX	COM2-RX	Sensor1	Sensor2	Buzzer	Relay1	Relay2
Connected	3	0	0	0	0	Off	Off	Off	Off	Off
Connected	Main gate	0	0	0	0	Off	Off	Off	Off	Off
Connected	Ware house	0	0	0	0	Off	Off	Off	Off	Off

Item	Displays
COM1-TX COM1-RX	Activity of RS-232C port - TX: server -> external equipment - RX: external equipment -> server
COM2-TX COM2-RX	Activity of RS-422/485 port - TX: server -> external equipment - RX: external equipment -> server
Sensor1 Sensor2	States of sensor ports
Buzzer	State of buzzer
Relay1 Relay2	States of relay ports

5. Network and System Diagnostics
IP Manager provides various diagnostic features with which the reason for the following
situations can be found.
- Connection between two IP camera systems, or between IP camera system and
  CMS(Central Monitoring System) is not established.
- Video, audio or serial data are not delivered as configured.
- Video and/or audio outputs don't come on output port.

■ Ping test
Ping Test dialog can be invoked by selecting Ping Test on Tools menu after selecting a
server.

Ping test is useful for checking if one or more remote systems are reachable from a
server. Up to 4 systems can be registered as the targets of Ping test, which makes it pos-
sible to identify the hop(segment of network) where network failure may happen. For
example, local router, remote router and remote Encoder can be pinged from a Decoder
simultaneously.

■ Network test
Network Test dialog is invoked by selecting Network Test on Tools menu.
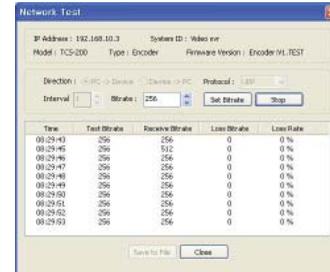
Network test can be used for measuring effective bandwidth and/or packet loss rate
between a server and PC running IP Manager by generating test traffic of constant
bitrate. This feature is useful for identifying the reason why video quality comes poorer
than expected. TCP protocol can be selected for measuring effective bandwidth, while
UDP protocol is appropriate for checking if the network is not reliable.

■ System test
Selecting System Test on Tools menu invokes a dialog on which system H/W status,
video/audio output function and serial ports can be diagnosed.
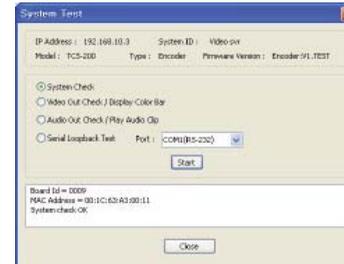
System Check
System Check tests if H/W components are fine and displays board ID and MAC address.

Video Out Check / Display Color Bar
It displays color bar on video output port. This function works for Decoder or Duplex mode, and is useful for checking if video output port or external display device is normal.

Audio Out Check / Play Audio Clip
It plays audio clip and outputs to audio output port. This function is useful for checking if audio output function of a server or external audio output devices such as amplifier and speaker are normal.

Serial Loopback Test

Using this function, it is possible to check if a serial port is alive. When this function is started after forming the loopback in a serial port (i.e. connecting pin 2 and 3 together in case of RS-232C port), numbers of bytes sent and received are displayed. The port is normal if number of sent bytes and number of received bytes are equal. This function doesn't work for RS-485 port, for it doesn't support full-duplex communication.

■Viewing server's log
The log in a server can be viewed by selecting Log on Tools menu.
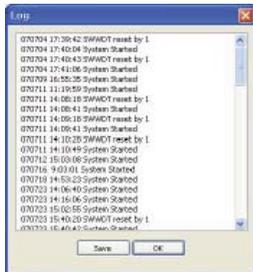
■Viewing server's log
The log in a server can be viewed by selecting Log on Tools menu.

6. F/W Upgrade
When Update is selected on Tools menu, the dialog for F/W upgrade comes.

1) Select a server to upgrade (check the check box in Sel column). More than one server can be upgraded simultaneously.
2) Select an upgrade file.
3) Press Upgrade button.
4) Wait until Progress is changed to Upgrade succeeded.

> **Caution: Don't power-off the server while upgrade is in progress.
> The server may go to irrecoverable state.**

When network condition is poor, upgrade may fail. In such case, please retry above procedure after network condition is recovered.

7. Remove Configuration and Video Monitoring
IP camera provides web-based Setup and video viewing. If Setup on Server menu is selected, Internet Explorer is invoked and page for remote setup of the server is displayed. If Viewer is selected on the menu, Internet Explorer displays the video from the server.

5. Remote Configuration

1. Using Internet Explorer

The server can be configured using web browser. Type IP address of IP camera in the address input area of Internet Explorer, then a live viewing screen will be displayed. Press Setup button located in the upper right area of the monitoring screen, then the setup page for server setup will be displayed.

The configurations are grouped into 8 categories: System, Video, Audio, Network, Serial, Event, Preset and User. Any configuration changes are not applied until Apply is pressed. Leaving the page without pressing Apply button, changes in the page will be discarded.

2. IP camera Configuration

2.1 System Configuration
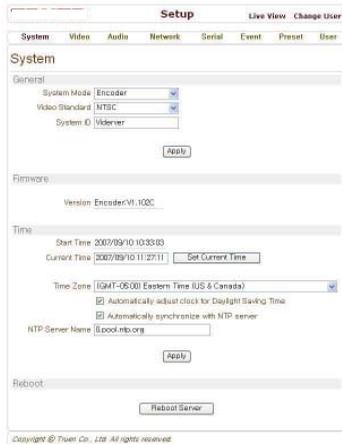
■ Video Standard
Video signal type: Select NTSC or PAL

■ System ID
System ID: Alphanumeric System ID to be transferred to remote software

■ Firmware version
Current firmware version

■ Start Time
Latest system boot date and time

■ Current Time
Current date & time: Enter a new date and time and press Set Current Time button to update date & time.

■ Time Zone
Time zone: Select time zone of where the system is installed. Depending on the time zone, Daylight Saving Time will work automatically..

■ Automatically synchronize with NTP server
Synchronize system time with an NTP server using NTP(network time protocol). Name of the NTP server should be registered on NTP server Name.

■ Reboot Server
Pressing Reboot Server button will cause the system to reboot. Do not press the Reboot button unless the server needs a reboot.

2.2 Video Configuration

■ Preference
Preference in video compression and transmission: With 'Bitrate' selected, the video compression will be effected by the 'Bitrate' value entered. With 'Quality' selected, the video compression will be effected by the quality of image selected. Therefore, 'Bitrate' and 'Quality' corresponds to CBR and VBR respectively.

■ Resolution
Selectable video compression resolution:
NTSC: 720X480, 720x240, 352X480, 352X240
PAL: 720X576, 720X288, 352X576, 352X288

■ Frame rate
Selectable video frame rate: Determine the maximum number of frames of video images to compress. The frame rate of actually transmitted video can be affected by the network bandwidth limitation.

■ Quality
Video image compression quality: The selection is possible with Preference is set to 'Quality'.

■ Bitrate
Video bitrate: The value is applicable when Preference is set to 'Bitrate'.

■ I-Frame Interval
I-frame interval: Possible values between 0 and 255. There will be no Iframes if 0 is selected.

■ Motion Detection Area Editing
   Configure regions for motion detection. Regions of arbitrary shape can be
   configured by the following steps.
   1) Enable Edit item.
   2) Select editing Mode. Set is for including cells to motion detection region and Erase
      is for excluding.
   3) Select cells using the right button of the mouse. Multiple cells can be selected
      conveniently by press and dragging.
   4) Press Apply Edited Area to save the editing.

Motion Detection
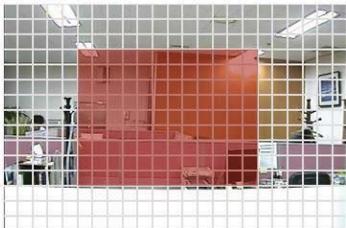
Edit ⊙ Enable   ○ Disable
Mode ⊙ Set   ○ Erase   [Apply Edited Area]

Sensitivity(0 for most sensitive)
                                        5

■ Sensitivity
   A condition to trigger an event with motion detection. The value determines the
   sensitivity of the motion detection within a block: the smaller, the more sensitive.

■ Brightness
   Controls input video brightness by selecting values between 0 and 100.

■ Contrast
   Controls input video contrast by selecting values between 0 and 100.

■ Hue
   Controls input video Hue by selecting values between 0 and 100.

■ Saturation
   Controls input video saturation by selecting values between 0 and 100.

■ Burn-in OSD
   Inserts system ID and date/time in the compressed video. Separately System ID and
   Time can be turned On or Off in the video. Position specifies the position of such data.

2.3 Audio Configuration

■ Mode
   Select audio operation mode.

Mode	Action
Off	No operation
Tx-Only	Transmit only
Rx-Only	Receive only
Tx & Rx	Transmit and Receive

■ Input Gain
   Set audio input gain.

2.4 Network Configuration

Setup Live View Change User

System Video Audio **Network** Serial Event Preset User Camera

Network

Apply

Local

IP Mode Fixed IP
Local IP 192.168.10.146
Local Gateway 192.168.10.1
Local Subnet 255.255.255.0

DNS

○ Obtain DNS server address automatically
● Use the following DNS server addresses
Primary DNS Server 0.0.0.0
Secondary DNS Server 0.0.0.0

Port

Base Port 2222
HTTP Port 80

Multicast

Multicast IP 224.10.0.0

DDNS

DDNS Server ● None ○ Truen ○ DynDNS
ID
Password
Domain Name

Bitrate Control

Flow Control Mode ○ Min ○ Max ○ Adjust ● Off

Address Information

Current IP 192.168.10.146
Current Domain Not RegisteredB
MAC Address 00:1C:63:A4:00:33

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■ IP Mode
  Three IP modes are supported. Depending on the selected mode, further configuration items come as follows.

IP Mode	Selection	Description
Fixed IP	Local IP	Fixed IP address
	Local Gateway	Gateway IP address
	Local Subnet	Subnet mask
DHCP	N/A	

* Please ask an IP address information from ISP provider or network manager.

■ DNS
  Set DNS server IP address.

■ Base Port
  Network base port use for communication between systems. In order for the servers and remote systems to be connected together, the port number must be identically set.

■ HTTP Port
  HTTP port use for web-based connection

■ Multicast IP
  The multicast IP address selection range is between 224.0.1.0 and 238.255.255.255. The selection can be used only when media protocol is set to Multicast. The multicast address must be the same for the system to be connected using multicast protocol.

■ DDNS
  Select the DDNS(Dynamic DNS) server to use. One of the two servers can be selected.
  - TrueDNS : use TrueDNS service. Systems can be registered on the web for TrueDNS service: http://ns1.truecam.net. System will get a domain name of xxx.truecam.net style. Refer user guide document for True DNS service.
  - DynDNS : use DynDNS service. Refer www.dyndns.org for details.

■ Flow Control Mode
  When several clients connect to a server, bandwidths of networks clients may differ and some clients may not receive encoded stream fully. To handle such situation, three flow control modes which can be chosen according to users' preference are provided.

Mode	Description
Min	The bitrate is automatically adjusted to a client with smallest network bandwidth.
Max	The bitrate automatically adjusted to a client with largest network bandwidth size. When set to this mode, a client with smaller bandwidth will not receive all frames of video.
Adjust	The bitrate is adjusted to most optimum rate by learning the network bandwidth.
Off	Flow control is off.

■ Address Info
Display network related information.
IP Address
The server own IP address. This information is useful when the server's IP mode is set to DHCP.
Domain Name
In case the server is registered with DDNS server, the registered domain name is displayed.
MAC Address
Display the MAC address of the server. In case the server is registered with DDNS server, the MAC address is used in DDNS registration.

2.5 Serial Port Configuration
In case for the user who use IP camera, there might be very seldom case to use this Serial port.

■ Serial Port Configuration
Differ to IP camera, There are one serial ports, RS-485, in IP camera.

■ Sensor Type
There are one sensor input ports on IP camera. the sensor port can be configured to the following.

Function	Operation
OFF	Not used
NO (Normally Open)	The port is normally open and activated when closed.
NC (Normally Closed)	The port is normally closed and activated when opened.

The function of the sensor port is set based on the type of the sensor connected.

2.6 Event Configuration
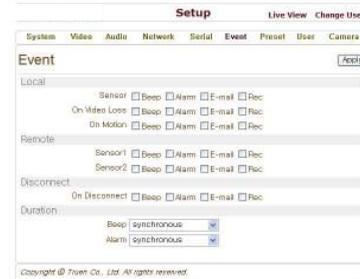
The IP camera series has at least one sensor port and alarm port. Actual numbers of sensor, alarm ports and beep may vary depending on models.

When a decoder system instead of a PC client is connected to a IP camera, one system becomes a Local system and the other a Remote system (Generally a system which is being used by the user is called as Local system). Then, actions for events can be configured for events from remote system as well as for local system. For example, it is possible to turn on an alarm device in local(center) decoder system when a sensor device in remote(site) IP camera is triggered. Local section configures the actions for events from local(self) system, and configuration activates local devices and Remote sections configures the actions for events from remote(peer) system.

■ Sensor
Configure the actions when the sensor is activated. Multiple actions can be set for a single event.

■ On Video Loss
Configure the actions when video input signal is lost. Multiple actions can be set for a single event.

■ On Motion
Configure the actions when motion is detected. Multiple actions can be set for a single event.

■ On Disconnect
Configure the actions when the link(connection) with peer system is disconnected. Multiple actions can be set for a single event.

■ Alarm activation duration
Set the duration of alarm activation in case of an event. If it is set to continuous, it will be in active state until an operator reset it manually.

2.7 Preset Configuration

Setup   Live View   Change User

| System | Video | Audio | Network | Serial | Event | **Preset** | User | Camera |

Preset

1	window	○
2	gate1	⦿
3	gate2	○
4		○
5		○
7		○
8		○
9		○
10		○
11		○
12		○
13		○
14		○
15		○

Preset Name

Move PTZ Camera to normal view

Save

[Set] [Go to]

[Save List]

Press Set Button

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This function is available for using IP camera in order to control PTZ effectively.

Configure up to 15 preset positions. Preset function is not available on some PTZ receivers. Make sure to check if a PTZ receiver supports preset.

■Preset Configuration
Set the PTZ Presets by following the next steps.
 1) Move cameras to desired view using PTZ control buttons.
 2) Enter Preset name.
 3) Press Set button.
 4) Once all the presets are set, press Save List button.

■Move to Preset Position
Select a preset from the Preset and press Go To button, then, the camera will move to the selected preset position.

2.8 User Configuration

Setup   Live View Change User

| System | Video | Audio | Network | Serial | Event | Preset | **User** | Camera |

User

User List

	ID	Privilege Level	
	admin	Admin	⦿

[Add] [Delete] [Modify Password] [Modify Privilege]

Login Policy

Skip Login ⦿ Disable ○ Enable
Privilege Level After Login Skipped [Admin ▾]
[Apply]

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User can be registered and privilege level of a user can be specified. User configura tion is allowed only to admin user. Max 16 users can be registered and each user can have one of four privilege.

Privilege	Allowed Operations	Remarks
Admin	All operations	User id = admin
Manager	All operations except for userv configuration	
User	Live viewing and PTZ control	
Guest	Live viewing only	

■Add User
Page for adding a user comes on pressing Add button.

Setup

Live View Change User

| System | Video | Audio | Network | Serial | Event | Preset | User | Camera |

Add User

ID	
Password	
Privilege Level	Manager

[Add] [Cancel]

User ID and password need to be entered and privilege level need to be selected. User ID and password consist of alphanumeric string of max 15 charaters.

■ Delete User
A user is deleted by pressing Delete button.

■ Change Password
Pressing Modify Password button after selecting a user shows a page for changing password. In case changing admin password, old password is checked.

■ Modify Privilege Level
Pressing Modify Privilege button after selecting a user shows a page for changing the privilege. It is not allowed to change the privilege level of admin user.

■ Login Policy
Skip Login is provided for convenient access to the server when authentication is not required. When Skip Login is set to Enable, login step is skipped. The privilege level af ter login in this way is determined by the setting of Privilege Level After Login Skipped.

2.9 Camera Configuration

Setup

Live View Change User

| System | Video | Audio | Network | Serial | Event | Preset | User | Camera |

Camera

Buttons

[Up]

[Left] [Set] [Right]

[down]

Settings for analog part of the camera can be configured. Camera-specific menu is displayed using OSD on video display, and this menu can be operated with 5 buttons on the page.
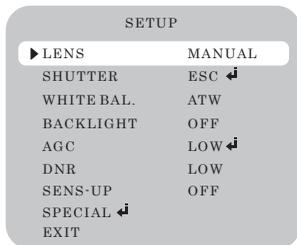
✳ OSD MENU

SETUP Menu			
LENS (selection)	MANUAL	DC	
SHUTTER (condition and speed control)	ESC	MANUAL	FLK
WHITE BALANCE Control	ATW	AWC	MANUAL
BACKLIGHT (Backlight compensation)	OFF HIGH	LOW	MIDDLE
AGC (Auto Gain Control)	OFF HIGH	LOW	MIDDLE
DNR (Digatal Noise Reduction)	OFF HIGH	LOW	MIDDLE
SENS-UP (Low illumination)	OFF	AUTO	
SPECIAL	CAMERA ID SYNC PRIVACY SHARPNESS RETURN	COLOR MOTION DETECTION MIRROR RESET	
EXIT			

1. Please press the SETUP button

- Settings can now be made. The SETUP menu is displayed on the monitor.

```
                SETUP
    ▶ LENS            MANUAL
      SHUTTER         ESC ↵
      WHITE BAL.      ATW
      BACKLIGHT       OFF
      AGC             LOW ↵
      DNR             LOW
      SENS-UP         OFF
      SPECIAL ↵
      EXIT
```

2. Please select any function you wish to activate by using the UP and DOWN buttons.

- The arrow can be moved up or down by using the UP and DOWN buttons. Please position the arrow to point to the function you wish to operate.
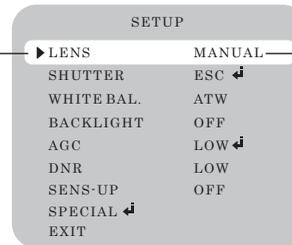
Select any function you wish to operate by using the UP and DOWN buttons.

```
                SETUP
    ▶ LENS            MANUAL
      SHUTTER         ESC ↵
      WHITE BAL.      ATW
      BACKLIGHT       OFF
      AGC             LOW ↵
      DNR             LOW
      SENS-UP         OFF
      SPECIAL ↵
      EXIT
```

Modes can be changed using the LEFT and RIGHT buttons.

3. Please press the LEFT or RIGHT button if you wish to change mode.

- When the LEFT or RIGHT button is pressed, available values and modes are displayed in order. Please keep pressing the button until you get to the mode you wish to operate.

4. Please select 'EXIT' and then press the SETUP button to finish the setting.

✳ **Note**

- If ↵ appears at the mode you wish to operate, it means that there is a sub-menu which can be selected by pressing the SETUP button.
- If - - - appears at the mode item, it means that there is no mode available to be selected.

LENS (selection)

This function is used to adjust the brightness of the screen.

1. When the SETUP menu is displayed on the screen, please position the arrow to point to 'LENS' by using the UP and DOWN buttons.

2. Please select the type of the lens you wish to use by pressing the LEFT or RIGHT button.

```
                SETUP
    ▶ LENS            DC
      SHUTTER         - - - ↵
      WHITE BAL.      ATW
      BACKLIGHT       OFF
```
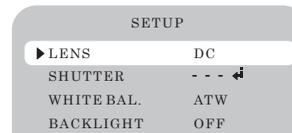
□ **DC :** Auto iris lens selection

❋ *Note*

• When using an auto iris lens, the setting of the auto iris lens selection switch, located on the back of the camera, must be on DC depending on the type of the lens which is being used.

• The brightness of the screen can be adjusted in DC mode. The brightness can be adjusted within the range of 0 ~ 100. The optimum level of brightness for the user can be achieved by adjustment.

```
            LENS

IRIS LEVEL |━━━━━━━|━━━━━━| 50



        Press Set to Return
```

□ **MANUAL :** Manual lens selection

3. Please press the SETUP button if you wish to return to the previous menu.

SHUTTER (condition and speed control)

Auto or manual control can be selected.

1. When the SETUP menu is on the screen, please position the arrow to point to 'SHUTTER' by using the DOWN button.

2. Please select the shutter mode by pressing the LEFT or RIGHT button.

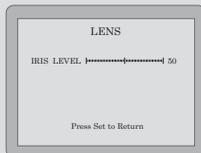   □ **FLK** : Please select 'FLK' mode when flickering occurs on the screen, due to an imbalance between illumination and frequency. NTSC Model:1/100, PAL MODEL: 1/120

   □ **ESC** : Auto control of the shutter speed can be achieved. When ESC mode is on, the speed is controlled automatically according to the brightness of the screen.

   □ **MANUAL** : The shutter speed can be controlled manually.

```
              SETUP

   LENS          MANUAL
 ▶ SHUTTER       ESC ↵
   WHITE BAL.    ATW
   BACKLIGHT     OFF
```
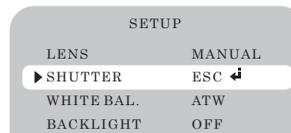
3. Please select 'MANUAL' mode if you wish to adjust the shutter manually.
   • You can select speed from '1/60' to '1/120,000'sec (NTSC Models), '1/50' to '1/120,000'sec (PAL Models).

4. Please press the SETUP button when all the settings are complete.

❋ *Note*

• When selecting DC lens, the shutter speed is fixed at 1/60.

• While using the internal synchronous system, if the shutter setting is on 'ESC' and the camera is directly facing a bright fluorescent light, the image on the screen can be adversely affected. Therefore please choose the installation location with care.

• When 'MANUAL' mode is on, the SENS UP function does not operate.

WHITE BALANCE control

The screen color can be adjusted by using the WHITE BALANCE function.

1. Please position the arrow to point to 'WHITE BAL' on the SETUP menu by using the UP and DOWN buttons.

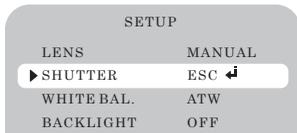2. Please select the mode you wish to operate by pressing the LEFT or RIGHT button.

```
                  SETUP

    LENS              MANUAL
  ▶ SHUTTER           ESC ↲
    WHITE BAL.        ATW
    BACKLIGHT         OFF
```

✳ Please select one of the 3 modes below.

   ▫ **ATW(Auto Tracking White Balance) :** This mode can be used within the color temperature range 1,800°K ~ 10,500°K (eg, fluorescent light, outdoor, sodium vapor lamp or inside tunnels)

   ▫ **AWC(Auto White Balance Control) :** Please press the SETUP button while the camera is directed at a piece of white paper to obtain the optimum state under current illumination. If the environment including the light source is changed, you have to adjust the white balance again.

   ▫ **MANUAL :** The manual adjustment mode enables finer adjustment. Please select ATW or AWC first. Please change to manual adjustment mode and press the SETUP button. Please set the appropriate color temperature, and then increase or decrease the red and blue color values while monitoring the color changes on the object.

✵ Note

- Under the following conditions the WHITE BALANCE function may not operate properly. In such cases, please select the AWC mode.

❶ When the object's surroundings have a very high color temperature (eg, a clear sky and sunset)

❷ When the object's surroundings are dark

❸ If the camera directly faces a fluorescent light or is installed in a place where there are considerable changes in illumination, the WHITE BALANCE function may become unstable.

BACKLIGHT (Backlight Compensation)

When there is a strong backlight behind the object, clear images of the background as well as the object can still be obtained by using the BACKLIGHT function.

1. Please position the arrow to point to 'BACKLIGHT' on the SETUP menu by using the UP and DOWN buttons.

2. Please select the mode you wish to operate by pressing the LEFT or RIGHT button.

```
                  SETUP

    LENS              MANUAL
    SHUTTER           ESC ↲
    WHITE BAL.        ATW
  ▶ BACKLIGHT         OFF
    AGC               LOW ↲
    DNR               LOW
```
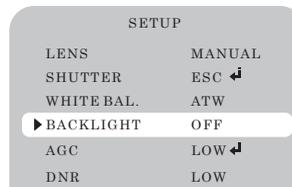
▫ **HIGH**   : The gain increases from 0dB up to 42dB.

▫ **MIDDLE** : The gain increases from 0dB up to 30dB.

▫ **LOW**   : The gain increases from 0dB up to 18dB.

▫ **OFF**   : BACKLIGHT function does not operate.

BACKLIGHT ON   BACKLIGHT OFF

AGC (Auto Gain Control)

1. Please position the arrow to point to 'AGC' on the SETUP menu by using the UP and DOWN buttons.

2. Please select the mode you wish to operate by pressing the LEFT or RIGHT button. As the level of gain increases, the screen gets brighter and the level of noise also increases.

   ▫ **HIGH** : The gain increases or decreases within the range of 6dB ~ 42dB.

   ▫ **MIDDLE** : The gain increases or decreases within the range of 6dB ~ 30dB.

   ▫ **LOW** : The gain increases or decreases within the range of 6dB ~ 18dB.

   ▫ **OFF** : The gain is fixed at 6dB.

```
                    SETUP

        LENS            MANUAL
        SHUTTER         ESC ↵
        WHITE BAL.      ATW
        BACKLIGHT       OFF
      ▶ AGC             LOW ↵
        DNR             LOW
        SENS-UP         OFF
        SPECIAL ↵
        EXIT
```

DNR (Digital Noise Reduction)

The background noise in the low light level decreases automatically as the level of gain changes.

1. Please position the arrow to point to 'DNR' on the SETUP menu by using the UP and DOWN buttons.

2. Please select the mode you wish to operate by pressing the LEFT or RIGHT button.

```
                    SETUP

        LENS            MANUAL
        SHUTTER         ESC ↵
        WHITE BAL.      ATW
        BACKLIGHT       OFF
        AGC             LOW ↵
      ▶ DNR             LOW
        SENS-UP         OFF
        SPECIAL ↵
        EXIT
```

   ▫ **OFF** : There is no reduction in noise level.

   ▫ **LOW** : There is a small reduction in noise level with almost no ghost image.

   ▫ **MIDDLE** : The most effective mode. There is a sufficient reduction in noise levels without causing much ghost imaging.

   ▫ **HIGH** : The level of noise is reduced greatly, however there is an increase in ghost imaging.

✴ *Note*
• When AGC is turned off, DNR does not operate.

SENS UP (Low illuminance)

SENS UP helps maintain a bright, clear screen image by automatically detecting changes in the level of light in low light level conditions.

1. Please position the arrow to point to 'SENS UP' on the SETUP menu by using the UP and DOWN buttons.

2. Please select the mode you wish to operate by pressing the LEFT or RIGHT button.

   ¤ **AUTO** : Low light level auto mode

   ¤ **OFF** : The function does not operate.

✳ **Note**
- When SHUTTER is in the manual mode, SENS UP does not operate.
- When AGC is turned off, SENS UP does not operate.

```
                    SETUP
        LENS            MANUAL
        SHUTTER         ESC ↵
        WHITE BAL.      ATW
        BACKLIGHT       OFF
        AGC             LOW ↵
        DNR             LOW
      ▶ SENS-UP         OFF
        SPECIAL ↵
        EXIT
```

3. Please press the SETUP button when all the settings are complete.

✳ **Note**
- The maximum storage magnification in low light level movement situations can be adjusted by pressing the SETUP button in 'AUTO' mode.(X2~X128)
- As the magnification increases, the screen gets brighter; however the after image also increases.
- If storage magnification is increased while SENS UP is operating, it may cause noise, and spots may appear; however this is normal.

SPECIAL

1. Please position the arrow to point to 'SPECIAL' on the SETUP menu by using the UP and DOWN buttons.

2. Please select the mode you wish to operate by pressing the UP or DOWN button.

```
                    SPECIAL
      ▶ CAMERA ID        OFF
        COLOR            ON
        SYNC             INT
        MOTION DE P      OFF
        PRIVACY          OFF
        MIRROR           OFF
        SHARPNESS        ON ↵
        RESET
        RETURN
```

¤ **CAMERA ID** : If the ID is input, the camera ID appears on the monitor.

   1) Please position the arrow to point to 'CAMERA ID' by using the UP or DOWN button.

   2) Please select 'ON' by pressing the LEFT or RIGHT button.

✳ **Note**
- If 'OFF' is selected, the ID does not appear on the monitor even if it has been input.

```
                    SPECIAL
      ▶ CAMERA ID        OFF
        COLOR            ON
        SYNC             INT
        MOTION DE P      OFF
        PRIVACY          OFF
        MIRROR           OFF
        SHARPNESS        ON ↵
        RESET
        RETURN
```
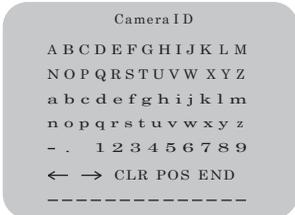
3) Please press the SETUP button.

Camera I D

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m
n o p q r s t u v w x y z
- .　1 2 3 4 5 6 7 8 9
← →　CLR POS END
_ _ _ _ _ _ _ _ _ _ _ _ _ _

4) Up to 15 letters can be used for the ID.

❶ Please move the cursor to the letter you wish to choose by using the UP and DOWN button.

Camera I D

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m
n o p q r s t u v w x y z
- .　1 2 3 4 5 6 7 8 9
← →　CLR POS END
_ _ _ _ _ _ _ _ _ _ _ _ _ _

❷ Select an ID from A,B~Y,Z, a,b~y,z, 0,1~8,9 by using the UP, DOWN, LEFT and RIGHT buttons.

❸ Please lock in the letters by using the SETUP button.

• When the letter is locked in, the cursor moves to the next space.

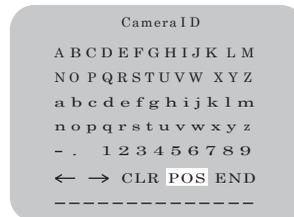❹ Please repeat the above to input the ID.

✳ *Note*

• **If the wrong name has been input.....**
If you press the SETUP button after moving the cursor to CLR, all the letters will be erased. If you want to correct a letter, please move the cursor to the arrow at the bottom left of the screen and press 'SET'. Please position the cursor above the letter you wish to correct, and then move the cursor onto the letter you wish to choose and press the SETUP button.

5) When a name has been chosen, please select a position for the name display.

❶ Please move the cursor onto 'POS' and then press the SETUP button.

Camera I D

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m
n o p q r s t u v w x y z
- .　1 2 3 4 5 6 7 8 9
← →　CLR POS END
_ _ _ _ _ _ _ _ _ _ _ _ _ _

❷ The name will appear at the top left hand corner.

❸ Please find the position you wish to display the name by using the 4 directional buttons, and then press the SETUP button.

6) Please select 'END' and then press the SETUP button to complete ID input.

▫ **COLOR**
 - AUTO : This camera has a function which automatically changes to the appropriate mode for daytime or night-time. The COLOR mode is operated for daytime, and it converts to BW mode for night-time.
 - ON : The color mode is selected by default, and the modes do not change automatically.

☀ Note

• When the AGC is turned off, COLOR does not operate.
• When an infrared light is used, there may be a problem with focusing.

▫ **SYNC** : Two SYNCHRONIZATION modes are available INTERNAL and
EXTERNAL LINE-LOCK. In LINE-LOCK mode, it synchronizes
the video signal between cameras without a synchronous generator.
The line-lock synchronization is only used in the areas of 60Hz
(NTSC Models) / 50Hz (PAL Models).
- INT : Internal synchronization
- LL : External line-lock synchronization
• If you choose 'LL', you can adjust the desired phase. Press the
SET button.
• You can adjust the desired phase from 0 to 359.

```
                    SYNC

    PHASE    |················◆···············| 225
```
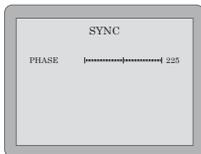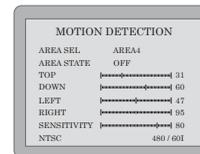
☀ Note

• When the power frequency is 50Hz, you can not use line-lock mode
(NTSC Models).

• When the power frequency is 60Hz, you can not use the line-lock mode
(PAL Models).

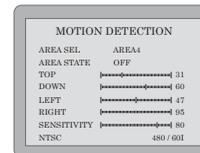• 'Sync.' mode is fixed to 'INT' in DC 12V input power.

▫ **MOTION DETECTION:**
This product has a feature that allows you to observe movements of objects in
4 different areas on the screen, and the words 'MOTION DETECTED' appear on
the screen when movement is detected; hence a single individual can conduct
supervision efficiently. The camera detects an object's movement by sensing
disparity of outline, and level of brightness and color.

• Please press the SETUP button.
- OFF : MOTION DETECTION mode is cancelled.
- ON : Any motion in the selected areas is observed.

• Please select the area you wish to observe from the 4 areas in AREA SEL mode.

• Please select ON mode for the chosen area.

• Please adjust the size of the area to be observed by using the UP, DOWN, LEFT
or RIGHT button.

• Please adjust the level of observation by using SENSITIVITY mode.

```
              MOTION DETECTION

    AREA SEL        AREA4
    AREA STATE      OFF
    TOP         |·······◆·················| 31
    DOWN        |················◆········| 60
    LEFT        |·········◆···············| 47
    RIGHT       |······················◆·| 95
    SENSITIVITY |····················◆····| 80
    NTSC                      480 / 60I
```

• Please press the SETUP button to save the changes and complete the setting.

▫ **PRIVACY** : This modes conceals the areas you do not wish to appear on the
screen.

- OFF : Cancels the PRIVACY mode. - ON : Operates the PRIVACY mode.

• Please press the SETUP button.

```
              MOTION DETECTION

    AREA SEL        AREA4
    AREA STATE      OFF
    TOP         |·······◆·················| 31
    DOWN        |················◆········| 60
    LEFT        |·········◆···············| 47
    RIGHT       |······················◆·| 95
    SENSITIVITY |····················◆····| 80
    NTSC                      480 / 60I
```

• Please select the area you do not wish to appear from the 4 areas in AREA SEL mode.

• Please select ON mode for the chosen area.

• Please adjust the size of the area to be concealed by using the UP, DOWN, LEFT or RIGHT button.

▢ **MIRROR**

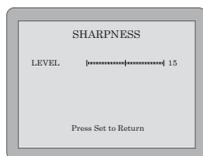- ON : Sets a horizontal image inversion.
- OFF : Cancels the inversion.

MIRROR ON   MIRROR OFF

▢ **SHARPNESS** : The outline of the video image becomes cleaner and more distinctive as the level of SHARPNESS increases. If the level goes up excessively, however, it may affect the video image and generate noise.

• Please press the SETUP button.

```
            SHARPNESS

LEVEL    |---------------------| 15


        Press Set to Return
```

• The available range of level is 0 ~ 31.

▢ **RESET** : Returns to the level which was set by the manufacturer for shipment.

▢ **RETURN** : Saves the SPECIAL menu and returns to the SETUP menu.

EXIT

Saves all the setting menus and then exits.

	Item	NTSC MODEL	PAL MODEL
P O W E R	Input Voltage	DC 12V ±10%	
	Power Consumption	Max. 2.0W	
C C D	Sensor	1/3 inch Super HAD CCD	
	Picture Elements	811(H) x 508(V) 410K pixels (NTSC)	795(H) x 596(V) 470K pixels (PAL)
	Effective Picture Elements	768(H) x 494(V) 380K pixels (NTSC)	752(H) x 582(V) 440K pixels (PAL)
Sync.	Scanning System	2:1 Interlace	
	Synchronization	Internal / Line Lock	
	Frequency	Horizontal:15.734 KHz / Vertical:59.94 Hz	Horizontal:15.625 KHz / Vertical:50.00 Hz
E L E C T R I C A L	Resolution	560 TV Lines	
	S/N (Y signal)	50 dB (AGC Off, Weight ON)	
	Video Output	CVBS : 1.0Vp-p / 75Ω	
	Min. Illumination	0.3 Lux at F1.2 (50 IRE, AGC HIGH, DNR HIGH) 0.002 Lux (Sens-up X 128)	
	White Balance	ATW / AWC / Manual (1,800 ˚K ~ 10,500˚K)	
	Electronic shutter Speed	AUTO / MANUAL (X128 ~ 1/60sec ~ 1/120,000sec) Sens-up and Sens-up Limit is selectable / Flickerless	AUTO / MANUAL (X128 ~ 1/50sec ~ 1/120,000sec) Sens-up and Sens-up Limit is selectable / Flickerless
	O.S.D	Built-in	
	Backlight Compensation	Low, Middle, High, Off Selectable	
	Gain Control	Low, Middle, High, Off Selectable	
	DNR	Low, Middle, High, Off Selectable	
	DAY&NIGHT	AUTO / ON	
	SYNC	INT / LL Selectable	
	Motion Detection	ON / OFF (4 Zone)	
	PRIVACY	ON / OFF (4 Zone)	
	MIRROR	ON / OFF	
	Operating Temperature/Humidity	-10℃ to +50℃ / 30% to 80% RH	
	Storge Temperature/Humidity	-20℃ to +60℃ / 20% to 90% RH	

Network module specification			
Network	Interface		Ethernet 10/100 Base-T (RJ45)
	Protocol		TCP/IP, UDP, Multicast, DHCP, PPPoE, SMTP, HTTP, SNMP
Video	Standard		H.264
	Date rate		32Kbps ~ 4Mbps
	Resolution		NTSC : 720x480, 720x240, 352x480, 352x240 PAL : 720x576, 720x288, 352x576, 352x288
	Max frame rate		NTSC : Max. 30fps, PAL : Max. 25fps
	Frame rate range		NTSC : 0.2 ~ 30fps, PAL : 0.2 ~ 25fps
	Out put		1 composite (1 Vpp 75Ohm, BNC)
	Video Loss Check		Yes
	Motion detection		Sensitivity adjustable, OSD Display
Audio	Standard		G.711
	Sample rate		8Khz
	Data rate		64Kbps
	Input		1 Line-in (mini-stereo)
	Output		1 Line-in (mini-stereo)
Serial Port	Port 1		RS-232
	Port 2		RS-422/485
	Data rate		2,400bps ~ 115,200bps
Sensor / Alarm	Sensor Input		1ch
	Alarm Output		1ch
User Interface	Sytem Status		OSD
Physical	Power source		DC 12V / 0.5A, PoE : 802.3AF(option)
	PoE Support		802.3AF (option)
CMS	Live monitoring		Max. 36ch monotoring simultaneously PTZ control Event monitoring, Alarm control Bi-directional Audio communication
	Search / Playback		Time / Camera-base / Event-base Multi-channel viewing of recorded status on timeline
	Backup		Export to AVI file, Snapshot to BMP file

Memo

Memo

Memo