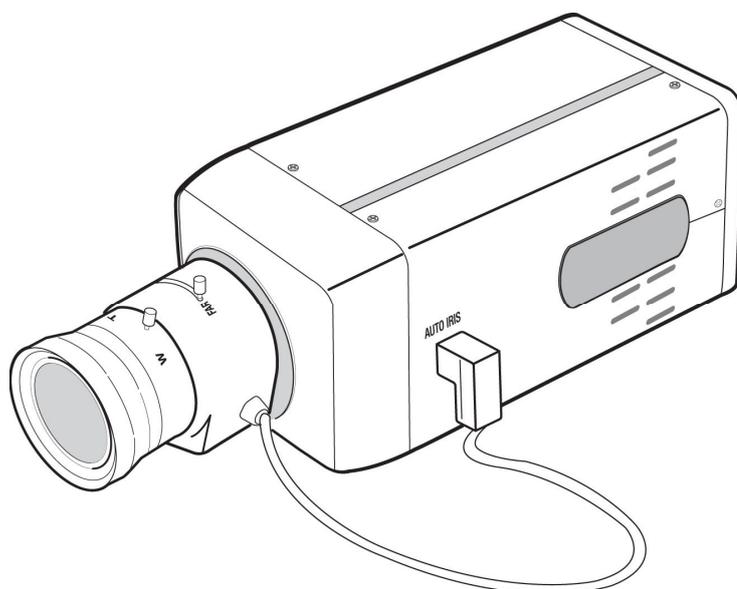


Network Camera TCAM-230 User Manual



Safety Precaution

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

- ◇ Make sure to turn off the power before installing TCAM-230.
- ◇ 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.

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1. Introduction

1. About User Manual

The User Manual is to provide information on operation of the high quality Network Camera, TCAM-230. In this guide, information on installation, operation, configuration of TCAM-230 is written as well as how to trouble shoot in case problems arise.

2. Feature

TCAM-230 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 (TCAM-230 -> Client PC or Decoder, Client PC or Decoder -> TCAM-230), 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 TCAM-230 and Decoder

■ Sensor and Alarm

- Connections to external sensor and alarm devices
- Event Alarm

■ User Interface

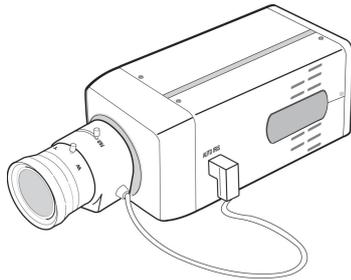
- System status display utilizing OSD(On Screen Display)
- System configuration using Internet Explorer

■ Reliability

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

3. Product and Accessories

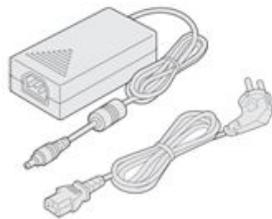
TCAM-230 System



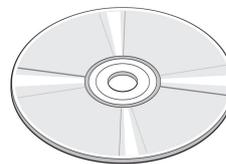
User Manual



Power adaptor and cable



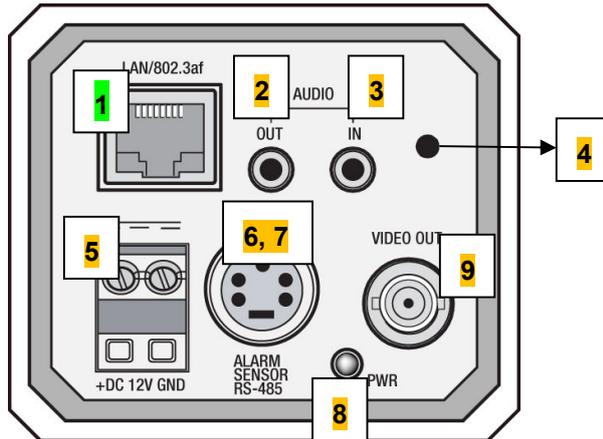
CMS S/W CD



<Picture 1> Product and Accessories

4. 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

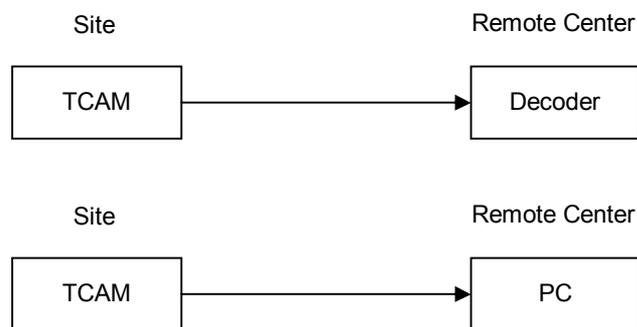
5. System Connections

TCAM-230 systems can be connected in either 1-to-1 fashion where one TCAM-230 is connected one PC client or decoder system or 1-to-many fashion where one TCAM-230 connected to many PC and decoder systems. (TCS-200 video server can work as a decoder system which takes the data from a video server or IP camera, decodes and outputs analog video.)

■ Topology

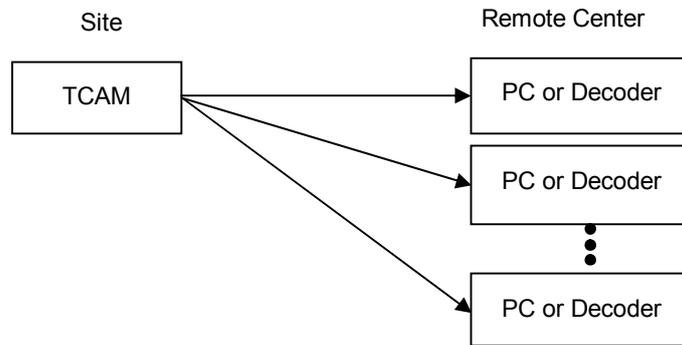
Generally, the TCAM-230 and the PC & decoder are connected in 1-to-1 mode or 1-to-many connection is also supported.

◆ 1:1 Connection (Unidirection)



Mostly used configuration is 1 to 1 connection. A TCAM-230 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)



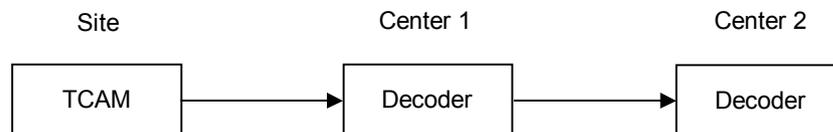
In this configuration, a site can be monitored from many remote center locations. Although up to 64 PCs or decoders can be connected to on TCAM-230, in the real network environment, network bandwidth can limit the maximum connections.

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 TCAM-230 using a single streaming of video and audio.

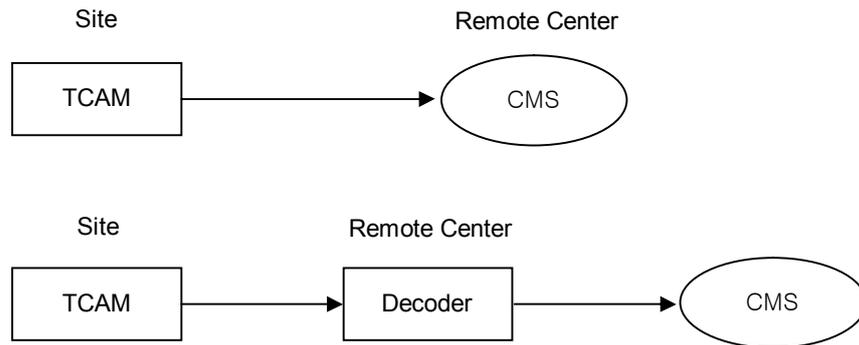
◆ Relaying



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**



CMS (Central Monitoring System) is a Windows based remote monitoring program to access multiple TCAM-230 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 TCAM-230 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 TCAM-230, the serial port of TCAM-230 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 **True 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 TCAM-230 IP address is set in the remote IP address section of the decoder, the decoder system will connect to the TCAM-230 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 is 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. Remote Configuration

1. Using Internet Explorer

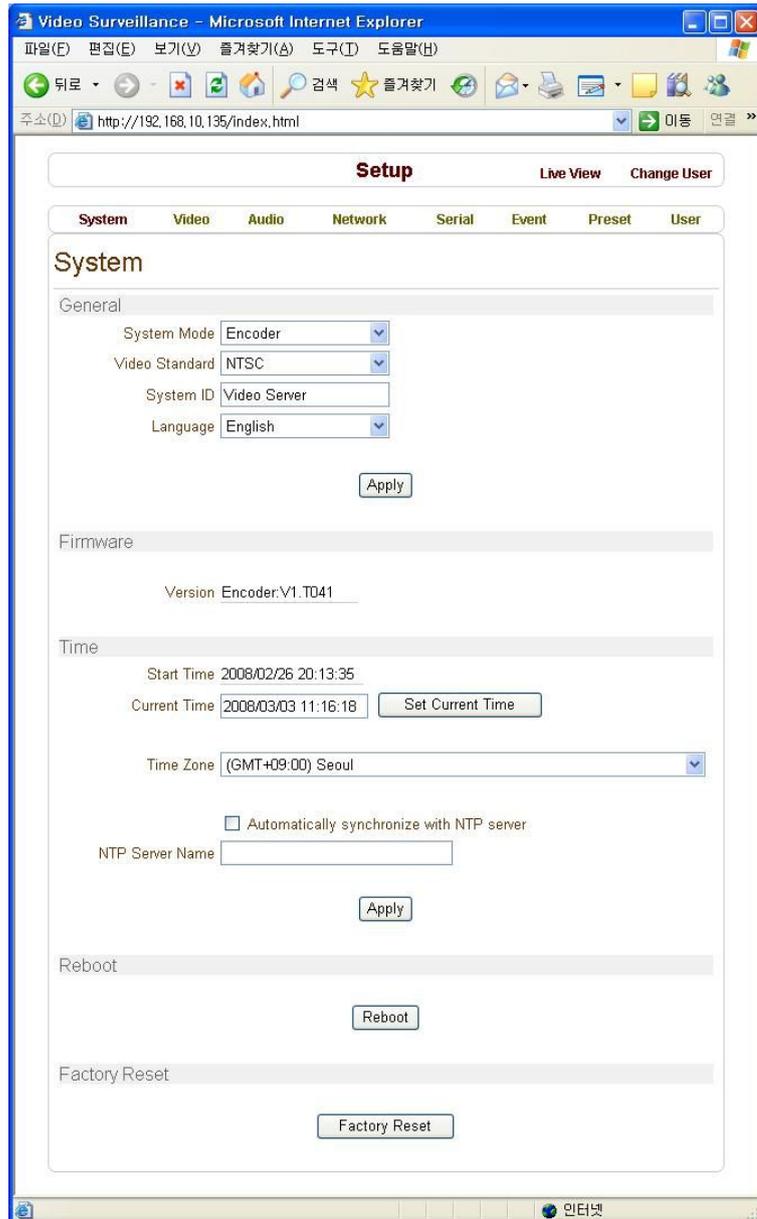
The server can be configured using web browser. Type IP address of TCAM-230 in the address input area of Internet Explorer, then a live viewing screen will be displayed. Press **Setup** button located in the upper right area of the monitoring screen, then the se page for server setup will be displayed.



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. TCAM-230 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

- Language

Language to be used for web-based configuration(English, Japanese and Korean)

- 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.

- Factory Reset

Set all settings to the factory default values. System log and user registrations are also cleared.

2.2 Video Configuration

Setup
Live View
Change User

System
Video
Audio
Network
Serial
Event
Preset
User

Video Apply

Encode

Preference Bitrate

Resolution 720x480

Framerate 30

Quality Ultra fine

Bitrate 1500 kbps

I-Frame Interval 126

Motion Detection

Use Motion Detection Off On



Edit Enable Disable Apply Edited Area

Mode Set Erase

Sensitivity(0 for most sensitive)

5

Information Display

SystemID Off On

Time Off On

Position Bottom Top

Burnin OSD

SystemID Off On

Time Off On

Position Bottom Top

Color

Brightness 50

Contrast 50

Hue 50

Saturation 50

■ 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 I-frames if 0 is selected.

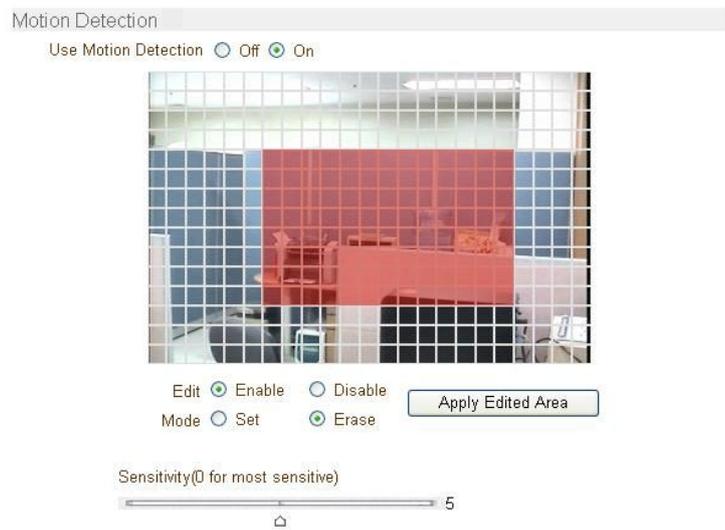
■ Use Motion Detection

Turn on/off motion detection operation.

■ 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.



■ 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.

■ Information Display

System ID and/or server time can be display over the video window in Internet Explorer. Each item can be turn on or off separately, and position also can be configure. These information are displayed after the video is decompressed.

■ 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.

■ 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.

2.3 Audio Configuration

Setup
Live View Change User

System
Video
Audio
Network
Serial
Event
Preset
User
Camera

Audio Apply

Mode

Mode Off Tx-only Rx-only Tx & Rx

Input Gain

Input Gain
←
→
25

■ 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

Network Apply

Local

IP Mode Fixed IP

Local IP 192.168.10.54

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 168.126.63.1

Secondary DNS Server 168.126.63.2

Port

Base Port 2222

HTTP Port 80

Multicast

Multicast IP 224.10.0.0

DDNS

DDNS Server None TrueDNS DynDNS

ID

Password

Domain Name

Bitrate Control

Flow Control Mode Min Max Adjust Off

Address Information

Current IP 192.168.10.54

Current Domain test222.truecam.net

MAC Address 00:1C:63:A4:00:46

■ 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 website 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 TCAM-230/250/270, there might be very seldom case to use this Serial port.

■ Serial Port Configuration

Differ to TCS-200 Video server, There are one serial ports, RS-485, in TCAM-230.

■ Sensor Type

There are one sensor input ports on TCAM-230. 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 screenshot shows the 'Event' configuration page in a web browser. At the top, there are tabs for 'Setup', 'Live View', and 'Change User'. The 'Event' title is on the left, and an 'Apply' button is on the right. The configuration is organized into several sections:

- Local:** Contains three rows of settings. Each row has a label (Sensor, On Video Loss, On Motion) followed by three checkboxes for Alarm, E-mail, and FTP.
- Remote:** Contains two rows of settings. Each row has a label (Sensor1, Sensor2) followed by three checkboxes for Alarm, E-mail, and FTP.
- On Disconnect:** Contains one row with the label 'On Disconnect' followed by three checkboxes for Alarm, E-mail, and FTP.
- Duration:** Contains one row with the label 'Alarm' and a dropdown menu currently set to 'synchronous'.
- E-mail Notification:** Contains several input fields: 'Server Address', 'Authentication on SMTP server' (radio buttons for Off and On), 'ID', 'Password', and 'Destination Address'. It also has a 'Video Clip Attaching' section with radio buttons for Off and On, an 'E-mail Test' button, and a note: 'Before testing e-mail, please apply your configuration first.'
- FTP Upload:** Contains four input fields: 'Server Address', 'Port' (with '21' entered), 'ID', and 'Password'.
- Event Record:** Contains two dropdown menus: 'Pre-event Time' and 'Post-event Time', both currently set to 'None'.

The TCAM-230 series has 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 TCAM-230, 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.

. The following table lists the possible actions for events.

Action	Description
Sensor In	One sensor in port
Alarm out	Triggers alarm (relay) port.
E-mail	Sends E-mail to the specified address. AVI file can be attached
FTP	Upload AVI file to a specified FTP server

■ 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.

■ E-mail Notification

Specify the information to send E-mail as the action of an event. The address of mail(SMTP) server needs to be specified on **Server Address** field and **Port** specifies the port for SMTP operation (Port 25 is the default port in SMTP operation. If different port is configured in the SMTP server, this port needs to be changed accordingly). When the server requires authentication, ID and password of an E-mail account need to be entered also. Destination address needs to be entered on **Destination Address** field. More than one address can be entered by delimiting comma(,) or semi-colon(;). Destination address can take up to 63 characters. Video clip of AVI file format at the moment of the event can be attached by setting **Video Clip Attaching**.

■ FTP Upload

Specify the information for uploading video file as the action of an event. The address of an FTP server to receive video files is specified on **Server Address** field, and **Port** specifies the port for FTP operation (Port 21 is the default port in FTP operation. If different port is configured in the FTP server, this port needs

to be changed accordingly.). ID and password for accessing the FTP server also need to be specified.

■ Event Recording

Specify how a video clip is to be generated for E-mail sending or FTP uploading.

Pre-event Time specifies the duration of recording before an event happens.

Post-event Time specifies the duration after the event is cleared.

2.7 Preset Configuration

The screenshot displays the 'Setup' interface for the TCAM-230. The 'Preset' configuration page is active, showing a table for defining 15 presets. The table has columns for preset number (1-15) and a corresponding input field for the preset name. A 'Save List' button is located below the table. To the right of the table is a live video feed of a conference room. Below the video feed are PTZ camera controls, including a central directional pad and zoom in/out buttons. Below the controls are 'Set' and 'Go to' buttons. Annotations with yellow boxes and blue dashed arrows point to specific elements: ① points to the PTZ camera controls, ② points to the 'Preset Name' input field, ③ points to the 'Set' button, and ④ points to the 'Save List' button.

This function is available for using TCAM-230-270 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

User can be registered and privilege level of a user can be specified. User configuration 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 user configuration	
User	Live viewing and PTZ control	
Guest	Live viewing only	

■ Add User

Page for adding a user comes on pressing **Add** button.

The screenshot shows the 'Setup' interface with the 'User' tab selected. The 'Add User' form contains three input fields: 'ID', 'Password', and 'Privilege Level'. The 'Privilege Level' dropdown menu is set to 'Manager'. Below the form are 'Add' and 'Cancel' buttons.

ID	
Password	
Privilege Level	Manager

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 characters.

■ 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.

System	Video	Audio	Network	Serial	Event	Preset	User
--------	-------	-------	---------	--------	-------	--------	------

Modify Privilege Level

ID	user
Privilege Level	User <input type="button" value="v"/>

■ 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 after 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		

The screenshot shows a camera's on-screen display (OSD) menu. The menu is titled 'SETUP' and lists various camera settings that can be adjusted using the physical buttons shown in the adjacent diagram. The settings listed are: LENS, SHUTTER, WHITE BAL., BACKLIGHT, AGC, DNR, SENS-UP, SPECIAL, EXIT, DC, ATW, MIDDLE, LOW, and OFF. A hand is visible in the foreground, interacting with the camera's controls.

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.