



IRIS DIGITAL VIDEO SYSTEMS



Eyz-On^{CVR} Camera Video Recorder
User Guide



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Titles displayed on some of the screen samples in this Manual may vary from the software release installed at the time of your system manufacture. Contact the IRIS Customer Service Department with any questions, 888.451.4646.

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A Quick Reference Set-up Guide is located in Appendix D, page 59, at the very back of this Manual.

Throughout this Manual “key” items of information will be highlighted with one of the following symbols:





Introduction

Eyz-On^{CVR} (**C**amera **V**ideo **R**ecorder) is a complete surveillance solution containing all elements of a typical digital video system engineered into a compact surveillance camera housing: advanced high-sensitivity I.P. Camera, digital video recorder, and analytics.

The *Eyz-On^{CVR}* goes beyond a “typical” system by incorporating the latest DaVinci™ technology from Texas Instruments™. Our new circuitry combines multiple video and computer system functions in one multi-processor controller.

It is unique in that it contains a built-in network switch allowing installation “onto” an existing network without additional hardware.

Recorded images are stored on-board a micro-SD card, or can be uploaded. A BNC connector outputs an analog video signal for ease of initial installation adjustments, or outputting to a Spot Monitor.

Eyz-On^{CVR} is perfect for stand-alone use, or as part of an enterprise-wide installation. Images are easily retrieved using a HTML interface or via smartphone.



Eyz-On^{CVR} Features

Video

- Video Resolution
 - QVGA (320x240)
 - VGA (640x480)
 - D1 (720x480)
- Recording speeds
 - 30 FPS @ 320x240
 - 15 FPS @ 640x480
 - 7.5 FPS @ 720x480
- Recording formats
 - JPEG
 - MPEG
 - H.264
- Storage of video/images on micro-SDHC memory card (Class 10)
- BNC for NTSC Video Output (1vpp)

Ethernet

- Built-in 2 port 10/100 Ethernet switch to provide pass-through and monitoring capabilities
 - One Ethernet port with POE
- Both Ethernet ports provide auto-negotiation (no crossover cable required for direct connect to other equipment)

Connectors / Indicators

- Alarm Input
 - N/C or N/O - on input unit takes programmable action
- Alarm Output
 - On programmed conditions
- Status LED's Power and Alarm
- Input Power: 12 VDC @ 1.5 Amp (Input range 10.5V - 13.5V)



Software

- Embedded Linux software
- User interface using standard HTML
- Requires VLC media player plug-in
- Maximum 16 simultaneous users
- Access controlled by username and password
 - Maximum of 100 usernames/password combinations
- Three levels of access control: Admin, Operator, Viewer
- Support Standard IRIS TCPIP Protocol
- Networking Protocols: IP, TCP, HTTP, RTCP, FTP
- Software remotely upgradeable through HTML interface

Mechanical

- Aluminum case (approx.) 2.5"W x 2.5"H x 5.65"D
- Convection Cooling

Camera Version

- Built-in high-sensitivity imager
- Wide Dynamic Range: ~120dB (min.)
- Low Light (0.1 lux color min., 0.001 lux B&W operation)

Browser Support

The *Eyz-On* system can be accessed over the Internet using a standard HTML browser and supports Mozilla Firefox, Microsoft Internet Explorer, and Google Chrome. However, IRIS Digital Video Systems recommends that Mozilla Firefox be used to insure the best performance and speed.

The latest Mozilla Firefox browser for Windows XP, 2000, Vista, or 7 can be downloaded from:

<http://www.mozilla.org/en-US/firefox/new/>



Required VLC Media Player Plug-In



The *Eyz-On* system uses the VLC Media Player to display live and recorded images. When connecting to the *Eyz-On* system for the first time you will be directed to download the latest VLC Media Player. This Player can be installed on any Microsoft XP, 2000, Vista, or 7 PC and is available at no-charge. Once the VLC Player is downloaded and installed you will need to close the browser, and then reopen it to activate the VLC Plug-In for your Internet browser.

The latest VLC Media Player can be downloaded at:

<http://www.videolan.org/index.html>

Network Configuration

When the *Eyz-On* system powers on initially the unit will be configured for a static IP address with the following settings:

- Address: 192.168.1.168
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.1.254
- DNS Server: 192.168.1.1

These setting can be changed by the following two methods.

Network configuration using an Internet browser

1. Open the browser application and in the address window enter: <http://192.168.1.168>, (This assumes that your network connection in your PC is configured for the 192.168.1.x subnet).
2. Once you get the sign-on *Eyz-On* web page, enter the username and password. The Default username is "admin" and the default password is "admin."
3. If this was the initial log-in you will need to enter a new password. See username and password section.
4. Go to the Settings->Network->TCP/IP screen and enter the desired network settings.
5. Press "Save". If you changed the IP address of the system you will need to close your browser window and reconnect using the new IP address.



Network configuration using the USB port

The network setting can be changed without connecting to the unit using the Ethernet.

1. Using a USB cable, connect the micro USB connector to the USB connector on the *Eyz-On* system. Connect the other end of the USB cable to an available USB port on a Windows PC. Windows should recognize the device as a standard "mass storage device."
2. Open the window to see the files on the *Eyz-On* system.
3. Select the USBConfig application.
4. Using the USBConfig application set the desired network settings. When done press the "Apply" and "Exit" buttons. Close the window.
5. Using Windows eject the mass storage device. (*Note Failure to "eject" or "safely remove" the Eyz-On mass storage device will result in the changes that were made being lost.*)
6. When you "eject" the *Eyz-On* mass storage device the new setting(s) will take effect.

Access Levels

All users are assigned one of three *Eyz-On* access levels: Admin, Operator, or User. The access level determines what a user can and cannot do on the *Eyz-On* system. The various permissions are:

- **Admin**
 - Full Access. User can change and set any parameter or setting.
- **Operator**
 - The same access as Admin, with the exception that an Operator cannot add or delete users, or change user passwords other than their own.
- **Viewer**
 - Can only access Live View, Recorded View, and change their own password.



Username and Password Limitations

Username

- Maximum username length is 32 characters.
- Default minimum username length is 2 characters.

With the UserName_Password configuration file the minimum length can be set to any number between 1 and 32 inclusive.

Password

- Maximum password length is 19 characters.
- Minimum password length is 6 characters.

With the UserName_Password configuration file the minimum length can be set to any number between 1 and 19 inclusive.

Passwords must have at least one lower case letter, one upper case letter, and one numeric character.

Maximum Users

The *Eyz-On* system is limited to a maximum of 100 usernames and passwords. Of those 100 users a maximum of 16 users can have simultaneous access using a web browser interface.



Maximum number of assigned Users: 100

Maximum simultaneous Users via a web browser: 16



Password Character Restrictions

The table below shows the type and quantity of characters in a password that are required by default.

Character Type	Required Quantity
Lower case [a-z]	1
Upper Case [A-Z]	1
Number [0-9]	1



The colon “:“ character is not allowed in a password.

Password Age Restrictions

The default maximum age of a password is 0 which means passwords will not expire by default. This can be overridden to any number of days with the UserName_Password configuration file.

Default Username and Password

- Default username: **admin**
- Default password: **admin**

Users will be required to change the password when they initially log onto the Eyz-On system.



If a hard reset is performed on the Eyz-On system all username with password combinations, and other settings, will be erased, and the system will return to the default username and password.



Alarm Input Operation

Basic Operation

The *Eyz-On* has a single alarm input connection. To use the alarm input feature on the *Eyz-On* system the user will need to connect a N.O. (normally open) switch or relay to the alarm input connections.

When the *Eyz-On* detects closure across these terminals an alarm connection will be recorded by the *Eyz-On* system.



In no case should you apply any voltage or current to either the alarm "+" input or the alarm "-" input terminal.

Alarm Detection

The *Eyz-On* system monitors the alarm input terminals for a contact closure. The alarm input must have a contact closure for a minimum of 1 second for the *Eyz-On* to recognize an alarm input. Alarm contact closures of less than 1 second *may or may not* be detected. (*The 1 second limitation is not user configurable.*) There is no maximum time that an alarm input contact closure can be held close, but only one alarm input event will be recorded for each contact closure.

Alarm Operation

For proper operation the user must set-up the "Settings->Event Inputs->Alarm Input" page. This page will determine what actions the *Eyz-On* takes when an alarm input is detected.

Alarm Limitations

The *Eyz-On* does not monitor the alarm input terminals when either it is trying to acquire an Ethernet IP address or while the USB cable is inserted. Therefore, care should be taken if the *Eyz-On* is set-up in DHCP mode since the *Eyz-On* will not monitor the alarm input terminal until either an IP address is acquired from the DHCP or the *Eyz-On* has timed-out on the DHCP request; this may be as long as two minutes.

If the *Eyz-On* is set-up for a static IP address this limitation does not apply.



Reverse Logic

The default condition for the *Eyz-On* is to detect a contact closure on the alarm inputs, but the *Eyz-On* can be configured to detect an alarm input open condition. In this case the normal (not alarmed) state would be to use a N.C. (normally closed) switch or relay. When the *Eyz-On* detects that the alarm inputs are NOT closed for a minimum of 1 second an alarm input event will occur.

This reverse logic option is not configurable through the Web Interface, but requires a modification to the *Eyz-On* configuration file.

Trigger Events

The *Eyz-On* system has the following event triggers:

- **Alarm Input**
- **Motion Detection**
- **Network Down**
- **Remote Alarm Message**

Each of these events can specify a unique notification to happen when the trigger is detected; i.e., record video, send email, etc., as determined by the event trigger page. Trigger Events are continuously monitored as long as the system is operational and modified based on the Schedule.

A Trigger Event is defined by the monitored event changing state. Motion Detection is determined on a frame by frame basis, so constant motion in the video stream will continuously trigger motion detection.

When a Trigger Event happens, it can cause the following to occur as defined by the various HTML page settings:

Record Video - The number/length of images saved as defined in the time setting on specific event page. (Implies recording to the on-board micro-SD card.)



FTP Notification - The image sent by FTP (for a trigger event) will always be a JPEG image. The number of images sent per the definition in the FTP setting page.

Email Notification - The image attached to an email will always be a JPEG image. The number of images sent per the definition in the Email Notification page.

Activate Alarm Out - The alarm output signal to be active for five seconds on the first detection of the trigger event. If the trigger event keeps happening the alarm output will stay active for 5 seconds after the last trigger event.

Log Event - A message will be logged for each occurrence of the Trigger Event.

If a Trigger Event has both the FTP notification and the Email Notification specified for a specific event then the number of images specified for both the FTP notification and the Email Notification should be the same. This will ensure that if there are multiple event triggers that happen quickly that both the FTP and the email receive the correct number of images. If the number of images is not the same then some images may be skipped for either the FTP or email notification.

Recording

In the recording mode, images are only recorded during the specified recording times as defined in the Schedule page. The format of these images is based on the settings specified in the Image Compression page. The recording length is specified by the Recording Schedule.

By definition “recording” only includes the process of recording based on the schedule. It does not include recording based on “Motion Detection”. Motion Detection is defined as a trigger event and as such the settings for recording images based on Motion Detection are governed by the Motion Detection events page.

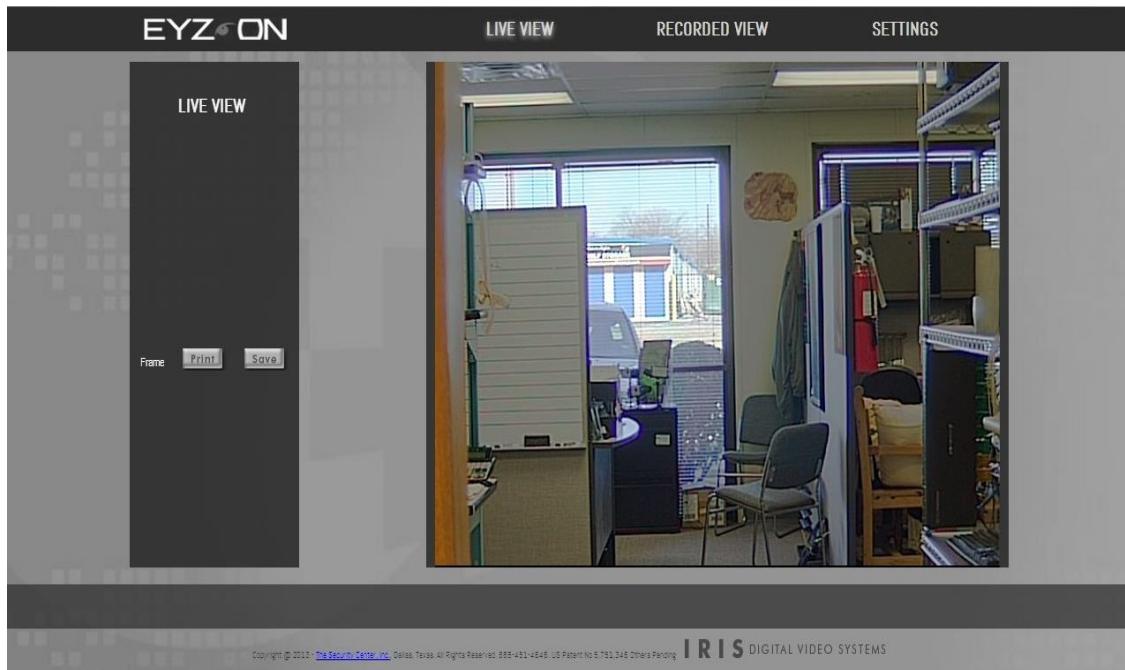


While the Eyz-On is recording the image files can be sent to the micro-SD card, the FTP site, or both locations. The file format used for both the SD card and the FTP site are the same. The file format is set on the Image Compression page.





Live View



The Live View screen allows you to watch a live video feed.

To view Live image(s):

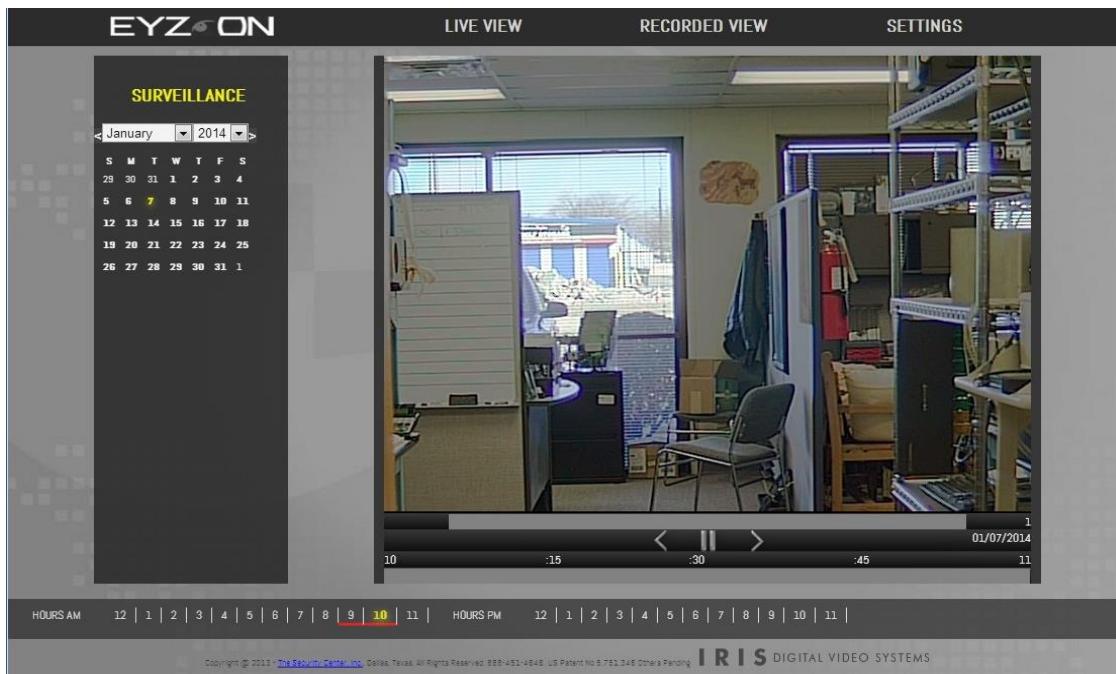
- Hold mouse over “Live View”, select and click

User options on this screen are:

- Frame “Save”
- Frame “Print”



Surveillance Images



Surveillance images may be retrieved by day and time. Days with video available are highlighted in Yellow on the calendar.

To retrieve Surveillance image(s):

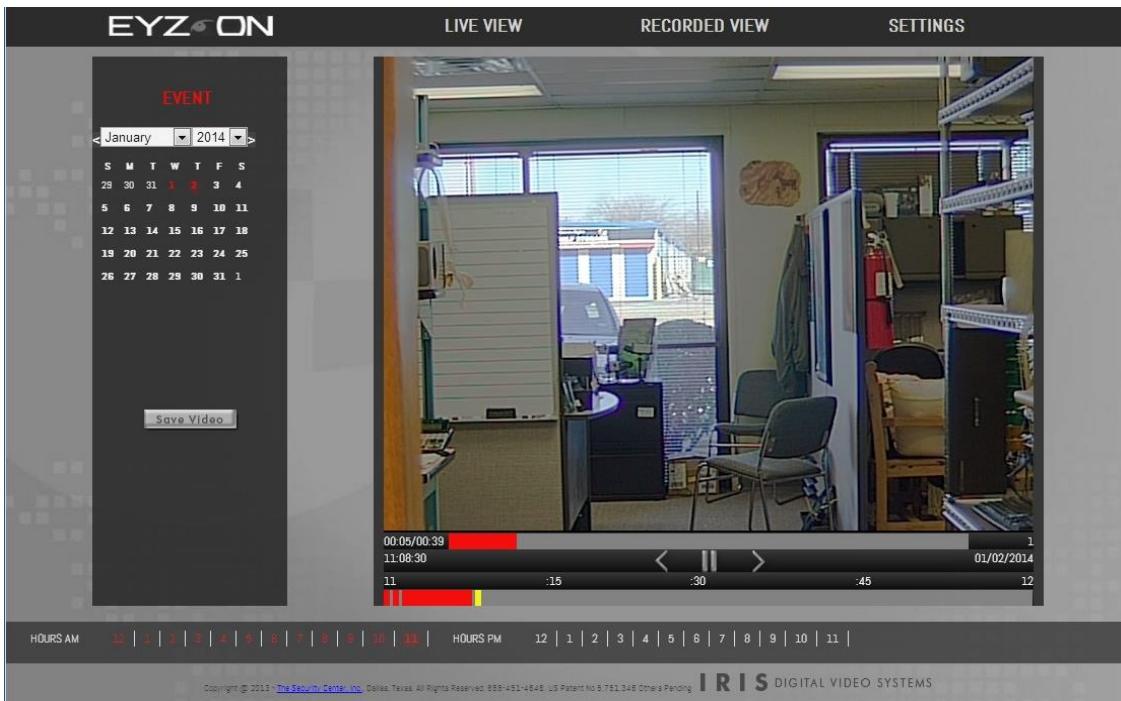
- Hold mouse over “Recorded View”, select and click “Surveillance”

User options on this screen are:

- Image retrieval by Calendar Date
- Image retrieval by Time (hours and minutes)
- Viewed “Video Save” (computer or external memory device)



Event Images



Event images may be retrieved by day and time. Days with video available are highlighted in Red on the calendar.

To retrieve Event image(s):

- Hold mouse over “Recorded View”, select and click “Event”

User options on this screen are:

- Image retrieval by Calendar Date
- Image retrieval by Time (hours and minutes)
- Viewed “Video Save” (computer or external memory device)



Settings

Date and Time



To set the Date and Time:

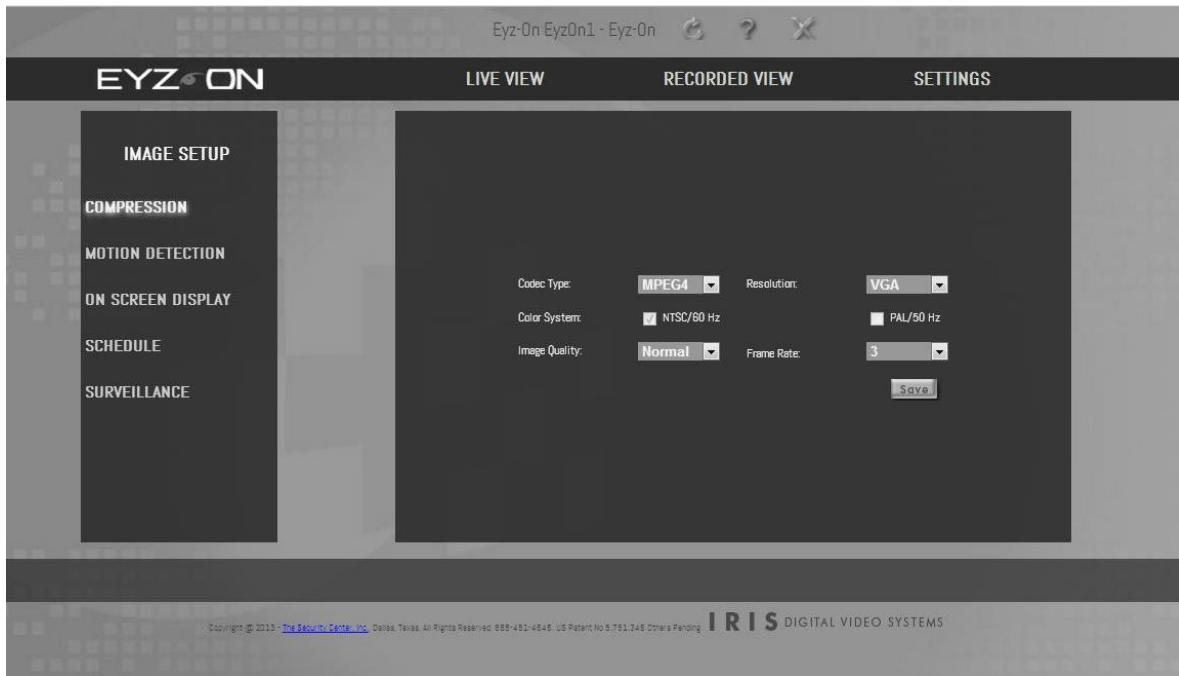
- Select and click “Settings”
- Select and click “Date & Time”
 - Use the dropdown menus to set the current date and time
 - Optionally, or check the box to let *Eyz-On* synchronize with either the computer (network server)
 - Optionally, or check the box to let *Eyz-On* perform a one-time synchronization with the programmed SNTP server
- Select and click “Save” when entries have been completed.



The Time Zone and Daylight Savings options may be programmed under the Settings, Network, SNTP Server menu.



Image Set-up Compression

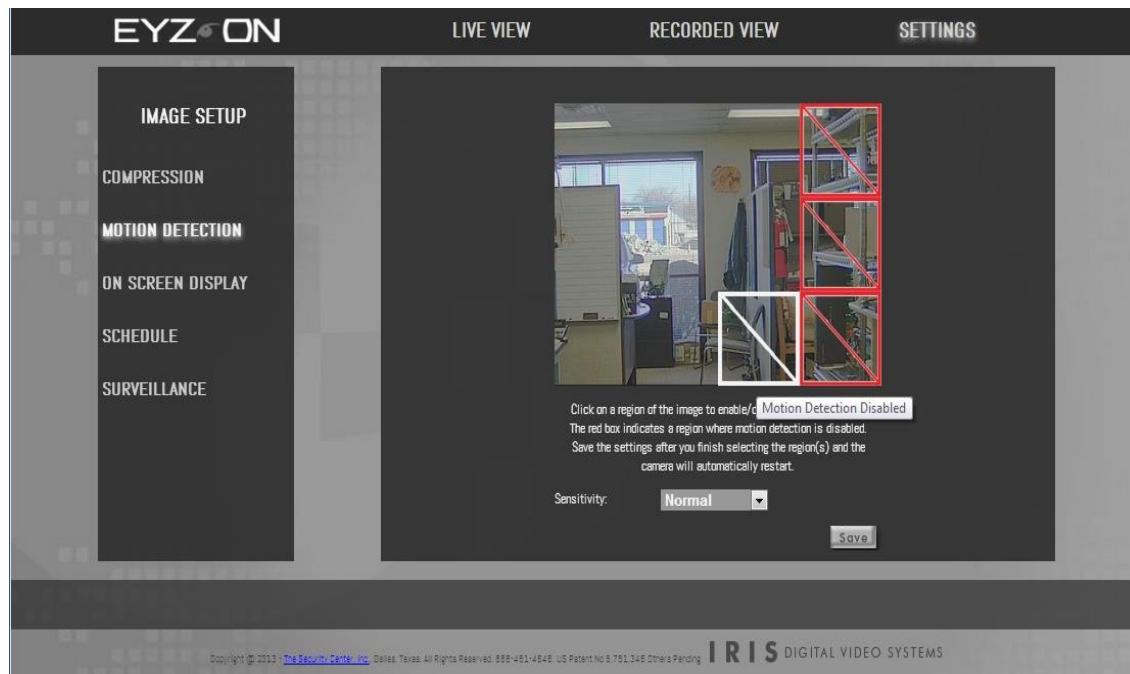


The following options will allow the user to determine the quality of the recorded image:

- Codec
 - Selections are: JPEG, H.264, and MPEG4 (default)
- Color System
 - Selections are: NTSC (U.S.A. standard), or PAL
- Image Quality
 - Selections are: Low, Normal (default), High
 - Low requires the least amount of storage space
 - High requires the most amount of storage space
- Frame Rate (frames per second)
 - Selections are: 3, 6, 10, 15 (default), and 30



Motion Detection



The *Eyz-On* system has the ability to ignore motion in selected “zones” within a viewed (recorded) image.

Moving the cursor over the image will display white boxes. Click on the boxes to select parts of the screen that will not trigger a motion recording. These sections can be used to eliminate certain areas, such as a plant in front of a fan. When the box turns red the selected area will be omitted from the motion recording. To unselect a section just click the red box so it turns white and disappears.

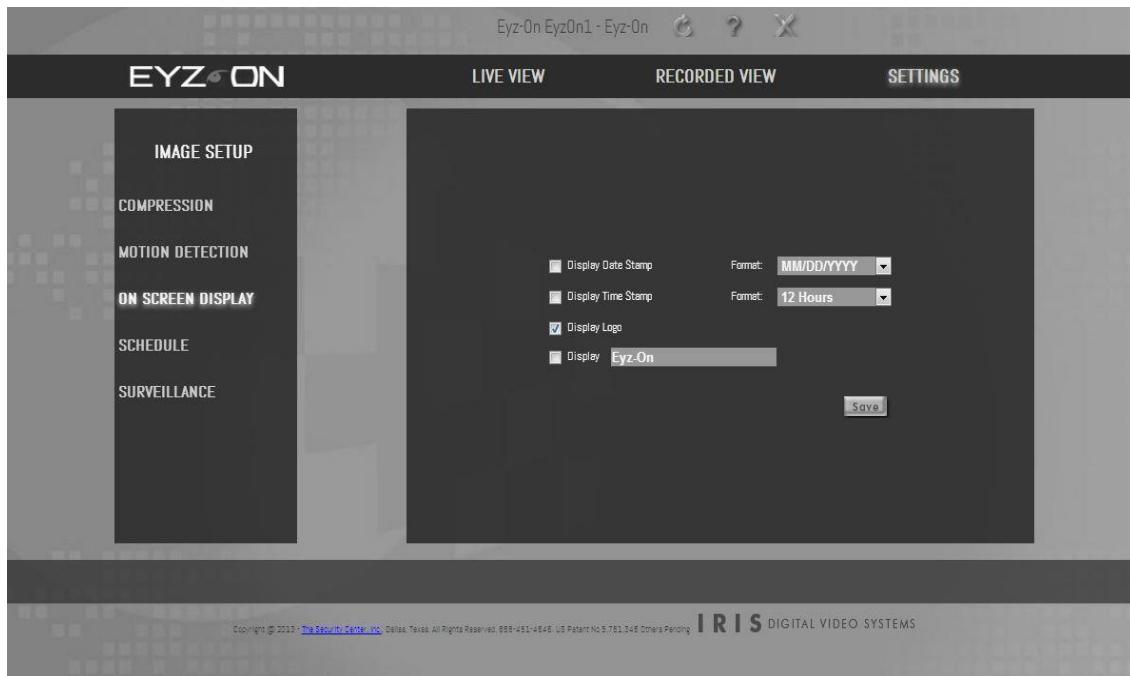
- Set the sensitivity of the Motion Detection.
 - Low
 - Medium (Default)
 - High



IMPORTANT - *in order for the Motion Detection function to be active, you must also establish a Schedule.*



On-Screen Display



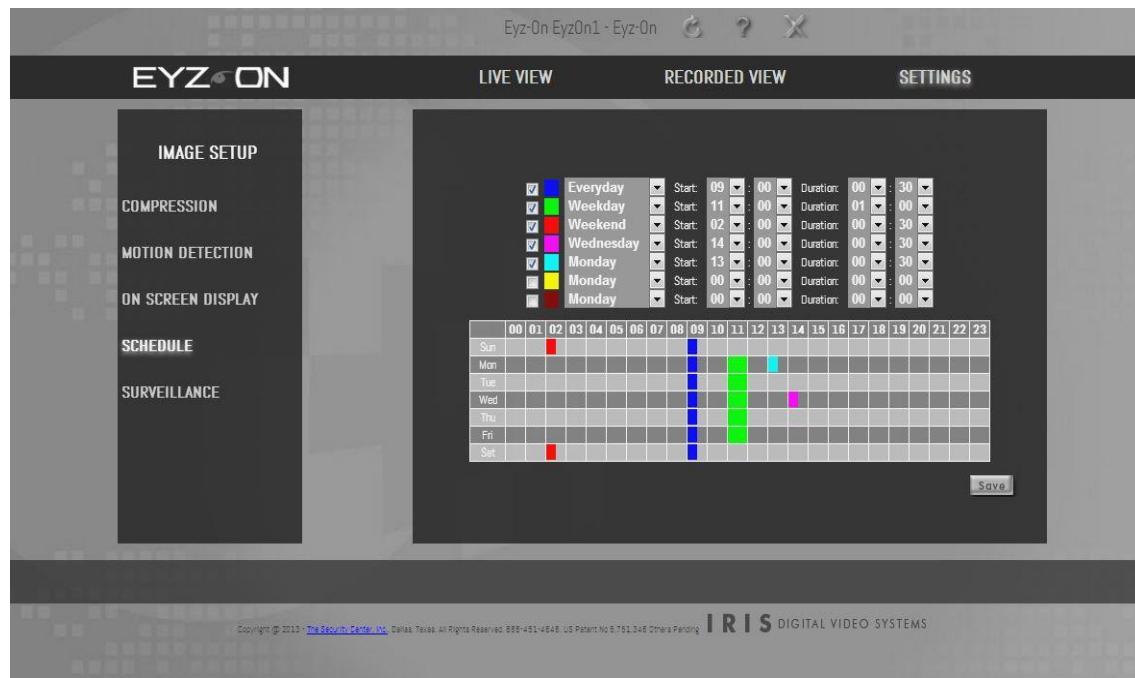
This screen allows you to add the following to the Live View screen.

These selections will appear when viewing recorded video:

- Date Stamp
 - Select format
- Time Stamp
 - Select 12 or 24 hour format
- Add logo to the screen
- Add Text (i.e., *Eyz-On* name, branch name) to the screen



Schedule

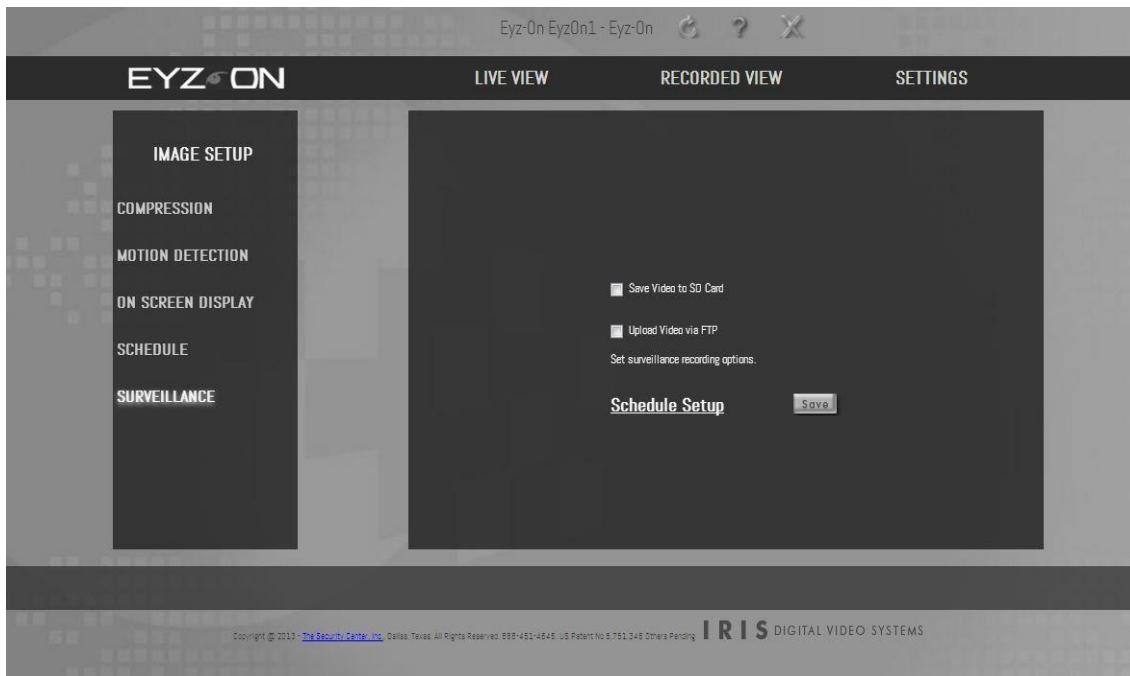


From this screen users choose what day(s) and time(s) they would like the Eyz-On system to record. The default settings are all blank.

- Check the box next to the color block.
- Using your cursor, “click” on what days you would like to select:
 - Monday through Friday
 - Everyday
 - Weekdays
 - Weekends (Saturday and Sunday)
- Select what time the recording will begin.
- Select the duration.
- Click “Save” for the changes to take place.



Surveillance



From this screen users choose where to save recorded video.

- Select “Save Video to SD Card” (on-board storage)
- Select “Upload Video via FTP” (images stored on a FTP Server)



Both choices may be selected.

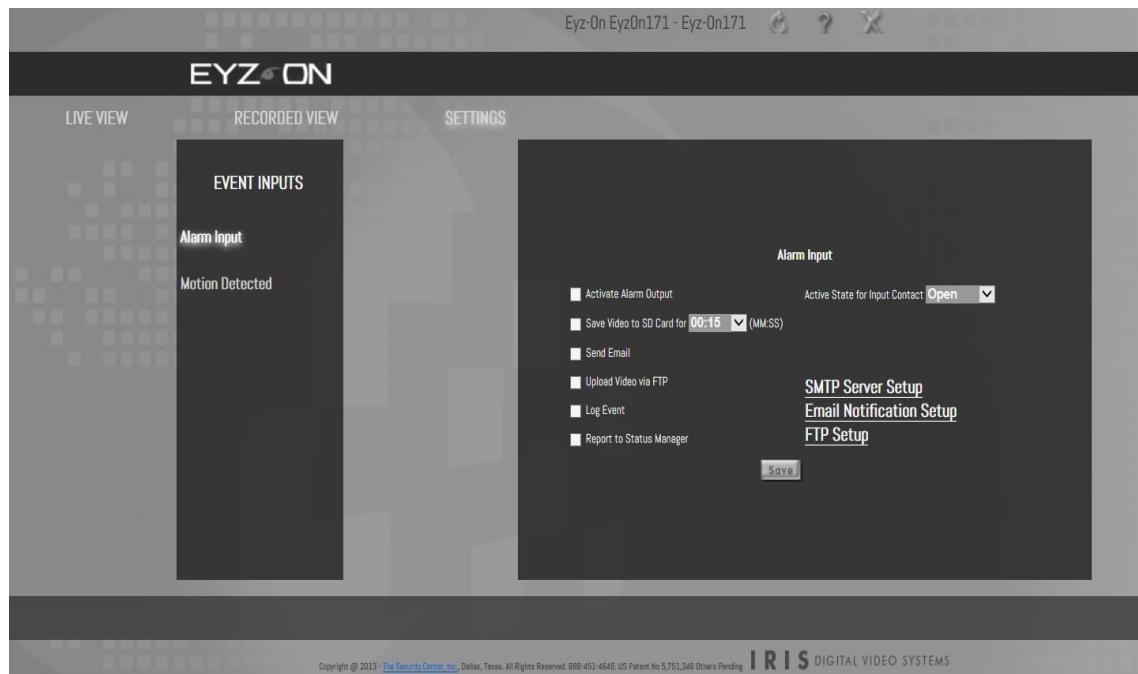
- Select “Save” for the change(s) to take place



You may also enter the “Schedule Setup” from this screen.



Event Inputs – Alarm Input

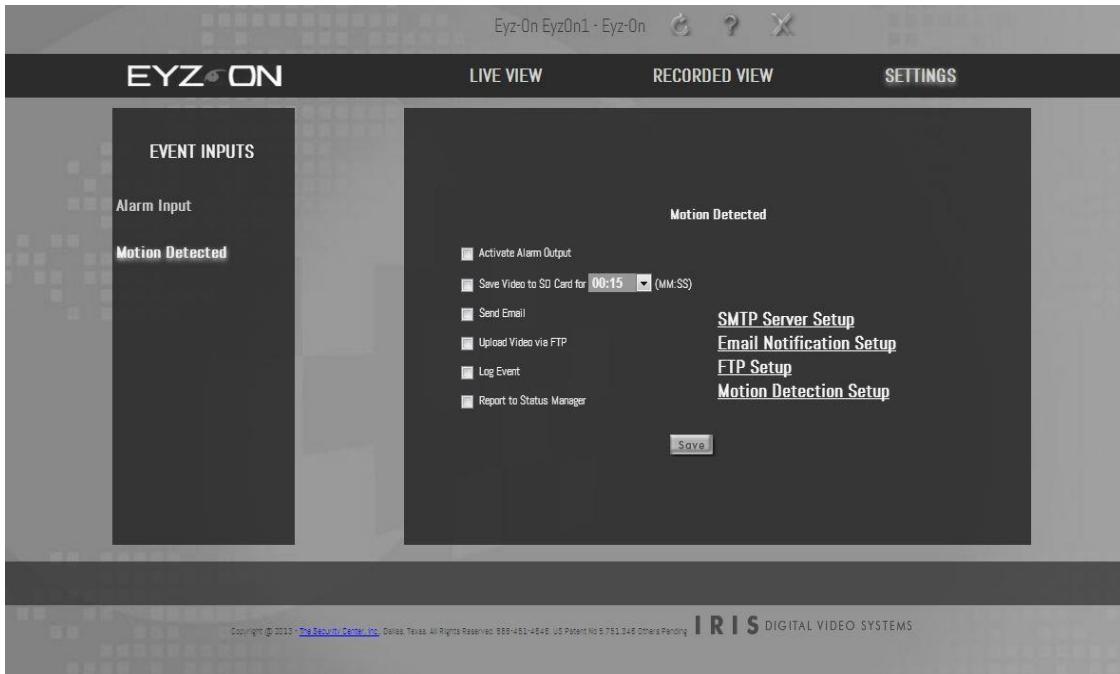


This screen allows the user to choose what action the *Eyz-On* system should take when an alarm is received.

- Click “Activate Alarm Output” to enable alarm reporting and other user-selected activity.
- On Alarm, perform the following with the images:
 - Save video to micro-SD Card
 - Send Email
 - Upload video via FTP
 - Log Event
 - Report to Status Manager
- On Alarm, save video to SD Card for:
 - 0 minutes up to 10 minutes in fifteen (15) second intervals
 - 15 seconds is Default.
- Select “Open” or “Closed” indicating the type of Alarm Contacts



Event Inputs – Motion Detected



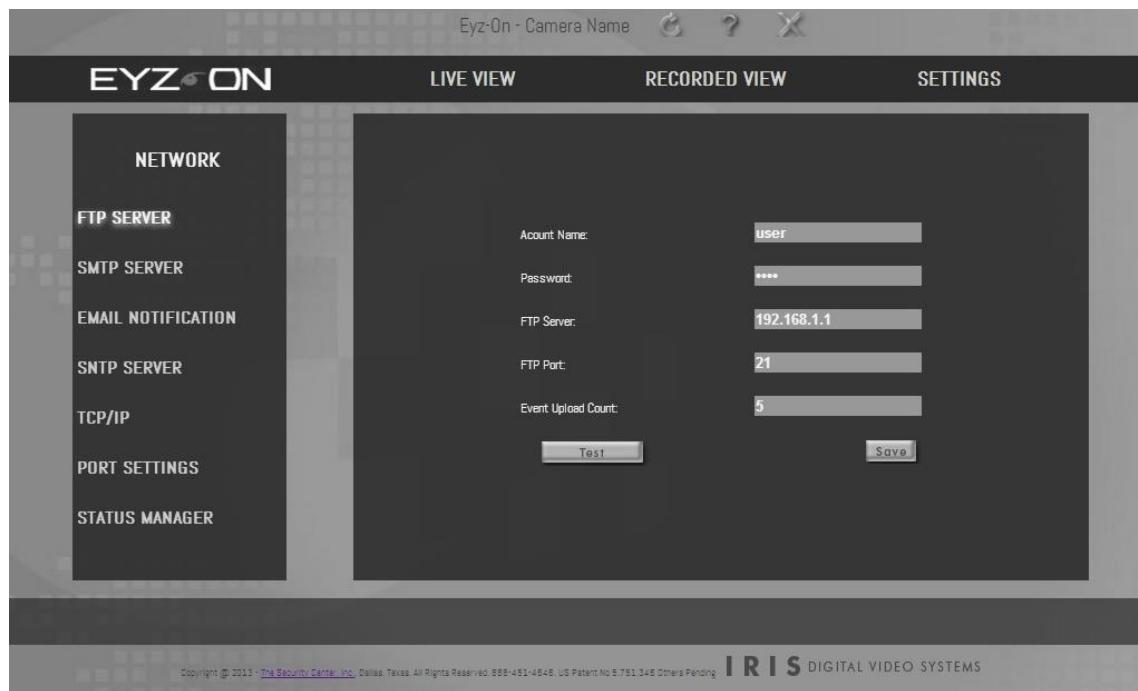
This screen allows the user to choose what action should happen when an alarm is received.

- Click “Activate Alarm Output” to enable alarm reporting and other user-selected activity.
- On Alarm, perform the following with the images:
 - Save video to micro-SD Card
 - Send Email
 - Upload video via FTP
 - Log Event
 - Report to Status Manager
- On Alarm, save video to SD Card for:
 - 0 minutes up to 60 seconds in 1 second increments



Network

FTP Server



The *Eyz-On* system has the ability to upload its images to a FTP Server. File Transfer Protocol is a standard network protocol used to transfer files from one host device to another.

To Set-up the FTP

- Set “Account Name:” to the user ID on the FTP server
- Set “Password:” to the password on the FTP server for the user ID
- Set the “FTP Server:” field to either the IP address of the FTP server or the hostname of the FTP server (i.e. <http://ftp.SecurityTexas.com>). (Assuming that the *Eyz-On* has DNS configured)
- The “FTP Port:” should be left set to 21 (The default FTP port) unless directed by the network administrator

The “Event Upload Count:” determines the number of Images or Seconds (depending if JPEG or MPEG is selected) that will be uploaded to the FTP site on each occurrence of an event input where the event input has “Upload Video via FTP”.

- The Event Upload Count default is 5



Set-up information for the FTP Server

When *Eyz-On* connects to the FTP server it will search for a “/eyz-on” folder in the root directory of the user ID. If this folder is not present, the *Eyz-On* will create one.



The user must have full privileges to create and delete folders and files on the users root directory and any subdirectories.

All images will be stored in that folder on the FTP server.



If the FTP server is on a different subnet then the Network Gateway and DNS server will need to be set up correctly for FTP to work correctly.



SMTP Server

The screenshot shows the Eyz-On software interface with a dark theme. At the top, there's a toolbar with icons for camera control, help, and exit. Below it is a navigation bar with tabs: EYZ ON (selected), LIVE VIEW, RECORDED VIEW, and SETTINGS. The left sidebar has a 'NETWORK' section with links to FTP SERVER, SMTP SERVER, EMAIL NOTIFICATION, SNTP SERVER, TCP/IP, PORT SETTINGS, and STATUS MANAGER. The main content area is titled 'SMTP SERVER' and contains the following configuration fields:

<input type="checkbox"/> Use SSL/TLS for the connection
Account Name: <input type="text" value="user"/>
Password: <input type="password" value="****"/>
Sender: <input type="text" value="user@domain.com"/>
SMTP Server: <input type="text" value="192.168.1.1"/>
SMTP Port: <input type="text" value="25"/>
<input type="button" value="Save"/>

At the bottom of the window, there's a copyright notice: "Copyright © 2013 - The Security Center, Inc., Dallas, Texas. All Rights Reserved. 888-451-4848. US Patent No 5,781,346 Others Pending." To the right of the notice is the IRIS DIGITAL VIDEO SYSTEMS logo.

For the *Eyz-On* system to send emails the SMTP Server must be set up. Although in most cases the end user will want to use their own SMTP Email Server,

IRIS Digital Video provides a generic SMTP Server that can be used for test and demo purposes. To use the IRIS Digital Video SMTP Server you need to set up the SMTP Server as show below.

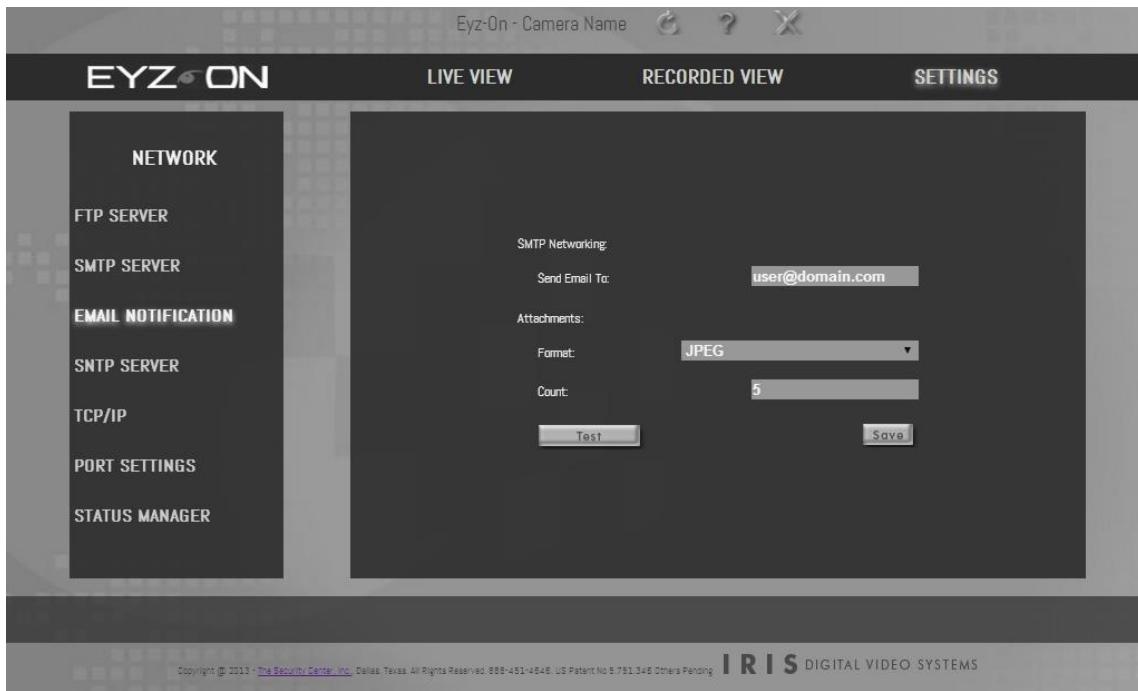
- Use SSL/TLS for the connection: Not Checked
- Account Name: DVR_Email@SecurityTexas.com
- Password: Since1994
- Sender: DVR_Email@SecurityTexas.com
- SMTP Server: mail.SecurityTexas.com (Assumes DNS in network setting is set correctly, otherwise enter IP address)
- SMTP Port: 25



These settings will only work if your network administrator allows the Eyz-On system access outside of your network. Be sure to apply correct settings for use with your own email delivery systems. Contact your (internal) I.T. Department for assistance.



Email Notification



Sending Messages to a Cell Phone

The *Eyz-On* can be easily configured to send a message and image(s) directly to a cell phone on the triggering of an event. Messages to your cell phone are either SMS messages (**Short Message Service** - or only a text messages) or MMS messages (**Multi-media Message Service** - having a picture attachment).

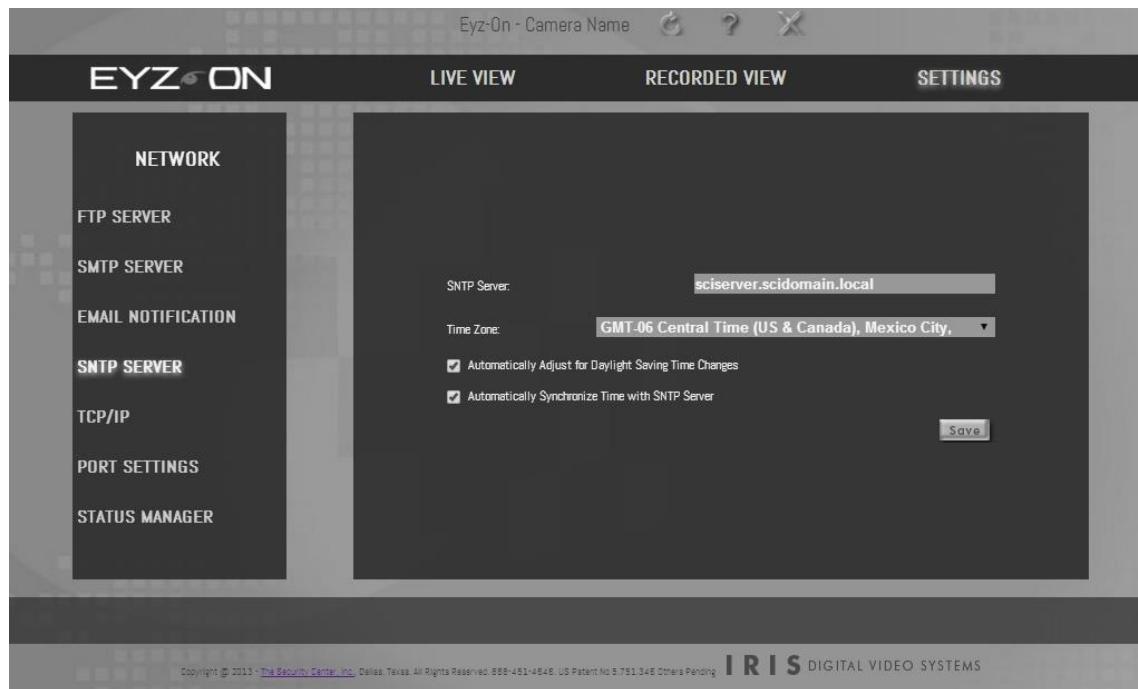
When sending SMS message the number of images sent for an event must be set to 0 since SMS messages do not support attachments. When sending MMS messages then the number of images can be set to any number between 1 and 20 (note, your phone service provider may limit the number of attachments). In both cases the message sent will include text describing the *Eyz-On* location and the event action.

Some cell phone companies have a separate email address for SMS and MMS. You will need to create the cell phone's email address and then insert this email address in the "Send Email To" field on the "Settings->Network->Email Notification" page. For example if you want to send a MMS message (i.e. the count field on the "Settings->Network->Email Notification" page is greater than 0) to an AT&T phone with the number of 212-555-1212, then the email address would be 2125551212@mms.att.net.

See Appendix "A" for more information.



SNTP Server



It is recommended that the *Eyz-On* system may be synchronized to a time server. This screen allows you to input the required information needed to connect to your preferred network time synchronization source.

- SNTP Server may be identified by:
 - Name (i.e., server.domain.local)
 - I.P. Address
- Time Zone
 - Select the correct Time Zone for the *Eyz-On* installation site
- Automatically Adjust for Daylight Saving Time Changes
 - Check if desired (Default is “enabled”)
- Automatically Synchronize Time with SNTP Server
 - Check to enable synchronization
- Select “Save” when your changes have been completed



Time synchronization sources may include: network-based time server, stand-alone time appliance, or other source available on the Internet.



If the SNTP Server is identified by its name, then you must have a valid DNS Server enabled in the Settings, Network, TCP/IP.



TCP/IP



This screen allows the *Eyz-On* system to be set-up with a TCP/IP address.

- Broadcast local IP address using mDNS (multi-cast DNS)
 - Select and click to “enable”
 - Typically used for iOS (Apple using the Safari browser)
- Dynamic IP address configuration without DHCP server
 - Select and click to “enable”
- Obtain IP address automatically
 - Select and click to “enable” standard DHCP operation
 - Leave unchecked to manually input:
 - Static IP Address
 - Subnet Mask
 - Default Gateway
 - DNS Address



To reveal the static IP address setting fields you must uncheck the Obtain IP address automatically (DHCP) option. You may need to contact your I.T. Department for network settings.



*For more information about mDNS, auto-DNS, DHCP, and static IP addresses refer to **Appendix B**.*



Port Settings



Use this screen to program the two *Eyz-On* network ports.

LAN1 or LAN2 options are:

- Down
 - Permanently disables (selected) LAN port
 - Must perform a “factory restore” to re-enable
- Auto
 - Will auto-negotiate the fastest speed with the network switch
- 100_Full
 - 100MBS, full-duplex
- 100_Half
 - 100MBS, half-duplex
- 10_Full
 - 10MBS, full-duplex
- 10_Half
 - 10MBS, half-duplex

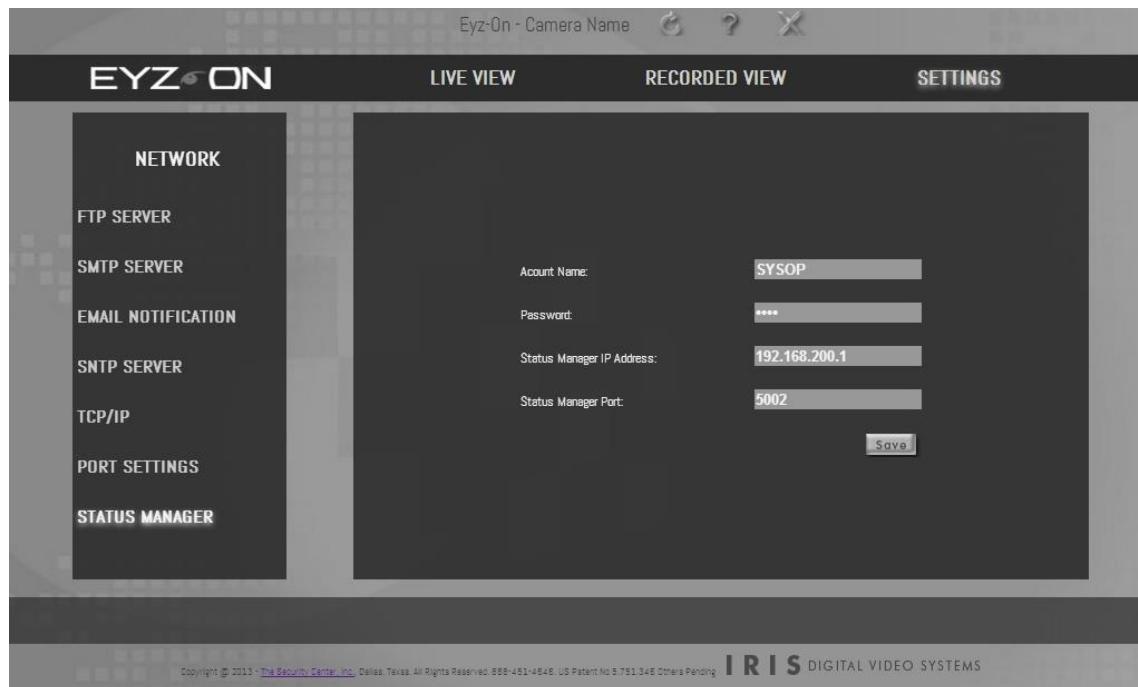


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Use for notes.



Status Manager



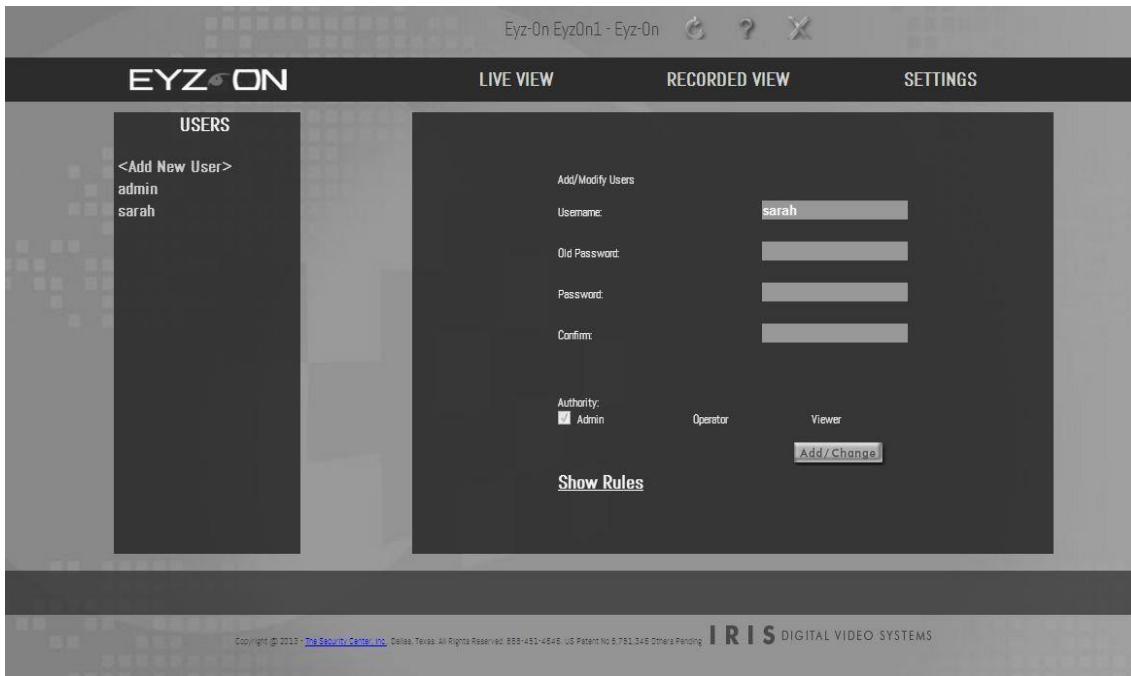
The *Eyz-On* system may be monitored by the IRIS Status Manager software.

Input Settings to allow this *Eyz-On* to communicate with IRIS Status Manager.

- Account Name
- Password
- Status Manager IP Address
- Status Manager Port (number)



User Administration



This screen allows the user to administer Users and their assigned Passwords:

- Select “Settings”
- Select “Users”

To add a New User:

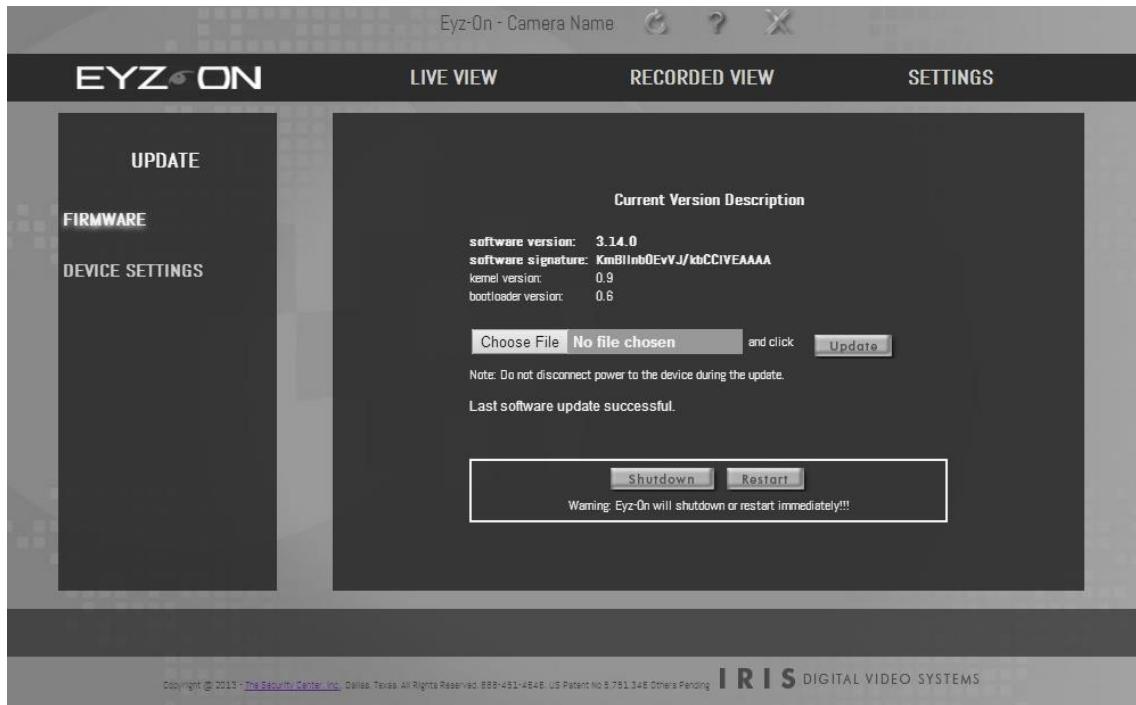
- Create and enter the Username
- Create and enter a Password
 - confirm Password
- Select the level of authority
 - Admin
 - can change all entries / pages
 - Operator
 - can change all entries / pages except Status
 - Viewer
 - can view Live and Recorded, and change their password



- Select “Save” when entries have been completed

Update

Firmware



This screen allows the user to view and/or verify the current software version of the *Eyz-On* system, perform a “one-button” software update, and properly Shutdown or Restart the system.

To perform an *Eyz-On* system update (software / firmware)

- Select “Browse”
 - Locate the update file
 - Select and click “open”
- Click “update”
- Restart the *Eyz-On* system
- Close your browser, start a new browsing session, and restart *Eyz-On*

 During the update process *Eyz-On* will verify the selected file is valid and that it is a newer version of the software than what is installed on the system.

To properly shutdown or restart the *Eyz-On* system

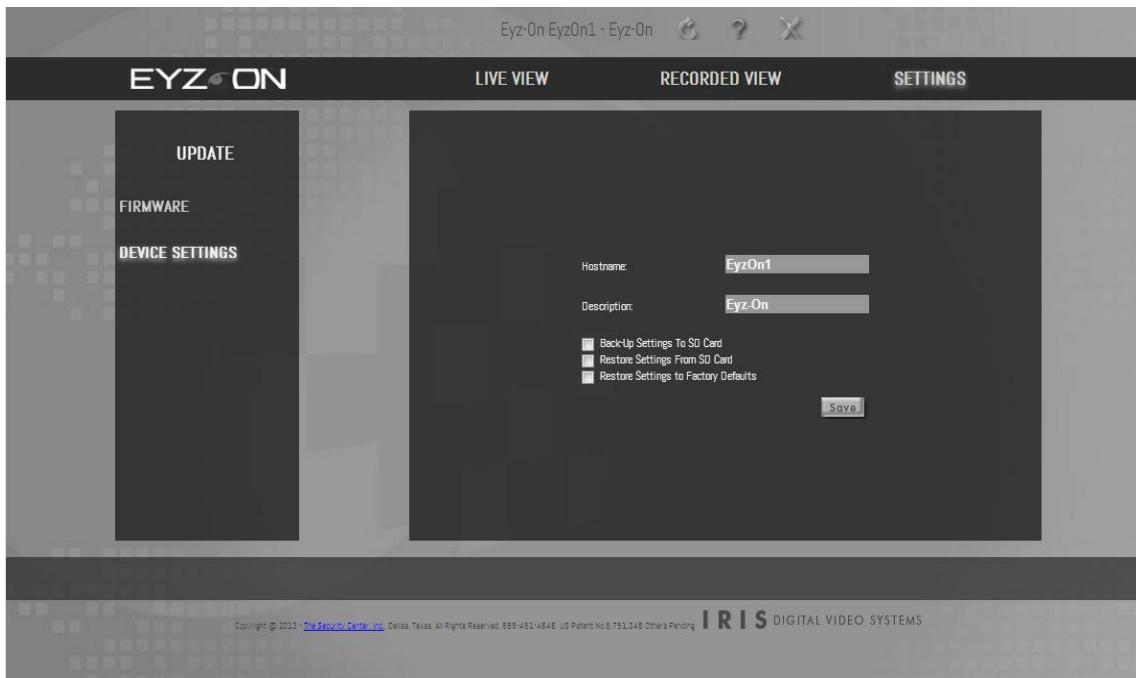
- To turn the *Eyz-On* off, click “Shutdown”
- To restart *Eyz-On*, click “Restart”



Perform Restart after any software updates.

Update

Device Settings



This screen will allow you to update the *Eyz-On* Device Settings.

- Hostname
 - Input the network name for this *Eyz-On* system
- Description
 - Input a descriptive name that appears in the browser and on the actual browser tab
- Back-up Setting to SD Card
 - Select to make a copy of all *Eyz-On* settings, useful for copying onto another *Eyz-On*; or, restoring after a Factory Reset
- Restore Settings from SD Card
 - Select to copy system settings from the micro-SD Card into the internal memory of an *Eyz-On* system



Settings must have been previously saved to the micro-SD card in order to perform a Restore Settings.

*After the initial installation of the *Eyz-On* system, it is recommended*



that a Back-up Settings be performed.

Restoring Eyz-On to Factory Settings

One of the choices under **Update – Device Settings** is the option to restore the Eyz-On system to Factory Default Settings. This will reset all users, passwords, and settings. *Use care when performing this option.*

- Select Restore Settings to Factory Defaults
 - Restores the Eyz-On to a “factory fresh” default configuration
- Select “Save” after making your choice

WARNING, be careful when using this option as you cannot “back out” once selected.

If selected, choices are:



- “Restart”, which will restart the Eyz-on System with the Factory Default Settings in place.
- “Cancel”, which will shut-down the Eyz-On system with Factory Default Settings in place. If you are making this selection from a remote location, be sure there is someone physically at the Eyz-On system site to perform a power cycle restart. This is required to resume normal operation of the Eyz-On system.

In addition to a “software” Factory Reset function described above you may perform a “hardware” reset. The picture at the right shows where the reset button is located.



Hardware Factory Reset Button.
Depress this button and hold for more than five seconds. Reset will be indicated by cycling of the LED indicators.



Status – Activity Log

The screenshot shows the Eyz-On software interface. The left sidebar has four options: STATUS, ACTIVITY LOG (which is selected and highlighted in blue), SYSTEM LOG, and SD CARD. The main area displays a list of activity logs. The logs are as follows:

```

2013-11-20 13:24:48 user sarah login from 192.168.200.110
2013-11-20 13:22:08 user sarah login from 192.168.200.110
2013-11-20 10:01:50 user sarah login from 192.168.200.128
2013-11-13 12:18:55 user sarah login from 192.168.200.110
2013-11-07 09:18:56 user sarah login from 192.168.200.110
2013-11-06 10:49:39 user sarah login from 192.168.200.110
2013-11-06 10:47:29 user sarah login from 192.168.200.110
2013-10-31 10:33:54 user sarah login from 192.168.200.127
2013-10-31 09:57:11 user sarah login from 192.168.200.127
2013-10-31 09:23:52 user sarah login from 192.168.200.127
2013-10-30 10:10:25 user sarah login from 192.168.200.127
2013-10-29 11:34:13 user sarah login from 192.168.200.127
2013-10-29 10:00:26 user sarah login from 192.168.200.128
2013-10-24 18:29:27 user sarah login from 192.168.200.128
2013-10-24 18:28:13 user admin login from 192.168.200.128
2013-10-24 14:39:13 user sarah login from 192.168.200.127
2013-10-24 11:47:47 user sarah login from 192.168.200.127
2013-10-23 16:09:29 user sarah login from 192.168.200.127
2013-10-23 11:37:22 user sarah login from 192.168.200.127
2013-10-22 16:42:54 user sarah login from 192.168.200.127
2013-10-22 11:29:53 user admin login from 192.168.200.127
2013-10-22 12:41:00 user sarah login from 192.168.200.127
2013-10-22 10:35:19 user sarah login from 192.168.200.127
2013-10-17 10:44:10 user admin login from 192.168.200.128
2013-10-15 13:54:58 user admin login from 192.168.200.104
2013-10-19 10:48:22 user admin login from 192.168.200.104
2013-10-19 09:23:20 user sarah login from 192.168.200.129
2013-10-19 09:23:29 user sarah login from 192.168.200.125
2013-10-14 11:18:01 user admin login from 192.168.200.104
2013-10-14 11:36:17 user sarah login from 192.168.200.104
2013-10-14 11:36:10 user sarah login from 192.168.200.104
2013-10-14 10:42:16 user sarah login from 192.168.200.125
2013-10-14 10:38:35 user sarah login from 192.168.200.125
2013-10-14 10:34:45 user admin login from 192.168.200.104
2013-10-14 10:34:42 user admin login from 192.168.200.121

```

Copyright © 2013 [The Security Center, Inc.](#), Dallas, Texas. All Rights Reserved. 888-451-4848. US Patent No. 6,751,348. Other Pending.

I R I S DIGITAL VIDEO SYSTEMS

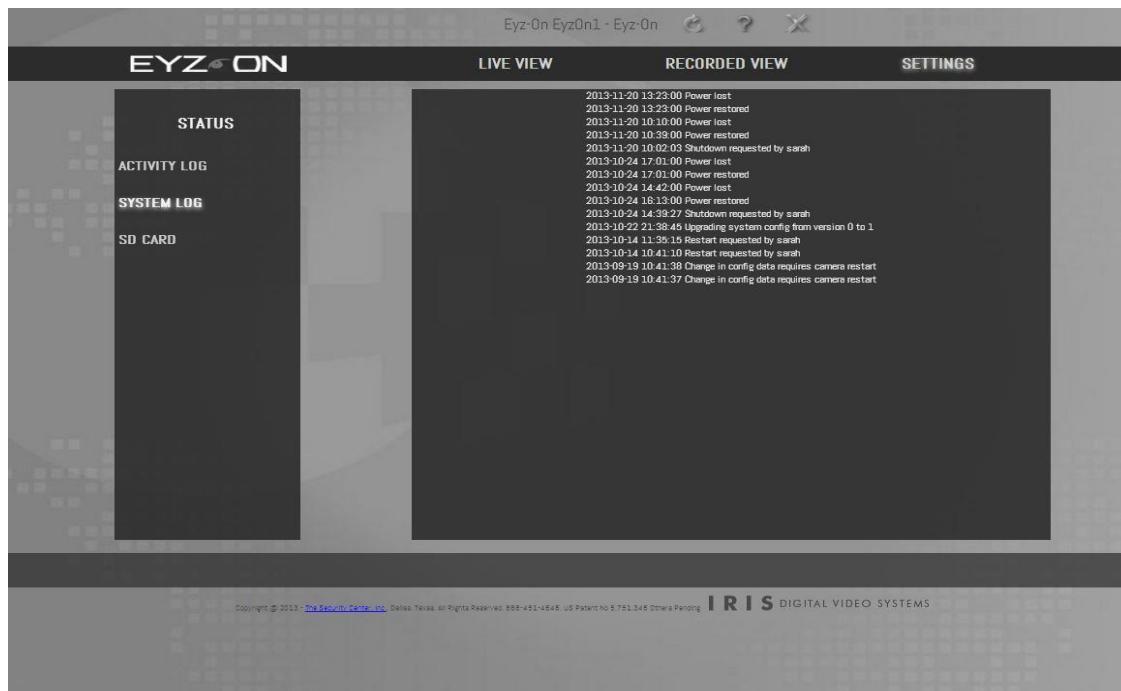
The *Eyz-On* system maintains a log of all user activity. This will allow a user, with assigned permission, to review who has connected to the *Eyz-On* system, when they did, what they did, and from what IP address they connected from.

- Select “Activity Log”
 - Entries are listed by Date and Time

Use the scroll bar to display more of the Activity Log.



Status – System Log



The *Eyz-On* system maintains a log of all System Activity. This screen functions similar to the Activity Log screen (see previous page). It contains a detailed list of all hardware activity, system activity, alarms with their cause, and any errors that have happened over time to this *Eyz-On* system.

This information may be useful in troubleshooting the system or any connected devices.

- Select “System Log”
 - Entries are listed by Date and Time

Use the scroll bar to display more of the System Log.



Status – micro-SD Card



This screen presents Information about the micro-SD memory card installed in the *Eyz-On* system.

- Specific information available:
 - SD Card Status
 - Operational / Non-operational
 - SD Card Capacity
 - Standard is 32GB
 - Optional is 64GB
 - SD Card Usage
 - % Full
 - Storage Disk Format
 - Formats the micro-SD memory card



Be careful as formatting a micro-SD memory card will result in loss of all recorded images.

- Storage Disk Unmount
 - Select prior to removing the micro-SD memory card from the *Eyz-on* system



Additional Eyz-On System Technical Information

When "Activate Alarm" is selected and the event is active, how long is alarm output closed?

When activated the alarm output contacts are closed for 1 second. This is the default setting but can be changed using a Configuration File that would be installed on the micro-SD card. This configuration file is NOT altered by the Web pages but can be set up and included on the micro-SD card to "customize" the *Eyz-On* for specific customers.

What is the recommended minimum screen resolution?

The minimum recommended screen size should be 1024 x 768, but because of possible settings in the browser adding tool bars and etc.; to the frame you may still have a vertical scroll bar on some pages.

Web Page Naming Conventions

The "Settings->Update->Device Settings" page has two fields used to identify the *Eyz-On*. "Camera Name" and "Description". Camera Name is a maximum of 128 characters and must be alphanumeric characters and the characters '.', '_', '' and '~'. The description field is a maximum of 80 characters and can be any printable ASCII character.

When the *Eyz-On* is in DHCP mode its Name will be sent to both the DHCP and DNS so that it can be used as a web name in a browser. Correct operation of the DHCP and DNS will still depend on the customers DHCP and/or DNS supporting this publish feature (more on that later)

The "Camera Name" field will be the data that is sent to the DNS and DHCP. This name will be limited to 128 characters and must conform to valid URL requirements.

The Title of the Web Page (the text shown in the tab of the browser) will be "*Eyz-On* Camera Name - Description" (Note: if Camera Name is "*Eyz-On*" then the title will be "Camera Name – Description".)

If the Web Page is bookmarked then the default name used in the bookmark will be the same as the Title of the Web Page. This should allow you to bookmark many *Eyz-On* systems and use the description field as a grouping indicator (i.e. location).



Video Compression Limitations and Artifacts

Introduction

The *Eyz-On* supports several types of video compression including JPEG, MPEG4, and H.264. While the JPEG option stores video information as individual images the MPEG4 and H.264 algorithms store several video frames to make a complete video clip.

JPEG Mode

When the *Eyz-On* is in the JPEG mode images are stored as a single frame. In this mode each file contains one and only one frame and each frame is independent of all the other frames that are contained in other files. Since each file is an individual frame, the video image in the frame can be saved, transmitted or displayed as a single image.

When the *Eyz-On* detects that an event has happened and the *Eyz-On* is configured to record images it records the currently captured image and a number of additional images. The number of images saved depends on the setting for the event, but generally each image saved is an individual file and the number of files saved is fairly consistent between events as long as the setting for the event length is not altered.

MPEG4 & H.264 Mode

MPEG4 and H.264 algorithms contain a number of features that allow them to compress video much better than JPEG. If a particular video sequence contains 30 JPEG images (and therefore 30 files) each compressed JPEG image contains all the information necessary to reconstruct the image. But if the same video sequence is recorded in MPEG4 or H.264 a very different result emerges. The MPEG4 and H.264 file contains a series of frames labeled "I", "B" and "P". The "I" frames are very similar to JPEG images in that they contain all the information necessary to reconstruct the image. The "B" and "P" frames contain only differences in the image from the preceding "I" frame. (*Note: In this discussion we will only refer to "B" frames.*) Therefore, an MPEG4 or H.264 video clip consisting of 30 frames would be a single file containing one "I" frame and 29 "B" frames. This file size would result in a tremendous savings over the 30 individual JPEG images, when a series of video images is involved.

Effects of I, B & P Frames

Although there is tremendous memory saving using MPEG4 or H.264 over normal JPEG there are some unique differences when video clips are recorded. This limitation is due to the fact that in order to reconstruct an image frame you need to have at least one "I" frame in the sequence and the "I" frame must be the first frame in the sequence. If the MPEG4 or H.264 algorithm only consisted of "I" frames then the algorithm would in essence be Motion JPEG and the resulting savings in file size would be lost. This limitation that the first field in the MPEG4 or H.264 video clip be an "I" frame has some direct consequences in the way that *Eyz-On* records video.



Frame Rates and I Frames

Video is received from the imager at a rate of 30 frames per second (fps). In normal circumstances MPEG4 and H.264 would compress this 30 fps into one “I” frame followed by 29 “B” or “P” frames. Therefore, the minimum video clip consists of an “I” frame followed by 29 smaller frames and this video clip would represent 1 second of actual time. When the *Eyz-On* is set up for a frame rate less than 30 fps then the *Eyz-On* effectively discards the excess frames. Thus if a frame rate of 15 fps is selected, then the *Eyz-On* discards every other frame from the imager; if the frame rate is set for 3 fps, then the *Eyz-On* discards 9 out of 10 frames. The reduction of the frame rate has a big impact on the encoded video. Since each encoded video clip has an “I” frame followed by 29 “B” frames, the time resolution for the video clip is changed. Thus, if the *Eyz-On* is set for 3 fps a video clip consisting of an “I” frame and 29 “B” frames represents 10 seconds of actual time.



Note: When the Motion Detection event is enabled the *Eyz-On* will look for motion on frames from the imager that are not discarded due to a frame rate setting less than 30 fps.

How MPEG4 and H.264 Events are Recorded

When *Eyz-On* is in the MPEG4 or H.264 mode the *Eyz-On* is continually capturing and encoding the video image to internal memory. When the *Eyz-On* detects that an event has happened and the *Eyz-On* is configured to record images, the operation of the *Eyz-On* depends on if the system is currently recording video or not. If the *Eyz-On* system is recording video for a prior event or is currently recording due to a schedule time then it is assumed to be currently in the record mode.

If the *Eyz-On* system is currently recording video (in record mode), then the event video will be saved starting with the next “I” frame. If the *Eyz-On* system is not currently recording video (not in record mode), then the event video will be saved starting with the previous “I” frame.

Note the slight difference between the two modes. This is because the MPEG4 and H.264 video must start with an “I” frame. If the frame rate is sufficiently high, say 30 fps or 15 fps, this slight difference is not noticeable but with lower frame rates of 3 fps the difference can be several seconds. Caution must be exercised when using low frame rates with MPEG4 or H.264.

Length of Recorded Events

All MPEG4 or H.264 video clips must begin with an “I” frame, therefore the total time length of the video recording segment will be determined by the frame rate and the recording time specified for the event. Since a video clip must contain an “I” frame and a minimum number of “B” frames and the time required to



capture the requisite number of “B” frames is determined by the frame rate then the length of the recording is determined by both the frame rate and the recording length set for the event. But, in no case shall the recording time be less than the time interval set for the event.

Summary

Recording MPEG4 or H.264 at lower frame rates of 3 fps or 7 fps may have unwanted side effects in the system’s performance in terms of when video starts and stops for defined events. Of particular importance is when the *Eyz-On* is set in a low frame rate mode and is recording video because the current time falls within the preset schedule recording time. In that case the beginning sequence of some events may not be captured with the event recording file, but they will be available on the surveillance or transaction page for that same time.



The performance of the Eyz-On is best optimized when using the lower frame rates in JPEG mode and using the higher frame rates while in MPEG4 or H.264 mode.

LED Indicators

There are two status LED’s on the rear panel of the system that normally show power and alarm status when the unit is operational. These LED’s are both bi-color and are used to indicate the status of the unit.

During the start-up phase the Power LED will be purple (blue + red) in most cases.

- Red + Blue (Purple) - System Initializing
- Blue - System operational and OK

When the *Eyz-On* system is successful in booting-up the Power LED will be blue and the Alarm LED will be “off”.

During the start-up phase these LED’s will be used to indicate the successful completion or errors during various phases and will help in troubleshooting if there are issues.



As the start-up continues the LED's will flash per the following table to show the current state. If the unit should halt and show one of the following states the following table should help with diagnosing boot-up issues.

Power LED	Alarm LED	Boot Time	Most likely error or condition
Blue	None	0 sec	If no other LED's are visible after power cycle it indicates a CPU failure. Defective unit.
Blue + Red	None	0.9 sec	TI ROM Loader failed to find/load UBL (first stage boot loader) from NAND ROM.
Blue + Red	Red	1 sec	UBL failed to find/load U-Boot (2nd stage boot loader) from NAND ROM.
Blue + Red	Green + Red	2 sec	U-Boot failed to initialize network card.
Blue + Red	Green	5 sec	Linux Kernel and OS initialization/update problem. (Note: Normal system start-up is approx. 30 seconds.)



Appendix A

Typical Cellular Company Email Addressing

The following is a list of some cell phone email address schemes. Not all cellular companies are represented; be sure to check with the applicable service provider for their full information. (See Hint at the end of this list for one easy way to determine a phone's email address.)

Alltel phononenumber@message.alltel.com	Metro PCS @mymetropcs.com
AT&T @mms.att.net MMS	Metro PCS phononenumber@mymetropcs.com
AT&T @txt.att.net SMS	Misc @info2go.com
AT&T phononenumber@txt.att.net	Misc @mypixmessages.com
BellSouth Mobility phononenumber@blsdcs.net	Nextel phononenumber@messaging.nextel.com
Blue Sky Frog phononenumber@blueskyfrog.com	Orange phononenumber@orange.net
Boost Mobile @myboostmobile.com	Pagenet phononenumber@pagegate.pagenet.ca
Boost phononenumber@myboostmobile.com	PCS Rogers phononenumber@pcs.rogers.com
Cellular One phononenumber@mobile.celloneusa.com	Powertel phononenumber@voicestream.net
Cellular One West phononenumber@mycellone.com	PSC Wireless phononenumber@sms.pscel.com
Cellular South phononenumber@csouth1.com	Qualcomm phononenumber@pager.qualcomm.com
Cincinnati Bell phononenumber@gocbw.com	Qwest phononenumber@qwestmp.com
Cingular phononenumber@cingularme.com	Qwest yourphononenumber@qwestmp.com
Cricket @mms.mycricket.com MMS	Safaricom phononenumber@safaricomssms.com
Cricket @sms.mycricket.com SMS	Satelindo GSM phonenumbe@satelindogsm.com
Edge Wireless phononenumber@sms.edgewireless.com	Simple Freedom phonenumbe@text.simplefreedom.net
Einstein PCS phononenumber@einsteinSMS.com	Skytel-Alphanumeric phonenumbe@skytel.com



Smart Telecom phonenumber@mymsmart.mymobile.ph	U.S. Cellular phonenumber@email.uscc.net
Sprint @messaging.sprintpcs.com SMS	USA Mobility yourpagernumber@usamobility.net
Sprint phonenumber@messaging.sprintpcs.com	Verizon @vtext.com SMS
Sprint (Personalized Name)@pm.sprint.com MMS	Verizon @vzwpix.com MMS
SunCom phonenumber @tms.sunsom.com	Verizon phononenumber@vtext.com
SureWest Communications phonenumber@mobile.surewest.com	Virgin Mobile Canada phonenumber@vmobile.ca
SwissCom Mobile phonenumber@bluewin.ch	Virgin Mobile USA phononenumber@vmobl.com
T-Mobile (Sidekick) yourusername@tmail.com	Weblink Wireless phonenumber@airmessage.net
T-Mobile @tmomail.net	
T-Mobile phononenumber@tmomail.net	



Hint: The easiest way to check and determine a cell phone's email address is to use your cell phone and send your email address a text message and then a picture message. When you receive the message on your email account look at the sending address to determine the cell phone's email address for both message types.



Appendix B

DHCP Explained Further

Unit will default to DHCP or static IP mode on initial power-up based on DIP switch setting on the CPU card.

If DHCP is not enabled, the system will bring up the static IP address that is assigned in the configuration file shortly after power is applied or when DHCP is turned off.

If DHCP is enabled, the *Eyz-On* will make three attempts to acquire a DHCP address from the DHCP server before falling back to a predefined IP address. The *Eyz-On* waits up to a minute each attempt to acquire a DHCP address. Once an IP address is assigned the *Eyz-On* will broadcast the new address to the DNS server. In addition, you can use the *Eyz-On Camera Discovery Tool*, *Eyz-On Discovery.exe*, to locate *Eyz-On* cameras on your network.

If DHCP is enabled and it fails to get an IP address assigned, the *Eyz-On* will fall back to either the static IP address assigned in the configuration file or if zeroconfig ("Select Dynamic IP Address without DHCP server") is enabled the unit will revert the zero configuration address of 169.254.x.x. If the user's network has cooperating equipment then the unit will auto negotiate an IP address with other items on the network.

Note: When using DHCP, the user must set up their DHCP to dynamically update the DNS server when a new host name is assigned an IP address. Information on specific setup depends on the DHCP/DNS used but generic Microsoft information can be found at [http://technet.microsoft.com/en-us/library/cc787034\(v=ws.10\).aspx](http://technet.microsoft.com/en-us/library/cc787034(v=ws.10).aspx) and information on Dynamic DNS can be found at http://en.wikipedia.org/wiki/Dynamic_DNS

When using DNS the user may simply type the *Eyz-On* name plus ".local" in the space for the URL on the web browser to connect to the *Eyz-On*. There is no need to enter the IP address as the DNS will resolve the system name field into an IP address.

Multi-Cast (mDNS)

Unit will default to Multi-Cast enabled in either DHCP or static IP mode. On the Settings->Network->TCP/IP page there is an option to enable/disable "Broadcast local IP address using mDNS".

When mDNS is enabled *Eyz-On* will broadcast its name and IP address on the local subnet. Web browsers (and OS's) that support mDNS will be able to use



this information to enable the user to simply type the *Eyz-On* name plus ".local" for the URL in the browser.

Example: Assuming the *Eyz-On* Name is "LocationX" then the user would type "LocationX.local" into the browser URL location to access the *Eyz-On* system.

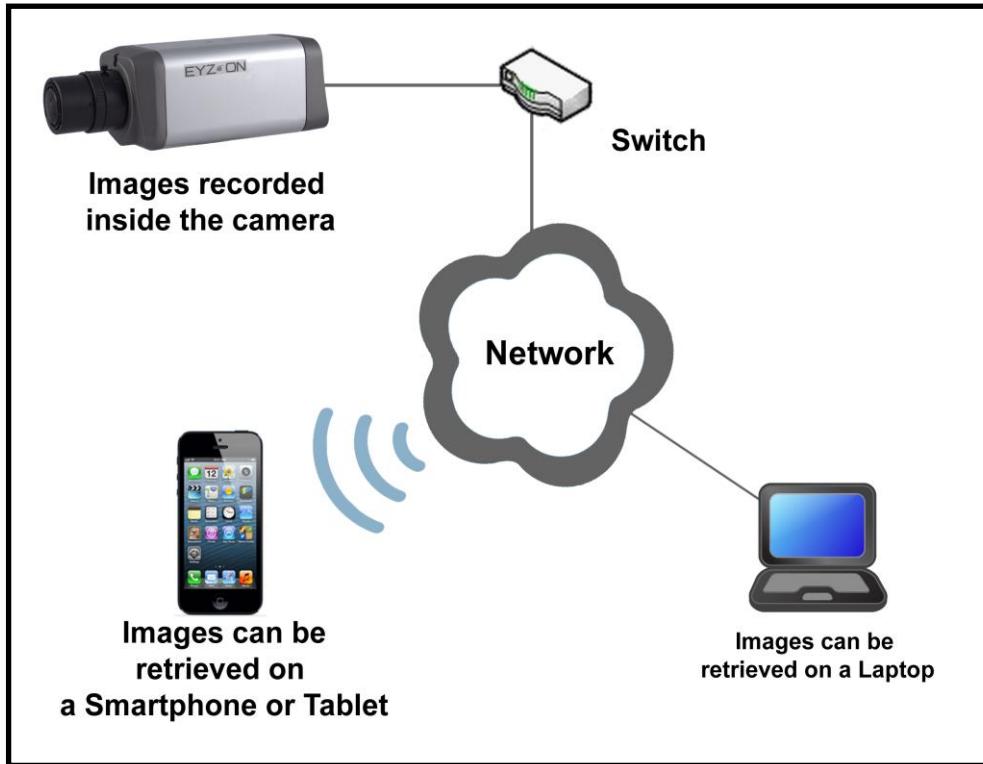
Currently iOS (Apple using the Safari browser) supports mDNS. For Windows to support mDNS the user will need to install "Bonjour for Windows" on their PC. This can be downloaded from:

http://download.cnet.com/3028-18507_4-93550.html?c=SEM5302&s=fivemill&pid=dlcom_sem&aid=bonjour%20for%20windows-e&dlc=n&part=fivemill

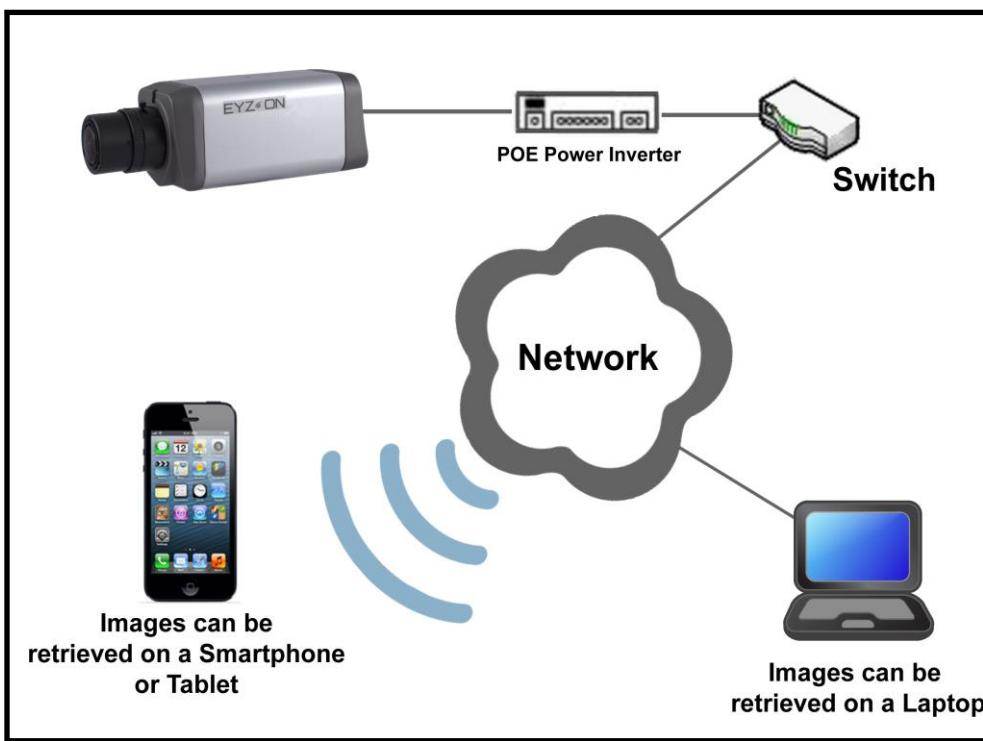


Appendix C

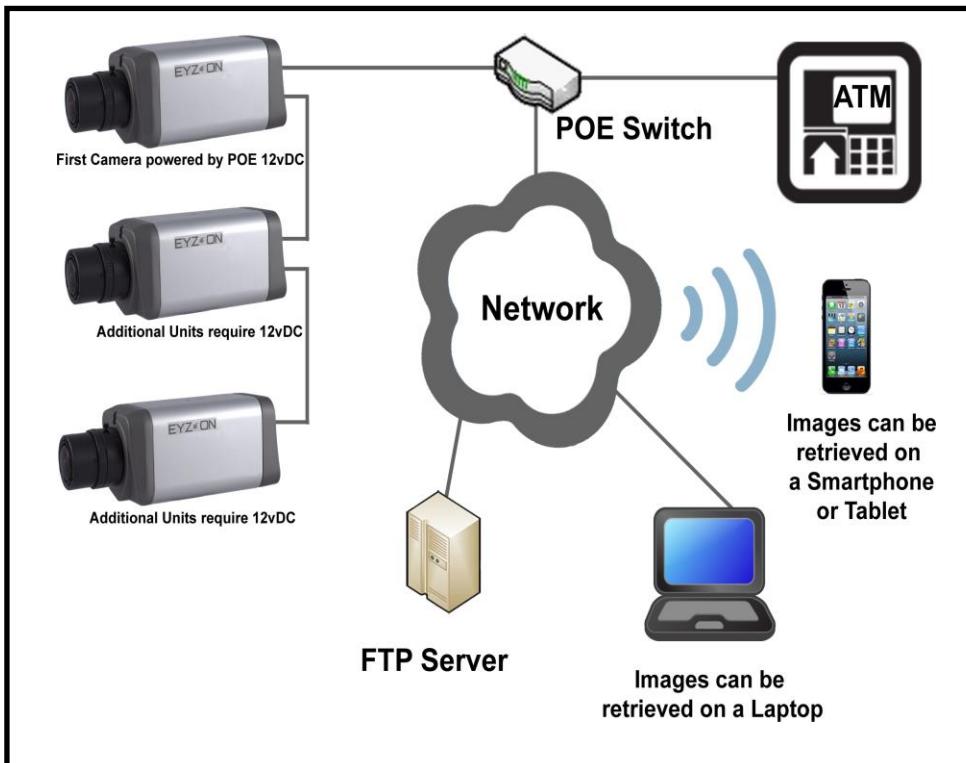
Sampling of Eyz-On^{CVR} Configurations



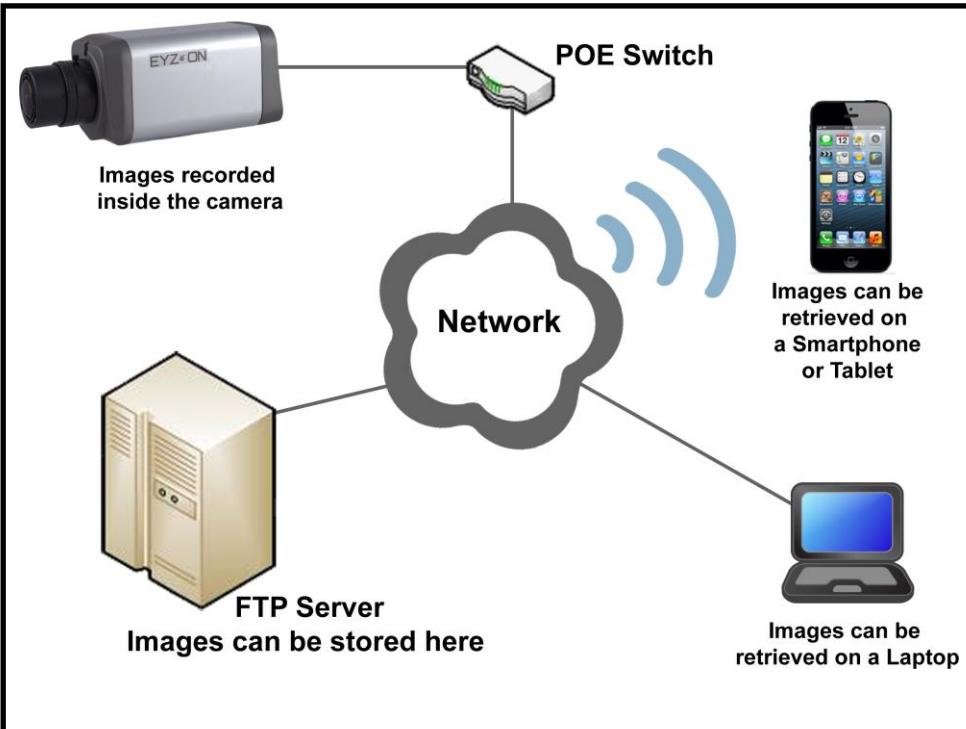
Basic Configuration



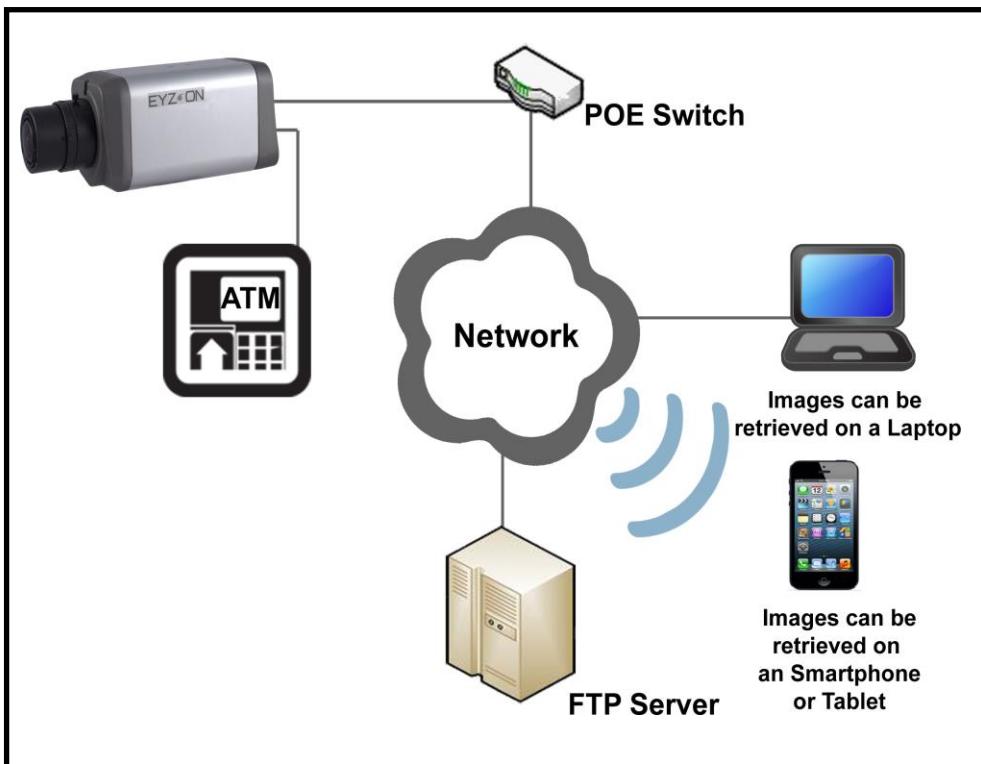
POE Configuration



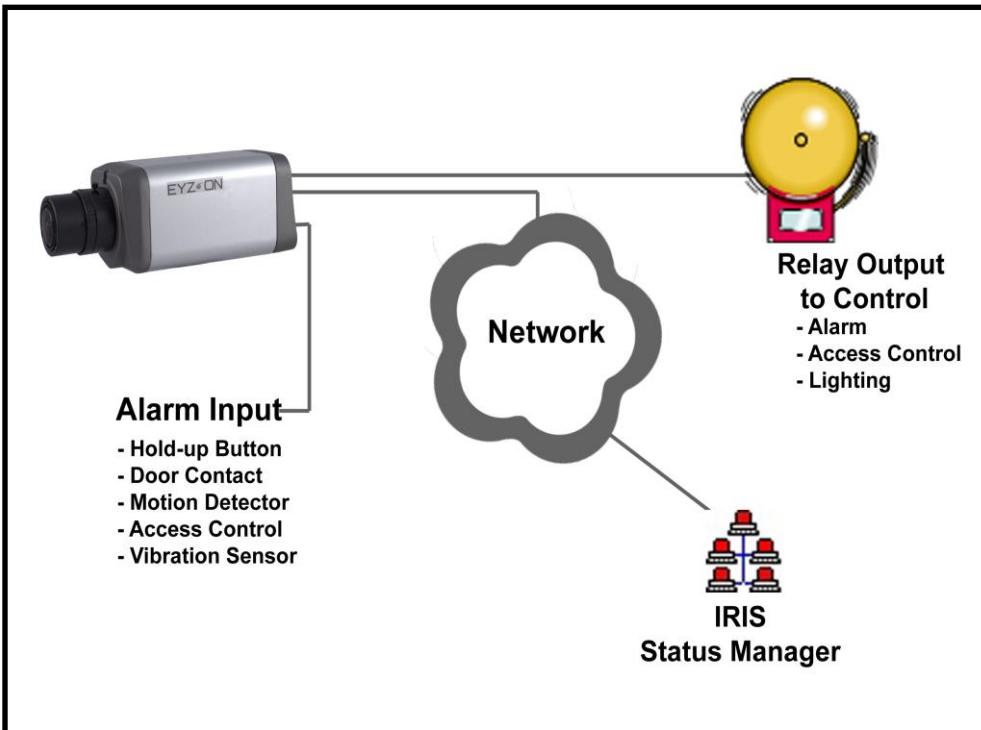
Multiple Eyz-On Configuration



FTP Configuration (with POE Switch)



ATM Configuration (with POE Switch)



Alarm Input Configuration



Glossary

- **Alarm Input and Outputs** – A means to connect alarm devices to the Eyz-On to “trigger” an event; or, an output for Eyz-On to notify a device.
- **CIF – Common Intermediate Format** – Format used to standardize the horizontal and vertical resolution of a video image in pixels. A few examples are (horizontal x vertical):
 - QCIF (Quarter CIF) - 176x144
 - CIF – 352x288
 - 4CIF – 704x576

Codec Type – Compression / decompression formats JPEG, H.264, MPEG4.

- **Color System** – NTSC is the USA standard, and PAL is the European and South American standard.
- **DHCP – Dynamic Host Configuration Protocol** – used to configure devices that are connected to a network so they can communicate on that network using the Internet Protocol (IP).
- **DNS – Domain Name Server** - This translates IP address and domain names.
- **Frame Rate** - The frequency rate at which an imaging device produces unique consecutive images called frames, expressed in frames per second. 7.5fps is the default. 30fps is only available in QVGA.
- **FTP – File Transfer Protocol** – transfers files over the network to a designated (server) location.
- **H.264** - A video compression format, currently one of the most common formats for recording, compression, and distribution of video content.
- **Image Quality**
 - Low – High compression, small image size
 - Normal – Balance between compression and size
 - High – Better image quality, large file size
- **IP address** – Internet protocol address assigned to a device.



Glossary (cont.)

- **JPEG** – The Joint Photographic Experts Group standard for saving images.
- **MPEG4** - Method of defining compression of audio and visual (AV) digital data.
- **NTSC** – National Television System Committee – U.S.A. color standard.
- **PAL** – Phase Alternating Line - European and South American Standard for Color System.
- **Pixel** – A physical “point” in a video image, can be used to express the size of an image in pixels per inch (ex: 640x480)
- **Port** – A physical connection, typically refers to a network (LAN) port.
- **Resolution** – Denotes the size of an image in Pixels.
 - QVGA – 320x240
 - VGA – 640x480
 - D1 – 720x480
- **SMTP** – Simple Mail Transfer Protocol – used for sending and receiving email messages.
- **SNTP** – Simple Network Time Protocol.
- **TCP/IP** – Transmission Control Protocol / Internet Protocol - provides end-to-end connectivity specifying how data should be formatted, addressed, transmitted, routed, and received at the destination.



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Appendix D

Quick Reference Set-up Guide

For “quick” set-up of the *Eyz-On^{CVR}* use the following steps....

Equipment needed

- Laptop or desktop computer (PC) with I.P. address set to 192.168.1.10 and Firefox installed
- Mini-USB Cable
- CAT 5 Cable (straight or crossover)
- Power cord
- 12VDC Power Supply
- *Eyz-On^{CVR}* with appropriate lens installed (w/ auto-iris cable connected)

Configuration

1. Determine the network parameters, host name, and *Eyz-On* name
 - IP Address: _____ . _____ . _____ . _____
 - Gateway: _____ . _____ . _____ . _____
 - Netmask: _____ . _____ . _____ . _____
 - Host Name _____
 - *Eyz-On* (Camera) Name _____
2. Attach the power cable (observing polarity) to the *Eyz-On^{CVR}* and connect to a 12VDC power supply. Wait approximately 30 seconds until the Power LED turns blue, and the yellow Alarm LED turns off.
3. Plug the USB cable into a PC, and into the *Eyz-On^{CVR}*. A “window” will then open; double-click the usbconf.exe icon to launch the USB Configuration Utility. Enter the information recorded above and then disconnect the cable.



4. Determine User Names, Passwords, and Access Levels (Administrator, Operator, or Viewer) for the individuals who will have access to the Eyz-On^{CVR}.



The Primary Administrator must have the username “admin”.

5. Set the PC’s IP address according to the following rule: the first three digits match that of the Eyz-On^{CVR}, the last octet must not and needs to be between 2 and 254. (1 and 255 are typically reserved for the Gateway.)
6. Connect the Eyz-On^{CVR} to the PC using the CAT 5 cable and wait until a connection has been established (per the connection icon in the lower-right tray on the monitor screen.)
7. Open the browser and type in the IP address of the Eyz-On^{CVR}. Enter the username “admin” and password “admin”, then select “Sign In”. Enter the new Administrator password (twice) and click “Save”.
8. The Date and Time page will load, enter needed information and click “Save”.
9. Hold the mouse pointer over SETTINGS and click on USERS. Click <Add New User>, and enter the information for each user.
10. Hold the mouse pointer over SETTINGS and click EVENT INPUTS. Enter any Alarm Input Settings and click “Save”. Click “MOTION DETECTED” if needed and enter settings, then click “MOTION DETECTION SETUP” and configure the Schedules, Motion Masking, Image Quality, and other settings.
11. Disconnect the Eyz-On^{CVR} from the PC and power supply. Install the lens, mount the system using the appropriate mount for the installation, and power-up. Assuming the installation occurred during an “ON” Schedule, the Eyz-On^{CVR} will start operating according to the configured program.



IMPORTANT - *in order for the Motion Detection function to be active, you must also establish a Schedule.*



In no case should you apply any voltage or current to either the alarm "+" input or the alarm "-" input terminal.