Express Video Servers

User's Manual

www.stardot.com
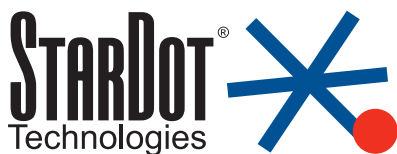
STARDOT®
Technologies

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Chapter 1   Configuration

Congratulations on your purchase of a StarDot Express Video Server. The server provides high quality streaming video from any analog video source. With proper usage, your video server will provide many years of quality video. We recommend that you read this manual carefully to completely understand the video server's capabilities.

1.1   Before You Start

This manual guides you through the basic setup procedure for the Express video server and provides a detailed resource for the server's advanced options and capabilities.

Setting up the video server consists of three steps. The first step is to configure the network settings. The second step is to configure the Express server to upload images to a web server (this step is optional). The third step is the actual physical installation of the video server and the camera(s) at their final location.

1.2   What's Included and What's Required

The package includes the Express Video Server, a power supply, a network cable (CAT5), a null modem serial cable (for optional configuration via the Setup Wizard) and the StarDot Tools software.
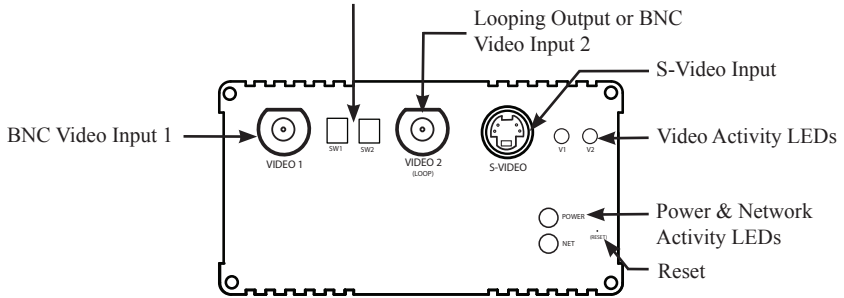
- Power source
- A computer for viewing the Express server video and configuring the Express server

Note: *A computer is not necessary for the video server's operation. It is only required to configure the video server and view the live video.*

- Network connectivity (LAN, cable modem, DSL, Dial-Up Internet Account, etc.)
- A video source, usually a video camera

1.3   Parts of the Express 2 Video Server

SW1: Switch In: S-Video, BNC2 Video Loop Output
        Switch Out: BNC2 Video Input
SW2: Video Termination, On = Terminate Signal (default)

Looping Output or BNC
Video Input 2

S-Video Input

BNC Video Input 1

Video Activity LEDs

VIDEO 1   SW1   SW2   VIDEO 2
                              (LOOP)   S-VIDEO   V1   V2

POWER

NET

Power & Network
Activity LEDs

Reset

Front View

TRIGGER I/O
2 x Input
1 x Output Relay

RS-485
Future Expansion

Ethernet Port

TRIGGER I/O
+ - R R

RS485

DC IN

Power (DC Power Jack)
12VDC, 1A

NET

S0   S1

S0
Serial Port 0, used for Auxiliary
Device Control

Back View

S1
Serial Port 1, Configuration via PC
serial port

1.4 Parts of the Express 4 Video Server

Power (DC Power Jack)
12VDC, 1A

4 Video Inputs with
Looping Output

S0
Serial Port 0, used for
Auxiliary Device Control

Ethernet Port

TRIGGER I/O
3 x Input
1 x Output Relay

S1
Serial Port 1,
Configuration via PC serial port
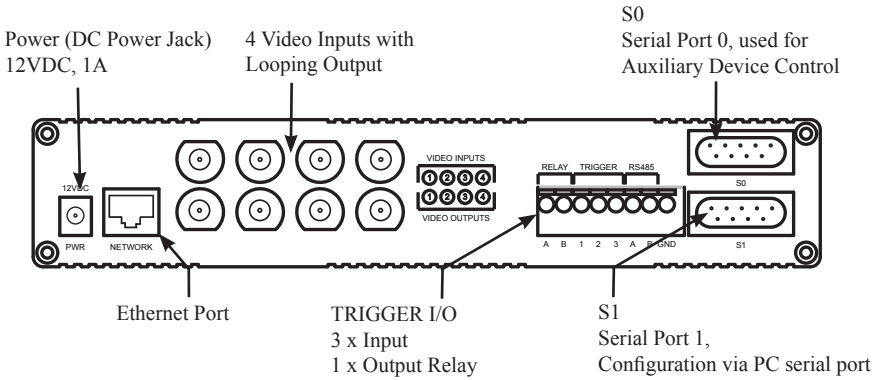
Back View

1.5 Parts of the Express 8 Video Server

Power (DC Power Jack)
12VDC, 1A

8 Video Inputs

S0
Serial Port 0, used for
Auxiliary Device Control

Ethernet Port

TRIGGER I/O
3 x Input
1 x Output Relay

S1
Serial Port 1,
Configuration via PC serial port
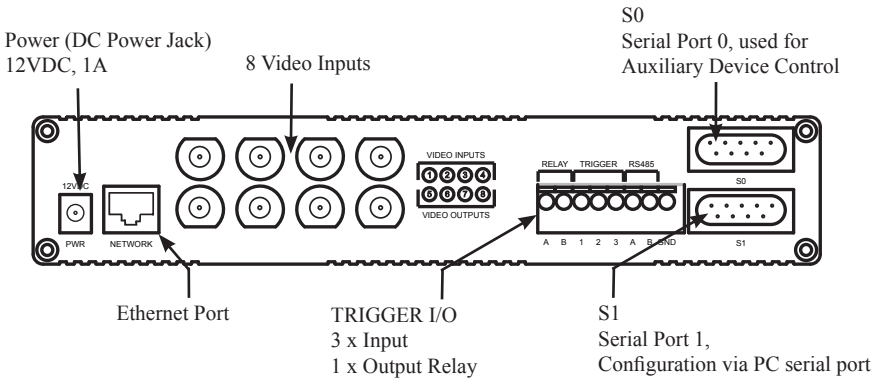
Back View

1.6　Connecting to a Network

A LAN or network connection is the simplest configuration for the Express server. The Express server simply needs an IP address (and other networking parameters) to make the live images and configuration menus accessible from any web browser on the network. There are two ways the Express server can be assigned an IP address: automatically or manually.

Install the StarDot Tools software by inserting the included CD-ROM and running `setup.exe`.

The StarDot Tools software is the easiest way to configure the Express server. If your network automatically assigns IP addresses, you will see the server's IP address listed in StarDot Tools. Simply double-click the IP address to browse to the Express server.

If for some reason you don't see the IP address or your network does not automatically assign IP addresses, you can manually configure the Express server using the StarDot Tools software:

❶ Connect one end of the null serial cable to the **S1** port of the Express server and the other end into an available serial port on your PC. If your computer does not have a 9-pin male serial port, you can use a USB to RS-232 adapter.

❷ Connect the Express server into a network hub, router or switch with a standard CAT 5 network cable (included).

❸ Run the StarDot Tools software and click on the Setup Wizard button.

❹ Follow the steps in the Setup Wizard. If you're unsure of some of the answers or you'd like more information on connecting the Express server to the Internet or your private network, read "An Overview of Network Connectivity".

1.7　An Overview of Network Connectivity

A LAN or network connection is the simplest configuration for the Express server. The Express server needs an IP address (and other networking parameters) to make the live images and configuration menus accessible from any web browser on the network. There are two ways the Express server can be assigned an IP address: automatically or manually.

Automatic IP Assignment (DHCP)

The Express server is shipped in an automatic IP assignment mode called DHCP (Dynamic Host Configuration Protocol). If your network has a DHCP server (most routers act as DHCP servers), it will automatically assign the necessary network parameters to the Express server. Before you can access the server, you will need to know which

IP address it was assigned. Use the StarDot Tools software to find the IP addresses of all StarDot servers on your local network.

Automatic IP Assignment (Zeroconf)

If your network does not have a router that automatically assigns IP addresses (DHCP), the Express server will auto-assign its own IP address. This is accomplished through Zero Configuration Networking or Zeroconf. The Express server will give itself an IP address like 169.254.X.Y, where X and Y can be any number between 0 and 255.The first two numbers will always be 169.254. If your computer or laptop is not set up with a manual IP address (i.e. it's in DHCP mode), it will also assign itself its own 169.254.X.Y address. You'll know this is the case if you see the Express server's IP listed in the StarDot Tools software with a 169.254.X.Y IP address.

If your computer has a manual IP address assigned, you can add a secondary IP or temporarily change your address to 169.254.100.100 and set the subnet mask to 255.255.0.0. Once you do this, you should be able to see the Express server's IP address in StarDot Tools. Double click the IP address and you can then use a browser to assign it a permanent IP address (see Chapter 3.3).

Manual IP Assignment

If you want to assign the Express server a permanent IP address, you will need the following information:

- IP Address (example: `192.168.1.5`)
- Subnet Mask (example: `255.255.255.0`)
- Gateway (example: `192.168.1.1`)
- DNS Servers (example: `24.1.179.1, 24.1.179.2`)

If you are installing the Express server on a company network, you will probably want to get this information from your system administrator.

The easiest way to manually configure the Express server is to connect it to a serial port on your computer. Plug one end of the null modem serial cable into the **S1** port on the back of the Express server and the other end into an available 9-pin serial port on the back of your computer (if your PC or laptop does not have a 9-pin serial port, you can purchase a USB-to-RS232 converter). Press the Setup Wizard button in the included StarDot Tools software to configure the video server.

If you don't have a serial port or using the Windows OS, there are a few options.

If the video server is connected to a network with a DHCP server and your computer is not running Windows, you can log into your router (or whatever is acting as your DHCP server) and view the DHCP clients table. The Express server will have a MAC address starting with 00:30:F4. Take note of the IP address and enter it in your web browser. Click on the configuration link, visit the network tab and assign the camera a manual IP address (preferrably outside of the router's DHCP range).

If the video server is connected to a network without a DHCP server (IP addresses are not automatically assigned) and your computer is not running Windows, you'll have to manually assign the camera an IP address. This requires terminal emulation software and the included null serial cable. On a Macintosh or on a Windows computer without a serial port, you'll need a USB RS-232 adapter.

Before having to go down the path of manually assigning the IP address via terminal software and a serial port, you may want review the earlier section on Zeroconf.

To talk directly to the video server via the included null serial cable, set your terminal software to a bitrate of 38,400 (8/N/1). Log in with username `admin`, password `admin` and use the following commands to assign the camera a temporary IP address. Once the IP has been assigned, browse to the video server with a web browser and configure the Express server so it has a permanent static IP address (see Chapter 3.8).

In the following example, the Express server is being assigned a temporary IP address of 192.168.0.2 via a terminal program connected to the S1 port on the back of the video server:

```
ifconfig eth0 192.168.0.2
route add -net 192.168.0.0 netmask 255.255.255.0 eth0
```

Once you can reach the video server via its temporary IP address, you'll want to immediately assign it a permanent static IP address in the network configuration menu.

Chapter 2   Installation

Before installing the Express server in its final location, it is important to configure and test it first (see Chapter 1).

2.1   Ethernet Connection

If the Express server will be connected directly to an Ethernet network, measure the distance between it and the nearest Ethernet hub or switch. This distance should not exceed 330 feet. If you wish to extend the distance further than 330 feet, you can add an Ethernet hub or switch between the server and the original switch.

Running Separate Ethernet and Power

Run standard CAT 5 or better Ethernet cable from the hub/switch to the **NET** jack on the back of the Express server. Plug the included power supply into the back of the Express server.

Running Combined Ethernet and Power

To save the hassle of running both power and network cables (or having to have a 110V or 220V power supply at the the video server location), StarDot offers combo Ethernet/power cables in lengths of 50, 100, 200 and 300 ft. Contact StarDot for more information (www.stardot.com)

2.2   Wireless Ethernet Connection

It is possible to turn the Express server into a WiFi device on a wireless network using external hardware (wireless Ethernet bridge, wireless Ethernet Access Point configured as a client, etc.). StarDot does not provide wireless Ethernet equipment.

2.3   Analog or Wireless Modem Connection

Because of the limited bandwidth of analog modem connections, StarDot does not recommend using the Express server with an analog modem.

Some wireless modems provide higher speeds than traditional analog modem connections. It is possible to use the Express with a cellular connection. Contact StarDot Technologies for more information.

Chapter 3   Accessing Express

3.1   Viewing the Video

Any Javascript or Java-enabled browser can be used to view the live video. Type the Express IP address in your browser's address bar (example: `http://192.168.1.5`) or use StarDot Tools to find the camera's IP address.

3.2   Accessing the Configuration Menus

Virtually any web browser can be used to access the Express server's configuration menus. To access these menus, type the IP address in your browser's address bar (example: `http://192.168.1.5`). This will bring up the live image page. Click on the Configuration link to access the configuration menus. You will be prompted for a User Name and Password. Use `admin` for both.

Tip: We highly recommend that you change the default password. To do so, see Chapter 3.10.

3.3   Image Properties

All image-related configuration options are located on the Image Properties page. After making changes, click the Apply button to save the new settings.
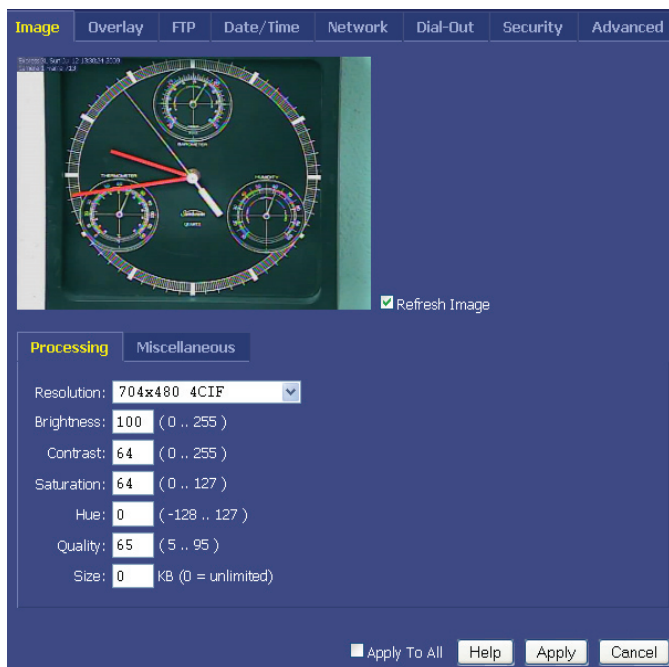
PROCESSING

Resolution

Resolution is the dimensional size of the image, measured in pixels. The higher the resolution, the larger the picture appears in your browser, and the longer it takes to download.

Brightness

This value determines the brightness of the image. Most video cameras have automatic exposure compensation so you'll rarely need to adjust the brightness.

Default: `100`

Contrast

This value determines the amount of contrast in the image. The higher the value, the larger the difference between dark and light areas will be. Conversely, low contrast produces a hazy image with little difference between the dark and light areas. In most cases, this value should be left at its default value.

Default: `64`

Saturation

Saturation determines the amount of color in the image. The higher the value, the more saturated the colors become. Conversely, low saturation produces an image with little color information. A value of 0 will produce a grayscale (black & white) image.

Default: `64`

Hue

Hue determines the color balance of the image. You will rarely need to change this value.
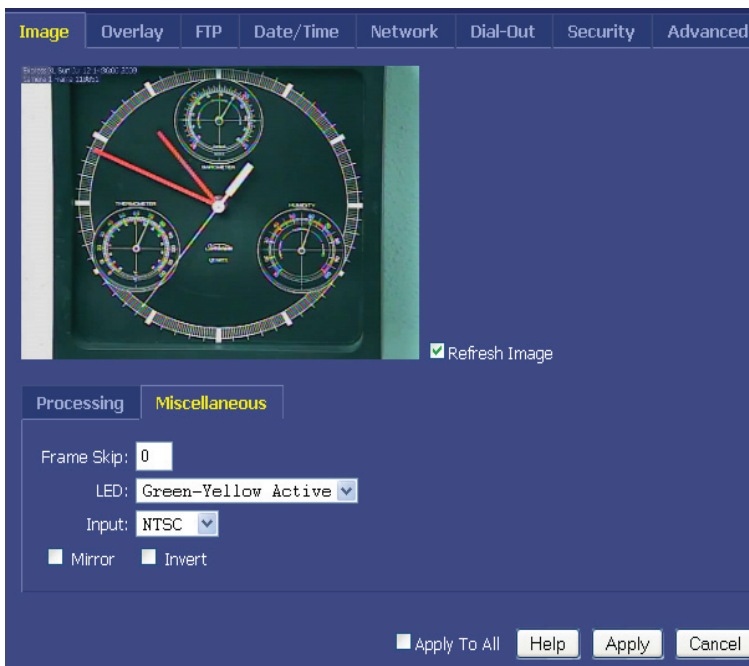
Default: `0`

Quality

Quality represents the amount of JPEG compression performed on the image. A high value produces the highest quality image at the expense of file size (and transfer speed). A low value produces a small file size (and hence, quicker transfer speed) at the expense of image quality. A compromised value in the range of 50-80 is recommended. **A value higher than 80 is not recommended, as it greatly increases the file size with very little noticeable difference in image quality.**

Default: `80`

Size

You can limit the JPEG frame size as a means of throttling bandwidth. The value is in kilobytes (KB). 0 means no maximum.

Frame Skip

To lower the frame rate (and bandwidth), increase this value. A value of 0 means full frame rate, a value of 1 means skip every other frame, a value of 2 means skip every two frames

Default: 0

LED

The video input activity LEDs can be configured in a number of different ways:

- **Off** - LED is always off.
- **Always Green** - LED is always on and green.
- **Green-Yellow Active** - LED remains green until image activity occurs (viewing, recording, FTP, etc.), in which case it momentarily blinks yellow.

3.4   Overlay Properties

The Overlay Properties allow you to edit the text displayed on the video frames.

TIME/DATE/TEXT STAMP

Text

Any text entered into this field will be stamped onto the live image. Camera location and copyright information are two examples. In addition to static text, the current date and time, as well as internal camera parameters, can all become part of the text on the live image. This is handled through markup characters. For instance, %d inserts the current day of the month on the live image. There is a complete list of markup characters below and a mini reference on the Overlay page itself.

> Default: Express XL %a %b %d %H:%M:%S %Y
>   Camera $I Frame $n

Scale

The size of the font can be scaled from 1x (smallest size) to 4x (largest size). The larger fonts sizes are useful for high resolution images that are being resized smaller on a web page.

Markup Character Reference

All of the following markup characters can be used in the text overlay. Additionally, any date/time markups (preceded by the `%` character) can be used to compose the filenames in the FTP Properties Page, which is very useful for archiving images with unique filenames (based on the current date and time, for instance).

Date Markups

`%Y`	Year, Four-Digit [2000-2199]
`%y`	Year, Two-Digit [00-99]
`%m`	Month, Numerical [01-12]
`%B`	Month, Full [January-December]
`%b`	Month, Abbreviated [Jan-Dec]
`%U`	Week of Year (Starting with Sunday) [00-53]
`%W`	Week of Year (Starting with Monday) [00-53]
`%d`	Day of Month [01-31]
`%w`	Day of Week, Numerical (Sunday=0) [0-6]
`%u`	Day of Week, Numerical (Monday=1) [1-7]
`%A`	Day of Week, Full [Sunday-Saturday]
`%a`	Day of Week, Abbreviated [Sun-Sat]
`%j`	Day of Year (Julian Day) [001-366]
`%p`	AM/PM, Uppercase
`${Z}`	Time zone

Time Markups

`%H`	Hour, Military [00-23]
`%I`	Hour, Standard [00-12]
`%M`	Minute [00-59]
`%S`	Second [00-59]
`$[`	Milliseconds [000-999]

Date & Time Shortcut Markups

`%D`	Date String [mm/dd/yy]
`%r`	Time String [HH:MM:SS AM/PM]
`%T`	Time String, Military [HH:MM:SS]

Symbol Markups

`\260`	Degree Sign, º
`\251`	Copyright Sign, ©
`\256`	Registered Sign, ®
`\261`	Plus-Minus Sign, ±
`%%`	Percentage Character, %

Camera Markups

`${IF}`	Internal Server Temperature, in Fahrenheit
`${IC}`	Internal Server Temperature, in Celsius
`${F}`	Weather Station Temperature, in Fahrenheit
`${C}`	Weather Station Temperature, in Celsius
`${HUM}`	Weather Station Relative Humidity
`${MB}`	Weather Station Pressure in Millibars (hPa)
`${HGIN}`	Weather Station Pressure in Inches of Mercury
`${HGMM}`	Weather Station Pressure in Millimeters of Mercury
`$n`	Frame Number
`$u`	Camera Uptime

The Express server supports much of the ISO 8859-1 character set, which is very useful for adding foreign language text to the overlay. In most cases, you can also copy and paste characters from other applications.

3.5   FTP Properties

The FTP Properties instruct the Express to upload images to a remote server. After making changes, click the Apply button to save the settings in the video server.

FTP Upload

FTP stands for File Transfer Protocol, one of the most popular methods for transferring files over the Internet. In addition to camera serving images from its internal web server, it can also upload images to an external web server. This is useful if you plan on having a large number of visitors viewing the live images or if you'd like to archive every image the camera takes. To enable image uploads, check FTP Upload on and fill out the options below.

Required Fields

Hostname

The hostname is the name of the server where you'd like the camera to upload images to. It can be a machine name or IP address. Do not include the http:// or ftp:// header or a path.

Example: example.com or ftp.example.com

Username

This is the username or login name assigned to you by your hosting company.

Password

This is the password assigned to you by your hosting company.

Path/File

This field combines two elements, the image filename, preceded by an optional path or directory. Ask your web host if you need to use a directory path for the image filename. Otherwise, you can just use the filename of the JPEG image.

Example Without Path: `camera.jpg`
Example With Path: `/html/images/camera.jpg`

Advanced Fields

Rotating Archive

If enabled, the Express will use a renaming scheme to store the last 10 images on your server. A hyphen, followed by the archive number (0-9) is automatically appended to the end of the filenames.

Default: Off

Passive Mode

If the Express is behind a proxy server, enable passive mode. If you are unsure if you need passive mode, it is usually safe to enable it anyway.

Default: On

Timeout

If the FTP transfer is unsuccessful, The Express server will abort and re-initiate the process after the specified amount of seconds.

Default: `120`

Delete Before Rename

The Express Server employs a file renaming scheme, which greatly reduces the possibility of file collisions between the camera uploading an image and viewers downloading the image. The image is uploaded with a `.tmp` extension. Once uploaded the tmp file is renamed without the `.tmp` extension. Certain FTP/Web servers do not allow a file to be renamed to a filename that already exists. To get around this problem, enable Delete Before Rename.

Default: Off

IIS 4.0

Some FTP servers lock a file when a file with the same filename is constantly uploaded and renamed. If you have problems seeing your image update on your web site, try enabling the IIS 4.0 option. This option is only valid if Delete Before Rename (above) is also enabled.

Default: Off

Secondary Path/File

The Express server can optionally upload the image with a separate path and/or filename from the Path/File above. This provides a very convenient way to archive images on your server while still maintaining a statically named live image. One way to do this is to include date/time markup characters as part of the filename. The current upload time of the image will become the filename.

For example, the filename `%Y-%m-%d-%H%M%S.jpg` automatically translates to `2009-06-01-153015.jpg` if the date and time of the upload is June 1, 2009 at 3:30:15 PM.

Tip: *For a complete list of Date/Time markup characters, click the Help button on the Overlay page.*

Example Without Path:

```
netcam-%Y-%m%d-%H%M%S.jpg
```

Example With Path:

```
public_html/netcam-%Y-%m%d-%H%M%S.jpg
```

Only the characters beginning with the percentage symbol (`%`) are valid. It not advisable to use date/time characters that insert `/` `\` `:` or space characters, as this can confuse the FTP/Web server.

Current IP Link Path/File

If the Express server is using an external modem to dial out to an ISP, it will most likely be assigned a different IP address every time it connects. This makes it next to impossible to access the Express server directly from a browser since its IP address is not known. To eliminate this problem, the Express can upload a small web page every time an image is uploaded. The web page contains the current IP address of the Express server so you can configure the server remotely. Clear this field if you don't want this file to be uploaded.

Default: `ip.html`

Schedule

Scheduling tells the Express when and how often to FTP images to your server.

Delay

This tells the Express to delay a specified number of seconds between FTP image uploads. The speed at which the Express can upload varies on the image resolution, amount of JPEG compression, Internet connection and network congestion.

Keep in mind that the overhead of FTP and the Internet doesn't allow for the same update rates that you see when accessing the Express server directly with a browser. It is safe to say that FTP restricts 352x240 uploads to once every 3-6 seconds, even on a DSL or cable connection. 704x480 images will probably not upload faster than once every 10-15 seconds.

Default: 30

Upload Window

The Express can upload images 24 hours a day, seven days a week, or you can set whatever time window and days of the week you like. Use military time for the beginning and ending window times.

Example: You can configure the Express to only upload Between 07:30 and 18:30 only on Mon, Tue, Wed, Thu and Fri.

3.6   Date/Time Properties

The Date/Time Properties allow you to set the date and time in the Express server. After making changes, click the Apply button to save the settings in the video server.

Setting the Date and Time

Automatic vs. Manual - For the most accurate date & time, having the camera automatically synchronize with a network time server is recommended.

Automatic Time Set

When Automatic time synchronization is enabled, the camera will query a network time server and synchronize the camera's date and time, usually accurate to within seconds or less. This will happen every time the camera is powered on or rebooted, provided it is connected to the Internet or a network with a time server.

- **Time Server** - The name (or IP address) of a time server is entered here. Some popular ones include:

```
pool.ntp.org
tock.usno.navy.mil
time-b.nist.gov
```

Note: While these time servers have proved reliable over the years, there is no guarantee that they will always be available to the public.

Manual Time Set

If you don't have access to a time server, you can manually set the video server's clock. You can do this in one of two ways. Using the Sync button, you can synchronize the Express server's clock to your PC's clock. You may also manually modify the time and date in the Date/Time box. In either case, be sure to hit the Apply button after you've set the time.

TIME ZONE

The Express server integrates your current time zone into the time/ date string and can even automatically adjust for daylight savings time. Type in the time zone code from the list on this page. If your time zone is not listed, enter your abbreviated time zone followed by the number of hours you are behind GMT (if you're ahead of GMT, add the "-" character before the value).

`HST10`	Hawaiian Standard Time
`AT10ADT`	Aleutian Standard/Daylight Time (Alaska, parts)
`YST9YDT`	Yukon Standard/Daylight Time (Alaska, parts)
`PST8PDT`	Pacific Standard/Daylight Time
`MST7MDT`	Mountain Standard/Daylight Time
`MST7`	Mountain Standard Time (Arizona)
`CST6CDT`	Central Standard/Daylight Time
`EST5EDT`	Eastern Standard/Daylight Time
`AST4ADT`	Atlantic Standard/Daylight Time
`NST3:30NDT`	Newfoundland Standard/Daylight Time
`WET0WETDST`	Western European Standard/Daylight Time
`PWT0PST`	Portuguese Winter/Summer Time
`MEZ-1MESZ`	Mitteleuropaeische Zeit/Sommerzeit
`MET-2METDST`	Middle European Standard/Daylight Time
`SAST-2SADT`	South African Standard/Daylight Time
`JST-9`	Japan Standard Time
`WST-8:00`	Australian Western Standard Time
`CST-9:30`	Australian Central Standard Time
`CST-9:30CDT`	Australian Central Standard/Daylight Time
`EST-10`	Australian Eastern Standard Time
`EST-10EDT`	Australian Eastern Standard/Daylight Time
`NZST-12NZDT`	New Zealand Standard/Daylight Time

3.7   Network Properties

The Network Properties page contains all the IP configuration information for setting up the Express server on a network. After making changes, click the Apply button to save the settings in the Express server.

Ethernet

If your network is Ethernet-based (LAN, cable modem, DSL), use the **NET** port on the back of the Express to access the server. The first step to network access is assigning the Express an IP address. There are two ways in which this can be done: automatically (DHCP) or manually (static).

IP Assignment

DHCP

By default, the Express comes up in DHCP mode, meaning that it probes the network for a DHCP server. If there is a DHCP server on the network, the Express is automatically assigned an IP address, subnet mask, gateway, and name servers. No manual configuration is needed. One negative of DHCP mode is not knowing what IP address the Express server was given. Use the StarDot Tools software to find DHCP-assigned StarDot servers on your local network.

Manual

If you'd like to manually assign the Express a static IP address,

set the Express to Manual IP Assignment and provide the following information:

- **IP Address** - The IP address you'd like to assign to the Express. Consult your network administrator to determine what IP address is OK to use. If you are setting up the Express behind a residential gateway or cable/DSL router, your IP address will be something similar to `192.168.1.5`.

- **Subnet Mask** - Find out your netmask from your network administrator. If you're on a private network, your netmask will usually be `255.255.255.0`.

- **MAC Address** - This is the factory-set Ethernet address of the Express server. It also serves as the Server Serial ID. It cannot be changed from the web menu.

Network

Hostname

Alphanumeric name of the Express that can get linked to the Express video server's IP address. This is disabled if DHCP is enabled.

Default: `expressxl`

Gateway

In most cases, this is a machine name or IP address that serves as a gateway to the Internet. If the Express is on a private network behind a router/gateway, you would enter the IP address of the router/gateway. This is disabled if DHCP is enabled.

Name Servers

DNS

This is the domain name server's IP address. This is critical if your FTP server and/or time server is entered as a domain name and not an IP address. Check with your ISP to determine your name servers (you can list up to three). This is disabled if DHCP is enabled.

Web Server

The Express server has a built-in web server which is used to serve both the live image and configuration pages.

Web Server Port

In most situations you will want to leave the web server port at its default value of `80`. The only situation that calls for changing the port number is if you're hosting one or more Express servers behind a residential router/gateway that supports port forwarding.

This allows you to access multiple Express Servers behind a single public IP address (most DSL and Cable Modem accounts provide only one public IP address).

Many routers can be configured to forward unique port numbers to individual IP addresses on the private network side of the gateway.

Example: *Assign the Express server a web server port of 8085. In your router, under the port forwarding section, route port 8085 to the Express server's IP address.*

Use caution when changing the web server port number. If it's anything but 80, you will not be able to access it normally through a browser. You will always need to add `<:port number>` to the end of the IP address (Example: `http://192.168.1.5:8085` from the local network or `http://208.146.196.41:8085` on the Internet).

Default: `80`

Video Streaming Support

One way the browser or NVR software can pull the motion JPEG stream from the camera is using each camera's unique streaming port. If you want to disable this non-password port for security reasons, set the port to 0. Most NVRs can read the motion JPEG stream without using this open port.

3.8   Dial-Out Properties

The Dial-Out Properties page contains all the ISP dial-up configuration information for setting up the Express connected to an analog modem. After making changes, click the Apply button to save the settings in the Express server.

Image	Overlay	FTP	Date/Time	Network	Dial-Out	Security	Advanced

■ INTERNET DIAL-OUT CONNECTION

Connection: [S0 ▾]
Baud Rate: [38400 ▾]
Initialization String: [AT]
Phone Number: [   ]
Timeout: [180]
Username: [username]
Password: [••••••••]
☑ Default Connection
■ Always Up
■ Send CR After Login
■ Shell Login

[Help] [Apply] [Cancel]

INTERNET DIAL-OUT CONNECTION (PPP)

If the Express server's primary connection to the Internet will be a dial-up modem connection to the Internet, enter your ISP (Internet Service Provider) account information here.

Check this option on if you'd like the Express to use an external analog modem to dial the Internet.

Baud Rate

This represents the speed or baud rate at which the Express will communicate with the external analog modem. For most dial-up accounts, a baud rate of 38400 or 19200 works best.

Initialization String

This is a string that configures the analog modem before dialing the Internet. The default string works fine in most cases.

Default: AT&F

Phone Number

The phone number of the ISP (Internet Service Provider). You can embed special characters in the phone number.

, = pause one second
\# = same as # button on phone
* = same as * button on phone

Timeout

The Express will attempt to dial up the ISP for the specified number of seconds. If the Express is unable to connect during this time period, it will stop and start over again.

Default: 180

Username

The username or login assigned to you by your ISP.

Password

The password assigned to you by your ISP.

Default Connection

Enabling this option makes the ISP dial-out connection the Express 1's default connection to the Internet.

Default: On

Always Up

If enabled, the Express will attempt to stay continuously connected to the Internet. If disconnected, it will automatically attempt to reconnect. If the Express is configured to upload images to a server via FTP, it is not necessary to enable this option; the Express will automatically attempt to dial into the Internet when an image is scheduled to upload if dial-out is enabled.

Default: Off

Send CR After Login

This advanced ISP option tells the Express to send a CR (Carriage Return) after logging in. Most ISP's don't require this, but some do.
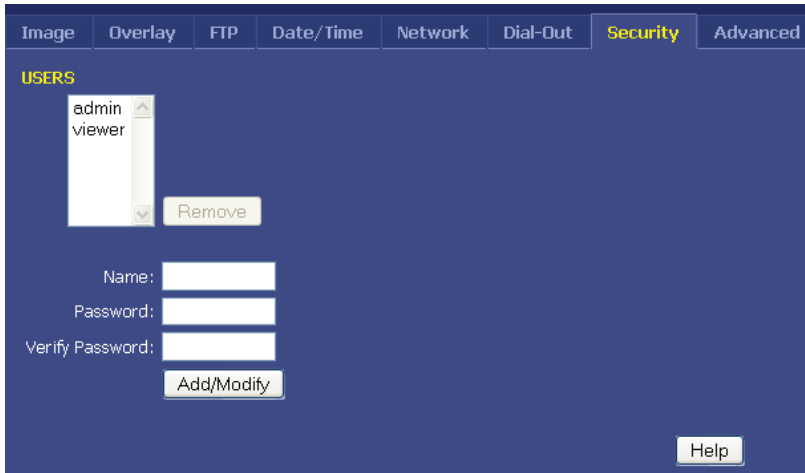
Default: Off

Shell Login

This advanced ISP option tells the Express to perform a shell login. Most ISP's don't require this, but some do.

Default: Off

3.9 Security Properties

The Security properties page contains user/password information for securing the Express server from unwanted visitors.

Express Users

The Express server has its own multi-user capable, password protected operating system. By default, the live images can be viewed by anyone and only the configuration pages are password protected. However, these options can be changed.

admin - The *admin* user has configuration and viewing rights. It is strongly recommended that you change the default password (initially "admin") to something else. This will prevent anonymous users from logging into the camera and making changes. It is important to choose your password carefully. Pick something that cannot easily be guessed. The password can be a combination of alpha and numeric characters, upper and lowercase (maximum 8 characters).

> **Tip:** *Do not use the same password you use on another system or anything that can be easily guessed. At the same time, do not forget or lose your password or you will not be able to access the Express configuration-menus without resetting the unit to its default settings.*

viewer - The *viewer* user only has viewing rights (this user cannot access the configuration menus). By default, the *viewer* user has no password. This allows anyone to view the images on the camera without being prompted for a password. If you want to block public access to the live image, you will need to change the password for the *viewer* user.

To modify the password of an existing user, click on the user name and then type in a new password in the password field (retype it in the verify password field). Then click the Add/Modify button.

Adding a New User

To add a user to the Users list, type in the desired username in the Name field. Type and retype a password in the Password fields. Click the Add/Modify button. New users will only have viewing rights; only the *admin* user can make configuration changes in the Express server.

Deleting a User

To remove a user from the Users list, click on the desired username and click on the Remove button. Note: The default users, *admin* and *viewer*, cannot be removed.

3.10 Advanced Menus

The advanced menu allows you to configure some advanced features inside the video server such as triggers and dynamic DNS support.

3.11 Miscellaneous

Reboot Camera

Click this to reboot the video server.

Upgrade Firmware

Allows you to select a new firmware and upgrade the video server. You can also use the StarDot Tools software to upgrade the firmware. It is recommended that you clear the configuration settings before upgrading (see the manual config section).

3.12 Manual Config

Configuration Files

This advanced menu provides access to all of the internal configuration files. We recommend that you do not edit these files unless you are well versed in Linux and the Express server settings.

3.13 Pan/Tilt/Zoom Functions

To use a pan/tilt/zoom camera with the Express server, you must select a compatible model from the PTZ configuration menu. You may need an RS-232 to RS-485 converter to control certain PTZ cameras.

This PTZ menu seen here will appear on the main viewing page of the Express server.
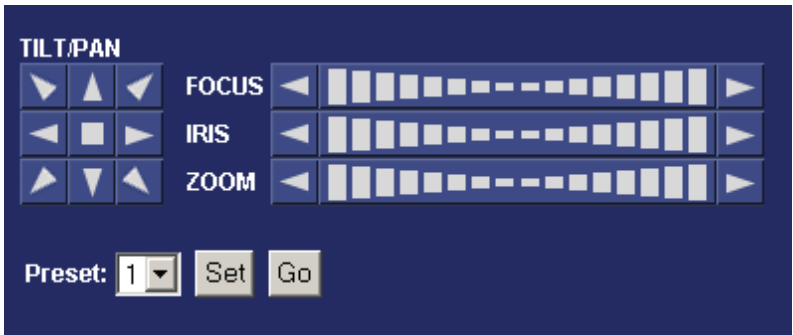
Tilt/Pan

Controls the Pan/Tilt movements of the camera.

Focus

Allows user to manually focus the camera. For a single increase or decrease of focus, you must click the arrows at each end of the focus control panel. If a greater amount of increase or decrease is desired, you will need to click on the varying bars located in the center of the focus control panel.

Iris

Allows user to manually control the open and close functions of the iris. For a single increase or decrease of iris, you must click the arrows at each end of the iris control panel. If a greater amount of increase or decrease is desired, you will need to click on the varying bars located in the center of the iris control panel.

Zoom

Allows user to manually zoom in and out. For a single increase or decrease in zoom, you must click the arrows at each end of the zoom control panel. If a greater amount of increase or decrease is desired, you will need to click on the varying bars located in the center of the zoom control panel.

Presets

This option allows the user to preset a focal point into the Express server's memory. The number of available preset focal points depends on the model of the PTZ camera.

To set a preset focal point use the pan/tilt controls and zoom controls until you have your desired focus point. Then using the drop down list select the desired number for that preset, and click the "Set" button. This will save your focal point into memory.

3.14 Dynamic DNS

If the Express server is behind a DSL or cable modem connection and the public IP address changes, you can use tzo.com as a dynamic DNS service. This maps your dynamic (temporary) IP address to a static (permanent) hostname of your choice (i.e. yourcompany.stardotcams.com or yourname.remotecam.com).

Why is knowing your public IP address valuable? If your router is configured to "port forward" port 80 to the camera's local IP address, you can browse to the camera directly from anywhere on the Internet. This is useful for viewing the camera live and making configuration changes from a remote location. For information on configuring port forwarding on a router, visit http://www.portforward.com, click on routers, select your model and click on "Default guide".

To set up a TZO account, visit http://stardot.tzo.com. After you've signed up, enter the appropriate information in either NetCam SC or your router (if it supports DDNS).

3.15 Trigger Properties

The trigger menu allows you set up the video server to capture and upload a series of images based on a triggered event using the input ports on the back of the video server.

Trigger Overview

By connecting an alarm system, motion detector or other type of sensor to the back of the Express server, it is possible to gather a series of images when the sensor "triggers" the video server. Wiring examples can be found at the end of this chapter.

EXTERNAL TRIGGER

I/O Port

Select with I/O port your trigger source is connected to.

I/O Level

Select the state of your trigger source's output.

SCHEDULE

The server can wait in trigger-capture/upload mode 24 hours a day, seven days a week, or you can set whatever time window and days of the week you like. Use military time for the beginning and ending window times.

Example: You can configure the server to only upload Between 07:30 and 18:30 only on Mon, Tue, Wed, Thu and Fri.

PRE-BUFFER

Pre-buffered images are images that are stored before the event trigger occurs. For example, if you connect a door sensor to the server with 10 image pre-buffering enabled, 10 frames of video that occurred before the door was opened will be captured/uploaded.

If pre-buffering is enabled, the server will continuously buffer images in a rotating loop. This will affect the video frame rate if you'd like to view live streams at the same time. Most applications don't require pre-buffering. Only enable this option if you require video frames before the actual trigger takes place.

Delay

The number of milliseconds to delay between image captures. For the fastest possible frame rate, set this to 0. Viewing other video sources during the triggered capture will affect the recording speed. Assuming no other video sources are being viewed/uploaded, here are some example frames rates for a single triggered video source:

0 ms = Max Speed (10 frames per second)
250 ms = 4 FPS
1000 ms = 1 FPS

Count

The number of pre-buffer images to store. There is a finite amount of memory in which to store images. Keep the total number of pre and post-buffer medium resolution images to below 100, even less for full size images.

POST-BUFFER

Post-buffered images are images that are recorded after a triggered event occurs. For example, if you connect a door sensor to the server with 20 image post-buffering enabled, 20 images will be captured/uploaded after the door opened.

Delay

The number of milliseconds to delay between image captures. For the fastest possible frame rate, set this to 0. Viewing other video sources during the triggered capture will affect the recording speed. Assuming no other video sources are being viewed/uploaded, here are some example frames rates for a single triggered video source:

0 ms = Max Speed
250 ms = 4 FPS (frames per second)
1000 ms = 1 FPS

Count

The number of post-buffer images to store. There is a finite amount of memory in which to store images. Keep the total number of pre and post-buffer medium resolution images to below 100, even less for full size images.

UPLOAD VIA FTP

If you'd like the event-triggered image captures to be uploaded to an FTP server, select this option. The "Upload via FTP" parameters are independent of the regular image FTP parameters (see Chapter 3.5).

Hostname

The hostname is the name of the server where you'd like the video server to upload images. It can be a machine name or an IP address. Do not include the `http://` or `ftp://` header or a path.

Example: `example.com` or `ftp.example.com`

Username

This is the username or login name assigned to you by your hosting provider.

Password

This is the password assigned to you by your hosting provider

Path

Specify the path on your FTP server where you'd like the images stored. There is no need to specify a filename. The video server automatically creates sequential filenames (image0-000.jpg, image0-001.jpg, image0-002.jpg, where image0 means images from the first video input).

Passive Mode

If the Express is behind a proxy server, enable passive mode. If you are unsure if you need passive mode, it is usually safe to enable it anyway.

Default: On

Timeout

If the FTP process hasn't completed within the time specified here, the Express will attempt to restart the process.

Default: 120

UPLOAD VIA SMTP (EMAIL)

If you prefer the event-triggered image captures to be e-mailed, select this option. If you've enabled a large number of images, this can add up to a large e-mail attachment.

Mail To

Email address where images are to be sent.

Mail From

Specify a "from" e-mail address. This can be made up.

3.16 Trigger Sensor Connection

Express 2

1 Opto-Isolated Trigger Input 1-A

2 Opto-Isolated Trigger Input 1-B

3 Relay 1-A

4 Relay 1-B

The Express 2 I/O connector contains one opto-isolated trigger input and one relay connection.

Pins 1 and 2 are the opto-isolated input, providing 2500VRMS isolation. To trigger, apply positive voltage to pin 1 and apply negative or ground to pin 2. The trigger voltage should be 3.5VDC to 12VDC, 1.4mA minimum. You may connect directly to a 12VDC alarm system, current-providing door sensor, etc. but the polarity must be correct or you risk the possibility of false triggers. Sensors such as simple open/closed switches cannot be used without a pull-up voltage to provide the 1.4mA@3.5V minimum.

Pins 3 and 4 are the relay, which can handle 2A @ 28VDC. It is

good for 100,000 cycles at maximum load, 100 million when unloaded. The relay is rated for 0.5A @ 125VAC; however it should never be used to directly control AC voltages from the wall outlet. It will wear out rapidly and may result in sparking with risk of fire. Switching mechanisms designed for controlling wall outlet power, which can be triggered from a low DC voltage, are available.

Express 4/8

1	Relay 1-A
2	Relay 1-B
3	Trigger Input 1 (+5V pull-up)
4	Trigger Input 2 (+5V pull-up)
5	Trigger Input 3 (+/- 64V OK)
6, 7	Future Use
8	Ground ("Common" for Trigger Inputs)

The Express 4 and 8 I/O connector contains three non-isolated trigger inputs and one relay connection.

Pins 3 and 4 are trigger inputs 1 and 2, both of which have a 5v pull-up. Trigger input 1 and 2's pull- ups can be shorted to the ground pin (also present on the connector) to provide a second state. A normal operation might be a magnetic switch on a window or door which is normally closed, and which is broken when the door is opened, giving the trigger signal.

Pin 5 is a diode-clamped trigger which can accept +-64V as its input, with negative voltages generating an internal "0" condition, and anything over +3V generating a "1" condition.

Pins 1 and 2 are the relay, which can handle 2A @ 28VDC. It is good for 100,000 cycles at maximum load, 100 million when unloaded. The relay is rated for 0.5A @ 125VAC; however it should never be used to directly control AC voltages from the wall outlet. It will wear out rapidly and may result in sparking with risk of fire. Switching mechanisms designed for controlling wall outlet power, which can be triggered from a low DC voltage, are available.

Troubleshooting Guide

The StarDot Tools software doesn't list the Express server on my local network and/or is not accessible via its IP address.

1. Double check all cable connections and make sure the Express server's network cable is plugged into an active Ethernet hub, switch or router. Make sure the Express server's power LED is on.

2. Connect the Express server to a PC's serial port with the included null modem cable to verify network settings with the StarDot Tools software.

The Express is slow to respond on a web browser.

1. Set the JPEG quality to 70 or below. The higher the JPEG quality, the bigger the image file size, with very little improvement in image quality.

Images are not uploading to FTP server.

1. Double check all settings including hostname, username, password and path by using third party FTP client software (the command prompt FTP in Windows is a good test).

2. Try using an IP address in the hostname, or double check your DNS settings. For a dial-up Express, do not use an IP address for the hostname.

3. Try turning on the advanced FTP options "Delete Before Rename" and "IIS 4.0"

4. Telnet into the Express server type `ftpscript ftp0.scr` and press Enter. Watch the results for errors. (Note: To telnet from windows, click on Start, Run and type telnet <express_IP_address> and click OK.

Technical Support

Technical support for StarDot customers is available directly from StarDot Technologies. Answers to most questions can be found at our web site at http://www.stardot.com.

Technical Support and Software/Firmware Downloads
http://www.stardot.com/kb

Technical Support via E-mail
help@stardot.com

Technical Support via Phone
(714) 908-2380, 6AM - 5PM PST, Monday-Friday

Specifications

TECHNICAL SPECS: Express 2, 4 and 8

Image Compression	Industry Standard JPEG, M-JPEG
Frame Rate	*Express 2:* 1 x 30 FPS D1 or 2 x 5 FPS D1 *Express 4:* 4 x 30 FPS D1 *Express 8:* 8 x 7.5 FPS
Resolution	NTSC: 704x480, 352x240, 176x120 PAL: 704x576, 352x288, 172x144
Video Input	*Express 2:* 2 x BNC (dual input or looping output) or 1 x S-Video *Express 4:* 4 x BNC inputs and 4 x BNC looping outputs *Express 8:* 8 x BNC inputs All BNC inputs are composite video signal w/75 ohm termination.
Video Decoder	Adaptive 2/4-line comb filter for two dimensional chrominance/luminance separation resulting in increased luminance and chrominance bandwidth for all PAL and NTSC standards as well as reduced cross color and cross luminance artifacts
Network Connection	1 x 100-baseT Ethernet (10/100 compatible)
Network Protocols	TCP/IP, HTTP, FTP, DHCP, ARP, PING, TELNET, DAYTIME, NTP, SMB, NFS, SMTP, PPP

I/O Connectors	*Express 2*:
	  1 x Fully Isolated Digital Alarm Inputs
	  1 x Fully Isolated Relay, 28VDC 2A / 125VDC 0.5A
	Express 4/8:
	  3 x Digital Alarm Input
	  1 x Fully Isolated Relay, 28VDC 2A / 125VDC 0.5A

Internal Operating System	uClinux
Security	Separate password-protected user accounts for configuring the server and viewing the images, additional user account can be added.
Operating Temperature	-40°F to +120°F (-40°C to +49°C)

Physical	*Express 2:*
	  Size: 3.6" W (92 mm) x 1.7" H (44 mm) x 6.0" D (152 mm),
	  Weight: 13 oz (369 grams)
	Express 4/8:
	  Size: 9.3" W (235 mm) x 1.8" H (45 mm) x 5.8" D (147 mm),
	  Weight: 13 oz (369 grams)

EMI Approval	FCC Class A, CE (EN55024/1998, EN5022/1998)
Power Requirements	12VDC 1A

FCC STATEMENT OF COMPLIANCE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notes

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