DGy 201
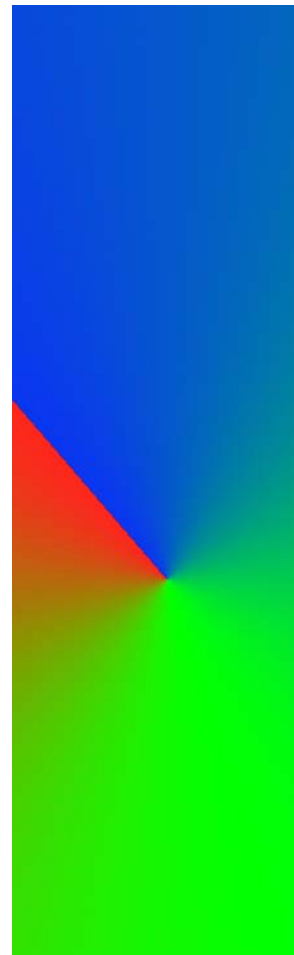# Digital Graphics Recorder
User's Guide
Equipped with Simultaneous Record/Play Option

Revision 2.0.2— July 5, 2006

DOCUMENT

- DGy Model 201 User Guide
- P/N 350-8697
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NOTICE

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INTRODUCTION

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IN THIS CHAPTER

This chapter provides an introduction to the features of the *DGy 201* high resolution graphics recorder.

PRODUCT OVERVIEW

The RGB Spectrum *DGy 201* is a family of recorder products designed specifically to record and replay high-resolution graphic images in real time. The *DGy 201* family of products employ the wavelet based JPEG 2000 compression standard. This state-of-the-art method of coding and compression offers numerous advantages, including high coding efficiency, error-resiliency, efficient scalability and excellent image quality.

The *DGy 201* is a single channel recorder that accepts a wide variety of standard and non-standard graphics signals. Multi-channel recording can be accomplished simply by linking single channel *DGy 201* recorders to build multi-channel capability from a single control point.

SYSTEM FEATURES

The *DGy 201* includes the following features and functions:

- **Quality, Utility** — The *DGy 201* is a graphics recording, playback and storage device, offering exceptional quality, flexibility and ease of use — all delivered in a compact 1RU package.

- **Models** — *DGy 201* is available in four different models differentiated by functionality and performance. Refer to the "**DGy Models**" section for details.

- **System Input/Output** — *DGy 201* supports RGB, DVI and optional composite video inputs, RGB and DVI outputs, plus stereo audio I/O. Refer to the "**DGy A/V Inputs and Outputs**" section for details.

- **Record Storage** — *DGy 201* recording systems include internal disk-based storage. Refer to the "**Recording and Replay**" section for full details.

- **File Transmission** — The DGy's standard networking capability enables users to transfer recorded clips to remote computers over 100 Base-T connections. Refer to the "**Networking and Control**" section for additional details.

- **Resolution Flexibility** — DGy models support a wide range of resolutions and frame rates as listed below:

Table 1-1. *DGy 201* Resolution and Frame Rates

Resolution	Maximum Frame Rate	DGy Model
1024 x 768	47 Hz (frames per second)	200, 201 , 300, 301
1280 x 1024	30 Hz	200, 201 , 300, 301
1600 x 1200	20 Hz	201, 301

- **Compression and Storage** — *DGy 201* offers selectable compression rates, enabling users to balance quality and recording capacity as required for each application. Some examples are shown in Table 1-2 below.

Table 1-2. *DGy 201* Record Time (single 238 GB disk)

Resolution	Quality Setting		
		Mid (24:1)	Low (34:1)
1024 x 768 @ 30 Hz	14.9 hrs.	22.4 hrs.	31.8 hrs.
1280 x 1024 @ 30 Hz	9.0 hrs.	13.5 hrs.	19.1 hrs.
1600 x 1200 @ 20Hz	-	13.8 hrs.	19.5 hrs.

NOTE: These times can be doubled by adding a higher capacity (476 GB) drive or the optional fixed disk.

- **Streaming** — *DGy 201* offers the optional ability to record to disk or stream signals via Ethernet to a recipient PC in real time. In this manner remote storage or viewing can be accomplished. Refer to the "**Recording and Replay**" section for additional examples.

- **Timecode** — *DGy 201* includes flexible timecode capability for synchronization and the time-stamping of clips. Refer to the "**External Timecode Synchronization**" section for details.

DGY MODELS

The *DGy 201* Digital Graphics Recorder is available in different models, as indicated in the table below:

Table 1-3. *DGy 201* Models

Feature	DGy 200	DGy 201	DGy 300	DGy 301
Standard removable drive	✓	✓	N/A	N/A
Optional internal fixed drive	✓	✓	N/A	N/A
Maximum input resolution	1280 x 1024	1600 x 1200	1280 x 1024	1600 x 1200
Composite video input	N/A	Option	N/A	N/A
FTP file transfers	✓	✓	N/A	N/A
Streaming	N/A	Option	Option	Option
Remote Disk Mount	N/A	Option	✓	✓
Simultaneous Play/Record	N/A	Option	Option	Option
Multi-unit Synchronization	✓	✓	✓	✓
IRIG-B Time code	N/A	Option	Option	Option
Basic PC software player	✓	✓	✓	✓
Advanced PC software player	Option	Option	Option	Option
Multi-Channel Manager Software	Option	Option	Option	Option

DGY A/V INPUTS AND OUTPUTS

The *DGy 201* includes a comprehensive array of inputs and outputs as outlined below, enabling you to record and replay low-data-rate signals — all the way to high resolution graphic displays.

SYSTEM INPUTS

The following system inputs are provided:

- **Digital** — One digital input is provided (DVI-I integrated digital/analog connector). With a pixel rate up to 165 MHz, this input supports a resolution of up to 1600 x 1200 at 60 Hz, or higher refresh rates at lower resolutions.

- **RGB** — One analog RGB input is provided (DVI-I integrated digital/analog connector). With a pixel rate up to 330 MHz, this input supports a resolution of up to 1600 x 1200 at 60 Hz, or higher refresh rates at lower resolutions.

- **Loop** — Both the analog and digital graphics inputs have an active loop. The input signal will be output on the loop connector, provided that the *DGy 201* is powered up.

- Stereo Audio — One analog stereo input in provided (2 x RCA phono connectors). Sampling rate may be set to 44.1 kHz, 22.05 kHz or 11.025 kHz.

- **Composite Video** (Optional) - One composite video input with automatic selection of NTSC or PAL formats.

- **IRIG Time Code** (Optional) - A looping input compatible with IRIG-B DCLS and 1KHz modulated formats (IRIG B123). Used to synchronize the system time clock to an external IRIG time standard. The loop output is used to pass the IRIG-B input signal to another IRIG compatible device.

SYSTEM OUTPUTS

The following system outputs are provided:

- **Digital** — One digital output is provided (DVI-I integrated digital/analog connector), supporting a resolution of 1600 x 1200 at 60Hz.

- **RGB** — One analog RGB output is provided (DVI-I integrated digital/analog connector).

- **Stereo Audio** — One analog stereo output is provided (2 x RCA phono connectors).

- **Pass Through** — In record or stop, the *DGy 201*'s digital or analog output reflects the audio and video signals presented at the inputs.

In Appendix A, refer to the "**DVI-I Connector**" section for complete wiring details on the DVI-I connector.

RECORDING AND REPLAY

DGy 201 offers a high degree of flexibility and versatility in terms of recording clips, replaying and transmitting clips. Replaying may be accomplished directly from a *DGy 201* or using a software player on a Windows PC. Many of these capabilities are listed below. Please contact RGB Spectrum for details on specific configurations and their capabilities.

RECORD CAPABILITIES

The *DGy 201*'s record capabilities are listed and illustrated in the following section.

LOCAL RECORDING

Typically, the *DGy 201* is set up to record an input source directly to the removable or optional fixed disk drive. When in the record mode, you can monitor the input signal through the output port as shown in the figure below.
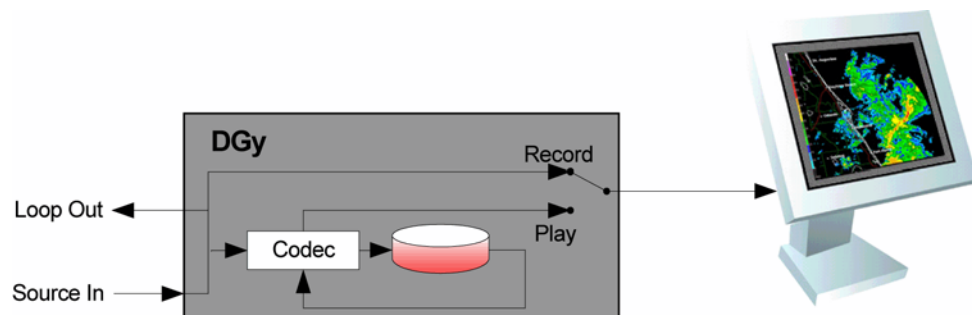
Figure 1-1. **Local Recording**

When the optional fixed drive is included, the user has the ability to choose which of the two drives the encoded material will be stored to.

A looping input is provided so that the input signal can be sent to another device for display or measurement without the need for a distribution amplifier.

REMOTE RECORDING & REPLAY OPTION

The *DGy 201* can be set up to mount an external network mapped disk drive to allow recording and playback from a remote disk such as a RAID disk system. The use of an external RAID provides increased storage capacity. For more information please refer to **Remote Disk Mount** (page 7) and **Recording Clips** (page 64).

PLAYBACK CAPABILITIES

A *DGy 201* recording can be replayed directly from a *DGy 201* from the internal drive or remotely mounted disk (option). The file created by *DGy 201* can also be viewed from a suitably configured PC at a reduced frame rate. The *DGy 201*'s playback capabilities are listed and illustrated in the following section. For details about playback from a PC, refer to the following section "**Software Replay Application**".

LOCAL PLAYBACK

For local viewing, the *DGy 201* is typically configured to replay from the installed drive(s) to the analog RGB or DVI outputs, as shown in the figure below.
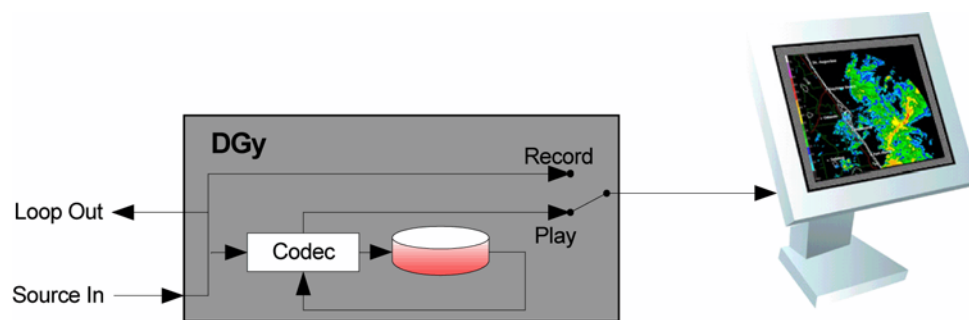
Figure 1-2. Replay from Disk, Local Viewing

SOFTWARE REPLAY APPLICATION

A Windows® software application supplied by RGB Spectrum can be used with PCs to replay *DGy 201* recordings directly on the PC. The quality level will be the same, but at reduced frame rates. This application works with the standard Windows® Media Player (version 9 and above) to provide basic transport functionality including play, pause and stop.

This application can be used to replay recordings in the following ways:

- Recordings copied from a *DGy 201* to the PC local drive using the popular TCP/IP file transfer protocol (FTP).

- Recordings played out from a *DGy 201* removable drive inserted in an appropriately configured PC equipped with a compatible removable disk drive bay. Note that *DGy 201* uses the ext2 file system found with the Linux operating system. PCs running the Windows ® operating will require additional software in order to mount the drive under the Windows® operating system. Commercial software is available for this purpose.

Playback quality is high, but note that the playback frame rate is limited by the performance of the selected PC. As an example, a PC equipped with a Pentium IV 3GHz CPU with 512 MB of memory will typically play a 1280 x 1024 recording at about 5-6 frames per second.

**SIMULTANEOUS
RECORD/REPLAY**

The *DGy 201* supports the optional ability to playback from disk at the same time as it is recording new material. Record and play start and stop times are independent.

> **Note**
>
> You must have an AuxCodec board installed to use the Simultaneous Record/Play option on the *DGy 201*.
>
> The presence of this option can be confirmed by viewing the **WCP Configuration Screen** (page 22).

STREAMING

The *DGy 201* can encode and stream a graphics input to the network port using the optional streaming capability. In this mode, instead of directing the encoded visuals to the local *DGy 201* disk, the encoded visuals are streamed to the network port as a unicast (point-to-point) transmission for remote viewing on a PC equipped with the optional Advanced PC Player software.
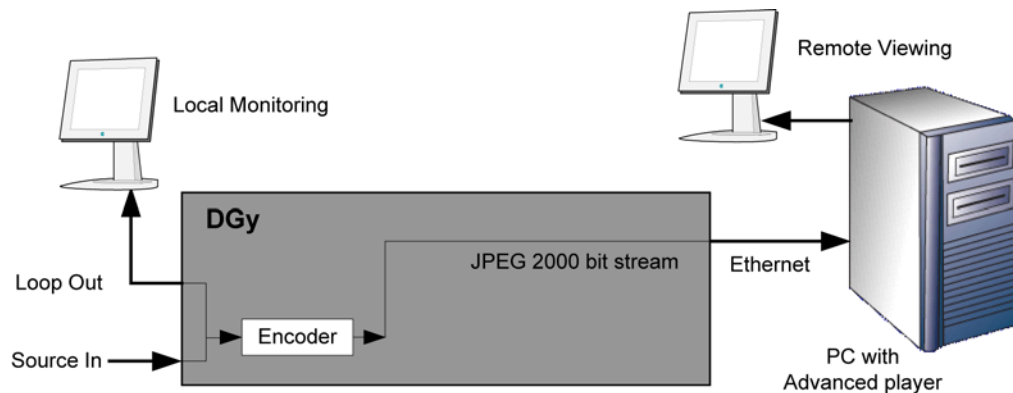
Figure 1-3. Optional streaming to the network (10/100 Base-T) port

The streaming output of a suitably optioned *DGy 201* can be viewed on a remote PC with Windows® Media Player using the optional RGB Spectrum Advanced Player software. Note that although the image quality will have the same resolution and quality as if displayed on the graphics output of the *DGy 201*, the frame rate will be limited by the network performance and the capability of the PC that you use.

**REMOTE DISK
MOUNT**

The *DGy 201* also offers an optional capability to record to a remote disk drive accessible through a network. Remote drives include network attached storage devices, servers, RAID servers and network attached PCs. To accomplish this the remote drive is mounted as a network assigned NFS (Network File System) drive and appears to the *DGy 201* as if it is a local disk drive. Note that this feature requires the use of Allegro (Windows PC platforms) or Linux based NFS servers. For more information please see **"Mounting a Remote Disk" on page 64**.

NETWORKING AND CONTROL

Although there are no front panel controls, the *DGy 201* includes the following networking and control capabilities:

- **RS-232** capability for command-line control. The RS-232 serial port connects to an ASCII terminal, any computer with a serial port or an external device such as a touchpad. Commands are sent from the terminal or computer to the *DGy 201*. In Chapter 6, refer to the "**Command Set List**" section for details.

- The **Ethernet** port (10/100BaseT) allows multiple *DGy 201* systems to be connected to a local area network (LAN), or directly to a PC properly equipped with a network card. Note that direct connection requires the use of an Ethernet hub or Ethernet crossover cable. This method allows you to use a Telnet session or a standard web browser to access *DGy 201*'s internal Web Control Panel (GUI).

- **Telnet** and **web server** control capability.

- **Remote storage / replay** capability. Files can be transferred using the standard FTP protocol or with the Remote Disk Mount option to a remote computer or RAID file server (Windows XP OS using Allegro server software or Linux OS). Typical compression ratios will allow users to transfer 30 fps at 1280 x 1024 over a dedicated 100 Base-T Ethernet link. Replay can then be accomplished on the remote computer independent of the *DGy 201* recorder.

MULTI-CHANNEL SYSTEMS

The *DGy 201* is a single channel recording system. However, all models support the ability to provide a multi-channel record and playback capability. A number of units can be configured together and controlled from a single control point using the optional Multi-Channel Manager software as shown in the figure below.
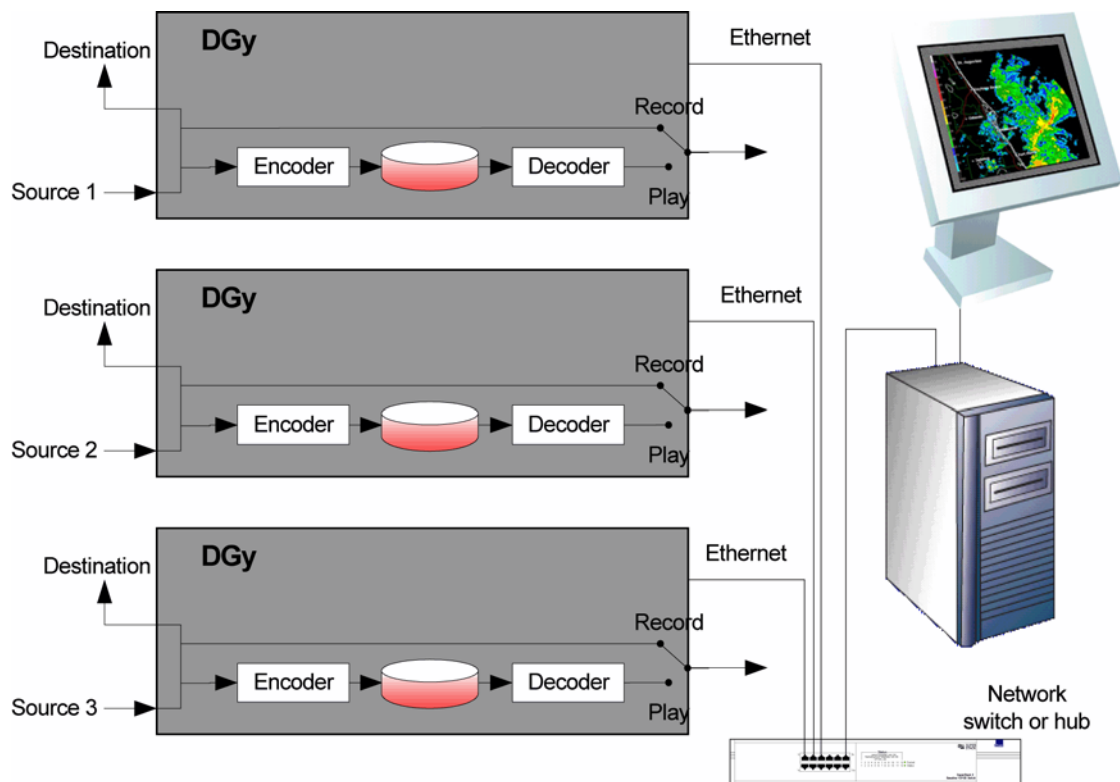
Figure 1-4. Multi-channel recorder set up

Control of a multi-channel setup can be accomplished using the optional Multi-Channel Manager software (MCM) application available from RGB Spectrum. The MCM runs under the Windows operating system. From a single user interface, the MCM coordinates the synchronization of the record and play capabilities of multiple machines.

EXTERNAL TIMECODE SYNCHRONIZATION

Multi-channel recording requires multiple *DGy 201* units to be synchronized so that start and stop of record and play can be accomplished. This is achieved by synchronizing the internal real time clocks of all the *DGy 201* units.

All *DGy 201* models can be synchronized to an external time source using a network connection to a NTP (Network Time Protocol) server. Additionally, the *DGy 201* can be configured with an IRIG-B option. Using the IRIG loop through connection this provides the ability to synchronize each of the *DGy 201* real-time clocks from a single IRIG-B timecode generator (IRIG DCLS or 1 kHz modulation).

INSTALLATION AND SET UP

2

IN THIS CHAPTER

This chapter provides instructions for installing and setting up your *DGy 201* system. The following topics are discussed:

- **Standard Supplied Components**
- **Optional Items**
- **Rack Mounting**
- **Front Panel**
- **Rear Panel**
- **Installation**
- **Web Control Panel Connection**

STANDARD SUPPLIED COMPONENTS

The following equipment is included in the *DGy 201* shipping carton:

Table 2-1. Standard Supplied Components

Item	Part Number
DGy 201	---
Accessory Kit (domestic)	970-8134-01
DGy 201 User Manual (CD-ROM, also includes Basic Player PC software)	
Power cord (110 volt)	
DVI - VGA Adapter (3)	
Rear Rack mount adapter kit	
Accessory Kit (international)	970-8134-02
Power cord (220 volt)	
DVI - VGA Adapter (3)	
Rear Rack mount adapter kit	

OPTIONAL ITEMS

The following options are available for the *DGy 201* . Note that many of these options are factory installed and should be part of the original order.

Table 2-2. **Optional Items**

Item	Part Number	Description
VGA Cable	520-0298-1	15-pin HD Male to 15-pin HD Male, 6 ft. Use to connect your analog output/inputs to sources with a female VGA connector.
Fixed disk	HDF 238	238 GB Hard disk drive (Factory installed)
Extra removable disk	HDR 238	238 GB Hard disk drive with caddy and carrying case.
Extra removable disk	HDR 476	476 GB Hard disk drive with caddy and carrying case.
VGA-to-BNC Adapter	520-0251-1	15-pin HD Male to a 5 BNC cable bundle Male, 6 ft. 10 inches. Use to connect the analog output/inputs to sources with BNC connectors.
Composite Video	VIN	NTSC / PAL Composite video input channel. (Factory installed)
Remote Disk Mount and Basic Streaming	BAS	Streams *DGy 201* output to a network for replay on the Advanced Player. Also supports NFS mounting of a remote drive for access to an external storage system such as a RAID server.
Simultaneous Record / Replay	SRP	Provides the ability to play a previous recording while simultaneously making a new recording. (Factory Installed)

RACK MOUNTING

The *DGy 201* chassis is designed to be mounted in a standard 19" rack. Please note the following important points:

- Ensure that the *DGy 201* is positioned in the rack where the side air intake and rear exhaust vents are not blocked.

- Rack mount the unit from the front rack ears using four rack screws (not supplied). Rack threads may be metric or otherwise — depending upon the rack type.

- Install the *lower* of the two mounting holes first.

Important	Do not use the *DGy 201* as a shelf to support other pieces of equipment. If you do, the rack ears and mounting screws may be damaged.

- The *DGy 201* is provided with a rear rack bracket and arm to support the rear of the chassis. It is recommended that you use the bracket to provide additional stability.

- Attach the rear brackets to the rack adapter at the rear of your chassis.

- Slide an arm through the slot on the rack adapter and attach the arm to the chassis.

- Attach the arm to the rear bracket by means of the fasteners located in the arms.

FRONT PANEL

The figure below illustrates a front panel view of the *DGy 201*.
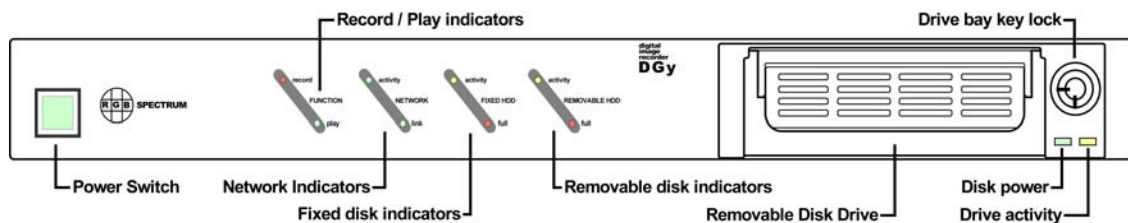
Figure 2-1. *DGy 201* **Front Panel View**

Descriptions of each control and indicator are provided below:

1) AC Power Switch

   Use the **AC Power Switch** to turn the *DGy 201* on and off. When the unit is on, the switch is illuminated.

   NOTE: When you turn the power off from the front panel, the *DGy 201* first closes any open files on the disk before completing power down. This delay is normal and the power indicator will stay lit during this interval. Do not turn off the *DGy 201* by disconnecting the power cord, as this may result in corruption of data on the disk.

2) **Function Record**

In the "Record / Play" group of LEDs, the **Record** LED lights when the *DGy 201* is in the record mode (and also in the Record/Pause mode).

3) **Function Play**

In the "Record / Play" group, the **Play** LED is illuminated when the *DGy 201* is in playback mode.

4) **Network Activity**

In the "Network" group, the **Activity** LED is illuminated when there is activity on the *DGy 201* network connection. See also the "**Network Link**" description below.

5) **Network Link**

In the "Network" group of LEDs, the **Link** LED glows solid green when there is a valid Ethernet connection between *DGy 201* and another Ethernet device. Note that if you are only using an RS-232 connection this LED will be off.

6) **Fixed HDD Activity**

In the "Fixed HDD" group, the **Activity** LED is illuminated when there is read or write activity on the Fixed (non-removable) Hard Disk Drive (HDD). This indicator also flashes to indicate that a disk check (fsck) operation is in process. Do not power cycle the unit during this time.

NOTE: The Fixed Hard Disk Drive is a factory installed optional item.

7) **Fixed HDD Full**

In the "Fixed HDD" group, the **Full** LED flashes when the optional non-removable disk is near maximum capacity.

NOTE: The Fixed Hard Disk Drive is an optional item.

8) **Removable HDD Activity**

In the "Removable HDD" group of LEDs, the **Activity** LED is illuminated when there is read or write activity on the standard removable disk. This indicator also flashes to indicate that a disk check (fsck) operation is in process. Do not power cycle or remove the disk during this time.

9) **Removable HDD Full**

In the "Removable HDD" group, the **Full** LED flashes when the removable disk is near maximum capacity.

10) **Key Lock**

The **Key Lock** is used to ensure that the removable drive is engaged securely in position. The key is required for both removal and installation of the drive into the removable disk

drive bay. Note that the key must be in the locked position before the *DGy 201* can record or play to the removable disk drive.

11) Disk Power

The Disk Power light indicates that power is applied to the removable disk drive. The power is automatically disabled when the key lock is in the correct position to enable removal or installation of the drive. The drive should not be removed or installed when this light is illuminated.

12) Disk Activity

The Disk activity light indicates read and write activity to the removable disk. It is recommended that you do not remove the drive while the disk is active.

REAR PANEL

The figure below shows a view of the *DGy 201* rear panel. Click on the numbered callouts for more information on each item. Click on each connector for details of connector pin outs.
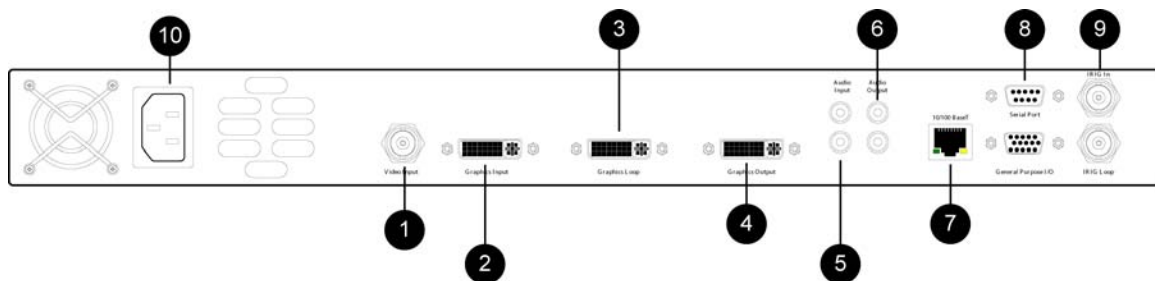
Figure 2-2. *DGy 201* **Rear Panel View**

1) Composite Video Connector (optional)

The **Video Input** is a BNC connector which will accept a composite video signal in either the NTSC or PAL format.

2) Graphics Input

The **Graphics Input** is a DVI-I connector supporting both analog RGB and digital DVI input signals. An adapter is supplied with the unit to convert to the standard RGB 15-pin sub miniature connector.

3) Graphics Loop

Use the **Graphics Loop** connector to pass the unprocessed input signal to an external device such as a monitor. This

connector provides looping for both the digital (DVI) and analog RGB signals. Note that this is an active loop, so there will be no output when the *DGy 201* has no power applied.

4) Graphics Output

This **Graphics Output** connector provides both analog RGB and digital DVI output signals on a DVI-I connector. When the *DGy 201* is in **Play** mode, the output signal plays back from recorded material on disk. When *DGy 201* is in **Record** mode, the output signal displays the signal present at the **Graphics Input** connector.

Note that a DGy equipped with the optional simultaneous record/play options will display the playback on the **Graphics Output** connector whenever the DGy is in **Play** mode even when the unit is recording.

5) Audio Inputs

The *DGy 201* provides stereo record capability. A pair of RCA phono **Audio Input** connectors accept analog audio signals for both left and right channels. The Audio input will accept either line or microphone level inputs signals. A choice of sample rates is provided.

6) Audio Outputs

A pair of RCA phono **Audio Output** connectors supply the line level left and right analog audio output signals.

7) Ethernet Port

A standard RJ-45 connector is provided for the **Ethernet** 10/100 BASE-T control port. This port is used if you choose to control the *DGy 201* with a graphical interface (Web Control Panel), command line interface (telnet session) or for the transfer of recorded clips over a network (using FTP).

8) Serial RS-232 Port

A standard 9-pin sub miniature D connector is provided for connection to an external **RS-232** equipped control device. The serial port does not support a graphical user interface.

9) IRIG Time code input (optional)

The optional IRIG time code input accepts IRIG-B time code in either DCLS or 1kHz modulated formats (B123 format). The looping output can be used to provide the reference signal to other IRIG-B compatible devices.

10) AC Power Connector

One **AC Power** Connector (IEC 320 three pin) is provided for the system's universal power supply, which operates from any power source with a line voltage in the range of 100 - 240 VAC.

INSTALLATION

This section provides *DGy 201* installation instructions. All connections are made to the rear of the chassis. Refer to **Figure 2-2** for the name and location of each rear chassis connector.

Note	If the *DGy 201* is going to be used in rack, you should install it in the rack before continuing. Refer to the "**Rack Mounting**" section on page 12 for instructions.

Use the following steps to install the *DGy 201*:

1. Connect Power — Connect a power cord to the **AC Power** connector. The *DGy 201* is equipped with a universal, 100-240 V, 50-60 Hz power supply.

2. Connect Inputs — Connect the desired computer and / or video sources if used. Please note:

   ~ For an analog RGB input, use a standard VGA cable with a 15-pin male D-sub connector. You will need to use the supplied DVI-I to analog RGB adapter provided with the *DGy 201*. The input connector supports 3, 4 or 5 wire connections. In Appendix A, refer to the "**DVI-I Connector**" section for pinout information.

   ~ For a digital input, use a standard DVI cable. In Appendix A, refer to the "**DVI-I Connector**" section for pinout information.

3. **Connect Graphics Output** — Using a DVI-I interconnect cable, connect the **Graphics Output** to the desired display device. The output connector supports both RGB analog and DVI output signals. With a standard DVI interconnect cable, you can connect directly to a DVI capable monitor.

   To connect to a monitor with an analog RGB input, use an adapter which converts from the DVI connector directly to a 15 pin D-sub connector. This adapter is provided as a standard item with your *DGy 201*. As an alternative, standard cables are readily available to convert from the DVI connector to either 15-pin D connectors or BNC connectors.

   In Appendix A, refer to the "**DVI-I Connector**" section for detailed wiring instructions for the Graphic Output connector.

Note	Analog display devices must be able to accept RGB inputs of at least 15 kHz.

4. Connect IRIG In/Out connectors - IRIG time code is an option to the *DGy 201* product. If you have this option connect the output of your IRIG time code generator to the *DGy 201* IRIG input connector. Connect a cable from the *DGy 201* IRIG loop

connector to the next IRIG device in the IRIG loop if you are cascading IRIG to other devices.

5. Select a Control Method — either via an RS-232 serial connection or via an Ethernet connection:

   ~ **Serial Control** — To control *DGy 201* using a terminal emulation program (such as Hyperterminal or Procomm), connect the COM port of your computer (or other terminal control device) to the *DGy 201* **RS-232 Port**. This enables you to control the *DGy 201* using ASCII commands. For information on *DGy 201* commands refer to the **Command Line Interface** chapter (page 86).

   ~ A straight through cable (typically 9-pin male to female with one-to-one wiring) is required. For information on RS-232 connection parameters refer to the "**RS-232 Connector**" section in Appendix A (page 137).

   ~ Launch Hyperterminal or other terminal emulator software and set the communication parameters to:

      • 115,200 Baud

      • 8 Bits

      • 1 Stop Bit

      • No Parity

      • XON/XOFF Flow Control

   ~ For information on setting up a Hyperterminal see **Appendix B**, "Launching a Hyperterminal Window" (page 139).

   ~ **Ethernet Control** — To control the *DGy 201* over a network, connect an Ethernet cable (from your LAN, Ethernet hub or switch) to the *DGy 201*'s 10/100 Base-T **Ethernet Port**. This method allows you to use a Telnet session or a standard web browser to access *DGy 201*'s internal **Web Control Panel (GUI)**. Ethernet is also ideal for controlling *multiple DGy 201* devices.

Note

> A PC can be connected *directly* to the *DGy 201*'s **Ethernet Port**, without being connected to a network. For this "direct connect" method, use an inexpensive Ethernet hub or an Ethernet crossover cable. In Appendix A, refer to the "**Ethernet Connector**" section (page 136) for pinout details.

WEB CONTROL PANEL CONNECTION

DGy 201's **Web Control Panel** (WCP) interface provides a graphical alternative to the "command-line" setup and control used with serial control. This method uses the *DGy 201*'s internal Web Server, allowing you to set up and operate the system from a standard browser.

▲ Please note the following important recommendations:

• To minimize compatibility issues between browsers, it is recommended that you use the Internet Explorer® web browser.

• You must have Java version 1.5 or higher installed on your computer for the WCP to function.

• To use the *DGy 201* on your LAN (Local Area Network), ensure that the *DGy 201* has an IP address that is compatible with your LAN.

• Changes to the *DGy 201* default IP address should be made before putting your *DGy 201* on the network.

CONNECTING TO THE WEB CONTROL PANEL (WCP)

The *DGy 201* contains an internal web server that provides the Web Control Panel (WCP) user interface. Note that the *DGy 201* is configured to have a static IP address. The default IP address is **192.168.1.200,** but can be changed to suit your network.

You can connect to the *DGy 201* WCP in the following ways:

• **Direct connection** — connect the Ethernet Port on a computer equipped with a standard web browser to the *DGy 201*'s 10/100 BASE-T **Ethernet Port**. You will need to use an Ethernet crossover cable for this connection method. In Appendix A, refer to the "**Crossover Cables**" section (page 136)for details.

Note	Computers that are set up to communicate on the network are typically configured to have a dynamic IP address. In this configuration the computer is provided with a suitable IP address by a DHCP server connected to the network. When you connect directly to the *DGy 201* a server will not be available and you will have to set the IP address on your computer manually (static IP address). Refer to the network settings help section of your computer operating system (OS) for assistance with this.

• **LAN connection** — connect the *DGy 201* 10/100 BASE-T **Ethernet Port** to a local area network (LAN). From a computer on the network, access the WCP using a standard web browser. You can use a standard Ethernet cable for this connection method.
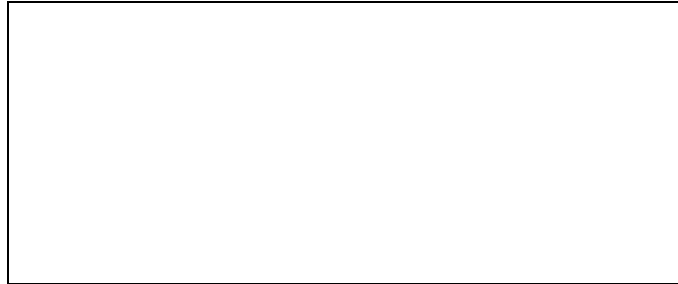
When the physical connections have been made, launch your internet web browser and connect to the WCP by entering the *DGy 201*'s IP address into the browser URL address line.

▲ Example:

If the *DGy 201*'s IP address is **192.168.1.200**, the browser entry would be http://192.168.1.150 as illustrated below.

Address | http://192.168.1.200 | ✓ | → Go

Figure 2-3. **Sample Browser IP Address Entry**

If the network connection is working properly and the correct IP address has been entered, *DGy 201* responds by displaying the Web "Applications Suite" page shown in **Figure 2-4** below. To access the

Web Control Panel click on the **DGy WCP** button.
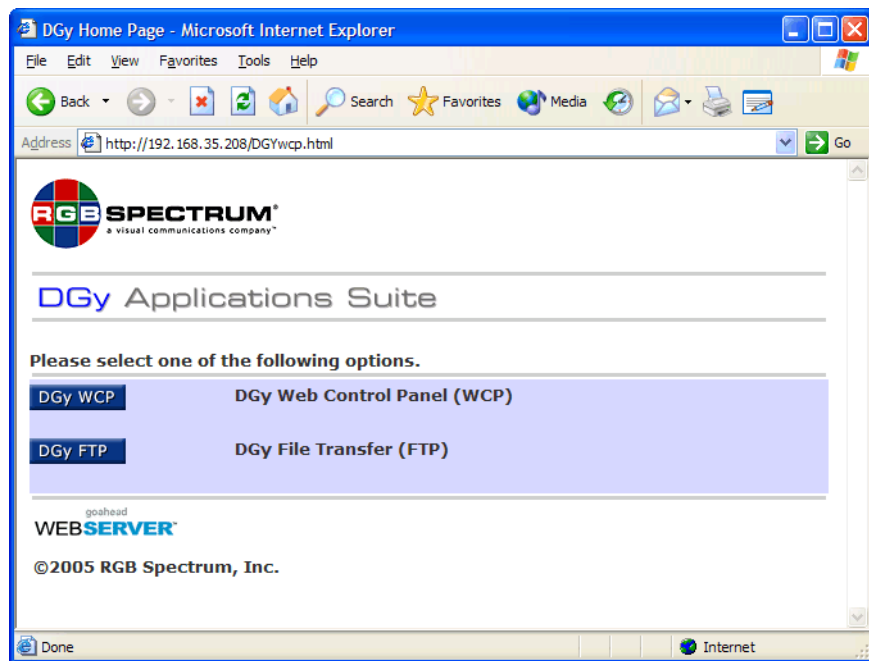
Figure 2-4. **DGy Web Applications Suite**

If you cannot connect to the WCP, use the following steps to determine the problem:

- Check that the network **Link** and **Activity** LEDs on *DGy 201*'s front panel are indicating an active Ethernet link.

- Determine that you have a working TCP/IP connection by using the "ping" utility to check the connection. The "ping" utility is typically provided as part of the networking tool included in your computer operating system.

- If you are using a direct Ethernet connection between the *DGy 201* and control PC be sure that the PC has a valid IP address and that you are connecting via an Ethernet crossover cable.

  With a direct connection a DHCP server is not available and the PC will have to be set with a manually set static IP address compatible with the *DGy 201* address.

- Check that you have entered the correct IP address into the browser address line. If you are unsure about *DGy 201*'s IP address, use the serial port to determine the current IP address. In Chapter 6, refer to the **IPADDRess** command for more information.

WCP PLAYER

After you have selected the *DGy 201* WCP option from the *DGy 201* Application Suite page, the **WCP Configuration Screen** will appear

(**Figure 2-5**) together with the standard **WCP Player Screen** (**Figure 2-6**).
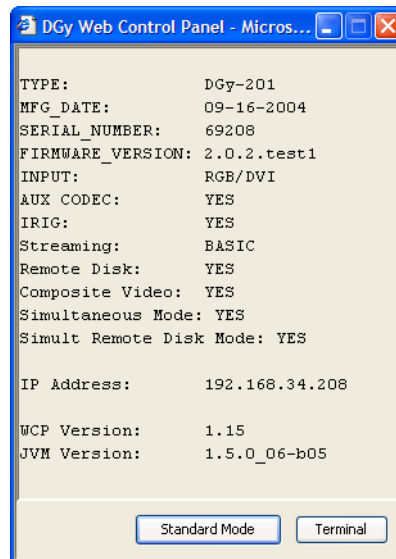
Figure 2-5. **WCP Configuration Screen**

The **WCP Configuration Screen** provides information about the configuration of your *DGy 201* in addition to two control buttons.

- **Simultaneous Mode**

  By default, when you launch WCP, the standard WCP Player Control panel is launched. If your *DGy 201* is equipped with the optional Simultaneous Mode option then the **Simultaneous Mode** button should be used to select the WCP Simultaneous Record/Play control panel. If the option is not installed then this button will be greyed out.

- **Terminal**

  Click on the **Terminal** button to launch the Terminal page. This page can be used to issue commands using the *DGy 201* ASCII command protocol. See Chapter 6, **Command Line Interface** for information on these commands. This feature is useful if you want to enable the Command Log to make or debug commands from an external controller.

When the **WCP Configuration Screen** opens, the default **WCP Player**

Screen is automatically launched.

Figure 2-6. **WCP Player Screen**

The WCP Player page enables you to control the *DGy 201* record and playback functions — including the ability to select clips, play clips, set event marks and random access marks.

For complete WCP operating instructions, refer to Chapter 3, **Operations.**

OPERATIONS

3
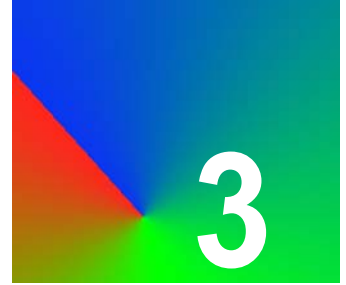
IN THIS CHAPTER

This chapter provides user interface orientation and operating instructions for the *DGy 201* using the optional simultaneous Record/Play feature using the WCP (Web Control Panel). The following topics are discussed:

- **Before you Start**
- **WCP Simultaneous Record/Player Controls**
- **Clip Browser Menu**
- **Options Menu**
- **Recording Clips**
- **Playing Back Clips**

BEFORE YOU START

Please note the following important prerequisites to using the WCP:

- Ensure that your system has been properly installed, with all required audio, video, and graphic connections. For details, refer to Chapter 2, **Installation and Set Up**.

- Make sure that you have a copy of Java installed on your PC. You will need either Java version 1.4.2 or version 1.5.0 or higher (you may also see them confusingly referred to as version 4.2 and 5.0). You will find a copy of Java on the CD ROM that was provided with your *DGy 201* or it can be downloaded free of charge from the official Sun Microsystems web site **http://www.java.com/en/download/manual.jsp**

- Ensure that your PC (or controlling device) is connected to the *DGy 201*'s Web Control Panel. For details, refer to the "**Web Control Panel Connection**" section in Chapter 2.

LAUNCHING THE SIMULTANEOUS RECORD/PLAYER

If the optional Simultaneous Record/Player is installed in your *DGy 201* then you can choose between using the standard Record/Player, or the simultaneous Record/Player. By default the standard Record/Player is loaded automatically.

If you want to use the Simultaneous Record/Play feature (option) you will have to use the WCP Simultaneous Record/Play control panel. This is accessed from the WCP Configuration page shown in Figure 3-1.

Figure 3-1. **WCP Configuration Page**

Click the "**Simultaneous Mode**" button to open the WCP Simultaneous Record/Play control panel.

Hint	If you are in the "Simultaneous" mode, the mode selection button will be labeled "Standard". To switch to the Standard record/play mode in the WCP Configuration page click on the "Standard" mode button.
	You must close any open WCP option pages (Play, Record, Input ...) before the new Simultaneous Record/Play control panel can open.

WCP SIMULTANEOUS RECORD/PLAYER CONTROLS

The following figure illustrates an example of the optional Simultaneous Record/ Player Screen.

RECORDER CONTROLS

The upper part of the Simultaneous Record/Play WCP control console is associated with the record function. All controls on this section apply to recording only. For information on playback functions please see **Player Controls** (page 29).

Figure 3-2. **Simultaneous Recorder/Player Screen (Record)**

The following table indicates the recorder functions provided by the Simultaneous Record/Play WCP control panel.

1	**Record Disk Status**	6	**Record Clip Name**
2	**Select Record Disk**	7	**Record Clip Path**
3	**Record Disk Capacity Indicator Bar**	8	**Record Stop**
4	**Record Pause**	9	**Show All Record Event Marks**
5	**Record**	10	**Set Record Event Mark**

1) Record Disk Status

This region indicates the selected disk drive and the amount of disk space remaining in **H:M:S** (hour:minutes:seconds) format.

2) Select Record Disk

Click the **Select Record Disk** label to choose the fixed or removable disk drive for recording. Information for the selected disk appears in the adjacent **Record Disk Status** area.

3) Record Disk Capacity Indicator Bar

This bar visually indicates the available record time on the selected disk drive. The solid white area represents the time remaining, as a percentage of the whole.

4) Record Pause

Click **Record Pause** to pause a recording. The ‖ symbol appears in the status area. To resume recording click on the **Record** or **Pause** button.

5) Record

Note: You cannot start a recording if you are currently in playback mode. Click on the **Player Stop** button in the WCP Player Control Panel (**Figure 3-3**) prior to clicking the **Record** button. Only clicking **Player Pause** is not enough.

The recording will use the parameters established on the **Record Tab** in the **Options Dialog** (**page 46**)**.**

The recording will be stored using the **Record Clip Name** and **Record Clip Path**. See below for details.

The ● symbol appears in the status area. When recording begins, the *DGy 201* records the visuals from the graphics input port.

If the clip is new, recording begins immediately. If the clip has already been recorded, you will be asked to confirm to overwrite the clip.

6) Record Clip Name

This area indicates the name of the clip you are currently recording. Click the **Record Clip Name** label to display the **Record Clip Browser Dialog**, which enables you to select clips for playback or recording. Refer to the "**Clip Browser Menu**" section (page 39) for details.

7) Record Clip Path

This area indicates the path of the clip you are currently recording. Click the **Record Clip Path** label to display the **Record Clip Browser Dialog**, which enables you to select clips for recording and set the desired path. Refer to the "**Clip Browser Menu**" (page 39) section for details.

8) Record Stop

Click the **Stop** button to halt the recording.

9) Show All Record Event Marks

Click **All** to display the **Event Marking Dialog**, which enables you to view, manage and edit marks.

10) Set Record Event Mark

You can set a **Mark** in **Record** mode to identify an event of interest. Click **Mark** to set a mark immediately. A mark will be entered in the **Event Marking Dialog** list. Marks are automatically provided with a unique mark number which is derived from the time code on the recording. Event marks may also be named. The Event marks are saved with the clip and are accessible when played back.

PLAYER CONTROLS

Player controls are provided in the lower section of the Simultaneous Record/Play Screen. Player controls are described in the following section. For information on record functions please see **Recorder Controls** (page 26).
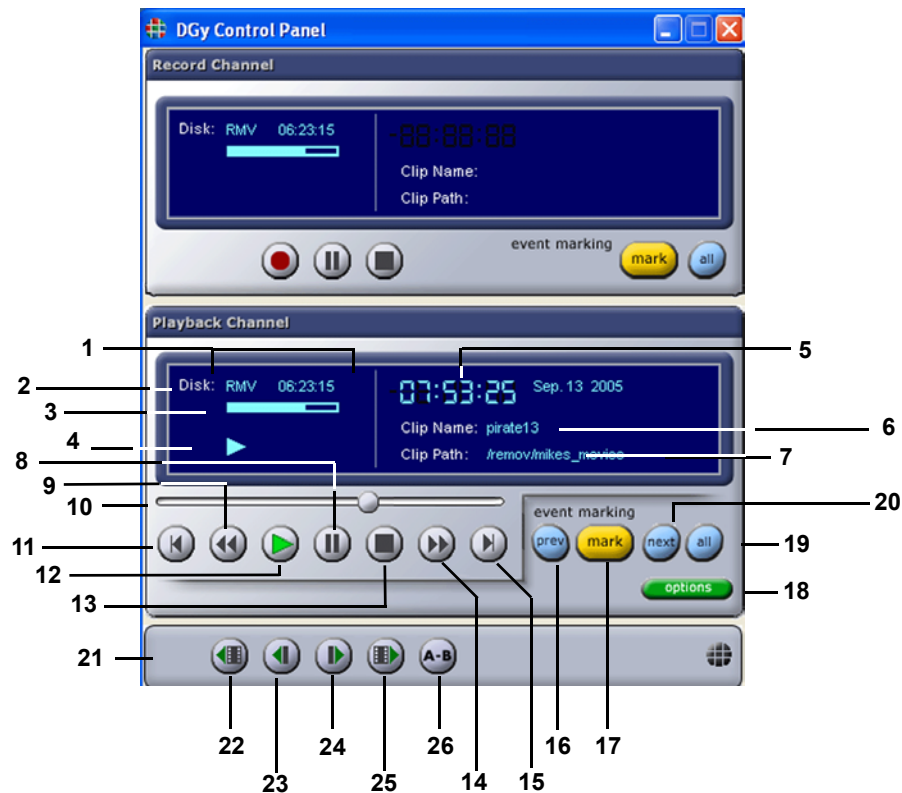
Figure 3-3. **Simultaneous Recorder/Player Screen (Play)**

Click on a hyperlink in the table below to find information about any of the player controls.

1)	**Disk Status**	10)	**Current Position Slider**	19)	**Goto Next Mark**
2)	**Select Disk**	11)	**Previous Clip**	20)	**Show All Marks**
3)	**Disk Capacity Indicator Bar**	12)	**Play**	21)	**Advanced Playback Panel**
4)	**Machine Status**	13)	**Stop**	22)	**Previous Frame**
5)	**Clip Status**	14)	**Fast Forward**	23)	**Slow Reverse**
6)	**Clip Name**	15)	**Next Clip**	24)	**Slow Forward**
7)	**Clip Path**	16)	**Goto Previous Mark**	25)	**Next Frame**
8)	**Pause**	17)	**Set Mark**	26)	**Play Loop**
9)	**Fast Reverse**	18)	**Options**		
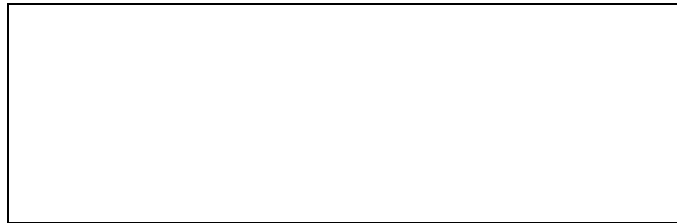
1) Disk Status

This region indicates the selected disk drive and the amount of disk space remaining in **H:M:S** (hour:minutes:seconds) format.

2) Select Disk

Click the **Select Disk** label to choose the fixed or removable disk drive for playback. Information for the selected disk appears in the adjacent **Disk Status** area.

3) Disk Capacity Indicator Bar

This bar visually indicates the available record time on the selected disk drive. The solid white area represents the time remaining, as a percentage of the whole.Clip Status

4) Machine Status

Icons appear in this area to indicate the Play status:

- ~ ▸ Play
- ~ ❙❙ Pause
- ~ ▸▸ Fast Forward (+ FF speed)
- ~ ◂◂ Fast Reverse (+ FR speed)
- ~ ❙❙ ▸ Slow Forward (+SF speed)
- ~ ◂ ❙❙ Slow Reverse (+SR speed)

This display provides timecode status for the selected clip. By clicking the display, you can toggle between different counters:

- ~ In **Stop** mode, the counter always indicates the date and time at the start of the recording for the selected clip.
- ~ In **Play** mode, the counter displays the "**Time Code**" of the original recording.
- ~ Click on the time field to switch the display to "**Elapsed Time**".
- ~ Click again on the time field to switch the display to "**Time Remaining**".
- ~ Click on the time field to return the display to "**Time Code**".

5) Clip Status

This display provides timecode status for the selected clip. By clicking the display, you can toggle between different counters:

~ In **Stop** mode, the counter always indicates the date and time at the start of the recording for the selected clip.

~ In **Play** mode, the counter displays the "**Time Code"** of the original recording.

~ Click on the time field to switch the display to "**Elapsed Time**".

~ Click again on the time field to switch the display to "**Time Remaining**".

~ Click on the time field to return the display to "**Time Code**".

6) Clip Name

This area indicates the name of the clip you are currently recording or playing back. Click the **Clip Name** label to display the **Clip Browser Dialog**, which enables you to select clips for playback or recording. Refer to the "**Clip Browser Menu**" section (page 39) for details.

7) Clip Path

This area indicates the path of the clip you are currently recording or playing back. Click the **Clip Path** label to display the **Clip Browser Dialog**, which enables you to select clips for playback or recording and set the desired path. Refer to the "**Clip Browser Menu**" page 39) section for details.

8) Pause

Click **Pause** to pause playback. The ❚❚ symbol appears in the status area. To resume playback click on the **Play** or **Pause** button

9) Fast Reverse

There are a total of five reverse play speeds as shown below:

~ x 2

~ x 4

~ x 8

~ x 16

~ x 32

To select the Fast Reverse mode use the following procedure:

~ Select the clip that you want to play (Click on the **Clip Name** label and select a clip from the clip dialog menu)

~ Click the **Play** button

~ Click the **Fast Reverse** button

~ If you want to play at a faster reverse speed click again on the **Fast Reverse** button. Each click of the button will increase the speed to the next speed setting

To return to normal (1x) playspeed directly from any speed, click on the **Play** button.

If you pause playback while in the Fast Reverse mode, clicking on **Pause** again will continue in Fast Reverse at the previously selected speed.

If you select **Fast Forward** while in the Fast Reverse mode, the *DGy 201* will change direction and play at the first fast forward speed.

Note that pressing the **Stop** button will cause Play to stop and also cancel the Fast Reverse speed setting.

10) Current Position Slider

The **Current Position Slider** represents the full clip duration. During playback, the "dot" moves to indicate the relative playback point within the clip.

Click and drag the "dot" to randomly access and cue to any position within the clip (note the *DGy 201* must be in Play or Pause mode).

11) Previous Clip

Click the **Previous Clip** button to move to the clip prior to the clip currently selected. This command is active only when in the Play or Pause modes, and is inactive in the Stop mode.

~ Clicking the **Previous Clip** button in the **Play** mode causes *DGy 201* to cue to the beginning of the previous clip in the clip list (see **Clip Browser Menu**, page 39) and automatically enter the Pause mode. To begin playback click on the **Play** or **Pause** buttons.

~   Clicking the **Previous Clip** button in the **Pause** mode causes *DGy 201* to cue to the beginning of the previous clip in the clip list (see **Clip Browser Menu** on page 39). To begin playback click on the **Play** or **Pause** buttons.

12) Play

Click **Play** to play the clip forward at 1x normal play speed. The ▸ symbol appears in the status area.

13) Stop

~ Clicking the **Stop** button halts playback and re-cues playback to the beginning of the clip.

14) Fast Forward

There are a total of five fast forward speeds as shown below:

- ~ x 2
- ~ x 4
- ~ x 8
- ~ x 16
- ~ x 32

To select the fast forward mode use the following procedure:

- ~ Select the clip that you want to play (Click on the **Clip Name** label and select a clip from the clip dialog menu)
- ~ Click the **Play** button
- ~ Click the **Fast Forward** button
- ~ If you want to play at a faster speed click again on the **Fast Forward** button

To return to normal (1x) playspeed immediately from any playspeed click on the **Play** button.

If you pause playback while in the fast forward mode, clicking on **Pause** again will continue in fast forward at the previously selected speed.

If you select **Fast Reverse** while in the fast forward mode, the *DGy 201* will reverse direction at the lowest reverse speed.

Note that pressing the **Stop** button will cause **Play** to stop and also cancel the fast forward speed setting.

15) Next Clip

Click the **Next Clip** button to move to the clip subsequent to the clip currently selected. This command is active only when in the **Play** or **Pause** modes, and is inactive in the **Stop** mode.

- ~ Clicking the **Next Clip** button in the **Play** mode causes *DGy 201* to cue to the beginning of the next clip in the clip list (see **Clip Browser Menu**) and automatically enter the **Pause** mode. To begin playback click on the **Play** or **Pause** buttons.
- ~ Clicking the **Next Clip** button in the **Pause** mode causes *DGy 201* to cue to the beginning of the next clip in the clip list (see **Clip Browser Menu**). To begin playback click on the **Play** or **Pause** buttons.

16) Goto Previous Mark

After you have entered some Event Marks in the Event list (see **Set Mark** in the following section), you can use the **Prev** and **Next** mark buttons.

Click **Prev** to cue to the previous event mark.

Click on **Play** or **Pause** to continue playback from the new cue point. Note that this command works in **Play** or **Pause** modes only.

17) Set Mark

To set a **Mark** at the current playback position of the clip, click on the **Mark** button. A mark will be entered in the **Event Marking Dialog** list. Marks are automatically provided with a unique mark number which is derived from the time code on the recording. Event marks may also be named. Refer to " **Show All Marks**" below for information on how to name an event mark.

18) Options

Click **Options** to display the **Options Dialog** which enables you to set a variety of system options, including audio, video and recording parameters. Refer to the "**Options Menu**" section (page 44) for details.

19) Goto Next Mark

With marks established, click **Next** to instantly jump to the next mark and pause clip playback. Click on **Play** or **Pause** to continue playback from the new cue point. Note that this command works in **Play** or **Pause** modes only.

20) Show All Marks

Click **All** to display the **Event Marking Dialog**, which enables you to view, manage and edit marks. A sample dialog is shown below.
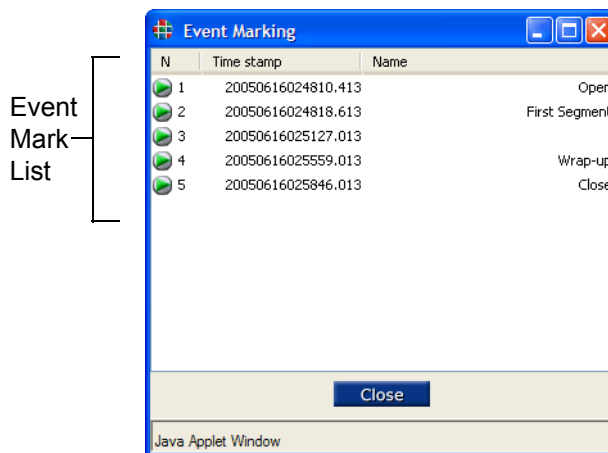
Figure 3-4. **Event Marking Dialog (sample)**

You can go directly to an Event Mark by using the Event Mark List as shown in Figure 3-4 above. Double click on the required Event Mark's time stamp and the *DGy 201* will stop playback, cue to the selected Event Mark and enter the Pause mode. Click

on the **Play** or **Pause** button to continue playback from the selected Event Mark.

To name an Event Mark, double click in the "**Name**" column of the Event Mark that you wish to assign a name to and press ENTER on your keyboard.

To delete an Event Mark, highlight the desired Mark, right click and select "**Delete**" from the drop down menu.

21) Advanced Playback Panel

Controls enabling slow playback and single frame step modes are provided in the Advanced Playback Control Panel.

Figure 3-5.   Advanced Playback Control Panel

The Advanced Control Panel (Figure 3-5) is an additional panel that is located immediately below the WCP Player Screen (Figure 3-3).

To turn on or off the Advanced Control Panel use the following procedure:

~   On the WCP Player Screen, click on the **System Option** button (**Options**).

~   Select the **Playback** tab on the Options page.

Click the **Enable Advanced Playback Console** check box (Figure 3-6). A checkmark in the box indicates the Advanced Playback Control Panel will be visible.
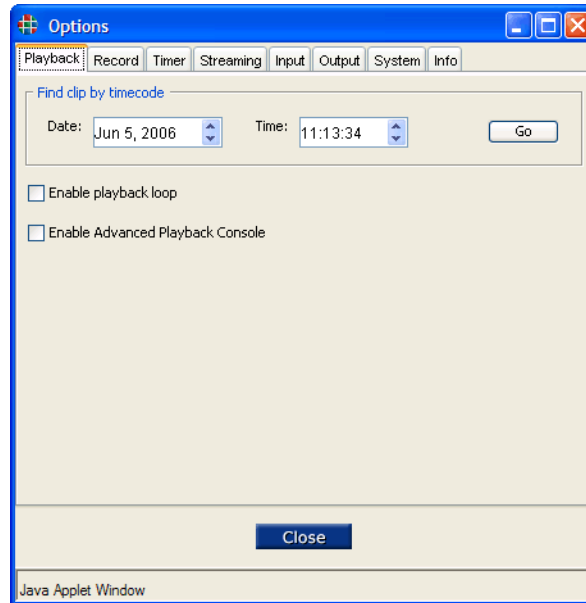
Figure 3-6. **Options Playback Tab**

There is another method you can use to activate the Advanced Control Panel:

~ On the WCP Player Screen select **Play** (or **Pause**)

~ Click either the Fast Forward or the Fast Reverse button

The Advanced Playback Control Panel should now appear

The functions provided by the Advanced Control Panel are described in the following sections.

22) Previous Frame

The **Next Frame** and **Previous Frame** buttons allow you to step through a clip one frame at a time. Note that this function is available in **Pause** mode only.

To step backwards one frame use the following procedure:

~ Select the clip that you want to play (Click on the **Clip Name** label and select a clip from the clip dialog menu)

~ Click the **Play** button

~ Click the **Pause** button

~ Click the **Previous Frame** button

Each click of the **Previous Frame** button will move the displayed image to the next frame until the end of clip is reached.

To cancel the **Previous Frame** mode click on either the **Play** or **Stop** buttons.

23) Slow Reverse

There are total of four slow reverse speeds as shown below:

- ~ x 0.8 (80% of normal speed)
- ~ x 0.5
- ~ x 0.3
- ~ x 0.1 (10% of normal speed)

The **Slow Reverse** mode is available only when the *DGy 201* is in the **Play** or **Pause** mode.

To select the **Slow Reverse** mode use the following procedure:

- ~ Select the clip that you want to play (Click on the **Clip Name** label and select a clip from the clip dialog menu)
- ~ Click the **Play** button
- ~ Click the **Slow Reverse** button
- ~ If you want to play at a slower speed click again on the **Slow Reverse** button

To return to normal (1x) playspeed immediately from any playspeed click on the **Play** button.

Note that pressing the **Stop** button will cause Play to stop and also cancel the Slow Reverse setting.

24) Slow Forward

There are total of four slow forward speeds as shown below:

- ~ x 0.8 (80% of normal speed)
- ~ x 0.5
- ~ x 0.3
- ~ x 0.1 (10% of normal speed)

The **Slow Forward** mode is available only when the *DGy 201* is in the **Play** or **Play Pause** mode.

To select the **Slow Forward** mode use the following procedure:

- ~ Select the clip that you want to play (Click on the **Clip Name** label and select a clip from the clip dialog menu)
- ~ Click the **Play** button
- ~ Click the **Slow Forward** button
- ~ If you want to play at a slower speed click again on the **Slow Forward** button

To return to normal (1x) playspeed immediately from any playspeed click on the **Play** button.

Note that pressing the **Stop** button will cause playback to cease and the Slow Forward setting will be canceled.

25) Next Frame

The **Next Frame** and **Previous Frame** buttons allow you to step through a clip one frame at a time. Note that the **Next Frame** function is only available in the **Pause** mode.

To step forward a frame use the following procedure:

~ Select the clip that you want to play (Click on the **Clip Name** label and select a clip from the clip dialog menu)

~ Click the **Play** button

~ Click the **Pause** button

~ Click the **Next Frame** button

Each click of the **Next Frame** button will move the displayed image to the next frame until the end of clip is reached.

To cancel the **Next Frame** mode click on either the **Play** or **Stop** buttons.

26) Play Loop

The Play Loop button (**A-B**) is used to set the beginning and end points of a loop within a clip. To set up a play loop use the following procedure:

~ Start playing the clip that you wish to loop from a point before the place that you wish to start the loop from

~ When you have reached the point at which you wish to start the loop click the **A-B** button. The machine status indicator will display **A-** (without the B)

~ Continue playing the clip until you reach point at which you would like to end the loop and click the **A-B** button again. The machine status indicator (5) will display **A-B** indicating that the end point has been set and the unit is in the Play Loop mode.

To cancel the Play Loop mode use the following procedure:

Click the **A-B** button to cancel the Play Loop function. The looping function can be canceled at any point during the loop.

CLIP BROWSER MENU

The **Clip Browser Menu** enables you to select clips for playback.

To access the Clip Browser click on the **Clip Path** title on the WCP Player Screen and a Clip Browser Menu should be displayed (see figure below for a representative example).
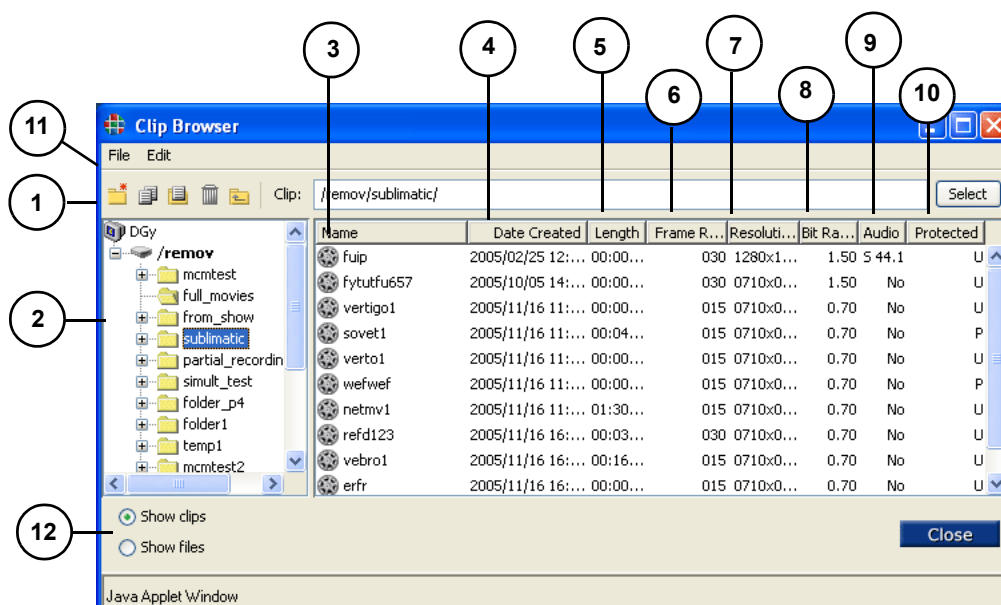
Figure 3-7. Clip Browser Menu (sample)

1)	**Browser Tools**	5)	**Length**
2)	**Disk Directory**	6)	**Frame Rate**
3)	**Clip Name Field**	7)	**Resolution**
4)	**Date Created**	8)	**Bit Rate (Quality Setting)**

9)	**Audio**	
10)	**Protection**	
11)	**Toolbar**	
12)	**File / Clip View**	

1) Browser Tools

The **Browser Tools** section includes icons for a variety of file and folder management functions such as copy, move and delete.

2) Disk Directory

The **Disk Directory** column displays all folders and paths in the selected disk drive, using the standard Windows® "tree" approach.

3) Clip Name Field

The **Clip Name Field** displays the name of each clip in the list. When in Stop mode you can double click on a clip name to select the clip and initiate playback automatically.

4) Date Created

Displays the time and date at the beginning of the clip when the clip was originally recorded.

5) Length

Displays the length of the clip.

6) Frame Rate

Displays the record frame rate in frames per second (fps).

7) Resolution

Displays the resolution (in pixels) of the recorded image (HxV).

8) Bit Rate (Quality Setting)

Indicates the Record Bit Rate setting for the clip.

Low quality bit rate setting is 0.7

Medium quality bit rate setting is 1.0 (default)

High quality bit rate setting is 1.5

Change this setting from the Record Tab.

9) Audio

Indicates the Audio sample rate.

~ 44.1 kHz (CD sample rate; default setting)

~ 22.05 kHz

~ 11.025 kHz

10) Protection

Indicates the protection status of the clip.

~ "U" indicates an unprotected clip. An unprotected clip can have event marks added and can be overwritten and deleted.

~ "P" indicates a protected clip. A protected clip cannot be overwritten or deleted and event marks cannot be placed.

To change the state of the clip protection:

~ Click on the name field of the desired clip (Figure 3-7)

~ Click on "Edit" in the Clip Browser tool bar

~ Click on the "Protect" option to change the state of protection

11) Toolbar

The Clip Browser tool bar is located at the top of the Clip Browser page (see Figure 3-7). The Toolbar provides access to the File and Edit menus.
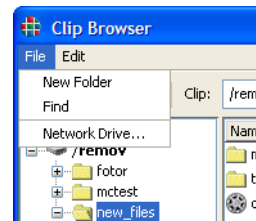
Figure 3-8. **Clip Browser Toolbar (File menu)**

The Clip Browser Toolbar File menu provides the following tasks

~ New Folder (Create a new folder)

~ Find (Search for a clip)

~ Network Drive (mount to a remote disk using NFS)

(See "Mounting a Remote disk" on page 66 for more information on the optional Remote Disk Mount feature)
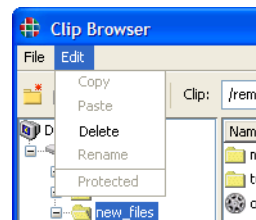
Figure 3-9. **Clip Browser Toolbar (Edit menu)**

The Clip Browser Toolbar Edit menu provides the following tasks

~ Copy (copy clip to clipboard)

~ Paste (paste clipboard to a selected folder)

~ Delete (delete selected clip)

~ Rename (rename selected clip

~ Protected (protect selected clip)

Note that the Browser Tools also provides a quick way to access the Copy, Paste, Delete and New folder features.

12)

13) File / Clip View

It is generally convenient to display recordings in the clip browser as clips. Clips however are technically created as a sequence of files. In some situations it is useful to be able to display clips as a list of files.

The maximum size that of each file in a clip is about 512 MB which represents a record time of about 1.7 mins / file with a record rate of 5 MB/s. The record rate depends upon the resolution of the image, the frame rate and the choice of quality level. As an example a record rate of 5MB/s is required to record a 1280 x 1024 image with 30 Hz frame rate and mid level (24:1) quality setting.

Table 3-1. Maximum File size (time)

Resolution	Quality Setting		
	High (16:1)	Mid (24:1)	Low (34:1)
1024 x 768 @ 30 Hz	1.9 mins.	2.9 mins.	4.1 mins.
1280 x 1024 @ 30 Hz	1.2 mins.	1.7 mins.	2.5 mins.
1600 x 1200 @ 20Hz	1.2 mins.	1.8 mins.	2.5 mins.

▲ Example

A 1024 x 768 @ 30Hz image is recorded at mid level quality with a clip length of 38 minutes. From Table 3-1 above, the maximum file size at this resolution is about 1.7 minutes in length. The total number of files created to support this clip will then be 38/1.7 **=** 23.

To use the clip browser to show files contained within the clips click on the "Show Files" radio button.

To show clips in the clip browser click on the "Show Clips" radio button.

OPTIONS MENU

The **Options menu** includes five tabs that enable you to set a variety of system record, playback and setup parameters. The following topics are discussed:

- **Playback Tab**
- **Record Tab**
- **Timer Tab**
- **Streaming Tab**
- **Input Tab**
- **Output Tab**
- **System Tab**
- **Info Tab**

PLAYBACK TAB

The figure below show the Options menu **Playback Tab**
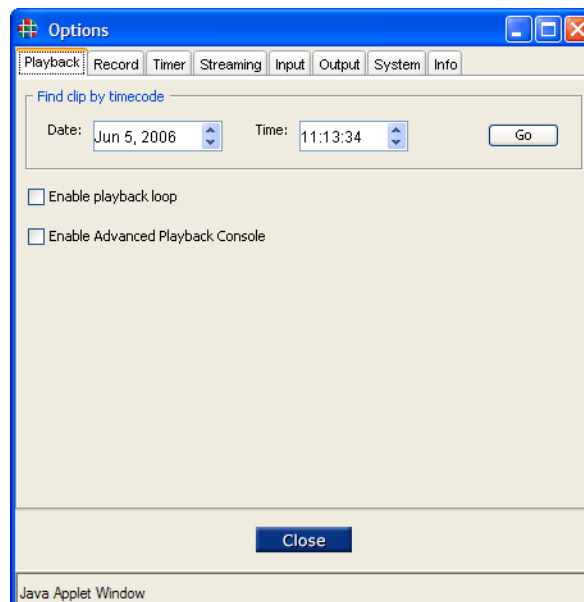
Figure 3-10. Playback Tab

PLAY FROM A TIME CODE

When a recording is made the recording is stamped with a time code. The Playback tab provides the ability to go directly to a time code position within the currently selected clip - providing random access to any point within a clip. This is equivalent to the RealTimeSeek command. You may seek to a time code when *DGy 201* is in either **Play, Pause** or **Stop** mode.

Use the following procedure to go to a specific time code:

~ From the WCP Player Screen (Figure 3-3) click on the **Options** button

~ On the Options page select the **Playback** tab

~ Select the date of the clip by entering directly into the **Date** field or using the spin controls.

~ Select the time that you are seeking to by entering directly into the **Time** field.

~ Click on the **Go** button

The *DGy 201* will cue to the specified time code if the time code is within the scope of the current clip.

~ Click on **Play** to commence playback from the specified point.

PLAYBACK LOOPING

The "Enable playback loop" check box enables the playback loop feature. This causes the *DGy 201* to repeatedly play the current clip.

ADVANCED PLAYBACK CONSOLE

The Advanced Playback Console supports the following playback functions:

• Previous Frame

• Next Frame

• Slow Reverse Play

• Slow Forward Play

• A-B Loop

By default the Advanced Playback controls are enabled, but if they are not visible click in the **Enable Advanced Playback Console** check box on the **Playback** Tab page. The drop down control panel will be displayed below the basic player control panel as shown in Figure 3-3. The control screen is shown separately in Figure 3-11 below.

Play Loop
Next Frame
Slow Forward Play
Slow Reverse Play
Previous Frame
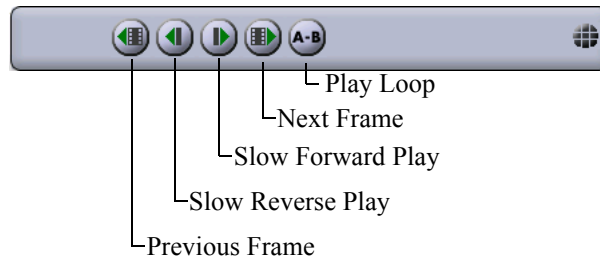
Figure 3-11. Advanced Playback Console

For information on the use of these controls see the following:

~ "**Previous Frame**" (page 36)

~ "**Slow Reverse**" (page 37)

~ "**Slow Forward** " (page 37)

~ "**Next Frame**" (page 38)

~ "**Play Loop**" (page 38)

RECORD TAB

The figure below illustrates the **Record Tab.** The **Record Tab** allows you to select sources to record, and set the frame rate and quality of the recorded image. You can also set an audible alarm to warn the operator when the disk is approaching full capacity.
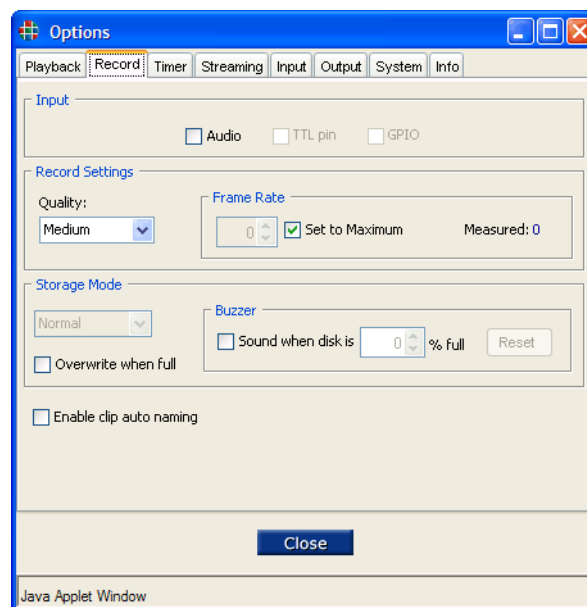
Figure 3-12.   Record Tab

SELECTING INPUT SOURCES

- In the **Input** section:
    - ~ With nothing checked, only video is recorded.
    - ~ Check **Audio** to record audio input signals together with the video.

SETTING QUALITY AND FRAME RATE

- In the **Record Settings** section:
    - ~ Use the pull-down **Quality** menu to set the desired recording quality, from **High** to **Low**. When set to **High** the Record Bit Rate is set to 1.5 bits per pixel. For most applications the Medium setting is recommended (factory default).

        The Medium setting provides compression of 1.0 bits per pixel (compression ratio 24:1) .
    - ~ Check **Set to Maximum** to record at the maximum frame rate allowable for the selected input resolution. Uncheck the box to manually set the frame rate with the up/down selector.

        If you select a frame rate that exceeds the maximum value for the current input resolution and quality setting, *DGy 201* will record at the maximum frame rate compatible with the quality setting and input resolution currently selected.

SETTING DISK RECORD OPTIONS

- In the **Storage Mode** section:
    - ~ Click in the "**Overwrite when full**"check box to activate the record overwrite feature. When this box is checked, the *DGy 201* will overwrite old recordings when the disk is full.
    - ~ Check "**Sound buzzer when full"** to alert you with an audible buzzer and flashing "**full**" indicator on the *DGy 201* front panel when the selected disk reaches the threshold level set in the "**% full**" entry box.
    - ~ If the buzzer sounds, click **Reset** to silence the buzzer.

CLIP NAMING

- A check box is provided at the bottom of the tab to enable or disable the automatic naming of clips.
    - ~ Check **Enable clip auto naming** to automatically create and name new clips when the **Record** button is

clicked. Automatically naming a clip provides the advantage that *DGy 201* will begin recording right away without first prompting for a file name.

When unchecked, a filename is required and WCP prompts you to enter a name when you initiate the record functions. The default name is automatic naming. If you want to enter a name manually, type the name into the entry box and press ENTER. Note that the recording will not begin until you have clicked on the **Record Clip** OK button.
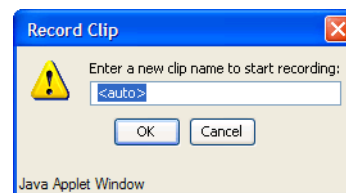
Figure 3-13.   Record Clip Name Entry

Automatic naming places a numeric name based on the current time and date when the recording was initiated. Refer to the "**Recording Clips**" section (see page 64) for details.

The figure below show the Options menu **Timer Tab**
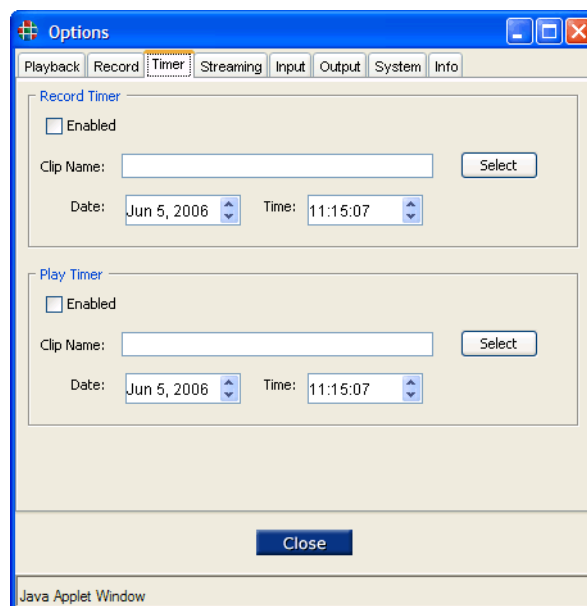
Figure 3-14.   Timer Tab

The Timer tab provides the ability to record a new clip or playback an existing clip at a user defined time in the future. Note that you may not have both a Record and Play Timer set at the same time.

SETTING A RECORD TIMER

To set a Record event use the following procedure:

~ Enter a Clip Name into the **Record Timer Clip Name** dialog box (A quick way to set the path name is to use the **Select** button to navigate to the folder that you want to use, select a file and rename the file to the file name that you wish to use for this recording)

~ Enter the required date into the Date Entry box or use the spin box to select the date

~ Enter the required Record Start time into the Time Entry box or use the spin box to select the time

~ Click in the **Enable** check box to activate the Timer

CANCELLING A RECORD TIMER

To cancel a Record Timer that has not yet started use the following procedure:

~ Uncheck the Record Timer **Enable** check box (**Figure 3-14**)

To cancel a Record Timer that has already started use the following procedure

~ Click on the **Stop** button (13, **Figure 3-3**)

SETTING A PLAY TIMER

To set a Play event use the following procedure:

~ Enter a Clip Name into the **Player Timer Clip Name** dialog box . A quick way to set the path name is to use the **Select** button to navigate to the folder that you want to use and select the desired clip.

~ Enter the required date into the Date Entry box or use the spin box to select the date

~ Enter the required Play Start time into the Time Entry box or use the spin box to select the time

~ Click in the **Enable** check box to activate the Timer

CANCELLING A PLAY TIMER

To cancel a Player Timer that has not yet started use the following procedure:

~ Uncheck the Player Timer **Enable** check box (**Figure 3-14**)

To cancel a Player Timer that has already started use the following procedure:

~ Click on the **Stop** button

STREAMING TAB

The *DGy 201* offers the optional ability to provide a unicast (single point to point) stream to a network attached PC for remote viewing of a live input signal. The *DGy 201* can stream from a live input or a pre-recorded clip. The stream can be viewed at the remote computer using Windows Media Player equipped with optional *DGy 201* Advanced Player software (JPEG 2000 plug in). You will have to configure the player before you can accept the stream. See the *DGy 201* Advanced Player User Guide for information on setting up and using the player to play a stream from the *DGy 201*.
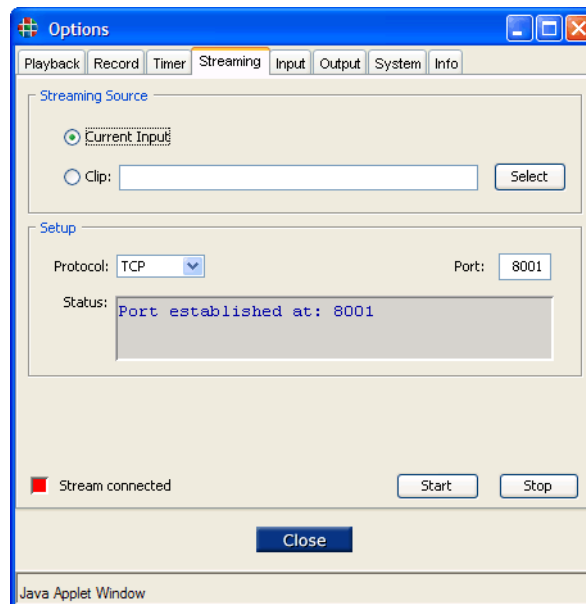
Figure 3-15. Streaming Tab

SELECTING THE STREAMING SOURCE

- In the **Streaming Source** section:
  - ~ Click the "Current Input" button to send the encoded form of the live input signal to the streaming output.
  - ~ Click the "Clip" button to send the selected clip to the streaming output
    - To change the selected clip use the **Select** button to open the Clip Browser and navigate to the clip that you wish to stream (see **Clip Browser Menu** on page 39)

SETTING THE STREAM CONNECTION

- In the **Set Up** section:
  - ~ Set the port number that you choose to stream over. This is the number of the port that the player will use at the receiving end of the stream. The default port number is 8001. It is important that the same port number is used at the server (*DGy 201*) end and at the player end.

    Note: The state of the connection is indicated by the **Connected** indicator located in the lower portion of the Streaming Tab. The indicator will be displayed as a green box if the connection has been opened successfully, or a red box if the connection was unsuccessful. If the *DGy 201* is unsuccessful at opening a connection using the specified port number, it will attempt to use the next available port number. Make sure that the player is set to use the next highest new port number. (for example 8002). Note that the port number 8000 is reserved and should not be used for this purpose.

STARTING THE STREAM

  - ~ Start the stream using the "Start" button.

STOPPING THE STREAM

  - ~ Stop the stream using the "Stop" button.

Note	You must be sure to start sending the stream from *DGy 201* before you receive the stream from the *DGy 201* Advanced PC Player software.

INPUT TAB

The figure below illustrates the **Input Tab.**

The Input Tab provides the ability to select the video input source, the type of audio, image settings (brightness, contrast ...) and load specific input signal timing parameters.
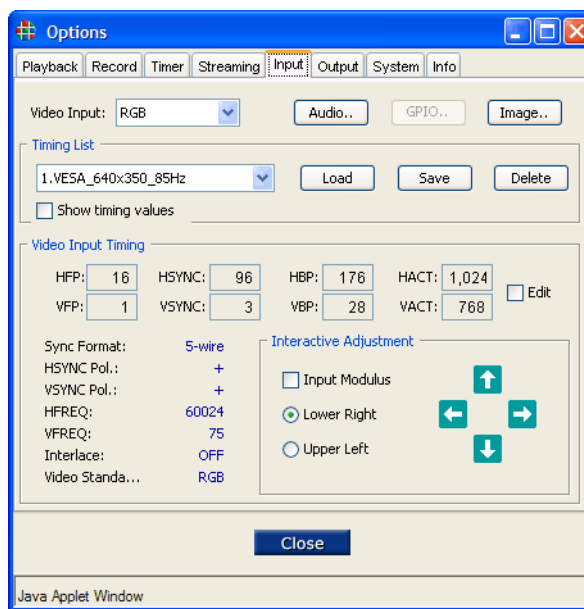
Figure 3-16.   Input Tab

SELECTING DVI, RGB OR COMPOSITE VIDEO INPUT

- At the top of the **Input Tab**:
    - ~ Use the pull-down **Video Input** menu to select the DVI , RGB or optional composite video input that you want to record.

ENABLING AUDIO RECORDING

    - ~ Click on the **Audio** button to open the **Audio Settings Dialog** box shown in the following figure.

      The **Audio Settings** dialog (Figure 3-17) provides the ability to set the audio inputs to accept line or microphone level input signals. If you are using a microphone level input and require power to supply the microphone, select the **Phantom Power** check box.
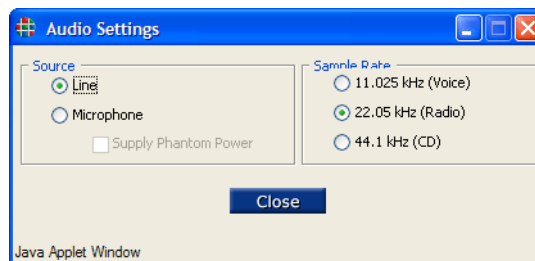
Figure 3-17. **Audio Settings Dialog**

The audio sample rate can be set using the radio buttons located in the right hand section of the **Audio Settings Dialog** box. The choice of audio sampling is based upon the desired quality level. Full CD quality audio is provided using the 44.1 kHz sample option. This is equivalent to a data rate of 176 kBytes per second. This is the default setting.

MAKING IMAGE ADJUSTMENTS

~   Click **Image** to display the **Image Adjustment Dialog**, which enables you to adjust the selected RGB or composite video input image:
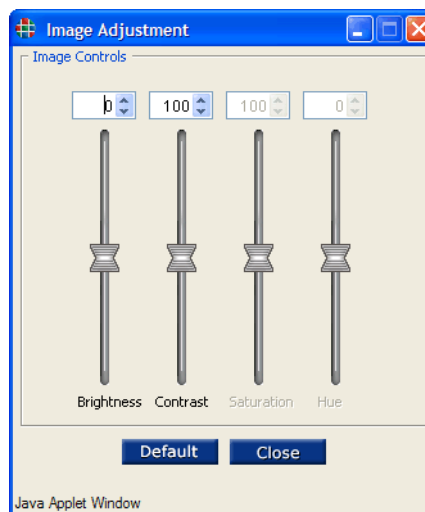
Figure 3-18. **Image Adjust Settings Dialog**

Four categories of adjustment are provided:

~ Brightness

~ Contrast

~ Saturation (optional composite input only)

~ Hue (optional composite input only)

These categories are enabled dynamically, depending on the selected input. To adjust a parameter, use the associated slider control or adjust numerically with the up/down selector. Note that Hue and Saturation apply only to the composite input which is an optional feature available for the *DGy 201* .

MAKING TIMING ADJUSTMENTS

• In the **Timing List** section:

~ Use the pull-down "Input" **Timing List** to select a pre-defined or user-defined set of input timing parameters for the selected input. Once selected, the parameters can be loaded or saved. If the timing is user-defined, it can also be deleted. It is not generally necessary to manually set Input Timing if Autosync is enabled. If you need more details on preset and user-defined timings please refer to Chapter 6, **Factory Timing List**.

~ Click **Load** to load the selected set of timing parameters into the system's active input registers. If desired, the parameters can be edited using the fields in the **Video Input Timing** section.

~ Click **Save** to save a modified set of timing parameters. Registers 100 - 160 are reserved for user-defined parameters. You will be asked to select and name a register.

~ Click **Delete** to delete a selected user-defined timing register. Preset registers can not be deleted.

• The timing parameters displayed in the **Video Input Timing** section of the page relate to the settings currently in use. When you use the drop down timing list, the timings shown in the **Input Timing** section are not updated until you load the new timing entry. To view the timing values before loading them, check the **Show Timing Values** check box. When the box is checked and a new entry is selected the values associated with the new entry will be displayed in the **Input Timing** section in red.

- In the **Video Input Timing** section, click **Edit** to activate all input timing fields for modification. In Chapter 6, refer to the **INputTiMing** command description for technical details on all input parameters.

Important | Only qualified engineering personnel should adjust or modify video input timing parameters.

- In the **Interactive Adjustment** section, controls are provided to enable qualified engineering personnel to interactively adjust input timing and input modulus parameters for the active screen area. Interactive adjustments can be used to fine tune the settings for non-standard video input signals.

OUTPUT TAB

The figure below illustrates the **Output Tab**:
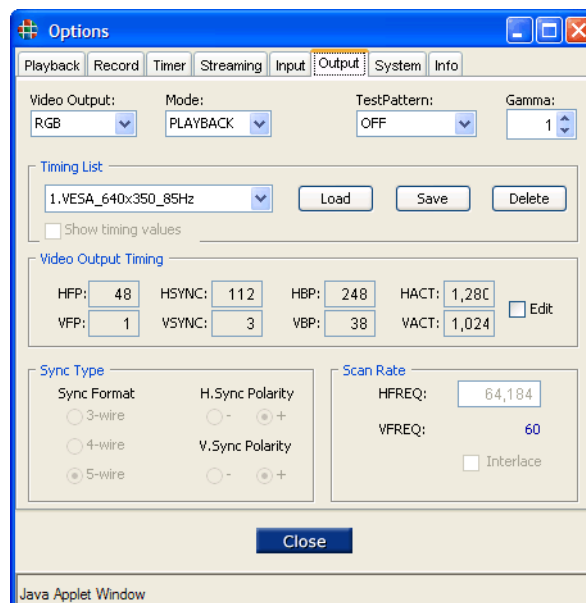
Figure 3-19. Output Tab

The **Output Tab** enables you to view the current output timing settings in addition to loading different settings. Typically, the output timing matches the timing parameters of the recorded image.

CHANGING VIDEO OUTPUT SETTINGS

- At the top of the **Output Tab**:
    - ~ Use the pull-down **Video Output** menu to select the desired output format: **RGB** or **DVI**. When one format is enabled, the other is disabled.

~ Use the **Mode** drop down menu to select between the Playback and Free-run modes. In the **Free-run** mode the output timing parameters are set by the user. In the **Playback** mode the output timing parameters are automatically loaded to match the format of the clip that is being played.

~ Use the **Test Pattern** drop down menu to select a test pattern to display on the output port. The test pattern provides a simple way to confirm that the output is correctly connected to a display device.

~ Use the **Gamma** spin box to change the gamma of the playback image for both analog and DVI outputs.

Note: The gamma of the input image recorded to disk is preserved. The **Gamma** control does not apply to the input image.

~ Use the **Timing List** section of the Output page to set the output format. To select a new Output format, select the required format from the drop down Timing list and click on the **Load** button. The timing parameters associated with the format are listed in the **Video Output Timing** section of the Output page. These parameters may be changed by clicking on the **Edit** button and making the required changes to the parameters in the **Video Output Timing** fields. This new setting may then be saved to the **Timing List** by selecting an unused entry in the list and clicking the **Save** button. Unwanted entries to the Timing List can be deleted by selecting the timing entry that you wish to delete in the drop down Timing List box, and clicking on the Delete button.

SYSTEM TAB

The figure below illustrates the **System Tab.**

The **System Tab** is used to view and set communications parameters in addition to setting the *DGy 201*'s internal clock.

Figure 3-20. System Tab

CHANGING COMMUNICATIONS SETTINGS

- In the **Network Settings** section:

  - ~ Fields are provided to report or change (if desired) the system's IP address, host name, subnet mask and default gateway.

  - ~ Click **Apply** to apply the new settings to the *DGy 201*.

    Note that network settings will not be applied to the *DGy 201* until the unit has restarted. After you have clicked on the **Apply** button you should see a pop up message window as shown in the following figure (Figure 3-21.)

    The Restart warning window gives you the opportunity to cancel the reboot and go back to the old network settings, or to restart the *DGy 201* using the new network settings.

    Note that WCP will lose communication with *DGy 201* as soon as the restart procedure begins. Also, if you have changed the IP address of *DGy 201* you will have to connect to it using the new network settings. Note that you will need to restart the WCP from your browser after the connection has been dropped.

Figure 3-21.   Restart Warning Message

Serial Communications settings are also set in the Systems Page. Available baud rates range from 9600 baud to 115,200 baud, but it is recommended to use the default baud rate (115 kbaud). Use the following procedure to change the serial port parameters.

- In the **Serial Port** section:
    - ~ Use the pull-down **Baud Rate** menu to set the baud rate for the system's RS-232 serial port. The default value is 115,200 baud.
    - ~ Check the **Echo On** box to enable echo.

SETTING THE DGy DATE AND TIME

The *DGy 201* uses an internal real time clock to time stamp the recordings.

You can manually set the time and date, or use the time and date setting of the PC that is running the copy of WCP that you are using to control *DGy 201*.

- In the **Clock** section:
    - ~ Click **Sync to PC** to load your PC's "local" time into the *DGy 201*'s temporary clock register.
    - ~ Use the **Date** and **Time** up/down selectors to adjust the date and time as necessary.
    - ~ Identify the Time Zone that your *DGy 201* is located in by using the drop down **Time Zone** box.
    - ~ Click **Apply** to upload the new time setting into *DGy 201*'s active clock register.

        OR
    - ~ Use the drop down entry boxes to manually set the Date and Time
    - ~ Identify the Time Zone that your *DGy 201* is located in by using the drop down **Time Zone** box.

~ Click **Apply** to upload the new time setting into *DGy 201*'s active clock register.

Note that the *DGy 201* will have to be restarted in order for the new time to be set. A warning message (see Figure 3-21) is issued asking you if you want to reboot immediately.

The *DGy 201* internal real time clock can be synchronized to an external time reference so that it is always set accurately. Accurate time references are provided by Network Time Servers (NTS) over the internet using the Network Time Protocol (NTP).

Alternatively an optional IRIG-B time reference can be used.

The Clock synchronization section provides the ability to set operation with either type of external time reference.

- In the **Clock Synchronization** section:

  ~ Radio buttons are provided to set the *DGy 201*'s timecode synchronization functions, including NTS and IRIG (IRIG-B is an optional *DGy 201* feature) assignments.

  NTS Time Synchronization

  ~ To use the Network Time Server (NTS) capability note that you will have to provide the IP address of at least one Network Time Server in the box provided before you can select the **Network Time Server** radio button in the clock synchronization section. You will also have to be sure that the *DGy 201* can access the time server over your network connection. In Chapter 6, refer to the "**RealTimeClockSYNC**" command description for details.

  ~ To put an entry into the NTS list box, click on the **Edit** button associated with the NTS list.

  ~ Enter the new server IP address and press the ENTER button.

  ~ If you want to change an existing entry, then first select the entry that you wish to edit using the drop down **NTS** list box, and then click on the Edit button. Enter the server IP address into the **NTS** list box and press the ENTER button.

  ~ Select the **Network Time Server** radio button to activate

    OR

IRIG-B Time Synchronization

~ To use the optional IRIG-B capability you will have to choose the type of IRIG-B signal that is connected to the IRIG input. This must be selected correctly before selecting IRIG-B time synchronizing.

~ Select the required input type (DCLS or 1kHz modulated) using the **IRIG Standard** drop down menu.

~ In the Clock Synchronization section click the **IRIG** radio button.

Update Period

~ The internal clock is synchronized to the currently selected reference signal (NTS or IRIG) periodically. You can adjust the length of time between updates by defining the update period in the entry box provided. The default period is 2 hours but the rate may be set from a minimum update period of 30 minutes to a maximum update period of 24 hours. Having a short update period may be required if you are using multiple *DGy 201* recorders in a time synchronized application.

INFO TAB

The figure below illustrates the **Info Tab**:
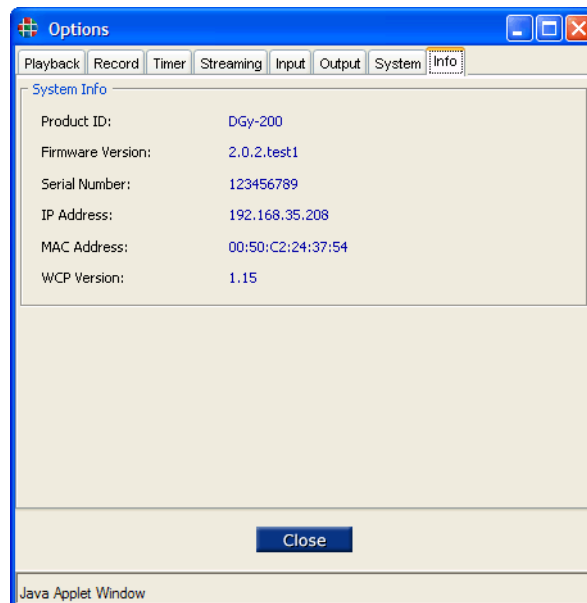
Figure 3-22. Info Tab

The **Info Tab** provides information about the *DGy 201* including:

- Product ID

- Firmware version

- WCP version

- Serial number

- IP address

- MAC address

COMMAND LINE CONTROL

The WCP provides a terminal emulator that can be used to issue serial commands from your PC (for details about serial commands see Chapter 6 on page 86). This is useful if you are developing scripts for controlling *DGy 201* from an external controller.

- Opening the Terminal Window use the following procedure:

    ~ Locate the *DGy 201* Configuration Page that opens automatically when the *DGy 201* WCP is launched (Figure 3-23)

Figure 3-23. DGy Configuration Page (WCP)

    ~ Click on the **Terminal** button at the bottom of the Configuration Page

    A Terminal window similar to that shown in Figure 3-24 should appear.

Figure 3-24. Terminal Window

- Using the terminal window

    ~ When the terminal window is open it is ready to use. Click inside the window to get access to the command prompt

    ~ Type the desired command at the command prompt including any arguments that the command requires and press ENTER

       Example: To confirm that the terminal type **ver** at the terminal command prompt and press ENTER. (see **"Command Line Interface" on page 86** for a detailed list of commands).

       The terminal should respond with a message similar to that shown in Figure 3-24.

       Note that you do not need to disable command logging in order to use command line control, but you may want to do so if you want to see only those commands that you have entered manually.

- Clearing the Terminal Window

    ~ To clear the contents of the Terminal Window click on the **Clear** button at the bottom of the Terminal Window

COMMAND LOG

The WCP Terminal window can also be used to log commands that are sent from the WCP to the *DGy 201*. This is particularly useful for debugging or in the development of a script for an external controllers using the command line interface (see **"Command Line Interface" on page 86** for details about each command).
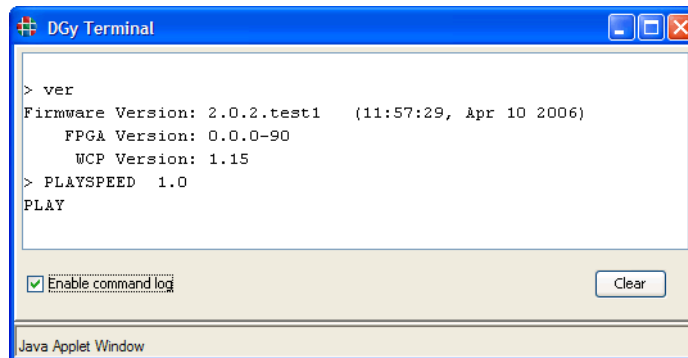
Figure 3-25. Terminal Window configured for logging

To turn on the Command Logging capability use the following procedure:

- If the Terminal Window is not open then follow the steps on "Opening a Terminal Window" on page 61

- On the **Terminal Window** page check the **Enable command log** check box

Important	Only use the command log as a guide to controlling the *DGy 201* from the command set. The WCP application uses some special functions that not supported in the *DGy 201* command set, and also may execute command sequences that are much more involved than your application demands. Use the log as a starting point and be ready to simplify the result.

RECORDING CLIPS

Before you proceed with this setup, refer to the "**Before you Start**" section (page 24) for important setup and connection information.

The first step in making a recording is to decide where you want to store the recording. The recording can be stored on the local removable drive, optional fixed drive or on a remote disk (optional feature). You may also wish to store the file in a particular directory, or even create a new directory.

MOUNTING A REMOTE DISK

If your *DGy 201* was provided with the optional Remote Disk Mount capability, you have the ability to a mount a disk external to the *DGy 201* over a network. Before beginning the process of mounting the remote disk you will have to set up the NFS server on the remote device. Note that *DGy 201* supports remote disk mount activity only with Allegro (for Windows PC platforms), or Linux based NFS servers. Allegro is a low cost server for the Windows platform and can be downloaded from the following web site: **http://nfsforwindows.com/home**

It is strongly recommended that you consult with your IT manager for assistance before proceeding.

 Use the following procedure to mount a remote disk.

1. Open the **Clip Browser** from the WCP **Player Screen** by clicking in the **Clip Path** section (see "Clip Browser Menu" on page 39)

2. Click on **File** in the **Clip Browser** tool bar

3. Click **Network Drive ...** from the **File** drop down menu.

4. Enter the path name to the remote disk in the Mount Network Drive pop up menu (Figure 3-26).

    The path name consists of two parts, the IP address of the remote storage device, and the name of the shared space that has been created on the device (known as the NFS name). You should generally obtain this information from your IT manager or network support specialist.

▲ **Example**:

> If the IP address of the Network drive is 192.168.1.59, and the storage area on the drive has been set up as usr/dgy, enter the following into the Mount Network Drive address line:
>
> 192.168.1.59:/usr/dgy

5. Click the **Mount** button

If the remote drive is found it will be displayed with the other drives in the left pane of the Clip Browser and listed as "**\remot**".

Figure 3-26. Remote Disk Mount network drive menu

CHOOSING A RECORD DESTINATION

Recordings can be made to the internal disk (removable or optional fixed disk) or an externally mounted drive (NFS disk mount option). Selection of the destination is made from the Clip Browser using the following procedure.

Note that the removable drive is named **/remov**, the fixed drive is named **/fixed** and the remote NFS drive is named **/remot.** Be sure not to confuse the remote and removable disk names.

1. If the Clip Browser is not open then open it from the WCP **Player Screen** by clicking in the **Clip Path** section (see "Clip Browser Menu" on page 39)

2. Use the left pane of the Browser (Figure 3-7) to navigate the drive and folder that you wish to use.

3. If you wish to create a new folder click on the New Folder icon on the Clip Browser Menu. Enter a name in the pop dialog box and click OK

RECORDING A CLIP

Use the following procedure to record a clip with *DGy 201*.

1. From the Web Control Panel (WCP) **Player Screen**, click **Options** to display the **Options Dialog**.

2. Click the **Record Tab** and set up the desired recording parameters, including input signal selection, quality level, frame rate and auto naming choice. Refer to the "**Record Tab**" section (page 46) for details.

3. Click the **Input Tab** and set up your input parameters, including RGB/DVI input selection, audio recording parameters, and image adjustments. If the *DGy 201* has not automatically locked to your input source then you can manually select the timing parameters from the Timing list. In the **Timing List** section,

select the timing that matches your input signal and click **Load**. Refer to the "**Input Tab**" section (page 52)for details.

4. Click **Close** to return to the **Player Screen** (Figure 3-3).

5. On the **Player Screen**, click the **Record** button to begin recording the new clip, with all parameters selected in the **Options Dialog**. If the clip autoname function is enabled the recording will begin immediately. If the clip autoname is disabled, a clip name dialog box will open giving you the opportunity to name the clip. For more details please refer to **Clip Naming** (page 47).

6. As required, click the **Pause** button to pause recording, or the **Stop** button to stop recording. Once stopped, the recording can be played back. Refer to the "**Playing Back Clips**" section (page 66) for details.

7. Repeat the process from step 7 to create another new clip for recording.

PLAYING BACK CLIPS

Before you proceed with this setup, refer to the "**Before you Start**" section (page 24) for important setup and connection information.

MOUNTING A REMOTE DISK

If you wish to play back a clip from a remote disk drive (optional feature) you need to make sure that the drive is mounted to *DGy 201*.

Note that *DGy 201* supports remote disk mount activity only with Allegro (for Windows PC platforms) or Linux based NFS servers.

Use the following procedure to mount a remote disk.

1. Open the **Clip Browser** from the WCP **Player Screen** by clicking in the **Clip Path** section (see "Clip Browser Menu" on page 39)

2. Click on **File** in the **Clip Browser** tool bar

3. Click **Network Drive ...** from the **File** drop down menu.

4. Enter the path name to the remote disk in the Mount Network Drive pop up menu (Figure 3-26 below).

   The path name consists of two parts, the IP address of the remote storage device, and the name of the shared space that has been created on the device (known as the NFS name). Obtain this name from your IT manager or network support specialist.

▲ **Example**:

> If the IP address of the Network drive is 192.168.1.59, and the storage area on the drive has been set up as usr/dgy, enter the following into the Mount Network Drive address line:
>
> 192.168.1.59:/usr/dgy

5. Click the **Mount** button

    If the remote drive is found it will be displayed with the other drives in the left pane of the Clip Browser and designated as "**/remot**".
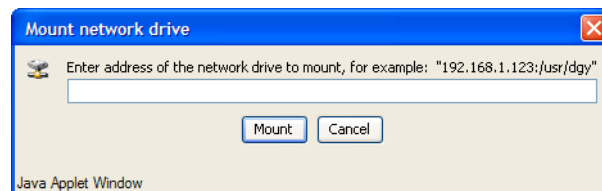
Figure 3-27. **Remote Disk Mount network drive menu**

CHOOSING A PLAYBACK DRIVE

You can play a recording back from either the removable drive, optional fixed drive or remote drive using the optional NFS mount option.

1. If the Clip Browser is not open then open it from the WCP **Player Screen** by clicking in the **Clip Path** section (see "Clip Browser Menu" on page 39)

2. Use the left pane of the Browser (Figure 3-7) to navigate to the drive and folder that contains that clip that you wish to play.

    Note that the removable drive is named /remov and the remote drive (NFS) is named /remot. Be sure not to confuse the names.

PLAYBACK A CLIP

Use the following steps to play back a clip with *DGy 201*.

1. If a clip was just recorded on the **Player Screen**, simply click the **Play** button to play back the same clip. Click **Pause** or **Stop** as required.

2. To play back a *different* clip, click the **Clip Name** label to display the **Clip Browser Menu.**

3. In the **Clip Directory** section, highlight the clip that you want to play back and click **Select**. The clip is transferred to the **Clip Name Field** in the **Player Screen**.

4. Click on the **Player Screen**.

5. Click the **Play** button to play back the clip. Click **Pause** or **Stop** as required.

6. To play back the *previous* clip in the **Clip Directory** without accessing the **Clip Browser Dialog**, click the **Previous Clip** button. *DGy 201* will cue to the beginning of the clip. Click on the **Play** button to play back the clip.

7. To play back the *next* clip in the **Clip Directory** without accessing the **Clip Browser Dialog**, click the **Next Clip** button. *DGy 201* will cue to the beginning of the clip. Click on the **Play** button to play back the clip.

NOTE: Next and Previous Clip work in the Play and Pause modes only.

CLIP PROTECTION

Clips can be protected to prevent accidental overwrite or deletion. Note that you cannot place event marks on a protected clip. The protect status of each clip is shown in the **Clip Browser**.

To set the protection on a clip use the following steps:

1) Open the **Clip Browser**

2) Click on the required clip

3) Click on the **Edit** button on the clip dialog Tool Bar

4) Click on **Protected** (check mark should indicate protected clip)

To remove the clip protection.

1) Open the clip browser

2) Click on the required clip

3) Click on the **Edit** button on the clip dialog Tool Bar

4) Click on **Protected** (check mark should clear indicating unprotected clip)

TRANSFERRING RECORDINGS

4

IN THIS CHAPTER

This chapter provides information regarding the transfer of recordings from *DGy 201* to an external storage device in addition to moving recordings from an external storage device to *DGy 201* :

- **File Transfers**
- **Transferring Files from DGy**
- **Transferring Recordings to DGy**

FILE TRANSFERS

The *DGy 201* records video and audio to disk (removable or optional fixed disk). Playback of recorded material is accomplished by the DGy reading the stored information, decoding the JPEG 2000 images and providing an analog or digital output signal for display on a local display device.

The images stored on the disk drive are stored as data files in the same way as other types of data are stored. This means that it is possible to transfer previously recorded files from the *DGy 201* to an external storage device for playback on a different device. This can be accomplished using the standard File Transfer Protocol (FTP) method. After the transfer is complete you will then able to play the recordings on your PC using an RGB Spectrum software player in conjunction with the Windows Media Player which will replay the clip that you have transferred to your local disk.

Transfer is easily accomplished from the WCP using the *DGy 201* FTP client.

Although less popular, it is also possible to transfer files from an external drive to a *DGy 201* for later replay on the *DGy 201* . This method can also be used if it is necessary to clone a *DGy 201* recorder.

STARTING THE FTP

CLIENT

When you use your web browser to connect to your *DGy 201* , the first page that the browser displays is the *DGy 201* "Applications Suite" page as shown in the following figure.

To access the page, type the IP address of the *DGy 201* in the Address line of your web browser and click on the **Go** button. Note that if the WCP application is already running you must first close it by clicking on the close window buttons (you cannot operate the WCP and FTP at the same time).
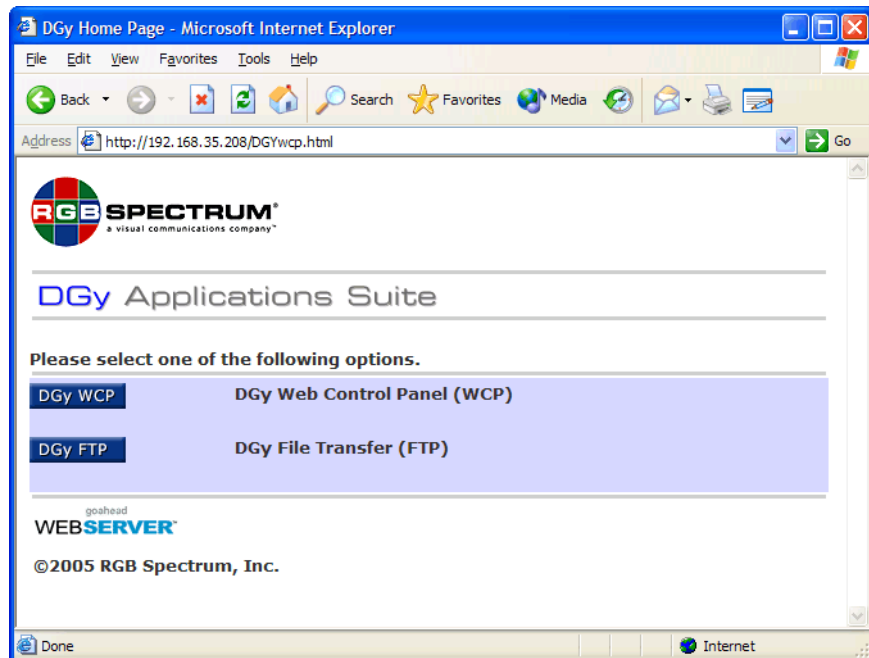
Figure 4-1. *DGy 201* **Application Suite Page**

The **Application Suite** page provides the option to open the *DGy 201* Web Control Panel or to set up a *DGy 201* FTP file transfer. To begin the file transfer set up, click on the button labeled ***DGy 201* FTP**. You will see the download file dialog shown in Figure 4-2.

Figure 4-2. **File Download Dialog Box**

To continue with setting up the FTP session click on the **Open** button in the File Download dialog box. After a pause of about 15 - 20 seconds, as the FTP Client application loads, you will see the *DGy 201* FTP Client dialog box as shown in the following figure.
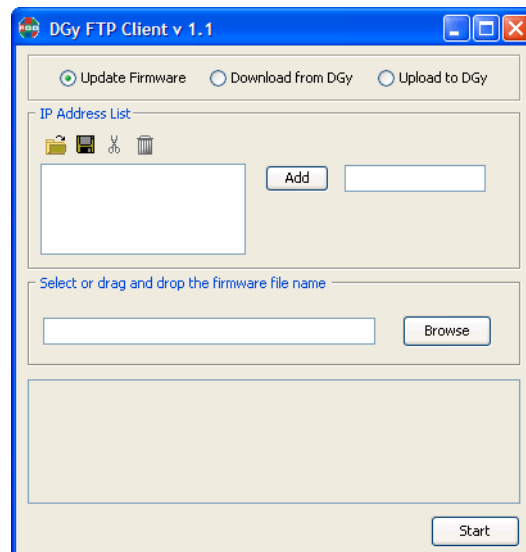
Figure 4-3. *DGy 201* **FTP Client Dialog Box**

Note	If additional dialog boxes appear, due to security applications, select **Run** or **OK**, depending on the software.

FTP TRANSFER TIME

The size of transfers can involve very large file sizes. The transfer rate on a typical network connection is similar to the rate at which the image can be stored to disk. This means that the transfer of files is approximately real time. In other words a clip that is 15 minutes in length will take about 15 minutes to transfer. Because you may have a long list of files, each of which may also be long, the ability to terminate the transfer is provided. To terminate the transfer of the current file, click on the **Abort** button at the bottom of the **File Transfer** Screen. If you wish to terminate the whole session click on the **Abort All** button. A dialog box will provide you with the chance to confirm your choice to terminate the process or complete the transfer process.

TRANSFERRING FILES FROM DGY

The built in *DGy 201* GUI provides both a graphical user interface and an FTP file transfer control panel. The *DGy 201* FTP application provides a convenient way to transfer one or a number of files from the *DGy 201* to an external drive.

DOWNLOADING FILES VIA FTP CONTROL PANEL

Use the following steps to set up and transfer files from the *DGy 201* to your local computer.

Step 1. Click the **Download from DGy** radio button to display the FTP download options as shown in the figure below.
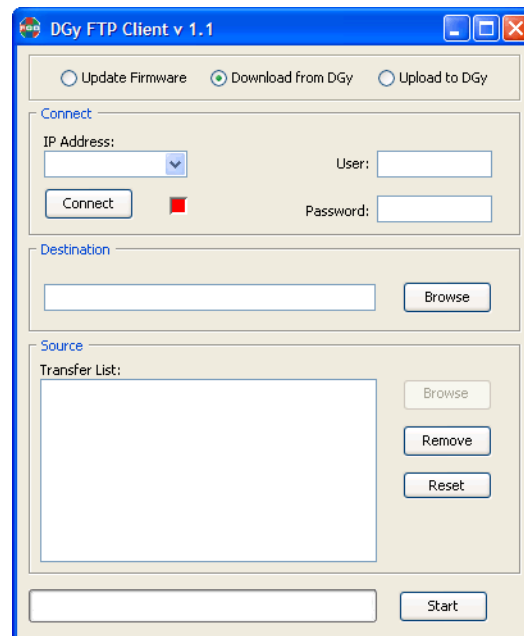
Figure 4-4. *DGy 201* **FTP Download Dialog Box**

Step 1. Enter the IP address of the *DGy 201* in the IP address entry box.

Step 2. Type "**rgb"** into the **User:** entry box (lower case only).

Step 3. Type "**spectrum**" into the **Password:** entry box (lower case only). The password will be hidden from view with each character replaced by the "*" symbol.

Step 4. Click on the **Connect** button and wait for the status icon to the right of the button to change from red to green (this may take from 30 to 90 seconds depending on network traffic). The green icon indicates that you are successfully connected to the *DGy*

201 and ready to begin the process of selecting and downloading clips to your PC. See Figure 4-5 below.
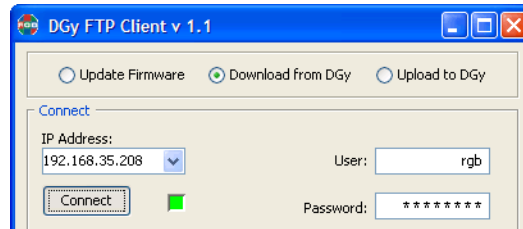
Figure 4-5. *DGy 201* **FTP Download Connection Established**

Step 5. Click on the **Browse** button in the **Destination** window to navigate to the folder that you wish to store the transferred files within (see Figure 4-6 below). Alternatively if you know the path name you can type this directly into the Pathname entry box.
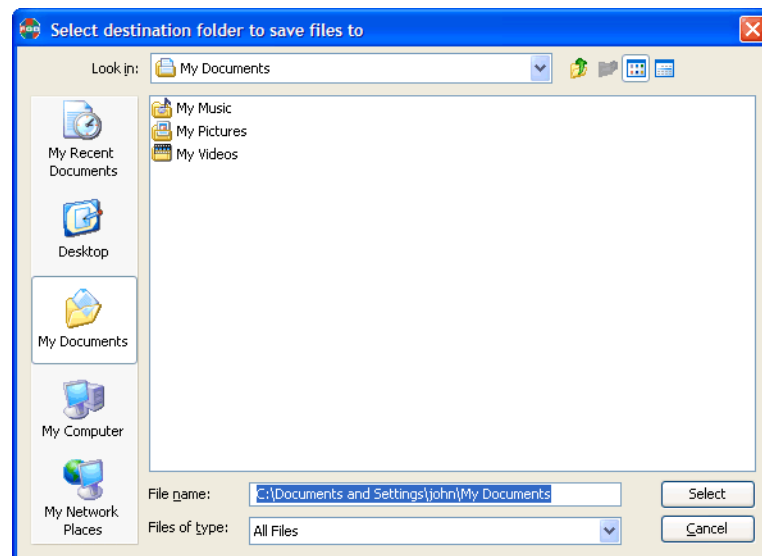
Figure 4-6. **FTP Download Destination Folder**

Step 6. Click on the **Browse** button in the **Source** window to open the **Select files to copy window** shown in Figure 4-7.

Figure 4-7. FTP File to Copy

Choose between the **Show clips** and **Show files** radio buttons at the bottom of the **Select files to copy** page so that you can view either a list of files or a list of clips.

Note	A clip is typically composed of a group of files (a file is part of a clip). It is suggested to set this window to **Show clips** so you make sure to transfer all the files associated with a clip.

Step 7. Click on the clip (or file) that you wish to transfer and then click on the **Select** button. The clip will then be added automatically to the **Source transfer list** (Figure 4-9). Repeat this step for each of the clips (or files) that you wish to transfer.

Note	Depending on the clip, you may have more than 1 file listed in the Source Transfer List for every clip you selected.

Step 8. Click on the **Close** button in the **Select files to copy** window to complete the file selection process and return to the *DGy 201*

FTP Client. You can leave this open if you wish to transfer files later.

Step 9. Note that the Source transfer list now includes the clips (or files) that you selected in Step 7.
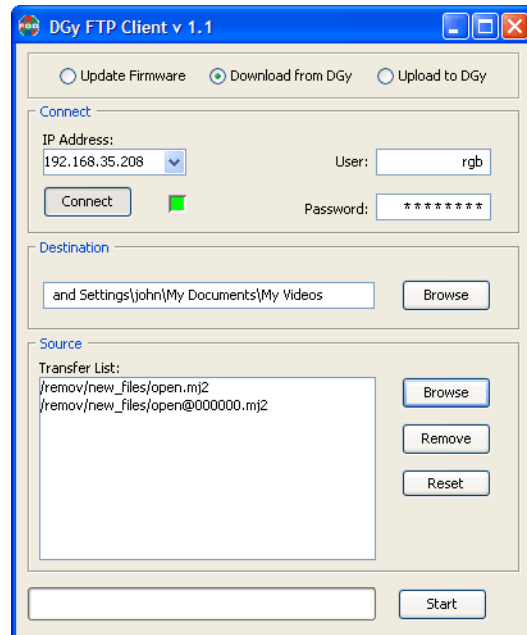
Figure 4-8. File Download Transfer List

Step 10. Click on the **Start** button to initiate the transfer of the files in the Transfer list. The files will be automatically transferred sequentially from the file transfer list. The file that is currently being transferred is indicated in the **File Transfer** screen that appears as soon as the transfer process has been started (shown in the following figure).
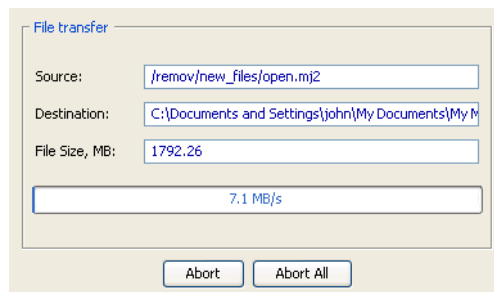
Figure 4-9. File Transfer Screen

To terminate the transfer of the current file, click on the **Abort** button at the bottom of the **File Transfer** Screen. If you wish to terminate the whole session click on the **Abort All** button. A dialog box will provide

you with the chance to confirm your choice to terminate the process or complete the transfer process.

TRANSFERRING RECORDINGS TO DGy

Although files are typically transferred from *DGy 201* to an external device, they can also be imported from an external device to the *DGy 201* using the either the FTP control panel GUI or standard command line ftp method. Both methods are described below.

**UPLOADING FILES
VIA FTP
CONTROL PANEL**

Use the following steps to set up and transfer files to the *DGy 201* from your local computer.

Step 1. Start the FTP client. Refer to **Starting the FTP Client** (page 70).

Step 2. Click the **Upload to DGy** radio button to display the FTP upload options as shown in the figure below.
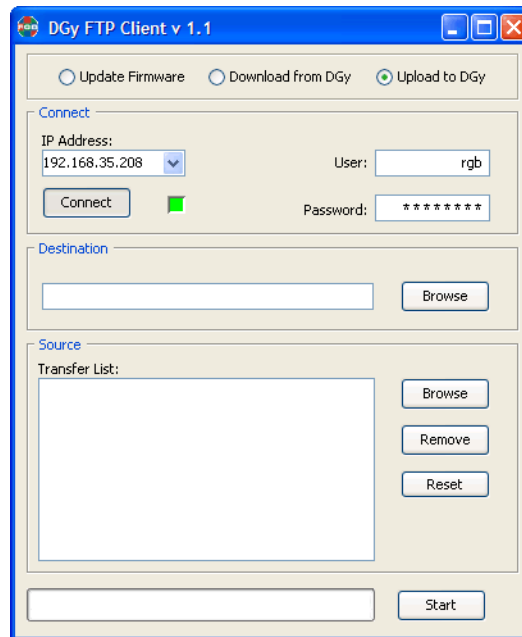
**Figure 4-10.** *DGy 201* **FTP upload Dialog Box**

Step 3. Enter the IP address of the *DGy 201* in the IP address entry box.

Step 4. Type "**rgb"** into the **User:** entry box (lower case only).

Step 5. Type "**spectrum**" into the **Password:** entry box (lower case only). The password will be hidden from view with each character replaced by a "*" character.

Step 6. Click on the **Connect** button and wait for the status icon to the right of the button to change from red to green (this may take from 30 to 90 seconds). The green icon indicates that you are successfully connected to the *DGy 201* and ready to begin the process of selecting and uploading clips from your PC. See Figure 4-5 below.
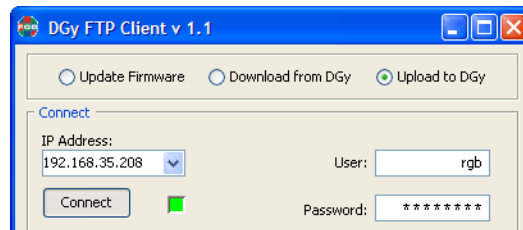
Figure 4-11. *DGy 201* **FTP Upload Connection Established**

Step 7. Click on the **Browse** button in the **Destination** window to navigate to the folder where you wish to store the transferred files (see Figure 4-12 below). Alternatively if you know the path name you can type this directly into the Pathname entry box at the bottom of the window.
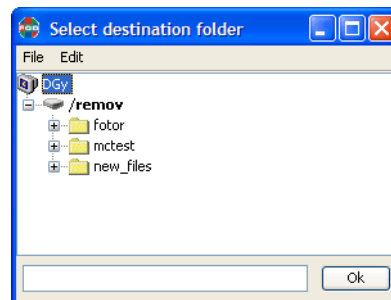
Figure 4-12. **FTP Upload Destination Folder**

Step 8. Click on the **Browse** button in the **Source** window to open the **Select files to copy window** shown in Figure 4-7.

Figure 4-13.   FTP File to Copy Page

Step 9. Click on the clip (or file) that you wish to transfer and then click on the **Select** button. The clip will then be added automatically

to the **Source transfer list** (Figure 4-9). Repeat this step for each of the clips (or files) that you wish to transfer.

Step 10. Note that the Source transfer list now includes the clips (or files) that you selected in Step 9.
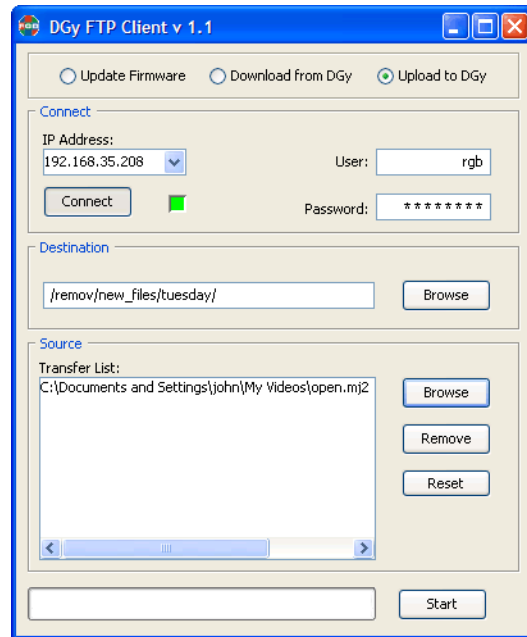
Figure 4-14. File Upload Transfer List

Step 11. Click on the **Start** button to initiate the transfer of the files in the Transfer list. The files will be automatically transferred sequentially from the file transfer list. The file that is currently being transferred is indicated in the **File Transfer** screen that appears as soon as the transfer process has been started (shown in the following figure).
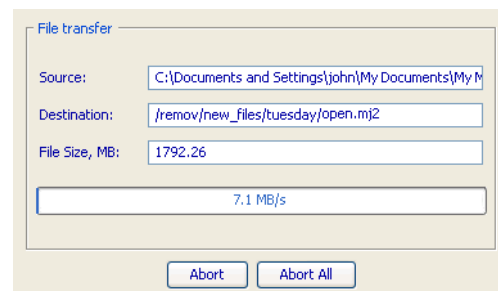
Figure 4-15. File Transfer Screen

To terminate the transfer of the current file, click on the **Abort** button at

the bottom of the **File Transfer** Screen. If you wish to terminate the whole session click on the **Abort All** button. A dialog box will provide you with the chance to confirm your choice to terminate the process or complete the transfer process.

**UPLOADING FILES
VIA FTP
COMMAND LINE**

Use the following steps to transfer files via command line from a PC running Windows software to the *DGy 201*.

Step 1. From the Windows START menu, select RUN.

Step 2. In the RUN dialog box, type: **cmd** then press OK

Step 3. At the prompt, type: **ftp** *<ipadddress of the DGy>* then press ENTER

Example: ftp 192.168.1.200

Step 4. *DGy 201* will respond with a prompt requesting a user name. Type: **rgb** (lower case) and press ENTER

Step 5. *DGy 201* will respond with a prompt requesting a password.Type: **spectrum** (lower case) and press ENTER

Step 6. You should now see a login confirmation message. Select the binary file transfer mode by typing: **bin** and press ENTER

Step 7. From the prompt, type: **pwd** then press ENTER. This will report the DGy directory that you are currently logged into (typically reported as "**/rgb**").

To copy files to the *DGy 201* removable drive, type: **cd /remov** and press ENTER

To copy files to the *DGy 201* fixed drive, type: **cd /fixed** and press ENTER

Step 8. Select the source directory on your PC's hard disk by typing: **lcd <PC drive>\< PC directory>** and press ENTER

(where **<PC drive>\<PC directory>** is the source directory path name)

Example: lcd c:\DGy_Samples

Step 9. To copy a single file from your PC to the *DGy 201*, type: **put <filename>** and press ENTER

To copy multiple files use the ftp "mput" function. *DGy 201* recorded files have the file extension .mj2. To copy all files with that extension you can the use the following ftp command **mput *.mj2**

Step 10. To exit the FTP process, type: **bye** and press ENTER

PC Software Player

5
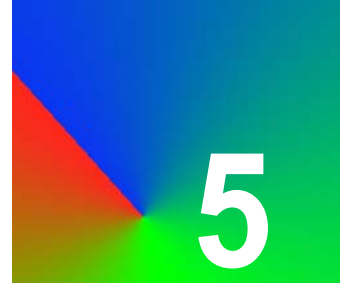
IN THIS CHAPTER

This chapter provides installation information for the *DGy 201* PC software player plug in for the standard Windows Media Player (version 9 or later).

PC SOFTWARE PLAYER

The *DGy 201* encodes the input images using the standard JPEG 2000 compression standard. Files recorded on the *DGy 201* can be played on a PC player running the Windows operating system. This is accomplished by using a plug in for the standard Windows Media Player version 9 or later. You will find a copy of the plug in provided on the CD ROM manual that was included with your *DGy 201* . The plug in is installed using the common Install shield method which is described in the next section.

INSTALLING THE JPEG 2000 PLUG IN

Use the following procedure to install the JPEG 2000 plug in for the Windows Media Player.

Step 1. Open the CD which contains the DGy Basic PC Player software

Step 2. Double click on the *DGy PC Player Software Setup* icon. This will launch the familiar InstallShield Wizard.

Step 3. Follow the prompts to load the software onto your system.

Step 4. Copy the *Simulator Sample* file to a folder on your PC's hard drive.

Step 5. Launch Windows *Media Player*.

Step 6. From the Media Player *File*, choose *Open*, then select *All Files *.**. Then navigate to the folder which contains the sample files.

Step 7. Click on the *Simulator Sample* file and Click OK.

If you receive a pop-up message stating that the Media Player does not recognize the file extension, choose the option to let Media Player attempt to play the clip anyway and click on the box to prevent this message box from being displayed again.

(We recommend using the latest version of Media Player, version 9 (or higher). This is downloadable freely at the Microsoft website.

Step 8. The selected clip will load into Media Player and commence playback.

For the highest quality PC replay, use the keystroke sequence **ALT ENTER** to display the clip full screen. To return to normal size press the **ESC** key.

COMMAND LINE INTERFACE

6

IN THIS CHAPTER

This chapter discusses the *DGy 201* control command set, which provides access to all of the unit's functions. The factory timing list is also provided.

The following topics are discussed:

- **Command Overview**
- **Command Format**
- **Command Set List**
- **Command Summary**
- **Input Commands**
- **Image Commands**
- **Audio Commands**
- **Output Commands**
- **Recorder Commands**
- **Clip and Disk Commands**
- **Time Commands**
- **Miscellaneous Commands**
- **Factory Timing List**

COMMAND OVERVIEW

All *DGy 201* functions are accessible by means of ASCII commands that are used to set one or more system parameters (or values). The command set is made up of ASCII characters. Note that commands associated with file and path names are case sensitive. These commands may be used to control *DGy 201* via the RS-232 serial port or via the Ethernet port using the internal *DGy 201* telnet server.

The *DGy 201* can also be controlled using the supplied Web Control Panel (WCP) graphical user interface which can be used with a computer and a standard web browser. Remote control is typically accomplished using a third party controller connected to either the serial or Ethernet port.

COMMAND FORMAT

The following topics are discussed in this section:

- **Command Line Usage**
- **Command Help**
- **Predefined Parameter Values**
- **Query the Current Setting**
- **Parameter Ranges**
- **Optional Parameters**

COMMAND LINE USAGE

All commands take the following form:

COMMAND_NAME <value1> <value2>...

… followed by **Enter**.

Parameter values are shown in angle brackets < > and optional parameters are contained in square brackets [ ]. In the above example, value1, value2 (etc.) are *required* parameters specific to the stated command.

▲ **Example**: Set *DGy 201*'s baud rate to 115,200 bps:

BAUDRATE 115200

The majority of commands have both long and short forms:

- The long form version is an easily understood word (or the concatenation of two or more words).

- The short form version is an abbreviation of the command name.

Note | With the exception of several "interactive" functions, commands are not case sensitive. In the **Command Set List**, upper case characters in the long form version indicate the letters required for the short form version.

In the example above, the command "BAUDrate" could be entered in four different ways:

BAUDRATE

baudrate

BAUD

baud

To execute commands, each command line must be followed by a carriage return (pressing **Enter**).

COMMAND HELP

▲ **Commands:** "Help"

There are two primary ways to use the *DGy 201*'s help feature:

- Type HELP to list all *DGy 201* commands.

- Type HELP followed by the command to get command-specific help.

    ▲ **Example:** Type H PLAY to get help on the **Play** function.

    ▲ **Example:** Type H PLAYLOOP to get help on the **Play Loop** function.

- Type HELP followed by the first character or characters of the command name to get a list of all commands beginning with those characters.

    ▲ **Example:** Type H IP to get help on the commands associated with IP addressing.

PREDEFINED PARAMETER VALUES

Some commands have predefined values, and only these may be used as parameter choices. Predefined parameter choices are indicated as

<value1|value2|value3>

▲ **Example:** The choices for BAUDrate are:

<1200 | 2400 | 9600 | 19200 | 38400 | 57600 | 115200>

QUERY THE

CURRENT SETTING

Many commands will report back on the current parameter settings. To establish the current parameters associated with the command enter the command without any arguments. *DGy 201* will respond with the current settings of the selected parameter.

▲ **Example:** If you wish to determine the current *DGy 201* selection of input source, use the INputSouRCe command without entering an argument (this example assumes that the current input source is set DVI).

Typing the command:

    INSRC

would return:

    DVI

PARAMETER

RANGES

Parameter values may be a "range," or a defined set of choices (as described above in the "**Predefined Parameter Values**" section).

Ranges are indicated as:

    <value1 ... value2>

▲ **Example**: The value of GAMma is a number in the range of

    <0.5 ... 2.0>

OPTIONAL

PARAMETERS

Some commands have optional parameter values that are *not required* in a command. These discretionary values are indicated by square brackets []:

    COMMAND <value> [value2]

In this example, <value> is a required parameter and [value2] is an optional parameter.

COMMAND SET LIST

The following sections list the commands used for controlling the *DGy 201*. A table of all commands is provided, followed by lists arranged according to categories.

- **Command Summary**
- **Input Commands**
- **Image Commands**
- **Audio Commands**
- **Output Commands**
- **Recorder Commands**
- **Clip and Disk Commands**
- **Time Commands**
- **Miscellaneous Commands**

Note	It is recommended that you take the time to review each of these command lists, trying as many commands as possible with your *DGy 201*. In that way, you will quickly become familiar with the machine's full capabilities, in addition to improving your operational skill.

COMMAND SUMMARY

This section provides a hyperlinked index of all *DGy 201* commands in alphabetical order. Click the hyperlink to see a detailed description of the associated command.

Command Index

Command Index (Continued)

INPUT COMMANDS

A summary of *DGy 201* input commands is listed below. Click on the hyperlink to see a detailed description of the command.

Table 6-1. **Input Commands Summary**

Command	Description
INputAutoSync	Engages the RGB input Autosync circuitry.
INputFormat	Reports the type of signal selected for record.
INputLOAD	Loads the indicated entry from the Timing List to the RGB input channel.
INputMODulus	Adjusts the sample point of the analog RGB analog/digital converter to optimize the digitized picture quality.
INputNAME	Assigns a name to the input.
INputSAVE	Saves the RGB input characteristic to the selected entry in the Timing List.
INputSourCe	Selects between DVI and RGB input types (and optional composite video)
INputTiMing	Sets the timing of the analog RGB input.
TiMingDELete	Deletes the specified timing entry from the Timing List.
TiMingLIST	Displays the list of saved input and output timings.
TiMingLISTCLEAR	Deletes all user entries from the Timing List.
TiMingLISTLOAD	Create and save a custom timing list entry into the user space.

Refer to the "**Input Commands Descriptions**" section for descriptions of all input commands.

INPUT COMMANDS DESCRIPTIONS

The table below lists all *DGy 201* input commands, their arguments and detailed descriptions.

Table 6-2. **Input Commands**

Command	Arguments	Description
INput**A**uto**S**ync	<AUTO | LOCK | DEBUG>	AUTO engages the input autosync circuitry. LOCK turns the autosync circuitry off. If the source is slightly unstable this prevents the autosync circuitry from constantly re-acquiring the signal. DEBUG provides information on input status, and reports changes to measured parameters (serial port only). Factory Default: AUTO
INputFormat	(none)	INputFormat is a read only command that reports the type of signal selected for recording. DVI, RGB or NTSC or PAL for the optional Composite video input (see also **INputSourCe**).
INput**LOAD**	<1..160>	Loads the indicated entry from the Timing List to the RGB input channel. This command only operates when an analog RGB signal is present and selected (with the **INputSourCe** command). Otherwise an error message will be returned. Refer to the "**Factory Timing List**" section for additional details.
INput**MOD**ulus	(none)	This command provides a way to optimize the input timing for the analog RGB input to exactly sample the center of each pixel. A reasonably "busy" image is required for alignment (for example a screen with fine vertical lines or a screen with lots of fine text). i = increase modulusm =decrease modulus j = decrease phasel= increase phase J = move left L = move right I = move up M = move down With the image properly adjusted, quit the utility: q = quit If the timing of the analog source is known, it should be entered with the **INputTiMing** command, but the INputMODulus command may still be used to set the sampling phase interactively.
INput**NAME**	<name>	Assigns a name to the input. The argument can be up to 23 alphanumeric characters with no spaces (underscore is acceptable). Factory default: Auto_1 This command only operates when an analog RGB signal is present and selected (with the **INputSourCe** command). Otherwise an error message is returned.

Table 6-2. Input Commands (Continued)

Command	Arguments	Description
INput**SAVE**	<100..160>	Saves the RGB input characteristic to the selected entry in the Timing List. These settings are recalled whenever the signal is detected by the auto-sync circuitry, and the RGB input is selected.
		This command only operates when an analog RGB signal is present and selected (with the **INputSourCe** command). Otherwise an error message is returned.
		If **INputSAVE** is issued for an already occupied position, the *DGy 201* requests overwrite confirmation.
		Refer to the "**Factory Timing List**" section for additional details.
INput**SourCe**	<RGB | DVI | Composite>	This command selects between an RGB or DVI input source. When the optional Composite video input is installed the selection also includes Composite as a choice of signal source.
		Factory default: RGB
INput**TiM**ing	[<hfp> <hs> <hbp> <hact> <vfp> <vs> <vbp> <vact> [<phase>]	This command sets the timing of the analog RGB input. The command can be used in two different ways. The syntax described here provides the ability to change or read the complete set of timing parameters with a single command. An alternate method allowing a change to a single parameter is shown in the next description (see below).
		Note: The vertical total can not be changed from the measured value; that is, the total of <vfp> + <vs> + <vbp> + <vact> must remain constant.
		The optional argument <phase> may be used to set the sampling phase. Typically it is easier to set the sampling phase with the **INputMODulus** command.
INput**TiM**ing (Alternate syntax)	<HFP | HS | HBP | HACT | VFP | VS | VBP |VACT| PHASE>[<value>]	Using the InputTiming command with the alternate syntax shown here provides the ability to change or read a single parameter of the current input timing. See above for the syntax that supports setting or reading all Input timing parameters as a single command.
TiMing**DEL**ete	<100..160>	Deletes the specified timing entry from the Timing List. Refer to the "**Factory Timing List**" section for details.
TiMing**LIST**	[<1..160> [<1..160>]] | [ACTIVE]	Displays the list of saved input and output timings. If two numeric arguments are supplied, displays all entries in the range. If ACTIVE, displays only the active timings.
TiMing**LISTCLEAR**	(none)	Deletes all user entries from the Timing List.

Table 6-2. **Input Commands (Continued)**

Command	Arguments	Description
TiMingLISTLOAD	<100 ...160> <name> <hfp> <hs> <hbp> <hact> <vfp> <vs> <vbp> <vact> <hfreq> <sync> <hpol> <vpol> <il>	This command is used to create and save a user timing set to the timing list. User defined entries may be saved to the list using timing list slots 100 - 160 (Timing slots 1 - 99 are reserved for factory defined timing settings). The name parameter is a name that is used to identify the timing set (for example *mytiming3*). **hfp** - width of the horizontal front porch (pixels) **hs** - width of the horizontal sync pulse (pixels) **hbp** - width of horizontal back porch (pixels) **hact** - width of the active picture area (pixels) **vfp** - width of the vertical front porch (pixels) **vs** - width of the vertical sync pulse (pixels) **vbp** - width of vertical back porch (pixels) **vact** - height of the active picture area (pixels) **hfreq** - horizontal frequency (Hz) **sync** - type of sync signal (analog 3, 4 or 5 wire) **hpol** - polarity of horizontal sync pulse (0=negative) **vpol** - polarity of vertical sync pulse (0= negative) **il** - interlace (0 = non interlace, 1 = interlace)

IMAGE COMMANDS

A summary of *DGy 201* image commands is listed below.

Table 6-3. **Image Commands Summary**

Command	Description
BRIghtness	Sets brightness value of the analog RGB input or optional composite video input.
CONTrast	Sets contrast value of the analog RGB input or optional composite video input
HUE	Sets hue value of the optional composite video input.
SATuration	Sets the saturation (color contrast) value of the optional composite video input.

IMAGE COMMANDS DESCRIPTIONS

The table below lists all *DGy 201* image commands, their arguments and detailed descriptions.

AUDIO COMMANDS

A summary of *DGy 201* audio commands is listed below. Click on the hyperlink to see a detailed description of the command.

Table 6-5. **Audio Commands Summary**

Command	Description
AUDioFREQuency	Sets the sample rate (in kHz) of the audio input
AUDioMoDe	Determines which (if any) audio source is recorded.
AUDioSouRCe	Determines whether input sensitivity is appropriate for microphone or line level signals.
AUDioPHANTom	Supplies the low voltage phantom power, required by some electret microphones.

AUDIO COMMANDS DESCRIPTIONS

The table below lists all *DGy 201* audio commands, their arguments and detailed descriptions.

Table 6-6. **Audio Commands**

Command	Arguments	Description
AUDio**FREQ**uency	<11.025 | 22.05 | 44.1>	Sets the sample rate (in kHz) of the audio input. Factory default: 44.1 (CD quality).
AUDio**M**o**D**e	<L | R | Stereo | OFF>	Determines which (if any) audio source is recorded. If AUDioMoDe is set to *L* or *R*, the audio is routed to both output channels on replay. If AUDioMoDe is set to Stereo, the Left and Right audio channels are routed independently to the Left and Right audio output connectors (Stereo or separate audio). If AUDioMoDe is set to OFF then audio is not recorded. NOTE: This does not affect playback. A clip containing audio will be replayed independent of the setting of this command. Factory Default: OFF
AUDio**PHANT**om	<ON | OFF>	Supplies the low voltage phantom power, required by some electret microphones. The setting of **AUDioPHANTom** is ignored unless **AUDioSouRCe** is *MIC*. Factory default: OFF

Table 6-6. Audio Commands (Continued)

Command	Arguments	Description
AUDio**S**ou**RC**e	<MIC | LINE>	Determines whether input sensitivity is appropriate for microphone or line level signals. If AUDioSouRCe is set to *LINE*, phantom power is disabled automatically (but the setting of **AUDioPHANTom** remains unchanged). Factory default: LINE

A summary of *DGy 201* output commands is listed below. Click on the hyperlink to see a detailed descriptors of the command.

Table 6-7. **Output Commands Summary**

Command	Description
GAMma	Sets the playback gamma.
OUTPUT	A query command which returns information on the current output timing.
OutputMode	Sets the output mode to *FreeRun* or *PlayBack*.
OutPuTForMaT	This command selects the active format, analog RGB or DVI.
OutPutTiMingLOAD	Sets the output raster to the timing selected from the Timing List.
OutPutTiMingNAME	Assigns a name to the current output timing.
OutPutTiMingSAVE	Saves the timing data of the current output raster into the Timing List.
OutPutTiMing	Sets the timing for the current output.

Refer to the "**Output Commands Descriptions**" section for descriptions of all output commands.

OUTPUT COMMANDS DESCRIPTIONS

The table below lists all *DGy 201* output commands, their arguments and detailed descriptions.

Table 6-8. **Output Commands**

Command	Arguments	Description
GAMma	<0.5...2.0>	Sets the playback gamma. Factory default: 1.0
OUTPUT	(none)	A query command which returns information on the current output timing.
Out**P**ut**TiM**ing**LOAD**	<1..160>	Sets the output raster to the timing selected from the Timing List. In order to load the output timing parameters the *DGy 201* must be in the Free Run mode. (see **OutputMode**) Refer to the "**Factory Timing List**" section for details.
Out**P**ut**TiM**ing**NAME**	<name>	Assigns a name to the current output timing. The argument can be up to 23 alphanumeric characters with no spaces (underscore is acceptable).
Out**P**ut**TiM**ing**SAVE**	<100..160>	Saves the timing data of the current output raster into the Timing List. The argument specifies which Timing List position is used. If **OutPutTiMingSAVE** is issued for an already occupied position, the DGy requests overwrite confirmation. Refer to the "**Factory Timing List**" section for additional details.
Out**P**ut**TiM**ing	<hfp> <hs> <hbp> <hact> <vfp> <vs> <vbp> <vact> <hfreq> <sync> <hpol> <vpol> <il>	Sets the timing for the current output.
Out**P**ut**TiM**ing (Alternate)	<HFP | HS | HBP | HACT | VFP | VS | VBP |VACT| HFREQ| SYNC | HPOL | VPOL | IL>[<value>]	Changes (or reports) one parameter of the current output timing.

Table 6-8. **Output Commands (Continued)**

Command	Arguments	Description
Output**M**ode	[FreeRun | PlayBack]	In **FreeRun** mode, the output reflects the Output Timing numbers. In **PlayBack** mode, the output has the same timing as that of the recorded signal being played back. If the DGy is not in playback mode, the output timing reflects the last clip played. Factory default: Playback
Out**P**u**TF**or**M**a**T**	[RGB | DVI]	The DGy has a DVI-I output connector, capable of carrying analog and digital outputs. Only one output format is active at any time. This command selects the format of the active output signal. Factory Default: RGB

RECORDER
COMMANDS

A summary of *DGy 201* recorder commands is listed below. Click the hyperlink to see a detailed description of the command.

Table 6-9. **Recorder Commands Summary**

	Description
DeleteMARK	Deletes the specified event mark if the event mark is in the clip currently being played.
EditMARK	This command names (or renames) the specified event mark.
FrameNext	Steps to the next frame of a paused clip
FramePrevious	Steps to the previous frame of a paused clip
ListMARK	Displays the timecode and description of the mark number specified.
ListEVeryMARK	Lists the timecode and description of all event marks in all clips on both disks.
MARK	Creates an event mark within the current clip.
NEXTMARK	Sends the recorder to the next event mark from the current position and cues there.
PAUSE	This command pauses the playback or record mode.
PLAY	Switches the DGy to Playback mode and plays a previously made recording.
PLAYLOOP	Plays the current list of clips to the end and automatically replays the list until stopped.
PLAYSPeeD	Set the playback speed. Applies to forward and reverse play modes.
PREVMARK	Sends the recorder to the previous event mark from the current position and cues there.
RECord	This command switches the DGy to Recording mode.
RECordBitRate	Sets the degree of compression i.e. quality level (Stated in bits/pixel).
RECordFrameRate	Sets the rate at which input frames are compressed and stored to disk.
RECordLOOP	Enables or disables the disk overwrite feature.
SeekToMARK	Sends the recorder to the specified event mark and cues there.
STOP	This command cancels *Play, Pause*, and *Record* recorder functions.
SYNChronizedPLAY	Sets up the DGy to start playback of a specified clip at a pre-determined time.
SYNChronizedRECord	Sets up the DGy to start recording at a pre-determined time.
SYNChronizedSTATus	Reports the status of any queued synchronized commands.
SYNChronizedSTOP	Cancels all pending queued synchronized commands.
TimeCodeQuery	Returns the timecode at the current clip position.

RECORDER COMMANDS DESCRIPTIONS

The table below lists *DGy 201* recorder commands, associated with the record and play functions, including event marks.

Table 6-10. *DGy 201* Play and Record Commands

Command	Arguments	Description
RECord	[-P] [clipname]	This command switches the DGy to Recording mode. If an argument is given, that argument is used as the name of the clip. If no argument is given, the clip name reflects the record start time, in the form yyyymmddhhmmss. The optional -P argument places the recording into a **RECORD PAUSE** mode. In this mode the recorder will enter the record mode, but will not start recording until a subsequent **RECORD** command is received. This provides the ability to set up the recorder for an "instant" start. Note: To switch from **Record** to any other recorder function, you must first issue the **Stop** command.
SYNChronized**REC**ord	\<clipname> \<starttime>	The *SYNChronizedREC* command is used to schedule recording of a clip at a specified time. A clipname must be provided, and the start time must be specified using the time format yyyymmddhhmmss (24 hour time). Example Start recording a clip named Rec227 at 3:05pm, June 9th 2005. **syncrec** Rec227 20050609150500 The **SYNChronizedREC** command is typically used to synchronize multiple DGy recorders so that they will perform as a multi-channel recorder. Before using the DGy in this mode it is recommended that the real time clocks of each recorder are synchronized using either an IRIG or NTS time reference (synchronizing is then automatic). The **SYNChronizedREC** command should then be issued to each machine using the same time argument.

Table 6-10. *DGy 201* **Play and Record Commands (Continued)**

Command	Arguments	Description
RECord**F**rame**R**ate	<0 .. 100>	Sets the rate at which input frames are recorded. This command would most likely be used to save disk space by recording at a lower frame rate. For example, a 1280 x 1024 image can typically be recorded at 30 frames/second. **RecordFrameRate** *15* would record at half the rate, with double the available recording time. An argument of 0 always allows recording at the maximum rate which is calculated automatically by DGy. Factory default: 0
RECord**B**it**R**ate	<0.1 .. 8.0>	Sets the degree of compression i.e. quality level (Stated in bits/pixel). **RECordBitRate** effectively controls the trade-off of bit-rate versus quality. Without regard to recording frame rate, an argument of 0.1 reflects a 240:1 compression, with an argument of 8 reflecting a 3:1 compression. (Compression is measured relative to a 24-bit pixel) Quality levels are related to compression level, for example: RECordBitRate 0.7 is low quality RECordBitRate 1.0 is medium quality RECordBitRate 1.5 is high quality Factory default: 1.0 (medium quality)
RECord**LOOP**	<ON | OFF>	If **RECLOOP** is *ON*, recording will be continuous. Note that only the current clip is overwritten. Disk overwrite will begin when there is only 4 GB of remaining disk space. Overwrite begins with the oldest part of the clip. Factory default: OFF

Table 6-10. *DGy 201* **Play and Record Commands (Continued)**

Command	Arguments	Description

PLAY	[-P] [playlist]	This command switches the unit to Playback mode and plays a previously made recording.
		
		The *PLAY* command plays back the items in the optional playlist.The playlist may contain up to 5 clipnames. Clips in the playlist will be played in the order they appear in the playlist.
		
		If a playlist is not entered, the most recently recorded clip in the current directory will be played.
		
		It the optional -P argument is supplied, the DGy will be queued for playing but will immediately enter the **PLAY Pause** mode. To start playback from Pause a PLAY command must be issued. This provides the ability to set up a play back and to "instantly" start playback and is particularly useful in controlling multiple DGy recorders.
		
		Example
		Play the clips named clip1, clip7 and latest_clip using the PLAY PAUSE mode.
		    PLAY - P clip1 clip7 latest_clip
		    PLAY

SYNChronized**PLAY**	<clipname> <starttime> [clipstarttime| startmark - MARK]	The **SYNChronizedPLAY** command is used to schedule playback of a clip at a specified time. The start point within the clip can be defined using the optional parameters **clipstarttime** or **startmark - MARK**. Example: Start playback from the beginning of a clip named Rec227 at 8:15 pm, June 11th 2005. **syncrec Rec227 20050611500** The **SYNChronizedPLAY** command is typically used to synchronize multiple DGy recorders so that they will perform as a multi-channel playback system. Before using the DGy in this mode it is recommended that the real time clocks of each DGy are synchronized using either an IRIG or NTS time reference (synchronizing is then automatic). The **SYNChronizedPLAY** command should then be issued to each machine using the same time argument.
SYNChronized**STAT**us	(none)	Cancels any queued synchronized command. See SYNChronizedPLAY and SYNChronizedRECord.

Table 6-10. *DGy 201* **Play and Record Commands (Continued)**

Command	Arguments	Description
SYNChronized**STOP**	(none)	This command modifies the behavior of **PLAY**. If **PLAYLOOP** is **OFF** then **PLAY** plays its clip (or list of clips) once, then stops. If **PLAYLOOP** is **ON**, **PLAY** plays the listed clip(s) in a loop until **STOP** is issued. Factory default: OFF
PLAYLOOP	<ON | OFF>	List information about any queued synchronized command. See SYNChronizedPLAY and SYNChronizedRECord.
PLAYSPee**D**	[-100.0 ... 100.0]	This command sets the *DGy 201* play speed. **PLAYSPeeD** = 1.0 represents normal speed in the forward direction. Positive **PLAYSPeeD** values represent playback in the forward direction. To play in fast forward use a positive value of **PLAYSPeeD** greater than 1.0 To play in slow motion, use a positive value between 1.0 and 0.0 Negative **PLAYSPeeD** values represent playback in reverse. To play in fast reverse use a negative value greater than -1.0 To play in slow reverse use a negative value between -1.0. and 0.0. **Example:** Set the play speed for 8 times normal in the reverse direction. **PLAYSPD -8.0** **Example:** Set the play speed for 1/10 normal speed in the forward direction. **PLAYSPD 0.1** Default: 1.0
PAUSE	(none)	In Playback mode, this command (with no argument) pauses playback. Playback resumes when you send the **Play** command. In Record mode, this command (with no argument) pauses record. Record resumes when you sent the **Record** command.
Frame**N**ext	(none)	Advances to the next frame of a paused clip
Frame**P**revious	(none)	Setps back to the pervious frame of a paused clip
STOP	(none)	This command cancels the **Play**, **Pause**, and **Record** recorder functions.

Table 6-10. *DGy 201* **Play and Record Commands (Continued)**

Command	Arguments	Description
DeleteMARK	<markNum | markName | -ALL>	The **DMARK** command deletes the given event mark if the event mark is in the clip currently being played (or paused). With the argument "-ALL," DeleteMark deletes all event marks in the current clip. Without an argument, this command deletes the currently selected event mark (if the DGy is paused on an event mark).
Edit**MARK**	<markNum | markName> <markName>	The **EMARK** command names (or renames) the specified event mark, if the event mark is in the clip currently being played (or paused). Initially each event mark is assigned a number. The EditMARK command may be used to associate a descriptive name with that number. MarkNames must have at least one alpha character and must contain no white space. The markName "ALL" is illegal.
List**EV**ery**MARK**	(none)	The **LEVMARK** command lists the timecode and description of all event marks in all clips on both disks. Retrieval time will be dependent upon the total number of event marks.
List**MARK**	<markNum | markName | -ALL>	The **LMARK** command displays the timecode and description of the mark number specified, if the mark is in the clip currently being played (or paused). The optional "-ALL" argument provides a list of all marks. Example List all marks of the current clip (player currently paused on the clip) *lmark* -all
MARK	(none)	Event marks can be made during record or playback. If a **MARK** is issued during record the event mark is created using the current record time. If a MARK is issued during playback the event mark is created using the time stamp of the original recording.
NEXTMARK	(none)	The **NEXTMARK** command sends the recorder to the next event mark from the current position, and cues there. To play from that spot you must issue a **PLAY** or **Pause** command. **NEXTMARK** will only seek within the current clip, and will not wrap.

Table 6-10. *DGy 201* **Play and Record Commands (Continued)**

Command	Arguments	Description
PREVMARK	(none)	The **PREVMARK** command sends the recorder to the previous event mark from the current position, and cues there. To play from that spot you must issue a **PLAY** or Pause command. **PREVMARK** will only seek within the current clip, and will not wrap.
Seek**T**o**MARK**	<mark number | description>	The **STMARK** command sends the recorder to the specified event mark, and cues there. To play from that spot you must issue a **PLAY** or **Pause** command. **STMARK** will only seek within the current clip.
Time**C**ode**Q**uery	[H | F]	Returns the timecode at the current disk position. Only valid in *PLAY* or *PAUSE* modes. When used without an argument, the TimeCodeQuery command returns the time in the format yyyymmddhhmmss. When used with the optional H argument, the TimeCodeQuery returns the replay timecode with resolution in milliseconds with the format yyyymmddhhmmssxxx where the final three digits (xxx) represent the fractional time in milliseconds. When used with the optional F argument, the TimeCodeQuery command returns the replay timecode using the frame number. The first frame in a file is identified as frame 0. Note that a clip may consist of multiple files and that the maximum file size is approximately 1.8 GB. This command option is typically used for debug only.

STREAMING

COMMANDS

A summary of *DGy 201* streaming commands is listed below. Click the hyperlink to see a detailed description of the command.

Note that streaming is an optional feature.

	Description
SENDSTREAM	Causes the encoded stream to be sent to the network port instead of the disk.
STOPSEND	Stops transmission of the encoded stream and reverts to internal disk record mode.
StreamSTATus	This command reports the streaming state of the system.

STREAMING COMMANDS DESCRIPTIONS

The table below lists *DGy 201* streaming commands.

CLIP AND DISK COMMANDS

A summary of *DGy 201* clip and disk management commands is listed below. Click the hyperlink to see a detailed description of the command.

	Description
BUZZerFUNCtion	Enables buzzer to sound when disk contents exceed the user specified threshold.
BUZZerReSeT	Turns the buzzer off, without changing *buzzfunc*.
CD	Changes to a new directory.
CHecKFIXEDDISK	Launches a utility to check the file structure of the (optional) fixed disk
CHecKREMOVABLEDISK	Launches a utility to check the file structure of the removable disk
CoPyCLIP	Creates clipname2 as an identical copy of clipname1.
CurrentCLIP	Gives the name of the clip currently being played.
DELeteCLIP	Deletes named clip.
DELeteDIR	Removes the named (empty) directory.
LiStCLIPs	Displays a listing of all recorded clips in the current directory.
ERASEFIXEDDISK	Erases the DGy (optional) fixed disk
ERASEREMOVABLEDISK	Erases the DGy removable disk
MKDIR	Makes a new directory. Relative or absolute pathnames are allowed.
MOUNT	Mounts a remote drive to the DGy file system to allow record/ play a remote disk (option).
NextCLIP	Moves DGy from the current clip (in Play or Pause) to the beginning of the next clip.
PrevCLIP	Moves DGy from the current clip (in Play or Pause) to the beginning of the previous clip.
PROTECTCLIP	Change the status of an unprotected clip to protected.
PWD	Gives the absolute path of the current directory.
RealTimeSeek	Places the DGy at the selected real time recording time within the selected clip.
RENameCLIP	Renames clipname1 to clipname2.
TimeCodeQuery	Returns the time code for the current clip position.
UMOUNT	Unmounts a remote drive from the DGy file system.
UNPROTECTCLIP	Change the status of a protected clip to unprotected.
VOLumeINFO	Displays disk storage parameters.
VOLumeNAME	Used to read or write the DGy disk volume name.

CLIP AND DISK COMMAND DESCRIPTIONS

Individual recordings are known as clips. Clip and disk management commands are described in this section.

Table 6-12. **Files System Commands**

Command	Arguments	Description
BUZZer**FUNC**tion	<OFF | FULL | [1..100]>	Determines when the buzzer will sound. *FULL* causes the buzzer to sound when there is no disk space left. The numeric argument causes the buzzer to sound when that percentage of the disk space has been used.
		For example, with BUZZFUNC set to 95, the buzzer will sound (and the front panel disk-full light will illuminate) when there is about 12 GB of a 238 GB drive available.
		Notes:
		The buzzer never sounds if RECordLOOP is ON.
		If BUZZFUNC is OFF the buzzer doesn't sound.
		Factory default: 95
BUZZer**ReSeT**	(none)	Turns the buzzer off. Note: Using this command does not change the settings of BUZZerFUNCtion.
Co**Py**CLIP	<clipname1> <clipname2>	Creates *clipname2* as an identical copy of *clipname1*. Relative or absolute pathnames are allowed.
Current**CLIP**	(none)	Gives the name of the clip currently being played.
DELete**CLIP**	[-R] <clipname>	Deletes named clip. *Clipname* can contain Unix style wild cards, and may be used to specify multiple clips. *deleteclip* * deletes all clips in the directory.
		The -R flag indicates that *deleteclip* should recurse through subdirectories in an attempt to find clips to delete.

Table 6-12. **Files System Commands(Continued)**

LiStCLIPs	[-R] [-L] [-F] [-P] [clipname]	With no argument, *lsclip* displays a listing of all recorded clips in the current directory. For each clip, the real time, elapsed time, and recording length are listed.
		Clips are listed chronologically with the earliest clip at the beginning of the list.
		Clipname can contain Unix style wild cards, and is used to qualify the search (not valid for the **-P** flag described below).
		The following optional command flags are supported:
		-F Identifies directories by displaying a trailing /
		-L Provides additional clip information including: record frame rate, quality mode, quality level and protection status.
		-R Provides a recursive listing of clips
		-P Provides a list of the individual files that make up the current clip.
		Example Show a listing of the file "jnew" displaying details about frame rate and quality level. Type: **lsclip -L jnew**
Next**CLIP**	(none)	Cues the DGy from the currently playing clip to the beginning of the next recorded clip. Works in Stop, Play or Pause modes.
Prev**CLIP**	(none)	Moves the DGy from the currently playing clip to the beginning of the previously recorded clip, then cues. Works in Stop, Play or Pause modes.
REName**CLIP**	<clipname1> <clipname2>	Renames *clipname1* to *clipname2*. Relative or absolute pathnames are allowed. Only renames to the same disk. An attempt to rename a clip to a location on the other disk will return an error.
PROTECTCLIP	<clipname>	Write protects named clip. *Clipname* can contain Unix style wild cards, and may be used to specify multiple clips. Note: Event marks cannot be placed into a protected clip.

Table 6-12. **Files System Commands(Continued)**

UNPROTECTCLIP	<clipname>	Removes write protection from named clip. *Clipname* can contain Unix style wild cards, and may be used to specify multiple clips.
Real**T**ime**S**eek	<yyyymmddhhmmss[xxx]>	The RealTimeSeek command cues the DGy to the specified real time recording time within the current clip. The time argument can be provided with resolution in seconds, or in milliseconds by adding the final three digits (xxx) at the end of the RealTimeSeek argument.
Time**C**ode**Q**uery	[F | H]	The **TCQ** command returns the timecode of the current clip position. This command is valid in **PLAY** or **PLAY PAUSE** modes only. When used with the F argument, the **TCQ** command returns the relative frame number. When used with the H argument the **TCQ** command returns the time code with resolution in milliseconds.
CD	<dirname>	Changes to a new directory on the current drive. Relative or absolute pathnames are allowed. The path name to the removable disk is /remov/ The path name to the (optional) fixed disk is /fixed/ Use the PWD command to report your current directory and drive Example: If you are currently using the fixed drive and wish to change to the directory "myclips" on the removable drive use the following command: cd /remov/myclips
DELete**DIR**	<dirname>	Removes the named (empty) directory. Relative or absolute pathnames are allowed.
MKDIR	<dirname>	Makes a new directory. Relative or absolute pathnames are allowed. Example: Create the directory "myclips" mkdir myclips
PWD	(none)	Gives the absolute path of the current directory.
CHec**KFIXEDDISK**	(none)	Executes a utility to detect and repair file problems on the optional fixed disk.
CHec**KREMOVABLEDISK**	(none	Executes a utility to detect and repair file problems on the removable disk.

Table 6-12. **Files System Commands(Continued)**

ERASEFIXEDDISK	(none)	This command erases the entire contents of the fixed disk drive.
		This is an interactive command that will prompt for confirmation that you wish to proceed. The process may take several minutes, and the DGy will automatically reboot as soon as the procedure is complete. Note that only recorded data is stored on the disk. The DGy application software (firmware) is not stored on disk.
		WARNING: This command does not have an undo feature.
ERASEREMOVABLEDISK	(none)	This command erases the entire contents of the removable disk drive.
		This is an interactive command that will prompt for confirmation that you wish to proceed. The process may take several minutes, and the DGy will automatically reboot as soon as the procedure is complete. Note that only recorded data is stored on the disk. The DGy application software (firmware) is not stored on disk.
		WARNING: This command does not have an undo feature.

Table 6-12. **Files System Commands(Continued)**

MOUNT	<ipaddress:sharename>	This *DGy 201* optional feature supports the ability to mount an external network mapped disk drive. Note that this capability requires the use of Linux or an Allegro network file server software for the Windows OS.
		The MOUNT command provides the ability to set up a network mapped NFS remote disk drive that DGy can use to store and recall recordings. The location of the remote drive is identified by the network address (*ipaddress*) and *sharename* is the name of the shared drive as configured in the NFS server on the remote host (note that the syntax of this name may differ with different NFS servers). The local mount point is always on the *DGy 201* /mnt/mp1
		It is recommended that you consult with your IT manager before executing the mounting procedure.
		Example:
		To mount the /usr/dgy NFS share on a Linux host at IP node 192.168.1.123, issue the following:
		mount 192.168.1.123:/usr/dgy
		Once the disk is mounted the drive will be identified in the Clip Browser as **\remot**.
		To record, play or list clips on the remote drive execute the command *CD/rgb/mp1* followed by the desired clip command (*PLAY, RECORD* ...).
		The settings associated with the remote drive are saved in non-volatile memory, and the DGy will automatically attempt to reconnect after a reboot. To select a new remote drive you must first unmount the current drive (see the **UMOUNT** command for details).
		NOTE: After mounting a drive verify that the drive is mounted can be accomplished using the *VOLINFO* command (see **VOLumeINFO** for details).
UMOUNT	(none)	The UMOUNT command will unmount the current remote drive. Requires the optional disk mount feature. See also **MOUNT**

Table 6-12. **Files System Commands(Continued)**

VOLumeINFO	[-f | -n]	Displays disk storage parameters: total disk record time, used disk time, and remaining disk record time and disk volume name. If no argument is supplied *VOLumeINFO* responds with the information for the removable drive. Use the -f flag argument to display parameters for the fixed drive.
		Use the -n flag argument to display the parameters for the remote (NFS) drive.
VOLumeNAME	[name] [-f]	*VOLumeNAME* can be used to read or write the DGy disk volume name. The name can be up to 30 characters in length and may include spaces and punctuation characters. If no name is specified, *VOLumeNAME* prints the current name of the disk. If the *-f* flag is not specified, *VOLumeNAME* relates to the removable disk. Use the *-f* flag to display parameters for the fixed drive.

TIME COMMANDS

A summary of *DGy 201* recorder time commands is listed below. Click the hyperlink to see a detailed description of the command.

	Description
CurrentTIME	Displays current time of the DGy internal clock.
IRIGSTandarD	Sets the type of IRIG signal to be connected to the IRIG input.
NTSIP	Sets the addresses of Network Time Servers used to synchronize the internal DGy clock.
RealTimeClockSET	Sets the internal DGy real time clock.
RealTimeClockSYNC	Provides a means to synchronize a DGy to an external time reference or other DGy units.
RealTimeClockSYNCPERiod	Sets the update rate for synchronizing the DGy internal clock to an external time reference.
TimeZone	Sets the time zone relative to UTC.

TIME COMMAND DESCRIPTIONS

The *DGy 201* recorder uses an internal real time clock to time stamp recordings. This clock can be set manually or can be synchronized automatically on a periodic basis to an external time reference. *DGy 201* supports the use of a Network Time Server (using the NTP protocol) or as an option may be connected to an IRIG-B time standard.

Table 6-13. **Time Commands**

Command	Arguments	Description
Current**TIME**	[RAW]	Displays currently computed local time of DGy internal clock with the date in mm/dd/yyyy format and time displayed in hh:mm:ss format. The time displayed is the current local time. If the time zone is changed the local time will also be changed.
		To display the time as an unformatted data string use the optional RAW argument. For example if the current date and time are 3/02/2005 8:01:23, then using the RAW argument DGy will respond with the string 2005302080123.
Real**T**ime**C**lock**SET**	<yyyymmddhhmmss>	Sets the internal DGy real time clock. This should only be used if no other method of timesetting is available.
Time**Z**one	<-12 ... +12>	Sets the timezone relative to UTC, For example Pacific Standard Time (PSRT) is -8 (8 hours behind UTC). DGy must be rebooted before the new time zone takes effect.
IRIGSTandar**D**	[DCLS | MOD1K]	The IRIGSTandard command is used to set the optional IRIG-B (format B123) input to accept either a DCLS (DC Level shift) or MOD1K (modulated 1kHz) reference signal.
		Factory default: DCLS
NTSIP	{Network Time Server IP address}	Sets the IP address of a Network Time Server. Up to three IP addresses can be set.
		See also the commands: **RealTimeClockSYNC** and **RealTimeClockSYNCPERiod**

Table 6-13. **Time Commands**

Real**T**ime**C**lock**SYNC**	<OFF | IRIG | NetworkTimeServer>	The internal DGy real time clock can be automatically synchronized to an external network time server. When the RealTimeClockSYNC is set to OFF, the DGy internal clock is not synchronized to an external time reference (IRIG or NTS).
		When the RealTimeClockSYNC is set to *NetworkTimeServer* the DGy will automatically synchronize it's internal clock to the network time server specified by the NTSIP command. Note that when using the NTSIP to display your local time correctly, you must set the Time Zone to correspond with your geographical location.
		Note: DGy requires a full time Internet connection to provide this capability. See also: NTSIP and TimeZone.
		When the RealTimeClockSYNC is set to *IRIG*, the DGy will automatically synchronize it's internal clock to the external (optional) IRIG time reference connected to the IRIG input (see also **IRIGSTandarD**).
		Factory default: OFF
Real**T**ime**C**lock**SYNCPER**iod	[30 ... 1440]	Sets the update interval period for the NTS or (optional) IRIG reference time servers. The period is set in minutes (30 to 1440 minutes).
		Factory default: 120

MISCELLANEOUS COMMANDS

A summary of *DGy 201* miscellaneous commands is listed below. Click the hyperlink to see a detailed description of the command.

Table 6-14. **Miscellaneous Commands Summary**

Command	Description
BAUDrate	Sets the serial port *baud* rate.
ECHO	Turns the serial *echo* On/Off.
HANDShaking	Selects hardware or software handshaking for the serial control port.
Help	*Help*, without an argument will display the entire serial command set.
HOSTNAME	Sets Ethernet hostname.
ID	Displays product ID, serial number, name, firmware version, date of manufacture and more.
IPADDRess	Sets or reports the *DGy 201* IP address.
IPGateWay	Sets or reports the IP gateway address.
IPSubNET	Sets or reports the system Subnet Mask.
MACADDRess	Displays the *DGy 201* MAC address.
RestoreFactoryDefaults	Restores all user settings to their factory default values.
SYStemReSet	Restarts the DGy firmware.
TestPattern	Enables or disables the internal Test Pattern (color bars).
UpdateFirmWare	Updates the firmware for the DGy.
VERsion	Displays the version numbers of the installed firmware components.

Refer to the "**Output Commands Descriptions**" section for descriptions of all output commands.

MISCELLANEOUS COMMANDS DESCRIPTIONS

The table below lists all *DGy 201* miscellaneous commands, their arguments and detailed descriptions.

Table 6-15. **Miscellaneous Commands**

Command	Arguments	Description
Help	[<command>]	*Help*, without an argument will display the entire serial command set. *Help*, with a command as an argument will display detailed information about that command.
ID	(none)	Displays the following DGy information: • Product type • Date of manufacture • Serial number • Firmware version number • Input Type
VERsion	(none)	Displays the following DGy information: • Firmware version • FPGA version number, • Web Interface (WCP) version number.
BAUDrate	<9600 | 19200 | 38400 | 57600 | 115200>	Sets the serial port *baud* rate. It is recommended that you operate the serial port at the highest possible speed. Factory default: 115,200
ECHO	<ON | OFF>	Turns the serial *echo* On/Off. The *echo* is only on commands typed and sent to the unit. Note: *Echo* setting has no effect on responses issued by the DGy; responses are always visible, regardless of the *echo* status. Factory default: ON
HANDShaking	<HardWare | SoftWare>	Sets the type of flow control on the serial port. The HardWare handshaking uses CTS/RTS control. The SoftWare handshaking protocol is XON-XOFF. Factory default: SoftWare
HOSTNAME	<hostname>	Sets Ethernet hostname. Factory default: DGy
IPADDRess	[ddd.ddd.ddd.ddd]	Sets or reports the system IP address. To determine the current IP address without changing it, use the IPADDR command without an argument. Use the**SYStemReSet** command to reboot the unit to activate the new IP address. Factory default 192.168.1.200

Table 6-15. **Miscellaneous Commands (Continued)**

Command	Arguments	Description
IPSub**NET**	ddd.ddd.ddd.ddd	Sets the system Subnet Mask. Use the**SYStemReSet** command to reboot the unit to activate the new IP subnet mask. Factory default: 255.255.255.000
IPGate**W**ay	ddd.ddd.ddd.ddd	Sets the system default gateway. Use the**SYStemReSet** command to reboot the unit to activate the new IP gateway.
MACADDRess	(none)	Reports the physical Ethernet (Media Access Controller) address.
Restore**F**actory**D**efaults	(none)	Restores all user settings to their factory default values.
SYStem**ReS**et	(none)	Causes DGy to reboot. This command allows the system firmware to be restarted without having to use the front panel power switch.
Test**P**attern	<CBAR | BOX | RAMP | PRBS | GRATE | OFF>	This command selects which internal Test Pattern is displayed or turns the test pattern generator off. Test patterns include: CBAR - 100% color bars BOX - a box indicating the extent of the output image RAMP - a horizontal luminance ramp PRBS - a test sequence for the DVI output GRATE - an fs/2 vertical grate Factory default: OFF
Update**F**irm**W**are	(none)	This command updates the firmware for the DGy.The firmware file must be transferred to the *DGy 201* using FTP prior to using this command. See Appendix C, **Firmware Upgrade** on page 147 for more details.

FACTORY TIMING LIST

The table below lists all of *DGy 201*'s preset timings that can be used for **Output** or **Input** timing settings. User-defined settings can also be added to this list. These settings are used to match the system's output to that of your display device or can be used to manually define input timing.

Columns are provided for the timing ID, plus all of the individual parameters such as frequency, sync, polarity, interlace and many more.

Please note:

- Entries 1 - 44 are factory defined timing parameters.

- Entries 45 - 99 are reserved for future pre-defined parameters.

- Entries 100 - 160 are for user-defined timings.

- Because all parameters can be modified with the "**OutPutTiMing**" function, advanced users can "tweak" output settings and then store them in the first ten registers, using the "**OutPutTiMingSAVE**" function.

- Custom settings can also be named using the "**OutPutTiMingNAME**" function.

- If desired, print this list and keep a record of any user-defined settings that you configure.

Table 6-16. **Factory Timing List**

ID	TYPE	HFP	HS	HBP	HACT	HFRQ	VFP	VS	VBP	VACT	SYNC	HPOL	VPOL	IL
1	VESA 640 x 350 @ 85Hz	32	64	96	640	37.861	32	3	60	350	5	1	0	0
2	VESA 640 x 400 @ 85Hz	32	64	96	640	37.861	1	3	41	400	5	0	1	0
3	VESA 720 x 400 @ 85Hz	36	72	108	720	37.927	1	3	42	400	5	0	1	0
4	VESA 640 x 480 @ 60Hz	16	96	48	640	31.473	10	2	33	480	5	0	0	0
5	VESA 640 x 480 @ 72Hz	24	40	128	640	37.861	9	3	28	480	5	0	0	0
6	VESA 640 x 480 @ 75Hz	16	64	120	640	37.500	1	3	16	480	5	0	0	0
7	VESA 640 x 480 @ 85Hz	56	56	80	640	43.269	1	3	25	480	5	0	0	0
8	VESA 800 x 600 @ 56Hz	24	72	128	800	35.156	1	2	22	600	5	1	1	0
9	VESA 800 x 600 @ 60Hz	40	128	88	800	37.879	1	4	23	600	5	1	1	0
10	VESA 800 x 600 @ 72Hz	56	120	64	800	48.077	37	6	23	600	5	1	1	0
11	VESA 800 x 600 @ 75Hz	16	80	160	800	46.875	1	3	21	600	5	1	1	0
12	VESA 800 x 600 @ 85Hz	32	64	152	800	53.674	1	3	27	600	5	1	1	0
13	VESA 1024 x 768 @ 43 Hz	8	176	56	1024	35.601	0	4	20	768	5	1	1	1
14	VESA 1024 x 768 @ 60Hz	24	136	160	1024	48.363	3	6	29	768	5	0	0	0
15	VESA 1024 x 768 @ 70Hz	24	136	144	1024	56.476	3	6	29	768	5	0	0	0
16	VESA 1024 x 768 @ 75Hz	16	96	176	1024	60.023	1	3	28	768	5	1	1	0
17	VESA 1024 x 768 @ 85Hz	48	96	208	1024	68.677	1	3	36	768	5	1	1	0
18	VESA 1152 x 864 @ 75Hz	64	128	256	1152	67.500	1	3	32	864	5	1	1	0

Table 6-16. **Factory Timing List (Continued)**

ID	TYPE	HFP	HS	HBP	HACT	HFRQ	VFP	VS	VBP	VACT	SYNC	HPOL	VPOL	IL
19	VESA 1280 x 960 @ 60Hz	96	112	312	1280	60.000	1	3	36	960	5	1	1	0
20	VESA 1280 x 960 @ 85Hz	64	160	224	1280	85.938	1	3	47	960	5	1	1	0
21	VESA 1280 x 1024 @ 60Hz	48	112	248	1280	63.981	1	3	38	1024	5	1	1	0
22	VESA 1280 x 1024 @ 75Hz	16	144	248	1280	79.976	1	3	38	1024	5	1	1	0
23	VESA 1600 x 1200 @ 60Hz	64	192	304	1600	75.000	1	3	46	1200	5	1	1	0
24	EIA-343-A 675 lines	16	56	64	832	20.253	2.5	2.5	20	312	4	1	1	1
25	EIA-343-A 729 lines	20	64	80	900	21.870	2.5	2.5	22	337	4	1	1	1
26	EIA-343-A 875 lines	26	96	118	1080	26.245	3	3	27	404	4	1	1	1
27	EIA-343-A 945 lines	36	112	140	1164	28.343	3	3	29	437	4	1	1	1
28	EIA-343-A 1023 lines	44	136	164	1260	30.692	4	4	30	473	4	1	1	1
29	720 x 480, 29.97i	16	61	61	720	15.734	3	3	14	242	3	0	0	1
30	720 x 576, 25i	12	66	66	720	15.625	2.5	2.5	20	287	3	0	0	1
31	960 x 480, 29.97i	23	69	92	960	15.734	3	3	14	242	3	0	0	1
32	960 x 576, 25i	23	69	100	960	15.625	2.5	2.5	20	287	3	0	0	1
33	1280 x 720, 24	70	40	260	1280	18.000	5	5	20	720	3	0	0	0
34	1280 x 720, 30	70	40	260	1280	22.500	5	5	20	720	3	0	0	0
35	1280 x 720, 60	70	40	260	1280	45.000	5	5	20	720	3	0	0	0
36	1920 x 1080, 24i	594	44	192	1920	27.000	2	5	15.5	540	3	0	0	1
37	1920 x 1080, 24p	594	44	192	1920	27.000	4	5	36	1080	3	0	0	0
38	1920 x 1080, 30i	44	44	192	1920	33.750	2	5	15.5	540	3	0	0	1
39	1920 x 1080, 30p	44	44	192	1920	33.750	4	5	36	1080	3	0	0	0
40	1920 x 1080, 60p	44	44	192	1920	67.500	4	5	36	1080	3	0	0	0
41	1920 x 1035, 30i	44	44	192	1920	33.750	5	5	35.5	517	3	0	0	1
42	1365 x 768, 60p	51	50	60	1365	47.280	4	4	12	768	5	1	1	0
43	1360 x 768, 60p	64	176	192	1360	47.712	3	6	18	768	5	1	1	0
44	1920 x 1200, 60p	48	32	80	1920	74.038	3	6	26	1200	5	1	0	0

TECHNICAL SPECIFICATIONS

A

IN THIS APPENDIX

This appendix provides functional and performance specifications for the *DGy 201* and in addition a description of connector and pin out information.

GENERAL SPECIFICATIONS

The following section provides detailed tables of functional and performance specifications:

- **High Resolution Analog Input**
- **Digital Input Specifications**
- **Composite Video Input Specifications**
- **Graphic Output Specifications**
- **Control Specifications**
- **Power and Physical Specifications**

HIGH RESOLUTION ANALOG INPUT

The following tables indicate the *DGy 201* input capability.

Table A-1. **Analog Graphics Input Characteristics**

Parameter	Specification
Scanning	Interlaced or non-interlaced
Number of inputs	1
Signal formats	RGB
Signal level	Nominal 0.7 V pk-pk (1.0 V. composite)
Input impedance	75 ohms nominal
Sample rate	Up to 170 MHz
Resolution	640 x 480 to 1600 x 1200
Sync	3 wire (Sync on Green) 4 wire (separate composite sync) 5 wire (separate H & V sync)
Sync Level	0.3 V p-p (3 wire) 1 to 5V (4 and 5 wire)

DIGITAL INPUT SPECIFICATIONS

The tables below list the high resolution digital input specifications.

Table A-2. **Digital Input Specifications**

Parameter	Specification
Type	DVI - Single link
Number	1
Maximum bandwidth	1.65 Gbps
Resolution	640 x 480 to 1600 x 1200
Connector type	DVI-I Integrated digital / analog connector (see the "**DVI-I Connector**" section in Appendix A).

COMPOSITE VIDEO INPUT SPECIFICATIONS

The table below lists the specifications for the optional composite video input.

Table A-3. **Composite Video Input Specifications (optional item)**

Parameter	Specification
Format	Composite, NTSC RS-170A or PAL CCIR 624
Number	1
Video levels	1.0V peak-to-peak nominal (composite)
Connector type	BNC female (see the "**Composite Video Connector**" section in Appendix A).

GRAPHIC OUTPUT SPECIFICATIONS

The table below lists the high resolution analog and digital output specifications.

Table A-4. **Analog Output Specifications**

Parameter	Specification
Output level	Nominal 0.7V. pk to pk (excluding sync)
Output impedance	75 ohms nominal
Sample rate	Up to 240 MHz
Resolution	Up to 1600 x 1200, progressive scan
Sync type	Available sync types: • 3 wire (sync on green), • 4 wire (separate composite sync) • 5 wire (separate H and V sync)
Sync level	0.3V p-p (3wire), 5V p-p max (4 and 5 wire)

Table A-5. **Digital Output Specifications ()**

Parameter	Specification
Type	DVI - single link
Max bandwidth	1.65 Gbps
Connector type	DVI-I Integrated Digital / Analog Connector (see the "**DVI-I Connector**" section in Appendix A).

STORAGE

CAPACITY

The table below lists the storage capacity for the internal drives.

Table A-6. **Storage Capacity**

Parameter	Specification
Removable Disk	238 GB IDE
Fixed Disk	Optional 238 GB IDE
Optional Removable Disk	476 GB IDE

How much time does this storage capacity provide? The amount of material recorded on the drive is related to the following variables:

- Image resolution
- Frame rate
- Compression level (quality level)

Examples of record times for a signal with various frame rates and quality levels are shown in the table below:

Table A-7. *DGy 201* **Record Time (High Quality Setting - single 238 GB disk)**

Resolution	Quality Setting		
		Mid (24:1)	Low (34:1)
1280 x 1024 @ 5 fps	53.8 hrs.	80.7hrs.	114.3hrs.
1280 x 1024 @ 10 fps	26.9 hrs.	40.4 hrs.	57.2 hrs.
1280 x 1024 @ 20 fps	13.5 hrs.	20.2 hrs.	28.6 hrs.
1280 x 1024 @ 30 fps	9 hrs.	13.5 hrs.	19.1 hrs.
1600x 1200 @ 5 fps		55.1 hrs.	78.0 hrs.
1600x 1200 @ 10 fps		27.5 hrs.	39.0 hrs.
1600x 1200 @ 20 fps		13.9 hrs.	19.5 hrs.

NOTE: Double these record times when using the optional 476 GB Removable Disk Drive.

CONTROL SPECIFICATIONS

The table below lists *DGy 201* control specifications:

Table A-8. **Control Specifications**

Parameter	Specification
Control Protocol	*DGy 201* Control is accomplished by use of the *DGy 201* ASCII based command set. This command set may be used with any of the control ports listed below. (see the "**Command Set List**" section in Chapter 6 for details).
Ethernet	10/100 BASE-T ethernet port. • Supports control of the full set of *DGy 201* commands over a network connection using a Telnet server/client architecture. • Internal *DGy 201* web server provides the Web Control Panel (WCP) a graphical user interface used with a standard web browser. • The *DGy 201* Ethernet port connector type is a standard RJ45 modular connector (see the "**Ethernet Connector**" on page 136)
RS-232 Port	*DGy 201* commands can be sent through the RS-232 port to control the system. • The RS-232 port transfers commands using the asynchronous serial protocol at 115200, 57600, 38400, 19200 or 9600 baud. • The port is configured as DCE and can handle full duplex transfer. • Support for hardware and software handshaking is provided. • The *DGy 201* RS-232 port connector type is a 9-pin sub miniature D connector (see the "**RS-232 Connector**" section on page 127 for details).

IRIG TIME CODE

The table below lists specifications for the optional IRIG-B timecode interface. The interface is designed in accordance with the requirements of the Range Commanders Council (RCC) document 200-04 (Defense Technical Information Center).

Table A-9. **IRIG Timecode specification**

Parameter	Specification
IRIG Type	IRIG-B (Time frame of 1 sec, BCD time of year, SBS)
Format	B123
Interface	DCLS (dc level shift code) 1 kHz amplitude modulated.
Signal Level	2 -3 V peak to peak (10v p-p maximum)
Connector Type	BNC female (looping input, bridging impedance)

POWER AND PHYSICAL SPECIFICATIONS

The table below lists *DGy 201* power and physical specifications:

Table A-10. **Power and Physical Specifications**

Parameter	Specification
Input Voltage	100-240 VAC
Frequency	50Hz - 60 Hz
Power Consumption	65 VA
Power Factor Correction	Compliant with EN 61000-3-2
Size	17.25"W (excluding rack mount ears) x 19.0"D x 1.75"H
Rack Mount Kit	Included
Weight	14 pounds (6.4 kg)

CONNECTORS AND PINOUTS

This section provides information about the signal and control connectors used in *DGy 201*.

- **DVI-I Connector**
- Composite Video Connector
- Ethernet Connector
- **RS-232 Connector**

DVI-I CONNECTOR

The DVI connector is used to interconnect graphics devices. This is a standard connector based on the work of the Digital Display Working Group (DDWG).

CONNECTOR TYPE AND PINOUTS

The connector used in the *DGy 201* is a 29-pin DVI-I connector, supporting both analog and digital signals. The DVI-I connector (as shown below) is used for the standard *DGy 201* DVI input and output signals.
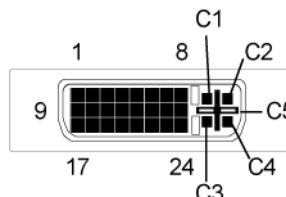
Figure A-16. **DVI-I Digital/Analog Connector (viewed from rear of chassis)**

The 29 pin DVI-I connector (Molex #74320) has the following pin assignments:

Table A-1. **DVI-I Connector Pinout**

Pin	Signal	Description
1	TMDS Data 2-	
2	TMDS Data 2+	
3	TMDS Data 2/4 shield	
4	NC	Defined for Dual Link only
5	NC	Defined for Dual Link only
6	DDC Clock	

Table A-1. **DVI-I Connector Pinout (Continued)**

| Pin	Signal	Description
7	DDC Data	
8	Analog Vertical Sync	Horizontal sync is on pin C4
9	TMDS Data 1-	
10	TMDS Data 1+	
11	TMDS Data 1/3 shield	
12	NC	Defined for Dual Link only
13	NC	Defined for Dual Link only
14	+5V Power	5 V fused @ 300mA.
15	Ground	
16	Hot Plug detect	
17	TMDS Data 0-	
18	TMDS Data 0+	
19	TMDS Data 0/5 shield	
20	NC	Defined for Dual Link only
21	NC	Defined for Dual Link only
22	TMDS Clock shield	
23	TMDS Clock+	
24	TMDS Clock-	
C1	Analog Red	Red signal
C2	Analog Green	Green signal
C3	Analog Blue	Blue signal
C4	Analog H sync	Analog Horizontal Sync signal
C5	Analog Ground	Common analog ground (R,G,B, sync)

INPUT CABLES

Digital inputs can be connected to the *DGy 201* directly using DVI cables. Analog RGB signals can be connected to the device using DVI to 15-pin sub miniature D adapters that are provided as a standard accessory with *DGy 201* units.

OUTPUT CABLES

Both the digital and analog outputs of the *DGy 201* are provided on the DVI output connector. Purpose built cables are available commercially to provide connections for digital interfaces or analog interfaces. The *DGy 201* is provided with DVI-15 pin adapters for use with analog devices, or alternatively an analog only output cable can be purchased that provides a "break out" capability to separate RGB connectors or sub miniature 15-pin D connector.

COMPOSITE VIDEO CONNECTOR

The optional composite video signal input use the industry standard 75 Ω BNC connector.
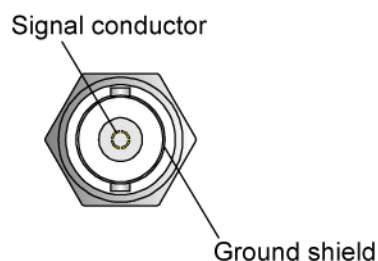
Figure A-1. **BNC connector (viewed from rear of chassis)**

The BNC connector is designed for use with coaxial cables. Coaxial cables are well suited for the transmission of high frequency signals over moderate distances. Coaxial cable is commonly available with a characteristic impedance of either 50 or 75 Ω. Video signals exclusively use 75 Ω cable and connectors. For best signal quality it is important to use a high quality 75 Ω coaxial cable. The use of 50 Ω cable will cause a signal mismatch which may result in visible artifacts on video images.
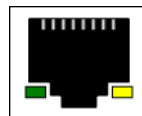
Ready made cables are available commercially or can be easily customized on site to suit your particular requirements.

CONNECTOR TYPE AND PINOUTS

The Ethernet connector is a standard RJ-45 type connector.

Figure A-2. **Ethernet connector (viewed from rear of chassis)**

The 8 pin RJ-45 Ethernet connector has the following signals:.

Table A-2. **Ethernet Connector Pinouts (EIA/TIA 568B)**

Pin	Signal	Wire Color
1	TX Data +	White/Orange
2	TX Data -	Orange
3	RX Data+	White/Green
4		Blue
5		White/Blue
6	RX Data-	Green
7		White/Brown
8		Brown

STANDARD CABLES

Standard Ethernet cables are available commercially in many different lengths. The standard cable is wired pin for pin (straight through) which means that pin 1 of the connector at one end of the cable is wired to pin 1 of the connector at the opposite end of the cable. This type of cable is used to connect the *DGy 201* directly to the network — typically using an Ethernet hub or switch. To connect directly from a PC to the *DGy 201*, a crossover cable must be used (see the following section for details).

CROSSOVER CABLES

To connect directly from a PC (such as a laptop) to the *DGy 201* without connecting to the network, an Ethernet "crossover" cable must be used. Crossover cables are available commercially.

In a crossover cable, one end of the cable is wired as a straight through cable, using the pin assignments shown in **Table A-2**. At the other end of the cable, the TX and RX interconnections are exchanged (crossed over).

Ethernet uses balanced differential signals on twisted pairs of

conductors. It is important to use wires from the same pair for each pair of signals. The standard pairs are shown in **Table A-2**. Note that one wire of the pair has a solid color. The other wire (of the pair) is white with a stripe of the same color as the other wire (e.g., Orange and White/Orange).

RS-232 CONNECTOR

The RS-232 port is configured according to the Electronic Industries Association Standard RS-232-C published in August 1969. The *DGy 201* can be explicitly controlled with ASCII Command Set instructions sent via the RS-232 serial port from either a computer or an ASCII terminal. Refer to **Chapter 6**, for details on all commands.

CONNECTOR TYPE AND PINOUTS

Physically, the RS-232 port is a 9-pin D-Sub female connector. The pins for the RS-232 connector are numbered from top to bottom, right to left. Looking at the connector, pin #1 is located in the upper right corner, and pin #9 is in the lower left corner.
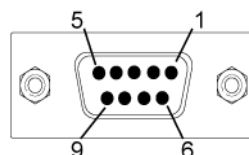
Figure A-3. **9-pin D-Sub RS-232 Female Connector**

The 9-pin D-Sub connector has the following signals:

Table A-3. **RS-232 Serial Connector Pinouts**

	Circuit	Description
1	CD	Carrier Detect
2	TD	Transmit Data
3	RD	Received Data
4		(not connected)
5	AB	Signal Ground (common return)
6	DSR	Data Set Ready
7	CTS	Clear to Send
8	RTS	Request to Send
9		(not connected)

NULL MODEM

You may need to connect the *DGy 201*'s serial port to a computer configured as Data Communications Equipment (DCE). This is done using a null modem. The net effect of a null modem is to reverse the Transmitted Data and Received Data connections within the cable. Also, the Request to Send (RTS) and Clear to Send (CTS) connections are reversed. This may be done by using a special "null modem" cable, or by inserting a small "null modem" box or cable in series with a regular "straight through" cable.

COMMUNICATIONS SETUP

B

IN THIS APPENDIX

This appendix provides detailed information about specific communications setup procedures that are referenced in Chapter 2, "**Installation and Set Up**." The following topics are discussed:

- **Launching a Hyperterminal Window**
- **IP Address Setup via Serial Port**
- **IP Address Setup via Ethernet**

SERIAL COMMUNICATIONS

LAUNCHING A HYPERTERMINAL WINDOW

A command line interface is provided for *DGy 201* using the serial port. A full description of available commands is provided in **Command Line Interface** (see page 86).

PCs running the Windows Operating system are provided with serial emulation software known as Hyperterminal. This provides a convenient method to communicate with your *DGy 201*.

Use the following steps to launch a Hyperterminal window on your PC:

1. On your PC, click **Start > Programs > Accessories > Communications > Hyperterminal**.
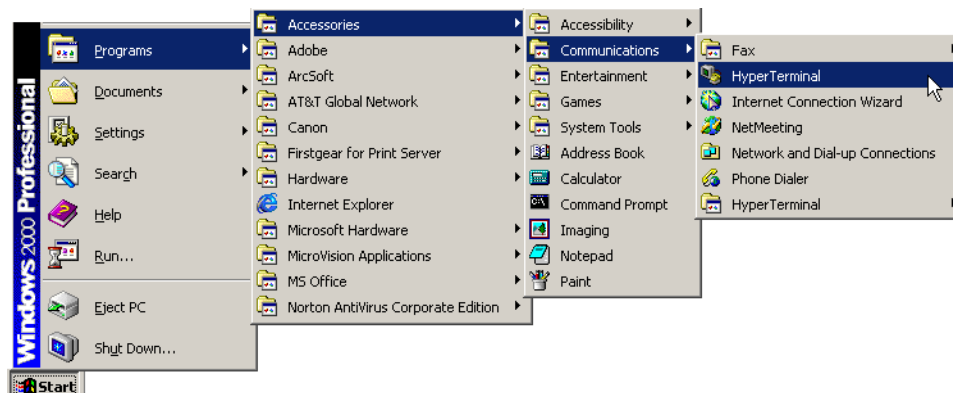
Figure B-1. **Hyperterminal Path**

This action displays the **Connection Description Dialog**, a sample of which is shown below.

**Figure B-2.** **Connection Description Dialog (Sample)**

2. In the dialog:

~   Enter a name

~   Choose an icon

~   Click **OK** to display the **Connect To Dialog**.

Figure B-3. **Connect To Dialog (Sample)**

3. In the **Connect To Dialog**, ignore the **Country**, **Area Code** and **Phone Number** fields. In the **Connect Using** field, select your PC's COM port to which the serial cable from *DGy 201* is connected.

4. Click **OK** to display the **COM Properties Dialog**.
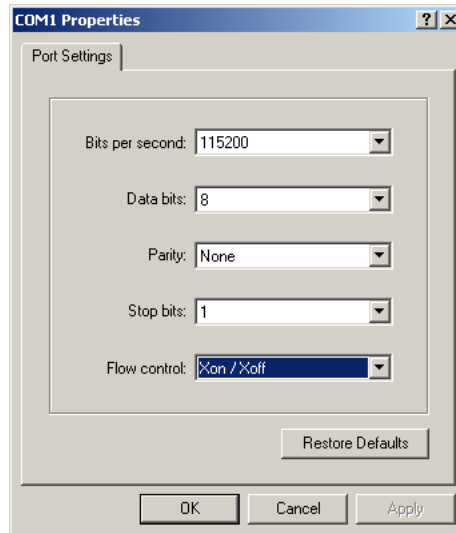
Figure B-4. COM Properties Dialog (Sample)

5. Configure your PC to match *DGy 201*'s pre-configured factory settings, as follows:

   ~ Bits per second (baud): **115,200** (default)

   ~ Data bits: **8**

   ~ Parity: **None**

   ~ Stop bits: **1**

   ~ Flow control: **XOn / XOff**

   DGy 201 can be configured to operate at baud rates from 9600 baud to 115 kbaud. The recommended baud rate is 115 kbaud (default baud rate). In Chapter 6, refer to the "**Command Set List**" page 90 section for details about changing baud rates.

6. Click **OK** to display the Hyperterminal window.

7. In Chapter 2, please continue with the "**Installation**" section (page 17).

ETHERNET CONTROL

The *DGy 201* can be controlled from the 10/100 BASE-T Ethernet port using a command line interface (Telnet) or a standard web browser. The same set up procedure is used for either type of control. Your *DGy 201* can be connected to a standard LAN or directly as a peer-to-peer connection. Network settings must be set prior to using it in either configuration.

The following topics are discussed in this section:

- **Introduction to IP Addresses**
- **IP Address Setup via Serial Port**
- **IP Address Setup via Ethernet**

INTRODUCTION TO IP ADDRESSES

When connecting systems via Ethernet, the setup of communications parameters is automatic. However, because this is a network connection, a unique address (known as the **IP address**) is required.

For proper operation, *DGy 201* requires a fixed IP address (also known as a "**static**" IP address). At the factory, *DGy 201* is programmed with a default IP address (**192.168.1.200**), but this address must be changed if you want to use your *DGy 201* on a network.

Important	Consult your network administrator to obtain a valid IP address before commencing the network setup procedure.

▲ **Recommendation**: If you want to use *DGy 201* on a Local Area Network (LAN), change the unit's IP address before putting it on the network. This can be accomplished in one of two ways:

~ Use the serial port to change the unit's IP address. Refer to the "**IP Address Setup via Serial Port**" section below.

~ Connect *DGy 201* directly to a PC using *DGy 201*'s Ethernet port. Refer to the "**IP Address Setup via Ethernet**" section (page 144) for details.

**IP ADDRESS SETUP
VIA SERIAL PORT**

Use the following steps to change *DGy 201*'s IP address using the serial port:

1. Connect *DGy 201* as outlined in the "**Installation**" section in Chapter 2 and set up your Hyperterminal as described in the "Serial Communications " section (page 139) of this chapter.

2. In the Hyperterminal window, type:

   `IPADDR`

   ... and press **Enter**.

   DGy 201 responds with the current IP address. Make a note of the address before proceeding with the next step.

3. Type `IPADDR` followed by a space, and the new IP address (as provided to you by your network administrator).

▲ **Example**: If the new IP address is **192.168.1.190**, type:

   `IPADDR 192.168.1.190`

   ... and press **Enter**.

4. *DGy 201* responds with the following message:

   `The system must be restarted for your changes to take effect. Do you want to restart the system (y/n)?`

   ~ Press "**y**" to restart *DGy 201* and use the newly assigned IP address.

   ~ Press "**n**" to retain the current IP address, and discard the new address.

5. After the *DGy 201* restarts, confirm the new setting by typing the command `IPADDR`. If *DGy 201* has accepted the command, it responds with the new IP address that you just entered.

Once you have set the IP address, you can connect your PC to *DGy 201* using Ethernet. In Chapter 2, refer to the "**Web Control Panel Connection**" section for instructions.

IP ADDRESS SETUP

VIA ETHERNET

DGy 201's IP address can be set directly via Ethernet, using a Telnet session that enables you to remotely log into *DGy 201* from a computer. This procedure is not required if you have already set the IP address using the method described above, in the "**IP Address Setup via Serial Port**" section of this chapter (page 143).

Use the following procedure to set up the IP address with a Telnet session:

1. Use an Ethernet crossover cable to connect directly between the *DGy 201*'s Ethernet port the network port of your PC.

Note | For this procedure, the *direct* connection method is recommended over the network method. This avoids potential conflicts between *DGy 201*'s default IP address and your network.

2. From the Start menu at the bottom of your Windows desktop select "**Run**..."

3. In the "**Open**" dialog box type "**cmd**" as shown in the following figure.
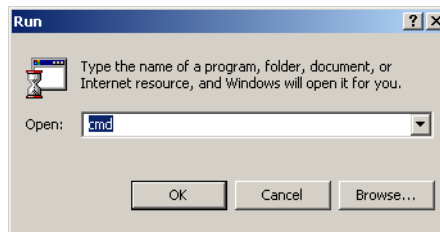
4. Click on the OK button to open the Windows command window.

5. At the command prompt in the command window type:

    telnet <ipaddress> 8000

where **<ipaddress>** represents *DGy 201*'s current IP address.

▲ **Example**: If you have not changed *DGy 201*'s default IP address, it should be set to:

    192.168.1.200

Using the default IP address shown above, in the command line window, type:

    telnet 192.168.1.200 8000

... and press **Enter**.

At this point, the Telnet window starts and *DGy 201* responds with the product name and copyright notice as shown in the sample below.

Figure B-5. *DGy 201* **Telnet Login (sample)**

6. To change the current IP address, type `IPADDR` followed by *DGy 201*'s new IP Address (as provided by your network administrator).

▲ **Example**: If the new IP address is **192.168.1.190**, type:

   `IPADDR 192.168.1.190`

   ... and press **Enter**

   DGy 201 responds with the following message:'

   `The system must be restarted for your changes to take effect.`

   `Do you want to restart the system (y/n)?`

   Type "**y**" to accept the new address, or "**n**" to retain the current address.

Important | When you change the IP address from the Ethernet port, the Telnet connection (and communication) will be lost. This behavior is to be expected. Simply restart the Telnet session using the new IP address.

7. If you pressed "**y**" in the step above, *DGy 201* reboots and the Telnet connection is lost. Repeat steps 2 through 4 to establish a new Telnet session — except in step 4, type the new IP address.

8. Confirm the new setting by typing the command `IPADDR` and pressing **Enter**. If the *DGy 201* has accepted the command, it will respond with the new IP address.

In addition to setting the IP address, if required you can also set the IP subnet mask (**IPSubNET**) and gateway (**IPGateWay**). See (page 124) for more details.

This completes the procedure for setting up the IP address via Ethernet. You can now control *DGy 201* either by directly issuing ASCII commands from the Telnet Window, or from the Web Control Panel using a standard web browser. Refer to Chapter 6, "**Command Line Interface**" for a complete command list.

Note	To close a Telnet session, type EXIT or use the keystroke sequence "**Control + D**."

FIRMWARE UPGRADE

C

IN THIS APPENDIX

RGB Spectrum periodically provides upgrades to the *DGy 201* to add new features, change functionality or correct defects. Check the " Support" section of the RGB Spectrum Web site for information about firmware upgrades.

This appendix provides detailed information about the upgrade process required to download and install new versions of the *DGy 201* firmware.

UPGRADE PROCEDURE

OVERVIEW

The firmware upgrade procedure is a three step process:

1) Download new firmware from the RGB Spectrum Web site

2) Transfer the new firmware to the *DGy 201* memory

3) Perform the upgrade process

OBTAINING THE LATEST FIRMWARE

Before commencing the upgrade procedure you should download the latest revision of the firmware from the RGB Spectrum web site. A downloadable copy of the latest firmware can be found in the "Support" section of the RGB Spectrum web site
http://www.rgb.com/en/Support/DGy.asp

The use of a broadband connection is highly recommended as the upgrade file is approximately 8MB in size.

Each revision of firmware is provided with a copy of the firmware release notes which identifies changes and improvements associated with the new version of firmware. It is suggested that you read the release notes prior to performing the upgrade so that you will know of any changes in the features or operation of the unit. If you have any questions, please contact RGB Spectrum Customer Service.

The upgrade file should be named "FWDGY_x.yyy.tgz" where x.yyy represents the version number. (note that the file name is case sensitive). Copy this file onto a local drive on your PC in a folder that is easily accessible for the next step.

NOTE: Do not rename the file.

SETTING UP THE

DGy

The next step in the firmware upgrade process is to transfer the new firmware to the *DGy 201*. To accomplish this you will have to connect your PC to the *DGy 201* network port (10/100 BASE-T Ethernet). Connect an Ethernet cable to the *DGy 201* as described in Appendix B, **Ethernet control** (see page 142) and make sure that you have the communications between your PC and the *DGy 201*. Make special note of the IP address of the *DGy 201* as you will need it in the next step.

TRANSFERRING

THE NEW

FIRMWARE TO THE

DGy

The new firmware is transferred to the *DGy 201* using standard FTP (File Transfer Protocol). This is accomplished easily by using one of the two following methods:

- **Automated Update Procedure**

- **Manual Update Procedure**

AUTOMATED UPDATE PROCEDURE

The *DGy 201* offers an automated procedure for updating firmware via Graphical User Interface (GUI). This section outlines the steps involved in setting up this automated procedure.

STARTING THE FTP

CLIENT

Use your web browser to connect to your *DGy 201*. The first page that the browser displays is the *DGy 201* "Applications Suite" page as shown in **Figure C-1 on page 149**.

To access this web page, type the IP address of the *DGy 201* in the Address line of your web browser and click on the **Go** button. Note that if the WCP application is already running you must first close it by clicking on the close window buttons (you cannot operate the WCP and FTP at the same time).

Figure C-1. *DGy 201* **Application Suite Page**

The **Application Suite** page provides the option to open the *DGy 201* Web Control Panel or to set up a *DGy 201* FTP file transfer and firmware upgrade. To begin the file transfer/firmware upgrade operation, click on the button labeled *DGy 201* **FTP**. You will see the download file dialog shown below in Figure C-2.
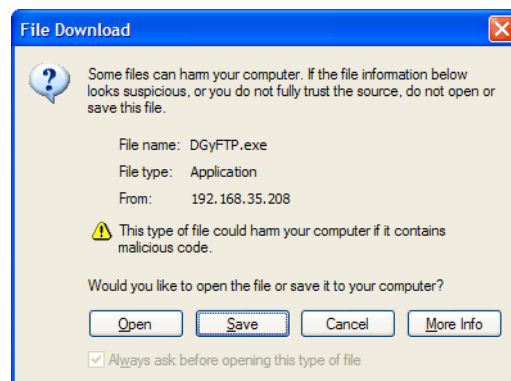
Figure C-2. **File Download Dialog Box**

To continue with setting up the FTP session click on the **Open** button in the File Download dialog box. After a pause of about 15 - 20 seconds, as the FTP Client application loads, you will see the *DGy 201* FTP Client dialog box as shown in the following figure.
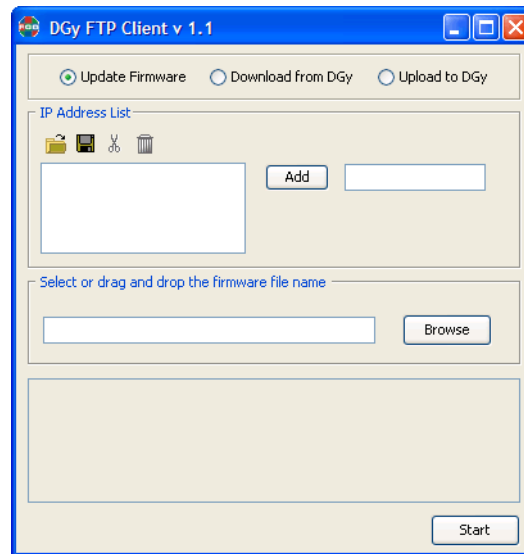
**Figure C-3.** *DGy 201* **FTP Client Dialog Box**

Note	If additional dialog boxes appear, due to security applications, select **Run** or **OK**, depending on the software.

FIRMWARE UPDATE PROCEDURE

Use the following steps to transfer the firmware from your local computer to the *DGy 201* chassis.

Step 1. If not already selected, click the **Update Firmware** radio button to display the options as shown in the figure below.
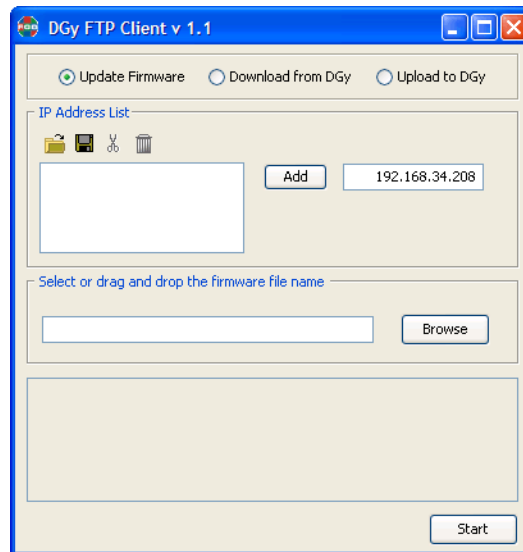
Figure C-4. *DGy 201* **FTP Update Firmware Box**

Step 1. Enter the IP address of the *DGy 201* in the IP address entry box on the right side of the **Add** button.

Step 2. Click the **Add** button to add the IP address of the *DGy 201* to the IP Address List on the left side of the window.
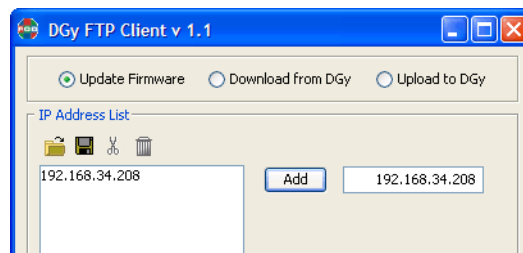

Figure C-5. *DGy 201* **FTP Update Firmware IP Address List**

Step 3. Click on the **Browse** button to navigate to the folder where you downloaded the firmware upgrade file (see Figure C-6 below). Alternatively if you know the path name you can type this directly into the Pathname entry box or drag and drop the file onto this area.

Figure C-6. **FTP Select Firmware Archive File**

The file name should appear in the box to the left of the **Browse** button as shown below.
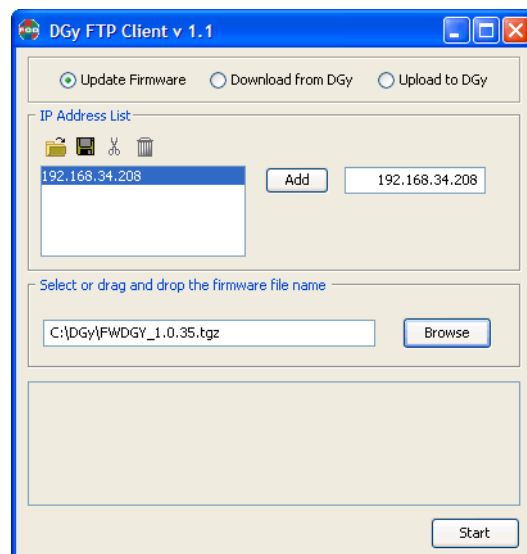

Figure C-7. **FTP Firmware File Name**

Step 4. Click the **Start** button to begin the firmware file transfer process from your computer to the *DGy 201*. You should see the following information about the transfer in the status area of the window.

Figure C-8. **FTP Firmware Upload Status**

You will also see another window open indicating file transfer status as shown in the following figure.
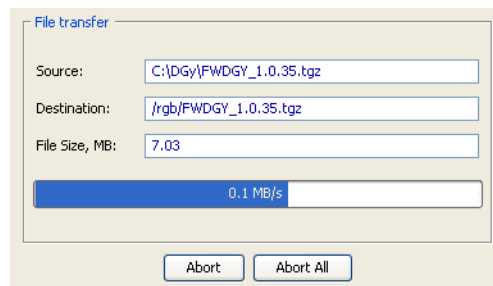
Figure C-9. **FTP File Transfer Status**

The *DGy 201* will automatically update the firmware after it has transferred the fiile. When the update has begun, you will see the following status window.

Figure C-10. FTP Updating Firmware Status

The *DGy 201* will automatically reboot upon completion of the firmware update. During this time, you will loose commnuncation with the *DGy 201*. You will need to reconnect to the *DGy 201* "Applications Suite" after the system has rebooted.

To confirm the new version number, launch the WCP (see **Web Control Panel Connection** page 19) and click on the **Options** button. Under the **Info** tab you should see the new firmware version number listed. The automatic firmware upgrade procedure is now complete.

MANUAL UPDATE PROCEDURE

The *DGy 201* also offers a manual procedure for updating firmware by using a standard web browser. This section outlines the steps involved in setting up this procedure.

STARTING THE FTP SESSION VIA WEB BROWSER

Follow the steps below to use a web browser, such as Microsoft Internet Explorer, to update the *DGy 201* firmware.

1) Open your web browser and type ftp://<ipaddress>
where <ipaddress> is the IP address of your *DGy 201* (noted in the previous step).

▲ Example - assuming that the *DGy 201* IP address is currently set to 192.168.1.150

Type: ftp://192.168.1.150

This will launch the *DGy 201* FTP server login screen as shown in the figure below.
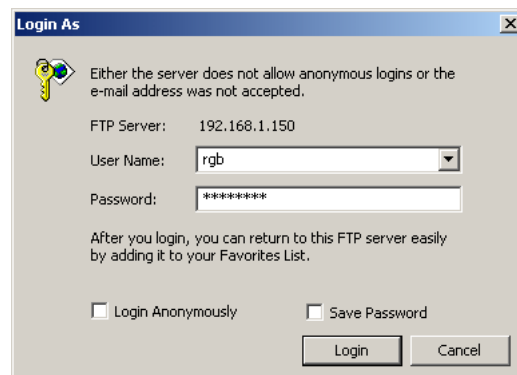

Figure C-11. Typical FTP login screen

2) If the User Name **rgb** is not already entered in the User Name entry box then type **rgb**

3) Type **spectrum** in the password dialog box (lower case only).

4) Click on the "Login" button in the FTP login window.

5) Cut and paste the upgrade file (FWDGY.x.yyy.tgz) from your PC folder into the browser window and download will automatically begin.

While the transfer is in process typically a progress dialog is displayed on your PC as shown in the figure below.
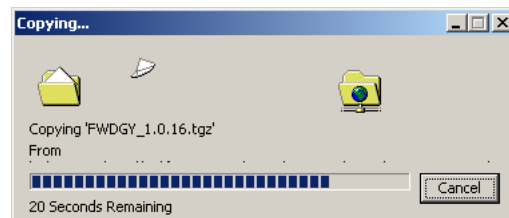
Figure C-12. Typical FTP copy progress screen

When the copy process is complete your browser FTP window should look similar to the window shown in the figure below.
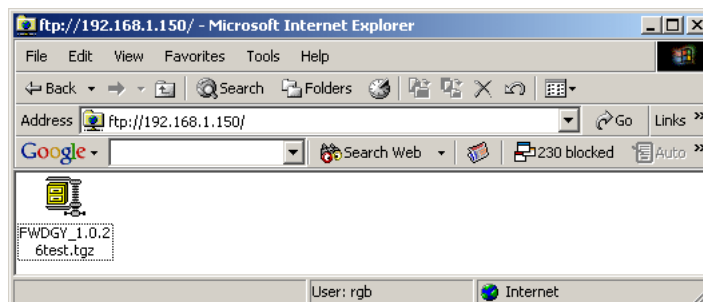
Figure C-13. FTP browser window with file transfer complete

**INSTALLING THE
DGy FIRMWARE**

After the new firmware has been transferred to the *DGy 201*, the final step is to install the firmware into *DGy 201* non volatile memory. Installation of the *DGy 201* firmware requires the **ufw** command to be issued from a command line interface. You can use either the serial (RS-232) port or open a Telnet session on the Ethernet (10/100 BASE-T) port to complete this final step.

1) Connect to the *DGy 201* by either the serial port using a serial emulator or the Ethernet port as a telnet session.

2) Verify that you have established communication to the command line interface by typing either **help** at the command line prompt. If the connection is set up correctly the *DGy 201* should respond with a list of commands.

3) Type the command **ufw** and press ENTER.

4) The *DGy 201* will prompt you with a warning message: "This command will replace the current firmware with the firmware you just downloaded and restart the system. Do you want to proceed (y/n) ?"

   Type '**y** to proceed or "**n**" to terminate the process.

Note

> Communications with the unit will be lost during the installation process. This is normal and does not indicate that there is a problem with the installation process. This process may take several minutes.
>
> Do NOT turn the power off during this time.

5) When the installation is complete the *DGy 201* will automatically reboot. This is indicated by the front panel LED indicators being turned on simultaneously. Wait fifteen seconds for the boot process to complete before moving on to the next step.

6) Reconnect the serial emulator or start a new Telnet session with *DGy 201* and type "**ver**". *DGy 201* should respond with the new firmware version number. The firmware upgrade process is now complete.

CONTACT INFORMATION

D

RGB Spectrum can be reached via phone, fax, mail and e-mail as listed below:

- **RGB Spectrum**
  950 Marina Village Parkway
  Alameda, CA 94501

- Phone: (510) 814-7000

- Fax: (510) 814-7026

- E-Mail (technical support): **support@rgb.com**

- E-Mail (sales and product information): **sales@rgb.com**

- Website: **http://www.rgb.com**