

# DGx Digital Storage Subsystem

## Quick Start Guide

### INTRODUCTION

The DGx Digital Storage Subsystem (DSS) is an accessory to the DGx High resolution digital recording system. The DSS is an external digital hard disk drive subsystem comprised of a single 120GB removable hard disk drive for extended digital recording capacity and high performance recording/playback.

The DSS is controlled directly from the DGx recorder via RS-232 serial and IEEE 1394 Firewire interfaces.

### PRODUCT HIGHLIGHTS:

- Removable 120GB hard disk drives for unlimited recording & archival storage
- Each removable drive provides 9 hours of recording time
- Immediate, random access to recordings: real time/military time & event marks
- 1U Rackmount chassis: 17.22"(w) x 1.75"(h) x 17"(d)

### SUPPLIED ITEMS:

Items including in your Digital Storage Subsystem package:

- (1) 9-pin Male-to-Male Serial cable
- (1) 6 foot 1394 Firewire cable
- (1) Null modem adapted (for RS-232 serial port)
- (1) Power cable

### INSTALLATION

The installation process consists of interconnecting the DSS to the DGx recording system. **Turn off** the power to the DGx before continuing with this procedure.

Using the numbered steps shown in **Figure 1** connect the DSS disk system to the DGx recorder.

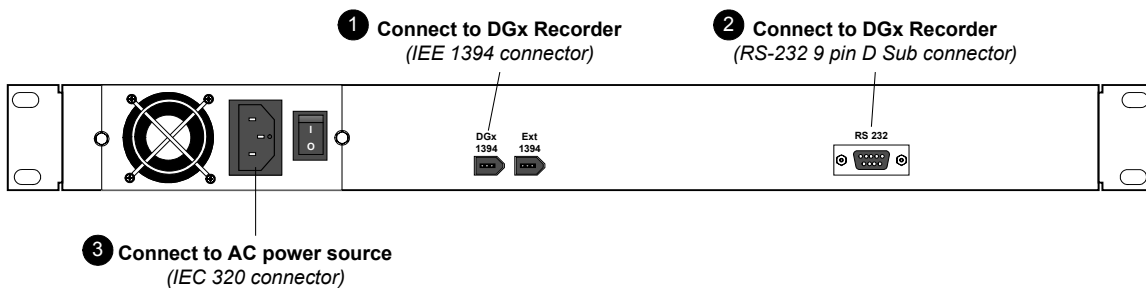


Figure 1. DSS Rear View

1. Connect one end of the supplied 1394 Firewire cable to the DSS 1394 port marked "DGx 1394" as shown in the illustration above.
2. Connect the other end of the Firewire cable to one of the two connectors on the DGx rear panel marked "1394". (Use the leftmost of the two 1394 connectors).

3. Connect the Null Modem adapted to RS-232 connector mounted on the DSS rear panel.
4. Connect one end of the supplied serial cable to the Null Modem adapter attached to the DSS RS-232 connector.
5. Connect the other end of the serial port cable to the RS-232 connector on the DGx rear panel marked "Auxiliary" (this is the upper of the two 9-pin serial ports).
6. Make sure that the drive is firmly seated in its drive bay, with lever bar down and the drive front is flush with the DSS front panel.
7. Lock the drive into position by inserting the key into the keyhole lock and turning counterclockwise.
8. Connect the supplied power cord.
9. Turn on the power to your DSS by operating the power switch adjacent to the power connector on the rear of the panel.
10. Power ON your DGx digital recording system by turning on the power switch on the DGx front panel.  
The DGx recorder will take several seconds to initialize and will show the Main Menu on the front panel LCD display (optional item) when initialization is complete.

## REMOVABLE HARD DISK DRIVE

For convenience, the DSS hard disk drive is mounted in a removable caddy. The removable hard disk drive is located at the right hand side of the DSS front panel as shown in the figure below.

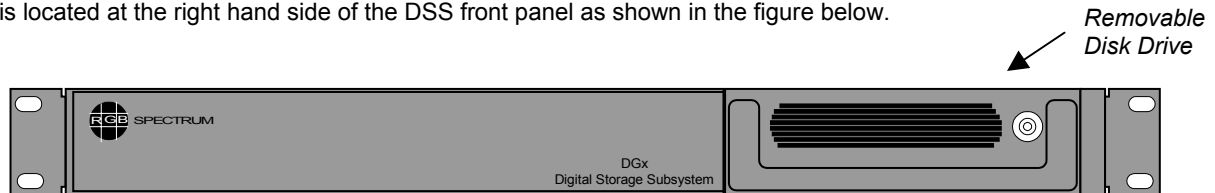


Figure 2. DSS Front Panel

Disk drives provide high capacity and reliable operation, but can be damaged if subjected to shock. To ensure good results be use to follow the instructions below.

### HARD DISK DRIVE REMOVAL FROM THE DSS DRIVE BAY

To remove the disk drive from its bay, insert the key into the keyhole on the front of the drive. Turn the key counter clockwise. Raise the lever bar on the front of the drive. As you do this, the removable disk drive will release from its internal DSS connector. Slowly slide the removable drive from its bay.

To maximize reliability, the DSS removable hard disk drives have read/write heads that automatically retract and rest on a "landing zone" upon power OFF. However, these removable drives are fragile. It is important to handle the removable drives carefully minimizing shock to ensure reliable operation. We recommend that you place the DSS removable drives in their padded caddy before moving or transporting the drives.

**IMPORTANT NOTE:** Please make sure that the drive activity light (amber or red LED – located on the front of the DSS in the left, bottom corner of the DSS drive) is OFF before turning the drive key. If you turn this key while the drive activity light is ON, data can be corrupted on the DSS drive.

### HARD DISK DRIVE INSERTION INTO THE DSS DRIVE BAY

Insert the drive into the bay, with its lever bar in the up position. Slide the drive all the way into the bay, pressing the drive lever bar down and sliding the drive firmly into the bay until the drive front is flush with the DSS front panel and securely seated into the internal connector. Next, insert the key into the keyhole lock and turn counterclockwise.

## CONTROL OF DSS USING THE SERIAL PORT

The DGx/DSS can be operated from an optional PC application (VCP) or via the DGx serial control port. This section provides a brief description of operation using the serial control port.

**Note:** A complete list of serial control commands is provided in your DGx User Guide.

### SET DGX CLOCK FUNCTION

You can synchronize the DGx clock to your external timing devices (i.e. PC clock, etc), using a Real Time clock operating inside the DSS. Since virtually all devices can use the Real Time "Time-of-Day" convention, this is a simple way to ensure timekeeping synchronization between the DGx and the other devices you use.

The DGx applies a Real Time code to your recordings. In this way, you can:

1. Keep a log of the recorded content based on real time.
2. Ensure consistency of DGx recording sessions to conventional real time keeping.
3. Synchronize your DGx recording session to real time external devices, e.g. PCs.

Use the following procedure to set the real time clock from the serial port.

1. From Hyperterminal, type: **RealTimeClockSet** and follow the prompts for YR,MO,DATE and TIME
2. Press Enter.

NOTE: RGB Spectrum recommends that you regularly review the DGx clock setting to ensure reliable, fully synchronized timekeeping.

### RECORDING TRACKS

A recording session (the process of selecting RECORD then STOP) is stored on the DSS hard drive in the form of a TRACK. You can have up to 999 TRACKS on each removable hard disk

1. From Hyperterminal, type: **LTRACKS** and press Enter. You will see a list of tracks with information as shown below.

TRACK	Real Time Start	TC Start	Recording Length
#	YEAR.MO.DAY HR:MIN:SEC:FRAME	HR:MIN:SEC:FRAME	HR:MIN:SEC:FRAME
(1,2,3 etc.)		(Time code)	(Duration)

### TRACK PLAYBACK

1. From Hyperterminal, type: **CTRACK** followed by the desired track number you want to playback (Enter).
2. Type **PLAY**, then press Enter.

### MOVING BETWEEN TRACKS

There are two methods to move between tracks. The first method allows explicit random access to a track, and the other method provides immediate access to the prior or next track.

1. From Hyperterminal, type: **CTRACK** followed by the desired track number.
2. Press Enter.

OR alternatively to move to the next or previously recorded track:

3. Type **NextTRACK** or **PrevTRACK** followed by ENTER.

## CONTROL OF DSS USING THE VIRTUAL CONTROL PANEL

The DGx/DSS can be controlled from a PC using an optional application known as VCP (Virtual Control Panel). The VCP provides an interface using windows accessed by TABs allowing control of record and play functions in addition to many configuration parameters such as setting communications parameters and the real time clock. VCP also provides a terminal page so that serial commands can be entered directly from VCP in the same way as using a terminal emulator (such as HyperTerminal used in the previous section).

### RECORDING TRACKS

A recording session (the process of selecting RECORD then STOP) is stored on the DSS hard drive in the form of a TRACK. You can have up to 999 TRACKS per hard disk. You can view the list of recorded tracks on the DSS hard disk in two ways:

1. From the VCP (Virtual Control Panel) "Record and Play Disk" tab, you will see a track list displayed in the "Select Track" dialog box as shown in **Figure 4**. Use the "Select Track" drop down dialog box view the Track list.
2. From the VCP "Terminal" tab, type: **LTRACKS** and press Enter. You will see a list of tracks with the following information:

TRACK	Real Time Start	TC Start	Recording Length
#	YEAR.MO.DAY HR:MIN:SEC:FRAME	HR:MIN:SEC:FRAME	HR:MIN:SEC:FRAME
(1,2,3 etc.)		(Time code)	(Duration)

### TRACK PLAYBACK

There are two ways to playback selected tracks when using VCP.

1. From the VCP "Record and Play Disk" tab, go to the "Select Track" drop down box and select the desired track you want to playback. Click on the PLAY button.
2. From the VCP "Terminal" tab, type: **CTRACK** followed by the desired track number you want to playback and press Enter. Type **PLAY**, then press ENTER.

### MOVING BETWEEN TRACKS

You can move between tracks by two different means. The first method provides the ability to explicitly to to a track, and the alternate method provides the ability to incrementally move forwards or backwards one track at a time.

To directly move to a given track use the following procedure:

#### VCP "Record and Play Disk" Tab

Highlight desired track in the track list

#### VCP "Terminal" Tab or Hyperterminal

Type: **CTRACK** followed by the desired track number. Press Enter.

To move incrementally forward or backwards use the following procedure:

#### VCP "Record and Play Disk" Tab

Click the NEXT or PREVIOUS buttons to move to the next or previously

#### VCP "Terminal" Tab or Hyperterminal

Type **NextTRACK** or **PrevTRACK** to move to the next or previously recorded

recorded track

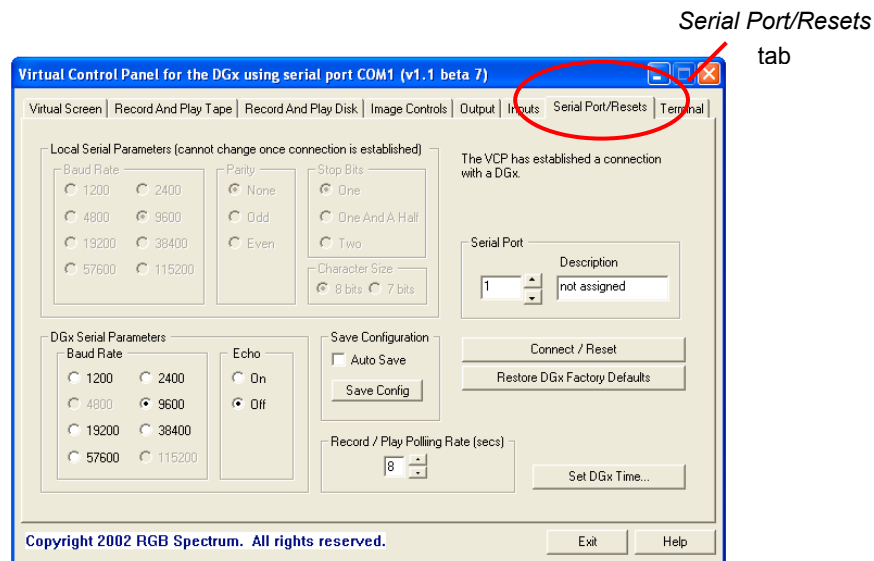
track.

## VCP SET DGX CLOCK FUNCTION

The DGx applies a Real Time code to your recordings. In this way, you can:

1. Keep a log of the recorded content based on real time.
2. Ensure consistency of DGx recording sessions to conventional real time keeping.
3. Synchronize your DGx recording session to real time external devices, e.g. PCs.

To set the DGx real time clock, go to the “Serial Ports/Reset” Tab. Click on the “Set DGx Time” button. A dialog box appears. Enter the appropriate Year, Month, Day, Hour, Minute, Seconds, and Day of the Week settings in the respective dialog boxes. When finished, click on the “Set” button. See **Figure 3**.



**Figure 3. VCP Serial Ports Tab**

NOTE: RGB Spectrum recommends that you regularly review the DGx clock setting to ensure reliable, fully synchronized timekeeping.

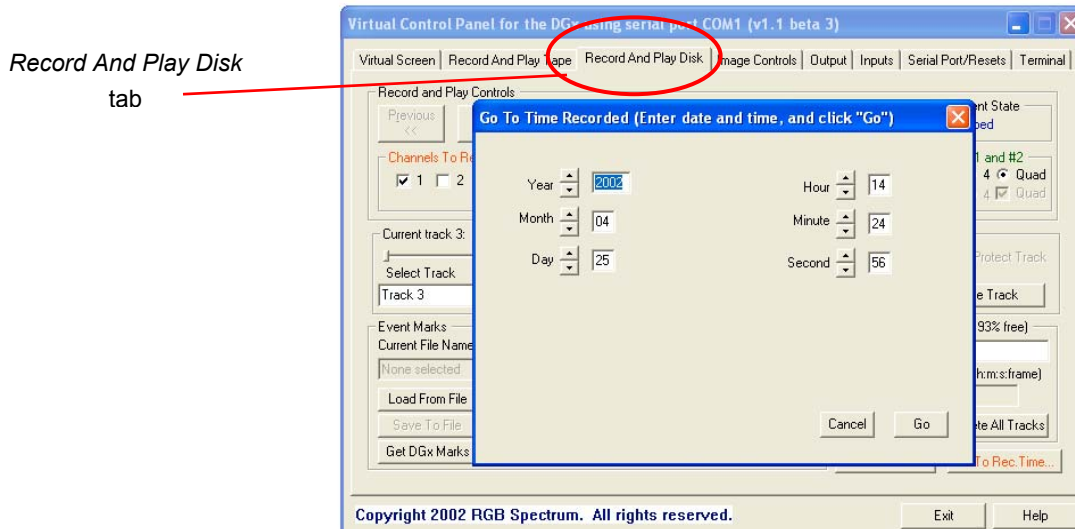
## VIRTUAL CONTROL PANEL (VCP) USER SELECTABLE POLLING

VCP communicates with the DGx and DSS system at regular intervals to check settings and update current information such as recording timed elapsed, available DSS hard disk drive space, etc. When VCP is performing this polling routine, the hourglass prompt appears momentarily, during which you cannot issue VCP commands. Shorter polling intervals provides more constant updating and display of status information on the VCP screen, but you have less access to issuing commands. Longer polling intervals gives you more access to issuing commands but more infrequent updating and display of status information.

You can set the VCP polling intervals to suit your personal preferences. To do this, go to the VCP “Serial Ports/Resets” tab. Go to the “Record/Play Polling Rate” dialog box located in the bottom, center of the screen. See **Figure 3**. The standard VCP polling interval is every 8 seconds. Use the up and down arrow buttons or type in the number (in seconds) to set the desired polling interval.

## DSS REAL TIME SEEK

You can seek to any recorded position on the DSS hard disk based on the real time, i.e. time-of-the-day, it was recorded, e.g. 10AM. From the VCP (Virtual Control Panel) "Record and Play Disk" tab, click on the "Go to Rec Time" button. A dialog box appears, as shown in **Figure 4**. Enter the desired Year, Month, Day, Hour, Minute, and Seconds in the respective dialog boxes. When finished, click on the "GO" button. Now you can click on the "Record and Play Controls" starting from this position. See **Figure 4**



**Figure 4. VCP Record And Play tabs**

## MORE VCP FUNCTIONS

VCP contains the following dialog sections and buttons:

- Current Track
- Deleted Track Time
- Select Track
- Delete Track
- Elapsed Disk Time
- Delete All Tracks
- Go To Real Time Recorded
- Real Time Recorded
- Record Date

**Current Track:** Displays current recorded track that the system is set to and its associated track time in the "Elapsed Track Time" dialog box. When you select a track in the "Select Track" dialog box, Current Track displays the selected track's "Start Time" in HR:MIN:SEC:FRAME and the selected track's "Length", also in HR:MIN:SEC:FRAME, and the track's original "Record Date" in YEAR, MONTH, DAY.

**Delete Track** After selecting the desired track in the "Select Track" drop down box, Click the "Delete Track" button to delete the selected track from the DSS hard drive.  
**Caution:** Once a track is deleted, it cannot be recovered. The deleted track's corresponding event marks will also be erased.

**Delete All Tracks:** Deletes ALL recorded tracks on the DSS hard drive. You will be asked for a confirmation before tracks are deleted. **Caution:** Once these tracks are deleted, they cannot be recovered. All track event marks are also deleted.

Elapsed Disk Time	The time code, or elapsed time, for the recorded track is displayed. The time code value, in HR:SEC:MIN:FRAME, is the elapsed time of the recorded information on the DSS hard disk. Example: track 1 duration is 10 minutes, its time code is 00:00:00:00 (start) to 00:10:00:00 (end). Its real-time value could be any time of the day. Track 2's duration is 5 minutes. Its time code would be 00:10:00:00 (start) to 00:15:00:00.
Elapsed Track Time	Displayed only in PLAY mode in the "Current Track" section. Displays time elapsed during playback within the selected track.
Real Time Recorded	Displayed only in PLAY mode in the "Current Track" section. Displays the track's original time-of-day, in 24-hour format, that the track was recorded in, as it is being played back. Use this information and the track's "Record Date" for use with the "Go to Real Time Recorded" function.
Record Date	Displayed only in PLAY mode in the "Current Track" section. Displays the track's original recording date. Use this information and the track's "Real Time Recorded" for use with the "Go to Real Time Recorded" function.
Select Track:	The "Select Track" drop down box displays the list of recorded tracks on the DSS hard disk. From this box, you can select tracks for various functions, e.g. PLAY, deletion, etc.

### ***DGx Firmware Upgrade Instructions***

To upgrade your DGx firmware, you must use a terminal emulation program, such as Hyperterminal, capable of communicating at up to 115,200 baud. You **cannot** use Virtual Control Panel to do this. We recommend using Hyperterminal v. 6.3 or higher for optimal performance.

- Step #1                    Set the baud rate of your DGx and terminal emulator software to 115,200.
- Step #2                    Test the DGx-to-terminal emulation communication link by pressing the ENTER key. Confirm that prompt characters are being displayed after each keypress. If not, check your DGx and terminal emulation software baud settings and your serial cable connections. Repeat step 1.
- Step #3                    From the terminal program, type: UPDATEFIRMWARE then press ENTER  
You are prompted to erase the DGx EPROM firmware and download the upgrade file. When the you see displayed "Send S-Record Data", go to the terminal emulation software "Transfer" menu. Select "Send Text File". Next, set the "File Type" dialog box to "All Files \*.\*". Browse to the Folder containing your new DGx firmware. Select "DGX\_MB.ABS", then press "OK".
- Step #4                    When this process is done, you will see the message:  
"Loading Done. Finished loading flash... rebooting.  
Reset your terminal baudrate to 9600". The DGx will automatically reboot itself and reset its baud rate to 9600.
- Step #5                    If the optional DGx Video Board is installed, set your DGx and terminal emulation program communication rates to 57,600 baud. Test the DGx-to-terminal emulation communication link by pressing the ENTER key. Confirm that prompt characters are being displayed after each keypress. If not, check your DGx and terminal software baud settings and your serial cable connections. Repeat setting the DGx and terminal emulation program baud rates to 57,600 and retest.
- Step #6                    From the terminal program, type: DGXFIRMWAREUPDATE then press ENTER.  
You are prompted to reboot the DGx. Turn the DGx off and power it back up.

- Step #7** Once the DGx restarts, from the terminal program, type: `STARTDGXUPDATE` then press ENTER. When the you see displayed "Send S-Record Data", go to the terminal emulation software "Transfer" menu. Select "Send Text File". Next, set the "File Type" dialog box to "All Files \*.\*". Browse to the Folder containing your new DGx firmware. Select "DGX\_DB.ABS", then press "OK". When the upgrade process is complete, follow the prompts to reboot the DGx. Turn the DGx off and power it back up. The DGx firmware upgrade is complete.
- Step #8** Set up your desired DGx configuration, i.e. setting "Channels to Record", "Playback to Outputs", "Input Type" for each channel, "Image Controls", etc., from the DGx Virtual Control Panel (VCP), the DGx front control panel, or a terminal emulation program. Then from the VCP "Terminal" tab or your terminal emulation program, type or select: `SAVECONFIGURATION` and then press ENTER. You will only need to do this one time as your settings will be saved every time you turn off your DGx and turn it back on.