FOCUS enhancements

FS-M
MPEG Digital Disk Recorder

User Manual

MANL-0977-01

Notices:
Legal, Regulatory, and Safety

LEGAL

Copyright

Contacting FOCUS ENHANCEMENTS

Office Hours:	Monday through Friday 8:00 AM to 5:00PM (Central Time)
Email:	support@FOCUSinfo.com
Telephone:	763-398-1658
Fax:	763-571-7688
Address	Focus Enhancements, Inc. 1370 Dell Avenue Campbell, CA. 95008

Unauthorized Use Is Prohibited

FOCUS ENHANCEMENTS is not responsible for the unauthorized use of its equipment and will not make allowance or credit for unauthorized use or access.

Unauthorized Alterations and Modifications

Alterations or modifications to FOCUS ENHANCEMENTS equipment or software that is carried out without appropriate authorization may invalidate the product warranties and the user's right to operate the equipment.

Unauthorized Servicing

Do not attempt to service this product yourself. Opening or removing covers may expose dangerous voltage or other hazards.

Refer all servicing to qualified service personnel.

Serial Number

The serial number for this equipment is located on the back of the unit. Please write this serial number on the enclosed warranty card and keep it in a secure area.

Regulations

FCC Class A

This product satisfies FCC regulations when shielded cables and connectors are used to connect the unit to other equipment. To prevent electromagnetic interference with electric appliances such as radios and televisions, use shielded cables and connectors.

This equipment has been tested and found to comply within the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, correct the interference by one or more of the following:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that used by the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

Safety

Symbols

In the FS-M Unit

This symbol indicates the presence of an uninsulated Dangerous Voltage within the product's enclosure that may constitute a risk of electric shock to persons.

In the FS-M Documentation

This symbol indicates important information.

This symbol indicates information about features, functions, operations, that is of interest to the user.

Documentation

Read, Retain, and Follow Instructions

All the safety and operating instructions should be read before the product is operated.

- **Retain Documentation**
  Place documentation in a secure place for future reference on operating and safety instructions.
- **Follow All Operating and Safety Instructions**
- **Pay Attention to All Warnings**
  Warnings are provided to protect the operator, the equipment, and content.

Electrical Precautions

Do Not Expose to Moisture

Do not use this product near water or in an environment where it is exposed to dampness or there is the possibility of it getting wet.

Do Not Remove Cover

There are *No User Serviceable Parts* inside this unit. Servicing should be done by qualified service personnel.

ON / OFF Switch in Stand-By Position

The On/Off switch *Does Not Separate the Unit From the Main Power* when it is in the stand-by position.

Power Sources

Use only power sources that match those indicated on the marking label. If unsure sure of the type of power supply that is available, consult your dealer or local power company.

Do Not Overload Power Outlets

Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.

Verify Power Plugs are Fully Inserted

To prevent potential electrical shock to personnel, verify that the FS-M power cord plug is fully inserted in to a grounded receptor and that the plug blades are not exposed.

ATTENTION

POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

Power-Cord Protection

- **Routing Power-Cords**
  Route power supply cords so that they are not likely to be walked on or pinched by items placed upon or against them. Avoid sharp angles in the cord, particularly at plugs, convenience receptacles, and the point where they exit the product.
- **Non-Use Period**
  During extended periods when the device is not used, unplug it from the power source and retract the power-cord.

Grounding or Polarization

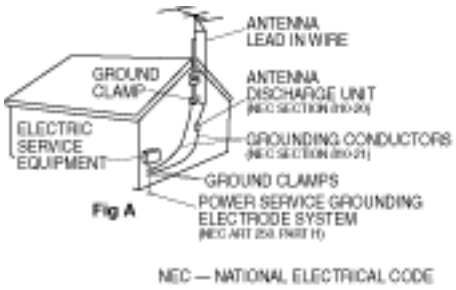
- **Polarized**
  If this product is equipped with a polarized alternating current line plug (a plug having one blade wider than the other), it will fit into the outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

- **Grounded**
  If this product is equipped with a three-wire grounding type plug, a plug having a third (grounding) pin, it will only fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug.

Outdoor Antenna Grounding

If an outside antenna or cable system is connected to the FS-M, verify that the antenna or cable system is grounded. This provides some protection against voltage surges and built-up static charges.

Refer to Article 810 of the National Electric Code, ANSI/NFPA 70, for information about the proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding connectors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Fig. A.



Lightning and Power Surges

During electrical storms or when left unattended and unused for long periods of time, unplug the FS-M from the power source and disconnect the antenna or cable system.

Power Lines

Do not locate an outside antenna system in the vicinity of overhead power lines, electric light or power circuits, or where it can fall onto such lines or circuits.

When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

Environmental Precaution

Focus Enhancements, Inc.
1370 Dell Avenue
Campbell, CA. 95008

Model Number: FS-M

Date of Manufacture:
Reference the Serial Number label attached to the unit.

Optical Precaution

The use of optical instruments with this device will increase hazards to the eyes hazard.

Maintenance and Moving

Cleaning

Unplug this product from the wall outlet before cleaning. The product should be cleaned only with a polishing cloth or a soft dry cloth. Never clean with furniture wax, benzine, insecticides or other volatile liquids since they may corrode the cabinet.

Moving

- Use safe lifting techniques when lifting and moving the FS-M.
- When using a cart or dolly, avoid surfaces that cause excessive vibration or risk of overturning.

Servicing

Unplug the device from the power outlet and refer servicing to qualified service personnel under the following conditions:

- When the power-supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the product.
- If the product has been exposed to rain or water.
- If the product does not operate normally when following the operating instructions. Adjust only those controls that are covered by the operating instructions. The incorrect adjustment of other controls can result in damage and often requires extensive work by a qualified technician to restore the product to its normal operation.
- If the product has been dropped or damaged in any way.
- When the product exhibits a distinct change in performance.

Accessories and Replacement Parts

Use only attachments and accessories recommended by Focus Enhancements.

Use only replacement parts specified by the Focus Enhancements or of comparable quality and characteristics as the original parts.

Unauthorized substitution of parts can result in fire, electrical shock, other hazards, and loss of warranty.

Safety Check

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

Operating Environment

Location

Install this device on a sturdy, level surface, away from moisture and dust.

- **Heat**
  Locate this device away from heat sources such as radiators, heat registers, stoves or other electrical devices (including amplifiers) that generate heat.
- **Wall or Ceiling Mounts**
  This device should not be mounted to a wall or ceiling.

Any mounting of this device should follow its instructions, and should use only mounting accessories recommended by Focus Enhancements.

Ventilation

Do not block the ventilation openings in the FS-M cabinet. Overheating can occur and damage the device. Do not place this device in a built-in installation, such as a bookcase or rack, unless proper ventilation is provided.

FS-M
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CHAPTER 1

Getting Started

1.1 Introduction

Thank you for purchasing the Focus Enhancements FS-M MPEG Digital Disk Recorder/Player. The FS-M is a digital video recorder/player (DVR) that uses the latest MPEG compression technology. This technology provides superb video quality and large storage capacities. Video and audio material is digitized, compressed and stored on the removable hard disk drive during recordings.

FS-M is extremely easy to use, but you should first read the manual carefully to avoid any damage to the device.

1.1.1 FS-M Interfaces

The FS-M provides the following audio, video and control interfaces:

- Video input Composite (BNC) or Y/C (4-pin, mini-DIN).
- Video output Composite (BNC) and Y/C (4-pin, mini-DIN).
- Front panel for control.
- RS-232 Interface for control.
- Two USB 2.0 connectors.
- One Ethernet network interface (10/100 Mbits/s) for control, file transfer, and firmware upgrade.
- Three FireWire, IEEE 1394, 6-pin connectors.

Please check the Focus Enhancements web site at *www.FOCUSinfo.com* for the latest list of optional accessories.

1.2 Getting Started

1.2.1 System Requirements

To operate the FS-M, the following items are required:

- A composite video or s-video source.
- A video monitor with a video or s-video input.
- A set of video and audio cables.
- An AC power outlet.

Before powering on the FS-M, please take a few minutes to become familiar with the FS-M front panel control interface and its back panel connections.

1.2.2 Unpacking the FS-M

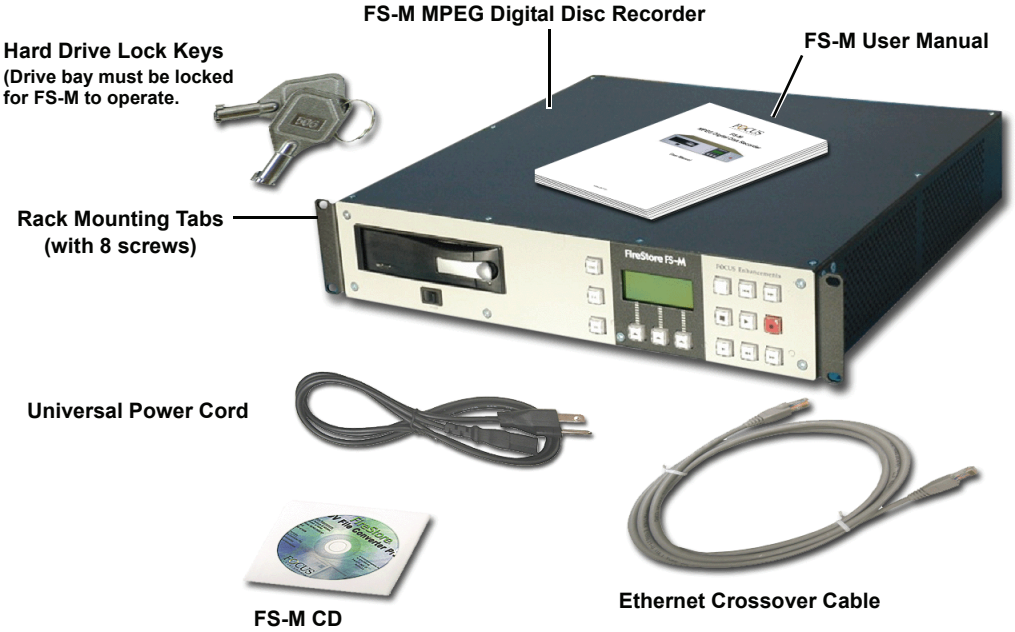
Unpack the FS-M and verify that all components are present and not damaged.

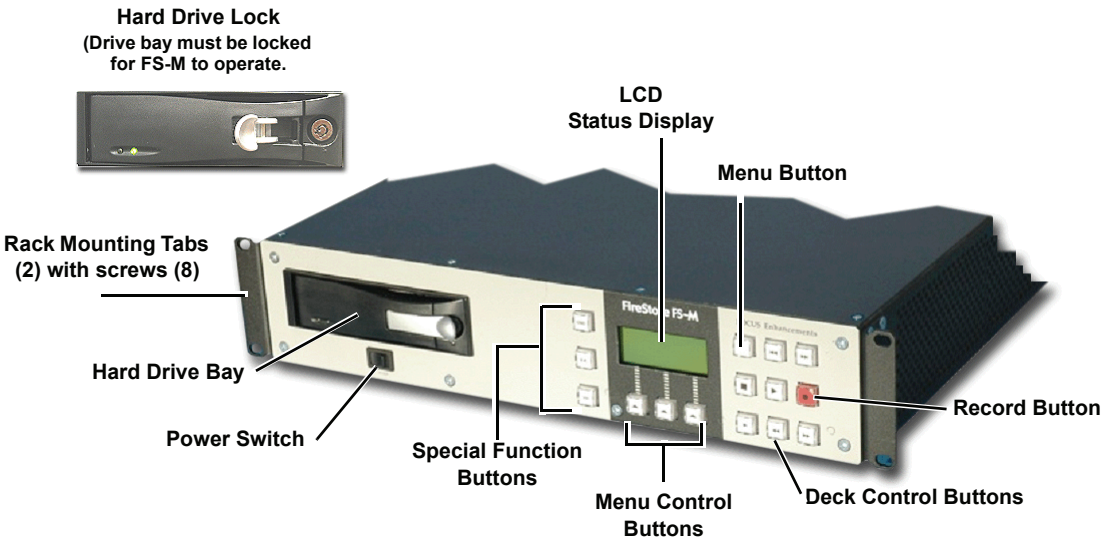
Note

Missing or Damaged Components
If there are missing or damaged items, contact Focus Enhancements Support for assistance.

Email: Support@FOCUSinfo.com
Telephone: 763-398-1658

The standard FS-M system includes:





1.2.3 Front Panel

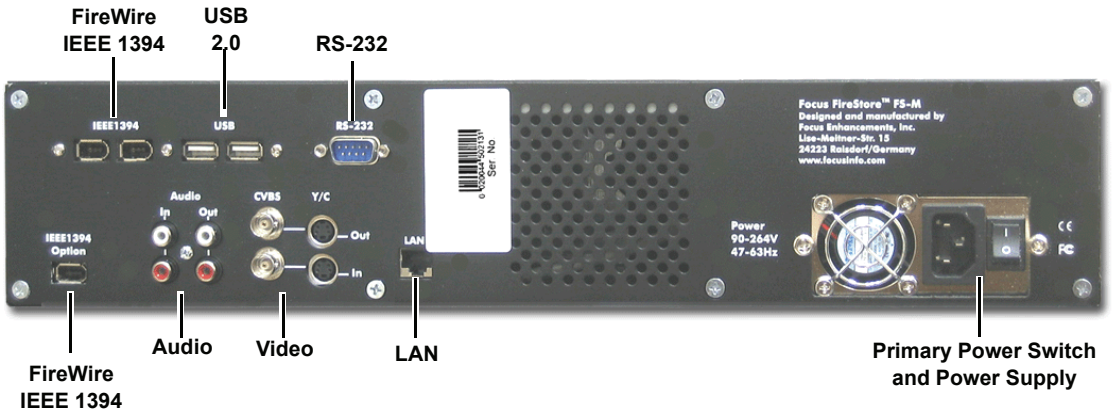
1. **Power Switch** Below the HDD rack, the power switch turns on the switching Power Supply inside the FS-M. This switch is active only when the rear power switch is **ON**.
2. **Status Display (LCD)** The LCD screen displays the FS-M Control Menu.
3. Another important control feature is the On Screen Display (OSD) that appears on the video monitor and works in conjunction with the LCD and Menu Control Buttons.
4. **Menu Button** Opens and closes the FS-M Control Menu on the LCD for viewing status or changing settings within the menu system.
5. **Menu Control Buttons** These 3 buttons provide navigation to and selection of the different layers and options within the Menu.
6. **Deck Control Buttons** These 8 buttons are the controls for the:
    - Playback speed,
    - Selection of the tracks,
    - Pause, Stop, and Record functions; see below for more details.
7. **Record and Stop Buttons**
    - **Record** starts the recording of a track.
    - **Stop**, ends the recording.
    - Pressing the Record button again pauses the recording and pushing the button again resumes recording without generating a new track.
8. **Special Function Buttons OSD, E-E, and V in**
    - **OSD** turns the monitor On Screen Display on and off.
    - **E-E** toggles between recorder and player mode.
    - **Vin** (Video in) selects between CVBS and Y/C input.
9. **Hard Drive Bay**

- Location of FS-M hard drive.

Note

For Operation, Drive Bay Must Be Locked
As a data integrity measure, the FS-M requires that the drive bay be locked, securing the hard drive, before operation can start.

1.2.4 Back Panel



FireWire (IEEE 1394)
Upper two ports are for future expansion and are active.
Lower single port is not implemented at this time.

USB (2.0)
Two ports for connecting to external controller devices, i.e. Contour Design ShuttlePro.

RS 232 Connector (DB9 Male)
Interface for remote control of the unit by a computer.

Audio and Video Connectors

- **S-Video**
  Y/C with Mini DIN connector.
- **Composite Video**
  CVBS with BNC connector. The top Composite and BNC connectors are for outputs and the bottom are for inputs.
- **Stereo Audio Inputs/Outputs**
  These are unbalanced RCA. The left audio RCA connectors are for input and the right ones are for output. The outputs are parallel active.

Primary Power Switch and Power Supply
Internal switching power supply with main switch and automatic voltage selection, 110/230V.

Note

Power Supply

The FS-M comes with a regulated internal power supply (110-230V). No switching is necessary for 110 or 230Volt environments

10/100 Base T LAN Interface
Default settings:

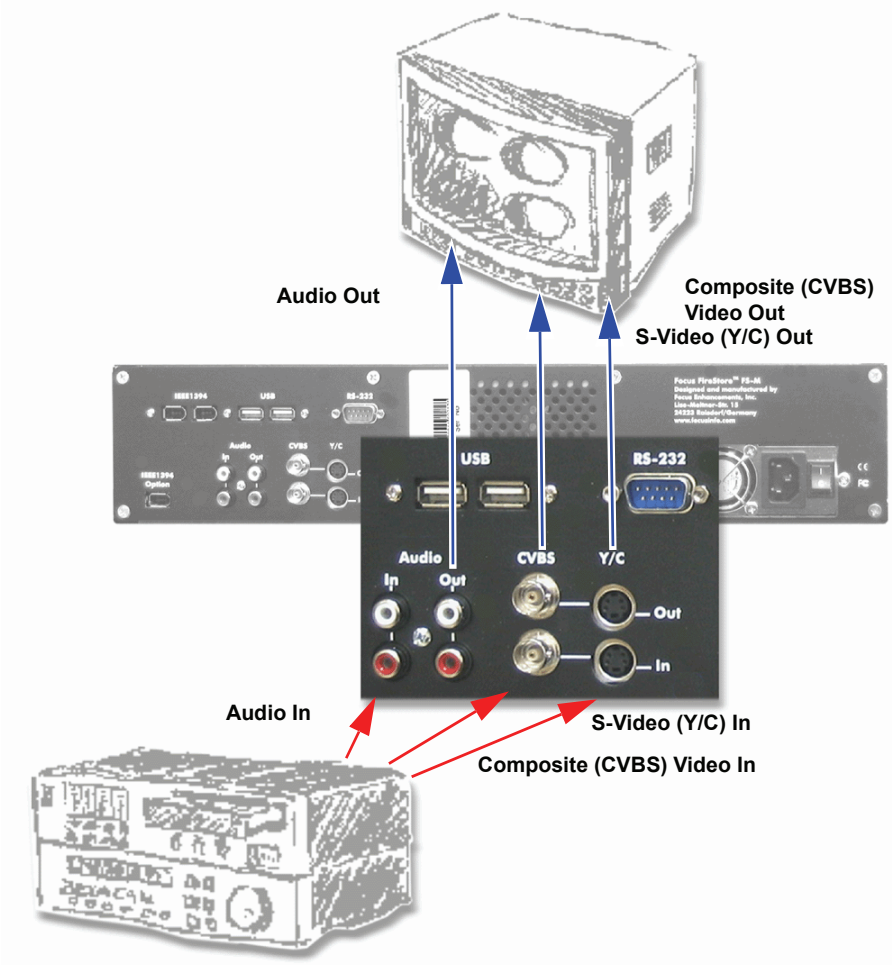
- IP Address: 192.168.0.102
- Subnet Mask: 255.255.255.0

Note

Video Input
CVBS and Y/C must not be connected with a source at the same time, because they are wired together internally and this would cause distortions. It is not possible to use the CVBS / Y/C input selection as an input cross switch. The outputs are available at the same time and can be used simultaneously

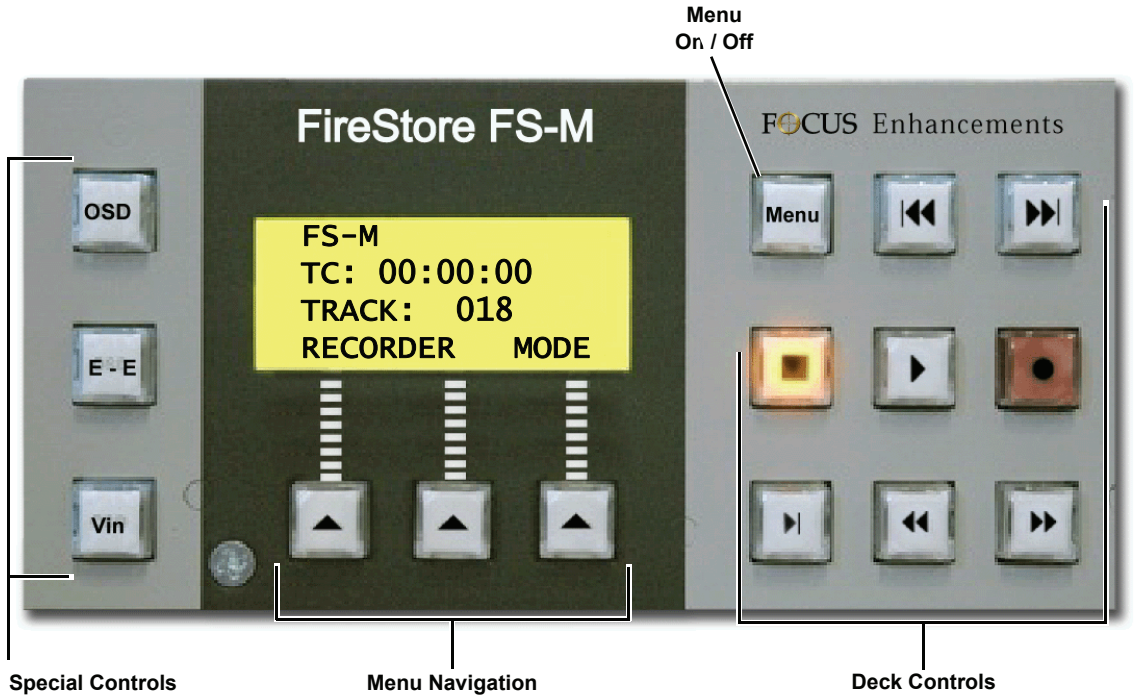
1.2.5 Video and Audio Connectors

1. Connect the video/audio sources to one of the video/audio inputs on FS-M.
2. Connect a video monitor to one of the video outputs of the FS-M.
3. When the FS-M powers on, an FS-M image appears on the video monitor. If the image does not appear, check the video and audio connections.



CHAPTER 2

Control Panel Interface



2.1 Front Panel

2.1.1 Power = On/Off Switch

At power on, the FS-M boots from an internal Flash Disk and, after a few seconds, the front panel LCD displays system status information as shown above.

At the same time, the video output initializes and the FS-M On Screen Display (OSD) displays on the monitor.

The front panel Power switch is active only if the rear panel Power switch is **ON**.

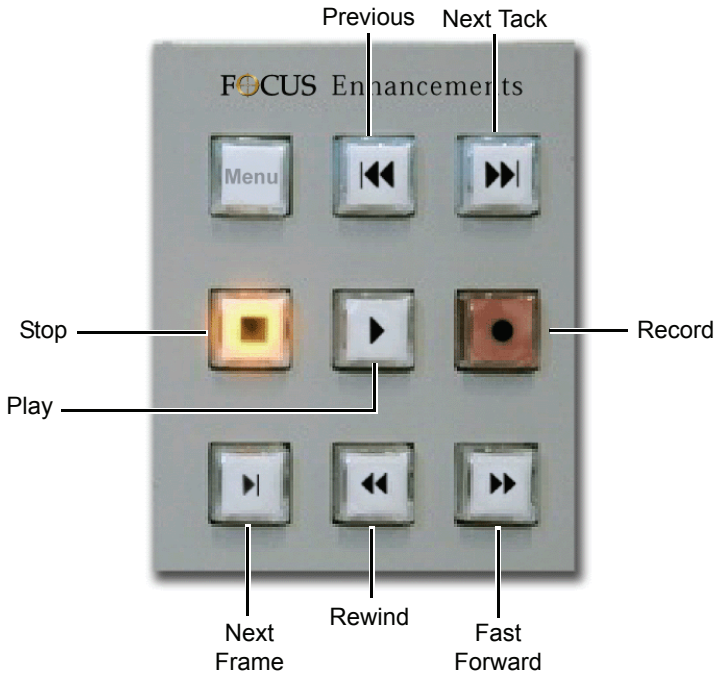
2.1.2 Menu Control

To open the FS-M menu, press the **Menu** button.

To exit the menu, press the **Menu** button again.

The three arrow buttons below the LCD are for menu navigation and option selection.

2.1.3 Deck Control



Previous Track

- Jump back to the beginning of the previous track.

Rewind

- Press the Rewind button to move backward through the video.
- To increase rewind speed, press the Rewind button again. Each time the Rewind button is pressed, rewind speed increases.

Stop

- Stops the foreground function, such as Play or Record.

  Example: In Player mode, the FS-M plays a recorded track out its video output to a monitor where it is displayed. This is the foreground activity.

  At the same time, in the background, the FS-M is in Record mode and is capturing the incoming video.

  Pressing Stop, stops the foreground playback activity but does not effect the background recording which continues.

  If Record mode is the foreground activity, pressing Stop terminates the recording.

Play

- In Player mode, press Play to start playback of a recorded video. This playback can be from a simultaneous recording session, as in the example above.
- To Pause playback, press Play again. During a pause, the Play button blinks.

Fast Forward

- In Player mode, pressing Fast Forward the first time starts advancing the video at twice the normal playback speed.
- To increase the forward speed press Fast Forward again. Each time Fast Forward is pressed, the speed doubles; 2x, 4x, 8x, 16x and so on.
- In PAUSE mode, pressing Fast Forward starts a slow motion advance through the video. Initial slow forward is 1/8 of regular forward speed.
- To increase the speed of the slow playback, press Fast Forward again. During Pause, each time Fast Forward is pressed the speed is increases by half; 1/8, 1/4, and 1/2.

Next Track

- In Player mode, pressing Next jumps to the next Track.
- In Record mode, pressing Next starts a new track. However, a few frames may be lost.

Next Frame

- In Player mode and Pause, pressing Next Frame advances to the next frame in the video.

Record

- When pressed, FS-M immediately starts recording the selected input to disk at the selected bit-rate. Pressing REC during a recording, pauses the recording. Pressing REC again will resume the recording without creating a new track.

2.1.4 Special Controls

E-E

- Electronic to Electronic, use E-E to switch back and forth between Record and Player modes.

OSD

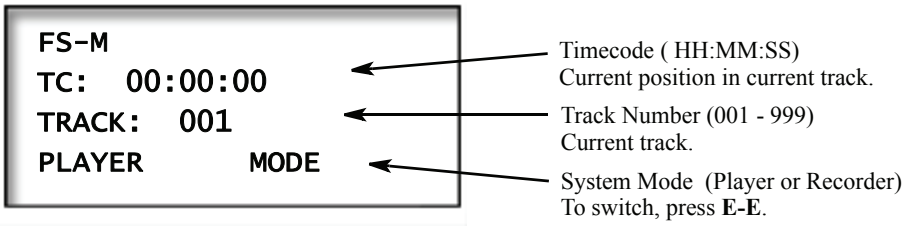
- On Screen Display, use OSD to turn On and Off, the menu display on the monitor.

Vin

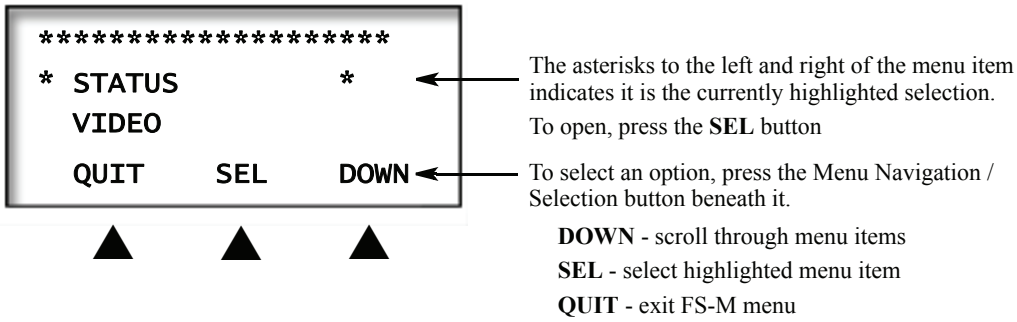
- Video input, use Vin to switch between two video inputs; Composite (CVBS) and S-Video (Y/C).

2.2 LCD Menu Structure

On power up, the control panel LCD displays the FS-M system status.



Press the **Menu** button to enter the FS-M menu system.



The FS-M System Menu provides access to three functions.

Status

- Displays the system software revision information, hard drive usage, unit IP address, and audio/video I/O settings.

Video

- Controls setting the video compression and the video standard.

System

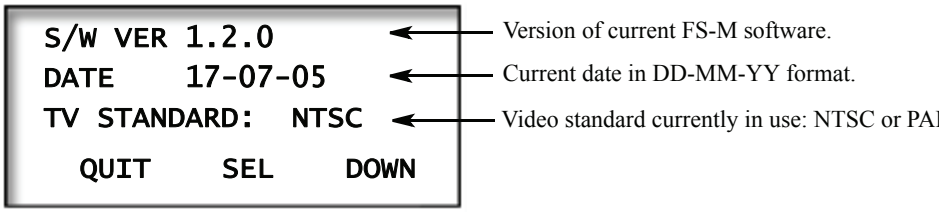
- Resets the system IP settings to their defaults.
  IP address: 192.168.0.102
  Subnet mask: 255.255.255.0
  Gateway: 0.0.0.0
- In preparation for recording, a System option provides the ability to erase the hard disk and maximize storage capacity for the recording.

2.2.1 Status Menu

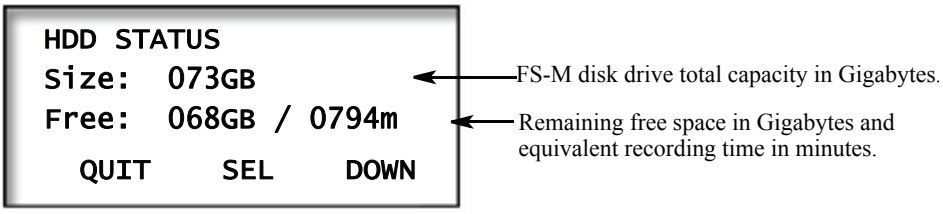
The Status Menu displays current FS-M settings. This menu does not allow changing these settings. The Status Menu contains the following items:

- General
- Hard Disk Drive
- Network
- Audio / Video

2.2.1.1 General



2.2.1.2 Hard Disk Drive

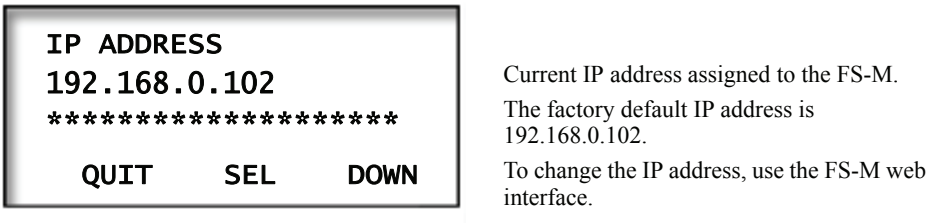


Note

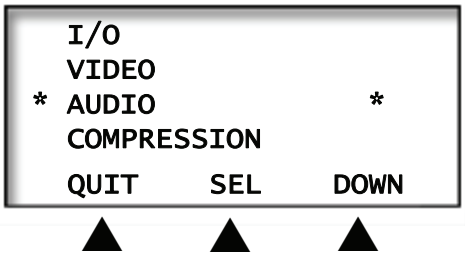
Changing Compression Settings

Changing the compression settings does impact on available recording time. The FS-M automatically updates the hard drive status information as changes occur.

2.2.1.3 Network

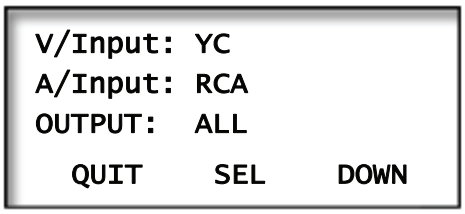


2.2.1.4 Audio / Video (Menu)



This menu provides access to the status of the FS-M audio/visual input and output parameters.

2.2.1.4.1 I/O

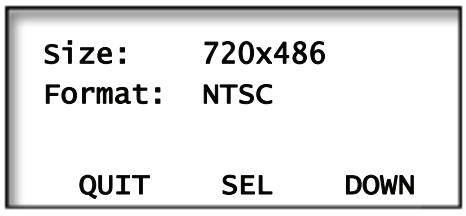


V / Input
The currently selected video input, either CVBS (Composite – BNC) or YC (S-Video – Mini DIN).

A / Input
The currently selected audio input; RCA.

Output
ALL indicates all outputs are active.

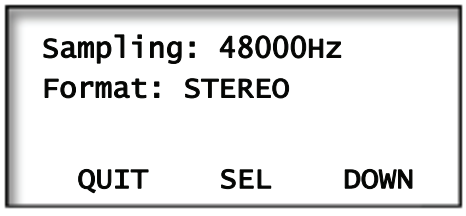
2.2.1.4.2 Video



Size
The picture size of the selected video standard.

Format
The currently selected video standard, NTSC or PAL.

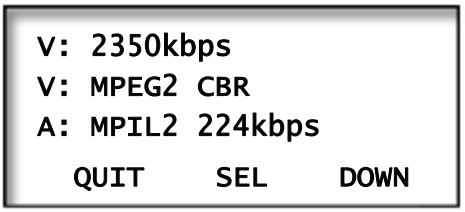
2.2.1.4.3 Audio



Sampling
The currently selected sampling rate.

Format
The FS-M audio format.

2.2.1.4.4 Compression (status)



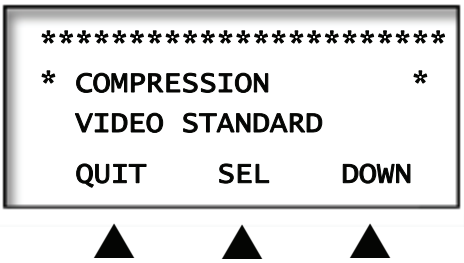
V
Video Bit Rate - the currently selected video sampling rate.

V
Video Compression - the currently selected video compression standard.

A
Audio Compression - the currently selected audio compression standard and bit rate.

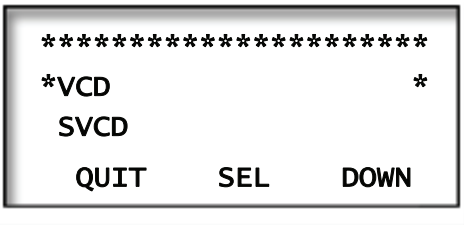
For information on video compression standards, see Table 1, Video Compression Specfications, on page 14.

2.2.2 Video Menu



Use this menu to access and change video compression and video standards settings.

2.2.2.1 Compression (control)



Use this menu to set the FS-M to industry standard compressiom rates.

Compression	Description and Specifications
VCD	Video: 1150kbps, CBR, SIF, MPEG1, Audio: 224kbps,
SVCD	Video: 2350kbps, CBR, D1, MPEG2, Audio: 224kbps,
DVD-LP	Video: 4000kbps, VBR, D1, MPEG2, Audio: 256kbps,
DVD	Video: 6000kbps, VBR, D1, MPEG2, Audio: 384kbps,
DVD-HQ	Video: 8000kbps, VBR, D1, MPEG2, Audio: 384kbps,
HQ	Video: 12000kbps, VBR, D1, MPEG2, Audio: 384kbps,

TABLE 1. Video Compression Specfications

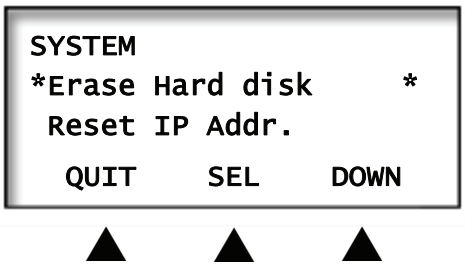
2.2.2.2 Video Standard

Use this menu to set the video line and field rates according to NTSC and PAL standards.

NTSC - 525/60

PAL - 625/50

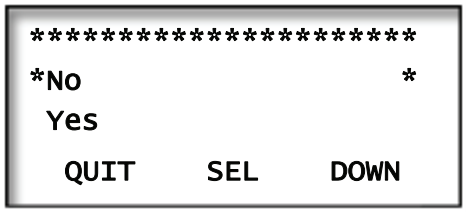
2.2.3 System Menu



WARNING
The Erase Hard Disk function destroys the data that is on the FS-M hard disk. This is not reversible.

2.2.3.1 Erasing Content on the Hard Disk

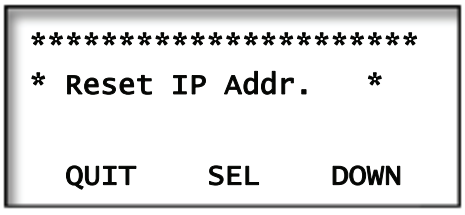
The Erase Hard disk function: prepares the FS-M hard drive for a recording session by maximizing storage space through erasing all content on the drive.



Yes
To start the content erasing process.

No
To abort the erasing process.

2.2.3.2 Reset IP Address



This Reset IP Addr. option returns the FS-M IP settings to factory default:

IP address: 192.168.0.102

Subnet mask: 255.255.255.0

Gateway: 0.0.0.0.

A Yes / No screen appears, offerring the option to continue to reset the IP address or to cancel the operation.

2.3 The FS-M Hard Drive

2.3.1 Record and Playback Using the FS-M Hard Drive

- Connect a video source and video monitor to the FS-M.
- Power on the FS-M.
- If the monitor displays a distorted or black and white video image, change the video input by pressing the **Vin** button on the front control panel. **Vin** selects between S-Video or composite video inputs.
- Press the Record button to start recording immediately.
- To pause recording, press the Record button a second time.
- To create a new track without stopping the recording, press the *Next* button.
- Use the Stop button to halt the recording otherwise, the FS-M automatically stops recording when the hard drive reaches full capacity.
- To switch between Recorder and Player modes, press the **E-E** button on the front control panel.
- Switching between modes does not affect recording, it continues in either mode. However, switching from Player to Recorder mode during playback operation immediately stops the playback and displays the live video signal that is being recorded.
- Use the Play button to start playback of the recorded video.

2.3.2 Hard Drive Filesystems

2.3.2.1 Linux ext3

The FS-M uses the Linux extended filesystem 3 (ext3) for the hard drive filesystem. Whenever a new hard drive is inserted in the FS-M hard drive rack, the system detects the drive and during boot up, installs the Linux ext3 filesystem and partition table.

WARNING

Installing any hard drive that does not use the *Linux ext3* file system, causes the FS-M to initiate a formatting process. If the drive has data stored on it, the data will be lost.

2.3.2.2 PC ext3 Compatible File System

The FS-M can store MPEG Files in a PC ext3 compatible file system. However, the PC file system is a Linux file system and is not compatible with Windows.

Windows Drivers

Windows ext3 drivers are available from FOCUS Support.
Web site: http://www.FocusInfo.com/support/support.htm
Email: support@FocusInfo.com
Telephone: 1-763-398-1658

2.3.2.3 MPEG Players for For Use with a PC

To play back MPEG files stored on a Windows PC, it is necessary to install a MPEG-2 player software, such as WinDVD. This software is able to playback MPEG1 and MPEG2 files.

Windows Media Player is only capable of playing MPEG-1 files.

2.3.3 Hard Drive Capacity

The hard drive capacity for audio/video content depends on the the type of video compression used and its bit-rate. The FS-M records with a variable bit-rate that can be adjusted from 1.2 Mbps, VCD quality, up to 12 Mbps, which is higher than DVD quality. Below is table of hard drive storage capacity, bit-rate, and types of compression.

Bitrate:	1150 kbit/s	2350 kbit/s	4000 kbit/s	6000 kbit/s
Compression:	**VCD**	**SVCD**	**DVD-LP**	**DVD**
Drive Capacity				
80 GB	9108 min. = 152 h	4554 min. = 76 h	2846 min.= 47.4 h	1897 min. = 31.6h

TABLE 2. Hard Drive Audio/Video Capacity According to Compression Type

Video Content Affects Drive Capacity and Bit-rate

The values in Table 2 are estimates and performance during production can vary depending on the content of the video. For example, fast moving images with action require higher bit-rates than the recording of non-moving images.

CHAPTER 3

Stand-Alone, Peripheral, Network Device

The FS-M digital recorder/player is capable of operation as a stand-alone device, a peripheral recorder/player for a host, or a network device.

3.1 Modes of Operation

3.1.1 Stand-alone

As a stand alone device, the FS-M can receive video content directly through its video inputs or through the exchanging of hard drives with Linux ext3 file systems, see *Hard Drive Filesystems on page 16*. In addition, hard drive exchanges permit software upgrades and the sharing of the FS-M video content with other systems.

When the FS-M is a stand-alone device, the user interface is the front control panel, see *Control Panel Interface on page 7*.

3.1.2 Peripheral

In addition to its capabilities as a stand-alone device, when the FS-M acts as a peripheral, it provides record-and-play functions to a host device such as a computer or controller. In return, the host offers direct access and control of the video content and FS-M software stored on the FS-M hard drive. Host access and control of the FS-M is through two graphical user interfaces (GUI).

- Software KeyPad

  Using familiar record-and-play controls, this application permits direct access of video stored on the FS-M with either a mouse or keyboard keypad, see *Software Keypad Interface on page 23*.

- Internet Browser

  This application gives the user easy access to record-and-play and system management functions, see *FS-M Web and FTP Interfaces on page 29*.

3.1.3 Network Device

As a network device, the FS-M provides all the capabilities mentioned above as well as the efficiency that the network offers when transferring video files or performing software upgrades.

Control and file management are through two interfaces.

- Interface Browser
- FTP Utility

3.2 Connecting to the FS-M Ethernet Port

Verify that All Devices are Powered Off Before Attaching Cables
Protect the FS-M and other devices by observing common ESD precautions. Whenever attaching or removing cables, verify that the devices involved are powered off.

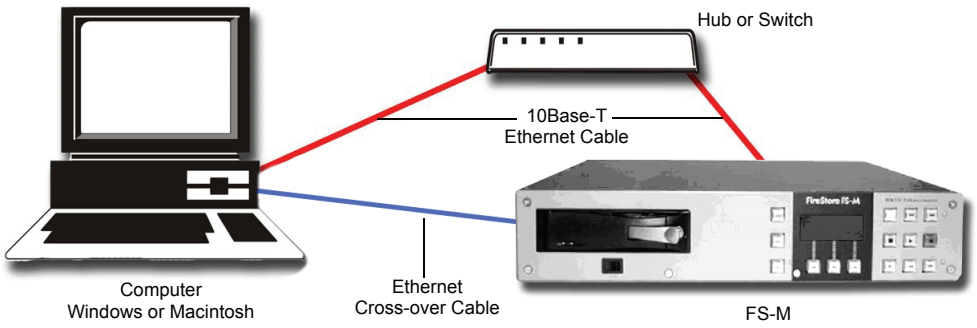


Figure 1: Connecting to a FS-M via Ethernet Hub or Cross-over Cable

There are two methods for connecting a computer to the FS-M ethernet port.

1. Use an ethernet hub to emulate a network. This permits the use of regular ethernet cables between the three devices.
2. Use the ethernet cross-over cable included with the FS-M, to cable the FS-M directly to the ethernet port on the computer.

A **straight through ethernet cable** has the same wire configuration colors on each end.
A **crossover cable** has two different wire configuration colors on each end.

3.2.1 Connections

Connecting the FS-M to the network requires standard, 10Base-T ethernet cable.

1. Verify that the FS-M and the computer are powered-off. If a hub is to be used, power it off too.
2. Connect the FS-M to the computer.
   - Use the ethernet cross-over cable included with the FS-M.
   - If a hub is used as an intermediate, use standard ethernet 10Base-T cables.
3. Power-on the two units.

3.3 Accessing the FS-M

The three procedures below describe how to use an internet browser to initially access the FS-M.

3.3.1 Access When the FS-M is a Peripheral

1. Open a browser such as Internet Explorer or Foxfire.
2. Enter the default IP address for the FS-M in the URL field and press **Enter**.

FS-M Factory Default Address Settings
IP address: **192.168.0.102**,
Subnet Mask: **255.255.255.0**,
If the FS-M has been in use, its IP address may have been changed. To determine the current IP address using the FS-M front control panel, see *Network on page 11*.

The FS-M Web application appears in the browser window.
For information about the FS-M Web application, see *FS-M Web and FTP Interfaces on page 29*.

3.3.2 Configuring the FS-M as a Network Device

Before installing a FS-M on a network, it is often necessary to configure it's IP and subnet mask address to conform with the network.

1. Make a direct connection between a computer and the FS-M.
2. Access the FS-M **System Config** screen.
   - Open an internet browser.
   - Enter the default IP address of the FS-M and press enter.
     The FS-M Web Interface appears in the browser window.
3. In the Web Interface main screen, click on the **System Config** tab.
   For information about the FS-M Web application, see *FS-M Web and FTP Interfaces on page 29*.
4. Enter the TCP/IP addresses appropriate for the network.

3.3.2.1 Static IP Network

On a Static network, the IP is a fixed address that is assigned by a system administrator. The IP address does not change and if the device is physically moved, the IP address can travel with device.

1. Set the FS-M IP and subnet mask using the addresses provided by the Network Administrator.
2. Click on the **Apply** button at the bottom of the **System Config** area and save the settings.

3.3.3 Accessing a Networked FS-M with Default IP Settings

It is possible to attach a new FS-M, with its factory default IP and submask addresses, to a network and then change the FS-M addresses to match the parent network.

This procedure requires temporarily changing the host computer's address, to allow initial access to the FS-M, and then changing it back.

1. Change the Host Computer IP address to an IP address in the same IP range as the FS-M's default IP address, e.g. 192.168.0.101.
2. Set the subnet mask to 255.255.255.0. For information on how to change TCP/IP settings, refer to the OS **Help** documentation for the host computer.
3. Reboot the computer when the TCP/IP changes are completed.
4. Open a browser such as Internet Explorer or Foxfire.
5. Enter the default IP address for the FS-M in the URL field and press **Enter**.

FS-M Factory Default Address Settings
IP address: **192.168.0.102**,
Subnet Mask: **255.255.255.0**,

Consult with the Network Administrator to determine what type of network addressing scheme is used and what IP and subnet mask addresses are necessary.

The FS-M Web application appears in the browser window. For information about the FS-M Web application, see *FS-M Web and FTP Interfaces on page 29*.

6. In the main screen, click on the **System Config** tab.
7. Change the IP settings so that the FS-M is compatible with the network.
8. Click on the **Apply** button at the bottom of the System Config area.
9. Reboot the FS-M using the Power Switch on the front control panel to power-off and then power-on. The FS-M TCP/IP settings are now active.

CHAPTER 4

Software Keypad Interface

4.1 Introduction

The Software Keypad Control with its two familiar keypad windows, provides the User the ability to control the basic functions of the FS-M with a PC that is directly connected to it by the RS232 interface, see ”RS-232 Interface” on page 43. This connection requires a crossover cable with female, 9-pin, sub-D connectors at both ends.

In addition, the keypad application has a **Macro** feature that offers the User the capability to create macro commands so that frequently used strings of FS-M commands can be scripted and then executed by pressing a hotkey on the keyboard., see ”Macros” on page 27.

4.1.1 The Software KeyPad Interface

The Software Keypad interface is a graphical representation of two common keypads: a video remote control and a numerical, the kind found on most computer keyboards. To enter commands, the use either a mouse to click on the keypad buttons on the screen or press the corresponding keys on the keyboard.

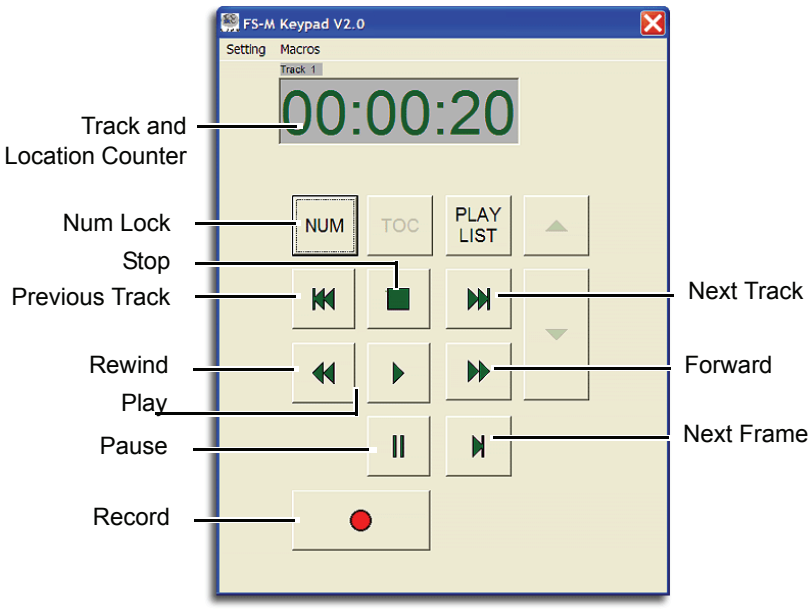


Figure 1: Software Keypad, Main Screen

TOC, Playlist, and Up/Down Arrows Not Enabled

Currently, the TOC, Playlist, and the Playlist Up and Down Arrow keys on the Software Keypad are not enabled.

4.1.2 Computer Keyboard Layout for the FS-M

The keypad keys on the computer keyboard have the following functions:

Key	Function	Key	Function
0	Record	**5**	Play
1	no function	**6**	Forward
2	Pause	**7**	Previous Track
3	Next Frame	**8**	Stop
4	Rewind	**8**	Next Track
Num Lock	Switches between the two Software Keypad screens.		
Enter	Enter		

Numerical Character Mapping

Only the number keys on the Host computer's keyboard keypad are mapped to the graphical keypad. The regular number keys, located at the top of a QWERTY keyboard, are not mapped to the above keyboard functions.

4.2 Installation

4.2.1 Operating Systems

This Software Keypad application runs under Windows 2000 and XP.

4.2.2 Installation

4.2.2.1 Connect the PC Directly to the FS-M

To install the Software Keypad on a PC or laptop, it is necessary that the computer be connected directly to an FS-M recorder/player.

4.2.2.2 Run Application SetUp

1. Using the Windows Explorer, locate the Software Keypad setup.exe file on the Focus Enhancements CD.
2. Double click on Setup.exe and then follow the instructions on the screen.

4.2.3 Application Setup

After the Software Keypad is installed, it is necessary to configure the application before using it.

1. Click on Settings to access the configuration drop-down menu.

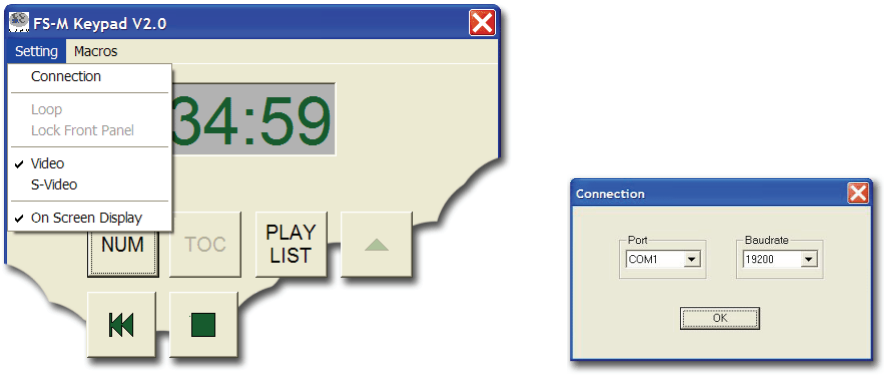


Figure 2: Settings Drop-down Menu and Com-port Connection Box

2. Select **Connection** to setup a COM-port for communication between the PC and the FS-M.
3. Set the Baud Rate to 19200.
4. **Set Loop**: Not available.
5. **Lock Front Panel**: Not available.
6. **Video** / **S-Video**: This function selects the Video Input of the FS-M.
7. On Screen Display: This function enables/disables the On Screen Display Function of the FS-M.

4.3 Operation

4.3.1 Play Single Tracks from the FS-M Hard Drive

To playback tracks on the FS-M hard drive, do the following.

1. Press the Num lock key to view the **Track Access** screen.

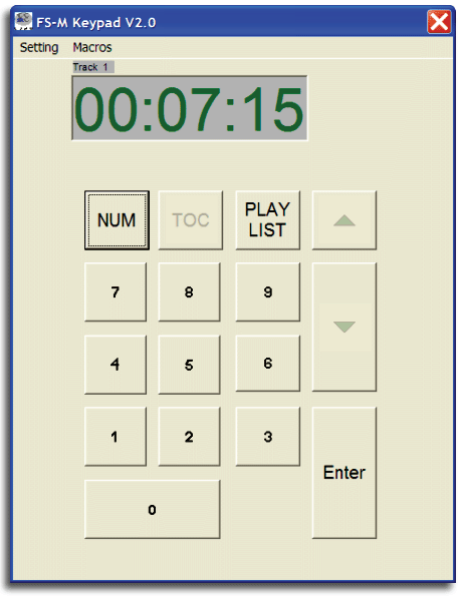


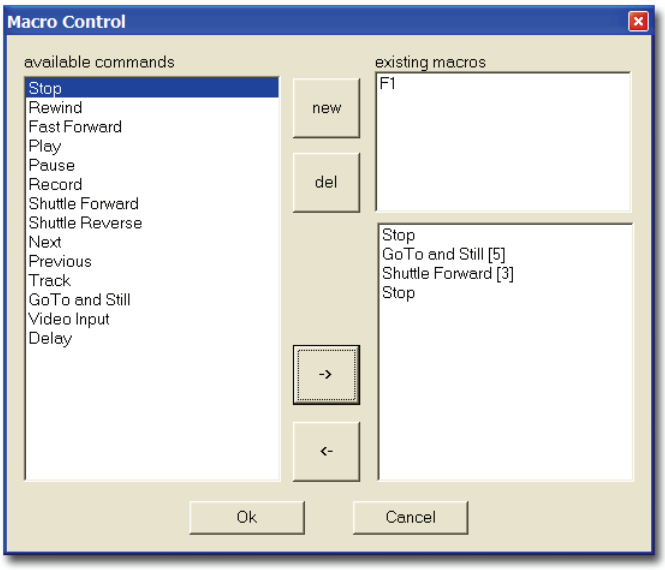
Figure 3: Track Access Screen

2. This screen provides for selecting and playing back single tracks.
3. Key-in the track number and click/press **Enter**.
   The track begins playing immediately.
4. Use the **Num Lock** key to return to the main screen.

4.3.2 Macros

Use macro command sets to execute more than one FS-M command with a single keystroke.

Clicking on **Macros** in the main screen displays the Macro Control screen.



4.3.2.1 Creating A Macro

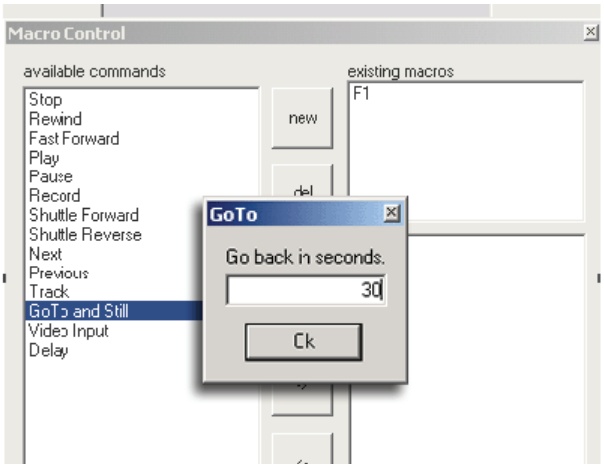
The following instruction describes how to create a macro that stops a recording of a track, then goes to a specific amount of time, and displays a specified frame.

1. Begin by clicking on the **New** button.
2. Select, from the Host computer keyboard, the Hotkey that will activate the macro, e.g. F1.

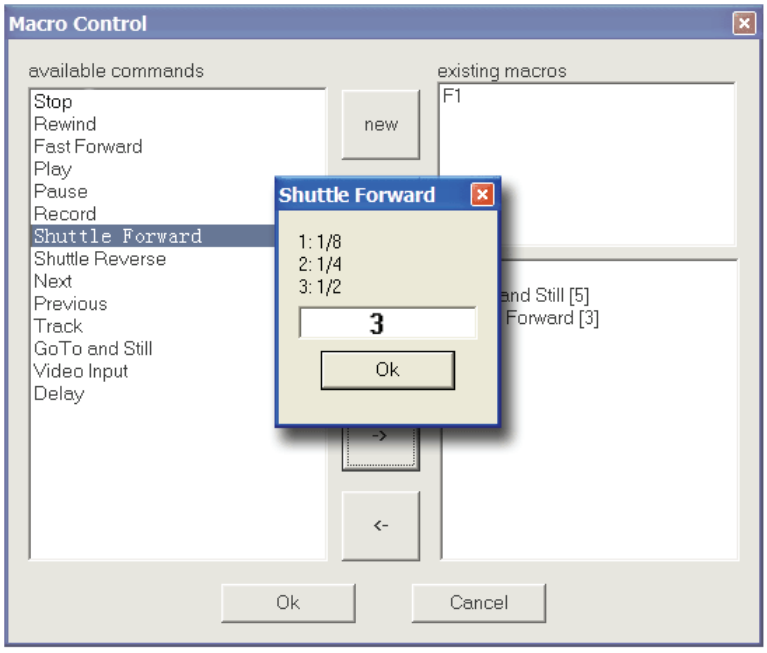
Now begin the command script.

3. Select the command **Stop**.

4. Next, select **Go To and Still**.
   A screen appears requesting how far back to go on the track. Select 30 seconds and then click **Ok**.



5. Now, select the **Shuttle Forward** command.
   A screen appears that displays a list of available speeds for advancing the shuttle. Key in the appropriate speed; in this case 3.



6. Click **Ok** to set the speed.
7. Select **Stop**.
8. Click **Ok** at the bottom of the Macro Control screen to save the macro.

CHAPTER 5

FS-M Web and FTP Interfaces

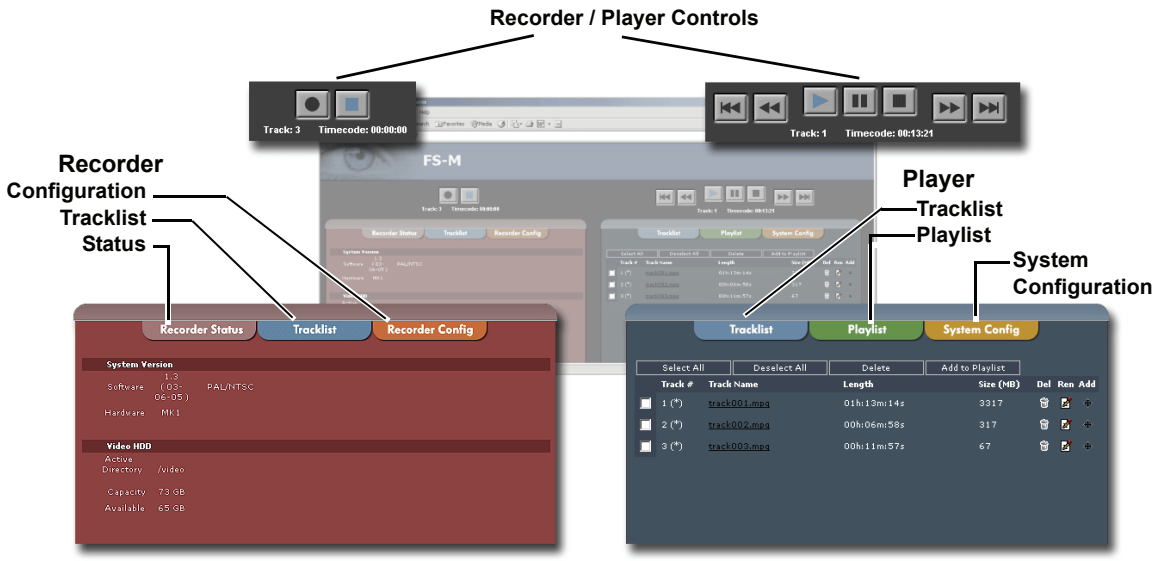


Figure 1: Web Interface Home Page

The FS-M Web Interface is a browser-based application that provides recorder/player operations and system management functions.

To open the Web Interface for a FS-M, enter the IP address of that FS-M in the browser address window and press **Enter**.

Note

JAVA Software for the Desktop

The Web Interface control functions require that the Java Runtime Environment be installed. Download this software from **http://www.java.com**.

5.1 The Web Interface

5.1.1 Recorder/Player Controls

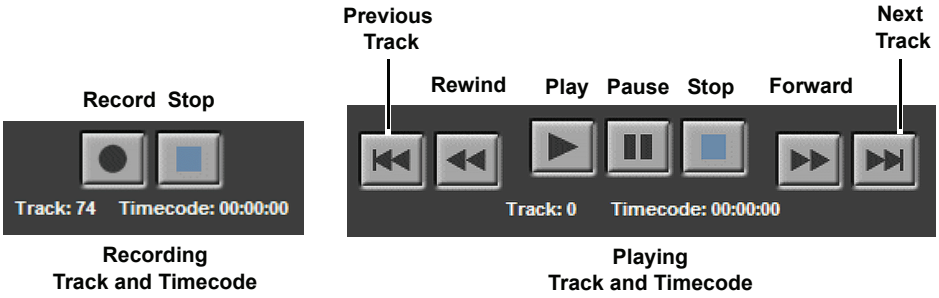


Figure 2: Recorder and Player Control Buttons

The Recorder and Player buttons function in the same manner as the control panel buttons on the front of the FS-M, see ”Deck Control ” on page 8 for more information.

5.1.1.1 Record

1. Use **OSD** (On Screen Display) and the **Remote Control** to select a video feed and display it on the monitor.
2. Click on the **Record** button to start recording.
3. To *pause recording*, click on the **Record** button a second time.
4. To resume recording, click on **Record** a third time.
5. To *create a new track without stopping the recording*, click on the **Next** button.
6. Click on the **Stop** button to halt the recording.

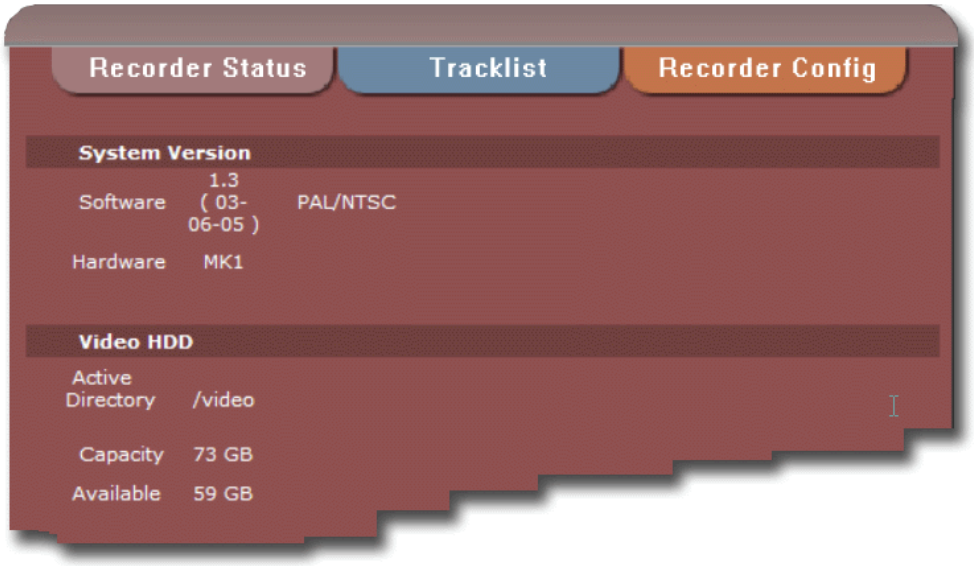
   If allowed to run on its own, the FS-M continues recording until the hard drive reaches full capacity and then stops.

5.1.1.2 Playback

The method of playback depends on the Playback Mode selected on the System Configuration page, see page 38.

1. In Track mode, select a track in either the Tracklist, page 33, and click the **Play** button. The track begins to play.
2. In Playlist mode, click Play and the Playlist, page 37, begins playback.
3. Click **Stop** to terminate playback.

5.1.2 Recorder Status Page



The Recorder Status page provides software revisions and the status of hard drive capacity.

Software

- Displays the current version of the FS-M firmware and it's release date.

Hardware

- Shows the current version of the FS-M hardware driver software.

Active Directory

- Displays the directory currently in use.

Capacity

- Shows the maximum storage capacity of the hard drive.

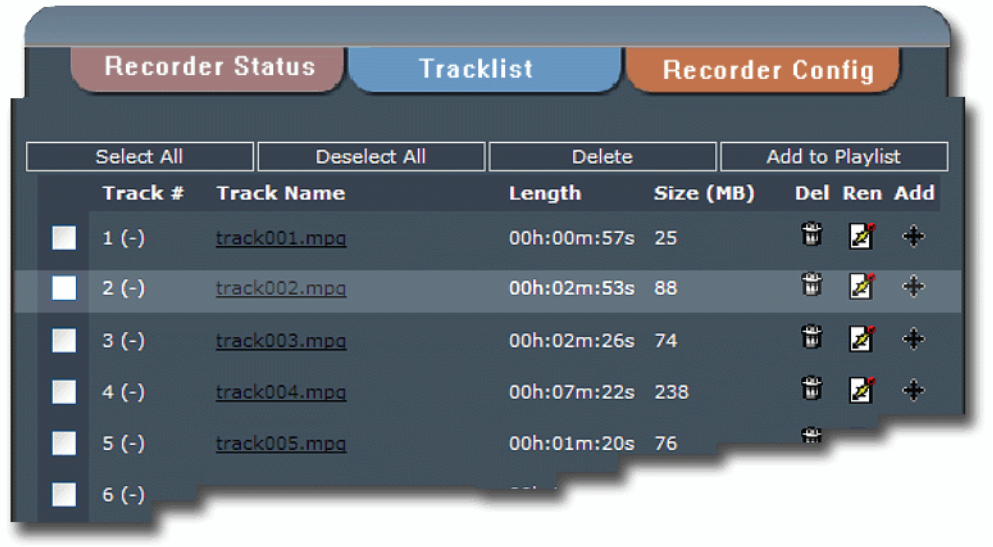
Available

- Displays the free space remaining on the hard drive.

Drive Capacity and Video Compression Settings

The video compression settings impacts on both the available recording time and hard drive storage capacity, see "Hard Drive Capacity" on page 17.

5.1.3 Tracklist Page



The Tracklist is similar to a file directory list on a hard drive. It is available under both the Recorder and Player tabs and is used to manage the Playlist.

5.1.3.1 Select a Track from the Tracklist

To select a track, click on the box to the left of the Track Number.

5.1.3.2 Copy a Track to the Host Computer

1. Select the track.
2. Position the mouse over the track and **right-click**.
3. Select the option **Save under**.

5.1.3.3 Add a Track from the Tracklist

1. Select the track.
2. Click on the **Add** icon to complete the task.

5.1.3.4 Delete a Track from the Tracklist

Recorder and Player Must be Stopped
To delete a track, the Recorder and Player must be in **Stop** mode.

Deleting or Removing a Track from a Playlist
Deleting a track deletes the track file from the FS-M hard drive. This deletion can not be undone.

Removing a Track is Non-destructive
Removing a track is a non-destructive procedure that removes the track name from the Playlist but leaves the track file intact.

There are two methods for deleting a track: instantly or with confirmation.

1. Instantly

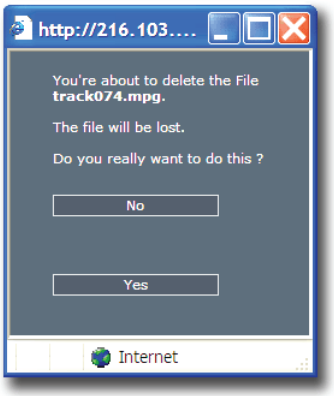
   This procedure deletes the track(s) immediately and offers no opportunity to reconsider.

   - Select one or more tracks by clicking the **Check** box to the left of the track(s).
   - Click **Delete** in the button bar at the top of the list.

2. With Confirmation

   This procedure includes a confirmation step as a safeguard.

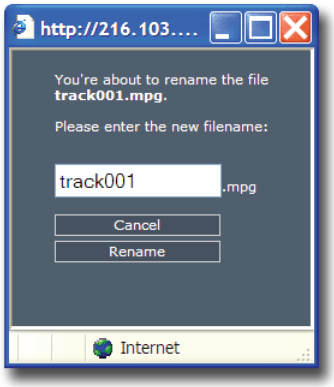
   - Select the track to delete.
   - Click on the **Delete** icon to the right of the track.
     A confirmation window appears.
   - Click **Yes** in the confirmation dialog window.



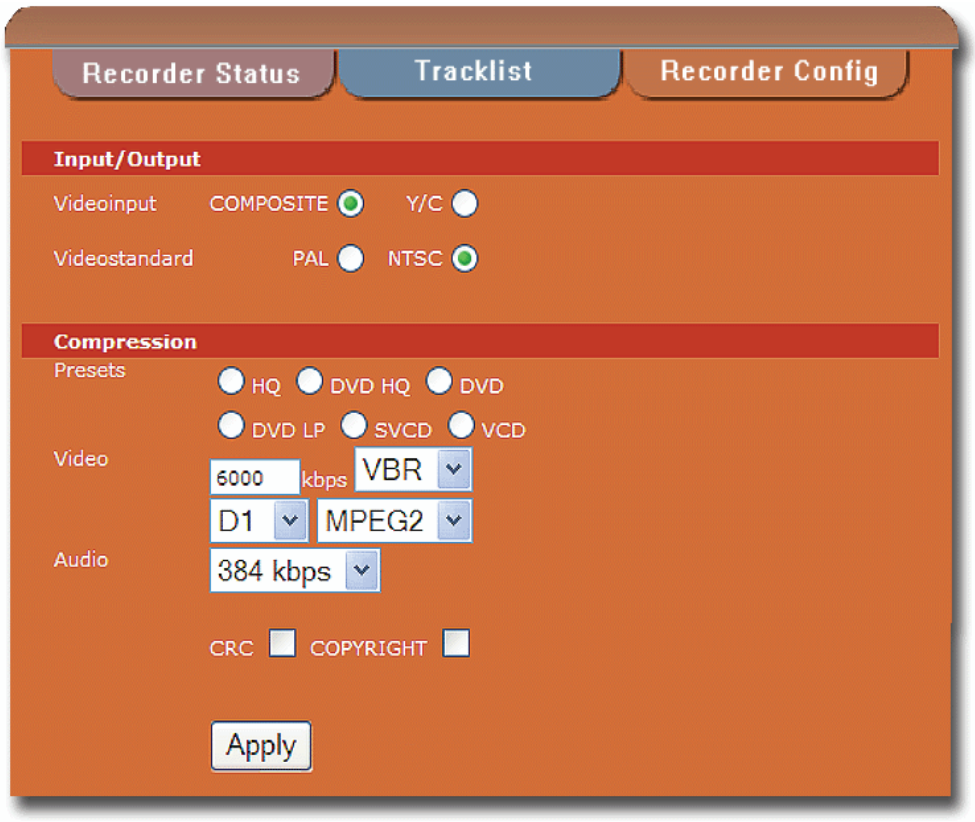
5.1.3.5 Rename a Track

1. Select the track.
2. Click on the **Ren** icon to the right of the track.

   A rename dialog window appears.
3. Enter the new name for the track in the name field and then click **Rename**.



5.1.4 Recorder Configuration Page



5.1.4.1 Input/Output

Video Input

- Composite for CVBS.
  Y/C for S-Video.

Video Standard

- Set the video line and field rates according to NTSC and PAL standards: NTSC - 525/60 and PAL - 625/50.

5.1.4.2 Compression

- **Presets**
  Clicking on a preset automatically populates the video and audio fields with the parameters of that standard.

Compression	Description and Specifications
VCD	Video: 1150kbps, CBR, SIF, MPEG1, Audio: 224kbps,
SVCD	Video: 2350kbps, CBR, D1, MPEG2, Audio: 224kbps,
DVD-LP	Video: 4000kbps, VBR, D1, MPEG2, Audio: 256kbps,
DVD	Video: 6000kbps, VBR, D1, MPEG2, Audio: 384kbps,
DVD-HQ	Video: 8000kbps, VBR, D1, MPEG2, Audio: 384kbps,
HQ	Video: 12000kbps, VBR, D1, MPEG2, Audio: 384kbps,

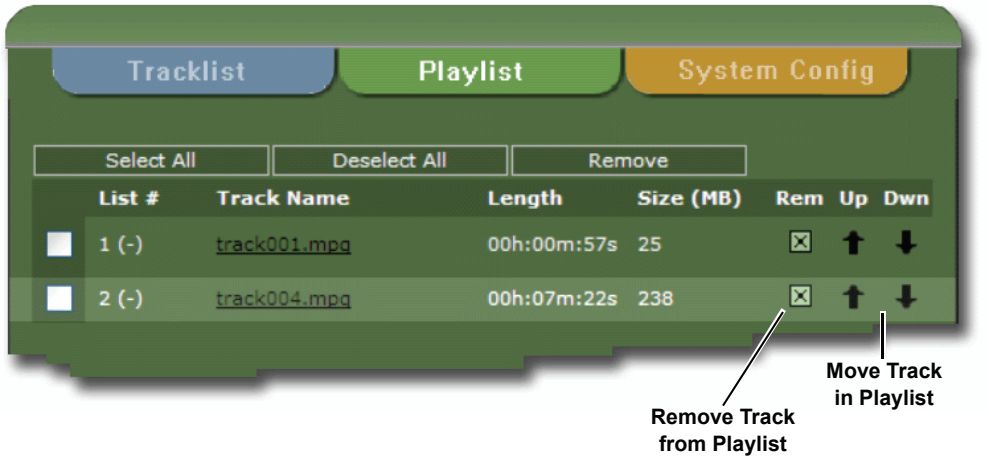
TABLE 1. Video Compression Specifications

- **Video**
  Individual video parameters: video bit rate, digital recording format, and video encoding standard.
- **Audio**
  Bit rate of audio stream.
- **CRC**
  Enable Cyclic Redundancy Checking to verify accurate data transmission.
- **Copyright**
  Set the copyright bit in the MPEG audio stream.

5.1.4.3 Saving Configuration Settings

When the recording parameters are set, click on **Apply**.

5.1.5 Playlist Page



The Playlist feature allows the User to create a list of tracks that play in a loop, in a particular sequence and at scheduled dates and times. The Playlist is stored on the FS-M hard drive.

5.1.5.1 Add a Track to the Playlist

To add a track to the Playlist:

1. Go to the Tracklist.
2. Select the track to add.
3. Click on the **Add** icon to the right of the highlighted track.

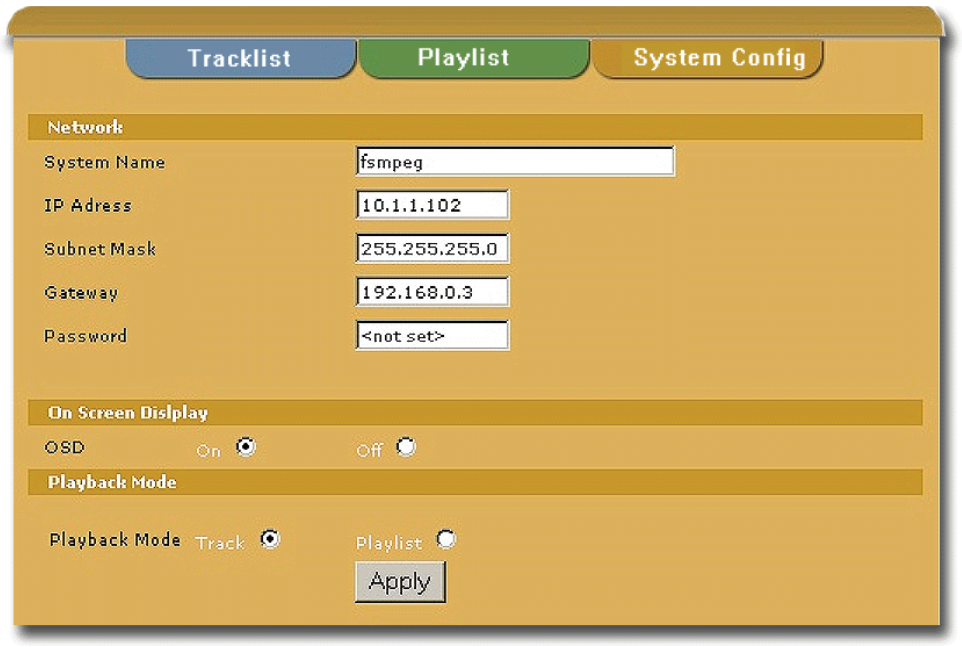
5.1.5.2 Change Order of Play

1. Select the track to move.
2. Use the **arrows** at the right to move the track up or down.

5.1.5.3 Remove Track from Playlist

1. Select the track to remove.
2. Click on the **Rem** box at the right.
   This step is non-destructive. It removes the name from the playlist but does not delete the track from the hard drive.

5.1.6 System Configuration Page



System Name

- A name that describes the system by location, function, or other distinguishing characteristic. The Network Administrator may assign the system name.

IP Address

- Enter the IP address assigned to the FS-M. The Network Administrator provides this address.

Subnet Mask

- If required, enter the Subnet Mask. Similar to an IP address, this four-byte, numerical identifier, works with the IP address to designate where in a subnet the FS-M is located.

Gateway

- If required, enter the Gateway address. Similar to an IP address, this four-byte identifier specifies a node on a network that is designated to act as an entrance to another network. The node can be a computer or other network device. Without the gateway address, the other network is invisible to the FS-M.

Password

- Enter a password to restrict access to the Web Interface. When asked for User Name and Password:
    1. Leave the User Name blank.
    2. Enter the password.
- If using a password, place a copy of the password in a secure location for possible future reference.

OSD

- Turn On or Off the On Screen Display of the FS-M control settings that can appear on the video monitor.

Playlist Playback Mode

- Set the playback mode that the FS-M uses when it enters Player mode.

  Track
  When the FS-M enters Player mode, it begins playing back all the tracks in the tracklist.

  Playlist
  On entering Player mode, the FS-M begins playback of the Playlist.

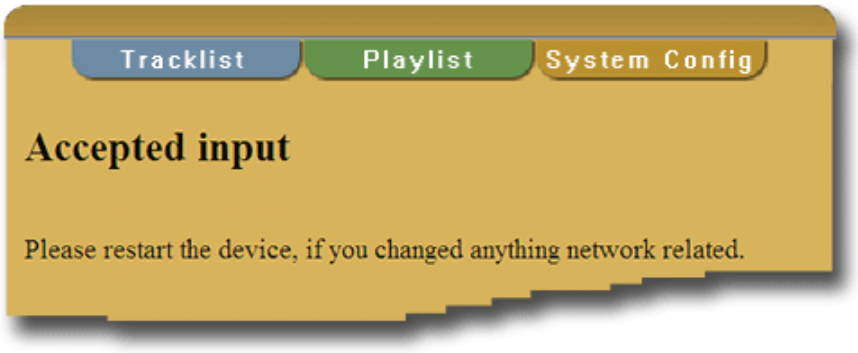
Apply

- Click on **Apply** to update the FS-M with the new settings.

Note

System Restarts
For changes involving network settings, it is necessary for the FS-M to do a reboot.

If a reboot is necessary the FS-M alerts the User.



5.2 FTP Interface

The FS-M FTP interface permits the uploading of firmware upgrades and the copying of tracks to and from the FS-M. The interface consists of a FTP application and the FTP directory on the FS-M hard drive. Depending on the type of network security in use, the FTP application is up to the User and may be:

- **Internet Browser**
  The same one used to access the Web Interface. Internet Explorer 5.5 and later has basic FTP capabilities.
- **FTP Program**
  The choice of the FTP application is up to the User. A basic program works well and can be one of the many freeware or shareware FTP applications available.

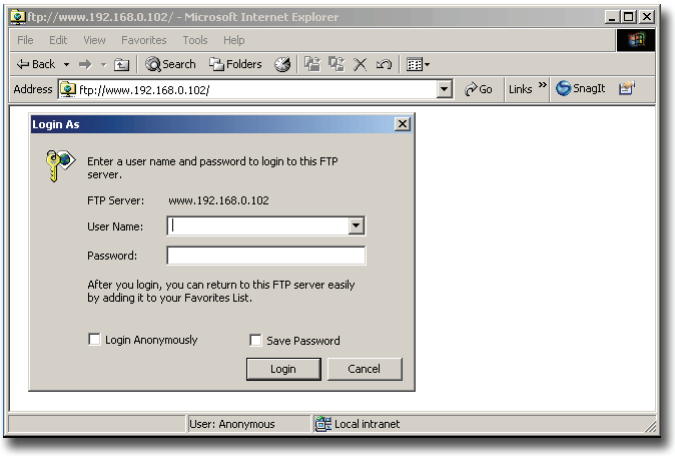
5.2.1 Using FTP to Access the FS-M

Because there are a many FTP applications available, the User should refer to the software documentation.

5.2.1.1 Using Internet Explorer 6.0

To access the FS-M FTP directory, do one or more of the following:

1. In the browser Address field, enter the FS-M FTP address.
   This is the IP address with an FTP header. The example below is for a FS-M that is using its default IP address: **ftp:// 192.168.0.102** .
2. Press **Enter** or click **Go**.
   Depending on how the FS-M is setup, it may be possible to go directly to the FTP directory. Otherwise it may be necessary to login to the directory. On the browser window,
   - Click on **File.**
   - Click on **Login.**



3. The default username and password are **ftp**.

4. The root folder of FS-M shows the recorded tracks.

5.2.1.2 Managing Tracks in the FTP Directory

- **Download**
  To download a file or folder from the FS-M to the local computer, right-click the item, and then click **Copy to Folder**.
- **Upload, Rename or Delete**
  To rename or delete items in the FTP folder, or to paste (upload) items into the FTP site, use the same commands and actions used with Windows Explorer or My Computer.

File Parameters
Uploading (copying) files to FS-M, requires that the tracks must be placed into the **incoming** directory.

File Extensions
The ending of the file must be **.mpg** (all lower case) if the FS-M is to accept it as a legal MPEG track. Once loaded, the FS-M creates an index file and then transfers the file to the tracklist.

File Size Limitations
The FTP interface supports files that are 4GB or smaller.

CHAPTER 6

RS-232 Interface

The RS-232 Interface provides the ability to use either PC software or an event controller to control various FS-M play, record, and track maintenance functions.

6.1 Introduction

The RS-232 interface provides the ability to,

- control the FS-M with either a computer or an event controller that is directly connected to it,

6.1.1 Connecting to the FS-M RS-232 Port

To connect directly to the FS-M, use a cross-over cable with female, SUB-D, 9-pin connectors on both ends.

6.2 RS-232 Parameters

When connecting to the FS-M RS-232 port, set the Host serial port to the following parameters.

Baud Rate	19200
Stop / Data Bits	1 / 8
Parity	None

6.3 Transfer Mode

Transfer mode involves,

- two types of command structures, normal and extended,
- a data transfer protocol to facilitate the transfer,
- the data that is transferred between the FS-M and the Host.

6.3.1 Command / Reply Elements Defined

During transfer mode, the Host transmits commands to the FS-M and the FS-M replies either to confirm receipt of the command or to return requested data. The command and reply structures share common elements, *STX* and *ETX*, to start and end transmissions

In addition, transfer mode uses a generic error code, *ERE*, to report error conditions.

Element	Value	character format
STX	0x02	hexadecimal
ETX	0x03	hexadecimal
Error	ERE	ASCII

TABLE 1. Command / Reply Elements

6.3.2 Normal Commands

Normal commands are used for simple actions such as Play, Stop, Pause and Record; an example is the *Play* command shown below.

Transmit

STX	*Command*	ETX

Reply

STX	*Reply*	ETX

6.3.2.1 Play command

Transmit

STX	*OPL*	ETX

Reply

STX	*OPL*	ETX

6.3.3 Extended Commands

Extended commands are used when transmitting data to or from the FS-M. The extended command structure includes command and data blocks. An example is the *Track* command.

Transmit

STX	*Command*	*Extra Data*	ETX

Reply

STX	*Reply*	ETX

6.3.3.1 Track command

The *Track* command plays a selected track. The command structure includes both the command block and a data block containing the track ID.

Transmit

STX	*DIG:*	*X*	ETX

Reply

STX	*DIG*	ETX

X is the track number: 1 - 999.

6.3.4 Data Transfer Protocol

The data transfer protocol provides a method that permits the sending of large or small amounts to data between the Host and the FS-M. The process is described below:

1. The Host issues a command to the FS-M to initiate a data transfer. The type and quantity of data returned depends on the command.
2. The FS-M collects the requested data and parses it into 255-byte data blocks.
3. The FS-M returns a *Transfer Data Size* message to the Host with the total size in bytes of the data about to be sent.
4. Host confirms size of the data transfer by returning the data size to the FS-M.
5. The FS-M sends the data in a series of *Transfer Data Packets*. As an error checking method, each packet includes a checksum of its data.
6. The Host receives and reassembles the data.
7. The Host verifies data integrity using the checksum and returns it to the FS-M, indicating the successful receipt of the data packet.
8. When done, the FS-M issues a command reply message back to the Host.

6.3.4.1 Transfer Data Size

Transmit

'L'	*Data Size*	ETX

Reply

'L'	*Data Size*	ETX

6.3.4.2 Transfer Data Packet

Transmit

'T'	*Byte Size*	*Data*	*Checksum*	ETX

Reply

Check sum

6.3.4.3 Example: Read TOC

The Host issues *Read TOC* command to FS-M.

Transmit (Host)			**Reply (FS-M)**		
STX	*TOC*	ETX	STX	*TOC*	ETX

The FS-M responds by sending *Transfer Data Size* to Host.

Transmit (FS-M)			**Reply (Host)**		
'L'	*Data Size*	ETX	'L'	*Data Size*	ETX

In this example TOC size is 32-bit.

6.3.4.4 Transfer Data Packet

Transmit (FS-M)					**Reply (Host)**
'T'	*Byte Size*	*Data*	*Checksum*	*'H'*	*Checksum*

This is the last TOC data packet in the series.
Byte Size is the size of the particular data packet.
Data is less than or equal to 255-bytes.
H is data packet ID.
Checksum returned by Host is total of all the data packet checksums.

6.4 RS-232 Commands

6.4.1 Track Name and Number Conventions

Follow the conventions below when issuing commands that require the inclusion of a track name or number.

6.4.1.1 Names

Commands that include *FFFFFFFF* in their argument, need a track name supplied.

- *FFFFFFFF* is the name of the track being acted on by the command.
- The track name must have either 8 characters or fewer characters with the remainder of the name made up of spaces to the right, for example; **Clip1_ _ _** where there are 5 characters followed by 3 spaces **_ _ _**.
- Special characters such as the language dependent characters ä, ü, ö, ß, ?, and !, are not valid. Only upper and lower case characters A through Z and the numbers 0 through 9 are allowed.
- Do not use file type extension, e.g. *.mpg*, in a track name. During some operations, the FS-M renames tracks and saves them without extensions.

6.4.1.2 Track Numbers

Commands with *XX* or *XXX* in their argument, need a track number supplied.

- *XX* indicates a track number, 00 through 99.
- XXX indicates a track number 000 through 999. This number must be 3 characters in length or fewer digits with the remainder of the number made up of spaces or zeros to the left, for example **666**, **_99**, **099**, **007**, or **_ _7**.
- For clarity and simplicity , select one method to fill any left leading spaces.

6.4.2 Stop (OSP)

Transmit

STX	*OSP*	ETX

Reply

STX	*OSP*	ETX

Use *OSP* to stop the FS-M in either player or recorder mode.

When in player mode and after the first stop, the last frame of the video is visible. Sending a second stop, switches the FS-M to recorder mode and the live video returns.

6.4.2.1 Example

The FS-M is in recorder mode and actively recording. The FS-M receives a *Play* command. and starts playing, from the beginning, the track that was being recorded.

- Sending a *Stop* halts the playback and shows the last frame.
- Sending another *Stop* returns the FS-M to recorder mode and displays the live video that has continued to record, even while the *Play* occurred.
- Sending a third *Stop* halts the recording and the live video remains playing and visible.

6.4.3 Play (OPL)

Transmit

STX	*OPL*	ETX

Reply

STX	*OPL*	ETX

Use *OPL* to begin playback.

6.4.4 Pause (OPA)

Transmit

STX	*OPA*	ETX

Reply

STX	*OPA*	ETX

Use *OPA* to pause the current playback.

6.4.5 Record (ORC)

Transmit			Reply		
STX	*ORC*	ETX	STX	*ORC*	ETX

Use *ORC* to start recording the foreground video.

When the player receives a *Record* command the action it takes depends on the mode it is in.

- When in recorder mode, recording starts immediately.
- When in active player mode, recording starts in the background.
- When in player mode and stopped, the FS-M switches to recorder mode.
- Sending a *Record* during a recording session, pauses the recorder and the FS-M returns a *Pause* status.

6.4.6 Fast Forward (OFF)

Transmit			Reply		
STX	*OFF*	ETX	STX	*OFF*	ETX

Use *OFF* to start fast forwarding through the foreground video. The FS-M must be in play mode of Pause to respond to this command.

- Sending *Fast Forward* the first time, starts fast forwarding at 2 times the original speed.
- Sending a second *Fast Forward* doubles the speed to 4 times the original speed. A maximum speed is not available.
- At the end of a track, the FS-M advances to the next track and continues fast forwarding.
- At the end of the last track, the FS-M advances to the first track and continues fast forwarding.

6.4.7 Rewind (ORW)

Transmit

STX	*ORW*	ETX

Reply

STX	*ORW*	ETX

Use *ORW* to start rewinding the foreground video. The FS-M must be in play mode of Pause to respond to this command.

- Sending *Rewind* the first time, starts rewinding at 2 times the original speed.
- Sending a second *Rewind* doubles the speed.
- At the end of a track, *Rewind* jumps to the previous track and continues rewinding.
- At the beginning of the first track, *Rewind* jumps to the end of the last track and continues rewinding.

6.4.8 Shuttle Forward (OSF:)

Transmit

STX	*OSF:*	*X*	ETX

Reply

STX	*OSF*	ETX

Use *OSF:X* when it is necessary to advance slowly through the track. The FS-M must be in play mode of Pause to respond to this command.

X	**Speed (slow)**
1	1/8 of normal speed
2	1/4 of normal speed
3	1/2 of normal speed

6.4.9 Shuttle Reverse (OSR)

Transmit

STX	*OSR*	ETX

Reply

STX	*OSR*	ETX

Use *OSR* to reverse shuttle direction. The FS-M must be in play mode of Pause to respond to this command.

6.4.10 OnScreenDisplay Switch (OSD) and (ODD:)

There are two methods for enabling and disabling the On Screen Display feature; *OSD* and *ODD*.

6.4.10.1 OSD

Transmit			Reply		
STX	*OSD*	ETX	STX	*OSD*	ETX

Use *OSD* as a toggle switch to turn the FS-M control screen display On and Off.

6.4.10.2 ODD:

Transmit			Reply		
STX	*ODD:X*	ETX	STX	*OSD*	ETX

Use *ODD:X* as a toggle or to set a specific screen display state.

X	State of Screen Display
0	Similar to OSD, 0 acts as a toggle switch: repeated sending of 0 turns OSD on and off.
1	Sets the screen display to ON.
2	Sets the screen display to OFF.

6.4.11 Video Input (VIN) and (VID:)

There are two commands that can switch video inputs.

6.4.11.1 VIN

Transmit			Reply		
STX	*VIN*	ETX	STX	*VIN*	ETX

- Use *VIN* as a toggle switch to change between the two video input modes.

	Video Input
Video	CVBS
SVideo	Y/C

6.4.11.2 VID:

Transmit			Reply		
STX	*VID:X*	ETX	STX	*VIN*	ETX

Use *VID:X* to set a specific video input.

X	Video Type
1	CVBS
2	Y/C

6.4.12 Next Frame (OAF)

Transmit			Reply		
STX	*OAF*	ETX	STX	*OAF*	ETX

Use *OAF* to advance to the next frame.

6.4.13 Next (NXT)

Transmit			Reply		
STX	*NXT*	ETX	STX	*NXT*	ETX

Use *NXT* to play the next track.

6.4.14 Previous (PRV)

Transmit			Reply		
STX	*PRV*	ETX	STX	*PRV*	ETX

Use *PRV* to play the previous track.

6.4.15 Read Status (QOP)

Transmit			Reply		
STX	*QOP*	ETX	STX	Status	ETX

Sends the status of the FS-M.

The status that may be returned are:

FS-M Operation	Status Returned
Playing	OPL
Recording	ORC
Stopped	OPS
Paused	OPA
Fast Forwarding	OFF
Reversed	ORW
Slow	SCR

TABLE 2. Status Returned by QOP

6.4.16 Read Position (QCD)

Transmit			Reply		
STX	*QCD*	ETX	STX	**Time**	ETX

Use *QCD* to determine the current position in the foreground track. *QCD* retrieves the running timecode, *CDFSHHMMSSFF*, of the foreground track.

6.4.16.1 Time

CD	*Mode*	*Counter Data*

Mode is set to FS.

Counter Data

Item	Value	Description
HH	00 - 99	Hours
MM	00 - 59	Minutes
SS	00 - 59	Seconds
FF	00	Frames, set to 00

TABLE 3. QCD Timecode Elements

6.4.17 Track Request (QOT:)

Transmit			Reply			
STX	*QOT:*	ETX	STX	*QOT:*	*XXX*	ETX

Use *QOT:X* to retrieve the number of the current track in the foreground mode, i.e. if the FS-M is in record mode, it is the track number of the track being recorded; example QOT:66.

Value for *X*, 001 through 999.

6.4.18 Tracks Request (QON:)

Transmit			Reply			
STX	*QON:*	ETX	STX	*QON:*	*XXX*	ETX

Use *QON:X* to return the track numbers of the current tracks in both foreground and background modes.

Value for *X*, 001 through 999.

6.4.19 Status Reply (ROS)

Transmit			Reply		
STX	*ROS*	ETX	STX	*ROS:X*	ETX

Use *ROS* to enable an automated *QOP*, Read Status.

- If the current status changes, the FS-M notifies the Host. with a message similar to that sent by *Read Status,* see ”Read Status (QOP)” on page 53.

6.4.20 Track Reply (ROT)

Transmit			Reply		
STX	*ROT*	ETX	STX	*ROT:X*	ETX

Use *ROT* to enable an automated *QOT:X*, Track Request.

- If the current track changes, the FS-M notifies the Host with a message similar to that sent by *Track Request*, see ”Track Request (QOT:) ” on page 54.

6.4.21 Position Reply (ROP)

Transmit			Reply		
STX	*ROP*	ETX	STX	*ROP:X*	ETX

Use *ROP* to enable an automated *QCD*, Read Position.

- If the current position changes, the FS-M notifies the Host with a message similar to that sent by *Read Position*; *CDFSHHMMSSFF*, see ”Read Position (QCD)” on page 54.

6.4.22 Read TOC (TOC)

Transmit			Reply		
STX	*TOC*	ETX	STX	*TOC*	ETX

Use *TOC* to retrieve a hard drive table of contents. This command is only valid for retrieving tables of contents from hard drives.

Note

TOC Contains Only First 99 Tracks on Hard Drive

To remain compatible with the earlier MPEG-2@Disk the *Read TOC* command retrieves only the first 99 tracks on the hard drive.

6.4.22.1 Data Structure

```
struct
{
UInt32NumberOfTracks;
TrackInfo_t TrackInfo[99];
}TOCInfo_t;

struct
{
UInt32  trackStart;
UInt32  trackEnd;
Char    trackName[9];
UInt8   PlayTime[3];
UInt8   OGTInfo;
UInt8   AudioInfo;
}TrackInfo_t;

// evaluate track time
time_count = (((UInt32)TOCInfo->TOCInfo.TrackInfo[j].PlayTime[2] << 16) +
                ((UInt32)TOCInfo->TOCInfo.TrackInfo[j].PlayTime[1] << 8) +
                 (UInt32)TOCInfo->TOCInfo.TrackInfo[j].PlayTime[0]);
```

Variable	Description
time_count	Time in seconds
numberOfTracks	Number of tracks on media
TrackInfo	Track information structure
TrackStart	Start of track
TrackEnd	End of track
TrackName	Track Title
PlayTime	Playing time of track in minutes/seconds
OGTInfo	not implemented
AudioInfo	not implemented

6.4.23 Track (DIG:)

Transmit				Reply		
STX	*DIG:*	*X*	ETX	STX	*DIG*	ETX

Use *DIG:X* to play a specified track: *X* is the track number, examples DIG:001 and DIG:999.

6.4.24 Track Goto (STS:)

Transmit				Reply		
STX	*STS:*	*X*	ETX	STX	*STS*	ETX

Use *STS* to search for a specified position within a track and then show last image in that range.

- *STS* specifies the search position using an 8-digit timecode *HHMMSSFF*; example STS:01281900 (1hr., 28 min., 19 sec., frames are always set to 00)

	Value	Description
HH	00 - 99	Hours
MM	00 - 59	Minutes
SS	00 - 59	Seconds
FF	00	Frames, set to 00

TABLE 4. STS Timecode Elements

6.4.25 Track Goto, Seek, and Play (SDP:)

Transmit				Reply		
STX	*SDP:*	*X*	ETX	STX	*SDP*	ETX

Use *SDP* to locate a specific position within a particular track. *SDP* employs an 11-digit code to locate a particular track and then find the defined position within that track. When the position is found, *SDP* begins playback from that point.

- The code for *SDP* is *TTTHHMMSSFF*;
  example, SDP:00101281900 (track 1, position [1hr, 28min., 19sec., frames set to 00])

	Value	Description
TTT	000 - 999	Track Number
HH	00 - 99	Hours
MM	00 - 59	Minutes
SS	00 - 59	Seconds
FF	00	Frames, set to 00

TABLE 5. SDP Position Elements

6.4.26 Unknown Command

Transmit			Reply		
STX	*Unknown Command*	ETX	STX	*ERE*	ETX

If the FS-M receives an unknown command, it sends an error, *ERE*, to the Host.

6.4.27 Rename Single Track (REN*xxFFFFFF*)

Transmit			Reply		
STX	*RENxxFFFFFFFF*	ETX	STX	*REN*	ETX

Use *REN:* to rename a track without the need to read and writing out hard drive, table of contents.

	Value	Description
xx	01 - 99	Track Number Only first 99 tracks are supported, see "Read TOC (TOC)" on page 56.
FFFFFFFF	8 characters	New Track Name Must have 8-characters and can be right-padded with spaces.

TABLE 6. REN Renaming Elements

- *FFFFFFFF* is the name of the track being sought, see "Track Name and Number Conventions" on page 47 for information about track names.
- If the new track name already exists as the title for another track, the *REN* returns an error, *ERE*.

6.4.28 Track Goto by Name and Play (SNP:*FFFFFFFF*)

Transmit			Reply		
STX	*SNP:FFFFFFFF*	ETX	STX	*SNP*	ETX

Use *SNP:* to locate for the beginning of a specified track and then begin playing it back.

- *FFFFFFFF* is the name of the track being sought, see "Track Name and Number Conventions" on page 47 for information about track names.

6.4.29 Track Goto by Name (SNS:)

Transmit			Reply		
STX	*SNS:FFFFFFFF*	ETX	STX	*SNS*	ETX

Use *SNS:* to locate and display the first frame of a specified track.*SNS:* employs the track name in its search.

- *FFFFFFFF* is the name of the track being sought, see ”Track Name and Number Conventions” on page 47 for information about track names.

6.4.30 Track Goto by Number (TSS:)

Transmit			Reply		
STX	*TSS:XX*	ETX	STX	*TSS*	ETX

Use *TSS:* to locate and display the first frame of a specified track. *TSS:* employs the track number in its search.

- *XX* is the track number, 00-99.
- The track number must be 3 characters in length. Left-pad the track number with one or two spaces, for example TSS:_ _7 or _99.

6.4.31 Erase Track (CLT:)

Transmit				Reply		
STX	*CLT:*	*XXX*	ETX	STX	*CLT*	ETX

Use *CLT:* to locate a track by its number and then erase it.

- *XXX* is the number of the track to erase, 001 - 999, examples CLT:1, CLT:01, or CLT:001.
- If the track is playing or being recorded, the FS-M returns an error code.
- If the track is not available, the FS-M returns an error code.

Caution: No UnDo for Erase Track

Erase Track is final and once the track is erased it can not be recovered.

Double check to verify that the correct track is specified in the command before issuing it.

6.4.32 Erase Track by Name (CLN:)

Transmit			
STX	*CLN:*	*FFFFFFFF*	ETX

Reply		
STX	*CLN*	ETX

Use *CLN*: to locate a track by its name and then erase it.

- *FFFFFFFF* is the name of the track being erased, see ”Track Name and Number Conventions” on page 47 for information about track names.
- If the tracks are named sequentially, the tracks following the erased track are renamed accordingly. If the track names are unique, they are not changed.
- When FS-M renames tracks, it omits file type extensions.
- If the track is playing or recording, the FS-M returns an error code.
- If the track is not available, the FS-M returns an error code.

Caution: No UnDo for Erase Track by Name

Erase Track by Name is final. Once the track is erased it can not be recovered.

Double check to verify that the correct track is specified in the command before issuing it.

6.5 Command Table

VCR Command	Command	Reply	Description	Transfer mode
Stop	OSP	OPS	Stop	Command
Play	OPL	OPL	Play	Command
Pause	OPA	OPA	Pause	Command
Record	ORC	ORC	Record	Command
FastForward	OFF	OFF	Fast forward	Command
Rewind	ORW	ORW	Rewind	Command
Shuttle Forward	OSF:	OSF	Shuttle Forward [0-7]	Ext.command
Shuttle Reverse	OSR:	OSR	Shuttle Reverse [0-7]	Ext.command
OSD Switch	OSD	OSD	Switch the OSD on/off	Command
OSD Switch	ODD:	ODD:	Switch the OSD on or off	Ext.Command
Video Input	VIN	VIN	Video input toggle switch	Command
Video Input	VID:	VIN	Video input switch	Ext.Command
Next Frame	OAF	OAF	Step forward next frame	Command
Next	NXT	NXT	Play Next track	Command
Previous	PRV	PRV	Play Previous track	Command
Read Status	QOP	Status	Read status	Read Status
Read Position	QCD	Time	Read position	Read Position
Read number of tracks	QON	QON:	returns number of available tracks	Ext. Command
Track Request	QOT	QOT:	Read Track	Ext.Command
Status Reply	ROS	ROS	Automatic reply of status	Command
Track Reply	ROT	ROT	Automatic reply of track	Command
Position Reply	ROP	ROP	Automatic reply of position	Command
Read TOC	TOC	TOC	Read table of contents from Host	Data transfer
Track	DIG:	DIG	Play chosen track [1-99]	Ext.Command
Seek track, position, and Play	SDP:	SDP	Seek chosen track and search position inside track	Ext. Command
Track Goto by Name (Play)	SNP:	SNP	Play chosen track	Ext.Command
Track Goto by Name (Still)	SNS:	SNS	Seek chosen track and still	Ext.Command
Track Goto	STS:	STS	Search position within track and still	Ext.Command
Rename Track	REN:	REN	Rename Track	Ext.Command
Track Goto by Number	TSS:	TSS	Seek chosen track and still	Ext.Command
Track erase	CLT:	CLT	Erase track	Ext. Command
Track erase by name	CLN:	CLN	Erase track by name	Ext. Command

CHAPTER 7

Upgrading FS-M Software

Upgrade FS-M firmware over the network, using a standard FTP application.

7.1 Upgrade Procedure

1. Use the URL, http://www.focusinfo.com/ support/support.htm to locate the most recent FS-M firmware upgrade information.Determine which upgrade is appropriate.
2. Upload the upgrade file into the **incoming** folder of the FS-M.
   The firmware upgrade file extension is .**upd**.

FS-M and FTP
To FTP files to the FS-M, use the FS-M IP address and substitute the FTP header; HTTP://www.192.168.0.102 becomes **FTP://192.168.0.102**.

3. When the upload completes, the FS-M automatically installs it and then reboots.
4. Verify that the upgrade is successful by using the Web Interface to open the Recorder Status window and confirming that the new firmware version number is displayed.

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