



# FS-C

## Portable DTE Recorder



## User Guide

**Part Number: MANL-1038-04**



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# Regulations and Safety



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

Model Number: FS-C

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

## 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.

## FCC Class B

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 B 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.

## Symbol Used In the FS-C 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.

## Symbols Used in This Documentation



This symbol indicates important information that the User should read.



This symbol indicates supplementary information about features, functions, or operations that may be 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-C 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

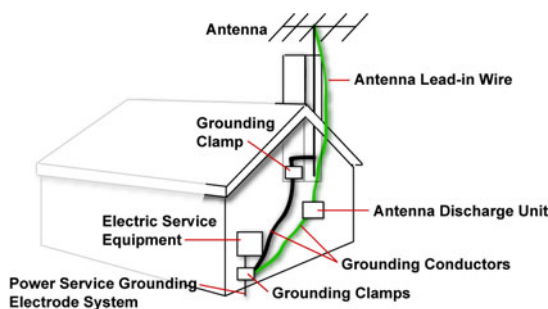


Figure A National Electric Code

If an outside antenna or cable system is connected to the FS-C, 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.



## Lightning and Power Surges

During electrical storms or when left unattended and unused for long periods of time, unplug the FS-C 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.

## 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.

### 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

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

- 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.

### Ventilation

Do not block the ventilation openings in the FS-C body. 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.

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# Introduction

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Thank you for purchasing a Focus Enhancements' FS-C portable direct-to-edit (DTE) disk recorder. The FS-C is the first portable DV/HD disk recorder with DTE technology designed for hand held camcorders in a small, rugged and shock proof chassis.

If you edit with applications from Adobe, Apple, Avid, Canopus, Matrox, Pinnacle, Sony, Ulead, and many others, Focus Enhancements' DTE Technology is the only solution that can save hundreds of hours a year by recording clips to disk in your non-linear editor's (NLE) native file format.

## **DTE Eliminates Pre-edit Processing**

The FS-C DTE disk recorder eliminates the need to capture, transfer or convert video clips before editing. The FS-C is a stand-alone device that records DV25, HD 720p, and HD 1080i video to its disk drive as a NLE native file. In HD Recorder mode it has the capability of capturing to disk HD 720p and 1080i video from HDV camcorders equipped with a 1394 interface. For most DV and many HDV compatible NLE systems, when the disk drive is connected to a computer the clips are immediately available for editing. Shoot, connect, and edit: it is now that easy.

These capabilities make the FS-C the perfect companion for the Canon HDV camcorders.

## Unpacking



Verify that the FS-C has the following items:

1. FS-C unit
2. Belt clip
3. User guide
4. Two Firewire cables
5. Power cord
6. Power supply with cable and connector to the FS-C
7. Removable Li-Ion battery pack

### **i**Note

#### **Missing or Damaged Components**

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

USA Email: [support@focusinfo.com](mailto:support@focusinfo.com)

USA Telephone: +1 763-398-1658

EMEA Email: [techsupport@como.com](mailto:techsupport@como.com)

EMEA Telephone: +49 4307 - 83 58 58

# Features

## FS-C Features

The FS-C offers the following features:

- **Tapeless acquisition**

Especially equipped camcorders permit the use of Direct To Edit (DTE) Technology to record directly from a camcorder while shooting and without the need of a tape.

- **True DTE Technology**

When shooting is finished, connect the FS-C to a computer and instantly be ready to edit in the timeline. Files are recorded to disk as

<b>HD Recorder</b> M2T	<b>DV Recorder:</b> AVI Type 1 AVI Type 2 Avid OMF Canopus AVI Matrox AVI Pinnacle QuickTime RawDV	<b>DV Recorder (NTSC units):</b> AVI Type 2 24p QuickTime 24p
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FS-C provides support for cutting edge HDV camcorders with 720p and 1080i MPEG-2 capabilities and FireWire, 1394, connection.

- **Fast and Efficient Editing**

When shooting is finished, mount the FS-C to a Mac or PC editing system like a typical FireWire hard disk drive. Transfer clips to your NLE's media drive at up to 400 Mbps or edit instantly in real-time using the FS-C as your media source. With some DV and HDV compatible NLE systems, it is necessary to capture the video footage using the NLE system's capture capability.

- **Confidence in Recording**

Now, simultaneously record to disk and tape while you shoot, providing an immediately available, drop out free, edit source with an archive and backup on tape.

- **Compact, Lightweight, Rugged Design**

The FS-C weighs approximately one pound including the battery and is only 1.5" thick. You can mount the FS-C directly to your camcorder using the optional camera mount kit, or clip the FS-C directly to your belt. The FS-C is designed to withstand the rigors of field shooting. The programmable, 10-second electronic shock cache ensures that your video is always recorded even in the roughest of conditions.

- **Flexible Capacities and Power**

The FS-C is available with different capacity hard drives. See the Focus Enhancements website for more information, [www.focusinfo.com](http://www.focusinfo.com).

Extend record times by linking two FS-C units together. Power the FS-C using slim, removable battery packs or power it using the supplied AC adapter.

- **Easy to Use, Control and Update**

The FS-C interfaces with your camcorder using a single FireWire cable that passes audio, video, timecode and control information. When a tape is present, each press of start and stop on your camcorder's record button creates an individual clip on disk. The FS-C features a comprehensive backlit display, menu system and buttons allowing easy control and management. In addition, these units are upgradeable in the field.

- **Never Miss A Shot**

FS-C's ten second retro record mode means you are always recording. When action happens, you know up to ten seconds prior to the event occurring is saved in your clip.

- Retro Disk and Loop Record modes.

- Scene Marking:

This allows categorizing video clips into pre-named folders on the disk during a shoot.

- User definable time lapse.
- Loop playback modes.
- Free Run, Rec Run, and Regen timecode modes.

## **FS-C 2.0 upgrade features**

- **QUICKTIME HD DTE format**
- **MXF OPatom DV DTE format.**
- **HD TC display and restripe capabilities.**



# Quickstart

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This section provides the following information necessary for using the FS-C as quickly as possible.

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# Physical Description and Basic Controls

## Front Panel Controls



### LCD Display

This is a backlit, 14 character by 7 line dot matrix display.

In event of a mild electrical discharge to the unit the LCD could go blank. To correct, hold the SELECT button down for 5 seconds.

### Function buttons (A, B, C)

Below the FS-C LCD display are three user-defined function buttons: A (left), B (center), and C (right). Use them as short-cut keys for the most frequently selected functions at the bottom of the LCD display. The function of these soft buttons changes, depending on the options displayed above that specific button. Refer to the **Functions Screen** on page 76 for more information.



## Power On Button

The Power ON button provides two functions.

- **Power ON**  
Turn on the FS-C.
- **Reset FS-C**
  - FS-C first must be powered on.
  - Hold down the **Power On** button for more than one second.
- **Power OFF**

Hold down the **OFF** button ■ for three (3) seconds. During power off, the FS-C beeps, indicating that it is turning off.

### Note

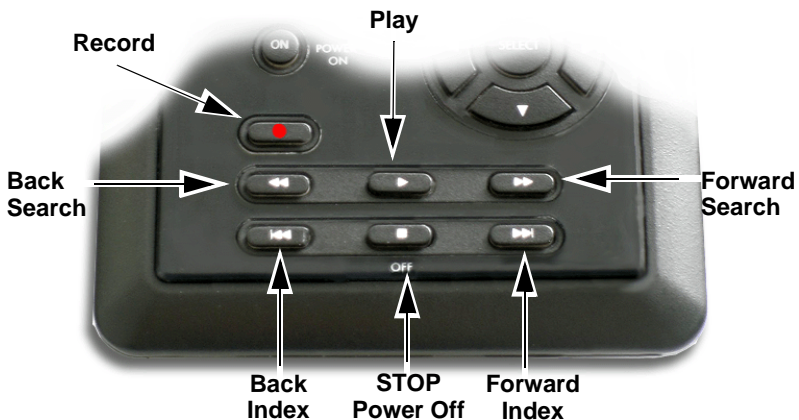
#### Alarm OFF

If the Alarm feature is set to OFF, then the power-down sequence occurs silently.

## Navigation Buttons

Use these buttons to navigate through the FS-C menus. The navigation buttons are **Left**, **Right**, **Up**, **Down**, and **Select**.

## Transport Control Buttons



Use these buttons to control FS-C playback and record functions. You usually operate these transport buttons while on the Home screen.

## Record ●

Press this button once when the FS-C is in **Stop** mode to put the FS-C into **REC-PAUSE**. Press it again to start recording. Pressing the Record button while recording, causes the current clip to close and a new clip is created without dropping any frames. This button is the only button that has a red legend on the front panel.

## Back Search ◀◀

Press this button to play video at speeds different than real-time. Refer to the note in the Forward Search section.

## Play ▶

Press this button to start playback of the selected clip.

### Note

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#### **Some HDV Camcorders Require a Moment to Synchronize**

Some HDV camcorders require a moment to synchronize the video from an external source. Typically during this period, they display a solid blue or black video until synchronized.

## Forward Search ▶▶

Press this button to play video at speeds different than real-time.

### Note

---

#### **Fast Forward and Reverse**

Pressing the Forward Search button multiple times results in increases in the search speed, i.e. fast forward. This mode works both in forward and reverse functions. For instance, if you are in 10X FF speed and you press the Back Search button once, the FS-C is now in 2X FF mode. In addition, this applies to backward search speeds. The default speed resolution is as follows (NTSC and PAL have slightly different multiples for < 1X)

- Reverse: -30X, -10X, -2X, -1X (reverse play), -1/2X(-15fps), Still.
- Forward: Still, +1/2X (+15fps), +1X (play), +2X, +10X, +30X

#### **Fast Forward and Reverse Search Compatible Camcorders**

In Forward and Reverse Search modes, some camcorders do not display video when played-back from an external device, such as the FS-C.

## Back Index |◀◀

This button returns the FS-C to the beginning of the current clip when in playback mode. Press this button twice in sequence to return the FS-C to the previous clip during playback. In **STOP** mode, press this button to return the FS-C to the beginning of the previous clip.

### Note

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#### Using Back Index with Short Clips

When using Back Index with short clips, it is first necessary to place the FS-C in **STOP** mode.

## Pause, STOP ■ and Power OFF

While in the Home screen, and in any transport mode, press this button to Pause the FS-C. Press it again to stop the FS-C. Refer to the section, **Setup Screens** on page 65 for more information.

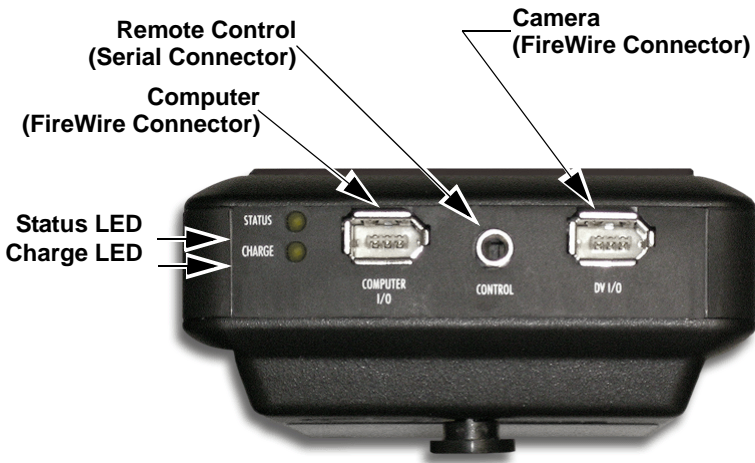
To power off the FS-C, hold down the **STOP** button ■ for three seconds. During Power OFF and if the Alarm function is **ON**, the FS-C, makes an audible beep indicating it is turning off.

## Forward Index ▶▶|

Use this button to skip forward to the next clip in **STOP** and **PLAY** modes.

## Top Panel

The top panel contains the following connectors and LEDs:



### Charge LED States

LED	Indicates
Off	No Charger Connected
Green	Charging Cycle Completed
Amber / Green	Floating Charge Mode (Charging almost completed.)
Amber	Fast Charge Mode (Maximum charging rate.)
Red	Charging Error
Red / Amber	No Battery Installed / Battery Error
Amber, flashing	Insufficient Voltage to Charger

### Status LED States

LED	Indicates
Off	Power OFF
Green	Power ON (Power On but there is no activity.)
Orange, solid	Playback
Orange, fluttering	Hard drive being accessed during playback.
Red, solid	Recording Mode
Red, blinking	Recording Pause

## Computer FireWire Connector

- In/Out: 6-pin IEEE-1394a port x 1
- Asynchronous Data I/O

## Remote Control, Serial Connector

- GPI / RS232C; 3.5mm TRS mini jack. (3.5mm to DB-9 cable accessory available).
- Configure as a simple contact closure or RS-232C port.
- Connect an optional wired remote commander.

## Camera FireWire Connector

- DV/I/O
- 6-pin IEEE-1394a connector
- Isochronous 25Mb/s DV video I/O  
FS-C supports 1080i/720p video I/O when used with HDV camcorders equipped with a 1394 connection like the Canon HDV camcorders.
- DV Audio: embedded 2-channel (48kHz, 16-bit) or 2-channel (12-bit, 32kHz) audio, 720p/1080i HDV MPEG1 Audio Layer II.

### Note

#### 4-Channel Audio

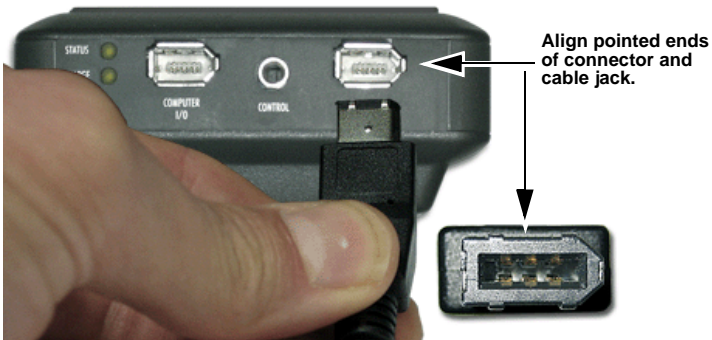
4-channel (12-bit, 32kHz) audio is available only with RawDV format.

## FireWire Alignment



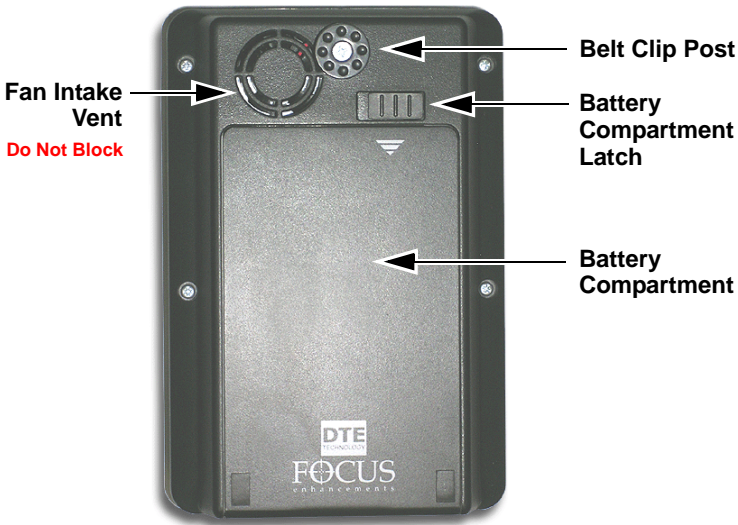
### IMPROPER INSERTION WILL DAMAGE UNIT

Properly Align FireWire Cable and Connector - Do Not Force  
Correctly align the FireWire cable to the connector before insertion. The pointed end of the connector and the jack should be on the same side before insertion:



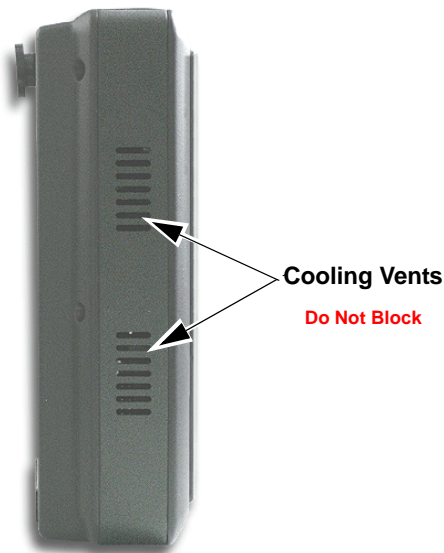
## Rear Panel

The rear panel contains the following important items:



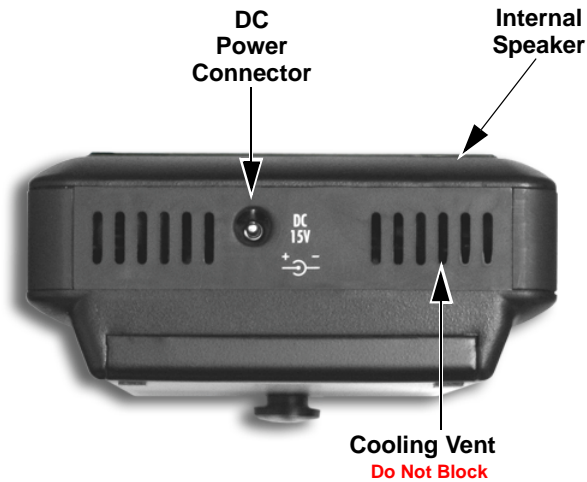
## Side Panel

The side panel contains cooling vents as illustrated below.



## Bottom Panel

The FS-C bottom panel features a single 2-pin DC power connector. Connect the supplied AC power adapter here.



### Internal Speaker

An internal speaker provides alarms and audible feedback.

To disable the audible feedback, go to the Settings menu and select **ALARM OFF**. However, the power, temperature, and disk capacity alarms are always active.

## The FS-C Menu System

The FS-C menu system provides access to all the functions available in the unit. Each of the screens below (except the Welcome and Home screens which come up automatically when the unit starts) are accessed by pressing the **Left** or **Right** navigation buttons. The functions of each of the selections on these screens is explained in more detail in **FS-C Functions** on page 49.

### Note

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#### Returning to the Top of Menu or Home screen

To get to the top of any menu, press the **Left** button. To get back to the Home screen:

- Highlight the screen title at the top of the screen.
- Press the **Select** button.

- **Welcome**

Only appears for several seconds upon power up.

- **Home**

Gateway screen for all functions, it displays disk and operational status.

- **Control**

Contains the following selections:

- Local
- Syncro Slave
- AV/C
- Tapeless

- **Play From**

Provides lists to select play material from:

- Track List
- Reel List

- **Play**

Contains the following Play selections:

- Play Clip
- Loop Clip
- Loop All
- Play All



- **Reels**

Allows selected clips to be marked for placement in particular Reels Folders.

- R0 0
- R1 1
- R2 2
- R3 3
- R4 4
- R5 5
- R6 6
- R7 7
- R8 8
- R9 9
- NONE

- **Utilities**

Contains the following disk and clip functions:

- Organize Reel
- Organize OMF
- Organize MXF **2.0 upgrade only**
- Organize PINN
- Delete Clip
- Format
- Repair Disk
- Repair Clip **DV mode only**
- File Name
- Upgrade
- System Reset
- Diagnostic
- Status

- **Functions**

Contains user definable function button selections. Changing a setting with a Function button is identical to changing the setting in its corresponding menu. Refer to **Functions Screen** on page 76 for more information.

- **Setup**

Contains the controls for setting and reviewing the FS-C configuration:

- Set Date (MM/DD/YY)
- Set Time (XX:XX:XX)
- View Firmware Version
- LCDLight ON
- LCDLight OFF
- LCDLight AUTO
- Alarm ON
- Alarm OFF
- Stop Frame **DV mode only**
- Stop Gray **DV mode only**
- Stop No Video
- EXT CTL OFF
- EXT CTL PAUSE
- EXT CTL FRAME **DV mode only**
- EXT CTL FILE
- TC EXT (external)
- TC REC RUN **DV mode or 2.0 only**
- TC FREE RUN **DV mode or 2.0 only**
- TC REGEN (regenerate) **DV mode or 2.0 only**
- TC SET
- UB SET
- TC DROP **NTSC only**
- TC NON-DROP **NTSC only**
- HDV TC TYPE **HD only in 2.0 upgrade**
- LCD Contrast

- **HDD Mode**

Contains the following hard drive selections:

- DV Recorder
- HD Recorder
- DD Drive
- Use Ext. FS-C

- **DV or HD Formats**

Following HDD mode is a menu of formats available for the type recorder selected in HDD mode.

When selecting **DV Recorder** the following formats are shown:

- Raw DV
- AVI Type 1
- AVI Type 2
- Canopus AVI
- Matrox AVI
- Quicktime
- Avid OMF
- Quicktime 24p
- AVI Type 2 24p
- Pinnacle

When selecting **HD Recorder** the format displayed is:

- M2T

- **Record**

Contains the following recording functions:

- Normal
- Retro Disk
- Retro Cache
- Loop Record
- SNAP **DV mode only**
- Time Lapse **DV mode only**

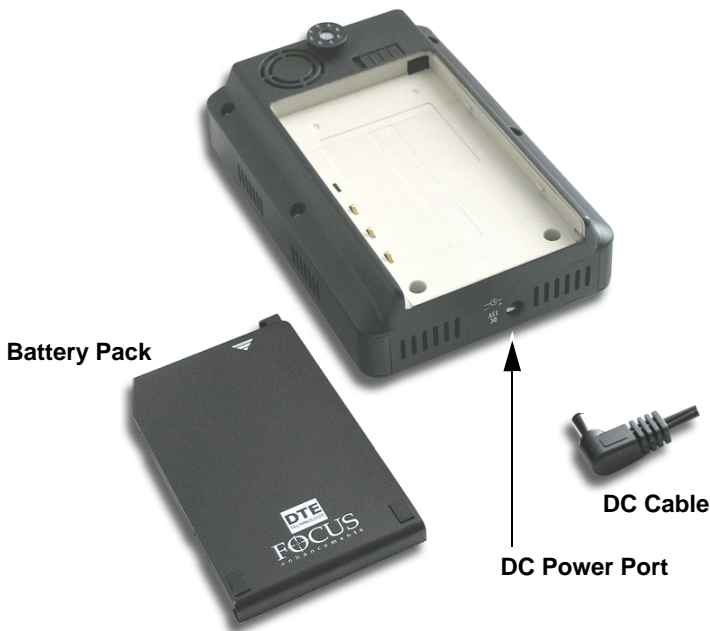
## Powering the FS-C

- **The FS-C operation without a battery installed.**  
To operate the FS-C without a battery installed, connect the unit to an AC power source.
- **Before operating the FS-C with battery power.**  
It is first necessary to fully charge the battery. An uncharged battery, typically takes 2-3 hours to charge.

## Connecting the FS-C to AC Power

Attach the AC power cord to the FS-C (with or without battery installed). The FS-C is immediately ready for operation.

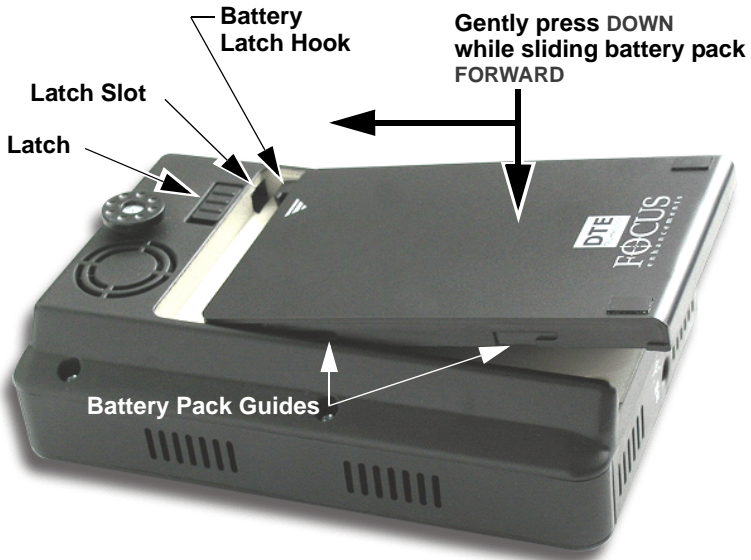
To do this, connect the AC power as follows:



1. Plug the cord from the power supply into the bottom of the FS-C.
2. Connect the line cord to the rectangular power supply.
3. Plug the line cord into an electric outlet.

## Installing / Removing the Battery Pack

### Installing a Battery



1. Place the unit, so that the battery compartment is up.
2. Position the battery pack, as shown above, so that the latch hook is almost in the latch slot, and touching the floor of the battery compartment.
3. Slide the battery forward while gently pressing down. Feel the battery slide along guides and seat itself.
4. When seated, the battery latch clicks into place.

### Removing a Battery

1. Slide the battery latch to the left and hold.
2. Apply backward pressure to the battery pack at the triangle/arrow and gently slide the pack back about 1cm or 3/8 in.  
This is the reverse motion of inserting the battery.
3. Remove the battery pack.

## Charging the Battery

The battery begins charging anytime it is connected to AC power using the AC adapter supplied with the FS-C. The charge LED lights when the FS-C is charging. For information on the charge LED, refer to the subsection **Top Panel** on page 12.

Before the battery can be used it must charge until the battery status LED indicates the unit is fully charged (green).

- The Charge LED on the top of the FS-C lights to show the battery is charging.
- An uncharged battery takes 2-3 hours to charge with the unit powered off.
- The battery provided with the FS-C can supply power to the unit for about 90 minutes while in continuous Record or Playback mode.
- An optional high capacity battery (**BATT-0009-01**) capable of providing power for almost three hours of continuous recording is available from Focus Enhancements.

### Note

#### Using FireWire to Charge FS-C

It is possible to charge the FS-C battery through the 1394 port on a computer provided that the computer outputs at least 15V through the port. To determine if this is possible, consult the computer's specifications.



#### Battery Use

Misuse can cause property damage and/or bodily injury such as burns if a conductive material such as jewelry, buttons, or beaded chains touch exposed terminals. The conductive material may complete an electrical circuit (short circuit) and become quite hot. Exercise care in handling a charged battery, particularly when placing it inside a pocket, purse, or other container with metal objects.



#### Warning: Do Not Use Unapproved Battery Chargers

Use of battery chargers not approved by Focus Enhancements could cause the battery to catch fire or explode.

#### Use Only Original Focus Enhancements FS-BC Battery Chargers

There are four versions of the optional FS-BC battery charger for use in various parts of the world.

ASYF-0940-01	USA
ASYF-0941-01	Europe
ASYF-0943-01	United Kingdom
ASYF-0944-01	Australia

These optional battery chargers are available from either your local dealer or online at the Focus Enhancements web store, [www.focusinfo.com/sales/store](http://www.focusinfo.com/sales/store).

## Connecting a FS-C to a DV/HD Camcorder

Before performing this procedure, make sure you have installed and charged the battery, see **Installing / Removing the Battery Pack** on page 21.

1. Connect the supplied Firewire cable to the "DV I/O" connector on the top of the FS-C.



2. Locate the FireWire/DV/iLink (or similar) connector on your video camera. It is located in different places depending upon the brand of camera. If you are unclear of its location, consult your video camera manual.

### **i**Note

#### **FS-C Supplied with 4-pin to 6-pin FireWire Cable**

A 4-pin to 6-pin FireWire, 1394, cable is provided with the FS-C.

#### **FireWire Connector**

The FireWire connector on the XL H1 is located on the back side of the camera, above the XLR connectors. On the XHG1 and XHA1 cameras the firewire connector is located on the back to the right of the battery compartment.

For more information, refer to the Canon HDV camcorder's documentation.

3. Connect the other end of the FireWire, 1394, cable to your video camera.
4. Turn on the video camera.
5. Turn on the FS-C.

## Record and Playback with the FS-C

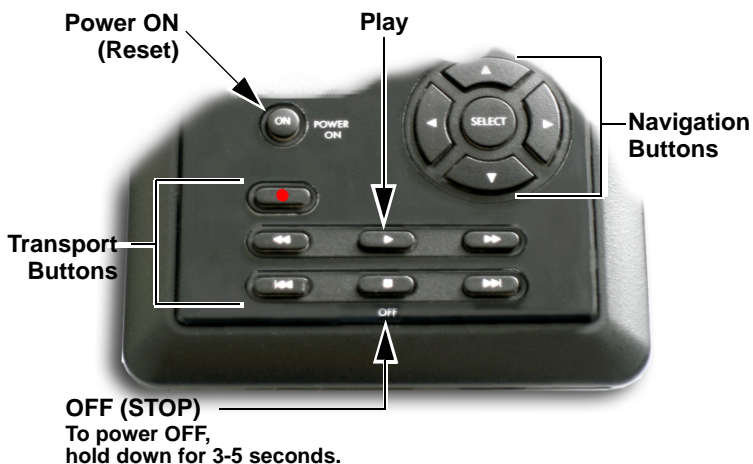
Before using the FS-C, set up the unit as outlined in the following sections:

Power On the FS-C .....	24
Select HDD Recorder Mode .....	25
Select a DV/HD File Format .....	26
Set Time and Date .....	27
Record With the FS-C .....	29
Manual Recording .....	31
Syncro Slave .....	32
Tapeless .....	33
Playback on the FS-C .....	34

The values set in these procedures are fixed and persist through power cycles. To change them, repeat the steps outlined above.

### Power On the FS-C

1. Press the **Power ON** button for more than one second and release it.





- The Welcome screen appears and displays while the Home screen appears when the FS-C initializes.

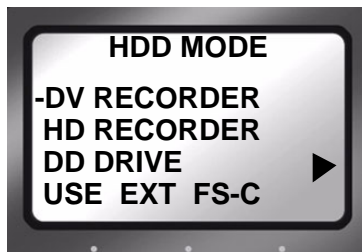


- The Home screen appears when the FS-C first powers up. For more details about this screen, **Home Screen** on page 51.



## Select HDD Recorder Mode

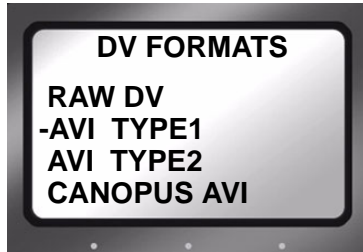
- Press the **Right** navigation button two times until the HDD Mode display appears.



- Use the **Down** navigation button to highlight the recorder mode, either DV or HD.
- Press the **Select** button on the navigation buttons.
- Press the **Left** button to return to the menu title.
- Press the **Right** button once and advance to the **FORMAT** screen.

## Select a DV/HD File Format

The formats displayed depend on the recorder mode selected in the previous step, for example **DV RECORDER** results in the following:



1. Use the **Up** and **Down** navigation buttons to select the DV file format that supports the preferred NLE system. A dash mark to the left of a list item indicates that it is the current selection. The default value is AVI Type 2.

### **Note**

#### **DV24p and PAL 25p Modes**

24p modes are only for use with camcorder's that are capable of DV-24p Advanced mode.

PAL 25p camcorders require no special 25p DV format

#### **Check [www.focusinfo.com](http://www.focusinfo.com) for supported Applications**

For a complete and up-to-date list of supported applications and their associated formats, visit the website:

<http://www.focusinfo.com>

2. Press the center **Select** button on the navigation buttons.
3. Press the **Left** button to return to the menu title.
4. Press the **Right** button once and advance to the **SETUP** screen.

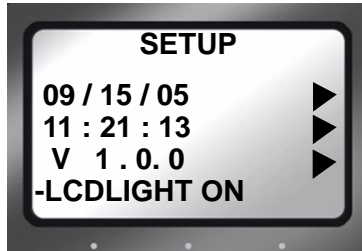
## Set Time and Date

### Note

#### Date and Time Must Be Set

The date and time must be set because they are used in the FS-C file naming function.

1. Press the **Right** navigation button several times until the Setup appears on the screen as shown below:



2. Use the **Down** navigation button to highlight the date and press the **Right** navigation button to access the **SET DATE** screen.



3. Use the **Up** and **Down** navigation buttons to change the highlighted value. Use the **Right** and **Left** navigation buttons to highlight the Month, Day, and Year.
4. When complete, press the right-most Function button indicated as **BACK** on the screen. The new date will be indicated on the **SETUP** screen.

5. Use the **Down** navigation button to select the time and press the **Right** navigation button. The following screen appears:



6. Use the **Up** and **Down** navigation buttons to change the highlighted value. Use the **Right** and **Left** navigation buttons to highlight the Hour, Minute, and Second. (Time is indicated in 24hr. mode.)
7. Press the right-most Function button indicated as **BACK** on the screen. The new date appears on the **SETUP** screen.  
The Time and Date are now set.
8. Press the **Left** navigation button followed by the **Select** button to return to the beginning screen.  
For more information on the Setup function, refer to the section, **Setup Screens** on page 65.

## Record With the FS-C

There are four modes of recording with the FS-C.

- **Manual Recording**

Control with the FS-C transport buttons.

- **Syncro Slave**

Use this mode with camcorders that do not have FS-C compatible external control or tapeless trigger functionality. In this mode, the FS-C watches the record status of the camcorder and replicates its actions. A tape must be in the camcorder for this mode to function.

- **Tapeless**

Control recording with other camcorders that have FS-C compatible external control or tapeless trigger capabilities. Use this control mode with companion Canon camcorders, like the XLH1, XHG1, and XHA1.

Before beginning recording, verify that:

1. Time and date are set.
2. Recording format is set.
3. The FS-C is connected to the video camera according to the explanation in **Connecting a FS-C to a DV/HD Camcorder** on page 23.
4. Camera and FS-C are powered on.
5. Tape is loaded in the camera.

### **Note**

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#### **Tapeless Control**

If the camcorder supports an external control function, then tapeless recording is possible. Otherwise, the FS-C control panel keys must be used to control recording in **LOCAL** control mode when there is no tape in the camcorder.

For a list of compatible camcorders, go to Focus Enhancements website at <http://www.focusinfo.com>.



#### Do Not Disconnect Power or FireWire Cable

Never disconnect the power or the FireWire cable during a recording. This will cause file corruption.

#### Loss of Power During Recording

If power is lost during recording it is possible to repair the damaged file or files, refer **Repair Disk** on page 86 to and **Repair Clip DV Mode only** on page 87.

### Note

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#### **Troubleshooting: Counter Not Incrementing**

If the Counter does not increment while recording from the camera, it is an indication that there is no active connection between the FS-C and the camera.

- Verify that the FS-C 1394 DV I/O and the camera connections are secure. It may be necessary to unplug and then reconnect them.

When a good connection is made, the Counter increments and recording starts.

#### **Verify Record Mode Matches Source Video Content and Format**

If in DV Recorder mode, HD content will not record properly. A NTSC or PAL DV source records only on a matching NTSC or PAL unit.

#### **Switch Camera to External Control Mode**

To set your companion Canon camcorder to external control mode, turn the **SYSTEM>DV CONTROL** menu to **ON**.

#### **EXTERNAL Control Requires 5 Second Wait**

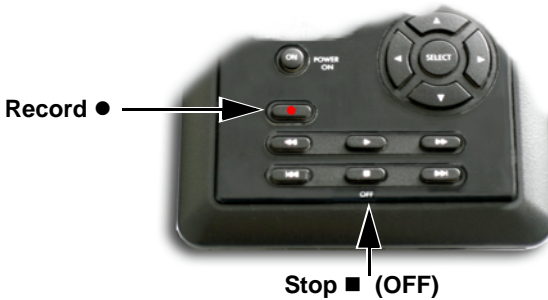
When using EXTERNAL control, FS-C requires a 5 second wait period between stopping and starting a recording.

#### **HDV Recording with Tape**

When recording with a tape in the camera, there may be small clips at the beginning of the FS-C recording. This is normal.

## Manual Recording

1. Set the video camera to **Camera** or **Cam** mode.
2. Verify that an image appears in the viewfinder.
3. On the FS-C, press **Record ●** once.  
This sets the FS-C to **Record-Pause** mode.



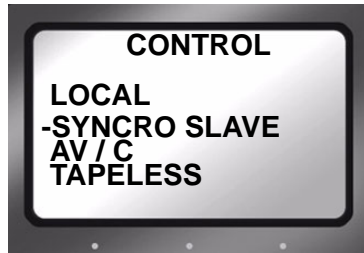
4. On the FS-C, press **Record ●** button a second time. The FS-C begins to record. The timecode value is displayed on the screen.
5. Press **Stop ■ (OFF)** once to return the FS-C to **Record-Pause** mode.
6. Press **Record ●** and the FS-C begins to record again on the same clip.
7. Press **Stop ■ (OFF)** *twice* to stop the recording.
8. Press **Record ●** *twice* to begin recording a new clip.

### Creating a New File without Dropping Frames

When in record mode, it is possible to break the recording into a separate, new file without dropping frames.

Press **Record ●** and the FS-C automatically creates a new clip.

## Syncro Slave



This mode is for camcorders that do not have external control or the tapeless control functionality compatible with the FS-C.

- Syncro Slave mode requires that a tape be in the camcorder for operation.
- The FS-C must be set to **Syncro Slave** control mode.
- In this mode, the FS-C watches the record state of the camcorder and follows its actions.

When Syncro Slave mode is entered from the menu, the Home screen appears with the Pause indicator displayed in the upper left-hand corner along with a Y that indicates that the FS-C is following the camcorder's record state.

1. Verify that the FS-C is in **STOP** mode.
2. From the FS-C Home screen, press the **Right** navigation button several times until the **CONTROL** screen appears:
3. Use the **Down** navigation button to select **Syncro Slave**. The dash on the left side of an item indicates it is the current selection. The default value is **Local**.
4. Press the **Select** navigation button.
5. The beginning screen returns and a **Pause** indicator appears in the upper left-hand corner. Next to this symbol, is a Y indicating that FS-C is now following the record state of the connected camcorder.
6. Now the FS-C will record at the same time the camcorder records to tape.



## Tapeless



Use the Tapeless control mode with camcorders that are compatible with FS-C external control or tapeless operation capabilities.

- When the FS-C is in **Tapeless** mode, an **E** displays along with the tape state, indicating that the unit is in **Tapeless** mode.
- Use the camcorder's **REC** button to **Start** and **Stop** the FS-C tapeless recording.
- The camcorder's Tapeless control or tapeless trigger function must be enabled for this mode to work.

Refer to the camcorder User Manual for more details.

## Recording Timecode in the File

Select **EXT TC** in the Setup menu. This option records the video camera timecode in the file. There are other timecode options available, refer to **TIME CODE** on page 70.

### Note

#### Function buttons

The tasks discussed above are available for programming into the function buttons. For information on setting up function buttons, refer to the section, **Functions Screen** on page 76

## Playback on the FS-C

Verify that both the video camera and the FS-C are powered on and that they are connected together with the FireWire cable from the FS-C DV/IO port to the camcorder 1394 port.

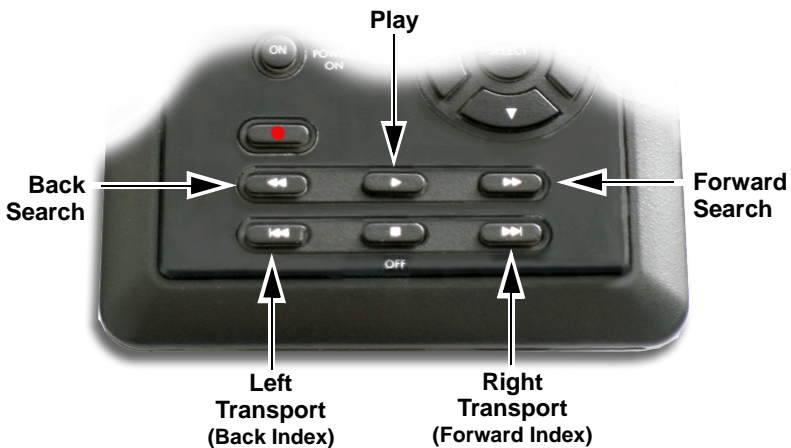
### **iNote**

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#### **Feature Availability on PAL Cameras**

This feature is not available on some PAL cameras.

1. Set the video camera to **VTR** or **playback** mode.
2. Navigate to the video clip to preview, using the FS-C **Left** and **Right** transport control buttons.



3. Press the FS-C **Play** button.
4. Search through the clips using the FS-C **Forward Search**, **Forward Index**, **Backward Index**, or **Backward Search** buttons. Refer to **Navigation Buttons** on page 9 for more information on the function of these buttons.

### **iNote**

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#### **Camcorder Compatibility with External Players**

Some HD camcorders are not compatible with the external player functions Forward/Reverse Search and Pause.

#### **VTR/CAMERA Setting**

To change the VTR/CAMERA setting, use the dial on the left side of the Canon HDV camcorder.

# FS-C

## Using with a Computer

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Once video clips are recorded to the FS-C it is possible to use those clips in most computer based DV/HD NLE systems. This section contains the following:

Initial Setup .....	36
Mounting the FS-C in Windows .....	37
FS-C and FAT 32.....	40
Using Avid OMF Clips (Required for DV mode only) .....	41
Dismounting the FS-C (Windows).....	44
Mounting the FS-C (Macintosh) .....	45
Dismounting the FS-C (Macintosh) .....	46

In the past, to get footage into an NLE system, it was necessary to capture / digitize the footage using a video capture card. For most DV and some HDV compatible NLE systems, FS-C DTE functionality eliminates the capture stage. All that is necessary is the moving of the video files from the FS-C to a computer.

### Note

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#### **Recording for Unsupported NLE**

If a desired NLE is not supported by Focus Enhancements DTE, it is necessary to use the AV/C control to capture the video footage for editing. For more details refer to **Control Screen** on page 97.

To move video files from the FS-C to a computer:

- Connect the FS-C's **Computer I/O 1394** port directly to a computer with an active OHCI compliant IEEE-1394 FireWire port and the necessary FireWire disk drive drivers.

### Note

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#### For More Information

Go to the FOCUS Enhancements' website ([www.focusinfo.com](http://www.focusinfo.com)) for more compatibility information.

- Use the FS-C HDD Bypass mode, refer below for more information.

The FS-C is compatible with any computer system that can read FAT 32 volumes, such as Windows 98SE/ME/2000/XP and Mac OS9/OS10.

## Initial Setup

1. Connect the FS-C through its **COMPUTER I/O 1394** port to the computer system using a standard 6-pin to 6-pin FireWire cable.
2. Enter HDD mode and enable DD Drive.  
This step is required before mounting the FS-C to a computer.
  - On the FS-C go to the **HDD** screen.
  - Select **DD Drive** and **Right** arrow to **Connect** screen.
  - Press **Enable** function button.

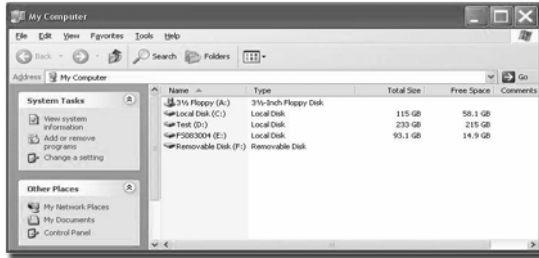
Refer to the section, **HDD Mode Screen** on page 60

3. Connect power to the drive if necessary.
4. Consult the computer's documentation for more information.

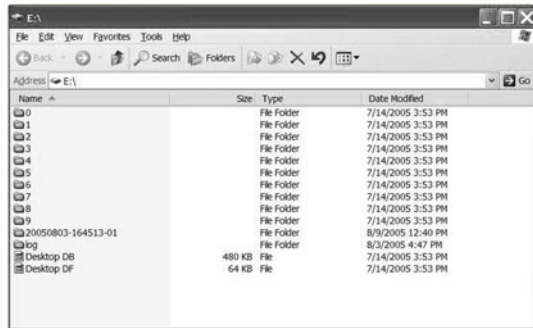
## Mounting the FS-C in Windows

Use this procedure for Windows XP, 2000, 98SE and ME.

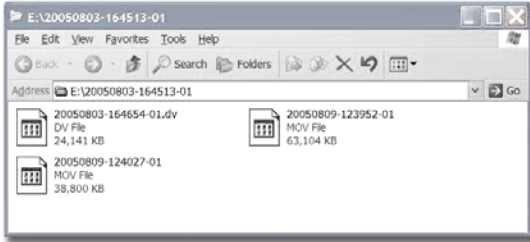
1. On a Windows-based computer system, double click the **My Computer** icon on the top left hand corner of the desktop. A directory window appears.



2. Locate the FS-C drive and open it.  
Often, it appears as a standard FireWire disk drive and may be labeled E:, F:, G:, and so on.
3. Open the FS-C disk icon.
4. Open the folder with the most recent date code.



This folder may contain several different files. The video clips. can appear as:



- RawDV (.dv)
- AVI Type 1 - (YYYYMMDDHHMMSSa01)
- AVI Type 2 or AVI Type 2 24p - (YYYYMMDDHHMMSSb01)
- Canopus AVI - (YYYYMMDD-HHMMSSb01)
- Matrox AVI - (YYYYMMDD-HHMMSSm01)  
This file has a separate .wav audio file per track.
- QuickTime or Quicktime 24p (.mov)
- Pinnacle - (YYYYMMDD-HHMMSSp01)  
There are two separate .wav audio files per track.
- Avid OMF (.omf )  
OMF has two separate .aif audio files per track.

### Note

#### **FS-C Video Clips in Reel Folder**

FS-C permits the storing of video clips in either the standard file folder or a Reel folder. If video clips have been assigned to a Reel folder, it is necessary to run Organize Reels before attaching the FS-C to a computer.

## HD Resolution and Frames

- M2T and MOV filename format:  
YYYYMMDD-HHMMSSX01.m2t or .mov  
where the **X** is a letter indicating the resolution of the captured video file. The table below lists letters and associated resolutions. Not all HDV camcorders support these resolutions.

<b>X</b>	<b>Resolution</b>	<b>X</b>	<b>Resolution</b>
<b>d</b>	720p, 23.976 fps *	<b>D</b>	1080i, 23.976 fps
<b>b</b>	720p, 24 fps *	<b>B</b>	1080i, 24 fps
<b>c</b>	720p, 25 fps	<b>C</b>	1080i, 25 fps
<b>a</b>	720p, 29.97 fps	<b>A</b>	1080i, 29.97 fps
<b>e</b>	720p, 30 fps	<b>E</b>	1080i, 30 fps
<b>f</b>	720p, 50 fps *	<b>F</b>	1080i, 50 fps
<b>g</b>	720p, 59.94 fps *	<b>G</b>	1080i, 59.94 fps
<b>h</b>	720p, 60 fps *	<b>H</b>	1080i, 60 fps
<b>y</b>	576p, 50 fps *		
<b>z</b>	480p, 60 fps *		

\* These resolutions are not supported in the HD RECORDER QUICKTIME format. The unit will not record these resolutions when the camera is in HD RECORDER QUICKTIME format.

## FS-C and FAT 32

The FAT32 file system limits file size to a maximum of 2GB or approximately, 9 minutes of recording time.

### Note

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#### **Recording Time Depends on Recorder Mode and Resolution**

The number of minutes per 2G file depends upon the recorder mode and resolution:

- DV - 9 minutes,
- 720p (MOV) - 10 minutes,
- 720p (M2T) - 13 minutes,
- 1080i (MOV) - 8 minutes,
- 1080i (M2T) - 9 minutes,

When clips exceed 2GB in size, the FS-C automatically creates a new, file without dropping any frames. The two files have the same root filename but have different two digit suffixes that indicate the order of their creation, -01, -02, and so on. This process can produce as many sequential 2GB files as the drive can hold.

With most DV and many HDV compatible NLE systems on Windows or Macintosh computers, it is possible to use clips within the timeline. Select the clips on the source volume, i.e. the connected FS-C, and import them directly into the NLE bin.

This makes clips immediately available in the NLE timeline.

The high transfer speed of the FS-C drive permits direct streaming of the clips to the NLE, thus eliminating the need to copy or transfer the clips before their use.

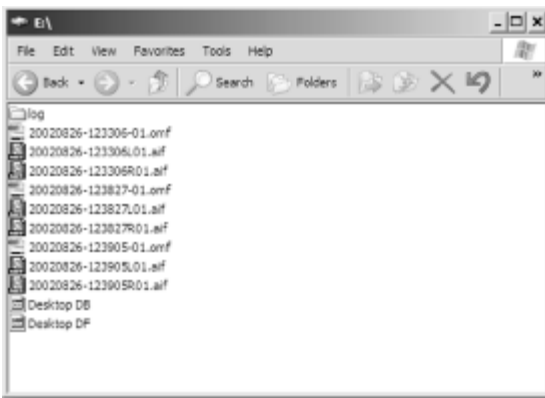


## Using Avid OMF Clips (Required for DV mode only)

These steps are required when using Avid OMF formatted clips.

The Avid OMF file format was developed for use with Avid editing products on Windows 2000, Windows XP or Mac OSX. These products include Avid Xpress Pro, NewsCutter, and Media Composer Adrenaline (with the DV option).

The Avid OMF file format creates three files simultaneously; one OMF video file and two separate AIF audio files. On the computer's desktop, the files appear similar to those shown below.



On the FS-C, the video file (OMF) and the audio files (AIF) appear as one track.

When an Avid OMF file is deleted, the FS-C deletes the audio and video portions at the same time.

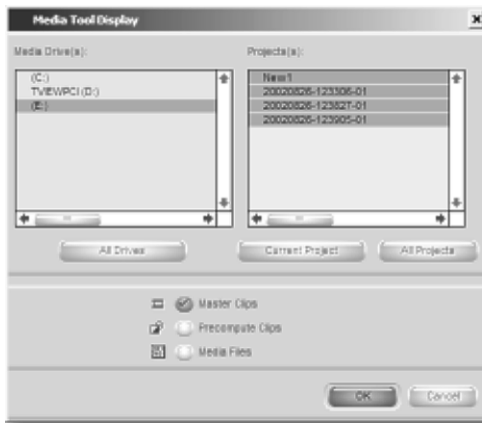
To use a FS-C recorded Avid OMF file on an Avid NLE system, use the following procedure.

**Note**

**ORGANIZE OMF Function**

If using the ORGANIZE OMF function on the FS-C before connecting it to a computer, steps 2 and 3 are not necessary

1. Locate and open the FS-C drive folder.
2. Create a new folder and name it **OMFI MediaFiles**.
3. To do this in Windows, select **File>New>Folder** .
4. To do this with Macintosh, select **File>New Folder**. Next, type **OMFI MediaFiles**.
5. Drag all the OMF and AIF files into the new folder:  
**Do Not Drag in the files titled Desktop DB or Desktop DF.**
6. Launch Avid.
7. Open an existing project or create a new one.
8. Select **Tools>MediaTool**. A screen similar to the following appears:



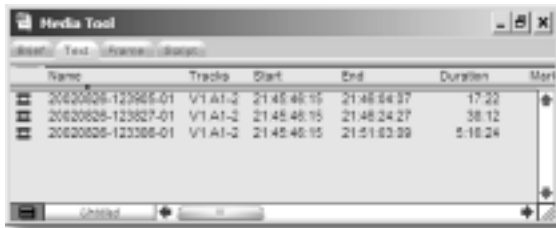
9. Locate and select the FS-C under Media Drive(s).

### Note

#### If Drive Does Not Appear

If the drive does not appear, check to make sure that the OMFI MediaFiles folder was created correctly with proper case and spacing. In addition, verify that the drive is properly connected and recognized by the computer. Under **Project(s)**, select **All Projects** (This highlights all items in the Project(s) window).

10. Verify that Master Clips is checked and press **OK**. The Media Tools Window, similar to the following, appears:



11. Create a new bin (select **File** -> **New Bin**) or open an existing bin in Avid.
12. Select all items in the Media Tools window (select **Edit**> **Select All**).
13. Drag the contents of the Media Tools Window into the bin. It is now possible to use these clips in the Avid timeline.

## Dismounting the FS-C (Windows)

When finished working with the FS-C and the computer, it is necessary to dismount FS-C from the system



Dismount FS-C Before Powering Off

It is important to dismount the FS-C from the Windows system BEFORE powering down the unit.

To do dismount the FS-C:

1. Click the **Safely Remove Hardware** icon at the bottom right side of the Windows task bar as shown below.



**Unplug or Eject Hardware Icon  
(Safely Remove Hardware)**

2. Next, the computer system prompts to remove the connected FS-C. This begins the dismount process.
3. Select the message and click on it.

The computer dismounts the FS-C and then displays a message that it is now safe to remove the unit.

## Mounting the FS-C (Macintosh)

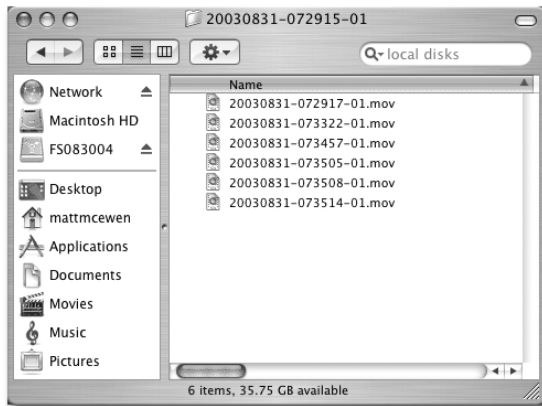
1. Start the Mac computer and connect the FS-C's **COMPUTER I/O** port to the computer using a standard 6-pin to 6-pin FireWire cable.

When mounted, the FS-C should appear on the computer's desktop as shown below:



The FS-C appears as a FAT32 volume with a PC label.

2. Locate the FS-C on the desktop and open it up.
3. Open the folder with the most recent date code (for example, "20050127-110345-01"). It should look similar to the following:



### Before Connecting FS-C to a Computer

If clips have been assigned to a Reel folder: perform an **Organize Reels** before connecting the unit to a computer.

## Dismounting the FS-C (Macintosh)

When finished working with the FS-C and the Macintosh it is necessary to dismount the unit from the system.



Dismount FS-C Before Powering Off

It is important to dismount the FS-C from the Mac system BEFORE powering down the FS-C.

To dismount the FS-C from a Mac:

1. Select the FS-C on the computer's desktop. It is marked with a PC symbol.
2. Drag the drive into the **Trash** or use the **Eject** button. This dismounts the particular disk drive.
3. It is now safe to remove the FS-C.

### Note

---

#### **Eject Shortcut for Two-button Mouse**

If the Macintosh is equipped with a two-button mouse, the following shortcut is available.

- Right-click the **FS-100 icon** on the desk top.
- Select the **Eject** function from the pop-up menu.

## Mounting Hardware

### Mounting FS-C to a Camcorder

Mount the FS-C to your camcorder using the optional Camcorder Mount Kit (P/N ASYF-0849-01). For more information about this kit or to order it, contact Focus Enhancements:

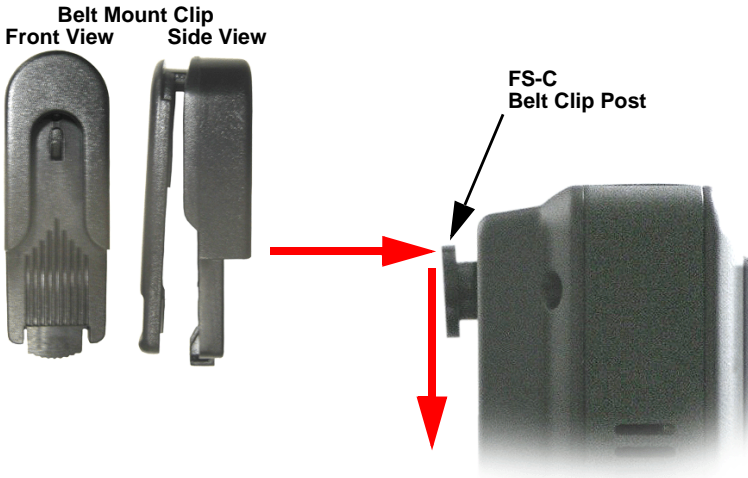
#### USA

**Email:** support@focusinfo.com  
**Telephone:** +1 408 866 8300  
**Address:** Focus Enhancements, Inc.  
1370 Dell Avenue  
Campbell, CA. 95008  
www.focusinfo.com

#### EMEA (Europe, Middle East, Africa)

**Email:** techsupport@como.com  
**Telephone:** +49 4307 - 83 58 58  
**Fax:** +49 4307 - 83 58 99  
**Address:** COMO Computer & Motion GmbH  
A Focus Enhancements Company  
Lise-Meitner-Str. 15  
24223 Raisdorf / Germany  
www.focusinfo.com

## Clipping to a Belt



A belt mount clip is included with the FS-C. This mount is similar to those used with cellular telephones. Attach the belt mount to the belt clip post on the rear of the FS-C and push it down to lock it in position. The belt clip can ratchet to various positions when attached to a belt.



# FS-C Functions

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This section contains information on the following LCD displays:

General Screen Information .....	50
Record Screens .....	55
HDD Mode Screen .....	60
Format Screen .....	63
HD Format Screen .....	64
Setup Screens .....	65
Functions Screen .....	76
Utilities Screen .....	81
Control Screen .....	97

FS-C screens are organized in a flat hierarchy. Every screen has a unique name, and it is possible to cycle continuously through the screens using the **Left** and **Right** navigation buttons.

Use the **Up** and **Down** navigation buttons to cycle through screen items (selections).

Use the **Select** Navigation button to make a choice.

## Note

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### **Navigation Tip: Jump to Top of Display Using the Left Button**

When navigating through the LCD displays and scrolling down into the menu, press the **Left** navigation button on the front panel and immediately return to the top of the display, which allows navigating to other displays.

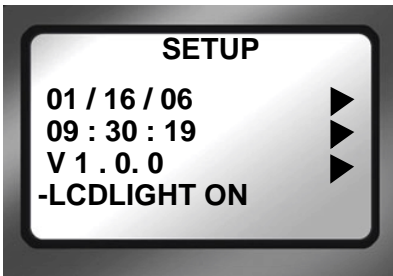
### **Jump to Home display Using Select Button**

To return immediately to the Home Screen, navigate to the menu title at the top of the screen and press the Select button.

## General Screen Information

The FS-C LCD displays are organized by function with each screen displaying a list of items. An item can be:

- A value that can be set, such as the date.
- A switch similar to a check box, that can be enabled along with other options in the display.
- A switch similar to a radio button, that belongs to a family of options, in which only one can be active at any time.
- A link to another display, which is indicated by a ►.



### Menu Title

Appears at the top of the display and identifies its topic or function.

### Navigation

Use the **Left** or **Right** navigation buttons to move to the previous or next display.

Use the **Up** and **Down** navigation buttons to move between the items in the display.

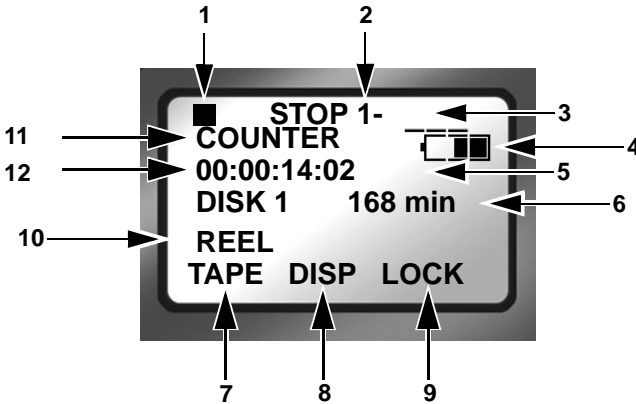
## Welcome Screen

The Welcome screen appears briefly after boot-up, and automatically switches to the Home screen when the FS-C is ready for operation.



## Home Screen

The Home screen is read only and has no navigable items. To leave the Home screen use either the **Left** or **Right** Navigation button.



1. Current Function: Symbol and Description  
Refer to **LCD Display Symbols and Text** on page 99.
2. Volume Disk Number  
The volume number is always 1 unless multiple FS-C's are connected, refer to **USE EXT FS-C** on page 61.
3. Clip Number  
Number of the current video clip, i.e. 001 for clip 1.  
The system can hold a maximum number of 999 clips.
4. Battery Life Gauge  
This gauge is accurate only when the unit is powered exclusively from the battery.
5. Timecode Value  
Either Drop Frame - 00;00;00;00 or, Non Drop Frame - 00:00:00:00.
6. Time remaining on the disk.
7. FA Functions with **TAPE** as the default, refer to **Functions Screen** on page 76 for more information.
8. FB Functions with **DISP** as the default, refer to **Functions Screen** on page 76 for more information.
9. FC Functions with **LOCK** as the default, refer to **Functions Screen** on page 76 for more information.

10. **Reel Display**

In **Record** or **Playback** modes, this item displays the particular REEL that a clip is located in or, has been marked to. If in **PLAY FROM > REEL LIST** mode, the REEL appears in brackets for example, [REEL]. This area is blank if **NO REEL** has been selected.

11. **DISP** information field that displays data type.

12. **DISP** information field that displays current data.

**DISP (display) Information Fields**

Use the **DISP** function button to display current operation information fields 11 and 12. The data shown depends on the mode of operation, i.e. DV or HD Recorder.

Pressing the **DISP** button advances the display to the next category of information. Below is a table of the data types and data available with **DISP**.

<b>Field Number</b>	<b>Data Type / Data Description</b>
11	COUNTER
12	Shows frame count of current video clip during record or playback.
11	REMAINING
12	<b>Record:</b> counts down number of available frames remaining, as time, on a specific disk. <b>Playback:</b> displays time remaining of the current clip.
11	DV (NTSC or PAL) or HD (see note following table)
12	The type of timecode displayed in <b>HD RECORDER</b> mode from this screen is defined by the <b>HDV TC TYPE</b> setting. See <b>HDV TC TYPE</b> page 74. <b>Record:</b> displays the external timecode value being generated by a camcorder or other device during a recording session. Timecode mode must be set to <b>EXT TC</b> for this function to operate, refer to <b>TIME CODE EXT, REC RUN, FREE RUN, REGEN</b> on page 70. <b>Playback:</b> displays the embedded DV timecode value in a particular track.
11	UB NTSC

12	Displays the set user bit value in a particular clip. A user bit value must be added for this to display, refer to <b>UB SET</b> on page 72.
11	<b>ABSOLUTE</b>
12	Displays an absolute timecode value for the particular session: the sum of all COUNTER timecodes on connected volumes. Absolute is primarily used when setting the FS-C to AV/C mode and controlling it with an external FireWire device, such as a computer.

### Note

#### **DV (NTSC or PAL) and HD**

The information displayed in fields 11 and 12 depends, in part, on which Recorder Mode is set.

#### **DV RECORDER**

Line 11 displays the Standard Definition (SD) video format. It can not be changed.

#### **HD RECORDER**

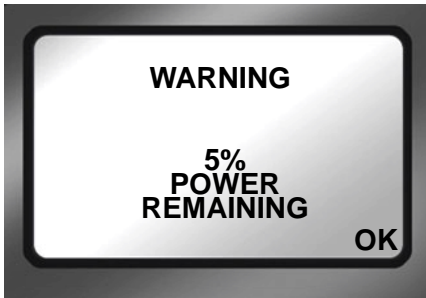
Line 11 displays the HD resolution of the current track which depends on the camcorder in use with the FS-C HD unit. Possible values are:

- 1080/50i TC
- 1080/60i TC
- 1080/30F
- 1080/24F
- 1080/25F
- 720/60 TC
- 720/50 TC
- 720/30p TC
- 720/25p TC
- 720/24p TC
- 576/50p TC
- 480/60p TC

Refer to the camcorder manual for supported resolutions.

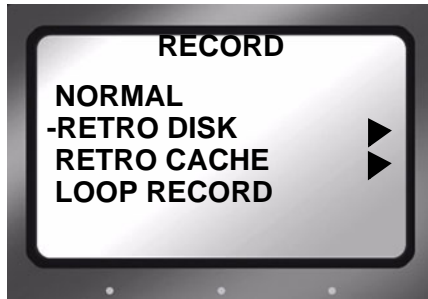
## FS-C System Information Screens

The FS-C automatically creates information screens to indicate conditions such as high temperature, power remaining, or drive capacity remaining.



Press **OK** to clear the screen and return to the last screen.

## Record Screens

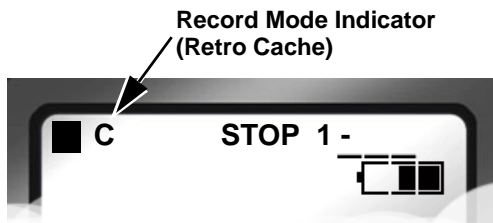


The Record screen permits setting the FS-C to various recording modes, depending on the model:

- **NORMAL**
- **RETRO DISK**
- **RETRO CACHE**
- **LOOP RECORD**
- **SNAP** DV modes only
- **TIME LAPSE** DV modes only

Once a record mode is selected, the recorder remains in that mode until a different mode is chosen. Exiting the **Record** screen and returning to **Home**, enables the selected recording mode.

To verify that the digital recorder is set to the correct recording mode, refer to the upper left-hand of the Home screen where the recorder mode is displayed.



Symbol	Indicates
L	Retro Disk
C	Retro Cache
O	Loop Record

Symbol	Indicates
<b>SNAP</b>	Snap Record
<b>T</b>	Time Lapse

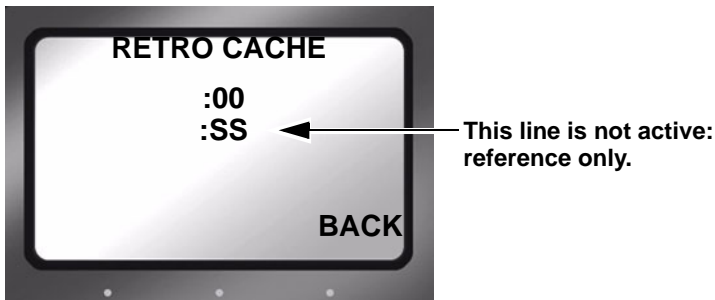
For more about LCD display symbols and text, see **LCD Display Symbols and Text** on page 99.

## Normal Record

This is the standard recording mode.

- All control is from the FS-C front panel. Initially, the Home screen displays **■ STOP**.
- Pressing Record ● puts the FS-C into **II REC PAUSE** mode.
- Pressing Record ● a second time puts the FS-C into **REC** mode.

## Retro Cache Record Mode



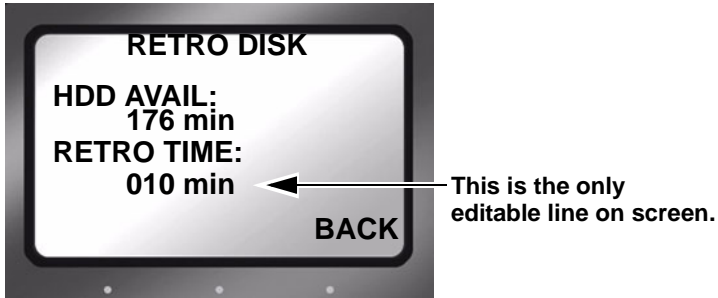
The Retro Cache mode insures that important material at the very start of a recording session is captured. Retro Cache stores in the on board memory a continuous loop of video captured by video camera during pauses. Pressing Record ● begins active recording at the last frame stored in the cache. The resulting video clip has the cached video at the beginning.

Retro Cache is available in **Local**, **Syncro Slave**, and **Tapeless** control modes.

Set the length of video that the Retro Cache should store: 0 to 10 seconds.



## Retro Disk Record Mode



The Retro Disk mode records video in a continuous loop to a user-defined portion of disk space. Pressing Record ● seamlessly begins active recording. The Retro Disk session is appended to the beginning of the new clip. The result is a set of clips beginning with the cached video and continuing with the newly recorded video.

- When calculating the amount of hard disk space needed for a Retro Disk record session, always include additional space beyond the recording requirements. The added space depends on the length of the loop.
  - Loops less than 60 minutes, need an additional 1 minute of unused disk space.
  - Loops 60 minutes and greater, require an additional 2GB of unused disk space.
- When looping less than one hour, Retro Disk records the loop in a series of 1 minute clips.
- Retro Disk is available in **Local**, **Syncro Slave** and **Tapeless** control modes.
- When Retro Disk is set, the symbols ●L (Record and L) appear in the FS-C display.

## Loop Record

Loop Record is similar to Retro Disk.

Loop Record continuously records a series of video clips to available disk space. When all available disk space is used, Loop Record begins sequentially replacing the earliest clip with the most recent.

- The size of the video clip depends on the length of the loop.
  - Loops of 60 minutes or less are recorded in one-minute clips.
  - Loops greater than 60 minutes, are recorded in 2GB clips.
  - When the capacity of the disk is reached, one additional clip is created. The size of the last clip depends on the length of the loop i.e., one-minute or 2GB. The disk must have at least 30 minutes of disk space available for this functionality.

### Saving Loop Record Clips

Press **STOP** during a record session.

The FS-C stops recording and saves the current LOOP RECORD session clips to a folder on the disk.

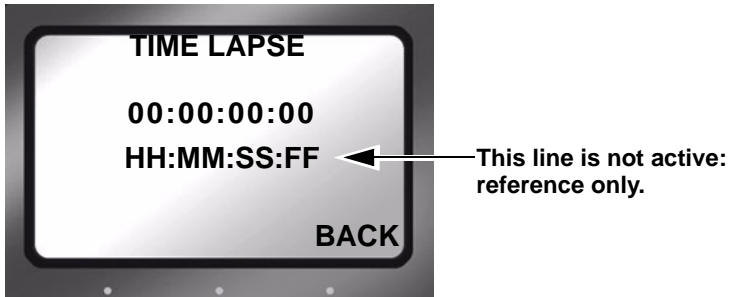
## Snap Record DV modes only

Use **Snap** to record individual frames. In Snap mode, pressing Record ● captures individual frames. All the frames recorded in the same session are stored in a single file.

- To start a new **SNAP** record session, place the unit in **STOP** between **SNAP** records.
- Snap Record is available only in DV modes of operation.
- Use Snap in **Local**, **Syncro Slave**, and **Tapeless** control modes.
- Removing power from the FS-C in the midst of a Snap recording session causes the unit to return to Normal recording mode when it powers back up.

 **Note**
**Another Method to Capture Single Frames**

An alternative to Snap is EXT CTL FRAME. For more information see EXT CTL OFF, Pause, Frame, File on page 69.

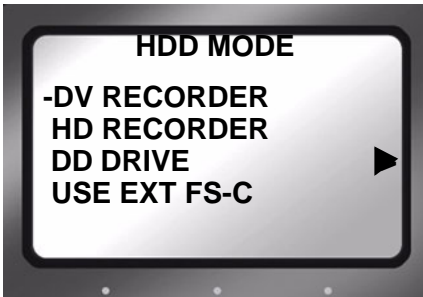
**Time Lapse Record DV modes only**

Time lapse provides the ability to record a single frame at specific time intervals, for example one frame per minute, 00:01:00:00. Time lapse applications can include capturing the traffic on city streets, the growth of a plant from seed to maturity, and construction projects.

Features of the Time Lapse function include:

- All the captured frames are recorded in a single clip.
- The time between recording periods can be set in frames, seconds, minutes, and hours.
- The maximum time between recorded frames is 24 hours.

## HDD Mode Screen



This screen displays the following items:

- **DV RECORDER**

This sets the FS-C as a DV recorder.

Connect the camera to the FS-C DV I/O port using a FireWire cable.

- **HD RECORDER**

This sets the FS-C as an HD recorder.

Connect the camera to the FS-C DV I/O port using a FireWire cable.

Recording in this mode only works with HDV camcorders that have a 1394 FireWire connector and that support an HD resolution, such as 1080i or 720p.

### **Note**

#### **Switching Between Recorder Modes (DV and HD)**

Switching between recorder modes resets the RECORDER mode to Normal, see **Normal Record** on page 56.

#### **Power-cycle After Changing Recorder Modes**

It is recommended that the FS-C be power-cycled after switching RECORDER modes.

- **DD DRIVE** 

Use this option when connecting the FS-C to a computer. The FS-C functions as a volume visible to the computer. In addition, this setting permits the connecting of multiple FS-Cs together to increase recording space.

- **USE EXT FS-C**

Use this option when longer recording times are needed. **USE EXT FS-C** permits the connecting of two FS-C together to provide more disk storage for longer recording. One unit acts as the master with the other as a slave: the master records to itself until full and then continues recording on the slave unit.

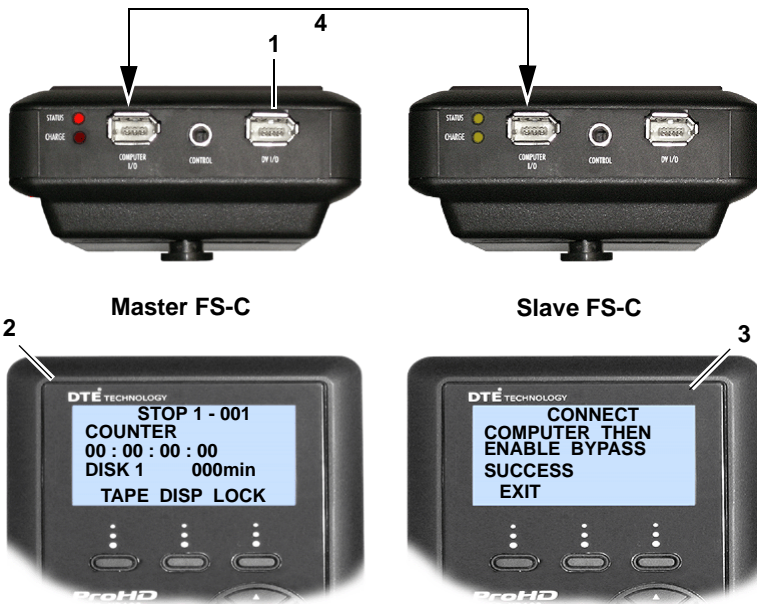
 **Note**

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**Identifying Master/Slave Volumes During Record/Playback**

When two FS-Cs are in combined via **USE EXT FS-C** and in either **Record** or **Playback** mode, the volume on the Home screen will display 1-xxx when the master unit is recording or playing back and 2-xx if it is the slave.

## Setting Up Master and Slave FS-C



1. Connect the camcorder to the master FS-C, DV I/O connector using the supplied FireWire cable.
2. **Master**  
Power on unit.  
Go to the **HDD Mode** menu screen and enable **USE EXT FS-C**.
3. Connect the FS-Cs through the units **Computer I/O** connectors using a 6-pin to 6-pin FireWire cable.
4. **Slave**  
Power on the unit  
Go to the **HDD Mode** screen and enable **DD DRIVE**.
5. **Master**  
Begin recording or playback using the master FS-C.

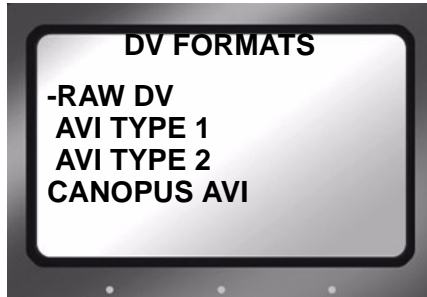


Use DD Drive Mode when Connecting to a PC

It is important to take the master FS-C out of USE EXT FS-C mode before attempting to connect to a computer. To do this, select DD DRIVE from the HDD Mode screen. This returns use of the unit to hard disk mode.

# Format Screen

## DV Formats



DV formats include:

- RAW DV
- AVI TYPE 1
- AVI TYPE 2
- CANOPUS AVI
- MATROX AVI
- QUICKTIME
- AVID OMF
- QUICKTIME 24P (NTSC only)
- AVI TYPE 2 24P (NTSC only)
- PINNACLE
- MXF OPAAtom FS-C 2.0 upgrade only

### Note

#### Using Organize

AVID OMF, MXF OPAAtom (2.0 only) and PINNACLE formats require using the Utilities functions, Organize OMF, Organize MXF, or Organize PINN respectively. Refer to the section, **Utilities Screen** on page 81.

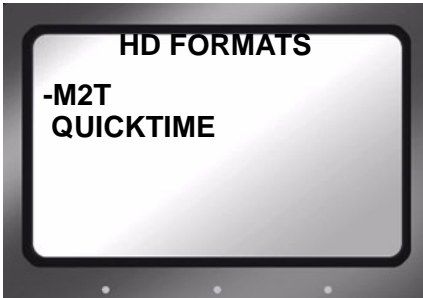
#### Formats for 25P Applications

Use standard file formats for all 25P applications **except** AVID OMF. OMF is not compatible with 25P DV streams.

The latest DTE supported applications and file formats are listed on the Focus Enhancements website:

[www.focusinfo.com](http://www.focusinfo.com).

## HD Format Screen



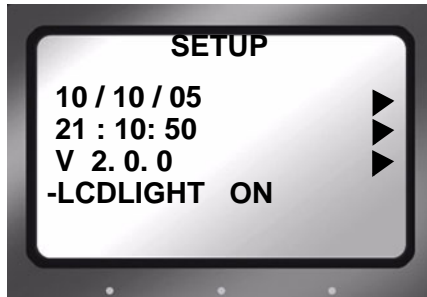
The FS-C 2.0 upgrade provides the additional HD DTE format QUICKTIME

The latest DTE supported applications and file formats are listed on the Focus Enhancements website:  
[www.focusinfo.com](http://www.focusinfo.com).

Check regularly for updates.



## Setup Screens



The items on the Setup Screen are grouped by function. Within the function the items act like radio buttons, i.e. when one is active the others are not.

In some cases, such as the Date, a settings screen appears. To return from a settings screen, use the **BACK** function button.

The items displayed on the Setup screen include:

- **DATE** Displayed ►
- **TIME** Displayed ►
- **VERSION** Displayed ►
- **LCDLIGHT ON** Group Default
- **LCDLIGHT OFF**
- **LCDLIGHT AUTO**
- **ALARM ON** Group Default
- **ALARM OFF**
- **STOP FRAME; (1st frame of current clip)** DV mode only
- **STOP GRAY** DV mode only
- **STOP NO VIDEO** Group Default
- **EXT CTL OFF** Group Default
- **EXT CTL PAUSE**

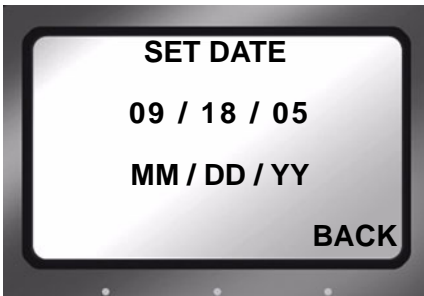
- **EXT CTL FRAME**
- **EXT CTL FILE**
  
- **TC EXT** Group Default
- **TC REC RUN** DV mode or 2.0 only
- **TC FREE RUN** DV mode or 2.0 only
- **TC REGEN** DV mode or 2.0 only
- **TC SET** ▶
- **UB SET** ▶
  
- **TC DROP** NTSC only
- **TC NON-DROP** Default, NTSC only
  
- **HDV TC TYPE** HD mode (2.0 upgrade only)
  
- **LCD CONTRAST**

**Note**

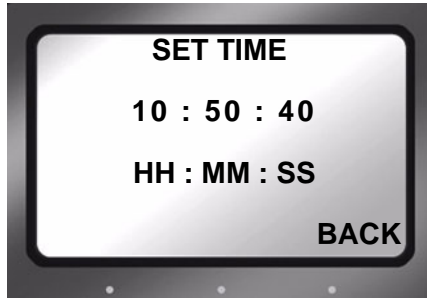
**Date and Time Must Be Set**

The date and time must be set. They are used in the FS-C file naming function. Refer to **Set Time and Date** on page 27.

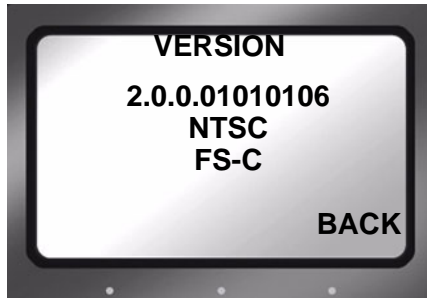
**Date**



## Time



## Version



This screen displays:

- FS-C Firmware version
- SD video of the unit.
- FS-C model

## LCD Light On, Off, Auto

These items enable or disable the LCD's backlight.

- **LCDLIGHT ON** Group Default  
keeps the backlight on permanently.
- **LCDLIGHT OFF**  
Keeps the backlight off permanently.
- **LCDLIGHT AUTO**  
Turns off the backlight after one minute, pressing any button pad button turns the backlight back on.

Any information screen turns the backlight on.

## Alarm On, Off

Default is On.

- When the alarm is enabled, pressing any button on the FS-C produces audio feedback.
- The FS-C alarm triggers when conditions such as low battery charge, low disk space, or over heating occur.
- When Alarm is set to **Off**, the audio feedback for the buttons is disabled, however the alarm will still sound for low power, high heat, or low disk space conditions.

## Stop Frame, Gray, No video

These settings determine the FS-C video output when using the search index keys to view recorded clips..

- **STOP FRAME** DV only  
Displays the first frame of the clip.
- **STOP GRAY** DV only  
Displays a black frame.
- **STOP NO VIDEO** Group Default  
Video output is Off.

## EXT CTL OFF, Pause, Frame, File

These options permit the use of an external device to control the FS-C through the optional RS-232 cable.

### Note

#### **RS-232 Cable Available from Focus Online Store**

The RS-232 cable required to connect the FS-C to an external control device is Focus part number **CBLA-0113-01**. It and other accessories mentioned in this manual are available at <https://www.focusinfo.com/sales/store>.

- **EXT CTL OFF**

Use this option when connecting an external device using an RS232C cable.

- This requires the use of a 3.5mm-to-DB9 adapter cable, plugged into FS-C **Control** port.

In Local mode, select this item to control the FS-C with the optional wired remote control unit.

The following options permit control functions to occur from a simple contact closure.

- **EXT CTL PAUSE**

Controls **Pause** and **Resume** during a record or playback session.

- **EXT CTL FRAME DV Mode Only**

Captures a single frame of video and records it to a file. Each time this function is triggered, it sequentially adds another frame to the same file until stopped.

- **EXT CTL FILE**

Creates a new file during a record session without losing frames.

## TIME CODE EXT, REC RUN, FREE RUN, REGEN

The FS-C 2.0 upgrade provides additional **TC REC RUN**, **TC FREE RUN**, and **TC REGEN** functionality in HD RECORDER mode.

This functionality is only active when HD FORMAT is set to **QUICKTIME**. In M2T mode, all TC modes act as **TC EXT**.

The following are timecode (TC) functions.

- **TC EXT** Group Default

Records the incoming source timecode. If the timecode is not running, the FS-C records the same timecode number in each recorded frame. Choose **TC EXT** mode to clear any stored number.

- **TC REC RUN** DV mode only

In this mode, after a power cycle, the FS-C starts its TC record count using the **TC SET** value. Later recordings add to the last value recorded. A power cycle resets the TC record value to the **TC SET** value.

- **TC FREE RUN** DV mode only

This function causes the FS-C to begin counting from the value stored by **TC SET**.

- A number entered through **TC SET** is not stored and available to the FS-C until exiting **TC SET**. Only then does the FS-C begin counting using that number.

- **TC REGEN** DV mode only

When the FS-C powers up in **TC REGEN** mode, it:

- Reads the timecode of the last track recorded.
- Adds 1 to the number.
- Stores the new timecode as the number that will be assigned to the first frame of the next recording session.

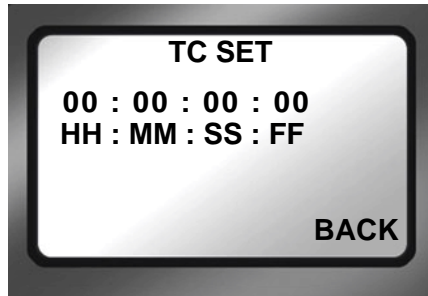
If the drive is empty, i.e. no existing recordings, the FS-C uses the **TC SET** value.

### Note

#### **TC SET and UB SET Can Be Set at the Same Time**

Both parameters, TC SET and UB SET, may be set and are not mutually exclusive as in some groups, i.e. LCDLIGHT.

## TC SET



The Timecode Set parameter stores a user defined timecode in the FS-C's non-volatile memory. This value is available for use by the FS-C immediately after exiting **TC SET**.

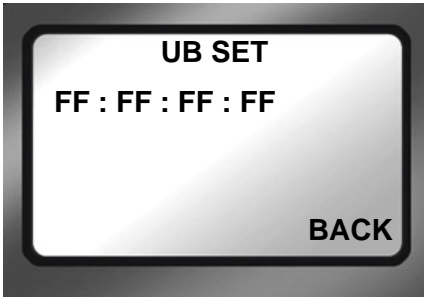
- **TC FREE RUN**  
The FS-C uses this value on the next recording after it is set in **TC SET**.
- **TC REGEN**  
This is the starting value when using an empty hard disk drive for recording.
- **TC REC RUN**  
This is the value used to begin every recording session after a power cycle.

### Note

---

The **TC SET** value is only actively applied when the unit is in **DV RECORDER** mode.

## UB SET



The User Bit Set function provides the ability to change the user bits in the timecode recorded in the video files.

- Timecode values are not set when in **TC EXT** mode.

Professional applications employ user bits to add metadata to recordings to assist in post production. For example, multiple cameras are used during a shoot. Each FS-C has a unique UB setting that identifies it and the camera it serves. Later, the user bits are used to determine from which camera station the footage was recorded.

### **Note**

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The UB SET value is only actively applied when the unit is in DV RECORDER mode.



## TC DROP, NON-DROP NTSC only

These parameters are only available for NTSC and only one may be enabled at a time. Drop and non-drop enable and disable the drop-frame function that modifies how the timecode is calculated during recording. These options are only applied when the unit is in DV RECORDER mode.

- **TC DROP**

Enables the drop-frame function:

- Frames 00 and 01 are dropped from each minute of video recorded.
- **Exception** The first minute of each hour is not dropped.

- **TC NON-DROP** Group Default

Disables drop-frame. No frames are dropped during recording and the timecode reflects the actual time during recording.

### Note

#### Use with TC FREE RUN or TC REGEN

TC DROP and TC NON-DROP may only be set when using the TC FREE RUN or TC REGEN settings.

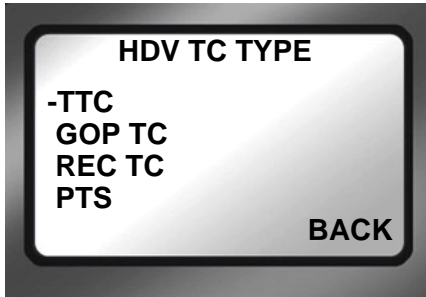
#### Displayed Timecode Indicates TC DROP/NON-DROP Mode

The timecode displayed on the LCD indicates the TC DROP/NON-DROP mode by using either a semi-colon or a colon as a separator between hours, minutes, seconds and frames:

**DROP** HH;MM;SS;FF

**NON-DROP** HH:MM:SS:FF

**HDV TC TYPE** FS-C 2.0 upgrade only



This menu sets the source of the timecode displayed in the TC DISP mode, while in HD RECORDER mode. This is also the timecode reported in AV/C control mode.

- **TTC** (Title Timecode)
- **GOP TC** (Group of Pictures Timecode)
- **REC TC** (Recorded Timecode)
- **PTS** (Presentation Timestamp)

Each NLE utilizes a different HDV TC TYPE for its workflow. Use the following table to determine which HDV TC TYPE is utilized by a particular NLE:

	<b>720p</b>	<b>1080i</b>
<b>Avid</b>	GOP TC	TTC
<b>FCP</b>	TTC	TTC
<b>Edius</b>	TTC	GOP TC or PTS

See your NLE users guide for more information.

## LCD CONTRAST

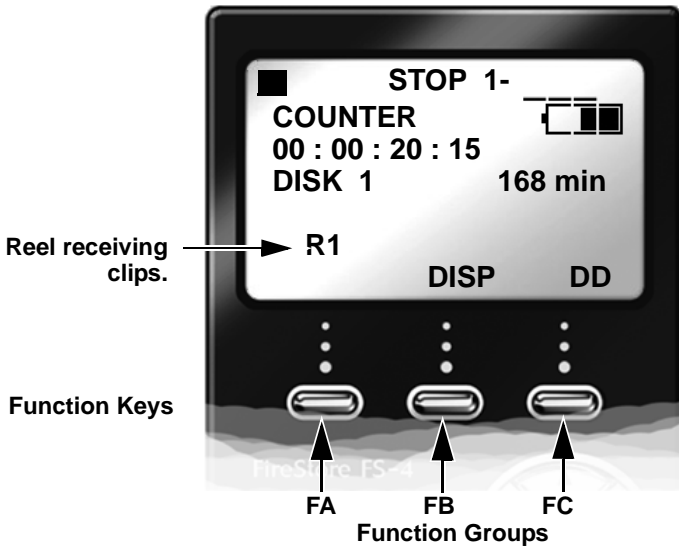


Use this function to adjust the contrast of the LCD display for easier viewing.

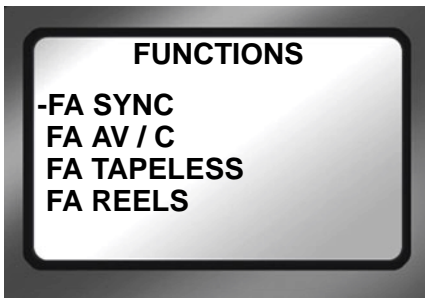
1. Use the **Right** navigation button to go to the **SET CONTRAST** submenu.
2. Use the **Up** and **Down** navigation buttons to increase and decrease the contrast number.
3. Press **BACK** when done.

## Functions Screen

The Functions buttons FA, FB, and FC provide convenient Home screen shortcuts by acting as toggle switches for specific system settings. The Home screen below is an example of the information displayed.



Function settings are user-assignable and available in the Functions screen. Changing a setting with a Function button has the same effect as manually changing the setting.



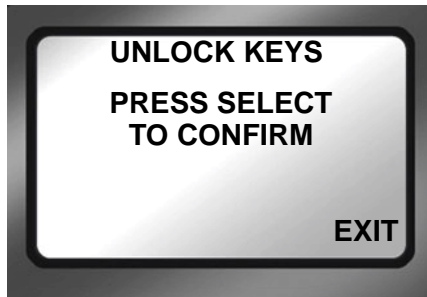
- There are three groups of functions FA, FB, and FC displayed via the Functions screen.
- The function groups are independent of each other.
- In each group only one selection is active at a time.

## Functions List

A list of the Function button menu is below. In each group, the default selection is listed first.

<b>MENU</b>	<b>Appears on LCD as...</b>
FA SYNC	SYNC Toggles between SYNCRO and LOCAL record control.
FA AV/C	AV/C (Toggles between AV/C and LOCAL control)
FA Tapeless	TAPE (Toggles between Tapeless TRIGGER and LOCAL control) <b>Default</b>
FA REELS	REEL Increments current reel number
FA R0-0	R0 Marks Current Clip to Reel 0,
FA R1-1	R1 Marks Current Clip to Reel 1,
FA R2-2	R2 Marks Current Clip to Reel 2,
FA R3-3	R3 Marks Current Clip to Reel 3,
FA R4-4	R4 Marks Current Clip to Reel 4,
FA R5-5	R5 Marks Current Clip to Reel 5,
FA R6-6	R6 Marks Current Clip to Reel 6,
FA R7-7	R7 Marks Current Clip to Reel 7,
FA R8-8	R8 Marks Current Clip to Reel 8,
FA R9-9	R9 Marks Current Clip to Reel 9,
FA LCD ON/OFF	LCD1/LCD0 LCD On/Off Toggle
FA LCD AUTO	LCD A/LCD0 LCD Auto On/Off Toggle
FA BLANK	No Function.
FB DISP	DISP (Toggles the different TC display modes) (Default)
FB ALARM	ALRM/MUTE Turns the FS-C alarm on or off.
FB FILE	FILE (Toggles between normal and display of the file name)
FB REELS	REEL Increments current reel number
FB R0-0	R0 Marks Current Clip to Reel 0,
FB R1-1	R1 Marks Current Clip to Reel 1,
FB R2-2	R2 Marks Current Clip to Reel 2,
<b>MENU</b>	<b>Appears on LCD as...</b>
FB R3-3	R3 Marks Current Clip to Reel 3,
FB R4-4	R4 Marks Current Clip to Reel 4,
FB R5-5	R5 Marks Current Clip to Reel 5,
FB R6-6	R6 Marks Current Clip to Reel 6,
FB R7-7	R7 Marks Current Clip to Reel 7,
FB R8-8	R8 Marks Current Clip to Reel 8,
FB R9-9	R9 Marks Current Clip to Reel 9,

FB BLANK	No Function.
FC LOCK	LOCK/UNLK Locks the buttonpad (Default) - toggles between LOCK and UNLK <Unlock>
FC DV/DD	DD Toggles FS-C between DV/HD and HDD Modes
FC REELS	REEL Increments current reel number
FC R0-0	R0 Marks Current Clip to Reel 0,
FC R1-1	R1 Marks Current Clip to Reel 1,
FC R2-2	R2 Marks Current Clip to Reel 2,
FC R3-3	R3 Marks Current Clip to Reel 3,
FC R4-4	R4 Marks Current Clip to Reel 4,
FC R5-5	R5 Marks Current Clip to Reel 5,
FC R6-6	R6 Marks Current Clip to Reel 6,
FC R7-7	R7 Marks Current Clip to Reel 7,
FC R8-8	R8 Marks Current Clip to Reel 8,
FC R9-9	R9 Marks Current Clip to Reel 9,
FC BLANK	No Function.

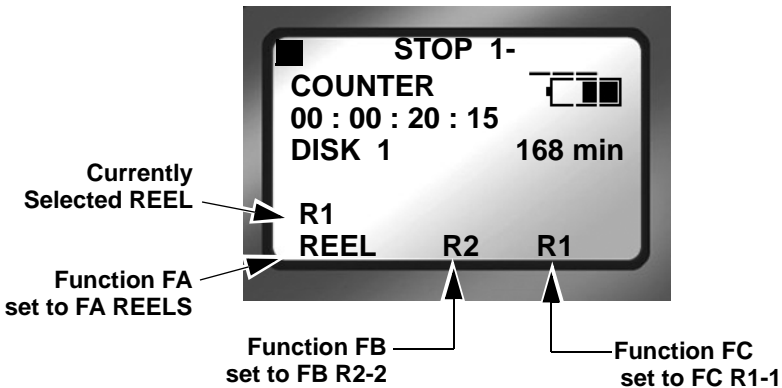
**LOCK/UNLK:**

This function is a toggle switch that locks and unlocks the keys on the FS-C's front panel.

To prevent accidental unlocking of the front panel, there is an unlock confirmation screen:

1. Press the **UNLK** key.
2. Press **SELECT** to unlock the front panel keys.

## Assigning Clips to Reels



The function buttons are a quick way to mark video clips during recording. The Functions menu offers two types of markers to use, as an example **FA REELS** and **FB R2-2**.

- **FA REELS**

Selecting the FA REELS programs the FS-C to mark the clips to the currently selected reel. The current reel is indicated in the line **above** the FA function reel selection.

- **FB R2-2**

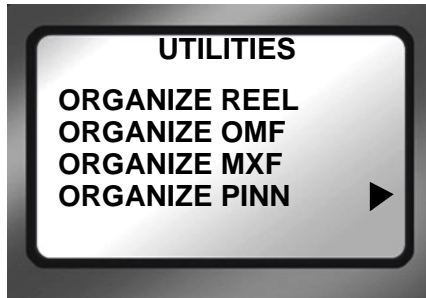
Setting a function button to this type of marker, instructs the FS-C to mark the current clip as belonging to the REEL R2.

## Blank

Functions identified as Blank are inactive.



## Utilities Screen



The Utilities available are:

- **ORGANIZE REEL**
- **ORGANIZE OMF**
- **ORGANIZE MXF** 2.0 only
- **ORGANIZE PINN**
- **DELETE CLIP** ▶
- **FORMAT** ▶
- **REPAIR DISK** ▶
- **REPAIR CLIP** ▶ DV mode only
- **FILE NAME** ▶
- **UPGRADE** ▶
- **SYSTEM RESET** ▶
- **DIAGNOSTIC** ▶
- **STATUS** ▶

### Note

#### **Organize Functions are Mutually Exclusive**

Once one organize utility is performed on a set of files, another organize function can not be applied. For example, if the Organize OMF is used on a set of files, then Organize Reel can not be applied to them.

## **Organize Reel**

This selection places all files identified as a REEL clip during recording or playback into the appropriate reel folder. You can import this folder directly into most DV NLE bins.

## **Organize OMF**

When files are recorded in the AVID OMF file format, this selection allows you to take all the OMF and AIF audio files at the end of a recording session and place them into a folder on the disk drive named **OMFI MediaFiles**. When the disk is connected to a computer, this folder is recognized by Avid Xpress DV's Media Tool enabling direct import of files into the Avid timeline. Refer to the section, **Using Avid OMF Clips (Required for DV mode only)** on page 41 for more information.

## **Organize MXF FS-C 2.0 upgrade only**

When using MXF OPAtom with some NLEs, such as AVID Xpress Pro, it is necessary to do an Organize MXF prior to importing the clips. Organize MXF is available in the Utilities menu.

The Organize MXF:

- Moves all MXF video files into the `/contents/video` directory.
- Moves all MXF audio files into the `/contents/audio` directory.
- Updates and moves the xml files from the log directory into the `/contents/clip` directory.
- Generates thumbnails of the clips in the `/contents/icon` directory.

## Organize PINN

This selection organizes clips for use with Pinnacle Liquid series NLE systems. Products such as the Pinnacle file format were created for use with products such as Pinnacle Liquid Edition. The Pinnacle file format creates three files simultaneously during a recording; an AVI video file and two separate WAV audio files labeled as left and right. An additional ALE file for each recording session is also created which contains timecode data. This file must be kept with the media.

Once clips have been imported into Liquid Edition, an Index file is created on the disk drive for each clip. Do not delete this file since it is required to continue work in the particular project.

## Delete Clip



Use this item to delete a selected clip.

1. From the **Utilities** screen, go to the **DELETE CLIP** screen.
2. Enter the number of the clip to be deleted using the **Up** and **Down** navigation buttons.
3. Press the **YES** function key.  
The selected clip is deleted.
4. Press **BACK** to return to the **Utilities** screen.

When a clip is deleted, the FS-C re-organizes and displays the remaining clips in sequence. For instance, if there are three clips on the disk: 1-001, 1-002, 1-003. If clip 1-002 is deleted, the remaining clips are reorganized and clip 1-003 becomes clip 1-002. However the base file names are not affected.

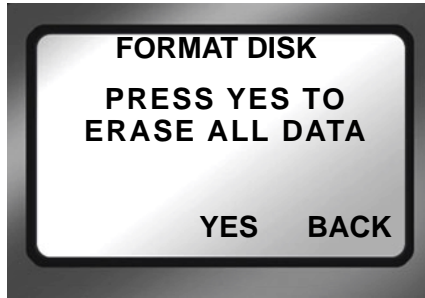
### Note

#### Use Delete Clip Sparingly

Using the delete clip can cause disk fragmentation that reduces disk drive performance and can impact both Playback and Record. To defragment the disk or if more disk space is needed:

- Transfer all content from the FS-C.
- Perform the **FORMAT** utility, see **Format Disk** on page 85.

## Format Disk



Prevent lost frames due to file fragmentation by formatting the FS-C before each recording session.



Save Files Before Formatting

The formatting process erases all data on the disk and is not reversible. Backup all files and clips on the FS-C before formatting.

This selection formats the disk as follows:

1. From the **Utilities** screen, go to **Format Disk**.
2. Select **YES** to begin formatting.  
A status screen displays progress of the formatting and at completion displays the message:
  - **Complete** indicating Repair Disk was successful.
  - **Aborted** indicating that there were errors and the repair did not complete.
3. Press **BACK** to return to the **Utilities** screen.

## Repair Disk



Use this function if a recording session does not complete properly and there is a question that the file may be damaged. For example, recording terminates due to a loss of power to the FS-C. Repair Disk scans the entire disk drive checking for and repairing file errors and incomplete files. When the file is repaired it is can be used in the NLE system.

### Note

#### Corrupted Files May Need More Repairs

After running Repair Disk some files may still need further work to restore them. In such a case, run the utility Repair Clip, refer to the following page.

To repair a disk:

1. From the Utilities screen, go to **Repair Disk**.
2. Select **YES** and the FS-C begins repairing the disk. A status screen displays the progress of disk repair and at completion displays the message:
  - **Complete** indicating Repair Disk was successful.
  - **Aborted** indicating that there were errors and the repair did not complete.
3. Press **BACK** to return to the **Utilities** screen.
4. Move content from FS-C.
5. Use Format Disk utility before doing any further recording. This step optimizes disk storage, see **Format Disk** on page 85.

## Repair Clip DV Mode only



Use this function to repair a specific file that may be damaged or incomplete. For example, recording terminates due to a loss of power to the FS-C and a specific file may be damaged. Repair Clip scans the specified file checking for and repairing file errors and incomplete files. When the file is repaired it then can be used in the NLE system.

1. From the Utilities screen, go to **Repair Clip**.
2. Enter the number of the clip to be repaired, using the **Up** and **Down** navigation buttons.
3. Press **YES** and the FS-C begins repairing the file. A status screen displays the progress of disk repair and at completion displays the message:
  - **Complete** indicating Repair Disk was successful.
  - **Aborted** indicating that there were errors and the repair did not complete.
4. Press **BACK** to return to the **Utilities** screen.
5. Move content from the FS-C.
6. Use Format Disk utility before doing any further recording. This step optimizes disk storage, see **Format Disk** on page 85.

## File Name



This function displays a file name but does not permit changing it.

1. From the **Utilities** screen, go to **FILE NAME**.
2. Enter the file's clip number using the **Up** and **Down** navigation buttons.

The base filename is dynamically displayed as a function of the clip number.

When a clip has multiple files, the first Base file name is displayed

3. Press **BACK** to return to the **Utilities** screen.



## Upgrade

Check Focus Enhancements website for upgrades and latest software updates, go to [www.focusinfo.com](http://www.focusinfo.com).

To upgrade system software:

1. Set the FS-C to **DD Drive** mode from the **HDD Mode** screen and connect it to a computer.
2. On your computer, rename the XXX.bin file as **fsc.bin**.
3. Copy or drag the fsc.bin file to the FS-C while it is in **DD Drive** mode.
4. Exit the FS-C from **DD Drive** mode and navigate to the Utilities screen.
5. From the Utilities screen, go to Upgrade.
6. Press **Right**. The following screen appears.



7. Press **Select**.
8. A confirmation screen appears: press **YES** to continue. A status screen displays the progress of the upgrade.



- Up on successful completion of the upgrade, the FS-C displays the message:



- Hold down the **STOP / POWER OFF** button until the FS-C shuts down.
- Power up the FS-C.

### Upgrade Errors

If the upgrade fails, the FS-C displays one of the following messages:



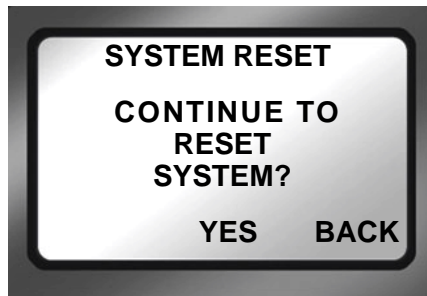
Verify that the update is for the model of FS-C it is being installed on. An update is not cross-platform and must be installed on the model for which it is intended.

To find the specific model of a FS-C go to the **SETUP** screen and then version (V 1.0.0), refer to **Setup Screens** on page 65.



Verify that the upgrade file name is fsc.bin and that it is in the FS-C hard drive's root directory.

## System Reset



The System Reset feature restores the factory default settings for the FS-C unit. This feature is useful for diagnosing problems with the unit.



System Reset

A System Reset can not be reversed.

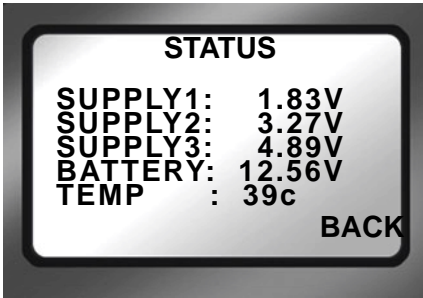
## Diagnostic



DO NOT CHANGE THE SETTINGS OF THIS FUNCTION

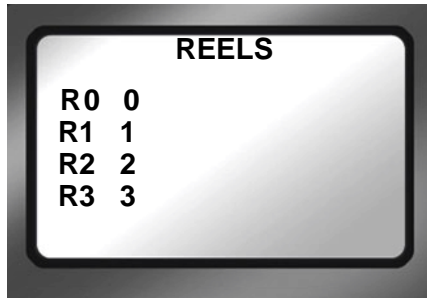
This function is included to assist Focus Enhancement Technical Support diagnose problems that may occur with the FS-C.

## Status



The FS-C Status screen provides details of the systems power state as well as internal temperature. This screen may assist Focus Enhancements Technical Support in determining power and thermal problems with your unit.

## Reels Screen



When a disk is formatted, the FS-C creates 10 folders, numbered 0-9, on the disk. During recording or playback of a clip, it is possible to place it into folders or play it from up to 10 different reels.

These folders can have any name up to 10 characters in length. To name the folders it is first necessary to enter **DD Drive** mode and mount the FS-C to a computer.

### Placing a Clip in a Reel

From the Reels screen, choose the Reels as follows:

1. From the Utilities screen, go to Reels screen.

Values include:

- FA R0-0 **Default Value**
- FA R0-0 through R9-9 "Reel Name"

2. Select a reel from the list.

When selecting a REEL from this screen, the current track is marked with that REEL number. This can be done in any mode: record, stop, or playback.

Each of the function keys can be set to specific reel, making it possible to quickly switch between multiple reels: a total of three reels being the maximum. Refer to **Functions Screen** on page 76 for more information.

## Using a Wired Remote Control



When using the optional wired remote control, use the button pad numbered 0-9 to mark the clips. Any additional button presses during a recording or playback, changes the selected REEL. Once a session is finished, select **ORGANIZE REEL** in **Utilities** screen. The marked clips are placed in the REEL in sequential order.

When a reel is selected, the Home screen menu displays the reel's name on the left side of the second to the last line of the screen, refer to **LOCAL** on page 97.

### **Note**

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#### **Optional Wired Remote Control (p/n ACSS-0019-01)**

To order the Wired Remote Control, go to Focus Enhancements website, [www.focusinfo.com/sales/store/](http://www.focusinfo.com/sales/store/).

## Play Screen



- **Play Clip**

In this mode, the FS-C plays the selected clip from start to finish when you press the PLAY button. At the end of the particular clip, the FS-C pauses.
- **Loop Clip**

In this mode, the FS-C plays the selected clip from start to finish. Immediately after completing the clip, the FS-C begins playing the clip again without a pause. It stays in this state until stopped.
- **Loop All**

In this mode, the FS-C plays the entire contents of the disk (all clips), in order, from start to finish. At the end of the last clip, the FS-C begins to play from the beginning of the first clip again without a pause. It stays in this state until stopped.
- **Play All**

In this mode, the FS-C plays the entire contents of the disk (all clips) in order, from start to finish. At the end of the last clip, the FS-C pauses.

## Play From Screen



This screen permits the selection of from where clips playback. There are two choices:

- **Track List**

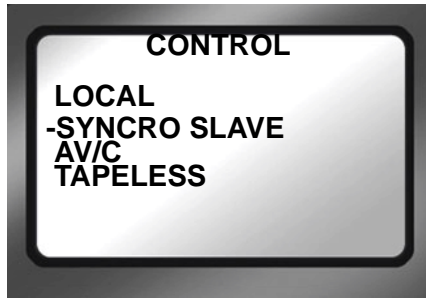
Clips playback in the order in which they were recorded. Playback order is based on the order of the file names.

- **Reel List**

Clips in a selected folder are played back. This function provides the ability to choose between any folders on the disk. Folders can appear with their user assigned folder name (if used).



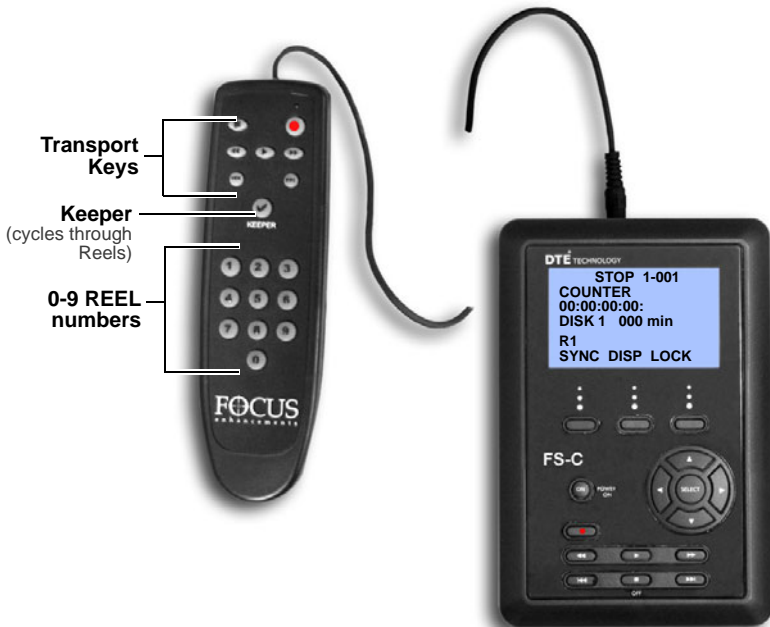
## Control Screen



The Control screen provides the capability of enabling the FS-C to operate in five different control modes during record and playback.

- **LOCAL**

Local control mode ignores record triggers from the camcorder and is controlled exclusively from the FS-C front panel or the optional wired remote control unit.



- **Transport keys** have the same functions as on the FS-C.

- Use the **Keeper** ✓ key to cycle through the available Reels. For example, if the current Reel selection is 3, pressing **Keeper** changes the selection to Reel 4.

To purchase the wired remote control, p/n **ACSS-0019-01**, for the FS-C, visit Focus Enhancements web site at [www.focusinfo.com/sales/store/](http://www.focusinfo.com/sales/store/).

- **Syncro Slave**

Use this mode when the camcorder does not have FS-C compatible external control or the tapeless trigger functionality. In **Syncro Slave** control mode, the FS-C mimics the camcorder's operations by monitoring the camcorder's tape record state.

- **AV/C**



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**Do Not Use AV/C control in Record Mode**

Use AV/C in playback mode and other situations where the FS-C is controlled by an external FireWire device such as a NLE system that is not supported by Direct To Edit Technology. In these cases, the FS-C can be used in a manner similar to a camcorder to capture footage to the NLE. When in HD RECORDER mode, and the QUICKTIME HD FORMAT is selected, the type of timecode reported is defined by the HDV TC TYPE setting, refer to **HDV TC TYPE** on page 74.

- **Tapeless**

The Tapeless Control mode allows the FS-C to be controlled from a camcorder, if it features a FS-C compatible external control setting separate from the tape transport. Use Tapeless Control mode with the companion Canon HDV camcorder.



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**Camcorder Requirements for Tapeless Control Mode**

Tapeless Control mode will not work unless it is supported by the camcorder and the camcorder is placed in this external control mode. Please check your camcorder manual for more details.

# LCD Display Symbols and Text

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The table below shows the different symbols and states displayed on the top line of the LCD when used with different FS-C control, record, play and stop modes:

<b>PLAY/REC MODE</b>	<b>FS-C LCD</b>
Stop	STOP
Pause	II PLAY
Play	▶ PLAY
Rec (Pause)	II REC
Normal Rec (Rec)	REC
Retro Disk (Stop)	L STOP
Retro Disk (Standby)	L REC
Retro Cache (Stop)	C STOP
Retro Cache (Standby)	C REC
Loop Record (Stop)	○ STOP
Loop Record (Rec)	○ REC
Loop Record (Standby)	II ○ REC
Snap (Stop)	STOP
Snap (Standby)	II SNAP
Snap (Rec)	II SNAP
Time Lapse (Stop)	STOP

<b>PLAY/REC MODE</b>	<b>FS-C LCD</b>
Time Lapse (Pause)	<b>II T REC</b>
Time Lapse (Rec)	<b>O T REC</b>
AV/C* (Stop)	<b>A STOP</b>
AV/C* (Rec Pause)	<b>II A&lt;REC TYPE&gt;REC</b>
AV/C* (Rec)	<b>A&lt;REC TYPE&gt;REC</b>
AV/C* (Play Pause)	<b>II A PLAY</b>
AV/C* (Play)	<b>A PLAY</b>
Syncro Slave (Pause)	<b>II Y&lt;REC TYPE&gt;REC</b>
Syncro Slave (Rec)	<b>Y&lt;REC TYPE&gt;REC</b>
Tapeless (Pause)	<b>II E&lt;REC TYPE&gt;REC</b>
Tapeless (Rec)	<b>E&lt;REC TYPE&gt;REC</b>

**AV/C\*** Only for use when the FS-C is connected to a computer system.

# Technical Specifications

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Specifications are subject to change.

## Physical Description

- Dimensions: 1.59" x 5.6" x 3.74" (40mm x 142mm x 95mm) (with normal 90 minute Battery)
- Weight: 1 lb. (.45 kg)

## Input/Outputs

- DV Video I/O - 25Mb/s (1x 6-pin IEEE-1394)  
In HD RECORDER mode the unit accepts 720P and 1080i MPEG video from specially equipped camcorders.
- FireWire Computer I/F - up to 400Mb/s (1 x 6-pin IEEE-1394)
- GPI & RS-232C Control (1 x 3.5mm mini jack)

## Power

- 15V DC, 7.5W
- Mini-jack power connector
- Custom Removable Li-ion Rechargeable Battery Pack (90 minutes estimated run-time)

## Audio/Video/Timecode Specification

- 25Mb/s, 8-bit 4:1:1 (NTSC-DV) or 4:2:0 (PAL-DV) video (model dependent). The HD RECORDER mode supports 720p (24/25/30) and 1080i (50/60) from HDV camcorders with a 1394 interface.

- DV Embedded Timecode (Drop or Non-Drop)
- DV audio: embedded 2-channel (16-bit, 48kHz) or 2-channel (12-bit, 32kHz) Audio. 4-channel (12-bit, 32kHz) is available for RawDV format only.
- HD audio: MPEG1 Audio Layer II.

## DTE File Formats

- DV mode: Raw DV, AVI Type 1, AVI Type 2, Matrox AVI, Canopus AVI, QuickTime, AVID OMF, AVI Type 2 24p (NTSC only), QuickTime 24p (NTSC only), Pinnacle  
HD mode: M2T
- **FS-C 2.0 upgrade only**  
MXF OPAAtom (DV)  
QUICKTIME (HD)

## Disk Information

- Internal Disk Type: 5400RPM, 8 MB cache  
See [www.focusinfo.com](http://www.focusinfo.com) for available hard drive capacities.
- Disk Format: FAT32
- FS-C compatible with Windows 98SE, ME, 2000, XP and Mac OS9/10.

## Log Files

With each recording of a particular clip on a disk, the FS-C creates a text log file to identify information about the recorded clip and the recording session. Information includes:

- Clip name
- Clip in/out source TC values
- Clip duration
- Clip type (record file type).

The log file also identifies when the shock cache becomes low and when disk or other errors occur during a recording.

## Error Messages

Error messages may appear on the FS-C LCD display from time to time. The purpose of these messages is to alert you to action that may effect your FS-C operation. Below is a list of error messages and actions you can take:

Error Message	Description	Action
<b>LOW BATTERY!</b>	Battery power is low.	Connect AC Power or replace the battery pack. When the unit is run without the battery installed, this warning can be displayed, that is normal.
<b>HIGH TEMPERATURE!</b>	The unit is getting too hot for normal operation.	Make sure the vent and fan intake holes are clear.
<b>NO SPACE LEFT!</b>	The Disk Drive is Full.	Transfer files off the drive and format it before attempting to do more recording.
<b>DISK ERROR XXX</b>	Lost Disk Communication.	Contact Focus Enhancements Technical Support.
<b>NO DISK DETECTED</b>	Lost Disk Communication.	Contact Focus Enhancements Technical Support.
<b>WRONG PRODUCT ID</b>	Incorrect Software Loaded.	Download correct software and perform upgrade again.
<b>FILE NOT FOUND</b>	Wrong filename or missing file.	Check filename or that upgrade file exists.
<b>TRK LIMIT MAX!</b>	999 clips exist on system.	Copy content from FS-C hard drive and re-format.

## Warranty

- 2 years, FS-C
- 90 Days Accessories including the battery.

## Temperature

- Operating: 0-40° C (32 - 104° F)
- Operating humidity: 30% to 90% RH
- Storage temperatures: -20 to 60° C (-4° to 140°F)
- Storage humidity: 85% RH or less

## **Compatible Camcorders and Accessories**

For a list of tested camcorders, refer to [www.focusinfo.com](http://www.focusinfo.com).







Part Number: MANL-1038-04

## Free Manuals Download Website

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