

# Operation Manual

## NAC **MEMRECAM** fx K3



NAC Image Technology Corporation

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# Please Read Carefully Before Use

## Safety Precautions

Please read the following safety precautions carefully before operating the **MEMRECAM** fx K3 camera system. Depending on the device, particular safety precautions are required during handling. Please follow these guidelines carefully to ensure safe and proper operation of the camera system. As always there are instances where some unforeseen condition may exist which may not have been taken to account. As a result, operate the camera system only after sufficient understanding of the contents written in this manual. Contact your retail outlet if there are any questions regarding the operations of this system.

### **DANGER**

If the indications shown are ignored, dangerous conditions could result in death or serious injury.

### **WARNING**

If the indications shown are ignored, potentially dangerous conditions could result in death or serious injury.

### **CAUTION**

If the indications shown are ignored, potentially dangerous conditions could result in slight or moderate injury. This is also a warning sign of unsafe operation and indicates the potential of damage to this device or connected devices.

# Handling Precautions



## **Safety alert symbol**

This symbol alerts you or others to the danger and/or items or operating concerns related to the use of this device. This symbol is also used when there is important information relating to operation methods. Read the message adjacent to this symbol carefully and follow the instructions for safe and proper use of this device



## **Grounding terminal symbol**

This symbol indicates the location of a protective grounding terminal. If not grounded, electrical shock could result from metallic and other parts of this device. Due to this danger, please make sure it is properly grounded. When connecting to an electric outlet using a 3P-2P converter plug, connect the converter plug grounding wire to a common ground.



## **High voltage warning symbol**

When replacing fuses, proceed only after the power cable is unplugged from the electric outlet. Do not open the cover. Depending on the device, there may be parts that generate high voltage internally so opening the cover could result in electrical shock.



## Precautions for Use



### Caution - Confirm Input Power supply

Before connecting electric power to the camera system, confirm that the voltage, frequency and polarity are correct. The camera system requires D C 2 0 ~ 3 2 V when using a DC power supply or battery. The optional AC power supply adapter requires an electric input of A C 9 0 ~ 2 4 0 V / 4 7 ~ 6 3 H z . The AC power supply adapter is designed to deliver D C 2 0 ~ 3 2 V to the camera system.



### Caution - Ambient Environment

- For optimum performance operate the system where the ambient temperature is within 0 ~ + 4 0 °C and humidity is 3 0 ~ 8 0 % R H . Do not expose to dew.
- Do not operate or store where the ambient temperature is below - 1 0 and above + 6 0 °C or the humidity is not within 2 0 ~ 8 0 % R H .
- Avoid using in locations where there is smoke, where corrosive gases are generated or where there is a strong magnetic field.
- Do not place in direct sunlight or in locations near rain or salt water.
- Do not use where there is trash, dust, sand or high humidity.
- To prevent increasing the internal temperature, do not place in front of, or near ventilation openings.



### Caution - Vibration and Shock

Do not expose the **MEMRECAM** fx K3 and related accessories to strong vibration and shock.



### **Caution - DRP Handling**

The internal components of the DRP are intricately manufactured and assembled in the unit. Keep the screws on the cover tight and do not for any reason (even if there is a malfunction), open the cover. Reassembly of the camera is difficult.



### **Caution - Lens Mount Handling**

Handle camera and lenses with care. Always keep the camera sensor and lenses covered by protective caps. Do not allow the camera sensor and rear of lenses to be exposed to dust and foreign matter. Do not put fingers or any other items inside. If the internal optics is damaged or foreign objects are present, image quality will deteriorate.



### **Warning - Connecting Cables**

Confirm that the power is OFF before connecting or disconnecting camera cables. Damage to the device and potential of electrical shock could occur if the camera cables are connected or disconnected with the power ON. It is acceptable to leave the power ON when connecting or disconnecting the J-PAD2, D-VGA, TRIG-IN and network cables.



### **Caution - Battery Use**

Do not expose or store the optional Memory Backup Unit to high Temperatures. Avoid prolonged exposure to the sun, keep away from fire and heated surfaces. Exposure to high temperatures will cause the battery to leak and reduce battery performance and life. Do not use a Memory Backup Unit battery for other applications. Excessive current draw may cause battery leakage, excessive heat or rupture. Contact your retail outlet to acquire replacement batteries used in the Memory Backup Unit.



### **Caution - Mounting**

The DRP should be securely mounted on tripods or by any other means available. Use caution when pulling cables which could tip tripods over.



### **Caution - Handling During Shipment and Transport**

Use the special shipping case for shipping and transport this product.



### Caution - Increased Sensor Noise

The **MEMRECAM** fx series feature technology to address screen noise patterns due to sensor temperature. The sensor temperature rises when the system is set to **ARM** mode. At the time the system is set to **ARM** mode, the sensor is calibrated to its current temperature. As temperature changes it is necessary re-calibrate to the current sensor temperature.

To maintain proper sensor calibration and to obtain images with greater quality, follow these guidelines:

- Prepare to photograph in **VIEW** mode, and switch to **ARM** mode immediately prior to begin recording.
- Prepare to photograph in **ARM** mode and temporarily change the mode from **ARM** → **READY** → **VIEW** → **ARM** immediately prior to begin recording.
- After the system has been set to **ARM** mode for more than an hour, re-calibrate by changing the mode from **ARM** → **READY** → **VIEW** → **ARM**. With this method, it is possible to continue recording without the need to re-calibrate.

### NOTICE:

There may be problems, conditions and circumstances regarding use and operation this device not stated above. As a result, take time to sufficiently understand the general provisions noted in this Operation Manual before using. Please contact your retail outlet as soon as possible if there are any questions about this device.

## Regular Replacement of Parts

It is recommended that the internal backup battery be replaced 5 years after purchase. This battery keeps the clock and menu setting in memory when power is disconnected. Disassembly of the system is required. Since the user cannot replace, please return system to your retail outlet to perform maintenance.

## Warranty

NAC warrants products of its manufacture to be free from defects in design, workmanship and material under normal and proper use and service for a period of twelve (12) months after the date of NAC's shipment or delivery.

NAC agrees to repair or replace at the place of manufacture, without charge, all parts of said products which are returned for inspection, to NAC within the applicable warranty period, provided such inspection discloses that the defects are as above specified and provided also that the equipment has not been altered or repaired other than with authorization from NAC and its procedures, subjected to misuse, improper maintenance, negligence, accident, damage by excessive current, or had its serial number or any part thereof altered, defaced or removed.

Shipping expenses to and from NAC will be to the account of the customer. Consumer goods such as lamps, fuses, etc. are considered by NAC not to be covered under this warranty.

## Application Standards

### FCC

FCC Part 15 Class A. This device conforms to tests related to Class A computer devices, FCC regulation No. 15.

### EMC Statement

This product conforms to EMC directive (89/336/EEC, 92/31/EEC) and has obtained CE marks for the following standards.

EN55022

EN55024

**MEMRECAM**® is the registered trademark of NAC Image Technology Corporation.

# 1

## ***MEMRECAM*** fx K3

### Overview

# 1. **MEMRECAM** fx K3 Overview

## 1.1 **MEMRECAM** fx K3 Standard Components

The standard high-speed digital camera system **MEMRECAM** fx K3 is comprised of the following items:

Part Name	Model	Qty.
<b>MEMRECAM</b> fx K3 DRP	TBD	1
J-PAD2	4H2003	1
Carrying case	TBD	1
Trigger connector	J50500008	1
Operation Manual (this document)	TBD	1
fxLink CD-ROM	TBD	1

## 1.2 **MEMRECAM** fx K3 External Components

The exterior features of the **MEMRECAM** fx K3 are shown in Photo 1



Photo-1 **MEMRECAM** fx K3 (Shown with optional lens)

### 1.2.2 **MEMRECAM** fx K3 DRP Front Panel

The front panel of the **MEMRECAM** fx K3 DRP is shown in Photo 2.



Photo-2 RX Camera Head Front Panel



#### **Caution**

When not using the **MEMRECAM** fx K3, replace the F-mount cap (cover) and do not leave the mounting holes uncovered. Use caution not to let dust and dirt into to the interior of the camera.



### 1.2.3 **MEMRECAM** fx K3 DRP Side Panel

The **MEMRECAM** fx K3 DRP side panel has a ventilation slot for cooling as shown in photo 3.



**Ventilation Slot**

Photo-3 **MEMRECAM** fx K3 DRP Side Panel



#### **Caution**

Do not cover the ventilation slot during operation.

#### 1.2.4 **MEMRECAM** fx K3 DRP Rear Panel

The **MEMRECAM** fx K3 DRP rear panel is shown in photo 4. The rear panel includes the Power Panel, Camera Control Touch Pad and the Rear Connector Panel.



Photo-4 **MEMRECAM** fx K3 DRP Rear Panel

- 1** - Power Panel
- 2** - Rear Camera Control Touch Pad
- 3** - Rear Connector Panel

### 1.2.4(1) Power Panel

The Power Panel is comprised of the power input connector and the power switch. The power switch has three positions as shown below.



Photo-5 Power Panel

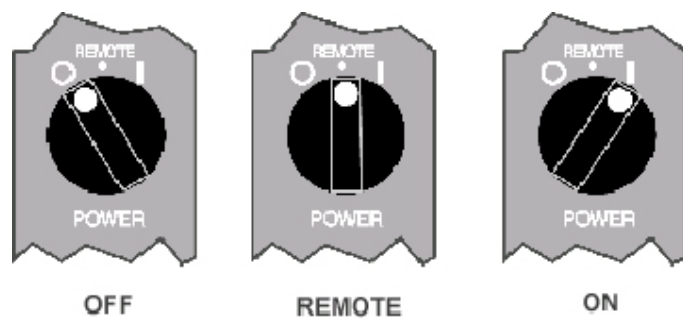


Diagram-1 Power Switch

The power input connector accepts DC voltage of 20~32V. Use the optional AC Power Adapter (DC24V) output. Use the optional battery system when AC power is not available. Contact your retail outlet for power supply options.

### 1.2.4(2) Rear Camera Control Touch Pad

The Rear Camera Control Touch Pad is located on the top of the **MEMRECAM** fx K3 DRP rear panel.

There are 12 keys and 8 LED as follows:

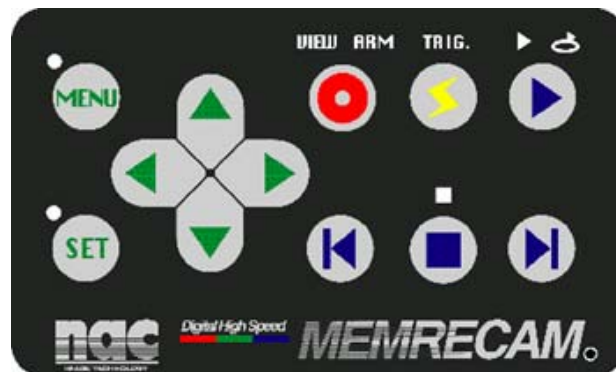


Diagram-2 Camera Control Touch Pad

#### ■ Setup Mode keys



**LEFT/RIGHT** keys (arrow keys)



**UP/DOWN** keys (arrow keys)



**MENU** key



**SET** key

#### ■ Setup Mode keys



**STOP** key



**PLAY** key



**REV STEP** key



**FWD STEP** key



**VIEW / ARM** key



**TRIGGER** key

■ LED (Near various keys)



**MENU** LED (Lit during MENU mode)



**STOP** LED (Lit during **READY** mode)



**VIEW / ARM** LED (Lit during **VIEW** or **ARM** modes)



**TRIGGER** LED (Lit during recording after trigger signal is received)



**PLAY / LOOP** LED (Lit during **PLAY** or **LOOP** modes)

- The following diagrams depict the recording and playback operation of the Rear Camera Control Touch Pad.

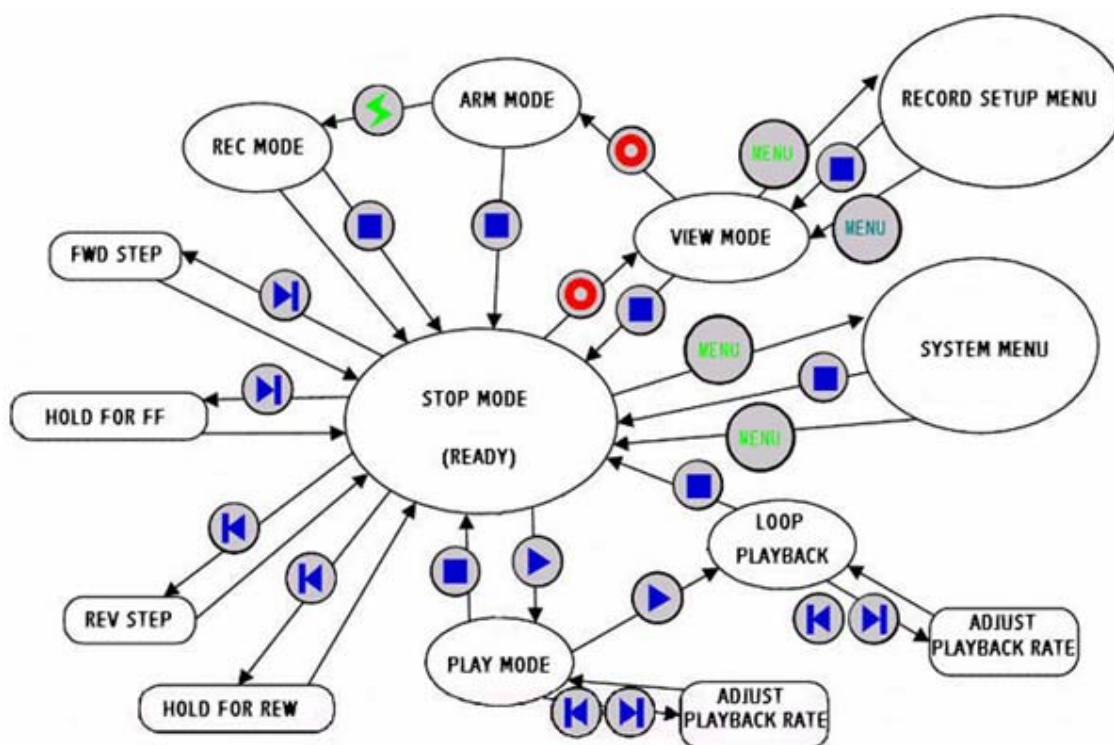


Diagram-3 Camera Control Touch Pad operation

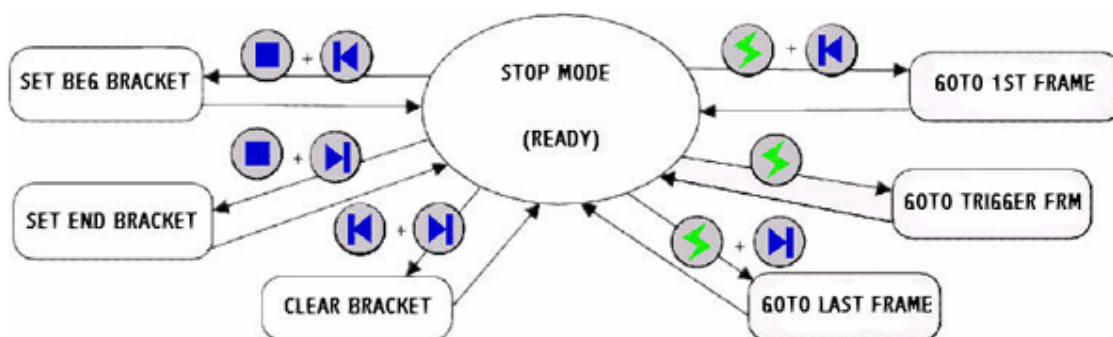


Diagram-4 Camera Control Touch Pad operation

■ Reset Switch

The Reset Switch is inside a small hole at the bottom right hand side of the Rear Camera Control Touch Pad. Gently insert and remove a thin wooden stick into the hole to access the SYSTEM SETUP MENU.



Diagram-5 Rear Camera Control Touch Pad

The **MEMRECAM** fx SYSTEM SETUP MENU displays the current firmware version, serial number, CID and other system settings. The following settings can be modified in this menu.

<b>IP address</b>	To change the DRP IP address and subnet mask
<b>Factory SET</b>	To reload original factory settings. Reboot to complete.
<b>CrashDump</b>	In the event of a system crash, the error information is stored to CF
<b>Reboot</b>	Reboot to restart the system. Rebooting from the SYSTEM SETUP MENU prevents images stored in memory from being lost.



SYSTEM SETUP MENU

### 1.2.4(3) Rear Connector Panel

There are eight types of input/output connectors in the Rear Connector Panel.



#### **D-VGA OUT**

Digital VGA output signal

Connects to a D-VGA compatible monitor, optional View Box or optional D-VGA Image Converter.



#### **AUX**

Strobe control and RS232C auxiliary port



#### **CONTROL**

Connect to the J-PAD2 remote control



#### **100B-T**

Ethernet connectivity. Use 100Base-T crossover cable to connect to control PC. When connecting to a 100Base-TX hub (optional) use a straight cable.



#### **FCAL**

Fibre Channel connectivity. Use a FCAL cable to connect to control PC or optional FCAL hub.



#### **REMOTE I/O**

Use special copper cable for connectivity to optional M-HUB.



#### **TRIG. IN**

External Trigger input (voltage or contact closure)



#### **CF**

Compact Flash storage media slot



### 1.3 J-PAD2 Operation

The J-PAD2 remote control connects to the CONTROL port on the **MEMRECAM** fx Rear Connector Panel. There are twelve keys on the J-PAD 2; the same as the Rear Camera Control Touch Pad (refer to section 1.2.4(2) for key descriptions). The Rear Camera Control Touch Pad and the J-PAD2 cannot be used at the same time. When the J-PAD2 is connected, key operation is done from the remote control pad. When the J-PAD2 is disconnected, the Rear Camera Control Touch Pad keys become effective. The DRP power switch cannot be operated from the J-PAD2.

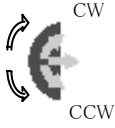
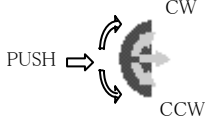
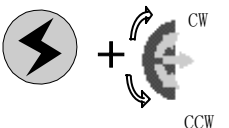
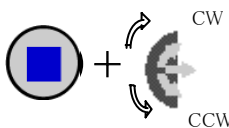
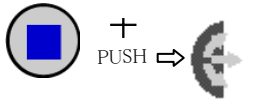
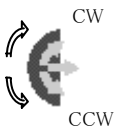
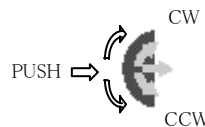
	During Playback ready mode	CW: Step forward CCW: Reverse Step
	During Playback ready mode	PUSH+CW: Fast forward PUSH+CCW: Rewind
	During Playback ready mode	CW: Jump to final frame CCW: Jump to top frame
	During Playback ready mode	CW: Set final playback frame CCW: Set start playback frame
	During Playback ready mode	PUSH: Cancel playback range setting
	During Playback or loop play	CW: Increase playback speed CCW: Decrease playback speed
	During Setup Mode	CW: Moves and sets right menu item or moves to the top of the menu CCW: Moves and sets left menu item or moves to the bottom of the menu PUSH: Switches top/bottom/left/right, executes function



Photo-6 J-PAD2

#### 1.4 Trigger Connector (External Trigger Input)

The Amphenol MS3116F8-4S four pin circular MIL connector is used to terminate the external trigger signal input cable (refer to External Trigger Input, section 4.1.3 for details). Connect the external signal input cable to the TRIG IN connector in the DRP Rear Connector Panel.



Photo-8 Amphenol MS3116F8-4S circular MIL connector

#### 1.5 AC Power Adapter (Optional)

The optional AC Power Adapter has been designed specifically for **MEMRECAM** fx series cameras. Do not use with other devices. It converts AC 100V~240V input to DC24V output. The DC power cable is terminated with a three pin circular MIL connector which connects to the DRP Power Panel. The AC input uses a standard power cable with a 3P plug.



Photo-9 AC Power Adapter



#### Warning



This device is dangerous due to the high voltage. Do not open the cover. When connecting to an outlet using a 3P-2P convertible plug, make sure the convertible plug is grounded. If used without it being grounded, electrical shock can be received from the **MEMRECAM** fx metal or other parts.

## 1.6 fxLink Software CD-ROM

Use the included fxLink software when operating the **MEMRECAM** fx from a control computer. For details on using the fxLink software, refer to the “fxLink Software User’s Manual”.

# 2

## ***MEMRECAM*** fx Basic Operation

## 2. Basic Operation

This section describes basic connectivity and record/playback operation of the **MEMRECAM** fx.

The **MEMRECAM** fx supports five connection methods between the control computer and the DRP (Digital Recording Processor).

1. CF (Compact Flash) card storage media (Record function only)
2. Ethernet connectivity to a Single **MEMRECAM** fx DRP
3. Fibre Channel connectivity to a single **MEMRECAM** fx DRP
4. Ethernet connectivity to multiple **MEMRECAM** fx DRP's
5. Fibre Channel connectivity to multiple **MEMRECAM** fx DRP's

**Note:** Ethernet and Fibre Channel connections cannot be used simultaneously.

### ■ PC hardware requirements to operate fx Link software

<b>PC</b>	IBM PC compatible (DOS/V), single processor
<b>CPU</b>	Pentium III 750 MHz or higher (with MMX) (Recommended Pentium IV 2.5GHz or higher, compression and display processing speed depends on CPU capability)
<b>Memory</b>	256MB RAM or higher (recommended 512MB or higher)
<b>Graphics</b>	Full color, 1024×768 resolution or higher (recommended 1280×1024 or higher)
<b>OS</b>	Windows NT 4.0 Service Pack 5 or higher, Windows 2000 Professional, Windows XP Professional, Internet Explorer 5.0 Service Pack 2 or higher
<b>Hard Disk</b>	Minimum 42MB of disk space for program, 512MB of disk space or higher recommended.
<b>Network</b>	Ethernet (IEEE8023u 100BASE-TX)
<b>CD Drive</b>	1 (for installation)

Compression and display processing speeds depend on CPU capability. There should be sufficient free disk space for data. Depending on the PC configuration and hardware version, fx Link may not operate well under conditions as listed above. (Consult your retail outlet for recommended PC systems).

**Note:** Refer to the fx Link software Operation Manuals for handling and operation of the control computer.

## 2.1 **MEMRECAM** fx System Connectivity and Applications

### 2.1.1 CF (Compact Flash) card storage media

Connect as shown in Diagram 1 before turning the **MEMRECAM** fx power on. The CF (Compact Flash) card is used after images have been recorded.

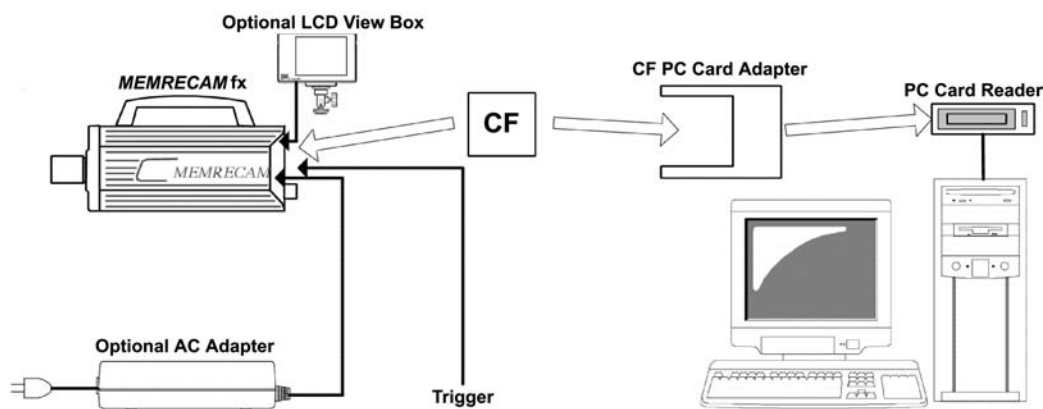


Diagram 1 CF Card application

The **MEMRECAM** fx supports CF (Compact Flash) card or a CF hard disk (micro drive) storage media to save previously photographed images and setup data (record and trigger settings). Depending on your particular control computer, an additional CF PC Card Adapter or PC Card Reader may be required. The **MEMRECAM** fx can be operated using the Rear Camera Control Touch pad or the J-PAD 2 remote control panel (Not shown in Diagram 1).

■ The following optional accessories can be used to display menu settings and image record/playback operation:

- LCD Viewfinder directly connected to **MEMRECAM** fx (standard D-VGA connector)
- LCD View Box directly connected to **MEMRECAM** fx (standard D-VGA connector)
- Use a readily available monitor compatible with NTSC, S Video or analog VGA signals converted from the **MEMRECAM** fx D-VGA signal by an Image Converter. (Not shown in Diagram 1)



### **Caution**

The optional LCD Viewfinder, LCD View Box and the optional Image Converter (Not shown in Diagram 1) must be connected to the **MEMRECAM** fx rear panel D-VGA OUT connector.

### 2.1.2 Ethernet connectivity to a single **MEMRECAM** fx DRP

Connect as shown in Diagrams 2 and 3 before turning the **MEMRECAM** fx power on. For proper operation ensure that the **MEMRECAM** fx DRP is configured for Ethernet connectivity (Refer to Section 3, System Setup).

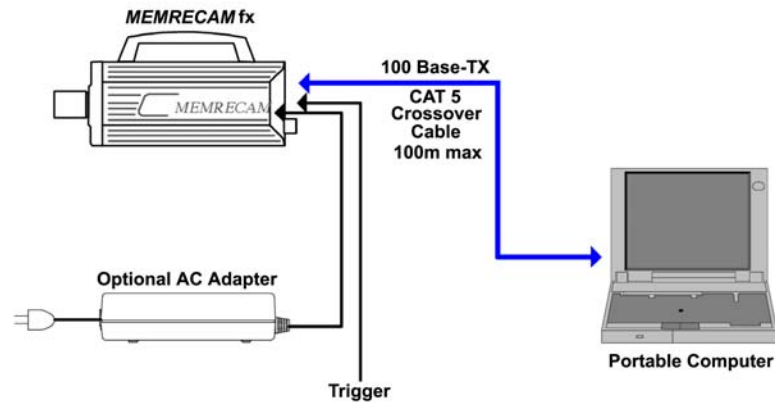


Diagram 2 Direct Ethernet Connectivity to a single **MEMRECAM** fx DRP

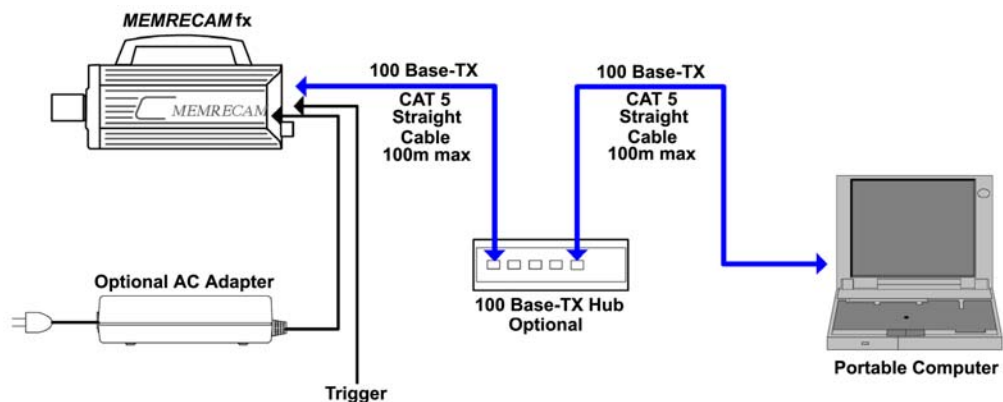


Diagram 3 Ethernet Connectivity via optional Ethernet Hub to a single **MEMRECAM** fx DRP

The **MEMRECAM** fx supports 100 Base-TX connectivity either direct to a control computer or via an optional 100 Base-TX Ethernet Hub. The control computer must have either Smart Capture or fx Link software installed to operate the DRP remotely. For direct connectivity a CAT 5 crossover cable is necessary. When the optional Ethernet Hub is used, straight CAT 5 cables are required. While connected to the control computer, the **MEMRECAM** fx can also be operated using the Rear Camera Control Touch Pad or the J-PAD 2 remote control panel (not shown).

### 2.1.3 Fibre Channel connectivity to a single **MEMRECAM** fx DRP

Connect as shown in Diagrams 4, 5 and 6 before turning the **MEMRECAM** fx power on. For proper operation ensure that the **MEMRECAM** fx DRP is configured for Fibre Channel connectivity (Refer to Section 3, System Setup).

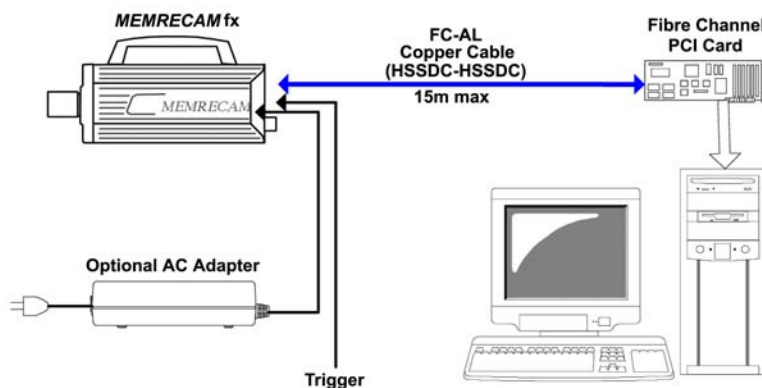


Diagram 4 Direct Fibre Channel Connectivity to a Single **MEMRECAM** fx DRP (Copper)

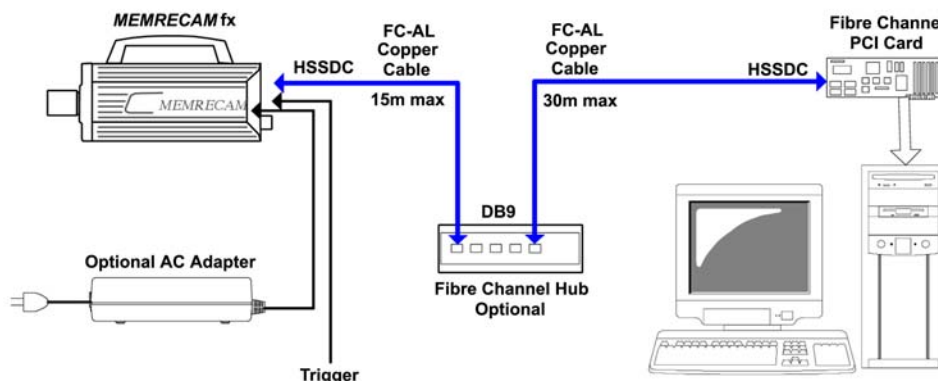


Diagram 5 Fibre Channel Connectivity via optional Fibre Channel Hub to a single **MEMRECAM** fx DRP (Copper)

The **MEMRECAM** fx supports Fibre Channel connectivity either direct to a control computer or via an optional Fibre Channel Hub. The control computer must have either Smart Capture or fx Link software installed to operate the DRP remotely. For direct connectivity use a FC-AL cable with HSSDC Connectors at both ends. The maximum cable length for a direct copper connection is 15m. When the optional Fibre Channel Hub is used, FC-AL cables with DB9 and HSSDC connectors at opposite ends are required. The combined maximum distance is 45m. While connected to the control computer, the **MEMRECAM** fx can also be operated using the Rear Camera Control Touch Pad or the J-PAD 2 remote control panel (not shown).



The optional Media Interface Adapter (MIA) system can be used where distances are greater than 45m (using FC Hub).

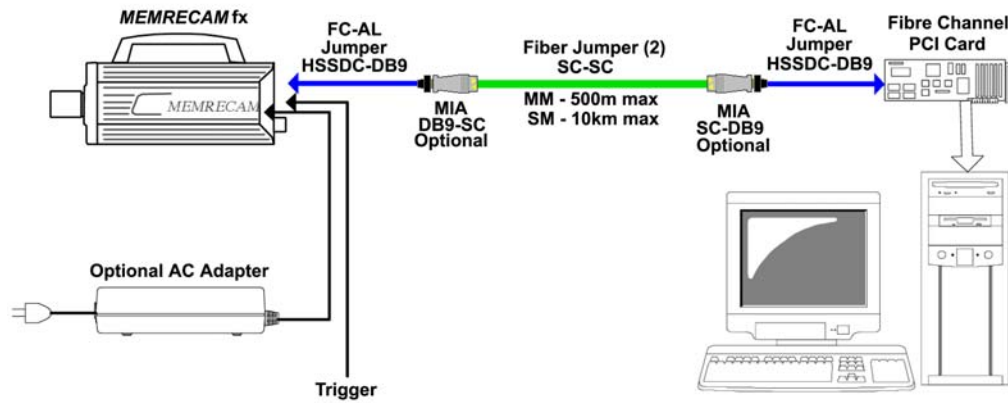


Diagram 6 Direct Fibre Channel Connectivity to a Single **MEMRECAM** fx DRP (Fiber Optic)

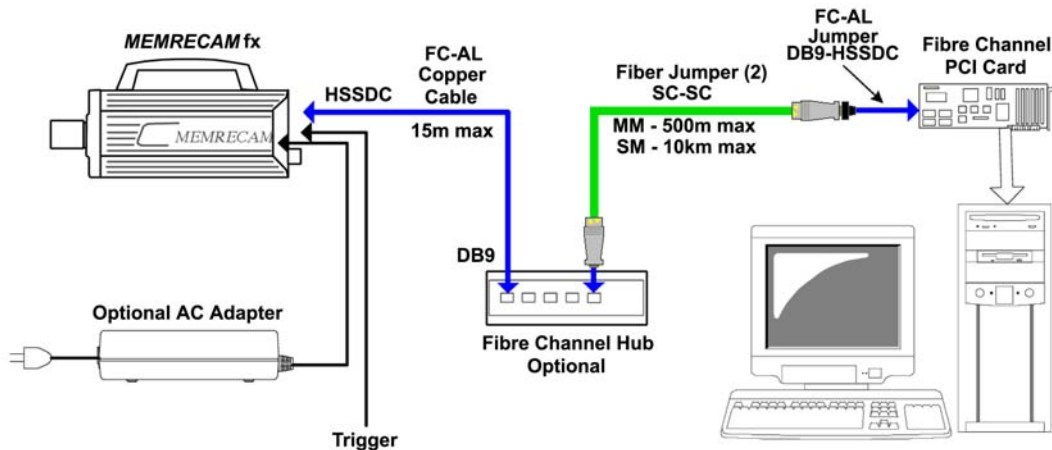


Diagram 7 Fibre Channel Connectivity via optional Fibre Channel Hub to a single **MEMRECAM** fx DRP (Fiber Optic)

The MIA system can transmit data using either Single Mode (SM) or Multi Mode (MM) fiber with SC connectors. The MIA lasers are fiber type specific. Please specify either SM or MM when ordering. The maximum jumper length using MM fiber is 500m. When using SM fiber the maximum jumper length increases to 10km. The MIA's are connected to the control computer and the FC-AL Hub using short jumpers with HSSDC and DB9 connectors at opposite ends. When the optional Fibre Channel Hub is used, the MIA connects directly to the FC-AL Hub DB9 connector. While connected to the control computer, the **MEMRECAM** fx can also be operated using the Rear Camera Control Touch pad or the J-PAD 2 remote control panel (not shown).

#### 2.1.4 Ethernet connectivity to multiple **MEMRECAM** fx DRP's

Connect as shown in Diagram 8 before turning the **MEMRECAM** fx power on. For proper operation ensure that the **MEMRECAM** fx DRP is configured for Ethernet connectivity (Refer to Section 3, System Setup).

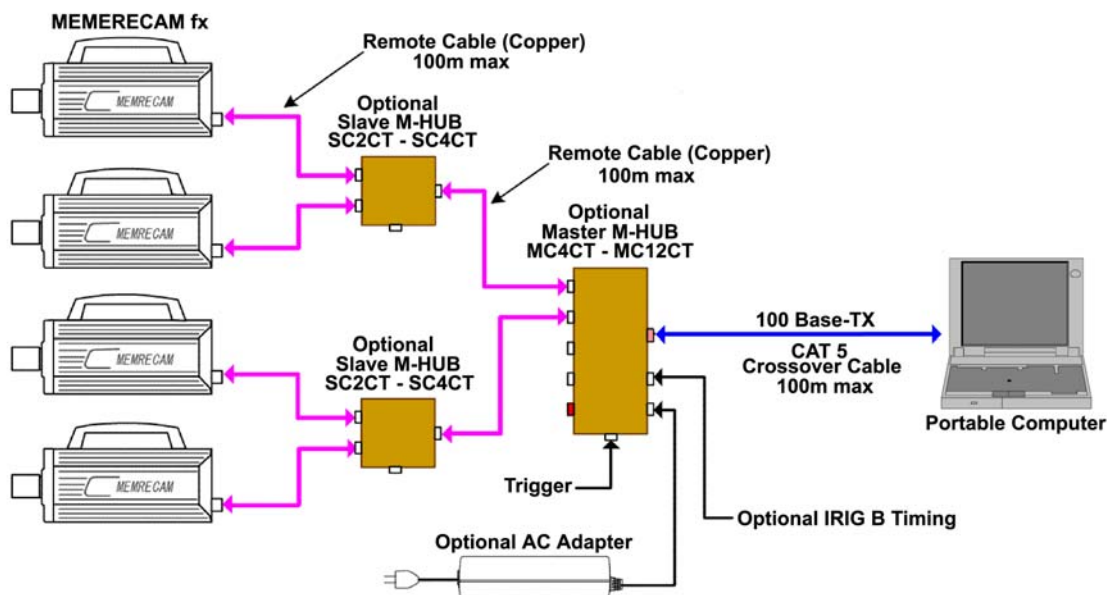


Diagram 8 Ethernet connectivity to four **MEMRECAM** fx DRP (AC Adapters for DRP's not shown)

Multiple **MEMRECAM** fx DRP's can be connected using the optional M-HUB system. The maximum number of DRP's that can be connected using the M-Hub system is 48. The M-HUB system features timing synchronization. The Master M-HUB internal clock sends a timing signal to all connected DRP's to lock on during image capture. Each DRP can be set to different recording speeds and still maintain synchronized image capture. When an external timing signal (e.g. IRIG B) is used, it takes precedence over the Master M-HUB internal clock.

Special copper Remote Cables (100m max) connect the Master M-HUB (up to 12 ports) directly to the **MEMRECAM** fx DRP's or to Slave M-HUB (up to 4 ports). If the Slave M-HUB is used, additional Remote Cables connect to the **MEMRECAM** fx DRP's. In the configuration shown the control computer has a single 100 Base-TX Ethernet connection to the Master M-HUB. The maximum cable length for a direct 100 Base-TX Ethernet copper connection to the control computer is 100m. For direct connectivity a CAT 5 crossover cable is necessary. When the optional Ethernet Hub (not shown) is used, straight CAT 5 cables are required. The control computer must have either Smart Capture or fx Link software installed to operate the DRP's remotely.

While connected to the control computer, the **MEMRECAM** fx can also be operated using the Rear Camera Control Touch Pad or the J-PAD 2 remote control panel (not shown).

### 2.1.5 Fibre Channel connectivity to multiple **MEMRECAM** fx DRP

Connect as shown in Diagrams 9 and 10 before turning the **MEMRECAM** fx power on. For proper operation ensure that the **MEMRECAM** fx DRP is configured for Fibre Channel connectivity (Refer to Section 3, System Setup).

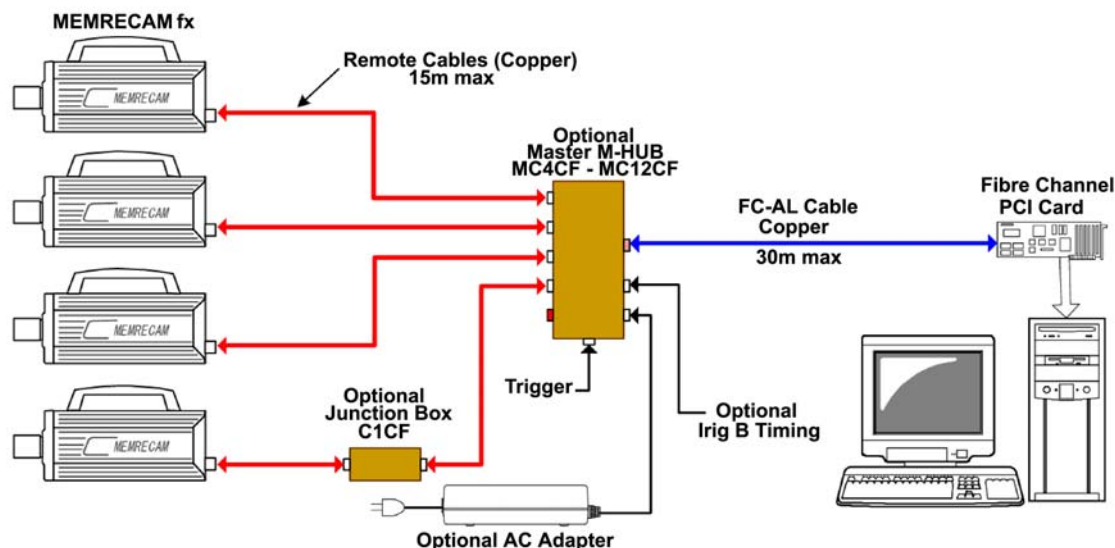


Diagram 9 Fibre Channel connectivity to four **MEMRECAM** fx DRP (AC Adapters for DRP's not shown)

Multiple **MEMRECAM** fx DRP's can be connected using the optional M-HUB system. The maximum number of DRP's that can be connected using the M-Hub system is 48. The M-HUB system features timing synchronization. The Master M-HUB internal clock sends a timing signal to all connected DRP's to lock on during image capture. Each DRP can be set to different recording speeds and still maintain synchronized image capture. When an external timing signal (e.g. IRIG B) is used, it takes precedence over the Master M-HUB internal clock.

Special copper Remote Cables (15m max) connect the Master M-HUB (up to 12 ports) directly to the **MEMRECAM** fx DRP's. If longer distance is needed, the optional Junction Box can be used to boost the signal. Using the Junction Box, the combined maximum distance is 30m. In the configuration shown the control computer has a single Fibre Channel connection to the Master M-HUB. The maximum cable length for a direct Fibre Channel copper connection to the control computer is 30m. When the optional Fibre Channel Hub (not shown) is used, FC-AL cables with DB9 and HSSDC connectors at opposite ends are required. With the optional Fibre Channel hub the combined maximum distance increases to 45m. The control computer must have either Smart Capture or fx Link software installed to operate the DRP's remotely.

While connected to the control computer, the **MEMRECAM** fx can also be operated using the Rear Camera Control Touch Pad or the J-PAD 2 remote control panel (not shown).

The optical Master and Slave M-HUB system can be used for distances greater than 30m between the Master M-HUB and the **MEMRECAM** fx DRP.

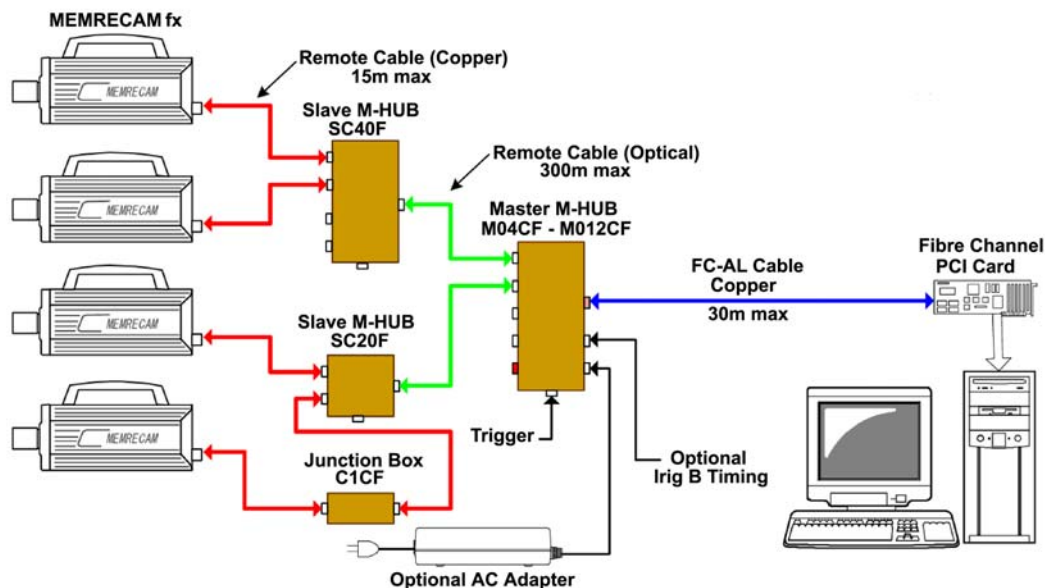


Diagram 10 Fibre Channel connectivity to multiple **MEMRECAM** fx DRP (AC Adapters for DRP's not shown)

The optical version of the Master M-HUB system transmits data using special optical cables to a maximum of 300m. The **MEMRECAM** fx DRP's can only connect to the special copper cables. When using the optical Master M-HUB, the optional Slave M-HUB is also needed to convert the signal from optical to copper. While connected to the control computer, the **MEMRECAM** fx can also be operated using the Rear Camera Control Touch pad or the J-PAD 2 remote control panel (not shown).

## 2.2 Basic **MEMRECAM** fx Operation

### 2.2.1 Power

As shown in Diagram 11, connect the AC adapter, J-PAD2 remote control and the optional LCD Viewfinder (or optional Image Converter with compatible monitor) to the **MEMRECAM** fx DRP and turn the power switch to the **ON** position.



Diagram 11

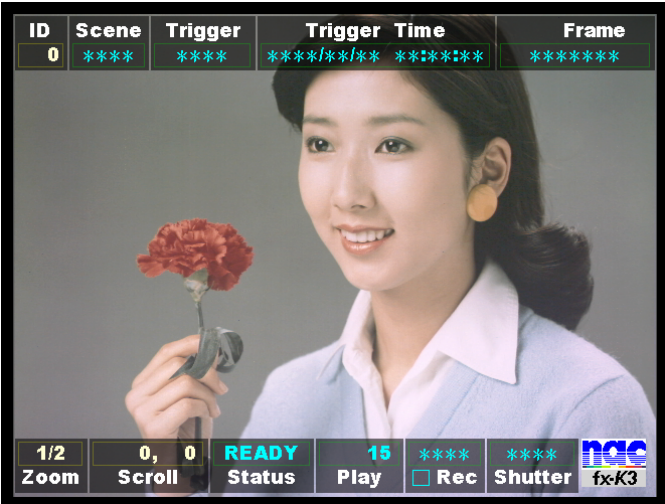
During the **MEMRECAM** fx startup sequence a long beeping sound will be heard as the auto diagnostics are conducted. The startup sequence will be completed in approximately 30 seconds and the Startup Screen 1 will appear in the center of the LCD View Box screen.



Startup Screen 1

■ **READY** Mode

Next, the Startup screen 2 will appear in the LCD Viewfinder screen. The **MEMRECAM** fx displays a test image and the IBOX will appear in **READY** mode. The IBOX operation will be described later. It displays the current **MEMRECAM** fx record/playback settings. These settings can also be changed with using the IBOX.



Startup Screen 2 (**READY** mode)

The IBOX **READY Status** appears indicating that the **MEMRECAM** fx is in **READY** mode. In addition, the Rear Camera Control Touch Pad and the J-PAD2 remote control **STOP** LED (green) is lit.

■ The IBOX Status box displays the current DRP mode as follows,



**READY Status** – DRP in **READY** mode



**VIEW Status** – DRP in **VIEW** mode



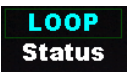
**ARM Status** – DRP in **ARM** mode



**REC Status** – DRP in **RECORD** mode



**PLAY Status** – DRP in **PLAY** mode



**LOOP Status** – DRP in **LOOP PLAY** mode

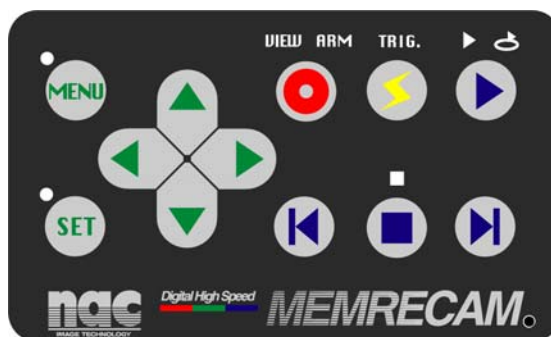
## 2.2.2 Initial Recording

Operation of the **MEMRECAM** fx DRP is done using the Rear Camera Control Touch Pad or the J-PAD2 remote control keys. The Rear Camera Control Touch Pad and the J-PAD2 cannot be used at the same time. When the J-PAD2 is connected, key operation is done from the remote control pad. When the J-PAD2 is disconnected, the Rear Camera Control Touch Pad keys become effective. Refer to the Smart Capture/fx Link software Operation Manuals for operation with a control computer.

For key movement descriptions refer to 1.2.3(1) Operation Panel.



J-PAD2 (operation panel)



MEMRECAM fx rear panel (operation panel)

■ The following keys are used to operate the record and playback functions of the **MEMRECAM** fx,



**VIEW/ARM** key



**TRIGGER** key



**PLAY** key



**STOP** key



**REV STEP** key

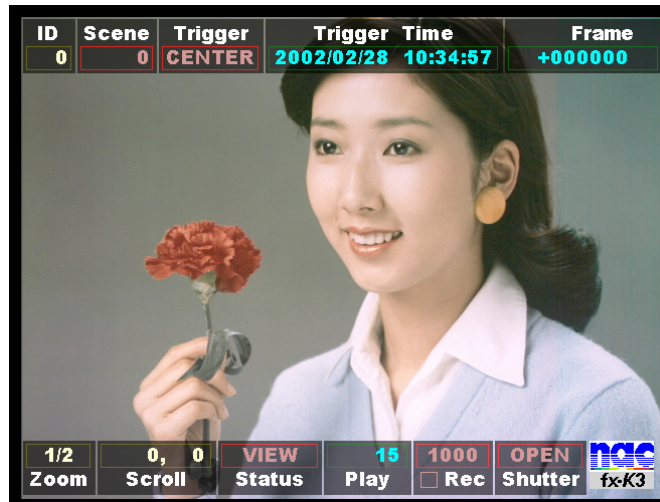


**FWD STEP** key



## ■ **VIEW** Mode

To enter the **VIEW** mode, the **MEMRECAM** fx DRP must be in **READY** mode. Press the **VIEW/ARM** key once to enter the **VIEW** mode. A confirmation beep will sound. The Rear Camera Control Touch Pad and the J-PAD2 remote control **VIEW** LED (continuous blue) will light. After approximately three seconds, the IBOX **Status** display will change from **READY** to **VIEW**.



**VIEW** mode display

While in **VIEW** mode, a live image is displayed in the LCD View Box. At this time adjustments to the **MEMRECAM** fx camera location, lens adjustments (focus, aperture, zoom) and record settings can be performed.

The **MEMRECAM** fx DRP stores the record settings from the previous session. When operating the **MEMRECAM** fx for the first time the IBOX displays the original factory settings as follows.



**Trigger: CENTER**



**Shutter (speed): OPEN**



**Rec (recording speed): 1000**

☐ **Frame size: 1280 Horizontal mode (1280x1024)\***

\* Frame size is shown by the small square before **Rec**



☐ **Frame size: 640 Horizontal mode (640x512)**

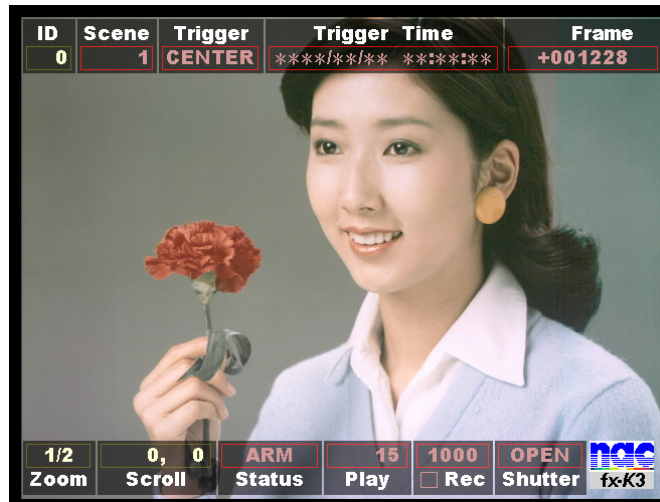


☒ **Frame size: VGA mode (640x480)**



## ■ ARM Mode

From the **VIEW** mode press the **VIEW/ARM** key once to enter the **ARM** mode. A confirmation beep will sound. The Rear Camera Control Touch Pad and the J-PAD2 remote control **ARM** LED changes from continuous blue to flashing red. After approximately three seconds, the IBOX **Status** display will change from **VIEW** to **ARM**.



**ARM** mode display

Once in **ARM** mode, the buffer begins to be updated by input from the camera. The percentage of memory used as a buffer is determined by the Trigger setting (e.g. **CENTER Trigger** equals 50% memory buffer). Any previous recording stored in memory is immediately deleted and replaced by the new recording. Simultaneously the live image continues to be displayed in the LCD View Box. At this time the **MEMRECAM** fx awaits a trigger signal input. The IBOX **Frame** (frame counter) box shows the value of remaining frames (recordable frames) available for recording after the trigger signal is received.



## ■ Trigger input and completion of recording

From the **ARM** mode press the **TRIGGER** key once. A confirmation beep will sound and recording will begin. The Rear Camera Control Touch Pad and the J-PAD2 remote control **ARM** LED stops flashing and the **TRIG** LED (yellow) will remain lit while recording. Simultaneously, the IBOX **Status** display changes from **ARM** to **REC** and the **Frame** (frame counter) box begins to count the recorded frames.

The IBOX **Status** display changes from **REC** to **READY** and the **Frame** box stops counting when recording is complete. A long beep will sound and the LCD View Box will display the image captured when the trigger input was received. The Rear Camera Control Touch Pad and the J-PAD2 remote control **STOP** LED (green) is lit. The image is now ready for playback (as a default, the image will begin to play from the trigger frame).

### 2.2.3 Playback of Recorded Images

#### ■ **PLAY** Mode

When recording is complete, the **MEMRECAM** fx returns to **READY** mode and the image is ready for playback (as a default, the image will begin to play from the trigger frame). Press the **PLAY** key once to enter the **PLAY** mode. A confirmation beep will sound and playback will begin. The Rear Camera Control Touch Pad and the J-PAD2 remote control **STOP** LED (green) turns off and the **PLAY** LED (green) is lit. The IBOX **Status** display changes from **READY** to **PLAY**. When final frame is reached, playback will stop and the **MEMRECAM** fx returns to **READY** mode.

#### ■ **LOOP PLAY** Mode

The **LOOP PLAY** mode plays the image in a continuous loop. While in **PLAY** mode press the **PLAY** key once again to enter **LOOP PLAY** mode (If the **PLAY** key is held down while in **READY** mode, it will automatically enter **LOOP PLAY** mode.) A confirmation beep will sound and loop playback will begin. The Rear Camera Control Touch Pad and the J-PAD2 remote control **PLAY** LED (green) turns off and the **LOOP PLAY** LED (green) is lit. The IBOX **Status** display changes from **PLAY** to **LOOP**. To stop loop playback press the **STOP** key and the **MEMRECAM** fx returns to **READY** mode.

#### ■ Navigation of Recorded Image

##### **Step Back to Previous Frame**

In **READY** mode, press the **REV STEP** key.

##### **Step Forward to Next Frame**

In **READY** mode, press the **FWD STEP** key.

##### **Fast Scroll Back**

In **READY** mode, hold down the **REV STEP** key.

##### **Fast Scroll Forward**

In **READY** mode, hold down the **FWD STEP** key.

##### **Jump to Trigger Frame**

In **READY** mode, press the **TRIGGER** key.

##### **Jump to Top Frame**

In **READY** mode, while pressing the **TRIGGER** key, then press the **REV STEP** key.

##### **Jump to Final Frame**

In **READY** mode, while pressing the **TRIGGER** key, then press the **FWD STEP** key.

##### **Decrease Playback Speed**

In **PLAY** mode, press the **REV STEP** key.

##### **Increase Playback Speed**

In **PLAY** mode, press the **FWD STEP** key.

#### ■ Setting Playback Range

To save time during playback and disk space when storing images, set the playback range to select only the area of interest. In **READY** mode, navigate to the first frame of the desired playback range. While holding down the **STOP** key, press the **REV STEP** key. A bracket **[** will appear on the left side of the IBOX **Frame** box.



The image shows a black rectangular box with the text **[ Frame** on the top line and **+000000** on the bottom line. The text is white, and the numbers are in a greenish-yellow color.

Then navigate to the last frame of the desired playback range. Hold down the **STOP** key, press the **FWD STEP** key. A bracket **]** will appear on the right side of the IBOX **Frame** box. The area of interest is now selected and is represented by the bracketed frame box **[ Frame ]**.



The image shows a black rectangular box with the text **[ Frame ]** on the top line and **+000009** on the bottom line. The text is white, and the numbers are in a greenish-yellow color.

#### ■ Cancellation of Playback Range Set

While in **READY** mode, press the **REV STEP** key and **FWD STEP** key simultaneously. The brackets will disappear from the IBOX **Frame** box.



The image shows a black rectangular box with the text **Frame** on the top line and **+000009** on the bottom line. The text is white, and the numbers are in a greenish-yellow color.

#### 2.2.4 Turning Power Off

While in **READY** mode, turn the **MEMRECAM** fx POWER switch to the OFF position (if not in **READY** mode press the **STOP** key). The current record/playback settings are saved for the next session.



#### Caution

When using a control computer with Smart Capture or fx Link software, close the programs first before turning the DRP power off. System errors in the control computer may occur when the connection is severed by the power loss.



#### Caution

Turning the power off deletes any image data recorded in RAM. If necessary, download image data to Compact Flash or control computer before turning power off. The optional Memory Backup Module can protect images from being deleted because of accidental power loss. Contact your retail outlet to inquire about the Memory Backup Module option.

3

***MEMRECAM*** fx

Setup

### 3. **MEMRECAM** fx Setup

Before beginning to setup the **MEMRECAM** fx DRP record and playback options, ensure that the AC adapter, the J-PAD2 remote control and the optional LCD View Box, LCD Viewfinder or Image Converter (with compatible monitor) are connected to the **MEMRECAM** fx DRP. The power switch should be in the ON position, after a few seconds the Startup Screen 2 appears and the IBOX **Status** box indicates that the DRP is in **READY** mode (Refer to Section 2.2.1, Basic **MEMRECAM** fx Operation, Power).

#### 3.1 IBOX (Information Box) and Screen Display

The IBOX is represented by the two menu bars above and below the image. The top bar contains the **ID**, **Scene**, **Trigger**, **Trigger Time** and **Frame** boxes. The bottom bar contains the **Zoom**, **Scroll**, **Status**, **Play**, **Rec** and **Shutter** boxes. The IBOX displays the current setting of the most common record and playback functions. After a recording these settings are stamped to the raw image file for future reference.



Startup Screen 2 (**READY** mode)

After initial startup of the **MEMRECAM** fx, the IBOX will display four asterisks (\*\*\*\*) in boxes where record settings have not been entered (e.g. **Scene**, **Trigger**, **Frame**, **Rec** and **Shutter**). During the setup operation, these asterisks will be replaced by the record setting values.

The **MEMRECAM** fx setup settings can be done using the Rear Camera Control Touch Pad or the J-PAD2 remote control keys. The Rear Camera Control Touch Pad and the J-PAD2 cannot be used at the same time. When the J-PAD2 is connected, key operation is done from the J-PAD2. When the J-PAD2 is disconnected, the Rear Camera Control Touch Pad keys become effective.

### 3.1.1 IBOX and Popup Menu

The **MEMRECAM** fx record and playback settings can be changed using the IBOX main display or the Popup Menu. The color of the IBOX display boxes changes depending on the DRP mode.

- The following keys are used to navigate and change the **MEMRECAM** fx IBOX settings,



**LEFT/RIGHT** keys (arrow keys)



**UP/DOWN** keys (arrow keys)



**MENU** key



**SET** key

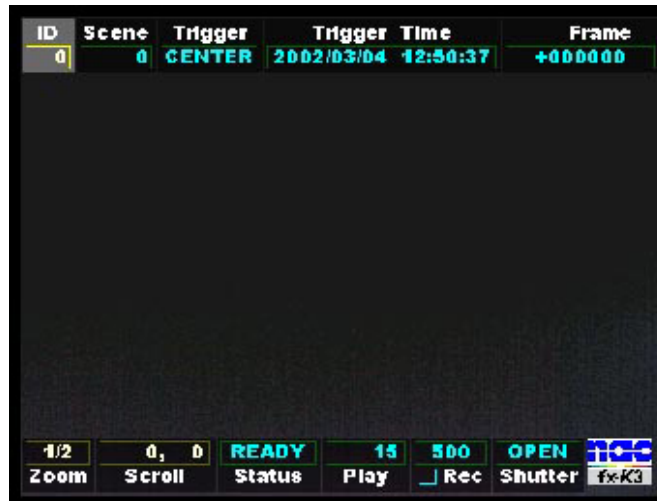
The IBOX display boxes are accessed by using the **LEFT/RIGHT** keys while in **READY** or **VIEW** modes. Once the particular box is selected, use either of the following methods to change the settings,

- 1) Press the **MENU** key and the Popup Menu appears. Use the **UP/DOWN** keys to select the item to be modified. Press the **SET** key to access the item to be modified. The **UP/DOWN** and **LEFT/RIGHT** keys are used to change the settings. Press the **SET** key to lock the value and return to the Popup Menu. Once finished making changes press the **MENU** key to exit back to the IBOX main display.
- 2) Press the **SET** key to modify the settings within the selected IBOX display box. Use the **UP/DOWN** keys to make the settings change. Once finished making changes press the **SET** key twice (when pressing it once, a white border surrounds the box allowing for it to be repositioned on the screen using the arrow keys) to exit back to the IBOX main display.

## ■ ID box

In the **ID** box, the **MEMRECAM** fx identification number can be set. It can be any number between 0 and 127. This identification number setting allows the user to easy identify the source DRP after the images are recorded.

To set the identification number select the **ID** box using the **LEFT/RIGHT** keys while in **READY** or **VIEW** modes.



IBOX display screen

- 1) To access the **ID** box Popup Menu press the **MENU** key once. In the popup menu, use the **UP/DOWN** keys to select the **ID** row and press the **SET** key to enable editing. Using the **UP/DOWN** keys enter any unique number between 0 and 127. Press the **SET** key to lock the value and return to the Popup Menu. Once finished making changes press the **MENU** key to exit back to the IBOX main display. The **ID** box now reflects the new value. The **ID** box Display options (ON, ON at READY, OFF) and screen Position (in pixels) can also be modified while in the Popup Menu.



**ID** box Popup Menu



- 2) To modify the settings from within the **ID** box press the **SET** key. Use the **UP/DOWN** keys to enter any unique number between 0 and 127.



Once finished making changes press the **SET** key twice (when pressing it once, a white border surrounds the box [as shown below] allowing for it to be repositioned on the screen using the arrow keys) to lock the value and return to the IBOX main display. Display options can only be set using the Popup Menu.



## ■ Scene box

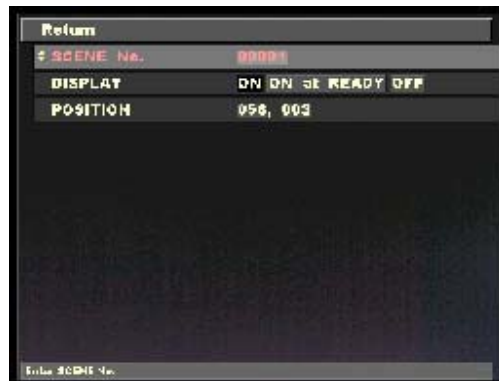
The **Scene** box displays the current scene number. It can be any number between 0 and 65535 and automatically increments on each recording. The scene number can be set to begin counting at any particular number or reset to zero.

To set the scene numbers select the **Scene** box using the **LEFT/RIGHT** keys while in **VIEW** mode.



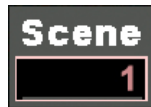
IBOX display screen

- 1) To access the **Scene** box Popup Menu press the **MENU** key once. In the popup menu, use the **UP/DOWN** keys to select the **SCENE No.** row and press the **SET** key to enable editing. Using the **UP/DOWN** keys enter any unique number between 0 and 65535 (by holding down the **UP/DOWN** keys the number changes by increments of 10). Press the **SET** key to lock the value and return to the Popup Menu. Once finished making changes press the **MENU** key to exit back to the IBOX main display. The **Scene** box now reflects the new value. The **Scene** box Display options (ON, ON at READY, OFF) and screen Position (in pixels) can also be modified while in the Popup Menu.



Scene box Popup Menu

- 2) To modify the settings from within the **Scene** box press the **SET** key. Use the **UP/DOWN** keys to enter any unique number between 0 and 65535.



Once finished making changes press the **SET** key twice (when pressing it once, a white border surrounds the box [as shown below] allowing for it to be repositioned on the screen using the arrow keys) to lock the value and return to the IBOX main display. Display options can only be set using the Popup Menu.



## ■ Trigger box

The **Trigger** box displays the current trigger setting. The percentage of memory used as a buffer during recording is determined by the trigger setting. There are five trigger settings,

<b>START</b>	The trigger point is about 5% after the top of memory
<b>CENTER</b>	The trigger point is at the center of the memory. (Factory default setting)
<b>END</b>	The trigger point is about 5% before the end of memory
<b>BURST</b>	No Memory Buffer. (Records only when trigger signal is present)
<b>CUSTOM (%)</b>	Any percentage of the Memory may be set as Buffer Ring and Delay Start.

**-100% DELAY Start**

**0% START Trigger**

**+50% CENTER Trigger**

**+100% END Trigger**

To modify the trigger settings select the **Trigger** box using the **LEFT/RIGHT** keys while in **VIEW** mode.



IBOX display screen

- 1) To access the **Trigger** box Popup Menu press the **MENU** key once. In the popup menu, use the **UP/DOWN** keys to select the **TRIGGER** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired trigger setting. Press the **SET** key to lock the value and return to the Popup Menu. Once finished making changes press the **MENU** key to exit back to the IBOX main display. The **Trigger** box now reflects the new value. The **Trigger** box Display options (ON, ON at READY, OFF) and screen Position (in pixels) can also be modified while in the Popup Menu.



**Trigger** box Popup Menu

- 2) To modify the settings from within the **Trigger** box press the **SET** key. Use the **UP/DOWN** keys to select the desired trigger setting.



Once finished making changes press the **SET** key twice (when pressing it once, a white border surrounds the box [as shown below] allowing for it to be repositioned on the screen using the arrow keys) to lock the value and return to the IBOX main display. Display options can only be set using the Popup Menu.



**Note:** When selecting the **CUSTOM** trigger setting use the **LEFT/RIGHT** keys to change the percentage value (by holding down the **LEFT/RIGHT** keys the percentage changes at increasing speed). Once finished making changes press the **SET** key twice to lock the value and return to the IBOX main display.



## ■ Zoom box

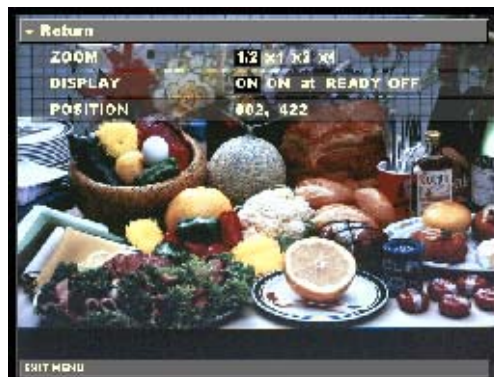
The **Zoom** box displays the current magnification setting (**x1/2**, **x1**, **x2**, and **x4**).

To modify the magnification settings select the **Zoom** box using the **LEFT/RIGHT** keys while in **READY** or **VIEW** modes.



IBOX display screen

- 1) To access the **Zoom** box Popup Menu press the **MENU** key once. In the popup menu, use the **UP/DOWN** keys to select the **ZOOM** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired zoom setting. Press the **SET** key to lock the value and return to the Popup Menu. Once finished making changes press the **MENU** key to exit back to the IBOX main display. The **Zoom** box now reflects the new value. The **Zoom** box Display options (ON, ON at READY, OFF) and screen Position (in pixels) can also be modified while in the Popup Menu.



**Zoom** box Popup Menu

- 2) To modify the settings from within the **Zoom** box press the **SET** key. Use the **UP/DOWN** keys to select the desired magnification value. Once finished making changes press the **SET** key twice (when pressing it once, a white border surrounds the box allowing for it to be repositioned on the screen using the arrow keys) to lock the value and return to the IBOX main display. The **Zoom** box display options can only be set using the Popup Menu.

**1/2**  
**Zoom**



**x1**  
**Zoom**



**x2**  
**Zoom**



**x4**  
**Zoom**





## ■ Scroll box

The **Scroll** box displays the horizontal and vertical position of the magnified section of the image shown while using **Zoom**. The X and Y coordinate originate from the upper left hand corner of the display. By changing the coordinates in the Scroll box the user can navigate around the image.

To modify the coordinate settings select the **Scroll** box using the **LEFT/RIGHT** keys while in **READY** or **VIEW** modes.



IBOX display screen

- 1) To access the **Scroll** box Popup Menu press the **MENU** key once. In the popup menu, use the **UP/DOWN** keys to select the **Scroll** row and press the **SET** key to enable editing of the Y (horizontal) coordinate. Use the **LEFT/RIGHT** to select the digit to be modified and the **UP/DOWN** keys to change its value. Press the **SET** key once to select the X (vertical) coordinate. Again use the **LEFT/RIGHT** to select the digit to be modified and the **UP/DOWN** keys to change its value. Press the **SET** key again to lock the value and return to the Popup Menu. Once finished making changes press the **MENU** key to exit back to the IBOX main display. The **Scroll** box now reflects the new coordinates and the image display changes to this new location. The **Scroll** box Display options (ON, ON at READY, OFF) and screen Position (in pixels) can also be modified while in the Popup Menu.



**Scroll** box Popup Menu



- 2) To navigate the image from within the **Scroll** box press the **SET** key. Use the **UP/DOWN** and **LEFT/RIGHT** keys to navigate around the image (by holding down arrow keys the coordinates change at increasing speed). Once finished making changes press the **SET** key twice (when pressing it once, a white border surrounds the box allowing for it to be repositioned on the screen using the arrow keys) to lock the value and return to the IBOX main display. Display options can only be set using the Popup Menu.

Use the **LEFT/RIGHT** keys to change the X (vertical) coordinate.



Use the **UP/DOWN** keys to change the Y (horizontal) coordinate.



## ■ Play box

The **Play** box displays the current playback speed in frames per second. The image playback can be forward or reverse.

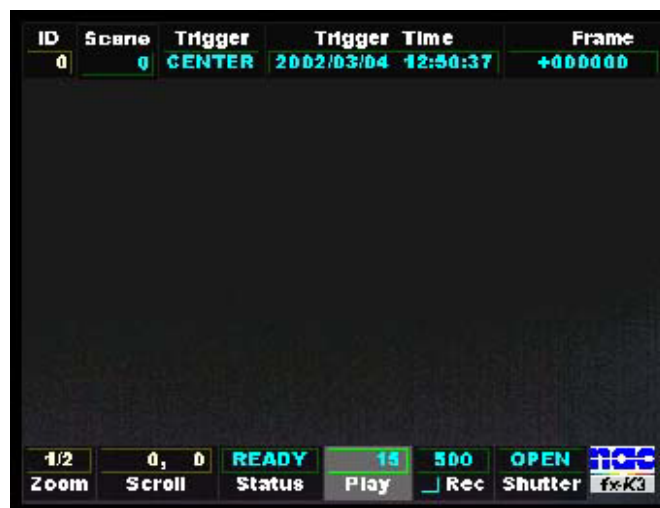
Forward playback increments in frames per second,

**1.0, 1.8, 3.7, 7.5, 15, 30, 60, 120, 240, 480, 960, 1920**

Reverse playback increments in frames per second,

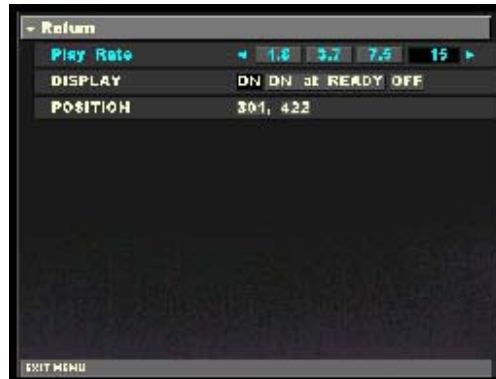
**-1920, -960, -480, -240, -120, -60, -30, -15, -7.5, -3.7, -1.8, -1.0**

To modify the playback speed settings select the **Play** box using the **LEFT/RIGHT** keys while in **READY** or **VIEW** modes.



IBOX display screen

- 1) To access the **Play** box Popup Menu press the **MENU** key once. In the popup menu, use the **UP/DOWN** keys to select the **Play Rate** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired playback speed setting. Press the **SET** key to lock the value and return to the Popup Menu. Once finished making changes press the **MENU** key to exit back to the IBOX main display. The **Play** box now reflects the new playback speed. The **Play** box Display options (ON, ON at READY, OFF) and screen Position (in pixels) can also be modified while in the Popup Menu.

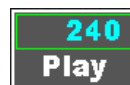


**Scroll** box Popup Menu

- 2) To set the playback speed from within the **Play** box press the **SET** key. Use the **UP/DOWN** keys to set the desired playback speed.



Once finished making changes press the **SET** key twice (when pressing it once, a white border surrounds the box [as shown below] allowing for it to be repositioned on the screen using the arrow keys) to lock the value and return to the IBOX main display. Display options can only be set using the Popup Menu.



## ■ Rec box

The **Rec** box displays the current recording speed and image resolution.

To modify the record settings select the **Rec** box using the **LEFT/RIGHT** keys while in **VIEW** mode.



IBOX display screen

- 1) To access the **Rec** box Popup Menu press the **MENU** key once. In the popup menu, use the **UP/DOWN** keys to select the **Frame Rate** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired recording speed. Press the **SET** key to lock the value and return to the Popup Menu. Repeat the process on the **Frame Size** row to set the image resolution. Once finished making changes press the **MENU** key to exit back to the IBOX main display. The **Rec** box now reflects the new recording speed and image resolution. The image resolution is represented by the small square left of the **Rec** label. The **Zoom** box Display options (ON, ON at READY, OFF) and screen Position (in pixels) can also be modified while in the Popup Menu.



**Scroll** box Popup Menu

- 2) To modify the record settings from within the **Scroll** box press the **SET** key. Use the **UP/DOWN** keys to modify the recording speed. The **LEFT/RIGHT** keys change the image resolution (notice changes in the small square located left of the **Rec** label).

☐ **Frame size:** 1280  
(1280x1024)



☐ **Frame size:** 640  
(640x512)



☒ **Frame size:** VGA  
(640x480)



Once finished making changes press the **SET** key twice (when pressing it once, a white border surrounds the box [as shown below] allowing for it to be repositioned on the screen using the arrow keys) to lock the value and return to the IBOX main display. Display options can only be set using the Popup Menu.



## ■ Shutter box

The **Shutter** box displays the current electronic shutter setting.

To modify the electronic shutter settings select the **Shutter** box using the **LEFT/RIGHT** keys while in **VIEW** mode.



IBOX display screen

- 1) To access the **Shutter** box Popup Menu press the **MENU** key once. In the popup menu, use the **UP/DOWN** keys to select the **Frame Rate** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired shutter setting. Press the **SET** key to lock the value and return to the Popup Menu. Once finished making changes press the **MENU** key to exit back to the IBOX main display. The **Shutter** box now reflects the new shutter speed. The **Shutter** box Display options (ON, ON at READY, OFF) and screen Position (in pixels) can also be modified while in the Popup Menu.



**Scroll** box Popup Menu

- 2) To modify the electronic shutter settings from within the **Shutter** box press the **SET** key.  
Use the **UP/DOWN** keys to modify the shutter speed.



Once finished making changes press the **SET** key twice (when pressing it once, a white border surrounds the box [as shown below] allowing for it to be repositioned on the screen using the arrow keys) to lock the value and return to the IBOX main display. Display options can only be set using the Popup Menu.



Use the **LEFT/RIGHT** keys to change the micro-second ( $\mu$  s) shutter speed setting.





## 3.2 Setup Menu

The **MEMRECAM** fx setup menus allow the user to fully customize the record, playback and system settings. There are three setup menus as follows.

### ■ RECORDING MENU (Record settings)

Used to fully customize the record settings including frame rate, frame size and trigger settings.

Enter the **RECORDING MENU** by pressing the **MENU** button while in **VIEW** mode.



**RECORDING MENU**

### ■ TOP MENU (Playback settings)

Used to fully customize the playback settings including GAIN and ENHANCE settings. Enter the **TOP MENU** by pressing the **MENU** button while in **READY** mode.



**TOP MENU**

### ■ SYSTEM MENU (Overall system settings)

Overall system options like ID number, Date/Time settings and whether or not to display the IBOX are set at the **SYSTEM MENU**. Enter the **SYSTEM MENU** from the **TOP MENU**.

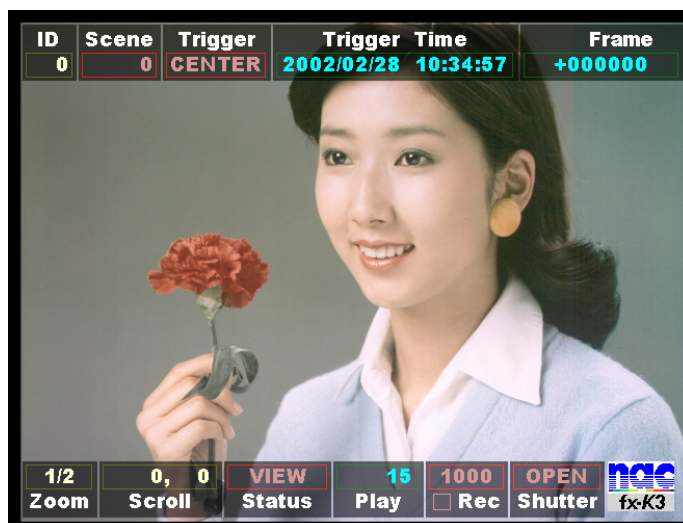


**SYSTEM MENU**



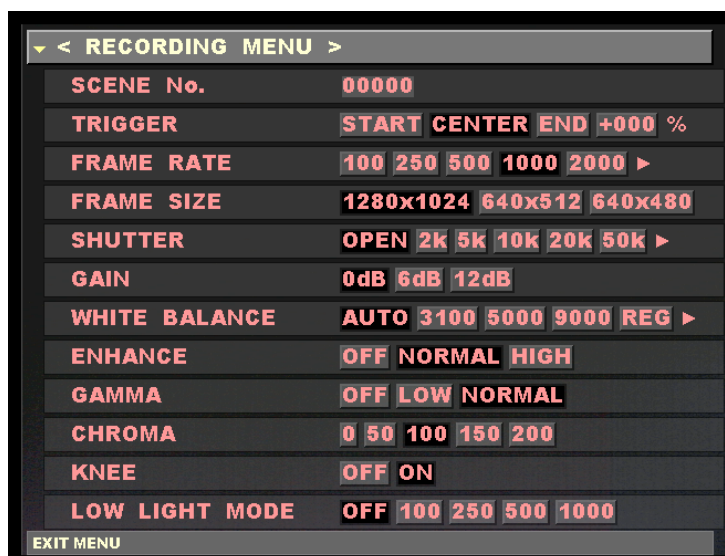
### 3.2.1 RECORDING MENU Setup

The **RECORDING MENU** administers settings related to recording. Enter the **RECORDING MENU** by pressing the **MENU** button while in **VIEW** mode.



Startup Screen 2 (**VIEW** mode)

The **RECORDING MENU** lettering is red in color. Use the **UP/DOWN** keys to select the desired row and press the **SET** key to enable editing. The **LEFT/RIGHT** keys are used to change the settings. Press the **SET** key to confirm the setting. Once finished making changes, press the **MENU** or **STOP** key to exit the setup menu and return to **VIEW** mode.

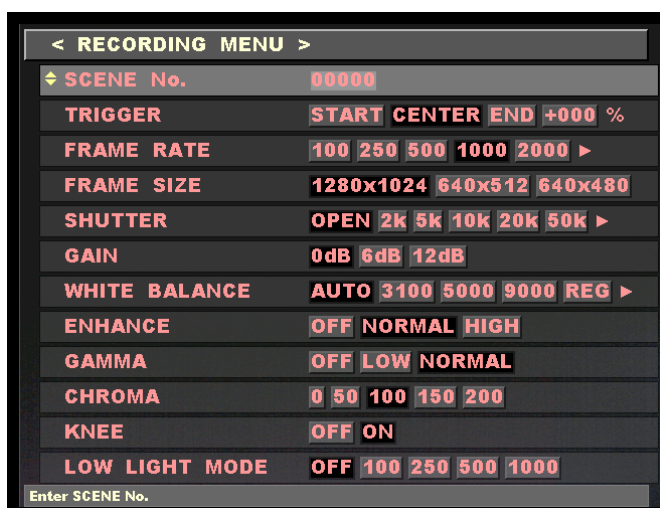


**RECORDING MENU**

## ■ SCENE No.

The **Scene No.** row displays the current scene number. It can be any number between 0 and 65535 and automatically increments on each recording. The scene number can be set to begin counting at any particular number or reset to zero.

In the **RECORDING MENU**, use the **UP/DOWN** keys to select the **SCENE No.** row and press the **SET** key to enable editing. Using the **UP/DOWN** keys enter any unique number between 0 and 65535 (by holding down the **UP/DOWN** keys the number changes by increments of 10). Press the **SET** key to lock the value and return to confirm the setting.



**RECORDING MENU - SCENE No.**

## ■ TRIGGER

The **TRIGGER** row displays the current trigger setting. The percentage of memory used as a buffer during recording is determined by the trigger setting. There are five trigger settings,

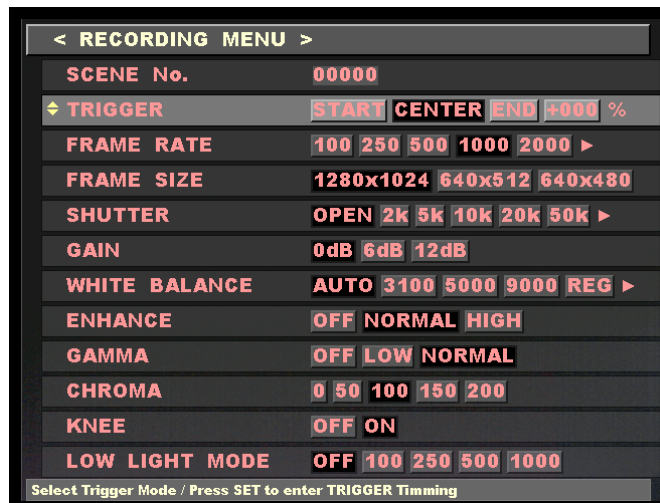
<b>START</b>	The trigger point is about 5% after the top of memory
<b>CENTER</b>	The trigger point is at the center of the memory. (Factory default setting)
<b>END</b>	The trigger point is about 5% before the end of memory
<b>BURST</b>	No Memory Buffer. (Records only when trigger signal is present)
<b>CUSTOM (%)</b>	Any percentage of the Memory may be set as Buffer

**-100% START Trigger**

**0% CENTER Trigger**

**+100% END Trigger**

In the **RECORDING MENU**, use the **UP/DOWN** keys to select the **TRIGGER** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired trigger setting. When selecting the **CUSTOM** trigger setting use the **LEFT/RIGHT** keys to change the percentage value (by holding down the **LEFT/RIGHT** keys the percentage changes at increasing speed). Press the **SET** key to confirm the setting.

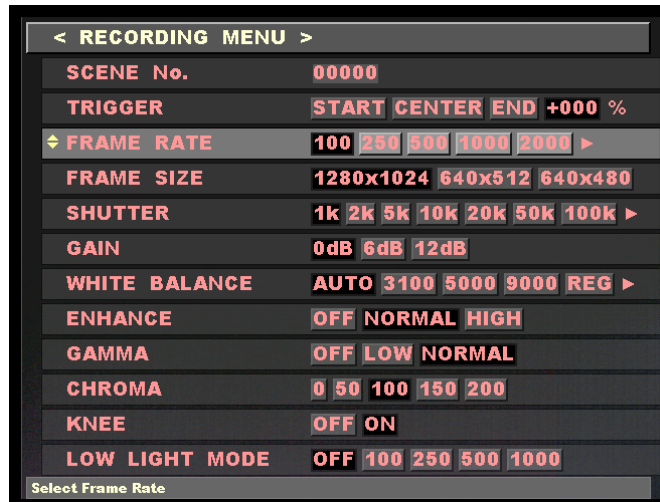


**RECORDING MENU - TRIGGER**

## ■ FRAME RATE

The **FRAME RATE** row displays the current recording speed in frames per second.

In the **RECORDING MENU**, use the **UP/DOWN** keys to select the **FRAME RATE** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired recording speed setting. Press the **SET** key to confirm the setting.

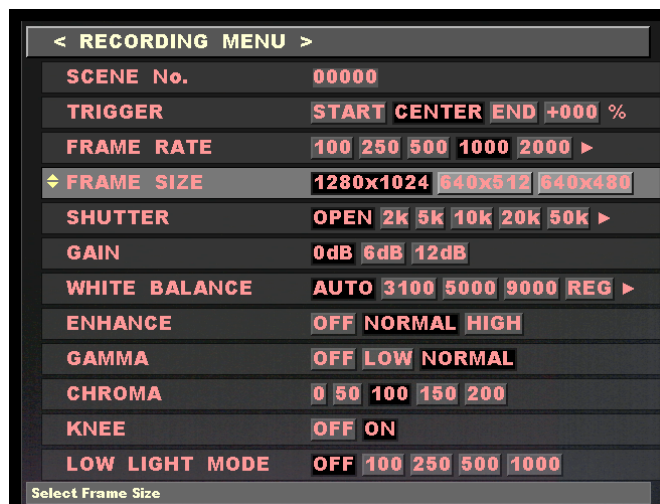


**RECORDING MENU - FRAME RATE**

## ■ FRAME SIZE

The **FRAME SIZE** row displays the current image resolution in pixels.

In the **RECORDING MENU**, use the **UP/DOWN** keys to select the **FRAME SIZE** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired image resolution setting. Press the **SET** key to confirm the setting.

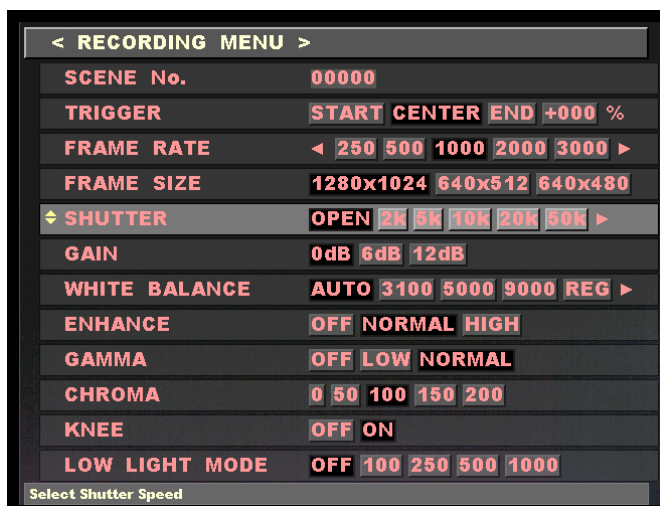


**RECORDING MENU - FRAME SIZE**

## ■ SHUTTER

The **SHUTTER** row displays the current electronic shutter setting.

In the **RECORDING MENU**, use the **UP/DOWN** keys to select the **SHUTTER** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired shutter speed (when selecting the micro-second ( $\mu$  s) shutter speed press the **SET** key again to enable editing and use the **UP/DOWN** keys to change value). Press the **SET** key to confirm the setting.



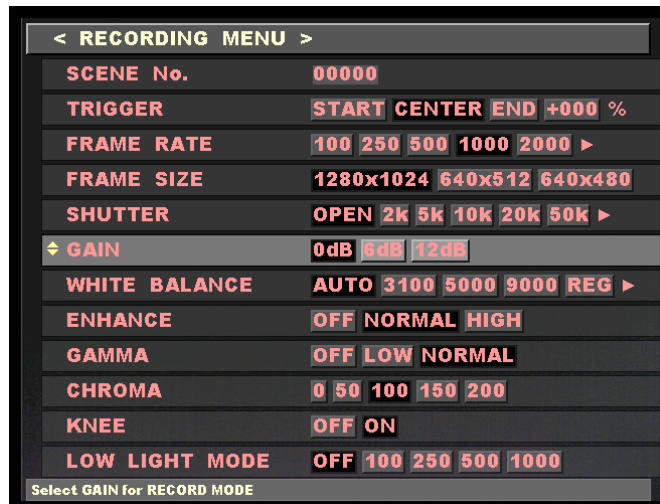
### RECORDING MENU - SHUTTER

## ■ GAIN

The **GAIN** feature enhances light sensitivity electronically. This is a post-processing enhancement. When an image is recorded, the raw data in memory is not affected by this setting. The setting can be changed later at playback.

<b>0dB</b>	Factory Setting
<b>6dB</b>	Increases light sensitivity by one lens stop compared to 0dB
<b>12dB</b>	Increases light sensitivity by two lens stops compared to 0dB

In the **RECORDING MENU**, use the **UP/DOWN** keys to select the **GAIN** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



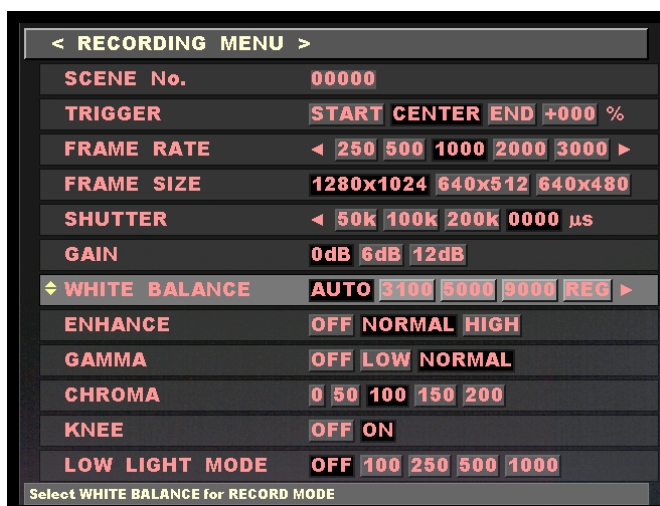
### RECORDING MENU - GAIN

## ■ WHITE BALANCE

The **WHITE BALANCE** row displays the current white balance setting of a color image. This is a post-processing enhancement. When an image is recorded, the raw data in memory is not affected by this setting. The setting can be changed later at playback.

<b>AUTO</b>	Automatic tracking mode (Factory Setting)
<b>3100</b>	Set at 3100K
<b>5000</b>	Set at 5000K
<b>9000</b>	Set at 9000K
<b>REG</b>	Register mode
<b>SET</b>	Current white balance register entry, automatically returns to REG when completed.

In the **RECORDING MENU**, use the **UP/DOWN** keys to select the **WHITE BALANCE** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



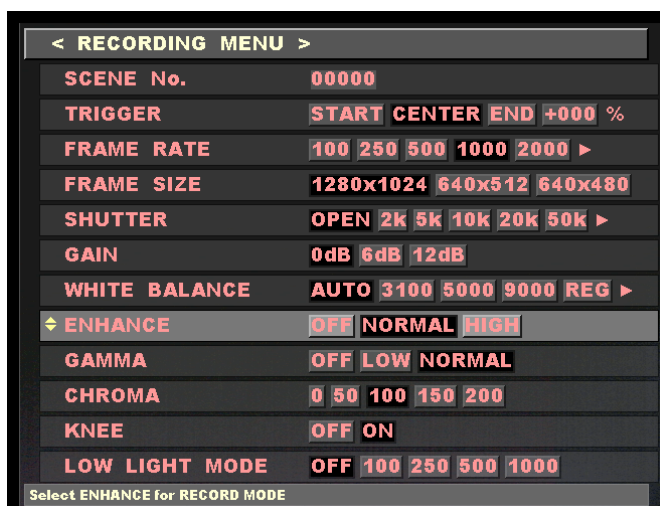
### RECORDING MENU - WHITE BALANCE

## ■ ENHANCE

The **ENHANCE** row displays the current edge sharpness setting. This is a post-processing enhancement. When an image is recorded, the raw data in memory is not affected by this setting. The setting can be changed later at playback.

<b>OFF</b>	No sharpness enhancement
<b>NORMAL</b>	Standard sharpness enhancement (Factory setting)
<b>HIGH</b>	High sharpness enhancement

In the **RECORDING MENU**, use the **UP/DOWN** keys to select the **ENHANCE** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



### RECORDING MENU - ENHANCE

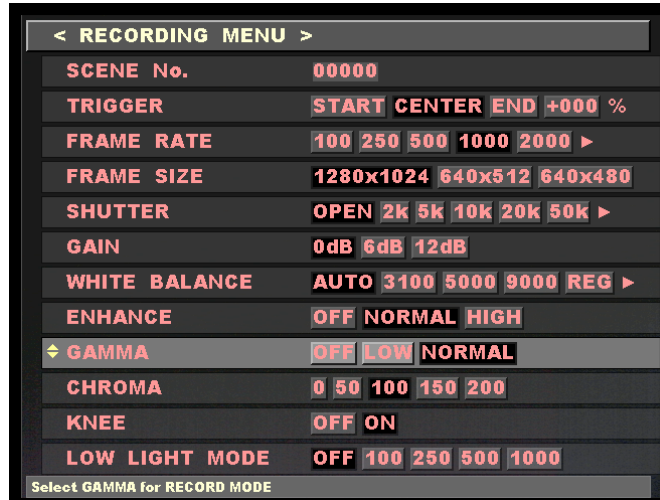


## ■ GAMMA

The **GAMMA** row displays the current gamma correction (gradation) setting. This is a post-processing enhancement. When an image is recorded, the raw data in memory is not affected by this setting. The setting can be changed later at playback.

<b>OFF</b>	No gamma correction (Gamma is about 1)
<b>NORMAL</b>	Low gamma correction
<b>HIGH</b>	Standard gamma correction (Factory setting)

In the **RECORDING MENU**, use the **UP/DOWN** keys to select the **GAMMA** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



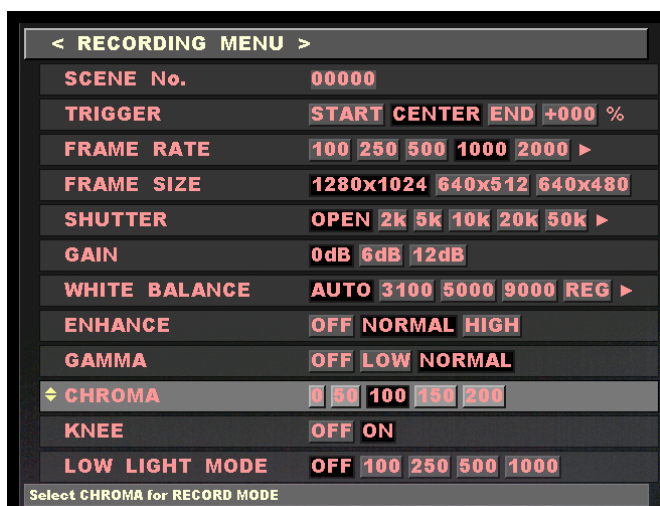
### RECORDING MENU - **GAMMA**

## ■ CHROMA

The **CHROMA** row displays the current color intensity (brilliance) setting. The higher the adjustment, the greater is the color intensity. This is a post-processing enhancement. When an image is recorded, the raw data in memory is not affected by this setting. The setting can be changed later at playback.

<b>0</b>	Set at 0% (Black/White image)
<b>50</b>	Set at 50%
<b>100</b>	Set at 100% (Standard color intensity)
<b>150</b>	Set at 150%
<b>200</b>	Set at 200%

In the **RECORDING MENU**, use the **UP/DOWN** keys to select the **CHROMA** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



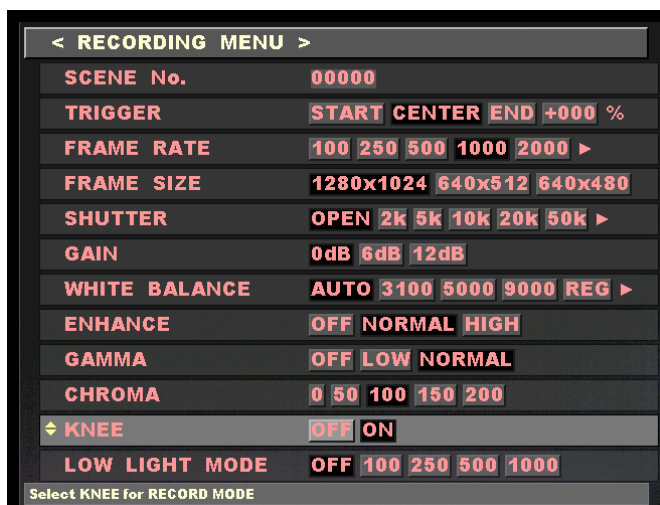
### RECORDING MENU - CHROMA

## ■ KNEE

The **KNEE** feature suppresses bright areas enhancing image definition. This is a post-processing enhancement. When an image is recorded, the raw data in memory is not affected by this setting. The setting can be changed later at playback.

<b>OFF</b>	Bright areas exceeding the fixed level will be clipped (No knee correction)
<b>ON</b>	Bright areas up to about 1-2 times the fixed level will be suppressed

In the **RECORDING MENU**, use the **UP/DOWN** keys to select the **KNEE** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



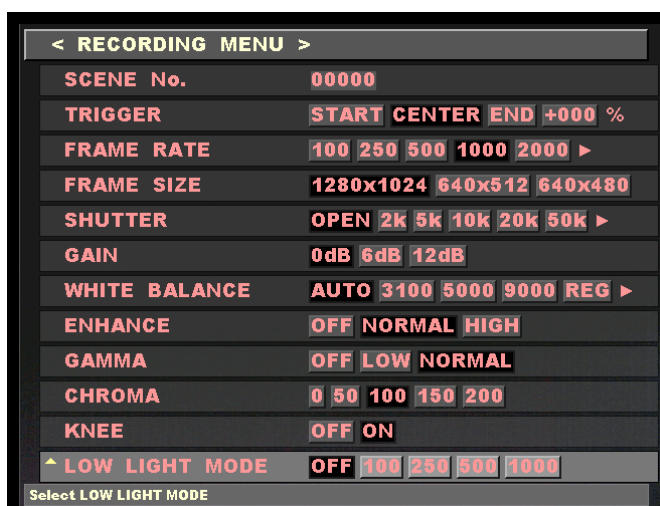
### RECORDING MENU - KNEE

## ■ LOW LIGHT MODE

The **LOW LIGHT MODE** allows for lens adjustments (e.g. focus) when using high frame rates and high shutter speeds. It may also be used to make such adjustments with supplemental lighting turned off. When in **LOW LIGHT MODE** the shutter is normally open. Depending on the brightness of the subject, the recording speed can be adjusted to 100, 250, 500, 1000 frames per second. Once the DRP is set to ARM mode the **LOW LIGHT MODE** is disabled and resumes recording in the previously set shutter and recording speed.

<b>OFF</b>	Normal mode instead of low light mode (image display for set shutter time)
<b>100</b>	1/100sec exposure
<b>250</b>	1/250sec exposure
<b>500</b>	1/500sec exposure
<b>1000</b>	1/1000sec exposure

In the **RECORDING MENU**, use the **UP/DOWN** keys to select the **LOW LIGHT MODE** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



**RECORDING MENU - LOW LIGHT MODE**

3.2.2 TOP MENU Setup

The **TOP MENU** administers settings related to playback. Enter the **TOP MENU** by pressing the **MENU** button while in **READY** mode.



Startup Screen 2 (**READY** mode)

The **TOP MENU** lettering is blue in color. Use the **UP/DOWN** keys to select the desired row and press the **SET** key to enable editing. The **LEFT/RIGHT** keys are used to change the settings. Press the **SET** key to confirm the setting. Once finished making changes, press the **MENU** or **STOP** key to exit the setup menu and return to **READY** mode.



**TOP MENU**

## ■ GAIN

The **GAIN** feature enhances light sensitivity electronically. This is a post-processing enhancement. When the image was recorded, the raw data in memory was not affected by this setting. The setting can now be changed at playback.

<b>0dB</b>	Factory Setting
<b>6dB</b>	Increases light sensitivity by one lens stop compared to 0dB
<b>12dB</b>	Increases light sensitivity by two lens stops compared to 0dB

In the **TOP MENU**, use the **UP/DOWN** keys to select the **GAIN** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



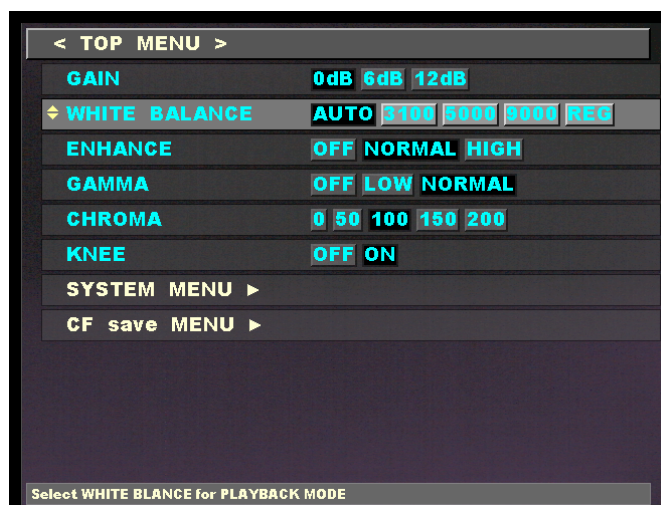
**TOP MENU - GAIN**

## ■ WHITE BALANCE

The **WHITE BALANCE** row displays the current white balance setting of a color image. This is a post-processing enhancement. When the image was recorded, the raw data in memory was not affected by this setting. The setting can now be changed at playback.

<b>AUTO</b>	Automatic tracking mode (Factory Setting)
<b>3100</b>	Set at 3100K
<b>5000</b>	Set at 5000K
<b>9000</b>	Set at 9000K
<b>REG</b>	Register mode
<b>SET</b>	Current white balance register entry, automatically returns to REG when completed.

In the **TOP MENU**, use the **UP/DOWN** keys to select the **WHITE BALANCE** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



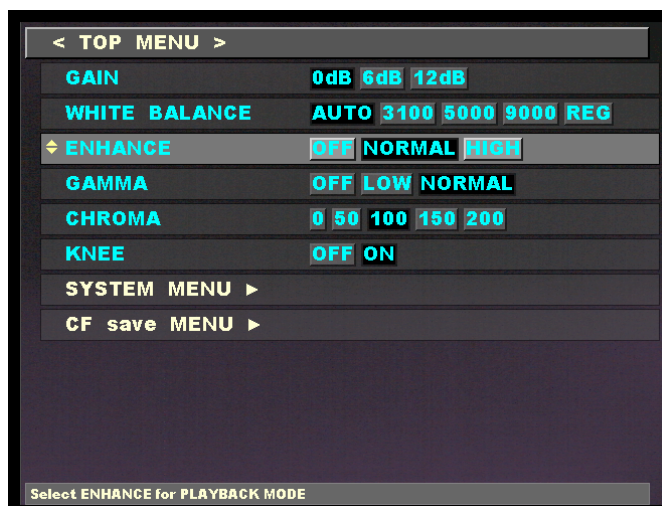
**TOP MENU - WHITE BALANCE**

## ■ ENHANCE

The **ENHANCE** row displays the current edge sharpness setting. This is a post-processing enhancement. When the image was recorded, the raw data in memory was not affected by this setting. The setting can now be changed at playback.

<b>OFF</b>	No sharpness enhancement
<b>NORMAL</b>	Standard sharpness enhancement (Factory setting)
<b>HIGH</b>	High sharpness enhancement

In the **TOP MENU**, use the **UP/DOWN** keys to select the **ENHANCE** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



**TOP MENU - ENHANCE**

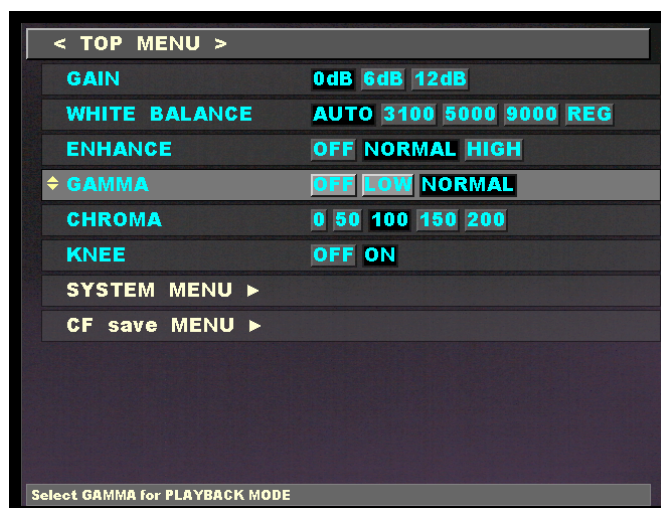


## ■ GAMMA

The **GAMMA** row displays the current gamma correction (gradation) setting. This is a post-processing enhancement. When the image was recorded, the raw data in memory was not affected by this setting. The setting can now be changed at playback.

<b>OFF</b>	No gamma correction (Gamma is about 1)
<b>NORMAL</b>	Low gamma correction
<b>HIGH</b>	Standard gamma correction (Factory setting)

In the **TOP MENU**, use the **UP/DOWN** keys to select the **GAMMA** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



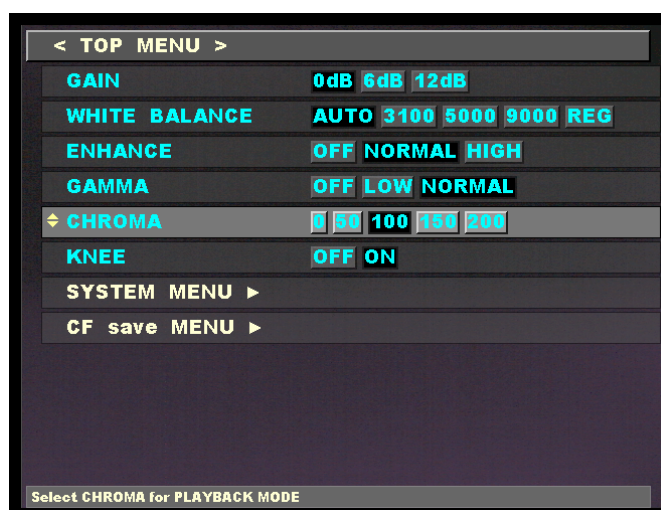
**TOP MENU - GAMMA**

## ■ CHROMA

The **CHROMA** row displays the current color intensity (brilliance) setting. The higher the adjustment, the greater is the color intensity. This is a post-processing enhancement. When the image was recorded, the raw data in memory was not affected by this setting. The setting can now be changed at playback.

<b>0</b>	Set at 0% (Black/White image)
<b>50</b>	Set at 50%
<b>100</b>	Set at 100% (Standard color intensity)
<b>150</b>	Set at 150%
<b>200</b>	Set at 200%

In the **TOP MENU**, use the **UP/DOWN** keys to select the **CHROMA** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



**TOP MENU - CHROMA**

## ■ KNEE

The **KNEE** feature suppresses bright areas enhancing image definition. This is a post-processing enhancement. When the image was recorded, the raw data in memory was not affected by this setting. The setting can now be changed at playback.

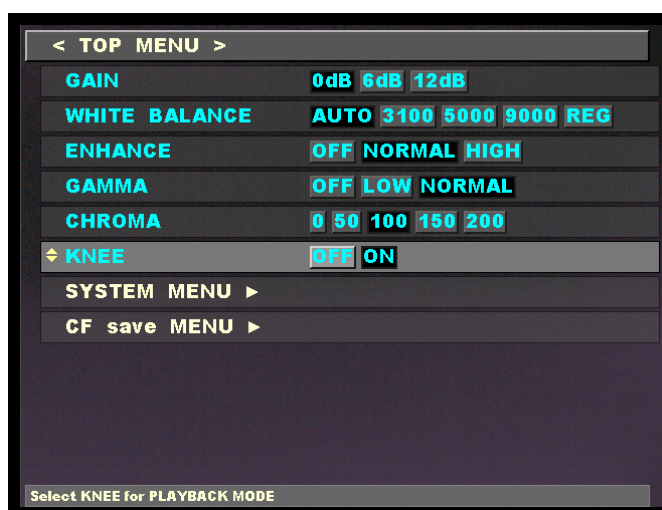
**OFF**

Bright areas exceeding the fixed level will be clipped (No knee correction)

**ON**

Bright areas up to about 1-2 times the fixed level will be suppressed

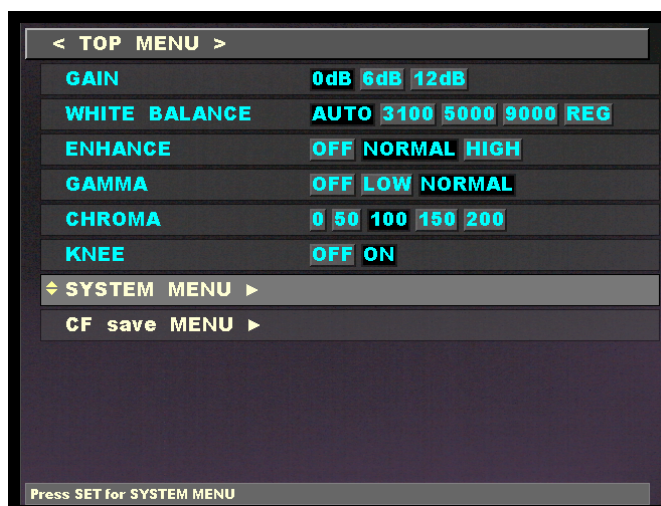
In the **TOP MENU**, use the **UP/DOWN** keys to select the **KNEE** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



**TOP MENU - KNEE**

## ■ SYSTEM MENU

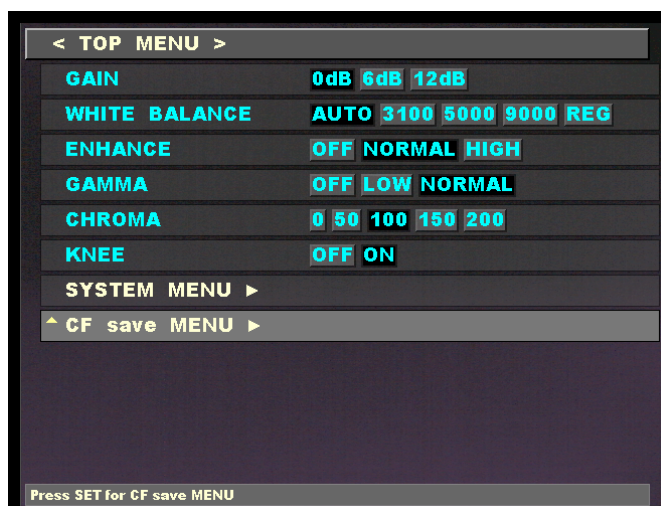
Enters the **SYSTEM MENU**, refer to section 3.2.2 for more details.



**TOP MENU - SYSTEM MENU**

## ■ SYSTEM MENU

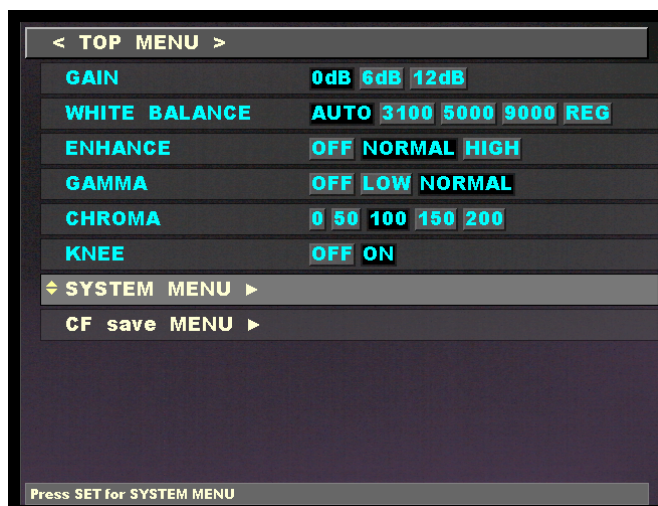
Enters the **CF save MENU** (Compact Flash), refer to section 3.4 for more details.



**TOP MENU – CF save MENU**

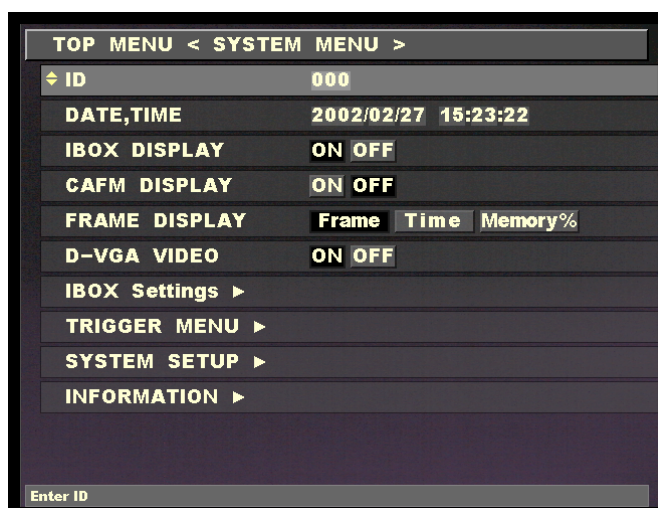
### 3.2.2 **SYSTEM MENU** Setup

Overall **MEMRECAM** fx system options are administered in the **SYSTEM MENU**. Enter the **SYSTEM MENU** by pressing the **RIGHT** key while in the **TOP MENU – SYSTEM MENU** row.



**TOP MENU**

The **SYSTEM MENU** lettering is yellow in color. Use the **UP/DOWN** keys to select the desired row and press the **SET** key to enable editing. The **LEFT/RIGHT** keys are used to change the settings. Press the **SET** key to confirm the setting. Once finished making changes, press the **MENU** or **STOP** key to exit the setup menu and return to **READY** mode.

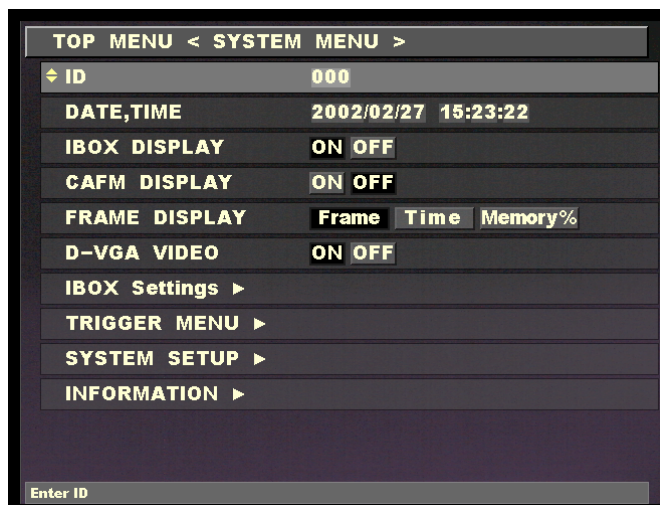


**SYSTEM MENU**

## ■ ID

In the **ID** row, the **MEMRECAM** fx identification number can be set. It can be any number between 0 and 127. This identification number setting allows the user to easily identify the source DRP after the images are recorded.

In the **SYSTEM MENU**, use the **UP/DOWN** keys to select the **ID** row and press the **SET** key to enable editing. Using the **UP/DOWN** keys enter any unique number between 0 and 127. Press the **SET** key to confirm the setting.



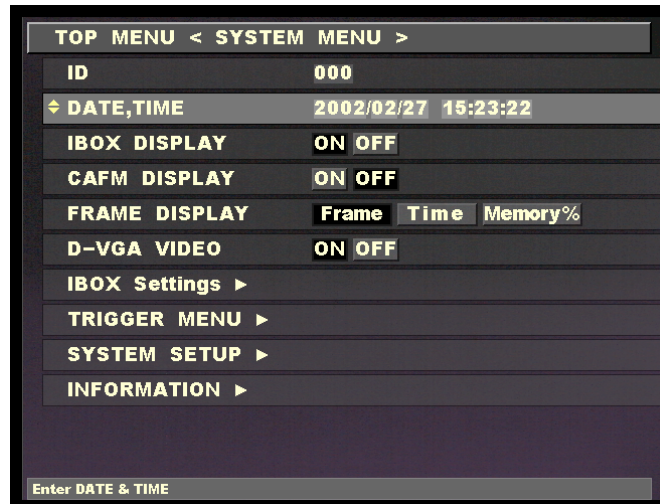
**SYSTEM MENU - ID**



## ■ DATE, TIME

In the **DATE, TIME** row, the normal date and time stamp can be set.

In the **SYSTEM MENU**, use the **UP/DOWN** keys to select the **DATE, TIME** row and press the **SET** key to enable editing. Use the **UP/DOWN** keys to enter the current year and press the **SET** key to confirm the setting. Repeat the process for the remaining (day, hour, minute, second) fields and press the **SET** key to confirm each setting.

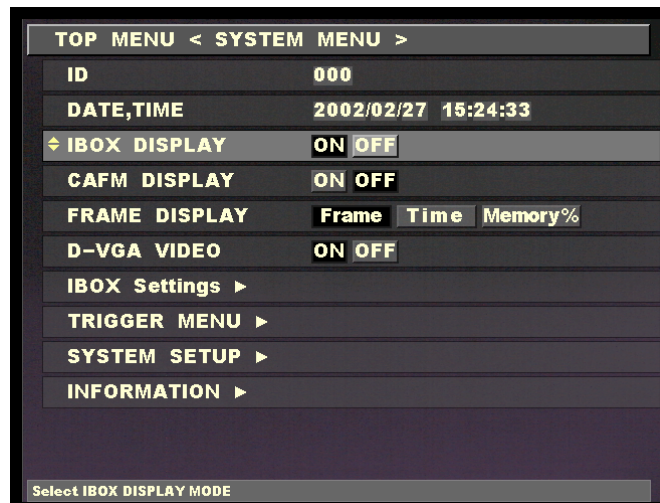


**SYSTEM MENU – DATE, TIME**

## ■ IBOX DISPLAY

In the **IBOX DISPLAY** row, the IBOX can be turned on or off.

In the **SYSTEM MENU**, use the **UP/DOWN** keys to select the **IBOX DISPLAY** row and press the **SET** key to enable editing. Use the **LEFT/RIGHT** keys to turn the IBOX on or off. Press the **SET** key to confirm the setting.

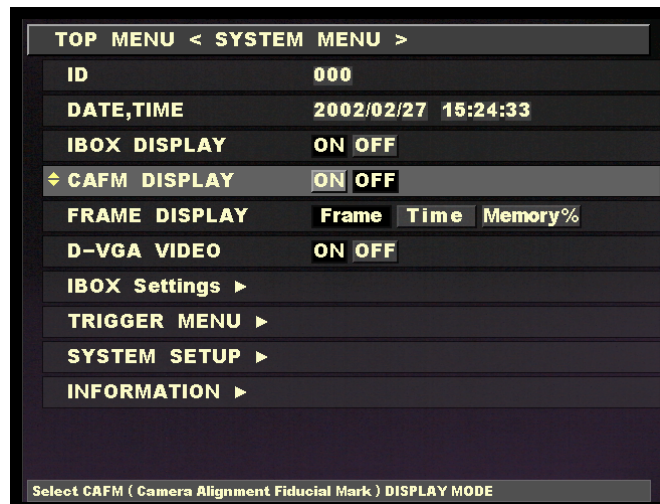


**SYSTEM MENU – IBOX DISPLAY**

## ■ CAFM DISPLAY

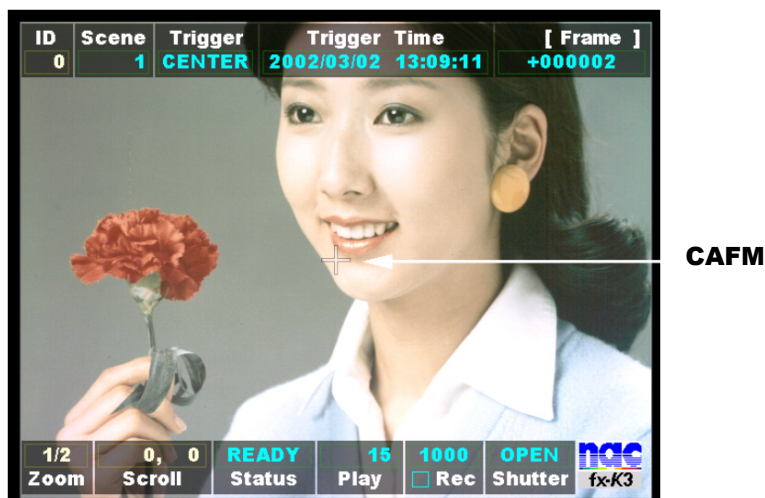
In the **CAFM DISPLAY** row, the CAFM (Camera Alignment Fiducial Mark) can be turned ON or OFF. The CAFM is used for adjusting the camera before recording. The CAFM cross is not displayed in a previously recorded image.

In the **SYSTEM MENU**, use the **UP/DOWN** keys to select the **IBOX DISPLAY** row and press the **SET** key to enable editing. Use the **LEFT/RIGHT** keys to turn the IBOX ON or OFF. Press the **SET** key to confirm the setting.



### SYSTEM MENU – CAFM DISPLAY

When the **CAFM DISPLAY** is set to the ON position a cross is displayed in the center of the image.



### Startup Screen 2 (READY mode) – CAFM

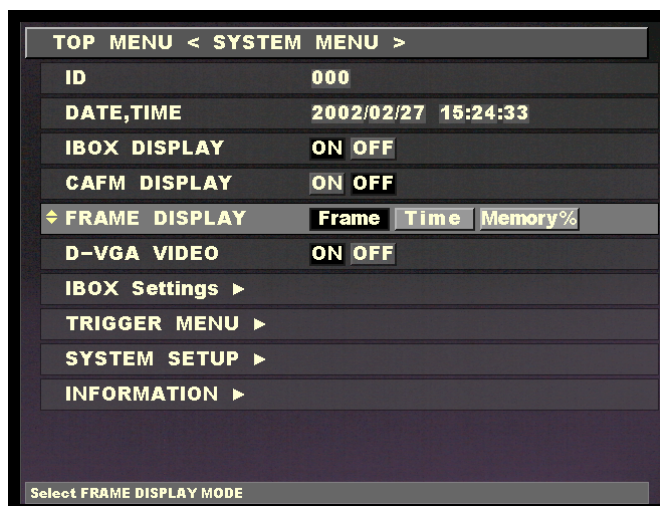


## ■ FRAME DISPLAY

The IBOX **Frame** counter can be set to display its contents in frame numbers, time or percentage of memory used / remaining. The desired setting can be selected in the **FRAME DISPLAY** row.

<b>Frame</b>	Counter set to display frame numbers
<b>Time</b>	Counter set to display minutes and seconds
<b>Memory %</b>	Counter set to display percentage of memory used

In the **SYSTEM MENU**, use the **UP/DOWN** keys to select the **FRAME DISPLAY** row and press the **SET** key to enable editing. Using the **LEFT/RIGHT** keys select the desired setting. Press the **SET** key to confirm the setting.



### SYSTEM MENU – FRAME DISPLAY

## ■ D-VGA VIDEO

In the **D-VGA VIDEO** row, the D-VGA video output port can be turned ON or OFF.

In the **SYSTEM MENU**, use the **UP/DOWN** keys to select the **D-VGA VIDEO** row and press the **SET** key to enable editing. Use the **LEFT/RIGHT** keys to turn the D-VGA video output port ON or OFF. Press the **SET** key to confirm the setting.

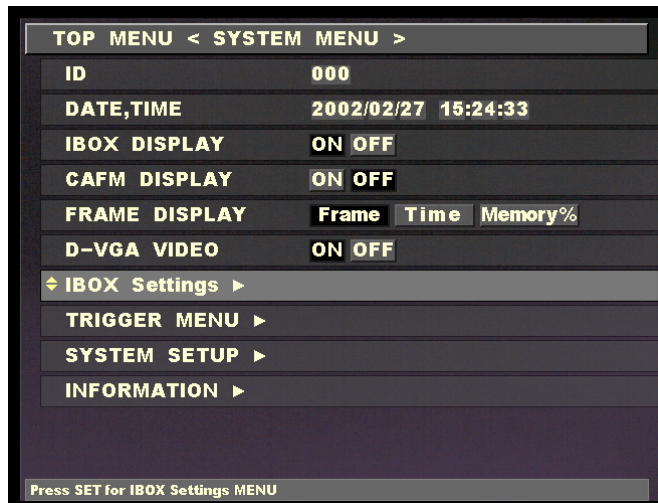


**SYSTEM MENU – D-VGA VIDEO**

## ■ IBOX Settings

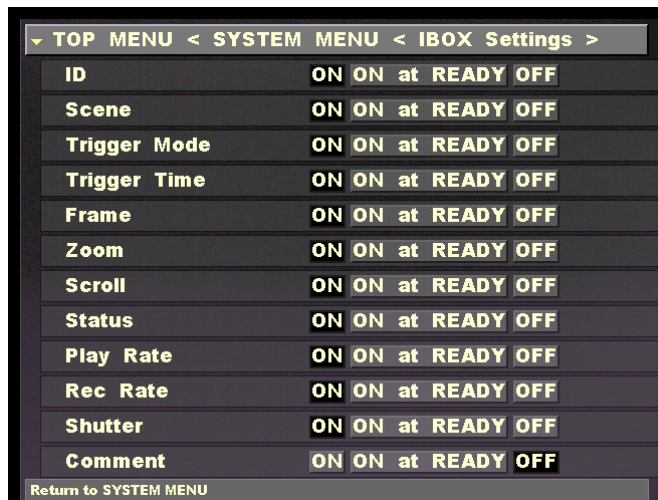
The **IBOX Settings** row opens the IBOX Settings Sub Menu. In the IBOX Settings Sub Menu each display box can be individually turned ON or OFF.

In the **SYSTEM MENU**, use the **UP/DOWN** keys to select the **IBOX Settings** row and press the **LEFT** key to enter the Sub Menu.



**SYSTEM MENU – IBOX Settings**

In the **IBOX Settings** Sub Menu, use the **UP/DOWN** keys to select the desired row and press the **SET** key to enable editing. Use the **LEFT/RIGHT** keys to turn the display box ON or OFF. Press the **SET** key to confirm the setting. Once finished making changes press the **LEFT** key to return to the **SYSTEM MENU**.



**IBOX Settings Sub Menu**

## ■ TRIGGER MENU

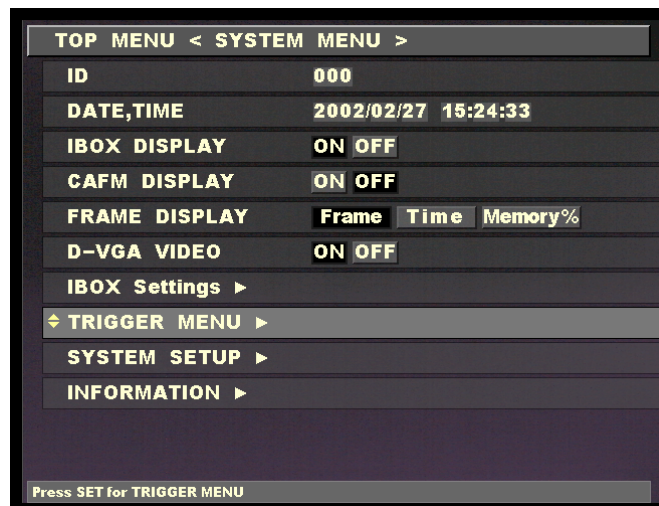
The **TRIGGER MENU** row opens the trigger settings Sub Menu (Refer to External Trigger Input, Section 4.1.3). The TRIGGER I/F defines the external trigger signal type.

**TRIGGER I/F**      **Voltage:** Contact or 5V CMOS (Schmidt trigger) input

**Current:** Current loop trigger input

**EVENT FRAME**      When feature is ON, an event mark is recorded at every external trigger signal

In the **SYSTEM MENU**, use the **UP/DOWN** keys to select the **TRIGGER MENU** row and press the **LEFT** key to enter the Sub Menu.



### SYSTEM MENU – IBOX Settings

In the **TRIGGER MENU**, use the **UP/DOWN** keys to select the desired row and press the **SET** key to enable editing. Use the **LEFT/RIGHT** keys to select the desired setting. Press the **SET** key to confirm the setting. Once finished making changes press the **LEFT** key to return to the **SYSTEM MENU**.



### IBOX Settings Sub Menu

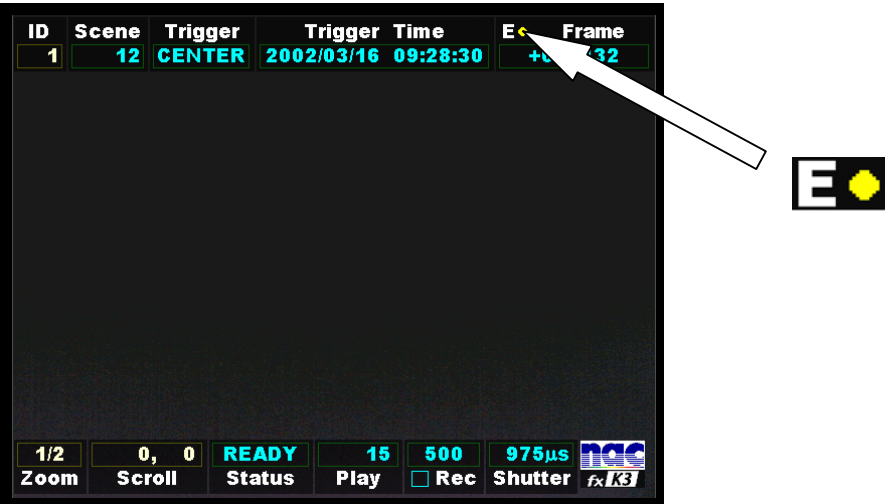
The **EVENT FRAME** feature records a mark at the particular frames where an external trigger signal is received. The first trigger signal is recorded as the original trigger frame. All trigger signals following the original are marked as event trigger frames for future reference.

When the **EVENT FRAME** feature is ON a capital **E** is shown in the IBOX between **TRIGGER Time** and **FRAME**.



Startup Screen 2 (**READY** mode)

When the recorded image is being reviewed, a yellow mark appears to the right of the capital **E** identifying this particular frame as an event trigger frame. The original trigger frame is not marked; instead the IBOX **Frame** counter is set to zero. Every external trigger input after the original trigger will cause a yellow mark to be recorded. While in **READY** mode press the **TRIGGER** key to jump to the original trigger frame. Every time the TRIGGER key is pressed the image jumps to the next event trigger frame.



Startup Screen 2 (**READY** mode)

## ■ SYSTEM SETUP

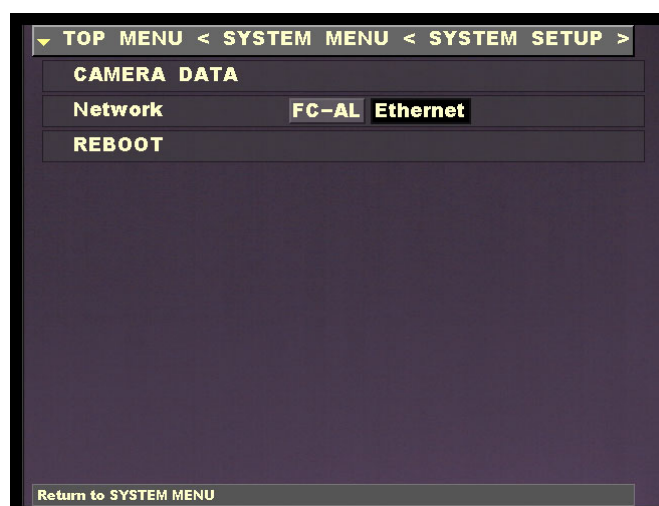
The **SYSTEM SETUP** row opens the SYSTEM SETUP Sub Menu. Here the network connection type can be specified to be either Fibre Channel (FC-AL) or Ethernet (100Base-T)

In the **SYSTEM MENU**, use the **UP/DOWN** keys to select the **SYSTEM SETUP** row and press the **RIGHT** key to enter the Sub Menu.



### SYSTEM MENU – SYSTEM SETUP

In the **SYSTEM SETUP** Sub Menu, use the **UP/DOWN** keys to select the **Network** row and press the **SET** key to enable editing. Use the **LEFT/RIGHT** keys to select the desired connection setting. Press the **SET** key to confirm the setting. Use the **UP/DOWN** keys to select the **REBOOT** row and press the **SET** key to reboot and apply changes. (For information on the **CAMERA DATA** row see section 3.5, Camera Head Exchange)



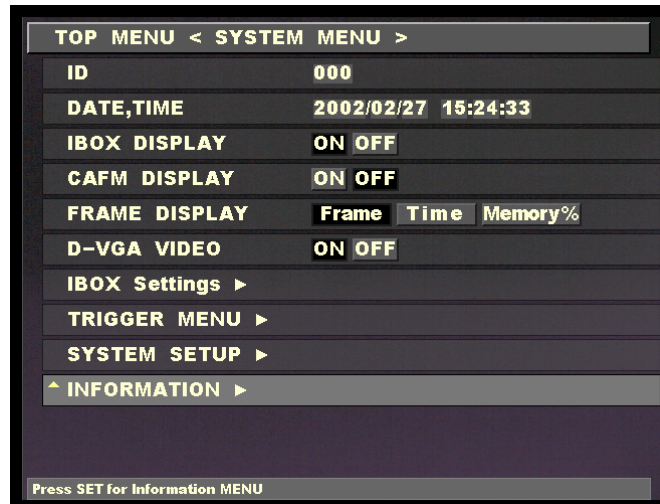
### Network Connection Sub Menu



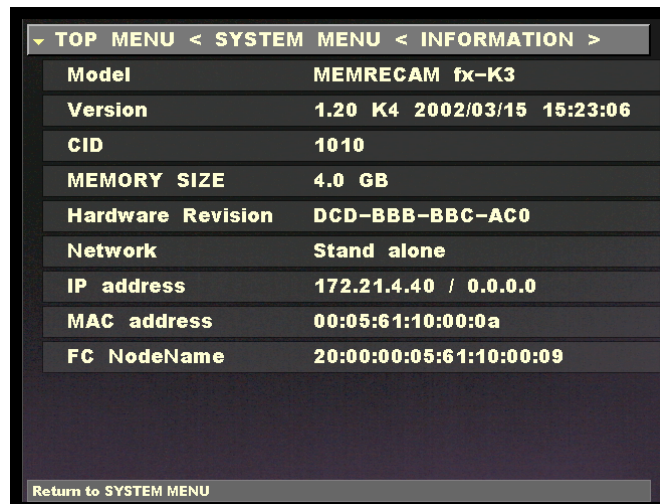
## ■ INFORMATION

The **INFORMATION** row opens the information Sub Menu. Here additional system information such as model type, CID, IP address, and memory size of the MEMRECAM fx DRP is shown.

In the **SYSTEM MENU**, use the **UP/DOWN** keys to select the **INFORMATION** row and press the **LEFT** key to enter the Sub Menu.



### SYSTEM MENU – INFORMATION



### INFORMATION Sub Menu

### 3.3 User Settings Storage

The user settings entered in the **MEMRECAM** fx **RECORDING MENU**, **TOP MENU** and **SYSTEM MENU** are saved in the internal memory. All settings from the previous session are loaded when the **MEMRECAM** fx power is turned ON.

### 3.4 Saving Images to Compact Flash (CF) Storage Media

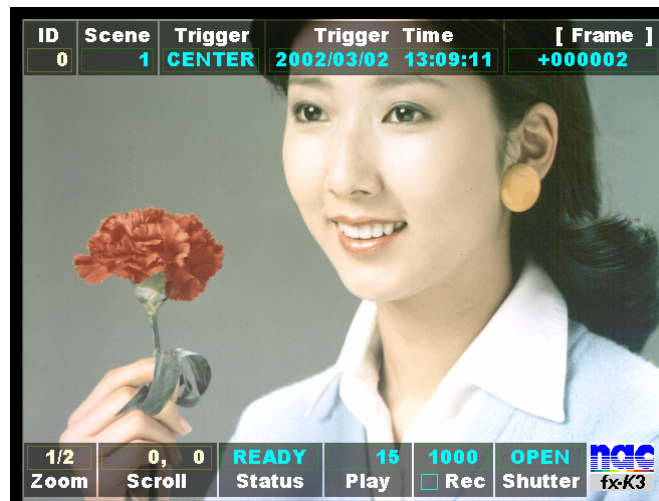
After an image is recorded and reviewed, it can be stored using Compact Flash (CF) Storage Media. Images stored in CF cards can be loaded to a computer for analysis and processing.



#### Caution

Images recorded by the **MEMRECAM** fx can be saved to CF Storage Media. These images cannot be uploaded back to **MEMRECAM** fx memory from the CF Storage Media.

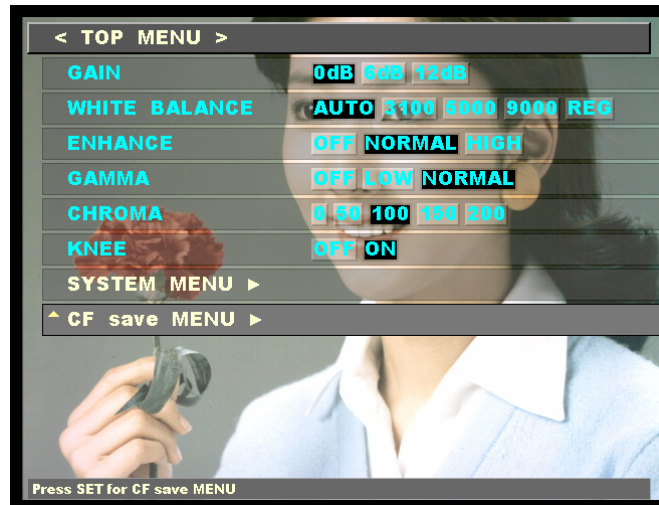
1. After recording, review the image and select the area of interest by setting the playback range.  
(refer to Setting Playback Range, Chapter 2)



Startup Screen 2 (**PLAY** mode)



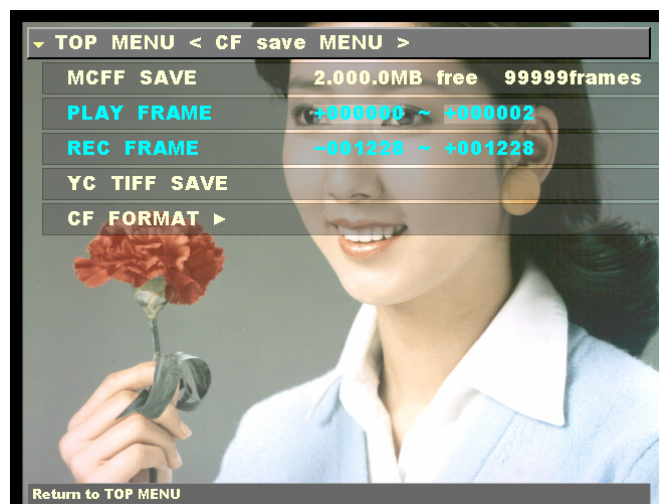
2. Enter the **TOP MENU** by pressing the **MENU** button while in **READY** mode. Using the **UP/DOWN** keys, select the **CF save MENU** row and press the **SET** key to enter the Sub Menu.



**TOP MENU – CF save MENU**

Enter the **TOP MENU** by pressing the **MENU** button while in **READY** mode. Using the **UP/DOWN** keys, select the **CF save MENU** row and press the **LEFT** key to enter the Sub Menu.

- |                     |  |
|---------------------|--|
| <b>MCFF SAVE</b>    | To save the raw image data to CF (Displays available storage space in MB and frames) |
| <b>PLAY FRAME</b>   | Displays the range of frames to be saved to the CF card                              |
| <b>REC FRAME</b>    | Displays the frame range of the recorded image                                       |
| <b>YC TIFF SAVE</b> | To save still images to CF   |
| <b>CF FORMAT</b>    | Formats the CF card ( <b>ALL DATA SAVED IN CF CARD IS ERASED</b> )                   |



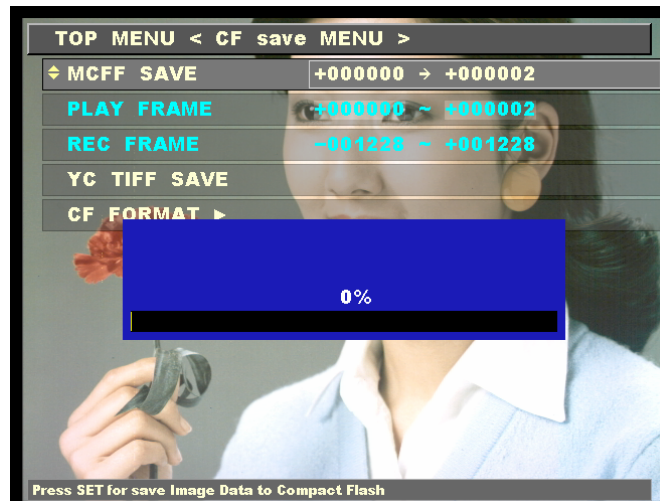
**CF save MENU**

3. In the **CF save MENU** Sub Menu, use the **UP/DOWN** keys to select the **MCFF SAVE** row and press the **SET** key to start saving.



**CF save MENU – MCFF SAVE**

4. Please wait while the image data is saved to CF.



**CF save MENU – MCFF SAVE**

5. Once the data is saved to CF the filename is shown in the **MCFF SAVE** row.



**CF save MENU – MCFF SAVE**

# 4

***MEMRECAM* fx**

Recording

## 4. *MEMRECAM* fx Recording

### 4.1 Memory Ring Buffer

The *MEMRECAM* fx semiconductor memory is structured as a ring buffer. In general, the images are saved to the ring buffer in series from the initial step to final step. Since the memory is comprised of a single ring, it greatly enhances its performance.

The storage of images to memory starts when the DRP is set to **ARM** mode. While in **ARM** mode, the images are sent sequentially to memory at the frame rate selected by the user. After circling the ring buffer, new images are updated in sequence. The updating of the ring buffer continues while in **ARM** mode until a trigger input is received.

In addition to the images being stored to the buffer ring, record settings are also stored to memory when the trigger input is received. This information is stored separately but displayed jointly. The information captured includes scene number, trigger mode setting, frame rate, frame size, shutter, image quality setting during recording, recording comments and trigger date/time.

### 4.1 Triggering

#### 4.1.1 Trigger Settings

The percentage of memory used as a buffer during recording is determined by the trigger setting. There are five trigger settings,

<b>START</b>	The trigger point is about 5% after the top of memory
<b>CENTER</b>	The trigger point is at the center of the memory. (Factory default setting)
<b>END</b>	The trigger point is about 5% before the end of memory
<b>BURST</b>	No Memory Buffer. (Records only when trigger signal is present)
<b>CUSTOM (%)</b>	Any percentage of the Memory may be set as Buffer Ring and Delay Start. <b>-100% DELAY Start</b> <b>0% START Trigger</b> <b>+50% CENTER Trigger</b> <b>+100% END Trigger</b>

- The **START**, **CENTER** and **END** are predefined trigger settings. The trigger setting determines how much of the Buffer Ring is being refreshed while in **ARM** mode. When the trigger input is received the images are saved to the remainder of the memory Buffer Ring. Recording stops once the Buffer Ring has circled. There is a 5% offset to ensure that important image data is not lost in the **START** and **END** trigger settings.

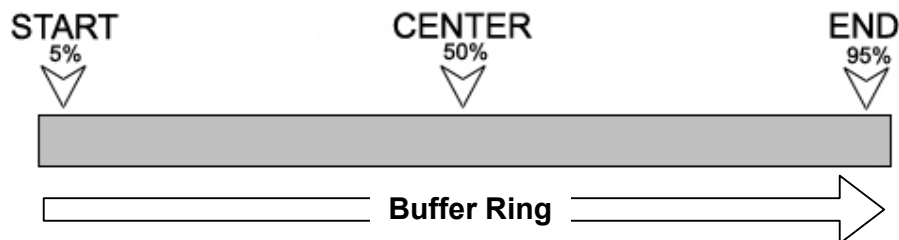


Diagram 1 **START**, **CENTER** and **END** trigger locations in Buffer Ring

- The **CUSTOM** trigger setting allows for any percentage value to be entered for the trigger setting or trigger delay. The percentage value can be any value from -100% to 100% and is based on the memory installed. To set a trigger setting, enter a positive percentage value. The negative percentage values delay the recording start time. At the -100% setting, recording will be delayed for a period of time equal to the recording time available in memory.

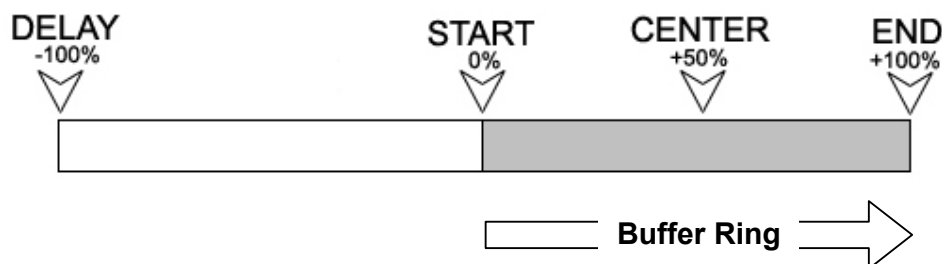


Diagram 1 **CUSTOM** trigger locations in Buffer Ring

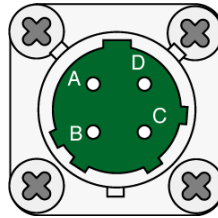


### Caution

When the DRP is set to **ARM** mode, even before a trigger input is received, writing to memory begins. Any previously recorded images are lost and cannot be played back.

#### 4.1.2 External Trigger Input

Use pins A and B for Contact Closure, 5V CMOS (Schmidt / Negative) or Current Loop trigger input. For Photo Isolate (Positive) trigger input use pins C and D.



##### ■ Contact Closure

A contact closure circuit triggers the DRP to complete the recording session.



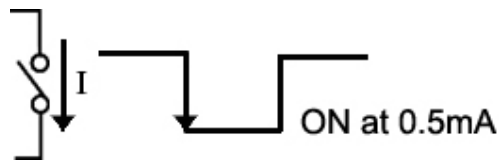
##### ■ 5V CMOS (Schmidt / Negative)

A 5V voltage transition from High-Low triggers the DRP to complete the recording session.



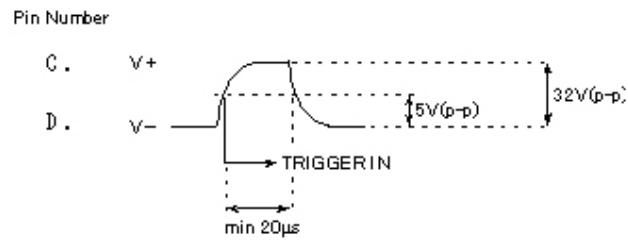
##### ■ Current Loop

When the current draw is greater than 0.5mA the DRP is triggered and completes the recording session.

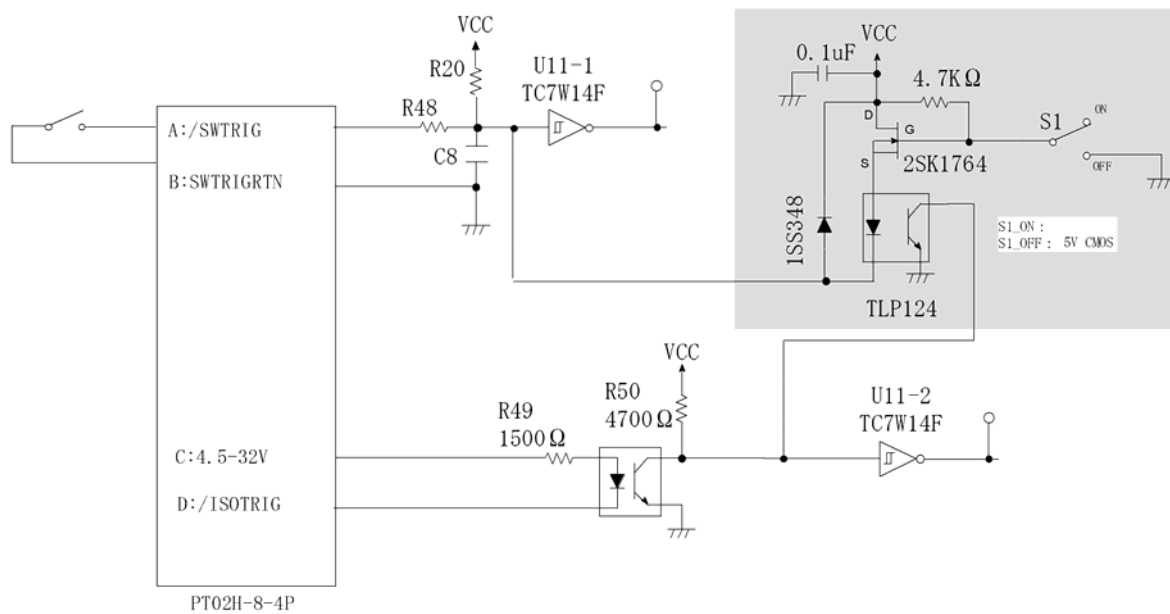


### ■ Photo Isolate (Positive)

The input impedance between pins C and D is approximately 1500Ω. A voltage value between 5 and 32V will trigger the DRP and complete the recording session.



### ■ Trigger Input Circuit





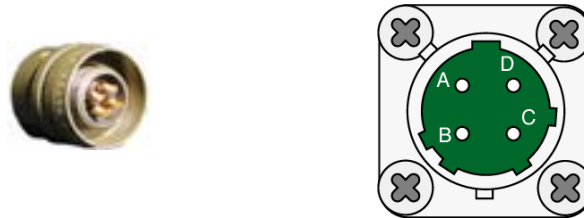
### 4.1.3 Trigger Connector

The Amphenol MS3116F8-4 four pin circular MIL connector is used to terminate the external trigger signal input cable. Use pins A and B for Contact Closure, 5V CMOS (Schmidt / Negative) or Current Loop trigger input. For Photo Isolate (Positive) trigger input use pins C and D.

- 1) Disassemble the trigger connector included as follows.



- 2) Use pins A and B for Contact Closure, 5V CMOS (Schmidt / Negative) or Current Loop trigger input. For Photo Isolate (Positive) trigger input use pins C and D.



- 3) Insert the cables through the Rear of the connector and the cable separation collar. Solder the cables to the appropriate pins. Use pins A and B for Contact Closure, 5V CMOS (Schmidt / Negative) or Current Loop trigger input. For Photo Isolate (Positive) trigger input use pins C and D.



- 4) Reassemble the connector and tighten securely.



## 4.2 Color Balance Operation

### 4.2.1 White Balance

White Balance is a post-processing enhancement. When an image is recorded, the raw data in memory is not affected by this setting. The setting can be changed later at playback. There are six White Balance settings.

#### ■AUTO TRACKING

The corresponding color temperature is determined from the image signal. The proper white balance and the color temperature are automatically maintained in a range of approximately 3000~9000K. Proper white balance might not be maintained if the image is saturated with excessive color (such as only red). To set the proper white balance, select a white area (without coloring) as large as possible on the screen.

#### ■3100

Select this setting when the light source has a color temperature of 3100 Kelvin. This corresponds to tungsten type lamp illumination.

#### ■5000

Select this setting when the light source has a color temperature of 5000 Kelvin. This corresponds to strobe or metal halide lamp illumination.

#### ■9000

Select this setting when the light source has a color temperature of 9000 Kelvin.

#### ■SET REG

Select when a more precise color white balance setting is desired, or when there is a possibility of modifying the color temperature during recording. Choose this menu to access the internal AUTO TRACKING mode for white balance. Next, press the **SET** key to confirm the proper white balance on the screen. This saves the white balance data for that instance. This data can be played back by selecting REG mode.

#### ■REG

To use the color temperature setting selected in SET REG mode.

#### 4.2.2 Auto-Track White Balance (AWB)

The Automatic White Balance function of the **MEMRECAM** fx employs a method where the corresponding color temperature is detected based on the signal of the image received. To match the proper white balance, it is necessary to extract the colorless data from the image signal. This is accomplished by integrating the entire image until it becomes colorless. This the method allows for variations to be corrected. Theoretically there is the potential of error when there is a large area of the screen with a specific color. Our control algorithm has been developed to the point where problems with the Automatic White Balance application are minimal.

# 5

## ***MEMRECAM*** fx Troubleshooting

## 5. **MEMRECAM** fx Troubleshooting

### 5.1 When Not Functioning Normally

The following are common troubleshooting practices when components are not functioning normally. Contact your retail outlet to perform maintenance when normal operation does not occur after following these instructions (refer to section 5.3 “Repair and Contact Information” ).

#### 5.1.1 Does Not Startup

Restart by reverting to factory settings. Press and hold the **STOP** key and turn the power switch **ON**. Hold the **STOP** key until the firmware version startup screen is displayed. If startup does not occur, repairs are needed.

#### 5.1.2 J-PAD2 Does Not Work

When connecting the J-PAD2, or during MEMRECAM fx startup, confirm that the J-PAD2 LED lights up in sequence. If the LED lights up and the J-PAD2 does not work properly, then there may be a J-PAD2 or MEMRECAM fx malfunction.

#### 5.1.3 MEMRECAM fx TRIG IN Connector Does Not Recognize the External Trigger (M-HUB Application)

The external trigger cable is connected to the MASTER M-HUB TRIG IN connector when using multiple cameras. The DRP TRIG IN connector is deactivated when connecting to an M-HUB.

## 5.2 Handling a System Crash

A system crash occurs when display continues but there is no operation. If many alphanumeric and exception patterns are displayed on the screen, there is a problem detected by the internal software and operation has been suspended. The cause varies according to the specific malfunction of the device.

When there is a system crash, make notes (memo or photograph) of all of the characters displayed on the screen. When recording is complete, run a test to see if the loss of images in the memory can be prevented.

### ■ When the optional memory backup is operational

Turn the switch **OFF** and after several seconds turn the power switch **ON**. It should revert to the state it was immediately after recording. Save the images to CF as soon as possible. If it does not startup normally, the images will be lost.

### ■ When the optional memory backup not available

To prevent loss of the image in the memory, restart without turning the power off to memory. Enter the SYSTEM SETUP MENU by pressing the Reset Switch in the Rear Camera Control Touch Pad. Use the **UP/DOWN** keys to select the **Reboot** row and press the **SET** key to reboot the system. The system should startup normally and if the image remains, playback can be conducted in the same manner as immediately after recording. Save the images to the CF as soon as possible. If it does not startup normally, the images will be lost.

## 5.2 Repair and Contact Information

Contact your retail outlet with the following information during a system crash or when normal operation does not occur.

- For system crash, make a note of the characters displayed on the screen
- For other problems, make a note of the items displayed
- Status of panel LED lighting
- MEMRECAM fx model name and serial number
- Specifics of problem, operation immediately prior to problem, frequency of problem
- Components
  - J-PAD2
  - Color LCD Viewfinder
  - Memory Backup Option
  - Master M-HUB (serial number, number and type of other MEMRECAM)
  - Slave M-HUB (number)
  - Smart Capture Software (version, OS of PC, type of PC)
  - CF
  - Type of Power input (AC / DC)
  - Other specifics