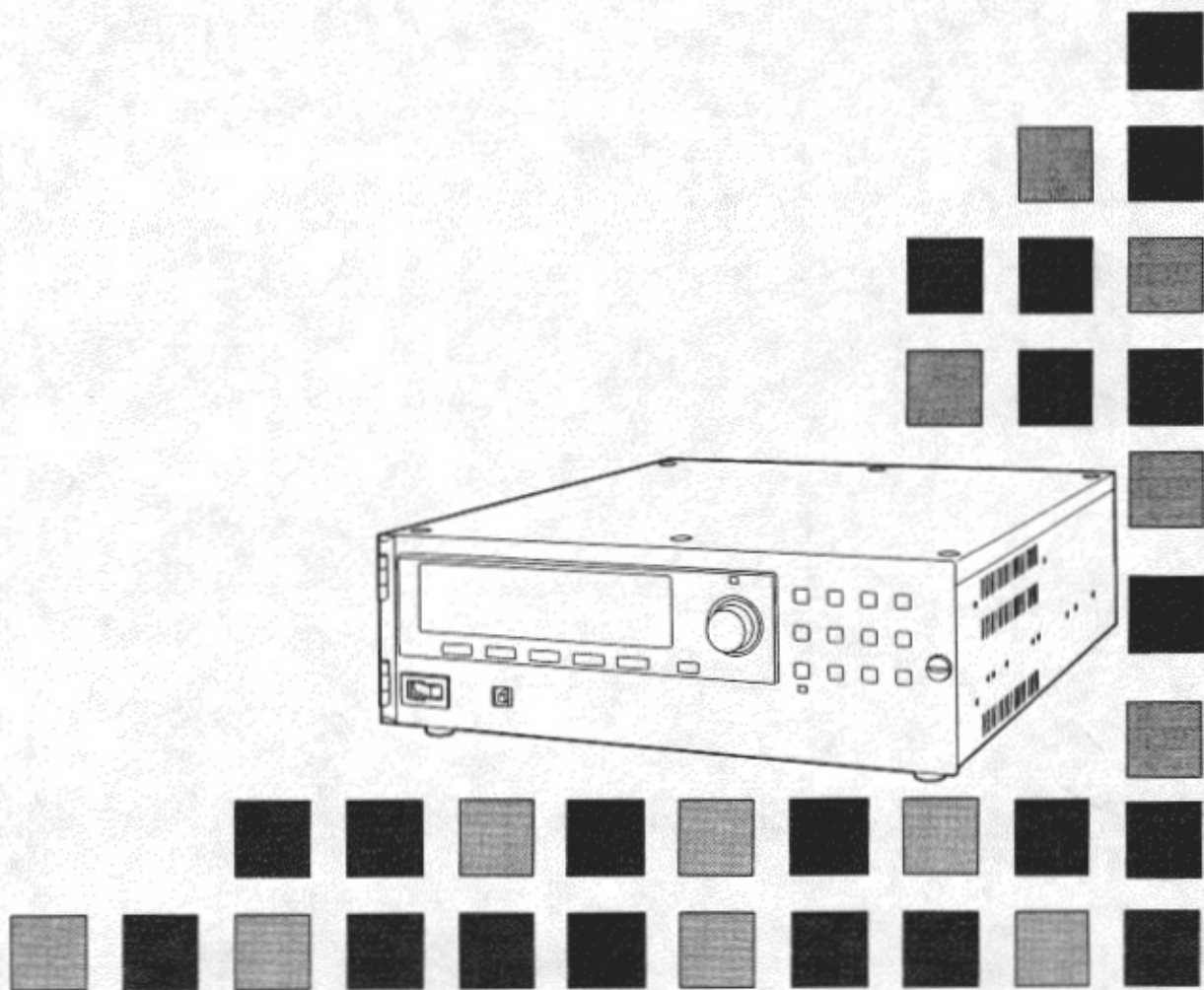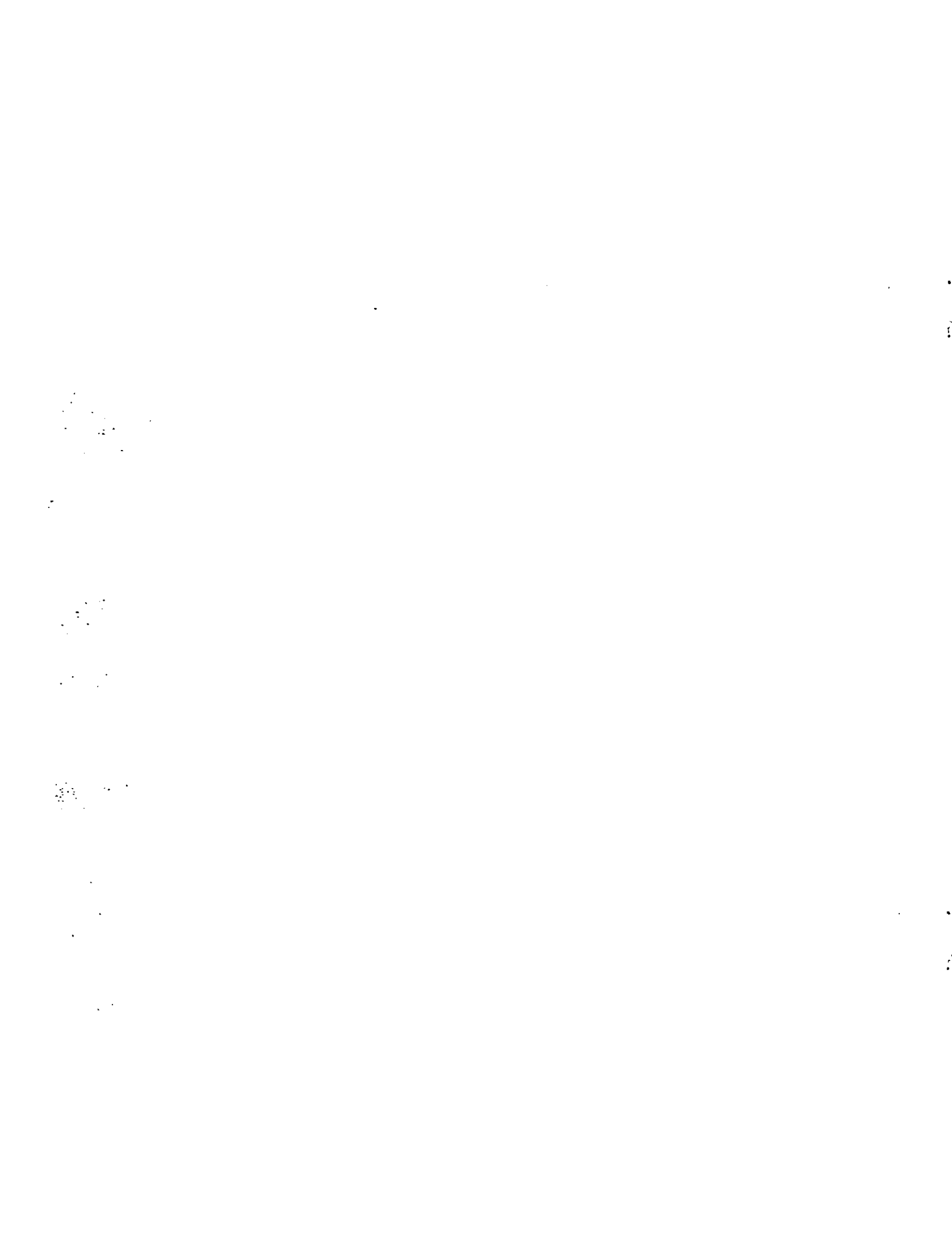# Panasonic

Universal Format Converter
## AJ-UFC1800P
## Operating Instructions

# Table Of Contents

# General

## Overview

The purpose of the AJ-UFC1800 is to create a spatial conversion from any input video format to any output video format. The input may be any standard video format (high definition or standard definition), and the output may also be any standard video format (high definition or standard definition) as long as it has a related frame rate to the input format. Frame rate conversion is not performed by the system, but frame rates from input to output may be changed by the insertion or removal of 3:2 or 2:2 pull-down. While performing a conversion, the end user will usually have to make additional adjustments regarding aspect ratio, color space, audio & video timing adjustments, etc. The AJ-UFC1800 allows all of these types of adjustments to be made using a simple front panel control system.

## Features

-   Conversion between most video formats with related frame rates. See table below.
-   Special film modes to handle 3:2 pull-down and segmented frames.
-   All digital processing, 10 bit, 4:2:2.
-   1035i ↔ 1080i conversions in field or frame (3:2) mode.
-   Extensive pan, zoom and crop function.
-   Internal test pattern generator.
-   16 user presets with the first 8 remotely selected by GPI.
-   Compact 3U size.

| Format Name | Active Sample (H/V) | Serial (bps) | SMPTE | Group A | | | Group B | Group C |
|---|---|---|---|---|---|---|---|---|
| | | | | 60p | 60i | 30p | 50i | 24p |
| 1125i | 1920 × 1080 (1035) | 1.5G | 292M | | ● | ● | ● | ● |
| 750p | 1280 × 720 | 1.5G | 296M | ● | | | | |
| 525i | 720 × 483 | 270M | 259M | | ● | ● | | |
| 525p | 720 × 483 | 360M | 294M | ● | | | | |
| 625i | 720 × 576 | 270M | 259M | | | | ● | ● |

• denotes that the conversion is possible.

**Note:** *Conversions can be made between any formats within the same group. Conversion between Group A and Group C are done using a 3:2 pull-down function.*

# Controls
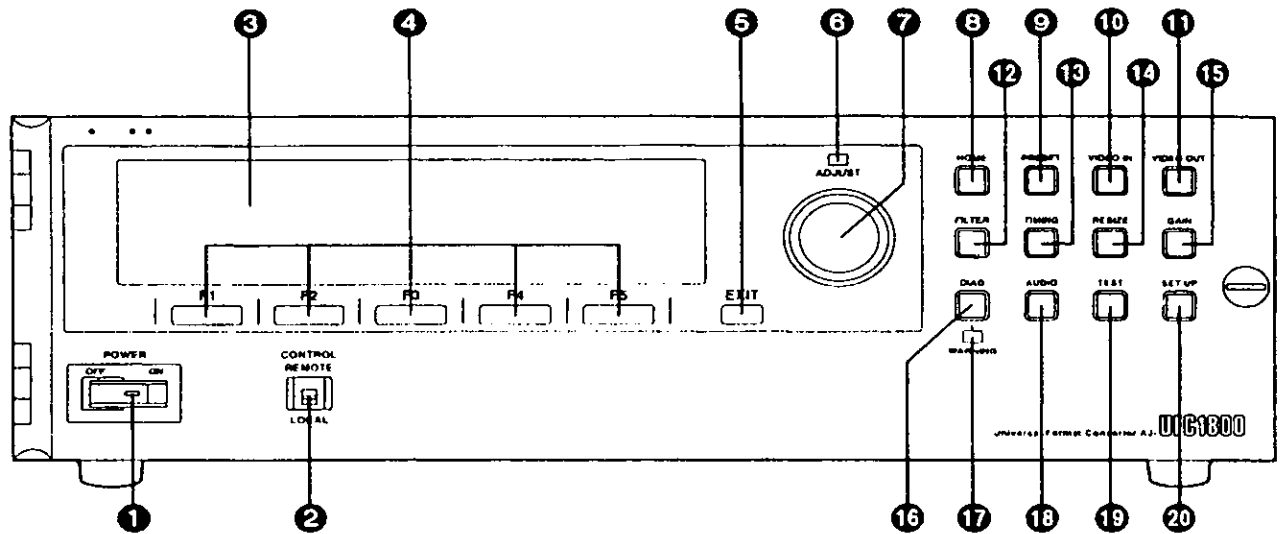


*Front Panel*

**❶ POWER switch**  After ON is pushed, it will take about 30 seconds for the system to initialize.

**❷ CONTROL switch**  This is used to switch between operation from the front panel and the remote connectors on the rear panel. The front panel will indicate this on all menus. Current settings can be viewed, but they cannot be modified in this mode. When it is set to REMOTE, front panel operation is disabled. When it is set to LOCAL, the remote connector is disabled.

**❸ Display panel**  All menus are displayed on a 40×4 line character display.

**❹ Function buttons**  F1-F5 follow the labels assigned to them for each system menu.

**❺ EXIT key**  The EXIT key is used to go up one level in the system menus. At the top level, it will cycle through the available menus.

**❻ ADJUST LED**  This lights when the Control knob is active.

**❼ Control knob**  When the ADJUST LED is lit, this controls the selected function shown on the display panel. If no adjustment is selected, it cycles through the choice of menus.

**❽ HOME key**  Selects the HOME menu. This displays the selected conversion and allows all settings to be viewed.

**❾ PRESET key**  Selects the PRESET menu. Allows up to sixteen system configurations to be saved and/or restored.

**❿ VIDEO IN key**  Selects the VIDEO IN menu. Allows the selection of SD and HD video inputs, auto input detection and film modes.

**⓫ VIDEO OUT key**  Selects the VIDEO OUT menu. Allows the selection of SD and HD video outputs and field versus frame filtering for film derived outputs.

# Controls

**⑫ FILTER key**       Selects the FILTER menu. H and V filters and enhancement levels can be adjusted from this menu.

**⑬ TIMING key**       Selects the TIMING menu. Reference selections and video phasing can be adjusted from this menu.

**⑭ RESIZE key**       Selects the RESIZE menu. Pan, zoom and crop adjustments can be made here.

**⑮ GAIN key**         Selects the GAIN menu. Video gain and black level adjustments can be made here.

**⑯ DIAG key**         Selects the DIAGnostics menu. When the warning LED ⑰ is illuminated, error messages can be viewed here. The status of all monitored systems can also be viewed here.

**⑰ WARNING LED**      Signals a potential system problem. This will not light for masked errors.

**⑱ AUDIO key**        Selects the AUDIO menu. Allows for audio channel mapping, synchronization and delay adjustments.

**⑲ TEST key**         Selects the TEST menu. Allows H, V and frame based test patterns to be selected as the video input. Frame patterns can also be saved and/or restored here.

**⑳ SETUP key**        Selects the SETUP menu. Background color, power-up mode and time code mapping selections are available here.

# Controls
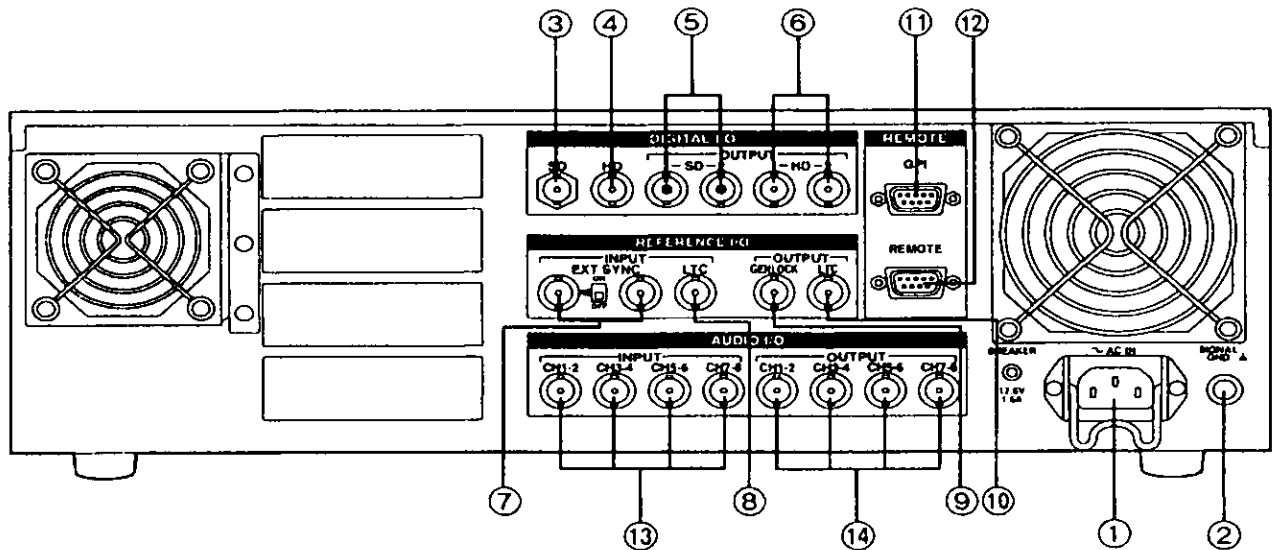


*Rear Panel*

## Power supply section

**① AC input socket**
This is connected to the power outlet using the supplied cable.

**② GND (ground) terminal**
It is recommended that this unit be grounded when connected to other units.

## Digital video input/output section

**③ SD SERIAL IN connector (BNC)**
SD serial digital signals are input to this connector.

**④ HD SERIAL IN connector (BNC)**
HD serial digital signals are input to this connector.

**⑤ SD SERIAL OUT 1,2 connectors (BNC×2)**
SD serial digital signals are output from these connectors.

**⑥ HD SERIAL OUT 1,2 connectors (BNC×2)**
HD serial digital signals are output from these connectors.

## Reference input/output section

**⑦ EXT SYNC IN connectors (BNC×2)**
Tri-level/bi-level sync signals or black burst signal are input to these connectors as the reference signal. A loop-through format and a 75 Ω termination switch are provided.

**⑧ LTC IN connector (BNC)**
The time code signals are input to this connector.

**⑨ GENLOCK SYNC OUT connector (BNC)**
The tri-level/bi-level sync signals, for genlocking external inputs, are output from this connector.

**⑩ LTC OUT connector (BNC)**
The time code signals are output from this connector.

# Controls

## Remote control section

⑪ **GPI connector (9P)**          Switch closure remote control connector.

⑫ **REMOTE IN connector**       RS-232 serial remote input connector.
   **RS-232, 9P)**

## Digital audio input/output section

⑬ **DIGITAL AUDIO IN CH**        AES digital audio signals are input to these connectors.
   **1/2, 3/4, 5/6, 7/8**
   **connectors (BNC × 4)**

⑭ **DIGITAL AUDIO OUT CH**       AES digital audio signals are output to these connectors.
   **1/2, 3/4, 5/6, 7/8**
   **connectors (BNC × 4)**

## Connections

### Input Reference

10801 SDI Video/Audio/TC ⟶ 720P SDI Video/Audio/TC

AJ-HD2700 — [rear panel diagram] — AJ-HD2700

### Output Reference

NTSC Black Burst

Genlock Sync (1080I Tri-level)

10801 SDI Video/Audio/TC    480P SDI Video/Audio/TC

AJ-HD2700 without Down Converter — [rear panel diagram] — AJ-PD950

### Black Burst Reference

10801 SDI Video/Audio/TC    4801 SDI Video/Audio/TC

NTSC Black Burst

AJ-HD2700 — [rear panel diagram] — AJ-D580

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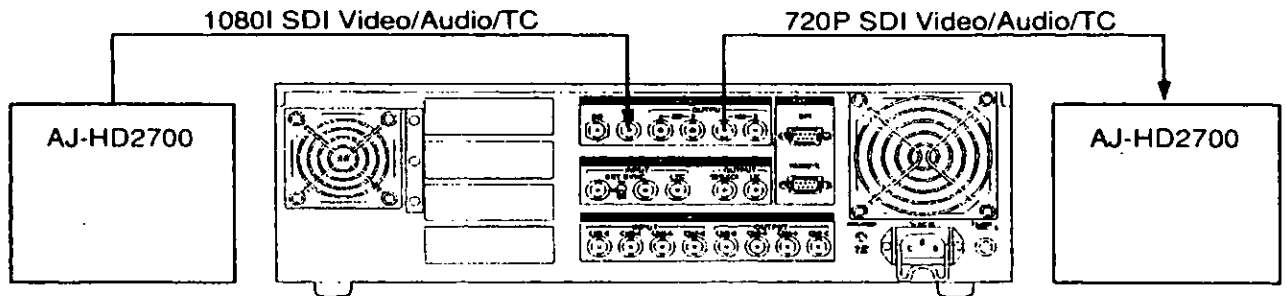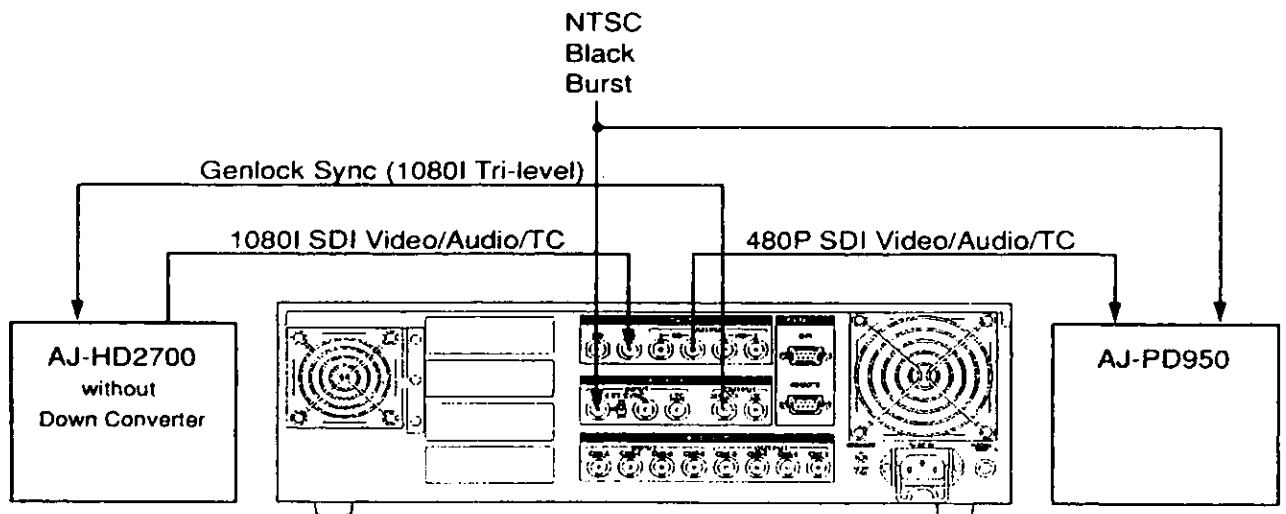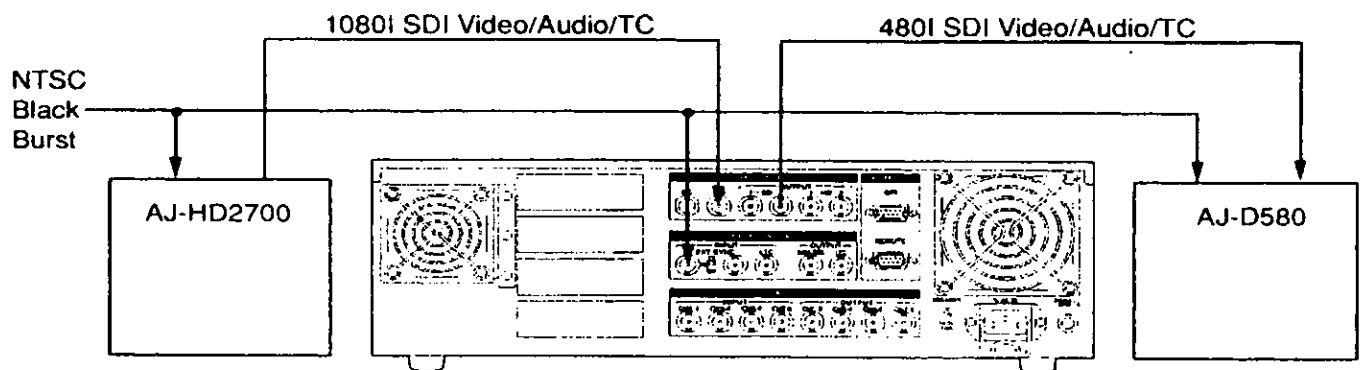
# Operation

## Basic operation

**VIDEO IN**

Press VIDEO IN to select the input format and frame rate.

**FORMAT**

Press FORMAT (F1) to select an H × V value. Pressing the function key or turning the knob will cycle through the range of choices. AUTO SD or AUTO HD will attempt to detect the input format if a signal is present.

**F RATE**

Press F RATE (F2) to select the frame rate. Pressing the function key or turning the knob will cycle through the range of choices. AUTO SD or AUTO HD will attempt to detect the input format if a signal is present.

**VIDEO OUT**

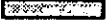Press VIDEO OUT to select the output format and frame rate.

**FORMAT**

Press FORMAT (F1) to select an H × V value. Pressing the function key or turning the knob will cycle through the range of choices.

**F RATE**

Press F RATE (F2) to select the frame rate. Pressing the function key or turning the knob will cycle through the range of choices.
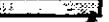
*This will set the system to nominal conversion settings. These settings can be modified under the following menus.*

**FILTER**

Press FILTER to change the conversion filters and to add enhancement.

**H RESP**

Press H RESP (F1) to select a horizontal filter response. Pressing the function key or turning the knob will cycle through the NARROW, STANDARD and WIDE choices.

**V RESP**

Press V RESP (F2) to select a vertical filter response. Pressing the function key or turning the knob will cycle through the NARROW, STANDARD and WIDE choices.

**H ENH**

Press H ENH (F3) to add horizontal enhancement. Pressing the function key or turning the knob will change the amount in 0.5dB steps.

**V ENH**

Press V ENH (F4) to add vertical enhancement. Pressing the function key or turning the knob will change the amount in 0.5 dB steps.

**2-D ENH**

Press 2-D ENH (F5) to add both horizontal and vertical enhancement at the edge of the band. Pressing the function key or turning the knob will change the amount in 1 dB steps. This control may have limited effect on upconverted signals.

**RESIZE**

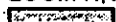Press RESIZE to change the zoom, pan or crop settings. Press EXIT or turn the knob until ZOOM/PAN is displayed. The double arrow ">>" signifies that multiple menus are available at this level.

**ZM MODE**

Press ZM MODE (F1) and select VARIABLE.

**ZOOM H,V**

Press ZOOM H (F2) and ZOOM V (F3) to change the zoom factor. This will lock the horizontal and vertical adjustments together. Turn the knob to set the desired size.

# Operation

**EXIT**    Press EXIT to go to the CROP menu.

**L. R. T. B**    Press LEFT (F1), RIGHT (F2), TOP (F3) or BOTTOM (F4) to remove portions of the input frame. Small adjustments can be made by successively pushing the function keys or the knob can be used to easily cover the full range of control.

**EXIT**    Press EXIT to view the resizing PRESETS menu. F1-5 are shortcut keys to select popular picture sizes such as letterbox and 14 × 9.

*If the output image does not completely cover the output frame, a black background will be displayed. To change the background color, go to the SET UP menu.*

**SET UP**    Press SET UP and then press EXIT or turn the knob until BACKGROUND COLOR is displayed. The double arrow ">>" signifies that multiple menus are available at this level.

**BG COL**    Press BG COL (F1) to select a predefined color or select CUSTOM and then use F2-4 to set the RGB values.

## Film mode operation

### For 24Hz progressive input:

**VIDEO IN**    Press VIDEO IN to select the input format and 24 Hz frame rate.

**FORMAT**    Press FORMAT (F1) to select an H × V progressive value. Pressing the function key or turning the knob will cycle through the range of choices.

**F RATE**    Press F RATE (F2) to select a 23.98/24 Hz frame rate. Pressing the function key or turning the knob will cycle through the range of choices.

**VIDEO OUT**    Press VIDEO OUT to select the output format and frame rate. 24, 30, 48 and 60 Hz rates are all possible.

**FORMAT**    Press FORMAT (F1) to select an H × V value. Pressing the function key or turning the knob will cycle through the range of choices.

**F RATE**    Press F RATE (F2) to select the frame rate. Pressing the function key or turning the knob will cycle through the range of choices. If a 29.97/30 Hz or 59.94/60 Hz rate is chosen, then a 3:2 sequence is inserted. The sequence will be A Frame aligned with one hour time code values whenever possible.

**FLD/FRM**    Press FLD/FRM (F3) to select field or frame filtering for 23.98/24 Hz interlaced or segmented frame outputs.

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# Operation

*For 24Hz interlaced(segmented) input:*

**VIDEO IN**

Press VIDEO IN to select the input format and 24 Hz frame rate.

**FORMAT**

Press FORMAT (F1) to select an H×V interlaced value. Pressing the function key or turning the knob will cycle through the range of choices.
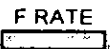
**F RATE**

Press F RATE (F2) to select a 23.98/24 Hz frame rate. Pressing the function key or turning the knob will cycle through the range of choices.

**PULLDN**

Press PULLDN (F3) to select the 2:2 pull-down mode. Pressing the function key or turning the knob will cycle through the range of choices.

Output selection is the same as above.

*For 30/60Hz input:*

**VIDEO IN**

Press VIDEO IN to select the input format and 30/60Hz frame rate.

**FORMAT**

Press FORMAT (F1) to select an H×V value. Pressing the function key or turning the knob will cycle through the range of choices.

**F RATE**

Press F RATE (F2) to select a 29.97/30 Hz or 59.94/60 Hz frame rate. Pressing the function key or turning the knob will cycle through the range of choices.

**PULLDN**

Press PULLDN (F3) to select the 3:2 pull-down mode. Pressing the function key or turning the knob will cycle through the range of choices.

**TIMING**

Press TIMING to select the 3:2 REFERENCE and A Frame position.

**3:2 REF**

Press 3:2 REF (F2) to select the 3:2 pull-down reference. Pressing the function key or turning the knob will cycle through the range of choices. TIME CODE will use one hour values as A Frame locations. MANUAL requires the position to be set each time the input sequence is interrupted.

**"A" POS**

Press "A" POS (F1) to select the A Frame position with respect to the 3:2 reference. Pressing the function key or turning the knob will cycle through the range of choices. This allows for manually setting the position or offsetting the position from normal reference points.
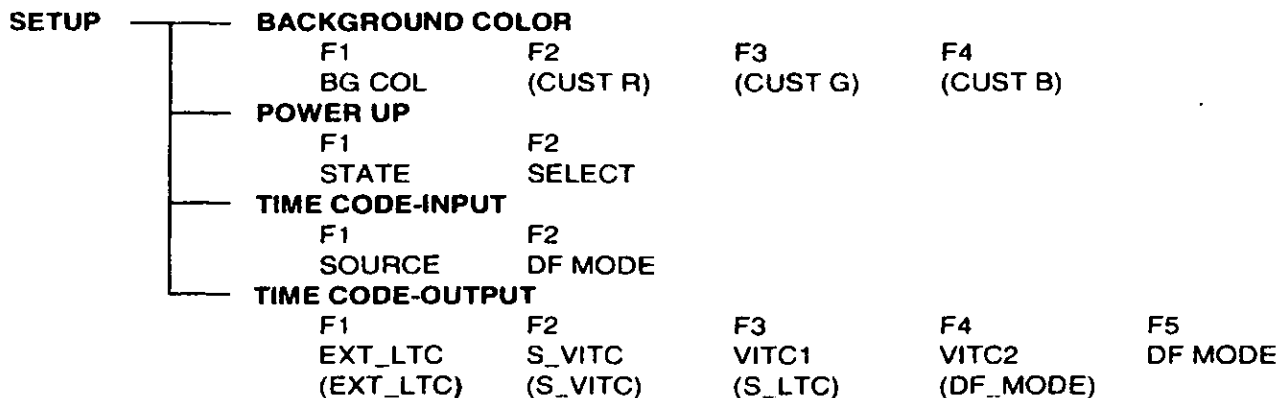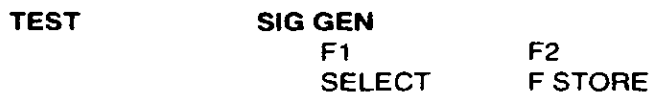
Output selection is the same as above.

## Operation

### MENU TREE

| HOME | | | | F4 | F5 |
|------|--|--|--|----|----|
| | | | | VERSION | DEFAULTS |

| PRESET | F1 | F2 | F3 | F4 |
|--------|----|----|----|----|
| | SAVE | RECALL | TITLE | DELETE |

**TITLE**

| | F1 | F2 | F3 | F4 |
|--|----|----|----|----|
| | <- | -> | DEL/CLR | SAVE |

**VIDEO IN**

| | F1 | F2 | F3 |
|--|----|----|----|
| | FORMAT | F RATE | PULLDN |

**VIDEO OUT**

| | F1 | F2 | F3 |
|--|----|----|----|
| | FORMAT | F RATE | FLD/FRM |

**FILTER**

| | F1 | F2 | F3 | F4 | F5 |
|--|----|----|----|----|----|
| | H RESP | V RESP | H ENH | V ENH | 2-D ENH |

**TIMING**

SYSTEM

| | F1 | F2 | F3 | F4 |
|--|----|----|----|----|
| | REF IN | GL TYPE | LIN ADV | SYS H |

FILM MODE

| | F1 | F2 | F3 |
|--|----|----|----|
| | "A" POS | 3:2 REF | (FLD DOM) |

**RESIZE**

ZOOM/PAN

| | F1 | F2 | F3 | F4 | F5 |
|--|----|----|----|----|----|
| | ZM MODE | ZOOM H | ZOOM V | PAN H | PAN V |

CROP

| | F1 | F2 | F3 | F4 |
|--|----|----|----|----|
| | LEFT | RIGHT | TOP | BOTTOM |

PRESETS

| | F1 | F2 | F3 | F4 | F5 |
|--|----|----|----|----|----|
| | FIT H | FIT V | FIT H&V | 14:9 | 13:9 |

**GAIN**

Y-Pr-Pb

| | F1 | F2 | F3 | F4 |
|--|----|----|----|----|
| | Y | Pr | Pb | BLACK |

CONV COLORIMETRY

| | F1 | F2 |
|--|----|----|
| | INPUT | OUTPUT |

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## Operation

| DIAG | F1<br>ALL ↓ | F2<br>MON'D ↓ | F3<br>TRIG'D ↓ | F4<br>RETRIG | F5<br>MON/MASK |
|---|---|---|---|---|---|

**└── ALL, MON'D, TRIG'D ──┘**

| | F1<br>MASK | | F3<br>TRG TYPE | | F5<br>(RETRIG) |
|---|---|---|---|---|---|

**AUDIO** ─┬─ **INPUT SELECTION**

| | F1<br>CH1-4 | F2<br>CH5-8 |
|---|---|---|

├─ **SYNCHRONIZER**

| | F1<br>CH1-4 | F2<br>CH5-8 |
|---|---|---|

└─ **DELAY**

| | F1<br>DELAY |
|---|---|

**TEST**   **SIG GEN**

| | F1<br>SELECT | F2<br>F STORE |
|---|---|---|

**SETUP** ─┬─ **BACKGROUND COLOR**

| | F1<br>BG COL | F2<br>(CUST R) | F3<br>(CUST G) | F4<br>(CUST B) |
|---|---|---|---|---|

├─ **POWER UP**

| | F1<br>STATE | F2<br>SELECT |
|---|---|---|

├─ **TIME CODE-INPUT**

| | F1<br>SOURCE | F2<br>DF MODE |
|---|---|---|

└─ **TIME CODE-OUTPUT**

| | F1<br>EXT_LTC<br>(EXT_LTC) | F2<br>S_VITC<br>(S_VITC) | F3<br>VITC1<br>(S_LTC) | F4<br>VITC2<br>(DF_MODE) | F5<br>DF MODE |
|---|---|---|---|---|---|

# Operation

## Front Panel Controls

All operation of the AJ-UFC1800 is performed by means of the front panel controls. These controls are used to activate presets, select input and output formats, adjust control settings, and perform diagnostic testing. The front panel consists of a 4×40 character display, 5 function buttons, an *EXIT* button, 12 menu buttons, and a control knob for making adjustments. There is also a *LOCAL/REMOTE* switch to select either front panel or remote control modes. In remote mode, the remote port is active and the front panel controls are ignored. In local mode, the front panel is active and the remote ports are disabled.

All of the front panel menus, with descriptions of their operation are shown below. In all cases, the *EXIT* button takes the user back to the previous menu.

## Home Menu

The *HOME* menu is activated by pushing the *HOME* button on the UFC front panel. This menu shows what input and output formats have been selected in the current configuration.

```
HOME
INPUT:      1920x1080I/29.97Hz
OUTPUT:     1280x720P/59.94Hz
                              VERSION  DEFAULTS
```

| F1 | F2 | F3 | F4 | F5 | EXIT |
|----|----|----|----|----|------|
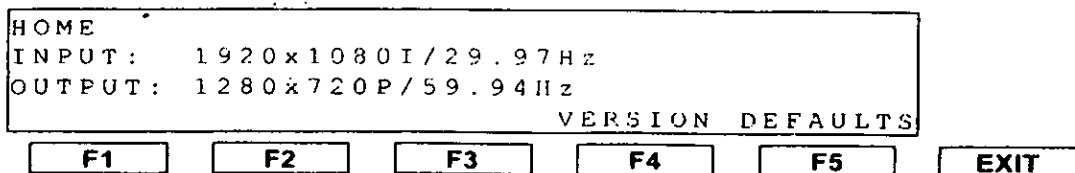
F4 – Displays the current version of the system software.
F5 – Sets all parameters to factory default values. Input and output format selections are preserved. This button must be held for more than two seconds.

Turning the knob displays all of the system parameters that are currently set for this conversion.

```
INPUT  FORMAT:   1920x1080I              [F1]
INPUT  F RATE:   29.97Hz                 [F2]
VIDEO  INPUT  PULLDOWN:  OFF              [F3]
OUTPUT  FORMAT:  1920x1080I               [F4]
```

| F1 | F2 | F3 | F4 | F5 | EXIT |
|----|----|----|----|----|------|
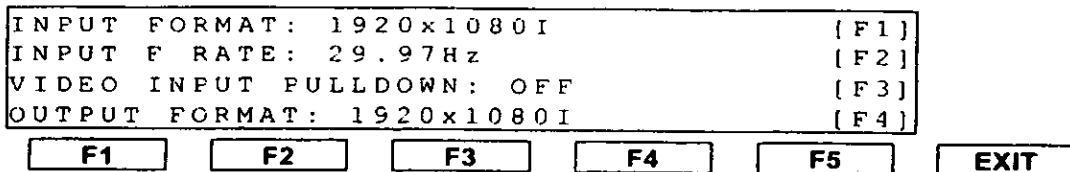
The function keys take you directly to the menu that sets the related parameter. If a given parameter does not apply to the current set-up, then "[N/A]" will appear instead of a function key number. On returning to the *HOME* menu, you will return to the same location in the menu. Pressing *EXIT* will return to the top display showing the input and output formats.

# Operation

## Preset Menu

The *PRESET* menu is activated by pushing the *PRESET* button on the UFC front panel.  This menu allows the user to look at preset system configurations that have been saved in memory.  All system parameters are stored in a preset file, including input and output formats, zoom & pan settings, timing adjustments, etc.  Up to 16 preset files are stored in the system, and can be saved or recalled from this menu.

*PRESET*

```
SYSTEM  PRESET  1
TITLE:   HD  I  TO  HD  P
         1920x1080I/30HZ→1280x720P/60Hz
    SAVE       RECALL      TITLE     DELETE
```

| F1 | F2 | F3 | F4 | F5 | EXIT |
|----|----|----|----|----|------|

Knob – Scrolls through the available presets (#1 to #16).
F1 – Saves the current system configuration to the displayed preset.
F2 – Recalls the displayed preset to the current system configuration.
F3 – Calls up the title menu.
F4 – Deletes the current system configuration stored in the displayed preset number.
*Note: F2-F4 will not appear unless the corresponding preset is already saved.  F1 and F4 must be held for more than two seconds to take effect.*

### TITLE

This menu allows a text string to be set to label the current preset file.

```
SYSTEM  PRESET  1  >>  TITLE  CHANGE
TITLE:
          ^
    <-          ->      DEL/CLR      SAVE
```

| F1 | F2 | F3 | F4 | F5 | EXIT |
|----|----|----|----|----|------|

F1 – Moves the cursor to the left.
F2 – Moves the cursor to the right.
F3 – Clears the current character.
F4 – Saves the text to the displayed preset number.

# Operation

## Video In Menus

The *VIDEO IN* menus are activated by pushing the *VIDEO IN* button on the UFC front panel. These menus allow the user to select the input video format for the system. The format, and frame rate, are selected independently, with the system providing feedback to the user if the format & frame rate selected are not compatible. These menus also allow the user to select film processing modes and to select the source of the 3:2 reference. Pull-down mode selects the frame processing that will be performed by the system: either none, 2:2 pull-down, or 3:2 pull-down. For 3:2 pull-down cases, a reference must be provided to signal the start of a 5 frame, 3:2 sequence. This reference may come from time code, or can be manually set.

### VIDEO IN

If SD or HD auto detect mode is selected, then the related SDI input is monitored for format information. If a valid format is detected, then the system is configured for that particular format.

```
VIDEO  IN
FORMAT:   1920x1080I                    30Hz

FORMAT    F  RATE     PULLDN
```
| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Activates knob to select an input video format (e.g., AUTO HD, 1920×1080I, 1280×720P).

F2 – Activates knob to select an input frame rate (AUTO SD, AUTO HD, 60, 59.94, 30, 29.97, 25, 24, 23.98).

F3 – Activates knob to select the 2:2 or 3:2 pull-down frame processing mode for input (OFF, 2:2 or 3:2).

### VIDEO IN (auto format mode)

```
VIDEO  IN
FORMAT:   AUTO  HD

FORMAT    F  RATE     PULLDN
```
| F1 | F2 | F3 | F4 | F5 | EXIT |

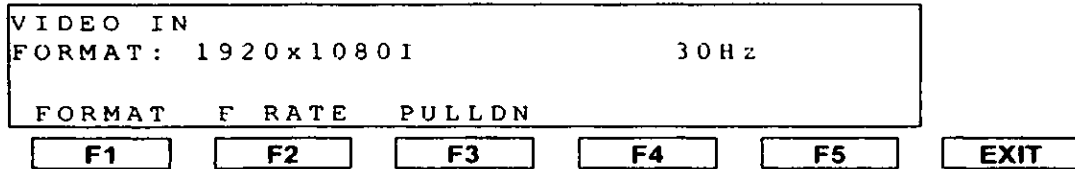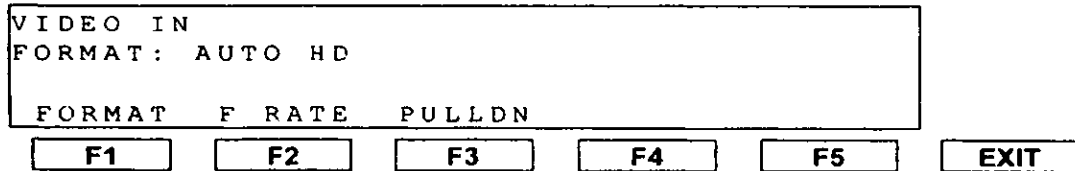**Note:** Function keys operate the same as above.

# Operation

## Video Out Menu

The *VIDEO OUT* menu is activated by pushing the *VIDEO OUT* button on the UFC front panel. This menu allows the user to select the output video format for the system. The format and frame rate are selected independently, with the system providing feedback to the user if the format & frame rate selected are not compatible. The output frame rate must also match the input frame rate; either matching exactly, or related through 2:2 or 3:2 pull-down (for example: if the input frame rate is 60, the output may be 60, 30, or 24).

```
VIDEO OUT
FORMAT:  1920x1080I              24Hz


 FORMAT    F RATE    FLD/FRM
```

| F1 | F2 | F3 | F4 | F5 | EXIT |
|----|----|----|----|----|------|

*F1 – Activates knob to select an output video format (e.g., 1920×1080I, 1280×720P).*
*F2 – Activates knob to select an output frame rate (60, 59.94, 30, 29.97, 25, 24, 23.98).*
*F3 – Activates knob to select either field or frame filtering for 2:2 or 3:2 film outputs. This selection only appears when it is appropriate.*

## Filter Menu

The *FILTER* menu is activated by pushing the *FILTER* button on the UFC front panel. This menu allows the user to select the filtering and enhancement responses for the system. The user may select different responses or enhancement settings depending upon the type of conversion being done (up or down) or the nature of the source material (soft material may need more enhancement, noisy material may need less).

```
FILTER



 H RESP   V RESP    H ENH    V ENH   2-D ENH
```

| F1 | F2 | F3 | F4 | F5 | EXIT |
|----|----|----|----|----|------|

F1 – Activates knob to select the horizontal filter response (Wide, Standard, or Narrow).
F2 – Activates knob to select the vertical filter response (Wide, Standard, or Narrow).
F3 – Activates knob to select the amount of horizontal enhancement (0 to +6 dB in 0.5 dB steps).
F4 – Activates knob to select the amount of vertical enhancement (0 to +6 dB in 0.5 dB steps).
F5 – Activates knob to select the amount of two-dimensional enhancement (0 to +7 dB in 1 dB steps).
**Note:** *H ENH and V ENH operate on the input format during the band-limiting process while 2-D ENH operates on the output format. H ENH and V ENH have upper mid-band peaks while 2-D ENH has its peak at the upper band edge.*

# Operation

## Timing Menu

The *TIMING* menu is activated by pushing the *TIMING* button on the UFC front panel. This menu allows the user to select the sync reference for the system, as well as the type of sync used for the genlock output (bi-level or tri-level). Timing of the output video with respect to sync may also be adjusted by line (line advance) or by sample (horizontal position). If the horizontal position exceeds the total number of samples per output line; line advance will automatically be increased by one, and the horizontal position will be reset to zero.

The *FILM MODE* menu allows for selection of a 3:2 reference, if applicable and allows for offsetting the film frame position that is referenced.

### SYSTEM

```
TIMING  »  SYSTEM



REF  IN    GL  TYPE  LIN  ADV    SYS  H
```
| F1 | F2 | F3 | F4 | F5 | EXIT |
|----|----|----|----|----|------|

F1 – Activates knob to select the sync reference (Input, External Bi-Level, External Tri-Level, or Black Burst).
F2 – Activates knob to select the genlock output sync type (Bi-Level or Tri-Level).
F3 – Activates knob to select the line advance value (0-7H).
F4 – Activates knob to select the horizontal position value (0-1H).
**Note:** *If an external sync source is selected, the video input must be vertically locked to the same source.*

### FILM MODE

```
TIMING  »  FILM  MODE



"A" POS    3 : 2  REF
```
| F1 | F2 | F3 | F4 | F5 | EXIT |
|----|----|----|----|----|------|

F1 – Activates knob to manually set the A Frame position or to offset the position from the nominal value when triggering from an external reference.
F2 – Activates knob to select the source of the 3:2 reference (TIME CODE or MANUAL).
**Note:** *F2 is only active for 3:2 inputs or outputs.*

# Operation

## Resize Menus

The *RESIZE* menus are activated by pushing the *RESIZE* button on the UFC front panel. These menus allow the user to set values of all resizing adjustments. Three submenus are available by turning the knob: *ZOOM/PAN*, *CROP* and *PRESETS*.

### ZOOM/PAN

Zoom is the scale factor applied to the input image so that zoom = 1 means the input frame size just fits the output frame size (either horizontally or vertically, whichever is larger). Pan is the spatial offset of the input frame from the center position of the output frame, where pan = 1 or −1 means the input frame just leaves the output frame.

```
RESIZE  »  ZOOM/PAN



ZM  MODE     ZOOM  H    ZOOM  V      PAN  H      PAN  V
```
| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Activates knob to select the horizontal & vertical zoom mode (Variable, Pass H, Pass V or Pass H&V).
F2 – Activates knob to select the horizontal zoom value (.25 to 8).
F3 – Activates knob to select the vertical zoom value (.25 to 8).
F4 – Activates knob to select the horizontal pan value (-1 to +1).
F5 – Activates knob to select the vertical pan value (-1 to +1).
***Note 1:*** *Pass modes map input samples directly to output samples using no filtering.*
***Note 2:*** *Holding F2 and F3 down for 1 sec. locks H and V zoom control together.*

### CROP

Crop is the number of samples or lines that are removed from a given edge of the input frame. (This is usually done to get rid of edge anomalies.)

```
RESIZE  »  CROP


   LEFT        RIGHT        TOP      BOTTOM
```
| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Activates knob to select the left crop value.
F2 – Activates knob to select the right crop value.
F3 – Activates knob to select the top crop value.
F4 – Activates knob to select the bottom crop value.

# Operation

## PRESETS

The *FIT* functions are used to automatically set up different aspect ration conversions from input to output. Some examples follow. If input=16×9 and output=4×3: then *FIT H*=letterbox, *FIT V*=side cut, *FIT H&V*=anamorphic squeeze. If input=4×3 and output=16×9: then *FIT H*=top&bottom cut, *FIT V*=side panel, *FIT H&V*=anamorphic stretch.

```
RESIZE.»  PRESETS
ZOOM H:  1.333333        ZOOM V:  1.000000

   FIT  H     FIT  V    FIT  H&V   14:9      13:9
```
| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Scales to match input size to output size along horizontal axis (maintaining the aspect ratio).
F2 – Scales to match input size to output size along vertical axis (maintaining the aspect ratio).
F3 – Scales to match input size to output size along both horizontal and vertical axis (may distort the aspect ratio).
F4 – Sets a 14×9 aspect ratio when the input and output formats have different aspect ratios.
F5 – Sets a 13×9 aspect ratio when the input and output formats have different aspect ratios.

## Gain Menus

The *GAIN* menus are activated by pushing the *GAIN* button on the UFC front panel. This menu allows the user to adjust the color component gains and black level settings of the system. These adjustments may be used for color correction of the input video, and also for changing the brightness and contrast of the image. Alternate color space conversion matrices can be selected if the user wants to override the normal format settings. Two submenus are available by turning the knob: *LEVEL ADJUST* and *COLOR MATRICES*.

## LEVEL ADJUST

```
GAIN  »  Y-Pr-Pb

      Y .        Pr        Pb      BLACK
```
| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Activates knob to select the Y gain value (0-1.4).
F2 – Activates knob to select the Pr gain value (0-1.4).
F3 – Activates knob to select the Pb gain value (0-1.4).
F4 – Activates knob to select the black level value (+7.4/- 7.5 IRE).

# Operation

## COLOR MATRICES

```
GAIN  »  CONV  COLORIMETRY


   INPUT    OUTPUT
```
| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Activates knob to select the input color matrix (240, 601, 709).
F2 – Activates knob to select the output color matrix (240, 601, 709).
**Note:** *Default values are set when input or output formats are changed.*


## Diagnostics Menu

The *DIAGNOSTICS* menu is activated by pushing the *DIAG* button on the UFC front panel. This menu shows any errors or warnings that have been detected by the system. Three submenus are available from the top menu: *ALL, MONITORED & TRIGGERED.*

### DIAG

```
DIAG
MONIT'D  ERRORS:  28       TRIG'D  ERRORS:  0

  ALL ↓     MON'D ↓    TRIG'D ↓ RETRIG  MON/MASK
```
| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Opens up the ALL submenu to show all possible error messages.
F2 – Opens up the MONITORED submenu to show which error conditions are being monitored.
F3 – Opens up the TRIGGERED submenu to show all monitored errors that have been detected.
F4 – Acknowledges all detected errors and resets their triggers.
F5 – Touch this button to monitor all error conditions. Hold this button in until it flashes to mask all error detection.

### ALL, MONITORED, TRIGGERED
The same functions are available under each submenu. The knob is used to scroll through all error conditions that are applicable to the respective submenu.

```
DIAG  »  TRIGGERED
[DIO-1]  NO  SD  DIG  VIDEO  INPUT      [FAULT]
(MONIT'D)            (TRANS)            (TRIG'D)
  MASK              TRG  TYPE           RETRIG
```
| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – On the ALL submenu, this toggles between masking or monitoring the displayed error condition. Only the mask option is available on the other two submenus.
F3 – Selects between a level trigger or a transition trigger for the displayed error condition. Transition triggers are useful for detecting error conditions that only occur for a brief period of time.
F5 – Resets the transition trigger for the displayed error condition. The error condition must be cleared in order to retrigger.
**Note:** *Masking and subsequently monitoring an error will automatically reset its trigger. The error condition does not have to be removed first.*

# Operation

## Audio Menus

The *AUDIO* menus are activated by pushing the *AUDIO* button on the UFC front panel. These menus allow the user to change audio routing and delay in the system, as well as enable or disable the audio synchronizers (sample rate converters). Each block of 4 outputs can have their input source selected independently, and also have their synchronizers enabled or disabled. The serial digital input may contain 4/8 channels of embedded audio, and the serial digital output of the system may also contain 4/8 channels of embedded audio which correspond to audio outputs 1-4/5-8. Three submenus are available by turning the knob: *INPUT SELECT, SYNCHRONIZER* and *DELAY*.

### *INPUT SELECTION*

```
AUDIO  »  INPUT  SELECTION


 CH  1 - 4    CH  5 - 8
```
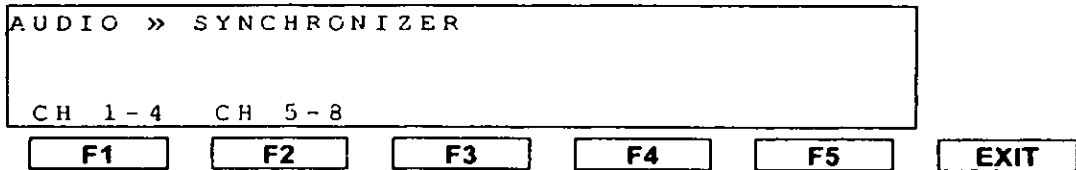
| F1 | F2 | F3 | F4 | F5 | EXIT |
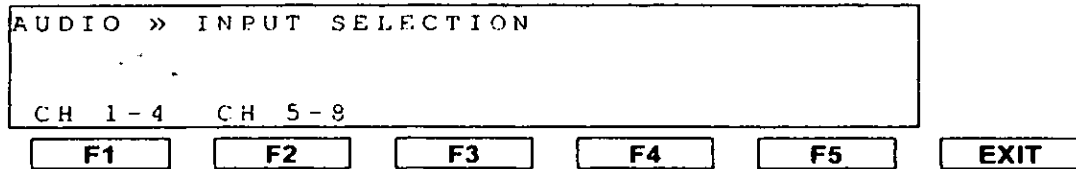
F1 – Activates knob to select the input source for audio output channels 1-4 (AES1-4, AES5-8, SDI 1-4 or SDI 5-8).
F2 – Activates knob to select the input source for audio output channels 5-8 (AES1-4, AES5-8, SDI 1-4 or SDI 5-8).
*Note: When an SD input is selected, SDI 5-8 can not be selected.*

### *SYNCHRONIZER*

```
AUDIO  »  SYNCHRONIZER


 CH  1 - 4    CH  5 - 8
```

| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Enables or disables the synchronizer for audio channels 1-4.
F2 – Enables or disables the synchronizer for audio channels 5-8.

### *DELAY*
Audio delay is a global adjustment where the default (delay=0) position delays the audio just enough to match the video processing delay through the system. Additional delay can be added by the user with the delay setting on this menu.

```
AUDIO  »  DELAY


 DELAY
```

| F1 | F2 | F3 | F4 | F5 | EXIT |
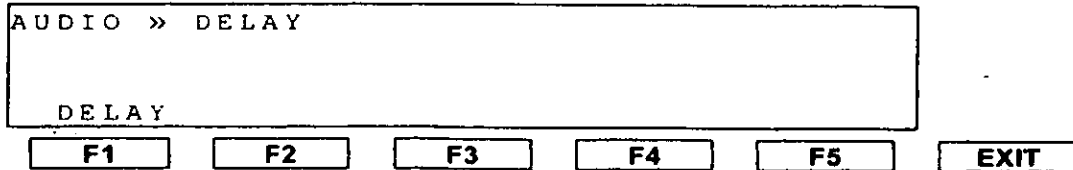
F1 – Activates knob to select the amount of audio delay (0 to 170 ms).
*Note: The zero value on the display corresponds to the amount of video processing delay. Therefore the displayed range is (–video delay) to (170 ms –video delay).*

# Operation

## Test Menus

The *TEST* menu is activated by pushing the *TEST* button on the UFC front panel. This menu allows the user to activate the internal test pattern generator, select patterns, or activate the frame store feature.

### SIGNAL GEN

```
TEST  »  SIG  GEN



 SELECT    F  STORE
```

| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Activates knob to select the test pattern (Off, Stored Frame and various H/V based patterns).
F2 – Captures current video image to frame store. This is only active when SELECT is set to "OFF".

## Setup Menus

The *SETUP* menus are activated by pushing the *SETUP* button on the UFC front panel. These menus allow the user to set the background color, power-up settings, and time code input/output modes. Four submenus are available by turning the knob: *BACKGROUND COLOR, POWER UP, TIME CODE-INPUT* and *TIME CODE-OUTPUT.*

### BACKGROUND COLOR

This menu allows the user to adjust the background color settings of the system. The background color shows through when the input frame does not completely fill the output frame (due to zoom, pan, or crop settings). The background color is selected from a preset list, or a custom color may be selected by setting RGB values manually.

```
SETUP  »  BACKGROUND  COLOR
BG  COLOR:  CUSTOM      RGB  =     0     0     0

 BG  COL    CUST  R    CUST  G    CUST  B
```

| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Activates knob to select the background color (Black, Sub-Black, Blue, White or Custom).
F2 – Activates knob to select the custom red value (0 to 255).
F3 – Activates knob to select the custom green value (0 to 255).
F4 – Activates knob to select the custom blue value (0 to 255).
*Note: F2, F3 and F4 only appear when CUSTOM is selected.*

### POWER UP

```
SETUP  »  POWER  UP
POWER  UP  OPTIONS:  PRESET  1
CURRENT  POWER  UP:  LAST  STATE
 STATE      SELECT
```

| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Activates knob to select the power-up mode (Last state, Default or Preset 1-16).
F2 – Selects the displayed state as the power up mode.
*Note: This state is momentarily displayed on the front panel during power up.*

# Operation

### TIME CODE-INPUT
This menu allows the user to select the source for inpu TC and indicate drop frame or non-drop frame TC.

```
SETUP » TIME CODE-INPUT


SOURCE   DF  MODE
```
| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Selects whether the time code source is from the serial input or from the external TC connector (S_LTC, EXT_LTC or S_VITC).

F2 – When this is on AUTO, the time code source drop frame flag is used. Otherwise, non-drop frame mode is set (AUTO, ON).

*Note: When an SD input is selected, S_LTC cannot be selected.*

### TIME CODE-OUTPUT
This menu allows the user to select the source for output TC and indicate drop frame or non-drop frame TC.

For an HDTV output, the following menu is seen.

```
SETUP » TIME CODE-OUTPUT


EXT LTC S VITC    S LTC   DF MODE
```
| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Selects whether the external LTC is on or off.
F2 – Selects whether the SDI output VITC is on or off.
F3 – Selects whether the SDI output LTC is on or off.
F4 – Selects between drop frame mode and non-drop frame mode.

*Note: If the input TC source is not available, then the TC output selections will be forced to the off setting until the source is present.*

For an SDTV output, the following menu is seen.

```
SETUP » TIME CODE-OUTPUT


EXT LTC S VITC    VITC1    VITC2    DF MODE
```
| F1 | F2 | F3 | F4 | F5 | EXIT |

F1 – Selects whether the external LTC is on or off.
F2 – Selects whether the SDI output VITC is on or off.
F3 – Activates knob to select the line for VITC1 insertion on SD outputs.
F4 – Activates knob to select the line for VITC2 insertion on SD outputs.
F5 – Selects between drop frame mode and non-drop frame mode.

*Note: If the input TC source is not available, then the TC output selections will be forced to the off setting until the source is present.*

# Error messages

| No. | Message | Error description | Remedy |
|---|---|---|---|
| DIO-1 | NO SD DIG VIDEO INPUT | No signal is detected on the SD serial input. | Check SD input signal. |
| DIO-2 | NO HD DIG VIDEO INPUT | No signal is detected on the HD serial input. | Check HD input signal. |
| DIO-3 | HD SDI CRC ERROR | A checksum error was found on the HD serial input. | Check HD SDI input cable and/or source. |
| DIO-4 | NO SD EMBED AUDIO INPUT | No embedded audio signal is detected on the SD serial input. | This may not be supported by the source equipment. |
| DIO-5 | SD SDI AUDIO ERROR | A checksum error was found on the SD embedded audio input. | Check SD SDI input cable and/or source. |
| DIO-6 | NO HD EMBED AUD IN, CH1-4 | No embedded audio signal is detected on CH1-4 on the HD serial input. | Check the source. |
| DIO-7 | HD SDI AUD ERR CH1-4 | A checksum error was found on the HD embedded audio input. | Check HD SDI input cable and/or source. |
| DIO-8 | NO HD EMBED AUD IN, CH5-8 | No embedded audio signal is detected on CH5-8 on the HD serial input. | This may not be supported by the source equipment. |
| DIO-9 | HD SDI AUD ERR CH5-8 | A checksum error was found on the HD embedded audio input. | Check HD SDI input cable and/or source. Check for support from source. |
| DIO-10 | SD SDI EDH ERR | An EDH error was detected on the SD serial input. | Check SD SDI input cable and/or source. |
| DIO-11 | NO SD EDH IN SDI | EDH information was not found on the SD serial input. | Check source. Not all equipment supports EDH. |
| DIO-12 | NO EXT LTC | An error was found on the external LTC input. | Check cable and/or source. |
| DIO-13 | NO HD LTC | An error was found on the HD embedded LTC input. | Check source. |
| DIO-14 | NO HD VITC | An error was found on the HD VITC input. | Check source. |
| DIO-15 | NO SD VITC | An error was found on the SD VITC input. | Check source. |
| AUD-1 | CH 1/2 AUD PARITY ERROR | A parity error was found on the external audio signal. | Check cable and/or source. |
| AUD-2 | CH 1/2 AUD CRC ERROR | A checksum error was found on the external audio signal. | Check cable and/or source. |
| AUD-3 | CH 3/4 AUD PARITY ERROR | A parity error was found on the external audio signal. | Check cable and/or source. |
| AUD-4 | CH 3/4 AUD CRC ERROR | A checksum error was found on the external audio signal. | Check cable and/or source. |
| AUD-5 | CH 5/6 AUD PARITY ERROR | A parity error was found on the external audio signal. | Check cable and/or source. |
| AUD-6 | CH 5/6 AUD CRC ERROR | A checksum error was found on the external audio signal. | Check cable and/or source. |

# Error messages

| No. | Message | Error description | Remedy |
|---|---|---|---|
| AUD-7 | CH 7/8 AUD PARITY ERROR | A parity error was found on the external audio signal. | Check cable and/or source. |
| AUD-8 | CH 7/8 AUD CRC ERROR | A checksum error was found on the external audio signal. | Check cable and/or source. |
| SYS-1 | FAN STOPPED | The rear panel cooling fan has stopped. | Check for obstruction. |
| MM-1 | NO EXT. SYNC | Reference is external sync, but no signal is detected. | Check EXT SYNC input. |
| MM-2 | NO SMPTE 318 SYNC | Reference is SMPTE 318, but signal is incorrect. | Connect a SMPTE 318 signal to EXT SYNC. |
| MM-3 | NO INPUT LOCK | Input PLL is not locked. | Make sure that input source matches the selected format. |
| MM-4 | NO OUTPUT LOCK | Output PLL is not locked. | Input source must be locked to the external reference. |

# Others

## INDICATORS

### L1 PCB LED

D3 - D0 LED (Red): These LEDs show the input frame rate. See table:

| LED | Status | 1125i | 1125p | 750p | 525i | 525p | 625i |
|---|---|---|---|---|---|---|---|
| D3<br>-<br>D0 | 0000 | | | 60 | | | |
| | 0001 | | | 59.94 | | | |
| | 0010 | 30 | 30 | | 30 | 60 | |
| | 0011 | 29.97 | 29.97 | | 29.97 | 59.94 | |
| | 0100 | | | | | | |
| | 0101 | 25 | 25 | | | | 25 |
| | 0110 | 24 | 24 | | | | 24 |
| | 0111 | 23.98 | 23.98 | | | | 23.98 |

**Note:** *1 is on , 0 is off.*

CRC LED (Green): When CRC errors are not present, the LED is lit.

### L2 PCB LED

D3 LED (Red): Processor error.
D4 LED (Green): Flashes when the system microprocessor is running.

## Remote connectors

The GPI port allows remote selection of PRESETS 1-8 when the front panel REMOTE/LOCAL switch is in the "REMOTE" position. The GPI inputs are active low so that a connection between pins 1-8 and pin 9 will select the corresponding PRESET.

GPI pins:
  1 – preset 1
  2 – preset 2
  3 – preset 3
  4 – preset 4
  5 – preset 5
  6 – preset 6
  7 – preset 7
  8 – preset 8
  9 – GND

# Rack-mounting

The unit can be installed in EIA standard 19-inch rack using the rack-mounting adapters supplied with the unit.
The rails and brackets for 22 inch length made by Accuride are recommended as the mounting rails. For details, consult your dealer.
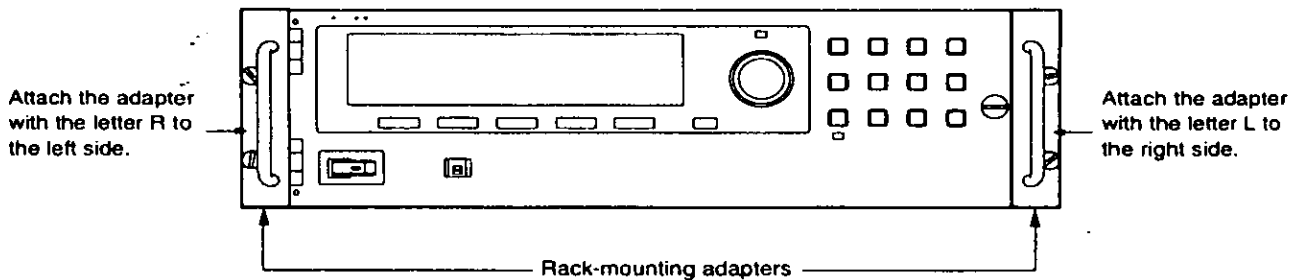
1. Use the screws supplied with the rails and brackets to attach the inner members of the slide rails on the unit's left and right panel.
   • The length of the screws used is restricted. If the mounting screws have been misplaced or lost, use the screws (M4 × 10) which are less than 2/5 " (10 mm) long.
   • Be sure to secure the inner members in 4 placed.
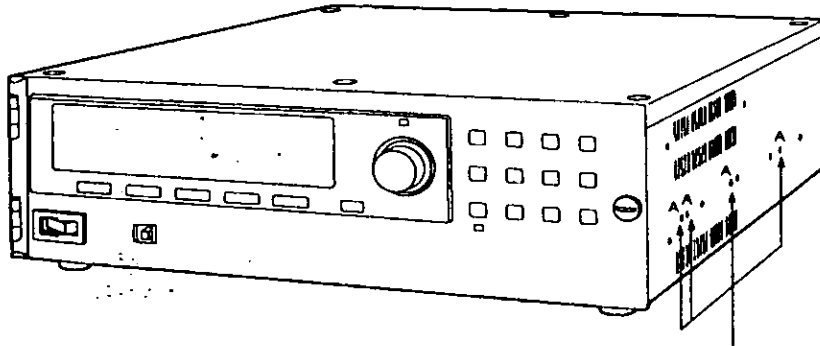


**Holes for mounting slide rail:**
A: Accuride C305A-22LRD (Please order to Winsted
   Co. Ltd. : Parts number 88820).

2. Remove the four set feet on the bottom of the unit.

3. Mount the outer member brackets on the rack.
   • Check that the brackets have been positioned at the same height on the left and right.

4. Attach one rack-mounting adapter with the letter R to the LEFT side panel, and another with the letter L to the RIGHT side panel.



Attach the adapter with the letter R to the left side.

Attach the adapter with the letter L to the right side.

Rack-mounting adapters

Use the screws (M4) supplied with the unit to mount the unit to the rack.

5. Install the unit in the rack.
   • Release the inner member stoppers when housing the unit in the rack.
   • After having installed the unit, check that it can be moved smoothly along the rails, and fasten to the adapter to the rack with the screws.

**Notes:**
• Keep the temperature inside the rack between 41°F (5°C) and 104°F (40°C).
• Bolt the rack securely to the floor so that it will not topple over when the unit is drawn out.

**Panasonic**