SONY

HD UP CONVERTER BOARD

HKSP-1125

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

設置や保守，点検，修理などを行う前に，本体（PFV-SPシリーズ）に付属のインストレーションマニュアルおよびオペレーションマニュアルの「安全のために」を必ずお読みください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

INSTALLATION MANUAL
1st Edition (Revised 1)
Serial No. 10001 and Higher

Purpose of this manual

This manual is an installation manual of HD Up Converter Board HKSP-1125.

This manual is intended for use by trained system and service engineers, and describes information regarding installation.

Related manuals

Besides this installation manual, the following manuals are available for the HKSP-1125.

- Maintenance Manual (Available on request)
  This manual describes the information that premises the parts level service (adjustment, parts list, diagrams, etc.). If this manual is required, please contact your local Sony Sales Office/Service Center.
- "Semiconductor Pin Assignments" CD-ROM (Available on request)
  This "Semiconductor Pin Assignments" CD-ROM allows you to search for semiconductors used in B&P Company equipment.
  Part number: 9-968-546-XX

1. Installation

The HKSP-1125 is composed of the following items.

- Main board (DPR-215A board)
- Connector board (DIF-137A board)
- Unit label (2pcs)
- Operation guide
- Installation manual

Attaching HKSP-1125

The HKSP-1125 is designed to be installed and operated in the signal processing unit PFV-SP series.

In accordance with the installation manual of the PFV-SP series, be sure to attach the main board and connector board of the HKSP-1125.

Note

This unit uses two slots of PFV-SP series. Remove the two-slot blank panels when installing the connector board.

Matching connector/cable

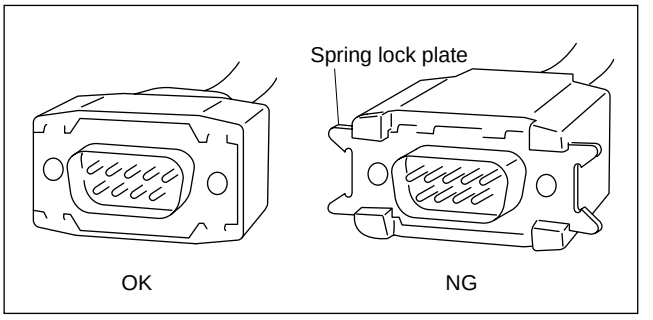
When external cables are connected to the connectors on the connector board, the hardware listed below (or equivalents) must be used.

SDI IN, VIDEO IN, HD OUT
Connector: BNC (75 Ω)/1-569-370-12
Cable: Fujikura 5C-2V cable

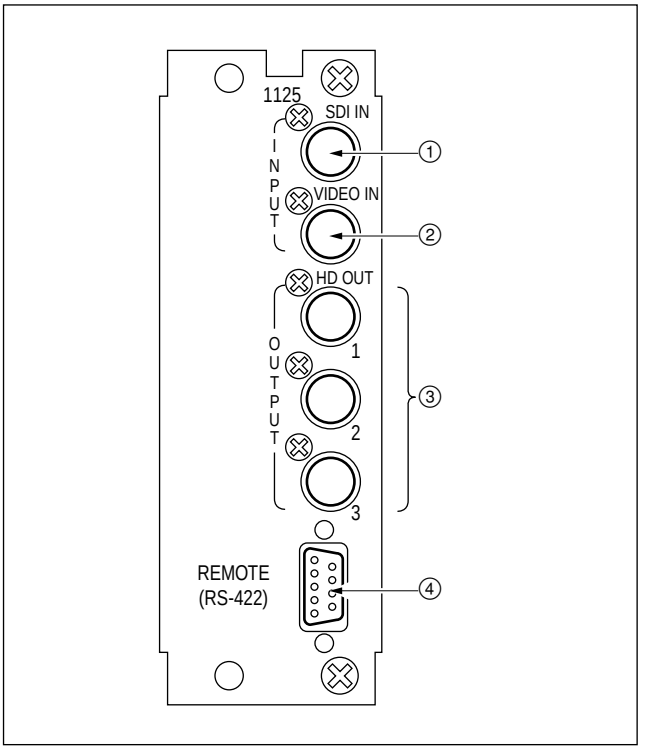
REMOTE
Connector: 9P, Male/1-566-354-XX
Cable: 9P-9P remote control cable
RCC-5G (5 m)
RCC-10G (10 m)
Shell: Hood for 9 pin/9-885-028-89
DDK Ltd. 17JE-09H-1A or equivalent

Note

Be sure to use the remote control cable RCC-5G/10G without attaching the spring lock plate.



2. Name and Function of Connector



① SDI IN (SDTV serial digital video signal input) connector (BNC-type)

This connector inputs a SDTV serial digital video signals of D1 SDI (525/625) and D2 SDI (525).

② VIDEO IN (NTSC analog video signal input) connector (BNC-type)

This connector inputs an analog NTSC video signal.

③ HD OUT (HDTV serial digital video signal output) connectors (BNC-type)

The video signal input to the SDI IN and VIDEO IN connectors is processed according to the operating mode and then output.

The same signal is output from connectors 1 and 3.

④ 9PIN/GPI connector (D-sub 9 Pin)

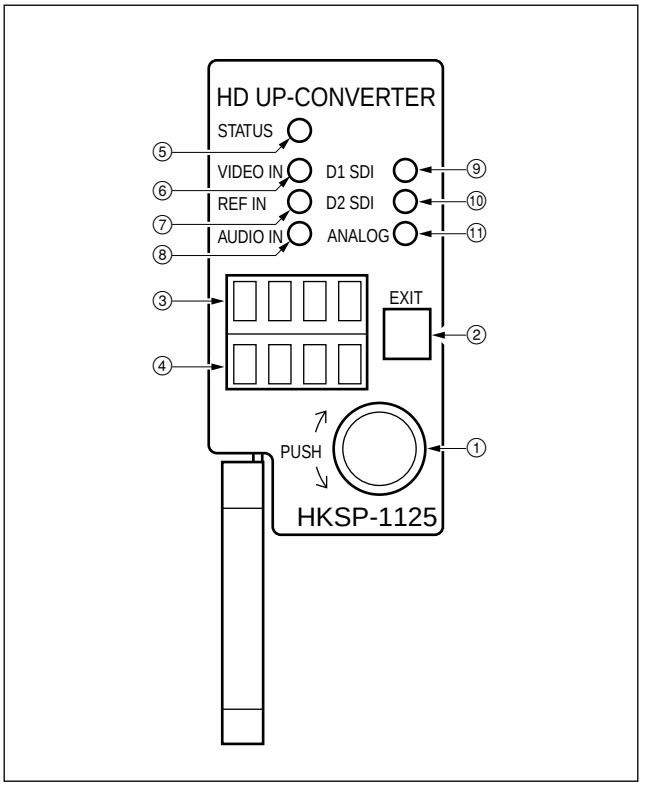
This connector is the input/output connector of an external controls which connecting the HD digital video controller HKDV-900.

Moreover, this connector can also be used as GPI. The selection is performed by the menu of this unit.

3. Name and Function of Switch and Indicator

The switches and indicators on the operation panel and main board (DPR-215A board) are described below.

3-1. Operation Panel



Dial and switch (Refer to Section 5-1-1 for operation.)

No.	Ref. No.	Name	Function
①	EN1 (LED-395A board)	Dial	Selects the setting item and data. Select: Turn the dial. Determine: Press the dial.
②	S1 (LED-395A board)	EXIT key	Returns to the display mode when this switch is pressed in the input mode.

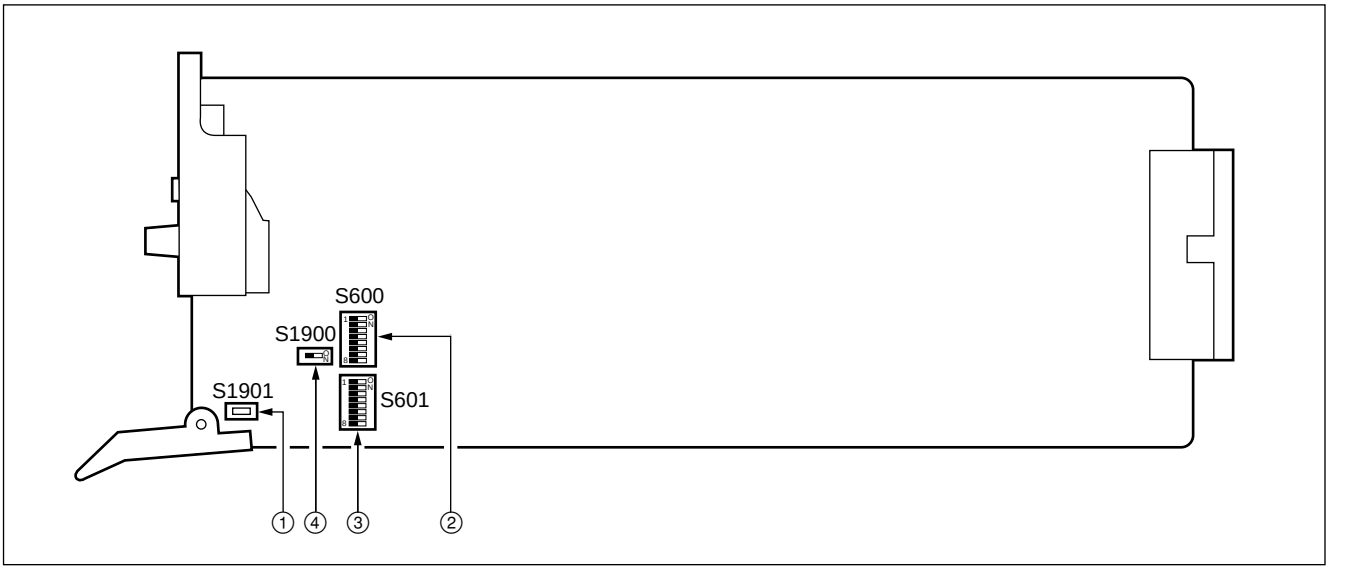
Displays

No.	Ref. No.	Name	Function
③	ND1 (LED-394A board)	Upper Display	Displays the setup and operation data items.
④	ND2 (LED-394A board)	Lower Display	Displays the values of setup and operation data.

Indicators

No.	Ref. No.	Name	Function
⑤	D1 (LED-393A board)	STATUS	Lights in green: Under normal operation Blinks in green: A warning occurs. (Refer to Section 6-1-2.) Blinks in red: An error occurs. (Refer to Section 6-1-1.) Off: The power supply of the main board is abnormal or CPU is not activated. **Note** When an error and warning are occurred simultaneously, error overrides the warning. For details, refer to Sections 5-2 and 6.
⑥	D2 (LED-393A board)	VIDEO IN	Lights in green: A SD video input signal is normal. Lights in red: A SD video input signal is abnormal or dose not match with the setting of a format. Off: A SD video input signal does not exist.
⑦	D3 (LED-393A board)	REF IN	Lights in green: A selected reference signal is normal. Lights in red: A selected reference signal is abnormal. Off: A selected reference signal does not exist.
⑧	D4 (LED-393A board)	AUDIO IN	Lights in green: An audio input signal is normal. Lights in red: An audio input signal is abnormal. Off: An audio input signal does not exist.
⑨	D6 (LED-393A board)	D1 SDI	Lights in green: A D1 SDI input mode is selected. Off: Other mode is selected.
⑩	D7 (LED-393A board)	D2 SDI	Lights in green: A D2 SDI input mode is selected. Off: Other mode is selected.
⑪	D8 (LED-393A board)	ANALOG	Lights in green: An ANALOG input mode is selected. Off: Other mode is selected.

3-2. Main Board (DPR-215A Board)



Switches (Factory default settings are indicated by a ■ mark.)

No.	Ref. No.	Name	Function
①	S1901	RESET	The DPR-215A board performs the same operation as during the power-on sequence when this switch is pressed. **Note** Do not use during normal operation.
②	S600	STATUS	Status out select switch 1-8 (■ ON) For details about this switch, refer to Section 5-2.
③	S601	TEST	Test switch 1-8 (■ OFF) **Note** Factory use only.
④	S1900	NORM/DOWN	CPU program rewrite switch (■ NORM) **Note** Do not use during normal operation.

4. Operating Function

The HD up converter board HKSP-1125 converts the standard TV signal (SDI) to high definition TV signal (HD SDI), and has an additional function required for conversion.

Input/Output

• Input signal can be selected from the following four video signals.

D1 SDI (59.94i)
D1 SDI (50i)
D2 SDI (59.94i)
NTSC ANALOG (59.94i)

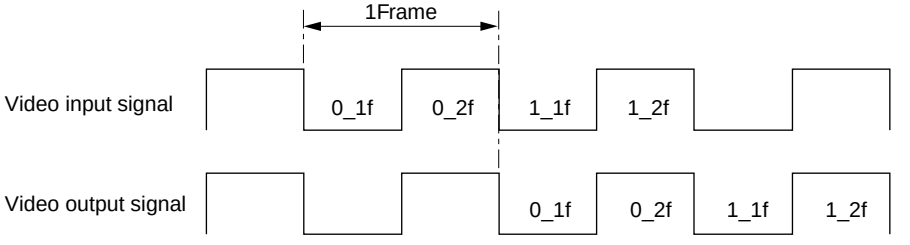
• Output signal can be selected from the following four signal systems according to the selected signal mentioned above.

1080i/59.94: D1 SDI (59.94i) /D2 SDI (59.94i) /NTSC ANALOG (59.94i)
1035i/59.94: D1 SDI (59.94i)/ D2 SDI (59.94i) /NTSC ANALOG (59.94i)
1080i/50: D1 SDI (50i)
720p/59.94: D1 SDI (59.94i) /D2 SDI (59.94i) /NTSC ANALOG (59.94i)

Genlock System

The sync signal of the output signal can be selected from internal sync INPT, external sync REFA and REFB. If the external sync signal is selected, the frame synchronizer function operates automatically.

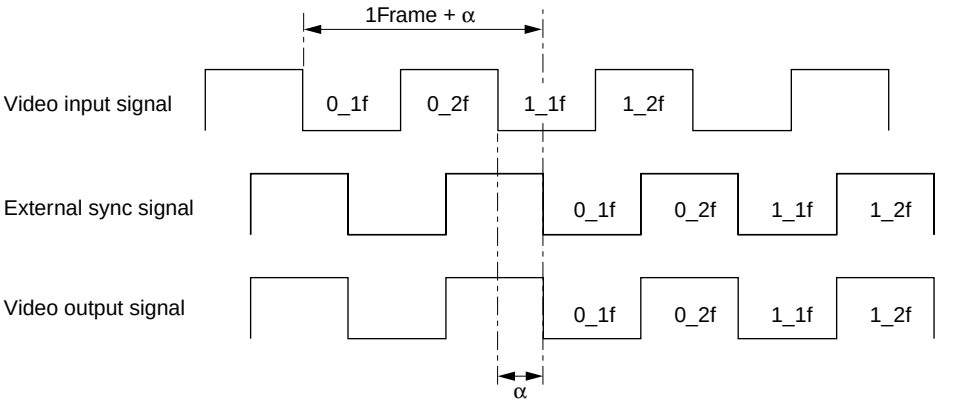
• Internal Synchronization Mode



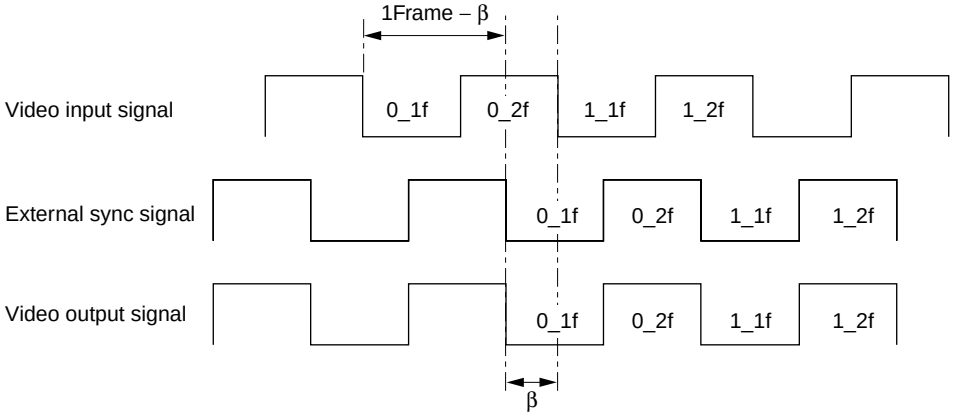
Notes

• The system delay is fixed to 1Frame.
• When the unit is operating in this mode, the audio rate convert function can not operate irrespective of the setting (ON/OFF) of the audio rate convert function ADRC.
The delay amount of audio is fixed to 1Frame. But, it is possible to adjust it by the system delay SYC, SY-F and audio delay ADLY. (For more details, refer to Section “5. Setting”.)

• External Synchronization Mode (Frame Synchronizer Mode)
When the external sync signal is delayed α (660H or less).



When the external sync signal is advanced β (1Frame – 660H or less).



Note

When the unit is operating in this mode, the audio rate convert function is switched to ON/OFF according to the setting (ON/OFF) of the audio rate convert function ADRC. The audio delay is fixed to 1Frame. But, it is possible to adjust it by the system delay SYC, SY-F and audio delay ADLY. (For more details, refer to Section “5. Setting”.)

Motion Sensitivity Adjustment Function

According to the motion, the ratio converts from a field or a frame is changed adaptively and processed. The sensitivity can be adjusted in five steps.

Aspect Ratio

The aspect ratio of the output video signal can be selected from Edge crop, Letter Box, or Squeeze. The position can be adjusted in each aspect ratio.

Color Corrector Function

The color corrector function can be selected from YPbPr, HUE, or RGB, and the white clip and black clip adjustments can also be performed.

Back-color Control Function

The back-color control function has the following features.

- Color adjustment of color matte
- Position adjustment for back-color area
- Enables the layout and super-impose of the intake picture into back.

Ancillary Data Multiplexing

Multiplexes the auxiliary data such as VITC, digital super imposed data, and so on to HD SDI signal.

Audio

Audio signal can be delayed up to 2 Frames, and corresponds to 8 channels.

5. Setting

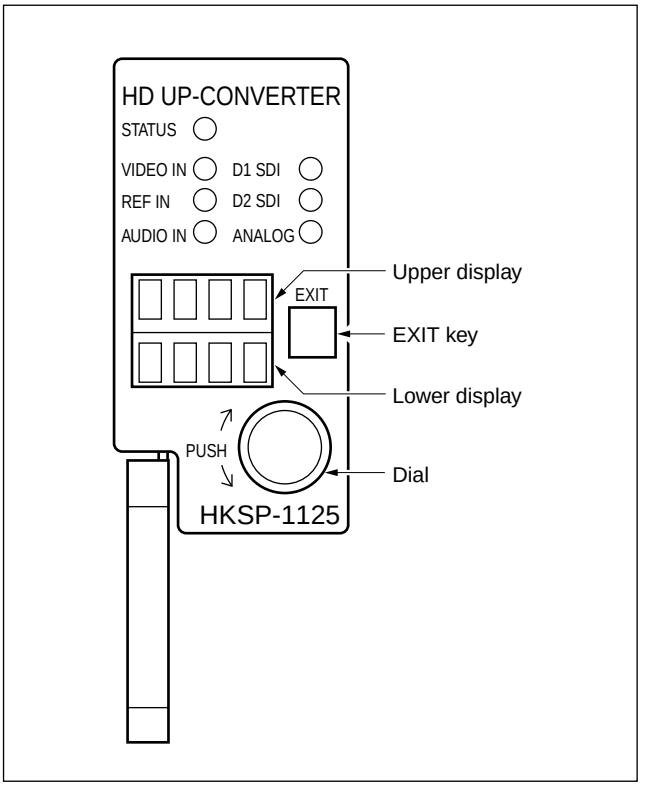
Each item can be set using the operation panel.

The operation of the operation panel and the setting of setup switches on the main board are described below.

The several setting items and operation modes are always stored, so it is not necessary to reset the settings by the POWER ON/OFF etc.

5-1. Setting Using Operation Panel

5-1-1. Operation



Upper Display: Displays the item (menu).
Lower Display: Displays the set value.
Turn the dial clockwise: The item advances.
Turn the dial counterclockwise:
The item returns.
Press the dial: The hierarchy of a menu turns into lower by one.
The set value is determined.
EXIT key: The hierarchy of a menu returns by one.

Note

For the configuration and hierarchy of a menu, refer to Sections “5-1-2. Menu Configuration” and “5-1-3. Menu List”.

Basic operation

1. Turn the dial and select the menu to be set.
2. Press the dial to turns into the lower hierarchy of a menu by one.
3. When it is determined at the bottom of the hierarchy, the display returns to the system menu.

Note

The system automatically returns to the HOME menu mode when, in the input mode, the state of no operation continues over a fixed period of time (about 5 minutes).

Setting example 1 (Without the hierarchy of a menu)

When setting the reference to REF IN A of signal processing unit PFV-SP series

1. Turn the dial to display “REF” on the upper display. The current setting is displayed on the lower display.
2. Press the dial. The lower display turns into the input mode and blinks.
3. Turn the dial to display “REFA” (REF IN A as the reference) and press the dial.
   “REFA” is lit up and returns the display mode, then the reference is set to REF IN A.

Setting example 2 (With the hierarchy of a menu)

When setting the video gain to 90 % in the color corrector mode

1. Turn the dial to display “C/C” on the upper display. The current setting (YpbPr) is displayed on the lower display.
2. Press the dial to turns into the input mode.
3. Turn the dial to display the “HUE”, and press the dial. The menu “VI-G” for the composite video signal is displayed on the upper display. The current setting value (“100 %”) is displayed on the lower display, and its picture is fed out.
4. Press the dial to turns into the input mode.
5. Turn the dial to counterclockwise to display “90 %”. The video gain is set to 90 %.
6. Press the dial once to turn the system into the higher hierarchy by one.
7. Press the EXIT key twice to return the HOME menu.

5-1-2. Menu Configuration

The setting items are classified into three groups.
The current “FMT” of the HOME is displayed when the power is turned on.

- HOME menu
  Group of items that displays the current statuses of MODE and format are contained.
- System menu
  Group of functions (e.g., signal format, default recall) that changes the system setting extensively during the operation are contained.

  Note

  To enter the system menu, press the dial 2 seconds or more in the HOME menu.
- Operation menu
  Group of items (e.g., color corrector function, enhancer function) that changes the setting frequently during the operation are contained.

5-1-3. Menu List

Note

The menus for the color corrector mode are displayed as follows.

Menu for RGB: Displays as “R”.
Menu for YPbPr: Displays as “Y”.
Menu for HUE: Displays as “H”.

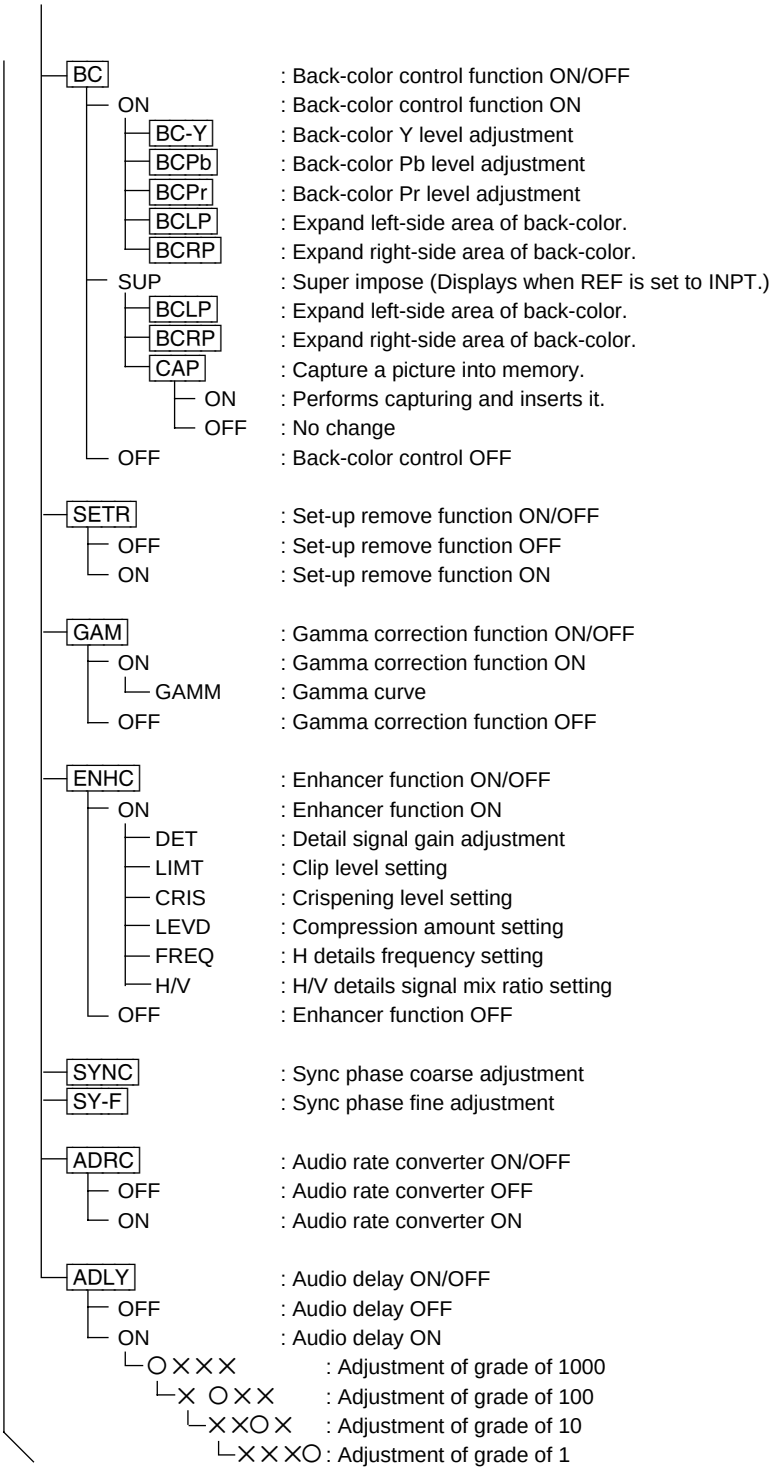
HOME

System menu

- FMT : Output format
  - 108i/5994 : 1080i/59.94
  - 103i/5994 : 1035i/59.94
  - 108i/50 : 1080i/50
  - 720p/5994 : 720p/59.94sF
- O_DL : Selects output delay
  - REF : REF synchronization
  - ADJ : Variable
  - MIN : Minimum delay
- DL_A : Adjusts delay amount
  - ○○×× : Adjustment of grade of 100
    - ××○× : Adjustment of grade of 10
      - ×××○ : Adjustment of grade of 1
- DL2F : 2 Frames delay ON/OFF
  - OFF : 2 Frames delay OFF
  - ON : 2 Frames delay ON
- FS_P : Frame synchronizer process select
  - FREZ : Outputs the picture just before intermittent of signal.
  - GRAY : Outputs the gray picture.
- DEFA : Default recall
  - OFF : No change
  - USER : User default setting
  - FACT : Factory setting state
- DF-S : User default save
  - OFF : No change
  - SAVE : Save current setting to user default
- REMO : 9-pin remote select HKDV-900/GPI
  - HKDV : Use HD digital video controller HKDV-900
  - GPI : Use GPI
- V-SG : Video SG
  - OFF : No output
  - 1 : Color bars 100 % (709) select
  - ⋮ ⋮
  - 16 : Grey select
- DIAG : Self diagnosis mode
  - OFF : End
  - ON : Start
- SOFT : CPU software version display
- PLD1 : PLD1 version display
- PLD2 : PLD2 version display
- HARD : Hardware version display
- ERR! : Error code display
- WRN! : Warning code display

Operation menu

- IN-V : Input video select
  - D1 : Selects D1 SDI
  - D2 : Selects D2 SDI
  - ANA : Selects NTSC ANALOG
- REF : Video reference select
  - INPT : INPUT VIDEO
  - REFA : REF IN A
  - REFB : REF IN B
- EX-R : External reference select
  - HD : Tri-level sync signal
  - SD : 525/625 black burst signal
- CONV : Conversion mode
  - ADP : Adaptive
  - FLD : Converts at field fixation.
  - FRM : Converts at frame fixation.
- M-SE : Motion detection sensitivity adjustment
  - 1 : Adaptive 2
  - ⋮ ⋮
  - 5 : Adaptive 3
- ASPC : Aspect mode select
  - ON : Aspect menu ON
    - ASPE : Aspect ratio select
      - EC : Edge Crop mode
      - LB : Letter Box mode
      - SQ : Squeeze mode
    - ECPC : Edge Crop position control
      - ON : Variable
      - OFF : Fixed to center
    - EC-P : Edge Crop position adjustment
    - LBPC : Letter Box position control
      - ON : Variable
      - OFF : Fixed to center
    - LB-P : Letter Box position adjustment
    - AS-F : Aspect flag mode ON/OFF
      - OFF : Panel setting is effective.
      - ON : Follows flag of stream.
  - OFF : Aspect menu OFF
- C/C_ : Color corrector mode
  - YPb
  - HUE
  - RGB
    - Y — M-G : Master gain adjustment
    - Y — Y-G : Y gain adjustment
    - Y — Pb-G : Pb gain adjustment
    - Y — Pr-G : Pr gain adjustment
    - Y — SETU : Setup adjustment
    - H — VI-G : Video gain adjustment
    - H — CH-G : Chroma gain adjustment
    - H — HUE : HUE adjustment
    - H,R — OFFS : Offset adjustment
    - R — M-G : Master gain adjustment
    - R — R-G : R gain adjustment
    - R — G-G : G gain adjustment
    - R — B-G : B gain adjustment
    - Y/R/H — WCL : White clip level setting
    - Y/R/H — BCL : Black clip level setting


BC : Back-color control function ON/OFF
ON : Back-color control function ON
BC-Y : Back-color Y level adjustment
BCPb : Back-color Pb level adjustment
BCPr : Back-color Pr level adjustment
BCLP : Expand left-side area of back-color.
BCRP : Expand right-side area of back-color.
SUP : Super impose (Displays when REF is set to INPT.)
BCLP : Expand left-side area of back-color.
BCRP : Expand right-side area of back-color.
CAP : Capture a picture into memory.
ON : Performs capturing and inserts it.
OFF : No change
OFF : Back-color control OFF
SETR : Set-up remove function ON/OFF
OFF : Set-up remove function OFF
ON : Set-up remove function ON
GAM : Gamma correction function ON/OFF
ON : Gamma correction function ON
GAMM : Gamma curve
OFF : Gamma correction function OFF
ENHC : Enhancer function ON/OFF
ON : Enhancer function ON
DET : Detail signal gain adjustment
LIMT : Clip level setting
CRIS : Crispening level setting
LEVD : Compression amount setting
FREQ : H details frequency setting
H/V : H/V details signal mix ratio setting
OFF : Enhancer function OFF
SYNC : Sync phase coarse adjustment
SY-F : Sync phase fine adjustment
ADRC : Audio rate converter ON/OFF
OFF : Audio rate converter OFF
ON : Audio rate converter ON
ADLY : Audio delay ON/OFF
OFF : Audio delay OFF
ON : Audio delay ON
○×××: Adjustment of grade of 1000
×○××: Adjustment of grade of 100
××○×: Adjustment of grade of 10
×××○: Adjustment of grade of 1

5-1-4. HOME Menu

Item	Description
HOME	Displays the input video (D1 SDI/D2 SDI/ANALOG input mode) on the upper display. (Displays the contents of the IN-V (D1, D2, ANA) in the actual display.) Displays the HD output format on the lower display. (Displays the number of scanning lines and frequency alternately at intervals of 1 second.)

5-1-5. System Menu

Note

To enter the system menu, press the dial in the HOME menu 2 seconds or more.

(Factory default settings are indicated by a ■ mark.)

Item	Description
FMT	Selects the output format. The number of scanning lines and frequency is displayed alternately at intervals of 1 second on the lower display. When the dial is pressed, the number of scanning lines is displayed on the upper display, and the frequency is displayed on the lower display, and the format can be selected. D1 SDI input mode Selects the D1 SDI input mode by IN-V, and selects the output format described below by FMT. Display — Output format ■ 108i/5994: — 1080i/59.94 108i/50: — 1080i/50 103i/5994: — 1035i/59.94 720p/5994: — 720p/59.94sF D2 SDI input mode Selects the D2 SDI input mode by IN-V, and selects the output format described below by FMT. Display — Output format ■ 108i/5994: — 1080i/59.94 103i/5994: — 1035i/59.94 720p/5994: — 720p/59.94 ANALOG input mode Selects the ANALOG input mode by IN-V, and selects the output format described below by FMT. Display — Output format ■ 108i/5994: — 1080i/59.94 103i/5994: — 1035i/59.94 720p/5994: — 720p/59.94
O_DL	Adjusts the output delay amount. ■ REF: REF synchronization (When the REF is set to INPUT, the delay amount is set to 1 frame. When the REF is set to REFA or REFB, the frame synchronizer operates, and then the delay amount is variable in the range of about 0.6 frame to 1.6 frame.) ADJ: Variable MIN: Minimum delay **Note** When the mode is in ADJ or MIN, the frame synchronizer is set to OFF forcibly.
DL_A	Adjusts the delay amount. (Only when O_DL is set to ADJ, this mode is enabled.) Sets the delay amount in the units of line, and setup is possible to 660 to 1171 lines. ○○××: The grade of 100 blinks. Sets the value from 6 to 11 by turning the dial, and press the dial to determination. Shifts the grade of 10 by pressing the dial againÅCand shifts the grade of 1000 by pressing the EXIT key. ××○×: The grade of 10 blinks. Set the value from 0 to 9 by turning the dial, and press the dial to determination. Shifts the grade of 1 by pressing the dial againÅCand shifts the grade of 100 by pressing the EXIT key. ×××○: The grade of 1 blinks. Set the value from 0 to 9 by turning the dial, and press the dial to determi nation.
DL2F	2 frames delay (Adds 1 frame to the normal delay amount of video and audio.) ■ OFF: No change ON: 2 frames delay

Item	Description
FS_P	Selects the frame synchronizer process (Selects the output picture at the time of the input signal is intermittent.) ■ FREZ: Outputs the picture just before intermittent of signal. GRAY: Output the gray picture. **Note** When the external sync is selected as the REF signal, the frame synchronizer operates automatically.
DEFA	Changes the setting into default setting. ■ _OFF: Not change the setting. USER: Changes the setting into the contents that is saved in DF-S. FACT: Changes the setting into the default settings of the factory shipping state. **Note** If the setting is not saved in DF-S, the default setting of the USER is the same as the factory shipping state.
DF-S	Saves the current setting as the user default. ■ _OFF: Not save the setting SAVE: Saves the setting.
REMO	Selects the 9 pin remote. ■ HKDV: Selects this mode when controlling the unit using a HD digital video controller HKDV-900. GPI: Selects this mode when controlling the unit using GPI. **Notes** • The HD digital video controller HKDV-503 cannot be used. Be sure to use the HKDV-900. • Even if the HKDV-900 is used, the unit can also be controlled by the front panel. **Note** The following table shows the functions of the video controller and control function of this unit. The ○ mark means the controllable function. For the items displayed as Enhancer etc. after the ○ mark, these items become controllable by pressing the Enhancer button of the HKDV-900. The × mark means the uncontrollable function.

Function	Item	Menu of the unit	HKDV-900
Video/REF select	All	○	×
Conversion	All	○	×
Aspect	Edge Crop	○	○ Enhancer
	Letter Box	○	○ Enhancer
	Squeeze	○	○ Enhancer
	Edge Crop Position	○	○ Enhancer
	Letter Box Position	○	○ Enhancer
	Aspect flag	○	×
Color Corrector	YPbPr	○	○ HD (Selectable to RGB)
	HUE	○	○ D2
	RGB	○	○ HD (Selectable to YPbPr)
	White clip	○	×
	Black clip	○	×
	Setup Remover (7.5 %)	○	○ D1
Back-color	Back-color Y Level	○	○ D1
	Back-color Pb Level	○	○ D1
	Back-color Pr Level	○	○ D1
	Back-color Left Position	○	×
	Back-color Right Position	○	×
Gamma Correction	All	○	○ Enhancer
Enhancer	All	○	○ Enhancer
Sync Phase	All	○	○ HD
Audio Delay	All	○	×

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td></td><td>
Note
The HKSP-1125 operates as the following GPI specifications.
• Pin assignment
<table>
<tr><th>Pin</th><th>Control</th></tr>
<tr><td>3 pin</td><td>LOW = REMOTE
HIGH = LOCAL (When LOCAL is selected, following pins cannot be controlled by GPI too.)</td></tr>
<tr><td>5 pin</td><td>LOW = SQUEEZE
HIGH = Follows the setting of 8 pin.</td></tr>
<tr><td>8 pin</td><td>LOW = LETTER BOX
HIGH = EDGE CROP</td></tr>
</table>
• Pin input TTL level
LOW ≦ 1.5 V
HIGH ≧ 3.5 V
</td></tr>
<tr><td>V-SG</td><td>
Starts up the VIDEO SG and selects the output signal.
■ OFF: Does not output the video signal. (The input video signal is processed and output directly.)
1: Color Bars 100% (709)
2: Color Bars 75% (709)
3: Vertical Color Bars 100% (709)
4: Vertical Color Bars 75% (709)
5: Ramp
6: Ramp with Chroma
7: 10 steps
8: 5 steps
9: Cross Hatch
10: Dot
11: Box1
12: Box2
13: Vertical Ramp
14: Vertical Ramp with Chroma
15: 100% White
16: Gray
</td></tr>
<tr><td>DIAG</td><td>
Self diagnosis mode
■ OFF: Ends the self diagnosis mode.
ON: Starts the self diagnosis mode.
Note
The DIAG display blinks during self diagnosis mode, and when 60 seconds are left to the end of the self diagnosis, the counts down starts. When the diagnosis is ended, lights up the DIAG display.
If the error is not existed, E-OK is displayed on the lower display.
If the error is existed, error number is displayed on the lower display.

Note
For details of the diagnosis results, refer to Section “6-2. Self Diagnosis Mode Error Code List”.

Notes
When the EXIT key is pressed during DIAG, the diagnosis operation is interrupted and ended.
• The display during DIAG is controlled normally.
• The DIAG operation takes about one minute from a start to an end.
</td></tr>
<tr><td>SOFT</td><td>
Displays the version of CPU software on the lower display.
Note
There is no hierarchy in this menu. Therefore, even if the dial is pressed, an item does not change.
</td></tr>
<tr><td>PLD1</td><td>
Displays the version of PLD mounted on the main board on the lower display.
Note
There is no hierarchy in this menu. Therefore, even if the dial is pressed, an item does not change.
</td></tr>
<tr><td>PLD2</td><td>
Displays the version of PLD mounted on the connector board on the lower display.
Note
There is no hierarchy in this menu. Therefore, even if the dial is pressed, an item does not change.
</td></tr>
</table>

Item	Description
HARD	Displays the version of hardware on the lower display. **Note** There is no hierarchy in this menu. Therefore, even if the dial is pressed, an item does not change.
ERR!	Displays the error code generated in this unit. When an error occurs in the error item being selected by STATUS_OUT SW, the error is displayed. When two or more errors occur, an error code is switched at intervals of 1 second, and is displayed. When there is no error, - - - - is displayed. **Note** For details of the error code, refer to Section “6-1-1 Error”.
WRN!	Displays the warning code generated in this unit. When a warning occurs in the warning item being selected by STATUS_OUT SW, the warning is displayed. When two or more warnings occur, a warning code is switched at intervals of 1 second, and is displayed. When there is no warning, - - - - is displayed. **Note** For details of the warning code, refer to Section “6-1-2 Warning”.

5-1-6. Operation Menu

(Factory default settings are indicated by a ■ mark.)

Item	Description
IN-V	Selects input video mode. ■ D1: Selects D1 SDI input mode (525/626). D2: Selects D2 SDI input mode (525). ANA: Selects NTSC ANALOG input mode (525).
REF	Selects the reference of the HD-SDI output signal. ■ INPT: Sets the INPUT VIDEO as the reference. REFA: Sets the REF IN A of the connector board on the PFV-SP series as the reference. REFB: Sets the REF IN B of the connector board on the PFV-SP series as the reference. **Note** When the REFA or REFB is selected as the REF signal, and when its selected signal is not inputted, the INPT is selected automatically.
EX-R	Selects the format of the reference input signal. ■ HD _: Tri-level sync signal SD _: 525/625 black burst signal
CONV	Selects the conversion mode. ■ ADP: Adaptive (Motion adaptive field/frame conversion) FLD: Converts at field fixation. FRM: Converts at frame fixation.
M-SE	Adjusts the motion detection sensitivity during converting. (This mode is effective only when CONV is set to ADP.) By this sensitivity, the conversion ratio from Frame or Field at the time of conversion can be changed. If a numerical value is enlarged, the sensitivity of motion sensor becomes high. As the result, the portion processed as the animation increases. (When the output mode is 720p, 2 to 4 can only be selected.) 1: adaptive2 (Still picture priority mode) 2: adaptive1-S ■ 3: adaptive1 (Standard mode) 4: adaptive1-M 5: adaptive3 (Animation priority mode)
ASPC	Selects the aspect mode. OFF: Edge Crop mode (Default) ■ ON: Opens the aspect menu.
ASPE	Selects the aspect ratio. ■ ECN: Edge Crop mode LB: Letter Box mode SQ: Squeeze mode
ECPC	Edge Crop Position Control OFF: Fixed to center. ■ ON: Variable
EC-P	Adjusts the Edge Crop position. (In the units of 2 pixels.) Factory setting: 0 Setting range: –240 to +240 (at 1080 output) –160 to +160 (at 720p output)
LBPC	Letter Box Position Control OFF: Fix to center. ■ ON: Variable
LB-P	Adjusts the Letter Box Position (This mode is only effective when LBPC is set to ON.) Factory setting: 0 Setting range: –31 to +32 (at 1080i/59.94 output, and the center is 52 lines.) –36 to +36 (at 1080i/50 output, and the center is 59 lines.) –30 to +30 (at 720p output, and the center is 52 lines.) **Note** The variable can be performed in the unit of one line. When the setting is set to maximum value, the picture is positioned to the lower most position, and set to minimum value, the picture is positioned to the upper most position.

Item	Description
AS-F	Selects the aspect flag mode. ■ OFF: The panel setting is turned effective. ON: Follows flag of stream. **Note** When the aspect flag is set to ON, and when the aspect identifying flag is set to 16 lines of the input signal, the output aspect is controlled irrespective of the aspect setting of the unit and aspect setting of the HKDV-900. Aspect identifying flag is existed → Outputs the Squeeze mode. Aspect identifying flag is not existed → Outputs the Edge Crop mode.
C/C	Selects the system when performing the color correction. The menu displaying by each selection differs.
	■ YPb: The color adjustment by YPbPr is possible. M-G: Adjusts the master gain. Factory setting: 100 % Adjusting range: 0 to 141 % (in units of 1 %)
	Y-G: Adjusts the Y-ch gain. Factory setting: 100 % Adjusting range: 0 to 141 % (in units of 1 %)
	Pb-G: Adjusts the Pb-ch gain. Factory setting: 100 % Adjusting range: 0 to 141 % (in units of 1 %)
	Pr-G: Adjusts the Pr-ch gain. Factory setting: 100 % Adjusting range: 0 to 141 % (in units of 1 %)
	SETU: Adjusts the setup. Factory setting: 0 % Adjusting range: –10 % to +10 % (in units of 0.5 %)
	WCL: Sets the white clip level. Factory setting: OFF Setting range: 93 % to 108 % (in units of 1 %)
	BCL: Sets the black clip level. Factory setting: OFF Setting range: –6 % to +7 % (in units of 1 %)
	HUE: The color adjustment by composite is possible. VI-G: Adjusts the video gain. Factory setting: 100 % Adjusting range: 0 % to 141 % (in units of 1 %)
	CH-G: Adjusts the chroma gain. Factory setting: 100 % Adjusting range: 0 % to 141 % (in units of 1 %)
	HUE: Adjusts the hue. Factory setting: 0 ° Adjusting range: –30 ° to +30 ° (in units of 1 °)
	OFFS: Adjusts the offset. Factory setting: 0 % Adjusting range: –10 % to +10 % (in units of 0.5 %)
	WCL: Sets the white clip level. Factory setting: OFF Setting range: 93 % to 108 % (in units of 1 %)
	BCL: Sets the black clip level. Factory setting: OFF Setting range: –6 % to +7 % (in units of 1 %)

Item	Description
	RGB: The color adjustment by RGB is possible. M-G: Adjusts the master gain. Factory setting: 100 % Adjusting range: 0 % to 141 % (in units of 1 %) R-G: Adjusts the R-ch gain. Factory setting: 100 % Adjusting range: 0 % to 141 % (in units of 1 %) G-G: Adjusts the G-ch gain. Factory setting: 100 % Adjusting range: 0 % to 141 % (in units of 1 %) B-G: Adjusts the B-ch gain. Factory setting: 100 % Adjusting range: 0 % to 141 % (in units of 1 %) OFFS: Adjusts the offset. Factory setting: 0 % Adjusting range: −10 % to +10 % (in units of 0.5 %) WCL: Sets the white clip level. Factory setting: OFF Setting range: 93 % to 108 % (in units of 1 %) BCL: Sets the black clip level. Factory setting: OFF Setting range: −6 % to +7 % (in units of 1 %)
	OFF: Sets the color corrector function to OFF.
BC	Back-color control function (Color matte function) In the Edge Crop mode, the color can be added to the black portion on both sides. The designation of color can be adjusted by the level of three signal of Y, Pb and Pr signals in the unit of 1 %. For the signal with the wide blanking width like an analog signal, it is possible to expand the widths of the right and left sides to add the back-color. ■ ON: Turns On the back-color control. BC-Y: Back-color Y level. (Default is 40.) BCPb: Back-color Pb level (Default is 200.) BCPr: Back-color Pr level (Default is 200.) BCLP: Expands the left side area of back-color. (0 to 32 pixels, default is 0.) BCRP: Expands the right side area of back-color. (0 to 32 pixels, default is 0.) SUP: Insert the picture that is converted by Squeeze mode instead of the back color. This menu is displayed only when the REF is set to INPT. If REFA or REFB is selected, this function cannot be used. CAP: Memorize the picture that is converted by the Squeeze mode into the memory. OFF: No change ON: Executes capturing, and inserts its picture to the side of the Edge Crop. **Note** Be sure to select the CAP and ON in the Squeeze mode. The capturing cannot be performed in the Edge Crop mode. The picture that was captured will be erased when the power of the signal processing unit is turned OFF, when except SUP is selected in BC mode, and when the REFA or REFB is selected in the REF. OFF: Turns the back-color control to OFF.
SETR	Set-up remove function ■ OFF: Performs the usual conversion. ON: Removes the 7.5 % set-up, and converts. **Note** This mode is only effective when the input signal is analog composite (NTSC) or D2 SDI (NTSC) signal.
GAM	Controls the gamma correction function. ON: Sets the gamma correction function to ON. Factory default setting: 0.45 Setting range: 0.38 to 0.52 (in units of 0.01) ■ OFF: Sets the gamma correction function to OFF. **Note** The specifications of both Inv-γ and γ conform to ITU-R BT.709 standard, and the default setting of the γ is ITU-RBT.709.

Item	Description
ENHC	Controls the enhancer function. ■ ON: Sets the enhancer function to ON. DET: Increases or decreases the level of the detail signal. The detail is not added on a level “40”, and the detail signal level is maximized on a level “7F”. When decreasing a level from a level “40”, the level decreases, and the detail signal level is minimized on a level “0”. (Detail Gain) Factory setting: 40 Setting range: 0 to 7F (in units of 1) LIMT: Sets the clipped level against the excessive level of the detail signal. (Limitter) Factory setting: 20 Setting range: 0 to 3F (in units of 1) CRIS: Sets the level that adds the crispening to the detail signal. (Crisp) Factory setting: 8 Setting range: 0 to F (in units of 1) LEVD: Sets the compression amount of the detail at the low level. (Level depend) Factory setting: 8 Setting range: 0 to F (in units of 1) FREQ: Sets the frequency of H detail in the four steps. (Enhancer Frequency) Factory setting: 2 Setting range: 0 to 3 (in units of 1) H/V: Sets the frequency of the mix ratio of the H/V detail signal in the seven steps. (Enhancer Frequency) Factory setting: 3 Setting range: 0 to 7 (in units of 1) OFF: Sets the enhancer function to OFF.
SYNC	Adjusts the sync phase (Coarse). The – means the direction that advances the sync phase, + of no polarity means the direction that delays the sync phase. Step: 8.6 CK (74 MHz CK), about 116 nsec Factory setting: 0 Setting range: –128 to +127 (in units of 1)
SY-F	Adjusts the sync phase (Fine). Step: about 13.5 nsec. When the setting value exceeds 0 (zero), the sync phase (coarse) is taken up or down one place. Factory setting: 0 Setting range: –0 to 1024 (in units of 8)
ADRC	■ OFF: Sets the audio rate conversion to OFF. ON: Sets the audio rate conversion to ON. **Notes** • When compressed audio such as Dolby-E is transmitted, be sure to set this mode to OFF. • The audio rate converter operates during the external sync mode (during the frame synchronizer operating). This function cannot operate under the lock state of INPUT irrespective of this setting is set to ON.
ADLY	Audio delay adjustment ■ OFF: Delays the audio signal 1 frame according to the system delay of the video. ON: Delays the audio signal irrespective of the system delay of the video. OXXX: The grade of 1000 blinks, and sets the value in the range of 0 to 4. Press the dial to determine the value, and shifts into the grade of 100. XOXX: The grade of 100 blinks, and sets the value in the range of 0 to 9. Press the dial to determine the value, and shifts into the grade of 10. Shifts the grade of 1000 by pressing the EXIT key. XXOX: The grade of 10 blinks, and sets the value in the range of 0 to 9. Press the dial to determine the value, and shifts into the grade of 1. Shifts the grade of 100 by pressing the EXIT key. XXXO: The grade of 1 blinks, and sets the value in the range of 0 to 9. Press the dial to determine the value. Shifts the grade of 10 by pressing the EXIT key. **Note** (Variable range: 61 to 4095 samples)

5-2. Setting Using STATUS OUT Switches

The setting using STATUS OUT switches on the main board is described below.

S600 STATUS OUT switch (Factory default settings are indicated by a ■ mark.)

Select whether or not to output a corresponding error/warning by this switch setting.

Switch	Setting item	Function
S600-1 ■ ON	Spare	
S600-2 ■ ON	Mismatch of version	Outputs an error when the hard, or PLD and software are not combined properly.
S600-3 ■ ON	No connector board or different model	Outputs an error when the connector board is not installed, or the different model's is installed.
S600-4 ■ ON	Hardware failure by diagnosis	Outputs an error when a failure is detected by the internal self-diagnosis at the time of starting.
S600-5 ■ ON	Input signal abnormal (Reference)	Outputs a warning when a reference input signal is abnormal.
S600-6 ■ ON	Input signal abnormal (Audio)	Outputs a warning when an audio input signal is abnormal.
S600-7 ■ ON	Input signal abnormal (Video)	Outputs a warning when a video input signal is abnormal.
S600-8 ■ ON	No signal input	Outputs a warning when no video or audio signal input.

Note

All switches are set to ON at the factory shipping state. Therefore, if you want to disable the error/warning output, turn OFF the corresponding switch.

6. Error/Warning

In this unit, the operations below are performed when an error or warning occurs.

- The output signal at pin 4 (BOARD ERROR OUT) or pin 5 (BOARD WARNING OUT) of the STATUS OUT connector on the connector panel of signal processing unit PFV-SP series becomes active.
- The STATUS indicator on the operation panel blinks in red (error) or blinks in green (warning).
- A code appears on the lower display of the operation panel.

6-1. Error/Warning Code List

6-1-1. Error

Error code	Contents of error
- - -	No error exists.
1-01	Internal hardware failure (SYS I/F bus connection check at the time of starting)
1-02	Spare
2-01	A connector board (DIF board) is not installed.
2-02	A connector board of the different model is installed.
2-10	Hardware and software are not combined properly.

6-1-2. Warning

Warning code	Contents of warning
- - -	No warning exists.
1-01	No reference signal input exists.
1-02	Not locks to the reference signal.
2-01	No SD video input signal exists.
2-02	The format of SD video input signal does not match with the setting of format.
2-03	A SD video input signal is abnormal.
2-04	Audio signal input is abnormal.

6-2. Self-diagnosis Mode Error Code List

Error code	Contents of error
E-OK	No error exists.
E-01	PLD1 system control defect
E-02	PLD2 system control defect
E-03	NVRAM system control defect
E-04	VSP system control defect
E-05	VFS system control defect
E-06	COPRO2 system control defect
E-07	TG system control defect
E-08	Video input presence or absence check
E-09	VSP input data is abnormal.
E-10	VFS input data is abnormal.
E-11	COPRO2 input data is abnormal.
E-12	TG defect

7. Specifications

General

Function guaranteed temperature	+5 °C to +40 °C
Storage temperature	−20 °C to +60 °C
Operating humidity	10 % to 90 % (Non-condensing)
Maximum outer dimensions (Width (W)/height (H)/depth (D))	Main board: 398 × 119 × 18 mm Connector board: 153 × 130 × 39 mm
Mass	Main board: Approx. 550 g Connector board: Approx. 210 g
Power requirements	+12 V dc: 2.0 A or less
Power consumption	24 W

Input/Output

SDI IN (BNC type) (1)	SDTV SDI signal (Conforms to SMPTE-259M.)
Level	0.8 V p-p ±10 %
Input impedance	75 Ω, unbalanced
Input return loss	15 dB or more (5 MHz to 270 MHz)
Signal transmission distance	200 m (when using a 5C-2V coaxial cable)
Audio	AES 20 bit (Conforms to SMPTE-272M.)
HD OUT (BNC type) (3)	HDTV SDI signal (Conforms to SMPTE-291M/292M/299M)
Output amplitude	0.8 V p-p ±10 %
Output impedance	75 Ω, unbalanced
Output return loss	15 dB or more (5 MHz to 1.485 GHz)
SYSTEM DELAY	1 Frame
Audio	AES 20 bit (Conforms to SMPTE-299M.)
VIDEO IN (BNC type) (1)	NTSC analog video signal (Conforms to SMPTE-170M.)
Level	1.0 V p-p ±10 %
Input impedance	75 Ω, unbalanced
REMOTE IN (D-sub 9 Pin, Female) (1)	Remote controller signal Connectable remote controller HD digital video controller HKDV-900

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HKSP-1125 (SY) J, E
3-690-409-02

Sony Corporation
B&P Company

Printed in Japan
2002. 10 08
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