SONY

HD CAMERA CONTROL UNIT

HDCU1700

4K/HDR PROCESSOR BOARD

HKCU2040

3G/HD SDI OUTPUT EXPANSION UNIT

HKCU2007

SD ENCODER UNIT

HKCU1001

MULTI INTERFACE UNIT

HKCU1003

Digital HDVS

OPERATION MANUAL English

1st Edition (Revised 4)

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Overview

The HDCU1700 Camera Control Unit is connected to a Sony HDC1700 high-definition video camera. It carries out signal processing and provides an interface for external equipment.

This unit may be combined with an MSU-1000 series Master Setup Unit (optional) or an RCP-1000 series Remote Control Panel (optional) to form a camera control system. Further, a system capable of controlling multiple video cameras can be configured by adding a CNU-700 Camera Command Network Unit.

The HDCU1700 has the following major features.

Front panel for increased usefulness

The HDCU1700 features a design that places menu operation switches and status LEDs related to optical transmission, etc., on the front panel. These were moved from under the cover of the HDCU1000/1500's front panel, providing even greater convenience.

Multiple video inputs and outputs

The HDCU1700 features the following standard-feature signal input/output ports.

- Four SDI outputs (HD/SD switchable outputs)
- Three HD-SDI/SD-SDI/SD analog return inputs
- One teleprompter input

In addition, a variety of input/output interfaces are offered via optional installable boards.

HKCU2040 4K/HDR Processor Board

This provides functions, such as changing the resolution from the HD camera signal to 4K video, or video processing with the high dynamic range (HDR)*1. 4K video can be output via the Multi-Link 3G-SDI signal or 12G-SDI signal*2, or HD video can be output via the 3G-SDI signal or HD-SDI signal.

*1 The high dynamic range (HDR) function will be supported by the software version V3.10 or higher.

*2 12G-SDI output will be supported by the software version V3.30 or higher.

HKCU2007 3G/HD SDI Output Expansion Unit

This provides four 3G/HD-SDI outputs.
Installing this board makes it possible to output up to four 3G/HD-SDI signals.

HKCU1001 SD Encoder Unit

Installing this board makes it possible to output SD analog composite signals (NTSC/PAL), SD picture monitor signals and SD waveform monitor signals.

HKCU1003 Multi Interface Unit

This board consists of 3 types of VDA boards, and makes the following input/output signals possible:

- Frame reference input and output to lock 2-3 pull-down sequence
- SD analog component signal (RGB or Y/R-Y/B-Y) or SD analog composite signal output
- SD analog composite signal (NTSC/PAL) output, SD picture monitor signal output, SD waveform monitor signal output

External reference signals

The HDCU1700 can be locked to an external reference signal. Either an HD tri-level sync signal or an SD sync (black burst) signal may be used as the reference signal.

Built-in down converter

When the system is operating at a 59.94/50 Hz field frequency, HD signals can be converted to SD component SDI signals using the down converter. The output signal aspect ratio may be set to 4:3 edge crop, 16:9 squeeze, or letter box. The down converter has image enhancement, gamma control, and matrix ON/OFF features, and can be controlled externally.

Built-in simplified up converter

The HDCU1700 has a simplified up converter to allow monitoring of SD signal return video using an HD viewfinder. The aspect ratio of the return video signal may be set to 4:3 edge crop, 16:9 squeeze, or letter box.

Digital Optical Transfer

The HDCU1700 may be connected to a camera using an optical fiber cable (two single-mode optical fiber lines, two power lines and two control lines) for the transmission of digital video, audio, and control signals. By connecting together optical fiber cables, signals may be transmitted up to a maximum of 2,000 meters (6,600 feet). The maximum length of the cable supplying power varies with the camera system configuration and with the type of optical fiber cable.
The HDCU1700 supports standard digital optical transfer, and when used with an HDC1700 camera, can support 1080/50I, 59.94I recording and more via just one optical cable.

Safety-oriented power supply

The HDCU1700 is designed for safety. When the power is turned on, a low voltage is supplied at first. Only after it has been verified that an appropriate camera is attached, the normal 180 V DC power supply is activated. The power is not supplied unless a camera is connected via an optoelectric cable.
Also, the HDCU1700 is equipped with an alarm indicator to warn of open or short circuits in the cable.

Wide range of audio functions

This unit has connectors for two-channel analog audio outputs and a program audio input. Further, the HDCU1700 can use an intercom system with two independent channels, and supports four-wire and RTS/Clear-Com intercom systems.

For information on support for RTS/Clear-Com systems, contact a Sony service or sales representative.

Remote control

The level and phases of this unit's output signals can be controlled remotely by an MSU-1000 series Master Setup Unit.

Microphone volume control

The camera's microphone volume can be controlled via the MIC REMOTE connector, MSU, or RCP.

Character monitor signal output

The results of the HDCU1700 self-diagnosis and setup menu can be obtained with a text display by character signal output.

Rack mountable

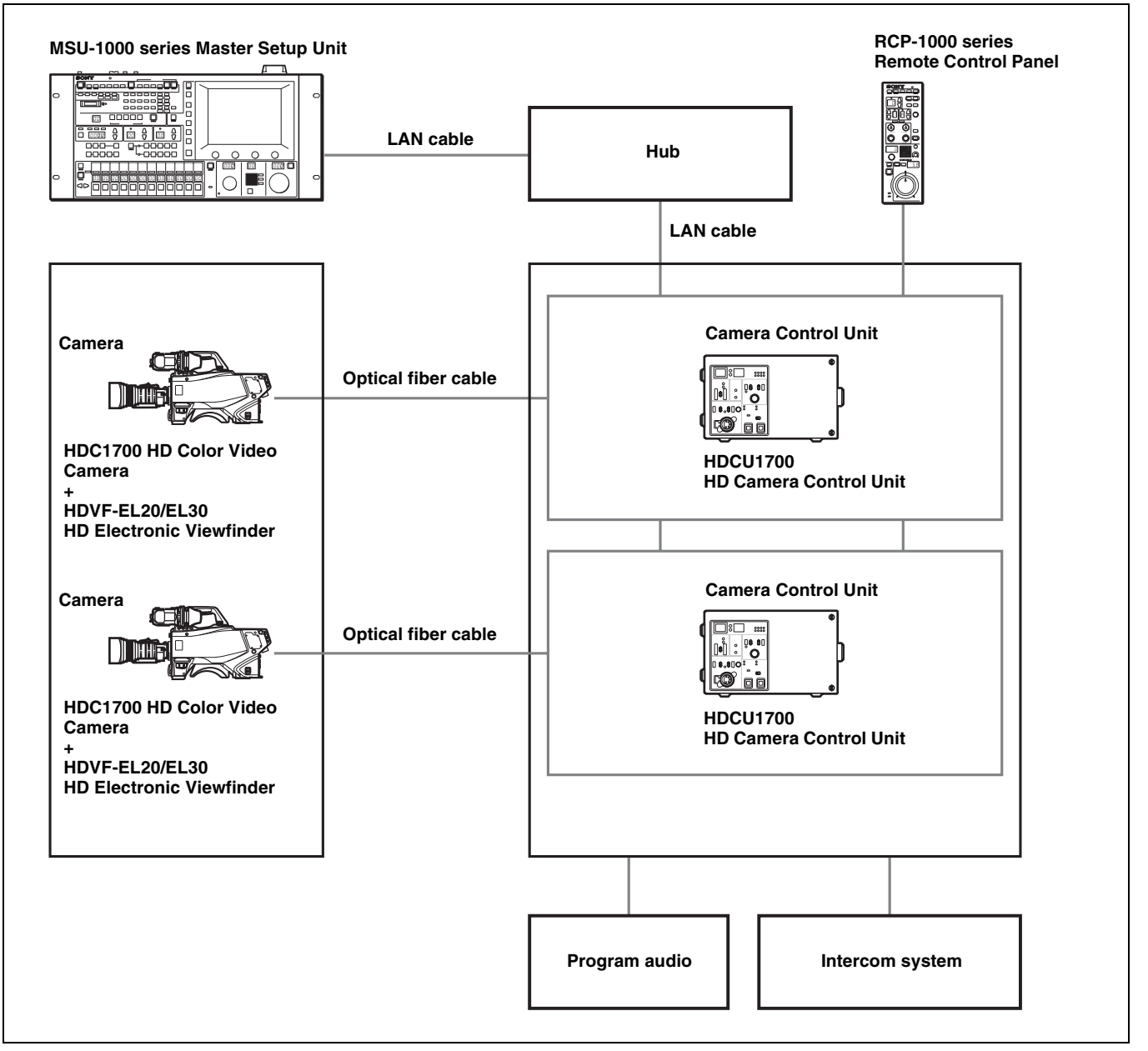
This unit may be installed in a standard EIA 19-inch rack (three units high). (The HDCU1700 needs the RMM-301 Rack Mount Adaptor (optional).)

Plug-in unit configuration

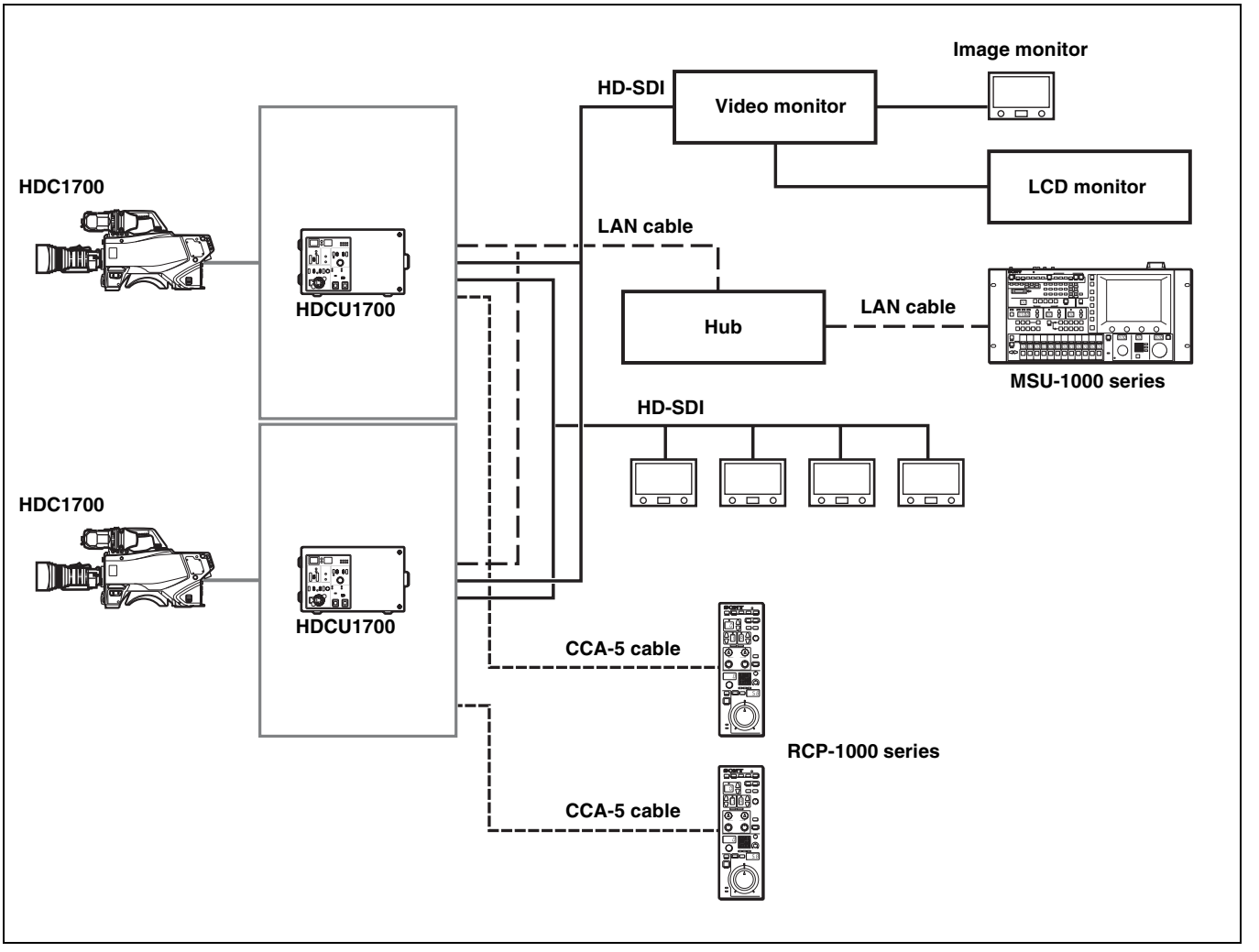
Internal printed circuit boards are designed for easy plug-in and removal, which makes it easy to inspect and maintain the unit.

System Configuration

Basic System Components

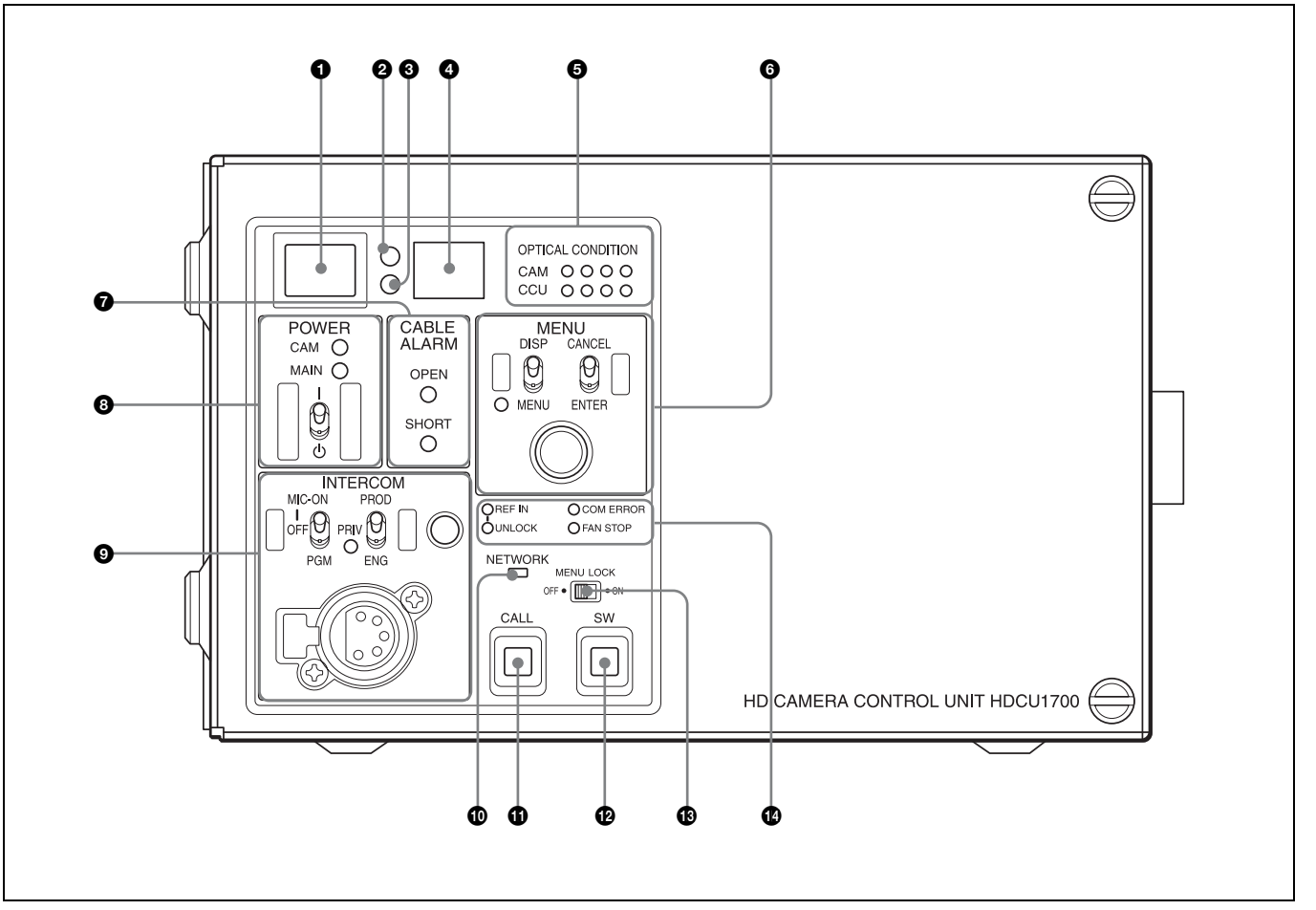


System Operation Example

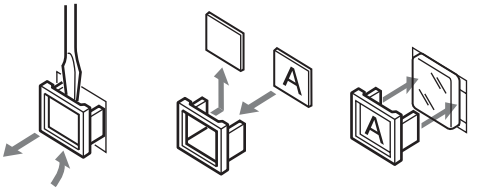


Locations and Functions of Parts

Front Panel



❶ Red tally indicator
Lights in red when this unit receives a red tally signal. When the CALL button on the MSU-1000 series Master Setup Unit, RCP-1000 series Remote Control Panel, etc., is pressed, this indicator will go out if previously lit, and light up if previously off. You can attach the supplied number plate here.



❷ Yellow tally indicator
Lights in yellow when this unit receives a yellow tally signal.

❸ Green tally indicator
Lights in green when this unit receives a green tally signal.

❹ CCU number display
The camera number set via the CCU menu is displayed.

❺ Optical signal reception status indicator
This indicates the camera and CCU's optical signal reception status when performing optical transmissions.

When the two lamps on the right (green) are lighted:
Reception status is excellent.

When the second lamp from the right (green) is lighted:
Reception status is good.

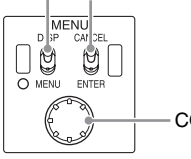
When the second lamp from the left (yellow) is lighted:
Reception status is low.

When the lamp on the left (red) is lighted: Reception status is at the lowest level.

❻ MENU control block

DISP/MENU (display/menu) lever and indicator

CANCEL/ENTER lever



CONTROL knob

• **DISP/MENU (display/menu) lever and indicator**
Selects the status display or setup menu display. In setup menu mode, the indicator turns on.
• **CANCEL/ENTER lever**
In setup menu mode, used to cancel and enter settings.
• **CONTROL knob (rotary encoder)**
In status screen mode, used to change the displayed page. In setup menu mode, used to move the cursor on a page and to change menu settings. Pressing the CONTROL knob performs the same function as setting the CANCEL/ENTER lever to the ENTER position.

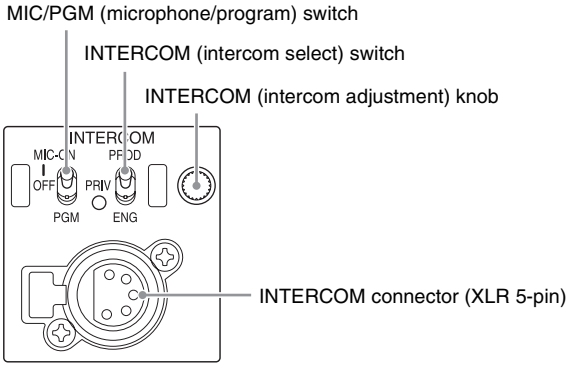
❼ CABLE ALARM indicators
OPEN (red): Lights in red when a camera isn't connected to the CAMERA connector on the rear panel of this unit via an optical fiber cable. Flashes when the connection status of an optical fiber cable is bad.
SHORT (red): Lights in red when the power supply cord of an optical fiber cable is short to external, or two power supply cords are short. Power isn't input to the camera when this indicator lights.

❽ POWER switch and indicators
Turns the entire system on and off, including this unit, the video camera, and the RCP-1000 series Remote Control Panel connected to the REMOTE connector of this unit. The MAIN indicator and the CAM indicator light when the power switch is turned on. Pressing the CAM PW button of the master setup unit and the remote control panel turns off the video camera only, and only the CAM indicator turns off.

Note

In order for the power supply to supply the unit with the necessary power to start up, energy is consumed even when this switch is set to OFF.

❾ INTERCOM audio input/output and control block



• **MIC/PGM (microphone/program) switch**
ON: Turns the headset microphone on.
OFF: Turns the headset microphone off.
PGM: Selects program audio output. In this mode, the INTERCOM knob adjusts the headset program audio level.
• **INTERCOM (intercom select) switch**
Selects the intercom signal input/output connection source for the INTERCOM connector on the front panel.
PROD: Connects the producer line.
PRIV: Blocks the connection to the producer line or engineer line, allowing private intercom talk between the CCU and the camera.
ENG: Connects the engineer line.
• **PRIV (Private) indicator**
Lights when the intercom is in private mode.
• **INTERCOM (intercom adjustment) knob**
Adjusts the receiver audio level of the intercom.
• **INTERCOM connector (XLR 5-pin)**
Connects the intercom headset.

To use a headset with a plug other than an XLR 5-pin plug, consult a Sony service or sales representative.

❿ Network indicator
Displays the network system connection status.
On: When CNS SETTING in the NETWORK SETTING menu is set to either BRIDGE or MCS, this indicates that external control equipment (MSU-1000/1500 Master Setup Unit, RCP-1000-series Remote Control Panel, or other device) is connected.
Flashing: When CNS SETTING in the NETWORK SETTING menu is set to either BRIDGE or MCS, this indicates a connection problem with the external control equipment (MSU-1000/1500 Master Setup Unit, RCP-1000-series Remote Control Panel, or other device).
Off: When CNS SETTING in the NETWORK SETTING menu is set to either BRIDGE or MCS, this indicates that a LAN cable is not connected or that the network system connection parameters have not been set.
When the CNS SETTING in the NETWORK SETTING menu is set to LEGACY, this remains turned off.

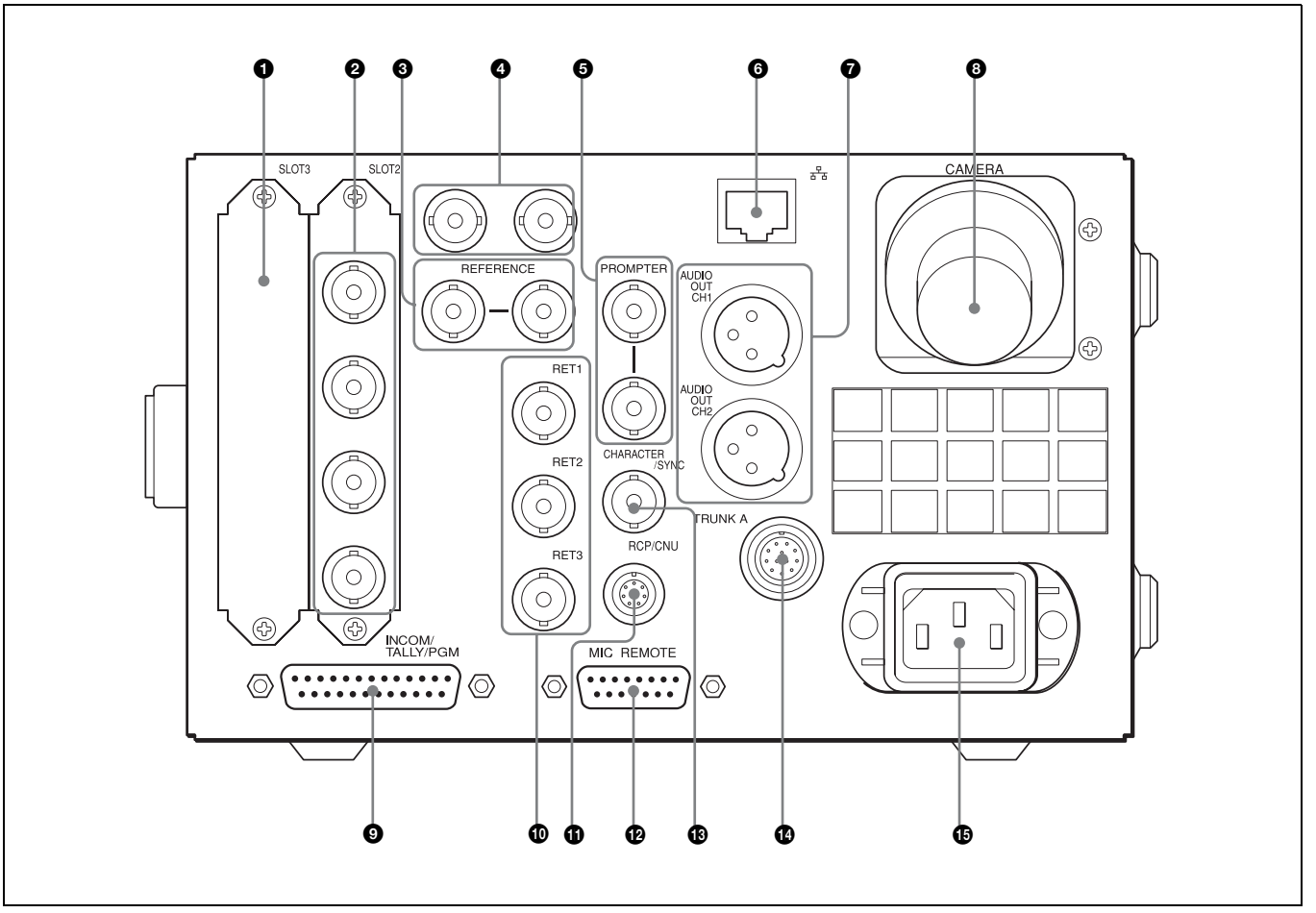
⓫ Call button
When pressed, this outputs a call signal to the camera and external control device (the RCP-1000 series, etc.) that are connected to this unit. Use this when you want to call and speak with the camera operator or external control device operator via intercom.

⓬ Menu lock switch
This locks out operation of the front panel menu operation area.

⓭ Assignable button
You can set a function for this button via the CCU menu.

⓮ Status display indicator
REF IN (Green): REFERENCE is being input.
UNLOCK (Red): The input REFERENCE is not locked.
COM ERROR (Red): There is a communication failure with the camera or other external control equipment (such as the RCP-1000 series Remote Control Panel).
FAN STOP (Red): The power fan is stopped.

Rear Panel



❶ Expansion slots
For installation of an optional HKCU2007 3G/HD SDI Output Expansion Unit, HKCU1001 SD Encoder Unit, or HKCU1003 Multi Interface Unit.

For details on installation, contact a Sony service or sales representative.

❷ HD/SD SDI OUTPUT (SDI output connectors) area (BNC-type)
The signal from the video camera may be output as two HD-SDI signals or two SD-SDI signals. The signals output from the OUTPUT3 and OUTPUT4 connectors can be superimposed character and marker signals.
Signals of the same format are output from the SDI 1 and SDI 2 connectors; similarly, signals of another format can be output from the SDI 3 and SDI 4 connectors.

For details on settings, contact a Sony service or sales representative.
When you exchange this slot with the optional HKCU2040 4K/HDR Processor Board, the number of 4K output increases by one or HD output increases by four.

❸ REFERENCE connectors (BNC-type)
Input an HD tri-level reference sync signal or SD reference sync signal (black burst signal, or black burst signal with 10 Field ID) to either of the two connectors.
The input signal is output from the other connector as is (loop-through output). If loop-through output is not used, terminate the unused connector at 75 ohms.
The type of reference signal is selected using the setup menu, or using the MSU-1000 series Master Setup Unit.

For details on the setup menu, contact a Sony service or sales representative.

Note

To use the VBS signal of the HKCU1001 SD Encoder Unit or the HKCU1003 Multi Interface Unit (when SC phase lock is required), use an SD reference sync signal (black burst signal).
When black burst signal with 10 Field ID is input, REF 10F BB of OTHERS (C21) must be set to ON.

❹ SPARE connector (BNC-type)
Reserved for future use.

❺ PROMPTER (tele-prompter) connectors (BNC-type)
Input a teleprompter signal to either of the two connectors. The input signal is output from the other connector as is (loop-through output). If loop-through output is not used, terminate the unused connector at 75 ohms. If the signal used is a 1.0 Vp-p, 75-ohm signal, it may be output from the PROMPTER OUT connector of the video camera with a frequency bandwidth of 5 MHz, regardless of signal format.

RET4 (return video input 4)
When required, either of the PROMPTER connectors can be assigned for the fourth return video input, exclusively for analog VBS signals.

For details on settings, contact a Sony service or sales representative.

❻ (LAN) connector (RJ-45 8-pin)
For LAN connection. Connect a LAN HUB (10BASE-T/100BASE-TX), using a LAN cable (shielded type of category 5 or more).

❼ AUDIO OUT CH1, CH2 (audio output 1, 2) connectors (XLR 3-pin)
Used for output of the audio signal to the AUDIO IN connectors of the video camera.

❽ CAMERA connector (optical fiber connector)
Used to connect a video camera, using an optical fiber cable. All video camera signals, including power supply, control, video, and audio, are sent and received over one optical fiber cable.

Note

Dust on the connection surface of the optical fiber cable may result in transmission errors. When not connected, always cover the end of the connector with the supplied cap.

❾ INTERCOM/TALLY/PGM (intercom/tally/program audio) connector (D-sub 25-pin)
Used for input and output of intercom, tally, and program audio signals. Connect to the intercom/tally/program audio connector of the intercom system.
Flag function: 10-pin is assigned for the output pin of the Flag function.

❿ RET1, RET2, RET3 (return video input 1, 2, 3) connectors (BNC-type)
- Three different return video input signals may be received independently.
- The selection of the return video input signal is made by the return video switch of the video camera.
- The input signal may be set to HD-SDI, SD-SDI, or analog VBS, using the setup menu, or using the MSU-1000 series Master Setup Unit.

For details on the setup menu, contact a Sony service or sales representative.

Refer also to the Master Setup Unit manual.

⓫ RCP/CNU connector (round 8-pin)
Used to connect to an MSU-1000 series Master Setup Unit, CNU-700 Camera Command Network Unit, or RCP-1000 series Remote Control Panel via a CCA-5 Connection Cable. Control signals are sent and received via this connector. When using an RCP-1000 series unit, power is also supplied.

⓬ MIC REMOTE (microphone remote) connector (D-sub 15-pin)
Using this connector, the video camera's microphone input level may be set by external equipment such as an audio mixer, in five level (–60, –50, –40, –30, and –20 dB). When shooting, set the volume to a level appropriate for the audio conditions. This connector also outputs red, yellow and green tally signals.
When DSUB-15 in the CCU CONFIGURATION menu is set to WF REMOTE and an MSU-1000 series Master Setup Unit or an RCP-1000 series Remote Control Panel is used to remotely control a waveform monitor display, use a connector that is compatible with recall-type waveform monitors. On the recall-type waveform monitor, set/preset the display mode to waveform monitor, and then select (recall) that mode externally.

The microphone input level may also be set using the setup menu. For details on the setup menu, contact a Sony service or sales representative.

⓭ CHARACTER/SYNC connector (BNC-type)
Outputs the self-diagnostic results or the setup menu as an SD monochrome analog video signal.
When CHARA/SYNC in the CCU CONFIGURATION menu is set to SYNC, this can also be used as a SYNC connector. SD composite sync or an HD3 synchronous signal will be output from the internal sync signal generator. (The default is set to SD composite sync.)

For details on signal selection, contact a Sony service or sales representative.

⓮ TRUNK A connector (round 12-pin)
Used to connect to the CCU connector on a video camera via an RS-232C or RS-422A interface. Communication with up to two channels is available.

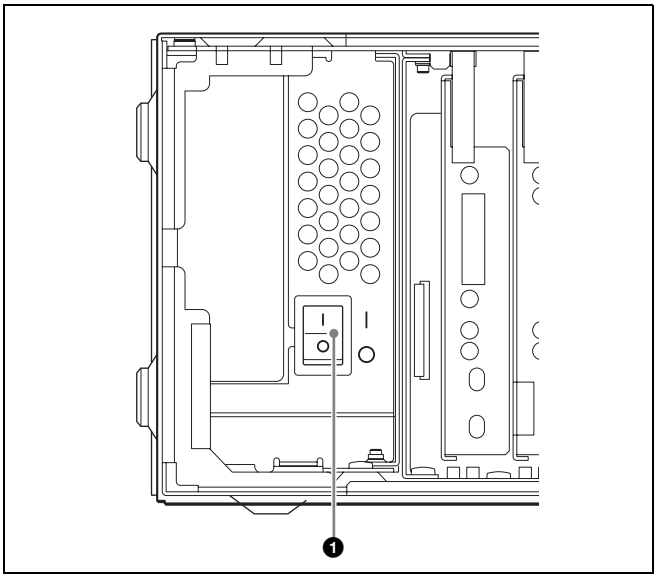
⓯ AC IN (AC power input) connector
Use the specified AC power cord to connect to an AC power supply. The AC power cord can be secured to this unit, using the plug holder (optional).

Internal Switches

Note

To reduce the risk of electric shock, fire or injury, do not open the cabinet. To adjust the internal settings, refer to qualified service personnel.

The following switches are located inside the unit, behind the front panel:



1 Internal main power switch
When an abnormality has occurred, and power cannot be cut off with the POWER switch on the front panel, you may turn off the unit using the internal main power switch. When the switch is set to OFF, setting the POWER switch on the front panel to ON doesn't turn on the unit.

HKCU2040 4K/HDR Processor Board (optional)

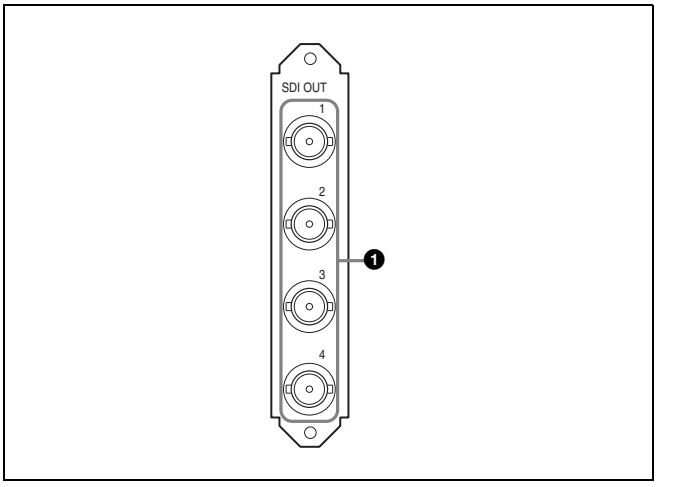
Note

To reduce the risk of electric shock, fire or injury, do not open the cabinet. To adjust the internal settings, refer to qualified service personnel.

The HKCU2040 4K/HDR Processor Board consists of a DPR front board, a DIF rear board and an HIF rear board.
The HIF-57 board is not used in this unit. The number of the Quad Link 3G-SDI signal increases by one or four 12G-SDI signals as 4K outputs, or four HD outputs.

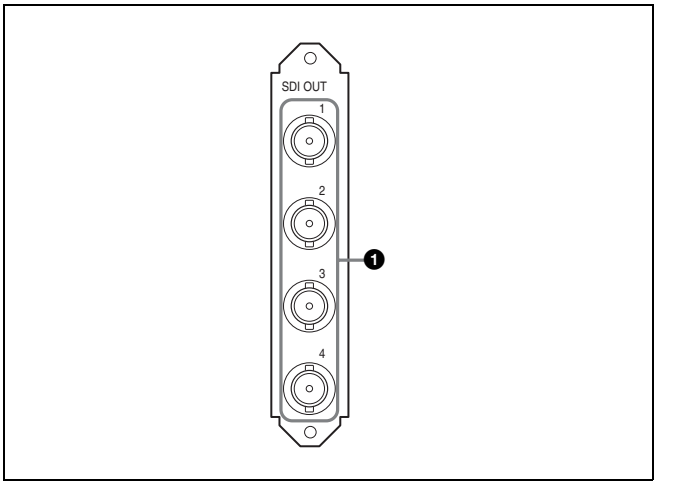
For details on installation, contact a Sony service or sales representative.

DIF-247 Board



1 SDI OUT 1, 2, 3, 4 (3G/HD serial digital interface output 1-4) connectors (BNC-type)
One Quad Link 3G-SDI signal or four 12G-SDI signals can be selected as 4K output when the camera is set to 1080P(4K/HDR). Four 3G-SDI or HD-SDI signals may be output when camera is set to others.

HIF-57 Board (Not used in this unit)



1 SDI OUT 1, 2, 3, 4 (3G/HD serial digital interface output 1-4) connectors (BNC-type)
The signal from the video camera may be output as four 3G-SDI or HD-SDI signals.

HKCU2007 3G/HD SDI Output Expansion Unit (optional)

Note

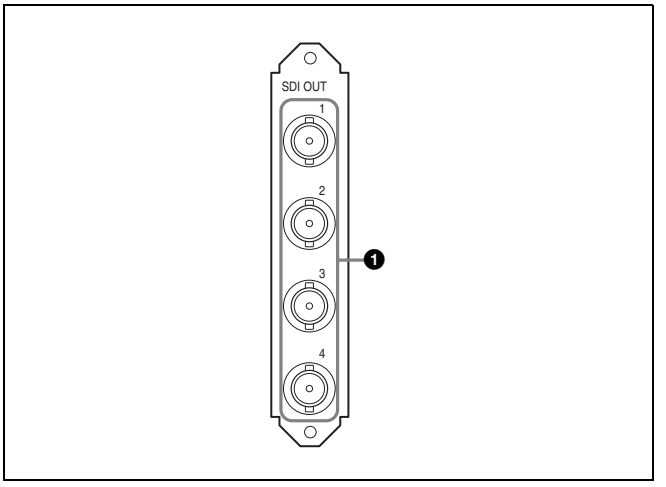
To reduce the risk of electric shock, fire or injury, do not open the cabinet. To adjust the internal settings, refer to qualified service personnel.

The HKCU2007 3G/HD SDI Output Expansion Unit consists of a DRX front board and an HIF rear board.

When these boards are installed in the front and rear expansion slots of the unit, the number of 3G/HD-SDI output connectors increases by four. These can also be installed on HDCU1700's expansion slots.
The format of SDI signals output via each upper/lower pair of connectors on the HIF board can be set.

For details on installation, contact a Sony service or sales representative.

HIF-57 Board



❶ SDI OUT 1, 2, 3, 4 (HD serial digital interface output 1-4) connectors (BNC-type)
The signal from the video camera may be output as four 3G/HD-SDI signals.

HKCU1001 SD Encoder Unit (optional)

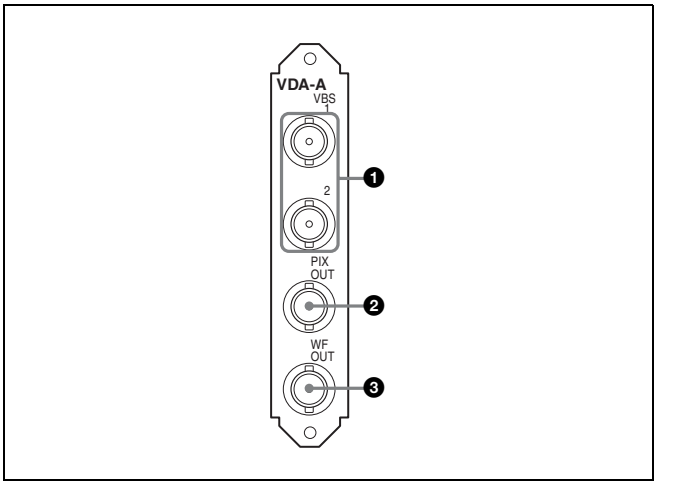
Note

To reduce the risk of electric shock, fire or injury, do not open the cabinet. To adjust the internal settings, refer to qualified service personnel.

The HKCU1001 consists of an EN-A front board and a VDA-A rear board.
When these boards are installed in the front and rear expansion slots of the unit, the unit outputs SD composite signals, waveform monitor output signals, and picture monitor output signals through the VDA-A board's connectors.

For details on installation, contact a Sony service or sales representative.

VDA-A Board



❶ VBS 1, 2 (composite video output 1, 2) connectors (BNC-type)
The signal from the video camera may be output as two analog composite signals.

❷ PIX OUT (picture monitor output) connector (BNC-type)
Outputs the video signal for a picture monitor selected with the PICTURE MONITOR button of an RCP-1000 series Remote Control Panel or MSU-1000 series Master Setup Unit.
Character signals or marker signals can be superimposed on the video signal output through this connector.

For details on these operations, refer to the Master Setup Unit or Remote Control Panel manuals.

❸ WF OUT (waveform monitor output) connector (BNC-type)
Outputs the video signal for a waveform monitor selected with the WF MONITOR button of an RCP-1000 series Remote Control Panel or MSU-1000 series Master Setup Unit.

For details on these operations, refer to the Master Setup Unit or Remote Control Panel manuals.

HKCU1003 Multi Interface Unit (optional)

Note

To reduce the risk of electric shock, fire or injury, do not open the cabinet. To adjust the internal settings, refer to qualified service personnel.

The HKCU1003 consists of an EN-B front board and three VDA rear boards (A/B/C).
When the EN-B board and one of the VDA rear boards are installed in the front and rear expansion slots of the unit, the unit inputs or outputs the following signals.

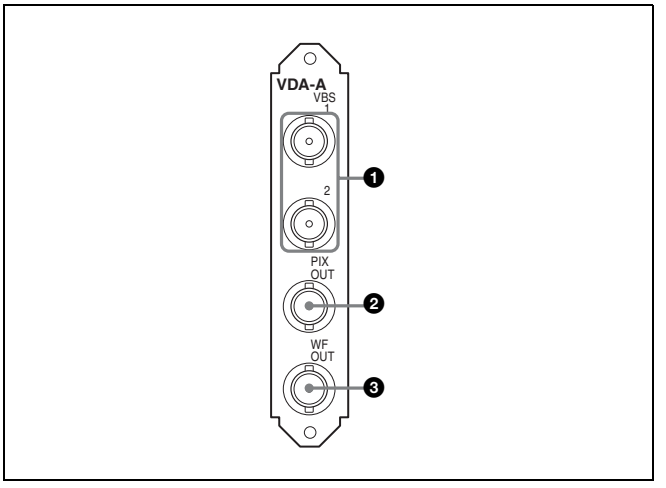
- Outputs SD composite signals, waveform monitor output signals, and picture monitor output signals through a VDA-A board.
- Inputs/outputs the frame sequence signal when operating a 24P system through a VDA-B board.

- Outputs analog component signals or analog composite signals through a VDA-C board.

When you use either the VDA-A board or the VDA-B board, insert the EN-B board in the corresponding expansion slot on the front of the HDCU1700. When either the VDA-A board or the VDA-B board is installed, you can insert the VDA-C board in an expansion slot on the rear panel of the HDCU1700. Don't insert any board in the corresponding expansion slot on the front of the HDCU1700.

For details on installation, contact a Sony service or sales representative.

VDA-A Board



❶ VBS 1, 2 (composite video output 1, 2) connectors (BNC-type)

The signal from the video camera may be output as two analog composite signals.

❷ PIX OUT (picture monitor output) connector (BNC-type)

Outputs the video signal for a picture monitor selected with the PICTURE MONITOR button of an RCP-1000 series Remote Control Panel or MSU-1000 series Master Setup Unit. Character signals or marker signals can be superimposed on the video signal output through this connector.

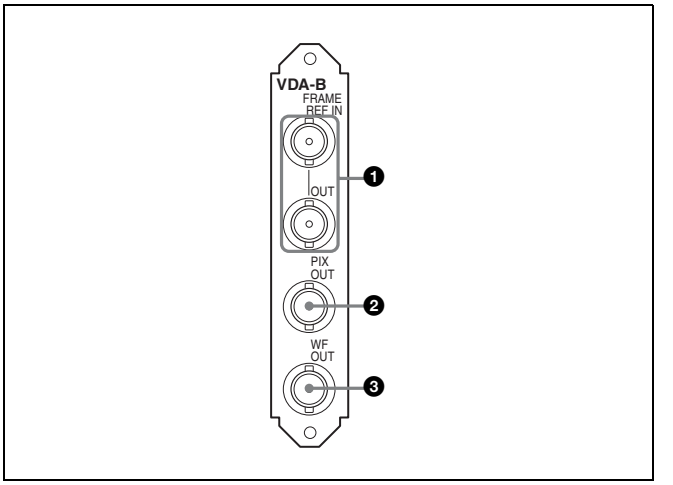
For details on these operations, refer to the Master Setup Unit or Remote Control Panel manuals.

❸ WF OUT (waveform monitor output) connector (BNC-type)

Outputs the video signal for a waveform monitor selected with the WF MONITOR button of an RCP-1000 series Remote Control Panel or MSU-1000 series Master Setup Unit.

For details on these operations, refer to the Master Setup Unit or Remote Control Panel manuals.

VDA-B Board



❶ FRAME REF IN, OUT (frame reference input/output) connectors (BNC-type)

Input an HD tri-level reference sync signal or SD reference sync signal (black burst signal) for the sequence-lock between the camera control units, to the upper of the two connectors. The input signal is output from the lower connector as is (loop-through output).

When not using the OUT connector, terminate it at 75 ohms.

❷ PIX OUT (picture monitor output) connector (BNC-type)

Outputs the video signal for a picture monitor selected with the PICTURE MONITOR button of an RCP-1000 series Remote Control Panel or MSU-1000 series Master Setup Unit.

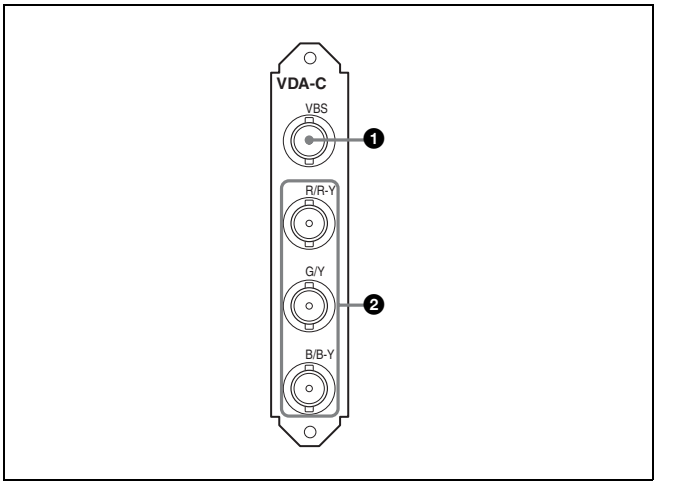
For details on these operations, refer to the Master Setup Unit or Remote Control Panel manuals.

❸ WF OUT (waveform monitor) connector (BNC-type)

Outputs the video signal for a waveform monitor selected with the WF MONITOR button of an RCP-1000 series Remote Control Panel or MSU-1000 series Master Setup Unit.

For details on these operations, refer to the Master Setup Unit or Remote Control Panel manuals.

VDA-C Board (Not used in this unit)



❶ VBS (composite video signal output) connector (BNC-type)

The signal from the video camera may be output as an analog composite signal.

❷ R/R-Y, G/Y, B/B-Y (component video signal output) connectors (BNC-type)

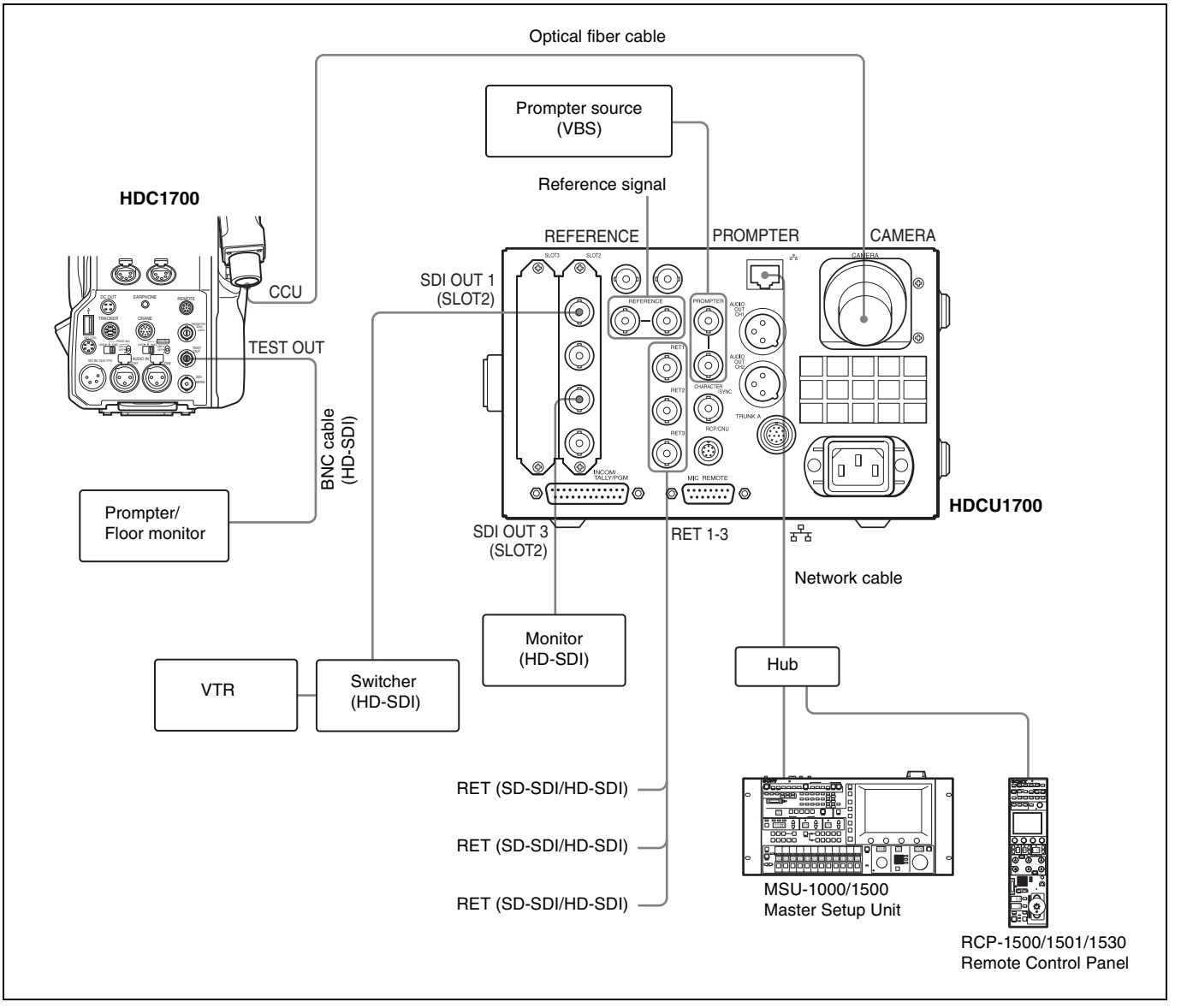
The signal from the video camera may be output as a R/R-Y, G/Y, B/B-Y component signal or an RGB component signal.

Connections and Settings

Fiber Transmission System

The camera and the camera control unit are connected via a single optical fiber cable, and the optical transmission is achieved.

Connection example



Settings

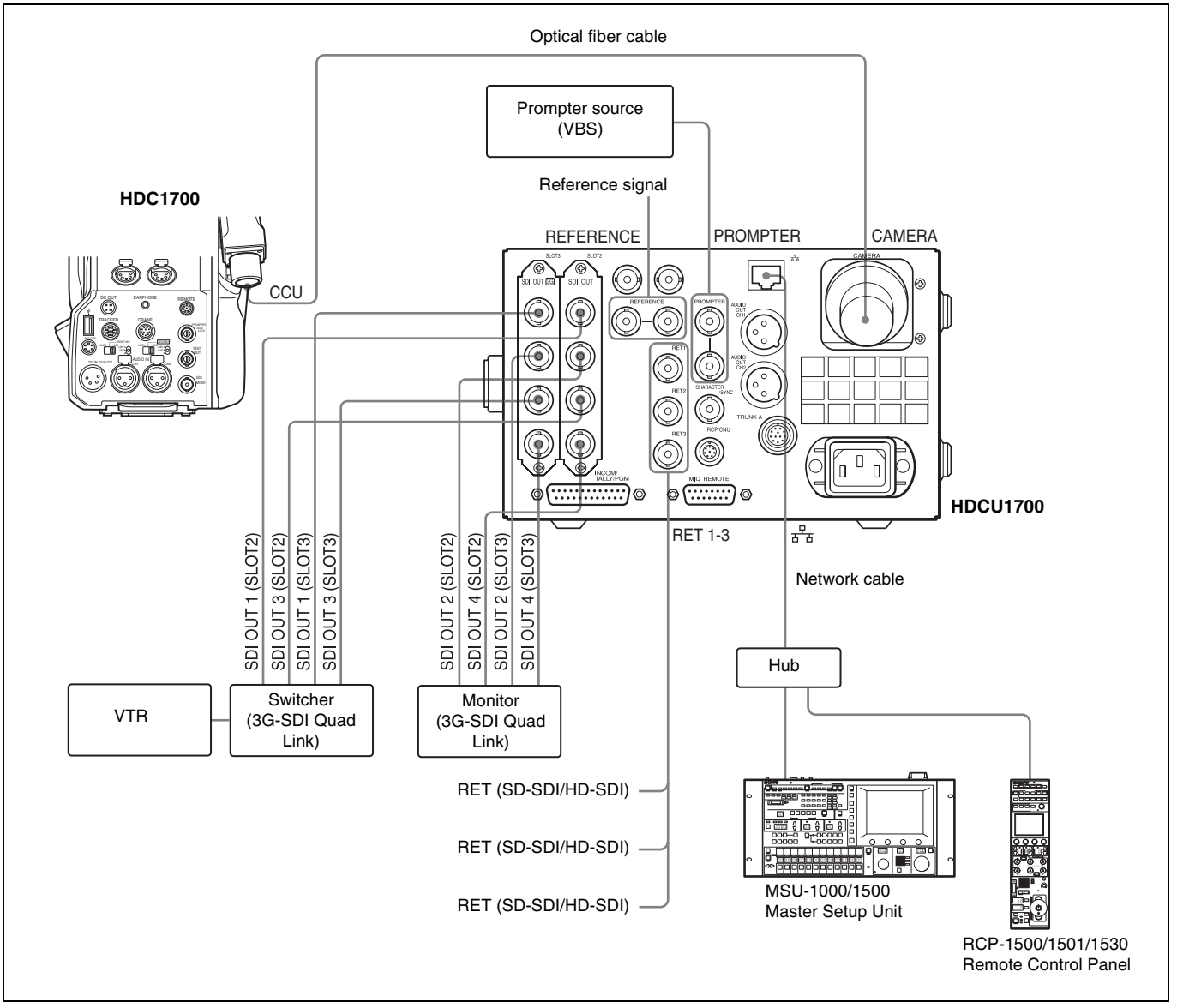
Camera control unit

Format: Select 1080/59.94I or 1080/50I.

4K/HDR output system

Available only when a slot is installed to the HKCU2040 4K/HDR Output Processor Board (optional).

Connection example



Settings

Camera

MAINTENANCE menu, <CAM MODE> page:

Set CURRENT to 4K/HDR MODE (DOWNCONV INVALID).

Camera control unit

Format: Select a format of 1080/59.94P (4K/HDR) or 1080/50P (4K/HDR).

SYSTEM OPERATION menu, when HDR output is selected.

<4K/HDR> page: Set HDR MODE to LIVE HDR.

<OUTPUT FORMAT> page: Set OETF and COLOR SPACE of HDR output.

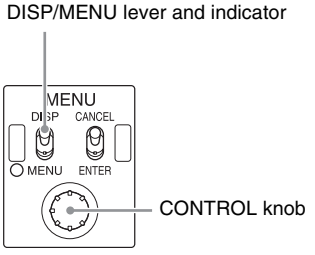
Status Display

The CCU system status can be monitored using a picture monitor connected to the PIX output.

For information on monitoring and changing settings, see “Setup Menu” on page 21.

Displaying the Status Screen

The status screen is controlled using the knob and levers in the MENU control block on the front panel.



To display the status screen

Set the DISP/MENU lever to the DISP position. The most recently viewed status screen page is displayed (when first powered on, the camera settings page is displayed). Turning the CONTROL knob changes the displayed page.

To exit the status screen display

In status screen display mode, set the DISP/MENU lever to the DISP position.

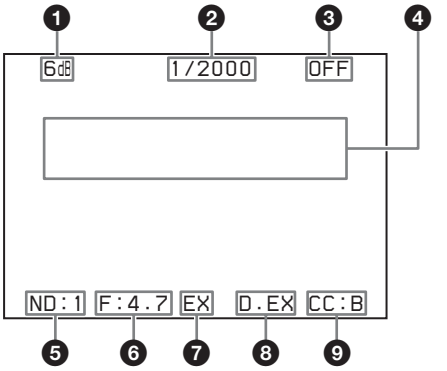
Status Display Screen

The following information is displayed on the status display screen.

- Camera settings
- System status
- CCU hardware diagnostics
- Camera system diagnostics
- Network diagnostics
- CCU AT board diagnostics
- CCU AVP board diagnostics
- CCU DTX board diagnostics
- Status of the boards inserted in Slot1 to 6
- CCU SDP board diagnostics
- Camera hardware diagnostics
- ROM version information for major components

Camera settings

Page 1



❶ Master gain value
Video output signal gain (dB units)

❷ Shutter speed/Clear scan frequency
Shutter speed value. When ECS is on, the clear scan frequency is displayed.

❸ Shutter/ECS
Shutter/ECS on/off indicator

❹ Camera auto control information area
Top: Displays the Auto Setup category and execution status
Bottom: Displays the execution item

❺ ND filter
Current ND filter selection

❻ F-stop value
Lens F-stop value (iris value)

❼ EX (lens extender)
Lens extender indicator

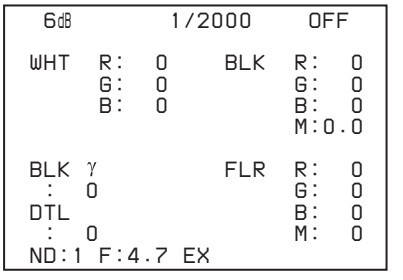
❽ D.EX
Digital lens extender indicator

❾ CC filter
Current CC filter selection

Notes

- Items that are turned off using the <DISPLAY> page settings of the CCU CONFIGURATION menu are not displayed.
- A “-” mark is displayed for each item when a camera is not connected.

Page 2



WHT: White balance R/G/B value

BLK: Black balance R/G/B/Master value
BLK γ: Black gamma value
FLR: Flare balance R/G/B/Master value
DTL: Detail level

Page 3

```
  EC   0 H:A V:A γ: 0

SD Matrix: ON
CC Reduction: ON
 Coring: 0 Level : 35
SD Detail: ON
 Level : 0 Comb  :  0
 Limit : 0 Lim-w :  0
 Crisp : 0 Lim-b :  0
 LDKnee: 0 LDGain:  0
 Ratio : 0
 Freq  : 0
```

The setting status for CCU SD signals is displayed.
SD Matrix: Linear matrix correction for down converter output setting
SD Detail: Contour correction function for down converter output setting

Note

Items with no explanation are the same as those listed under "*Page 1*" in "*Camera settings*" above.

System status

```
*System Status*      1/17

Ref:HD       Lock
Camera :HDC1700(HB)
 1080/59.94I
HD Main:1080/59.94I
HD Conv:-------------
SD Conv:525/59.94I
RET1:1080/59.94I(PsF)
RET2:1080/59.94I(PsF)
RET3:1080/59.94I(PsF)
RET4:1080/59.94I(PsF)
```

The model name of the camera connected to the unit, the format setting, CCU output format setting, external reference setting and return signal format setting are displayed.
Ref: Reference signal format and lock status
Camera: Model name of the connected camera
HD Main: Return signal format
HD Conv: HD up convert setting status
SD Conv: SD up convert setting status
RET1: Return 1 return format selection status
RET2: Return 2 return format selection status
RET3: Return 3 return format selection status
RET4: Return 4 return format selection status

CCU hardware diagnostics

```
                        2/17




** Diagnosis **
A:AT    :OK    1:
B:AVP   :OK    2:DRX    OK
C:DTX   :OK    3:RC     OK
```

The name of the board connected to the unit's front panel and that board's self-diagnostic results are displayed.
Slot A to C
Slot 1 to 3

Camera system diagnostics

Page 1

```
*System Diag 1/3*   3/17

Optical Condition
 CAMERA          OK
 CCU             OK

 Fan Power       OK
 Timer           56H
 CCU Power       AC  OK
 Fiber Cable     ~100m

SerialNo 00002002
```

CAMERA: Camera light sensor level
CCU: CCU light sensor level
Fan Power: CCU power supply fan status
Timer: Elapsed time since power-on
CCU Power: CCU power supply type and status
Fiber Cable: Cable length
SerialNo: CCU serial number

Page 2

```
*System Diag 2/3*   4/17

  CAMERA  Cable Connect
          Data  OK
          Power OK
  RCP/CNU Cable Connect
          Data  OK
          Power OK
```

CAMERA Cable: Camera cable connection status
CAMERA Data: Camera data transmission status
CAMERA Power: Camera power supply status
RCP/CNU Cable: This unit's REMOTE connector cable connection status
RCP/CNU Data: Data transmission status from a device connected to this unit's REMOTE connector
RCP/CNU Power: Power supply status to a device connected to this unit's REMOTE connector

Page 3

```
*System Diag 3/3*   5/17

Intercom
  CCU     System

Intercom MIC
  CAMERA  ENG    ON
          PROD   OFF

CAM MIC Gain     Local
          CH1    60dB
          CH2    60dB
```

Intercom CCU: CCU intercom selection status
Intercom MIC CAMERA ENG: Status for the camera microphone of the ENG line
(When 1CH is selected via the INTERCOM menu (C07), ---- is displayed.)
Intercom MIC CAMERA PROD: Status for the camera microphone of the PROD line
CAM MIC Gain: Camera microphone circuit control status
CAM MIC CH1: Camera microphone circuit 1 amp gain status
CAM MIC CH2: Camera microphone circuit 2 amp gain status

Network diagnostics

Page 1

```
*Network Diag 1/3*  6/17

MacAddress 00014A-xxxxxx
Auto Negotiation:  ON
Auto MDIX       :  ON
Connect Speed   :  100M
Duplex Mode     :  FULL
MDI/MDIX Select :  MDIX

Link Status     :OK
```

MacAddress: CCU MAC address
Auto Negotiation: Auto negotiation setting status
Auto MDIX: Auto-MDIX setting status
Connect Speed: Connection speed setting status
Duplex Mode: Communication method setting status
MDI/MDIX Select: Communications port wiring configuration selection status
Link Status: LAN connection status

Page 2

```
*Network Diag 2/3*  7/17

CNS Mode  : MCS

CCU No.   : (1)
Master IP Address
     192.168.  0.100
```

CNS Mode: REMOTE and LAN connectors mode setting status
CCU No.: CCU number setting status
Master IP Address: Master device IP address

Page 3

```
*Network Diag 3/3*  8/17


IP Addr :192.168.  0.101
NetMask :255.255.255.  0
Def GW  :192.168.  0.254
```

IP Addr: CCU IP address setting status
NetMask: CCU subnet mask setting status
Def GW: CCU default gateway setting status

CCU AT board diagnostics

```
*AT Diag*           9/17

System Frequency:1.001
CAM Format Setting
       1080/59.94I

Reference   :HD Remote
Line Delay  :Line(90H)
Power Supply:OK
PLD Version :4.00 Done

VIF Power   :OK
```

System Frequency: System frequency
CAM Format Setting: Camera format setting status
Reference: Reference signal setting status
Line Delay: HD-SD delay setting status
Power Supply: Status of power supply to the AT board
PLD Version: AT board PLD version
VIF Power: Status of power supply to the VIF board

CCU AVP board diagnostics

```
*AVP Diag*          10/17




Front Power:OK

PLD Version:1.00  Done

ADO Power  :OK
```

Front Power: Status of power supply to the AVP board
PLD Version: AVP board PLD version
ADO Power: Status of power supply to the ADO board

CCU DTX board diagnostics

```
*DTX Diag*          11/17

Return Delay  :F/S
Active Ret CH :2CH
Front Power:OK
PLD Version:1.00  Done
Rear:SDI      Power:OK
```

Return Delay: Return delay setting status
Active Ret CH: The selected RET channel
Front Power: Status of power supply to the DTX board
PLD Version: DTX board PLD version
Rear: Name of the board installed in the rear expansion slot
Power: Status of power supply to the board installed in the rear expansion slot

Status of the board inserted in Slot1

```
*Slot1 Diag*        12/17



Front:None


Rear :--------
```

Front: Status of power supply to the board installed in option slot 1 and the board name
PLD Version: PLD version of the board installed in option slot 1 and the board name

Status of the board inserted in Slot2

```
*Slot2 Diag*        13/17

1&2: 1080/59.94I
3&4:M1080/59.94I
HD CB:BAR 16:9(100%)
SD CB:SMPTE

Front:RC        Power:OK

PLD Version:1.00  Done

Rear :HIF       Power:OK
```

When the HKCU2040 board is installed

```
*Slot1 Diag*        12/20

1&2: 4K/59.94P(12G)
3&4: 4K/59.94P(12G)
HD CB:BAR 16:9(100%)
SDI Out  1   2   3   4
 Status: OK  OK  OK  OK
Front:DPR       Power:OK

PLD Version:1.00  Done
            2.00
Rear :DIF       Power:OK
```

1 & 2: Output format of Output 1 & 2
3 & 4: Output format of Output 3 & 4
HD CB: The output color bar signal
Status: SDI output status of each connector
Front: Status of power supply to the board installed in option slot 2 and the board name
PLD Version: PLD version of the board installed in option slot 2 and the board name
Rear: Status of power supply to the rear board and board name

Note

The items displayed differ depending on board connected to the expansion slot.

Status of the board inserted in Slot3

```
*Slot3 Diag*        14/17



Front:None      Power:OK
PLD Version:1.00  Done
Rear :HIF       Power:OK
```

The setting status of the board installed in Slot3 (front/rear) is displayed.

Note

The items displayed differ depending on board connected to the expansion slot.

CCU SDP board diagnostics

```
*SDP Diag*          15/17



Power:OK
PLD Version:1.00  Done
```

Power: Status of power supply to the SDP board
PLD Version: SDP board PLD version

Camera hardware diagnostics

```
*CAMERA Diag*       16/17

      ALL BOARD OK
```

Displays the camera hardware status.

ROM version information for major components

```
*ROM Version*       17/17

CAMERA HDC1700
       1.00    11.12.20
CCU    HDCU1700
       1.00    11.12.20
```

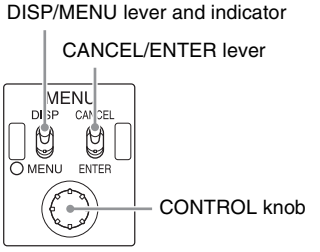
CAMERA: ROM version of the camera connected to this unit
CCU: ROM version of this unit

Setup Menu

The CCU system and peripheral settings can be checked and modified using a picture monitor connected to the PIX output.

Changing Menu Item Settings

The menu screen is controlled using the knob and levers in the MENU control block on the front panel.
Setting the CANCEL/ENTER lever to the ENTER position and pressing the CONTROL knob perform the same function.



To display a menu page

Set the DISP/MENU lever to the MENU position.
When first powered on, the CCU MENU page is displayed.

To display the CCU MENU page

In menu display mode, turn the CONTROL knob to move the pointer (➡) to TOP in the upper right corner of the menu page, then press the CONTROL knob. The CCU MENU showing the menu configuration is displayed.

```
** CCU MENU **

➔SYSTEM OPERATION
 CCU CONFIGURATION
 NETWORK SETTINGS
```

Menu name	Description
SYSTEM OPERATION	Input/output signal format and system-related settings
CCU CONFIGURATION	CCU configuration settings
NETWORK SETTINGS	Network-related settings

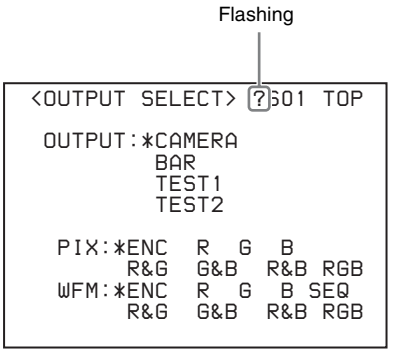
To select an item in the CCU MENU

Turn the CONTROL knob to move the pointer (➡) up/down to the desired menu item, then press the CONTROL knob. The most recently viewed page in the selected menu is displayed.

To change the displayed page

1 Turn the CONTROL knob to move the pointer (➡) to the page number, then press the CONTROL knob.

The pointer (➡) changes to a flashing question mark (?).



2 Turn the CONTROL knob to change the displayed page to the desired page, then press the CONTROL knob.
The question mark (?) changes back to the pointer (➡). Items on the page can now be selected and changed.

To change a menu item setting

If a question mark (?) is displayed beside the page number, press the CONTROL knob to restore the pointer (➡). Items on the page can now be selected and changed.

1 Turn the CONTROL knob to move the pointer (➡) to the desired item, then press the CONTROL knob.
The pointer (➡) changes to a flashing question mark (?).

2 Turn the CONTROL knob to change the setting.

To cancel a changed setting
Set the CANCEL/ENTER lever to the CANCEL position before pressing the CONTROL knob. The item is restored to its current setting.

To suspend menu changes
Set the DISP/MENU lever to the MENU position to exit the menu screen.
The DISP/MENU lever can be set to the MENU position again to restart the operation.

3 Press the CONTROL knob.
The question mark (?) changes back to the pointer (➡), and the item setting is registered.

4 Repeat steps 1 to 3 to change other settings on the same page.

To enter a character string

Some menu items require a character string input.
Moving the pointer (➡) to an item with a character string input and pressing the CONTROL knob displays a rectangular cursor and a list of selectable characters. Turning the CONTROL knob moves the cursor between characters.
The following menu item has character strings:

- CCU CONFIGURATION menu → <BAR CHARACTER> page → BAR CHARACTER

1 Move the text cursor to the input position, then press the CONTROL knob.
A second cursor is displayed in the character list.

2 Turn the CONTROL knob to move the cursor to the desired character, then press the CONTROL knob.
Repeat steps 1 and 2 to enter other characters.

- Select INS to insert a space character at the cursor position.
- Select DEL to delete the character at the cursor position.
- Select RET to return to step 1 without changing the string.
- Entering the maximum number of characters (up to the right edge) moves the cursor to ESC on the lower right of the character list.

3 Turn the CONTROL knob to move the cursor to END, then press the CONTROL knob.
The new input string is registered.

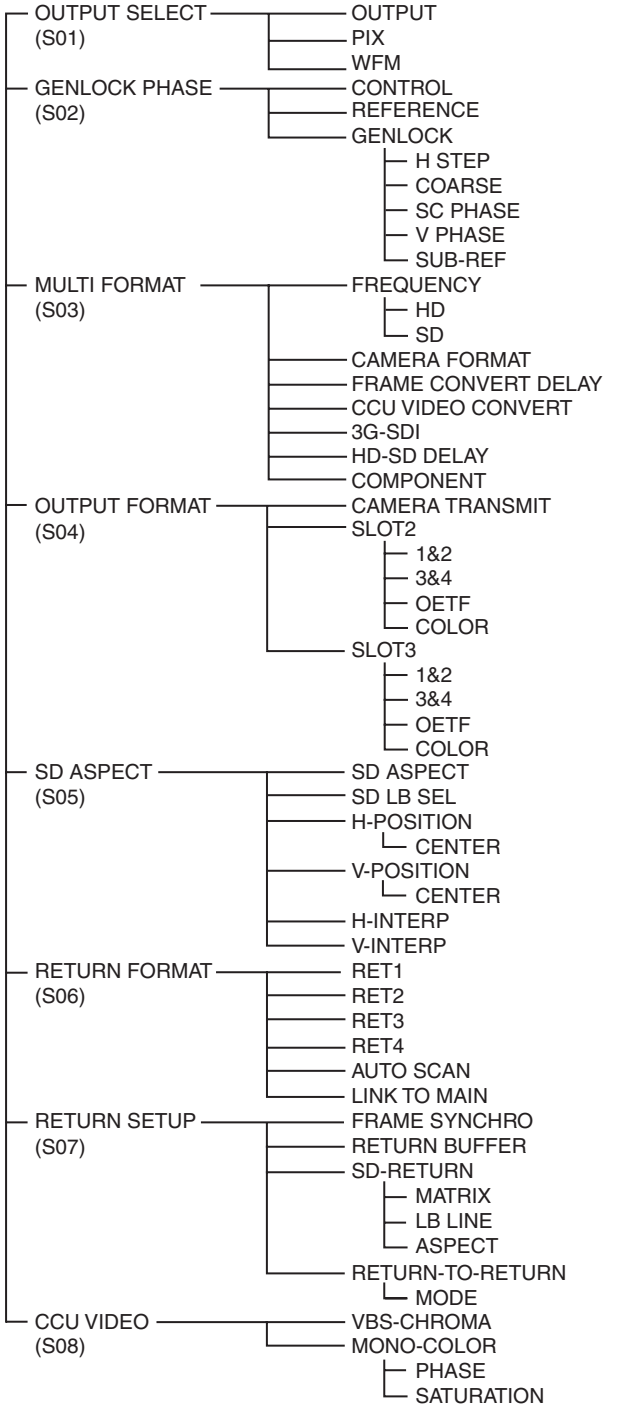
To cancel the character string setting
Turn the CONTROL knob to move the cursor to ESC, then press the CONTROL knob.

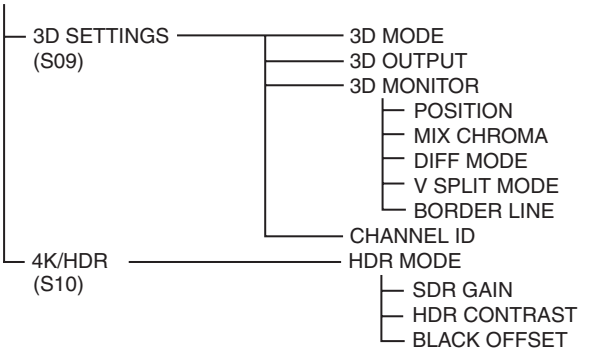
To exit the menu display

In menu display mode, set the DISP/MENU lever to the MENU position.

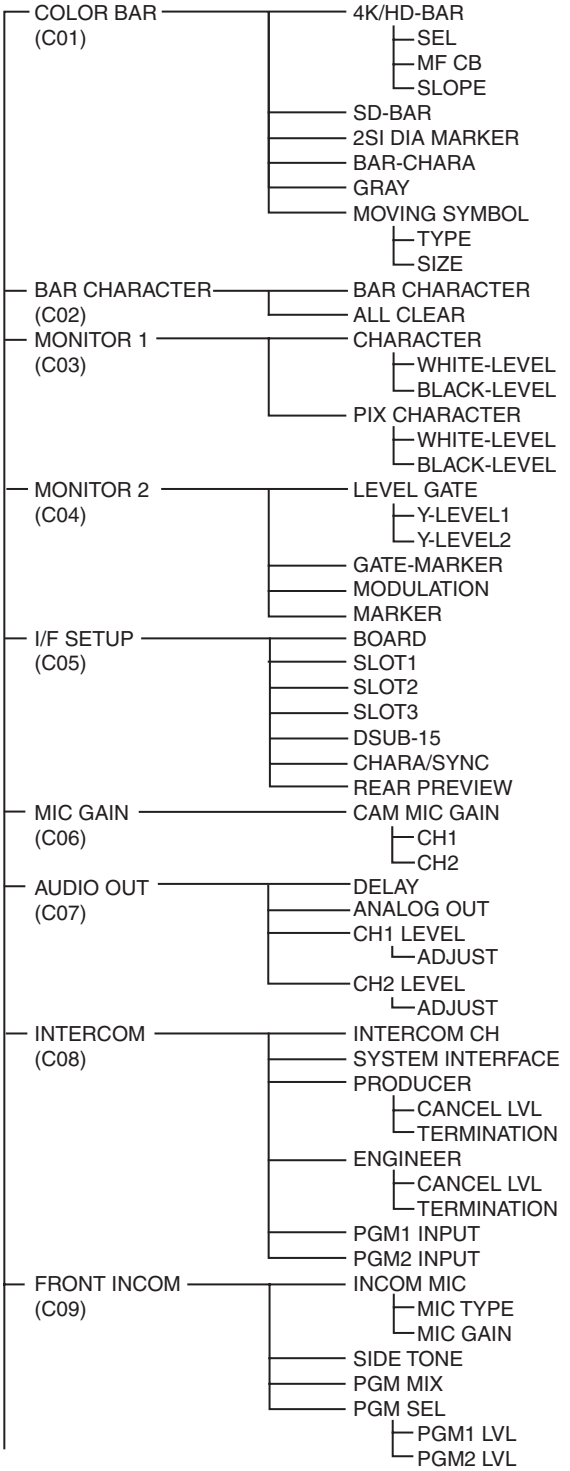
Menu Tree

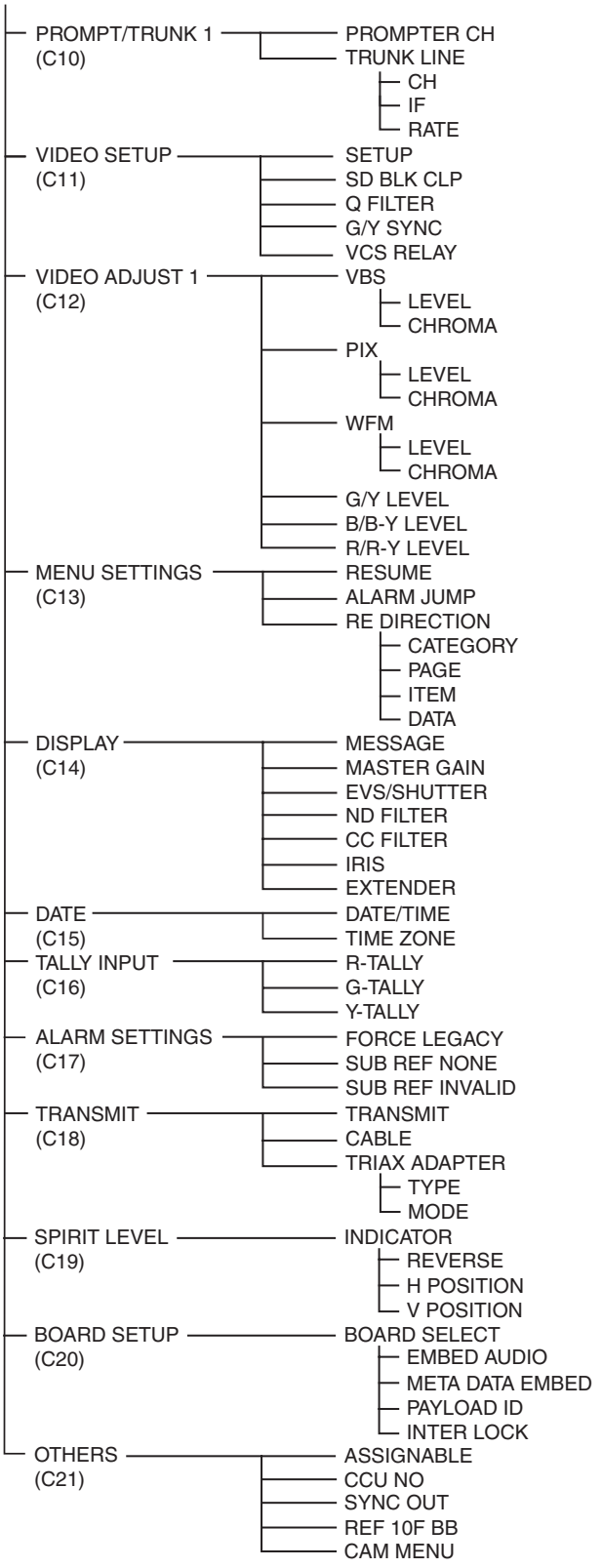
SYSTEM OPERATION menu



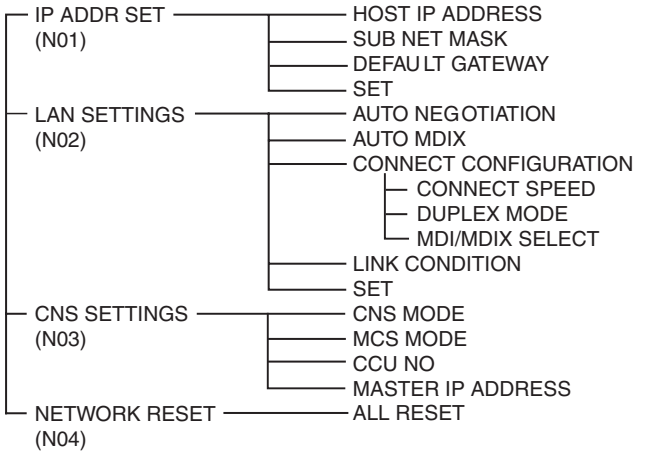


CCU CONFIGURATION menu





NETWORK SETTINGS menu



Menu List

Note

The following conventions are used in the menu list table.
Settings column values (e.g. ON, OFF, 0): Default settings
Execute via ENTER: Press the CONTROL knob or move the CANCEL/ENTER lever to the ENTER position to execute.

SYSTEM OPERATION menu

SYSTEM OPERATION			
Page name Page No.	**Item**	**Settings**	**Description**
<OUTPUT SELECT> S01	OUTPUT	CAMERA, **BAR**, TEST1, TEST2	Selects the output signal. TEST1 and TEST2 are not selectable if there is no communication with the camera.
	PIX	**ENC**, R, G, B, R&G, G&B, R&B, RGB	Selects the PIX connector output signal.
	WFM	**ENC**, R, G, B, SEQ, R&G, G&B, R&B, RGB	Selects the WFM connector output signal.
<GENLOCK PHASE> S02	CONTROL	(REMOTE), (LOCAL)	
	REFERENCE	(NONE), (EXT IN)	Displays the status of the reference signal input.
	GENLOCK	HD, **SD**	This unit's GEN LOCK mode: displays the lock status and format. **HD**: HD **SD**: SD
		(OK), (NG)	Sets the lock status of the external reference signal. **(OK)**: Locked **(NG)**: Unlocked
		External reference signal format	Displayed only when a reference signal is present.
	H STEP	When GENLOCK mode is HD: –3.01 to 3.45 µsec **0.00** When GENLOCK mode is SD: –8.29 to 9.48 µsec **0.00**	Horizontal phase (STEP) Displays the sub-reference signal format.
	COARSE	–99 to 99, **0**	Horizontal phase Displays the sub-reference signal format.
	SC PHASE **Note** Displayed only when HKCU1003 is connected	**0** to 359	Adjusts the subcarrier phase of the SD analog signal.
	V PHASE	**0** to 7	Vertical phase (line) Displays the sub-reference signal format.
	SUB-REF	(NONE), (EXT IN)	Displayed only when a sub-reference signal is present.
	Note Displayed only when HKCU1003 is connected	(UNKNOWN), (Frame Gate), (HD), (SD)	Sub-reference signal format display.

SYSTEM OPERATION			
Page name Page No.	**Item**	**Settings**	**Description**
<MULTI FORMAT> S03	FREQUENCY		
	HD	**1.001**, 1.000	Selects the operating frequency.
	SD	**(525NTSC)**, (625PAL)	
	CAMERA FORMAT	When FREQUENCY is set to 1.001: **1080/59.94I**, 1080/29.97PsF, 1080/23.98PsF, 720/59.94P, 1080/59.94P(4K/HDR) When FREQUENCY is set to 1.000: 1080/50I, 1080/25PsF, 1080/24PsF, 720/50P, 1080/50P(4K/HDR)	Selects the transmission format. **Note** Selectable items differ depending on the camera's supported format.
	FRAME CONVERT DELAY	0.8, 1.2, **1.6**	Sets the output delay for framerate-converted signals. (Displayed only when FREQUENCY HD is set to 1.001.)
	CCU VIDEO CONVERT	**DSB**, ENB	Sets video conversion. When CAMERA FORMAT is set to 1080/59.94P or 1080/50P, set to ENB to convert/output 720/59.94P or 720/50P signal from the DRX board. To set to ENB, set FRAME SYNCHRO in RETURN SETUP (S07) to ON. (Displayed only when HKCU2007 or HKCU2040 is installed.) **Tip:** When CCU VIDEO CONVERT is set to ENB, the CCU internal video conversion is delayed, so adjust the camera's signal by advancing it as necessary.
	3G-SDI	Level A, **Level B**	Selects SMPTE425 Level A or SMPTE425 Level B for 3G-SDI output.
	HD-SD DELAY	Line, **Frame (1F)**, 0-Delay	Sets the phase output for SD signals down converted from this unit's HD signals.
	COMPONENT	RGB, **YCD**	Selects the component signal connector's output format. (Displayed only when HKCU1003 is installed.)
<OUTPUT FORMAT> S04	CAMERA TRANSMIT	When FREQUENCY HD is set to 1.001: **1080/59.94I**, 1080/29.97PsF, 1080/23.98PsF, 720/59.94P, 1080/59.94P(4K/HDR) When FREQUENCY HD is set to 1.000: 1080/50I, 1080/25PsF, 1080/24PsF, 720/50P, 1080/50P(4K/HDR)	Selects the output format. This setting works in conjunction with CAMERA FORMAT. **Note** Selectable items differ depending on the camera's supported format.
	SLOT2 (board name)		
	1&2	Output format*	Selects the output format for expansion slot 2's SDI OUT1/2 connector.
	3&4	Output format*	Selects the output format for expansion slot 2's SDI OUT3/4 connector.
	OETF	S-Log3, HLG_BT.2100, HLG_Live, **SDR**	Selects OETF for expansion slot 2. (Displayed only when HKCU2040 is installed.)
	COLOR	BT.2020, **BT.709**	Selects COLOR SPACE for expansion slot 2. (Displayed only when HKCU2040 is installed.)
	SLOT3 (board name)		
	1&2	Output format*	Selects the output format for expansion slot 3's SDI OUT1/2 connector.
	3&4	Output format*	Selects the output format for expansion slot 3's SDI OUT3/4 connector.
	OETF	S-Log3, HLG_BT.2100, HLG_Live, **SDR**	Selects OETF for expansion slot 3. (Displayed only when HKCU2040 is installed.)
	COLOR	BT.2020, **BT.709**	Selects COLOR SPACE for expansion slot 3. (Displayed only when HKCU2040 is installed.)

Notes

- FREQUENCY or CAMERA FORMAT mode setting changes take effect only after the CCU power supply is turned off and then on again.
- Notes when changing FORMAT
  When BPU is attached, confirm if the FORMAT of BPU is set correctly after changing the FORMAT of CCU. Also, when you change the FORMAT of BPU, change the FORMAT of CCU beforehand.

* Use the charts on the following as an example of how to configure these settings. The settings differ depending on the boards connected to the expansion slots.

	1080/59.94I	**1080/29.97PsF**	**1080/23.98PsF**	**720/59.94P**	**1080/59.94P(4K/HDR)**
Slot2 1&2	1080/59.94I	1080/29.97PsF	1080/59.94I	720/59.94P	4K/59.94P(2SI) OETF: HLG_Live COLOR: BT.2020
Slot2 3&4	M1080/59.94I	M1080/29.97PsF	M1080/59.94I	M720/59.94P	4K/59.94P(2SI) OETF: HLG_Live COLOR: BT.2020
Slot3 1&2	525/59.94I	525/29.97PsF	525/59.94I	525/59.94I	1080/59.94I
Slot3 3&4	M525/59.94I	M525/29.97PsF	M525/59.94I	M525/59.94I	M525/59.94I

	1080/50I	**1080/25PsF**	**1080/24PsF**	**720/50P**	**1080/50P(4K/HDR)**
Slot2 1&2	1080/50I	1080/25PsF	1080/50I	720/50P	4K/50P(2SI) OETF: HLG_Live COLOR: BT.2020
Slot2 3&4	M1080/50I	M1080/25PsF	M1080/50I	M720/50P	4K/50P(2SI) OETF: HLG_Live COLOR: BT.2020
Slot3 1&2	625/50I	625/25PsF	625/50I	625/50I	1080/50I
Slot3 3&4	M625/50I	M625/25PsF	M625/50I	M625/50I	M625/50I

An “M” next to the output format indicates that a cable’s character will be output with the signal.

SYSTEM OPERATION			
Page name Page No.	**Item**	**Settings**	**Description**
<SD ASPECT> S05	SD ASPECT	SQUEEZE, **EDGE CROP**, LETTER BOX	Selects the SD output aspect.
	SD LB SEL	**16:9**, 15:9, 14:9, 13:9	Selects the LETTER BOX aspect ratio.
	H-POSITION	–99 to 99, (–99) to (99), **0**	Sets the horizontal position. Settings in ( ): Displayed when SQUEEZE or LETTER BOX is selected in SD ASPECT. (Display only)
	CENTER	**ON**, OFF, (ON), (OFF)	Sets the horizontal centering position. Settings in ( ): Displayed when SQUEEZE or LETTER BOX is selected in SD ASPECT. (Display only)
	V-POSITION	–99 to 99, (–99) to (99), **0**	Sets the vertical position. Settings in ( ): Displayed when SQUEEZE or EDGE CROP is selected in SD ASPECT. (Display only)
	CENTER	ON, OFF, **(ON)**, (OFF)	Sets the vertical centering position. Settings in ( ): Displayed when SQUEEZE or EDGE CROP is selected in SD ASPECT. (Display only)
	H-INTERP	**A**, B, C, D, E	Selects the down converter horizontal filter.
	V-INTERP	**A**, B, C, D, E	Selects the down converter vertical filter.
<RETURN FORMAT> S06	RET1 RET2 RET3	When 1.001 is selected for FREQUENCY HD: **1080/59.94I (PsF)**, 1080/23.97PsF, 720/59.94P, 525/59.94I (PsF), NTSC	Sets the return signal input format. Sets input format, aspect ratio, and letterbox mode.
	RET4	When 1.000 is selected for FREQUENCY HD: **1080/50I (PsF)**, 1080/24PsF, 720/50P, 625/50I (PsF), PAL When 525/59.94I (PsF), NTSC, 625/50I (PsF) or PAL are selected, the following settings are available: **SQUEEZE**, EDGE CROP, LETTER BOX, **16:9**, 15:9, 14:9, 13:9	The following shows selectable RETURN FORMAT settings at various OUTPUT FORMAT settings. **Note** RET4 is locked to NTSC or PAL.
	AUTO SCAN	Execute via EXEC.	Automatically detects the return signal input format, and then executes. **Note** If the automatically detected result is invalid, the previous setting flashes for 5 seconds, and then the previous setting is maintained.
	LINK TO MAIN	**MANUAL**/AUTO	Sets the mode for linking the return signal to this signal.

OUTPUT FORMAT	RETURN FORMAT
1080/59.94I	1080/59.94I (PsF), 525/59.94I (PsF), NTSC
1080/29.97PsF	
1080/23.98PsF	1080/23.98PsF, 1080/59.94I (PsF), 525/59.94I (PsF), NTSC
720/59.94P	720/59.94P, 525/59.94I (PsF), NTSC
1080/50I	1080/50I (PsF), 625/50I (PsF), PAL
1080/25PsF	
1080/24PsF	1080/24PsF, 1080/50I (PsF), 625/50I (PsF), PAL
720/50P	720/50P, 625/50I (PsF), PAL

Page name Page No.	Item	Settings	Description
<RETURN SETUP> S07	FRAME SYNCHRO	OFF, **ON**	Set the FRAME SYNCHRO function for the return signal to on/off.
	RETURN BUFFER	**NORMAL**, EXTEND	Set the buffer extension function for the return signal to on/off.
	SD-RETURN		
	MATRIX	OFF, **ON**	Turn the HD matrix to the SD return signal on/off.
	LB LINE	360, **364**	Set the effective line setting for letterbox.
	ASPECT	**MANUAL**, AUTO	Sets the auto-linking function for this unit's aspect setting.
	RETURN-TO-RETURN		
	MODE	**NORMAL**, SMOOTH	"SMOOTH" is available when the return signal is HD-SDI.
<CCU VIDEO> S08	VBS-CHROMA	OFF, **ON**	Turns the VBS output signal's cross signal on/off.
	MONO-COLOR	**OFF**, ON	Sets the MONO COLOR function on/off.
	PHASE	0 to 358, **0**	Adjusts the color phase for the MONO COLOR function.
	SATURATION	–99 to 99, **0**	Adjusts the color saturation for the MONO COLOR function.
<3D SETTINGS> S09 (Available when an HKCU2007 is installed)	3D MODE	**OFF**, ON	Turns the 3D Mode setting ON/OFF. (Available only with the HDFA-200 expansion.)
	3D OUTPUT	**3D MONITOR**, RIGHT ONLY, LEFT ONLY	Sets 3D Monitor output.
	3D MONITOR	**SPLIT SCREEN**, SIDE BY SIDE, ANAGLYPH, 50% MIX, DIFFERENCE, DIFF Y ONLY, MIRROR, CROP SPLIT, V SPLIT, CHECKER BOARD, LINE BY LINE	Displays the format.
	POSITION	–99 to 99, **0**	Sets the WIPE division ratio and MIX mix ratio. (Displayed when 3D MODE is set to ON.)
	MIX CHROMA	**ON**, OFF	Selects whether to display chroma information when MIX is activated.
	DIFF MODE	**L-R**, R-L	Switches to the difference image calculation operation.
	V SPLIT MODE	**L/R**, R/L	Switches the left and right sides when splitting the display.
	BORDER LINE	**OFF**, ON	Selects whether or not to display the boundary line when splitting the display.
	CHANNEL ID	**OFF**, ON	Selects whether to display the Channel ID with this line's output.
<4K/HDR> S10 (Available when an HKCU2040 is installed)	HDR MODE	**OFF**, LIVE HDR	**OFF:** Normal SDR shooting mode **LIVE HDR:** Extends the imaging dynamic range of camera and outputs enhanced HDR videos.
	SDR GAIN	**0.0** to –15.0 dB	Sets the gain for SDR output. Available only when HDR MODE is set to LIVE HDR.
	HDR CONTRAST	**100** to 566%	Displays the contrast of HDR output available when SDR GAIN is set. (Display only) Available only when HDR MODE is set to LIVE HDR.
	BLACK OFFSET	–99.9 to 99.9, **0.0**	Sets the black offset of HDR output. Available only when HDR MODE is set to LIVE HDR.

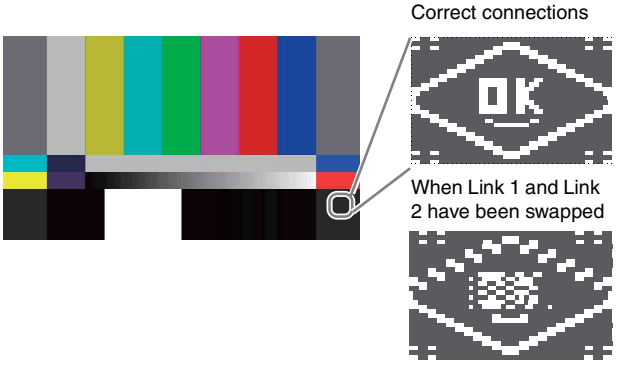
CCU CONFIGURATION menu

CCU CONFIGURATION Page name Page No.	Item		Settings	Description
<COLOR BAR> C01	4K/HD-BAR			
		SEL	**BAR 16:9 (100%)**, BAR 16:9 (75%), SMPTE 16:9 (BLACK), SMPTE 16:9 (–I/Q), BAR 4:3 (100%), BAR 4:3 (75%), SMPTE 4:3 (BLACK), SMPTE 4:3 (–I/Q), MF-ARIB (75%), MF-ARIB (100%), MF-ARIB (+I), MF-SMPTE (–I,Q), MF-SMPTE (75%,Q), MF-SMPTE (100%,Q), MF-SMPTE (+I,Q), HD-CUSTOM, SDI CHECK FIELD, Y-RAMP, Y/C-RAMP, HD-CUSTOM2	Sets an HD output color bar.
		MF CB	**MODIFY**, EVEN	Sets a multi-format color bar.
		SLOPE	**WIDE**, NARROW	Sets the chroma band for a color bar.
	SD-BAR		For NTSC: **SMPTE**, EIA, FULL, 95%, NTSC100%, Y/C-RAMP, Y-RAMP For PAL: **SMPTE**, EIA, EBU, 95%, PAL100%, Y/C-RAMP, Y-RAMP	Sets SD output for a color bar.
			DSB, **ENB**	**DSB:** Down convert and display the HD color bar. **ENB:** Display the set SD color bar.
	2SI DIA MARKER **Note** Displayed only when HKCU2040 is connected		**OFF**, ON	Sets diamond mark superposition on the color bar for 4K 2 sample interleave output. See *"4K 2SI diamond marks" (page 32)*.
	BAR-CHARA		ON, **OFF**	Turns the signal for characters superimposed on a color bar ON/OFF.
	GRAY		**ON**, OFF	**ON:** Gray screen output when camera power supply is off. **OFF:** Color bar signal output when camera power supply is off.
	MOVING SYMBOL		ON, **OFF**	Turns the moving symbol superimposed on the color bar ON/OFF.
		TYPE	**0**, 1, 2	Sets the symbol type.
		SIZE	**SMALL**, LARGE	Sets the symbol size.

Page name Page No.	Item	Settings	Description

4K 2SI diamond marks

This function is for displaying a test pattern like the following in the area at the bottom right of the 4K color bar when 4K 2 sample interleave output. OK is displayed if the connections for Links 1 to 4 are correct, and OK is not displayed if they are incorrect. This function can be used to check the connections.



<BAR CHARACTER> C02	BAR CHARACTER		Sets strings 1 to 12 that are superimposed on the color bar signal.
	ALL CLEAR		Execute to clear all character strings. (Execute via ENTER.)
<MONITOR 1> C03	CHARACTER		Sets the MONITOR output bar character.
	WHITE-LEVEL	0.0 to 107.0%, **71.5**	Sets the MONITOR output bar character level.
	BLACK-LEVEL	**0.0** to 107.0%	Sets the MONITOR output bar character border black level.
	PIX CHARACTER		Sets the PIX output bar character. (Displayed only when HKCU1001/1003 is installed.)
	WHITE-LEVEL	0.0 to 107.0%, **75.0**	Sets the PIX output bar character level.
	BLACK-LEVEL	**0.0** to 107.0%	Sets the PIX output bar character border black level.

CCU CONFIGURATION			
Page name Page No.	**Item**	**Settings**	**Description**
<MONITOR 2> C04	LEVEL GATE	**---**, 1&2, 1, 2, OFF	**1&2:** Displays level gate 1 & 2. **1:** Displays level gate 1. **2:** Displays level gate 2. **---:** Displayed when camera not connected, video output not set to CAMERA, or video output is set to CAMERA and GATE MARKER is ON. (Display only)
	Y-LEVEL1	0 to 108%, **49**, **61**	Sets the level gate 1 minimum and maximum detection level.
		–99 to 99, **–25**	Sets the level gate 1 zebra range.
	Y-LEVEL2	0 to 108%, **74**, **108**	Sets the level gate 2 minimum and maximum detection level.
		–99 to 99, **–25**	Sets the level gate 2 zebra range.
	GATE-MARKER	---, ON, **OFF**	Sets the gate signal display to ON/OFF. ---: Displayed when a camera is not connected.
		–99 to 99, **0**	Sets the gate signal level.
	MODULATION	---, ON, **OFF**	Sets the 4:3 aspect ratio mask function to ON/OFF when EDGE CROP is set to ON. ---: Displayed when a camera is not connected.
		–99 to 99, **0**	Sets the mask video level.
	MARKER	ON, **OFF**	Sets the marker signal to ON/OFF.
		4:3, 13:9, 14:9, EU VISTA, VISTA, CINEMA, FOLLOW DC	Selects a superimposed marker signal.
<I/F SETUP> C05	BOARD	FRONT, REAR	Display only
	SLOT1	(NONE) => (NONE)	Display only
	SLOT2	BOARD NAME DISPLAY	Detects and displays the boards installed to the front/rear of the CCU. (Display only)
	SLOT3	BOARD NAME DISPLAY	
	DSUB-15	**MIC-REMOTE**, WF-REMOTE	Sets the output for the MIC REMOTE connector.
	CHARA/SYNC	**CHARACTER**, SYNC	Sets the output for the CHARACTER/SYNC connector.
	REAR PREVIEW	**MOMENTARY**, TOGGLE	Selects the REAR PREVIEW output operating mode.
<MIC GAIN> C06	CAM MIC GAIN		Sets the microphone gain.
	CH1	---, 20, 30, 40, 50, **60** dB	Settings vary depending on microphones. **---:** Displayed when a camera is not connected. (Display only)
	CH2	---, 20, 30, 40, 50, **60** dB	
<AUDIO OUT> C07	DELAY	**0** to 3840FS	Sets the camera's microphone output phase.
	ANALOG OUT	**MIC 1/2**, AES, EBU	Selects the MIC OUT ANALOG output.
	CH1 LEVEL	**0**, +4, –20	Sets the AUDIO CH1 output level.
	ADJUST	–99 to 99, **0**	
	CH2 LEVEL	**0**, +4, –20	Sets the AUDIO CH2 output level.
	ADJUST	–99 to 99, **0**	

CCU CONFIGURATION			
Page name Page No.	**Item**	**Settings**	**Description**
<INTERCOM> C08	INTERCOM CH	1CH, **2CH**	Selects the intercom channel number.
	SYSTEM INTERFACE		
	PRODUCER	**4WIRE**, RTS, CLEAR COM	Sets the producer line intercom system.
	CANCEL LVL	–99 to 99, **0**	Sets the side tone cancel level.
	TERMINATION	**(OFF)**, ON	Connects to a 200 Ω terminator, if ON is selected while 2-wire intercom interface (RTS or CLEAR COM) is used. **(OFF):** Displayed when 4WIRE is selected in SYSTEM I/F. (Display only)
	ENGINEER	**4WIRE**, RTS, CLEAR COM	Sets the engineer line intercom system.
	CANCEL LVL	–99 to 99, **0**	Sets the side tone cancel level.
	TERMINATION	**(OFF)**, ON	Connects to a 200 Ω terminator, if ON is selected while 2-wire intercom interface (RTS or CLEAR COM) is used. **(OFF):** Displayed when 4WIRE is selected in SYSTEM I/F. (Display only)
	PGM1 INPUT	–20, **0**, +4 dBu	Sets the PGM1 input level.
	PGM2 INPUT	–20, **0**, +4 dBu	Sets the PGM2 input level.
<FRONT INCOM> C09		(MIC ON), (MIC OFF), (PGM ON)	CCU front panel MIC/PGM switch position. (Display only)
		(PROD), (ENG), (PRIVATE)	CCU front panel INTERCOM switch position. (Display only)
	INCOM MIC	CARBON, ECM, **DYNAMIC**	Sets the headset microphone connected to the INTERCOM connector on the front panel. **CARBON:** Carbon microphone (power supply, 20dB gain) **ECM:** Electret condenser microphone (power supply, 40dB gain) **DYNAMIC:** Dynamic microphone (no power supply, 60dB gain)
	MIC TYPE	BALANCE, **UNBALANCE**	Sets the headset microphone connected to the INTERCOM connector on the front panel. **BALANCE:** Balanced microphone **UNBALANCE:** Unbalanced microphone
	MIC GAIN	–6dB, **0dB**, +6dB	Sets the input gain.
	SIDE TONE	0 to 99, **50**	Sets the side tone level.
	PGM MIX	**OFF**, INCOM+PGM, L-INCOM/R-PGM	**OFF:** Signals are not mixed. **INCOM+PGM:** INCOM and PGM signals are mixed. **L-INCOM/R-PGM:** Outputs an INCOM signal through the left channel and a PGM signal through the right.
	PGM SEL	**PGM1**, PGM2, PGM1 + PGM2	Selects the PGM type.
	PGM1 LVL	0 to 99, **50**	Sets the PGM1 level.
	PGM2 LVL	0 to 99, **50**	Sets the PGM2 level.
<PROMPT/TRUNK 1> C10	PROMPTER CH	1CH	Displays the number of prompter lines.
	TRUNK LINE		
	CH	1CH, **2CH**	Sets the number of channels to be used.
	IF	**232C**, 422A	Sets the communication line mode.
	RATE	(38Kbps), (19Kbps), (75Kbps), (150Kbps)	Displays the TRUNK line. (Display only)

CCU CONFIGURATION			
Page name Page No.	**Item**	**Settings**	**Description**
<VIDEO SETUP> C11	SETUP	**ON**, OFF, ---	**ON:** Adds a setup signal to VBS and SD YCD component signal Ych-SYNC. **OFF:** No setup signal is added. **---:** Displayed when the format is PAL. (Display only)
	SD BLK CLP	OFF, **ON**	Y signals from SD SDI output that are less than 0% are clipped at 0%.
	Q FILTER	**WD**, NA	Sets the Q filter bandwidth. (Displayed only when HKCU1001 or HKCU1003 is installed.)
	G/Y SYNC	**OFF**, ON	Sets the R/G/B component signal's G ch-SYNC to on/off. (Displayed only when HKCU1001 or HKCU1003 is installed.)
	VCS RELAY	OFF, **ON**	Sets the PIX/WFM connector output. (Displayed only when HKCU1001 or HKCU1003 is installed.)
<VIDEO ADJUST 1> C12 (Available when an HKCU1001 or HKCU1003 board is installed)	VBS		
	LEVEL	–99 to 99, **0**	Adjusts the VBS output video level.
	CHROMA	–99 to 99, **0**	
	PIX		
	LEVEL	–99 to 99, **0**	Adjusts the PIX output video level.
	CHROMA	–99 to 99, **0**	
	WFM		
	LEVEL	–99 to 99, **0**	Adjusts the WFM output video level.
	CHROMA	–99 to 99, **0**	
(Available when yet another VDA board from the HKCU1003 is installed to the option slot)	G/Y LEVEL	–99 to 99, **0**	Adjusts the G/Y output video level.
	B/B-Y LEVEL	–99 to 99, **0**	Adjusts the B/B-Y output video level.
	R/R-Y LEVEL	–99 to 99, **0**	Adjusts the R/R-Y output video level.
<MENU SETTINGS> C13	RESUME	**ON**, OFF	Turns ON/OFF the menu mode resume page display function.
	ALARM JUMP	ON, **OFF**	Turns ON/OFF the error-related page display function for when an error occurs while in menu mode.
	RE DIRECTION		CONTROL knob operating mode settings
	CATEGORY	**STD**, RVS	**STD:** CONTROL knob clockwise rotation moves the CCU MENU pointer (➡) down. **RVS:** CONTROL knob counterclockwise rotation moves the CCU MENU pointer (➡) down.
	PAGE	**STD**, RVS	**STD:** CONTROL knob clockwise rotation displays the next page in the menu. **RVS:** CONTROL knob counterclockwise rotation displays the next page in the menu.
	ITEM	**STD**, RVS	**STD:** CONTROL knob clockwise rotation moves the pointer (➡) down to the next item on the page. **RVS:** CONTROL knob counterclockwise rotation moves the pointer (➡) down to the next item on the page.
	DATA	**STD**, RVS	**STD:** CONTROL knob clockwise rotation selects the next data option. **RVS:** CONTROL knob counterclockwise rotation selects the next data option.

CCU CONFIGURATION			
Page name Page No.	**Item**	**Settings**	**Description**
<DISPLAY> C14 Turn camera messages and switch settings ON/OFF for the camera's diagnostics screen.	MESSAGE	**ALL**, WARNING, OFF	**ALL:** Displays all messages. **WARNING:** Displays system warning messages and menu control messages. **OFF:** Displays only menu control messages.
	MASTER GAIN	**ON**, OFF	Displays or hides the master gain indication.
	EVS/SHUTTER	**ON**, OFF	Displays or hides the ECS/shutter indication.
	ND FILTER	**ON**, OFF	Displays or hides the ND filter indication.
	CC FILTER	**ON**, OFF	Displays or hides the CC indication.
	IRIS	**ON**, OFF	Displays or hides the IRIS indication.
	EXTENDER	**ON**, OFF	Displays or hides the EXTENDER indication.
<DATE> C15	DATE/TIME	20YY/MM/DD hh:mm	Sets the date and time.
	TIME ZONE	hh:mm –11h59m to +11h59m	Sets the time zone.
<TALLY INPUT> C16	R-TALLY	**CONTACT**, POWER (24V), POWER (TTL)	RED tally input setting
	G-TALLY	**CONTACT**, POWER (24V), POWER (TTL)	GREEN tally input setting
	Y-TALLY	**CONTACT**, POWER (24V), POWER (TTL)	YELLOW tally input setting
<ALARM SETTINGS> C17	FORCE LEGACY	OFF, **ON**	Set to OFF to not display the FORCE LEGACY alarm.
	SUB REF NONE	OFF, **ON**	Set to OFF to not display the REF NONE alarm.
	SUB REF INVALID	OFF, **ON**	Sets to OFF to not display the REF INVALID alarm.
<TRANSMIT> C18	TRANSMIT	AUTO, HIGH BIT RATE, HD-SDI, **(HD-SDI)**	Sets the optical transmission rate between a camera and CCU. (This setting is locked to HD-SDI normally. When an HKCU2007 is installed, AUTO and HIGH BIT RATE can be selected.)
	CABLE	**CAMERA CABLE**, COAX	Sets the transmission method between a camera and CCU.
	TRIAX ADAPTER		
	TYPE	**DISABLE**, A-TRIAX, D-TRIAX	Sets the TRIAX adapter type.
	MODE	AUTO TRIAX, FIBER	Sets the transmission method of the TRIAX adapter.
<SPIRIT LEVEL> C19 (Available only when a serial lens is attached to the HDC1700 HD Color Camera.)	INDICATOR	**OFF**, ON, ---	Turns the spirit level display on/off.
	REVERSE	**OFF**, ON	**OFF:** Moves to the tilted direction. **ON:** Moves to the reverse direction of the tilted direction.
	H POSITION	0 to 99, **50**	Adjusts the horizontal position.
	V POSITION	0 to 99, **50**	Adjusts the vertical position.
<BOARD SETUP> C20	BOARD SELECT	**DRX2**, DRX3, RC, (DPR)	Selects the board to set. DRX2 to 3: Only when an HKCU2007 board is installed. (DPR): Only when an HKCU2040 board is installed.
	EMBED AUDIO	**ON**, OFF	Sets superimposition of audio data to ON/OFF.
	META DATA EMBED	**OFF**, ON	Sets superimposition of metadata to ON/OFF.
	PAYLOAD ID	**LATEST**, 2002, 2010, 2011, 2017	Sets the PAYLOAD ID of VIDEO.
	INTER LOCK	**OFF**, ON	SDI output (3, 4) format linking function

CCU CONFIGURATION			
Page name Page No.	**Item**	**Settings**	**Description**
<OTHERS> C21	ASSIGNABLE	**NONE**, BARS, CLEAN, CAM POWER, FORCE LEGACY, REF LOCAL HD, REF LOCAL SD	Sets the function for the assignable button. **NONE:** No assignment. **BARS:** Sets the color bar output to ON/OFF. **CLEAN:** Sets character superimposition for all output slots to ON/OFF. **CAM POWER:** Sets camera power to ON/OFF. **FORCE LEGACY:** Forces the communication mode to LEGACY mode. **REF LOCAL HD:** Sets GENLOCK to LOCAL HD. **REF LOCAL SD:** Sets GENLOCK to LOCAL SD.
	CCU NO	**0**, 0 to 96, A to Z	Sets the CCU number.
	SYNC OUT	**SD SYNC**, HD SYNC	Sets the SYNC OUT connector.
	REF 10F BB	**OFF**, ON	Sets the 10F BB function.
	CAM MENU	**OFF**, ON	Displays the Camera menu. **Notes** • If CAM MENU is set to ON, CCU CONFIGURATION menu operations cannot be performed because only Camera menu operations are available. • The Camera menu is not displayed when SD signal is output.

NETWORK SETTINGS menu

NETWORK SETTINGS			
Page name Page No.	**Item**	**Settings**	**Description**
<IP ADDR SET> N01	HOST IP ADDRESS	**0.0.0.0** to 255.255.255.255	Displays the IP address.
	SUB NET MASK	**0.0.0.0** to 255.255.255.254	Displays the subnet mask.
	DEFAULT GATEWAY	**0.0.0.0** to 255.255.255.255	Displays the default gateway.
	SET		A “SET OK?” message is displayed. Press ENTER again to confirm the change. (Execute via ENTER.)
<LAN SETTINGS> N02	AUTO NEGOTIATION	**ON**, OFF	Selects whether to automatically set the connection speed and communication system according to the device connected.
	AUTO MDIX	**ON**, OFF	Sets the communication line.
	CONNECT CONFIGURATION		
	CONNECT SPEED	10M, **100M**	Selects the connection speed. **10M:** 10BASE-TX **100M:** 100BASE-TX Available only when OFF is selected in AUTO NEGOTIATION.
	DUPLEX MODE	HALF, **FULL**	Selects the communication system. **HALF:** Half-duplex communication. **FULL:** Full-duplex communication. Available only when OFF is selected in AUTO NEGOTIATION.
	MDI/MDIX SELECT	**MDI**, MDIX	Selects the communication line.
	LINK CONDITION	(DOWN), (UP)	Displays connection status. (Display only) **(DOWN):** Connection failure **(UP):** Connection successful
	SET		A “SET OK?” message is displayed. Press ENTER again to confirm the change. (Execute via ENTER.)
<CNS SETTINGS> N03	CNS MODE	**LEGACY**, BRIDGE, MCS	Sets the communication mode.
	MCS MODE	(CLIENT)	Displays that the CCU is a CLIENT.
	CCU NO	blank, 1 to 96	Sets the CCU number.
	MASTER IP ADDRESS	**0.0.0.0** to 255.255.255.255	Sets the master device’s IP address for MCS mode.
<NETWORK RESET> N04	ALL RESET		A “NET SETTINGS RESET OK?” message is displayed. Press ENTER again to reset NETWORK SETTINGS menu items to factory default values. (Execute via ENTER.)

Appendix

Notes on Use

Use and storage locations

Avoid using or storing the unit in the following places:

- Where it is subject to extremes of temperature (operating temperature: –10 to +40°C (14 to 104°F)). Note that in summer the temperature in a car with the windows closed can reach 50 °C (122 °F).
- Very damp or dusty places.
- Where rain is likely to reach the unit.
- Places subject to severe vibration.
- Near strong magnetic fields.
- Near transmitting stations generating strong radio waves.

Avoid violent impacts

Dropping the unit, or otherwise imparting a violent shock to it, is likely to cause it to malfunction.

Do not cover with cloth

While the unit is in operation, do not cover it with a cloth or other material. This can cause the temperature to rise, leading to a malfunction.

After use

Set the POWER switch on this unit to the OFF position.

Care

If the body or panels of the unit become dirty, wipe them with a dry cloth. For severe dirt, use a soft cloth steeped in a small amount of neutral detergent, then wipe dry. Do not use volatile solvents such as alcohol or thinners, as these may damage the finish.

Error Messages

When an error is detected in this unit or the camera, the ALARM indicator turns on and an error message is displayed on this unit.

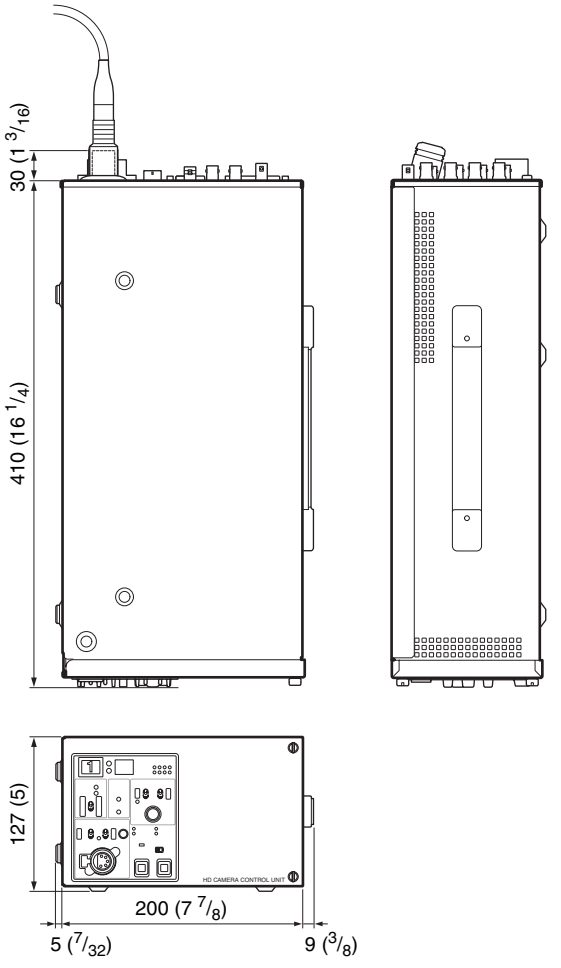
Error message	Indication
CCU:GEN LOCK NG	External reference sync error
CCU:DRX NG	Front DRX board power supply, PLD error
CCU:SDI NG	Rear SDI board power supply error
CCU:PS FAN NG	Power supply block fan error
CCU:PS CABLE SHORT	CAMERA connector optical fiber cable short circuit error
CCU:PS CABLE OPEN	CAMERA connector optical fiber cable open circuit error
CCU:PS RCP PWR SUPPLY NG	Remote control panel (connected to REMOTE connector) power supply error
CCU:RX WARNING	Transmission error between camera and CCU
CCU: CAM INVALID FORMAT	An invalid format is selected.
CCU:DPR NG	Front DPR board power supply, PLD error
CCU:DPR FAN NG	DPR board fan error

Specifications

HDCU1700

General	
Power supply	100 V to 240 V AC, 50/60 Hz
Current consumption	4.1 A (max.)
Standby power	Approx. 5 W
Operating temperature	–10°C to +40°C (14°F to 104°F)
Storage temperature	–20°C to +60°C (–4°F to +140°F)
Mass	Approx. 6.7 kg (14 lb 12 oz)

Dimensions (Unit: mm (inches))



Input/Output connectors	
CAMERA	Optical fiber connector (1) 180 V DC power supply
INTERCOM/TALLY/ PGM	D-sub 25-pin connector (1) • INTERCOM (PROD/ENG), 4W/RTS/CC, 0 dBu • PGM, 2 systems, 0 dBu/–20 dBu • TALLY (R, G, Y) • FLAG
RCP/CNU	8-pin multi-connector (1)
TRUNK A	12-pin (1)
LAN	8-pin (1)
Input connectors	
AC IN	(1), 100 V to 240 V AC
RET 1, 2, 3	BNC-type (3) 3G-SDI: SMPTE ST424/ST425, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 1.485 Gbps/ 1.4835 Gbps SD-SDI: SMPTE 259M, 270 Mbps VBS: 1.0 Vp-p, 75 ohms
REFERENCE	BNC-type (2), loop-through output HD: SMPTE 274M, tri-level sync, 0.6 Vp-p, 75 ohms SD: Black burst (NTSC: 0.286 Vp-p, 75 ohms/PAL: 0.3 Vp-p, 75 ohms) or NTSC 10F-BB
PROMPTER	BNC-type (2), loop-through output, analog signal, 1.0 Vp-p, 75 ohms
MIC REMOTE	D-sub 15-pin (1) (JAE-made DA-C1-J10 recommended) (switchable to WF REMOTE by an internal setting)
Output connectors	
AUDIO OUT CH1, CH2	XLR 3-pin, male (2), 0 dBu/–20 dBu/+4 dBu
HD/SD SDI OUTPUT	BNC-type (2) HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps SD-SDI: SMPTE 259M, 0.8 Vp-p, 75 ohms, 270 Mbps HD-SDI/SD-SDI selectable
HD/SD SDI OUTPUT (MONI)	BNC-type (2) HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps SD-SDI: SMPTE 259M, 0.8 Vp-p, 75 ohms, 270 Mbps HD-SDI/SD-SDI and character ON/OFF selectable
CHARACTER/SYNC	BNC-type (1) HD SYNC: HD, BTA-S001, tri-level sync, 0.6 Vp-p, 75 ohms SD SYNC: SD, composite sync, 0.3 Vp-p, 75 ohms CHARACTER: VBS, 1 Vp-p, 75 ohms, character ON/OFF selectable CHARACTER/HD SYNC/SD SYNC selectable

Supplied accessories
Number plates (1 set)
Operation guide (1)
Operation manual (CD-ROM) (1)
Optional accessories
AC power cord: USA and Canada: 1-551-812-XX Other countries: 1-782-929-XX
Power cord plug holder USA and Canada: 2-990-242-01 Other countries: 3-613-640-01
HKCU2040 4K/HDR Processor Board
HKCU2007 3G/HD SDI Output Expansion Unit
HKCU1001 SD Encoder Unit
HKCU1003 Multi Interface Unit
CCA-5-3 Connection Cable (3 meters/10 feet)
CCA-5-10 Connection Cable (10 meters/33 feet)
RMM-301 Rack Mount Adaptor
Expansion Board
Maintenance manual
Related devices
HDC1700/2500/2400 Color Camera
RCP-1000 series Remote Control Panel
MSU-1000 series Master Setup Unit
CNU-700 Camera Command Network Unit
HZC-CSM10 Camera System Management Software

Design and specifications are subject to change without notice.

HKCU2040 (optional)

General	
Power supply	23.5 W
Operating temperature	–10°C to +40°C (+14°F to 104°F)
Storage temperature	–20°C to +60°C (–4°F to 140°F)
Dimensions (w/h/d)	DPR board: Approx. 19 × 110 × 226 mm (3/4 × 4 3/8 × 9 inches) DIF board: Approx. 19 × 98 × 159 mm (3/4 × 3 7/8 × 6 3/8 inches) HIF board: Approx. 19 × 98 × 159 mm (3/4 × 3 7/8 × 6 3/8 inches)
Mass	DPR board: Approx. 0.35 kg (12 oz) DIF board: Approx. 0.15 kg (5.3 oz) HIF board: Approx. 0.09 kg (3.2 oz)
Output connectors	
DIF board	
SDI OUT	BNC-type (4) 12G-SDI: SMPTE ST2082, 0.8 Vp-p, 75 ohms, 11.880 Gbps/11.868 Gbps 3G-SDI: SMPTE ST424/ST425, 0.8 Vp-p, 75 ohms, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps 12G-SDI/3G-SDI/HD-SDI selectable
HIF board	
SDI OUT	BNC-type (4) 3G-SDI: SMPTE ST424/ST425, 0.8 Vp-p, 75 ohms, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps 3G-SDI/HD-SDI selectable

Design and specifications are subject to change without notice.

HKCU2007 (optional)

General	
Power supply	5.5 W
Operating temperature	–10°C to +40°C (14°F to 104°F)
Storage temperature	–20°C to +60°C (–4°F to +140°F)
Dimensions (w/h/d)	DRX board: Approx. 19 × 110 × 226 mm (3/4 × 4 3/8 × 8 7/8 inches) HIF board: Approx. 19 × 98 × 159 mm (3/4 × 3 7/8 × 6 1/4 inches)
Mass	DRX board: Approx. 0.24 kg (8 oz) HIF board: Approx. 0.09 kg (3 oz)
Output connectors	
HIF board	
SDI OUT	BNC-type (4) 3G-SDI: SMPTE ST424/ST425, 0.8 Vp-p, 75 ohms, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 ohms, 1.485 Gbps/1.4835 Gbps 3G-SDI/HD-SDI selectable Character ON/OFF selectable (connectors 3/4)

Design and specifications are subject to change without notice.

HKCU1001 (optional)

General	
Power supply	2.5 W
Operating temperature	–10°C to +40°C (14°F to 104°F)
Storage temperature	–20°C to +60°C (–4°F to +140°F)
Dimensions (w/h/d)	EN-A board: Approx. 19 × 110 × 226 mm (3/4 × 4 3/8 × 8 7/8 inches) VDA-A board: Approx. 19 × 98 × 159 mm (3/4 × 3 7/8 × 6 1/4 inches)
Mass	EN-A board: Approx. 0.22 kg (7.8 oz) VDA-A board: Approx. 0.10 kg (3.5 oz)
Output connectors	
VDA-A board	
VBS	BNC-type (2), 1.0 Vp-p, 75 ohms, VBS
PIX OUT	BNC-type (1), VBS/R/G/B (VBS 1.0 Vp-p, 75 ohms)
WF OUT	BNC-type (1), VBS/R/G/B/SEQ (VBS 1.0 Vp-p, 75 ohms)
Supplied accessories	
4-pin connector (1)	

Design and specifications are subject to change without notice.

HKCU1003 (optional)

General	
Power supply	3.6 W
Operating temperature	–10°C to +40°C (14°F to 104°F)
Storage temperature	–20°C to +60°C (–4°F to +140°F)
Dimensions (w/h/d)	EN-B board: Approx. 19 × 110 × 226 mm (3/4 × 4 3/8 × 8 7/8 inches) VDA-A/B/C board: Approx. 19 × 98 × 159 mm (3/4 × 3 7/8 × 6 1/4 inches)
Mass	EN-B board: Approx. 0.22 kg VDA-A/B/C board: Approx. 0.10 kg
Output connectors	
VDA-A board	
VBS	BNC-type (2), 1.0 Vp-p, 75 ohms, VBS
PIX OUT	BNC-type (1), VBS/R/G/B (VBS 1.0 Vp-p, 75 ohms)
WF OUT	BNC-type (1), VBS/R/G/B/SEQ (VBS 1.0 Vp-p, 75 ohms)
VDA-B board	
FRAME REF IN	BNC-type (1) HD: SMPTE 274M, tri-level sync input, 0.6 Vp-p, 75 ohms SD: Black burst input, 0.286 Vp-p, 75 ohms
FRAME REF OUT	BNC-type (1) Loop-through output or frame sync pulse output, 0.3 Vp-p, 75 ohms, switchable
PIX OUT	BNC-type (1), VBS/R/G/B (VBS 1.0 Vp-p, 75 ohms)
WF OUT	BNC-type (1), VBS/R/G/B/SEQ (VBS 1.0 Vp-p, 75 ohms)
VDA-C board	
VBS	BNC-type (2), 1.0 Vp-p, 75 ohms, VBS
R/R-Y, G/Y, B/B-Y	BNC-type (3) • RGB video R/G/B (100% white): 0.7 Vp-p, 75 ohms • Component video Y (100% white): 0.714 Vp-p R-Y/B-Y (75% color bar): 0.756 Vp-p, 75 ohms
Supplied accessories	
4-pin connector (1)	

Design and specifications are subject to change without notice.

Note

Always verify that the unit is operating properly before use. SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS DUE TO FAILURE OF THIS UNIT, EITHER DURING THE WARRANTY PERIOD OR AFTER EXPIRATION OF THE WARRANTY, OR FOR ANY OTHER REASON WHATSOEVER.

Sony Corporation

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