HD Camera Control Unit

Operating Instructions

Before operating the unit, please read this manual thoroughly
and retain it for future reference.

HXCU-FB70

HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE

Owner's Record

The model and serial numbers are located at the rear. Record these numbers in the spaces provided below. Refer to them whenever you call upon your Sony dealer regarding this product.

Model No._____ Serial No._____

WARNING

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

THIS APPARATUS MUST BE EARTHED.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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CLASS 1 LASER PRODUCT
LASER KLASSE 1 PRODUKT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT
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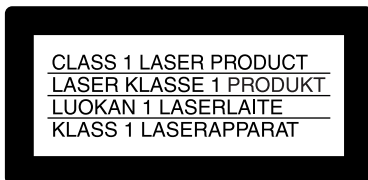
This HD Camera Control Unit is classified as a CLASS 1 LASER PRODUCT.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

CAUTION
The use of optical instruments with this product will increase eye hazard.

WARNING: THIS WARNING IS APPLICABLE FOR USA ONLY.

If used in USA, use the UL LISTED power cord specified below.
DO NOT USE ANY OTHER POWER CORD.

Plug Cap   Parallel blade with ground pin (NEMA 5-15P Configuration)
Cord   Type SJT, three 16 or 18 AWG wires

Length   Minimum 1.5 m (4 ft. 11in.), Less than 2.5 m (8 ft. 3 in.)
Rating   Minimum 10A, 125V

Using this unit at a voltage other than 120V may require the use of a different line cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel.

WARNING: THIS WARNING IS APPLICABLE FOR OTHER COUNTRIES.

1. Use the approved Power Cord (3-core mains lead)/ Appliance Connector/Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.
2. Use the Power Cord (3-core mains lead)/Appliance Connector/Plug conforming to the proper ratings (Voltage, Ampere).

If you have questions on the use of the above Power Cord/ Appliance Connector/Plug, please consult a qualified service personnel.

For kundene i Norge
Dette utstyret kan kobles til et IT-strømfordelingssystem.

For the customers in the U.S.A.
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

All interface cables used to connect peripherals must be shielded in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For the customers in Canada
This Class A digital apparatus complies with Canadian ICES-003.

Table of Contents

Overview

The HXCU-FB70 HD Camera Control Unit (CCU) connects to the CA-FB70 HD Camera Adaptor that is attached to the HXC-D70 HD Color Camera or PMW-500/350/320 Solid-State Memory Camcorder. It performs signal processing, provides an interface for external equipment, and supplies power to the camera.
The CCU can be combined with an RCP-1000-series Remote Control Panel (optional) to form a camera control system.

Features

Long distance transmission via optical fiber cable

- To connect the CA-FB70 HD Camera Adaptor to the CCU, either a single-mode optical fiber cable or optical composite cable can be used.
- When you use an optical composite cable to supply power to the CA-FB70 HD Camera Adaptor and camera/camcorder from the CCU, the connection distance can be extended up to 250 m (820 ft)[1]. When you use a single-mode optical fiber cable and mains to supply power to the CA-FB70 HD Camera Adaptor and camera/camcorder, the connection distance can be extended up to 10 km (32,800 ft)[1].
- While the CCU is connected to the HXCE-FB70 Power Supply Unit by a single-mode optical fiber cable (up to 10 km (32,800 ft)), you can connect the CA-FB70 HD Camera Adaptor and HXCE-FB70 Power Supply Unit with an optical composite cable to supply power (up to 250 m (820 ft)) . The adaptor offers flexibility to configure the camera system to suit your usage environment.

1) The available power supply distance varies depending on the total consumption of the connected peripherals such as camera/camcorder, lens or accessory. For information on the available distance, see "About Transmission Distance" on *page 32*.

Easy-to-use control panel

The HXCU-FB70 has a fully-functional, ergonomically-designed front panel that includes basic adjustment of the monitor image.

Multi-system input/output interface

The HXCU-FB70 includes the following input and output signal connectors to manage various system setups.

Video outputs

- SDI (main), 2-system (HD/SD selectable, embedded audio)
- SDI (monitor), 2-system (HD/SD selectable, embedded audio, superimposed character and marker display)
- HDMI[1], 1-system (monitor)
- Analog composite (VBS 2-system, PIX 1-system)
- Analog component, 1-system (HD Y/Pb/Pr, HD R/G/B, SD Y/R-Y/B-Y, SD R/G/B 4-format selectable)
- S-VIDEO, 1-system
- Sync, 1-system (HD/SD selectable)

1) HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing, LLC.

Video inputs

- Reference input (HD/SD auto-select)
- VBS return input, 2-system
- SDI return input, 2-system
- VBS teleprompter input, 1-system

Audio inputs/outputs

- Audio output, 2-system (XLR-3-pin)
- Intercom headset input/output (XLR-5-pin)
- System intercom input/output (D-sub 25-pin)
  - Intercom input/output, 2-system (PROD, ENG, 4W/RTS/CC selectable)
  - PGM (program audio) input, 1-system

Other inputs/outputs

- TRUNK (RS-232C, D-sub 9-pin)
- REMOTE (8-pin, round)
- LAN (RJ-45, 8-pin)
- D-sub 25-pin inputs/outputs (shared with the system intercom input/output connector)
  - Tally input, 2-system (R/G)
  - Tally output, 2-system (R/G)
  - PREVIEW output

External sync signal input

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

Built-in wideband down converter

HD signals from the camera can be converted to high-resolution SD component SDI output signals using the wideband down converter. The output signal aspect ratio can be set to 4:3 edge crop, 16:9 squeeze, or letterbox.

Rack mountable

The CCU can be installed in a standard EIA 19-inch rack. The height of the unit is 1.5U.

System Configuration Example

Connection using optical composite cable

1) The maximum transmission distance is 250 m (820 ft) when Sony CCFN-25/50/100 Hybrid Fiber Cable is used.
2) An optional CBK-HD02 SDI/COMPOSITE Input and 50 Pin Interface is required.
3) An optional CBK-CE01 50 Pin Interface and Digital Extender is required.
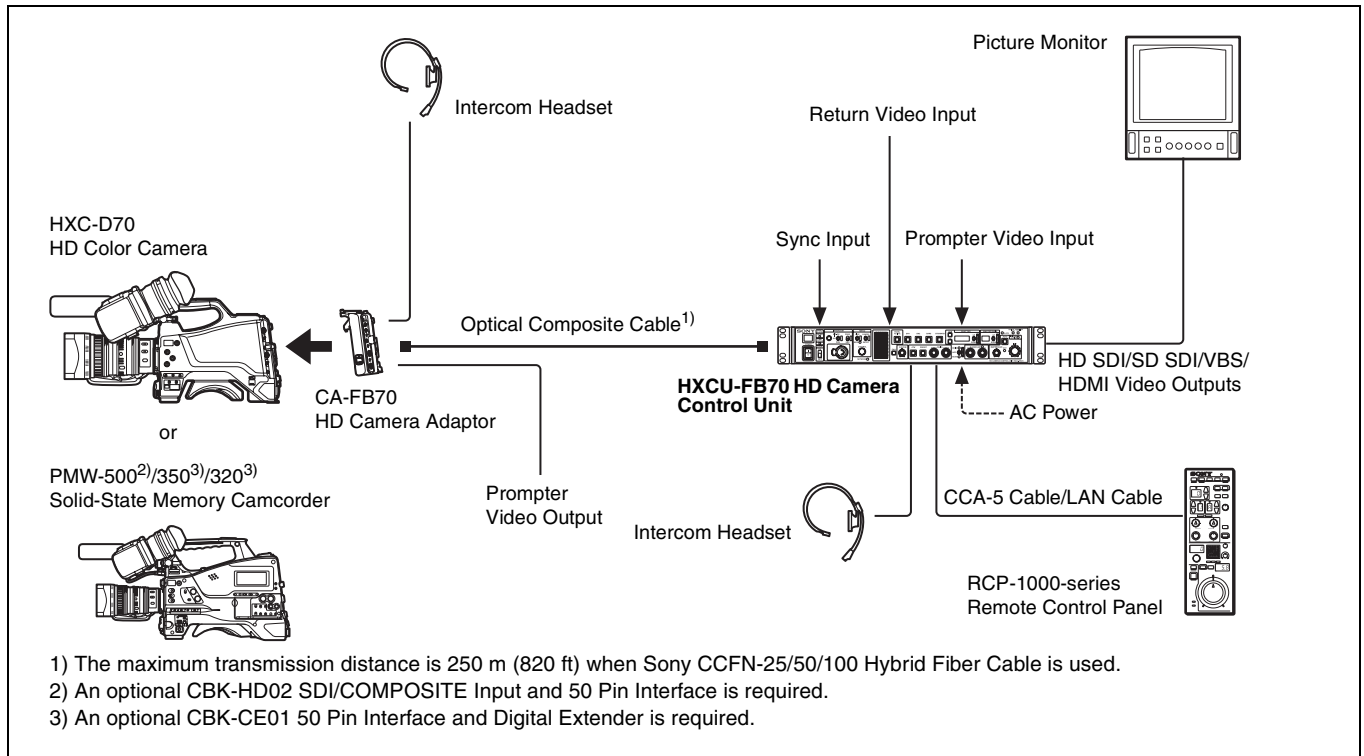
Connection using single-mode optical fiber cable only

For information on the setting, see "Settings when Connecting with Only Single-Mode Optical Fiber Cable" on *page 8*.

1) The maximum transmission distance is 10 km (32,800 ft) when a general single-mode optical fiber cable with an LC connector is used.
2) An optional CBK-HD02 SDI/COMPOSITE Input and 50 Pin Interface is required.
3) An optional CBK-CE01 50 Pin Interface and Digital Extender is required.
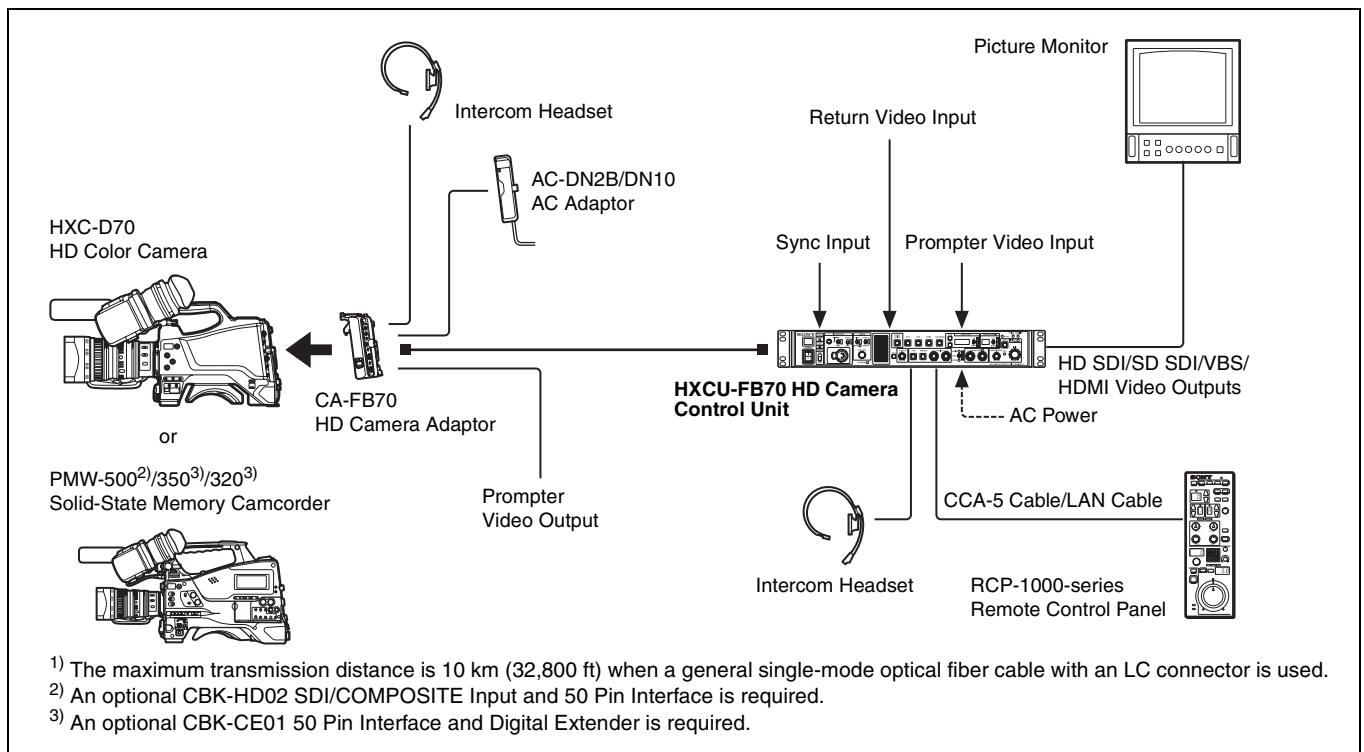
Connection using the HXCE-FB70 Power Supply Unit

Picture Monitor

Intercom Headset

Return Video Input

Optical Composite Cable[1]

Single-Mode Optical Fiber Cable[2]

Sync Input   Prompter Video Input

HXC-D70 HD Color Camera

CA-FB70 HD Camera Adaptor

HXCE-FB70 Power Supply Unit

HXCU-FB70 HD Camera Control Unit

HD SDI/SD SDI/VBS/ HDMI Video Outputs

AC Power

or

PMW-500[3]/350[4]/320[4] Solid-State Memory Camcorder

Prompter Video Output

AC Power

Intercom Headset

CCA-5 Cable/LAN Cable

RCP-1000-series Remote Control Panel

[1] The maximum transmission distance is 250 m (820 ft) when Sony CCFN-25/50/100 Hybrid Fiber Cable is used.
[2] The maximum transmission distance is 10 km (32,800 ft) when a general single-mode optical fiber cable with an LC connector is used.
[3] An optional CBK-HD02 SDI/COMPOSITE Input and 50 Pin Interface is required.
[4] An optional CBK-CE01 50 Pin Interface and Digital Extender is required.

Preparations

Area Settings

Before using the unit
When you use this unit for the first time, area setting is required.

Setting the area

SHUTTER display
SW1, SW2 button
PANEL ACTIVE button
UP/DOWN lever
LOCK switch
POWER switch
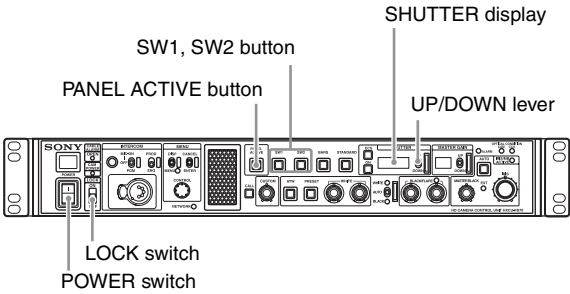
1 **Turn the power on.**

2 **Set the LOCK switch to OFF and make sure that the PANEL ACTIVE button is not illuminated.**
If the PANEL ACTIVE button lights up, press the button to turn the light off.

3 **Press and hold down the SW1 and SW2 buttons at the same time for more than two seconds.**
The unit switches to setting mode and selectable setting values appear in the SHUTTER display.

4 **Release the buttons after the unit switches to setting mode.**

5 **Select the desired area, using the UP/DOWN lever, within five seconds after the unit switches to setting mode.**

Settings	Areas
60.5	NTSC (except Japan)[a]
60.	NTSC (Japan)[b]
50.	PAL [c]

a) NTSC composite video signal output with a black setup (7.5 IRE). System frequency: 59.94i
b) NTSC composite video signal output with no black setup. System frequency: 59.94i
c) PAL composite video signal output. System frequency: 50i

> **Note**
> The setting mode is deactivated unless setting starts within five seconds after the unit switches to setting mode. Follow step **3** again to activate setting mode.

"- - - - " appears in the SHUTTER display five seconds after setting. Area settings are stored and the units switches to normal mode.

Settings when Connecting with Only Single-Mode Optical Fiber Cable

LASER DIODE (optical output) setting
When you use only single-mode optical fiber cable to connect the HD camera adaptor to this unit, configure the optical output setting in the unit.

Setting LASER DIODE

1 **Connect the unit and the HD camera adaptor by a single-mode optical fiber cable.**

2 **Set the POWER switch of this unit to ON.**

3 **Display the menu.**
For information on the menu setting, see "Setup Menu" on *page 17*.

4 **Set the optical output to ON.**
Display the <OUTPUT SELECT>S01 page on SYSTEM OPERATION menu, then set LASER DIODE to ON.

> **Notes**
> • This setting is unnecessary when you use optical composite cables.
> • In the factory default setting, LASER DIODE is set to OFF when this unit starts up. If you want to retain the LASER DIODE setting you have previously set, from the CCU CONFIGURATION menu, select <OTHERS> C12 page, LASER DIODE BACKUP, then set to ENABLE.
> • Use general, single-mode optical fiber cables with an LC connector for connection. For details, please contact a Sony sales representative.

Locations and Functions of Parts

Front Panel
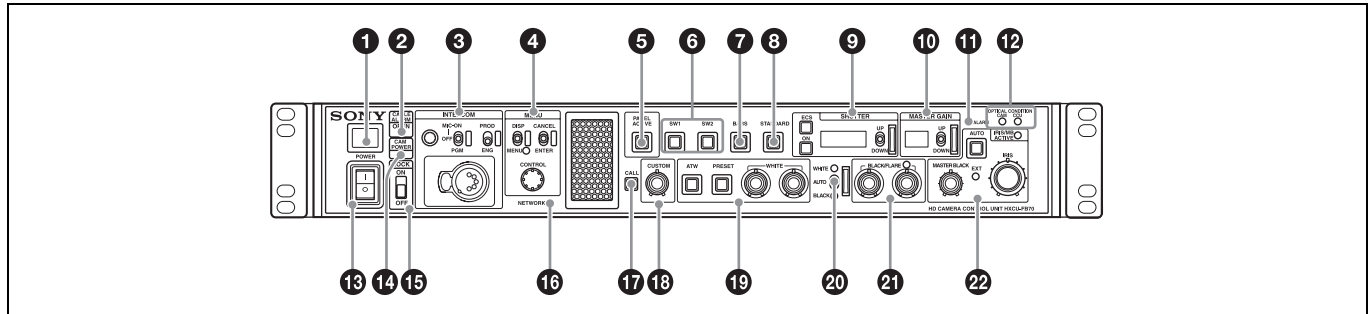
❶ Tally light

Turns on red to indicate a red tally signal is being received (such as when the picture from the camera connected to the CCU is being used). When the CALL button on the camera or the RCP-1000- series Remote Control Panel is pressed, the light turns off if lit or turns on if not lit.

Turns on green to indicate a green tally signal is being received.

A number plate supplied with the CCU can be attached here (*see the following figure*).

❷ CABLE ALARM indicators

OPEN: Turns on when a camera is not connected (open circuit) to the CAMERA connector on the rear panel via a fiber cable.

It flashes when there is a problem with the transmission between the camera and the CCU.

❸ INTERCOM audio input/output and control block

INTERCOM (intercom adjustment) knob

MIC/PGM (microphone/program) switch

INTERCOM (intercom select) switch

INTERCOM connector

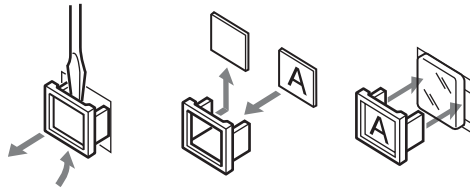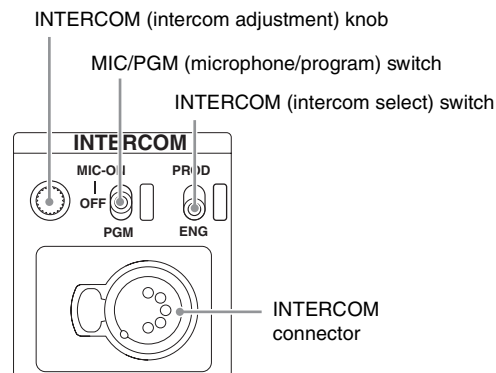**• INTERCOM (intercom adjustment) knob**
Adjusts the receiver audio level of the intercom.

• 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.

ENG: Connects the engineer line.

• INTERCOM connector (XLR 5-pin)

Connects the intercom headset.

For information on pin assignment, see "INTERCOM" in "Pin assignment" on page 34.

❹ MENU control block

DISP/MENU (display/menu) lever and indicator

CANCEL/ENTER lever
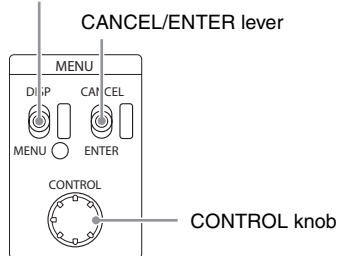
CONTROL knob

• 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.

❺ PANEL ACTIVE button

Activates the control panel to control the camera connected to the CCU (panel active state). When the button is lit, the IRIS/MB ACTIVE indicator also turns on simultaneously. When the button is not lit, the panel is deactivated (panel lock state) to prevent inadvertent operation.

❻ SW1, SW2 (assignable switch 1, 2) buttons

Controls the function assigned to each button on the <FRONT PANEL 1> page in the CCU CONFIGURATION menu. The button light turns on/off as the assigned function is switched on/off.

See "ASSIGNABLE/CUSTOM" on <FRONT PANEL 1> on page 28.

❼ BARS (color bars) button

Switches on the color bar signal output to the monitor connected to the CCU (button light turns on). Pressing the button again restores the previous signal output.

❽ STANDARD button

Stores the current camera settings as the reference file data values in the camera (button light turns on for a few seconds). While the button is lit, pressing the button again cancels the operation and restores the previous data values.

❾ SHUTTER control block

Controls the shutter settings.

ON button

ECS (extended clear scan) button

Display

UP/DOWN lever

• ON button

Switches the normal shutter function or extended clear scan function on/off (button light turns on/off).

• ECS (extended clear scan) button

Switches the extended clear scan mode on/off (button light turns on/off).

• Display

When the ECS button is lit: Displays the clear scan frequency.
When the ECS button is not lit: Displays the shutter speed.
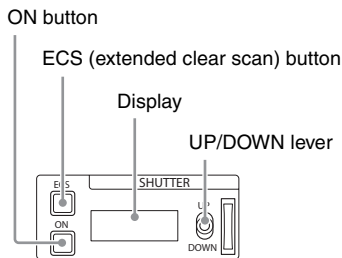
• UP/DOWN lever

When the ECS button is lit: Adjusts the clear scan frequency. UP increases the frequency, and DOWN decreases the frequency.
When the ECS button is not lit: Adjusts the shutter speed. UP increases the shutter speed, and DOWN decreases the shutter speed.
Holding the lever UP or DOWN advances the setting in that direction.

❿ MASTER GAIN control block

Controls the video output signal gain in response to the lighting of the subject.

Display
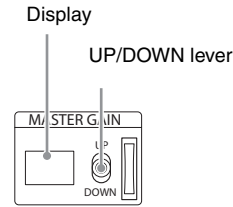
UP/DOWN lever

• Display

Displays the video output signal gain setting (dB units).

• UP/DOWN lever

Adjusts the video output signal gain setting (dB units).
UP increases the gain, and DOWN decreases the gain.
Holding the lever UP or DOWN advances the setting in that direction.

⓫ ALARM indicator

Lights up red to indicate an error in the CCU or camera system.

⓬ OPTICAL CONDITION CAM/CCU (optical reception) indicator

The CAM indicator shows the reception status of the connected camera adaptor, and the CCU indicator shows the reception status of the unit.
Green: The reception level is good.
Orange: The reception level is low.
Red: The reception level is extremely low.
Off: A transmission error has occurred.

⓭ POWER switch

Switches the power for the entire system on and off, including the CCU, camera, and the RCP-1000-series Remote Control Panel connected to the REMOTE connector on the rear panel. Pressing the "**I**" side turns the camera system on, and pressing the "○" side turns it off.

⓮ CAM POWER indicator

Turns on when power is supplied to the camera.

⓯ LOCK switch

Locks the buttons on the front panel. Select the desired buttons to be locked on the <FRONT PANEL 3> page in the CCU CONFIGURATION menu.

See "(LOCK TARGET)" on <FRONT PANEL 3> on page 30.

⓰ NETWORK indicator

Displays the network system connection status.
On: Indicates that external control equipment (RCP-1000-series Remote Control Panel or other device) is connected.
Flashing: Indicates a connection problem with the external control equipment (RCP-1000-series Remote Control Panel or other device).
Off: Indicates that a LAN cable is not connected or that the network system connection parameters have not been set.

See "Network diagnostics" on page 15 and NETWORK SETTINGS menu on page 30.

⓱ CALL button

Sends a call signal to the camera connected to the CCU and any external controller (such as the RCP-1000-series Remote Control Panel).
The CALL button is commonly used to raise the camera operator or external control equipment operators on the intercom.

⓲ CUSTOM (custom volume) knob

Controls the function assigned to the knob on the <FRONT PANEL 1> page in the CCU CONFIGURATION menu. Turning the knob adjusts the assigned function.
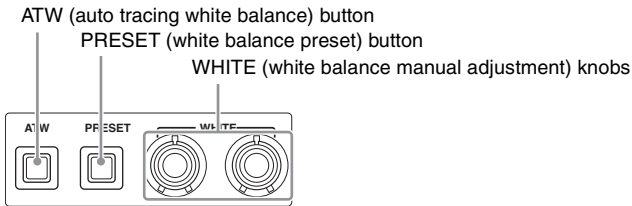
See "VOLUME" on <FRONT PANEL 1> on page 28 and "CUSTOM" on <FRONT PANEL 2> on page 29.

⓳ White balance adjustment control block

ATW (auto tracing white balance) button
PRESET (white balance preset) button
WHITE (white balance manual adjustment) knobs

• ATW (auto tracing white balance) button
The white balance is automatically adjusted in response to the lighting conditions while this button is turned on and lit.

• PRESET (white balance preset) button
The white balance is automatically adjusted with a 3200K color temperature preset value while this button is turned on and lit.

• WHITE (white balance manual adjustment) knobs
Adjusts the white balance manually. The left knob adjusts the R coefficient, and the right knob adjusts the B coefficient.
The adjustment can be set to relative or absolute value mode on the <FRONT PANEL 1> page in the CCU CONFIGURATION menu. The default value is relative value mode.

See "R/B WHITE" on <FRONT PANEL 1> on page 28 and "R/B WHITE" on <FRONT PANEL 2> on page 29.

Note

When the ATW button is lit, the WHITE knobs are deactivated.

⓴ AUTO WHITE/BLACK (white balance/black balance auto adjustment) lever

Initiates the white balance or black balance auto adjustment function.
WHITE automatically adjusts the white balance, and BLACK automatically adjusts the black balance.

㉑ BLACK/FLARE (black balance/flare balance manual adjustment) knobs and indicator

Adjusts the black balance and flare balance manually. When the indicator is not lit, the knobs adjust the black balance. When the indicator is lit, the knobs adjust the flare balance. The left knob adjusts the R coefficient, and the right knob adjusts the B coefficient.
The indicator operating mode (on/off function) can be set on the <FRONT PANEL 1> page in the CCU CONFIGURATION menu.
The adjustment can be set to black balance or flare balance adjustment in relative or absolute value mode on the <FRONT

PANEL 1> page in the CCU CONFIGURATION menu. The default value is black balance adjustment in relative value mode.

See "R/B BLACK" on <FRONT PANEL 1> on page 28 and "R/B BLACK" on <FRONT PANEL 2> on page 29.

㉒ IRIS/MASTER BLACK adjustment control block

MASTER BLACK (master black adjustment) knob
EXT (lens extender) indicator
AUTO (auto iris) button
IRIS/MB ACTIVE (iris/master black active) indicator
IRIS (iris adjustment) knob
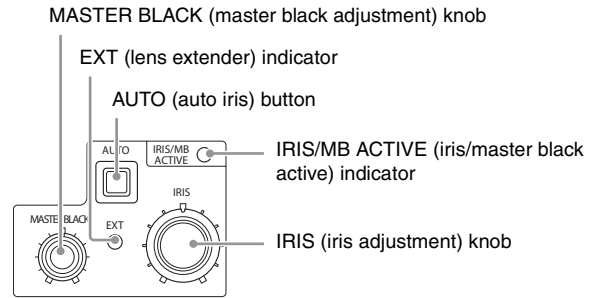
• MASTER BLACK (master black adjustment) knob
Adjusts the master black manually.
The adjustment can be set to relative or absolute value mode on the <FRONT PANEL 1> page in the CCU CONFIGURATION menu. The default value is relative value mode.

See "M BLACK" on <FRONT PANEL 1> on page 28 and "M BLACK" on <FRONT PANEL 2> on page 29.

• EXT (lens extender) indicator
Turns on to indicate that the lens extender is in-use on the camera.

• AUTO (auto iris) button
Switches the lens auto iris adjustment function on/off (button light turns on/off). The iris is automatically adjusted in response to the input light level.
When the button is not lit, the iris is adjusted manually.

• IRIS/MB ACTIVE (iris/master black active) indicator
Indicates, when lit, that the iris and master black controls are active (in panel active state set by the PANEL ACTIVE button). When the indicator is lit, the iris and master black can be adjusted from the CCU.

Note

The indicator is not lit when the iris and master black controls in the RCP-1000-series Remote Control Panel are active.

• IRIS (iris adjustment) knob
When the AUTO button is not lit: Adjusts the lens iris manually.
When the AUTO button is lit: Finely adjusts the auto adjusted iris value.
The adjustment can be set to relative or absolute value mode on the <FRONT PANEL 1> page in the CCU CONFIGURATION menu. The default value is absolute value mode.

See "IRIS" on <FRONT PANEL 1> on page 28 and "IRIS" on <FRONT PANEL 2> on page 29.

Rear Panel
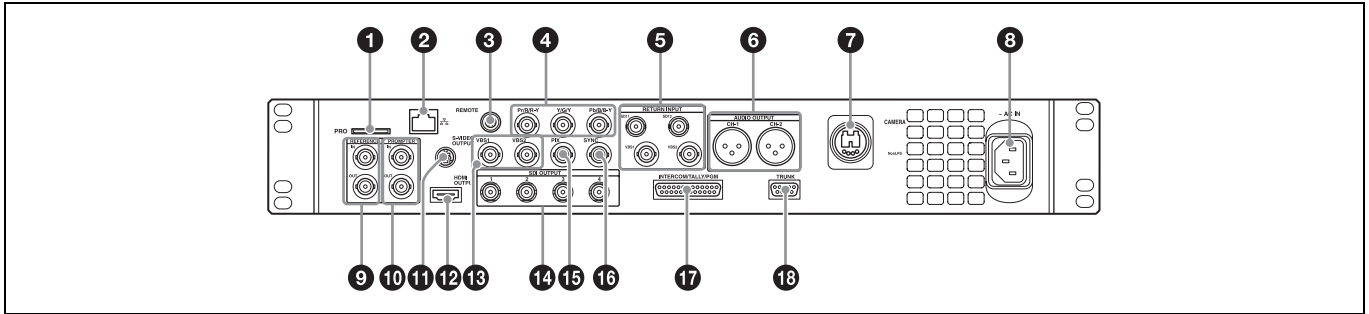
❶ "Memory Stick" slot
For service use only.

❷ LAN jack (RJ-45, 8-pin)
Connects to a LAN hub (10BASE-T/100BASE-TX), when using a network connection, via a LAN cable (shielded type, category 5 or higher).

| CAUTION |

For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to this port. Follow the instructions for this port.

❸ REMOTE connector (8-pin)
Transmits and receives control signals from the RCP-1000-series Remote Control Panel via a CCA-5 cable (optional). It also supplies power when connected to an RCP-1000-series Remote Control Panel.

❹ Pr/R/R-Y, Y/G/Y, Pb/B/B-Y (component signals) connectors (BNC type)
Outputs the HD component signals, SD component signals, HD RGB signals, or SD RGB signals from the corresponding connectors.

❺ RETURN INPUT SDI1, SDI2, VBS1, VBS2 (VBS/SDI return video) connectors (BNC type)
Inputs the VBS return video signals (2-system), HD SDI or SD SDI return video signals (2-system).

❻ AUDIO OUTPUT CH-1, CH-2 connectors (XLR 3-pin)
Outputs audio signals from the camera AUDIO 1 IN and AUDIO 2 IN connectors.

❼ CAMERA connector (optical fiber connector)
Connects the CCU to the CA-FB70 HD Camera Adaptor using an optical composite cable. When you use an optical composite cable for connection, power supply, all camera signals, such as control signal, video signal and audio signals can be transmitted. When you use only single-mode optical fiber cables for connection, all signals (except power supply) can be transmitted by a pair of single-mode optical fiber cables.

For information on pin assignment, see "CAMERA" in "Pin assignment" on page 34.

| Note |

If the terminations of the single-mode optical fiber cable or optical composite cable are contaminated with dust, etc., transmission errors can occur. Be sure to replace the cap that came with the cable over the termination when a cable is not in use.

| CAUTION |

CAMERA connector is non LPS (Limited Power Source) circuit. This connector is connected to the CA-FB70.

❽ AC supply input connector
Connects to the AC supply via the specified power cord (optional). A plug holder (optional) can be used to secure the power cord to the CCU.

❾ REFERENCE (reference input) connectors (BNC type)
IN: Inputs an HD tri-level reference sync signal or SD reference sync signal (black burst signal) for external sync.
OUT: The input signal is output from the other connector as-is (loop-through output). If the loop-through output is not used, it is automatically connected to a 75 Ω terminator.

❿ PROMPTER (teleprompter input) connectors (BNC type)
IN: Inputs the VBS signal for the teleprompter.
OUT: The input signal is output from the other connector as-is (loop-through output). If the loop-through output is not used, it is automatically connected to a 75 Ω terminator.

⓫ S-VIDEO OUTPUT connector (4-pin)
Outputs S-VIDEO signal.

⓬ HDMI OUTPUT connector (19-pin)
Outputs HDMI signal for a video monitor compatible with HDMI input.

| Notes |

- When connecting a household television with HDMI input, set its high-resolution function to off to avoid image artifacts.
- Use a Sony high-speed HDMI cable that has the cable type logos printed on the package.

⓭ VBS 1, 2 (composite video signal 1, 2) connectors (BNC type)
Outputs (2-system) the camera signals in composite signal format.

⓮ SDI OUTPUT 1 to 4 connectors (BNC type)
Outputs the camera signals in HD SDI or SD SDI signal format.
The SDI OUTPUT 3 and SDI OUTPUT 4 connectors can also output signals with superimposed character or marker display.

⓯ PIX (picture monitor output) connector (BNC type)

Outputs a video signal for a picture monitor. It can also output a signal with superimposed character display.

⓰ SYNC (sync signal output) connector

Outputs a sync signal for connection to the sync signal input connector of a waveform monitor or picture monitor.

⓱ INTERCOM/TALLY/PGM (intercom/tally/program audio) connector (D-sub 25-pin)

Transmits and receives the various intercom, tally, and program audio signals. It connects to the intercom/tally/ program audio connector of the intercom system.

For information on pin assignment, see "INTERCOM/TALLY/PGM" in "Pin assignment" on page 34.

| Note |

Depending on the PGM MIX LEVEL settings of the camera, PGM signal may leak into the INTERCOM output. Turn the PGM MIX LEVEL settings down to reduce the signal interference.

⓲ TRUNK connector (D-sub 9-pin, RS-232C standard)

Connects to an external device to provide a communication path via the CCU between that device and another external device connected to the TRUNK connector on the camera.

For information on pin assignment, see "TRUNK" in "Pin assignment" on page 34.

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 17.

Displaying the Status Screen

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

DISP/MENU lever and indicator
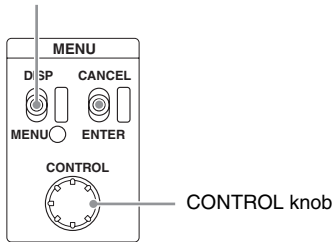
CONTROL knob

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 DPR board diagnostics
• Front panel diagnostics
• Camera hardware diagnostics
• ROM version information for major components

Camera settings

Page 1
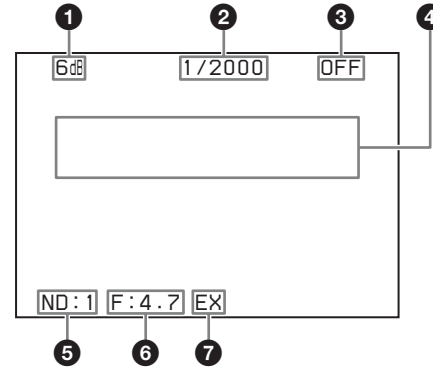
❶ **Master gain value**
Video output signal gain (dB units)

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

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

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

Note
The items along the bottom edge are common to both pages 1 and 2.

System status

```
*System Status*      1/13

HXC-D70    1080/59.94I
Reference:Free Lock

SDI-1/2  :1080/59.94I
SDI-3/4  :525/59.94I
Component:SD YCD
Return-1 :SDI-1(HD)
Return-2 :SDI-2(SD)
Return-3 :VBS-1
Return-4 :VBS-2
```

The camera model name and signal format are displayed at the top of the page (a "-" mark is displayed instead when a camera is not connected).
Reference: Reference signal format and lock status
SDI-1/2: SDI OUTPUT 1/2 connector output format setting
SDI-3/4: SDI OUTPUT 3/4 connector output format setting
Component: Component signal connector output format setting
Return-1: Return channel setting of Return 1
Return-2: Return channel setting of Return 2
Return-3: Return channel setting of Return 3
Return-4: Return channel setting of Return 4

CCU hardware diagnostics

```
*Diagnosis*          2/13


  DPR  :OK
  AT   :OK
  Front Panel : OK
```

The camera Auto Setup category, and the corresponding setup item and status are displayed at the top of the page.
DPR: DPR board status
AT: AT board status
Front Panel: Front panel status

Camera system diagnostics

Page 1

```
*System Diag 1/3*    3/13

Optical Condition

  CAMERA     OK
  CCU        OK

  Fan Power OK
  Timer     0H
  CCU Power OK

 SerialNo 00000000
```

CAMERA: Camera light reception status
CCU: CCU light reception status
Fan Power: CCU power supply fan status
Timer: Elapsed time since power-on
CCU Power: CCU power supply status
SerialNo: CCU serial number

Page 2

```
*System Diag 2/3*    4/13

  CAMERA   Cable Connect
           Data  OK
           Power OK
  REMOTE   Cable Connect
           Data  OK
           Power OK
```

CAMERA Cable: Camera cable connection status
CAMERA Data: Camera data transmission status
CAMERA Power: Camera power supply status
REMOTE Cable: Remote device cable connection status
REMOTE Data: Remote device data transmission status
REMOTE Power: Remote device power supply status

Page 3

```
*System Diag 3/3*    5/13

 Intercom
   CCU FRONT   ENG
               PGM
   CAMERA      ENG
               MIC ON


 CAM MIC Gain
   CH1(FRONT) 60dB
   CH2(REAR)  60dB
```

Intercom CCU FRONT: CCU intercom selection
Intercom CAMERA: Camera intercom channel selection and microphone status
CAM MIC Gain CH1 (FRONT): Amplifier gain for a microphone connected to the camera AUDIO 1 IN connector.
CAM MIC Gain CH2 (REAR): Amplifier gain for a microphone connected to the camera AUDIO 2 IN connector.

Network diagnostics

Page 1

```
*Network Diag 1/3*  6/13

 MacAddress:000000-000000
 Auto Negotiation: ON
 Connection Speed:100M
 Duplex Mode     :HALF

 Link Status     :OK
```

MacAddress: MAC address stored in CCU EEPROM
Auto Negotiation: Auto negotiation setting
Connection Speed: Connection speed setting
Duplex Mode: Communication method setting
Link Status: Network connection status

Page 2

```
*Network Diag 2/3*  7/13

CNS Mode    :BRIGDE

CCU No.      :1
```

CNS Mode: REMOTE and LAN connectors mode setting
CCU No.: CCU number setting

Page 3

```
*Network Diag 3/3*  8/13


IP Address
       0.  0.  0.  0
Subnet Mask
       0.  0.  0.  0
Default Gateway
       0.  0.  0.  0
```

IP Address: CCU IP address setting
Subnet Mask: CCU subnet mask setting
Default Gateway: CCU default gateway setting

CCU AT board diagnostics

```
*AT Diag*        9/13

Reference  :HD

PLD Status :OK
      AT   :1.00



AT  POWER:OK
```

Reference: Reference signal setting
PLD Status: PLD status
PLD AT: AT-PLD version
AT POWER: AT board power supply status

CCU DPR board diagnostics

```
*DPR Diag*       10/13

HD CB :BAR 16:9(100%)
SD CB :SMPTE
HDMI Firmware:1.00
PLD Status:OK
     DE-MUX:1.00
     SY    :1.00
     POST  :1.00
     HDMI  :1.00
IIC       :OK
DPR POWER:OK
```

HD CB: HD color bar setting
SD CB: SD color bar setting
HDMI Firmware: HDMI firmware version
PLD Status: PLD status

PLD DE-MUX: DEMUX-PLD version
PLD SY: SY-PLD version
PLD POST: POST-PLD version
PLD HDMI: HDMI-PLD version
IIC: IIC bus control status
DPR POWER: DPR board power supply status

Front panel diagnostics

```
*Front Panel Diag* 11/13

Assignable/Custom
 SW1     :CAM POWER
 SW2     :5600K
 VOLUME  :SD DTL Level

SW Bright:Normal

IIC       :OK
```

Assignable/Custom SW1: Function assigned to the SW1 button
Assignable/Custom SW2: Function assigned to the SW2 button
Assignable/Custom VOLUME: Function assigned to the CUSTOM knob
SW Bright: Button lights LED brightness setting
IIC: IIC bus control status

Camera hardware diagnostics

```
*CAMERA Diag*       12/13

      ALL BOARD OK
```

Displays the camera hardware status.

ROM Version Information

```
*ROM Version*       13/13

CAMERA HXC-D70
       1.00     11.08.01
CCU    HXCU-FB70
       1.00     12.11.01
```

CAMERA: Camera model name and ROM version
CCU: CCU model name and ROM version

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.

DISP/MENU lever and indicator

CANCEL/ENTER lever

```
         MENU
   DISP      CANCEL
   ⊚  □      ⊚  □
   MENU ○    ENTER
        CONTROL
        ⊚              CONTROL knob
```
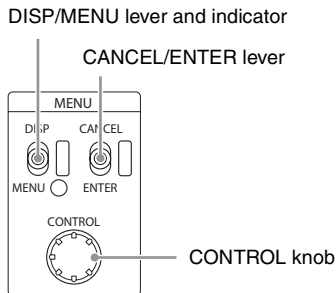
To display a menu page
Set the DISP/MENU lever to the MENU position.
When first powered on, the CCU MENU page is displayed.

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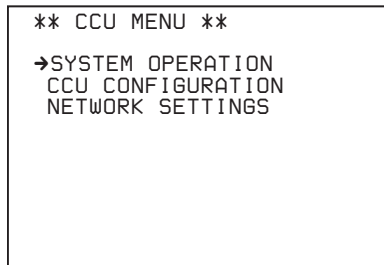
Menu name	Description
SYSTEM OPERATION	Input/output signal format and system-related settings
CCU CONFIGURATION	CCU configuration settings
NETWORK SETTINGS	Network-related settings

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 (?).

Flashing

```
<OUTPUT SELECT> ?601 TOP

  OUTPUT:*CAMERA
         BAR
         TEST1
         TEST2

  PIX:*ENC   R   G   B
       R&B  G&B  R&B RGB
```
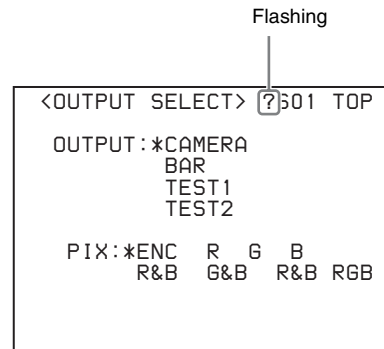
2 Turn the CONTROL knob to change the displayed page to the desired page, then press the CONTROL knob.
The question mark (?) changes back to the pointer (➡).
Items on the page can now be selected and changed.

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

```
— OUTPUT SELECT ———————— OUTPUT
  (S01)                   ├— PIX
                          └— LASER DIODE
— GENLOCK PHASE ————————— REFERENCE
  (S02)                  — GENLOCK
                          ├— H STEP
                          ├— COARSE
                          ├— SC PHASE
                          └— V PHASE
                         — SYNC OUT
— MULTI FORMAT —————————— FREQUENCY
  (S03)                  — CAMERA FORMAT
— OUTPUT FORMAT ————————— SLOT NO
  (S04)                   ├— 1- 1&2
                          └— 3&4
                         — HDMI
                         — COMPONENT
— SD ASPECT ————————————— SD ASPECT
  (S05)                  — SD LB SEL
                         — H POSITION
                          └— CENTER
                         — V POSITION
                          └— CENTER
                         — H INTERP
                         — V INTERP
— RETURN SET ———————————— RET-1
  (S06)                  — RET-2
                         — RET-3
                         — RET-4
```

CCU CONFIGURATION menu

```
— COLOR BAR ————————————— HD BAR
  (C01)                   ├— SEL
                          ├— MF CB
                          └— SLOPE
                         — SD BAR
                         — BAR CHARA
                         — GRAY
— BAR CHARACTER ————————— BAR CHARACATER
  (C02)                  — ALL CLEAR
— MONITOR 1 ————————————— CHARACTER
  (C03)                   ├— WHITE LEVEL
                          └— BLACK LEVEL
                         — PIX CHARACTER
                          ├— WHITE LEVEL
                          └— BLACK LEVEL
— MONITOR 2 ————————————— LEVEL GATE
  (C04)                   ├— Y LEVEL1
                          └— Y LEVEL2
                         — GATE MARKER
                         — MODULATION
                         — MARKER
— MIC/AUDIO ————————————— CAM MIC GAIN
  (C05)                   ├— CH1
                          └— CH2
                         — AUDIO OUTPUT
                          ├— CH1 LEVEL
                          └— CH2 LEVEL
— INTERCOM —————————————— SYSTEM I/F
  (C06)                   └— TERMINATION
                         — PGM INPUT
— FRONT INCOM ——————————— INCOM MIC
  (C07)                   ├— MIC TYPE
                          └— MIC GAIN
                         — SIDE TONE
                         — PGM MIX
                         — PGM LEVEL
— VIDEO SETUP ——————————— SETUP
  (C08)                  — Q FILTER
                         — SD G/Y SYNC
— VIDEO ADJUST —————————— VBS
  (C09)                   ├— LEVEL
                          └— CHROMA
                         — PIX
                          ├— LEVEL
                          └— CHROMA
                         — S-VIDEO LEVEL
                         — COMPONENT LEVEL
— MENU SETTINGS ————————— RESUME
  (C10)                  — RE DIRECTION
                          ├— CATEGORY
                          ├— PAGE
                          ├— ITEM
                          └— DATA
```

```
├─ DISPLAY ──────────────── MESSAGE
│   (C11)         ├──────── ALARM JUMP
│                 ├──────── MASTER GAIN
│                 ├──────── ECS/SHUTTER
│                 ├──────── ND FILTER
│                 ├──────── IRIS
│                 └──────── EXTENDER
├─ DATE ─────────────────── DATE/TIME
│   (C12)         └──────── TIME ZONE
├─ OTHERS ───────────────── REAR PREVIEW
│   (C13)         └──────── LASER DIODE ON BACKUP
├─ FRONT PANEL 1 ────────── ASSIGNABLE/CUSTOM
│   (C14)                        ├─ SW1
│                                ├─ SW2
│                                └─ VOLUME
│                 ├──────── VOLUME MODE
│                                ├─ IRIS
│                                ├─ M BLACK
│                                ├─ R/B BLACK
│                                └─ R/B WHITE
├─ FRONT PANEL 2 ────────── VOLUME REL COEFF
│   (C15)                        ├─ IRIS
│                                ├─ M BLACK
│                                ├─ R/B BLACK
│                                ├─ R/B WHITE
│                                └─ CUSTOM
│                 └──────── SW BRIGHT
└─ FRONT PANEL 3 ────────── LOCK TARGET
    (C16)
```

NETWORK SETTINGS menu

```
├─ TCP/IP SETTING ──────── IP ADDRESS
│   (N01)         ├──────── SUBNET MASK
│                 ├──────── DEFAULT GATEWAY
│                 └──────── SET
├─ LAN SETTINGS ────────── AUTO NEGOTIATION
│   (N02)         ├──────── CONNECTION SPEED
│                 ├──────── DUPLEX MODE
│                 ├──────── LINK CONDITION
│                 └──────── SET
├─ CNS SETTINGS ────────── CNS MODE
│   (N03)         ├──────── CCU NO
│                 └──────── TARGET IP ADDRESS
└─ NETWORK RESET ───────── ALL RESET
    (N04)
```

Menu List

Note

The following conventions are used in the menu list table.
Settings column values (e.g. <u>ON</u>, <u>OFF</u>, <u>0</u>): Default settings
Execute by 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	<u>**CAMERA**</u>, BAR, TEST1, TEST2	Output signal selection
			TEST1 and TEST2 are not selectable if there is no communication with the camera.
	PIX	<u>**ENC**</u>, R, G, B, R&G, G&B, R&B, RGB	PIX connector output signal selection
	LASER DIODE	ON, <u>**OFF**</u>	Turns on or off optical output from CCU
<GENLOCK PHASE> S02	REFERENCE	(NONE), (EXT IN)	Reference signal input status (display only)
	GENLOCK	(HD), (<u>**SD**</u>)	CCU GENLOCK mode, lock status, and signal format
			(HD): HD
			(SD): SD
		(OK), (NG)	External reference signal lock status
			(OK): Locked
			(NG): Unlocked
		External reference signal format	Displayed only when a reference signal is present.
			Reference signal lock phase adjustments
	H STEP	When GENLOCK mode is HD: −3.01 to 3.45 µs <u>**0.00**</u>	Horizontal phase (STEP)
		When GENLOCK mode is SD: −8.29 to 9.48 µs <u>**0.00**</u>	
	COARSE	−99.9 to 99.9 <u>**0.0**</u>	Horizontal phase
	SC PHASE	<u>**0**</u> to 359	Subcarrier phase
	V PHASE	<u>**0**</u> to 7	Vertical phase (line)
	SYNC OUT	HD SYNC, <u>**SD SYNC**</u>	SYNC connector output signal selection
<MULTI FORMAT> S03 **Note** FREQUENCY or CAMERA FORMAT mode setting changes take effect only after the CCU power supply is turned off and then on again.	FREQUENCY	<u>**59.94 Hz**</u>, 50 Hz <u>**(525 NTSC)**</u>, (625 PAL)	Operating frequency selection
	CAMERA FORMAT	When FREQUENCY is set to 59.94 Hz: <u>**1080/59.94i**</u>, 720/59.94P	Transmission format selection
		When FREQUENCY is set to 50 Hz: 1080/50i, 720/50P	

SYSTEM OPERATION			
Page name Page No.	**Item**	**Settings**	**Description**
<OUTPUT FORMAT> S04	SLOT NO		
	1-1&2	When CAMERA FORMAT is 1080/59.94i: **1080/59.94i**, 525/59.94i When CAMERA FORMAT is 720/59.94P: 720/59.94P, 525/59.94i When CAMERA FORMAT is 1080/50i: 1080/50i, 625/50i When CAMERA FORMAT is 720/50P: 720/50P, 625/50i	SDI OUTPUT 1/2 connector output format selection Sequence of format options: 1: HD 2: SD
	3&4	When CAMERA FORMAT is 1080/59.94i: M1080/59.94i, **M525/59.94i** When CAMERA FORMAT is 720/59.94P: M720/59.94P, M525/59.94i When CAMERA FORMAT is 1080/50i: M1080/50i, M625/50i When CAMERA FORMAT is 720/50P: M720/50P, M625/50i	SDI OUTPUT 3/4 connector output format selection Sequence of format options: 1: HD 2: SD
	HDMI		HDMI connector output format selection (display only)
	COMPONENT	HD RGB, HD YPbPr, SD RGB, **SD YCD**	Component signal connector output format selection
<SD ASPECT> S05	SD ASPECT	SQUEEZE, **EDGE CROP**, LETTER BOX	SD output aspect selection
	SD LB SEL	**16:9**, 15:9, 14:9, 13:9	LETTER BOX aspect ratio selection
	H POSITION	−99 to 99, (−99) to (99) **0**	Horizontal position setting Settings in ( ): Displayed when SQUEEZE or LETTER BOX 16:9 is selected in SD ASPECT (display only)
	CENTER	**ON**, OFF, (ON), (OFF)	Horizontal centering selection Settings in ( ): Displayed when SQUEEZE or LETTER BOX 16:9 is selected in SD ASPECT (display only)
	V POSITION	−99 to 99, (−99) to (99) **(0)**	Vertical position setting Settings in ( ): Displayed when SQUEEZE or EDGE CROP is selected in SD ASPECT (display only)
	CENTER	ON, OFF, **(ON)**, (OFF)	Vertical centering selection Settings in ( ): Displayed when SQUEEZE or EDGE CROP is selected in SD ASPECT (display only)
	H INTERP	**A**, B, C, D, E	Down converter horizontal filter selection
	V INTERP	**A**, B, C, D, E	Down converter vertical filter selection

SYSTEM OPERATION			
Page name Page No.	**Item**	**Settings**	**Description**
<RETURN SET> S06	RET-1	**SDI-1(HD)**, SDI-1(SD) SDI-2(HD), SDI-2(SD) VBS-1, VBS-2	Input settings of RETURN1

		SQUEEZE, EDGE CROP,
		LETTER BOX
		   Not displayed when HD SDI
		   signal is selected	

		16:9, 15:9, 14:9, 13:9
		   Not displayed when HD SDI
		   signal is selected	

	RET-2	SDI-1(HD), SDI-1(SD) SDI-2(HD), **SDI-2(SD)** VBS-1, VBS-2	Input settings of RETURN2

		SQUEEZE, EDGE CROP,
		LETTER BOX
		   Not displayed when HD SDI
		   signal is selected	

		16:9, 15:9, 14:9, 13:9
		   Not displayed when HD SDI
		   signal is selected	

	RET-3	SDI-1(HD), SDI-1(SD) SDI-2(HD), SDI-2(SD) **VBS-1**, VBS-2	Input settings of RETURN3

		SQUEEZE, EDGE CROP,
		LETTER BOX
		   Not displayed when HD SDI
		   signal is selected	

		16:9, 15:9, 14:9, 13:9
		   Not displayed when HD SDI
		   signal is selected	

	RET-4	SDI-1(HD), SDI-1(SD) SDI-2(HD), SDI-2(SD) VBS-1, **VBS-2**	Input settings of RETURN4

		SQUEEZE, EDGE CROP,
		LETTER BOX
		   Not displayed when HD SDI
		   signal is selected	

		16:9, 15:9, 14:9, 13:9
		   Not displayed when HD SDI
		   signal is selected	

CCU CONFIGURATION menu

CCU CONFIGURATION			
Page name **Page No.**	**Item**	**Settings**	**Description**
<COLOR BAR> C01	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	HD output color bar settings
	MF CB	**MODIFY**, EVEN	Multi-format color bar settings
	SLOPE	**WIDE**, NARROW	Chroma band settings for color bars
	SD BAR	For NTSC: **SMPTE**, EIA, FULL, 95%, NTSC100%, Y/C-RAMP, Y-RAMP	SD output color bar setting
		For PAL: **SMPTE**, EIA, EBU, 95%, PAL100%, Y/C-RAMP, Y-RAMP	
	BAR CHARA	ON, **OFF**	Character superimposed on color bar signal
	GRAY	**ON**, OFF	**ON:** Gray screen output when camera power supply is off **OFF:** Color bar signal output when camera power supply is off
<BAR CHARACTER> C02	BAR CHARACTER		Settings for strings 1 to 12 that are superimposed on the color bar signal
	<ALL CLEAR>		Execute to clear all character strings (Execute by ENTER)
<MONITOR 1> C03	CHARACTER		Bar character settings
	WHITE LEVEL	0.0 to 107.0% **71.5**	White level settings for bar character strings
	BLACK LEVEL	**0.0** to 107.0%	Black (font border color) level settings for bar character strings
	PIX CHARACTER		PIX output character settings
	WHITE LEVEL	**75.0** to 107.0%	White level settings for PIX output character strings
	BLACK LEVEL	**0.0** to 25.0%	Black (font border color) level settings for PIX output character strings

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**	Level gate 1 minimum and maximum detection levels settings
		−99 to 99 **−25**	Level gate 1 zebra range settings
	Y LEVEL2	0 to 108% **74** **108**	Level gate 2 minimum and maximum detection levels settings
		−99 to 99 **−25**	Level gate 2 zebra range settings
	GATE MARKER	---, ON, **OFF**	Gate signal display on/off settings **---:** Displayed when camera not connected (display only)
		−99 to 99 **0**	Gate signal level settings
	MODULATION	---, ON, **OFF**	4:3 aspect ratio mask function on/off settings when EDGE CROP is ON **---:** Displayed when camera not connected (display only)
		−99 to 99 **0**	Mask video level settings
	MARKER	ON, **OFF**	Marker signal on/off settings
		4:3, 13:9, 14:9, EU VISTA, VISTA, CINEMA, FOLLOW DC	Superimposed marker signal selection
<MIC/AUDIO> C05	CAM MIC GAIN		Microphone gain settings
	CH1	---, 20, 30, 40, 50, **60** dB	Settings vary depending on microphones
	CH2	---, 20, 30, 40, 50, **60** dB	**---:** Displayed when camera not connected (display only)
	AUDIO OUTPUT		Audio output level settings
	CH1 LEVEL	−20, **0**, +4 dBu	CH1 output level settings
	CH2 LEVEL	−20, **0**, +4 dBu	CH2 output level settings
<INTERCOM> C06	SYSTEM I/F	**4WIRE**, RTS, CLEAR COM	Intercom interface (D-sub 25-pin) settings
	TERMINATION	(**OFF**), ON, OFF	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)
	PGM INPUT	−20, **0**, +4 dBu	PGM input level settings

CCU CONFIGURATION				
Page name **Page No.**	**Item**		**Settings**	**Description**
<FRONT INCOM> C07			(MIC ON), (MIC OFF), (PGM ON)	CCU front panel MIC/PGM switch position (display only)
			(PROD), (ENG)	CCU front panel INTERCOM switch position (display only)
	INCOM MIC		CARBON, ECM, **DYNAMIC**	Headset microphone type connected to INTERCOM on the front panel **CARBON:** Carbon microphone (power supply, 20 dB gain) **ECM:** Electret condenser microphone (power supply, 40 dB gain) **DYNAMIC:** Dynamic microphone (no power supply, 60 dB gain)
		MIC TYPE	BALANCE, **UNBALANCE**	Headset microphone type connected to INTERCOM on the front panel **BALANCE:** Balanced microphone **UNBALANCE:** Unbalanced microphone
		MIC GAIN	−6dB, **0dB**, +6dB	Input gain setting
	SIDE TONE		0 to 99 **50**	Side tone level settings
	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 LEVEL		0 to 99 **50**	PGM level settings
<VIDEO SETUP> C08	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 format is PAL (display only)
	Q FILTER		**NARROW**, WIDE, --	Q FILTER bandwidth setting **--:** Displayed when format is PAL (display only)
	SD G/Y SYNC		**ON**, OFF	SD RGB component signal Gch-SYNC or SD YCD component signal Ych-SYNC on/off
<VIDEO ADJUST> C09	VBS			VBS output settings
		LEVEL	−99 to 99 **0**	VBS output level settings
		CHROMA	−99 to 99 **0**	Chroma settings for VBS output
	PIX			PIX output settings
		LEVEL	−99 to 99 **0**	PIX output level settings
		CHROMA	−99 to 99 **0**	Chroma settings for PIX output
	S-VIDEO LEVEL		−99 to 99 **0**	S-VIDEO signal level settings
	COMPONENT LEVEL		−99 to 99 **0**	Component signal level settings

CCU CONFIGURATION			
Page name **Page No.**	**Item**	**Settings**	**Description**
<MENU SETTINGS> C10	RESUME	**ON**, OFF	In menu mode, resume display of previously displayed page function
	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
<DISPLAY> C11 Camera messages and switch settings on/off. Displayed on the camera 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
	ALARM JUMP	ON, **OFF**	In menu mode, jump to display page if an error occurs function
	MASTER GAIN	**ON**, OFF	Displays or hides the master gain indication
	ECS/SHUTTER	**ON**, OFF	Displays or hides the ECS/shutter indication
	ND FILTER	**ON**, OFF	Displays or hides the ND filter indication
	IRIS	**ON**, OFF	Displays or hides the IRIS indication
	EXTENDER	**ON**, OFF	Displays or hides the EXTENDER indication
<DATE> C12	DATE/TIME	20YY/MM/DD hh:mm Time displayed in 24-hour format	Date and time settings
	TIME ZONE	hh:mm −11h59m to +11h59m	Time zone setting
<OTHERS> C13	REAR PREVIEW	**MOMENTARY**, TOGGLE	REMOTE device preview operation switching **MOMENTARY:** Display preview while PREVIEW button on REMOTE device is pressed **TOGGLE:** Toggle preview on/off when the PREVIEW button on REMOTE device is pressed
	LASER DIODE ON BACKUP	ENABLE, **OFF**	**ENABLE:** Retains the state of LASER DIODE in the OUTPUT SELECT page even if the CCU is turned off **OFF:** The CCU starts up with LASER DIODE in the OUTPUT SELECT page is set to OFF

CCU CONFIGURATION			
Page name Page No.	**Item**	**Settings**	**Description**
<FRONT PANEL 1> C14	ASSIGNABLE/CUSTOM		
	SW1	**NOT ASSIGN**, GAMMA OFF, HD DTL OFF, SD DTL OFF, BLK GAMMA, KNEE OFF, AUTO KNEE, 5600K, CAM POWER, LASER ON	Front Panel SW1 button assignment **NOT ASSIGN:** Not assigned (indicator always off) **GAMMA OFF:** Gamma off when indicator on **HD DTL OFF:** HD detail off when indicator on **SD DTL OFF:** SD detail off when indicator on **BLK GAMMA:** Black gamma on when indicator on **KNEE OFF:** Knee off when indicator on **AUTO KNEE:** Auto knee on when indicator on **5600K:** 5600K on when indicator on **CAM POWER:** Camera power on when indicator on **LASER ON:** LASER DIODE setting on when indicator on
	SW2	**NOT ASSIGN**, GAMMA OFF, HD DTL OFF, SD DTL OFF, BLK GAMMA, KNEE OFF, AUTO KNEE, 5600K, CAM POWER, LASER ON	Front Panel SW2 button assignment **NOT ASSIGN:** Not assigned (indicator always off) **GAMMA OFF:** Gamma off when indicator on **HD DTL OFF:** HD detail off when indicator on **SD DTL OFF:** SD detail off when indicator on **BLK GAMMA:** Black gamma on when indicator on **KNEE OFF:** Knee off when indicator on **AUTO KNEE:** Auto knee on when indicator on **5600K:** 5600K on when indicator on **CAM POWER:** Camera power on when indicator on **LASER ON:** LASER DIODE setting on when indicator on
	VOLUME	**NOT ASSIGN**, HD GAMMA, SD GAMMA, HD DTL LEVEL, SD DTL LEVEL, BLK GAMMA	Front Panel CUSTOM knob assignment **NOT ASSIGN:** Not assigned (knob deactivated) **HD GAMMA:** HD M-gamma setting **SD GAMMA:** SD M-gamma setting **HD DTL LEVEL:** HD detail level setting **SD DTL LEVEL:** SD detail level setting **BLK GAMMA:** Black gamma setting
	VOLUME MODE		
	IRIS	REL, **ABS**	IRIS knob operating mode **REL:** Relative value mode **ABS:** Absolute value mode
	M BLACK	**REL**, ABS	MASTER BLACK knob operating mode **REL:** Relative value mode **ABS:** Absolute value mode
	R/B BLACK	**REL/BLACK**, ABS/BLACK, REL/FLARE, ABS/FLARE	BLACK/FLARE knob function and operating mode **REL/BLACK:** BLACK (relative value mode) **ABS/BLACK:** BLACK (absolute value mode) **REL/FLARE:** FLARE (relative value mode) **ABS/FLARE:** FLARE (absolute value mode)
	R/B WHITE	**REL**, ABS	WHITE knob operating mode **REL:** Relative value mode **ABS:** Absolute value mode

CCU CONFIGURATION			
Page name Page No.	**Item**	**Settings**	**Description**
<FRONT PANEL 2> C15	VOLUME REL COEFF		
	IRIS	1/1, **1/2**, 1/4	Relative coefficient when the IRIS knob is set to relative value mode
			1/1: Variable range roughly 100% of total variation
			1/2: Variable range roughly 50% of total variation
			1/4: Variable range roughly 25% of total variation
	M BLACK	1/1, 1/2, **1/4**	Relative coefficient when the MASTER BLACK knob is set to relative value mode
			1/1: Variable range roughly 100% of total variation
			1/2: Variable range roughly 50% of total variation
			1/4: Variable range roughly 25% of total variation
	R/B BLACK	1/1, **1/2,** 1/4, (FLARE)	Relative coefficient when the BLACK/FLARE knob is set to relative value mode
			1/1: Variable range roughly 100% of total variation
			1/2: Variable range roughly 50% of total variation
			1/4: Variable range roughly 25% of total variation
			(FLARE): Displayed when the BLACK/FLARE knob is assigned to the FLARE function (display only)
	R/B WHITE	1/1, 1/2, **1/4**	Relative coefficient selection when the WHITE knob is set to relative value mode
			1/1: Variable range roughly 100% of total variation
			1/2: Variable range roughly 50% of total variation
			1/4: Variable range roughly 25% of total variation
	CUSTOM	1/1, **1/2**, 1/4	Relative coefficient when the CUSTOM knob is set to relative value mode
			1/1: Variable range roughly 100% of total variation
			1/2: Variable range roughly 50% of total variation
			1/4: Variable range roughly 25% of total variation
	SW BRIGHT	**NORMAL**, LOW	Front panel button lights LED brightness

CCU CONFIGURATION			
Page name **Page No.**	**Item**	**Settings**	**Description**
<FRONT PANEL 3> C16	(LOCK TARGET)	AWB: **ON**, OFF ABB: **ON**, OFF ATW: **ON**, OFF BARS: **ON**, OFF CALL: ON, **OFF** PANEL: ON, **OFF** A-SW1: **ON**, OFF A-SW2: **ON**, OFF INCOM: **ON**, OFF STANDARD: **ON**, OFF IRIS AT: **ON**, OFF SHUT-ECS: **ON**, OFF SHUT: **ON**, OFF GAIN-U/D: **ON**, OFF SHUT-U/D: **ON**, OFF PRST WHT: **ON**, OFF VOLUME: **ON**, OFF MENU: **ON**, OFF	Allows you to specify buttons on the front panel to be locked.

NETWORK SETTINGS menu

NETWORK SETTINGS			
Page name **Page No.**	**Item**	**Settings**	**Description**
<TCP/IP SETTING> N01	IP ADDRESS	**0.0.0.0** to 255.255.255.255	Displays IP address
	SUBNET MASK	**0.0.0.0** to 255.255.255.254	Displays subnet mask
	DEFAULT GATEWAY	**0.0.0.0** to 255.255.255.255	Displays default gateway
	SET		A "SET OK?" message is displayed. Press ENTER again to confirm the change. (Execute by ENTER)
<LAN SETTINGS> N02	AUTO NEGOTIATION	**ON**, OFF	Select whether to automatically set the connection speed and communication system according to the device connected.
	CONNECTION SPEED	10M, **100M**	Connection speed selection **10M:** 10BASE-TX **100M:** 100BASE-TX Available only when OFF is selected in AUTO NEGOTIATION
	DUPLEX MODE	HALF, **FULL**	Communication system selection **HALF:** Half-duplex communication **FULL:** Full-duplex communication Available only when OFF is selected in AUTO NEGOTIATION
	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 by ENTER)

NETWORK SETTINGS			
Page name Page No.	**Item**	**Settings**	**Description**
<CNS SETTINGS> N03	CNS MODE	**LEGACY**, BRIDGE, PC CONTROL	Network connection mode selection
			LEGACY: External controller connected using CCA-5 cable only
			BRIDGE: External controller connected using point-to-point LAN cable
			PC CONTROL*: HZC-RCP5 connected using LAN cable
			* The unit's software version must be 1.10 or above.
	CCU NO	**0** to 96, A to Z	CCU number settings
	TARGET IP ADDRESS	**0.0.0.0** to 255.255.255.255	Displays the PC IP address
<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 by 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: 5 °C to 40 °C (41 °F 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 the 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.

About Transmission Distance

The unit and the CA-FB70 HD Camera Adaptor can be supplied with power via an optical composite cable[1]. The transmission distance varies depending on the total power consumption of the connected periherals (camera/camcorder, camera adaptor and viewfinder). See the below examples for system configuration.
- When the transmission distance is 100 m (330 ft), the total power consumption of the connected periherals can be up to 75 W. In this case, it is possible to install the DXF-51 5-inch monochrome Electronic Viewfinder on the CA-FB70 HD Camera Adaptor, and the maximum DC power output from the adaptor is also available.
- When the transmission distance is 250 m (820 ft), the total power consumption of the connected periherals can be up to 45 W. In this case, it is possible to install the 5-inch HD color LCD viewfinder on the CA-FB70 HD Camera Adaptor. However, the DC power output from the adaptor will not be available.

When you use a single-mode optical fiber cable, transmission distance can be extended up to 10 km (32,800 ft). The maximum extension distance depends on the characteristics of the cable and the number of connected cables.
1) Sony CCFN-25/50/100 Hybrid Fiber Cable and Sony CCFN-JC1 Joint Adaptor used.

Error Messages

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

Error message	Indication
CCU: GEN LOCK NG	External reference sync error
CCU: DPR NG	Front DPR board power supply, PLD error
CCU: PS FAN NG	Power supply block fan error
CCU: PS CABLE OPEN	CAMERA connector camera open circuit error
CCU: PS RCP PWR SUPPLY NG	Remote control panel (connected to REMOTE connector) power supply error
CCU: AT NG	Front AT board power supply, PLD error
CCU: RX WARNING	Reception level of optical signal is low

Specifications

General	
Power supply	AC 100 to 240 V, 50/60 Hz
Current consumption	2.2 A (max)
Inrush current	(1) Maximum possible inrush current at initial switch-on (Voltage changes caused by manual switching):
	50A peak, 9.5A r.m.s. (240V AC)
	(2) Inrush current after a mains interruption of five seconds (Voltage changes caused at zero-crossing):
	15A peak, 5A r.m.s. (240V AC)
Operating temperature	5 °C to 40 °C (41 °F to 104 °F)
Storage temperature	–20 °C to +60 °C (–4 °F to +140 °F)
Weight	Approx. 6.5 kg (14 lb 5.3 oz)
Input/output connectors	
CAMERA	Optical composite connector (1)
INTERCOM	XLR 5-pin (1)
INTERCOM/TALLY/ PGM	D-sub 25-pin, female (1) • INTERCOM (PROD, ENG), 4W/RTS/CC, 0 dBu • PGM 1 system, –20/0/+4 dBu • TALLY (R, G) • PREVIEW
REMOTE	8-pin multiconnector (1)
TRUNK	D-sub 9-pin, female (1), RS-232C 1 system
LAN	8-pin (1)

REFERENCE IN/OUT	BNC type (2), loop-through output
	HD: SMPTE 274M, tri-level sync, 0.6 Vp-p, 75 Ω
	SD: Black burst (NTSC: 0.286 Vp-p, 75 Ω; PAL: 0.3 Vp-p, 75Ω)
PROMPTER IN/OUT	BNC type (2), loop-through output, VBS signal, 1.0 Vp-p, 75 Ω, 1 system

Input connectors	
AC IN	(1), AC 100 to 240 V
RETURN INPUT VBS1, VBS2	BNC type (2), 1.0 Vp-p, 75 Ω, 2 systems
RETURN INPUT SDI1, SDI2	BNC type (2)
	HD SDI: SMPTE 292M, 1.485 Gbps/ 1.4835 Gbps
	SD SDI: SMPTE 259M, 270 Mbps

Output connectors	
SDI OUTPUT 1 to 4	BNC type (4)
	HD SDI: SMTPE 292M, 0.8 Vp-p, 75 Ω, 1.485/1.4835 Gbps bit rate
	SD SDI: SMPTE 259M, 0.8 Vp-p, 75 Ω, 270 Mbps bit rate
	HD SDI/SD SDI selectable
Pr/R/R-Y, Y/G/Y, Pb/B/B-Y	BNC type (3)
	• HD component video Y (100% white): 0.7 Vp-p
	Pr/Pb (75% color bar): 0.7 Vp-p, 75 Ω
	• HD RGB video R/G/B (100% white): 0.7 Vp-p, 75 Ω
	• SD RGB video R/G/B (100% white): 0.7 Vp-p, 75 Ω
	• SD component video Y (100% white): 0.714 Vp-p
	Pr/Pb (75% color bar): 0.756 Vp-p, 75 Ω
VBS1, 2	BNC type (2), VBS 1.0 Vp-p, 75 Ω
PIX	BNC type (1), VBS/R/G/B (VBS 1.0 Vp-p, 75 Ω)
SYNC	BNC type (1)
	HD: BTA-S001A, tri-level sync, 0.6 Vp-p, 75 Ω
	SD: composite sync, 0.3 Vp-p, 75 Ω
	HD SYNC/SD SYNC selectable
AUDIO OUTPUT CH-1, CH-2	XLR 3-pin, male (2), 0/–20 dBu
S-VIDEO OUTPUT	4-pin
HDMI OUTPUT	Type A, 19-pin

Supplied accessories
Number plates (1 set)
Operating Instructions: Japanese (1) / English (1)
Warranty booklet (1)
CD-ROM (1)

Optional accessories
United States and Canada: Plug holder B (2-990-242-01)
Other areas: Plug holder C (3-613-640-01)
United States and Canada: Power cord set (1-551-812-XX)
Other areas: Power cord set (1-782-929-XX)

CCA-5-3 (3 m), CCA-5-10 (10 m) connection cables
CCFN-25/50/100 Hybrid Fiber Cable
CCFN-JC1 Joint Adaptor
Service manual

Connectors for optical/electric composite cables:
• NEUTRIK® opticalCON DUO
  (to the "CAMERA" connector on CCU or POWER SUPPLY UNIT)
• NEUTRIK® opticalCON DUO
  (to the "CCU" connector on CAMERA ADAPTOR)

Caution on the optical/electric composite cable:
For connection between the camera control unit and camera adaptor, or between a power supply unit and camera adaptor, be sure to use an optical/electric signal composite cable with the connectors specified in this manual in order to comply with the limit for EMC regulations.
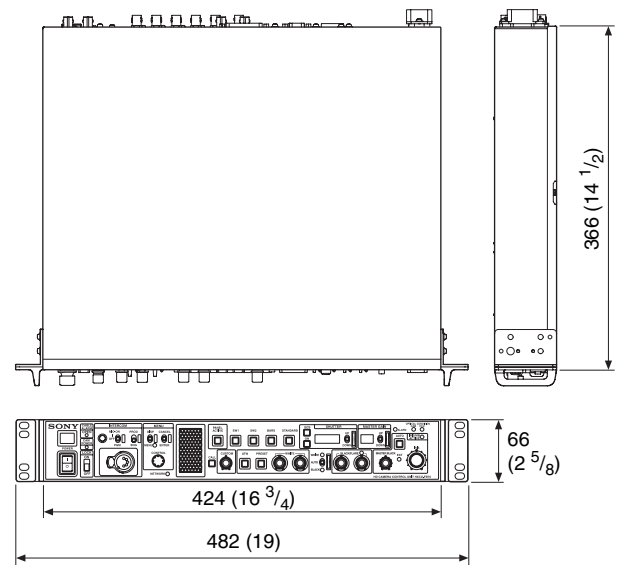
Related equipment
HD Camera Adaptor CA-FB70
Power Supply Unit HXCE-FB70
RCP-1000-series Remote Control Panel

Dimensions

Unit: mm (inches)

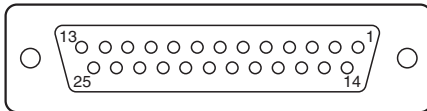Design and specifications are subject to change without notice.

Pin assignment

INTERCOM

- EXT VIEW -

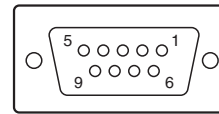| No.	Signal	Specifications
1	INTERCOM MIC IN (Y)/ (GND)*	-20 dBu (CARBON)
		-40 dBu (ECM)
2	INTERCOM MIC IN (X)	-60 dBu
		(DYNAMIC, BALANCE/ UNBALANCE)
3	GND	GND
4	INTERCOM L OUT	
5	INTERCOM R OUT	

* When the signal is unbalanced, connect the GND signal of the microphone to pin 1.

INTERCOM/TALLY/PGM

- EXT VIEW -

No.	Signal	Specifications
1	ENG (R) (X) OUT	ENG SYSTEM RECEIVE
2	ENG (R) (Y) OUT	0 dBu BALANCED
3	ENG (G)	GND for ENG
4	ENG (T) (X) IN	ENG SYSTEM TALK
5	ENG (T) (Y) IN	0 dBu BALANCED
6	PGM1 (X) IN	-20 dBu/0 dBu/+4 dBu
7	PGM1 (Y) IN	(Selectable with CCU Menu)
8	PGM1 (G) IN	
9	GND	GND for TALLY OUT
10	PREVIEW OUT	OPEN COLLECTOR (Max. 30 mA)
11	R TALLY (X) IN	ON: SHORT
12	R TALLY (G) IN	OFF: OPEN
13	GND	CHASSIS GND

No.	Signal	Specifications
14	PROD (R) (X) OUT	PROD SYSTEM RECEIVE
15	PROD (R) (Y) OUT	0 dBu BALANCED
16	PROD (G)	GND for PROD
17	PROD (T) (X) IN	PROD SYSTEM TALK
18	PROD (T) (Y) IN	0 dBu BALANCED
19	NC	
20	NC	
21	GND	CHASSIS GND
22	R-TALLY OUT	OPEN COLLECTOR (Max. 30 mA)
23	G-TALLY OUT	
24	G TALLY (X) IN	ON: SHORT
25	G TALLY (G) IN	OFF: OPEN

TRUNK

- EXT VIEW -

No.	Signal	Specifications
1	NC	
2	RX IN	TRUNK Data in
3	TX OUT	TRUNK Data out
4	NC	
5	GND	
6	NC	
7	NC	
8	NC	
9	NC	

CAMERA
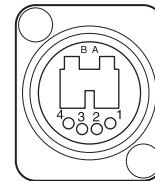
No.	Signal
A	Optical INPUT
B	Optical OUTPUT
1	DC OUT (GND)
2	NC
3	NC
4	DC OUT (+48 V)

http://www.sony.net/

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