SONY

4-582-207-**12**(1)

HD Multi Purpose Camera

Operating Instructions

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

HXC-P70

Exmor
FULL HD 3CMOS

Table of Contents

Overview

HD Multi Purpose Camera HXC-P70 is a high-definition video camera equipped with a 2/3-inch Exmor CMOS image sensor. A compact, box-shaped case enables the camera to be used for a variety of applications as it requires little space for installation.

In addition to use as a standalone camera using the SDI output, you can use this camera as a studio camera by directly connecting to the Camera Control Unit (CCU) HXCU-FB70 using fiber cables. This camera can be used for a wide range of applications such as video production and security monitoring, as it is equipped with an optical ND filter powered by a servo motor that can be operated from a CCU, RCP, or RM, an electrical CC filter, a slow shutter capable of storing up to 64 frames, a gain up to +48 dB, an x2 or x4 digital extender (that enlarges the image by digital processing), and Total Level Control System.

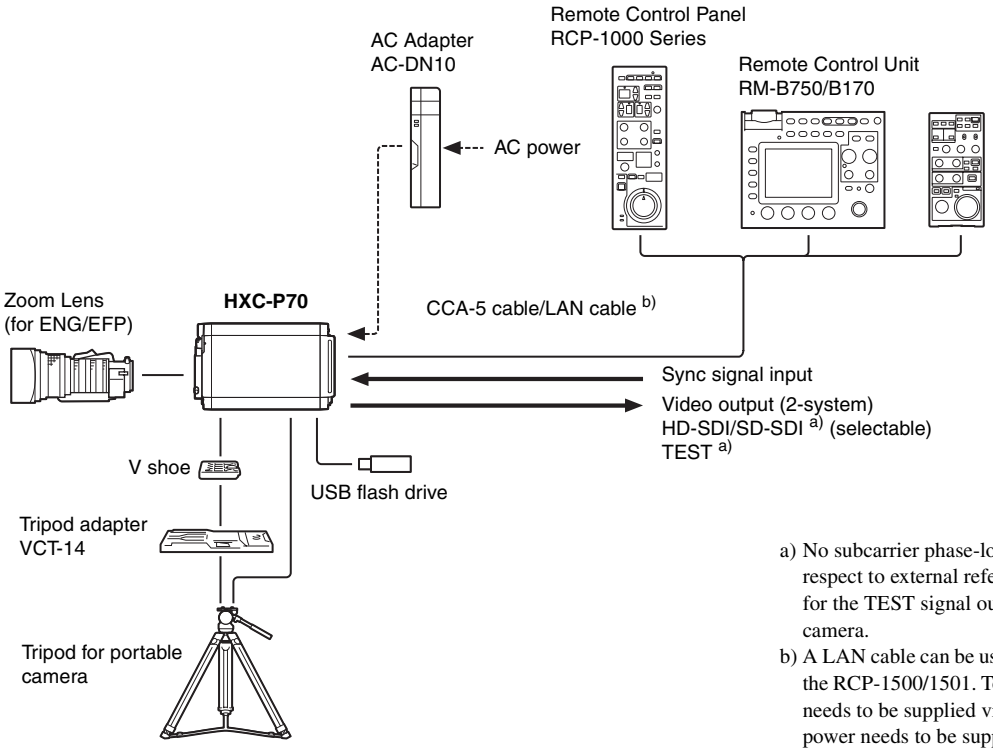
System Configuration

Peripherals and related devices for the camera are shown in figures.

Caution

Production of some of the peripherals and related devices shown in the figures has been discontinued. For advice on choosing devices, please contact your Sony dealer or a Sony sales representative.

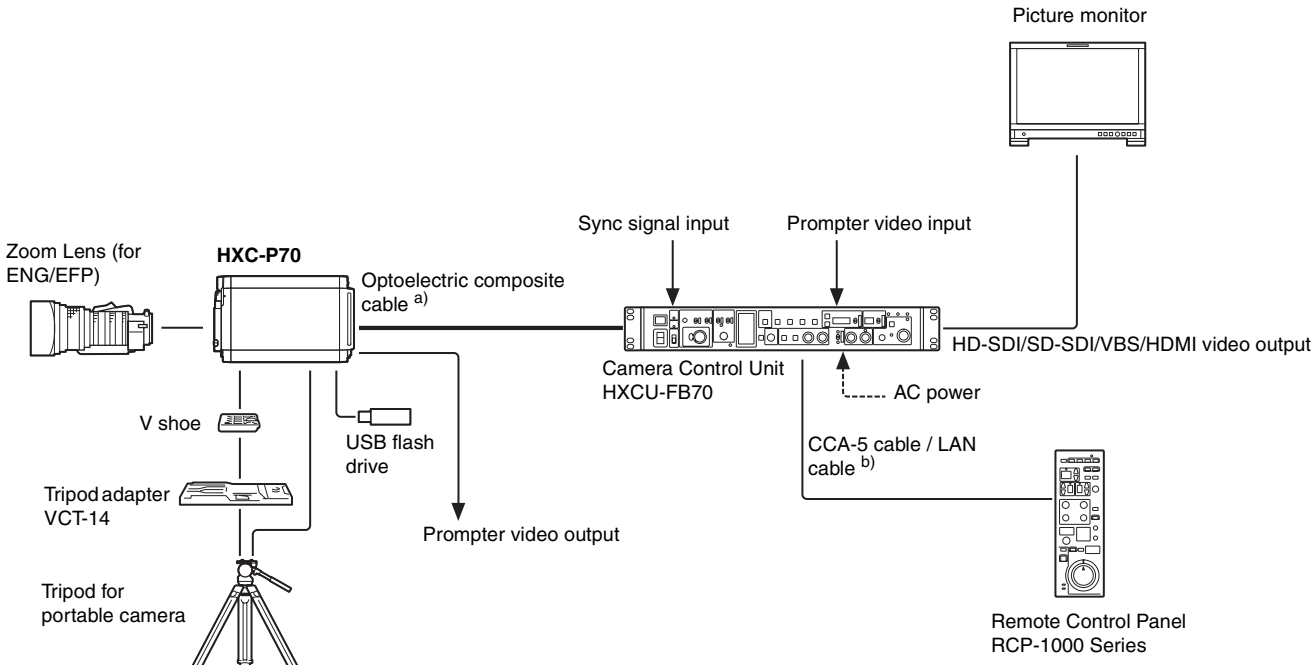
Standalone operation example



a) No subcarrier phase-lock function with respect to external reference is available for the TEST signal output from the camera.

b) A LAN cable can be used only to connect the RCP-1500/1501. To connect it, power needs to be supplied via a PoE hub or power needs to be supplied to the EXT DC IN connector of the RCP-1500/1501.

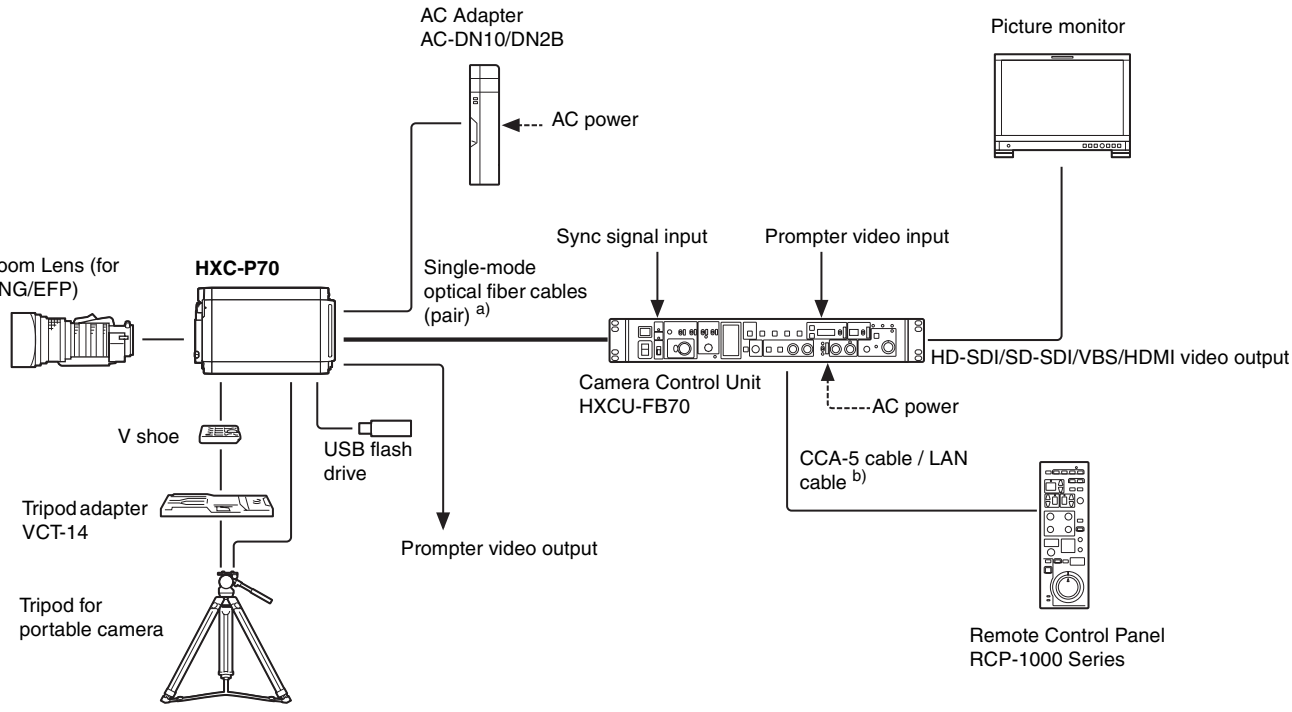
System operation example: When connected with an optoelectric composite cable



a) The maximum transmission distance is approximately 500 m when using Sony CCFN-25/50/100/150/200/250 Hybrid Fiber Cable (when camera head + portable lens).

b) A LAN cable can be used only to connect the RCP-1500/1501. To connect it, power needs to be supplied via a PoE hub or power needs to be supplied to the EXT DC IN connector of the RCP-1500/1501.

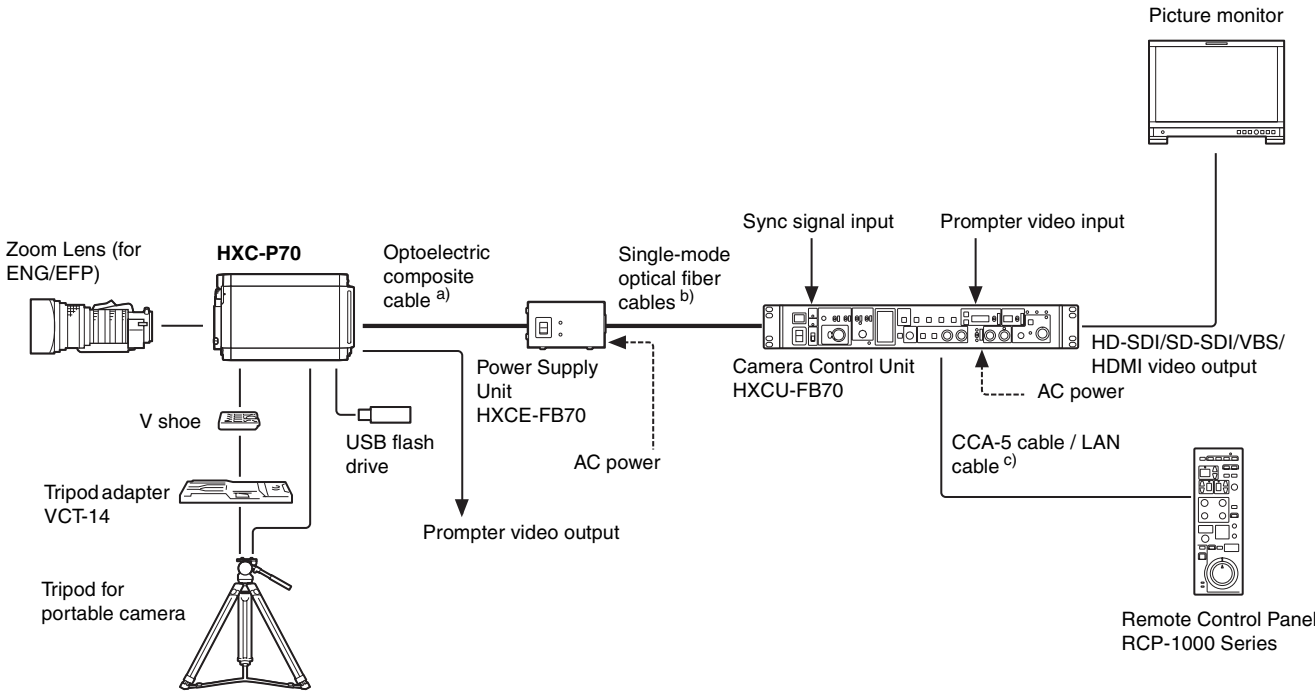
System operation example: When connected with single-mode optical fiber cables



a) The maximum transmission distance is approximately 10 km when using general single-mode fiber cables with LC connectors.

b) A LAN cable can be used only to connect the RCP-1500/1501. To connect it, power needs to be supplied via a PoE hub or power needs to be supplied to the EXT DC IN connector of the RCP-1500/1501.

System operation example: When connected using Power Supply Unit HXCE-FB70



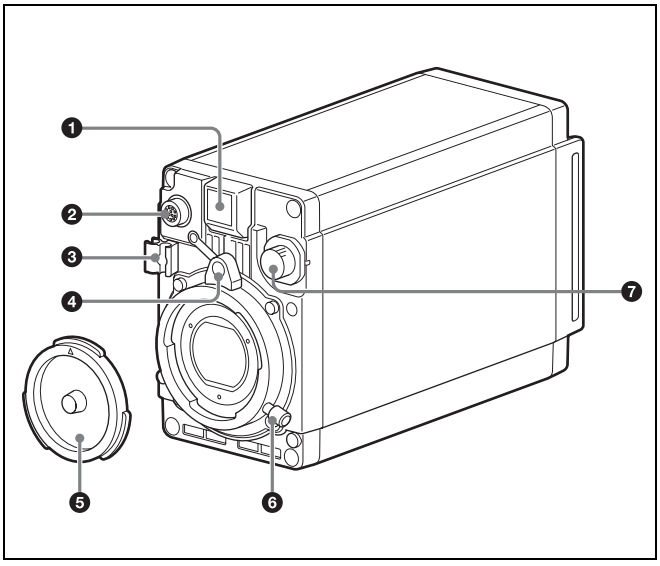
a) The maximum transmission distance is approximately 500 m when using Sony CCFN-25/50/100/150/200/250 Hybrid Fiber Cable (when camera head + portable lens).

b) The maximum transmission distance is approximately 10 km when using general single-mode fiber cables with LC connectors.

c) A LAN cable can be used only to connect the RCP-1500/1501. To connect it, power needs to be supplied via a PoE hub or power needs to be supplied to the EXT DC IN connector of the RCP-1500/1501.

Parts Identification

Front



1 Front tally lamp
The tally lamp lights when a tally signal is input to the EXT I/O connector of the HXCU-FB70 when the HXCU-FB70 is connected, and when a tally signal is input to the EXT I/O connector of the camera when it is used as a standalone camera.
The tally lamp does not light when a call signal is generated by pressing the CALL button.
You can attach the supplied number plate to display the camera number.

2 LENS connector (12-pin)
Connect the cable of the lens (optional). The camera can control the lens functions through this cable.
Connect the lens cable so that ▲ is at the top.

3 Lens cable clamp

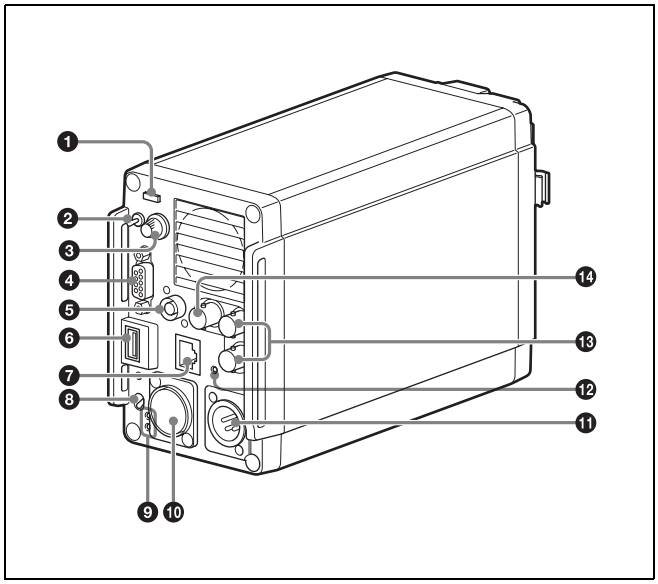
4 Lens mount safety rubber

5 Lens mount cap

6 Lens fixing lever

7 ND filter select knob
To select the built-in ND filters (1: clear, 2: 1/4 ND, 3: 1/16 ND, 4: 1/64 ND).

Rear



1 Rear tally lamp
The tally lamp lights when a tally signal is input and when a call signal is generated, for example, by pressing the CALL button. However, turning off the CALL setting on the M06 <TALLY> page disables the tally lamp when a call signal is generated by pressing the CALL button.
The rear tally lamp also serves as a battery alarm function.
If the voltage of the XLR input connected to the camera decreases, the rear tally lamp flashes, and if the limit becomes close to being reached, the rear tally lamp switches to high-speed flashing.
The alarm voltage for starting flashing can be set in the BEFORE END item of the <BATTERY ALARM> page on the MAINTENANCE menu, and the alarm voltage for switching to high-speed flashing can be set in the END item.

If a call signal is generated while the battery alarm function is operating, the rear tally lamp goes out.
If you want to operate the tally function and call function, set the BATTERY ALARM item of the <BATTERY ALARM> page on the MAINTENANCE menu to OFF.

For details, see "MAINTENANCE Menu" (page 25).

2 DISPLAY/MENU switch
Select the display on the screen connected to the SDI connector (VF Setting) or GL/TEST connector.
DISPLAY: To display various textual information, such as messages showing the camera settings and operating status, in addition to camera images.
● **(OFF):** To not display textual information and markers.
MENU: To display menus for camera settings, in addition to camera images.

3 Menu control knob (rotary encoder)
Used to select settings from menus (by rotating it) and to confirm settings (by pushing it).

4 EXT I/O (external input/output) connector (D-sub, 9-pin)
Connect an external device.

❺ REMOTE connector (8-pin)
For connection to an RM-B170/B750 Remote Control Unit, RCP-1000 Series Remote Control Panel, or another external control device.

Note

When using the camera by connecting to a camera control unit, do not connect, for example, a remote control panel to this connector.

❻ (USB) connector
Connect a USB flash drive to save or load a configuration data file.

❼ (LAN) connector (RJ-45 type, 8-pin)
To connect to a LAN. Use a LAN cable (shielded, category 5 or above) to connect to the hub of the LAN (10BASE-T/100BASE-TX).

❽ CAMERA POWER switch and indicator
To turn the power ON/OFF.
ON: Set the switch to the **I** side. The indicator lights green.
OFF: Set the switch to the ⏻ side.

❾ CONDITION indicators
To indicate the communication status and power status of the camera and CCU based on the light reception level and the voltage reaching the camera.

Indication	Meaning
Both top and bottom lit green	State is excellent.
Only bottom lit green	State is fairly good.
Only top lit yellow	State has deteriorated.
Only bottom lit red	State has become extremely poor (the connection between the camera and CCU needs to be checked).

❿ CCU (Camera Control Unit) connector (optoelectric composite connector)
To connect to the HD Camera Control Unit HXCU-FB70.
When connected with an optoelectric composite cable, all the signals of the camera including the power supply, control signals, video signals, and audio signals can be transmitted/received with the one optoelectric composite cable.
When connected with a pair of single-mode fiber cables, all the signals except the power supply can be transmitted/received with the pair of single-mode fiber cables.

⓫ DC IN (DC power supply input) connector (XLR 4-pin)
For connection to an AC-DN10 AC adapter, etc. to supply power to the camera.

⓬ NETWORK indicator
To indicate the state when connected to a network system.
Lit: Successfully connected to an external control device (RCP-1000 Series remote control panel, etc.).
Flashing: Unable to connect to an external control device (RCP-1000 Series remote control panel, etc.) properly.
Off: A LAN cable is not connected or the connection settings of the network system are not configured.

For details on the adjustment, see "Configuring Control System Connection Settings" (page 12), "MAINTENANCE Menu" (page 25), "DIAGNOSIS Menu" (page 30).

⓭ SDI 1 (serial digital interface) connector and SDI 2 connector (BNC type)
For HD-SDI or SD-SDI signal output.
HD-SDI signal and SD-SDI signal output can be selected on the menu.

Note

The functions that can be displayed differ depending on the output settings.

For details on the adjustment, see "Connector Output Settings and Display Functions" (page 8).

⓮ GL/TEST (external sync signal input/TEST signal output) connector
Select external sync signal (BB or tri-level) input to sync the camera or TEST signal output.

Note

Even when a BB signal is used for the external sync signal, no subcarrier phase-lock function is available for the TEST output signal.

Connector Output Settings and Display Functions

The functions that can be displayed differ depending on the connector output settings.

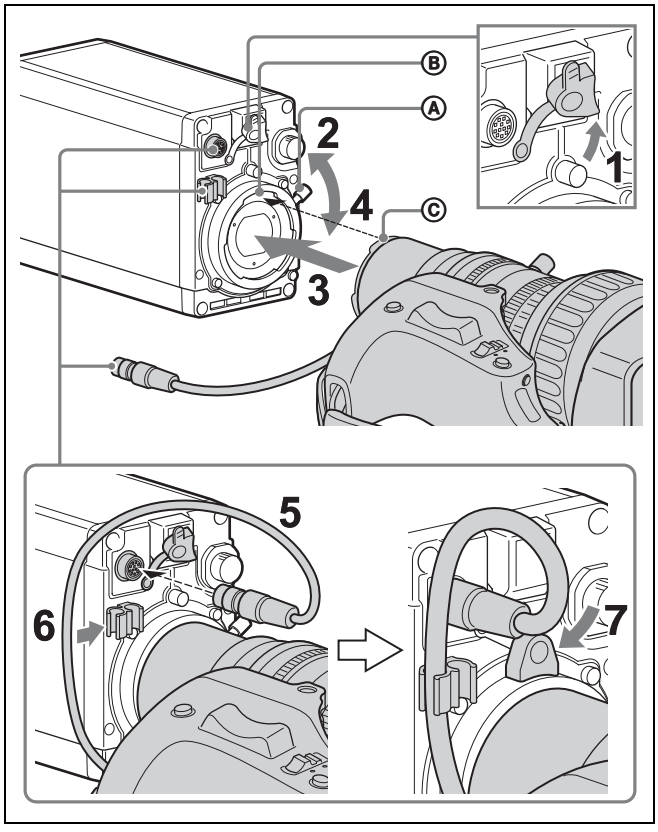
Connector name	Output setting	Format	Display functions				
			Setting menus[c]	Operation status[c]	Marker[d]	Zebra[d]	Focus assist[a]
SDI 1	MAIN/ SD-SDI	HD/ SD	No	No	No	No	No
SDI 2	MAIN	HD	Yes	Yes	No	No	No
	VF	HD	Yes	Yes	Yes	Yes	Yes
	RET	HD	Yes	Yes	No	No	No
	SD-SDI	SD	Yes	Yes	No	No	No
GL/ TEST[b]	VBS OUT	SD	Yes	Yes	No	No	No

a) The focus assist functions include the VF DETAIL function (OPERATION menu 03) and FOCUS ASSIST INDICATOR function (OPERATION menu 04).
b) When the GL/TEST connector is set to TEST output (VBS) to output a TEST signal.
c) Linked to the DISPLAY/MENU switch setting.
d) A function can be set to ON/OFF on the OPERATION menus 02 and 05.

Installation

Attaching a Lens

For information on handling lenses, refer to the operation manual for the particular lens



1 **Remove the lens mount safety rubber.**

2 **Push the lens fixing lever Ⓐ upward and remove the lens mount cap from the lens mount.**

3 **Align the lens' alignment pin Ⓒ with the notch Ⓑ in the upper part of the lens mount and insert the lens into the mount.**

4 **While supporting the lens, push the lens fixing lever Ⓐ downward to secure the lens.**

5 **Connect the lens cable to the LENS connector.**

6 **Secure the lens cable with the cable clamp.**

7 **Reattach the lens mount safety rubber.**

Adjusting the Flange Focal Length

Adjustment of the flange focal length (the distance between the lens mount attachment plane and the imaging plane) is necessary in the following situations:

- The first time a lens is attached
- When changing lenses
- If the focus is not sharp at both telephoto and wide angle when zooming

The flange focal length can be more precisely adjusted by using the focus assist indicators.

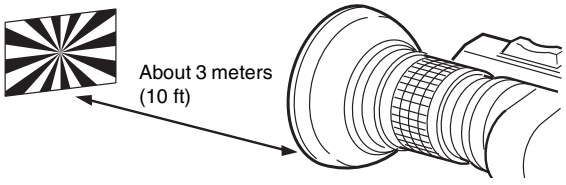
See "Displaying the focus assist indicators" (page 14) for the focus assist indicators.

Note

The various parts of the lens used in adjusting the flange focal length are in different positions on different lenses. Refer to the operation manual for the lens.

1 **Set the iris control to manual and open the iris fully.**

2 **Place a flange focal length adjustment chart approximately 3 meters from the camera and adjust the lighting to get an appropriate video output level.**



3 **Loosen the Ff (flange focal length) ring lock screw.**

4 **With either manual or power zoom, set the zoom ring to telephoto.**

5 **Aim at the flange focal length adjustment chart and turn the focus ring to focus the image.**

6 **Set the zoom ring to wide angle.**

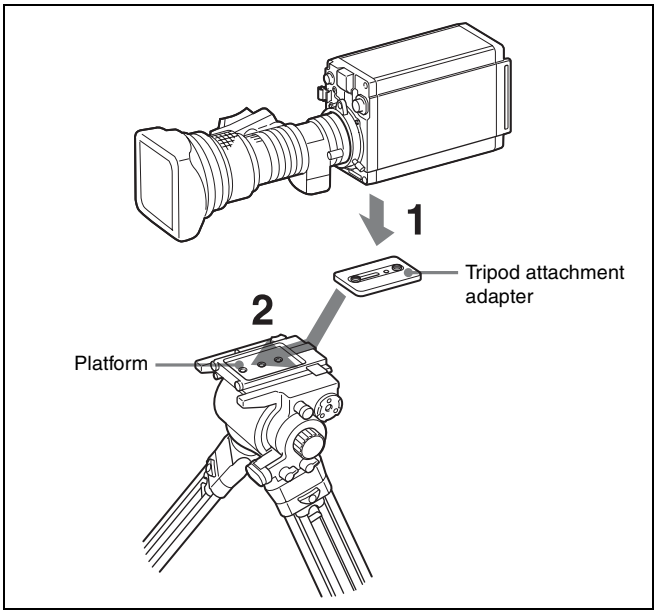
7 **Turn the Ff ring to bring the chart into focus.**
Take care not to move the distance ring.

8 **Repeat steps 4 through 7 until the image is in focus at both telephoto and wide angle.**

9 **Tighten the Ff ring lock screw.**

Mounting the Camera to a Tripod

When using tripod attachment adapter



1 Attach the tripod attachment adapter directly to the camera.
(Two 3/8-inch tripod screws: screw depth of 10 mm (13/32 inches) or less)

2 Place the camera on the tripod and mount the camera by sliding it forward along the groove of the platform until it clicks into place.

3 Move the camera back and forth, and check that it is securely fixed.

Note

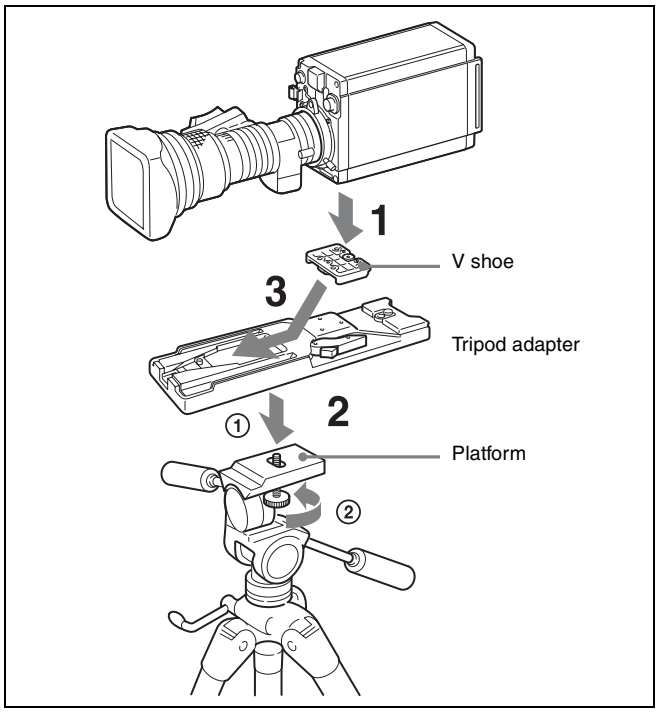
If the screws of the tripod attachment adapter are 1/4-inch tripod screws, use inch conversion screws (Sony Part No.: 4-170-419-02) to attach the adapter. For details on purchasing inch conversion screws, and other information, contact a Sony service representative or Sony sales representative.

When using V shoe and tripod adapter VCT-14

Use a separately sold V shoe (Sony Part No.: A-8279-993-D) and tripod adapter VCT-14 to mount the camera to the tripod.

Notes

- Select an appropriate hole from among those at the bottom of the tripod adapter considering the balance of the weight of the camera and the tripod adapter. If an inappropriate hole is selected, the camera may fall over.
- Check that the size of the selected hole matches that of the screw of the tripod. If they do not match, the tripod adapter cannot be attached to the tripod securely.
- Use the following screws when attaching a separately sold V shoe.
  Attachment screws: Four Alok + K4 × 8 screws
  (Sony Part No.: 3-729-072-02)
  Do not use screws that are 5 mm or longer for the camera. For details on purchasing parts, contact a Sony service representative or Sony sales representative.



1 Attach the V shoe to the camera with the attachment screws.

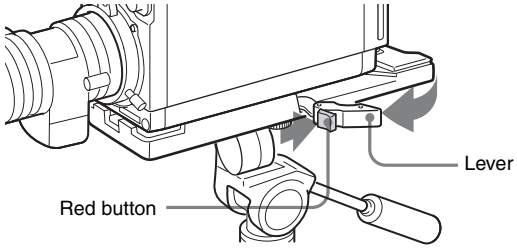
2 ①Attach the tripod adapter to the tripod and ② secure it with the screw.

3 Place the camera on the tripod adapter and slide forward it along the groove of the tripod adapter until it clicks.

4 Move the camera back and forth, and check that it is securely fixed.

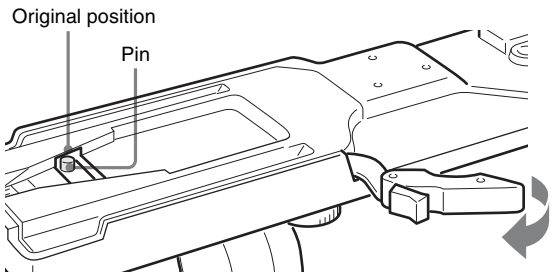
To remove the camera from the tripod adapter

Hold down the red button and pull the lever in the direction of the arrow.



If the pin of the tripod adapter does not return to its original position

After removing the camera, if the pin of the tripod adapter does not return to its original position, hold down the red button and move the lever in the direction of the arrow to return the pin to its original position. It is not possible to mount a camera with the pin not seated.



Setting the Area of Use

When using the camera for the first time

The camera is shipped with the area of use setting in an unset state. To use the camera, you need to first set the area of use.
Once the area setting is complete, set the current date and time.

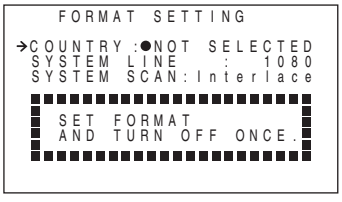
For details on setting the date and time, see "Setting the Local Time" (page 11).

Note

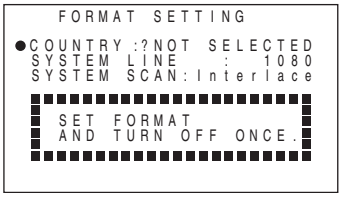
The camera cannot be used if the area of use is not set.

Setting the area of use

1 **Turn on the camera.**
The area of use setting screen appears on the monitor connected to the GL/TEST connector output or SDI 2 connector.



2 **Push on the menu control knob.**
The area of use becomes selectable.



3 **Rotate the menu control knob to select the area of use.**

Setting value	Area of use	Output composite signal	Systemfrequency
NTSC(J) AREA	NTSC area (for within Japan)	NTSC signal without setup	59.94i
NTSC AREA	NTSC area (for areas other than Japan)	NTSC signal with setup (7.5IRE)	59.94i
PAL AREA	PAL area	PAL signal	50i

4 **Change the SYSTEM LINE (video resolution) and SYSTEM SCAN (video scanning mode) settings according to the video format you are using.**

SYSTEM LINE

Setting value	Resolution (horizontal x vertical)
1080	1080 line (1920 x 1080)
720	720 line (1280 x 720)

SYSTEM SCAN

Setting value	Video scanning mode
Interlace	Interlace
Progressive	Progressive
PsF	PsF

Supported formats: 1080/59.94i, 1080/50i, 1080/29.97PsF, 1080/25PsF, 720/59.94P, 720/50P

5 **Turn the camera off and then back on.**
The camera becomes able to be used.

Changing the area of use

Change the setting in the COUNTRY item on the <OUTPUT FORMAT> page of the MAINTENANCE menu.

Note

The setting is switched to the CCU setting when a CCU is connected.

Setting the Local Time

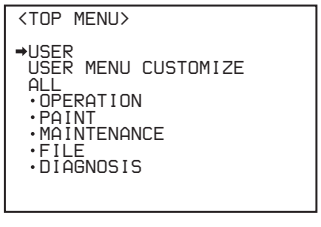
Set the built-in clock to the current local time on the <DATE> page of the MAINTENANCE menu.

For details on menu operations, see "Menus" (page 16).

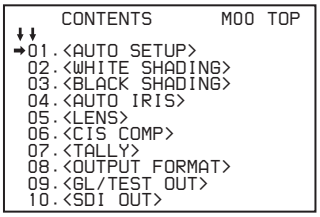
1 **Turn on the camera.**

2 **While holding the menu control knob pressed, set the DISPLAY/MENU switch to MENU.**
The camera enters Menu mode, and "TOP" is displayed at the upper-right corner of the screen.

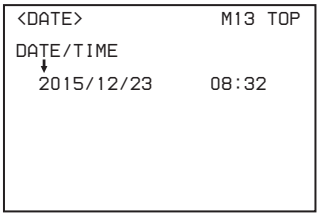
3 **Rotate the menu control knob to set the cursor to "TOP" and push on the menu control knob.**
The TOP MENU screen is displayed.



4 **Rotate the menu control knob to position the cursor to MAINTENANCE and push on the menu control knob.**
The CONTENTS page of the MAINTENANCE menu is displayed.



5 **Turn the menu control knob to scroll the page and position the pointer to <DATE> then push on the menu control knob.**
The <DATE> page is displayed.



6 **Turn the menu control knob and set the date and time.**
Push on the menu control knob to shift to the next digit.

7 **When the date/time setting is completed, set the DISPLAY/MENU switch to OFF to exit Menu mode.**

Preparatory Settings

Configuring Control System Connection Settings

There are the following three modes for the control system of the camera.
- LEGACY mode: This setting mode is for when controlling the camera from an external control device via the REMOTE connector of the camera.
- BRIDGE mode: This setting mode is for when controlling the camera from an external control device via the LAN connector of the camera on a one-to-one basis.
- PC CONTROL mode: This mode is for when controlling the camera from a HZC-RCP5 via a LAN cable.

Use the MAINTENANCE menu to set the mode.

For details on menu operations, see "Menus" (page 16).

Note

When the control system connection mode is changed, turn the power of all devices in the system off and then back on.

To connect in LEGACY mode

Set CNS MODE to LEGACY.

For details, see "CNS SETTINGS (MAINTENANCE menu)" (page 13).

Note

When a LAN cable will not be connected directly to the camera even when building a camera network system using a LAN, set CNS MODE to the LEGACY mode.

To connect in BRIDGE mode

1 **Set CNS MODE to BRIDGE.**

For details, see "CNS SETTINGS (MAINTENANCE menu)" (page 13).

2 **Configure settings related to TCP/IP.**

For details, see "TCP/IP SETTING (MAINTENANCE menu)" (page 13).

3 **Set the LAN connection.**

For details, see "LAN SETTINGS (MAINTENANCE menu)" (page 13).

4 **Set the IP address of the camera for "target IP address" of the RCP to be connected to the LAN.**

For details, see the operation manual of the RCP.

To connect in PC CONTROL mode

To use the camera in PC CONTROL mode, you need one PC with HZC-RCP5 (option) installed.

1 **Set CNS MODE to PC CONTROL.**

For details, see "CNS SETTINGS (MAINTENANCE menu)" (page 13).

2 **Set CCU NO.**

For details, see "CNS SETTINGS (MAINTENANCE menu)" (page 13).

3 **Set TARGET IP ADDRESS.**

For details, see "CNS SETTINGS (MAINTENANCE menu)" (page 13).

4 **Configure settings related to TCP/IP.**

For details, see "TCP/IP SETTING (MAINTENANCE menu)" (page 13).

5 **Set the LAN connection.**

For details, see "LAN SETTINGS (MAINTENANCE menu)" (page 13).

6 **Configure the settings of the PC to be connected by LAN.**

For details, see the manuals for the PC and HZC-RCP5.

Note

Set CCU NO to a number that is not a duplicate of any of the CCU device numbers in the system.

About the menu to configure the control system connection settings

TCP/IP SETTING (MAINTENANCE menu)

```
<TCP/IP SETTING>  M16 TOP

IP ADDRESS:
      0.   0.   0.   0
SUBNET MASK:
      0.   0.   0.   0
DEFAULT GATEWAY:
      0.   0.   0.   0

                   SET
```

IP ADDRESS: Set the IP address to assign to the camera.
SUBNET MASK: Set the subnet mask of the network environment.
DEFAULT GATEWAY: Set the default gateway of the network environment if necessary.

LAN SETTINGS (MAINTENANCE menu)

```
<LAN SETTINGS>    M17 TOP


CONNECTION SPEED  : 100M
DUPLEX MODE       : FULL
```

The LAN interface of the camera supports Auto Negotiation. The connection speed (SPEED) and communication system (DUPLEX) are automatically set depending on the connected device.
CONNECTION SPEED: Display the connection speed of the LAN line.
DUPLEX MODE: Display the communication system of the LAN line.

CNS SETTINGS (MAINTENANCE menu)

```
<CNS SETTINGS>    M18 TOP
CNS MODE      : LEGACY
CCU NO        : 0
TARGET IP ADDRESS:
      0.   0.   0.    0
                   SET
```

CNS MODE: Set the control system connection mode.
LEGACY: Set the mode to the LEGACY mode.
BRIDGE: Set the mode to the BRIDGE mode.
PC CONTROL: Set the mode to the PC CONTROL mode.
CCU NO: Set the device number (camera number) of the camera when using the PC CONTROL mode. Set a number that is not a duplicate of any of the CCU device numbers in the system.
TARGET IP ADDRESS: Set the IP address of the PC with HZC-RCP5 in PC CONTROL mode.

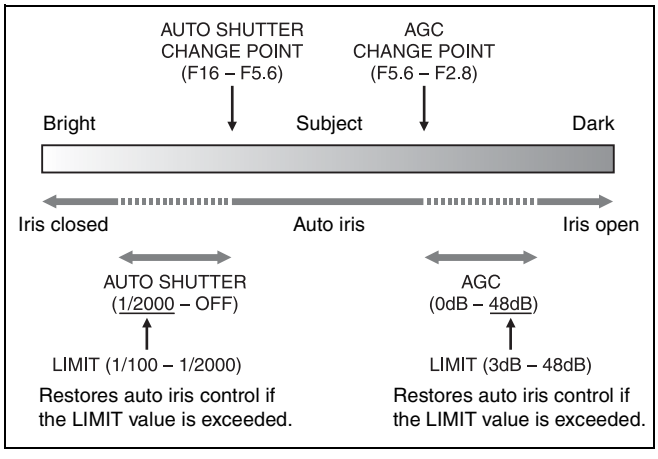
Resetting the network configuration information

```
<NETWORK RESET>   M19 TOP
    NETWORK ALL RESET
```

NETWORK ALL RESET: Restore the network related information to the default state.

Setting the TLCS Function

You can maintain the proper exposure by using the TLCS (Total Level Control System) function. This function controls not only the iris, but also the shutter (AUTO SHUTTER) and gain (AGC: Auto Gain Control) automatically.
The TLCS function can be assigned to one of the ASSIGN 1/2/3 buttons, and turned on/off by pressing the button.
The effective auto control range is set as shown in the following diagram on the <TLCS> in the OPERATION menu.



Notes

- Both AUTO SHUTTER and AGC switch on/off in response to the button assigned with the TLCS function. You can turn them on/off individually on the <TLCS> page in the OPERATION menu.
- SLS mode and AUTO SHUTTER cannot be used at the same time. The last enabled function takes precedence.

Setting the Focus Assist Function

Using the OPERATION menu, you can display the assist functions for easier focusing on the monitor screen connected to the SDI2 connector (VF Setting).

Adding a VF detail signal

Adding a VF detail signal to sharp edges in the image on the monitor screen makes it easier to check the focusing condition by observing changes in the detail signal or in the color converted from the detail signal (color detail).
The focus setting where the detail signal becomes strongest is the best focus setting.

1 **Turn on the camera.**

2 **Set the DISPLAY/MENU switch to MENU while holding the menu control knob pressed.**
The camera enters Menu mode, and "TOP" is displayed at the upper right corner of the screen.

3 **Rotate the menu control knob to align the pointer (➡) to "TOP" and push on the knob.**
The TOP MENU screen is displayed.

```
<TOP MENU>

➡USER
 USER MENU CUSTOMIZE
 ALL
 ·OPERATION
 ·PAINT
 ·MAINTENANCE
 ·FILE
 ·DIAGNOSIS
```

4 **Rotate the menu control knob to align the pointer (➡) to OPERATION and push on the knob.**
The CONTENTS page of the OPERATION menu is displayed.

```
    CONTENTS        00  TOP

➡01.<VF DISPLAY>
 02.<VF MARKER>
 03.<VF DETAIL>
 04.<FOCUS ASSIST>
 05.<ZEBRA>
 06.<CURSOR>
 07.<VF OUT>
 08.<TLCS>
 09.<OPERATOR FILE>
```

5 **Rotate the menu control knob to align the pointer (➡) to <VF DETAIL> and push on the knob**
The <VF DETAIL> page is displayed.

```
<VF DETAIL>          ➡ 03 TOP

VF DETAIL :  ON      8%
 CRISP    :   0
 FREQUENCY:  9M
 FLICKER  :  OFF
 AREA     :  70%
 ZOOM LINK: 100%

COLOR DETAIL :  ON  BLUE
 PEAK COLOR  :  ON
 CHROMA LEVEL: 100%
```

6 **Rotate the menu control knob to align the pointer (➡) to the item to be set and push on the knob.**

To use the VF detail signal

Set VF DETAIL to ON to activate the VF detail function to add the detail signal to sharp edges in the image. You can adjust the signal level (strength) in the range of 0 to 100% (default: 8%).
You can adjust the characteristics of the detail signal with the menu items below:
CRISP: Adjust to eliminate fine portions of the detail signal.
FREQUENCY: Change the detection band of sharp edges.
FLICKER: Set the function for flickering the detail signal to ON/OFF. (Setting the function to ON makes it easier to check the detail signal on a CRT screen.)
AREA: To limit the area where to display the detail signal.
ZOOM LINK: Set the VF detail level at the full WIDE position. (The VF detail level changes according to the zoom position. The default setting is 100% with no change at the full WIDE position. It becomes half at 50%.)

To use the color detail

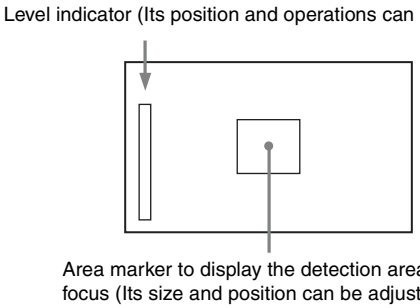
Set COLOR DETAIL to ON to convert the VF detail signal to a specified color. The display color can be selected in the column on the right of ON.
You can adjust the coloring with the menu items below:
PEAK COLOR: Turn the function ON/OFF to change the color where the detail signal is strongest.
CHROMA LEVEL: To reduce the chroma components of the video signal.

7 **Rotate the menu control knob to display the desired setting and push on the knob.**

8 **To finish the adjustments, set the DISPLAY/MENU switch to OFF to exit Menu mode.**

Displaying the focus assist indicators

The focus assist indicator function extracts the irregularities of a subject, converts the integrated values to a level indicator, and shows it on the monitor screen connected to the SDI2 connector (VF Setting).



The focus setting where the indicator shows the maximum level is the best focus setting. (The range of the indicator substantially changes depending on the picture elements or shooting environment. Adjust it with GAIN and OFFSET as necessary.)

1 Display the CONTENTS page of the OPERATION menu (referring to step 1 to 4 in "Adding a VF detail signal").

2 Rotate the menu control knob to align the pointer (➡) to <FOCUS ASSIST> and push on the menu control knob.
The <FOCUS ASSIST> page is displayed.

```
<FOCUS ASSIST>    ➡ 04 TOP

INDICATOR   : OFF
 MODE       : BOX   BOTTOM
 LEVEL      : 3     QUICK
 GAIN       : 50
 OFFSET     : 50

AREA MARKER:   ON
 SIZE       : MIDDLE
 POSITION   : CENTER
 POSITION H: 50
```

3 Rotate the menu control knob to align the pointer (➡) to the item to be set and push on the knob.

To use the level indicator

Setting INDICATOR to ON displays the level indicator on the monitor. You can set the display format with the menu items below.

MODE: Set the type and position of the indicator.

LEVEL: Set the density and the response speed of the indicator.

GAIN: Set the sensitivity of the indicator.[1)]

OFFSET: Set the offset of the focus detection value.[2)]

1) Normally, the sensitivity of the indicator is automatically set to the optimum value in conjunction with the AREA MARKER SIZE set value. Use this setting when an optimum sensitivity value cannot be obtained, depending on the shooting environment.

2) Normally, the optimum offset is automatically set in conjunction with the AREA MARKER SIZE and MASTER GAIN set values. Use this setting when the optimum offset cannot be obtained, depending on the shooting environment.

To use the area marker

Setting AREA MARKER to ON displays the detection area of the focus as a marker on the monitor.

You can set the size and position of the detection area with the menu items below.

SIZE: The size of the detection area can be changed. (If the area size is too large, both the subject and the background are included in the area, making the indicator display easily deviate from the subject.)

POSITION: Roughly set the position of the detection area.

POSITION H: Finely adjust the position of the detection area in the horizontal directions.

POSITION V: Finely adjust the position of the detection area in the vertical directions.

4 Rotate the menu control knob to display the desired setting and push on the knob.

5 To finish the adjustments, set the DISPLAY/MENU switch to OFF to exit Menu mode.

Notes

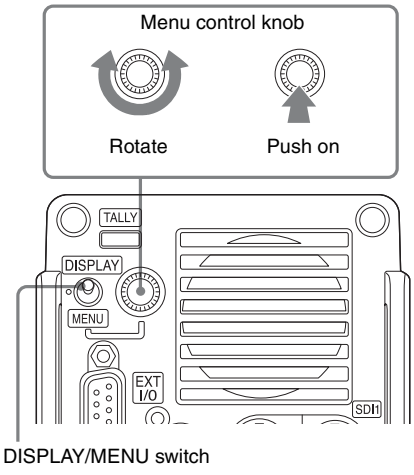
- The INDICATOR and effect area marker cannot be displayed at the same time. The one that was set to ON last takes priority.
- The AREA MARKER and aspect safety marker cannot be displayed at the same time. The one that was set to ON last takes priority.
- When displaying the focus assist indicators, check that the flange focal length has been precisely adjusted.

See "Adjusting the Flange Focal Length" (page 9) for the flange focal length.

Menus

The menus displayed on the monitor connected to the TEST signal output or SDI 2 connector enable various settings of the camera to be configured.
The following controls are used to operate the menus.
Turn the menu control knob on the rear panel to select menu items or values, and push on it to register (enter) the selection.

Rear



Operating the Menu

To display a menu page

Set the DISPLAY/MENU switch to MENU.
The menu page last accessed will be displayed. If it is the first time, the CONTENTS page of the USER menu will be displayed.

To display the TOP MENU screen

If you set the DISPLAY/MENU switch to MENU while holding the menu control knob pressed, "TOP" is displayed at the upper right corner of the screen.
Turn the menu control knob to move the pointer (➡) on the display to "TOP" and push on the knob. The TOP MENU screen is displayed, listing the available menus.

```
<TOP MENU>

➡USER
 USER MENU CUSTOMIZE
 ALL
 ·OPERATION
 ·PAINT
 ·MAINTENANCE
 ·FILE
 ·DIAGNOSIS
```

Menu	Purpose
USER	This menu can include menu pages selected from among the OPERATION, PAINT, MAINTENANCE, FILE, and DIAGNOSIS menus, for convenience (see the table on page 18 for the default configuration). Changing, adding, and deleting pages can be performed with the USER MENU CUSTOMIZE menu.
USER MENU CUSTOMIZE	This menu allows you to edit the USER menu. *For details, see "Editing the USER Menu" (page 17).*
ALL	This menu permits you to control all items of the OPERATION menu, PAINT menu, MAINTENANCE menu, FILE menu, and DIAGNOSIS menu as a single menu.
OPERATION *(page 20)*	This menu contains items for camera operators to operate the camera. It mainly permits switch settings.
PAINT *(page 22)*	This menu contains items for making detailed image adjustments while using a waveform monitor to monitor the waveforms output from the camera. Support of a video engineer is usually required to use this menu. Although you can also use an external control device to set the items on this menu, the menu is effective when using the camera by itself outdoors.
MAINTENANCE *(page 25)*	This menu contains items for performing camera maintenance operations, such as changing the system or setting infrequently used "paint" items.
FILE *(page 28)*	This menu is for performing file operations, such as writing or clearing the reference file.
DIAGNOSIS *(page 30)*	This menu enables you to confirm the self-diagnostic information.

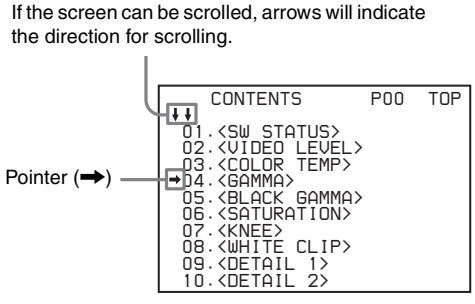
To select a menu on the TOP MENU screen

Rotate the menu control knob to align the pointer (➡) with the desired menu indication then push on the knob.
The CONTENTS page (page No. 00) or the last accessed page of the selected menu is displayed.

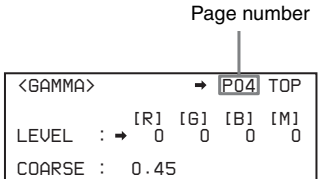
Selecting the Page

To select a page from a CONTENTS page

Rotate the menu control knob to align the pointer (➡) with the desired page indication then push on the menu control knob.

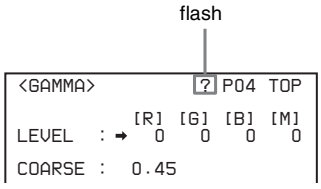


The selected page is displayed.



To change the displayed page

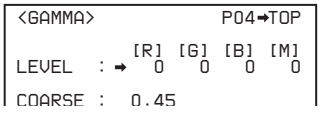
1 **Check that the pointer (➡) is located at the left of the page number then push on the menu control knob.**
The pointer (➡) changes to a flashing question mark.



2 **Rotate the menu control knob to flip through the pages, and push on the knob when the desired page is displayed.**
The question mark will change back to the pointer (➡), and operations with the displayed page are enabled.

To return to the TOP MENU screen

Align the pointer (➡) with "TOP" at the top right of the menu page then push on the menu control knob.



Setting the Menu Items

If a question mark is flashing at the left of the page number, push on the menu control knob to change it to the pointer (➡). Operation on the displayed page is enabled.

1 **Align the pointer (➡) with the desired item, then push on the menu control knob.**
The pointer (➡) changes to a flashing question mark.

2 **Rotate the menu control knob to change the setting value.**
When the knob is rotated quickly, the values will change quickly; when rotated slowly, the values will change slowly.

To interrupt settings

Set the DISPLAY/MENU switch to OFF to turn off the menu screen display.
The setting operation can be restarted by setting the DISPLAY/MENU switch back to MENU.

3 **Push on the menu control knob.**
The question mark will change back to the pointer (➡), and the new setting will be registered.

4 **To change other setting items on the same menu page, repeat steps 1 through 3.**

To specify a character string

When you press the menu control knob with the pointer (➡) pointing to an item for which a character string, such as a file ID, is to be specified, a cursor and the list of selectable characters are displayed.
The displayed cursor can be moved by rotating the menu control knob.

1 **Set the cursor to the position where you wish enter a character, then push on the menu control knob.**
Another cursor appears on the character list.

2 **Set the cursor to the character to be entered and push on the menu control knob.**
Repeat steps **1** and **2**.

- By selecting INS on the line below the character list, you can enter a space at the cursor position.
- Selecting DEL deletes the character at the cursor position.
- You can return to step **1** without changing the character by selecting RET.
- If you enter the permitted maximum number of characters (up to the stop mark at the right end of the line), the cursor moves to ESC on the line below the character list.

3 **Select END and push on the menu control knob.**
The new string you have set is registered.

To reset a changed value

Select ESC and push on the menu control knob.

Restoring a setting to the default setting

When an item is selected and ➡ is displayed, pressing and holding the menu control knob for 3 seconds restores the setting value to the state in the reference file. If 10 SEC CLEAR of the FILE CLEAR page on the FILE menu is set to ON, pressing the control knob for another 10 seconds restores the reference file value of the selected item to the default state.

To end menu operations

Set the DISPLAY/MENU switch to OFF.

Editing the USER Menu

You can select desired pages and items from the OPERATION, PAINT, MAINTENANCE, FILE, and DIAGNOSIS menus and register them to the USER menu.
If you specify pages or items frequently used for the USER menu, you can easily call and use them.
The following pages are included on the factory-set USER menu:

Menu page title	USER menu No.	Source menu/ page No.	
<VF OUT>	U01	OPERATION	07
<VF DETAIL>	U02	OPERATION	03
<FOCUS ASSIST>	U03	OPERATION	04
<VF DISPLAY>	U04	OPERATION	01
<VF MARKER>	U05	OPERATION	02
<CURSOR>	U06	OPERATION	06
<ZEBRA>	U07	OPERATION	05
<OUTPUT FORMAT>	U08	MAINTENANCE	M08
<SDI OUT>	U09	MAINTENANCE	M10
<TRUNK>	U10	MAINTENANCE	M11
<ROM VERSION>	U11	DIAGNOSIS	D03

For the items on each page, see "OPERATION Menu" (page 20), "MAINTENANCE Menu" (page 25), or "DIAGNOSIS Menu" (page 30).

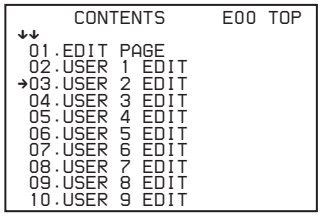
The USER MENU CUSTOMIZE menu allows you to configure the USER menu as follows:
- Creating a new menu page and selecting and adding (registering) items that you use very frequently from multiple menu pages.
- Deleting (unregistering) added items.
- Changing the order of added items.
- Adding (registering) a menu page (new page you create or existing menu page) to the USER menu.
- Deleting (unregistering) a page from the USER menu.
- Changing the order of pages of the USER menu.

Editing at the item level

The USER MENU CUSTOMIZE menu allows you to create a new page for the USER menu and add any item.
Initially, the EDIT page of the USER MENU CUSTOMIZE already contains items but the USER 1 EDIT to USER 19 EDIT pages are blank. Up to 10 items can be selected and registered to these pages from different menu pages.

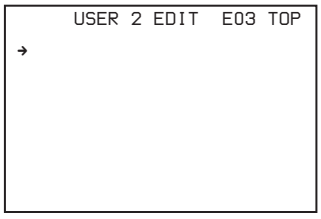
To add items to a page

1 **Select USER MENU CUSTOMIZE on the TOP MENU screen (see page 16).**
If this is the first time the USER MENU CUSTOMIZE menu has been displayed, the CONTENTS page of the menu appears.

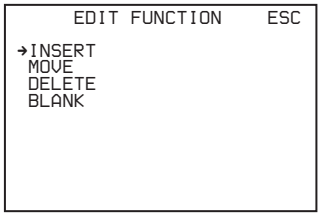


If the USER MENU CUSTOMIZE menu has been used before, the page last accessed appears.

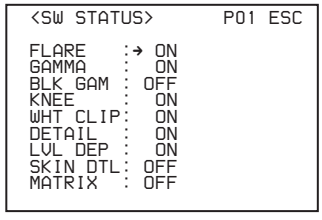
2 **If the CONTENTS page is displayed, turn the menu control knob to move the pointer (➡) to any of USER 1 EDIT to USER 19 EDIT then push on the menu control knob to display the page.**
If a different page is displayed, turn the menu control knob until the desired page appears then push on the menu control knob to select the page.
Example: When you select the USER 2 EDIT page



3 **Move the pointer (➡) to the item to be added (this operation is unnecessary if no item exists on the page, as shown in the figure for the previous step) then push on the menu control knob.**
The EDIT FUNCTION screen appears.



4 **Move the pointer (➡) to INSERT and push on the menu control knob.**
The page with the last item added appears.



5 **Add the items.**

① Turn the menu control knob until the page that has the desired items appears, then push on the menu control knob.

② Turn the menu control knob to move the pointer (➡) to the desired item, then push on the menu control knob.

The USER 2 EDIT page appears again, displaying the newly added item.

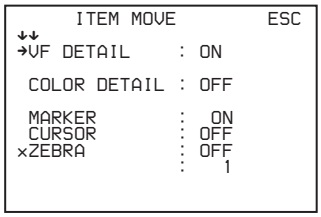
6 **Add the remaining items by repeating steps 3 to 5.**
You can add up to 10 items on one page.

To change the order of items on a page

1 **Move the pointer (➡) to the item to be moved then push on the menu control knob.**
The EDIT FUNCTION screen appears.

2 **Select MOVE then push on the menu control knob.**
The previously displayed page appears again.

3 **Move the pointer (➡) to the position where you wish to move the page then push on the menu control knob.**



The item selected in step **1** moves to the position that you selected in step **3**.
In the above example, ZEBRA is moved to the top, and the other items are moved down one line.

To delete items from a page

1 **Move the pointer (➡) to the item to be deleted then push on the menu control knob.**
The EDIT FUNCTION screen appears.

2 **Select DELETE and push on the menu control knob.**
The previously displayed page appears again, and the message "DELETE OK? YES➡NO" appears.

3 **To delete, turn the menu control knob to move the pointer (➡) to YES and push on the menu control knob.**

To insert a blank line

1 **Move the pointer (➡) to the item above which you wish to insert a blank line.**
The EDIT FUNCTION screen appears.

2 **Select BLANK then push on the menu control knob.**
The previously displayed page appears again, and a blank line is inserted above the specified item.

Note

You cannot insert a blank line on a page where 10 items have already been registered.

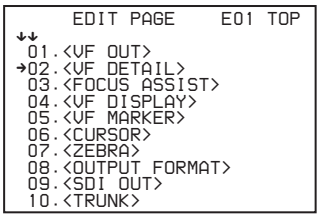
Editing at the page level

EDIT PAGE of the USER MENU CUSTOMIZE menu allows you add, delete, and sort new pages and existing pages.

To add a page

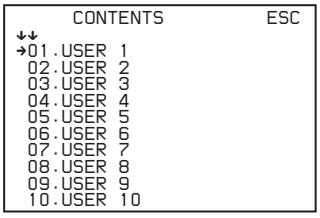
1 **Select USER MENU CUSTOMIZE on the TOP MENU screen.**
If this is the first time the USER MENU CUSTOMIZE menu has been displayed, the CONTENTS page of the menu appears.
If the USER MENU CUSTOMIZE menu has been used before, the page last accessed appears.

2 **If the CONTENTS page is displayed, turn the menu control knob to move the pointer (➡) to EDIT PAGE then push on the menu control knob to display the EDIT PAGE screen. If a different page is displayed, turn the menu control knob until the EDIT PAGE screen appears then push on the menu control knob to select the page.**



3 **Move the pointer (➡) to the position where you wish to add the page then push on the menu control knob.**
The EDIT FUNCTION screen appears.

4 **Select INSERT then push on the menu control knob.**
The selection screen appears.



5 **Move the pointer (➡) to the desired page then push on the menu control knob.**
This adds the number and name of the selected page above the item selected in step **3**.

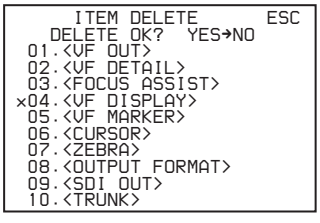
To cancel addition of a page

Before pushing the menu control knob in step **5**, turn the menu control knob to move the pointer (➡) to ESC at the top right of the screen then push on the menu control knob.
The EDIT PAGE screen appears again.

To delete a page

1 **On the EDIT PAGE screen of the USER MENU CUSTOMIZE menu, move the pointer (➡) to the page to be deleted and push on the menu control knob.**
The EDIT FUNCTION screen appears.

2 **Select DELETE and push on the menu control knob.**
The previously displayed page appears again, and the message "DELETE OK? YES➡NO" appears.



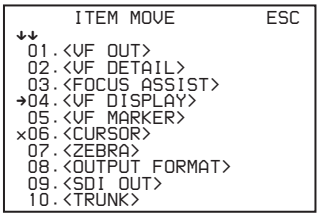
3 **To delete, turn the menu control knob to move the pointer (➡) to YES and push on the menu control knob.**

To change the order of pages

1 **Display the EDIT PAGE screen of the USER MENU CUSTOMIZE menu. Turn the menu control knob to move the pointer (➡) to the page that you wish to move.**
The EDIT FUNCTION screen appears.

2 **Select MOVE then push on the menu control knob.**
The EDIT PAGE screen appears again.

3 **Move the pointer (➡) to the position where you wish to move the page then push on the menu control knob.**



The item selected in step **1** moves to the position that you selected in step **3**. In the above example, <CURSOR> moves to 04, and <VF DISPLAY> and the following pages move down one line.

OPERATION Menu

Note

These remarks are common for all the following menu tables.
ON, **OFF**, **0**, ... , in the **Settings columns:** Default settings
Page No. nn (Unn): For the pages that have been registered on the USER menu at the factory, the USER menu page numbers are indicated in parenthesis.
Execute by ENTER: Execute by pushing on the menu control knob.

Page title Page No.	Item	Settings
<VF DISPLAY> 01 (U04)	EX	**ON**, OFF
	ZOOM	ON, **OFF**
	DISP	**LEFT**, RIGT
	FOCUS Valid only when a serial lens is used	ON, **OFF**
	ND	**ON**, OFF
	CC	**ON**, OFF
	5600K (246 ft)	**ON**, OFF
	IRIS	**ON**, OFF
	WHITE	ON, **OFF**
	D.EXT	ON, **OFF**
	GAIN	**ON**, OFF
	SHUTTER	**ON**, OFF
	BATT	ON, **OFF**
	RETURN	**ON**, OFF
	MESSAG	**ALL**, AT, WRN, OFF ALL: To display all messages WRN: To display warning messages and higher AT: To display Auto Setup information and higher

Page title Page No.	Item	Settings
<VF MARKER> 02(U05)	MARKER	**ON**, OFF
		WHITE, BLACK, DOT
	LEVEL	0%, 10%, 20%, 30%, **40%**, 50%, 60% 70%, 80%, 90%, 100%
	CENTER	ON, **OFF**
		1, 2, 3, 4 1: Entire cross 2: Entire cross with a hole 3: Center 4: Center with a hole
	SAFETY ZONE	ON, **OFF**
		80.0, **90.0**, 92.5, 95.0%
	EFFECT	ON, **OFF**, (FOCUS) (FOCUS): Displayed when INDICATOR of <FOCUS ASSIST> is ON.
	ASPECT	ON, **OFF**
		16:9, 15:9, 14:9, 13:9, **4:3**
	MASK	ON, **OFF**
		0 to 15 **12** Set the level to darken outside the aspect area.
	SAFETY For the safety marker in Aspect mode	ON, **OFF**, (AREA) (AREA): Displayed when AREA MARKER of <FOCUS ASSIST> is ON.
		80.0, **90.0**, 92.5, 95.0%
<VF DETAIL> 03 (U02)	VF DETAIL	**ON**, OFF
		0 to 100% **8%**
	CRISP	–99 to +99 **0**
	FREQUENCY	**9M**, 14M, 18M
	FLICKER	ON, **OFF**
	AREA	**100%**, 70%, 60%, 50%, 40%
	ZOOM LINK	**ON**, OFF
		0%, 25%, 50%, 75%, **100%**
	COLOR DETAIL	ON, **OFF**
		BLUE, RED, YELLOW
	PEAK COLOR	ON, **OFF**
	CHROMA LEVEL	100%, 50%, **25%**, 0%
	RETURN DISABLE	ON, **OFF**

Page title Page No.	Item	Settings
<FOCUS ASSIST> 04 (U03)	INDICATOR	ON, **OFF**, (EFFECT) (EFFECT): Displayed when EFFECT of <VF MARKER> is ON.
	MODE	**BOX**, B&W, COL
		BTM, LEFT, TOP, RIGHT
	LEVEL	0%, 10%, 20%, 30%, **40%**, 50%, 60%, 70%, 80%, 90%, 100%
		QUICK, SMOOTH
	GAIN	0 to 99 **50**
	OFFSET	0 to 99 **50**
	AREA MARKER	ON, **OFF**, (ASPECT) (ASPECT): Displayed when ASPECT SAFETY of <VF MARKER> is ON.
	SIZE	SMALL, **MIDDLE**, LARGE
	POSITION	LEFT, **CENTER**, RIGHT
	POSITION H	0 to 99 **50**
	POSITION V	0 to 99 **50**
<ZEBRA> 05 (U07)	ZEBRA	ON, **OFF**
		1, 2, 1&2
	ZEBRA1 LEVEL	50 to 109% **70**
	WIDTH	0 to 30% **10**
	ZEBRA2	50 to 109% **100**

Page title Page No.	Item	Settings
<CURSOR> 06 (U06)	CURSOR	ON, **OFF**
		WHITE, BLACK, DOT
	LEVEL	0%, 10%, 20%, 30%, **40%**, 50%, 60% 70%, 80%, 90%, 100%
	BOX/CROSS	**BOX**, CROSS
	H POSITION	0 to 99 **50**
	V POSITION	0 to 99 **50**
	WIDTH	0 to 99 **50**
	HEIGHT	0 to 99 **50**
	BOX MEMORY 1	ON, **OFF**
	H POSI	0 to 99 **50**
	V POSI	0 to 99 **50**
	WIDTH	0 to 99 **50**
	HEIGHT	0 to 99 **50**
	BOX MEMORY 2	ON, **OFF**
	H POSI	0 to 99 **50**
	V POSI	0 to 99 **50**
	WIDTH	0 to 99 **50**
	HEIGHT	0 to 99 **50**
	BOX MEMORY 3	ON, **OFF**
	H POSI	0 to 99 **50**
	V POSI	0 to 99 **50**
	WIDTH	0 to 99 **50**
	HEIGHT	0 to 99 **50**
<VF OUT> 07 (U01)	VF OUT	**COLOR**, Y, R, G, B
	RET MIX VF	ON, **OFF**
	MIX DIRECTION	MAIN, **RET**
	MIX VF MODE	**Y-MIX**, WIRE (W), WIRE (B)
	MIX VF LEVEL	0 to 80% **80%**
	CHARACTER LEVEL	1 to 5 **4**
	PinP	ON, **OFF**
	POSITION	**1**, 2, 3, 4 1: Upper left 2: Upper right 3: Lower right 4: Lower left
	SIZE	**1/3**, 1/4
	MODE	1 to 4 **1**

Page title Page No.	Item	Settings
<TLCS> 08	MODE	BACKLIGHT, **STANDARD**, SPOTLIGHT
	SPEED	–99 to +99 **0**
	LEVEL	–99 to +99 **0**
	AGC	ON, **OFF**
	LIMIT	3, 6, **9**, 12, 15, 18, 21, 24, 30, 36, 42, 48
	CHANGE POINT	F5.6, **F4.0**, F2.8
	AUTO SHUTTER	ON, **OFF**
	LIMIT	1/100, 1/150, 1/200, **1/250**, 1/500, 1/1000, 1/2000
	CHANGE POINT	F5.6, F8.0, F11, **F16**
<OPERATOR FILE> 09 *See FILE menu F01.*	READ (USB→CAM)	Execute by ENTER.
	WRITE (CAM→USB)	Execute by ENTER.
	PRESET	Execute by ENTER.
	FILE ID	Max. 14 characters
	CAM CODE	Display only
	DATE	Display only

PAINT Menu

Page title Page No.	Item	Settings
<SW STATUS> P01	FLARE	**ON**, OFF
	GAMMA	**ON**, OFF
	BLK GAM	ON, **OFF**
	KNEE	**ON**, OFF
	WHT CLIP	**ON**, OFF
	DETAIL	**ON**, OFF
	LVL DEP	**ON**, OFF
	SKIN DTL	ON, **OFF**
	MATRIX	ON, **OFF**
<VIDEO LEVEL> P02	WHITE	R/G/B: –99 to 99 **0**
	BLACK	R/G/B/M: –99 to 99 **0**
	FLARE	R/G/B/M: –99 to 99 **0**
	GAMMA	R/G/B/M: –99 to 99 **0**
	V MOD	R/G/B/M: –99 to 99 **0**
	FLARE	**ON**, OFF
	V MOD	**ON**, OFF
	TEST	**OFF**, SAW, 10STEP

Page title Page No.	Item	Settings
<COLOR TEMP> P03	WHITE	R/G/B: –99 to 99 **0**
	AUTO WHITE BALANCE	Execute by ENTER.
	COLOR TEMP	0K to 65535K **3200K**
	BALANCE	–99 to 99 **0**
	ATW	ON, **OFF**
	SPEED	1 to 5 **4**
	MASTER	–3.0dB to 12.0dB **0.0dB**
<GAMMA> P04	LEVEL	R/G/B/M: –99 to 99 **0**
	COARSE	0.35 to **0.45** to 0.90 (0.05 steps)
	TABLE	**STANDARD**, HYPER
		With STANDARD selected: 1, 2, 3, 4, 5, 6, 7 (Default setting varies with region of use.) 1: equivalent to a camcorder 2: 4.5-times gain 3: 3.5-times gain 4: equivalent to SMPTE-240M 5: equivalent to ITU-R709 6: 5.0-times gain 7: 5.0-times gain - 709 With HYPER selected: 1, 2, 3, **4** 1: 325% to 100% 2: 460% to 100% 3: 325% to 109% 4: 460% to 109% (When you change the TABLE setting, noise may be generated. This is not malfunction.)
	GAMMA	**ON**, OFF
	TEST	**OFF**, SAW, 10 STEP
<BLACK GAMMA> P05	LEVEL	R/G/B/M: –99 to 99 **0**
	RANGE	LOW, L.MID, H.MID, **HIGH**
		ON, **OFF**
	TEST	**OFF**, SAW, 10 STEP
<SATURATION> P06	SATURATION	–99 to 99 **0**
		ON, **OFF**
	LOW KEY SAT	–99 to 99 **0**
	RANGE	LOW, L.MID, H.MID, **HIGH**
		ON, **OFF**
	TEST	**OFF**, SAW, 10 STEP

Page title Page No.	Item	Settings
<KNEE> P07	K POINT	R/G/B/M: –99 to 99 **0**
	K SLOPE	R/G/B/M: –99 to 99 **0**
	KNEE	**ON**, OFF
	KNEE MAX	ON, **OFF**
	KNEE SAT	–99 to 99 **0**
		ON, **OFF**
	AUTO KNEE	**OFF**, AUTO
	POINT LIMIT	–99 to 99 **0**
	SLOPE	–99 to 99 **0**
	ABS	When highlighted (ABS mode): K POINT R/G/B, K SLOPE R/G/B, and POINT LIMIT are displayed in absolute values.
<WHITE CLIP> P08	W CLIP	–99 to 99 **0**
		ON, OFF
	ABS	When highlighted (ABS mode): W CLIP displayed in absolute values.
<DETAIL 1> P09	DETAIL	**ON**, OFF
	LEVEL	–99 to 99 **0**
	LIMITER [M]	–99 to 99 **0**
	LIMITER [WHT]	–99 to 99 **0**
	LIMITER [BLK]	–99 to 99 **0**
	CRISP	–99 to 99 **0**
	LEVEL DEPEND	–99 to 99 **0**
		ON, OFF
	ABS	When highlighted (ABS mode): LEVEL, LIMITER WHT, LIMITER BLK, CRISP, and LVL DEP are displayed in absolute values.
<DETAIL 2> P10	H/V RATIO	–99 to 99 **0**
	FREQ	–99 to 99 **0**
	MIX RATIO	–99 to 99 **0**
	KNEE APT	–99 to 99 **0**
		ON, **OFF**
	DTL H/V MODE	**H/V**, V only
	ABS	When highlighted (ABS mode): H/V RATIO, FREQ, MIX RATIO, and KNEE APERTURE are displayed in absolute values.
<SD DETAIL> P11	SD DETAIL	**ON**, OFF
	LEVEL	–99 to 99 **0**
	CRISPENING	–99 to 99 **0**
	LEVEL DEP END	–99 to 99 **0**
	H/V RATIO	–99 to 99 **0**
	FREQ	–99 to 99 **0**
<SD CROSS COLOR> P12	CRS COL REDUCE	ON, **OFF**
	LEVEL	–99 to 99 **0**

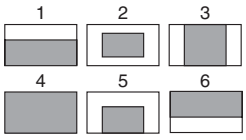
Page title Page No.	Item	Settings	
<SKIN DETAIL> P13	SKIN DTL	ON, **OFF**	
	SKIN GATE	ON, **OFF**, (MAT) (MAT): Displayed when GATE of <MULTI MATRIX> is ON.	
	ABS	When highlighted (ABS mode): LEVEL is displayed in an absolute value.	
	ZOOM LINK	ON, **OFF**	
	TELE	0 to **99**	
	WIDE	**0** to 99	
	CH SW	1: (ON), 2/3: ON, **OFF**	Set for each channel (always ON for Channel 1) When ABS, only LEVEL is displayed as an absolute value.
	HUE	1/2/3: Execute by ENTER.	
	PHASE	1/2/3: **0** to 359	
	WIDTH	1/2/3: 0 to 90 **29**	
	SAT	1/2/3: –99 to 99, **–89**	
	LEVEL	1/2/3: –99 to 99 **0**	
<USER MATRIX> P14	R-G	–99 to 99 **0**	
	R-B	–99 to 99 **0**	
	G-R	–99 to 99 **0**	
	G-B	–99 to 99 **0**	
	B-R	–99 to 99 **0**	
	B-G	–99 to 99 **0**	
	MATRIX	ON, **OFF**	
	PRESET	**ON**, OFF, - - - - : When MATRIX OFF (cannot be changed)	
		SMPTE-240M, **ITU-709**, SMPTE-WIDE, NTSC, EBU, ITU-601, - - - - : When MATRIX OFF (cannot be changed)	
	USER	ON, **OFF**, - - - - : When MATRIX OFF (cannot be changed)	
	MULTI	ON, **OFF**, - - - - : When MATRIX OFF (cannot be changed)	
	ADAPTIVE MATRIX	ON, **OFF**	
	LEVEL	0, 1, 2, **3**, 4, 5, 6, 7	

Page title Page No.	Item	Settings
<MULTI MATRIX> P15	PHASE Select an axis (angle) for which the multimatrix adjustment to be made.	**0**, 23, 45, 68, 90, 113, 135, 158, 180, 203, 225, 248, 270, 293, 315, 338
	HUE Independently set for 16 axes.	–99 to 99 **0**
	SAT Independently set for 16 axes.	–99 to 99 **0**
	ALL CLEAR	Execute by ENTER. The HUE and SAT values for all PHASE settings are cleared.
	GATE	ON, **OFF**, (1 to 3) (1 to 3): Displayed when SKIN GATE in <SKIN DETAIL> is set to 1 to 3
	MATRIX	ON, **OFF**
	PRESET	**ON**, OFF, - - - - : When MATRIX OFF (cannot be changed)
		SMPTE-240M, **ITU-709**, SMPTE-WIDE, NTSC, EBU, ITU-601, - - - - : When MATRIX OFF (cannot be changed)
	USER	ON, **OFF**, - - - - : When MATRIX OFF (cannot be changed)
	MULTI	ON, **OFF**, - - - - : When MATRIX OFF (cannot be changed)

Page title Page No.	Item	Settings
<SHUTTER> P16	SHUTTER	ON, **OFF**
		When 59.94i/59.94P: **1/100**, 1/125, 1/250, 1/500, 1/1000, 1/2000 (sec) When 50i/50P: 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000 (sec) When 29.97PsF: 1/40, 1/60, 1/100, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/2000 (sec) When 25PsF: 1/33, 1/50, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 (sec)
	ECS FREQ	59.94i: **60.00** to 4300 Hz 50i: 50.00 to 4700 Hz 59.94P: 59.96 to 4600 Hz 60P: 60.02 to 4600 Hz 50P: 50.03 to 4600 Hz 29.97PsF: 30.00 to 2700 Hz 25PsF: 25.00 to 2300 Hz
	SLOW SHUTTER	ON, **OFF**
	SLS FRAME	**2F**, 3F, 4F, 5F, 6F, 7F, 8F, 16F, 32F, 64F (16F or higher can be selected when SLS EXTEND is ON on the <OTHERS> page of the MAINTENANCE menu)
<NOISE SUPPRESSION > P17	SUPPRESSION	ON, **OFF**
<SCENE FILE> P18 *See "FILE menu" F02.*	1	To store and read scene files (paint data).
	2	
	3	
	4	
	5	
	STORE	
	STANDARD	Execute by ENTER.
	READ (USB→CAM)	Execute by ENTER.
	WRITE (CAM→USB)	Execute by ENTER.
	FILE ID	Max.16 characters
	CAM CODE	Display only
	DATE	Display only

MAINTENANCE Menu

Page title Page No.	Item	Settings
<AUTO SETUP> M01	AUTO BLACK	Execute by ENTER.
	AUTO WHITE	Execute by ENTER.
	AUTO LEVEL	Execute by ENTER.
	AUTO WHITE SHADING	Execute by ENTER.
	AUTO BLACK SHADING	Execute by ENTER.
	TEST	**OFF**, SAW, 10STEP
<WHITE SHADING> M02	V SAW	R/G/B: –99 to 99 **0**
	V PARA	R/G/B: –99 to 99 **0**
	H SAW	R/G/B: –99 to 99 **0**
	H PARA	R/G/B: –99 to 99 **0**
	WHITE	R/G/B: –99 to 99 **0**
	AUTO WHITE SHADING	Execute by ENTER.
	WHITE SHAD MODE	RGB, **RB**
<BLACK SHADING> M03	V SAW	R/G/B: –99 to 99 **0**
	V PARA	R/G/B: –99 to 99 **0**
	H SAW	R/G/B: –99 to 99 **0**
	H PARA	R/G/B: –99 to 99 **0**
	BLK SET	R/G/B: –99 to 99 **0**
	BLACK	R/G/B/M: –99 to 99 **0**
	MASTER GAIN	–3, **0**, 3, 6, 9, 12, 18, 24, 30, 36, 42, 48 dB (18 dB or higher can be selected when GAIN EXTEND is ON on the <OTHERS> page of the MAINTENANCE menu)
	AUTO BLACK SHADING	Execute by ENTER.
	2D BLACK SHAD	**ON**, OFF
	BLACK SHADE CLEAR	Execute by ENTER.

Page title Page No.	Item	Settings
<AUTO IRIS> M04	AUTO IRIS	**OFF**, ON (ON): Displayed in standalone operation
	WINDOW	**1**, 2, 3, 4, 5, 6 Select the auto iris windows:  The shaded parts indicate the area where light detection occurs.
	OVERRIDE	–99 to 99, **0** Set the override to temporarily change the reference value for brightness of the automatic iris level in the range of ±2 steps. –99: Two steps to fully closed iris +99F Two steps to fully open iris - - : OFF The setting returns to " - - " when the power is turned off.
	IRIS LEVEL	–99 to 99 **0** ±4 steps
	APL RATIO	–99 to 99 **65**
	IRIS GAIN	–99 to 99 **0**
	IRIS CLOSE	ON, **OFF**
<LENS> M05	F NO. DISP	**CONTROL**, RETURN Select the iris indication on the panel when AUTO IRIS is off CONTROL: To display the value from the camera RETURN: To display the value returned from the lens (When AUTO IRIS is on, the value returned from the lens is always displayed.)
	ALAC	OFF, **AUTO** With AUTO selected, the status is displayed at the right. (ACTIVE): Compensation in progress (STOP): Compensation is turned off for a non-applicable lens
	AF DISPLAY	ON, **OFF**

Page title Page No.	Item		Settings	
<CIS COMP> M06	FLICKER REDUCE			
		MODE	**AUTO**, ON, OFF	
		FREQ	60Hz, 50Hz (Default setting varies with region of use.)	
<TALLY> M07	FRONT TALLY		ON, **OFF**	
		BRIGHTNESS	0 to 100 **50**	
	REAR TALLY		**ON**, OFF	
		CCU CALL	**ON**, OFF	
		BATTERY ALARM	**ON**, OFF, (OFF) (OFF): Displayed when REAR TALLY is OFF	
<OUTPUT FORMAT> M08 (U08)	CURRENT		Displays the current format. (When OUTPUT FORMAT is changed, turn off the camera power. Operation will be performed in the selected mode the next time the power is turned on.)	
<GL/TEST OUT> M09	REFERENCE		Display only	
	SETTING		**VBS OUT**, SD-SYNC OUT, HD-SYNC OUT, GENLOCK IN (in standalone operation only), PROMPTER OUT (only when CCU is connected)	
		VBS-OUT		Displayed when SETTING is VBS OUT (SETUP is displayed only when the region is set to NTSC areas)
		GAIN	–99 to 99 **0**	
		CHROMA	–99 to 99 **0**	
		SETUP	ON, **OFF**	
		DOWN CONVERTER		
		OUTPUT	**MAIN**, RET, VF	
		ASPECT	**SQ**, EC	
		SYNC-OUT		Displayed when SETTING is SD-SYNC or HD-SYNC
		V-PHASE	–999 to 999 **0**	
		H-PHASE	–999 to 999 **0**	
		GENLOCK	DISABLE, **ENABLE**	Displayed when SETTING is GENLOCK
		STATUS	Display only	
		FORMAT		
		PHASE		
		V	–1024 to 1023 **0**	
		H	–1700 to 1700 **0**	

Page title Page No.	Item	Settings
<SDI OUT> M10 (U09)	SDI1-OUT	**MAIN**, SD-SDI
	SDI2-OUT	VF, **MAIN**, RET, SD-SDI
	EMB AUDIO	**OFF**, MIC, PGM
	DOWN CONVERTER	Displayed when OUTPUT is SD-SDI
	SELECT	**MAIN**, VF, RET, (MAIN) Fixed to (MAIN) when SDI1-OUT is SD-SDI.
	ASPECT	**SQ**, EC
<TRUNK> M11 (U10)	TRUNK	**ON**, OFF
<DATE> M12	DATE/TIME	31 to 00, 12 to 01, 2099 to 2000, 23 to 00, 59 to 00
	FILE TIMESTAMP FORMAT	1 Y/Mn/D, 2 Mn/D, 3 D/M/Y, 4 D/M, **5 M/D/Y**, 6 M/D Y: Year Mn: Month (numeric) M: Month (character string) D: Day
<BATTERY ALARM> M13	BEFORE END	**11.5 V** to 17.0 V
	END	**11.0 V** to 11.5 V
	BATTERY ALARM	OFF, **ON**, (OFF) (OFF): Displayed when REAR TALLY is OFF on the <TALLY> page (battery alarm function operating, rear tally R/G-TALLY disabled)
<FILTER> M14	ND FILTER	**1**, 2, 3, 4
	ECC FILTER	**A**, B, C, D, (DISABLE) C and D are displayed only when they are enabled (DISABLE): Displayed when ECC FILTER is disabled
	ELECTRICAL CC	DISABLE, **ENABLE**
	ELECTRICAL CC <A>	**3200K**, 4300K, 5600K, 6300K
	ELECTRICAL CC <B>	3200K, **4300K**, 5600K, 6300K
	ELECTRICAL CC <C>	3200K, 4300K, **5600K**, 6300K,-----
	ELECTRICAL CC <D>	3200K, 4300K, 5600K, **6300K**, -----

Page title Page No.	Item	Settings
<TCP/IP SETTING> M15	IP ADDRESS	**0.0.0.0** to 255.255.255.255
	SUBNET MASK	**0.0.0.0** to 255.255.255.255
	DEFAULT GATEWAY	**0.0.0.0** to 255.255.255.255
	SET	Execute by ENTER. When "SET OK?" appears, execute by ENTER again to confirm the changes in the page
<LAN SETTINGS> M16	CONNECTION SPEED	10M, 100M Set automatically (non-selectable)
	DUPLEX MODE	HALF, FULL Set automatically (non-selectable)
<CNS SETTINGS> M17	CNS MODE Select the connection system of the network	**LEGACY**, BRIDGE, PC CONTROL *See "CNS SETTINGS (MAINTENANCE menu)" (page 13)*
	CCU NO	The default setting is **0**. When PC CONTROL is selected for CNS MODE: 1 to 96
	TARGET IP ADDRESS	**0.0.0.0** to 255.255.255.255
	SET	Execute by ENTER. When "SET OK?" appears, execute by ENTER again to confirm the changes in the page
<NETWORK RESET> M18	NETWORK ALL RESET	Execute by ENTER. When "RESET OK?" appears, execute ENTER again to restore all settings of the MAINTENANCE menu items M15 to M17 to their default state.

Page title Page No.	Item	Settings
<EXT I/O> M19	PIN 4	**OFF,** R-TALLY OUT, G-TALLY OUT, TALLY OUT, R-TALLY IN, G-TALLY IN
	PIN 6	**OFF**, R-TALLY OUT, G-TALLY OUT, TALLY OUT, R-TALLY IN, G-TALLY IN
	PIN 7	**OFF**, R-TALLY OUT, G-TALLY OUT, TALLY OUT, R-TALLY IN, G-TALLY IN
	PIN 8	**OFF**, R-TALLY OUT, G-TALLY OUT, TALLY OUT, R-TALLY IN, G-TALLY IN, MIC (X) IN
	PIN 9	**OFF**, R-TALLY OUT, G-TALLY OUT, TALLY OUT, R-TALLY IN, G-TALLY IN, MIC (Y) IN
	GAIN	20dB, 30dB, 40dB, 50dB, **60dB** Only () is displayed when CCU is connected
	MIC +48V	ON, **OFF**
	TEST TONE	ON, **OFF**
<OTHERS> M20	FAN MODE	**AUTO1(NORM)**, AUTO2(SLOW), MIN, MAX AUTO1: Normal rotation AUTO2: Slow rotation
	CAM BARS	ON, **OFF**
	WHITE SETUP MODE	AWB, **A.LVL**
	D.EXT ENABLE	ENABLE, **DISABLE**
	D.EXT	OFF, ×2, ×4, **(OFF)** (OFF): Displayed when D.EXT ENABLE is set to DISABLE (not configurable)
	GAIN EXTEND	**OFF**, ON
	SLS EXTEND	**OFF**, ON

M16 to M19 appear only during standalone operation.

FILE Menu

Four types of files can be used for easy adjustments of the camera; Operator, Reference, Scene, and Lens.
You can store the items set with the OPERATION menu and customized USER menu in the Operator file.

Page title Page No.	Item	Settings
<OPERATOR FILE> F01	READ (USB→CAM)	Execute by ENTER. To read the operator file from a USB flash drive.
	WRITE (CAM→USB)	Execute by ENTER. To write the current settings of the operator file items to a USB flash drive.
	PRESET	Execute by ENTER. To set the operator file items to the preset values in internal memory.
	STORE PRESET FILE	Execute by ENTER. To store the current settings of the operator file items in the operator file in internal memory.
	FILE ID	Max. 14 characters Enter a comment for the operator file to be written to a USB flash drive. *See "To specify a character string" (page 17).*
	CAM CODE	Camera code Display only
	DATE	Date Display only

Page title Page No.	Item	Settings
<SCENE FILE> F05	1	To store and read scene files (paint data): When storing a file in camera memory, specify the number for STORE and execute by ENTER. When reading, only specify the number.
	2	
	3	
	4	
	5	
	STORE	
	STANDARD	Execute by ENTER. To read the standard paint data.
	READ (USB→CAM)	Execute by ENTER. To load five scene files from a USB flash drive to internal memory.
	WRITE (CAM→USB)	Execute by ENTER. To write five scene files in the camera's memory to a USB flash drive.
	FILE ID	Max. 14 characters Enter a comment for the scene files to be written to a USB flash drive. *See "To specify a character string" (page 17).*
	CAM CODE	Camera code Display only
	DATE	Date Display only

Page title Page No.	Item	Settings
<REFERENCE> F03	STORE FILE	Execute by ENTER. To store the current settings of the reference file items in the reference file in internal memory.
	STANDARD	Execute by ENTER. To read the standard values in the reference file in internal memory.
	ALL PRESET	Execute by ENTER. To resume the factory-preset reference file.
	READ (USB→CAM)	Execute by ENTER. To load a reference file from a USB flash drive.
	WRITE (CAM→USB)	Execute by ENTER. To write the current settings of the reference file items to a USB flash drive.
	FILE ID	Max. 14 characters Enter a comment for the reference file to be written to a USB flash drive. *See "To specify a character string" (page 17).*
	CAM CODE	Camera code Display only
	DATE	Date Display only
<LENS FILE> F04	STORE FILE	Execute by ENTER.
	No.	**1** to 17 1 to 16: When using a non-serial lens 1 to 17: When using a serial lens
	NAME	Lens file name Changeable only when using a non-serial lens
	F NO	F1.0 to F3.4 **F1.7**
	CENTER MARKER To set and store the center marker position	
	H POS	–20 to +20 **0** Increasing the value moves it to the right.
	V POS	–20 to +20 **0** Increasing the value moves it downwards.
	STORE	Execute by ENTER.

Page title Page No.	Item	Settings
<FILE CLEAR> F06	PRESET OPERATOR	Execute by ENTER.
	REFERENCE (ALL)	Execute by ENTER.
	10 SEC CLEAR	ON, **OFF** To activate/deactivate the function for clearing an item selected in a menu. *See "Restoring a setting to the default setting" (page 17).*

DIAGNOSIS Menu

This menu is only for viewing and no setting is made using this menu.

Page title Page No.	Item	Indication
<TRANSMISSION CONDITION> D01	OPTICAL LEVEL	
	CCU→CAM	GREEN, YELLOW, RED, NG, NO SIGNAL
	CAM→CCU	GREEN, YELLOW, RED, NG, NO SIGNAL
	DC INPUT LEVEL	GREEN, RED, YELLOW, NOT DETECT
<BOARD STATUS> D02	OHB	OK, NG
	DPR	OK, NG
	SY	OK, NG
<ROM VERSION> D03 (U11)	CAMERA APP	ROM name, date, and comment are displayed
	OS	Vx.xx date
	SY	Vx.xx
	DPR	Vx.xx
<NET STATUS 1> D04	NETWORK	OK, NG, - - - -: When not connected to a network device
	LINK CONDITION	(DOWN), (UP)
	CONNECTION SPEED	10M, 100M
	DUPLEX MODE	HALF, FULL
	MDI/MDIX	MDI, MDIX
	MAC ADDRESS	xx-xx-xx-xx-xx-xx
<NET STATUS 2> D05	IP ADDRESS	x.x.x.x
	SUBNET MASK	x.x.x.x
	DEFAULT GATEWAY	x.x.x.x
<SERIAL NO.> D06	MODEL	HXC-P70
	NO	Serial No.

Appendices

Precautions

Note on laser beams

Laser beams may damage the CMOS image sensors. If you shoot a scene that includes a laser beam, be careful not to let a laser beam become directed into the CMOS image sensors.

Do not subject to severe shocks

Damage to the case or internal components may result.

When finished using

Set the power switch to OFF.

Operation and storage environment

Store in a level place with air conditioning.
If the unit gets wet, make sure it is completely dry before storage.
Avoid use or storage in the following places:

- Extremely hot or cold places
- Places with high humidity
- Places with strong vibration
- Near strong magnetic fields
- In places where it receives much direct sunlight, or near heating equipment

If the unit is suddenly taken from a cold to a warm location, or if ambient temperature suddenly rises, moisture may form on the outer surface of the unit and/or inside of the unit. This is known as condensation. If condensation occurs, turn off the unit and wait until the condensation clears before operating the unit. Operating the unit while condensation is present may damage the unit.

The fan and battery are consumable parts that will need periodic replacement.
When operating at room temperature, a normal replacement cycle will be about 5 years.
However, this replacement cycle represents only a general guideline and does not imply that the life expectancy of these parts is guaranteed. For details on parts replacement, contact your dealer.

The life expectancy of the electrolytic capacitor is about 5 years under normal operating temperatures and normal usage (8 hours per day; 25 days per month). If usage exceeds the above normal usage frequency, the life expectancy may be reduced correspondingly.

Phenomena specific to CMOS image sensors

The following phenomena that may appear in images are specific to CMOS (Complementary Metal Oxide Semiconductor) image sensors. They do not indicate malfunctions.

White flecks

Although the CMOS image sensors are produced with high-precision technologies, fine white flecks may be generated on the screen in rare cases, caused by cosmic rays, etc. This is related to the principle of CMOS image sensors and is not a malfunction.

The white flecks especially tend to be seen in the following cases:
- when operating at a high environmental temperature
- when you have raised the master gain (sensitivity)

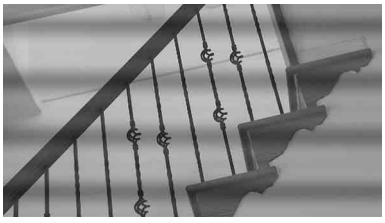
The problem may be alleviated by executing automatic black balance adjustment.

Aliasing

When fine patterns, stripes, or lines are shot, they may appear jagged or flicker.

Flicker

If recording is made under lighting produced by discharge tubes, such as fluorescent, sodium, or mercury-vapor lamps, the screen may flicker, colors may vary, or horizontal stripes may appear distorted.



In such cases, set the flicker-reduction function to AUTO mode *(see page 21)*.
If the frame rate selected for recording is close to the power-supply frequency, flicker may not be reduced sufficiently even if you activate the Flicker-Reduction function. In such cases, use the electronic shutter.

Focal plane

Owing to the characteristics of the pickup elements (CMOS image sensors) for reading video signals, subjects that quickly move across the screen may appear slightly skewed.

Flashband

The luminance at the top and bottom of the screen may change when shooting a flashlight beam or a light source that quickly flashes.

To prevent electromagnetic interference from portable communications devices

The use of portable telephones and other communications devices near this camera can result in malfunctions and interference with audio and video signals.
It is recommended that the portable communications devices near this camera be powered off.

SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND RESULTING FROM A FAILURE TO IMPLEMENT PROPER SECURITY MEASURES ON TRANSMISSION DEVICES, UNAVOIDABLE DATA LEAKS RESULTING FROM TRANSMISSION SPECIFICATIONS, OR SECURITY PROBLEMS OF ANY KIND.

Depending on the operating environment, unauthorized third parties on the network may be able to access the unit. When connecting the unit to the network, be sure to confirm that the network is protected securely.

Error Messages

If a problem occurs during operation, a warning message is displayed.

Note

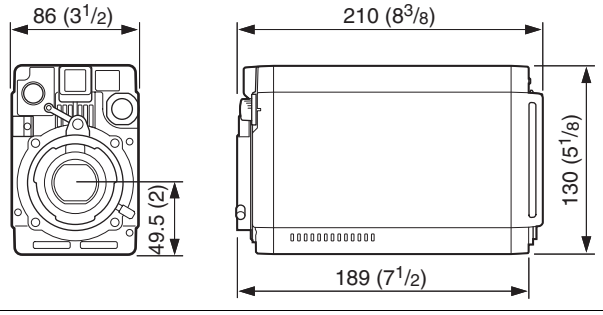
To display a message, set the DISPLAY/MENU switch to DISPLAY or MENU.

Message	Meaning
TEMP WARNING	The internal temperature is extraordinarily high.
FAN STOP	The built-in fan is not rotating properly.
SET SYSTEM CLOCK	The time/date of the internal clock have not been set.
OHB BLOCK NG!	A problem is detected in the optical block.
MSU RPN BUSY	RPN compensation was attempted using the camera menu while being operated from an external device. Consult Sony service personnel.
VF RPN BUSY	RPN compensation was attempted from an external device while being operated using the camera menu. Consult Sony service personnel.
FORMAT ERROR!	An access was attempted with an unformatted USB flash drive.
FILE ERROR	An error occurred while reading a file from a USB flash drive.
OTHER MODEL'S FILE	You attempted to read a file of other models having no compatibility.
FILE NOT FOUND	The file you attempted to read does not exist in the USB flash drive.

Specifications

General	
Power requirements	DC 48 V, 1.7 A (max.)
	DC 10.5 V to 17 V, 3.6 A (max.)
Operating temperature	–10 °C to +45 °C (14 °F to 113 °F)
Storage temperature	–20 °C to +60 °C (–4 °F to +140 °F)
Mass	Approx. 1.5 kg (3 lb 4.9 oz) (camera head only)
External dimensions (excluding largest protrusions)	

Unit: mm (inches)



Camera	
Imager	2/3-inch CMOS image sensor Effective resolution: 1920 (H) × 1080 (V)
Method	3-CMOS, RGB
Spectral system	F1.4 prism
ND filters	1: Clear 2: 1/4 ND 3: 1/16 ND 4: 1/64 ND
Sensitivity	F12 (system frequency: 59.94i) F13 (system frequency: 50i) (at 2000 lx with 89.9% reflectivity)
Image S/N	57 dB (NOISE SUPPRESSION OFF) 60 dB (NOISE SUPPRESSION ON)
Horizontal resolution	1000 TV lines or more
Gain	–3, 0, 3, 6, 9, 12, 18, 24, 30, 36, 42, 48 dB
Shutter speed	59.94i/59.94P: 1/100 sec. to 1/2000 sec. 50i/50P: 1/60 sec. to 1/2000 sec. 29.97PsF: 1/40 sec. to 1/2000 sec. 25PsF: 1/33 sec. to 1/2000 sec.
Slow shutter (1080i/PsF format only)	2 to 8, 16, 32, 64 frames
Input/output connectors	
LENS	12-pin (1)
SDI 1	BNC type (1) Can be switched between HD-SDI and SD-SDI
SDI 2	BNC type (1) Can be switched between HD-SDI and SD-SDI
GL/TEST	BNC type (1)
LAN	8-pin (1)
REMOTE	8-pin (1)
EXT I/O	D-sub 9-pin, female (1)
CCU	Optoelectric composite connector
USB	USB 2.0 Type A 4-pin (1) (for connecting a USB flash drive)
Supplied accessories	
Operating Instructions (CD-ROM) (1)	
Before Using this Unit (1 set)	
Tally number plate (1)	
Warranty booklet (1)	
Optional accessories	
VCT-14 Tripod Adapter	
V shoe (D) ASSY A-8279-993-D	
Related equipment	
HD Camera Control Unit HXCU-FB70	
Power Supply Unit HXCE-FB70	
Hybrid Fiber Cable CCFN-25/50/100/150/200/250	
Joint Adapter CCFN-JC1	
Remote Control Panel RCP-1000 Series	
Remote Control Unit RM-B170/B750	
AC Adapter AC-DN10/DN2B	

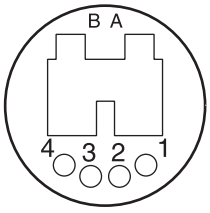
Design and specifications are subject to change without notice.

Notes

- 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 WILL NOT BE LIABLE FOR CLAIMS OF ANY KIND MADE BY USERS OF THIS UNIT OR MADE BY THIRD PARTIES.
- SONY WILL NOT BE LIABLE FOR THE TERMINATION OR DISCONTINUATION OF ANY SERVICES RELATED TO THIS UNIT THAT MAY RESULT DUE TO CIRCUMSTANCES OF ANY KIND.

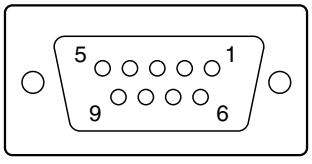
Pin Assignment

CCU connector



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

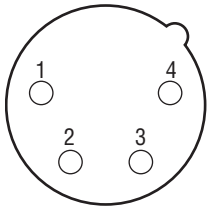
EXT I/O connector



No.	Signal	Input/output	Specification
1	UNREG	OUT	10.5 V to 17 V, 1.5 A (max.)
2	RX IN	IN	Trunk RX
3	TX OUT	OUT	Trunk TX
4	Assignable1	IN/OUT	Digital IO OUT: Open Collector (max. 10 mA) IN: Contact
5	GND	-	–

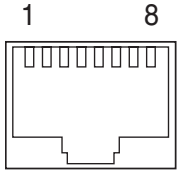
No.	Signal	Input/output	Specification
6	Assignable2	IN/OUT	Digital IO OUT: Open Collector (max. 10 mA) IN: Contact
7	Assignable3	IN/OUT	Digital IO OUT: Open Collector (max. 10 mA) IN: Contact
8	Assignable4	IN/OUT	MIC IN (X): –60 dBu to –20 dBu/ Balanced Digital IO OUT: Open Collector (max. 10 mA) IN: Contact
9	Assignable5	IN/OUT	MIC IN (Y): –60 dBu to –20 dBu/ Balanced Digital IO OUT: Open Collector (max. 10 mA) IN: Contact

DC IN connector



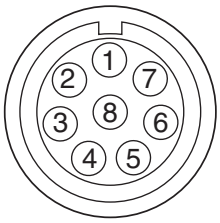
No.	Signal	Input/output	Specification
1	EXT DC (C)	–	GND for DC (+)
2	NC	–	No connection
3	NC	–	No connection
4	EXT DC (H)	IN	+10.5 V to +17 V DC

LAN connector



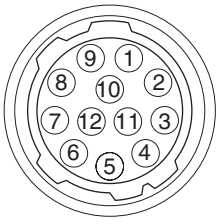
No.	Signal	Input/output	Specification
1	TX (+)	OUT	Transmitted Data (+)
2	TX (–)	OUT	Transmitted Data (–)
3	RX (+)	IN	Received Data (+)
4	NC	–	No connection
5	NC	–	No connection
6	RX (–)	IN	Received Data (–)
7	NC	–	No connection
8	NC	–	No connection

REMOTE connector



No.	Signal	Input/output	Specification
1	TX (+)	OUT	SERIAL DATA OUT
2	TX (–)	OUT	SERIAL DATA OUT
3	RX (+)	IN	SERIAL DATA IN
4	RX (–)	IN	SERIAL DATA IN
5	TX GND	–	GND for TX
6	POWER (+) OUT	OUT	RCP POWER
7	POWER (–) OUT	OUT	GND for POWER
8	VIDEO (X)	OUT	75Ω, 1.0 V p-p
	CHASSIS GND	–	CHASSIS GND

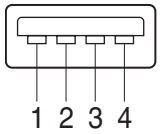
LENS connector



No.	Signal	Input/output	Specification
1	RET VIDEO ENABLE	IN	ENABLE: 0 V DISABLE: +5 V or OPEN
2	VTR CTL	IN	ENABLE: 0 V DISABLE: +5 V or OPEN
3	GND	-	GND for UNREG
4	SERVO MA/ AT	OUT	AUTO: +5 V MANU: 0 V or OPEN
5	IRIS POSITION	OUT	+3.4 V (F16) to +6.2 V (F2.8)
6	UNREG	OUT	+10.5 V to +17 V
7	IRIS POSITION	IN	+3.4 V (F16) to +6.2 V (F2.8)
8	IRIS AT/MA	OUT	AUTO IRIS: 0 V MANUAL IRIS: +5 V
9	EXTENDER ON/OFF	IN	EX 2 ON: GND EX 0.8 ON: 30 kΩ to GND OFF: OPEN
10	ZOOM POSITION	IN	WIDE: 2 V TELE: 7 V

No.	Signal	Input/output	Specification
11	FOCUS POSI (LENS RX)	IN	∞: 7 V min.: 2 V
12	FOCUS POSI (LENS TX)	OUT	–

USB connector



No.	Signal	Input/output	Specification
1	VBUS	OUT	USB Vcc (+5 V)
2	D+	IN/OUT	USB+
3	D–	IN/OUT	USB–
4	GND	–	GND

Menu Tree

OPERATION

- VF DISPLAY (01)
  - EX
  - ZOOM
  - FOCUS
  - ND
  - CC
  - 5600K
  - IRIS
  - WHITE
  - D.EXT
  - GAIN
  - SHUTTER
  - BATT
  - RETURN
  - MESSAG
- VF MARKER (02)
  - MARKER
  - LEVEL
  - CENTER
  - SAFETY ZONE
  - EFFECT
  - ASPECT
- VF DETAIL (03)
  - VF DETAIL
  - COLOR DETAIL
- FOCUS ASSIST (04)
  - INDICATOR
  - AREA MARKER
- ZEBRA (05)
  - ZEBRA
  - ZEBRA1 LEVEL
  - ZEBRA2
- CURSOR (06)
  - CURSOR
  - BOX MEMORY1
  - BOX MEMORY2
  - BOX MEMORY3
- VF OUT (07)
  - VF OUT
  - RET MIX VF
  - MIX DIRECTION
  - MIX VF MODE
  - MIX VF LEVEL
  - CHARACTER LEVEL
  - PinP
- TLCS (08)
  - TLCS
  - MODE
  - SPEED
  - LEVEL
  - AGC
  - AUTO SHUTTER
- OPERATOR FILE (09)
  - READ (USB→CAM)
  - WRITE (CAM→USB)
  - PRESET
  - FILE ID
  - CAM CODE
  - DATE

PAINT

- SW STATUS (P01)
  - FLARE
  - GAMMA
  - BLK GAM
  - KNEE
  - WHT CLIP
  - DETAIL
  - LVL DEP
  - SKIN DTL
  - MATRIX
- VIDEO LEVEL (P02)
  - WHITE
  - BLACK
  - FLARE
  - GAMMA
  - V MOD
  - FLARE
  - V MOD
  - TEST
- COLOR TEMP (P03)
  - WHITE
  - COLOR TEMP
  - BALANCE
  - ATW
  - MASTER
- GAMMA (P04)
  - LEVEL
  - COARSE
  - TABLE
  - GAMMA
  - TEST
- BLACK GAMMA (P05)
  - LEVEL
  - RANGE
  - TEST
- SATURATION (P06)
  - SATURATION
  - LOW KEY SAT
  - TEST
- KNEE (P07)
  - K POINT
  - K SLOPE
  - KNEE
  - KNEE MAX
  - KNEE SAT
  - AUTO KNEE
  - ABS
- WHITE CLIP (P08)
  - W CLIP
  - ABS
- DETAIL 1 (P09)
  - DETAIL
  - LEVEL
  - LIMITER [M]
  - LIMITER [WHT]
  - LIMITER [BLK]
  - CRISP
  - LAVEL DEPEND
  - ABS
- DETAIL 2 (P10)
  - H/V RATIO
  - FREQ
  - MIX RATIO
  - KNEE APT
  - DTL H/V MODE
  - ABS
- SD DETAIL (P11)
  - SD DETAIL
  - LEVEL
  - CRISPENING
  - LEVEL DEP END
  - H/V RATIO
  - FREQ
- SD CROSS COLOR (P12)
  - CRS COL REDUCE
  - LEVEL
- SKIN DETAIL (P13)
  - SKIN DTL
  - SKIN GATE
  - ABS
  - ZOOM LINK
  - CH SW
  - HUE
  - PHASE
  - WIDTH
  - SAT
  - LEVEL
- USER MATRIX (P14)
  - R-G
  - R-B
  - G-R
  - G-B
  - B-R
  - B-G
  - MATRIX
  - ADAPTIV MATRIX
- MULTI MATRIX (P15)
  - PHASE
  - HUE
  - SAT
  - ALL CLEAR
  - GATE
  - MATRIX
- SHUTTER (P16)
  - SHUTTER
  - ECS FREQ
  - SLOW SHUTTER
- NOISE SUPPRESSION (P17)
  - SUPPRESSION
- SCENE FILE (P18)
  - 1/2/3/4/5
  - STORE
  - STANDARD
  - READ (USB→CAM)
  - WRITE (CAM→USB)
  - FILE ID
  - CAM CODE
  - DATE

MAINTENANCE

- AUTO SETUP (M01)
  - AUTO BLACK
  - AUTO WHITE
  - AUTO LEVEL
  - AUTO WHITE SHADING
  - AUTO BLACK SHADING
  - TEST
- WHITE SHADING (M02)
  - V SAW
  - V PARA
  - H SAW
  - H PARA
  - WHITE
  - AUTO WHITE SHADING
  - WHITE SHAD MODE
- BLACK SHADING (M03)
  - V SAW
  - V PARA
  - H SAW
  - H PARA
  - BLK SET
  - BLACK
  - MASTER GAIN
  - AUTO BLACK SHADING
  - 2D BLACK SHAD
  - BLACK SHADE CLEAR
- AUTO IRIS (M04)
  - AUTO IRIS
  - WINDOW
  - OVERRIDE
  - IRIS LEVEL
  - APL RATIO
  - IRIS GAIN
  - IRIS CLOSE
- LENS (M05)
  - F NO. DISP
  - ALAC
  - AF DISPALY
- CIS COMP (M06)
  - FLICKER REDUCE
- TALLY (M07)
  - FRONT TALLY
  - REAR TALLY
- OUTPUT FORMAT (M08)
  - CURRENT
- GL/TEST OUT (M09)
  - REFERENCE
  - SETTING
- SDI OUT (M10)
  - SDI1-OUT
  - SDI2-OUT
- TRUNK (M11)
  - TRUNK
- DATE (M12)
  - DATE/TIME
  - FILE TIMESTAMP FORMAT
- BATTERY ALARM (M13)
  - BEFORE END
  - END
  - BATTERY ALARM

- FILTER (M14)
  - ND FILTER
  - ECC FILTER
  - ELECTRICAL CC
  - ELECTRICAL CC <A>
  - ELECTRICAL CC <B>
  - ELECTRICAL CC <C>
  - ELECTRICAL CC <D>
- TCP/IP SETTING (M15)
  - IP ADDRESS
  - SUBNET MASK
  - DEFAULT GATEWAY
  - SET
- LAN SETTING (M16)
  - CONNECTION SPEED
  - DUPLEX MODE
- CNS SETTING (M17)
  - CNS MODE
  - CCU NO
  - TARGET IP ADDRESS
  - SET
- NETWORK RESET (M18)
  - NETWORK ALL RESET
- EXT I/O (M19)
  - PIN 4
  - PIN 6
  - PIN 7
  - PIN 8
  - PIN 9
  - TEST TONE
- OTHERS (M20)
  - FAN MODE
  - CAM BARS
  - WHITE SETUP MODE
  - D.EXT ENABLE
  - D.EXT
  - GAIN EXTEND
  - SLS EXTEND

FILE

- OPERATOR FILE (F01)
  - READ (USB→CAM)
  - WRITE (CAM→USB)
  - PRESET
  - STORE PRESET FILE
  - FILE ID
  - CAM CODE
  - DATE
- SCENE FILE (F02)
  - 1/2/3/4/5
  - STORE
  - STANDARD
  - READ (USB→CAM)
  - WRITE (CAM→USB)
  - FILE ID
  - CAM CODE
  - DATE
- REFERENCE (F03)
  - STORE FILE
  - STANDARD
  - READ (USB→CAM)
  - WRITE (CAM→USB)
  - FILE ID
  - CAM CODE
  - DATE
- LENS FILE (F04)
  - STORE FILE
  - No.
  - NAME
  - F NO
  - CENTER MARKER
- FILE CLEAR (F05)
  - PRESET OPERATOR
  - REFERENCE (ALL)

DIAGNOSIS

- TRANSMISSION CONDITION (D01)
  - OPTICAL LEVEL
  - DC INPUT LEVEL
- BOARD STATUS (D02)
  - OHB
  - DPR
  - SY
- ROM VERSION (D03)
  - CAMERA APP
  - OS
  - SY
  - DPR
- NET STATUS 1 (D04)
  - NETWORK
  - LINK CONDITION
  - CONNECTION SPEED
  - DUPLEX MODE
  - MDI/MDIX
  - MAC ADDRESS
- NET STATUS 2 (D05)
  - IP ADDRESS
  - SUBNET MASK
  - DEFAULT GATEWAY
- SERIAL NO. (D06)
  - MODEL
  - NO

Open Software Licenses

On the basis of license contracts between Sony and the software copyright holders, this product uses open software.
To meet the requirements of the software copyright holders, Sony is obligated to inform you of the content of these licenses.
For the content of these licenses, see “License1.pdf” in the “License” folder of the supplied CD-ROM.

Adobe Reader must be installed on your computer to view PDF files.
If Adobe Reader is not installed on your computer, you can download it by accessing the following URL.
http://get.adobe.com/reader