SONY

5-020-943-**12** (1)

Master Setup Unit

Operating Instructions

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

MSU-3000
MSU-3500

Table of Contents

Precautions

Note on faulty pixels on the LCD panel

The LCD panel fitted to this unit is manufactured with high precision technology, giving a functioning pixel ratio of at least 99.99%. Thus a very small proportion of pixels may be “stuck”, either always off (black), always on (red, green, or blue), or flashing. In addition, over a long period of use, because of the physical characteristics of the liquid crystal display, such “stuck” pixels may appear spontaneously. These problems are not a malfunction.

Cleaning the touch panel

When cleaning the touch panel display, use a soft, dry cloth, similar to those used for cleaning spectacles, and gently wipe only the area that is dirty.

Notes

- Wiping firmly with tissue paper or similar may scratch the coating.
- If your monitor becomes dirty with fingerprints or dust, we recommend that you gently remove any dust on the surface and then clean it with a soft cloth.

To prevent electromagnetic interference from portable communications devices

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

On condensation

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.

On consumable parts

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.

On network security

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.

Do not place this product close to medical devices

This product (including accessories) has magnet(s) which may interfere with pacemakers, programmable shunt valves for hydrocephalus treatment, or other medical devices. Do not place this product close to persons who use such medical devices. Consult your doctor before using this product if you use any such medical device.

Overview

Features

The MSU-3000/3500 Master Setup Units are control panels designed mainly for initial adjustment and configuration of camera equipment. They can be used for central management of multiple cameras.

The MSU-3000 is equipped with horizontal rows of buttons, allowing it to be used to directly switch camera functions on/off while controlling the setup.
The MSU-3500 is a compact vertical model, with the same height as the RCP-3500 series.

They feature camera selection buttons for switching and setting multiple cameras, IRIS and MASTER BLACK adjustment dials, filter controls, and buttons for switching step gain and turning camera functions on/off.
Configuration of detailed settings of cameras, menu control, and saving/loading settings to/from USB drives can be performed using the LCD touch panel.

LCD touch panel

The unit has a 7-inch LCD with electrostatic capacitive touch panel with WVGA (800×480) resolution for menu operations.

USB drive support

Configuration files of cameras and the settings of the unit can be saved to a USB drive and loaded from a USB drive.

1000BASE-T support

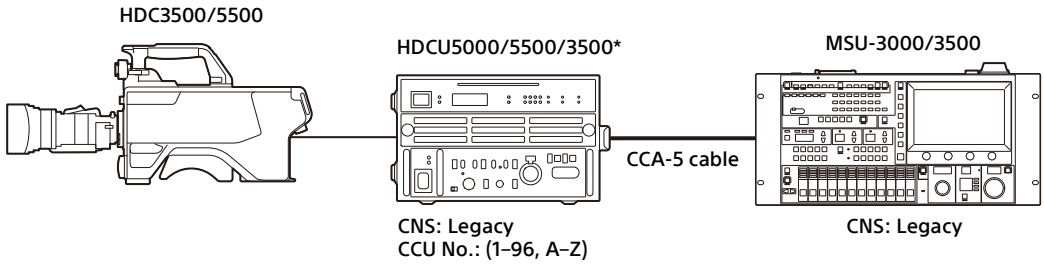
1000BASE-T high-speed networks are supported.

System Configuration Examples

Note

Restart all camera systems after changing the connection mode (CNS).

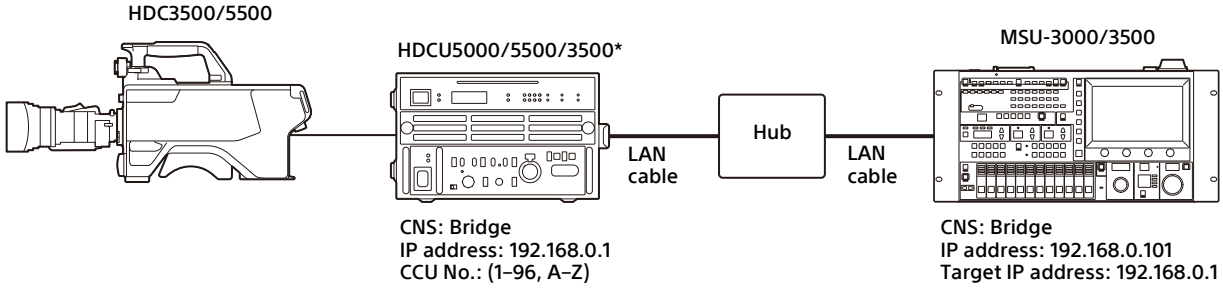
LEGACY mode connection example



- Connect a camera control unit (CCU) and MSU with a CCA-5 cable.
- The camera selection function is not supported.

* The diagram shows the HDCU5500/3500.

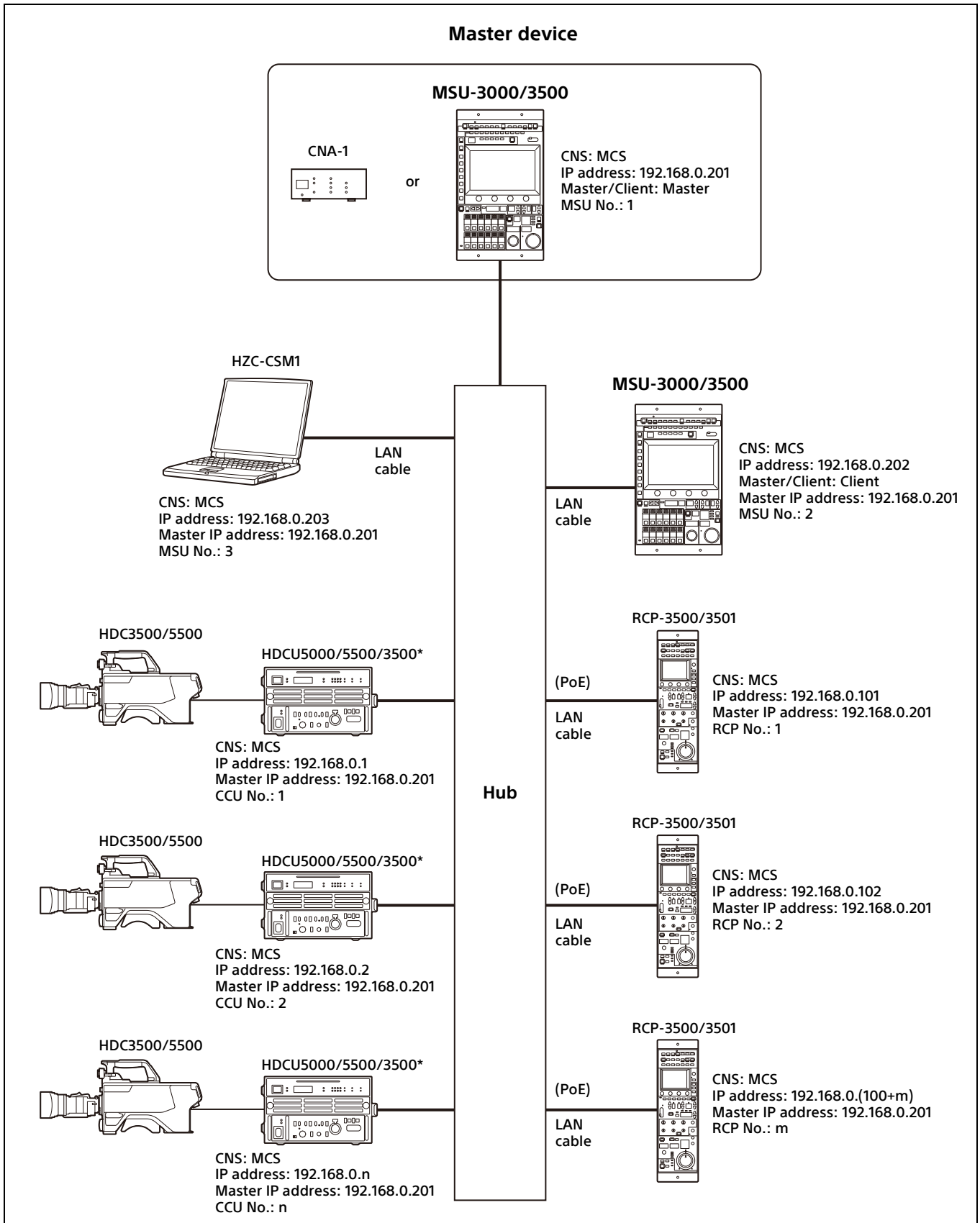
BRIDGE mode connection example



- Connect CCU and MSU (one to one) using a LAN cable.
- Configure the IP address and CCU (Target) destination IP address.
- The camera selection function is not supported.

* The diagram shows the HDCU5500/3500.

MCS mode connection example



- The master device controls the whole camera system.
- Configure the IP address of each device and the IP address of the master device.
- An MSU-3000/3500 or CNA-1 can be used as the master device.
- Centralized control of devices and assignment of device to control (RCP assignment) are supported using MSU and HZC-CSM1.

* The diagram shows the HDCU5500/3500.

Supported Devices

This unit supports connection to the following devices.

- HDC5000/3000 series
- HDCU5000/3000 series
- HDC2000/1000 series
- HDCU2000/1000 series
- HDC4300
- HDCU4300
- BPU-4800/4500/4000
- HDCE-TX30
- UHCU-8300
- HDC-P50/P31/P1
- HDRC-4000
- HSC/HSCU series
- HXCU-FB80/FB70
- HXC-FB80/FB75
- HXCU-TX70
- HXC-P70
- HZC-CSM10
- CNA-1
- MSU-1000 series
- RCP-3000/1500 series

For details about the devices other than the above, refer to the connecting information for each device.

Notes

- Use devices with the latest firmware. Proper functioning may not be possible depending on the version.
- The functions available on the unit may vary depending on the connected camera. If device functions do not operate, check whether the connected device is supported.

Operating Cameras

Camera operation in MCS mode

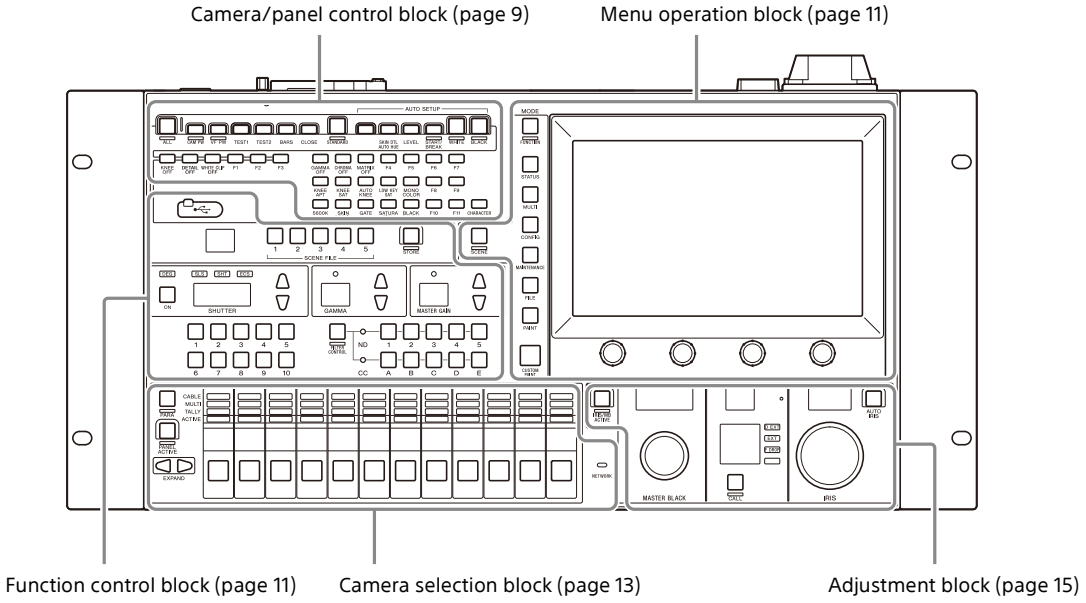
In a multi-camera system (MCS mode), you can operate a camera from multiple remote control panels (RCP) or master setup units (MSU), but only one RCP or MSU should have access permission (active) in order to prevent incorrect operation.

- Panel active
  This is the state when the PANEL ACTIVE button is lit. The RCP or MSU with active state can operate the corresponding device. Values are displayed on other RCPs and MSUs, but they cannot operate the device.
- PARA (parallel control)
  You can press the PARA button on an RCP or MSU that does not have active state to enable parallel control from more than one controller.
- Iris/Master Black active
  In iris/master black active state, PARA (parallel control) is not available to prevent incorrect operation. Only the RCP or MSU on which the IRIS/MB ACTIVE button is lit can operate the device.

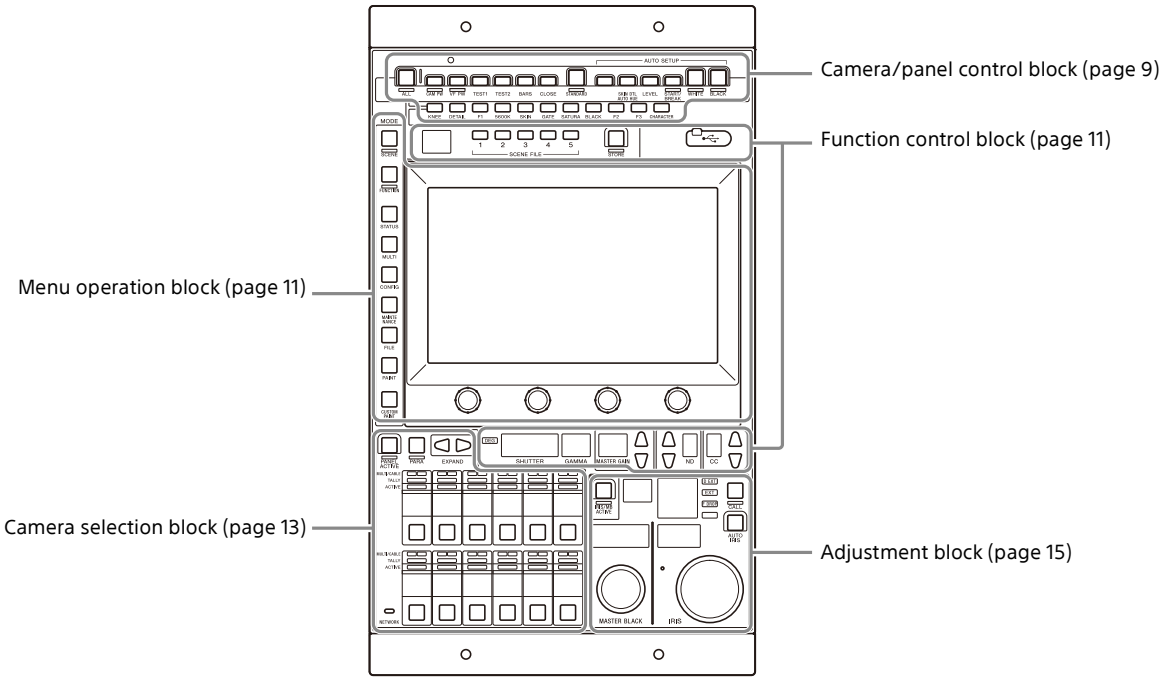
Names and Functions of Parts

Operation Panel

MSU-3000

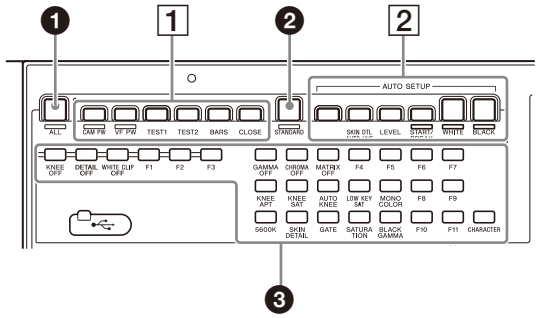


MSU-3500

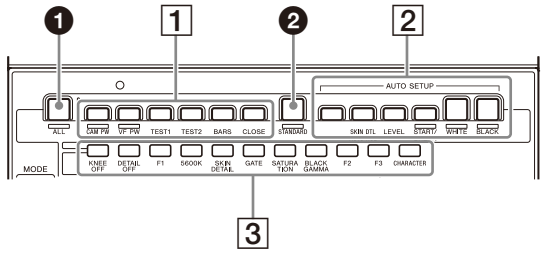


Camera/panel control block

MSU-3000



MSU-3500

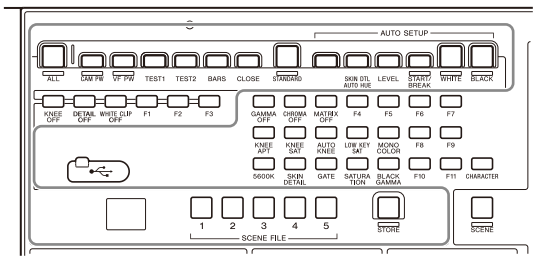


❶ ALL (all mode) button

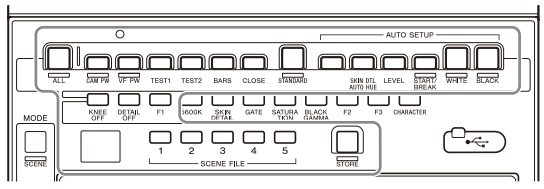
Switches the state of all cameras within the system. Pressing this button causes it to flash and then pressing a button in the same area partitioned by gray as the ALL button (see the figure below) changes the state of all selected cameras in the menu (however, a scene file cannot be saved). You can cancel the recall by pressing this button again while it is flashing.

For details setting the target cameras in All mode, see "Selecting the target cameras in All mode" (page 57).

MSU-3000



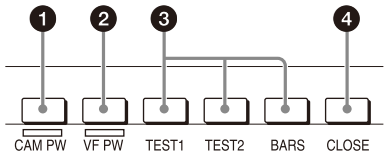
MSU-3500



❷ STANDARD button

This button is for accessing the standard state of the camera. After the standard state is accessed, you can cancel access by pressing the STANDARD button again while it is lit.

1 Power/output signal selection block



❶ CAM PW (camera power) button

Press this button to supply power from the CCU to the camera.

Lighting state	Meaning
On	The power is being supplied.
Off	The power is disconnected. It is not supplied even if the button is pressed.
Slow flashing	The power is disconnected. It is supplied when the button is pressed.
Fast flashing	The camera is starting up.

❷ VF PW (viewfinder power) button

This button switches the power supply to the viewfinder of the camera.
Pressing this button causes it to light, and supplies power to the viewfinder of the camera.
Pressing the button again causes the button to go out, and disconnects the power supply to the viewfinder.

❸ Test signal output selection buttons

These buttons light when pressed and are for operating the test signal generator of the camera to output the corresponding signal.
TEST1/TEST2: Camera test signals
BARS: Color bars signal

Note

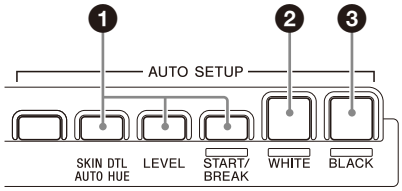
When the BARS button is lit, the function of the BARS button takes priority for CCU output. When you select TEST1 or TEST2, press the BARS button to turn its light off.

❹ CLOSE (iris close) button

This button is for closing the iris of the lens connected to the camera.
Pressing it when the auto iris is on changes the iris indication to CLS (close). Pressing it when the auto iris is off closes the lens iris without changing the iris indication. Pressing it again cancels the iris closing, and the previous state of the iris value is restored.

2 AUTO SETUP block

These buttons are for automatically adjusting the camera.



❶ AUTO SETUP buttons and START/BREAK button

Pressing one of the following buttons and then pressing the START/BREAK button runs the corresponding automatic adjustment function.

SKIN DTL AUTO HUE: Automatically sets the skin detail to an effective hue.

LEVEL: Runs the auto level setup.

Pressing the START/BREAK button while this function is running stops auto adjustment. The button flashes to indicate that this function is stopped, and pressing the button again stops the flashing indication.

❷ WHITE (auto white balance) button

This button is for starting auto white balance adjustment. The button is lit while this function is running and goes out when adjustment is finished. Pressing it again or pressing the START/BREAK button while this function is running stops automatic adjustment. The button flashes to indicate that this function is stopped, and pressing the button again stops the flashing indication.

❸ BLACK (auto black balance) button

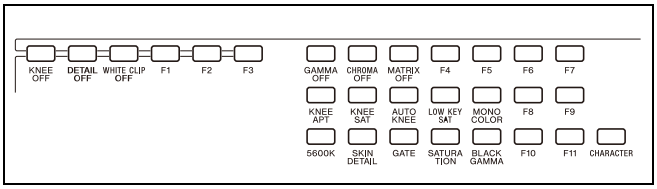
This button is for starting auto black balance adjustment. The button is lit while this function is running and goes out when adjustment is finished. Pressing it again or pressing the START/BREAK button while this function is running stops automatic adjustment. The button flashes to indicate that this function is stopped, and pressing the button again stops the flashing indication.

3 Camera/CCU function ON/OFF buttons

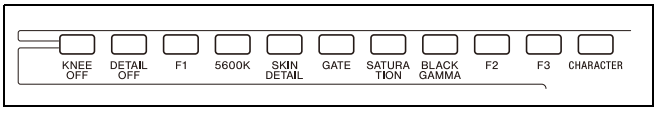
These buttons are for various functions. A function is enabled when its button is lit. A function with an OFF indication is off when the button is lit. Functions can be assigned to the F1 to F11 (MSU-3000) and F1 to F3 (MSU-3500) buttons.

For details on assigning functions to assignable buttons, see "To assign functions to assignable buttons" (page 21).

MSU-3000



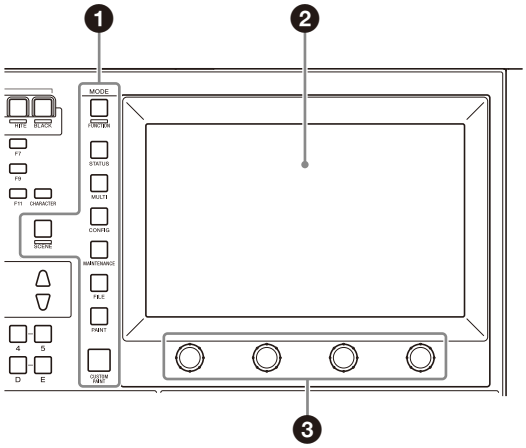
MSU-3500



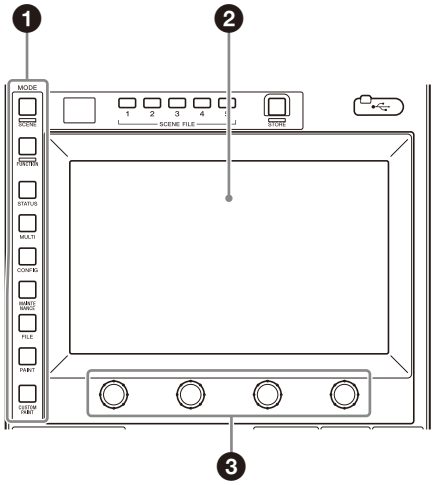
Button	Description
KNEE OFF	Knee compensation function
DETAIL OFF	Detail function for performing contour correction
WHITE CLIP OFF	White clip function
GAMMA OFF	Gamma function
CHROMA OFF	Chroma function
MATRIX OFF	Linear matrix function
KNEE APT	Knee aperture function
KNEE SAT	Knee saturation function
AUTO KNEE	Auto knee function
LOW KEY SAT	Low key saturation function
5600K	Electric color temperature correction function
SKIN DETAIL	Skin detail function
GATE	Gate function Displays the active area of the function on the screen (corresponds to skin detail and multi matrix gate). For details on for what kind of image output a gate signal is displayed, refer to the operation manual of the device of the connection destination.
SATURATION	Saturation function
BLACK GAMMA	Black gamma function
CHARACTER	This turns ON/OFF CCU character display or switches to the next page. When this function is ON, each press of the button switches to the next page (a long press switches to the last page and stops the function in the OFF state). For details on for what kind of image output characters are displayed, refer to the operation manual of the device of the connection destination. It can also be assigned the function for switching CNU characters on/off.

Menu operation block

MSU-3000



MSU-3500



Menu operations are performed using the LCD panel and the MODE buttons.
Operation is performed by touching the buttons and tabs that are displayed on the LCD. Use the adjustment knobs to change numbers and select items.

❶ MODE (mode selection) buttons
Each button accesses its corresponding menu.
Pressing a button causes it to light and displays the menu corresponding to the button on the LCD.
Pressing the button again causes it to go out and the menu display to disappear.

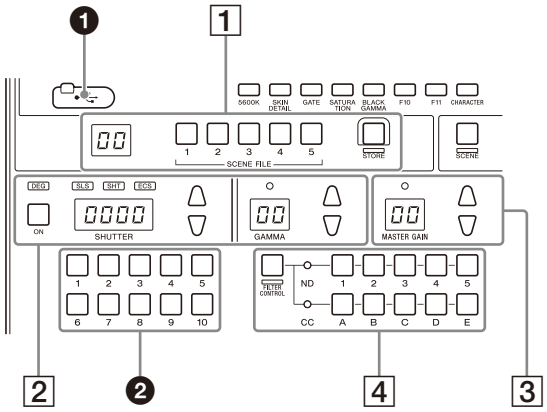
For details on each of the menu items, see "Menus" (page 27).

❷ LCD/touch panel
This is for displaying menus and performing operations.

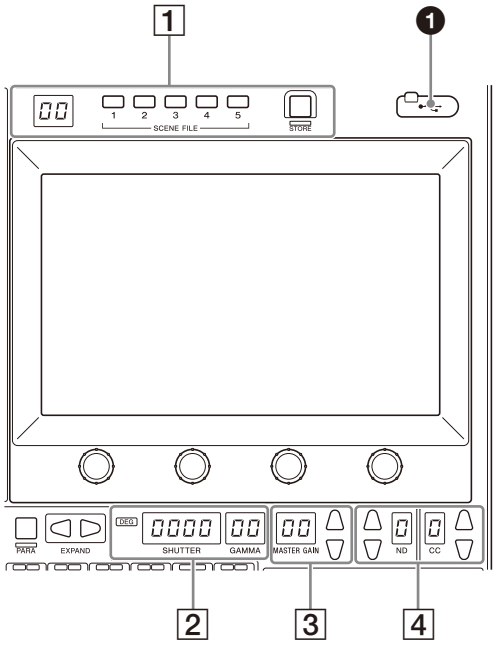
❸ Adjustment knobs (rotary encoders)
These knobs are for adjusting or selecting items in menus.

Function control block

MSU-3000



MSU-3500



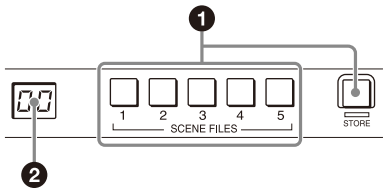
❶ USB connector
Insert a USB drive.
Use to export/import camera configuration and unit configuration settings.

❷ Assignable buttons (MSU-3000 only)
Functions can be assigned to the 1 to 10 buttons.

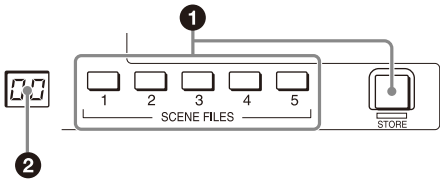
For details on assigning functions to assignable buttons, see "To assign functions to assignable buttons" (page 21).

1 Scene file control block

MSU-3000



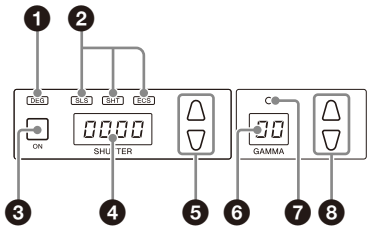
MSU-3500



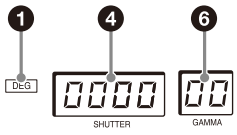
❶ SCENE FILES selection buttons and STORE button
These buttons are for registering and reading scene files. To register a scene file, press the STORE button to start it flashing and then press the SCENE FILE button with the corresponding number. When file registration is finished, the STORE button goes out. To cancel storing a file, press the STORE button again so that the STORE button goes out. To read a scene file, press the SCENE FILE button with the corresponding number while the STORE button is not flashing.
The items stored in a scene file vary depending on the connected camera.

❷ Scene file number display window
This window displays the number of the selected scene file.

2 Shutter and gamma control block (MSU-3000)



Shutter and gamma control block (MSU-3500)



❶ DEG indicator
This indicator is lit when the shutter indication is an angle value. Configure the setting with the switches in Shutter of the Paint menu.

❷ SLS/SHUTTER/ECS indicators (MSU-3000 only)
The indicator corresponding to the selected function is lit. Select a function in the menu.
SLS: Slow shutter mode
SHT: Shutter mode
ECS: ECS (Extended Clear Scan) mode

❸ ON button (MSU-3000 only)
Displays the on/off status of the selected function. Press this button to switch between on and off status.

❹ Shutter speed display window
This window displays the shutter speed that is currently set. If the DEG indicator is lit while in shutter mode (the SHT indicator is also lit), this window displays an angle value. If the DEG indicator is not lit, the shutter speed is displayed in seconds.

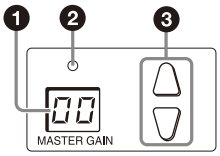
❺ Shutter speed selection buttons (MSU-3000 only)
These buttons are for setting the shutter speed. Each press of the ▲(up) button increases the shutter speed, and each press of the ▼(down) button decreases it.

❻ Gamma display window
This window displays the step gamma value.

❼ Standard value indicator (MSU-3000 only)
This indicator lights when the standard value is set in the Standard Indication menu. It lights in green for a standard state, and amber for a non-standard state.

❽ Step gamma selection buttons (MSU-3000 only)
Selects the gamma in steps.
Each press of the ▲(up) button decreases the value, and each press of the ▼(down) button increases it. Pressing and holding one of the buttons changes the gamma value continuously.

3 Master gain control block



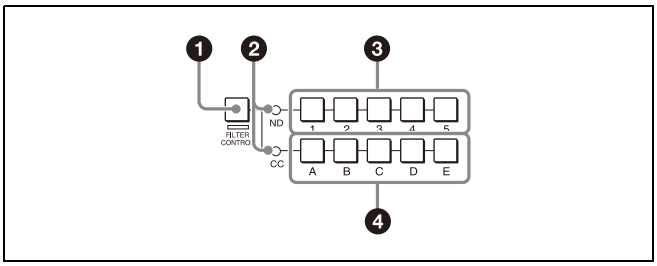
❶ Master gain display window
This window displays the currently configured master gain (dB units).

❷ Standard value indicator (MSU-3000 only)
This indicator lights when the standard value is set in the Standard Indication menu. It lights in green for a standard state, and amber for a non-standard state.

❸ Master gain selection buttons
This block is for setting the sensitivity of the camera. Each press of the ▲(up) button increases the sensitivity, and each press of the ▼(down) button decreases it. Pressing and holding one of the buttons changes the setting continuously.

4 Filter control block

MSU-3000



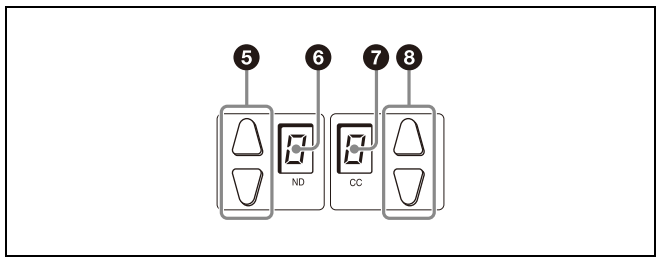
1 FILTER CONTROL button
This is lit when the unit has control permission for the filters. When it is not lit, the camera has the control permission. Pressing the button switches the control permission to the unit.

2 Standard value indicators
These light when standard values are set in the Standard Indication menu. They light in green for a standard state, and amber for a non-standard state.

3 ND filter selection buttons
The lit button indicates the ND filter that is currently selected. Press any button to switch the filter.

4 CC (color temperature conversion) filter selection buttons
The lit button indicates the CC filter that is currently selected. Press any button to switch the filter.

MSU-3500



5 ND filter selection buttons
These are lit when the unit has control permission for the ND filters. When they are not lit, the camera has the control permission. Pressing either the top or bottom button once switches the control permission to the unit.
If there is no filter servo or the camera does not have an ND filter, these buttons do not light and the control permission can also not be switched. The ▲(up) button changes the ND filters in order in the forward direction. The ▼(down) button changes them in the reverse direction. Pressing and holding one of the buttons changes the filters continuously.

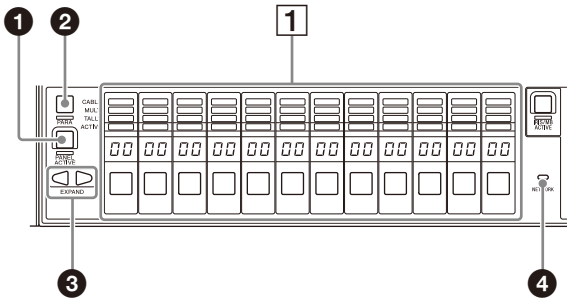
6 ND filter display window
This window is for indicating the ND filter that is currently selected.

7 CC (color temperature conversion) filter display window
This window is for indicating the CC filter that is currently selected.

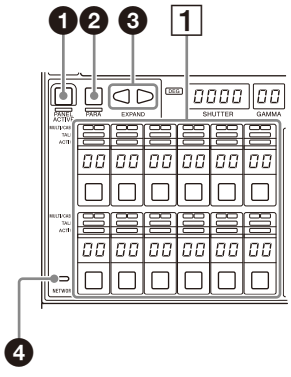
8 CC (color temperature conversion) filter selection buttons
These are lit when the unit has control permission for the CC filters. When they are not lit, the camera has the control permission. Pressing either the top or bottom button once switches the control permission to the unit.
If there is no filter servo or the camera does not have a CC filter, these buttons do not light and the control permission can also not be switched. The ▲(up) button changes the CC filters in order in the forward direction. The ▼(down) button changes them in the reverse direction. Pressing and holding one of the buttons changes the filters continuously.

Camera selection block

MSU-3000



MSU-3500



1 PANEL ACTIVE button
This button is for the control permission. It also serves as a function for preventing unintentional operation because a camera cannot be controlled from this unit when this button and the PARA button are not lit.

Note

If the connection to the master breaks off in MCS mode system, panel active operations are not possible.
In this case, a long press of the PANEL ACTIVE button forces the availability of the panel active.

❷ PARA (parallel control) button

This button is for the PARA function. It allows simultaneous camera control with the control panel that is panel active.

❸ EXPAND buttons

These buttons are for changing the cameras to select with the camera selection buttons.
When connected to a camera network system, you can set the maximum number of cameras that can be selected in a menu.

❹ NETWORK indicator

Indicates the status of the network connection.

MCS mode (when the unit is a client)

Lighting state	Meaning
Off	Not connected to the camera network system.
Flashing	Currently connected to the master of the camera network system. Alternatively, connected to the master of the camera network system, but there is not even one CHU (Camera Head Unit)/CCU device.
On	Connected to the master of the camera network system, and also connected to a CHU/CCU device.

MCS mode (when the unit is the master)

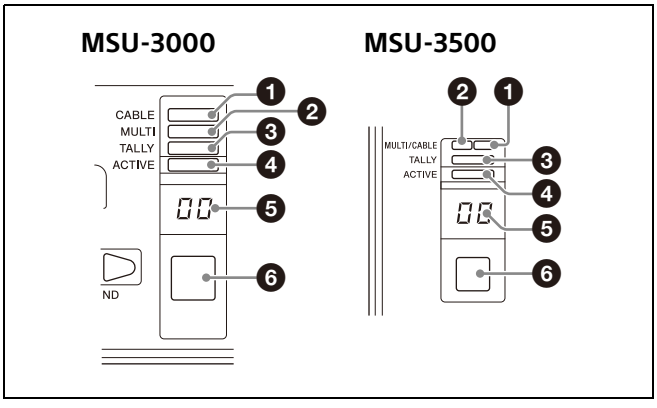
Lighting state	Meaning
Off	Not even one CHU/CCU device is connected in the camera network system.
On	A CHU/CCU device is connected in the camera network system.

BRIDGE mode

Lighting state	Meaning
Off	Not connected to the camera network system.
On	Connected to a CHU/CCU device in the camera network system.

1 Camera status display and selection block

Displays the status of each camera and has buttons for selecting the camera to control.



❶ CABLE indicator

Indicates the communication state of the camera and CCU.

Lighting state	Meaning
On (green)	The reception state is good.
On (yellow)	The reception level is low.
On (red)	The reception level is extremely low.
Off	The power of the camera or CCU is off. Also, the connected device has not been recognized.

❷ MULTI (multi mode) indicator

Indicates the mode of the selected camera.

Lighting state	Meaning
On (green)	Camera is the master in master/subordinate mode.
On (amber)	Camera is a subordinate in master/ subordinate mode.
Flashing (amber)	Camera is in All mode (only target cameras for All mode)
On (red)	Camera auto setup is in progress.
Flashing (red)	Auto setup was aborted due to an error.

❸ TALLY indicator

Indicates the tally of the selected camera.

Lighting state	Meaning
On (red)	Indicates a red tally signal is input.
On (green)	Indicates a green tally signal is input.
On (split red and green)	Indicates a red tally signal and a green tally signal are input simultaneously.
Fast flashing (red)	Indicates a call signal is input.

❹ ACTIVE indicator

Indicates the control status of the selected camera.

Lighting state	Meaning
On (green)	The unit has the control permission.
On (amber)	Another control panel has the control permission.
On (red)	An error was detected by the self-diagnostics function of the camera, CCU, or other device.
Fast flashing (red)	A warning was detected by the self-diagnostics function of the camera, CCU, or other device.
Slow flashing (red)	A caution was detected by the self-diagnostics function of the camera, CCU, or other device.
Off	A camera, CCU, or other device is not connected.

❺ Camera number display window

This window is for indicating the number of the camera selected with the camera selection buttons.

❻ Camera selection button

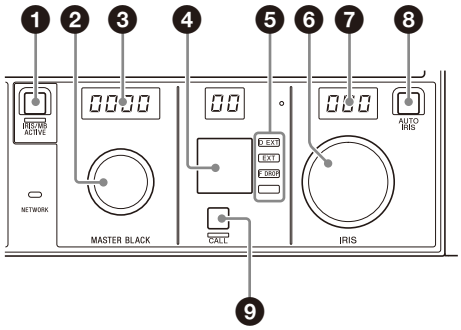
This button is for selecting the camera to control. Press the button to light it and enable the camera corresponding to the number of the button to be controlled from this unit.

Note

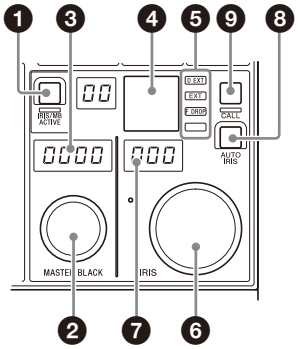
To use the camera selection function, connect the unit in MCS mode.

Adjustment block

MSU-3000



MSU-3500



❶ IRIS/MB ACTIVE (iris/master black active) button
Indicates the iris and master black control permission. The iris and master black can only be adjusted when this button is lit. Pressing the PANEL ACTIVE button also causes this button to light.

❷ MASTER BLACK knob
This knob is for manually adjusting the master black. The adjustment value is displayed in the master black display window. It can also be used as the master flare adjustment knob.

❸ Master black display window
Displays the master black or master flare setting value.

❹ Camera number/tally display window
This window displays an amber number for the camera controlled by the unit. When a red tally signal is sent to the camera, the number is displayed in black and the background of the number lights in red. When a green tally signal is sent to the camera, the number is displayed in black and the background of the number lights in green. When a 3rd tally signal is sent to the camera, a black number is displayed and the background of the number lights in orange.
If multiple tally signals are input at the same time, the background is divided into separate colors.

❺ EXT (lens extender) indicators
D EXT: Lights when the digital extender function is turned ON.
EXT: Lights when the lens extender is used.
F DROP: Lights when a drop in the peripheral brightness occurs.
Assignable indicator: Lights according to a predefined assigned function.

For details about the assignable indicator, see "To set the assignable indicator" (page 22).

❻ IRIS knob
This knob is for manually adjusting the iris of the lens when the AUTO IRIS button is not lit.
When the AUTO IRIS button is lit, you can finely adjust the reference value for auto adjustment of the iris.

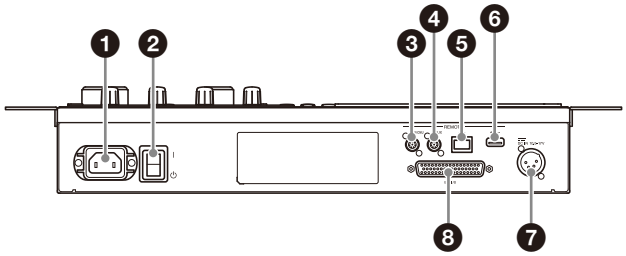
❼ IRIS display window
This window displays the iris setting as an F number. If the lens is closed, "CLS" is displayed.

❽ AUTO IRIS button
This button is for adjusting the iris automatically.

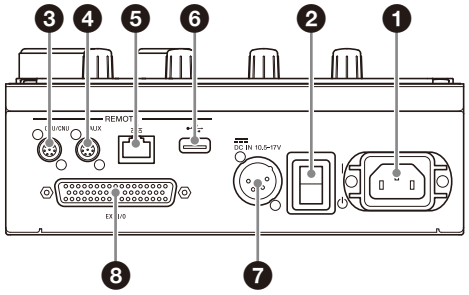
❾ CALL button
This button is for communication. When you press this button, a call signal is sent to the selected camera or CCU. Use this when you want to call a camera operator or an operator of an external control device to talk over the intercom. The button lights when a call signal is received from the connected device. You can change the duration of the button lit state using MSU Mode >Extend Call.

Connector Panel

MSU-3000



MSU-3500



❶ AC IN (AC power supply input) connector
This is for connecting an AC power supply with a separately sold power cord. You can secure the power cord to the unit with a separately sold plug holder.

❷ POWER switch
This switch is for turning on/off the power of the unit.

❸ CCU/CNU REMOTE (CCU/CNU remote) connector (8-pin)
This is for connecting to the RCP/CNU connector of the CCU or the MSU connector of the CNU.

❹ AUX REMOTE (auxiliary remote) connector (8-pin)
This is a spare connector.

❺ 🖧 (LAN) connector (8-pin RJ-45)
Use to connect to a LAN.
Use a LAN cable (shielded type, category 5e or higher) to connect to a hub.

❻ USB connector
Reserved for future use.

❼ DC IN (DC power supply input) connector (4-pin XLR, male)
This connector is used when supplying power from a battery. The DC input voltage range is +10.5 V to +17 V.

❽ I/O PORT connector (50-pin)
This is used for external interface connections.

Installation

Length of Cables

Connection via CCA-5 cable

The maximum length of connections from a CCU to the unit using a CCA-5 cable is 200 m (656 ft).

Connection via LAN cable

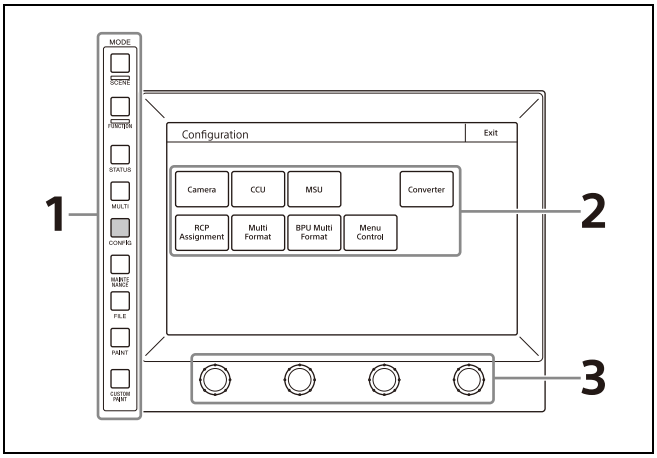
The maximum length of connections from a hub to the unit using a LAN cable is 100 m (328 ft).

Settings

The following procedures describe the state when the MSU Config screen is displayed.

Menu Operations

Use the touch panel and the buttons around the LCD to configure the settings of the unit.



1 **Press a MODE button according to the menu to display.**

The unit enters the menu operation mode and the menu corresponding to the pressed MODE button appears on the display. For details on each of the menu items, see the page shown in the parenthesis.

SCENE button: Scene Menu (page 58)
FUNCTION button: Function Menu (page 57)
STATUS button: Displays information about the cameras connected to the network.
MULTI button: Multi Menu (page 56)
CONFIG button: Config Menu (page 47)
MAINTENANCE button: Maintenance Menu (page 39)
FILE button: File Menu (page 37)
PAINT button: Paint Menu (page 27)
CUSTOM PAINT button: Paint Menu with customized paint menu items (page 23).

2 **Select the item to operate.**

Press an item button on the menu screen, and display the setting/adjustment screen or operation area.

When the menu has multiple pages

When a menu has multiple pages like the paint menu, press ◀ or ▶ to change the page of the menu if necessary.

When there are submenus

Press a tab to switch to the setting or adjustment items.

3 **Set or adjust the item.**

- Turn the knob (or press the button) corresponding to the setting or adjustment item (parameter) to adjust the item to the desired value (select the desired setting).
- If a message appears, perform the operation in accordance with the message, and then press OK.

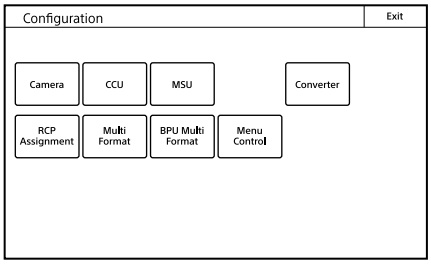
When the setting or adjustment is finished

- To adjust another item of the same menu, press the button of that item.
- To adjust a different menu, press the corresponding MODE button to switch to the menu.
- To end the menu operation mode, press the lit MODE button.
- The Function menu and Scene menu can be selected without closing the currently displayed menu.
  If you use one of the following procedures to close the Function menu or Scene menu, the screen displayed before you switched to that menu reappears.
  — Press the FUNCTION button or SCENE button to cause it to go out.
  — Press the lit MODE button (for the menu displayed immediately before).

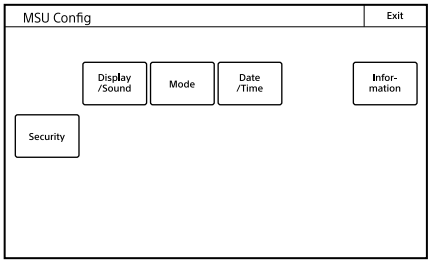
Displaying the MSU Config Screen

Use the following procedure to display the MSU Config screen in order to configure the unit.
For settings that require engineer mode, enter engineer mode and then display the MSU Config screen.

1 **Press the CONFIG button.**
The Configuration screen appears.



2 **Press [MSU].**
The MSU Config screen appears.

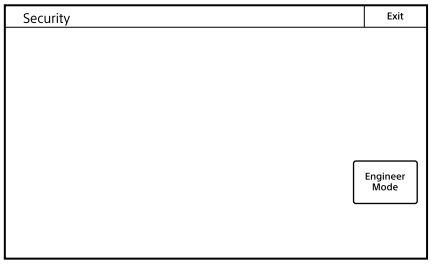


Entering Engineer Mode

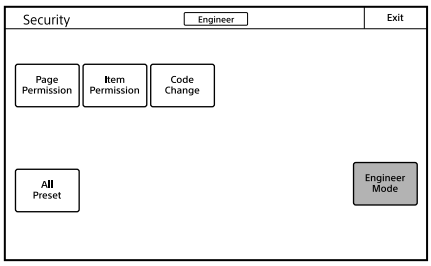
Some settings of the unit have their functions restricted and are not displayed to prevent unintentional operation. When you enter engineer mode, the restrictions are canceled.
Use the following procedure to enter engineer mode.

1 **Display the MSU Config screen.**

2 **Press [Security].**
The Security screen appears.



3 **Press [Engineer Mode] to light the button.**
The items that were hidden appear.



Notes

- To exit engineer mode, press [Engineer Mode] so that the button light turns off.
- If a security code has been configured (page 55), a security code entry screen will appear when you press [Engineer Mode]. Enter the correct security code and press [OK] to enter engineer mode.

Setting the Clock

The unit has an internal clock for recording the date and time at which reference files and scene files are saved to a USB drive.
This setting is configured in engineer mode.
Use the following procedure to set the clock.

1 **Press [Date/Time] on the MSU Config screen.**
The Date/Time screen appears.

2 **Set the time zone.**

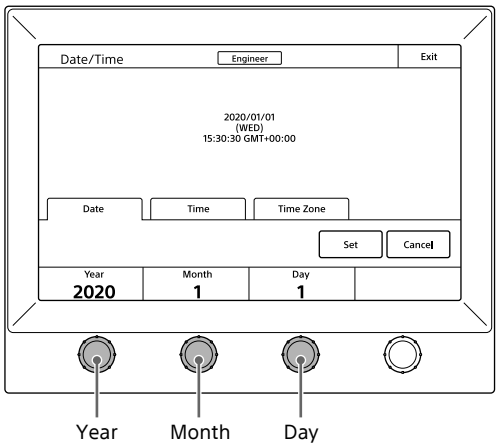
① Press and highlight the [Time Zone] tab.

② Set your region with the adjustment knobs. Set the hour offset from Greenwich Standard Time.

③ Press [Set].

3 **Set the date.**

① Press and highlight [Date].

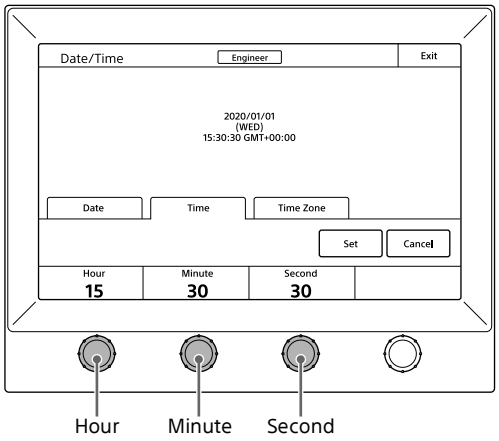


② Set the Year, Month, and Day with the left three adjustment knobs.

③ Press [Set].

4 **Set the time.**

① Press and highlight [Time].



② Set the Hour, Minute and Second with the left three adjustment knobs.

③ Press [Set] in synchronization with a time signal.

Setting the Connection

Configure the settings for connection of the unit with other devices.
All connection settings are configured in engineer mode.

Connection via CCA-5 cable

Setting LEGACY Mode

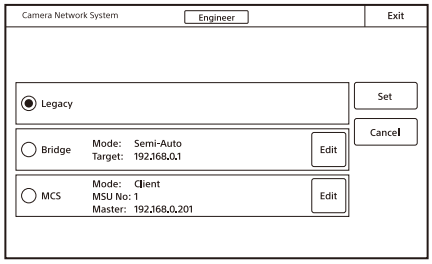
When the unit and camera device are connected using a CCA-5 cable, set LEGACY mode.

For details about connections, see "LEGACY mode connection example" (page 5).

TCP/IP and the MSU number do not need to be set.

1 **Press [Network] on the MSU Config screen.**
The Network screen appears.

2 **Press [CNS].**
The Camera Network System screen appears.



3 **Press [Legacy].**

4 **Press [Set].**
The unit is set to LEGACY mode.

Connection via LAN

Setting BRIDGE Mode

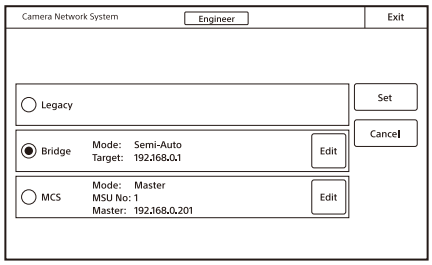
Connect the unit and camera device 1-to-1 on a LAN.

For details about connections, see "BRIDGE mode connection example" (page 5).

Configure the TCP/IP settings of the unit and the IP address of the connected device (target device).
Configure this unit as the target in the settings on the connected device.
The MSU number does not need to be set.
Multi-camera operation is not possible in BRIDGE mode.

1 **Press [Network] on the MSU Config screen.**
The Network screen appears.

2 **Press [CNS].**
The Camera Network System screen appears.

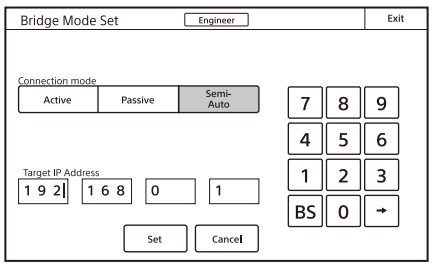


3 **Press [Bridge].**

4 **Press [Set].**
The unit is set to BRIDGE mode.

5 **Set the connection mode.**

① Press [Edit].
The Bridge Mode Set screen appears.



② According to the connection status, press one of the following three buttons to set the sub mode of BRIDGE mode.
[Active]: Performs the process to connect to the target by itself.
[Passive]: Waits for a connection from the target.
[Semi-Auto]: Switches between Active and Passive depending on the connection environment. Active is enabled when the MSU stands alone, and Passive is enabled when the MSU is connected to a CCU or camera via a CCA-5 cable.

6 Set the IP address of the connected device.

① Set the target IP address.
Press the IP address input field, and then use the numeric keypad on the screen to enter the IP address.

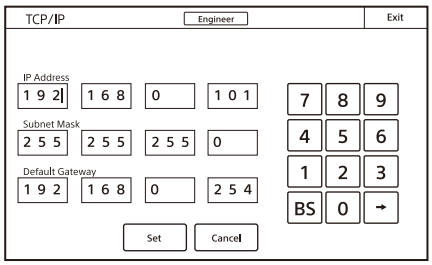
② Press [Set].

7 Press [Exit].
The Camera Network System screen reappears.

8 Press [Exit].
The Network screen reappears.

9 Set TCP/IP.

① Press [TCP/IP].
The TCP/IP screen appears.



② Set the IP address, subnet mask, and default gateway of the unit.
Press the corresponding input field, and then use the numeric keypad on the screen to enter the information.

③ Press [Set].

10 Press [Exit].
The Network screen reappears and the unit is set to BRIDGE mode.

Setting Multi-Camera System (MCS) Mode

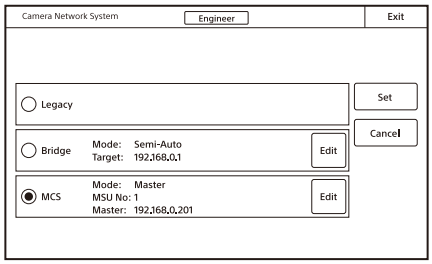
Set the unit to MCS mode when using it in a multi-camera system on a LAN.

For details about connections, see "MCS mode connection example" (page 6).

In MCS mode, in addition to the TCP/IP settings of the unit and IP address of the master device, the MSU number must also be set. Configure the setting so that there will not be a duplicate within the system.
One device needs to be the master device in MCS mode. An MSU or CNA-1 can be used as the master device. When using multiple MSU devices, configure one as the master and the others as clients.

1 Press [Network] on the MSU Config screen.
The Network screen appears.

2 Press [CNS].
The Camera Network System screen appears.

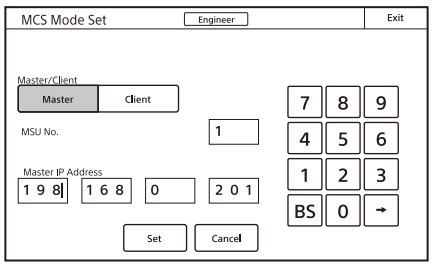


3 Press [MCS].

4 Press [Set].
The unit is set to MCS mode.

5 Set the MCS mode to Master or Client and set the IP address of the master device.

① Press [Edit].
The MCS Mode Set screen appears.



② To set to Master, press [Master] of Master/Client.
To set to Client, press [Client] of Master/Client then set the IP address of the master device.
Press the IP address input field, and then use the numeric keypad on the screen to enter the IP address.

③ Set the MSU number.
Press the MSU No. input field, and then use the numeric keypad on the screen to enter the MSU number.

Note

If an MSU number is set to 0 or a duplicate of that of another MSU, the equipment will not function normally. Be sure to set a number that will not be a duplicate of that of another MSU.

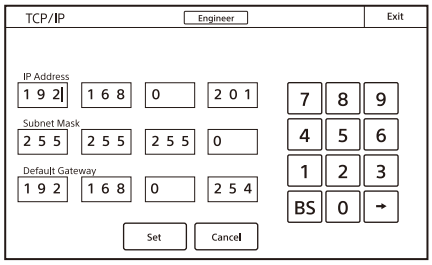
④ Press [Set].

6 Press [Exit].
The Camera Network System screen reappears.

7 Press [Exit].
The Network screen reappears.

8 **Set TCP/IP.**

① Press TCP/IP.
The TCP/IP screen appears.



② Set the IP address, subnet mask, and default gateway of the unit.
Press the corresponding input field, and then use the numeric keypad on the screen to enter the information.

③ Press Set.

9 **Press Exit.**
The Network screen reappears and the unit is set to MCS mode.

Setting Security Restrictions

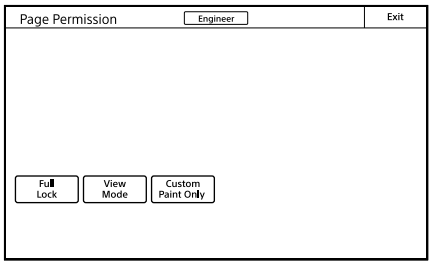
To set the security level

You can limit the functions that can be controlled by the unit to prevent incorrect operation during operation.
This setting is configured in engineer mode.

1 **Press Security on the MSU Config screen.**
The Security screen appears.

2 **Set the security level.**
The settings for the security level are split into two screens. Press each of the buttons to display each setting screen and configure the security level settings.

When Page Permission is pressed:



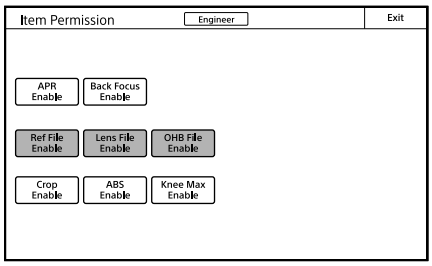
The following settings can be configured.

Full Lock: Press this to light the button and prohibit all operations of the unit.

View Mode: Press this to light the button and prohibit all operations of the unit except for viewing data.

Custom Paint Only: Press this to light the button and prohibit the majority of menu operations other than custom paint menu operations.

When Item Permission is pressed:



The following settings can be configured.

APR Enable: Press this to light the button and add the APR button to the Maintenance menu. The APR function of the unit is permitted.

Back Focus Enable: Press this to light the button and add the [Back focus] tab to the Maintenance – Lens – Zoom/Focus page. The back focus adjustment of the unit is permitted.

Ref File Enable: Press this to light the button and permit the setting of the reference files from the unit.

Lens File Enable: Press this to light the button and permit the setting of the lens files from the unit.

OHB File Enable: Press this to light the button and permit the setting of the OHB files from the unit.

Crop Enable: Press this to light the button and permit the setting of 16:9 → 4:3 Crop from the unit.

Abs Enable: Press this to light the button and permit the switching to the absolute value indication.

Knee Max Enable: Press this to light the button and permit the knee max function.

3 **Press Exit when the settings are finished.**
The Security screen reappears.

4 **Press Engineer Mode to cancel engineer mode.**

Customization

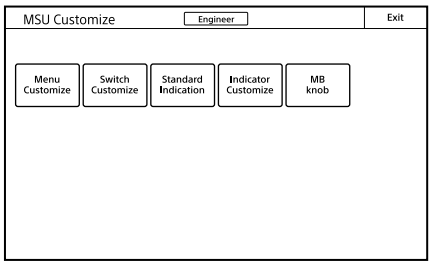
This setting is configured in engineer mode.

To assign functions to assignable buttons

Camera function ON/OFF buttons, shortcut buttons to settings screens of the unit, or indicators can be assigned to the F1 to F11 buttons, 1 to 10 buttons (MSU-3000), and F1 to F3 buttons (MSU-3500).

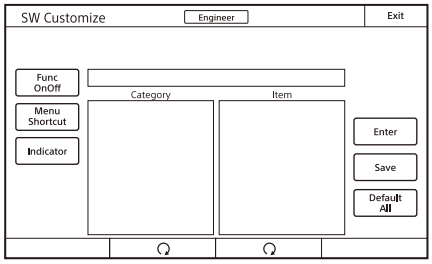
1 **Press Customize on the MSU Config screen.**

The MSU Customize screen appears.



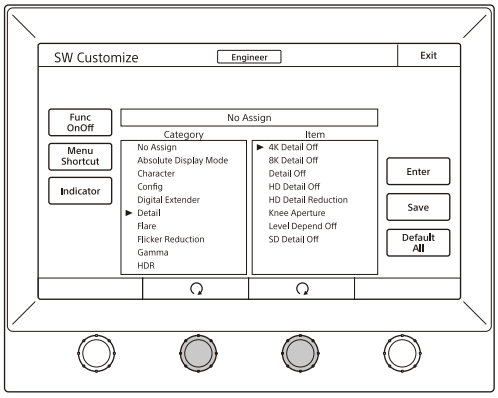
The Standard Indication button appears only for MSU-3000.

2 **Press SW Customize.**
The SW Customize screen appears.



All of the assignable buttons light immediately after this screen is displayed.

3 **Press the button for which to change the assigned function.**
The function that is currently assigned to the pressed button appears on the SW Customize screen.
A list of assignable functions also appears.



4 **Select the application using the button on the far left within the screen.**
Func OnOff**:** Select if using as a camera function ON/OFF button.
Menu Shortcut**:** Select if using as a shortcut to a settings screen of the unit.
Indicator**:** Select if using as an indicator to display the status of the camera.

5 **Turn the second and third adjustment knobs from the left to select the function to assign to the button.**
Select the category of the function using the second adjustment knob from the left, and select the function within the category using the third adjustment knob.

6 **Press Enter.**
The function assigned to the button changes to the function that was selected in the previous step. At this time, "*" appears in front of the function name.

7 **Repeat steps 3 to 5 if you want to assign functions to multiple buttons.**

8 **Press Save.**
The confirmation message screen appears.

9 **Press Save.**
The function assignments of assignable buttons are saved.
If you exit the menu without saving, the function assignments will not be reflected.

To reset the function assignments of assignable buttons to their default settings

1 **Press Default All.**
The confirmation message screen appears.

2 **Press OK.**
The function assignments of assignable buttons are reset to their default settings.

3 **Press Save.**
The confirmation message screen appears.

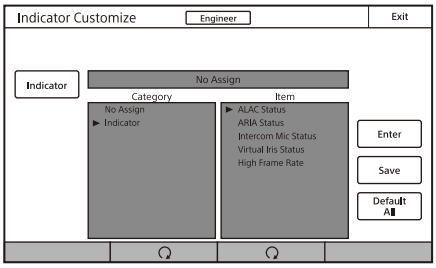
4 **Press Save.**
The function assignments of assignable buttons are saved and registered to the unit.

To set the assignable indicator

You can assign a function to the assignable indicator to indicate that the function is active when the indicator is lit.

1 **Press Customize on the MSU Config screen.**
The MSU Customize screen appears.

2 **Press Indicator Customize.**
The Indicator Customize screen appears.



While the screen is displayed, the assignable indicator flashes and all other indicators are turned off.

3 **Turn the second and third adjustment knobs from the left to select the function to assign.**

4 **Press Enter.**
The function assigned to the assignable indicator changes to the function that was selected in the previous step. At that time, "*" appears in front of the function name.

5 **Press Save.**
A confirmation message screen appears.

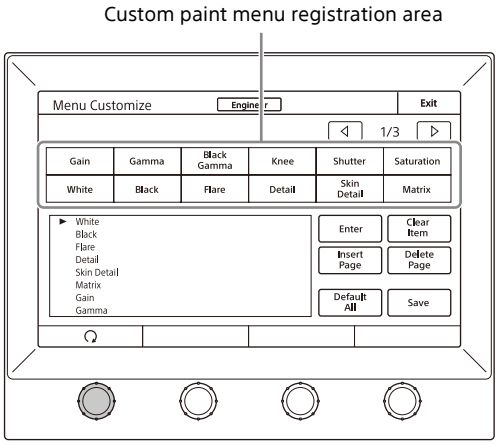
6 **Press** Save**.**
The function assigned to the assignable indicator is saved.

To set the custom paint menu

You can register frequently used paint menu items in the custom paint menu. These paint items can be used by general users.

1 **Press** Customize **on the MSU Config screen.**
The MSU Customize screen appears.

2 **Press** Menu Customize**.**
The Menu Customize screen appears.



The custom paint menu registration area is at the upper part of this screen. Below that area is a list of the paint menu items that can be added to the custom paint menu. You can edit the custom paint menu by selecting paint menu items in the list below and adding them to the registration area above.

To add a paint menu item to the custom paint menu

1 **Press and highlight the place to insert the paint menu item in the custom paint menu registration area.**

2 **Turn the adjustment knob on the far left to select the paint menu item to add to the custom paint menu from the list below.**
Turning the paint adjustment knob on the far left moves the cursor (▶) in the bottom list up or down. If you align the cursor with the paint menu item to add to the custom paint menu, that paint menu item is highlighted.

3 **Press** Enter**.**
The paint menu item selected in the list below is added to the highlighted paint menu.

4 **Repeat steps 1 to 3 if you want to add multiple paint menu items.**

5 **Press** Save**.**
The confirmation message screen appears.

6 **Press** Save**.**
The contents of the custom paint menu are saved and registered to the unit.

To delete a paint menu item from the custom paint menu

1 **Press and highlight the paint menu item to delete from the custom paint menu registration area.**

2 **Press** Clear Item**.**
The selected paint menu item is deleted from the custom paint menu registration area.

To add a page to the custom paint menu

1 **Press** Insert Page**.**
When a custom paint menu already has multiple pages and the Menu Customize screen is displayed in the second or a subsequent page, the page is added after the displayed page.
When you display the Menu Customize screen in the first page of a custom paint menu or when the custom paint menu only has one page, a message screen for confirming whether to add the page before or after the page appears.

2 **Press** Before **to add the page before the current page, and press** After **to add the page after it.**
The page corresponding to the pressed button is added.

To delete a page from the custom paint menu

If a custom paint menu has multiple pages, you can delete a page. However, it is not possible to delete a page if the custom paint menu only has one page.

1 **Press ◀ or ▶ to display the page to delete.**

2 **Press** Delete Page**.**
A page delete confirmation message screen appears.

3 **Press** Delete**.**
The page is deleted.

To reset the custom paint menu to the default settings

1 **Press** Default All**.**
The confirmation message screen appears.

2 **Press** OK**.**
The contents of the custom paint menu are reset to the default settings.

3 **Press** Save**.**
The confirmation message screen appears.

4 **Press** Save**.**
The contents of the custom paint menu are saved and registered to the unit.

Setting the User Interface

All the user interface settings can be configured in normal mode.

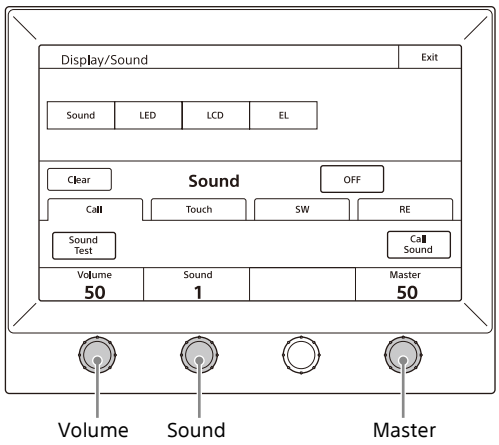
To set the sounds

You can select the sound and volume played when operating the unit and when a call is received.

1 **Press** Display/Sound **on the MSU Config screen.**
The Display/Sound screen appears.

2 **Press and highlight** Sound**.**
The Sound submenu appears.

3 **Select the type of sound to set.**
Four types of sound can be configured. Press the tab to display the setting screen of the desired sound, and then set each of the sound settings.



Call: Sets the sound played when call signals are received.
Touch: Sets the sound played when the LCD/touch panel is touched.
SW: Sets the sound played when the buttons are pressed.
RE: Sets the sound played when the adjustment knobs are turned.

4 **Turn the adjustment knobs to set the sound.**
The following settings can be configured.
Volume: Adjusts the volume.
Sound: Selects the type of sound.
Master: Adjusts the master volume.
To confirm a sound, press Sound Test to play the sound.

To turn ON/OFF the sound for each type

One of following buttons is displayed in each of the sound setting screens to turn ON/OFF the sound. You can press the button to turn ON/OFF the sound. The sound turns ON when the button lights.
Call Sound**:** Turns ON/OFF the sound played when call signals are received.
Touch Click**:** Turns ON/OFF the sound played when the LCD/touch panel is touched.
Switch Click**:** Turns ON/OFF the sound played when the buttons are pressed.
RE Click**:** Turns ON/OFF the sound played when the adjustment knobs are turned.

To turn off all sounds

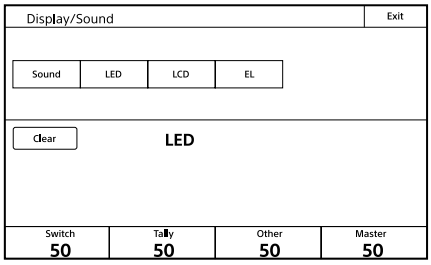
Press OFF to light the button.

To set the brightness of the LEDs

You can adjust the brightness of the operation buttons and tally display window on the unit.

1 **Press** Display/Sound **on the MSU Config screen.**
The Display/Sound screen appears.

2 **Press and highlight** LED**.**
The LED submenu appears.



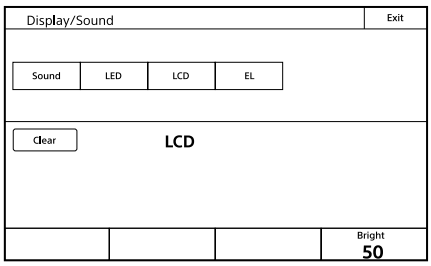
3 **Turn the adjustment knobs to set the brightness of the LEDs.**
The following settings can be configured.
Switch: Sets the brightness of the LEDs built into the operation buttons.
Tally: Sets the brightness of the camera number/tally display window.
Other: Sets the brightness of the indicators.
Master: Sets the brightness of all LEDs.

To adjust the LCD

You can adjust the brightness of the LCD of the menu operation block.

1 **Press** Display/Sound **on the MSU Config screen.**
The Display/Sound screen appears.

2 **Press and highlight** LCD**.**
The LCD submenu appears.



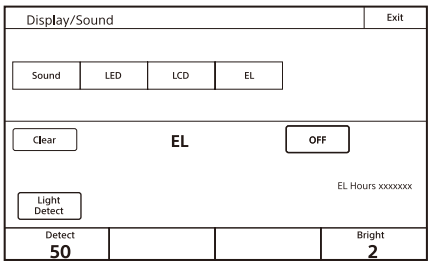
3 **Turn the adjustment knobs to set the brightness of the LCD.**
The following setting can be configured.
Bright: Sets the brightness of the LCD.

To set the brightness of text characters

The EL backlight can be set so that the characters on the panel are slightly brighter. This makes the characters easy to see in dark surroundings.

1 **Press** Display/Sound **on the MSU Config screen.**
The Display/Sound screen appears.

2 **Press and highlight** EL**.**
The EL submenu appears.



3 **Turn the adjustment knobs to change the settings.**
The following settings can be configured.

Detect: Specifies the surrounding brightness at which to turn OFF the EL backlight automatically. If you press the Light Detect button to light the button, the EL backlight turns OFF when the brightness specified here is detected.

Bright: Adjusts the brightness of the EL backlight.

To turn OFF the character light setting
Press OFF to light the button.

Saving and Initializing Settings

To save the settings of the unit to a USB drive

The settings of the unit can be saved to a USB drive and loaded from a USB drive.

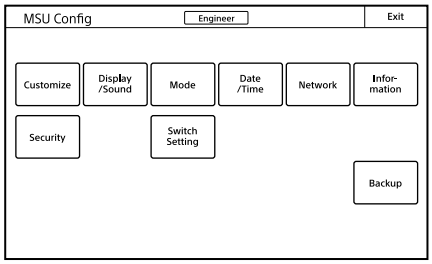
Note

USB drives must be formatted with the FAT32 file system.

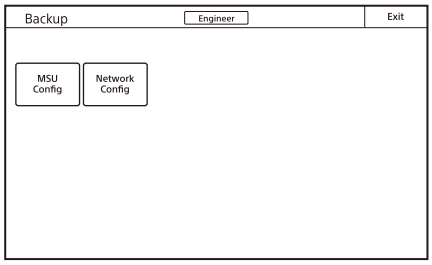
1 **Insert the USB drive into the USB connector.**

2 **Enter engineer mode (page 18).**

3 **Display the MSU Config screen.**

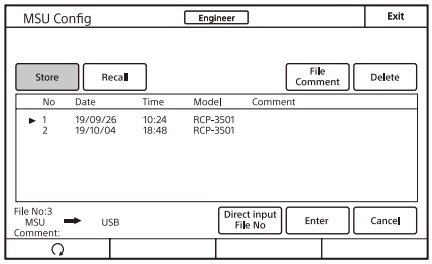


4 **Press Backup.**
The Backup screen appears.

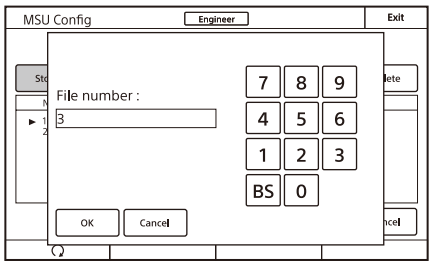


5 **Select the settings to save.**
MSU Config**:** MSU customization settings, excluding network settings
Network Config**:** Network settings

6 **Press Store.**
The screen changes as follows.

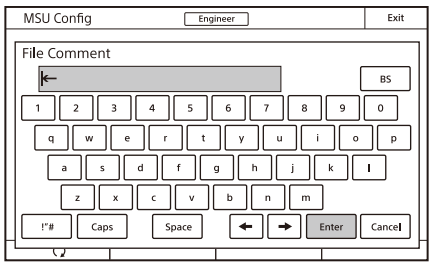


7 **Press Direct Input File No or use the adjustment knob on the far left to select the file number, and press Enter.**
When Direct Input File No is pressed, the file number entry screen appears as follows. Enter the file number, and then press OK to confirm. If you select the same number as that of a file displayed in the list, the data is overwritten.



8 **Confirm the file number, and press Enter.**
The settings are saved to the USB drive.

9 **Press File Comment to set or change the comment for the file.**
When the software keyboard is displayed, enter a comment, and press Enter to set the comment.



To read settings saved to a USB drive

Perform the procedure in "To save the settings of the unit to a USB drive" (page 25) up to step **5**, and then press Recall in step **6**. The subsequent operation is the same.

To delete settings saved to a USB drive

Perform the procedure in "To save the settings of the unit to a USB drive" (page 25) up to step **5**, and then press Delete in step **6**. The subsequent operation is the same.

To initialize the settings

You can reset the MSU configuration menu settings to their default settings. Initialization is performed in engineer mode.

1 Press [Security] on the MSU Config screen.
The Security screen appears.

2 Press the reset button for the range of settings that you want to initialize.
[Reset ALL]**:** Initialize all settings.
[Reset MSU Config]**:** Reset all settings, excluding the Network menu settings.
[Reset Network Cfg.]**:** Reset the Network menu settings.
A confirmation message appears.

3 Press [OK].
The settings are reset to their default settings.

Menus

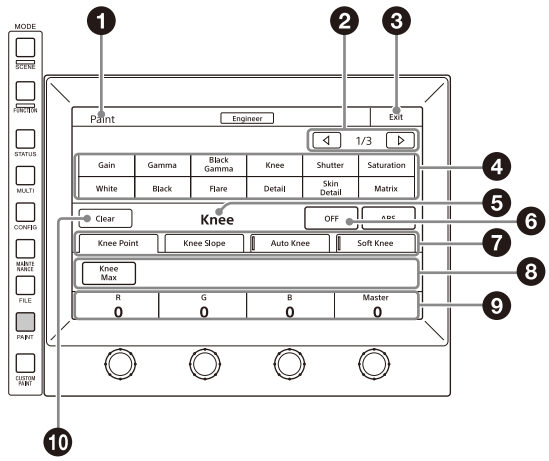
You can use various menus to adjust system devices and perform various other operations with the unit.

For details on menu operations, see "Menu Operations" (page 17).

Paint Menu

This menu is for camera image adjustments.
Press the PAINT button (MODE) to display the menu.
These are normally used by setting items for custom paint and custom buttons.

Screen display example (when "Knee" is selected in the Paint menu)



❶ Category
Displays the menu category.

❷ Page number/total number of pages
When this indication is displayed, you can press ◄ or ► to change the page.

❸ Exit button
Press this to return to the previous menu screen.

❹ Menu buttons
Selects menus.

❺ Menu
Displays the name of the selected menu.

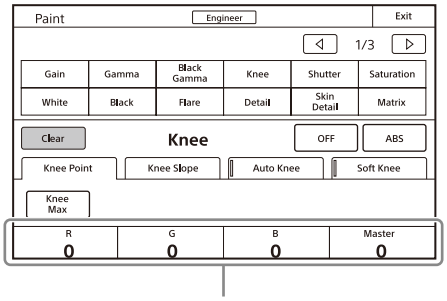
❻ ON/OFF button
Turns all the menu item functions ON/OFF.

❼ Submenu
Press a tab to switch to the setting items. Indicators are displayed for the individual setting items of each tab to indicate whether or not a setting is ON or OFF (an indicator lights when the setting item is ON).

❽ Switch
Turns submenu function ON/OFF.

❾ Adjustment items
Displays the adjustment item and adjustment value.

❿ Clear button
Press this to light the button in red and display a red frame around items that can be cleared.



Items that can be cleared are indicated by a red frame

You can press items with a red frame around them to clear their values one by one. If you press the menu name, the values for all of the items with a red frame around them will be cleared. To cancel clearing items, press the Clear button again.

Menu items

Paint menu		Switch	Adjustment items	Description
Menu	**Submenu**			
White				Corrects the color reproduction of the camera to match the color temperature of the light source shining on the subject.
	RGB		R/G/B	Changes the sensitivity of each primary color (R, G, and B) and corrects the color temperature.
		ATW		This is the Auto Tracing White Balance. It continually corrects the white balance to match the screen during shooting. An error may be generated depending on the pattern.
		AWB		This is the Auto White Balance. Pressing this button while shooting a white subject automatically corrects the color temperature so that the white areas of the subject appear correctly.
	Color Temp		Balance	Corrects the balance so that it intersects the color temperature in the color space. (R and B are corrected in the same direction.)
			Color Temp	Corrects the color temperature in accordance with the spectrum of black body radiation of the color space. (R and B are corrected in the opposite direction.)
		ATW		This is the Auto Tracing White Balance. It continually corrects the white balance to match the screen during shooting. An error may be generated depending on the pattern.
		AWB		This is the Auto White Balance. Pressing this button while shooting a white subject automatically corrects the color temperature so that the white areas of the subject appear correctly.
Black				Adjusts the black level of images for when the lens is closed.
			R/G/B	Adjusts the black level of each of R, G, and B.
			Master	Links R, G, and B and adjusts them simultaneously.
		ABB		This is the Auto Black Balance. It automatically adjusts the R Black and B Black so that no color is added to black when the lens is closed. Depending on the model of camera, Black Set is also automatically adjusted at the same time. When this is executed, the lens is temporarily closed.
Flare				Corrects the phenomenon of black in the subject becoming bright and color being added due to the influence of the optical system. Adjusting this in the plus direction reduces the black level of the corresponding color in accordance with the brightness of the subject. Be careful not to overcorrect this.
		OFF		Disables the flare correction function.
			R/G/B	Adjusts the correction level of each of R, G, and B.
			Master	Links R, G, and B and adjusts them simultaneously.
Detail				This function corrects the contour. The correction is applied to HD or higher resolution image output from a camera with a detail function using operations on this page. The displayed numerical value corresponds to the main resolution of the target camera.
		OFF		Disables the detail function.
	1/3			This is the first page of detail adjustment.
			Level	Adjusts the contour correction level. Adjusting this in the plus direction makes pictures sharp, and adjusting this in the minus direction makes pictures soft. For cameras with an electronic software focus function, this enables softer pictures than when in the DTL OFF state.
			Limiter	Makes adjustments so that contour correction is not greater than a set level to prevent overcorrection by strong contour correction when shooting subjects with large luminance differences. Adjusting this in the plus direction also enables clipping of objects with small luminance differences.
			Crispening	Makes adjustments so that signals with small luminance differences are considered to be noise and correction is not applied to them in order to reduce the emphasizing of also the contours of noise by the contour correction function. Adjusting this in the plus direction results in increasing luminance differences for which contour correction is not performed and improves the S/N sensitivity, but resolution sensitivity deteriorates.
			Level Dep	Contour correction is not applied to the dark parts and S/N sensitivity is increased in order to reduce the emphasizing of also the contours of noise by the contour correction function. Adjusting this in the plus direction results in contour correction not being applied up to a brighter level.
		Level Dep OFF		Disables the Level Dep function.

Paint menu		Switch	Adjustment items	Description
Menu	**Submenu**			
	2/3			This is the second page of detail adjustment.
			H/V Ratio	Adjusts the horizontal and vertical ratio of contour correction.
			Frequency	Adjusts the center frequency of contour correction.
			Mix Ratio	With a type of camera that creates a contour correction signal from gamma, adjusts the ratio for adding that correction signal before and after the gamma.
	3/3			This is the third page of detail adjustment.
			W Limiter	This is the limiter correction for detail signals added in the white direction.
			B Limiter	This is the limiter correction for detail signals added in the black direction.
			Knee Apt	Adjusts the resolution sensitivity of high-luminance parts for which knee is applied.
		Knee Apt		Enables the Knee Apt function.
Skin DTL				Allows adjustment of the contour correction level of the set color area. For example, allows you to make the faces of people appear shiny.
		ON		Enables the Skin DTL function. Allows up to three channels to be adjusted separately. This switch enables the Skin DTL function to be turned ON/OFF simultaneously in accordance with the setting of each channel.
	Skin DTL 1			Sets the first channel of Skin DTL. When this channel is enabled, the ON mark appears on the far left of the tab.
			Level	This is the contour correction value within the color area that is set with Phase or Width. Adjusting this in the plus direction makes pictures sharp, and adjusting this in the minus direction makes pictures soft. For cameras with an electronic software focus function, this enables softer pictures than when in the DTL OFF state.
			Phase	Adjusts the center of the hues of the effective color area of Skin DTL. The value is almost equivalent to the phase on a vector scope.
			Width	Sets a range centered on the phase. The value indicates an angle.
			Saturation	Disables Skin DTL for places with a small degree of color saturation. Adjusting this in the minus direction lowers the degree of saturation from which Skin DTL is applied.
		Auto Hue 1		This is a function for automatically searching for a hue. Capture the subject you want to measure in the center of the screen and execute the function. The phase of this channel is adjusted automatically.
		Gate 1		Adds a gate signal to the range of this channel for which Skin DTL is effective. For the output connector for which the signal can be added, refer to the manual of the corresponding device.
		Zoom Link		Turns on/off the function that changes the correction amount for Skin DTL in response to the zoom value of the camera.
		Natural Skin DTL		Enables the Natural Skin DTL function. This can be common to control the three channels.
		Skin DTL 1		Enables Skin DTL of this channel. The first channel cannot be disabled.

Paint menu		Switch	Adjustment items	Description
Menu	**Submenu**			
	Skin DTL 2			Sets the second channel of Skin DTL.
			Level	This is the contour correction value within the color area that is set with Phase or Width. Adjusting this in the plus direction makes pictures sharp, and adjusting this in the minus direction makes pictures soft. For cameras with an electronic software focus function, this enables softer pictures than when in the DTL OFF state.
			Phase	Adjusts the center of the hues of the effective color area of Skin DTL. The value is almost equivalent to the phase on a vector scope.
			Width	Sets a range centered on the phase. The value indicates an angle.
			Saturation	Disables Skin DTL for places with a small degree of color saturation. Adjusting this in the minus direction lowers the degree of saturation from which Skin DTL is applied.
		Auto Hue 2		This is a function for automatically searching for a hue. Capture the subject you want to measure in the center of the screen and execute the function. The phase of this channel is adjusted automatically.
		Gate 2		Adds a gate signal to the range of this channel for which Skin DTL is effective. For the output connector for which the signal can be added, refer to the manual of the corresponding device.
		Zoom Link		Turns on/off the function that changes the correction amount for Skin DTL in response to the zoom value of the camera.
		Natural Skin DTL		Enables the Natural Skin DTL function. This can be common to control the three channels.
		Skin DTL 2		Enables Skin DTL of this channel. When this channel is enabled, the ON mark appears on the far left of the tab.
	Skin DTL 3			Sets the third channel of Skin DTL.
			Level	This is the contour correction value within the color area that is set with Phase or Width. Adjusting this in the plus direction makes pictures sharp, and adjusting this in the minus direction makes pictures soft. For cameras with an electronic software focus function, this enables softer pictures than when in the DTL OFF state.
			Phase	Adjusts the center of the hues of the effective color area of Skin DTL. The value is almost equivalent to the phase on a vector scope.
			Width	Sets a range centered on the phase. The value indicates an angle.
			Saturation	Disables Skin DTL for places with a small degree of color saturation. Adjusting this in the minus direction lowers the degree of saturation from which Skin DTL is applied.
		Auto Hue 3		This is a function for automatically searching for a hue. Capture the subject you want to measure in the center of the screen and execute the function. The phase of this channel is adjusted automatically.
		Gate 3		Adds a gate signal to the range of this channel for which Skin DTL is effective. For the output connector for which the signal can be added, refer to the manual of the corresponding device.
		Zoom Link		Turns on/off the function that changes the correction amount for Skin DTL in response to the zoom value of the camera.
		Natural Skin DTL		Enables the Natural Skin DTL function. This can be common to control the three channels.
		Skin DTL 3		Enables Skin DTL of this channel. When this channel is enabled, the ON mark appears on the far left of the tab.
	Y Limit			Disables Skin DTL for low-luminance. Sets the maximum for the Y level to disable.
			Y Limit1	Sets the maximum for the Y level in the first channel of Skin DTL.
			Y Limit2	Sets the maximum for the Y level in the second channel of Skin DTL.
			Y Limit3	Sets the maximum for the Y level in the third channel of Skin DTL.

Paint menu		Switch	Adjustment items	Description
Menu	**Submenu**			
Matrix				Corrects the color reproduction without changing the white balance.
		OFF		Disables the matrix function. This switch enables the function to be turned ON/OFF simultaneously in accordance with individual matrix settings.
	User 1/2			Sets the matrix correction factor individually. This is the first page of the settings. When User Matrix is enabled, the ON mark appears on the far left of the tab.
			R-G	Corrects the signal of the R channel in accordance with the difference between the signals of the R channel and G channel.
			G-B	Corrects the signal of the G channel in accordance with the difference between the signals of the G channel and B channel.
			B-R	Corrects the signal of the B channel in accordance with the difference between the signals of the B channel and R channel.
		Adaptive Matrix		Enables the Adaptive Matrix function. This can be common to control all the matrix functions.
		User Matrix		Enables the User Matrix function.
	User 2/2			Sets the matrix correction factor individually. This is the second page of the settings. When User Matrix is enabled, the ON mark appears on the far left of the 1/2 tab.
			R-B	Corrects the signal of the R channel in accordance with the difference between the signals of the R channel and B channel.
			G-R	Corrects the signal of the G channel in accordance with the difference between the signals of the G channel and R channel.
			B-G	Corrects the signal of the B channel in accordance with the difference between the signals of the B channel and G channel.
		Adaptive Matrix		Enables the Adaptive Matrix function. This can be common to control all the matrix functions.
		User Matrix		Enables the User Matrix function. This is the same switch as 1/2.
	Multi			Changes color reproduction for each hue divided into 16. When Multi Matrix is enabled, the ON mark appears on the far left of the tab.
			Phase	Selects the hue to adjust.
			Hue	Changes the hue of colors within the hue range selected with Phase.
			Saturation	Changes the saturation of colors within the hue range selected with Phase.
		Clear All		Returns the factors of all ranges of Multi Matrix to their initial states.
		Gate		Adds a gate signal to an image within the hue range selected with Phase. For the output connector for which the signal can be added, refer to the manual of the corresponding device.
		Adaptive Matrix		Enables the Adaptive Matrix function. This can be common to control all the matrix functions.
		Multi Matrix		Enables the Multi Matrix function.
	Preset			Selects the matrix provided for the camera in advance. When Preset Matrix is enabled, the ON mark appears on the far left of the tab.
		Adaptive Matrix		Enables the Adaptive Matrix function. This can be common to control all the matrix functions.
			Level	Adjusts the effective condition of the Adaptive Matrix function.
		Preset Matrix		Enables Preset Matrix.
			Preset Matrix	Selects the matrix provided for the camera in advance.
Gain				Sets the sensitivity of the camera. The sensitivity of the camera is determined by the sum of the master gain, master white gain, and F drop gain.
			Total Gain	Sum of the master gain, master white gain, and F drop gain.
			F Drop Gain	Value of gain that compensates for lens F drop (display only).
			Step Gain	Changes the sensitivity of the camera in steps.
			M White	Changes the sensitivity of the camera continuously.

Paint menu		Switch	Adjustment items	Description
Menu	**Submenu**			
Gamma				Corrects the photoelectric conversion characteristic of the image pickup device to the luminance characteristic of the display.
		OFF		Disables the gamma correction function.
	Gamma		R/G/B	Adjusts the correction level of each of R, G, and B.
			Master	Links R, G, and B and adjusts them simultaneously.
	Step		Step Gamma	Changes correction in steps.
Black Gamma				Adjusts gamma correction of the screen dark sections.
		ON		Enables the black gamma function.
		Range		Selects the range for which black gamma is effective. Select from Low Range, L.Mid Range, H.Mid Range, and High Range.
			R/G/B	Adjusts the correction level of each of R, G, and B.
			Master	Links R, G, and B and adjusts them simultaneously.
Knee				Compresses the bright parts of the screen to enable expressions within the signal standard. This enables you to obtain pictures that have a high dynamic range.
		OFF		Disables knee correction. Auto Knee is also disabled.
	Knee Point			Adjusts the level at which compression of bright areas begins.
			R/G/B	Adjusts the level of each of R, G, and B.
			Master	Links R, G, and B and adjusts them simultaneously.
		Knee Max		Applies clipping at the point that knee correction is applied to make adjusting the knee point easy. This can only be set when in engineer mode or when Knee Max Enable is enabled.
	Knee Slope			Adjusts the ratio for compressing images.
			R/G/B	Adjusts the compression level of each of R, G, and B.
			Master	Links R, G, and B and adjusts them simultaneously.
	Auto Knee			Automatically adjusts the knee factor in accordance with the captured image signal.
		Auto Knee		Enables the auto knee function. The settings configured for Knee Point/ Slope are ignored. When auto knee is enabled, the ON mark appears on the far left of the tab.
			Point Limit	Sets the lower limit for the knee point automatically adjusted by auto knee. This results in low level images not being influenced by auto knee.
			Auto Slope	Sets the knee slope of auto knee.
	Soft Knee			Changes the polygonal line in the vicinity of the knee point to a curve.
		Soft Knee		Enables the soft knee function.
			Radius	Adjusts the curvature of the curve in the vicinity of the knee point.
Shutter				Controls the exposure time of the image pickup device.
	Shutter			Selects and sets the shutter mode.
		Angle		Displays the shutter speed as an angle value.
		Slow Shutter	Slow Shutter	Shoots with a frequency lower than the frame frequency of the capture image format (unit: number of frames).
		Shutter	Shutter	Controls the exposure time in steps. Display is 1/x seconds.
		ECS	ECS	Extended Clear Scan. It finely controls the exposure time (unit: Hz).

Paint menu		Switch	Adjustment items	Description
Menu	**Submenu**			
	FPS			This function is for overcrank and undercrank shooting.
		Shutter		Enables the shutter function.
		Angle		Displays the shutter speed as an angle value.
		Select FPS		Performs overcrank and undercrank shooting.
			Step/ continuous	Sets the shutter speed.
			Compensation	Corrects the change in the image level for when the FPS is changed. **OFF:** Disables the correction function. **Angle**: Automatically controls the shutter in conjunction with the FPS and maintains the output level. **Gain**: Automatically controls the electronic gain in conjunction with the FPS and maintains the output level.
			FPS	Sets the number of frames to capture.
Saturation				Adjusts the saturation of images. The luminance is not changed.
		ON		Enables the saturation function.
			Saturation	Adjusts the saturation.
V Mod Saw				Corrects color shading in the vertical direction caused by the lens or optical system.
		OFF		Disables the V Modulation Saw correction function.
			R/G/B	Adjusts the correction level of each of R, G, and B.
			Master	Links R, G, and B and adjusts them simultaneously. R, B, and G move in the opposite direction.
White Clip				Sets the maximum value of the image signal. Limits signals over a certain value by applying a clip to them.
		OFF		Disables the white clip function.
			R/G/B	Sets the maximum value of each of R, G, and B.
			Master	Links R, G, and B and sets them simultaneously.
Auto Iris				Controls the iris of the lens in accordance with the brightness of the subject. Additional adjustments are possible with the iris adjustment knob even when using auto iris.
		ON		Enables the auto iris function.
			Pattern	Selects the weighted pattern of auto iris in accordance with the screen position.
Mono Color				Applies a special effect to make the screen mono color.
		ON		Enables the mono color function.
			Saturation	Sets the saturation.
			Hue	Sets the hue.
Noise Suppression				Controls the white noise on the screen. Over control results in deterioration of fine resolution sensitivity.
		ON		Enables the Noise Suppression function.
			Noise Sup	Adjusts the suppression level.
Flicker Reduction				This is a function for Super Motion. It allows you to reduce flickering on the screen caused by the relationship between temporal fluctuations of the light source and the frame frequency of the camera.
		ON		Enables the Flicker Reduction function.
	Adjusting			Adjusts the flicker reduction function.
		ACM		Selects the ACM method flicker reduction function.
		Standard		Selects the standard method flicker reduction function.
			Power Line Frequency	Sets the power line frequency of the lighting.
			Gain	This is the correction level.
			Offset	This is image level at which correction starts to be applied.

Paint menu		Switch	Adjustment items	Description
Menu	**Submenu**			
	Type			Sets Standard/ACM properties.
		ACM		Selects the ACM method flicker reduction function.
		Standard		Selects the standard method flicker reduction function.
			ACM	In ACM mode, selects the combination of frames to add.
			Light	In Standard mode, selects the type of lighting.
Gamma/Knee				This page contains the gamma, black gamma, and knee.
		Gamma OFF		Disables gamma correction.
			Gamma	This value corresponds to the master of gamma adjustment.
		Black Gamma ON		Enables the black gamma function.
			Blk Gamma	This value corresponds to the master of black gamma adjustment.
		Knee OFF		Disables knee correction. Auto Knee is also disabled.
			Knee Point	This value corresponds to the master of knee point adjustment.
			Knee Slope	This value corresponds to the master of knee slope adjustment.
		Auto Knee ON		Enables the auto knee function.
Low Key Saturation				Allows adjustment of the saturation of dark sections.
			ON	Enables the low key saturation function.
			Range	Sets the range for which low key saturation is performed.
			Low Key Sat	Sets the saturation level.
Knee Saturation				Compensates for the color fading of the parts for which knee is applied and makes them appear colorful.
		ON		Enables the knee saturation function.
			Knee Sat	Sets the correction level.
Gamma Table				Allows you to select the curve for gamma correction.
	Standard	Standard		Uses a standard gamma curve.
			Standard	Allows you to select a type of standard gamma curve.
		Gamma OFF		Disables gamma correction.
	Hyper	Hyper		Uses gamma to completely reproduce the dynamic range of the camera including the high-luminance parts.
			Hyper	Allows you to select a type of hyper gamma curve.
		Gamma OFF		Disables gamma correction.
	Special	Special		Allows you to select the gamma that emulates film and other gamma.
			Special	Allows you to select a type of special gamma curve.
		Gamma OFF		Disables gamma correction.
	User	User		Allows you to select gamma created with CVP File Editor and other gamma.
			User	Allows you to select a type of user gamma curve.
		Gamma OFF		Disables gamma correction.
HDR Operation				Makes adjustments related to HDR (High Dynamic Range).
	HDR Setup			
		Black Clip		Enables the HDR Black Clip function.
		Black Compress		Enables the HDR Black Compress function.
			Black Offset	In Live HDR, adjusts the black offset of the HDR images only.
			HDR Target White	When Knee or White Clip is set to OFF, this displays the number of nits in the HDR image that corresponds to the area (white area) that is 100% (100 nits) in the SDR image (display only).
			HDR Contrast	HDR contrast value derived from SDR Gain (display only).
			SDR Gain	In Live HDR, adjusts (reduces) the gain of the SDR images only.
	HDR Knee			
		HDR Knee		Enables the HDR knee function.
			Knee Point	Adjusts the HDR knee point.
			Knee Slope	Adjusts the HDR knee slope.

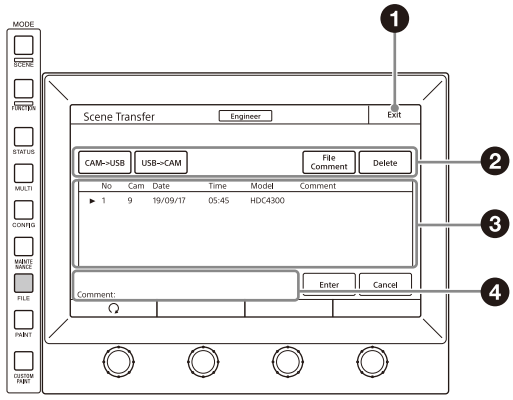
Paint menu		Switch	Adjustment items	Description
Menu	**Submenu**			
	HDR White Clip			
		HDR White Clip		Enables the HDR White Clip function.
			Master	Adjusts the HDR White Clip function.
HDR Conversion				Adjustment items for converting from SDR to HDR.
	Highlight Cre.			Highlight creation (restores areas with knee applied) function.
		Highlight Cre.		Enables the highlight creation function.
			Point	Adjusts the knee point of SDR images.
			Slope	Adjusts the knee slope of SDR images.
	Black			Adjusts the black level.
		Input Lvl Adjust		Enables the black level compensation function.
			Input	Adjusts the input black level.
			SDR Output	Adjusts the black level of the SDR output.
			HDR Output	Adjusts the black level of the HDR output.
	White/Gain			
		White Balance		Enables the white balance compensation function for SDR input.
		Gain		Enables the gain compensation function for SDR input.
			R/G/B	Adjusts the white balance (R, G, B).
			M.White	Adjusts the gain correction.
HD Detail				Adjusts the detail in the HD output.
		OFF		Disables the detail function for HD output.
	1/3, 1/2, 1/3			Same as Detail. The Level Dep Off function and Knee Apt. function are available on the Detail page only.
4K Detail				Adjusts the detail in the 4K output.
		OFF		Disables the detail function for 4K output.
	1/3, 1/2, 1/3			Same as Detail. The Level Dep Off function and Knee Apt. function are available on the Detail page only.
8K Detail				Adjusts the detail in the 8K output.
		OFF		Disables the detail function for 8K output.
	1/3, 1/2, 1/3			Same as Detail. The Level Dep Off function and Knee Apt. function are available on the Detail page only.
HD Detail Reduction				Function for reducing detail components in the HD input.
		ON		Enables the HD detail reduction function.
			Level	Adjusts the level of detail components in the HD input.
			Frequency	Adjusts the frequency of detail components in the HD input.
HFR Detail Ratio				Adjusts the contour correction function for HFR output images.
			Level [%]	Sets the detail level as a percentage of the standard speed output.
			Crisp [%]	Sets the crispening as a percentage of the standard speed output.
Live Tone Control 1				Configures setting for live tone control.
		ON		Enables live tone control.
	Base Tone			
		Base Tone		Enables base tone adjustment.
		Low Tone		Enables low brightness tone adjustment.
		Mid Tone		Enables mid brightness tone adjustment.
			Curve	Adjusts the curvature of the base tone adjustment curve. The higher the value the greater the curvature.
			Master	Sets the strength of the base tone adjustment. Applied to R, G, and B.

Paint menu		Switch	Adjustment items	Description
Menu	**Submenu**			
	Low Tone			
		Base Tone		Enables base tone adjustment.
		Low Tone		Enables low brightness tone adjustment.
		Mid Tone		Enables mid brightness tone adjustment.
			Width	Sets the width of the region for low brightness tone adjustment. The higher the value the wider the brightness range.
			Master	Sets the strength of the low brightness tone adjustment. Applied to R, G, and B.
	Mid Tone			
		Base Tone		Enables base tone adjustment.
		Low Tone		Enables low brightness tone adjustment.
		Mid Tone		Enables mid brightness tone adjustment.
			Width	Sets the width of the region for mid brightness tone adjustment. The higher the value the wider the brightness range.
			Center	Sets the brightness at the center of the region for mid brightness tone adjustment. The higher the value the brighter the range.
			Master	Sets the strength of the mid brightness tone adjustment. Applied to R, G, and B.
Live Tone Control 2				Configures setting for live tone control (R, G, and B can be set individually).
		ON		Enables live tone control.
	Base Tone			
		Base Tone		Enables base tone adjustment.
		Low Tone		Enables low brightness tone adjustment.
		Mid Tone		Enables mid brightness tone adjustment.
			R	Sets the strength of the base tone adjustment. Applied to R only.
			G	Sets the strength of the base tone adjustment. Applied to G only.
			B	Sets the strength of the base tone adjustment. Applied to B only.
			Master	Sets the strength of the base tone adjustment. Applied to R, G, and B.
	Low Tone			
		Base Tone		Enables base tone adjustment.
		Low Tone		Enables low brightness tone adjustment.
		Mid Tone		Enables mid brightness tone adjustment.
			R	Sets the strength of the low brightness tone adjustment. Applied to R only.
			G	Sets the strength of the low brightness tone adjustment. Applied to G only.
			B	Sets the strength of the low brightness tone adjustment. Applied to B only.
			Master	Sets the strength of the low brightness tone adjustment. Applied to R, G, and B.
	Mid Tone			
		Base Tone		Enables base tone adjustment.
		Low Tone		Enables low brightness tone adjustment.
		Mid Tone		Enables mid brightness tone adjustment.
			R	Sets the strength of the mid brightness tone adjustment. Applied to R only.
			G	Sets the strength of the mid brightness tone adjustment. Applied to G only.
			B	Sets the strength of the mid brightness tone adjustment. Applied to B only.
			Master	Sets the strength of the mid brightness tone adjustment. Applied to R, G, and B.

File Menu

This menu is for importing/exporting settings of cameras and devices connected to the unit to and from a USB drive. Configuration data for the unit can be exported and imported using MSU >Backup in the Config menu.
This menu is displayed only in engineer mode.

Screen display example (when “Scene” is selected in the File menu, and then “Scene Transfer” is selected)



❶ Exit button
Press this to return to the previous menu screen.

❷ Control/adjustment items
Press a button to select the transfer destination and source. Press the File ID button to enter a File ID, press the Delete button to delete a file.

❸ Scene file list
This displays a list of scene files that can be transferred. When there are multiple files, turn the SELECT knob to select the scene file that will be transferred.

❹ Message area
This displays files and the operation information.

Menu items

File menu items can only be set when in engineer mode.

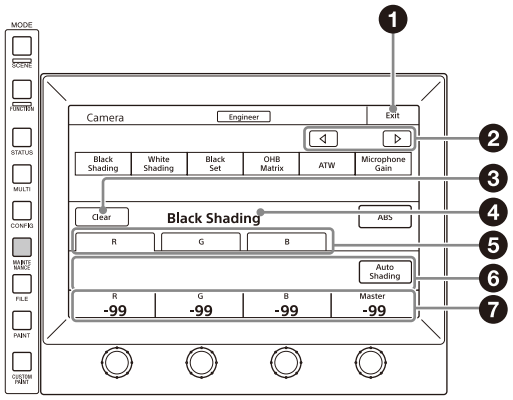
File menu		Control/adjustment items	Function
Menu	**Submenu**		
Reference	Reference Store		Registers a reference file.
	Reference Transfer	CAM → USB	Transfers a reference file from a camera to a USB drive.
		USB → CAM	Transfers a reference file from a USB drive to a camera.
		USB → CAMs	Transfers a reference file from a USB drive to multiple cameras. Not available during network connections.
		CAM → CAMs	Transfers a reference file from a camera to multiple cameras. Not available during network connections.
		File Comment	Sets a comment in a reference file on a USB drive.
		Delete	Deletes a reference file from a USB drive.
	Adjusting	(Paint menu items)	Allows you to adjust the save items.
Scene	Store/Recall		Registers or reads a scene file.
	Scene Transfer	CAM → USB	Transfers a scene file from a camera to a USB drive.
		USB → CAM	Transfers a scene file from a USB drive to a camera.
		USB → CAMs	Transfers a scene file from a USB drive to multiple cameras. Not available during network connections.
		CAM → CAMs	Transfers a scene file from a camera to multiple cameras. Not available during network connections.
		File Comment	Sets a comment in a scene file on a USB drive.
		Delete	Deletes a scene file from a USB drive.
	Adjusting	(Paint menu items)	Allows you to adjust the save items.
Lens	Lens Store		Registers a lens file.
	Lens Select	Change Name	Changes the lens name.
		Select File	Selects a lens file.
	Auto White		Adjusts the auto white balance.
	Adjusting	(Paint menu items)	Allows you to adjust the save items.
OHB	OHB Store		Registers an OHB file.
	Auto W Shading		Adjusts the white shading automatically.
	Auto B Shading		Adjusts the black shading automatically.
	Auto White		Adjusts the white balance automatically.
	Auto Black		Adjusts the black balance automatically.
	Adjusting	Black Shading	Adjusts the black shading.
		White Shading	Adjusts the white shading.
		Black Set	Adjusts the black set.
		Matrix	Adjusts the OHB matrix.
User Gamma	User Gam Transfer	USB → CAM	Transfers a user gamma file from a USB drive to a camera.
		USB → CAMs	Transfers a user gamma file from a USB drive to multiple cameras. Not available during network connections.
		Delete	Deletes a user gamma file from a USB drive.
	Adjusting	(Paint menu items)	Selects Gamma Table.
RCP Assignment	Store/Recall	Store	Saves an RCP assignment file from MSU internal memory to a USB drive.
		Recall	Reads an RCP assignment file from a USB drive to MSU internal memory.
		File Comment	Sets a comment in an RCP assignment file on a USB drive.
		Delete	Deletes an RCP assignment file from a USB drive.
	RCP Assignment	–	Sets the RCP assignment setting.

File menu		Control/adjustment items	Function
Menu	**Submenu**		
Custom Matrix	Store		Registers a custom preset matrix file.
	Transfer	CAM → USB	Transfers a custom preset matrix file from a camera to a USB drive.
		USB → CAM	Transfers a custom preset matrix file from a USB drive to a camera.
		USB → CAMs	Transfers a custom preset matrix file from a USB drive to multiple cameras. Not available during network connections.
		CAM → CAMs	Transfers a custom preset matrix file from a camera to multiple cameras. Not available during network connections.
		File Comment	Sets a comment in a custom preset matrix file on a USB drive.
		Delete	Deletes a custom preset matrix file from a USB drive.
	Adjusting	(Paint menu items)	Allows you to adjust the save items.
Converter All-Settings	Store/Recall		Stores or recalls a converter all-settings file.
	All-Settings Transfer	CAM → USB	Transfers a converter all-settings file from the camera to a USB drive.
		USB → CAM	Transfers a converter all-settings file from a USB drive to a camera.
		File Comment	Sets a comment in a converter all-settings file on a USB drive.
		Delete	Deletes a converter all-settings file from a USB drive.
SR Live MetaFile	Store/Recall		Registers or reads an SR Live MetaFile file.
	SR Live MetaFile Transfer	CAM → USB	Transfers an SR Live MetaFile file from a camera to a USB drive.
		USB → CAM	Transfers an SR Live MetaFile file from a USB drive to a camera.
		Delete	Deletes an SR Live MetaFile file from a USB drive.

Maintenance Menu

This menu is for adjustments and settings before using a camera or CCU.

Screen display example (when “Camera” is selected in the Maintenance menu, and then “Black Shading” is selected)



❶ **Exit button**
Press this to return to the previous menu screen.

❷ **Page number/total number of pages**
When this indication is displayed, you can press the ◀ or ▶ button to change the page.

❸ **Clear button**
Press this to clear the setting items.

❹ **Menu**
This displays the current setting item name. After the Clear button is pressed to light it, you can clear all of the setting values.

❺ **Submenu**
Press a tab to switch to the setting items.

❻ **Switch**
Turns submenu function ON/OFF.

❼ **Adjustment items**
Displays the adjustment item and adjustment value.

Menu items

Maintenance menu		Submenu	Switch	Adjustment items	Description
Menu	**Secondary menu**				
Camera					These are the maintenance items related to camera heads.
	Black Shading				Corrects black shading in images.
		R	Auto B Shading		This is the Auto Black Shading. It automatically adjusts each of the RGB, HV, and SAW/PARA parameters. Auto adjustment may be additionally performed with 2D Black Shading depending on the camera. If 2D Black Shading is not saved to the OHB file, it will not be saved when the power of the camera is turned off.
				H SAW	Corrects spots in the left and right directions of the R channel in a linear fashion.
				H PARA	Corrects spots in the horizontal direction in relation to the center part of the R channel in a parabolic fashion.
				V SAW	Corrects spots in the up and down directions of the R channel in a linear fashion.
				V PARA	Corrects spots in the vertical direction in relation to the center part of the R channel in a parabolic fashion.
		G	Auto B Shading		This is the Auto Black Shading. It automatically adjusts each of the RGB, HV, and SAW/PARA parameters. Auto adjustment may be additionally performed with 2D Black Shading depending on the camera. If 2D Black Shading is not saved to the OHB file, it will not be saved when the power of the camera is turned off.
				H SAW	Corrects spots in the left and right directions of the G channel in a linear fashion.
				H PARA	Corrects spots in the horizontal direction in relation to the center part of the G channel in a parabolic fashion.
				V SAW	Corrects spots in the up and down directions of the G channel in a linear fashion.
				V PARA	Corrects spots in the vertical direction in relation to the center part of the G channel in a parabolic fashion.
		B	Auto B Shading		This is the Auto Black Shading. It automatically adjusts each of the RGB, HV, and SAW/PARA parameters. Auto adjustment may be additionally performed with 2D Black Shading depending on the camera. If 2D Black Shading is not saved to the OHB file, it will not be saved when the power of the camera is turned off.
				H SAW	Corrects spots in the left and right directions of the B channel in a linear fashion.
				H PARA	Corrects spots in the horizontal direction in relation to the center part of the B channel in a parabolic fashion.
				V SAW	Corrects spots in the up and down directions of the B channel in a linear fashion.
				V PARA	Corrects spots in the vertical direction in relation to the center part of the B channel in a parabolic fashion.
	White Shading				Corrects sensitivity shading in images.
		R	Auto W Shading		This is the Auto White Shading. It automatically adjusts each of the RGB, HV, and SAW/PARA parameters. Auto adjustment may be additionally performed with 3D White Shading depending on the camera. If 3D White Shading is not saved to the OHB file, it will not be saved when the power of the camera is turned off.
				H SAW	Corrects spots in the left and right directions of the R channel in a linear fashion.
				H PARA	Corrects spots in the horizontal direction in relation to the center part of the R channel in a parabolic fashion.
				V SAW	Corrects spots in the up and down directions of the R channel in a linear fashion.
				V PARA	Corrects spots in the vertical direction in relation to the center part of the R channel in a parabolic fashion.

Maintenance menu		Submenu	Switch	Adjustment items	Description
Menu	Secondary menu				
		G	Auto W Shading		This is the Auto White Shading. It automatically adjusts each of the RGB, HV, and SAW/PARA parameters. Auto adjustment may be additionally performed with 3D White Shading depending on the camera. If 3D White Shading is not saved to the OHB file, it will not be saved when the power of the camera is turned off.
				H SAW	Corrects spots in the left and right directions of the G channel in a linear fashion.
				H PARA	Corrects spots in the horizontal direction in relation to the center part of the G channel in a parabolic fashion.
				V SAW	Corrects spots in the up and down directions of the G channel in a linear fashion.
				V PARA	Corrects spots in the vertical direction in relation to the center part of the G channel in a parabolic fashion.
		B	Auto W Shading		This is the Auto White Shading. It automatically adjusts each of the RGB, HV, and SAW/PARA parameters. Auto adjustment may be additionally performed with 3D White Shading depending on the camera. If 3D White Shading is not saved to the OHB file, it will not be saved when the power of the camera is turned off.
				H SAW	Corrects spots in the left and right directions of the B channel in a linear fashion.
				H PARA	Corrects spots in the horizontal direction in relation to the center part of the B channel in a parabolic fashion.
				V SAW	Corrects spots in the up and down directions of the B channel in a linear fashion.
				V PARA	Corrects spots in the vertical direction in relation to the center part of the B channel in a parabolic fashion.
		White		R/G/B	Changes the sensitivity of each primary color (R, G, and B) and corrects the color temperature.
			AWB		This is the Auto White Balance. Pressing this button while shooting a white subject automatically corrects the color temperature so that the white areas of the subject appear correctly.
	Black Set				Makes adjustments so that the black level of each color does not change when the master gain is changed.
		Black Set		R/G/B	Adjusts the correction level of each of R, G, and B.
			ABB		This is the Auto Black Balance. It automatically adjusts the R Black and B Black so that no color is added to black when the lens is closed. Depending on the model of camera, Black Set is also automatically adjusted at the same time. When this is executed, the lens is automatically closed.
		Black		R/G/B	Adjusts the black level of each of R, G, and B.
				Master	Links R, G, and B and adjusts them simultaneously.
			ABB		This is the Auto Black Balance. It automatically adjusts the R Black and B Black so that no color is added to black when the lens is closed. Depending on the model of camera, Black Set is also automatically adjusted at the same time. When this is executed, the lens is automatically closed.

Maintenance menu		Submenu	Switch	Adjustment items	Description
Menu	Secondary menu				
	OHB Matrix				Absorbs variations in color reproduction by the optical head block (optical unit).
			ON		Enables the OHB matrix function. This switch enables the function to be turned ON/OFF simultaneously in accordance with individual matrix settings.
		User Matrix 1/2			Sets the OHB User Matrix correction factor individually. This is the first page of the settings.
				R-G	Corrects the signal of the R channel in accordance with the difference between the signals of the R channel and G channel.
				G-B	Corrects the signal of the G channel in accordance with the difference between the signals of the G channel and B channel.
				B-R	Corrects the signal of the B channel in accordance with the difference between the signals of the B channel and R channel.
		User Matrix 2/2			Sets the matrix correction factor individually. This is the second page of the settings.
				R-B	Corrects the signal of the R channel in accordance with the difference between the signals of the R channel and B channel.
				G-R	Corrects the signal of the G channel in accordance with the difference between the signals of the G channel and R channel.
				B-G	Corrects the signal of the B channel in accordance with the difference between the signals of the B channel and G channel.
		Multi Matrix			Allows you to change color reproduction for each hue divided into 16.
				Phase	Selects the hue to adjust.
				Hue	Changes the hue of colors within the hue range selected with Phase.
				Saturation	Changes the saturation of colors within the hue range selected with Phase.
			Clear All		Returns the factors of all ranges of Multi Matrix to their initial states.
	ATW Setting				Adjusts the Auto Tracing White balance.
			ATW		Enables the ATW function.
				Speed	Sets the convergence speed.
	Microphone Gain				Sets the sensitivity of the microphones mounted on the camera head. Depending on the firmware version of the connected CCU, this setting may not be retained after the power is turned off.
				Ch1	Sets the sensitivity of microphone 1.
				Ch2	Sets the sensitivity of microphone 2.
Lens					These are the maintenance items related to the lens.
	Auto Iris Settings				Sets various parameters of the auto iris.
				Level	Sets the convergence level of the auto iris. The higher the value the brighter it becomes.
				APL Ratio	Sets the responsiveness to detailed bright parts of the subject. The higher the value the nearer it becomes to the average value, resulting in unresponsiveness to detailed parts.
				Iris Gain	This is the response speed of the auto iris. The higher the value the faster the response, but hunting becomes more likely to occur.
				Pattern	Sets the detection area of the auto iris.
			Auto Iris		Enables the auto iris function.

Maintenance menu		Submenu	Switch	Adjustment items	Description
Menu	Secondary menu				
	Flare				Corrects the phenomenon of black in the subject becoming bright and color being added due to the influence of the optical system. Adjusting this in the plus direction reduces the black level of the corresponding color in accordance with the brightness of the subject. Be careful not to overcorrect this.
			OFF		Disables the flare correction function.
				R/G/B	Adjusts the correction level of each of R, G, and B.
				Master	Links R, G, and B and adjusts them simultaneously.
	V Mod Saw				Corrects color shading in the vertical direction caused by the lens or optical system.
			OFF		Disables the V Modulation Saw correction function.
				R/G/B	Adjusts the correction level of each of R, G, and B.
				Master	Links R, G, and B and adjusts them simultaneously. R, B, and G move in the opposite direction.
			D.shade Comp		Automatically corrects V Mod Shading in accordance with the state of the lens. Operation is only possible for a supported lens.
	ALAC				This is the Auto Lens Aberration Compensation. It automatically reduces the chromatic aberration or magnification when using a supported lens. When the function is stopped or a supported lens is not attached, “Stop” is displayed on the screen.
			ON		Enables the ALAC function.
	F Drop Comp				Automatically adjusts the gain to compensate for the reduction in brightness due to lens F drop.
			ON		Enables the F drop compensation function.
				F Drop Gain	Value of gain that compensates for lens F drop (display only).
				Max Gain	Adjustment gain with lens open to full aperture and zoom at the telephoto end.
				Drop Point	Position of break point in polygonal line approximation of F drop characteristic with the lens iris fully open. This corresponds roughly to the zoom position at which F drop occurs.
				Roundness	The F drop characteristic can be approximated by a polygonal line. However, depending on the lens, this is not a perfect polygonal line, but has a roundness in the vicinity of the break point (which is smoothly interpolated). The roundness is expressed in terms of the compensation gain at the break point position. The higher the value, the higher the smoothing between two straight lines of the polygonal line. A value of 0 represents a perfect polygonal line.
	Zoom/Focus				
			Active		Switches the zoom/focus operation between a control panel and the camera. (When Active is ON, zoom/focus cannot be adjusted on the camera side.)
		Zoom/Focus			
			Focal Length (mm)		Switches the zoom display units. (Distance/Percentage)
			Distance (m)		Switches the focus display units. (Focus distance/ Percentage)
				Zoom	Adjusts the zoom.
				Control	Switches the focus/zoom control mode.
				Focus	Adjusts the focus.

Maintenance menu		Submenu	Switch	Adjustment items	Description
Menu	**Secondary menu**				
		Back Focus			Adjusts the back focus. Displayed when Back Focus Enable is configured on the Item Permission page.
			Focal Length (mm)		Switches the zoom display units. (Distance/Percentage)
			Wide End		Sets the focal length of the lens to the Wide end.
			Tele End		Sets the focal length of the lens to the Tele end.
			Distance (m)		Switches the focus display units. (Focus distance/ Percentage)
			Back Focus Active		Switches the back focus operation between a control panel and the camera. (When Active is ON, back focus cannot be adjusted on the camera side.)
				Zoom	Adjusts the zoom.
				Zoom Speed	Adjusts the operating speed of zooming when the Tele/Wide End button is pressed.
				Focus	Adjusts the focus.
				Back Focus	Adjusts the back focus.
	ARIA				Auto compensation for drop in light transmission through the lens (Automatic Restoration of Illumination Attenuation). When using a supported lens, the drop in light transmission is automatically compensated. When the function is stopped or a supported lens is not attached, “Stop” is displayed on the screen.
			ON		Enables the ARIA function.
				Total Gain	Total sum value of all gain.
				F Drop Gain	Value of gain that compensates for lens F drop (display only).
				Gain Limit	Sets the upper limit of the correction gain by the ARIA function.
	Virtual Iris				This function prevents deterioration of lens performance near the iris open position. Operations that open the iris are limited to the set value, and the brightness of the image is adjusted according to the gain beyond that.
			ON		Enables the virtual iris function.
				Upper Limit	Sets the upper limit for opening the iris.
			Extender Comp		If the lens being used has an iris compensation function*, this matches its enabled/disabled state. * If an extender is being used, this function compensates for the iris of the lens so that the image does not become dark.
CCU					These are the maintenance items related to the CCU.
	Phase				When a synchronization signal is input to the CCU, this allows you to set the phase in relation to that signal.
		H			Sets the phase of H.
				H Step	Adjusts the phase of the H direction.
				H Course	Coarsely adjusts the phase of the H direction.
		SC			Adjusts the phase of the subcarrier.
				SC Phase	Adjusts the phase of the VBS subcarrier.
	Monitor Output				Sets the marker for monitor output.
			4:3 Marker		Places a 4:3 marker on a 16:9 image for monitor output of the CCU.
				Gate Marker	Sets the brightness of the gate marker (skin gate, etc.).
			4:3 Mod		Darkens the outside of a 4:3 area within an 16:9 image for monitor output of the CCU.
				Modulation Level	This is the level with which to darken with 4:3 Mod.

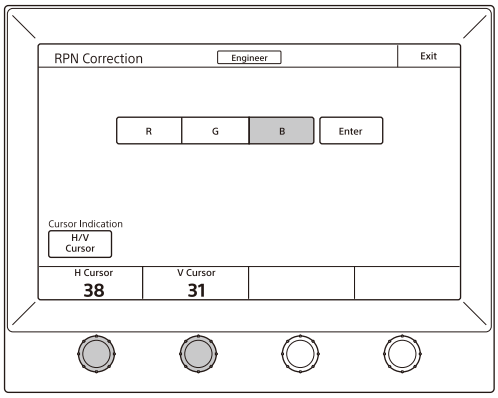
Maintenance menu		Submenu	Switch	Adjustment items	Description
Menu	**Secondary menu**				
SD Adjusting					These are the maintenance items for down converter output.
	SD Detail				This is the contour correction function for down converter output.
			OFF		Disables the SD Detail function.
		1/3			This is the first page of SD Detail adjustment.
				Level	This the contour correction level. Adjusting this in the plus direction makes pictures sharp, and adjusting this in the minus direction makes pictures soft.
				Limiter	Makes adjustments so that contour correction is not greater than a set level to prevent overcorrection by strong contour correction when shooting subjects with large luminance differences. Adjusting this in the plus direction also enables clipping of objects with small luminance differences.
				Crisp	Makes adjustments so that signals with small luminance differences are considered to be noise and correction is not applied to them in order to reduce the emphasizing of also the contours of noise by the contour correction function. Adjusting this in the plus direction results in increasing luminance differences for which contour correction is not performed and improves the S/N sensitivity, but resolution sensitivity deteriorates.
				Level Dep	Contour correction is not applied to the dark parts and S/N sensitivity is increased in order to reduce the emphasizing of also the contours of noise by the contour correction function. Adjusting this in the plus direction results in contour correction not being applied up to a brighter level.
		2/3			This is the second page of SD Detail adjustment.
				H/V Ratio	Adjusts the horizontal and vertical ratio of contour correction.
				Frequency	Adjusts the center frequency of contour correction.
		3/3			This is the third page of SD Detail adjustment.
				W Limiter	This is the limiter correction for detail signals added in the white direction.
				B Limiter	This is the limiter correction for detail signals added in the black direction.
	SD Gamma				This is the gamma correction for down converter output.
				SD M Gamma	Adjusts SD gamma.
	SD Matrix				This is the linear matrix correction for down converter output.
			OFF		Disables the SD matrix function. This switch enables the function to be turned ON/OFF simultaneously in accordance with individual matrix settings.
		User Matrix 1/2			Sets the SD matrix correction factor individually. This is the first page of the settings. When User Matrix is enabled, the ON mark appears on the far left of the tab.
			ON		Enables the User Matrix function.
				R-G	Corrects the signal of the R channel in accordance with the difference between the signals of the R channel and G channel.
				G-B	Corrects the signal of the G channel in accordance with the difference between the signals of the G channel and B channel.
				B-R	Corrects the signal of the B channel in accordance with the difference between the signals of the B channel and R channel.

Maintenance menu		Submenu	Switch	Adjustment items	Description
Menu	Secondary menu				
		User Matrix 2/2			Sets the SD matrix correction factor individually. This is the second page of the settings. When User Matrix is enabled, the ON mark appears on the far left of the 1/2 tab.
			ON		Enables the User Matrix function. This is the same switch as 1/2.
				R-B	Corrects the signal of the R channel in accordance with the difference between the signals of the R channel and B channel.
				G-R	Corrects the signal of the G channel in accordance with the difference between the signals of the G channel and R channel.
				B-G	Corrects the signal of the B channel in accordance with the difference between the signals of the B channel and G channel.
		Multi Matrix			If Multi Matrix which allows you to change the color reproduction for each hue divided into 16 is enabled, the ON mark appears on the far left of the tab.
			ON		Enables the SD Multi Matrix function.
				Phase	Selects the hue to adjust.
				Hue	Changes the hue of colors within the hue range selected with Phase.
				Saturation	Changes the saturation of colors within the hue range selected with Phase.
			Clear All		Returns the factors of all ranges of Multi Matrix to their initial states.
		Preset Matrix			Selects the matrix provided in advance. When Preset Matrix is enabled, the ON mark appears on the far left of the tab.
			ON		Enables SD Preset Matrix.
	Interpolation				Selects the filter for the down converter. Each has different frequency characteristics.
				H	Selects the filter for the horizontal direction.
				V	Selects the filter for the vertical direction.
	Cross Color Reduction				Reduces the cross color of VBS output.
			ON		Disables the Cross Color Reduction function.
				Coring	Sets cross color elimination to not work for detail signals.
				CC Reduction	This is the level for cross color elimination.
	Aspect				Sets the aspect for the down converter.
			SD Aspect Ratio		**16:9 Squeeze:** Outputs without converting the aspect. This is for a 16:9 monitor. **Letter Box:** Inserts a black band at the top and bottom and then outputs. This is for a 4:3 monitor. **4:3 Crop:** Crops to 4:3. This is for a 4:3 monitor.
				Letter Box	Sets the aspect of Letter Box.
			Center Lock		Crops the center part when cropping to 4:3.
				Crop Position	Sets the position for when cropping to 4:3.
RPN					Corrects the RPN. This can only be set when in engineer mode.
			R/G/B		Select the channel to correct.
			Enter		Confirms settings.
				H Cursor	Confirms the H cursor position.
				V Cursor	Confirms the V cursor position.
			H/V Cursor		Outputs the H and V cursors.
APR					Starts the APR function of the camera.

RPN correction

Selecting RPN in the Maintenance menu allows you to correct white dots that appear on the screen manually.

The image sensor is manufactured with high precision technology. However, cosmic rays and other noise may affect the pixels of the image sensor, resulting in small white dots appearing on the display. This is a physical characteristic of image sensors and is not a malfunction. Performing auto black balance adjustment activates the correction function, and may reduce the effects of this phenomenon.
In RPN correction, the white dots are corrected manually.



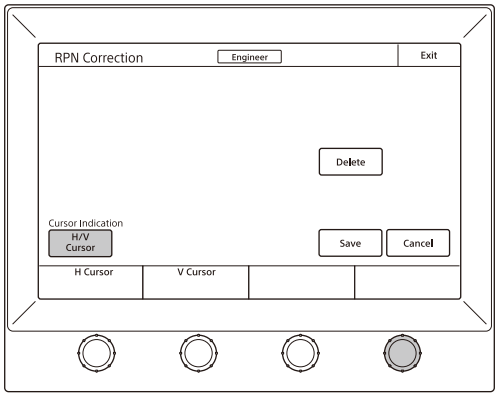
When you press RPN in the Maintenance menu, a cross-shaped cursor appears on the picture monitor connected to the CCU. Perform the following steps while viewing the picture monitor.

1 Press the button that corresponds to the channel you want to correct (R, G, or B) to light it.

2 Press the H/V Cursor button and turn the horizontal and vertical cursors ON.

3 Turn the adjustment knobs to move the cursors on the monitor to the position you want to correct.

4 Press Enter.
The cursor position is set, and the RPN Correction screen changes to the following.



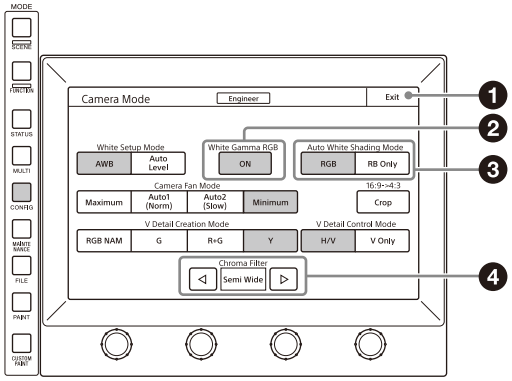
5 Press Save.
The adjustment value is registered in the unit.
To set a different correction value, press Delete to delete the previous value, and repeat the correction.

6 Press Exit.
The adjustment value is registered in the unit.

Config Menu

This menu is for configuring the unit and connected devices.

Screen display example (when “Mode” is selected after selecting “Camera” (Camera Config) in the Config menu)



❶ **Exit button**
Press this to return to the previous menu screen.

❷ **Function switching buttons**
Press this to light the button and turn ON each of the functions.

❸ **Function selection buttons**
Press either of the buttons to select the function mode.

❹ **Chroma filter**
Press ◀/▶ to select a filter.

Menu items

The Config menu is displayed only in engineer mode with some exceptions.
Menu items marked with an asterisk can also be set when not in engineer mode.

Config Menu		Item	Option	Function
Menu	**Submenu**			
Camera				Sets the camera.
	Mode	White Setup Mode		Selects the white value for when an auto setup is performed or an item is cleared.
			AWB	Restores the value obtained from the last time auto white balance was performed.
			Auto Level	Restores the reference file value.
		White Gamma RGB		Selects the reference for white and gamma of the auto setup.
			ON	R, G, and B are independent when this is ON, and all of R, G, and B use the G channel as the reference when this is OFF.
		Auto White Shading Mode		Sets the operation mode of auto white shading.
			RGB	Matches all of the R, G, and B channels so that they become even. A white subject with uniform luminance and no color shading must be used in this mode.
			RB Only	Matches the R and B channels to the G channel.
		Camera FAN Mode		Sets the operation mode of the camera fan.
			Maximum	Sets the number of revolutions of the camera fan to the maximum number.
			Auto1	Controls the number of revolutions of the fan in accordance with the internal temperature of the camera. This is the optimal mode for reducing any rise in the internal temperature.
			Auto2	Controls the number of revolutions of the fan in accordance with the internal temperature of the camera. This is the optimal mode for reducing the operation sound of the fan.
			Minimum	Sets the number of revolutions of the camera fan to the minimum number. However, if the internal temperature exceeds a specified value, the number of revolutions are increased.
		16:9 → 4:3		Crops a 16:9 picture to 4:3.
			Crop	Executes cropping when Crop is ON.
		V Detail Creation Mode		Selects the generation method for V Detail.
			RGB Nam	Uses the V Detail, generated from each of the R, G, and B channels, that has the largest amplitude. This increases resolution sensitivity, but S/N sensitivity may deteriorate.
			G	Generates V Detail from the G channel.
			R+G	Generates V Detail from a signal combining R and G.
			Y	Generates V Detail from the luminance signal.
		V Detail Control Mode		Sets control for when the Detail H/V Ratio knob is turned.
			H/V	Moves H Detail and V Detail in the opposite direction in response to movement of the knob.
			V Only	Adjusts V Detail only.
		Chroma Filter		Sets the band for the chroma component. Full is the same band as the signal standard, and the band becomes gradually narrower above that.
CCU				Sets the CCU.
	Mode	Genlock Mode		Selects the type of signal using synchronization.
			HD	This is HD tri-level sync.
			SD	This is BBS.
			Network	SMPTE ST 2059-1/2
		Bars Character		Sets the characters to add to color bars signals.
			On	Add characters to color bars signals.
			Edit	Opens the character edit screen.
		Chroma		Turns OFF the VBS chroma signal.
			Off	Adds the chroma component to VBS.
	Return Settings		–	See “To set the CCU return input settings” (page 53).

Config Menu		Item	Option	Function
Menu	Submenu			
MSU				See “MSU menu items” below.
CNU				Sets the system configuration using the CNU. (For details on the CNU menu, contact your Sony representative.)
Converter				Sets the converter (HDRC-4000).
	Mode			
		AIR Matching		Enables the AIR Matching function.
		Through Mode		When through mode is enabled, the signal that is input on the input connector is output without change from the output connector.
	SR Live Metadata			
		Metadata Input		Displays the SR Live Metadata detection status of the input signal.
		Apply SR Live Metadata		Applies the input SR Live Metadata to the converter operation.
			Once	Applies the input SR Live Metadata values to the image processing once only.
			Continuously	Applies the input SR Live Metadata values to the image processing continuously.
RCP Assignment				See “To set RCP assignments” (page 52).
Multi Format				Sets the video format of the CCU output.
BPU Multi Format				Sets the video format of the BPU output.
Menu Control				Controls the CAM/BPU/CCU menu.

RCP Assignment menu items

Menu	Submenu	Switch	Adjustment items	Description
RCP Assignment		1 - 5		Selects a memory file number of an RCP assignment.
		CLR		Clears the memory file of the selected RCP assignment.
		Store		Saves the memory file of the RCP assignment.
	RCP List			Sets the RCP assignment setting.
			Panel	Selects the panel for which to change the assignment.
			Camera	Selects the camera to which the target panel is assigned.
		Set		Enables reflecting the state of RCP List to the system.
		Cancel		Returns the state of RCP List to the current state.
		All Camera		Also displays the panel and camera which are currently not in the system, in the RCP List.
		All Reset		Resets the current state of RCP assignment.

MSU menu items

Menu	Item	Option	Function
Customize	–	Menu Customize	Changes the custom paint configuration. This can only be set when in engineer mode.
	–	SW Customize	Assigns functions to spare switches. This can only be set when in engineer mode.
	–	Standard Indication (MSU-3000 only)	Selects the standard state. The LED at the top of the corresponding indication lights green in the standard state, and amber in the non-standard state. It remains off when not even one standard state is selected. This can only be set in engineer mode.
		Indicator Customize	Sets the conditions for lighting the assignable indicator.
		MB Knob	Sets the function assigned to the MASTER BLACK knob.

Menu items marked with an asterisk can also be set when not in engineer mode.

Menu	Secondary menu	Submenu	Switch	Adjustment items	Description
Display/Sound*	Sound				Sets the volume and type.
			OFF		Sets no sound to be emitted from the speakers.
		Call			Sets the call sound.
			Sound Test		Confirms the set call sound.
			CALL Sound		Enables the call sound.
				Volume	Adjusts the volume of the call sound.
				Sound	Selects the type of the call sound.
				Master	Simultaneously sets the volume for all sounds emitted from the speakers.
		Touch			Sets the operation sound for when a switch on the LCD is pressed.
			Sound Test		Confirms the set operation sound.
			Touch Sound		Enables the operation sound.
				Volume	Adjusts the volume of the operation sound.
				Sound	Selects the type of the operation sound.
				Master	Simultaneously sets the volume for all sounds emitted from the speakers.
		SW			Sets the operation sound for when a switch button is pressed.
			Sound Test		Confirms the set operation sound.
			Switch Sound		Enables the operation sound.
				Volume	Adjusts the volume of the operation sound.
				Sound	Selects the type of the operation sound.
				Master	Simultaneously sets the volume for all sounds emitted from the speakers.
		RE			Sets the operation sound for when an adjustment knob is turned.
			Sound Test		Confirms the set operation sound.
			RE Sound		Enables the operation sound.
				Volume	Adjusts the volume of the operation sound.
				Sound	Selects the type of the operation sound.
				Master	Simultaneously sets the volume for all sounds emitted from the speakers.
	LED				Sets the LED brightness.
			Switch		Sets the switch brightness.
			Tally		Sets the tally brightness.
			Other		Sets other LED settings.
			Master		Simultaneously sets the brightness of all items.
	LCD				Adjusts the LCD.
				Bright	Adjusts the brightness of the LCD.
	EL				Adjusts the backlight for illuminating the function names.
			OFF		Turns off the backlight.
			Light Detect		Turns off the backlight in response to the surrounding brightness.
				Detect	Sets the brightness for turning off the backlight.
				Bright	Adjusts the brightness of the backlight.

Menu items marked with an asterisk can also be set when not in engineer mode.

Menu	Item	Option	Function
Mode	PIX/WF		Sets the operation for when PIX/WF output.
		PIX/WF Synchro	Links RGB selection in the menu and PIX/WF control for when Black Shading and White Shading are adjusted (linked when ON). This can only be set in engineer mode.
	Matrix Gate	Gate Interlock	When this is turned ON, priority is given to the setting of the unit for the selection of multi matrix gate when the unit disables Panel Active or PARA, even if another panel has a different channel selected. This can only be set in engineer mode.
	Extend Call		The TALLY indicator continues to flash for a while when a call is received.
		ON	Enables Extend Call.
		Time	Sets the flashing duration of the TALLY indicator.
		Mode	Sets the condition for enabling this function.
	Camera Select	Max Cam No	Sets the maximum number of cameras to be connected to the system.
Date/Time		Date	Sets the date.
		Time	Sets the time.
		Time Zone	Sets the time zone.
Network	Network Info		Displays the network information.
	CNS	Legacy/Bridge/MCS	Sets the connection mode.
	TCP/IP	IP Address	Sets the IP address.
		Subnet Mask	Sets the subnet mask.
		Default GW	Sets the default gateway.
Information*	Version	–	Displays the version information.
	Network Info	–	Displays the network information.
	Custom List	–	Lists the customized status of switches, knobs, and indicators.
Security	Page Permission	Full Lock	Locks all menu screens.
		View Mode	Locks the menu screens. However, the menus can be viewed.
		Custom Paint Only	Enables the menus such as Paint, Maintenance, and File.
	Item Permission	APR Enable	Enables the APR execution function.
		Back Focus Enable	Enables the back focus adjustment function.
		Ref File Enable	Enables the operation of reference files.
		Lens File Enable	Enables the operation of lens files.
		OHB File Enable	Enables the operation of OHB files.
		Crop Enable	Enables the operation of crop.
		Abs Enable	Enables the absolute value display button.
		Knee Max Enable	Enables the operation of Knee Max.
	Code Change	Code No.	Registers a security code.
	Engineer Protect	Code Enable	Protects switching to engineer mode with a security code.
	Reset All		Restores all settings to their default states.
	Reset MSU Config		Resets the Config menu items, excluding network settings, to their default settings.
	Reset Network Cfg.		Resets the network settings to their default settings.
	Engineer Mode		Switches to engineer mode.
Switch Setting		CAM PW Long Press	Enables long-press mode for the CAM PW button.
		STANDARD Long Press	Enables long-press mode for the STANDARD button.

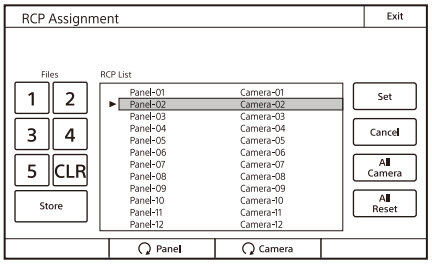
Menu	Submenu	Control item	Function
Backup	MSU Config	Store	See “To save the settings of the unit to a USB drive” (page 25).
		Recall	
		File Comment	
		Delete	
	Network Config	Store	
		Recall	
		File Comment	
		Delete	

To set RCP assignments

You can change the camera controlled by each RCP by selecting RCP Assign in the MSU Config menu.

Note

The following RCP assignment function is only available in MCS mode.



1 Use the “Panel” knob to select the RCP number for which you want to change assignment.
If you select the All Camera button, all RCPs and cameras will be displayed. (When All Camera is not selected, only devices with established connections to the Master of the MCS mode are displayed.)

2 Use the “Camera” knob to select the camera that will be controlled from the RCP selected in step 1.

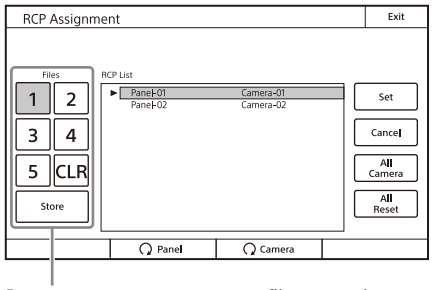
3 To return all RCP assignments to their standard state, press the All Reset button.

4 Press the Set button.
The setting changes are applied.

You can save up to five states of RCP assignment to the MSU internal memory, and retrieve them to reflect in the system, as needed.

To retrieve the state of RCP assignment saved to the MSU internal memory

1 Press the file number button to select the saved state of RCP assignment you want to read.
The selected file button lights, then the state of RCP assignment is reflected in the RCP List.



Buttons to operate memory files stored in the unit

Notes

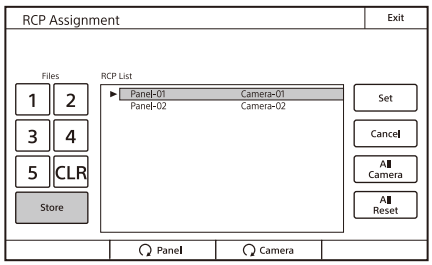
- You can select only the file number button that has state of RCP assignment saved.
- When the file number button is pressed and a changed state is reflected in the RCP List, RCP assignment has not yet been reflected in the system.
- If the panel existed when an RCP assignment file was saved, but no longer exists when the file is read, the assignment state of the non-existing panel is not guaranteed.

2 Press the Set button.
The file number button light goes off, and the change of setting is confirmed.

To save the state of RCP assignment to the MSU internal memory

1 Set the state of RCP assignment.

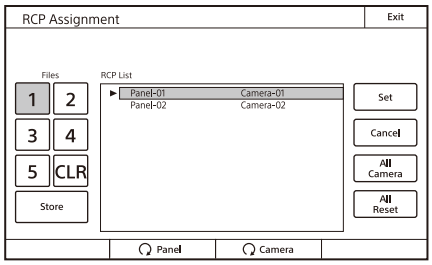
2 Press the Store button.
The Store button lights.



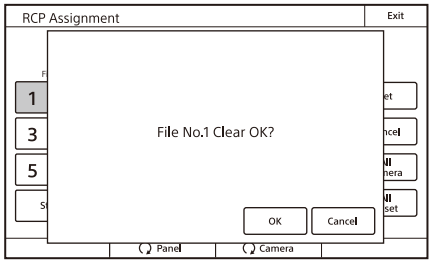
3 Press the file number to save.
The state of RCP assignment is saved to the assigned file number, and the Store button and the file number button lights go off.

To clear the RCP assignment file saved to the MSU internal memory

1 Press the file number button to select the saved state of RCP assignment you want to clear.
The selected file button lights, then the state of RCP assignment is reflected in the RCP List.



2 Press the CLR button.
The confirmation message screen for file clearing is displayed.



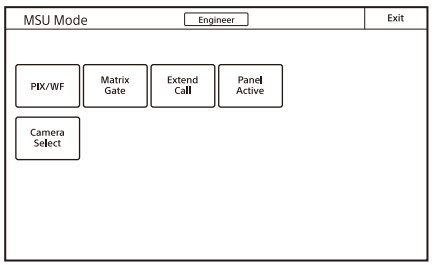
3 Press OK.
The saved data of the specified file is cleared, and the file number button will be disabled.
Press Cancel not to clear files.
When you press Cancel, the RCP List returns to the state before the file numbers were pressed.

To set PIX/WF operation

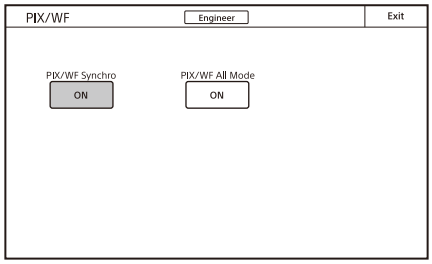
You can set the following operations for PIX/WF output.
- Whether to link output from the PIX2 OUTPUT and WF2 OUTPUT connectors to RGB switching on the adjustment display (PIX/WF Synchro setting).
- Turn ON/OFF All Mode (PIX/WF/Synchro setting)
- Control mode of the monitor selection buttons (PIX/WF Control Mode setting)

This setting is configured in engineer mode.

1 Press Mode on the MSU Config screen.
The MSU Mode screen appears.



2 Press PIX/WF.
The PIX/WF screen appears.



3 Set the PIX/WF operation.
The following settings can be configured.

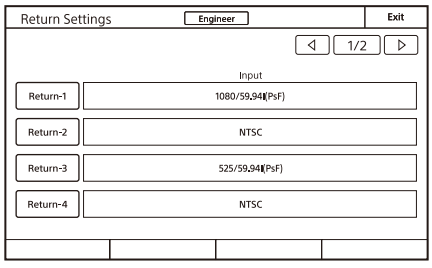
PIX/WF Synchro
Turn ON/OFF linking of output from the PIX2 OUTPUT and WF2 OUTPUT connectors to RGB switching on the adjustment display.
- Press ON to light the button and switch to linking of output from the PIX2 OUTPUT and WF2 OUTPUT connectors to RGB switching on the adjustment display when the white shading or black shading is adjusted.
- Set OFF to output the signal selected with the PICTURE MONITOR or WAVEFORM MONITOR buttons from the PIX2 OUTPUT and WF2 OUTPUT connectors regardless of the RGB selection in the adjustment screen.

PIX/WF All Mode
Turn ON/OFF PIX/WF All mode.
- Press ON to light the button and set each of the buttons of PICTURE MONITOR or WAVEFORM MONITOR to function for all of the cameras in the selected group.
- Set OFF to set each of the buttons of PICTURE MONITOR or WAVEFORM MONITOR to function for only the camera selected with a camera selection button.

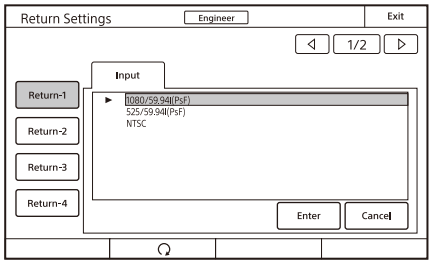
To set the CCU return input settings

Select Return Settings in the Config menu of the CCU to set the formats of return signals from the CCU.
This can only be set when in engineer mode.

The input signal settings are displayed on page 1.



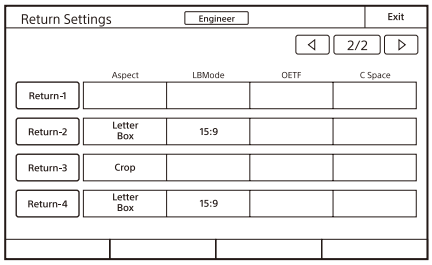
1 Press any one of Return-1 to Return-4.
The screen for specifying the format of the return signal appears.



2 **Set the format of the return signal.**
Input**:** Specifies the input signal.

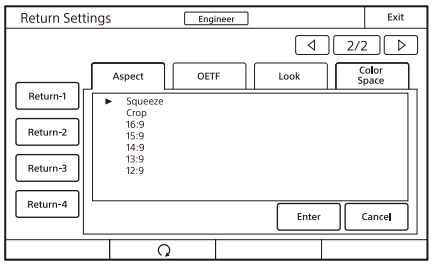
3 **Press** Enter**.**

4 **Press the ▶ button to move to page 2.**
Page 2 displays the aspect ratio if the input return signal is SD. It displays the OETF, Look, and color space settings if the signal is HDR/wide color space.



5 **Press the button for the return signal selected in step 1.**

6 **Configure the return signal settings.**



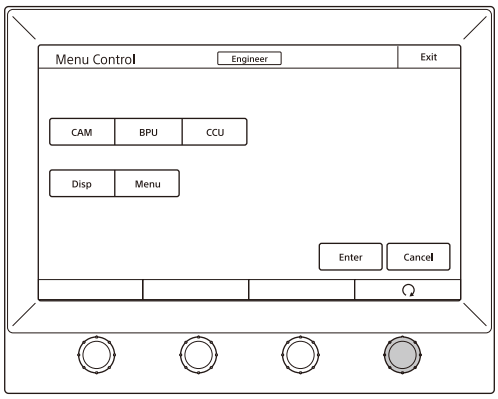
Aspect**:** Specifies the aspect ratio. This can only be set if you specified an SD signal on page 1.
OETF**:** Specifies the OETF. This can only be set for a CCU which supports HDR return input.
Look**:** Sets the Look of the input return image. This can only be set for a CCU which supports HDR return input.
Color Space**:** Specifies the color space. This can only be set for a CCU which supports wide color space return input.

7 **Press** Enter**.**

8 **Repeat steps 1 to 7 if you also want to set the remaining return signals.**

To control the CAMERA/BPU/CCU menu

When you select Menu Control in the Config menu, you can control the menu of the camera, BPU, or CCU from the unit remotely.
This can only be set when in engineer mode.



- Select the target device for menu control using CAM, BPU, or CCU. When a device is selected, the corresponding button is lit. When all button indications are not lit, no device is selected and menu control operation is disabled.
- Press the Disp button to show/hide the operating status of the camera or BPU. If pressed when CCU is selected, the display changes to the CHARACTER display.
- Use Menu to display or hide the target device menu.
- Press Enter to switch to configuration mode and to apply changes to settings.
- Press Cancel to exit configuration mode and cancel changes to settings.
- Turn the adjustment knob on the far right to move the cursor in the menu and to change a setting.

To protect operations with a security code

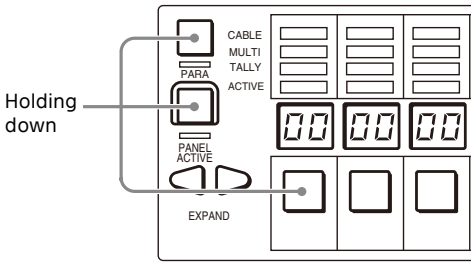
To prevent unwanted operations, you can protect operation of the unit with a security code.

To enable security code protection

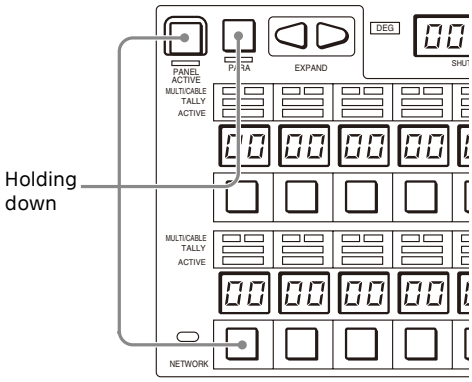
Under the default settings, the security code is disabled. Use the following procedure to enable the security code.

1 **Turn on the unit while holding down the PARA button, PANEL ACTIVE button, and camera selection button 1.**

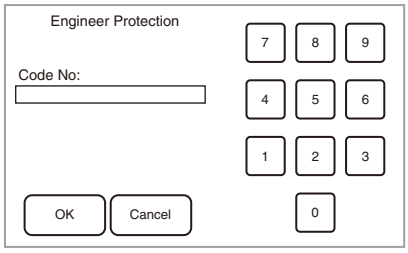
MSU-3000



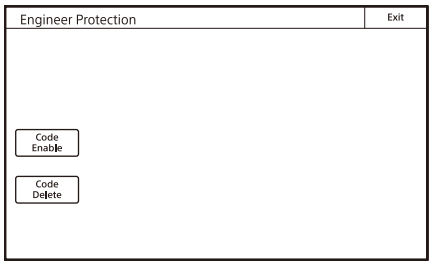
MSU-3500



The numeric keypad appears.



2 Use the numeric keypad to enter "0359" and then press [OK].
The Engineer Protection screen appears.



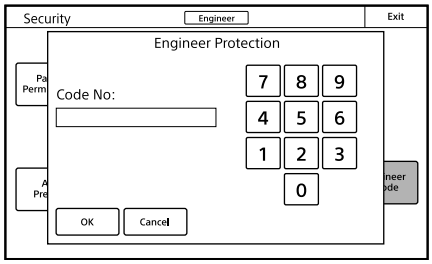
3 Press [Code Enable] to light the button.
Security code protection is enabled.
If you press [Code Delete] here to light the button, a confirmation screen for security code deletion appears. The Engineer Protection screen reappears when you press [OK].

4 Press [Exit].

To set the security code

Some of the menus on the unit are operated in engineer mode. To limit the use of engineer mode to specific operators, preset the security code. The security code setting is configured in engineer mode. After you set the security code, it will need to be entered to switch to engineer mode.

1 Press [Code Change] on the Security screen.
The numeric keypad and new security code (Code No.) input field appear.



2 Use the numeric keypad to enter any security code (1 to 8 digits), and then press [OK].

Note

Each number entered for the security code appears as "*" on the screen.

A security code reentry screen appears.

3 Confirm the security code entered in step 2 by reentering it, and press [OK].
The Security screen reappears.

4 Press [Engineer Mode] to cancel engineer mode.
The security code is set, and the numeric keypad will appear whenever you press [Engineer Mode] on the Security screen. To enter engineer mode, enter the security code that was set and press the [OK] button.

To change the security code

The security code is changed in engineer mode.

1 Press [Engineer Mode] on the Security screen.
The numeric keypad and security code (Code No.) input field appear.

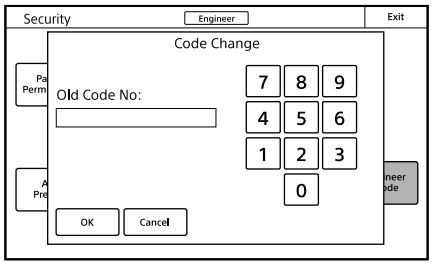
2 Enter the security code, and then press [OK].

Note

Each number entered for the security code appears as "*" on the screen.

The unit enters engineer mode, and [Code Change] appears.

3 Press [Code Change].
The current security code (Old Code No.) input field appears.



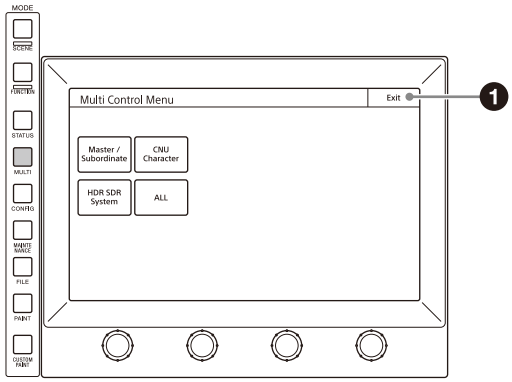
4 **Enter the security code that you entered in step 2, and then press OK.**
The new security code (New Code No.) input field appears.

5 **Perform steps 2 to 4 of "To set the security code" to set a new security code.**

To delete the security code

If you forget the security code or need to disable it to enter engineer mode in an emergency, perform the procedure in "To enable security code protection" (page 54), and perform one of the following in step **3**.
Press Code Enable to turn the button light off (security code protection is disabled).
Press Code Delete to light the button (the security code is deleted).

Multi Menu



❶ **Exit button**
Press this to return to the previous menu screen.

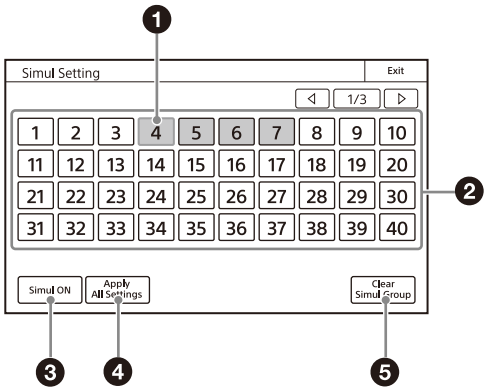
Menu items

Multi menu items can also be set when not in engineer mode.

Menu	Operation/Setting item	Function
Master/Subordinate	Master	Specifies the master device.
	Subordinate	Specifies the subordinate device.
	All Subordinate	Sets all cameras as subordinate devices.
	All Off	Cancels the subordinate specification for all of the cameras.
CNU Character	Character ON	Turns ON CNU character output.
	Default	Selects the default display.
	System <#-#>	Displays the control system setting state.
	Auto <#-#>	Displays the auto setup items.
	Diag <#-#>/One Cam	Displays the self-diagnosis results.
	Data <#-#>/One Cam	Displays the camera setting state.
HDR SDR System	Simul Setting	Sets linked conversion parameter settings for multiple cameras during HDR and SDR mixed operation. (See "To link parameters for HDR/SDR simultaneous operation" (page 57).)
ALL	All Target Select	Selects the camera to control in All mode. (See "Selecting the target cameras in All mode" (page 57)).

To link parameters for HDR/SDR simultaneous operation

When Simul Setting is selected in the Multi menu, you can select cameras to link their parameters during simultaneous HDR and SDR operation.



❶ **Selected cameras**
A blue frame is displayed on each number of the selected cameras.

❷ **Camera number buttons**
Press the number buttons for the cameras you want to link so that the buttons light. Pressing a button again will cancel the link.

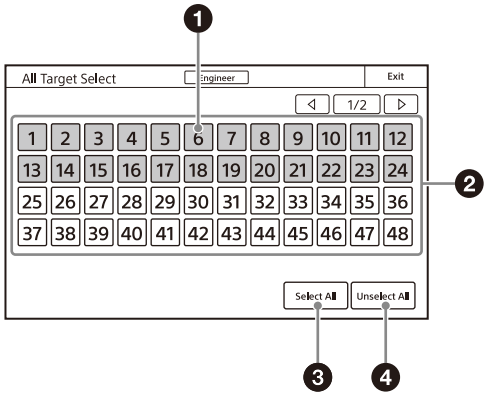
❸ **Simul ON button**
Enables/disables operation link mode.

❹ **Apply All Settings button**
Applies the values of the parameters of the currently selected camera to the link target cameras.

❺ **Clear Simul Group button**
Clear the registration of numbers of all link target cameras.

Selecting the target cameras in All mode

You can select the cameras to control in All mode when All Target Select is selected in the Multi menu.



❶ **Selected cameras**
The selected camera numbers are displayed highlighted. All cameras are selected in the initial state.

❷ **Camera number buttons**
Press the number buttons for the cameras you want to control in All mode so that the buttons light up. Pressing a button again will cancel the selection.

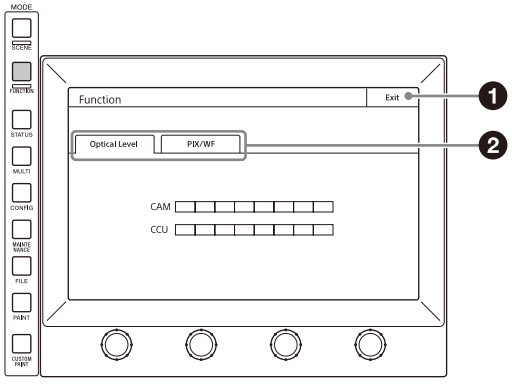
❸ **Select All button**
Selects all cameras.

❹ **Unselect All button**
Cancels the selection of all cameras.

Function Menu

This menu switches the optical level display and PIX/WF.

Screen display example (when PIX/WF is selected)



❶ **Exit button**
Press this to return to the previous menu screen.

❷ **Submenu**
Press a tab to switch to the setting items.

Menu items

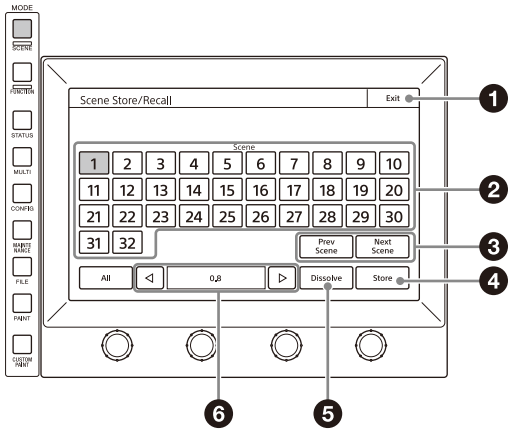
Function menu items can also be set when not in engineer mode.

Menu	Item	Description
Optical Level	CAM	Displays the optical communication reception level of the camera.
	CCU	Displays the optical communication reception level of the CCU.
Optical Level (when connecting the separate camera)	CCU → BPU	Displays the optical communication reception level from CCU to BPU.
	BPU → CCU	Displays the optical communication reception level from BPU to CCU.
	BPU → CAM	Displays the optical communication reception level from BPU to the camera.
	CAM → BPU	Displays the optical communication reception level from the camera to BPU.
PIX/WF	PIX (R/G/B/ENC)	Selects the PIX2 OUTPUT output signal of the CCU. **R/G/B:** Outputs one of the R, G, and B signals (or a combination of multiple signals). **ENC:** Outputs an encoded signal.
	WF (R/G/B/SEQ/ENC)	Selects the WF2 OUTPUT output signal of the CCU. **R/G/B:** Outputs one of the R, G, and B signals (or a combination of multiple signals). **SEQ:** Monitors the waveforms of the three signals R, G, and B in sequential mode. **ENC:** Outputs an encoded signal.

Scene Menu

This menu is for selecting, registering, and configuring scene files.

Screen display example (when connected to the cameras of the 32 scene files)



❶ **Exit button**
Press this to return to the previous menu screen.

❷ **Scene files**
Select and press the number of a scene file to access the registered file. When you access a file, the number of the accessed scene file lights.
If you press the same number, the state returns to that before you accessed the file.

❸ **Prev Scene / Next Scene buttons**
Press these buttons to access the previous scene file or next scene file.

❹ **Store button**
Press this button and then press the desired scene file number to register the file. When file registration is finished, the Store button turns off.

❺ **Dissolve button**
When you press this button to turn it on, the picture changes gradually when the scene file is accessed (when off, the picture changes instantly).

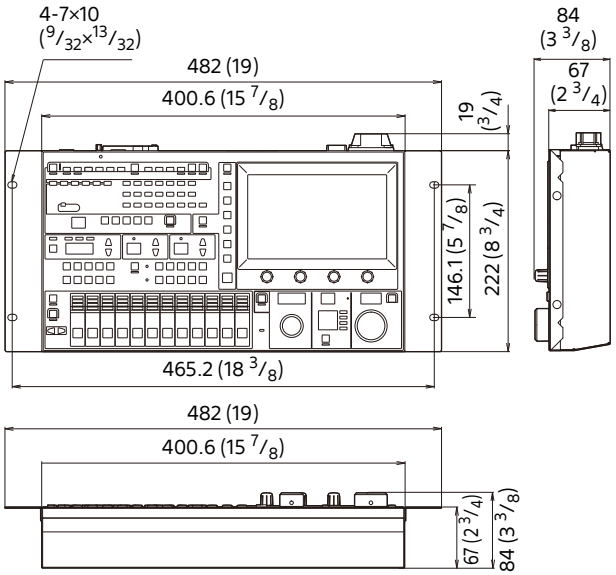
❻ **Dissolve Speed button**
Sets the approximate time to change the picture while the Dissolve button is on (the larger the number the longer it takes for the picture to change).
Press this button and then press the scene file number to access the scene file on all cameras.

Specifications

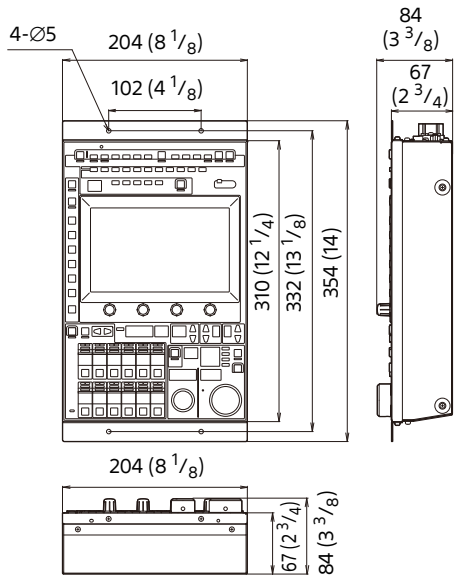
General	
Power requirements	AC 100 V to 240 V 50/60 Hz 0.30 A (Max.) DC 10.5 V to 17 V 2.3 A (Max.)
Operating temperature	5 °C to 40 °C (41 °F to 104 °F)
Storage temperature	–20 °C to +60 °C (–4 °F to +140 °F)
Mass	MSU-3000: Approx. 4.2 kg (9 lb 4.2 oz) MSU-3500: Approx. 3.4 kg (7 lb 7.9 oz)

External dimensions **Unit: mm (inches)**

MSU-3000



MSU-3500



Input/output connectors	
REMOTE	
CCU/CNU	8-pin multi-connector (1)
AUX	8-pin multi-connector (1)
I/O PORT	50-pin (1)
LAN	8-pin RJ-45 (1)
AC IN	3-pin (1)
DC IN	4-pin (1)

Supplied accessories

Operation Guide (1)
Operation Manual (CD-ROM) (1)

Optional accessories

AC power cord
- For customers in the USA and Canada
  Power cord (125 V, 10 A, 2.4 m (8 feet))
  (Part No. 1-551-812-3X)
- For customers in Europe
  Power cord (250 V, 10 A, 2.5 m (8.2 feet))
  (Part No. 1-782-929-1X)

Plug holder 2-990-242-0X
External I/O connector JAE-DE-50PF-N equivalent
CCA-5-3 remote cable (3 m)
CCA-5-10 remote cable (10 m)
CCA-5-30 remote cable (30 m)

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.
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