FOR.A®
INNOVATIONS IN VIDEO
and AUDIO TECHNOLOGY

OPERATION MANUAL

FA-505

Frame Synchronizer

FA-10AES-BL
FA-10AES-UBL
FA-10AES-UBLC
FA-10ANA-AUD
FA-10GPI
FA-50PS
FA-10RU*
FA-10DCCRU*
FA-AUX30*

4th Edition - Rev. 5

Software Version 2.13 – Higher

FOR-A COMPANY LIMITED

Edition Revision History

Edit.	Rev.	Date	Description	Section/Page
1	-	2014/12/17	First edition	
2	-	2015/03/05	Supported 3G-Level-B Dual-Stream Changed 4KFS mode Changed Line Sync/AVDL V Phase default settings Added 3G SDI Output Payload ID to Video System Added Input Signal Payload ID Status to Video Status	4-2-4, 11 4-2-4-1 4-2-4-2 4-2-4-5 4-2-15
3	-	2015/05/29	Added note on 3G-SDI (Level-B) dual-stream.	4-2
3	1	2015/07/07	Added notes on Sync Mode 4KFS settings. Added optional card external dimensions.	4-2-4-1, etc. 15-2
3	2	2015/09/04	Factual errors corrected.	4-2-4, 11
3	3	2016/03/15	Added new clean switch commands to GPI.	4-4-1
4	-	2016/05/27	Expanded GPI function Supports color correction for 4K 2SI signals Supports low frame-rate progressive formats. Supports HDR.	4-4 4-2-5-1, 4-2-9 4-2-1, 4-2-4, 4-2-6, 15-1 4-2-9
4	1	2016/07/29	Inhibit function Changed GUI menus (Video, Audio and Utility) Revised Color Correction menu Reboot function 1080/30p (HD-SDI) support 1080/60p (3G-SDI Level-A) support	4-1 4-2, 4-3, 4-6 4-2-9 4-6-1
4	2	2016/09/12	Changed 4K FS Mode description.	4-2-1
4	3	2016/09/28	Changed System Phase default settings. Changed the White Input Clip setting range for RGB Clip. Corrected the Input Embed Status OID value.	4-2-5-3 4-2-9-3 p.132
4	4	2016/11/02	Changed the Timecode menu screen and description. Error correction	4-2-11-3 11
4	5	2017/05/30	Supported Windows 10	3-5-1, 3-6

Precautions

Important Safety Warnings

[Power]

Caution	Operate unit **only** at the specified supply voltage.
	Disconnect the power cord via the power plug only. **Do not** pull on the cable portion.
Stop	**Do not** place or drop heavy or sharp-edged objects on the power cord. A damaged cord can cause fire or electrical shock hazards. Regularly check the power cord for excessive wear or damage to avoid possible fire / electrical hazards.
Caution	**Ensure** the power cord is firmly plugged into the AC outlet.

[Grounding]

Caution	**Ensure** the unit is properly grounded at all times to prevent electrical shock.
Hazard	**Do not** ground the unit to gas lines, units, or fixtures of an explosive or dangerous nature.

[Operation]

Hazard	**Do not** operate the unit under hazardous or potentially explosive atmospheric conditions. Doing so could result in fire, explosion, or other hazardous results.
Hazard	**Do not** allow liquids, metal pieces, or other foreign materials to enter the unit. Doing so could result in fire, other hazards, or a unit malfunction.
	If a foreign material does enter the unit, turn the power off and **immediately** disconnect the power cord. Remove the material and contact an authorized service representative if damage has occurred.

[Transportation]

Caution	**Handle** with care to avoid impact shock during transit, which may cause malfunction. When you need to transport the unit, use the original or suitable alternative packing material.

[Circuitry Access]

	Do not remove covers, panels, casing, or access the circuitry with power applied to the unit. Turn the power off and disconnect the power cord prior to removal. Internal servicing / adjustment of unit should only be performed by qualified personnel.
Stop	**Do not** touch any parts / circuitry with a high heat factor. Capacitors can retain enough electric charge to cause mild to serious shock, even after the power has been disconnected. Capacitors associated with the power supply are especially hazardous.
Hazard	Unit **should not** be operated or stored with cover, panels, and / or casing removed. Operating the unit with circuitry exposed could result in electric shock / fire hazards or a unit malfunction.

[Potential Hazards]

Caution	If abnormal odors or noises are noticed coming from the unit, immediately turn the power off and disconnect the power cord to avoid potentially hazardous conditions. If problems similar to the above occur, contact an authorized service representative **before** attempting to operate the unit again.

[Rack Mount Brackets, Ground Terminal, and Rubber Feet]

Caution	To rack-mount or ground the unit, or to install rubber feet, **do not** use screws or materials other than those supplied. Doing so may cause damage to the internal circuits or components of the unit. If you remove the rubber feet that are attached to the unit, **do not** reinsert the screws that secure the rubber feet.

[Consumables]

Caution	Consumable items that are used in the unit must be periodically replaced. For further details on which parts are consumables and when they should be replaced, refer to the specifications at the end of the Operation Manual. Since the service life of the consumables varies greatly depending on the environment in which they are used, such items should be replaced at an early date. For details on replacing consumable items, contact your dealer.

Upon Receipt

Unpacking

FA-505 units and their accessories are fully inspected and adjusted prior to shipment. Operation can be performed immediately upon completing all required connections and operational settings.
Check your received items against the packing lists below. Check to ensure no damage has occurred during shipment. If damage has occurred, or items are missing, inform your supplier immediately.

ITEM	QTY	REMARKS
FA-505	1	
AC Cord	1 set	(Including AC cord retaining clip)
Rack Mount Brackets	1 set	EIA standard type (Including 4 screws)
CD-ROM	1	Windows GUI installation disc (Including operation manual (PDF)
Quick Setup Guide	1	

Option

ITEM	QTY	REMARKS
FA-10AES-BL	1-4	Digital audio (balanced) I/O card
FA-10AES-UBL	1-4	Digital audio (unbalanced) I/O card
FA-10AES-UBLC	1-2	Digital audio (unbalanced) Output expansion cable * Requires FA-10AES-UBL option. * The FA-10AES-UBL functions as an input card when used with the FA-10AES-UBLC.
FA-10ANA-AUD	1	Analog audio I/O expansion cable
FA-10GPI	1-4	External I/O control card
FA-50PS	1 set	Redundant power supply unit (Including AC cord and AC cord retaining clip)
FA-10RU	1	Remote control unit
FA-AUX30	1	GPI control unit
FA-10DCCRU	1	Color Corrector Remote Control Unit

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Rack Mounting

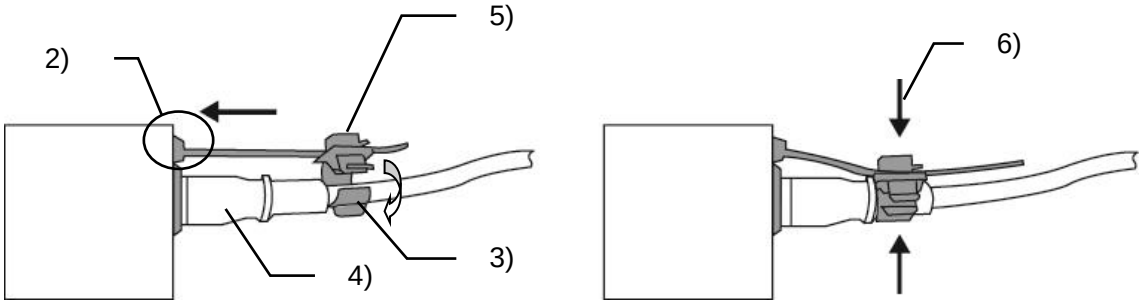
FA-505 can be mounted to EIA standard rack units. When rack mounting a unit, remove the rubber feet and use the accessory rack mount brackets (rack ears).

Installing the AC Cord Retaining Clip

Secure the AC cord with the supplied ladder strap/retaining clip assembly to prevent accidental removal from the FA-505.

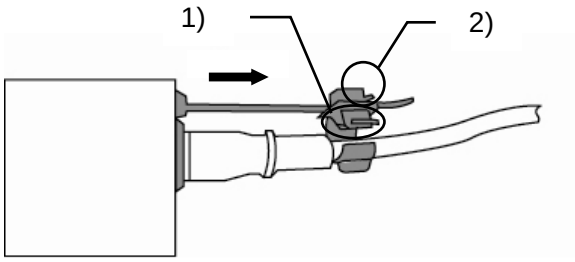
◆ **Attaching the retaining clip assembly**

1) Wrap the retaining clip around the AC cord (with the anchor of the ladder strap toward the unit).
2) Insert the anchor into the hole next to the AC IN socket.
3) Lightly fasten the clip around the AC cord.
4) Plug in the power cord.
5) Slide the clip on the ladder strap toward the plug.
6) Fasten the clip tightly.
7) Gently pull on the AC cord to ensure it is secured.



◆ **Unpluging the AC cord**

1) Push the tab on the retainer up to unfasten the clip.
2) Push the tab on the ladder strap up and slide the clip back.
3) Unplug the AC cord.



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1. Prior to Starting

1-1. Welcome

Congratulations! By purchasing an FA-505 Frame Synchronizer you have entered the world of FOR-A and its many innovative products. Thank you for your patronage and we hope you will turn to FOR-A products again and again to satisfy your video and audio needs.
FOR-A provides a wide range of products, from basic support units to complex system controllers, which have been increasingly joined by products for computer video-based systems. Whatever your needs, talk to your FOR-A representative. We will do our best to be of continuing service to you.

1-2. Features

Developed as an all-round unit, the FA-505 frame synchronizer comes equipped with 5 signal processing channels in a compact 1U body. Color correction, 5 x 5 clean switching, and 3G-SDI Level A/B conversion functions and remapping/embedding of 80-channel embedded audio in 5 SDI signal inputs have been added as standard to the various frame synchronizer functions of the FA-505. Moreover, by installing additional optional functions into the 4 built-in slots, the unit is able to function optimally under all types of video production scenes, including those for transmission, outside broadcasting, news reporting, production, editing and distribution.

Standard Features

- SDR / HDR / WCG Color Correction. Supports color correction and Proc Amp for 4K SQD and 2SI signals. (Software Version 2.00 or later) *
- Powerful frame synchroniation
- Audio embedding/de-embedding
- 3G-SDI Level A/B conversion
- 5 x 5 clean switching
- Up/down/cross conversion features
- Timecode insertion
- Pass-through of ancillary data such as closed captioning or time code data
- Other standard features
  - Video/Audio delay
  - Audio remapping
  - Audio down-mixing
  - Monitoring and control via dedicated GUI
  - Monitoring and control via Web GUI (Partial support)
  - SNMP monitoring

Optional Features

- Digital audio input/output (balanced/unbalanced)
- Analog audio input/output
- External input/output control (Extension function is available in Software Version 2.00 or later.)
- Redundant power supply

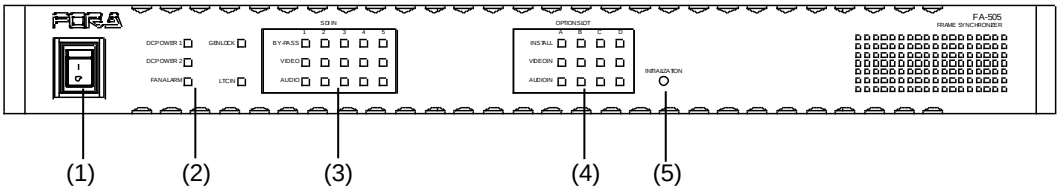
* Note that conversion between SQD and 2SI is not supported.

1-3. About This Manual

This manual is intended to help the user easily operate this product and make full use of its functions during operation. Before connecting or operating your unit, read this operation manual thoroughly to ensure you understand the product. Afterwards, it is important to keep this manual in a safe place and available for reference.

2. Panel Descriptions

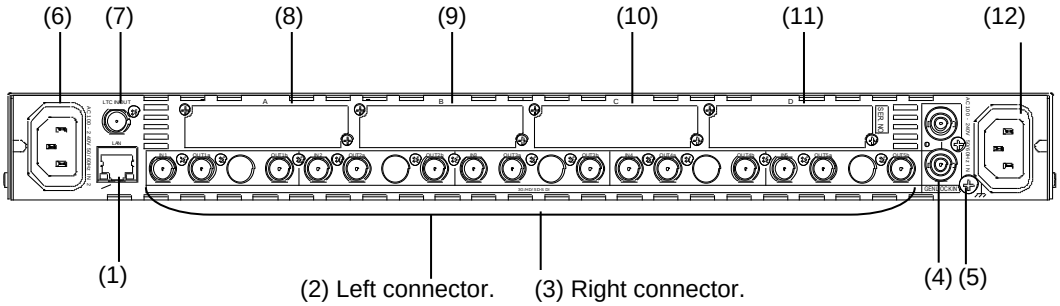
2-1. Front Panel



No	Name	Description		
1	Power switch	Used to turn the unit ON / OFF.		
2	Unit status indicator	DC POWER 1/2	Lit green	Power supply is normal.
			Lit red	A power failure has occurred.
		FAN ALARM	Lit green	All fans are operating normally.
			Lit red	One or more fans have failed.
		GENLOCK	Lit green	Genlock signal input is present.
			Unlit	No genlock signal input is present.
		LTC IN	Lit green	LTC input is present.
			Unlit	No LTC input is present.
3	SDI IN status indicator	BY-PASS	Lit green	Input signal is being bypassed.
			Unlit	No signal is being bypassed.
		VIDEO	Lit green	Video signal input is present.
			Flashing	Channel number mismatch in 4K 2SI signals. Channel number in paylod ID (see Sec. 4-2-5-1. “4K Input Mode”) and that in FS information are different.
			Unlit	No video signal input is present.
		AUDIO	Lit green	Embedded audio signal is present.
			Unlit	No embedded audio signal is present.
4	OPTION SLOT status indicator	INSTALL	Lit green	One or more option cards are found and recognized in option slots A to D.
			Unlit	No option card is installed or recognized.
		VIDEO IN	Lit green	Video signal input(s) is/are present in option slot(s).
			Unlit	No video signal input in option slots.
		AUDIO IN	Lit green	Audio signal input(s) is/are present in option slot(s).
			Unlit	No audio signal input in option slots.
5	INITIALIZATION button	Used to reinitialize the unit. Read the WARNING below before proceding. To reinitialize the unit, turn the unit on while holding down the INITIALIZATION button.		

WARNING
All setting data will initialize. Back up before executing a reinitialization.

2-2. Rear Panel



No	Name	Description
1	LAN	1000/100BASE-TX Ethernet LAN port. Used to connect to an external remote control unit or transfer data to an external device. RJ-45
2	SDI IN 1-5	3G/HD/SD-SDI video signal input connectors. IN and OUT connectors are placed in pairs. For example, IN1 (left connector) and OUT1a/b (two distribution output connectors on the right).
3	SDI OUT 1a/1b-5a/5b	3G/HD/SD-SDI video signal output connectors. IN and OUT connectors are placed in pairs. For example, IN1 (left connector) and OUT1a/b (two distribution output connectors on the right).
4	GENLOCK IN	Genlock signal input connector. Used for reference signal input (black burst or tri-level sync). The bottom connector is for a loop through. Terminate at 75 ohm when not in use.
5	Ground Terminal	Used to ground the unit to protect operators from static electricity and electrical shock.
6	AC IN 2	AC power source connector. (100-240 V AC 50/60 Hz)(optional)
7	LTC IN/OUT	Time code input/output connector
8	Option Slot A	Option card installation slot.
9	Option Slot B	Option card installation slot.
10	Option Slot C	Option card installation slot.
11	Option Slot D	Option card installation slot.
12	AC IN 1	AC power source connector. (100-240 V AC 50/60 Hz)

IMPORTANT
Internal cooling fans prevent overheating. Do not block the front, rear or side vents with other equipment or objects.

2-3. Internal Settings

IMPORTANT
Note that internal switch settings should remain unchanged from factory default settings under most operational circumstances. If you have accidentally changed a setting, refer to the MAIN card settings below to return to the factory default settings. Further note that adjustment and maintenance should only be performed by qualified technical personnel familiar with FOR-A equipment.

WARNING
Do not access internal cards or connect peripheral units with the unit power ON. Always power OFF all connected units / disconnect power cords prior to accessing the interior. To protect boards from electrostatic damage, do not touch board components.

2-3-1. Dipswitch Settings

The following dipswitch settings can be made on the MAIN CARD inside the FA-505.

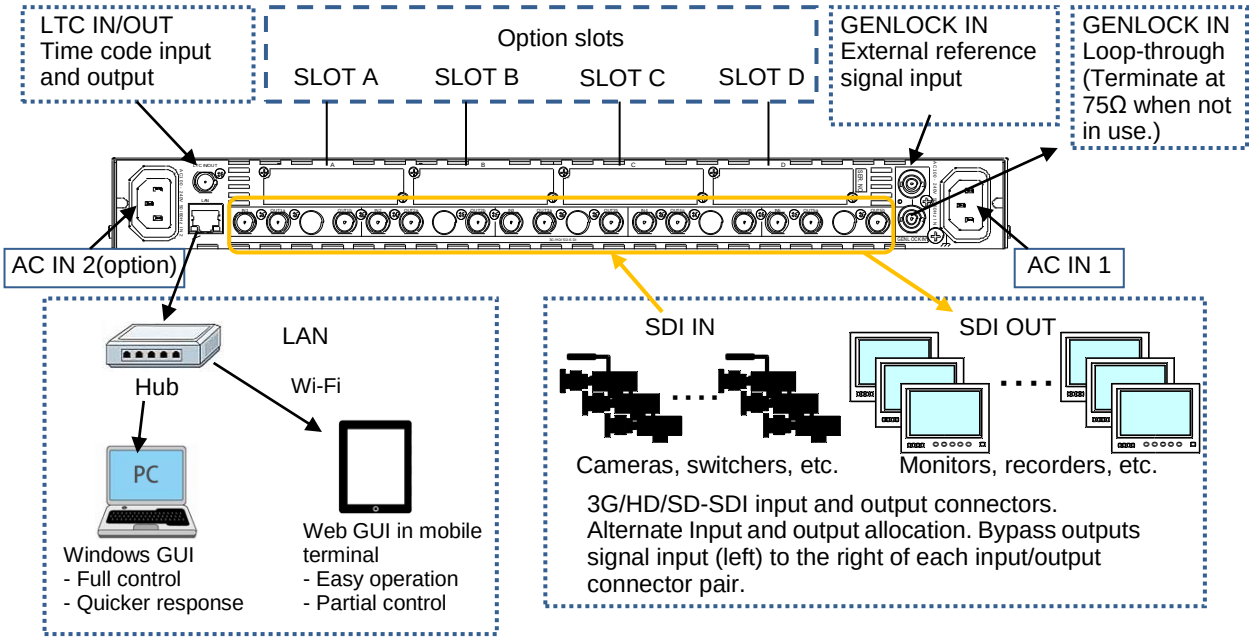
◆ Dipswitch DS1 Settings

	Pin No.	Default	Settings
DS1	1-8	OFF	Do not change.
DS2	1	OFF	FA-50PS option not installed: OFF FA-50PS option installed: ON
	2	OFF	FA-10ANA-AUD option not installed: OFF FA-10ANA-AUD option installed: ON
	3-8	OFF	Do not change.

3. System Setup

3-1. System Configuration

FA-505 base system device connections are shown below with the 5 SDI inputs and outputs standard.



Up-/Down-/Cross-converters are equipped as standard.

3-2. Optional Cards and Units

◆ **Additional Built-in Options**

Up to 4 option cards can be installed into SLOTS A to D to enhance your system.
Currently available option cards are as follows:

Option name	Description
FA-10AES-BL	Digital audio (balanced) input/output card
FA-10AES-UBL	Digital audio (unbalanced) input/output card
FA-10AES-UBLC	Digital audio (unbalanced) output expansion card Installing an FA-10AES-UBLC card changes the installed FA-10AES-UBL card to input-only.
FA-10ANA-AUD	Analog audio input/output expansion card (Installed into SLOT D.)
FA-10GPI	External GPI control card
FA-50PS	Redundant power supply unit.

◆ **Control Options**

Option name	Description
FA-10RU	Remote control unit using Ethernet
FA-10DCCRU	Remote control unit for color correction using Ethernet. Use this if color correction is your main requirements.
FA-AUX30	Auxiliary unit for controlling GPI input/output on FA-505 or FA-10RU units. Allows an FS to be selected at the press of a button.

3-3. Control Systems

The FA-505 offers a choice of four control systems, appropriate for different purposes.
See the table below for details on the comparative advantages of each form of control.

Control system	Windows GUI	Web GUI	FA-10RU	FA-10DCCRU
Control target	All	Color Corrector Status check	All (*1)	Color Corrector
Response	Slow	Slow	Fast	Fast
Color Corrector control	Normal	Normal	Good	Excellent
Other advantage	Quicker response compared to Web GUI control	Easy operation on tablet PC No space required	Signal adjustment using waveform monitor.	Color adjustment while viewing image using waveform monitor.
Setup	See Sec. 3-5	See Sec. 3-6.	-	-
Description	See Sec. 4. “Windows GUI.”	See Sec. 5. Web GUI.	See “FA-10RU (FA-505) Operation Manual.”	See “FA-10DCCRU (FA-505) Operation Manual.”

(*1) Network settings on the Main Unit cannot be changed.

3-4. Power-On

When the FA-505 is powered on, all LEDs on the front panel including Alarm indicators light. Once startup is complete, current status is indicated.

3-4-1. Note on Powering Off

Do not turn the power of the unit off for at least 10 seconds after a setting has been changed. The setting data may otherwise not save properly.

3-5. Windows GUI Setup

3-5-1. System Requirements

To install Product (software), your computer must meet the following requirements.

OS	Windows® 7 Professional (32/64 bit), 8.1, 10 Pro (32/64 bit)
CPU	Intel® Core™2 Duo processor 2 GHz or faster
Memory	2 GB or more
Display	1280 x 1024 pixel resolution or higher recommended Must be capable of full color (24-bit) display
Network port	Ethernet, at least one port 100BASE-TX/1000BASE-T
Network cable	100BASE-TX: Category 5 or better 1000BASE-T: Category 6, or enhanced category 5
Software	Microsoft® .NET Framework 4.0 Windows® Installer 3.1

* Mac OS is not supported.

3-5-2. Network Settings

Change the PC network settings for the connection with the FA-505.
From the Startup menu, go to **Local Area Connection** > **General** > **Internet Protocol (TCP/IP)** > **General** > **Properties**, then set the IP address and Subnet mask as shown below.

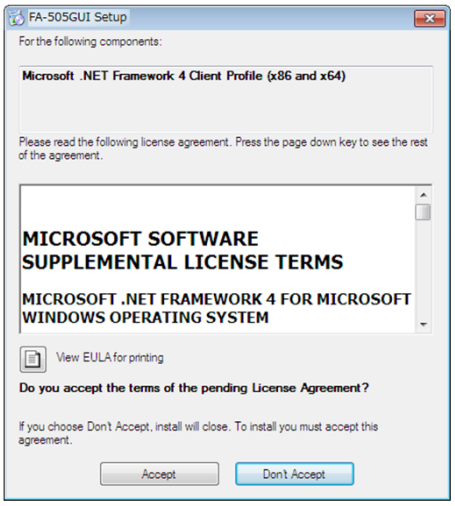
PC IP address	192.168.0.xxx (xxx is any number from 1 to 254 except the FA-505 and Gateway addresses.)
Subnet mask	255.255.255.0

* The default FA-505 IP address is 192.168.0.10.

3-5-3. Installing Software

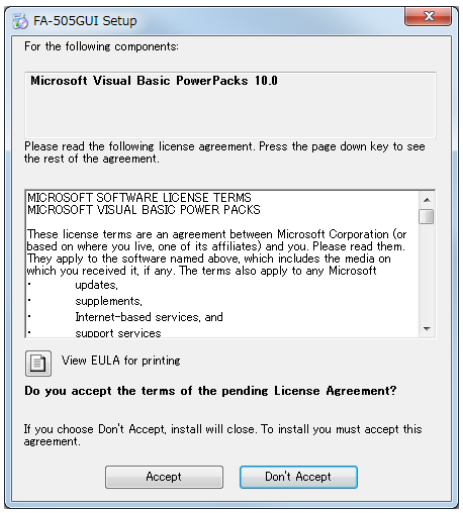
(1) Open the CD-ROM, and the **FA-505GUI** folder.
Double-click the **Setup** icon to start the setup wizard.

(2) If “Microsoft .NET Framework 4” is not installed on your PC, the screen as shown in the next page appears. Click **Accept.**



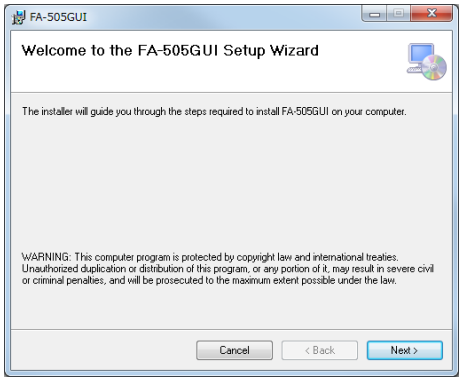
* If “Microsoft .NET Framework 4” is already installed on your PC, the screen will not appear.

(3) If “Microsoft Visual Basic Power Packs 10.0” is not installed on your PC, the screen as shown below appears. Click **Accept**.

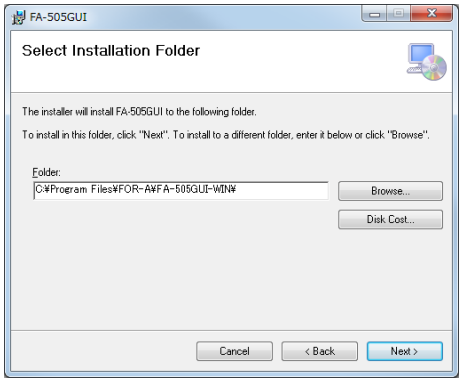


* If “Microsoft Visual Basic Power Packs 10.0” is already installed on your PC, the screen will not appear.

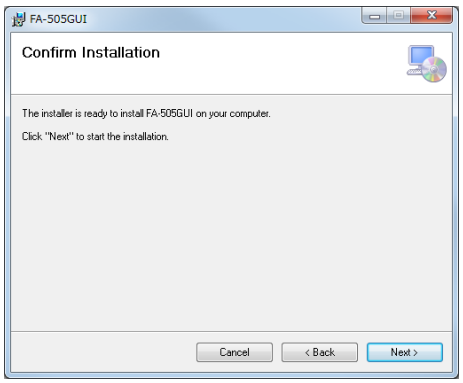
(4) Once the FA-505GUI setup wizard starts, the screen as shown below appears. Click **Next** to continue the setup.



(5) Select the installation directory, then click **Next**.

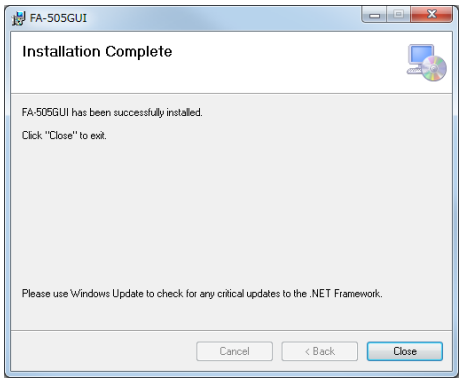


(6) A confirmation screen will appear. Click **Next** to start the installation.



(7) The user Account Control screen will appear. Click **Yes** to continue the installation.

(8) When installation is completed, the screen as shown below appears. Click **Close** to quit the setup wizard.



3-6. Web GUI Setup

1. Verify the connection between the FA-505 and PC (or tablet PC).

2. Start a web browser on the PC.

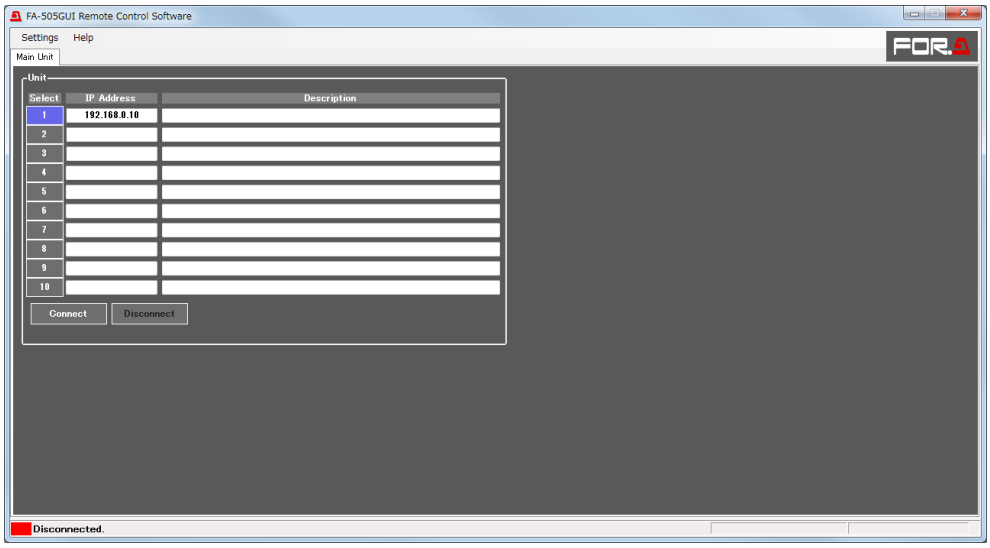
3. Enter the FA-505 IP address into the web browser address bar.
   * The FA-505 factory default IP address is “192.168.0.10”.

◆ **To use FA-505 Web GUI, your computer must meet the following requirements.**

OS	iOS 6 or later Windows® 7 Professional (32, 64-bit), 8.1, 10 Pro (32/64 bit)
Web browser	Apple Safari 6 or later Mozilla Firefox 24 or later Windows® Internet Explorer 10 or later Google Chrome 28 or later Microsoft Edge 38 or later
Network port	20 Mbps or faster (Complying with IEEE802.11a/g/n or IEEE802.3u/ab)
Display	1024 x 768 pixels, 32-bit or better

4. Windows GUI

This section describes Windows GUI, the dedicated FA-505 control software that runs on a PC.
Refer to Sec. 3-5-2. “Network Settings” when establishing a PC connection.
When FA-505 GUI starts up, the page as shown below opens.
Enter the FA-505 IP address to register the unit. Up to 10 units can be registered.
Select a unit to connect under Select, then click Connect. A menu page opens.
* Simultaneous connections with multiple units are not possible.

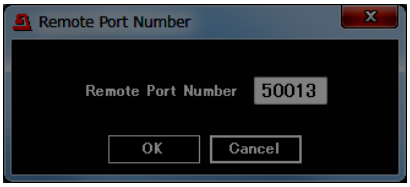


Item	Description
Select	Allows you to select an FA-505 to connect or enter Unit and FS names.
IP Address	Allows you to enter the IP address of each FA-505 unit. * If the FA-505 IP address has been changed, enter the new IP address. If the Port Number has been changed from the default setting (50011), refer to "If Port Number has been changed" below to enter the new port number.
Description	Allows you to enter a note.

Button	Description
Connect	Allows you to establish a connection with the selected FA-505.
Disconnect	Allows you to release the connection.
Abort	Allows you to cancel the connection.

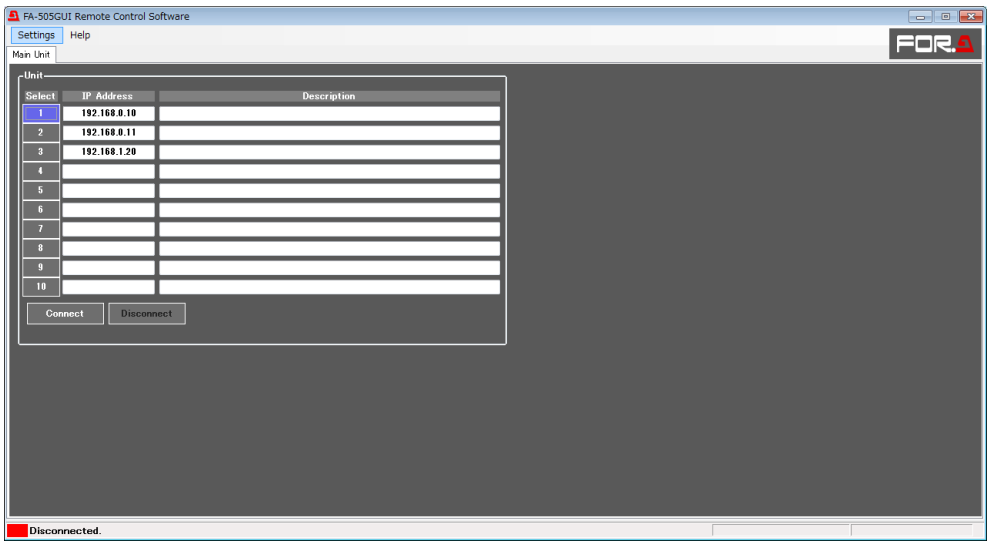
◆ **If Port Number has been changed:**

(1) Click the **Main Unit** tab in the FA-505 GUI window.
(2) In the menu bar, select **Settings** > **Remote Port Number**.
(3) A pop-up window will appear.
Enter the new port number, then click **OK**.



4-1. Main Unit

The Main Unit tab at the top of the screen allows you to open the Main Unit page as shown below.



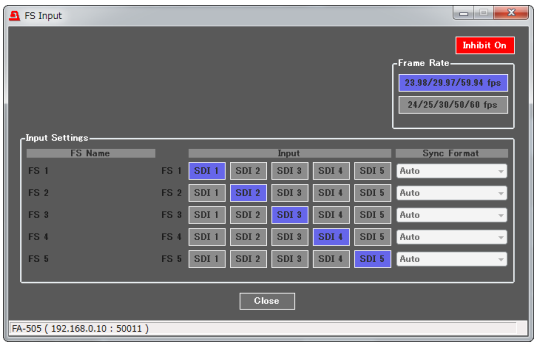
Windows GUI allows you to register up to 10 FA-505 units with unit names and FS names.

Item	Description
Select	Allows you to select an FA-505 to connect or enter Unit and FS names. An FA-505 unit selection cannot be changed while a unit is connected.
IP Address	Allows you to enter the IP address. The IP address cannot be changed while the unit is connected.
Description	Allows you to enter a note. Cannot be amended during connection.
Unit / FS Name	Allows you to enter the unit name and FS names for the selected FA-505. Unit/FS Name is visible and changeable only if an FA-505 is connected.

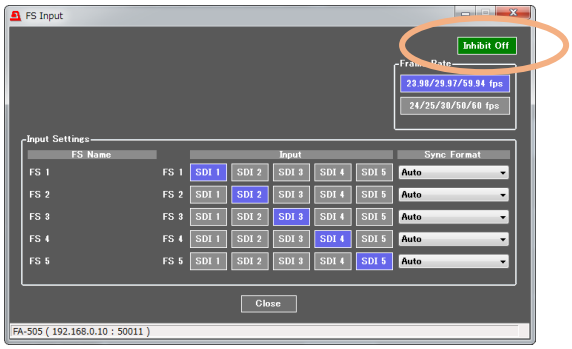
Button	Description
Connect	Allows you to establish a connection with the selected FA-505.
Disconnect	Allows you to release the current connection to connect to another FA-505 unit.
Apply	Allows you to apply settings.

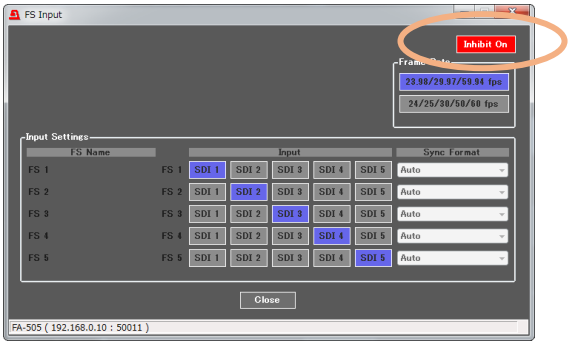
4-1-1. Window Inhibit

An **Inhibit** button is provided for each GUI menu window. If the **Inhibit** button at top right is enabled, all window menu items are disabled for preventing users from accidental mistakes.



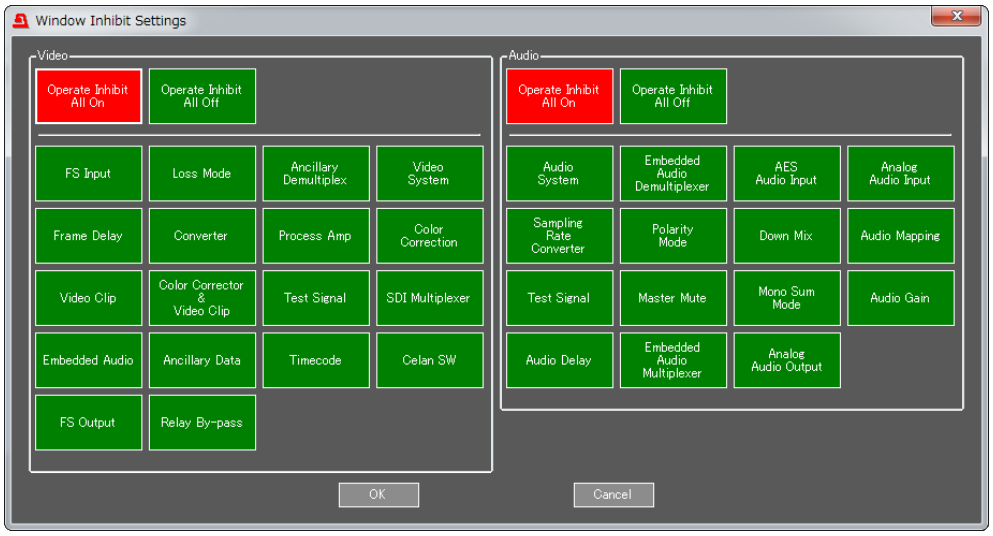
When “**Inhibit Off**” (lit green) is shown on the button, the window menus are enabled.
If the button is clicked, it turns red, the label changes to “**Inhibit On**” and the window menus are disabled.
If the button is clicked again, it turns green and “**Inhibit Off**” and the menus are enabled.





4-1-2. Window Inhibit Settings

This menu allows you to select the Window Inhibit default setting for each window.
To open this menu window, select **Setting** > **Window Inhibit** in the menu bar.
If set to **Inhibit On** for a window, all menus are greyed out when the window is initially opened, clicking **Inhibit On** , however, allows you to activate the window menus.



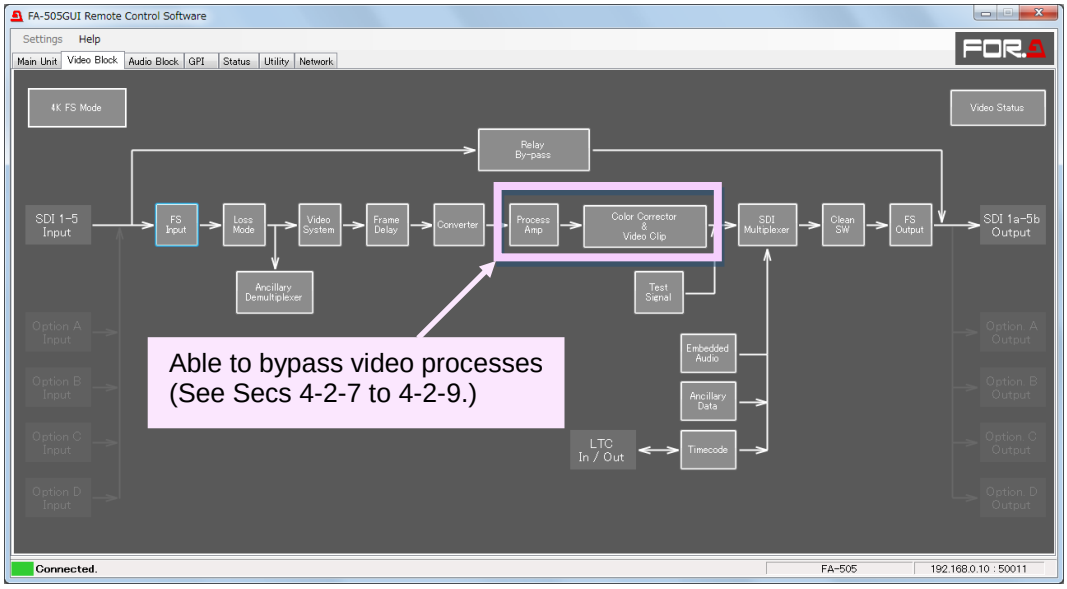
Video	Audio	Function
Operate Inhibit All On		Sets **Inhibit On** as default for all video or audio menu windows.
Operate Inhibit All Off		Sets **Inhibit Off** as default for all video or audio menu windows.
Other buttons	Other buttons	Selects **Inhibit On** (red) or **Inhibit Off** (green) as default for each menu window.

When all settings are complete, click **OK**. A pop-up message will appear and prompt you to restart the GUI. When the FA-505 GUI is restarted, the settings in Window Inhibit Settings are applied.

* The Window Inhibit Settings data is stored in the FA-505 GUI-installed computer. Therefore, all FA-505 units controlled from the GUI share the same Window Inhibit settings.

4-2. Video Block (Video Signal Control)

Click the Video tab at the top of the page. The video block diagram will be displayed.
Each block in the diagram lets you go to the corresponding windows or dialog boxes that allow you to change various settings.



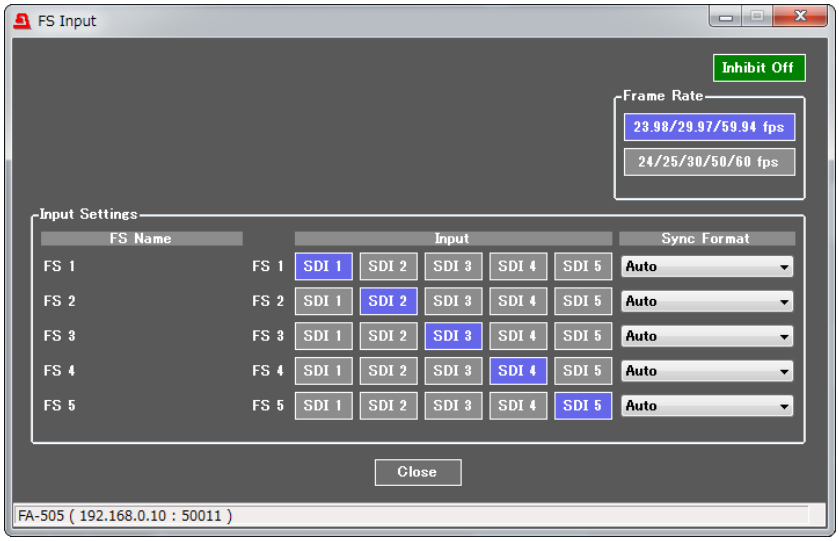
4-2-1. 4K FS Mode

This parameter is displayed in 4K FS mode when **FS2-5** is selected.

Item	Default	Setting range	Description
4KFS (FS2-FS5 only)	Disable	Enable Disable	Allows you to enable/disable 4KFS mode. To genlock video inputs, the phase difference of 4 input signals must be within 2 lines (1 line for 3G SDI-Level B). **Enable**: Processes FS2, FS3, FS4 and FS5 video signals as 4K video. Purple light indicates 4KFS mode is active. Frame dropping and repeating may occur in 4K video because these four signals are processed as synced video even if they are not synced with the genlock signal. To avoid this problem, set FS2 to FS5 as below. -Set **Sync Mode** to **Frame**. -Set **System Phase** to the **same** settings for FS2-FS5. If video signals are synced to the genlock signal, other settings than **Frame** can be set for **Sync Mode**. In such cases, the adjustable phase range of 4 input signals depends on the **Sync Mode** setting. See Sec. 4-2-5-3. “Sync Mode.” **Disable**: Processes the FS2, FS3, FS4 and FS5 signals independently.

4-2-2. FS Input

The Video Input page allows you to assign input video signals to FS 1 to 5.

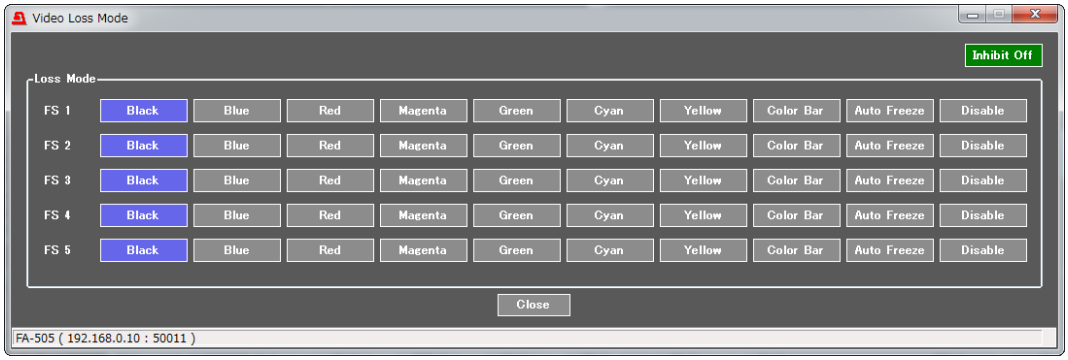


Item	Default	Setting range	Description
Frame Rate	23.98/ 29.97/ 59.94 fps	23.98/29.97/59.94 fps 24/25/30/50/60 fps	Allows you to select a frame rate for the format selected under Sync Format.
FS Name	-	-	Displays the names that have been set in the Main Unit page.
Input	-	SDI1-5	Allows you to select input video signals to input to FS 1 to 5.
Sync Format (*1)	Auto	When Frame rate is set to 23.98/29.97/59.94 fps Auto 525/60 1080/59i 1080/23PsF 1080/59p(Level-A) 1080/59p(Level-B) 2x1080/59i (Level-B) 1080/29p 1080/23p 720/59p When Frame rate is set to 24/25/30/50/60 fps Auto 625/50 1080/50i 1080/24PsF 1080/60p(Level-A) 1080/50p(Level-A) 1080/50p(Level-B) 2x1080/50i (Level-B) 1080/30p 1080/25p 1080/24p 720/50p	Allows you to select video signal input formats for FS 1 to 5. **Auto**: Automatically identifies the input format according to the Frame Rate setting. Set to **2x1080/59i (Level-B)** for 1080i Dual-Speed Acquisition (119.88Hz) for slow-motion replays and dual-green SHV (Super High Vision), due to the same data structure.

(*1) With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

4-2-3. Video Loss Mode

The Video Loss Mode page allows you to select a video signal loss operation.



Item	Default	Setting range	Description
FS1-5 (*1)	Black	Black Blue Red Magenta Green Cyan Yellow Color Bar Auto Freeze (*2) Disable	Allows you to select an alternative signal when the signal input that is selected under Input is lost. **Black – Yellow:** Outputs the selected back color. **Color Bar:** Outputs a color bar. **Auto Freeze:** Continues to output the image from one frame before the loss of signal input. **Disable:** No signal output.

(*1) With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.
With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), Loss mode (except Auto Freeze) is applied to all 4 FS video sources (FS2-5) although if Loss is detected for a single input.

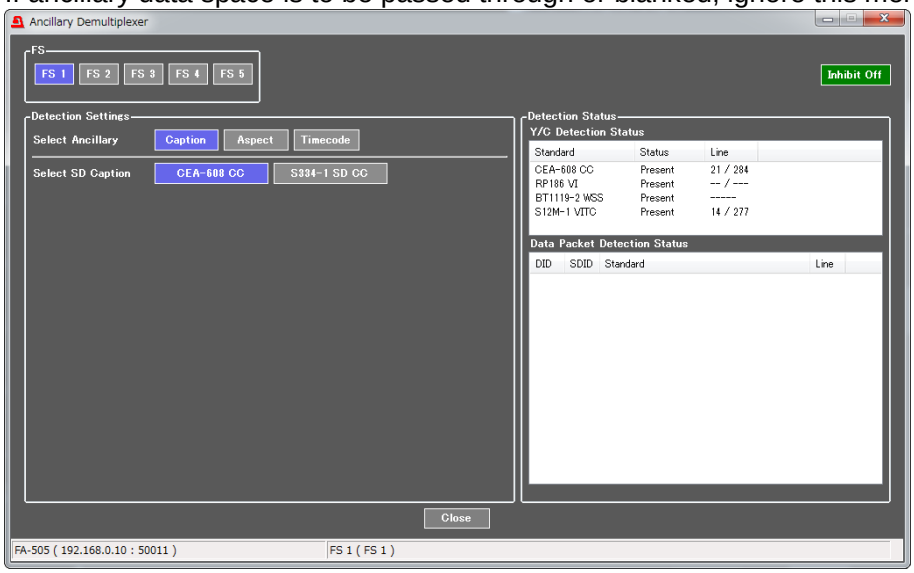
(*2) Auto Freeze is effective only if Sync Mode is set to Frame (see Section 4-2-1. “4K FS Mode”). If not, the operation will be the same as in Black (back color).

* Note that when using HDR functions, Back Color is automatically defined as Black regardless of this setting.
Back Color is selectable under the following conditions:

Input Gamma Curve (EOTF) setting	Bypass
Input Color Space setting	Rec. ITU-R BT.709
Output Bamma Curve (OETF) setting	Bypass
Input Color Space setting	Rec. ITU-R BT.709
Dynamic Range Control (Range) setting	100

4-2-4. Ancillary Demultiplexer

The Ancillary Demultiplexer page allows you to monitor ancillary data (Closed Caption, Aspect ratio data and Time code) embedded on input signals. The detected ancillary data is processed and can be re-embedded into output signals. (See Sec. 4-2-11-2. Ancillary Multiplexer.)
If ancillary data space is to be passed through or blanked, ignore this menu page.



Item	Default	Setting range	Description
FS	FS1	FS1-5	Allows you to select an FS to set its settings.

Select a form of ancillary data to be detected from **Caption**, **Aspect** and **Timecode.**
The ancillary data status in input signals is displayed in the **Detection Status** block on the right side of the window.

◆ Y/C Detection Status

Item	Description
Standard	Displays the selected ancillary data type (standard).
Status	Displays the ancillary data detection status.
Line	Displays the line number in which ancillary data is detected.

◆ Data Packet Detection Status

Item	Description
DID	Displays the detected DID data in hexadecimal format.
SDID	Displays the detected SDID data in hexadecimal format.
Standard	Displays the detected ancillary data type.
Line	Displays the line number in which ancillary data is detected.

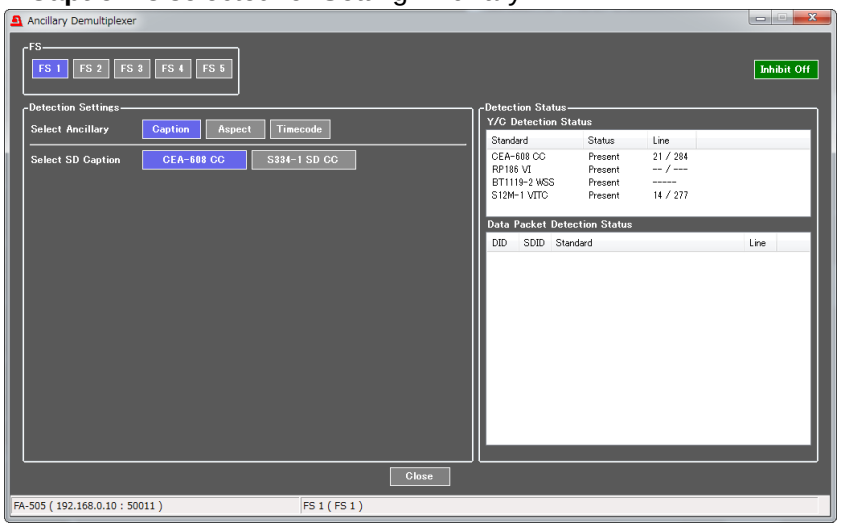
* Refer to Sec. 13 “FA-505 Ancillary Data Packet Name List” for details on Ancillary data displays under Detection Status.

* Refer to Sec. 12-3. “AFD Supported Video Formats” for details on AFD standards and their supported video formats.

If ancillary data on input signals is incorrectly displayed (detected), refer to the following sections to specify the data type (standard) and inserted position (line number).

4-2-4-1. Caption

If **Caption** is selected for Setting Ancillary:

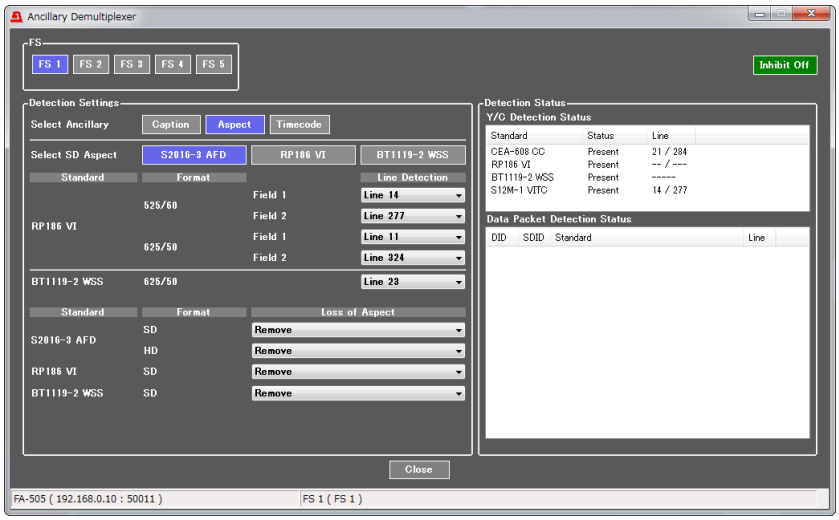


Item	Default	Setting range	Description
Select SD Caption	CEA-608 CC	CEA-608 CC S334-1 SD CC	Allows you to select a closed caption standard for detecting closed captions in SD-SDI inputs.

The detected data is displayed in the **Detection Status** block on the right side of the window.

4-2-4-2. Aspect

If **Aspect** is selected for **Setting Ancillary**:



- **Select Aspect** allows you to specify an AFD standard.

Item	Default	Setting range	Description
Select Aspect	S2016-3 AFD	S2016-3 AFD RP186 VI BT1119-2 WSS	Allows you to select an AFD standard for detecting AFD data, according to which video aspect ratios are changed.

- **Line Detection** allows you to specify a line to detect AFD data on input signals.

Standard	Format	Field	Line Detection (Setting range)	Default
RP186 VI	525/60	Field 1	Line 12 to 19	Line 14
		Field 2	Line 275 to 282	Line 277
	625/50	Field 1	Line 8 to 22	Line 11
		Field 2	Line 321 to 335	Line 324
BT1119-2 WSS	625/50		Line 8 to 23	Line 23

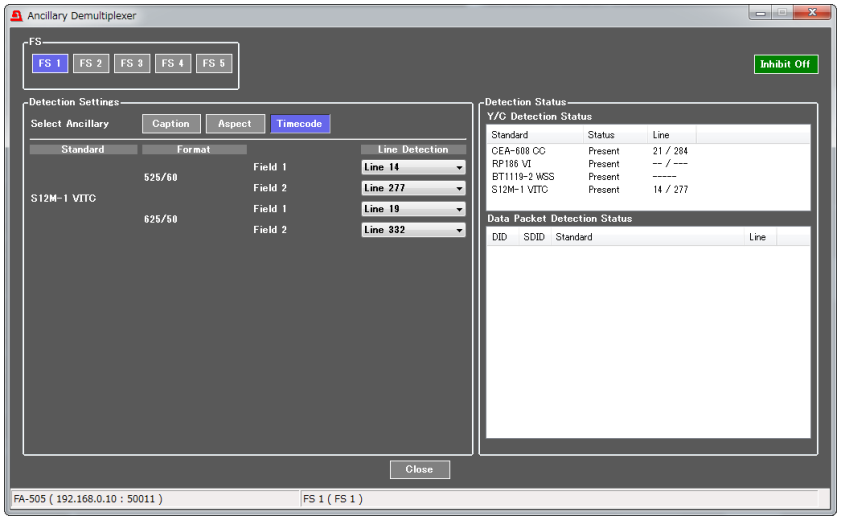
- **Loss of Aspect** allows you to specify an aspect-ratio format for use if AFD data cannot be detected. (See the “Loss of Aspect Settings” table blow for available settings.)
  The Loss of Aspect settings are recognized as AFD data detected in input signals and used for aspect-ratio processing.

<Loss of Aspect Settings>

Standard (AFD standard)	Loss of Aspect settings (SD)	Loss of Aspect settings (HD)
S2016-3 AFD	Remove Hold (4:3) Letterbox 16:9 at top (4:3) Letterbox 14:9 at top (4:3) Letterbox greater than 16:9 (4:3) Full frame 4:3 (4:3) Letterbox 16:9 protected (4:3) Letterbox 14:9 (4:3) Full frame 4:3 alternative 14:9 (4:3) Letterbox 16:9 alternative 14:9 (4:3) Letterbox 16:9 alternative 4:3 (16:9) Letterbox greater than 16:9 (16:9) Full frame 16:9 (16:9) Pillarbox 4:3 (16:9) Full frame protected (16:9) Pillarbox 14:9 (16:9) Pillarbox 4:3 alternative 14:9 (16:9) Full frame 16:9 alternative 14:9 (16:9) Full frame 16:9 alternative 4:3	Remove Hold (16:9) Letterbox greater than 16:9 (16:9) Full frame 16:9 (16:9) Pillarbox 4:3 (16:9) Full frame protected (16:9) Pillarbox 14:9 (16:9) Pillarbox 4:3 alternative 14:9 (16:9) Full frame 16:9 alternative 14:9 (16:9) Full frame 16:9 alternative 4:3
RP186 VI	Remove Hold (4:3) Letterbox 16:9 at top (4:3) Letterbox 14:9 at top (4:3) Letterbox greater than 16:9 (4:3) Full frame 4:3 (4:3) Letterbox 16:9 protected (4:3) Letterbox 14:9 (4:3) Full frame 4:3 alternative 14:9 (4:3) Letterbox 16:9 alternative 14:9 (4:3) Letterbox 16:9 alternative 4:3 (16:9) Letterbox greater than 16:9 (16:9) Full frame 16:9 (16:9) Pillarbox 4:3 (16:9) Full frame protected (16:9) Pillarbox 14:9 (16:9) Pillarbox 4:3 alternative 14:9 (16:9) Full frame 16:9 alternative 14:9 (16:9) Full frame 16:9 alternative 4:3	
BT1119-2 WSS	Remove Hold (4:3) Box 16:9 Top (4:3) Box 14:9 Top (4:3) Box > 16:9 Centre (4:3) Full Format 4:3 (4:3) Box 16:9 Centre (4:3) Box 14:9 Centre (4:3) Full Format 14:9 (16:9) Full Format 16:9 Anamorphic	

4-2-4-3. Timecode

If **Timecode** is selected for **Setting Ancillary**:



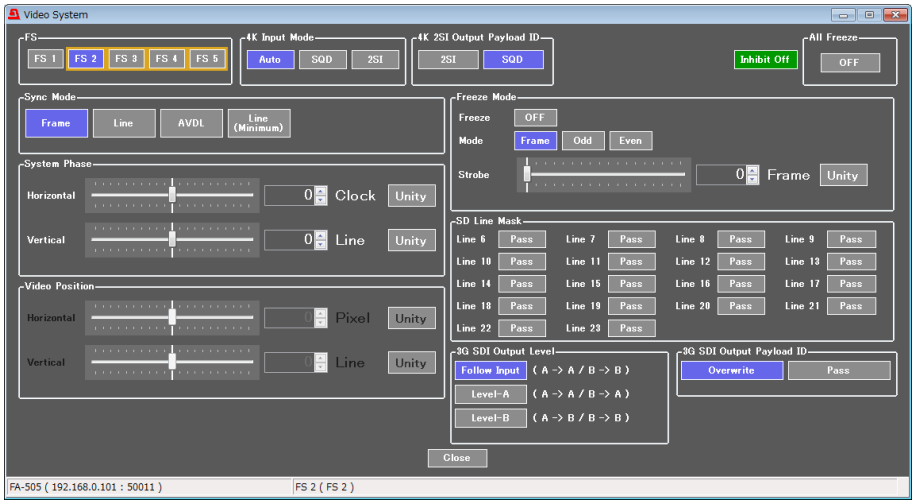
- **Line Detection** allows you to specify a line to detect time code in input signals.

Standard	Format	Field	Line Detection (Setting range)	Default
S12M-1 VITC	525/60	Field 1	Line 12 to 19	Line 14
		Field 2	Line 275 to 282	Line 277
	625/50	Field 1	Line to 22	Line 11
		Field 2	Line 321 to 335	Line 324

Detected data is displayed in the **Detection Status** block on the right side of the window.

4-2-5. Video System

The Video System page allows you to change frame synchronization settings.



Item	Default	Setting range	Description
FS	FS1	FS1-5	Allows you to select an FS to set its settings.
All Freeze	OFF	ON OFF	Allows you to freeze all FS1 to FS5 output videos. Freeze operation in each FS1 to FS5 varies depending on the Freeze mode setting (see Sec. 4-2-5-6. “Freeze Mode”).

4-2-5-1. 4K Input Mode

This parameter is displayed in 4K FS mode when **FS2-5** is selected.
It is enabled only when **3G** is selected for the output video format, and is disabled and fixed to SQD when other formats are selected
When **2SI** is selected, color correction and Proc Amp are enabled for 4K 2SI signals

Item	Default	Setting range	Description
4K Input Mode	Auto	Auto SQD 2SI	Selects a method for determining SQD or 2SI using 4K input signal payload ID. **Auto**: Detects the input signal payload ID to determine SQD or 2SI. **SQD**: Regards 4K input as SQD. **2SI**: Regards 4K input as 2SI.

* Payload Identification Codes for 2SI are compliant to SMPTE ST425-5.
* In **Auto** mode, input signals are regarded as **2SI** if a 2SI payload identification code is present in any channel (FS2 to FS5).
* In **2SI** mode, an error will be displayed under channels on the GUI or VIDEO LEDs on the front panel will be flashing if an FS channels (FS2-FS5) have no 2SI payload identification code. (See Sec. 4-2-14.)
* When **2SI** is selected, an error will be displayed on the GUI (see Sec. 4-2-14) and the relevant VIDEO LEDs will be flashing on the front panel if 2SI channel correspondence is mismatched between Payload ID and FS channel information. (See the table below)
* Payload Identification Codes for 2SI are located in Byte 4 in the payload ID information. Refer to Sec. 4-2-14 for more details on Payload Identification Codes.
Payload Identification Codes for **3G-SDI Level-A** are located in **Bit [7..6]** of **Byte 4**.

Bit[7..6]＝0	3G-SDI Link1	Corresponds to FS2.
Bit[7..6]＝1	3G-SDI Link2	Corresponds to FS3.
Bit[7..6]＝2	3G-SDI Link3	Corresponds to FS4.
Bit[7..6]＝3	3G-SDI Link4	Corresponds to FS5.

Payload Identification Code for **3G-SDI Level-B** is located in **Bit [7..5]** of **Byte 4**.

Bit[7..5]＝0	Data stream one on 3G-SDI Link1	Corresponds to FS2.
Bit[7..5]＝1	Data stream two on 3G-SDI Link1	Corresponds to FS2.
Bit[7..5]＝2	Data stream three on 3G-SDI Link2	Corresponds to FS3.
Bit[7..5]＝3	Data stream four on 3G-SDI Link2	Corresponds to FS3.
Bit[7..5]＝4	Data stream five on 3G-SDI Link3	Corresponds to FS4.
Bit[7..5]＝5	Data stream six on 3G-SDI Link3	Corresponds to FS4.
Bit[7..5]＝6	Data stream seven on 3G-SDI Link4	Corresponds to FS5.
Bit[7..5]＝7	Data stream eight on 3G-SDI Link4	Corresponds to FS5.

4-2-5-2. 4K 2SI Output Payload ID

Item	Default	Setting range	Description
4K 2SI Output Payload ID	SQD	SQD 2SI	Selects SQD or 2SI to be embedded as Payload ID onto the SDI output stream in 4KFS mode. **SQD**: Embeds payload ID codes for 3G-SDI. **2SI**: Embeds payload ID codes for 2SI.

Payload ID codes to be embedded onto the 4K SDI output change depending on **the 4K 2SI Output Payload ID** and **3G-SDI Output Payload ID** (see Sec. 4-2-5-9) settings as shown below.

4K 2SI Output Payload ID setting	3G-SDI Output Payload ID setting	Payload ID codes in SDI input	Payload ID codes in SDI output
SQD	Overwrite	-	Payload ID codes generated in FA-505
	Pass	Other than 2SI	Payload ID codes in SDI input
		2SI	Payload ID codes generated in FA-505
2SI	Overwrite	-	Payload ID codes generated in FA-505
	Pass	2SI	Payload ID codes in SDI input
		Other than 2SI	Payload ID codes generated in FA-505

When conversions between 3G-SDI Level-A and Level-B are performed, payload ID codes will be overwritten by replacing them with those generated in FA-505.

4-2-5-3. Sync Mode

Item	Default	Setting range	Description
Sync Mode (*1)	Frame	Frame Line AVDL Line (Minimum)	**Frame**: Adjusts horizontal and vertical timings of signals based on the adjusted FA-505 system phases. Effective on both synchronous and asynchronous signals. **Line/AVDL/ Line (Minimum)**: Adjusts horizontal and vertical timings of signals listed in the "Adjustable range per signal format" table on the next page, based on the adjusted FA-505 system phases.

(*1) With 4KFS enabled, all 4 FS settings (FS2-5) are linked.

For 3G Level-B signals, frame delays caused by FS control differ between video and ancillary data areas.

Format	Video area	Ancillary data area
1080/59p (50p)	16.7 ms (20 ms)	33.4 ms (40 ms)
2x1080/59i (50i)	33.4 ms (40 ms)	33.4 ms (40 ms)

IMPORTANT
FA-505 adopts the following values for 1H when outputting 3G Level B video: 2,200 clk (14.83 us) for 59.94 Hz 2,640 clk (17.78 us) for 50 Hz

<Adjustable range per signal format>

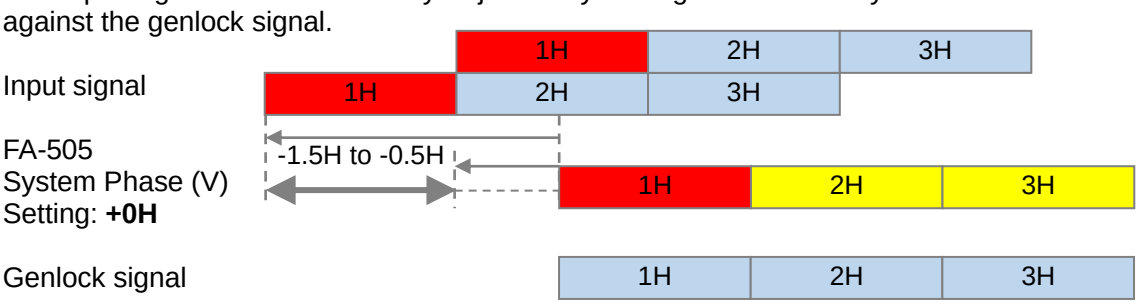
Format	Adjustable range		
	Line	AVDL	Line (Minimum)
1080/59i, 1080/29p	-1.5H to -0.5H	-6H to -0.5H	-1.3H to -0.3 H (-700 clk)
1080/30p	-1.5H to -0.5H	-6H to -0.5H	-1.3H to -0.3 H (-700 clk)
720/59p	-1.5H to -0.5H	-6H to -0.5H	-1.4H to -0.4 H (-700 clk)
1080/59p Level-A	-1.5H to -0.5H	-6H to -0.5H	-1.3H to -0.3 H (-700 clk)
1050/50i, 1080/25p	-1.5H to -0.5H	-6H to -0.5H	-1.25H to -0.25 H (-700 clk)
720/50p	-1.5H to -0.5H	-6H to -0.5H	-1.35H to -0.35 H (-700 clk)
1080/50p Level-A	-1.5H to -0.5H	-6H to -0.5H	-1.25H to -0.25 H (-700 clk)
1080/60p Level-A	-1.5H to -0.5H	-6H to -0.5H	-1.3H to -0.3 H (-700 clk)
1080/23.98PsF, 1080/23.98p	-1.5H to -0.5H	-6H to -0.5H	-1.25H to -0.25 H (-700 clk)
1080/24PsF, 1080/24p	-1.5H to -0.5H	-6H to -0.5H	-1.25H to -0.25 H (-700 clk)
1080/59p Level-B	-3.0H to -1.0H	-11H to -1.0H	-1.3H to -0.3 H (-700 clk)
Level-B output with converter	-4H to -3H	-11H to -3H	-3.3H to -2.3 H (-2H -700 clk)
Other format output with converter	-1.5H to -0.5H	-6H to -0.5H	-1.3H to -0.3 H (-700 clk)
1080/50p Level-B	-3.0H to -1.0H	-11H to -1.0H	-1.25H to -0.25 H (-700 clk)
Level-B output with converter	-4H to -3H	-11H to -3H	-3.25H to -2.25 H (-2H -700 clk)
Other format output with converter	-1.5H to -0.5H	-6H to -0.5H	-1.25H to -0.25 H (-700 clk)
2x1080/59i Level-B	-3H to -1H	-11H to -1H	-1.3H to -0.3 H (-700 clk)
2x1080/50i Level-B	-3H to -1H	-11H to -1H	-1.25H to -0.25 H (-700 clk)
1080/59p Level-A→B	-3.5H to -2.5H	-8H to -2.5H	-3.3H to -2.3 H (-2H -700 clk)
1080/50p Level-A→B	-3.5H to -2.5H	-8H to -2.5H	-3.243H to -2.43 H (-2H -1150 clk)
1080/59p Level-B→A	-1.5H to -0.5H	-6H to -0.5H	-1.3H to -0.3 H (-700 clk)
1080/50p Level-B→A	-1.5H to -0.5H	-6H to -0.5H	-1.25H to -0.25 H (-700 clk)
525/60	-1.5H to -0.5H	-6H to -0.5H	-1.4H to -0.4 H (-700 clk)
625/50	-1.5H to -0.5H	-6H to -0.5H	-1.4H to -0.4 H (-700 clk)

IMPORTANT
Note that 1080/59p or 1080/50p Level B output signal that is converted from Level A requires more delay than other output signal formats. In such casem, 3H delay is present in Line or AVDL Sync Mode, and 2H+700clk or 2H+1150clk in Line (Minimum) Sync mode.

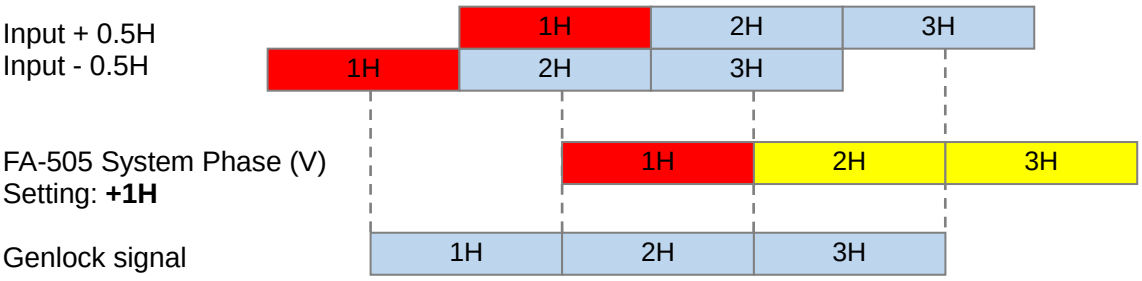
◆ Notes on configuring the Line (AVDL) / Line (Minimum) sync system (in case of 1080 /59i)

To synchronize input signals, the difference between input signal and the FA-505 output timings must be **-1.5H** to **-0.5H**, if **Sync Mode** is set to **Line**. The difference must be **-6H** to **-0.5H**, if set to **AVDL**. Note that if in the up-stream process, there exists a device such as router in which input signals with various timings are switched simultaneously, **0.5H or more is required for the allowable margin of difference between the FA-505 output timing and the most delayed input signal timing**.

Ex. 1) If the difference is **-1.5H to -0.5H**:
The input signals can be correctly adjusted by setting the FA-505 System Phase to **±0H** against the genlock signal.



Ex. 2) If the difference is **-0.5H to -0.5H**:
The input signals can be correctly adjusted by setting the FA-505 System Phase to **+1H** against the genlock signal.



In the same way, if the difference between input and the FA-505 output timings is:
-**AVDL** mode: **6H** to **-0.5H**
-**Line (Minimum)** mode: **-1.3H** to **-0.3H**
Adjust **System Phase** so that the adjustable range can cover the difference.
If set to **Frame**, any timing differences can be correctly adjusted.

NOTE

The FA-505 System Phase settings are performed based on the number of lines and clocks in the output signal format.
As seen in Ex. 2), to correctly adjust input signals, System Phase should be set to **+1H.** (In case when the output format is 1080/59i.)
If the FA-505 output format is changed using the converter, System Phase should also be changed according to the new output signal format as shown below.

1H (1080/59.94i) ＝2,200clk＝1H(1,650clk) + 550clk (In case of 720/59.94p)
＝ 2H(2,200clk x 2) + 0clk (In case of 1080/59.94p)

* The number of clocks should be computed from 74.18MHz for 1080/59.94i and 720/59.94p, and 148.35MHz for 1080/59.94p.

As seen above, sync settings become complicated when setting Sync Mode to other than Frame and using the converter. It is recommended to set Sync Mode to **Frame** if the input and output signal formats are different.

Reference / video signal format compatibility table

	Reference signal												
Output signal	525/60	1080/59i	720/59p	625/50	1080/50i	720/50p	1080/23PsF	1080/24PsF	1080/23p	1080/24p	1080/25p	1080/29p	1080/30p
525/60	✓✓	-	-	-	-	-	-	-	-	-	-	-	
1080/59i	✓✓	✓✓	✓	-	-	-	-	-	-	-	-	✓✓	
720/59p	✓✓	✓✓	✓✓	-	-	-	-	-	-	-	-	✓✓	
1080/59p (Level-A)	✓✓	✓✓	✓✓	-	-	-	-	-	-	-	-	✓✓	
1080/59p (Level-B)	✓✓	✓✓	✓✓	-	-	-	-	-	-	-	-	✓✓	
625/50	-	-	-	✓✓	-	-	-	-	-	-	-	-	
1080/50i	-	-	-	✓✓	✓✓	✓	-	-	-	-	✓✓	-	
720/50p	-	-	-	✓✓	✓✓	✓✓	-	-	-	-	✓✓	-	
1080/50p (Level-A)	-	-	-	✓✓	✓✓	✓✓	-	-	-	-	✓✓	-	
1080/50p (Level-B)	-	-	-	✓✓	✓✓	✓✓	-	-	-	-	✓✓	-	
1080/60p (Level-A)													✓✓
1080/23PsF	-	-	-	-	-	-	✓✓	-	✓✓	-	-	-	
1080/24PsF	-	-	-	-	-	-	-	✓✓	-	✓✓	-	-	
1080/23p	-	-	-	-	-	-	✓✓	-	✓✓	-	-	-	
1080/24p	-	-	-	-	-	-	-	✓✓	-	✓✓	-	-	
1080/25p	-	-	-	✓✓	✓✓	✓✓	-	-	-	-	✓✓	-	
1080/29p	✓✓	✓✓	✓✓	-	-	-	-	-	-	-	-	✓✓	
1080/30p													✓✓

✓✓: SYNCHRO can be set to FRAME, LINE, or AVDL.
✓: SYNCHRO can only be set to FRAME.
-: Unable to synchronize.

4-2-5-4. System Phase

Settings are not unavailable with no reference signal input.

Item	Default	Setting range (Steps)	Description
Horizontal (*1)	0	± 1400 (1 Clock)	Allows you to adjust the horizontal and vertical system phases referring to genlock signal.
Vertical (*1)	0	± 600 (1 H)	
Unity (button)	-	-	Allows you to reset the settings to default.

(*1) With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

4-2-5-5. Video Position

Adjustable when Sync Mode is set to Frame.

Item	Default	Setting range (Steps)	Description
Horizontal	0	± 200 (2 Pixel) (*1)	Adjusts the horizontal/vertical output video positioning.
Vertical	0	± 100 (1 Line)	
Unity (button)	-	-	Allows you to reset the settings to default.

(*1) Horizontal SD format positions are adjustable in 4-pixel steps.
Video Position settings are disabled if **Sync Mode** is set to other than **Frame** or **4KFS** is enabled.
This parameter is automatically set to **0** if **2x1080/59i (50i) Level B** is input.
With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), FS2-FS5 settings cannot be set.
With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), FS2-FS5 settings are fixed to 0.

4-2-5-6. Freeze Mode

Adjustable when Sync Mode is set to Frame.

Item	Default	Setting range	Description
Freeze (*1)	Off	Off, On	Allows you to turn Freeze **On/Off**.
Mode (*1)	Frame	Frame Odd, Even	Allows you to select an operation mode for Freeze.
Strobe (*1), (*2)	0	0 - 255	Allows you to set image refresh intervals in field numbers for the field or frame freeze. 0: Images will not be refreshed.
Unity (button)	-	-	Allows you to reset the settings to default.

(*1) With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.
(*2) Strobe freeze is disabled if **2x1080/59i (50i) Level B** is input.

4-2-5-7. SD Line Mask

Effective only if the input video format is SD-SDI. Ineffective for other video formats.

Item	Default	Setting range	Description
Line 6 - 23	Pass	Pass Blank	**Pass:** Outputs the selected SD-SDI input signal line without processing. **Blank:** Masks the selected SD-SDI output signal line.

4-2-5-8. 3G-SDI Output

Effective only if the input video format is 3G-SDI. Ineffective for other video formats.

Item	Default	Setting range	Description
3G SDI Output (*1)	Follow Input	Follow Input Level-A Level-B	Allows you to select a 3G Level A / B conversion. Follow Input: A→A / B→B Level-A: A→A / B→A (*2) Level-B: A→B / B→B

(*1) With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.
(*2) B→A conversions are unavailable if 2x1080/59i (50i) of 3G Level-B signals are input.
* Conversions are unavailable for 1080/60p (Level-A) signals.

4-2-5-9. 3G-SDI Output Payload ID

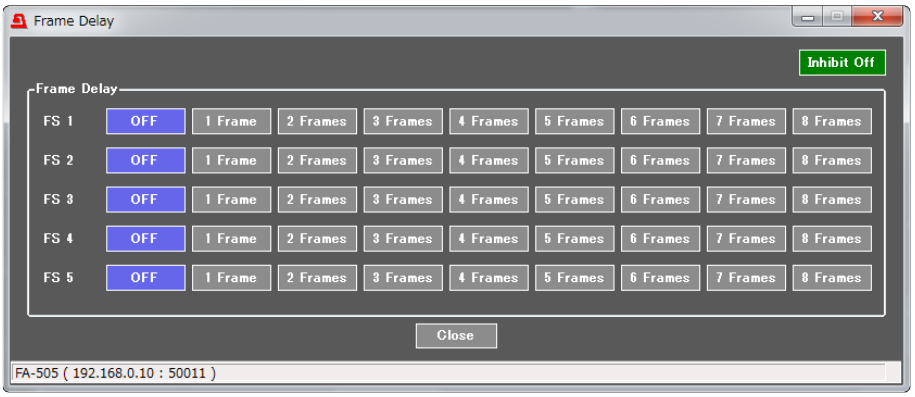
Effective only if the input video format is 3G-SDI. Ineffective for other video formats.

Item	Default	Setting range	Description
3G SDI Output Payload ID (*1)	Overwrite	Overwrite Pass	Allows you to select which Payload ID is inserted into G SDI output. (See Sec. 4-2-15. “Video Status”) **Overwrite**: Inserts a new Payload ID that matching the 3G Level-A, 1080/59p(50p) Level-B or 2x1080/59i(50i) Level B output signal, according to input signal and settings. **Pass**: Inserts the input signal Payload ID.

(*1) If 3G SDI **A→B or B→A conversion** is processed, **Overwrite** is applied regardless of this setting.

4-2-6. Frame Delay

The Frame Delay page allows you to set frame delay to be set for each FS separately.



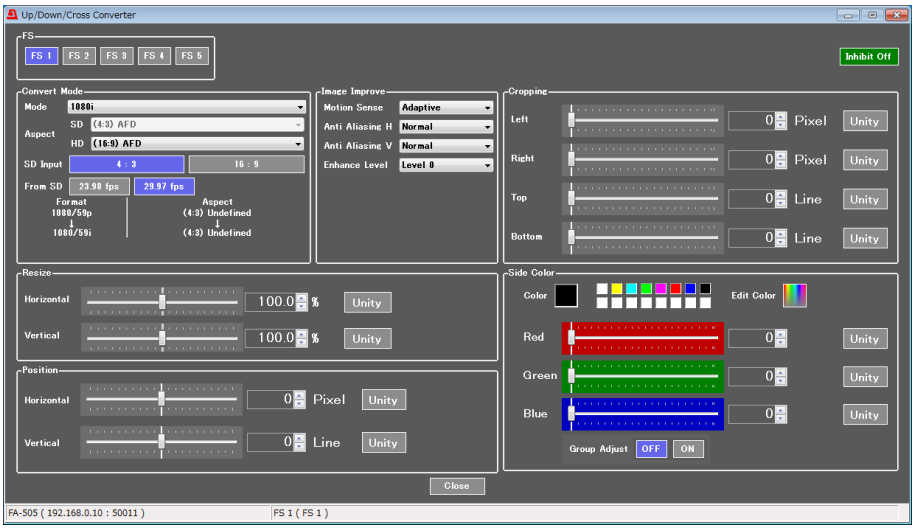
* Settings are effective only if Sync Mode is set to Frame. (see Section 4-2-1. “4K FS Mode”)

Item	Default	Setting range	Description
Frame Delay	Off	Off 1 - 8 Frames	Allows the frame delay amount to be set for each FS.

For 2x1080/59i (50i) of 3G Level-B signals, a maximum 5-frame delay can be added with 1 frame equivalent to 33.4 ms (40 ms).
For 1080/59p (50p) of 3G Level-B signals, up to 8-frame delay can be added with 1 frame equivalent to 16.7 ms (20 ms).
With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

4-2-7. Up/Down/Cross Converter

Up, Down and Cross Converters are available on each FS.
In addition, various aspect ratio conversions based on AFD (Active Format Description) data, SMPTE 2016 AFD, Video index or WSS, are also possible. Note that the converter is disabled if a 2x1080/59.94i(Level-B) or 2x1080/50i(Level-B) signal is input.



4-2-7-1. Convert Mode

Signals are converted based on the AFD (Active Format Description) data.

Item	Default	Setting range	Description
Convert Mode	BY-pass	BY-pass SD 1080i 720p 1080PsF 1080p 1080p(3G) (*1)	Selects a mode for FS1-FS5 UP/DOWN Converter to convert the input signal. **BY-pass**: Outputs the signal without converting. **SD**: Converts signals to a standard definition format. **1080i**: Converts signals to a 1080i format. **720p**: Converts signals to a 720p format. **1080PsF**: Converts signals to a 1080PsF format. **1080p**: Converts signals to a 1080p format. **1080p(3G)**: Converts signals to a 3G-SDI 1080p format.

Item		Default	Setting range	Description
Aspect	SD	(4:3) AFD	(4:3) AFD (4:3) AFD Alternative (16:9) AFD (16:9) AFD Alternative (4:3) Letterbox 16:9 at top (4:3) Letterbox 14:9 at top (4:3) Letterbox greater than 16:9 (4:3) Full frame 4:3 (4:3) Letterbox 16:9 protected (4:3) Letterbox 14:9 (4:3) Full frame 4:3 alternative 14:9 (4:3) Letterbox 16:9 alternative 14:9 (4:3) Letterbox 16:9 alternative 4:3 (16:9) Letterbox greater than 16:9 (16:9) Full frame 16:9 (16:9) Pillarbox 4:3 (16:9) Full frame protected (16:9) Pillarbox 14:9 (16:9) Pillarbox 4:3 alternative 14:9 (16:9) Full frame 16:9 alternative 14:9 (16:9) Full frame 16:9 alternative 4:3	Selectable aspect ratio settings when Conversion Mode is set to **SD**.
	HD	(16:9) AFD	(16:9) AFD (16:9) AFD Alternative (16:9) Letterbox greater than 16:9 (16:9) Full frame 16:9 (16:9) Pillarbox 4:3 (16:9) Full frame protected (16:9) Pillarbox 14:9 (16:9) Pillarbox 4:3 alternative 14:9 (16:9) Full frame 16:9 alternative 14:9 (16:9) Full frame 16:9 alternative 4:3	Selectable aspect ratio settings when Conversion Mode is set to “1**080i**, **720p**, **1080PsF** or **1080p(3G)**, and an SD signal is input.

Item		Default	Setting range	Description
SD Input		4:3	4:3 16:9	Specifies an aspect ratio for SD inputs.
SD Up Rate	NTSC	23.98 fps	23.98 fps 29.97 fps	Specifies the output signal frame rate when Convert Mode is set to **1080p** and input signal frame rate is an NTSC variant.
	PAL	25/50 fps	24 fps 25/50 fps 30/60 fps	Specifies the output signal frame rate when Convert Mode is set to **1080p** and input signal frame rate is a PAL variant.
Format		-	-	Displays the output signal formats before and after conversion.
Aspect		-	-	Displays the input aspect ratio and the aspect ratio after conversion.

(*1) If set to 1080p(3G), the 3G-SDI Output setting (see 4-2-5-8) determines whether Level A or B applies.

4-2-7-2. Conversion Table

Possible Conversions for Input Signal Formats and Mode Selections

Input signal		Convert Mode setting					
		SD	1080i	720p	1080PsF	1080p	1080p(3G)
NTSC type	525/60	525/60	1080/59i	720/59p	1080/23PsF	1080/23p *1 1080/29p *1	1080/59p
	1080/59i	525/60	1080/59i	720/59p	1080/59i (By-pass)	1080/29p	1080/59p
	720/59p	525/60	1080/59i	720/59p	720/59p (By-pass)	1080/29p	1080/59p
	1080/59p	525/60	1080/59i	720/59p	1080/59p (By-pass)	1080/29p	1080/59p
	2x1080/59i	2x1080/59i (By-pass)	2x1080/59i (By-pass)	2x1080/59i (By-pass)	2x1080/59i (By-pass)	2x1080/59i (By-pass)	2x1080/59i (By-pass)
PAL type	625/50	625/50	1080/50i	720/50p	1080/24PsF	1080/24p *1 1080/25p *1 1080/30p *1	1080/50p *1 1080/60p *1
	1080/50i	625/50	1080/50i	720/50p	1080/50i (By-pass)	1080/25p	1080/50p
	720/50p	625/50	1080/50i	720/50p	720/50p (By-pass)	1080/25p	1080/50p
	1080/50p	625/50	1080/50i	720/50p	1080/50p (By-pass)	1080/25p	1080/50p
	1080/60p	625/50	1080/60p (By-pass)	1080/60p (By-pass)	1080/60p (By-pass)	1080/30p	1080/60p
	2x1080/50i	2x1080/50i (By-pass)	2x1080/50i (By-pass)	2x1080/50i (By-pass)	2x1080/50i (By-pass)	2x1080/50i (By-pass)	2x1080/50i (By-pass)
Other	1080/23PsF	525/60	1080/23PsF (By-pass)	1080/23PsF (By-pass)	1080/23PsF	1080/23p	1080/23PsF (By-pass)
	1080/24PsF	625/50	1080/24PsF (By-pass)	1080/24PsF (By-pass)	1080/24PsF	1080/24p	1080/24PsF (By-pass)
	1080/23p	525/60	1080/23p (By-pass)	1080/23p (By-pass)	1080/23PsF	1080/23p	1080/23p (By-pass)
	1080/24p	625/50	1080/24p (By-pass)	1080/24p (By-pass)	1080/24PsF	1080/24p	1080/24p (By-pass)
	1080/25p	625/50	1080/50i	725/50p	1080/25p (By-pass)	1080/25p	1080/50p
	1080/29p	525/60	1080/59.94i	720/59.94p	1080/29p (By-pass)	1080/29p	1080/59p
	1080/30p	625/50	1080/30p (By-pass)	1080/30p (By-pass)	1080/30p (By-pass)	1080/30p	1080/60p

*1 The output signal format is that specified by SD Up Rate

In signal format conversions indicated as (By-pass), the Resize, Position, Cropping or Side Color settings cannot be changed.

4-2-7-3. Resize/Position

◆ Resize

Item	Default	Setting range (Steps)	Description
Horizontal	100.0%	50.0 - 150.0% (0.1%)	Adjusts the width of video displayed on monitor. (*1)
Vertical	100.0%	50.0 - 150.0% (0.1%)	Adjusts the height of video displayed on monitor. (*1)

◆ Position

Horizontal	0 Pixel	Variable (*2) (2 Pixel)	Adjusts the horizontal position of video displayed on monitor.
Vertical	0 Line	Variable (*2) (1 Line)	Adjusts the vertical position of video displayed on monitor.

(*1) If resized to smaller than the original size, set the background color under Side Color. (See Sec. 4-2-7-6.)

(*2) Setting range varies depending on the Convert Mode (see Sec. 4-2-7-1.) setting.

With Convert Mode set to By-pass, Resize and Position cannot be changed.

Neither can they be changed if the conversions are set to the formats indicated as (By-pass) in the Conversion Table (see Sec. 4-2-7-2).

4-2-7-4. Cropping

Item	Default	Setting range (Steps)	Description
Left	0 Pixel	Variable (*1) (2 Pixel)	Crops the left side of a video.
Right	0 Pixel	Variable (*1) (2 Pixel)	Crops the right side of a video.
Top	0 Line	Variable (*1) (1 Line)	Crops the top of a video.
Bottom	0 Line	Variable (*1) (1 Line)	Crops the bottom of a video.

These setting ranges vary depending on the input signal format. The Left and Right settings, and the Top and Bottom settings interact with each other. If the size cannot be adjusted as desired, try changing the setting of another parameter.

(*1) **FS Input** (See Sec. 4-2-1) and **Cropping** interact with each other. When one of their setting values are changed, setting ranges of other parameters will also change.

If the Convert Mode is set to **By-pass**, the **Cropping** setting cannot be changed. Neither can the setting be changed if a conversion is set to a format indicated as (By-pass) in the Conversion Table (See Sec. 4-2-7-2).

IMPORTANT

The cropping setting range resets itself if the video input changes. If the set value exceeds the setting range due to an input change, the set value will automatically reset itself to the default value. If the set value exceeds the horizontal range, the LEFT and RIGHT settings will reset themselves to default. If the value exceeds the vertical range, the TOP and BOTTOM settings will also reset accordingly.

4-2-7-5. Image Improvement

Item	Default	Setting range	Description
Motion Sense	Adaptive	Field Adaptive Frame (Odd 1st) Frame (Even 1st)	**Field**: Generates a progressive scan image from one field of an interlaced scan image. The created image has no motion artifacts, but vertical resolution will be reduced. **Adaptive**: Detects whether there is motion or no motion in the scene, and generates an optimal progressive scan image. **Frame (Odd 1st)**: Generates a progressive scan image from two fields (odd/even) of an interlaced scan image. Suitable for the progressive segment frame input of progressive scan signals. **Frame (Even 1st)**: Generates a progressive scan image from two fields (even/odd) of an interlaced scan image.
Anti Aliasing H (*1)	Normal	Weakness 8-1 Normal Strong 1-8	Performs horizontal anti-aliasing for the output video image. **Weak 8 to Strong 8** (low to high)
Anti Aliasing H (*1)	Normal	Weakness 8-1 Normal Strong 1-8	Performs vertical anti-aliasing for the output video image. **Weak 8 to Strong 8** (low to high)
Enhance Level (*1)	Level 0	Level 0-8	Sharpens the output video image. **Level 0 to 8** (low to high)

(*1) **Anti Aliasing** settings cannot be changed if **Convert Mode** is set to **By-pass**, or if a conversion is set to a format indicated as (By-pass) in the Conversion Table (see Sec. 4-2-7-2).

IMPORTANT
Setting **Motion Sense** to **Frame (Odd 1st)** or **Frame (Even 1st)** for input signals other than progressive segment frame inputs causes motion artifacts to appear. In such case, change the **Motion Sense** setting to **Field** or **Adaptive**.

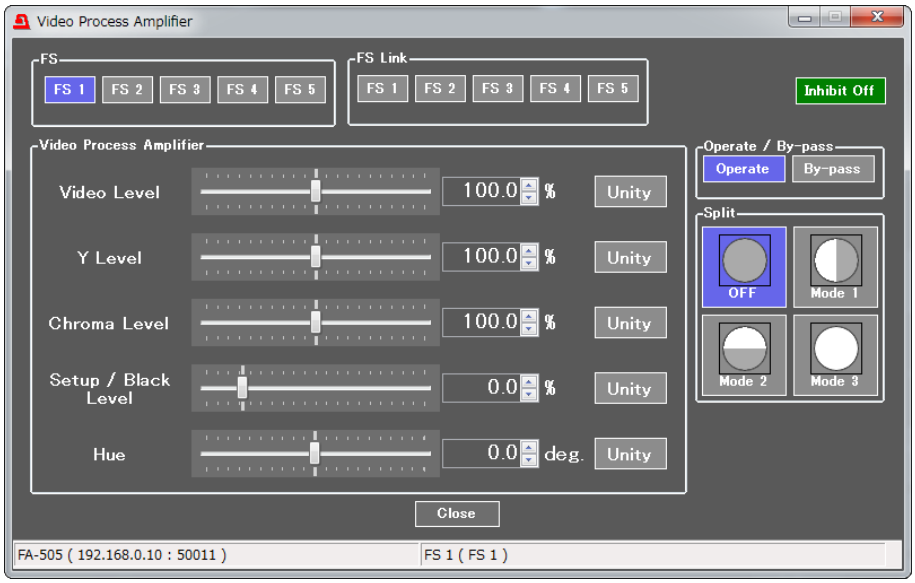
4-2-7-6. Side Color

Item	Default	Setting range	Description
Red Green Blue	0	0-255	Sets background color that will be visible if the converted image is set smaller than original in Resize/Position (see Sec. 4-2-7-3). R, G, and B components can be adjusted separately A color palette is also available by clicking on the color palette box.
Group Adjust (Group Adjustment)	Off	Off/On	Set to **On** and adjust Red, Green or Blue. This will change all three components accordingly while retaining the proportion.
Edit Color	-	-	Allows you to finely adjust the side color. Up to 8 custom colors can be saved as presets.

If the Convert Mode is set to **By-pass**, the **Side Color** setting cannot be changed. Neither can the setting be changed if a conversion is set to a format indicated as (By-pass) in the Conversion Table (see Sec. 4-2-7-2).

4-2-8. Video Process Amplifier

The Video Process Amplifier page allows you to set Process Amp settings for each FS separately.



Item	Default	Setting range	Description
FS	FS1	FS1-5	Allows you to select an FS for which to set Process Amp settings.
FS Link	-	FS1-5	Allows FS settings to be simultaneously adjusted. Designate a base FS from those selected under FS Link > FS. All other FS settings are adjusted in the same increments as those of the base FS.

Item	Default	Setting range (Steps)	Description
Video Level	100.0%	0.0 - 200.0% (0.1%)	Allows you to adjust the video level.
Y Level	100.0%	0.0 - 200.0% (0.1%)	Allows you to adjust luminance level.
Chroma Level	100.0%	0.0 - 200.0% (0.1%)	Allows you to adjust the chrominance level.
Setup/Black Level	0.0%	-20.0 - 100.0% (0.1%)	Allows you to adjust the black level.
Hue	0.0°	-179.8° - 180.0° (0.2°)	Allows you to adjust the Chroma phase.
Unity (button)	-	-	Allows you to reset all settings in this page to default.

Chroma Level and Hue settings are ineffective if Correction Mode is set to Sepia (see Sec. 4-2-9. “Color Corrector”).
With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

The following two parameter settings are shared for all **Video Process Amplifier**, **Color Corrector**, **YPbPr Clip** and **Color Space** pages.

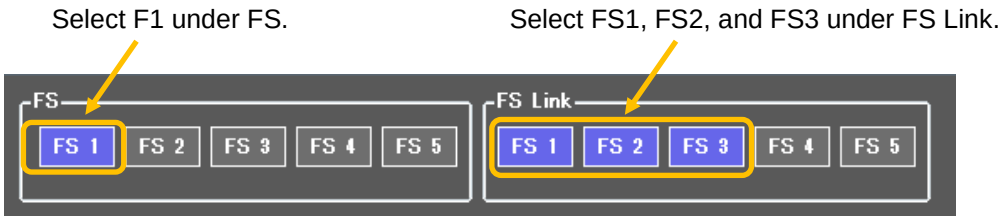
Item	Default	Setting range	Description
Operate / By-pass (*1)	Operate	Operate By-pass	Setting to **By-pass** skips and disables the video process parameters.
Split	Off	Off Mode1 - 3	Allows you to select a split display mode to compare images before and after correction. **Off**: Displays the image after correction. **Mode1**: Splits the screen vertically and displays images before and after correction. **Mode2**: Splits the screen horizontally and displays images before and after correction. **Mode3**: Displays the image before correction.

(*1) With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

IMPORTANT
In Link mode, the amount adjusted for an FS selected under FS will be applied to other FSs. The resulting setting values of Linked FSs may differ. If the adjusted value exceeds the upper/lower limit, the resulting setting value will be clipped at the limit. If the FS selected under FS is not selected under FS Link, Link mode settings are ineffective.

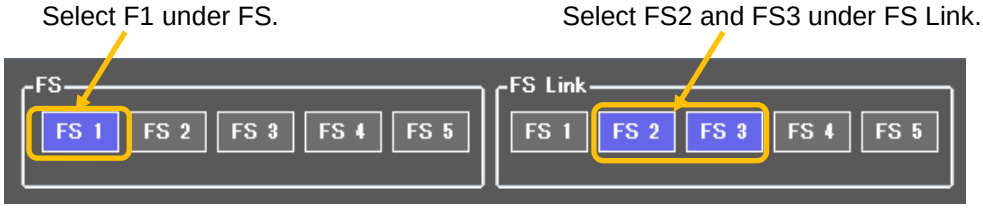
4-2-8-1. Link Mode Setting Example

Example 1: Linked



FS1 is selected under FS and FS Link.
The amount adjusted for the FS1 setting will be applied to FS2 and FS3.

Example 2: Unlinked



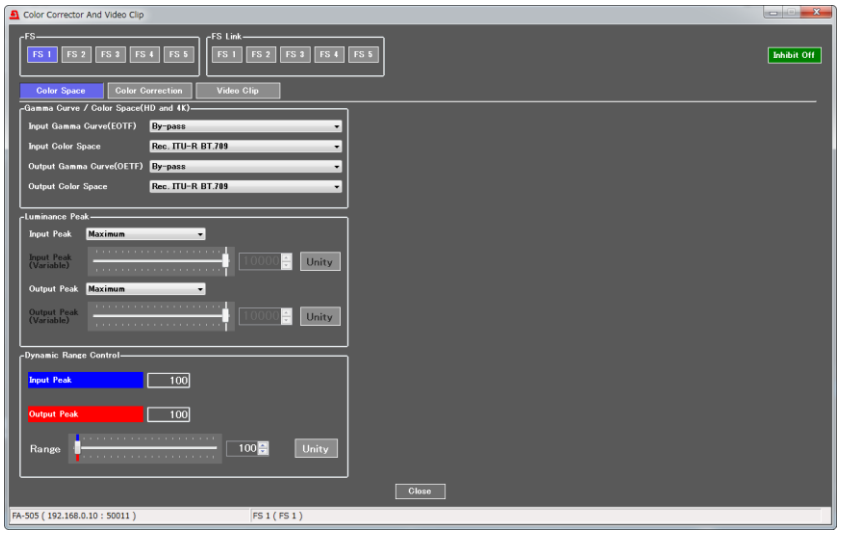
FS1 is selected only under FS.
Only FS1 settings will be adjusted.

IMPORTANT
Link mode is ineffective if an FS selected under FS is not selected under FS Link, or if Color Correction Mode and/or Video Clip Mode settings are different between selected FSs.

4-2-9. Color Corrector & Video Clip

4-2-9-1. Color Space

Click **Color Space** in the Color Corrector menu to display the setting page.
Values shown in the menu are in **nit** (100 equals to 100 nits) for **SMPTE ST 2084(PQ curve)** or in **percentage** (100 equals to 100%) for other curves.



◆ **Gamma Curve / Color Space(HD and 4K)**

Item	Default	Setting range	Description
Input Gamma Curve (EOTF) *1	By-pass	By-pass SDR 2.2 Rec. ITU-R BT.1886 SDR 2.4 Rec. ITU-R BT.1886 HLG SG 1.0 HLG SG 1.2 HLG SG 1.4 SMPTE ST 2084(Narrow Range) SMPTE ST 2084(SDI Range) SMPTE ST 2084(Full Range) User 1: SDR 2.2 Rec.709 User 2: S-Log3 User 3: Canon-Log 2 User 4: Not Assigned User 5: Not Assigned	Allows you to select a gamma curve for reverse-gamma correction of HD and 4K input video. **By-pass**: Processes as signals in non-linear color space without applying a reverse-gamma correction. In **other methods**, a reverse-gamma correction is performed, then signals are processed as those in the linear color space. **User1-User5**: Use gamma curve data in **lut** files. See Sec. 4-6-5. “Gamma Curve” and Sec. 4-6-7. “LUT and GMT Files. **User1-User3** have default values, but are able to be overwritten.
Input Color Space	Rec. ITU-R BT.709	Rec. ITU-R BT.709 Rec. ITU-R BT.2020 Rec. ITU-R BT.709 Rec. ITU-R BT.2020 User 1: S-Gamut/Gamut3 User 2: Not Assigned User 3: Not Assigned User 4: Not Assigned User 5: Not Assigned	Allows you to select a RGB color space of HD or 4K input video. To convert input signals from YPbPr to RGB, color matrix values corresponding to this setting is used (Transfer Matrix *2). **Rec. ITU-R BT.709**: Standard dynamic range **Rec. ITU-R BT.2020**: High dynamic range **User1-User5**: Use Transfer Matrix data in **gmt** files. See Sec. 4-6-6. “Gamut” and Sec. 4-6-7. “LUT and GMT Files.

			SD-SDI inputs are always processed in Rec. 601 Gamut.
Output Gamma Curve (OETF) *1	By-pass	By-pass SDR 2.2 Rec. ITU-R BT.1886 SDR 2.4 Rec. ITU-R BT.1886 HLG SG 1.0 HLG SG 1.2 HLG SG 1.4 SMPTE ST 2084(Narrow Range) SMPTE ST 2084(SDI Range) SMPTE ST 2084(Full Range) User 1: SDR 2.2 Rec.709 User 2: S-Log3 User 3: Canon-Log 2 User 4: Not Assigned User 5: Not Assigned	Allows you to select a gamma curve for gamma correction of HD and 4K output video. **By-pass**: Processes as signals in linear color space without applying a gamma correction. In **other methods**, a gamma correction is performed, then signals are processed as those in the non-linear color space. **User1-User5**: Use gamma curve data in **lut** files. See Sec. 4-6-5. “Gamma Curve” and Sec. 4-6-7. “LUT and GMT Files. **User1-User3** have default values, but are able to be overwritten.
Output Color Space	Rec. ITU-R BT.709	Rec. ITU-R BT.709 Rec. ITU-R BT.2020 User 1: S-Gamut/Gamut3 User 2: Not Assigned User 3: Not Assigned User 4: Not Assigned User 5: Not Assigned	Allows you to select a RGB color space of HD or 4K output video. To convert signals from RGB to YPbPr, color matrix values corresponding to this setting is used (Transfer Matrix *2). **Rec. ITU-R BT.709**: Standard dynamic range **Rec. ITU-R BT.2020**: High dynamic range **User1-User5**: Use Transfer Matrix data in **gmt** files. See Sec. 4-6-6. “Gamut” and Sec. 4-6-7. “LUT and GMT Files. SD-SDI outputs are always processed in Rec. 601 Gamut.

*1 Select **By-pass** if using the FA-505 legacy method.

*2 Transfer Matrix is a transfer function that converts video signals between RGB and YPbPr. If **Rec. ITU-R BT.709** or **Rec. ITU-R BT.2020** is selected for Color Space, a transfer matrix is automatically selected accordingly. If a **User** (**User1** to **User5**) is selected, however, the relevant transfer matrix must be written in the **gmt** file.

FS2 to FS5 are linked and use the same method if 4KFS (see Section 4-2-1. “4K FS Mode”) is enabled.

◆ Luminance Peak

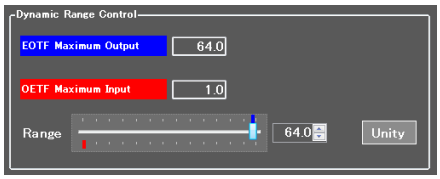
Item	Default	Setting range (Steps)	Description
Input Peak	Maximum	Maximum 100 200 300 400 500 800 1,000 2,000 4,000 10,000 Variable	Sets the maximum luminance value in linear color space by specifying the actual maximum value (in nit) of input video. This setting allows Knee Clip (see Sec. 4-2-9-3 “RGB Clip”) to be more effective. If **Maximum** is set, the maximum value in input EOTF is applied. Ex.) EOTF setting Maximum (actual value) SMPTE ST 2084(Narrow Range) 10,000nit HLG SG 1.0 1968% Bypass 100%
Input Peak (Variable)	10,000	100-10,000 (100)	Sets the value if **Input Peak** is set to **Variable**.

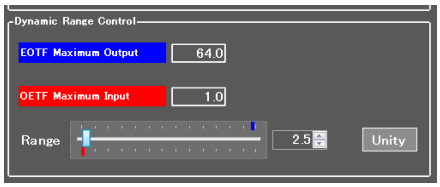
Output Peak	Maximum	Maximum 100 200 300 400 500 800 1,000 2,000 4,000 10,000 Variable	Sets the maximum luminance value (in nit) of output video. If **Maximum** is set, the maximum value in input OETF is applied. Ex.) OETF setting Maximum (actual value) SMPTE ST 2084(Narrow Range) 10,000nit HLG SG 1.0 1968% Bypass 100%
Output Peak (Variable)	10,000	100-10,000 (100)	Sets the value if **Output Peak** is set to **Variable**.
Unity button	-	-	Allows you to reset the settings to default.

◆ Dynamic Range Control

Item	Display	Description
Input Peak	(Maximum signal level in the linear color space after input color correction)	If Luminance Peak is set to **Maximum** in the traditional SDR (Standard Dynamic Range), Super White is included. Different values may be displayed for S-log or Cannon-log.
Output Peak	(Maximum signal level in the linear color space before output color correction)	

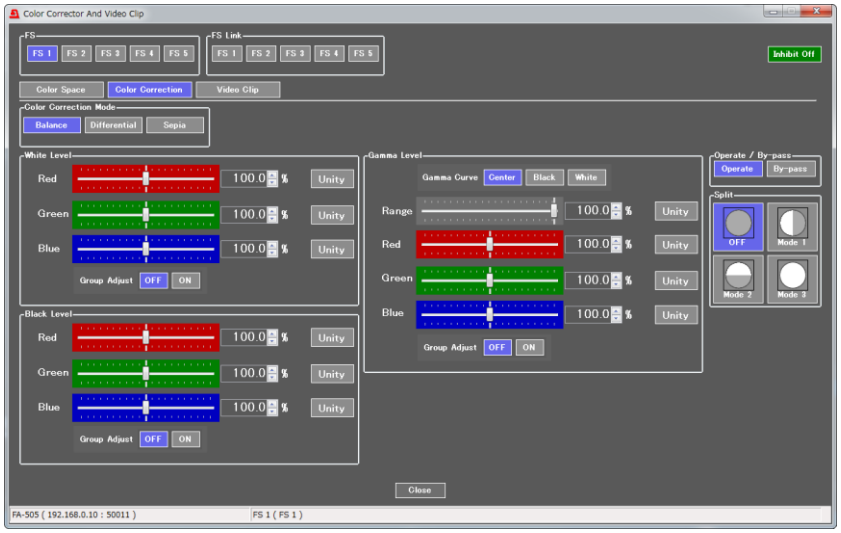
Item	Default	Setting range (Steps)	Description
Range	Input Peak	50-10,000 (10)	Allows you to adjust the color range coarsely. Use this parameter as necessary when Input Peak and Output Peak values are extremely different. Input Peak is indicated by a blue marker and Output Peak by a red marker. Default values are the same as those for Input Peak and rise to 1.0 times the initial internal processing range.
Unity button	-	-	Allows you to reset the settings to default.

Dynamic Range setting description	Dynamic Range setting / Output image example
If the **Input Peak** and **Output Peak** values extremely differ as shown at right, the correction without adjustment may result in overexposed or underexposed images. In such cases, to prevent an image from being blown-out, adjust the **Dynamic Range** value according to the image source.	 (Dynamic Range setting) (Example of corrected image)

If the dynamic range of image source is wider than that of image result (i.e. **Input Peak** > **Output Peak**), make the **Dynamic Range** value close to the **Output Peak** value to prevent clipped whites as shown at right. If the dynamic range of image result is wider than that of image source (i.e. **Input Peak** < **Output Peak**), increase the **Dynamic Range** value to prevent clipped blacks.	 (Dynamic Range setting) (Example of corrected image)

4-2-9-2. Color Corrector

Click **Color Correction** in the Color Corrector menu to display the setting page.



The Color Corrector page allows you to separately adjust color correction settings for each FS.

Item	Default	Setting range	Description
FS	FS1	FS1-5	Allows you to select an FS for which to adjust color correction settings.
FS Link	-	FS1-5	Allows FS settings to be simultaneously adjusted. Designate a base FS from those selected under FS Link > FS. All other FS settings are adjusted in the same increments as those of the base FS.
Color Correction Mode (*1)	Balance	Balance Differential Sepia	Allows you to select a correction mode from Balance (RGB), Differential (YPbPr), or Sepia. **Balance:** RGB signal correction mode Allows you to adjust the white balance. Gray scale can be changed by adjusting R, G and B levels. **Differential:** Color difference signal mode Allows you to adjust contrast without changing white balance. R, G and B levels can be changed without affecting gray scale. This adjustment is effective for images with different color saturation levels. **Sepia:** Sepia mode Useful for creating black and white images.

(*1) With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

IMPORTANT
In Link mode, the amount adjusted for the FS selected under FS will be applied to other FSs. The resulting setting values of Linked FSs may differ. If the adjusted value exceeds the upper/lower limit, the resulting setting value will be clipped at the limit. If the FS selected under FS is not selected under FS Link, Link mode settings are ineffective.See Sec. 4-2-8-1. “Link Mode Setting Example” for further information on Link mode settings.

If Color Correction Mode is set to Balance or Differential:

◆ **White Level settings**

Item	Default	Setting range (Steps)	Description
Red, Green, Blue	100.0%	0.0 - 200.0% (0.5%)	Allows you to adjust the white level of R, G, and B components separately. The value of 100% is based on the Output Peak setting. Ex.: If **Hybrid Log-Gamma** is set for Output Gamma Curve (OETF), 100% corresponds to about 39.9 times of the Reference White value.
Group Adjust (Group Adjustment)	Off	Off On	Allows you to adjust the white level of R, G, and B components all together while retaining the proportion of the separately adjusted levels.
Unity (button)	-	-	Allows you to reset the settings to default.

With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

◆ **Black Level Settings**

Item	Default	Setting range (Steps)	Description
Red, Green, Blue	100.0%	0.0 - 200.0% (0.1%)	Allows you to adjust the black level of R, G, and B components separately. 100% corresponds to 1.0 times of the Reference White value.
Group Adjust (Group Adjustment)	Off	Off On	Allows you to adjust the black level of R, G, and B components all together while retaining the proportion of the separately adjusted levels.
Unity (button)	-	-	Allows you to reset the settings to default.

With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

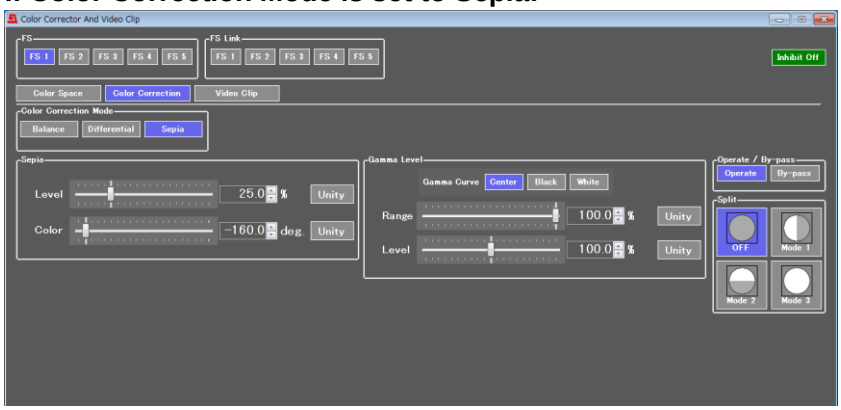
◆ **Gamma Level Settings**

Item	Default	Setting range (Steps)	Description
Gamma Curve	Center	Black Center White	Allows you to select a gamma curve type.
Range	100.0%	25.0 - 100.0% (0.5%)	Allows you to set the upper threshold where the gamma correction is enabled. The lower threshold is fixed to 0%. The value of 100% is based on the Output Peak setting.
RED, GREEN, BLUE	100.0%	0.0 - 200% (0.5%)	Allows you to adjust the gamma level of R, G, and B components separately.

GROUP ADJUST (Group Adjustment)	Off	Off On	Allows you to adjust the gamma level of R, G, and B components all together while retaining the proportion of the separately adjusted levels.
Unity (button)	-	-	Allows you to reset the settings to default.

With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

If Color Correction Mode is set to Sepia:



◆ Sepia

Item	Default	Setting range (Steps)	Description
Level	25.0%	0.0 - 100% (0.1%)	Allows you to adjust the color level in the Sepia mode.
Color	-160.0°	-179.8° - 180.0° (0.2°)	Allows you to adjust the color in the Sepia mode.
Unity (button)	-	-	Allows you to reset the settings to default.

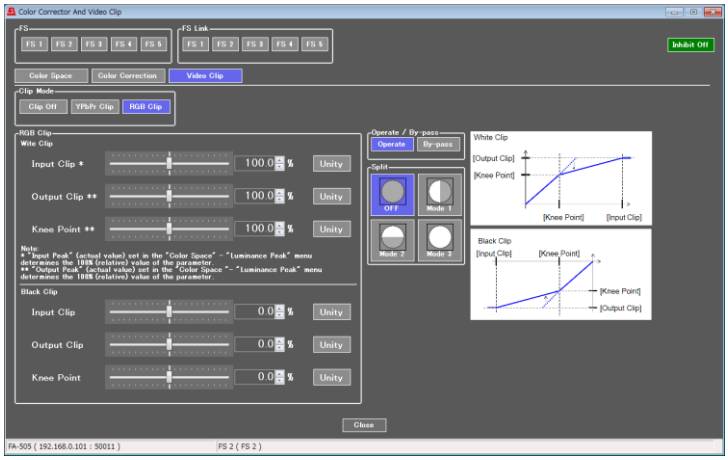
◆ Gamma Level

Item	Default	Setting range (Steps)	Description
Gamma Curve	Center	Center Black White	Allows you to select a gamma curve type.
Gamma Range	100.0%	25.0 - 100.0% (0.5%)	Allows you to set the upper threshold where the gamma correction is enabled. The lower threshold is fixed to 0%. The value of 100% is based on the Output Peak setting.
Gamma Level	100.0%	0.0 - 200% (0.5%)	Allows you to set the Gamma level. If set to 100%, the gamma correction is disabled. The higher the value, the stronger the effect becomes. If set to less than 100%, inverse gamma correction is enabled.
Unity (button)	-	-	Allows you to reset the settings to default.

Sepia settings are effective only when **Color Correction Mode** is set to **Sepia**.
With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

4-2-9-3. RGB Clip

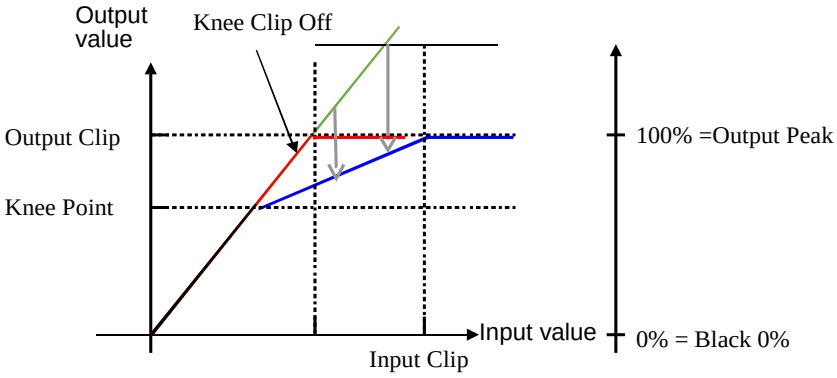
Click **RGB Clip** in the Color Corrector menu to display the setting page.



Item		Default	Setting range (Steps)	Description
White Clip	Input Clip	100.0%	0.5 - 100% (0.1%)	Allows you to set the input maximum level. Enter the value by treating the [Luminance Peak - Input Peak] value (see Sec. 4-2-9-1. “Color Space”) as a 100%.
	Output Clip	100.0%	50.0 - 150% (0.5%)	Allows you to set the output maximum level. Enter the value by treating the [Luminance Peak - Output Peak] (see Sec. 4-2-9-1. “Color Space”) as a 100%.
	Knee Point	100.0%	50.0 - 150% (0.5%)	Allows you to set the knee clip point.
Black Clip	Input Clip	0.0%	-50.0 - 50.0% (0.5%)	Allows you to set the input minimum level. Enter the value by treating the Reference White value as a 100%.
	Output Clip	0.0%	-50.0 - 50.0% (0.1%)	Allows you to set the output minimum level. Enter the value by treating the Reference White value as a 100%.
	Knee Point	0.0%	50.0 - 150% (0.1%)	Allows you to set the knee clip point.

With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

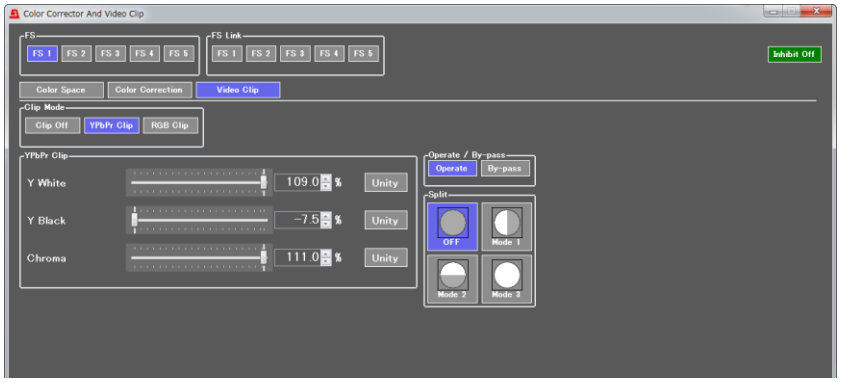
◆ Knee Clip Setting



Knee Clip allows you to output high-luminance areas (indicated in green line in the figure above) in images with enough resolution (indicated in blue line), which will be overexposed in traditional methods. Knee Clip is mainly used when images are converted from wide color range to small color range.
The clip levels are calculated on the basis of the **Output Peak** value (as 100%).
On the other side, Black is fixed to 0.0% (equal to **Black 0%**). When **Knee Point** is the same as the **Output Clip** level, the legacy RGB clip will be performed (indicated in red line).
Note that **Knee Point** cannot exceed the **Output Clip** level in White side and **Knee Point** cannot lower the **Output Clip** level in Black side.

4-2-9-4. YPbPr Clip

Click **YPbPr Clip** in the Color Corrector menu to display the setting page.



Item	Default	Setting range	Description
FS	FS1	FS1-5	Allows you to select an FS for which to adjust settings.
FS Link	-	FS1-5	Allows FS settings to be simultaneously adjusted. Designate a base FS from those selected under FS Link > FS. All other FS settings are adjusted in the same increments as those of the base FS.

IMPORTANT
In Link mode, the amount adjusted for the FS selected under FS will be applied to other FSs. The resulting setting values of Linked FSs may differ. If the adjusted value exceeds the upper/lower limit, the resulting setting value will be clipped at the limit. If the FS selected under FS is not selected under FS Link, Link mode settings are ineffective. See Sec. 4-2-8-1. “Link Mode Setting Example” for further information on Link mode settings.

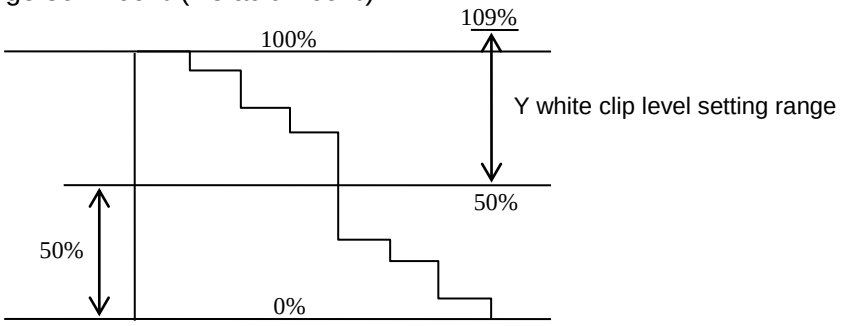
◆ **YPbPr Clip**

Item	Default	Setting range (Steps)	Description
Y White (Y White Clip)	109.0%	50.0 - 109.0% (0.5%)	Sets the Y signal upper threshold.
Y Black (Y Black Clip)	-7.5%	-7.5 - 50.0% (0.5%)	Sets the Y signal lower threshold.
Chroma (PbPr Chroma Clip)	111.0%	50.0 - 111.0% (0.5%)	Sets both the upper and lower thresholds of PbPr signals.
Unity (button)	-	-	Allows you to reset the settings to default.

With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

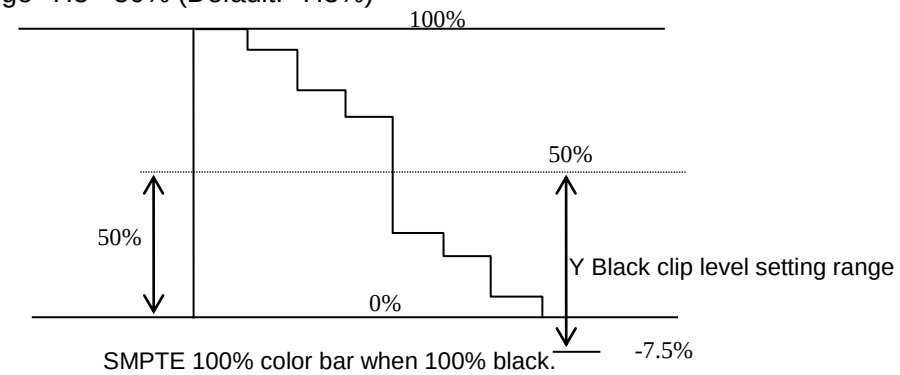
◆ **Video Clip Setting Ranges**

① Y White Clip Level
Setting range 50 - 109% (Default: 109%)



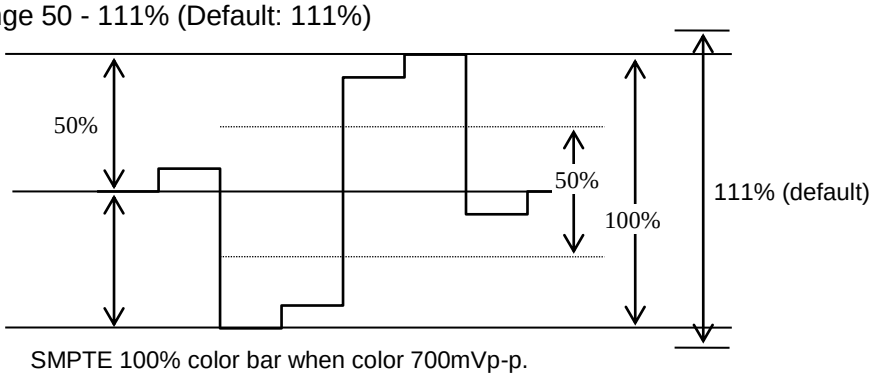
SMPTE 100% color bar when 100% white.

② Y Black Clip Level
Setting range -7.5 - 50% (Default: -7.5%)



SMPTE 100% color bar when 100% black.

③ C White Clip Level
Setting range 50 - 111% (Default: 111%)



SMPTE 100% color bar when color 700mVp-p.

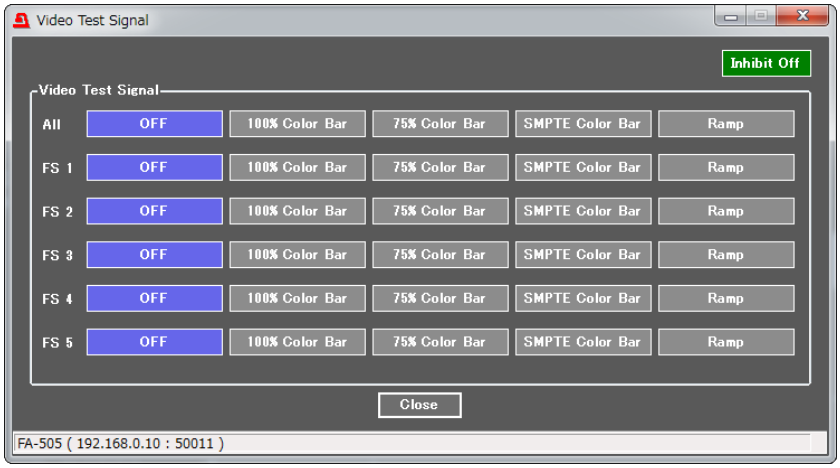
The following two parameter items are shared settings for all **Video Process Amplifier**, **Color Corrector** and **Video Clip** pages.

Item	Default	Setting range	Description
Operate / By-pass	Operate	Operate By-pass	Setting to **By-pass** skips the video process and disables the parameter settings.
Split	Off	Off Mode1 - 3	Allows you to select a split display mode for comparing images before and after correction. **Off**: Displays the image after correction. **Mode1**: Splits the screen vertically and displays images before and after correction. **Mode2**: Splits the screen horizontally and displays images before and after correction. **Mode3**: Displays the image before correction.

With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

4-2-10. Video Test Signal

The Video Test Signal page allows test signal output to be separately set for each FS.

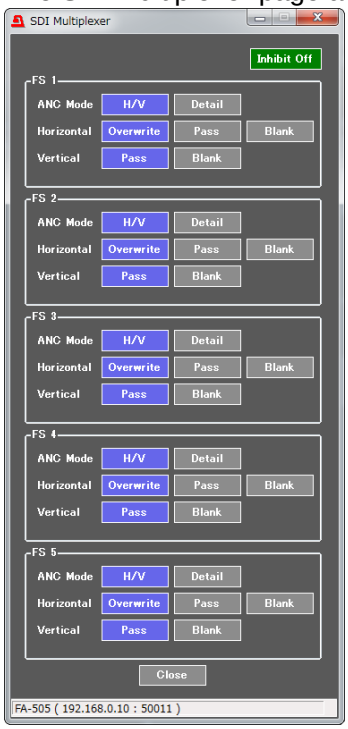


Item	Default	Setting range	Description
All	Off	Off 100% Color Bar 75% Color Bar SMPTE Color Bar Ramp	Allows you to set all FSs to generate the selected video test signal.
FS1-5 (*1)	Off	Off 100% Color Bar 75% Color Bar SMPTE Color Bar Ramp	Allows you to set each FS to generate the selected video test signal.

The All setting has higher priority than that of “FS1-5” settings.
All test signals are SDR (Standard Dynamic Range) signals.
(*1) With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

4-2-11. SDI Multiplexer

The SDI Multiplexer page allows you to select an ancillary data output mode for each FS.



Item	Default	Setting range	Description
ANC Mode	H/V	H/V Detail	Allows you to select a processing mode for ancillary data. **H/V**: Allows you to select overwrite, pass or blank HANC and VANC spaces on output signals. **Detail**: Deletes all exiting HANC data sources from SDI inputs and embeds the processed data into SDI output. For VANC data, input data are deleted and new data are inserted in enabled lines in the Ancillary Multiplexer menu (see Sec. 4-2-11-2) and input data passes through in other lines.

If **H/V** is selected for **ANC** Mode:

Horizontal	Overwrite	Overwrite Pass Blank	Selects a processing type for the HANC space (mainly audio) on SDI output. **Overwrite:** Removes the embedded HANC data from input signals, then embeds the processed data or new audio or other sources into output signals. Other data than audio is inserted after audio data. **Pass:** Passes through the HANC data space ”as is” without processing and allows each audio group to pass through or be deleted in the **Embedded Audio** (see Sec. 4-2-11-1) page. **Blank:** Blanks all HANC data space except audio sources. (Audio is passed through from SDI output.)
Vertical	Pass	Pass Blank	Selects a processing type for the VANC space on SDI output. **Pass**: Passes through the VANC data space ”as is”. **Blank**: Blanks all VANC data space.

* When 3G-**Level B** signals are input or output and **SDI Multiplexer** is set to **Pass**:
HANC: If 3G-Level B signals are input and output in **Line** mode, **all** data can be passed through. In other cases, only **time code** s passed through.
VANC: Only the input data shown in the table below can pass through VANC output lines.

I/O video format	Passable input signal VANC data lines	VANC data lines in output signal
3G-Level B In 3G-Level B Out	All lines except 7, 8, 569 and 570	Inserts input data into the same lines as those in input
3G-Level B In 3G-Level A Out	All lines except 7, 8, 569 and 570	Inserts input data into corresponding lines, based on SMPTE372 (*1)
3G-Level A In 3G-Level B Out	All lines except 7 and 8	Inserts input data into corresponding lines, based on SMPTE372 (*1)

(*1) Corresponding Data Lines between 3G SDI Level-A and Level-B (from SMPTE 372)

Level-B line number			Level-A line number
Field 2	1123	Link A	1121
		Link B	1122
	1124	Link A	1123
		Link B	1124
	1125	Link A	1125
		Link B	1
Field 1	1	Link A	2
		Link B	3
	2	Link A	4
		Link B	5
	3	Link A	6
		Link B	7
	4	Link A	8
		Link B	9
	5	Link A	10
		Link B	11

Level-B line number			Level-A line number
Field 1	561	Link A	1122
		Link B	1123
	562	Link A	1124
		Link B	1125
	563	Link A	1
		Link B	2
Field 2	564	Link A	3
		Link B	4
	565	Link A	5
		Link B	6
	566	Link A	7
		Link B	8
	567	Link A	9
		Link B	10
	568	Link A	11
		Link B	12

	6	Link A	12
		Link B	13
	7	Link A	14
		Link B	15
	8	Link A	16
		Link B	17
	9	Link A	18
		Link B	19
	10	Link A	20
		Link B	21
	11	Link A	22
		Link B	23
	12	Link A	24
		Link B	25
	13	Link A	26
		Link B	27
	14	Link A	28
		Link B	29
	15	Link A	30
		Link B	31
	16	Link A	32
		Link B	33
	17	Link A	34
		Link B	35
	18	Link A	36
		Link B	37
	19	Link A	38
		Link B	39
	20	Link A	40
		Link B	41

	569	Link A	13
		Link B	14
	570	Link A	15
		Link B	16
	571	Link A	17
		Link B	18
	572	Link A	19
		Link B	20
	573	Link A	21
		Link B	22
	574	Link A	23
		Link B	24
	575	Link A	25
		Link B	26
	576	Link A	27
		Link B	28
	577	Link A	29
		Link B	30
	578	Link A	31
		Link B	32
	579	Link A	33
		Link B	34
	580	Link A	35
		Link B	36
	581	Link A	37
		Link B	38
	582	Link A	39
		Link B	40
	583	Link A	41
		Link B	42

4-2-11-1. Embedded Audio

This page allows you to select whether to embed audio signals for each audio group. The function is enabled only when the SDI Multiplexer settings are as shown below (see the previous page):
-ANC Mode is set to **Detail**.
-ANC Mode is set to **H/V** and Horizontal is set to **Overwrite** or **Pass**.

Item	Default	Setting range	Description
Group 1 to Group 4	Enable (Blue)	Disable (Gray) Enable (Blue)	Allows you to select or unselect each Embedded Audio Group to enable (blue) or disable (gray) embedded audio insertion.

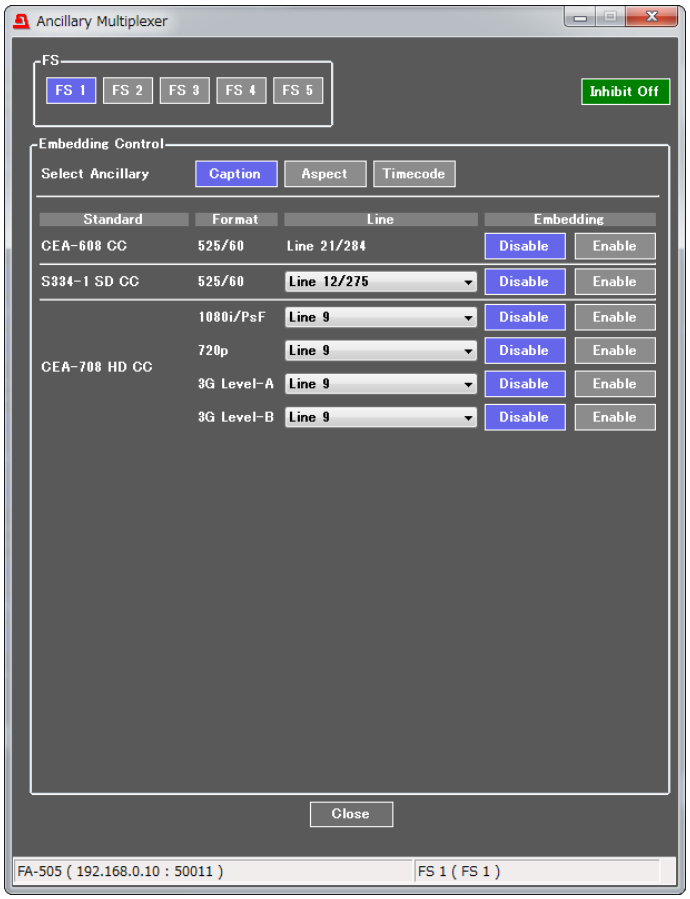
IMPORTANT
In 3G-SDI Level B signals, up to 16 channels of embedded audio data can be received if they are embedded in Link A. Audio data embedded in Link B cannot be received. Audio data in 3G-SDI Level B output signals can also only be embedded into Link A. Go to Audio Block (see Sec. 4-3) to adjust detailed audio settings.

4-2-11-2. Ancillary Multiplexer

The Ancillary Multiplexer page allows you to set Closed Caption, Aspect Ratio and Timecode data to be embedded into SDI output for each FS. This page is enabled only when **ANC Mode** is set to **Detail**. (See Sec. 4-2-11. “SDI Multiplexer.”)
See Sec. 4-2-4. “Ancillary Demultiplexer” for the details on the ancillary data embedded in SDI input

◆ Closed Caption Data Setting

Select **Caption** under Setting Ancillary.



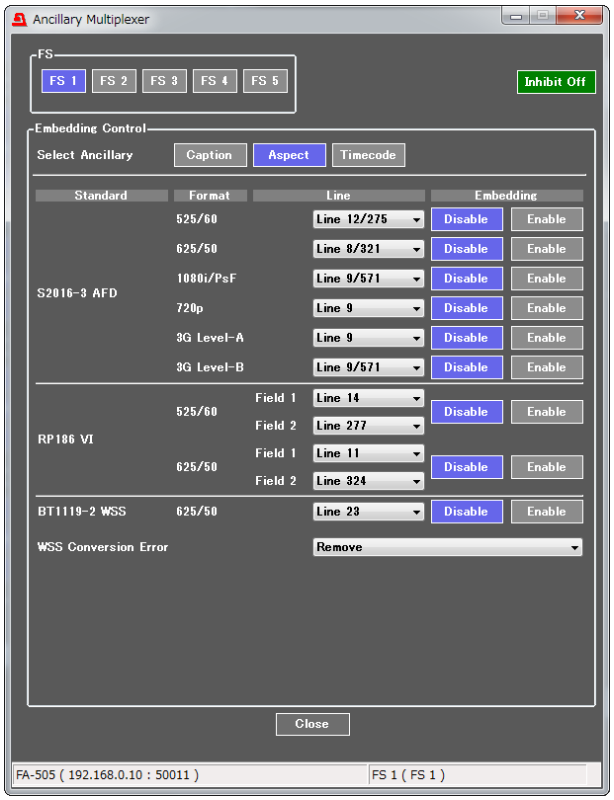
Select a line under **Line** into which Closed Caption data is inserted according to the SDI signal format and Closed Caption standard. (See the table below.)
Then click on **Enable** under Embedding to enable the line setting.

Standard	Format	Default	Setting range
CEA-608CC	525/60	Line 21/284	Line 21/284
S334-1 SD CC	525/60	Line 12 (275) (*1)	Line 12 (275) to 19 (282) (*1)
CEA-708 HDCC	1080i/PsF	Line 9	Line 9 to 20
	720p	Line 9	Line 9 to 25
	3G Level-A	Line 9	Line 9 to 41
	3G Level-B	Line 9	Line 9 to 20

(*1) The number in parentheses indicates the embedded line in Field 2.

◆ **Aspect Ratio (AFD) Data Setting**

Select **Aspect** under Select Ancillary.



Select a line under **Line** into which Aspect ratio (AFD) data is inserted according to the SDI signal format and AFD standard. (See the table below.)

Once a line (and AFD standard) is selected, AFD data is embedded into SDI output accordingly.

Then click on **Enable** under Embedding to enable the line setting.

Standard	Format	Field	Default	Line (Setting range)
S2013-3 AFD	525/60	-	Line 12(275)	Line 12(275) to 19(282) (*1)
	625/50	-	Line 8(321)	Line 8(321) to 22(335) (*1)
	1080i/PsF	-	Line 9(571)	Line 9(571) to 20(582) (*1)
	720p	-	Line 9	Line 9 to 25
	3G Level-A	-	Line 9	Line 9 to 41
	3G Level-B		Line 9(571)	Line 9(571) to 20(582)
RP186 VI	525/60	Field 1	Line 14	Line 12 to 19
		Field 2	Line 277	Line 275 to 282
	625/50	Field 1	Line 11	Line 8 to 22
		Field 2	Line 324	Line 321 to 335
BT1119-2 WSS	625/50	-	Line 23	Line 8 to 23
WSS Conversion Error (*2)	625/50	-	Remove	Remove Full Format 4:3

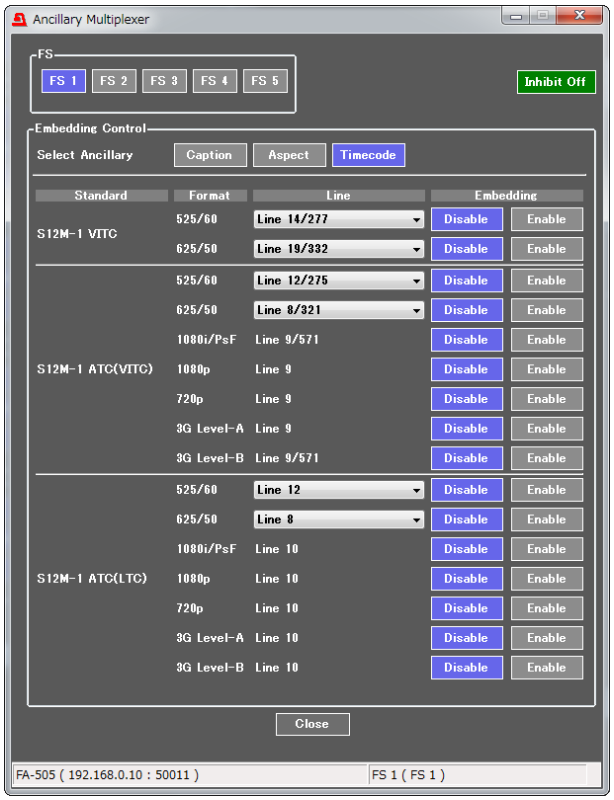
(*1) The number in parentheses indicates the embedded line in Field 2.

(*2) This selection is applied if a specified aspect ratio is not supported by the BT1119-2 WSS standard:

Remove: No data is embedded.
Full Format 4:3: Full Format 4:3 is embedded instead of the unsupported aspect ratio.

◆ **Timecode Setting**

Select **Timecode** under Setting Ancillary.



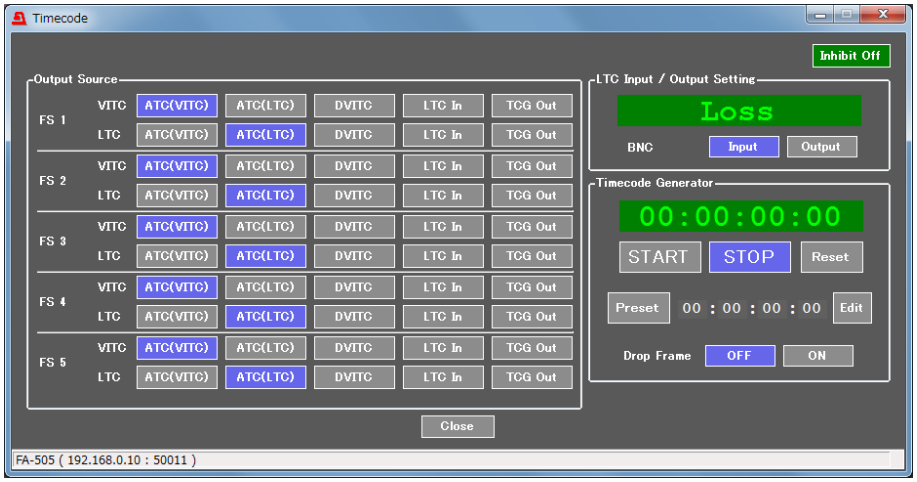
Select a line under **Line** into which a timecode is inserted according to the SDI signal format and timecode source type. (See the table below.)
Then click on **Enable** under Embedding to enable the line setting.
Specify the timecode source in the **Timecode** page (see the next page).

Standard	Format	Default	Setting range
S12M-VITC (*1)	525/60	Line 14/277	Line 12/275 to 19/282
	625/50	Line 11/324	Line 8/321 to 22/335
S12M-1 ATC (VITC)	525/60	Line 12/275	Line 12/275 to 19/282
	625/50	Line 8/321	Line 8/321 to 22/335
	1080i/PsF	Line 9/571	-
	1080p	Line 10	-
	720p	Line 9	-
	3G Level-A	Line 9	-
	3G Level-B	Line 9/571	-
S12M-1 ATC (LTC)	525/60	Line 12	Line 12 to 19
	625/50	Line 8	Line 8 to 22
	1080i/PsF	Line 10	-
	1080p	Line 10	-
	720p	Line 10	-
	3G Level-A	Line 10	-
	3G Level-B	Line 10	-

(*1) In principle, detected time code data (displayed in the Ancillary Demultiplexer menu) is processed and embedded onto the SDI output. In some cases, however, time code data may be looped through to output without processing depending on the Converter or other settings.

4-2-11-3. Timecode

The Timecode page allows you to specify a timecode source for VITC and/or LTC to be embedded in SDI output for each FS.



◆ Output Source

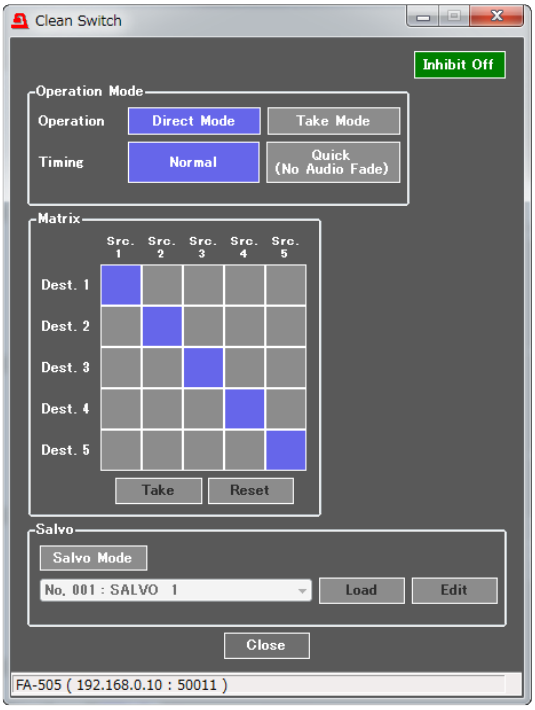
Item	Default	Setting range	Description
VITC	ATC(VITC)	ATC(VITC) *	Timecode embedded in SDI input (S12M-1 ATC (VITC)
		ATC(LTC) *	Timecode embedded in SDI input (S12M-1 ATC (LTC)
		D VITC	Timecode embedded in SDI input (S12M-VITC) * SD signals only
		LTC In	Timecode input from LTC In on rear panel.
		TCG Out	Internally generated timecode. Use Timecode Generator block to generate new timecode.
LTC	ATC(LTC)	(Same as above)	(Same as above)

* If ATC(VITC) or ATC(LTC) data is not embedded or cannot be detected in an SDI input, it is not embedded onto SDI output even if Output Source is set to **ATC(VITC)** or **ATC(LTC)**.
Refer to Sec. 4-2-4. "Ancillary Demultiplexer" to see whether ATC(VITC) or ATC(LTC) data is in an SDI input. Meanwhile, if Output Source is set to **LTC In** or **TCG-OUT**, timecode is embedded onto SDI output regardless of whether the timecode data is in an SDI input.

◆ LTC Input / Output Setting

This block allows you to configure the rear panel **LTC IN/OUT** connector as an **input** or **output**.
Pressing **Input** configures the connector as an input and displays the current status of timecode input to the connector.
Pressing **Output** configures the connector as an output and displays the counter of the built-in Timecode Generator.

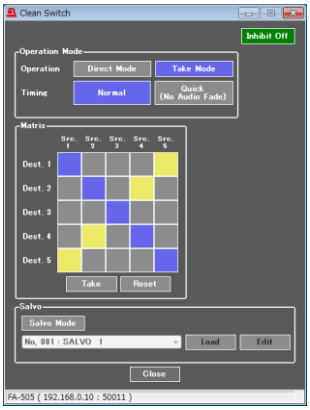
4-2-12. Clean Switch

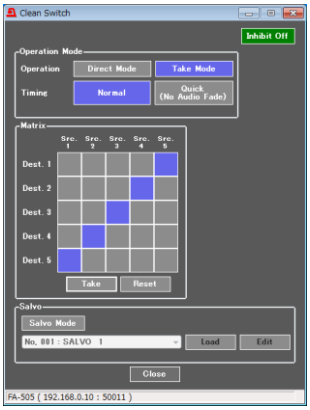


Item	Default	Setting range	Description
Operation	Direct Mode	Direct Mode Take Mode Salvo Mode	Allows you to select Clean switch mode. **Direct Mode:** Selecting a cross point immediately switches the cross point. **Take Mode:** The Take button switches multiple preset cross points simultaneously.
Timing	Normal	Normal Quick (No Audio Fade)	Allows you to select Clean switch mode timing. **Normal**: Normal switchover **Quick (No Audio Fade):** Switches signals 1 frame quicker than Normal mode without audio fade.
Matrix	Dest.1-Src.1 | Dest.5-Src. 5	Src.1-5	Allows you to select signals to be output from Destination 1-5 (output signals assigned to FS1-5) from Src 1-5 (input signals assigned to FS1-5). The same signal can be selected for multiple Destinations.
Take (button)	-	-	Displayed in Take Mode. Allows you to simultaneously switch multiple crosspoints set in the Matrix.
Reset (button)	-	-	Displayed in Take Mode. Allows you to reset
Salvo Mode	Off	Off On	**On:** Multiple crosspoint matrices can be saved to select and use later.

4-2-12-1. Take Mode Operation

Take Mode allows you to simultaneously switch multiple channels.
Blue-highlighted crosspoints in the below figure are currently selected sources.
Source selection changes are displayed in yellow as pre-selections in the left figure.
Pressing the **Take** button switches crosspoints set as the pre-selections in yellow, and switches them blue as in the right figure.





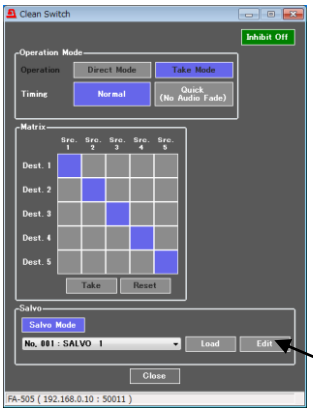
IMPORTANT
Switching source signals of which the following settings are set differently may produce video and/or audio signal noise. To perform shockless swithching, match the following settings for source signals (FSs) to be switched. - 4K FS Mode (See Sec. 4-2-1. “4K FS Mode.”) - System Phase (See Sec. 4-2-5-4. “System Phase.”)

4-2-12-2. Salvo Mode

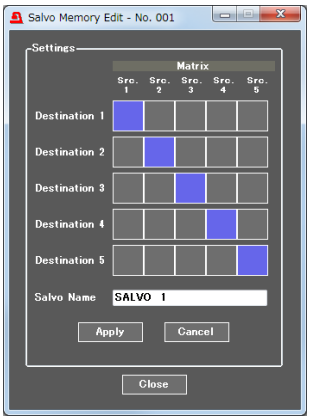
Salvo Mode allows you to preset 100 crosspoint matrices for later use.

◆ **Presetting Matrices**

1) Select Salvo Mode. Select a salvo number to register, and click **Edit** in the Salvo section. A Salvo Memory Edit screen as shown below on the right opens.

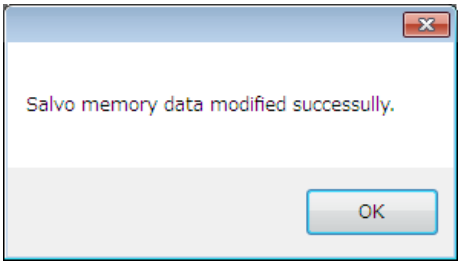


Click Edit.



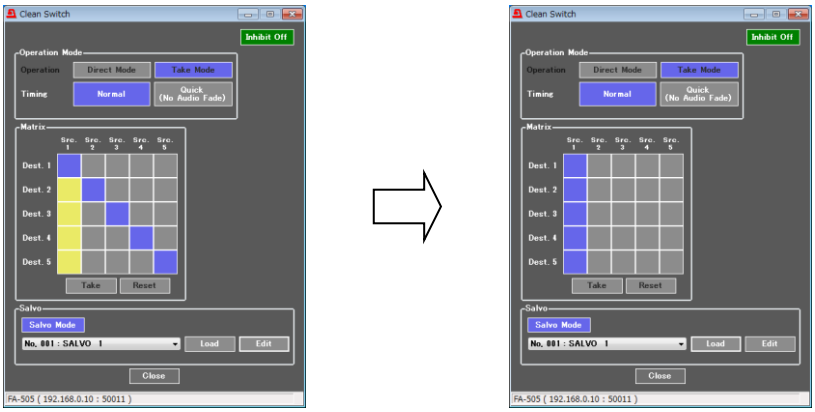
2) Set crosspoints to register.
3) Enter a name for the matrix in the Salvo Name setting box.

4) Click Apply. A message box as shown below appears, and the matrix is successfully registered.



◆ **Recalling Matrix**

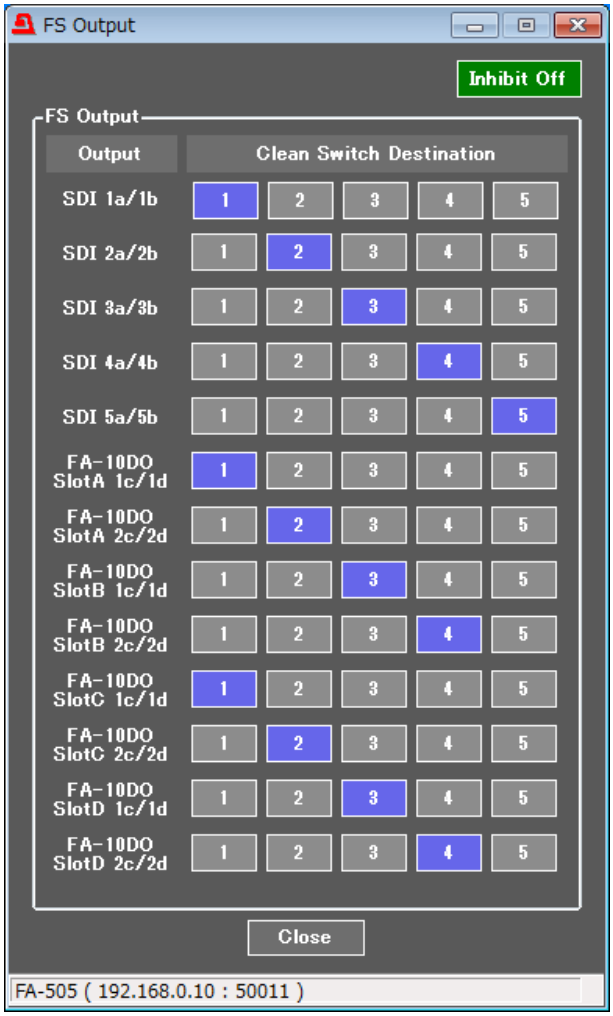
1) Select Salvo Mode, then select a salvo setting in the Salvo section at the bottom of the screen. Salvo crosspoint settings different from the current crosspoints are displayed in yellow as shown below on the left.
2) Click **Load** in the Salvo section to switch the crosspoints.



IMPORTANT
When switching crosspoints in Salvo mode, crosspoints cannot be changed arbitrarily from the FA-505GUI.

4-2-13. FS Output

The FS Output page allows you to assign Clean Switch output signals to output connectors.

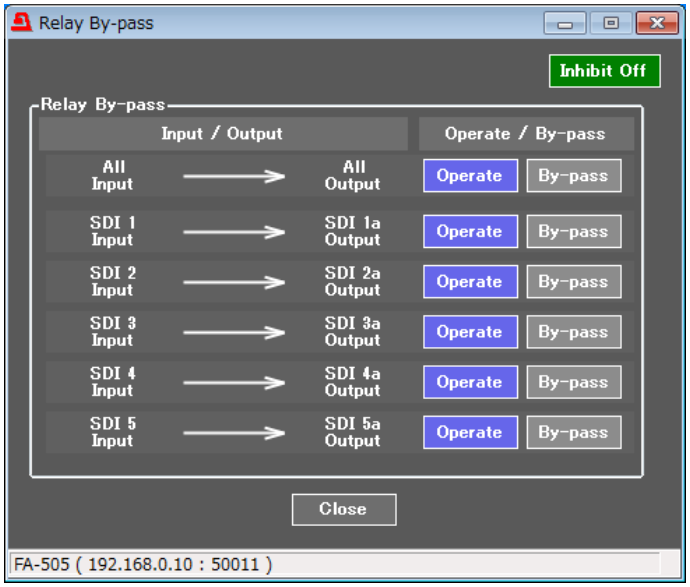


Item	Default	Setting range	Description
SDI 1a/1b to SDI 5a/5b	Clean Switch Destination 1	Clean Switch Destination 1-5	Allows you to select a clean switch output video signal to be output for each SDI output (SDI 1a/1b to SDI 5a/5b). Source 1-5 are signals assigned to Destination 1-5.

Note that the same signal is output from both SDI 1a and SDI 1b ports, as well as that from SDI 2a and SDI 2b to SDI 5a and SDI 5b.

4-2-14. Relay By-pass

The By-pass page allows you to set bypass outputs.
Input signals will be output to output connectors without being internally processed.



Item	Default	Setting range	Description
All Input -> All Output	Operate	Operate By-pass	Allows you to set all inputs and outputs simultaneously regardless of other settings. **Operate**: Processes input signals. **By-pass**: Output each input from its SDI–a output. e.g. Input SDI 1 → Output SDI 1a to Input SDI 5 → Output SDI 5a
SDI X Input -> SDI Xa Output	Operate	Operate By-pass	Allows you to set the By-pass setting for each input connector. **Operate**: Processes input signals. **By-pass**: By-passes input signals. (X: connector number) By-pass may be unsettable depending on FS Input and FS Output settings. Refer to the “Important” note below. **By-pass**: Outputs each input from its SDI Xa (1a - 5a) output. e.g. Input SDI 1 → Output SDI 1a

* The front panel status LED for by-passed input connectors light green.
* SDI outputs (SDI 1b to SDI 5b) that are set to By-pass output signals specified under “Video Loss Mode” (See Sec. 4-2-3.)
* The All Input-All Output setting has higher priority than SDI settings.

IMPORTANT
SDI input assigned to multiple FSs in the FS Input menu (see Sec. 4-2-2) or to an FS assigned to multiple output connectors in the FS Output menu (see sec 4-2-13) are unable to be set to By-pass. e.g., FS 1 and 2 assigned to SDI 1, FS 5 assigned to SDI 1, 2, 3, etc. However, All Input-All Output bypasses all input signals from the input connector to the same (numbered) output connector.

4-2-15. Video Status

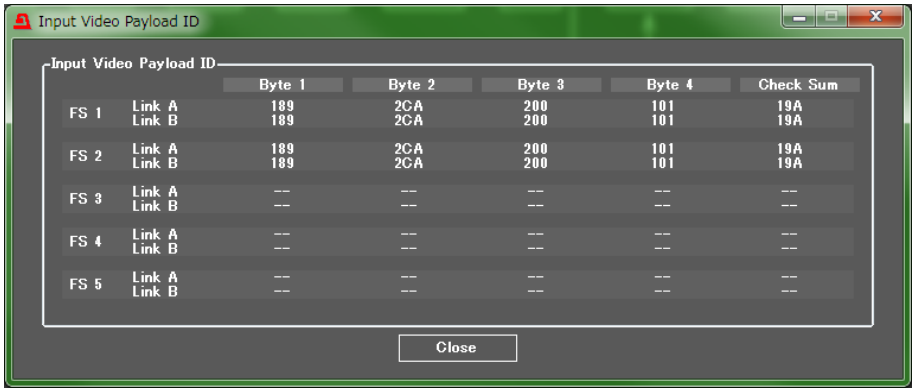
The Video Status page displays the video routing and output status of each output video signal.

Signal paths change according to the FS Input, Clean Switch, and/or FS Output menu settings.

Display	Description	Ref.
Input	Displays input channels (SDI IN 1-5) assigned to FS 1-5 in the FS Input menu.	Sec. 4-2-2. "FS Input"
FS	Displays FS (1-5) signal formats.	
Clean Switch	Displays Sources and Destinations in the Clean Switch menu.	Sec. 4-2-12 "Clean Switch"
Output	Displays the signal format of output signals assigned to connectors SDI OUT 1a/b to 5a/b.	Sec. 4-2-13 "FS Output"
Reference	Displays the input genlock signal format.	

◆ Display Payload ID Status

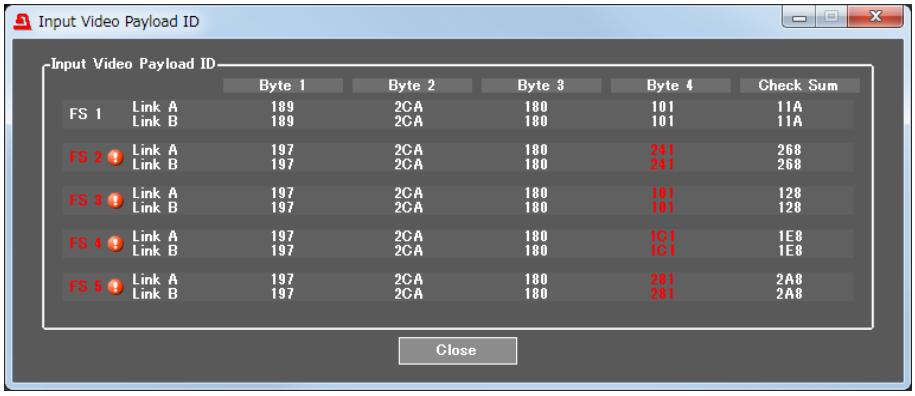
Clicking **Display Payload ID Status** opens the window as shown below, in which 4-byte Payload ID data (4 bytes) and checksums are displayed.



Payload ID and checksum values are 10-bit data (including parity bit) and displayed as three hexadecimal digits.

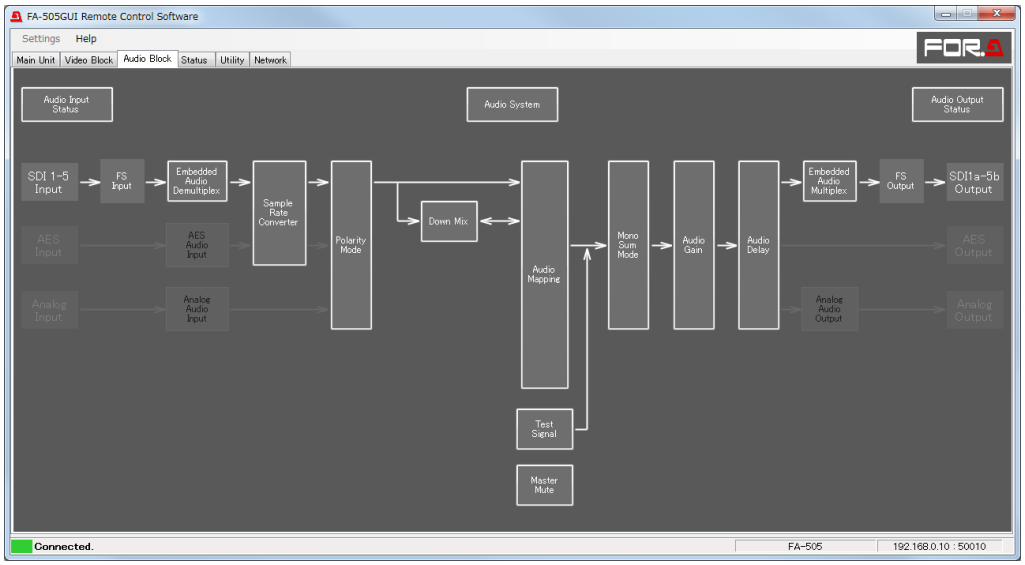
Display	Input signal format	Description
Link A	SD/HD	No information display
	3G Level A	Displays the Payload ID embedded in Y signal.
	3G Level B	Displays the Payload ID embedded in Link A.
Link B	SD/HD	No information display
	3G Level A	Displays the Payload ID embedded in C signal.
	3G Level B	Displays the Payload ID embedded in Link B.

If operating in 4KFS 2SI mode (see Sec. 4-2-5-1 “4K Input Mode”) and 2SI channel correspondence is mismatched between Payload ID (Byte 4) and FS channel information, an error will be indicated by red coloring FS error number(s) and code numbers under Byte 4.

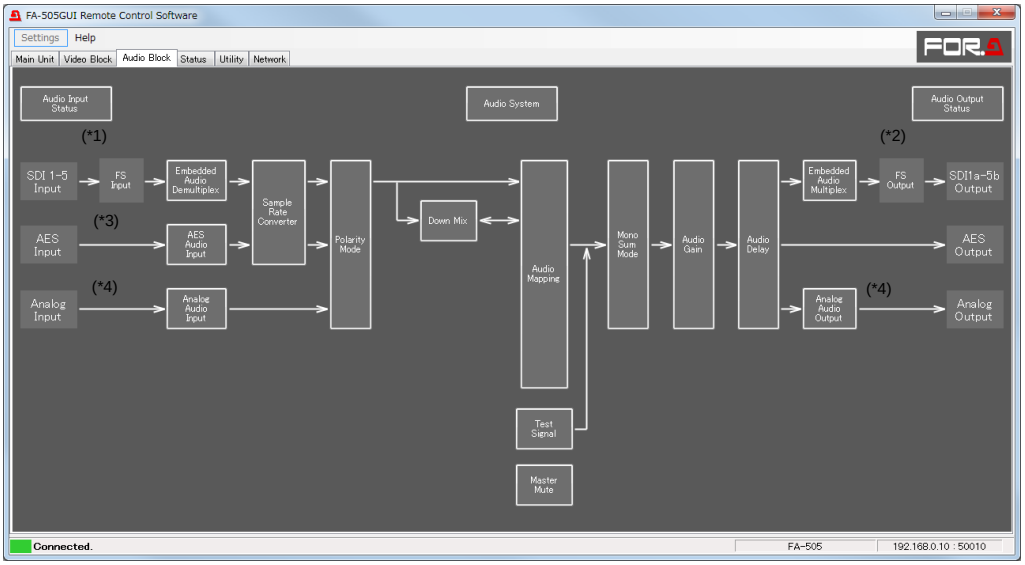


4-3. Audio Block (Audio Signal Control)

Clicking the Audio Block tab opens the Audio block diagram. Click a block to open its corresponding setting page.

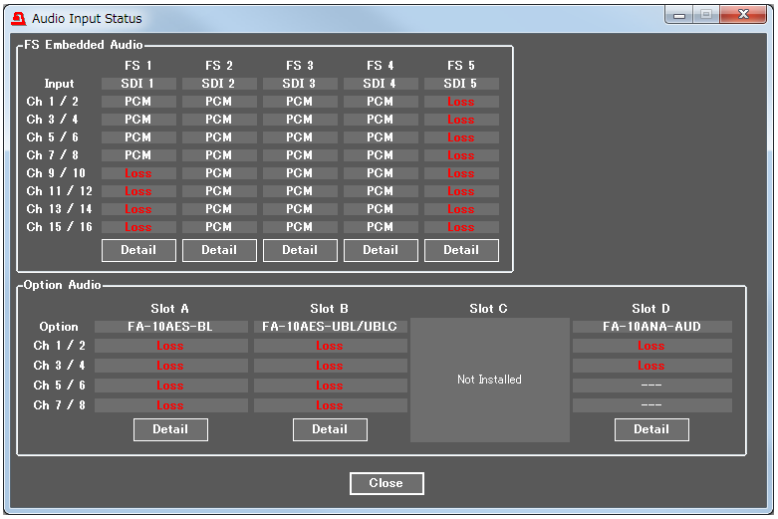


◆ **When an FA-10AES-BL/UBL option is installed**



(*1) FS Input Select cannot be selected. To change input selection, go to the Video Block FS Input menu. (See Sec. 4-2-2. “FS Input.”)
(*2) FS Output Select cannot be selected. To change input selection, go to the Video Block FS Output menu. (See Sec. 4-2-13. “FS Output.”)
(*3) Available only if the FA-10AES-BL/UBL option is installed.
(*4) Available only if the FA-10ANA-AUD option is installed.

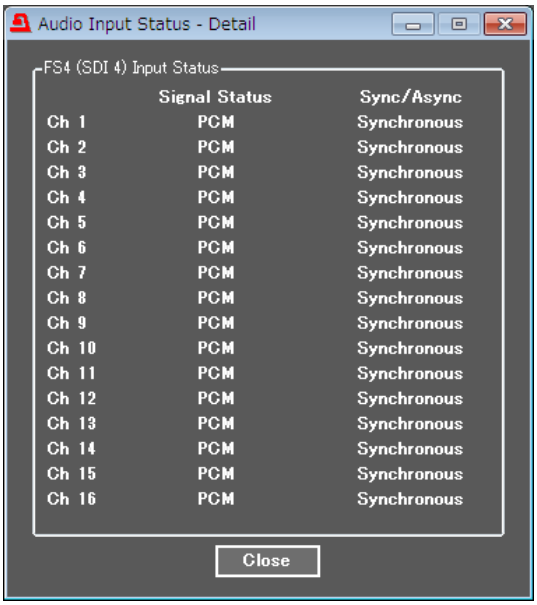
4-3-1. Audio Input Status



Item	Display	Description
FS Embedded Audio	Loss PCM PCM (Silence) NON-PCM By-pass	Displays the status of each audio input signal in FS1-5 and Slot A-D.
Option Audio (AES)	Loss PCM PCM (Silence) NON-PCM Output settings	
Option Audio (Analog Audio)	Loss Present	
Detail (button)	-	Allows you to open the Audio Input Status-Detail page

If an FA-10AES-UBL is installed with its FA-10AES-UBLC option, the FA-10AES-UBL is displayed as “FA-10AES-UBL/UBLC” and no status is displayed on the FA-10AES-UBLC installed slot.

4-3-1-1. Audio Input Status - Detail

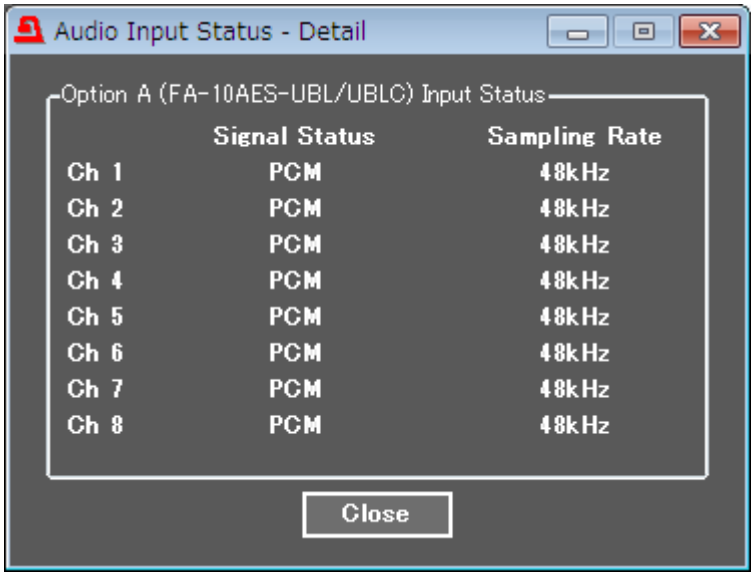


Item	Display	Description
Signal Status	Loss PCM PCM (Silence) (*1) NON-PCM Blank By-pass	Displays signal information on each audio channel.
Sync/Async	Synchronous Asynchronous	Displays audio / video sync status.

(*1) The Silence state is determined according to the Digital Audio Silence Level and Digital/Analog Audio Silence Time settings. See Sec. 4-3-16. “Audio System” for details.

4-3-1-2. Audio Input Status – Detail (FA-10AES Option)

This page displays optional AES audio input status.

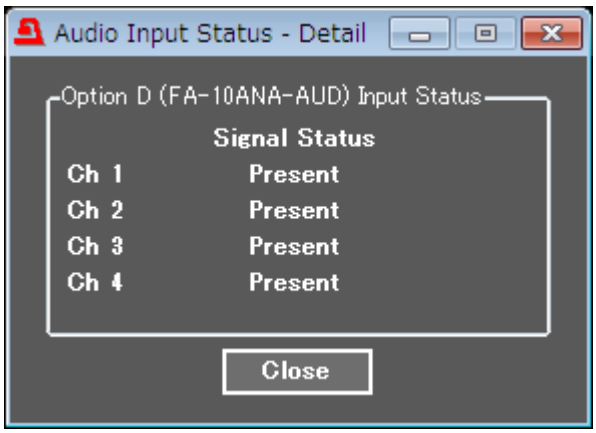


Item	Display	Description
Signal Status	Loss PCM PCM (Silence) (*1) NON-PCM Output Settings	Displays signal information on each audio channel.
Sampling Rate	32kHz 44.1kHz 48kHz	Displays the sampling rate for each audio input signal.

(*1) The Silence status is determined according to the Digital Audio Silence Level and Digital/Analog Audio Silence Time settings. See Sec. 4-3-16. “Audio System” for details.

4-3-1-3. Audio Input Status – Detail (FA-10ANA-AUD Option)

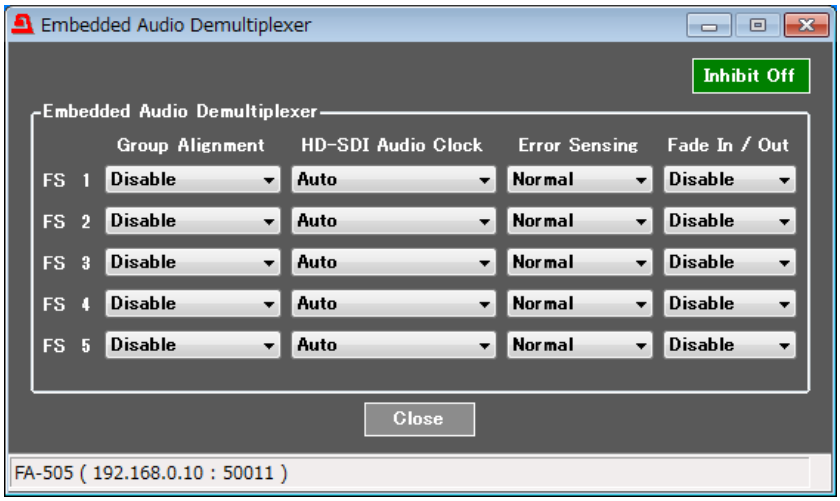
This page displays optional analog audio input status.



Item	Display	Description
Signal Status	Loss (*1) Present	Displays the signal input status for each audio channel.

(*1) The Loss state is determined according to the Analog Audio Silence Level and Digital/Analog Audio Silence Time settings. See Sec. 4-3-16. “Audio System” for details.

4-3-2. Embedded Audio Demultiplexer



This page allows you to set embedded audio demultiplexing for each FS.

Item	Default	Setting range	Description
Group Alignment	Disable	Enable Disable	Allows you to enable or disable automatic phase adjustment for FS1-5 input embedded audio groups. (*1) **Enable:** Automatic adjustment **Disable:** No adjustment (normal setting)
HD-SDI Audio Clock	Auto	Auto Sync SDI Audio Clock	Allows you to select audio clock signal to use for de-embedding and processing audio data in HD-SDI signal input. **Auto**: De-embeds HD-SDI embedded audio data using the audio clock phase data in the embedded audio. Synchronous and asynchronous embedded audio signals from 4 audio groups can be de-embedded separately. Audio data will be processed as synchronous data if the audio clock phase data is incorrect, or jitter is too great. **Sync SDI**: All audio data in 4 audio groups are always processed as synchronous data without referring to the respective audio clock phase data. **AUD Clock**: Always uses audio clock phase data in HD-SDI embedded audio data to de-embed the audio data.
Error Sensing	Normal	Disable Normal Sensitive	The FA-505 can detect audio status changes such as an input signal change, and automatically mute (*2) and fade signals out. **Disable**: Disables mute function when change in audio status is detected. Normally not selected. * Refer to the important note on the next page. **Normal**: Mutes when a change on an SDI signal, ADP (Audio Data Packet), or DBN (Data Block Number) is detected. Normally selected. **Sensitive**: Mutes when a change on channel status, or EDP (Extended Data Packet) presence (only for SD-SDI), as well as the above items, is detected.
Fade In/Out	Disable	Disable Enable	**Disable:** Always passes audio signals without applying fade or mute processing. **Enable:** Fades out and mutes when an error occurs, and fades in after returning to normal state.

(*1) **Enable** resets all group phase settings when an input audio status has changed in one group.
(*2) Fades out when **Fade In/Out** is set to **Enable**

IMPORTANT
Normally set Error Sensing to **Normal**. Set to **Disable** for a specific program or duration when audio output has noise or is muted. The FA-505 fades out audio or resets the delay circuit when a status change (SDI signal input interruption, signal switchover by a router, etc.) is detected. Faulty ANC data in normal audio signals may also be detected as status changes. Audio signals with such faulty ANC data may lead the FA-505's automatic correction to improperly process the audio input and produce noise or mute the audio. Note that while disabling the automatic correction can prevent such improper processing, the following functions will be affected. After a signal switchover by router or the recovery of an interrupted SDI signal, delay settings will lose their accuracy to within ±2 msec max. Audio signal phases among audio groups will not match.

4-3-3. AES Audio Input (FA-10AES Option)

◆ **In/Out (Enabled if the FA-10AES-UBL option is installed.)**

FA-10AES-UBL terminals are input / output selectable.

Item	Default	Setting range	Description
Ch. 1/2-3/4	Input	Input Output	**Input:** Allows you to use AES 1/2, 3/4 terminals for input. **Output:** Allows you to use AES 1/2, 3/4 terminals for output.
Ch. 5/6-7/8	Input	Input Output	**Input:** Allows you to use AES 5/6, 7/8 terminals for input. **Output:** Allows you to use AES 5/6, 7/8 terminals for output.

FA-10AES-BL terminals cannot change their input or output function.
If the FA-10AES-UBLC option is installed, FA-10AES-UBL terminals are fixed to input, and cannot be changed.

◆ **Hysteresis**

Item	Default	Setting range	Description
Ch. 1/2-7/8	OFF	OFF Group A Group B	Synchronizes the AES input signals in group A or B per group. These settings are effective when using AES audio signals to output multi-channel audio signals such as surround sound.

The channel pair with the smallest channel numbers within a group is used as the reference pair and other channel pairs are synchronized to it. If there is no audio signal in the channel pair, the next channel pair will be the reference. Audio signals with a phase difference relative to the reference within ±0.25 of a sample period can be synchronized.

Setting Examples:

◆ **When setting all channel pairs Ch 1/2 to 7/8 to Group A**

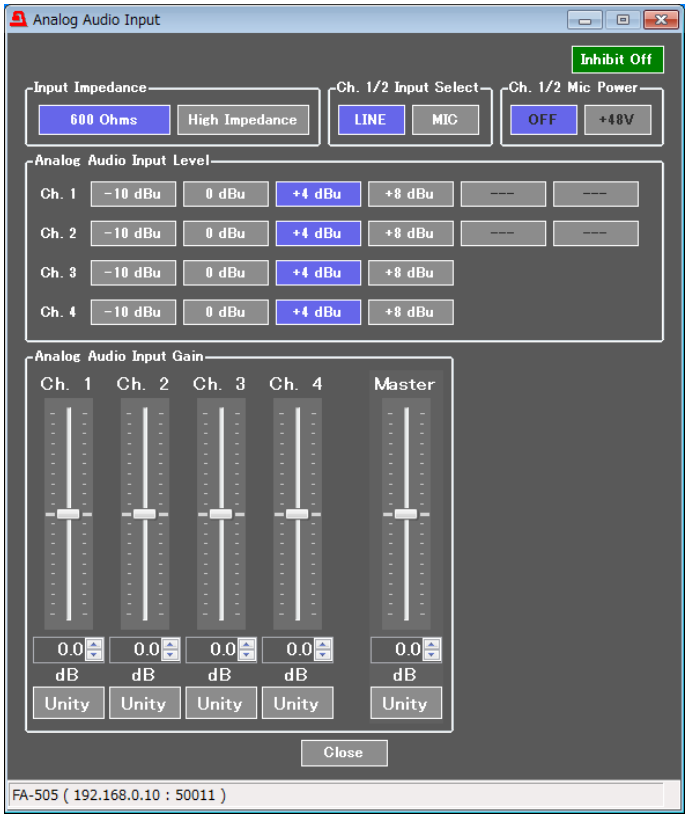
Ch 1/2 will be the reference. Other channel pairs will be synchronized to the word clock of Ch1/2.

◆ **When setting channels Ch1/2 to 3/4 to Group A, and channels Ch5/6 to 7/8 to Group B**

Ch 1/2 will be the reference pair for Group A, and Ch 5/6 the reference pair for Group B.

IMPORTANT
Channel pairs in an audio group must be synchronous and must have the same sampling rate. Changing the audio assignment of the reference channel pair may cause noise on other channel pairs within the same audio group.

4-3-4. Analog Audio Input (FA-10ANA-AUD Option)



Item	Default	Setting range	Description
Input Impedance	600 Ohms	600 Ohms High Impedance	Allows you to set the termination for all analog audio inputs.
Ch. 1/2 Input Select	LINE	LINE MIC	Allows you to select the input mode for Ch. 1 and Ch. 2 from Line and Microphone. The Input level changes depending on the selection. Ch.3 and Ch. 4 always operate in Line mode.
Ch. 1/2 Mic Power	OFF	OFF +48V	**+48V**: Outputs +48V power from the Ch.1 and Ch.2 analog audio input hot and cold pins. Effective only with Microphone input. Always turns off when the unit starts up. (*1)

(*1) Always turns off when performing an Event Load. Also turns off when a CSV file is loaded.

◆ Analog Audio Input Level

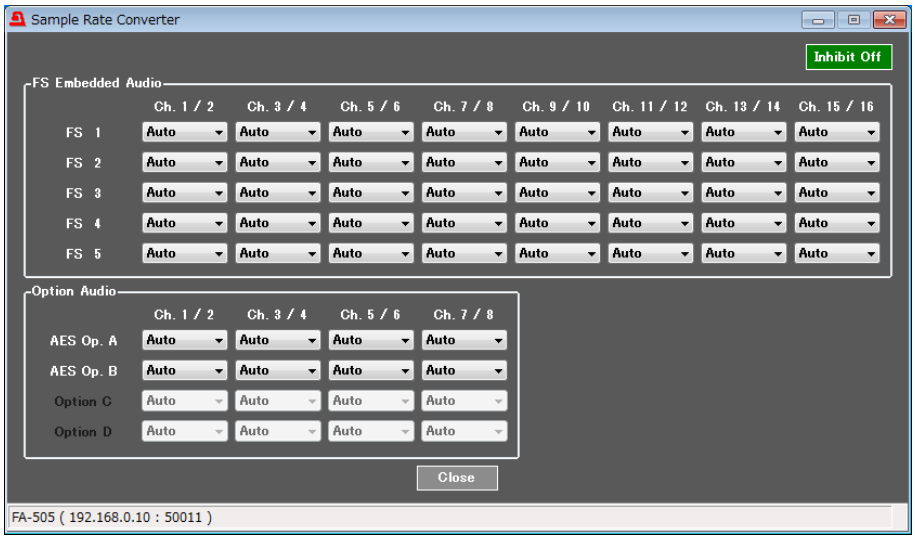
Item	Default	Setting range	Description
Ch.1-4 (in LINE mode)	+4dBu	-10dBu 0dBu +4dBu +8dBu	Allows you to set the input signal level for each analog audio channel.
Ch.1-2 (in MIC mode)	-45dBu	-55dBu -50dBu -45dBu -40dBu -35dBu -30dBu	

◆ **Analog Audio Input Gain**

Item	Default	Setting range	Description
Ch.1-4	0.0 dB	-20 - +20.0 dB (0.1 dB)	Allows you to set input gain for each analog audio channel.
Master	0.0 dB	-20 - +20.0 dB (0.1 dB)	Allows you to set an input gain offset for all analog audio channels.

IMPORTANT
Switching the Input Select LINE / MIC setting significantly changes the input level. **Make sure** no audio input signal is present when changing the **Input Select LINE/MIC setting**.

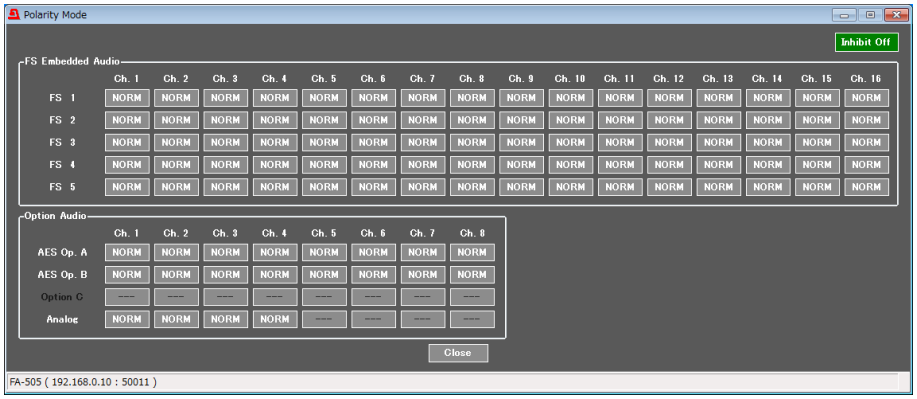
4-3-5. Sample Rate Converter (SRC)



Sample Rate Converter settings can be separately set for each FS channel pair.

Item	Default	Setting range	Description
FS 1-5	SRC In	Auto SRC In By-pass	Allows you to set the SRC circuit to pass or by-pass audio signals per channel pair. **Auto:** Sets the SRC circuit to pass signals. By-passes non-PCM audio signals. **SRC In:** Sets the SRC circuit to pass both PCM and NON-PCM signals. However, real non-PCM signals are improperly output. **By-pass:** Sets the SRC circuit to by-pass signals. Set to **By-pass** to output asynchronous audio signals or Non-PCM signals. Select an audio clock under 4-3-14. “Embedded Audio Multiplex“ for the respective audio groups to embed audio signals to SDI output video signals.
AES Op. A-D	Auto	Auto SRC In By-pass	Allows you to set the SRC circuit to pass or by-pass audio signals per channel pair for option cards.

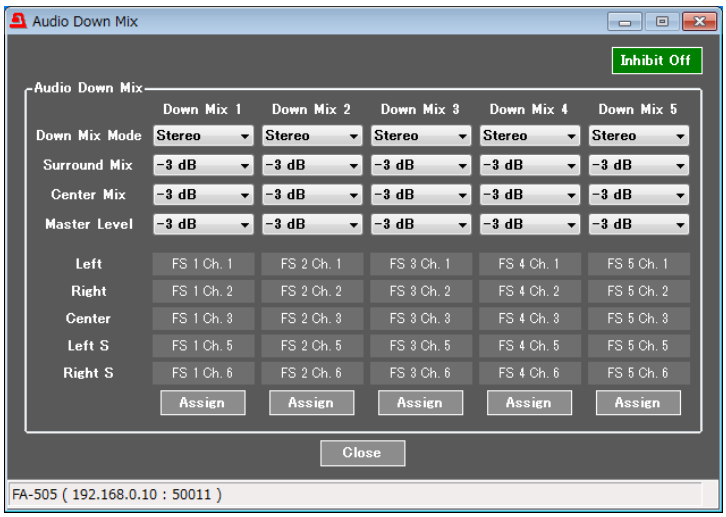
4-3-6. Polarity Mode



This page allows you to set polarity for each channel.

Item	Default	Setting range	Description
FS 1-5	NORM	NORM INV	Allows you to set polarity for each FS channel. **INV:** Reverses the polarity.
AES Op. A-D			
Analog Op.			

4-3-7. Down Mix



The following parameters for Down Mix 1 to 5 (One Down Mixer in each FS) can be separately set.

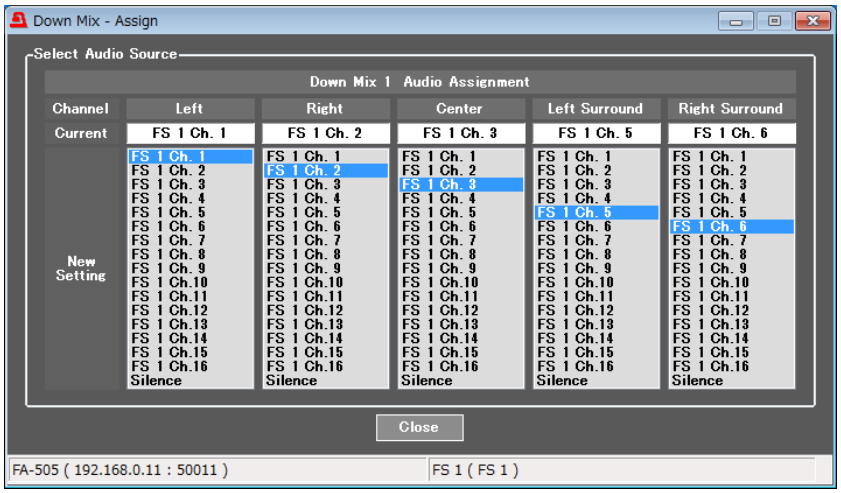
Item	Default	Setting range (Steps)	Description
Down Mix Mode	Stereo	Stereo Surround Monaural	Allows you to select a mode to downmix audio signals.
Surround Mix	-3dB	-3dB -6dB -9dB Off	Allows you to set the Ls/Rs (surround channels) level. **Off** : (-∞dB) Excludes surround channels from downmix.
Center Mix	-3dB	-3dB -4.5 dB -6dB	Allows you to set the C (center channel) level. **-3dB**: The output level after a downmix retains the original center channel level. **-4.5dB, -6dB:** Used to reduce the audio level in case it becomes too loud due to the center audio channel mixing to both the right and left channels.
Master Level	-3dB	-3dB 0dB Auto (*1)	Allows you to set a master level for downmixed audio signals as a whole. If set to **Auto**, Down MIX Master Level changes according to the Downmix Mode and Surround Mix level selections.
Left Right Center Left S (Surround) Right S (Surround)	Left: FS1-5 Ch1 Right: FS1-5 Ch2 Center: FS1-5 Ch3 Left S: FS1-5 Ch5 Right S: FS1-5 Ch6	FS1 Ch1 to 16 | | FS5 Ch1 to 16 Silence	Displays current audio input signals for downmixing.
Assign (button)	-	-	Allows you to open a window to assign audio signals to input for downmixing.

(*1) Master Level set to Auto changes to signal levels as shown in the below table.

Surround Mix Level / Down Mix Mode	-3dB	-6dB	-9dB	0 (-∞dB)
Stereo	approx.-7.7dB	approx.-6.9dB	approx.-6.3dB	approx.-4.6dB
Surround	approx.-9.9dB	approx.-8.7dB	approx.-7.7dB	approx.-4.6dB
Monaural	approx.-12.9dB	approx.-12.0dB	approx.-11.4dB	approx.-9.5dB

4-3-7-1. Down Mix Assign

Clicking an Assign button in the Down Mix page opens a window as shown below allowing audio signals to be assigned to down mix channels.



◆ Downmix Assign

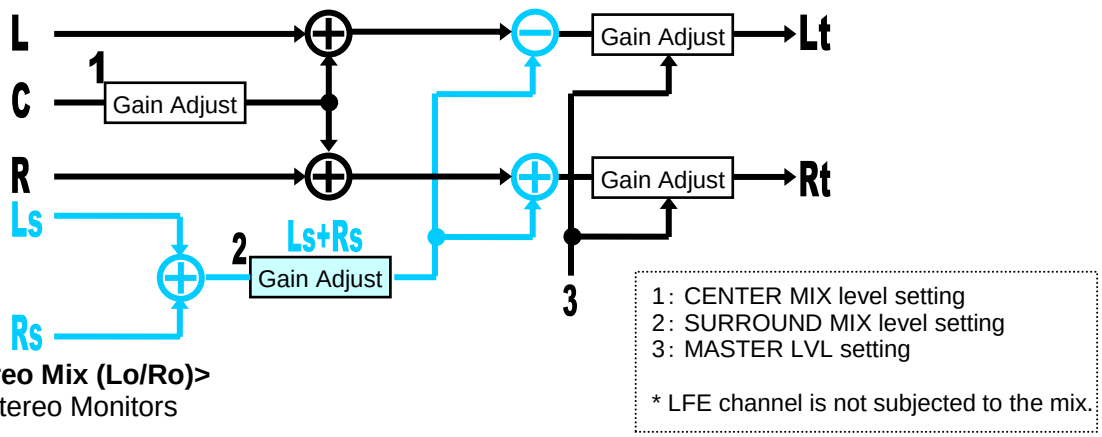
Item	Default	Setting range	Description
Channel	-	-	Allows you to assign an audio signal for each channel; Left, Right, Center, Left S (Surround), and Right S (Surround).
Current	-	-	Displays currently selected audio signals.
New Setting	Left: FS1-5 Ch1 Right: FS1-5 Ch2 Center: FS1-5 Ch3 Left S: FS1-5 Ch5 Right S: FS1-5 Ch6	FS X Ch1 to 16 Silence	Allows you to select audio signals to input to downmixed audio channels. (*1) (*2)

(*1) An audio signal assigned to multiple channels may not output properly.
(*2) Audio channels from different FSs are unable to be down mixed.
e.g.) Down Mix 1 can only assign FS 1 audio channels.
Down Mix 5 can only assign FS 5 audio channels.

◆ **Down Mix Block Diagram**

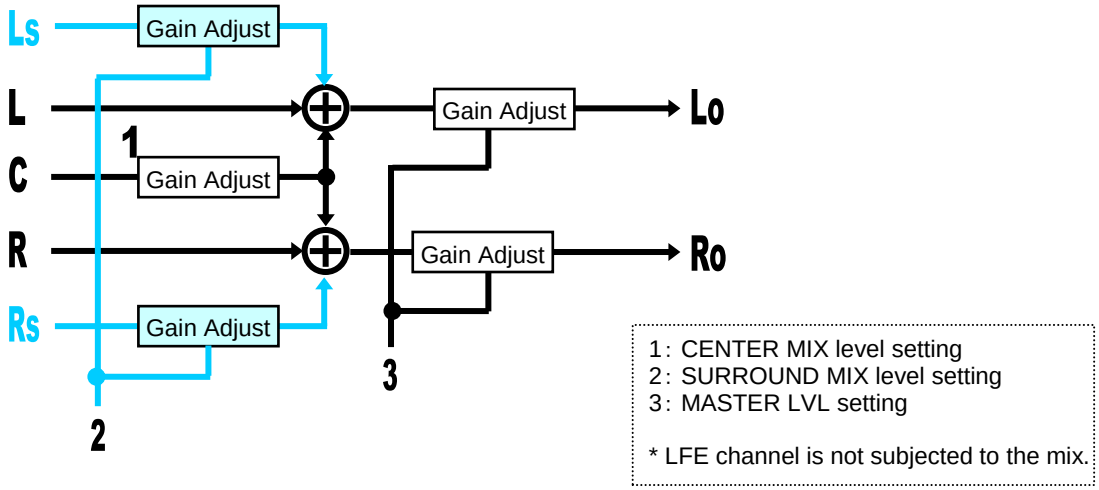
<Surround Mix (Lt/Rt)>

Ls/Rs surround channels are summed to produce a mono surround channel and mixed to right and left channels by the 180 degree phase difference. (LFE channel is discarded.)



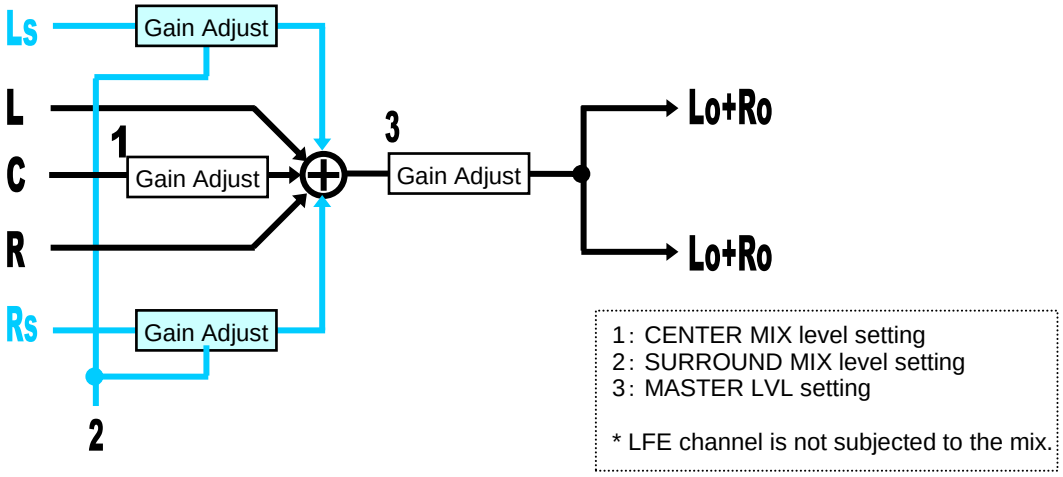
<Stereo Mix (Lo/Ro)>

For Stereo Monitors



<Monaural Mix (Lo+Ro/Lo+Ro)>

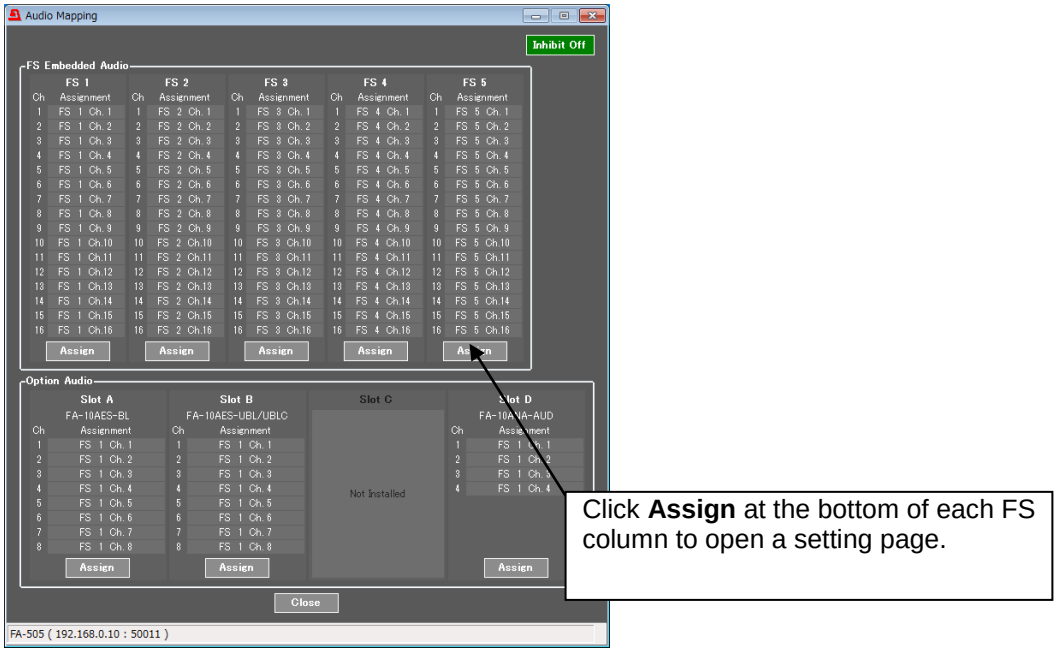
For Monaural Monitors



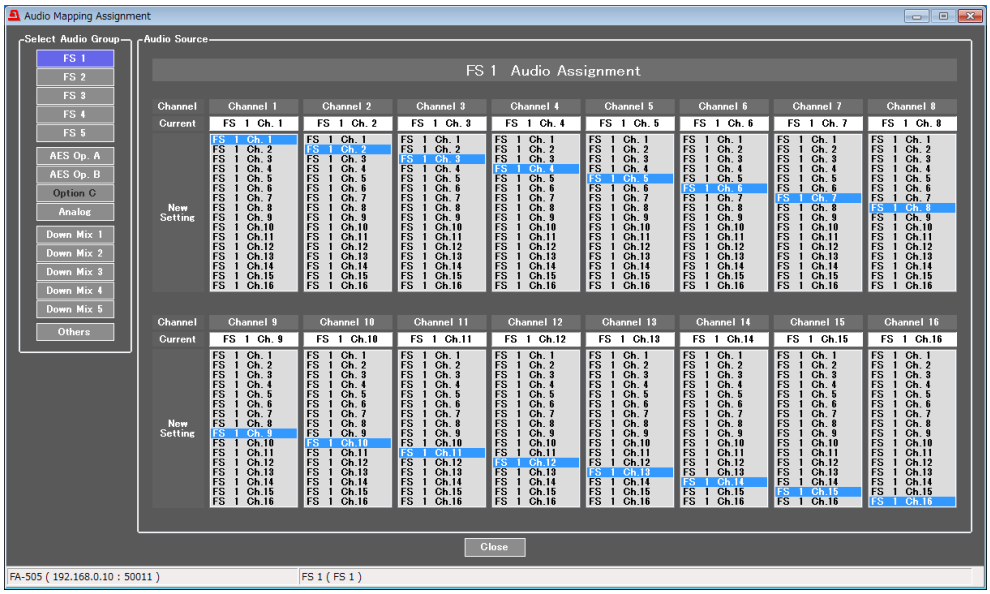
4-3-8. Audio Mapping

- SDI Mapping

The Audio Mapping block in the Audio Block diagram allows you to open the Audio Mapping page showing FS signals mapping states.



Clicking **Assign** at the bottom of each FS column opens a corresponding FS setting page. Buttons under **Select Audio Group** in the upper left section in a FS audio setting page are source group selection buttons. Clicking a source group selection button displays source channels in the **New Setting** boxes, and allow assignment.



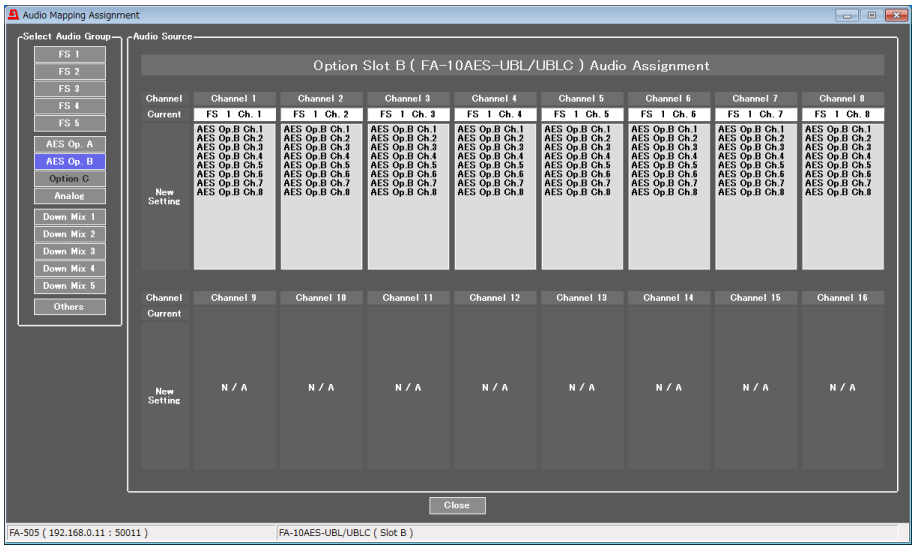
◆ **FS1-5 Audio Assignment**

Item	Default	Setting range	Description
Channel	Channel 1	Channel 1 – 16	Allows you to select an audio signal to output for the selected FS.
Current	-	-	Displays the currently assigned audio channel.
New Setting	FS1-5 Ch1-16	FS1 Ch1-16 | | FS5 Ch1-16 AES Op. A Ch.1-8 (*1) | AES OP. D Ch.1-8 (*1) Analog Op.Ch1-4 (*2) Down Mix1 L Down Mix1 R | | Down Mix5 L Down Mix5 R Silence 500Hz Tone 1kHz Tone	Allows you to select an audio signal type and channel to output to respective audio channels. Channels of audio sources selected under Select Audio Group section are displayed.

(*1) Displayed if the FA-10AES-BL/UBL/UBLC option is installed in the option slot.
(*2) Displayed if the FA-10ANA-AUD option is installed.

4-3-8-1. Audio Mapping (FA-10AES Option)

Clicking **Assign** at the bottom of each option column in the Audio Mapping page opens a corresponding option setting page.
AES option buttons also appear under **Select Audio Group** in the upper left section in an FS/Option audio setting page. Clicking an AES option shortcut button displays and allows assignments of AES source channels in the **New Setting** boxes.



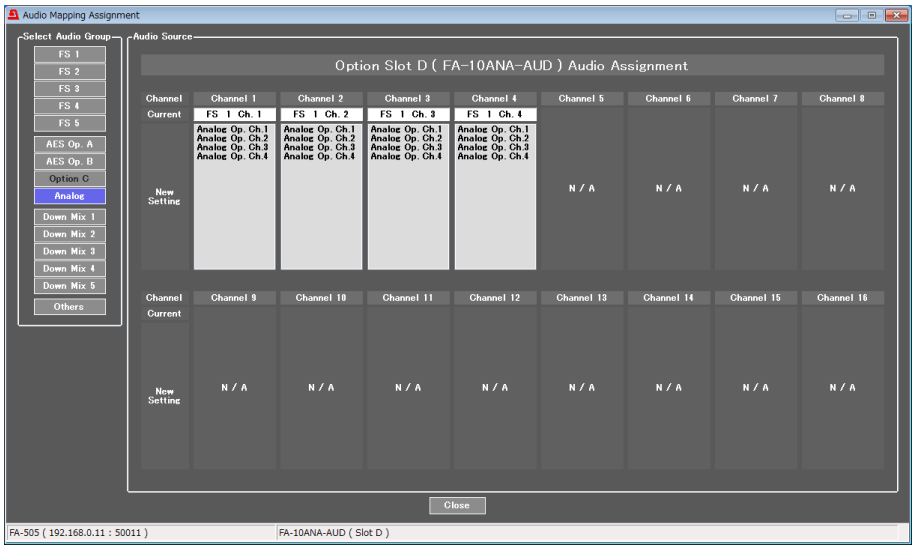
Item	Default	Setting range	Description
Channel	Channel 1	Channel 1 – 8	Allows you to select an audio signal to embed into respective AES option audio channels.
Current	-	-	Displays the currently assigned audio channel.
New Setting	FS1 Ch1-8	FS1 Ch1-16 | | FS5 Ch1-16 AES Op. A Ch.1-8 (*1) | AES OP. D Ch.1-8 (*1) Analog Op.Ch1-4 (*2) Down Mix1 L Down Mix1 R | | Down Mix5 L Down Mix5 R Silence 500Hz Tone 1kHz Tone	Allows you to select an audio signal to embed into respective AES audio channels. Channels of audio sources selected under Select Audio Group section are displayed.

Settings in this page cannot be changed for input channels on the FA-10AES-UBL option. (See Sec. 4-3-3. “AES Audio Input (FA-10AES Option).")

(*1) Displayed if the FA-10AES-BL/UBL/UBLC option is installed in the option slot.
(*2) Displayed if the FA-10ANA-AUD option is installed.

4-3-8-2. Audio Mapping (FA-10ANA-AUD Option)

Clicking **Assign** at the bottom of each option column in the Audio Mapping page opens a corresponding option setting page.
Analog option buttons also appear under **Select Audio Group** in the upper left section in an FS/Option audio setting page. Clicking an Analog option shortcut button displays and allows assignments of Analog source channels in the **New Setting** boxes.



Item	Default	Setting range	Description
Channel	Channel 1	Channel 1 – 4	Allows you to select an audio signal to embed into respective Analog option audio channels.
Current	-	-	Displays the currently assigned audio channel.
New Setting	FS1 Ch1-4	FS1 Ch1-16 | | FS5 Ch1-16 AES Op. A Ch.1-8 (*1) | AES OP. C Ch.1-8 (*1) Analog Op.Ch1-4 (*2) Down Mix1 L Down Mix1 R | | Down Mix5 L Down Mix5 R Silence 500Hz Tone 1kHz Tone	Allows you to select an audio signal to embed into respective Analog audio channels. Channels of audio sources selected under Select Audio Group section are displayed.

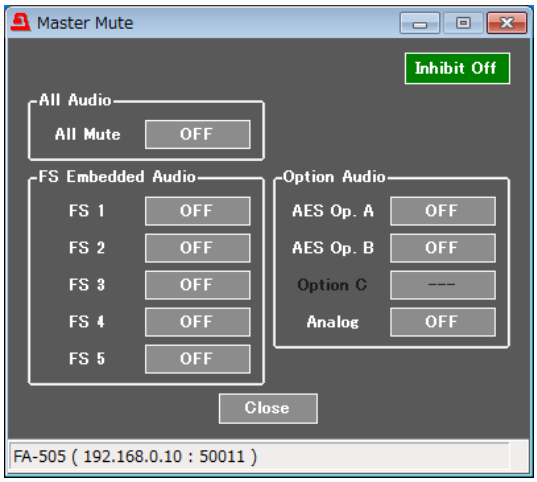
(*1) Displayed if the FA-10AES-BL/UBL/UBLC option is installed in the option slot.
(*2) Displayed if the FA-10ANA-AUD option is installed.

4-3-9. Audio Test Signal

Item	Default	Setting range	Description
All (*1)	OFF	OFF 500Hz Tone 1kHz Tone	Allows you to output audio test signals in all FS and option card channels.
FS1-5 AES Op. A-D Analog Op.	OFF	OFF 500Hz Tone 1kHz Tone	Allows you to output an internal embedded audio test signal in all FSs or respective option cards.

(*1) All has higher priority than other settings.

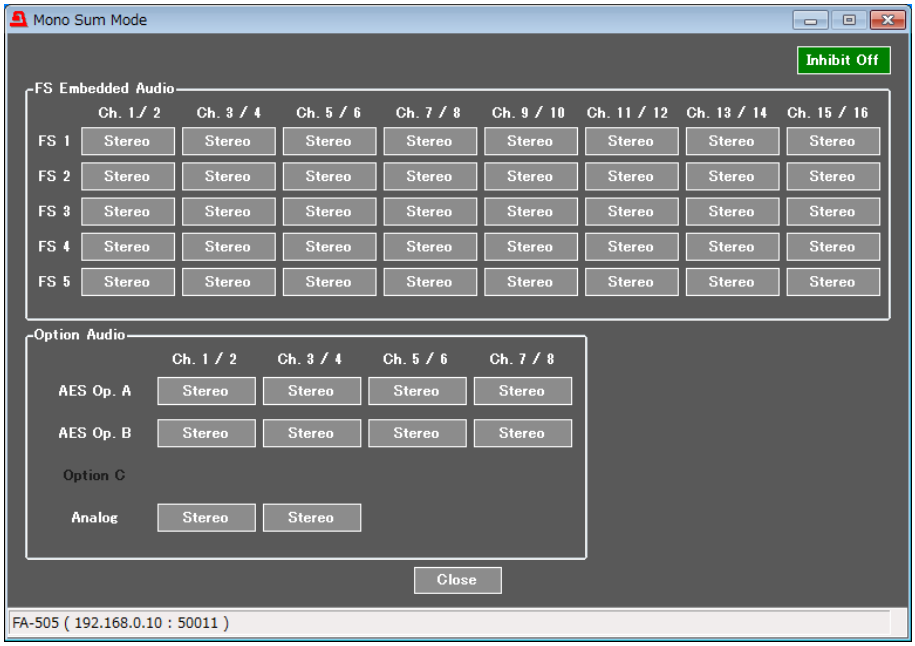
4-3-10. Master Mute



Item	Default	Setting range	Description
All Mute (*1)	OFF	ON OFF	**ON:** Mutes all FS 1 to 5 audio channels that are set to be internally processed.
FS1-5 AES Op. A-D Analog Op.	OFF	ON OFF	**ON:** Mutes all audio channels of each FS or option card that are set to be internally processed.

(*1) All Mute has higher priority than other settings.

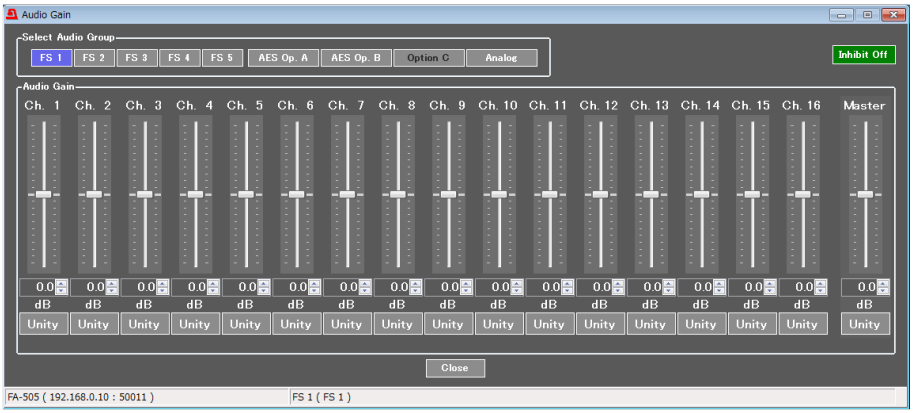
4-3-11. Mono Sum Mode



This page allows Mono Sum mode to be set for each channel pair.

Item	Default	Setting range	Description
FS 1-5	Stereo	Stereo Monaural	**Monaural:** Outputs each FS or option card channel pair signals in mono sum mode.
AES Op. A			
AES Op. B			
Analog			

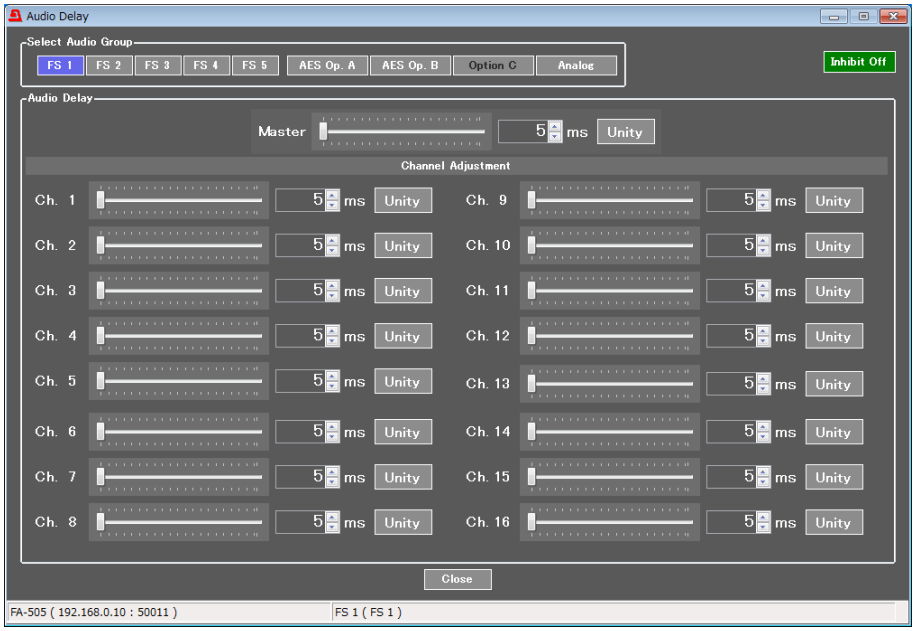
4-3-12. Audio Gain



◆ Embedded Audio Gain (When FS1-5 is selected under Select Audio Group)

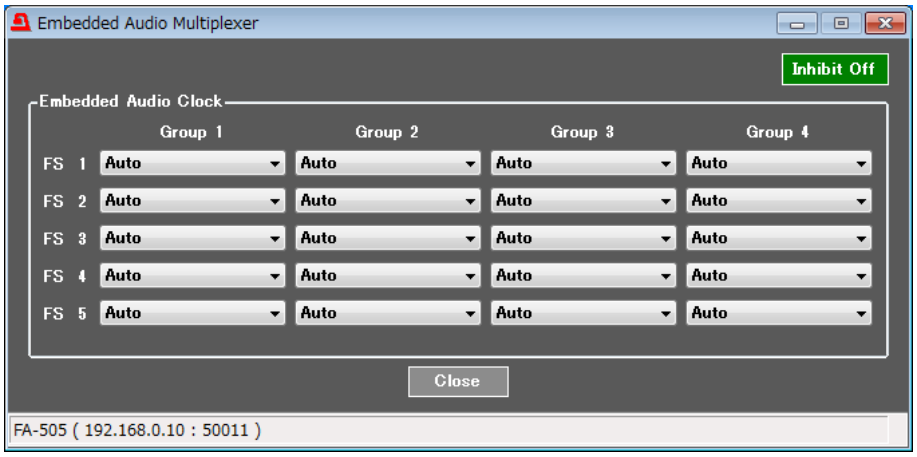
Item	Default	Setting range (Steps)	Description
FS Ch.1-16	0.0dB	-20.0 - +20.0 dB (0.1 dB)	Allows you to set audio gain for each audio channel selected under Select Audio Group for each FS.
AES Op. A-D Ch. 1-8	0.0dB	-20.0 - +20.0 dB (0.1 dB)	Allows you to set AES audio gain for each audio channel selected under Select Audio Group.
Analog Op. Ch. 1-4	0.0dB	-20.0 - +20.0 dB (0.1 dB)	Allows you to set Analog audio gain for each audio channel selected under Select Audio Group.
Master	0.0dB	-20.0 - +20.0 dB (0.1 dB)	Allows you to set an output offset for all embedded audio channels in audio groups selected under Select Audio Group.

4-3-13. Audio Delay



Item	Default	Setting range	Description
Master	5 ms	5 – 1000 ms	Allows you to set the delay offset for all audio channels selected under Select Audio Group simultaneously.
FS Ch. 1-16	5 ms	5 – 1000 ms	Allows you to set a delay for each audio channel of the audio group selected under Select Audio Group of each FS.
AES Op. A-D Ch. 1-8	5 ms	5 – 1000 ms	Allows you to set a delay for each AES audio channel of the audio group selected under Select Audio Group.
Analog Op. Ch. 1-4	5 ms	5 – 1000 ms	Allows you to set a delay for each Analog audio channel of the audio group selected under Select Audio Group.

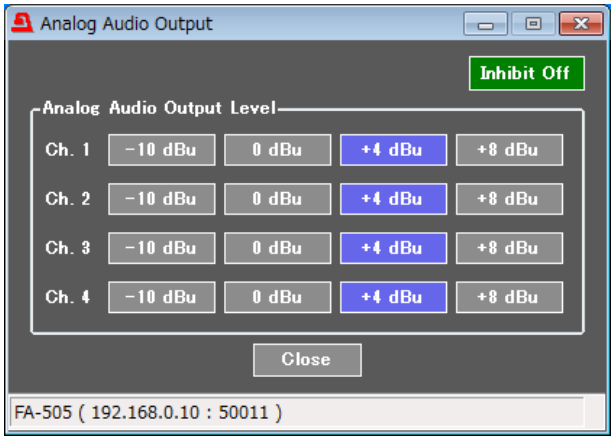
4-3-14. Embedded Audio Multiplexer



- FS1-5 Out Group Audio Clock

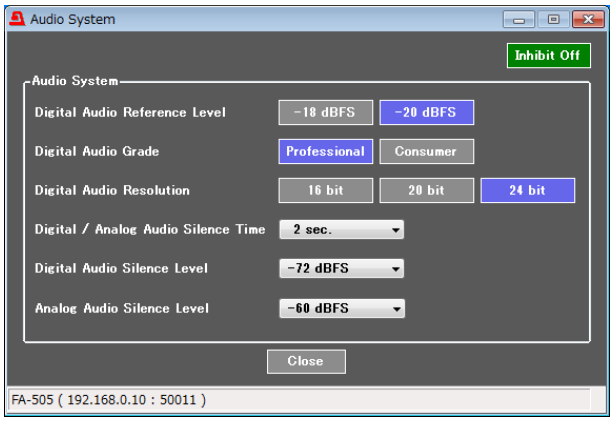
Item	Default	Setting range	Description
Group 1	Auto	Auto Reference clock CH 1/2 CH 3/4	Allows you to select an audio clock per group for SDI embedded audio output for FS1 to FS5, respectively. **Auto:** Automatically selects audio clock input in the NON-PCM signal channel, if an input NON-PCM signal is in the selected SDI embedded audio group. Automatically selects audio clock signal in the smallest numbered channel, if all signals in the audio group are NON-PCM. Automatically selects audio clock signal synchronized to the output video signal, if all signals in the audio group are PCM. **Reference clock**: Uses an audio clock synchronized with the output video signal. (Used to synchronize audio with the video signals processed in the SRC.) **CH 1/2 to 15/16:** An input audio clock in channels 1/2 to 15/16. To output asynchronous audio signals, select one input channel pair for each group. For SD-SDI output, **Reference clock** is automatically selected regardless of the setting.
Group 2	Auto	Auto Reference clock CH 5/6 CH 7/8	
Group 3	Auto	Auto Reference clock CH 9/10 CH 11/12	
Group 4	Auto	Auto Reference clock CH 13/14 CH 15/16	

4-3-15. Analog Audio Output (FA-10ANA-AUD Option)



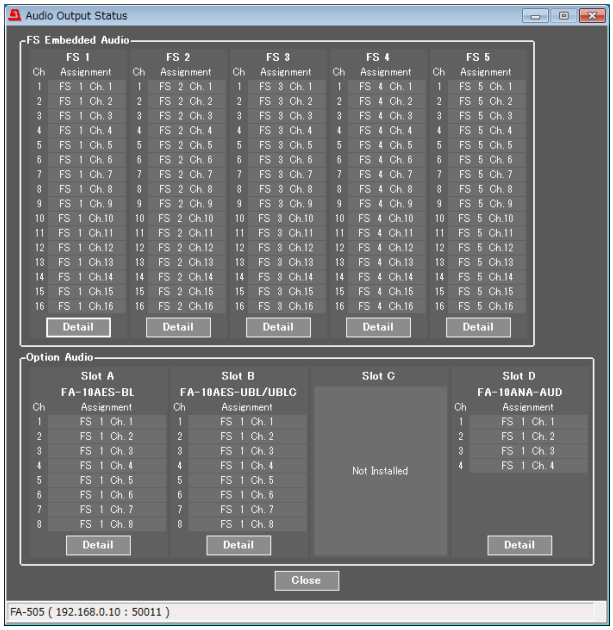
Item	Default	Setting range	Description
Ch.1-4	+4dBu	-10dBu 0dBu +4dBu +8dBu	Allows you to select the output level for each analog audio channel.

4-3-16. Audio System



Item	Default	Setting range	Description
Digital Audio Reference Level	-20 dBFS	-18 dBFS -20 dBFS	Allows you to select the reference level for digital audio signals.
Digital Audio Grade	Professional	Professional Consumer	Allows you to select an audio application for digital audio channels. **Professional**: Optimized for professional use **Consumer**: Optimized for consumer use.
Digital Audio Resolution	24 Bit	16 Bit 20 Bit 24 Bit	Allows you to select an audio word length for Digital Audio output signals.
Digital/Analog Audio Silence Time	2 sec	1 – 10sec	Allows you to set the duration to determine audio signal silence.
Digital Audio Silence Level	-72 dBFS	-48 dBFS -54 dBFS -60 dBFS -66 dBFS -72 dBFS	Allows you to select the audio level to determine audio signal silence.
Analog Audio Silence Level	-60 dBFS		

4-3-17. Audio Output Status



◆ **FS Embedded Audio**

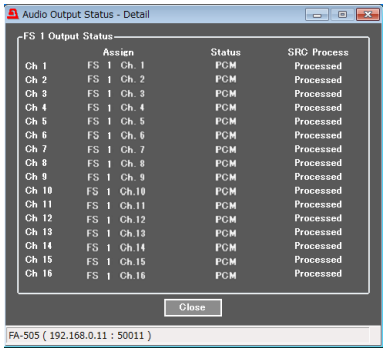
Item	Display	Description
Ch1 - 16	FS1-5 Ch.1-16 etc.	Displays source signals assigned to FS 1 to 5.

◆ **Option Audio**

Item	Display	Description
Ch1 - 8	FS1-5 Ch. 1-8 etc.	Displays source signals assigned to AES or analog audio output connectors.

◆ **Audio Output Status Details**

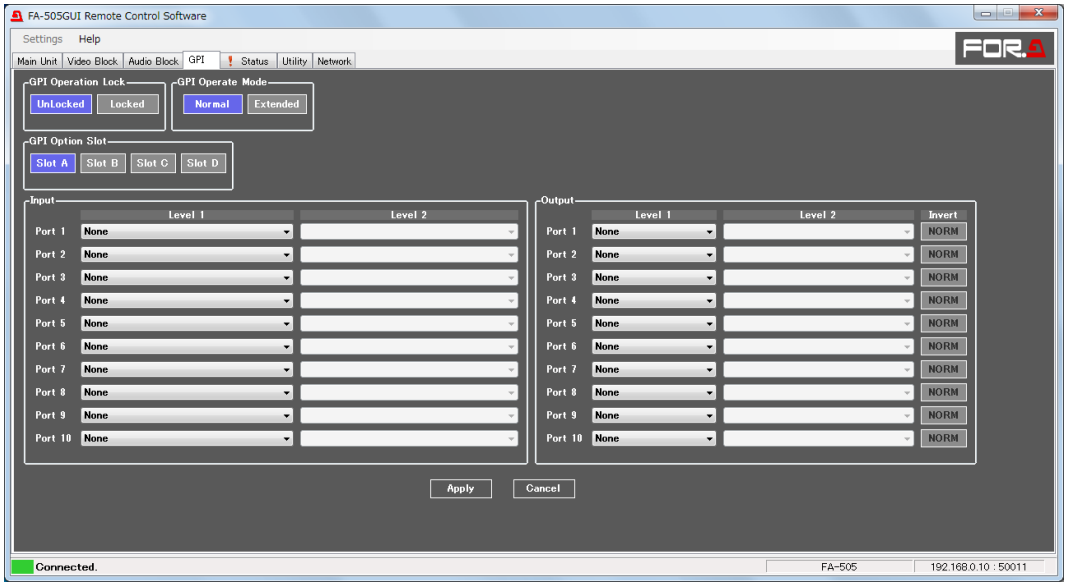
Clicking the Detail button at the bottom of each output group opens a window showing details for each channel.



Item	Display	Description
Assign	-	Displays the assigned source signal.
Status	PCM PCM (Silence) NON-PCM Blank By-pass Silence	Displays the embedded audio signal type or status. **PCM:** Normal audio signal **PCM (Silence):** Mute signal **NON-PCM:** Compressed audio data such as AC3 **Blank:** No embedded audio **By-pass:** SDI input and output are relay by-passed. **Silence:** Mute signal (Analog)
SRC Process	Processed Bypassed	Displays whether the audio signal has been processed or not in the SRC.

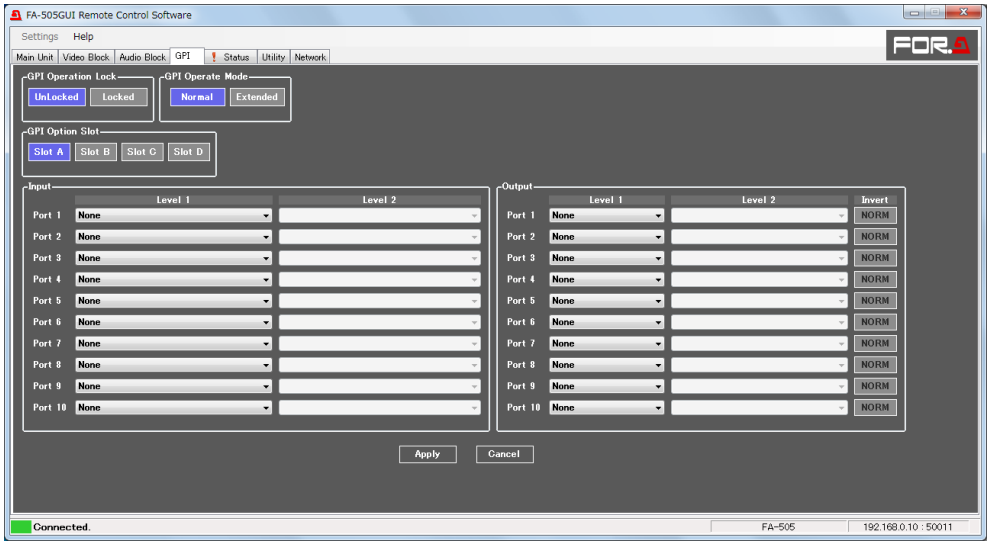
4-4. GPI (FA-10GPI Option)

Click the **GPI** tab at the top of the page to open the GPI page.



Item	Setting range	Description
GPI Option Slot	Slot A – D	Selects the port to which your FA-10GPI card is installed.
GPI Operation Lock	Unlocked Locked	**Locked**: Disables GPI inputs. **Unlocked**: Enables GPI inputs. The GPI Lock feature can also be set using GPI inputs, however, input commands are different depending on the GPI Operate Mode setting (**Normal** mode or **Extended**, see below).
		In **Normal** mode, to lock GPI inputs through the GPI, assign GPI Lock to a GPI input port, then send the GPI pulse through the port. In **Normal** mode, to unlock GPI inputs through the GPI, assign GPI Lock to a GPI input port, send the GPI pulse for more than one second, then remove the GPI Lock assignment from the port.
		In **Extended** mode, to lock GPI inputs through the GPI, select **SYSTME.LockGPI** under Parameter and **True** under Value for an input port, then send the GPI pulse through the port. In **Extended** mode, to lock GPI inputs through the GPI, select **SYSTME.LockGPI** under Parameter and **False** under Value for an input port, then send the GPI pulse through the port.
GPI Operate Mode	Normal Extended	Selects a GPI mode that affects all GPI ports. **Normal**: Allows you to assign a function to Port 1-10 in each slot. (See Sec. 4-4-1. “GPI Normal Mode (FA-10GPI Option).”) **Extended**: Allows you to assign functions to Port 1-10 in each slot. (See Sec. 4-4-2. “GPI Extended Mode (FA-10GPI Option).”) * When using GPI in **Normal** mode, GPI command execution timing is guaranteed. (See Sec. 9-4. “GPI Control Sensitivity.”) When using GPI in **Extended** mode, GPI command execution timing is NOT guaranteed. The maximum waiting time for execution after input is approximate 100 ms.
Input	-	Displays GPI input settings.
Output	-	Displays GPI output settings.

4-4-1. GPI Normal Mode (FA-10GPI Option)



Allows you to assign a function for each port. The Level 2 menu option display changes according to the Level 1 selection.

◆ **Input**

Level 1	Level 2	
None	-	
Video Freeze	All Freeze Frame	
	All Freeze Odd	
	All Freeze Even	
	FS 1-5 Freeze ON/OFF (*1)	
	All Freeze ON/OFF	
SDI Relay By-pass	SDI 1-5 By-pass ON/OFF (*1)	
	All By-pass ON/OFF	
Time Code	Time Code Start	
	Time Code Stop	
	Time Code Reset	
	Time Code Preset	
Clean Switch System	Direct Mode	
	Take Mode	
	Take	
Clean Switch Destination	Destination 1-5	
	Source 1-5 to Destination 1-5 (*2)	
Clean Switch Source	Source 1-5	
Salvo Recall	Salvo 1-100	
Event Load (*3)	Default	
	Event 1-100	
Video Test Signal	FS1-5, All OFF	
	FS1-5, All 100% Color Bar	
	FS1-5, All 75% Color Bar	
	FS1-5, All SMPTE Color Bar	
	FS1-5, All Ramp	
Audio Test Signal	FS1-5	All OFF All 500Hz Tone All 1kHz Tone
	AES A-D (*4)	
	Analog (*5)	
Other	GPI Lock	

(*1) If the GPI control is obstructed by other settings, an "*" will appear at the head of the text string.
(*2) These options are available in and after the Software Version 1.21. They allow users to perform a clean switching by sending only a single GPI command, whereas two commands, Destination and Source selections, are needed in the previous version. In addition, both types of GPI commands are available, but the new clean switch commands have higher priority.
(*3) Once a GPI Event Loading is performed, the next event loading will be disabled for about 3 seconds.
(*4) AES A-D features are displayed only if the FA-10AES-BL/UBL/UBLC option is installed in respective Slots A-D.
(*5) Analog features are displayed only if the FA-10ANA-AUD option is installed in Slot D.

◆ Output

Level 1	Level 2	
None	-	
Unit Alarm	FAN 1/2/3/4 Alarm	(Indicates a FAN in an alarm state.)
	FAN 1-4 Alarm	(Indicates the selected FAN in an alarm state.)
	DC Power 1/2 Alarm (*1)	(Indicates a DC power is in an alarm state.)
	DC Power 1/2 Alarm (*1)	(Indicates the selected DC power is in an alarm state.)
	Any Alarm	(Indicates an alarm has occurred.)
Video In	FS 1-5 Video In	(Indicates a video signal is present in the selected FS.)
	Reference In	(Indicates a reference signal is present in the selected FS.)
Audio In	FS 1-5 Audio In	(Indicates an audio signal is present in the selected FS.)
	Option A-D Audio In (*2)	(Indicates audio signal presence in the selected option slot.)
Other	Input Function (*3)	

(*1) DC Power 2 is displayed if the FA-50PS is installed.
(*2) Displays Option A-D Audio In are displayed if FA-10AES-BL/UBL/UBLC and/or FA-10ANA-AUD are installed in respective slots A-D.
(*3) Output varies depending on the Input setting of the port. Refer to the "Input Function Operation Characteristics of GPI Output" for details.

◆ Invert

Allows you to select the output logic level for Unit Alarm selected under Level 1.

NORM (Normal): In an Alarm state, output is L (low).
INV (Invert): In an Alarm state, output is H (high).

◆ Input Function Operation Characteristics of GPI Output

Input setting	Output Behavior (under Input Function)
All Freeze Frame	Outputs when Freeze Mode is set to Frame for all FSs 1-5.
All Freeze Odd	Outputs when Freeze Mode is set to Odd for all FSs 1-5.
All Freeze Even	Outputs when Freeze Mode is set to Even for all FSs 1-5.
FS 1-5 Freeze On/Off	Outputs when Freeze is set to On for the subject FS.
All Freeze On/Off	Outputs when Freeze is set to On for all FSs 1-5.
SDI 1-5 By-pass On/Off	Outputs when By-pass is set to On for the subject FS.
All By-pass On/Off	Outputs when By-pass is set to On for all FSs 1-5.
Time Code Start	Outputs when the built-in Time Code Generator starts counting.
Time Code Stop	Outputs when the built-in Time Code Generator stops counting.
Direct Mode	Outputs when Clean Switch is set to Direct Mode.
Take Mode	Outputs when Clean Switch is set to Take Mode.
Take	Outputs and does not output alternately when a Source is selected for a Destination in Take Mode so that Clean Switch is in the Take stand-by state.
Destination 1-5	Outputs when the subject Destination is selected.
Source 1-5 to Destination 1-5	Outputs when a Source is assigned to the selected Destination.
Source 1-5	Outputs when the subject Source is selected.
Salvo 1-100	No action.

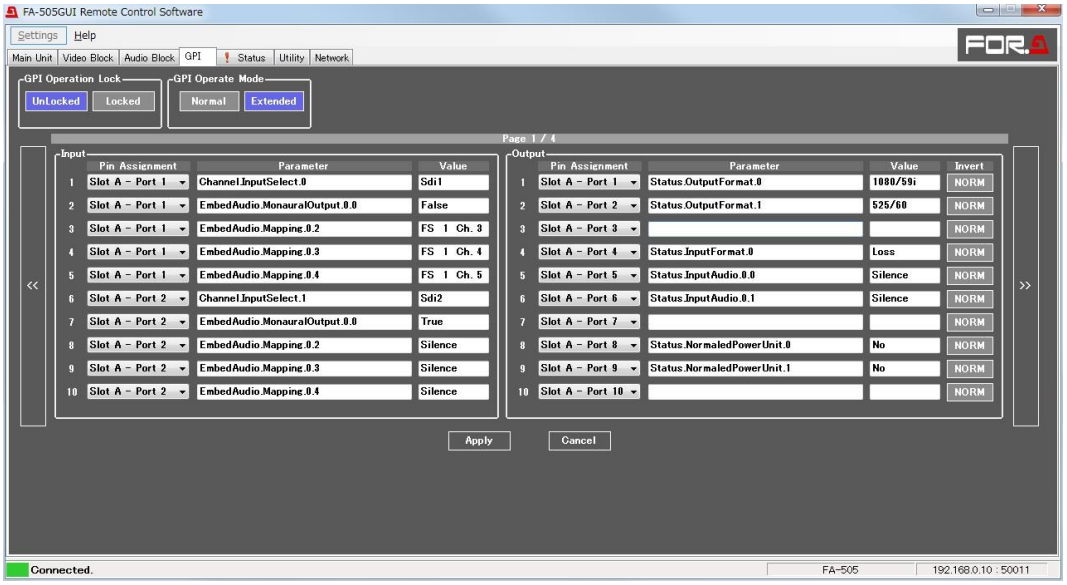
Event Load Default	Outputs and does not output alternately for about 3 seconds when an Event Load is performed.
Event 1-100	Outputs and does not output alternately for about 3 seconds when an Event Load is performed.
Video Test Signal FS1-5 Off	Outputs when Video Test Signal is set to Off for the subject FS.
Video Test Signal FS1-5 100% Color Bar	Outputs when Video Test Signal is set to 100% Color Bar for the subject FS.
Video Test Signal FS1-5 75% Color Bar	Outputs when Video Test Signal is set to 75% Color Bar for the subject FS.
Video Test Signal FS1-5 SMPTE Color Bar	Outputs when Video Test Signal is set to SMPTE Color Bar for the subject FS.
Video Test Signal FS1-5 Ramp	Outputs when Video Test Signal is set to RAMP for the subject FS.
Video Test Signal All Off	Outputs when Video Test Signal All is set to Off.
Video Test Signal All 100% Color Bar	Outputs when Video Test Signal All is set to 100% Color Bar.
Video Test Signal All 75% Color Bar	Outputs when Video Test Signal All is set to 75% Color Bar.
Video Test Signal All SMPTE Color Bar	Outputs when Video Test Signal All is set to SMPTE Color Bar.
Video Test Signal All Ramp	Outputs when Video Test Signal All is set to RAMP.
Audio Test Signal FS1-5 Off	Outputs when Audio Test Signal is set to Off for the subject FS.
Audio Test Signal FS1-5 500Hz	Outputs when Audio Test Signal is set to 500Hz for the subject FS.
Audio Test Signal FS1-5 1kHz	Outputs when Audio Test Signal is set to 1kHz for the subject FS.
Audio Test Signal AES A-D Off	Outputs when Audio Test Signal is set to Off for the subject AES.
Audio Test Signal AES A-D 500Hz	Outputs when Audio Test Signal is set to 500Hz for the subject AES.
Audio Test Signal AES A-D 1kHz	Outputs when Audio Test Signal is set to 1kHz for the subject AES.
Audio Test Signal Analog Off	Outputs when Audio Test Signal is set to Off for the Analog audio.
Audio Test Signal Analog 500Hz	Outputs when Audio Test Signal is set to 500Hz for the Analog audio.
Audio Test Signal Analog 1kHz	Outputs when Audio Test Signal is set to 1kHz for the Analog audio.
Audio Test Signal All Off	Outputs when Audio Test Signal All is set to Off.
Audio Test Signal All 500Hz	Outputs when Audio Test Signal All is set to 500Hz.
Audio Test Signal All 1kHz	Outputs when Audio Test Signal All is set to 1kHz.
GPI Lock	Outputs when GPI Lock is enabled.

4-4-2. GPI Extended Mode (FA-10GPI Option)

4-4-2-1. Overview

Extended mode allows you to control almost functions in FA-505.
On the other hand, the legacy GPI mode, **Normal** mode, allows only simple commands such as “Turning ON GPI 1 sets A to X.”
Complex commands are enabled in **Extended** mode, such as “Turning ON GPI 3 sets A to X and B to Y” or “An GPI input turns on Tally Output 5 and 7 and turns off Output 10.”

Up to 40 input/output functions are assignable to GPI port(s), regardless of the number of FA-10GPI cards installed in the FA-505.
The GPI setting menu has 4 pages and each page can assign 10 functions. User the navigation marks, “<<” and “>>,” at both edges to move between pages.

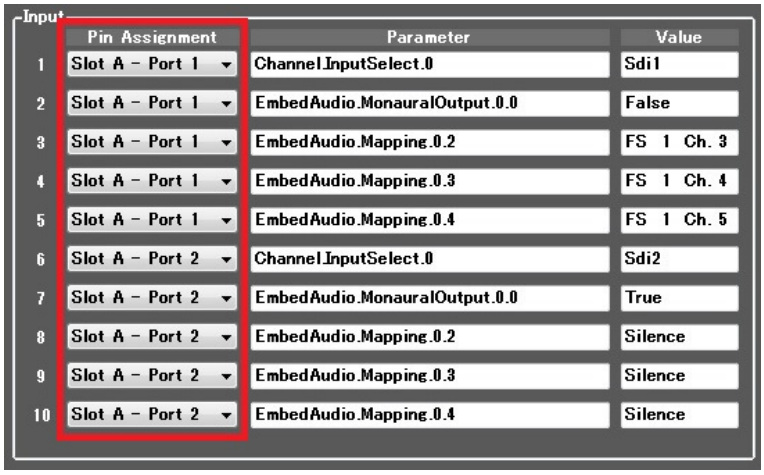


IMPORTANT
Although the GPI feature covers almost FA-505 fucntions in Extended mode, the **Clean SW** function (simple routing control using destinations and sources) is **not** fully supported. Only available commands for the Clean SW function in Exteded mode are to assign FS channels to outputs. It is recommended to use GPI Normal mode, if only simple commands are needed.

4-4-2-2. GPI Input Settings

GPI inputs should be set using **Pin Assignment**, **Parameter** and **Value** items as shown below.

(1) Select a GPI pin (port) under Pin Assignment.

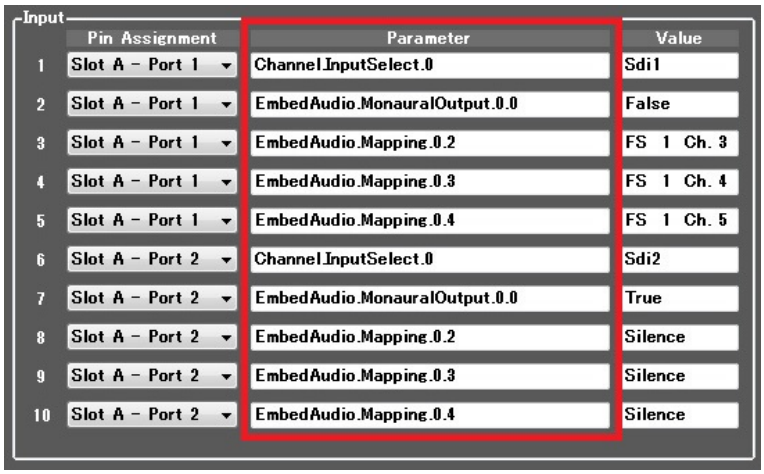


Input

	Pin Assignment	Parameter	Value
1	Slot A - Port 1	ChannelInputSelect.0	Sdi1
2	Slot A - Port 1	EmbedAudio.MonauralOutput.0.0	False
3	Slot A - Port 1	EmbedAudio.Mapping.0.2	FS 1 Ch. 3
4	Slot A - Port 1	EmbedAudio.Mapping.0.3	FS 1 Ch. 4
5	Slot A - Port 1	EmbedAudio.Mapping.0.4	FS 1 Ch. 5
6	Slot A - Port 2	ChannelInputSelect.0	Sdi2
7	Slot A - Port 2	EmbedAudio.MonauralOutput.0.0	True
8	Slot A - Port 2	EmbedAudio.Mapping.0.2	Silence
9	Slot A - Port 2	EmbedAudio.Mapping.0.3	Silence
10	Slot A - Port 2	EmbedAudio.Mapping.0.4	Silence

Verify to select the slot in which the FA-10GPI card is installed
In the menu example above, five input functions (1-5) are assigned to Port 1 (Pin 1) in the card installed on Slot A and five input functions (6-10) are assigned to Port 2 (Pin 2).

(2) Select a function parameter under Parameter.



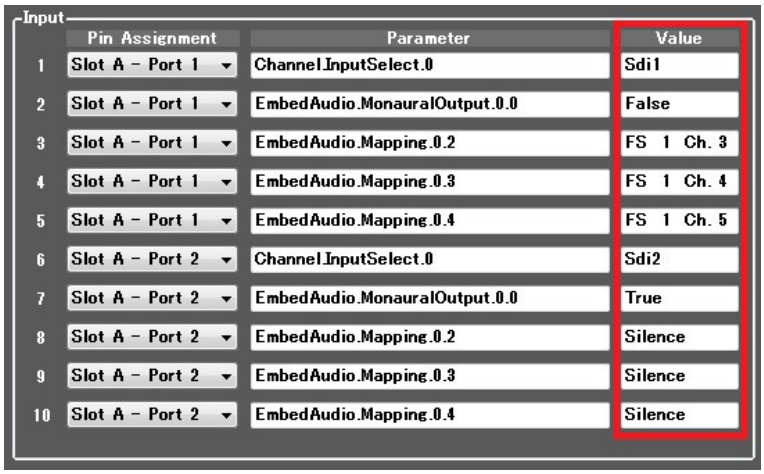
Input

	Pin Assignment	Parameter	Value
1	Slot A - Port 1	ChannelInputSelect.0	Sdi1
2	Slot A - Port 1	EmbedAudio.MonauralOutput.0.0	False
3	Slot A - Port 1	EmbedAudio.Mapping.0.2	FS 1 Ch. 3
4	Slot A - Port 1	EmbedAudio.Mapping.0.3	FS 1 Ch. 4
5	Slot A - Port 1	EmbedAudio.Mapping.0.4	FS 1 Ch. 5
6	Slot A - Port 2	ChannelInputSelect.0	Sdi2
7	Slot A - Port 2	EmbedAudio.MonauralOutput.0.0	True
8	Slot A - Port 2	EmbedAudio.Mapping.0.2	Silence
9	Slot A - Port 2	EmbedAudio.Mapping.0.3	Silence
10	Slot A - Port 2	EmbedAudio.Mapping.0.4	Silence

Parameters should be typed manually using Backup Parameter names.

To obtain backup parameter names:
- Refer to Sec. 4-6-3. “Backup Parameter” to save a **backup file** in **CSV** format. Open the generated CSV file to obtain backup parameter names. (Note that certain parameters such as Event Load and Salvo Recall are not stored in CVS files.)
- Refer to the **setting file** stored in the supplied **CD-ROM**.

(3) Specify the parameter value under Value.



Input

	Pin Assignment	Parameter	Value
1	Slot A - Port 1	Channel.InputSelect.0	Sdi1
2	Slot A - Port 1	EmbedAudio.MonauralOutput.0.0	False
3	Slot A - Port 1	EmbedAudio.Mapping.0.2	FS 1 Ch. 3
4	Slot A - Port 1	EmbedAudio.Mapping.0.3	FS 1 Ch. 4
5	Slot A - Port 1	EmbedAudio.Mapping.0.4	FS 1 Ch. 5
6	Slot A - Port 2	Channel.InputSelect.0	Sdi2
7	Slot A - Port 2	EmbedAudio.MonauralOutput.0.0	True
8	Slot A - Port 2	EmbedAudio.Mapping.0.2	Silence
9	Slot A - Port 2	EmbedAudio.Mapping.0.3	Silence
10	Slot A - Port 2	EmbedAudio.Mapping.0.4	Silence

Values should be typed manually in the same manner as for Parameters, referring to the setting file in the CD-ROM or a backup CSV file.

In the menu example above, five input functions are assigned to Port 1 in the card installed on Slot A and Port 1 input will execute the following five commands.
- Set the video input in FS 1 to SDI In 1.
- Set Ch1 of embedded audio output in FS 1 to Stereo.
- Set Ch2 of embedded audio output in FS 1 to Stereo.
- Pass through Ch3 of embedded audio input to output in FS 1.
- Pass through Ch4 of embedded audio input to output in FS 1.
- Pass through Ch5 of embedded audio input to output in FS 1.

In the same manner, Port 2 will executes the following five commands.
- Set the video input in FS 1 to SDI In 2.
- Set Ch1 of embedded audio output in FS 1 to Mono Sum.
- Set Ch2 of embedded audio output in FS 1 to Mono Sum.
- Set Ch3 of embedded audio output in FS 1 to Silence.
- Set Ch4 of embedded audio output in FS 1 to Silence.
- Set Ch5 of embedded audio output in FS 1 to Silence.

IMPORTANT

Up to 40 input/output commands can be assigned to a single GPI port and they are processed in the increasing order of input numbers.

If the following two functions are assigned to Port 1:

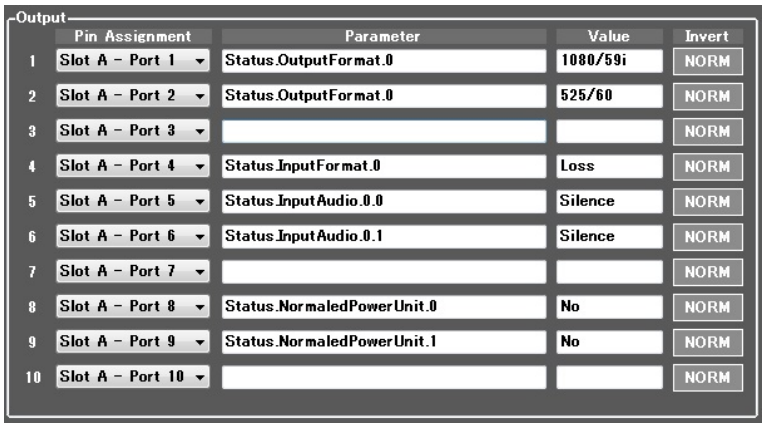
Input 1 Pin Assignmet: **Slot A Port 1**
Parameter: **Channel.VideoLevel.0**
Value: **1500** (Set the FS1 video level to 150.0%.)

Input 2 Pin Assignmet: **Slot A Port 1**
Parameter: **Channel.VideoLevel.0**
Value: **2000** (Set the FS1 video level to 200.0%.)

Then the Port 1 input results in 200.0% for FS1 video level.

4-4-2-3. GPI Output Settings

GPI outputs (tally outputs) should be set using **Pin Assignment**, **Parameter, Value** and **Invert** items as shown below.



Set GPI outputs in the same manner as GPI inputs.
Invert allows you to invert output trigger conditions

In the menu example above, functions (output trigger conditions) are assigned to pins on the FA-10GPI card that is installed on Slot A as show in the table below.

Pin	Function (output trigger condition)
1	The SDI Out1A/B output format is set to 1080/59.94i.
2	The SDI Out1A/B output format is set to 525/60.
3	(Not used)
4	No input signal is present in FS1.
5	Ch 1 of embedded audio input in FS1 is silence.
6	Ch 2 of embedded audio input in FS1 is silence.
7	(Not used)
8	An error has occurred in DC POWER 1.
9	An error has occurred in DC POWER1.
10	(Not used)

IMPORTANT

Multiple tallies can be assigned to a single GPI port and they are processed in the increasing order of output numbers.

If the following two functions are assigned to Port 1:

Output 1 Pin Assignmet: **Slot A Port 1**
Parameter: **Channel.VideoLevel.0**
Value: **1500** (FS1 video level is set to 150.0%.)

Output 2 Pin Assignmet: **Slot A Port 1**
Parameter: **Channel.VideoLevel.0**
Value: **2000** (FS1 video level is set to 200.0%.)

Then the Port 1 tally outputs only when 200.0% is set for FS1 video level.

4-4-2-4. GPI Supported Menu Items

The GPI function supports the following menus items.

Video Block	Audio Block	Other menus
4k FS Mode Relay By-pass FS Input Loss Mode Ancillary Demultiplexer Video System Frame Delay Converter Process Amp Color Correction Video Clip Color Space Test Signal SDI Multiplexer Embedded Audio Ancillary Data Timecode Clean SW FS Output FA-10DO Settings Video Status	Audio Input Status Audio System Embed Audio Demultiplexer AES Audio Input Analog Audio Input Sample Rate Converter Polarity Mode Down Mix Audio Mapping Test Signal Master Mute Mono Sum Mode Audio Gain Audio Delay Embedded Audio Multiplexer Analog Audio Output Audio Output Status	Event Control GPI Lock Internal Tally

* Certain menu items are not fully supported.

4-4-2-5. Internal Tally

Internal tallies allow you to change the On/Off status through GPI inputs and output tallies without being affected by other settings. Up to 30 internal tallies are available.

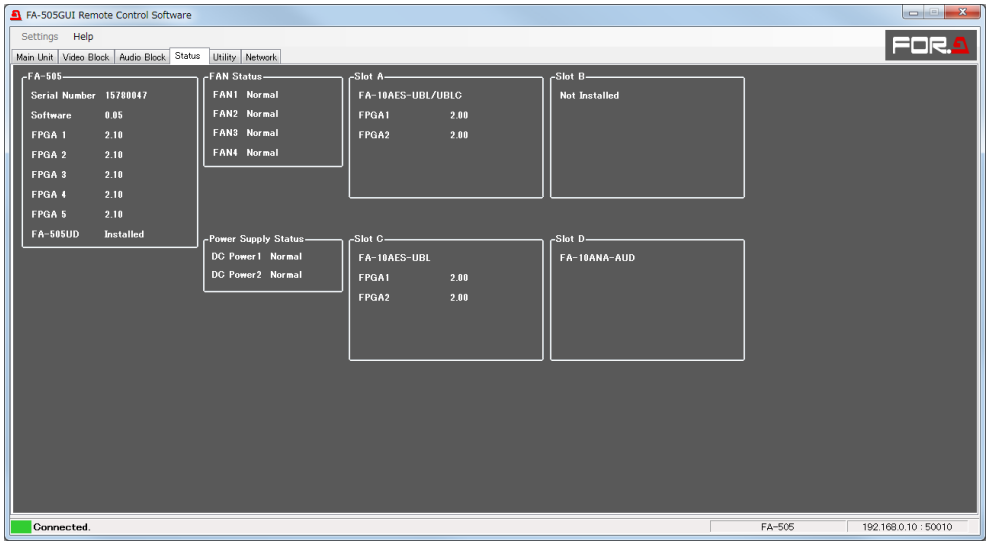
Ex.) To change tallies assigned to Port 1 and Port 2 on Slot A, set the menu as shown below.

Input/ Output	Pin Assignment	Parameter	Value	Input command / Tally output
Input 1	Slot A - Port1	System.InternalTally.0	True	Turn On Internal Tally 1.
Input 2	Slot A - Port1	System.InternalTally.1	False	Turn Off Internal Tally 2.
Input 3	Slot A - Port2	System.InternalTally.0	False	Turn Off Internal Tally 1.
Input 4	Slot A - Port2	System.InternalTally.1	True	Turn On Internal Tally 2.
Output 1	Slot A - Port1	System.InternalTally.0	True	Output a tally while Internal Tally 1 is On.
Output 2	Slot A - Port2	System.InternalTally.1	True	Output a tally while Internal Tally 2 is On.

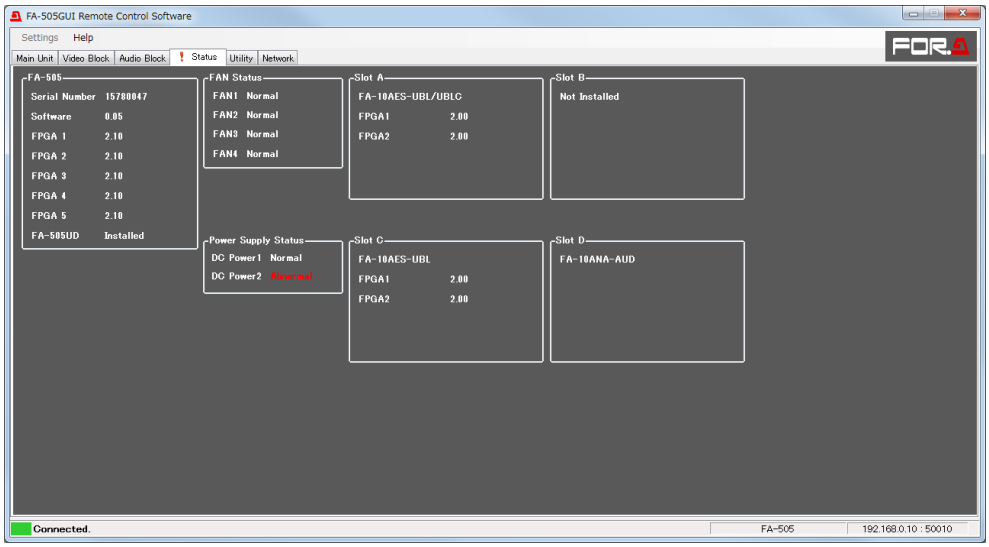
Use internal tallies effectively by combining them with other functions to achieve flexible tally control.

4-5. Status

Click the **Status** tab at the top of the page to open the status page.



* An exclamation mark (!) is displayed on the Status tab, if an error occurs in a FAN or power supply unit.



◆ FA-505

Item	Indication
Serial Number	Displays the serial number of the unit.
Software	Displays the software version.
FPGA 1- 5	Displays the version of each FPGA.
FA-505UD	Displays whether an FA-505UD is installed on the system.

◆ Fan Status

Item	Indication	Description
FAN 1-4	Normal Stopped	Displays the status of FAN 1-4 respectively. **Normal**: Operating normally. **Stopped**: The FAN has stopped. Turn the unit power off, and contact your dealer for assistance.

◆ **Power Supply Status**

Item	Indication	Description
DC Power1 DC Power2	Normal Abnormal Not Installed	Displays the status of power supply units respectively. **Normal**: Normal **Abnormal**: Error state An error has occurred in the power supply unit. Although operation can be continued, replacing the power supply unit is recommended. To do so, contact your dealer. **Not Installed**: The power supply unit is not installed.

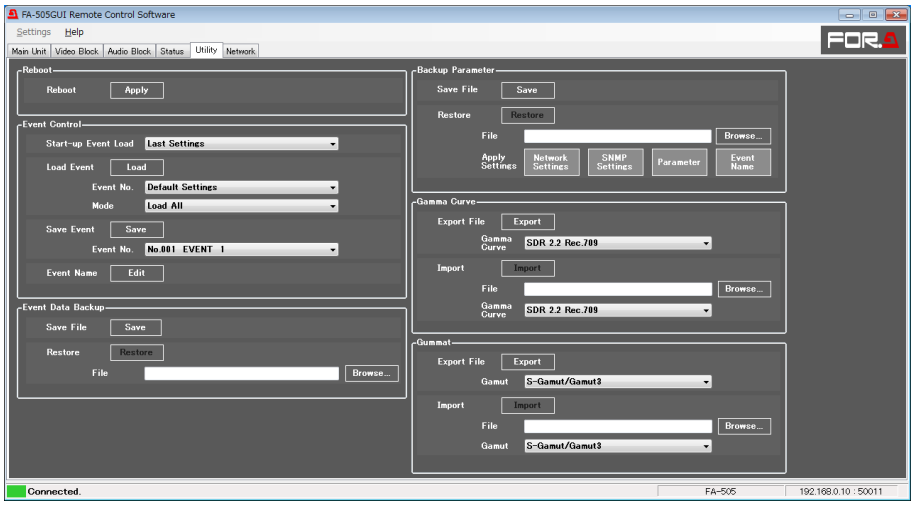
◆ **Slot A-D**

Item	Indication	Description
Slot A-D	FA-10AES-BL FA-10AES-UBL FA-10AES-UBL/UBLC FA-10ANA-AUD FA-10GPI	Displays state and version information on installed option cards.

* The installed FA-10AES-UBLC is displayed with the FA-10AES-UBLC to which it is connected as “FA-10AES-UBL/UBLC”. The status display of the slot where the FA-10AES-UBLC occupies does not change.

4-6. Utility

Click the **Utility** tab at the top of the page to open the Utility page.



4-6-1. Reboot

To reboot the FA-505, click **Apply,** and **OK** in the confirmation dialog.
It takes about one minute to complete the reboot.

4-6-2. Event Control

FA-505 can save setting data in 100 event memories. The desired settings can be immediately recalled by loading a saved item of setting data.

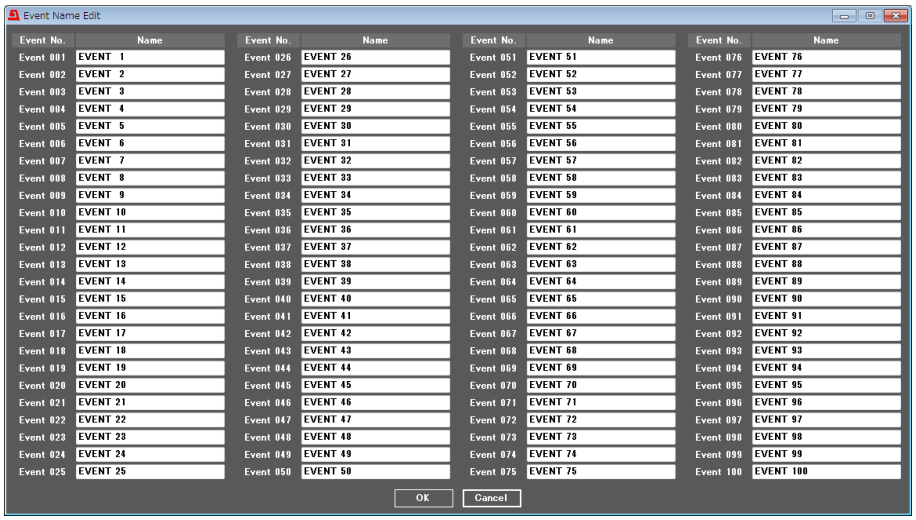
Item		Default	Setting range	Description
Start-up Event Load		Last Setting	Last Setting Default Settings Event1-100	**Last Setting**: Starts up with the last set settings. **Default Settings**: Starts up with default settings. **Event1 to 100**: Starts up with the settings saved as an event among events 1 to 100.
Load Event	Load	-	-	The Load button allows you to load an event.
	Event No.	Default Settings	Default Settings Event1-100	Allows you to select an event number to be recalled.
	Mode	Load All	Load All Load FS(1-5) Only	Allows you to select how to load event data. (*1) **Load All:** Loads all data in the event. **Load FS1-5 Only:** Loads only the selected FS event data.
Save Event	Save	-	-	The Save button allows you to save an event to the FA-505.
	Event No.	Event 1	Event1-100	Allows you to select an event number to be saved
Event Name		-	-	The Event button allows you to open the Event Name setting screen. (*2) (See Sec. 4-6-2-1. “Event Name Edit.”)

(*1) See Sec. 10. “Menu List” for details on the event loading under different modes.
(*2) Event names will be displayed for Event Load/Event Save settings.

WARNING
Note that selected Default Settings reset settings, and that all data except Event data and network settings will be lost every time the FA-505 is powered on.

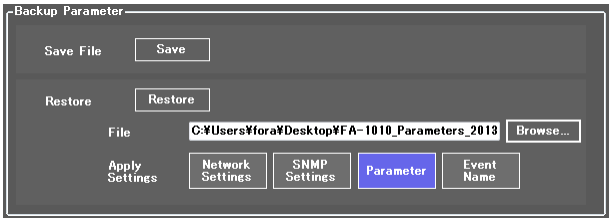
4-6-2-1. Event Name Edit

Events 1 to 100 can be named in this page.



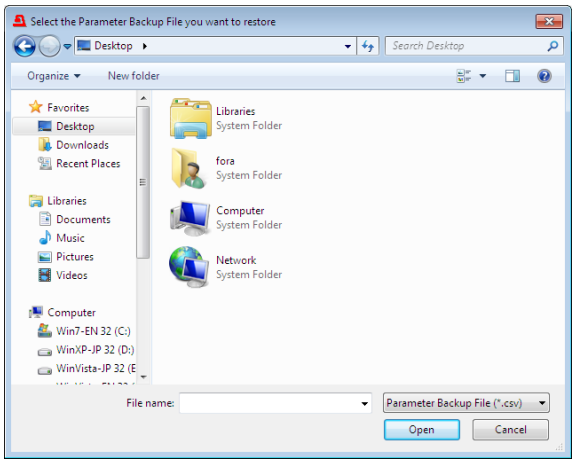
4-6-3. Backup Parameter

The FA-505 settings can be saved to a file, and then loaded.



◆ **Saving the FA-505 Settings to a File**

Click **Save**. A window to save files to as shown below opens.



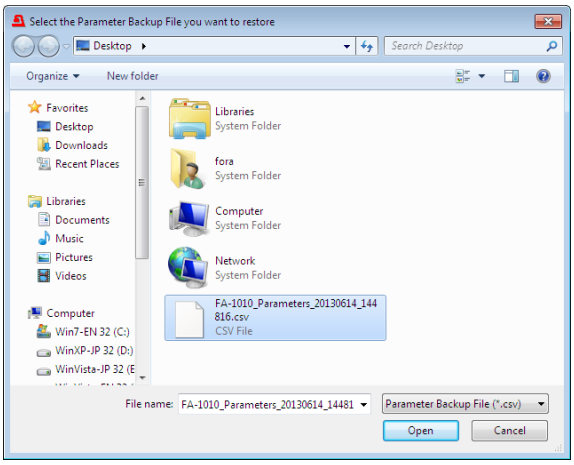
Specify the destination directory and file name, then click **Open**. A “Saving in progress” message box appears.

A “Saving complete” message box appears after the file is saved.

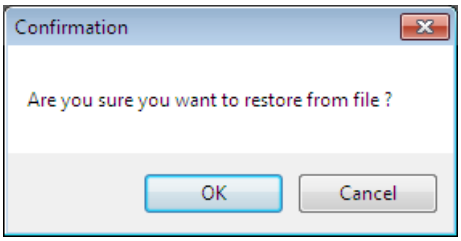
◆ **Loading the data saved in a file**

Press a button to select a load setting under Apply Setting. The button will light blue.
If no button is selected, no data will load.

Click **Browse.** A “Select the Parameter Backup File you want to restore” window opens.



Specify a destination directory, and click **Open**.
Click **Restore**. The confirmation message as shown below opens.



Click **OK** to start transferring file material to the FA-505. To stop the file transfer, click **Cancel**.

* Some parameters such as By-pass and Freeze settings are not stored in any Backup Parameter.

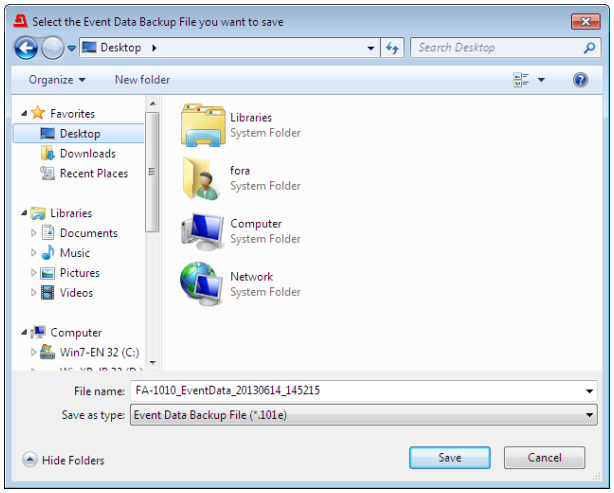
IMPORTANT
The FA-505 uses the CSV file format to back up the configuration data that enables commercially available spreadsheet software to edit the data. However, Unit ID or event names that consisting only of numeric characters may be recognized as numeric values by such software and appear differently after being recalled to the FA-505. It is recommended that alphabetical characters be included in names to enable editing using such software.

4-6-4. Event Data Backup

Event Memory data (Events1 through 100) can be saved into a file on the computer as backup. The backup data can be moved to another FA-505.

◆ Save File

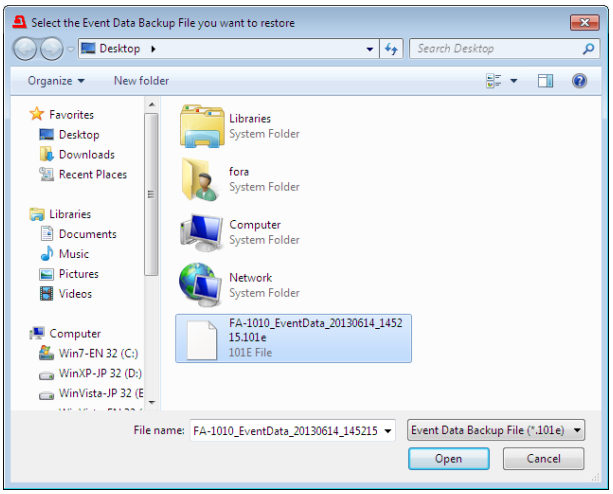
Click **Save**. A window as shown below opens.



Specify a destination directory and file name, then click **Save**. A “Saving in progress” message box appears.
Once the file has been saved, a “Saving complete” message box appears.

◆ Restore File

To load a backup file on the computer, click **Browse**. The “**Select the Event Data Backup File you want to restore”** window appears.



Specify the directory and the file name and click **Open**. The destination path will be displayed on screen.
Click **Restore**. A confirmation dialog box appears.
Click **OK** to start loading. To stop the data upload, click **Cancel**.

4-6-5. Gamma Curve

Gamma curve data (in **lut** files) can be saved to (Import) or loaded from (Export) **User1** to **User5** of Input Gamma Curve and Output Gamma Curve.
(See Sec. 4-2-9-1. “Color Space.”)

Refer to Sec. 4-6-7 “LUT and GMT Files” for how to create Gamma Curve data (lut files).

◆ **Export File**
To export (obtain) Gamma Curve data, select source data from **User1 to User5** under Gamma Curve and click **Export** to save the Gamma Curve data by specifying a destination folder in the local computer.

◆ **Import**
To import (save or overwrite) Gamma Curve data, specify a source lut file, select a destination from **User1 to User5** under Gamma Curve and click **Import** to save or overwrite the Gamma Curve data. A complete message will appear when the data is stored.

4-6-6. Gamut

RGB Gamut data (in **gmt** files) can be saved to (Import) or loaded from (Export) **User1** to **User5** of Input Color Space and Output Color Space.
(See Sec. 4-2-9-1. “Color Space.”)

Refer to Sec. 4-6-7 “LUT and GMT Files” for how to create RGB Gamut data (lut files).

◆ **Export File**
To export (obtain) RGB Gamut data, select source data from **User1 to User5** under Gamut and click **Export** to save the Gamut data by specifying a destination folder in the local computer.

◆ **Import**
To import (save or overwrite) RGB Gamut data, specify a source gmt file, select a destination from **User1 to User5** under Gamut and click **Import** to save or overwrite the Gamut data. A complete message will appear when the data is stored.

4-6-7. LUT and GMT Files

This chapter explains how to create lut (Gamma Curve data) and gmt (Gamut data) files used in the previous chapter.
To do this, create new text files, change the file extensions respectively to **.lut** and **.gmt** , and enter lines of data referring to the following samples. Place a sharp (#) in front of comments.

◆ Gamma Curve

A Gamma Curve sample file (.lut file) is shown below.

```
# FOR-A Gamma Curve Table Version 1.0
#
# Set 13 Parameters and RAM DATA
# EOTF/OETF Parameters, Y Offset, Matrix Parameters,
# EOTF RAM DATA, and OETF RAM DATA
# Do not change the order
#
# 1. Gamma Curve Name ( Maximum Length 15 )
SAMPLE
#
# 2. EOTF/OETF Parameters, Y Offset and Matrix Parameters
# EOTF RAM Offset
0
# OETF RAM Offset
0
# EOTF Output Minimum
0
# OETF Output Minimum
0
# EOTF Input Maximum
80124
# EOTF Output Maximum
101978
# Y Offset
64
# Prematrix Gain of Y
19152
# Prematrix Gain of Pb
18724
# Prematrix Gain of Pr
18724
# Postmatrix Gain of Y
14016
# Postmatrix Gain of Pb
14336
# Postmatrix Gain of Pr
14336

# 3.EOTF/OETF RAM DATA
# EOTF RAM 1A DATA
...
# EOTF RAM 1B DATA
...
# EOTF RAM 2 DATA
...
# OETF RAM 1A DATA
...
# OETF RAM 1B DATA
...
# OETF RAM 2 DATA
...
#
# End of File
```

Enter this information in the first line.

Gamma Curve name with up to 15 alphanumeric characters.

EOTF/OETF parameters.
Normally set to “0.”

Y Offset value
Narrow Range: 64
Full Range: 0

Parameters used for YPbPr quantization/de-quantization.
From the top
Narrow Range: 19152, 18724, 18724, 14016, 14336, 14336
Full Range: 16400, 16400, 16400, 16368, 16368, 16368

Enter three empty lines.

1024 of EOTF RAM 1A DATA
128 of EOTF RAM 1B DATA
128 of EOTF RAM 2 DATA
1024 of OETF RAM 1A DATA
1024 of OETF RAM 1A DATA
128 of OETF RAM 1A DATA

◆ Gamut

A Gamut sample file (.gmt file) is shown below.

GMT_sample.gmt - メモ帳

ファイル(F) 編集(E) 書式(O) 表示(V) ヘルプ(H)

```
# FOR-A Gamut Parameter Version 1.0
#
# Set 10 Parameters
# Name, 8 Chromaticity Values, Transfer Matrix
#
# Do not change the order
#
# 1. Color Space Name ( Maximum Length 15 )
SAMPLE
#
# 2. Chromaticity Values x and y of Primaries (Red, Green, Blue) and White point
# Chromaticity Value x of Red
0.640000
# Chromaticity Value x of Green
0.300000
# Chromaticity Value x of Blue
0.150000
# Chromaticity Value x of White
0.312700
# Chromaticity Value y of Red
0.330000
# Chromaticity Value y of Green
0.600000
# Chromaticity Value y of Blue
0.060000
# Chromaticity Value y of White
0.329000
#
# 3. Transfer Matrix 0:BT.709 or 1:BT.2020
0
#
# End of File
```

Enter this information in the first line.

Gamma Curve name with up to 15 alphanumeric characters.

x and y chromaticity values of Primaries (Red, Green, Blue) and White Point (See the table below.)

Select the Transfer Matrix between YPbPr and RGB.
0: BT. 709, 1: BT. 2020

Enter these values for x and y chromaticities.

Item	Parameter	System Values	
1.1	Opto-electronic transfer characteristics before non-linear pre-correction	Assumed Γ	
1.2	Overall opto-electronic transfer characteristics at source[1]	$V = 1.099\,L^{0.45} - 0.099$ for $1 \geq L \geq 0.018$ $V = 4.500\,L$ for $0.018 > L \geq 0$ where: L : luminance of the image $0 \leq L \leq 1$ V : corresponding electrical *signal*	
1.3	Chromaticity coordinates (CIE, 1931) Primary – Red (R) – Green (G) – Blue (B)	x 0.640 0.300 0.150	y 0.330 0.600 0.060
1.4	Assumed chromaticity for equal primary signals (Reference white) $E_R = E_G = E_B$	D_{65} x 0.3127	 y 0.3290

[1] In typical production practice the encoding function of image sources is adjusted so that the final picture has the desired look, as viewed on a reference monitor having the reference decoding function of Recommendation ITU-R BT.1886, in the reference viewing environment defined in Recommendation ITU-R BT.2035.

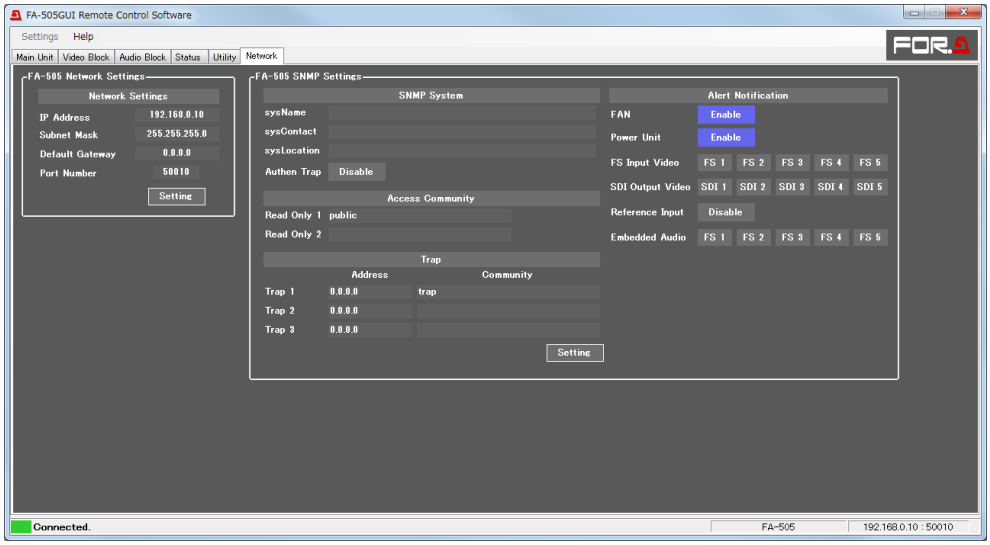
2 Picture characteristics

Item	Parameter	System Values
2.1	Aspect ratio	16:9
2.2	Samples per active line	1 920
2.3	Sampling lattice	Orthogonal
2.4	Active lines per picture	1 080
2.5	Pixel aspect ratio	1:1 (square pixels)

* Above tables are extracted from the following file:
https://www.itu.int/dms_pubrec/itu-r/rec/bt/R-REC-BT.709-6-201506-I!!PDF-E.pdf

4-7. Network

Clicking the Network tab at the top of the screen opens the FA-505 Network Settings page.



4-7-1. Network Settings

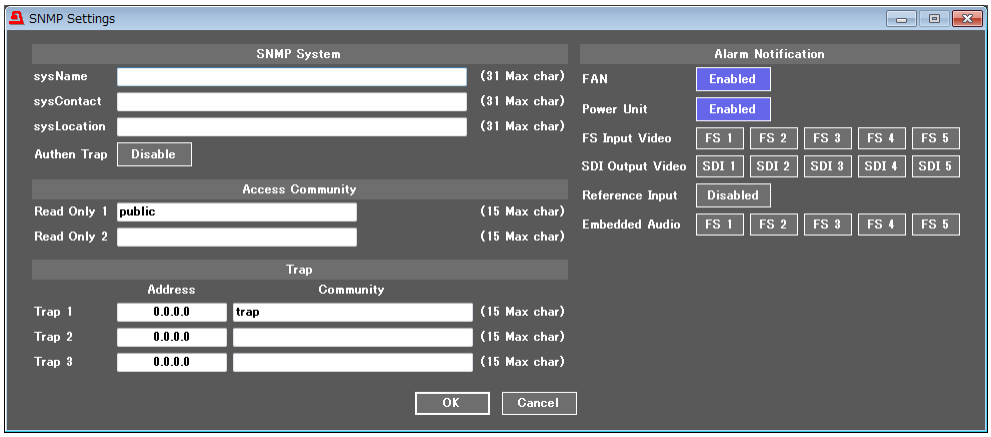
Clicking the Setting button in the FA-505 Network Settings section displays the LAN port network settings page.

Item	Default	Description
IP Address	192.168.0.10	Allows you to set the LAN port IP address. A period “.” is used to separate each octet.
Subnet Mask	255.255.255.0	Allows you to set the LAN port subnet mask. A period “.” is used to separate each octet.
Default Gateway	0.0.0.0	Allows you to set the gateway. A period “.” is used to separate each octet.
Port Number	50011	Allows you to set the TCP port number for the Windows GUI connection.
OK (button)		Allows you to apply the settings to the FA-505.

IMPORTANT
Clicing **OK** after changing a network setting opens a message box that asks you to restart the unit. In such case, close the message box, then restart the unit. Changes will take effect after the unit is restarted.

4-7-2. SNMP Settings

Clicking the Setting button in the FA-505 SNMP Settings section displays the SNMP settings page.



◆ SNMP System

Item	Character limit (Alphanumeric and symbolic characters)	Description
SysName	31 char max	Allows you to set the device name.
SysContact	31 char max	Allows you to enter comments regarding the device location.
SysLocation	31 char max	Allows you to enter comments regarding the person in charge of the device.
Authen Trap	-	**Enable:** Sends a trap if authentication fails.

◆ Access Community

Item	Character limit (Alphanumeric and symbolic characters)	Description
Read Only1	15 char max	Read only SNMP community name
Read Only2	15 char max	Read only SNMP community name

◆ Trap

Item	Character limit (Alphanumeric and symbolic characters)	Description
Trap1 Address	---	The SNMP manager's IP address to which a trap is sent.
Trap2 Address	---	The SNMP manager's IP address to which a trap is sent.
Trap3 Address	---	The SNMP manager's IP address to which a trap is sent.
Trap1 Community	15 char max	The community name that sends a trap to Trap1 Address.
Trap2 Community	15 char max	The community name that sends a trap to Trap2 Address.
Trap3 Community	15 char max	The community name that sends a trap to Trap3 Address.
OK (button)		Allows you to apply SNMP System, Access Community, and Trap settings to the FA-505.

◆ **Alert Notification**

Item	Default	Setting range	Description
FAN	Enable	Disable Enable	**Enable:** Sends a trap when the fan state changes.
Power Unit (Only if FA-50PS is installed)	Enable	Disable Enable	**Enable:** Sends a trap when the power supply unit state changes.
FS Input Video	-	-	Allows you to select whether to send a trap when the SDI input signal changes for each channel.
SDI Output Video	-	-	Allows you to select whether to send a trap when the SDI output signal changes for each channel.
Reference Input	Disable	Disable Enable	**Enable:** Sends a trap when the reference signal changes.
Embedded Audio	-	-	Allows you to select whether to send a trap when the input embedded audio state changes for each FS.

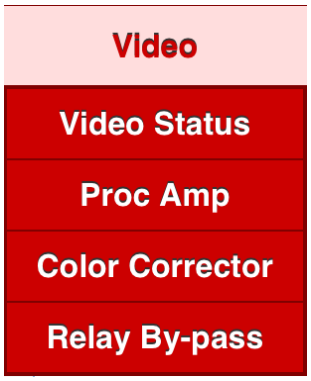
5. Web GUI

This section describes how to control the FA-505 using a Web GUI.

Verify a computer is connected to the FA-505 either with or without a cable.
Enter the FA-505 IP address to a web browser address bar.
(Default FA-505 IP address: 192.168.0.10.)
Once a connection is established, a display of the main unit's information as shown below opens up.
The Web GUI connection is now complete.

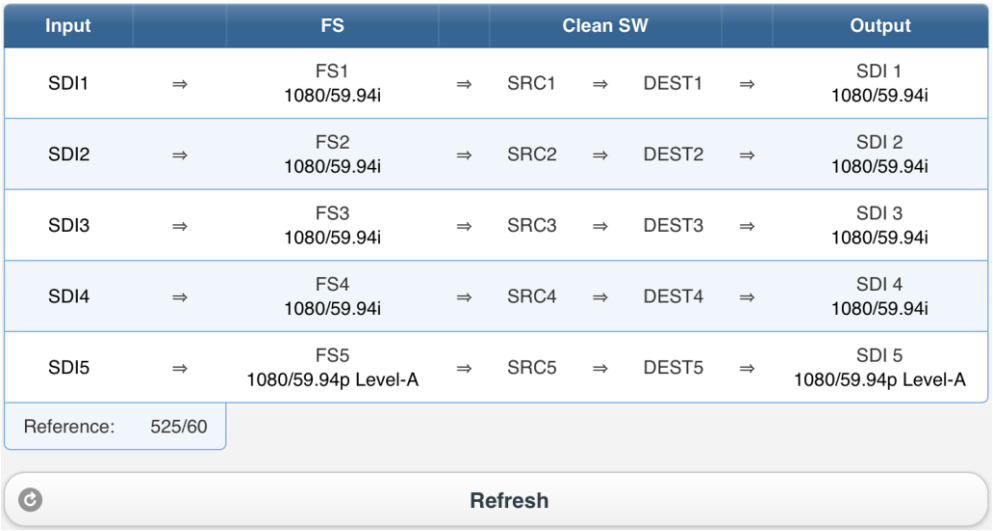
5-1. Video

Clicking the Video tab on the menu bar opens the dropdown menu as shown below.



5-1-1. Video Status

The Video status page displays the status of routing and output video signal status.



Input		FS		Clean SW				Output
SDI1	⇒	FS1 1080/59.94i	⇒	SRC1	⇒	DEST1	⇒	SDI 1 1080/59.94i
SDI2	⇒	FS2 1080/59.94i	⇒	SRC2	⇒	DEST2	⇒	SDI 2 1080/59.94i
SDI3	⇒	FS3 1080/59.94i	⇒	SRC3	⇒	DEST3	⇒	SDI 3 1080/59.94i
SDI4	⇒	FS4 1080/59.94i	⇒	SRC4	⇒	DEST4	⇒	SDI 4 1080/59.94i
SDI5	⇒	FS5 1080/59.94p Level-A	⇒	SRC5	⇒	DEST5	⇒	SDI 5 1080/59.94p Level-A

Reference: 525/60

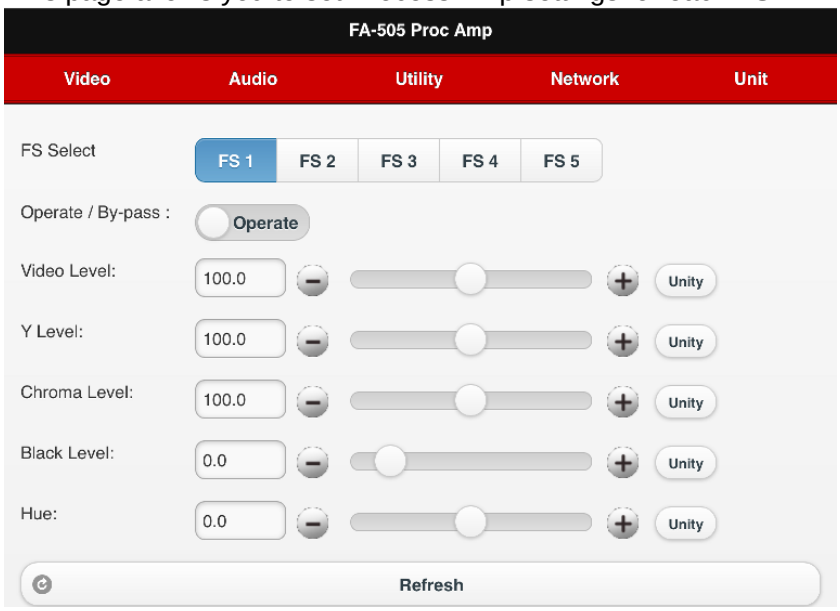
Refresh

Signal paths change according to the FS Input, Clean Switch, and/or FS Output menu settings.

Display	Description	Ref.
Input	Displays input channels (SDI IN 1-5) assigned to FS 1-5 in the FS Input menu.	Sec. "4-2-2. FS Input"
FS	Displays FSs (1-5) and their signal formats assigned to Dest 1-5 in the Clean Switch menu.	Sec. "4-2-12 Clean Switch"
Clean Switch	Displays Clean Switch settings and their output signal assignments to output connectors (SDI OUT 1-5) in the FS Output menu.	Sec. "4-2-13 FS Output"
Output	Displays the signal format of output signals assigned to connectors SDI OUT 1a/1b to 5a/5b.	
Reference	Displays the input genlock signal format.	

5-1-2. Proc Amp

This page allows you to set Process Amp settings for each FS.



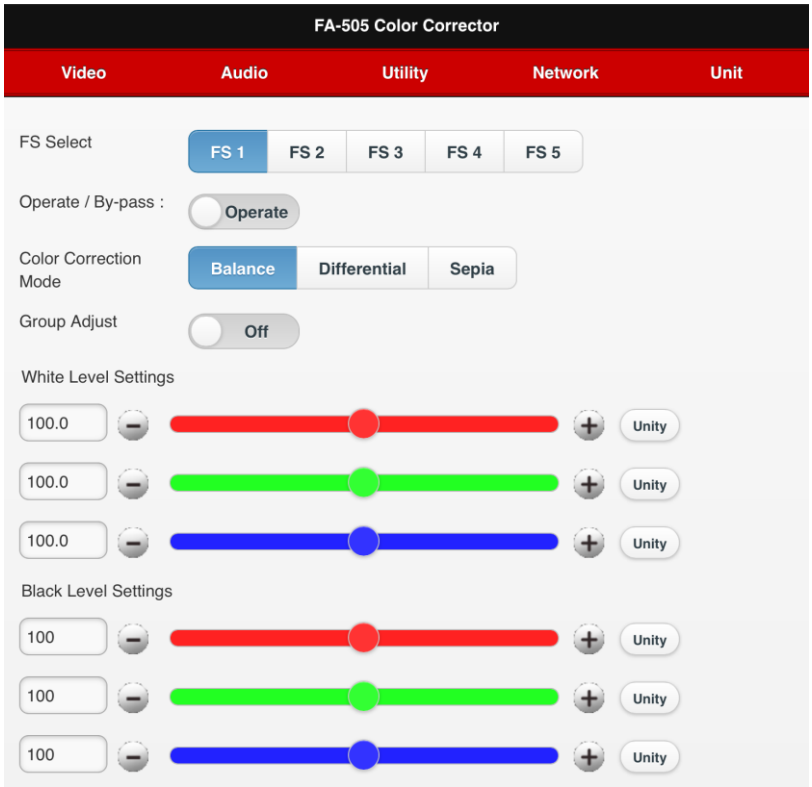
Item	Default	Setting range (Steps)	Description
FS Select	-	-	Allows you to select an FS for which to adjust settings.
Operate / By-pass (Same setting as that in Color Corrector)	Operate	Operate By-pass	Setting to **By-pass** skips the video process and disables the parameter settings.
Video Level	100.0%	0.0 - 200.0% (0.1%)	Allows you to adjust the video level.
Chroma Level	100.0%	0.0 - 200.0% (0.1%)	Allows you to adjust chrominance.
Y Level	100.0%	0.0 - 200.0% (0.1%)	Allows you to adjust luminance.
Setup/Black Level	0.0%	-20.0 - 100.0% (0.1%)	Allows you to adjust the black level.
Hue	0.0°	-179.8° - 180.0° (0.2°)	Allows you to adjust color phase.
Unity button	-	-	Allows you to reset the corresponding settings.

If Color Correction Mode (see Sec. 4-2-9) is set to Sepia, Chroma Level and Hue settings cannot be changed.

With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

5-1-3. Color Corrector

This page allows you to set Color Corrector settings.

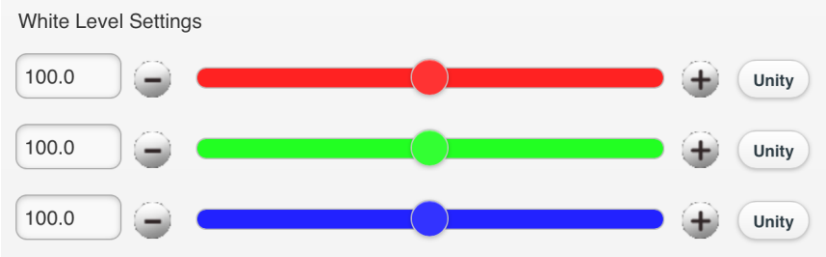


Select an FS, then select the correction mode and turn the simultaneous RGB setting feature On/Off.

Item	Default	Setting range	Description
FS Select	-	-	Allows you to select an FS for which to adjust settings.
Operate / By-pass (Same setting as that in Proc Amp) (*1)	Operate	Operate By-pass	Setting to **By-pass** skips the video process and disables the parameter settings.
Color Correction Mode (*1)	Balance	Balance Differential Sepia	Allows you to select a correction mode from Balance (RGB), Differential, or Sepia. **Balance:** RGB signal correction mode Allows you to adjust the white balance. Gray scale can be changed by adjusting R, G and B levels **Differential:** Color difference signal mode Allows you to adjust contrast without changing white balance. R, G and B levels can be changed without affecting gray scale. This adjustment is effective for images with different color saturation levels. **Sepia:** Sepia mode Useful for creating black and white images. Sepia mode cannot be selected in Link mode.
Group Adjust	Off	Off On	Allows you to simultaneously adjust Red, Green and Blue components while retaining the proportion of the separately adjusted levels.

(*1) With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

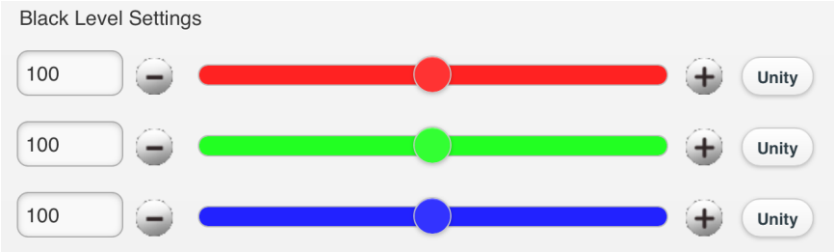
◆ White Level Settings



Item	Default	Setting range (Steps)	Description
Red, Green, Blue	100.0%	0.0 - 200.0% (0.5%)	Allows you to adjust the white level by separately adjusting R, G, and B components.
Unity button	-	-	Allows you to reset the settings to default.

With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

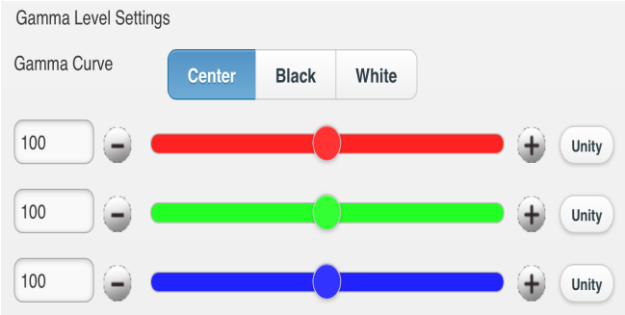
◆ Black Level Settings



Item	Default	Setting range (Steps)	Description
Red, Green, Blue	100.0%	0.0 - 200.0% (0.1%)	Allows you to adjust the black level by separately adjusting R, G, and B components.
Unity button	-	-	Allows you to reset the settings to default.

With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

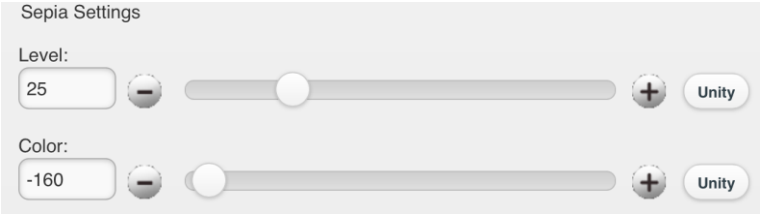
◆ Gamma Level Settings



Item	Default	Setting range (Steps)	Description
Red, Green, Blue	100.0 %	0.0 - 200% (0.5%)	Allows you to adjust the gamma level by separately adjusting R, G, and B components.
Unity button	-	-	Allows you to reset the settings to default.
Gamma Curve	Center	Center Black White	Allows you to select a gamma curve type from 3 types.

With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

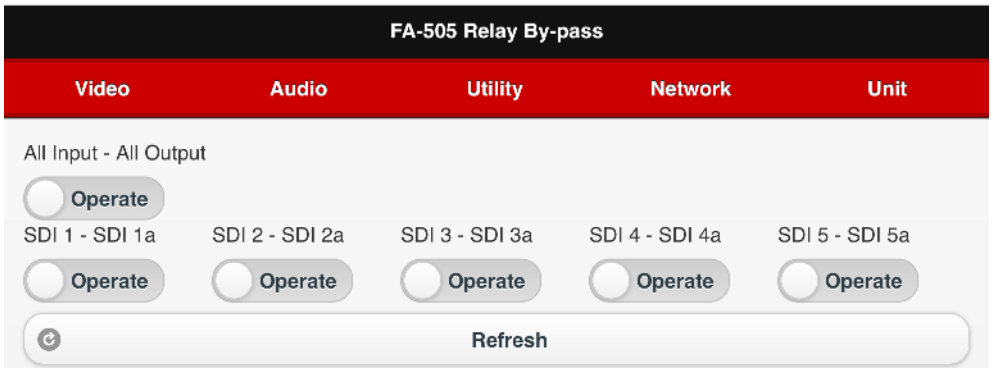
◆ Sepia Settings



Item	Default	Setting range (Steps)	Description
Level	25.0%	0.0 - 100% (0.1%)	Allows you to adjust the color level in Sepia mode.
Color	-160.0°	-179.8° - 180.0° (0.2°)	Allows you to adjust the color in Sepia mode.
Unity button	-	-	Allows you to reset the settings to default.

Effective only when Color Correction Mode is set to Sepia.
With 4KFS enabled (see Section 4-2-1. “4K FS Mode”), all 4 FS settings (FS2-5) are linked.

5-1-4. By-pass



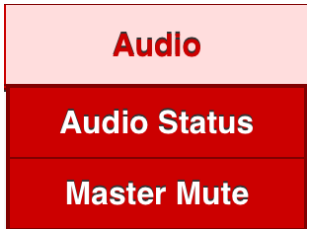
Item	Default	Setting range	Description
All Input-All Output	Operate	Operate By-pass (*1)	Allows you to set all inputs and outputs simultaneously regardless of other settings. **Operate**: Processes input signals. **By-pass**: By-passes input signals. e.g. Input 1 → Output 1a, Input 5 → Output 5a
SDI X -SDI Xa	Operate	Operate By-pass (*1)	Allows you to set the By-pass setting for each input connector. **Operate**: Processes input signals. **By-pass**: By-passes input signals to Xa outputs. (X: connector number) By-pass cannot be set depending on FS Input and FS Output settings. See the important note below.
Refresh	-	-	

(*1) The front panel status LED for the by-passed input connector lights green.

IMPORTANT
SDI input assigned to multiple FSs in the FS Input menu (see Sec. 4-2-2) or to an FS assigned to multiple output connectors in the FS Output menu (see Sec. 4-2-13) cannot be set to By-pass. e.g., FS 1 and 2 assigned to SDI 1, FS 5 assigned to SDI 1, 2, 3, etc. However, All Input-All Output bypasses all input signals from the input connector to the paired output connector.

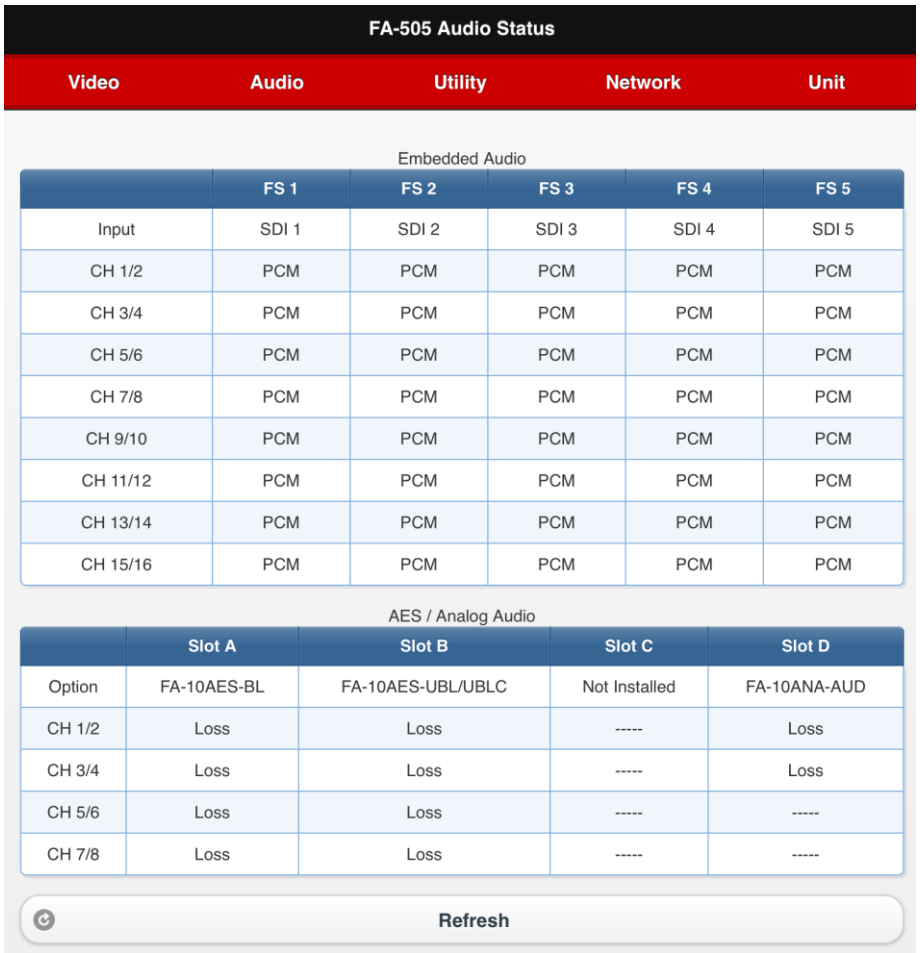
5-2. Audio

Clicking the Audio tab on the menu bar opens the dropdown menu as shown below.



5-2-1. Audio Status

Displays the audio signal assignment and status of each FS or option card.



FA-505 Audio Status

Video | Audio | Utility | Network | Unit

Embedded Audio

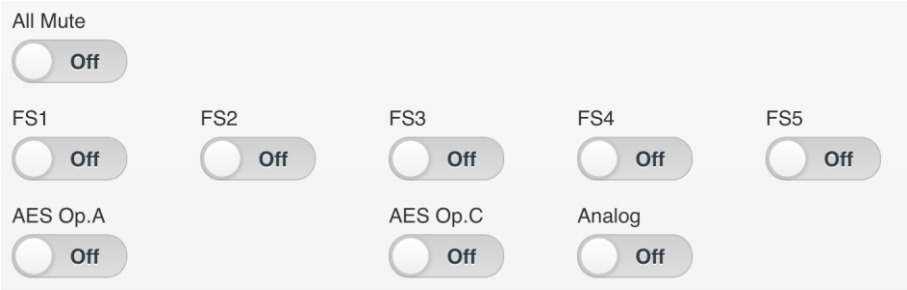
	FS 1	FS 2	FS 3	FS 4	FS 5
Input	SDI 1	SDI 2	SDI 3	SDI 4	SDI 5
CH 1/2	PCM	PCM	PCM	PCM	PCM
CH 3/4	PCM	PCM	PCM	PCM	PCM
CH 5/6	PCM	PCM	PCM	PCM	PCM
CH 7/8	PCM	PCM	PCM	PCM	PCM
CH 9/10	PCM	PCM	PCM	PCM	PCM
CH 11/12	PCM	PCM	PCM	PCM	PCM
CH 13/14	PCM	PCM	PCM	PCM	PCM
CH 15/16	PCM	PCM	PCM	PCM	PCM

AES / Analog Audio

	Slot A	Slot B	Slot C	Slot D
Option	FA-10AES-BL	FA-10AES-UBL/UBLC	Not Installed	FA-10ANA-AUD
CH 1/2	Loss	Loss	-----	Loss
CH 3/4	Loss	Loss	-----	Loss
CH 5/6	Loss	Loss	-----	-----
CH 7/8	Loss	Loss	-----	-----

Refresh

5-2-2. Master Mute

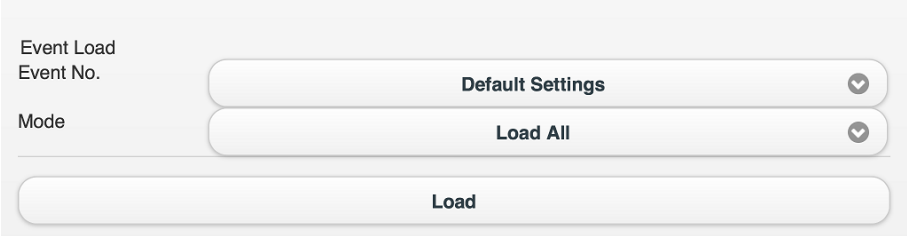


Item	Default	Setting range	Description
All	Off	On Off	**On**: Mutes all FS 1 to 5 audio channels that are set to be internally processed.
FS1-5 AES Op. A-D Analog Op.	Off	On Off	**On**: Mutes all audio channels of each FS and option card that is set to be internally processed

5-3. Utility

Clicking the Utility tab on the menu bar opens the dropdown menu as shown below.

5-3-1. Event Control

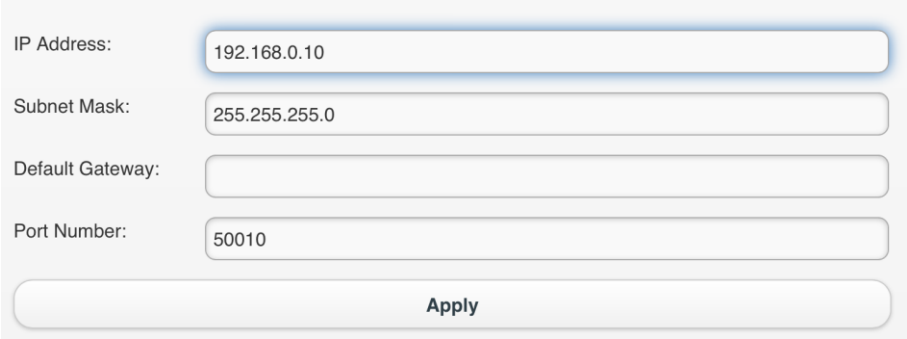


Item	Default	Setting range	Description
Event Load Event No.	Default Settings	Default Settings Event 1-100	Allows you to select an event to load. Clicking the arrow to the right opens a dropdown list.
Mode	Load All	Load All FS1 Only | FS5 Only	Allows you to select a loading mode. Clicking the arrow to the right opens a dropdown list. **Load All**: Allows you to load all saved event data. **FS 1-5 Only**: Allows you to load the selected FS event data.
Load button	-	-	Allows you to initiate the set event data loading.

5-4. Network

Clicking the Network tab on the menu bar opens the dropdown menu as shown below.

5-4-1. Network Settings

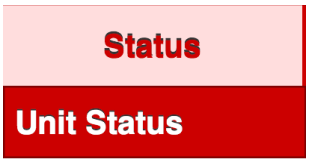


Item	Default	Description
IP Address	192.168.0.10	Allows you to set the LAN port IP address. A period "." is used to separate each octet.
Subnet Mask	255.255.255.0	Allows you to set the LAN port subnet mask. A period "." is used to separate each octet.
Default Gateway	0.0.0.0	Allows you to set the gateway. A period "." is used to separate each octet.
Port Number	50011	Allows you to set a TCP port number for the Windows GUI connection.
Submit button	-	Allows you to apply the settings to the FA-505.

IMPORTANT
Clicing **Submit** after changing network setting opens a message box that asks you to restart the unit. In such case, close the message box, then restart the unit. Changes take effect after the unit is restarted.

5-5. Status

Clicking the Status tab on the menu bar opens the dropdown menu as shown below.



5-5-1. Unit Status

◆ **FA-505**

Item	Description
Serial Number	Displays the serial number of the unit.
Software	Displays the software version.
FPGA 1- 5	Displays the version of each FPGA.
FA-505UD	Displays the module installation status.

◆ **FAN Status**

Item	Indication	Description
FAN 1-4	Normal Stopped	Displays the status of FAN 1-4 respectively. **Normal**: Operating normally. **Stopped**: Indicates a FAN has stopped. Turn the unit power off, and contact your dealer if a replacement is needed.

◆ **Power Supply Status**

Item	Indication	Description
DC Power1 DC Power2	Normal Abnormal Not Installed	Displays the status of power supply units respectively. **Normal**: Normal **Abnormal**: Error state Turn the unit power off, and contact your dealer if a replacement is needed. **Not Installed**: Power supply unit is not installed.

◆ **Option Slot Status**

Item	Indication	Description
Slot A-D	Name	Displays the type of installed option card.
	Software	Displays the software version.
	FPGA 1, 2	Displays the version of each FPGA.

6. Optional Audio Input and Output Cards

Slot assignment and the number and type of connectors for audio options are listed in the table below.

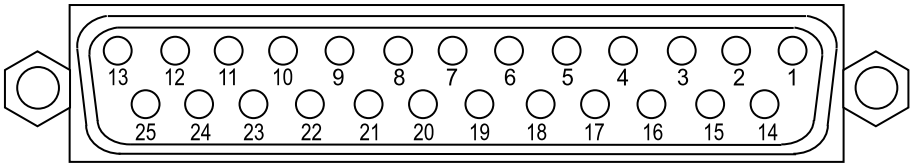
Option	I/O switch	Number of input channels	Number of output channels	Slot	Connector	Signal
FA-10AES-BL		8 (fixed)	8 (fixed)	SlotA to D	D-SUB 25	AES balanced
FA-10AES-UBL (*1)	Yes	Max. 8 (4-ch unit)	Max. 8 (4-ch unit)	SlotA to D	BNC x 4	AES unbalanced
FA-10AES-UBL FA-10AES-UBLC (*2) (2 slots required)		8 (fixed)	8 (fixed)	SlotA and B SlotC and D SlotB and C	BNC x 8	AES unbalanced
FA-10ANA-AUD		4 (fixed)	4 (fixed)	Slot D	D-SUB 25	Analog

(*1) Refer to Sec. 4-3-3. “AES Audio Input (FA-10AES Option)” for details on how to select audio input and output.
(*2) An FA-10AES-UBLC card requires an installed FA-10AES-UBL card.

7. Balanced AES Connection (FA-10AES-BL Option)

For balanced input and output, connect the hot and cold wires of an AES signal to plus and minus pins, respectively.

◆ **Analog Audio IN/OUT Connector (25-pin D-sub, female, inch screws)**



◆ **Pin Assignments**

Pin No.	Setting
1	CH7/8 OUT+
2	CH7/8 OUT COM
3	CH5/6 OUT-
4	CH3/4 OUT+
5	CH3/4 OUT COM
6	CH1/2 OUT-
7	CH7/8 IN+
8	CH7/8 IN COM
9	CH5/6 IN-
10	CH3/4 IN+
11	CH3/4 IN COM
12	CH1/2 IN-
13	NC
14	CH7/8 OUT-
15	CH5/6 OUT+
16	CH5/6 OUT COM
17	CH3/4 OUT-
18	CH1/2 OUT+
19	CH1/2 OUT COM
20	CH7/8 IN-
21	CH5/6 IN+
22	CH5/6 IN COM
23	CH3/4 IN-
24	CH1/2 IN+
25	CH1/2 IN COM

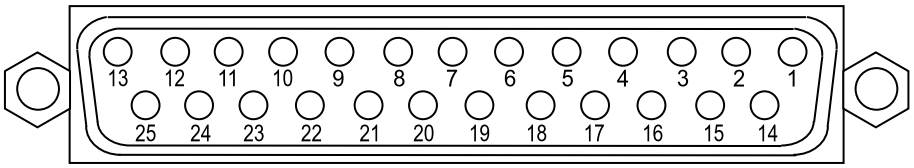
8. Analog Audio Connection (FA-10ANA-AUD Option)

For balanced input and output, connect the hot and cold wires of an analog audio signal to plus and minus pins, respectively.

For unbalanced input, connect the analog audio signal line to the plus pin and route the ground line to the minus pin and COM pin.

For unbalanced output, connect the analog audio signal line to the plus pin and the ground line to the COM pin.

◆ **FA-10ANA-AUD Connector (25-pin D-sub, female, inch screws)**



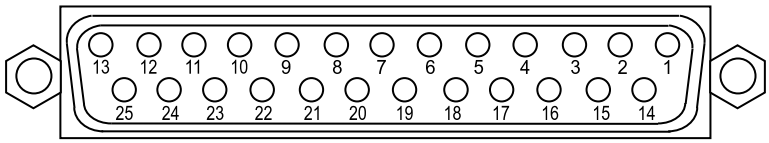
◆ **Pin Assignments**

Pin No.	Setting
1	CH4 OUT+
2	CH4 OUT COM
3	CH3 OUT-
4	CH2 OUT+
5	CH2 OUT COM
6	CH1 OUT-
7	CH4 IN+
8	CH4 IN COM
9	CH3 IN-
10	CH2 IN+
11	CH2 IN COM
12	CH1 IN-
13	NC
14	CH4 OUT-
15	CH3 OUT+
16	CH3 OUT COM
17	CH2 OUT-
18	CH1 OUT+
19	CH1 OUT COM
20	CH4 IN-
21	CH3 IN+
22	CH3 IN COM
23	CH2 IN-
24	CH1 IN+
25	CH1 IN COM

9. GPI Interface (FA-10GPI Option)

9-1. Pin Assignments

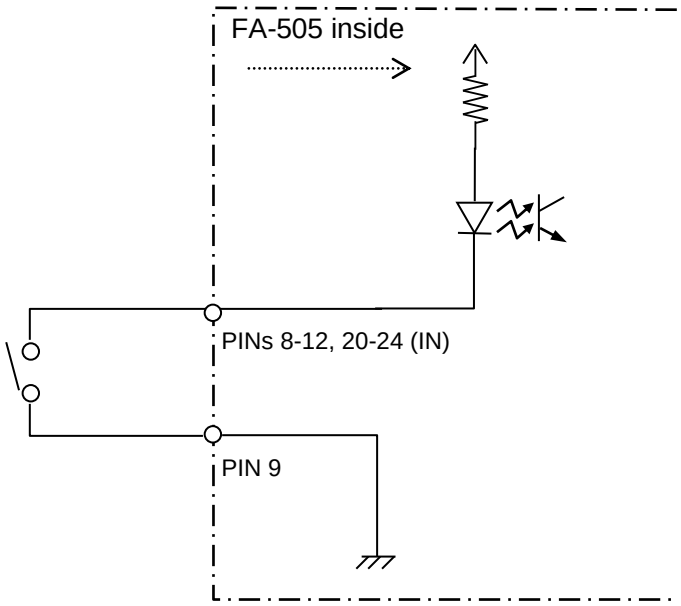
◆ **FA-10GPI connector 25-pin D-sub, female**



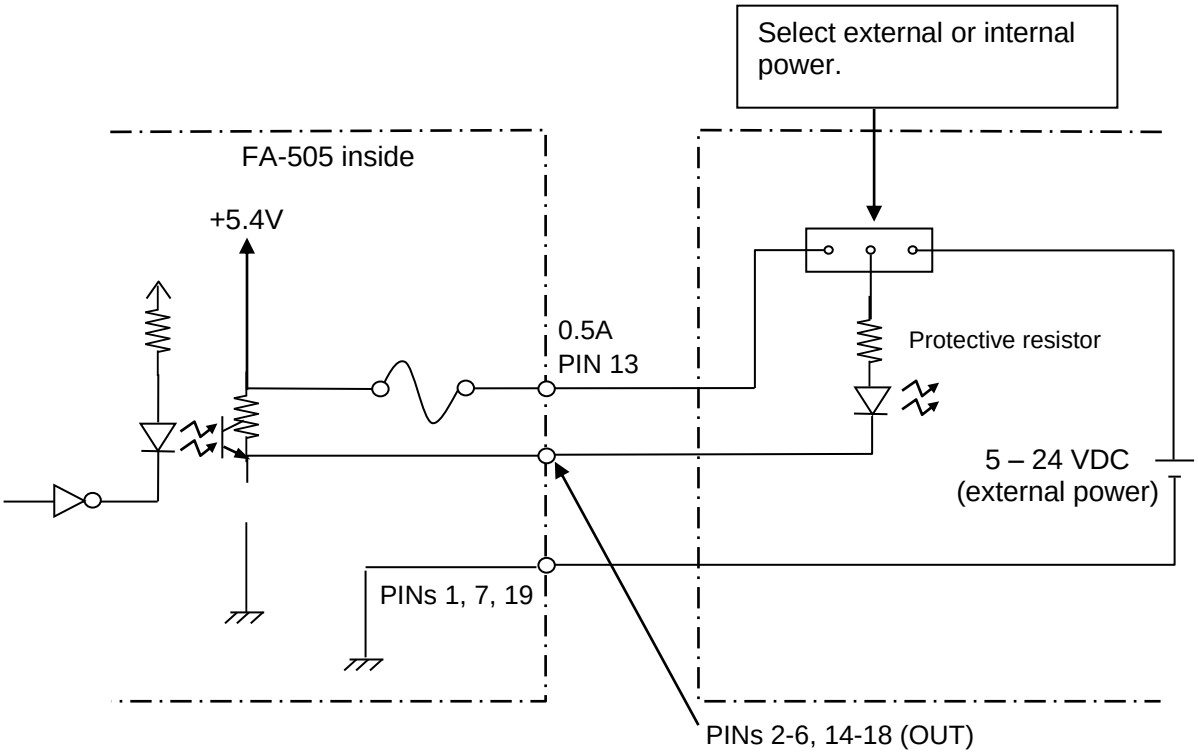
◆ **Pin Assignments**

Pin No.	Setting
1	GND (ground)
2	GPI OUT 1 (output)
3	GPI OUT 2 (output)
4	GPI OUT 3 (output)
5	GPI OUT 4 (output)
6	GPI OUT 5 (output)
7	GND (ground)
8	GPI IN 1 (input)
9	GPI IN 2 (input)
10	GPI IN 3 (input)
11	GPI IN 4 (input)
12	GPI IN 5 (input)
13	DC OUT (+5 V output, maximum 200 mA DC)
14	GPI OUT 6 (output)
15	GPI OUT 7 (output)
16	GPI OUT 8 (output)
17	GPI OUT 9 (output)
18	GPI OUT 10 (output)
19	GND (ground)
20	GPI IN 6 (input)
21	GPI IN 7 (input)
22	GPI IN 8 (input)
23	GPI IN 9 (input)
24	GPI IN 10 (input)
25	NC

9-2. GPI Input Circuit



9-3. GPI Output Circuit



IMPORTANT
Note that the allowed current for each GPI output circuit is **50 mA** and the external power supply should be **5 to 24 VDC**.

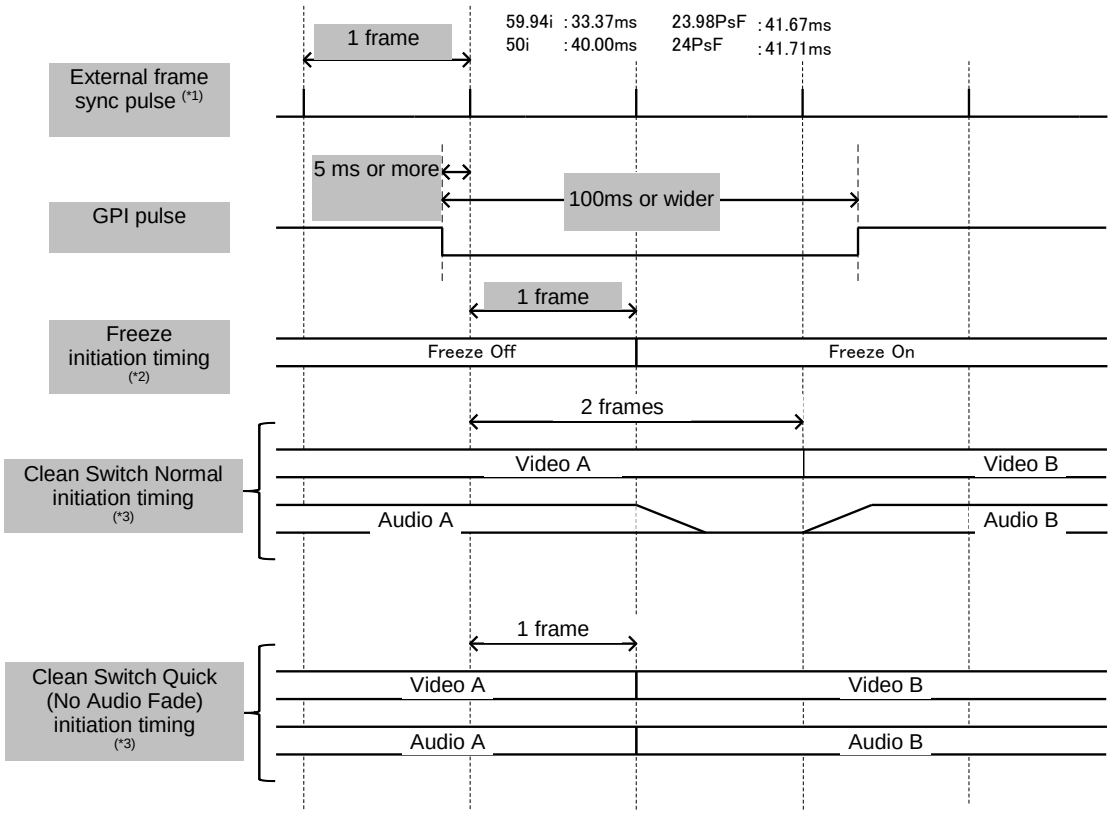
9-4. GPI Control Sensitivity

9-4-1. 59.94i/50i/24PsF/23.98PsF System (GPI Operate Mode: Normal)

Input a GPI pulse of width 100 ms or more.
When the GPI pulse changes from High to Low 5 ms ahead of the external frame sync pulse, control functions are processed under the following timeframes.

Control function	Duration from GPI pulse reception to processing
Freeze	1 frame
Clean Switch Normal	2 frames
Clean Switch Quick (No Audio Fade)	1 frame

Other functions are processed within 1 frame + 30 ms.



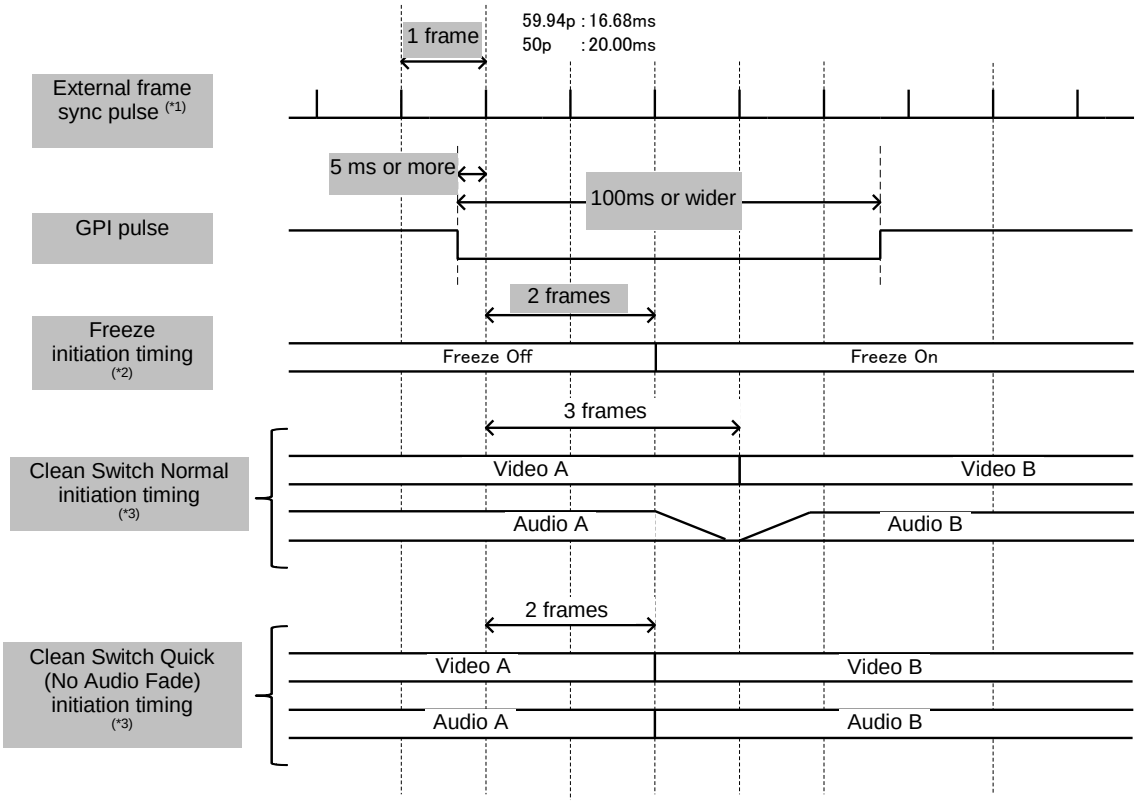
(*1) If an external sync pulse input is absent, uses the internally generated frame pulse.
(*2) Video Test Signal initiation timeframes are the same as those of Freeze.
(*3) The timing of Src.1-5 switching in Direct Mode, Take performance in Take Mode, or Load performance in Salvo Mode is shown.
* The process timeframes above show the case when the up, down, cross-converters are set to **By-pass**.

9-4-2. 59.94p/50p System (GPI Operate Mode: Normal)

Input a GPI pulse of width 100 ms or more.
When the GPI pulse changes from High to Low 5 ms ahead of the external frame sync pulse, control functions are processed under the following timeframes.

Control function	Duration from GPI pulse reception to processing
Freeze	2 frames
Clean Switch Normal	3 frames
Clean Switch Quick (No Audio Fade)	2 frames

Other functions are processed within 2 frames + 30 ms.



(*1) If an external sync pulse input is absent, uses the internally generated frame pulse.
(*2) Video Test Signal initiation timeframes are the same as those of Freeze.
(*3) The timing of Src.1-5 switching in Direct Mode, Take performance in Take Mode, or Load performance in Salvo Mode is shown.
* The process timeframes above show the case when the up, down, cross-converters are set to **By-pass**.

IMPORTANT
Allow 5-second intervals (minimum) when performing sequential event memory loading.

9-4-3. GPI Operate Mode: Extended

When using GPI in **Extended** mode (GPI Operate Mode is set to **Extended**), GPI command execution timing is NOT guaranteed. The maximum waiting time for execution after input is approximate 100 ms. Therefore, input a GPI pulse of width 100 ms or more.

10. Menu List

10-1. Video Block

Menu button	Menu	Event Loading	
		Load All	Load FS Only
FS Input	Frame Rate Matrix Sync Format	Yes Yes Yes	Yes Yes Yes
Loss Mode	Video Loss Mode	Yes	Yes
Video System	Sync Mode System Phase Video Position Freeze Mode 3G SDI Output	Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes
Ancillary Demultiplexer	Detection Settings	Yes	Yes
Frame Delay	Frame Delay	Yes	Yes
Converter	Converter Mode Resize Position Cropping Side Color	Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes
Process Amp	Bypass/Operate Video Level Y Level Chroma Level Setup/Black Level Hue Split	No Yes Yes Yes Yes Yes No	No Yes Yes Yes Yes Yes No
Color Corrector & Video Clip	Bypass/Operate Gumma Curve/Color Space Color Correction Mode White Level Black Level Gamma Level Gamma Range Sepia Split Clip Mode YPbPr Clip RGB Clip	No Yes Yes Yes Yes Yes Yes Yes No Yes Yes Yes	No Yes Yes Yes Yes Yes Yes Yes No Yes Yes Yes
Test Signal	Video Test Signal	Yes	Yes
Ancillary Multiplexer	Embed Control	Yes	Yes
Time Code	Output Source LTC Input / Output Settings Time Code Generator	Yes Yes Yes	Yes No No
SDI Multiplexer	SDI Multiplexer	Yes	Yes
Embedded Audio	Embedded Audio	Yes	Yes
Clean SW	Operation Mode Matrix	Yes Yes	No No
FS Output	FS Output	Yes	No
By-pass	Relay By-pass	No	No
Video Status	Video Status	No	No
GPI Option	GPI Port Assign	No	No

10-2. Audio Block

Menu button	Menu	Event Loading	
		Load All	Load FS Only
Audio Input Status	Embedded Audio AES Audio Analog Audio	No No No	No No No
Embedded Audio Demultiplexer	Embedded Audio Demux	Yes	No
AES Audio Input	I/O Setup In Hysteresis	Yes Yes	No No
Analog Audio Input	Input Impedance Input Select Mic Power Analog Audio Input Level Analog Audio Input Gain	Yes Yes No Yes Yes	No No No No No
Sample Rate Converter	Sample Rate Converter	Yes	No
Polarity Mode	Polarity Mode	Yes	No
Down Mix	Down Mix Mode Down Mix Assign	Yes Yes	No No
Audio Mapping	FS Embedded Audio Assignment Option Audio Assignment	Yes Yes	No No
Test Signal	Audio Test Signal	Yes	No
Master Mute	Audio Master Mute	No	No
Mono Sum Mode	FS Embedded Audio Option Slot Audio	Yes Yes	No No
Audio Gain	Audio Gain	Yes	No
Audio Delay	Master Channel Adjustment	Yes Yes	No No
Embedded Audio Mux	Embedded Audio Clock	Yes	No
Audio System	Digital Audio Reference Level Digital Audio Grade Digital Audio Resolution Digital/Analog Audio Silence Time Digital/Analog Audio Silence Level	Yes Yes Yes Yes Yes	No No No No No
Audio Output Status	FS Embedded Audio Option Audio	No No	No No

11. About SNMP (Simple Network Management Protocol)

The FA-505 can be remotely monitored using the SNMPv2C protocol. An MIB (Management Information Base) required in monitoring is included in the supplied CD-ROM. See Sec. 4-7-2 "SNMP Settings" for details on SNMP network settings.

◆ SET/GET List

Object group	Item name	Object name in MIB file	Value	OID	Type	TRAP function	Note
OID : 1.3.6.1.4.1.20175.1.314.1.1. (Unit Info)							
Unit info.	Product Name	fa505ProductName		1	OCTET STRING		
	Product Code	fa505ProductCode		2	INTEGER		
	Unit Name	fa505UnitName		3	OCTET STRING		
	Serial Number	fa505SerialNumber		4	INTEGER		
	Soft Ver.	fa505SoftwareVersion		10	OCTET STRING		
	FPGA1 Ver.	fa505Fpga1Version		11	OCTET STRING		
	FPGA2 Ver.	fa505Fpga2Version		12	OCTET STRING		
	FPGA3 Ver.	fa505Fpga3Version		13	OCTET STRING		
	FPGA4 Ver.	fa505Fpga4Version		14	OCTET STRING		
	FPGA5 Ver.	fa505Fpga5Version		15	OCTET STRING		
OID : 1.3.6.1.4.1.20175.1.314.1.2. (Unit Status)							
Unit Status	Fan1 Status	fa505Fan1Status	0: normal 1: stopped	1	INTEGER	✓	
	Fan2 Status	fa505Fan2Status	0: normal 1: stopped	2	INTEGER	✓	
	Fan3 Status	fa505Fan3Status	0: normal 1: stopped	3	INTEGER	✓	
	Fan4 Status	fa505Fan4Status	0: normal 1: stopped	4	INTEGER	✓	
	Power1Status	fa505Power1Status	-1: notInstalled 0: normal 1: abnormal	11	INTEGER	✓	
	Power2Status	fa505Power2Status	-1: notInstalled 0: normal 1: abnormal	12	INTEGER	✓	
	FA-505UD	fa505UdInstalled	0: notInstalled 1: Installed	21	INTEGER	✓	
OID : 1.3.6.1.4.1.20175.1.314.1.2.41.1 (Option)							
Option info.	Type	fa505OptionType	0: notInstalled 6: fa-10aes-bl 7: fa-10aes-ubl 8: fa-10aes-ublc 9: fa-10ana-aud 10: fa-10gpi 99: unknown	2.a	INTEGER		* 1
	Soft Ver.	fa505OptionSoftVer		3.a	OCTET STRING		* 1
	FPGA1 Ver.	fa505OptionFpga1Ver		4.a	OCTET STRING		* 1
	FPGA2 Ver.	fa505OptionFpga2Ver		5.a	OCTET STRING		* 1
OID : 1.3.6.1.4.1.20175.1.314.1.3 (Video Status)							
OID : 1.3.6.1.4.1.20175.1.314.1.3.1.1 (SDI Status)							
SDI Status	Channel	fa505SdiStausChannel	1-5	1.b	INTEGER		* 2 * 3
	Input SDI Status	fa505InputSdiStatus	0: loss 1: format525-60 2: format625-50 4: format1080-59i 5: format1080-50i 9: format1080-24psf 10: format1080-23psf 11: format1080-60pA 13: format1080-59pA 14: format1080-59pB 15: format1080-50pA 16: format1080-50pB 17: format1080-30p 18: format1080-29p 19: format1080-25p 20: format1080-24p 21: format1080-23p 23: format720-59p 24: format720-50p 32: unknown 33:By-pass 34: disable 35: none 36: invalid 39:format2x1080-59iB 40:format2x1080-50iB	2.b	INTEGER	✓	* 2
	Output SDI Status	fa505OutputSdiStatus	(Same as above)	3.b	INTEGER	✓	* 2

OID : 1.3.6.1.4.1.20175.1.314.1.3.2. (Reference Status)							
Ref Status	Reference Status	fa505ReferenceInStatus	0: loss 1: format525-60 2: format625-50 4: format1080-59i 5: format1080-50i 9: format1080-24psf 10: format1080-23psf 11: format1080-60pA 13: format1080-59pA 14: format1080-59pB 15: format1080-50pA 16: format1080-50pB 17: format1080-30p 18: format1080-29p 19: format1080-25p 20: format1080-24p 21: format1080-23p 23: format720-59p 24: format720-50p 32: unknown 33:By-pass 34: disable 35: none 36: invalid	-	INTEGER		
OID : 1.3.6.1.4.1.20175.1.314.1.4. (Audio Status)							
OID : 1.3.6.1.4.1.20175.1.314.1.4.1.1. (Input Embed Status)							
Audio Input Embed Status	Channel	fa505InputEmbedChannel	1-5	0.b	INTEGER		* 2 * 3
	Ch1	fa505FsInEmbedCh1	0: loss 1: pcm 2: pcm48k 3: pcm44k 4: pcm32k 5: pcmOther 6: silence 7: silence48k 8: silence44k 9: silence32k 10: silenceOther 11: nonPCM 12: asyncPCM 13: asyncNonPCM 14: present 15: bypass 16: outputSetting	1.b	INTEGER	✓	* 2
	Ch2	fa505FsInEmbedCh2	Ditto	2.b	INTEGER	✓	* 2
	Ch3	fa505FsInEmbedCh3	Ditto	3.b	INTEGER	✓	* 2
	Ch4	fa505FsInEmbedCh4	Ditto	4.b	INTEGER	✓	* 2
	Ch5	fa505FsInEmbedCh5	Ditto	5.b	INTEGER	✓	* 2
	Ch6	fa505FsInEmbedCh6	Ditto	6.b	INTEGER	✓	* 2
	Ch7	fa505FsInEmbedCh7	Ditto	7.b	INTEGER	✓	* 2
	Ch8	fa505FsInEmbedCh8	Ditto	8.b	INTEGER	✓	* 2
	Ch9	fa505FsInEmbedCh9	Ditto	9.b	INTEGER	✓	* 2
	Ch10	fa505FsInEmbedCh10	Ditto	10.b	INTEGER	✓	* 2
	Ch11	fa505FsInEmbedCh11	Ditto	11.b	INTEGER	✓	* 2
	Ch12	fa505FsInEmbedCh12	Ditto	12.b	INTEGER	✓	* 2
	Ch13	fa505FsInEmbedCh13	Ditto	13.b	INTEGER	✓	* 2
	Ch14	fa505FsInEmbedCh14	Ditto	14.b	INTEGER	✓	* 2
	Ch15	fa505FsInEmbedCh15	Ditto	15.b	INTEGER	✓	* 2
	Ch16	fa505FsInEmbedCh16	Ditto	16.b	INTEGER	✓	* 2
OID : 1.3.6.1.4.1.20175.1.314.1.4.2.1. (Output Embed Status)							
Audio Output Embed Status	Channel	fa505OutputEmbedChannel	1 to 5	0.b	INTEGER		* 2 * 3
	Ch1	fa505FsOutEmbedCh1	0: pcm 1: silence 2: nonPCM 3: present 4: blank 5: bypass 6: inputSetting	1.b	INTEGER	✓	* 2
	Ch2	fa505FsOutEmbedCh2	Ditto	2.b	INTEGER	✓	* 2
	Ch3	fa505FsOutEmbedCh3	Ditto	3.b	INTEGER	✓	* 2
	Ch4	fa505FsOutEmbedCh4	Ditto	4.b	INTEGER	✓	* 2
	Ch5	fa505FsOutEmbedCh5	Ditto	5.b	INTEGER	✓	* 2
	Ch6	fa505FsOutEmbedCh6	Ditto	6.b	INTEGER	✓	* 2
	Ch7	fa505FsOutEmbedCh7	Ditto	7.b	INTEGER	✓	* 2
	Ch8	fa505FsOutEmbedCh8	Ditto	8.b	INTEGER	✓	* 2
	Ch9	fa505FsOutEmbedCh9	Ditto	9.b	INTEGER	✓	* 2
	Ch10	fa505FsOutEmbedCh10	Ditto	10.b	INTEGER	✓	* 2
	Ch11	fa505FsOutEmbedCh11	Ditto	11.b	INTEGER	✓	* 2
	Ch12	fa505FsOutEmbedCh12	Ditto	12.b	INTEGER	✓	* 2
	Ch13	fa505FsOutEmbedCh13	Ditto	13.b	INTEGER	✓	* 2
	Ch14	fa505FsOutEmbedCh14	Ditto	14.b	INTEGER	✓	* 2
	Ch15	fa505FsOutEmbedCh15	Ditto	15.b	INTEGER	✓	* 2
	Ch16	fa505FsOutEmbedCh16	Ditto	16.b	INTEGER	✓	* 2

(*1) “a” indicates slot numbers.

(*2) “b” indicates FS channel numbers.

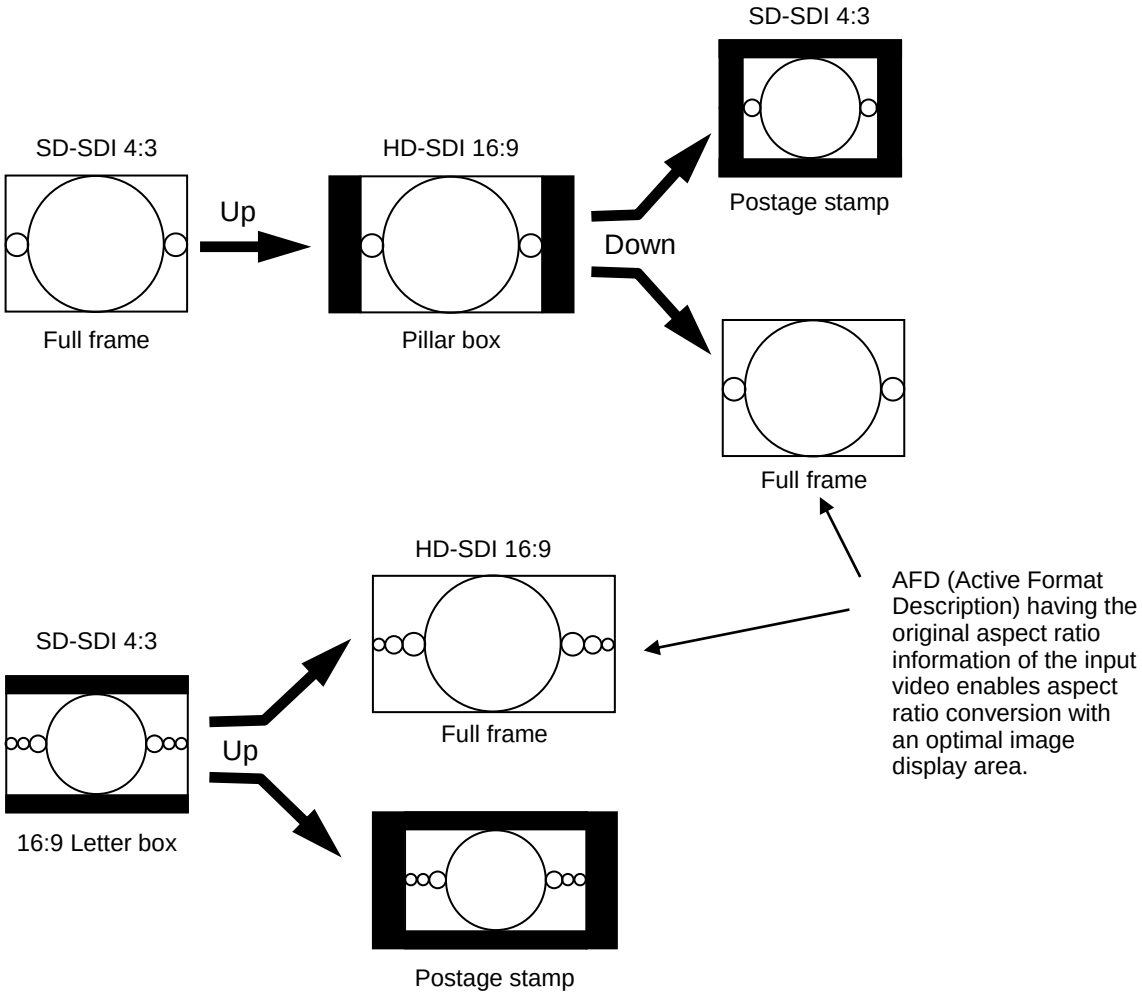
(*3) Obtainable only with Traps.

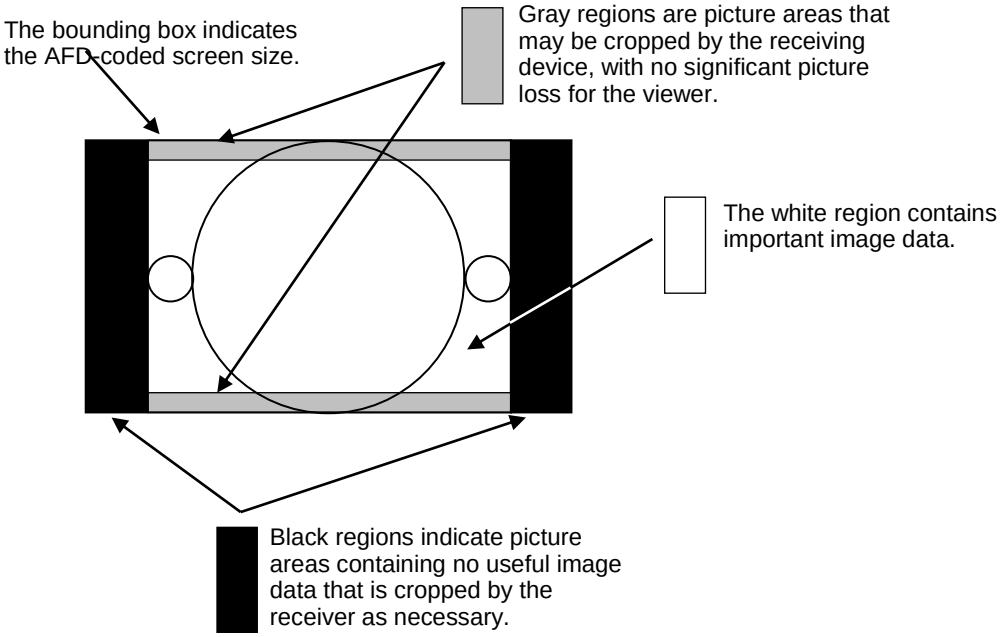
◆ TRAP List

Object group	Item name	Object name in MIB file	OID	Type	TRAP function	Reference object	
OID : 1.3.6.1.4.1.20175.1.314.0. (TRAP)							
TRAP Display	FAN1	fa505Fan1StateChangedTrap	1	INTEGER	✓	fa505Fan1Status	
	FAN2	fa505Fan2StateChangedTrap	2	INTEGER	✓	fa505Fan2Status	
	FAN3	fa505Fan3StateChangedTrap	3	INTEGER	✓	fa505Fan3Status	
	FAN4	fa505Fan4StateChangedTrap	4	INTEGER	✓	fa505Fan4Status	
	Power1	fa505Power1StateChangedTrap	11	INTEGER	✓	fa505Power1Status	
	Power2	fa505Power2StateChangedTrap	12	INTEGER	✓	fa505Power2Status	
	SDI Input	fa505FsInVideoChangedTrap	101	INTEGER	✓	fa505FsStausChannel	fa505InputSdiStatus
	SDI Output	fa505FsOutVideoChangedTrap	102	INTEGER	✓	fa505FsStausChannel	fa505OutputSdiStatus
	Reference	fa505ReferenceInChangedTrap	111	INTEGER	✓	fa505ReferenceStatus	
	Emb IN Ch1	fa505FsInEmbedCh1ChangedTrap	201	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh1
	Emb IN Ch2	fa505FsInEmbedCh2ChangedTrap	202	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh2
	Emb IN Ch3	fa505FsInEmbedCh3ChangedTrap	203	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh3
	Emb IN Ch4	fa505FsInEmbedCh4ChangedTrap	204	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh4
	Emb IN Ch5	fa505FsInEmbedCh5ChangedTrap	205	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh5
	Emb IN Ch6	fa505FsInEmbedCh6ChangedTrap	206	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh6
	Emb IN Ch7	fa505FsInEmbedCh7ChangedTrap	207	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh7
	Emb IN Ch8	fa505FsInEmbedCh8ChangedTrap	208	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh8
	Emb IN Ch9	fa505FsInEmbedCh9ChangedTrap	209	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh9
	Emb IN Ch10	fa505FsInEmbedCh10ChangedTrap	210	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh10
	Emb IN Ch11	fa505FsInEmbedCh11ChangedTrap	211	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh11
	Emb IN Ch12	fa505FsInEmbedCh12ChangedTrap	212	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh12
	Emb IN Ch13	fa505FsInEmbedCh13ChangedTrap	213	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh13
	Emb IN Ch14	fa505FsInEmbedCh14ChangedTrap	214	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh14
	Emb IN Ch15	fa505FsInEmbedCh15ChangedTrap	215	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh15
	Emb IN Ch16	fa505FsInEmbedCh16ChangedTrap	216	INTEGER	✓	fa505InputEmbedChannel	fa505FsInEmbedCh16

12. About AFD (Active Format Description)

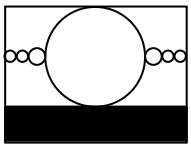
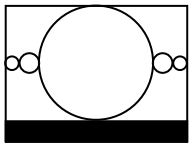
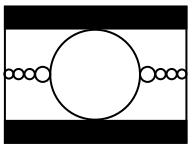
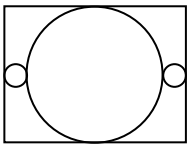
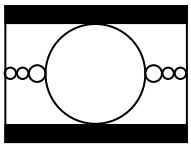
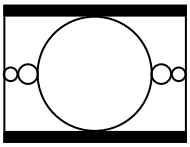
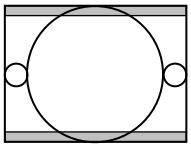
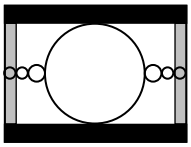
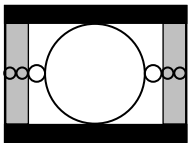
The FA-505 provides aspect ratio conversion according to S2016-3, RP186 VI (Video Index), or BT1119-2 WSS (Wide Screen Signaling) AFD code data in the ancillary data of input video signals. The below figure depicts aspect ratio conversion examples using AFD code data.



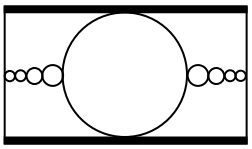
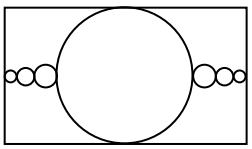
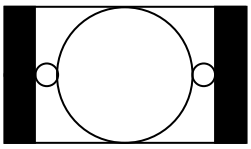
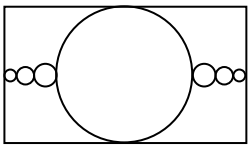
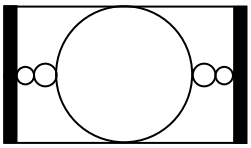
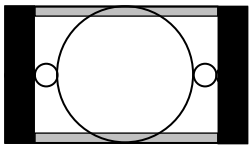
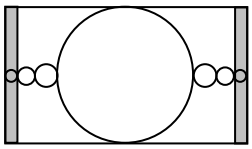
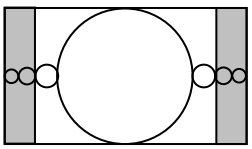


12-1. AFD Codes

◆ **AFD 4:3 code**

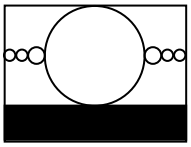
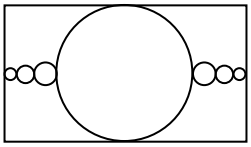
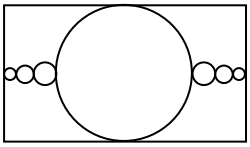
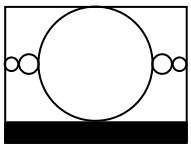
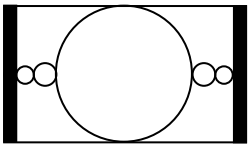
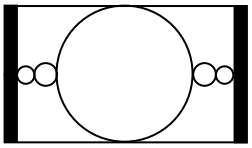
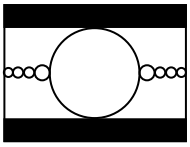
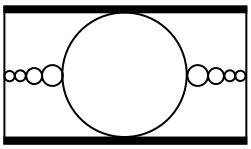
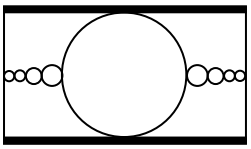
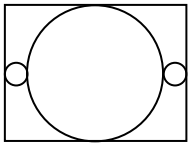
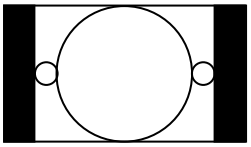
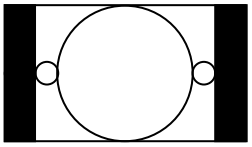
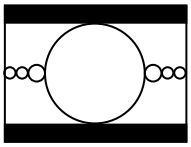
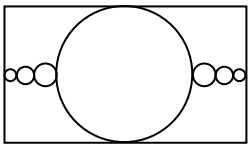
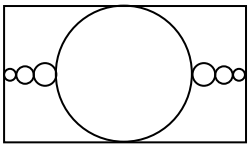
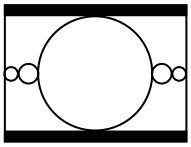
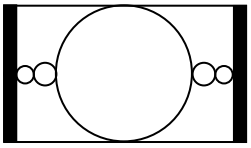
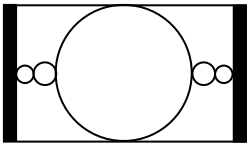
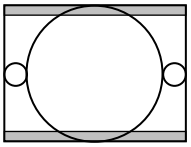
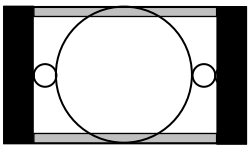
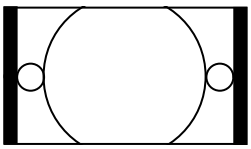
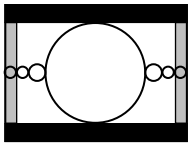
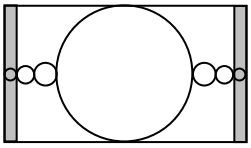
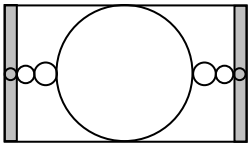
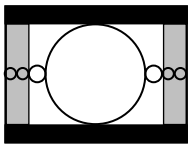
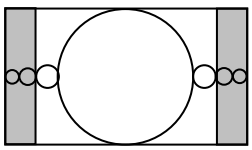
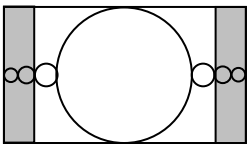
WSS name	FA-505-specified name (VI, S2016)	illustration in 4:3 frame	Description
BOX 16:9 TOP	4:3 L 16:9 T		16:9 aspect ratio letterbox image on top of 4:3 frame.
BOX 14:9 TOP	4:3 L 14:9 T		14:9 aspect ratio letterbox image on top of 4:3 frame.
BOX 16:9 CTR	4:3 L> 16:9		Greater than 16:9 aspect ratio vertically centered letterbox image in 4:3 frame.
F 4:3	4:3 F 4:3		Full frame image with same aspect ratio as that of the 4:3 frame.
BOX 16:9 CTR	4:3L16:9PRTD		Vertically centered 16:9 aspect ratio letterbox image in 4:3 frame.
BOX 14:9 CTR	4:3 L 14:9		Vertically centered 14:9 aspect ratio letterbox image in 4:3 frame.
F 14:9 CTR PRTD	4:3 F ALT14:9		4:3 aspect ratio image with an alternative 14:9 center in 4:3 frame.
None	4:3 L ALT 14:9		Vertically centered 16:9 aspect ratio letterbox image with alternative 14:9 center in 4:3 frame.
None	4:3 L ALT 4:3		Vertically centered 16:9 aspect ratio letterbox image with alternative 4:3 center in 4:3 frame.

◆ **AFD 16:9 code**

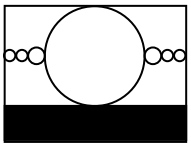
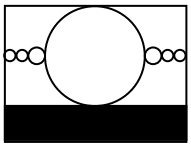
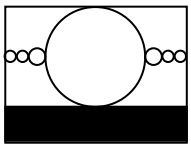
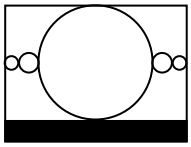
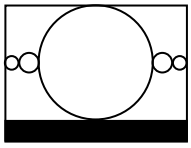
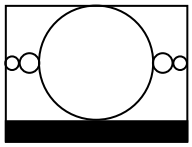
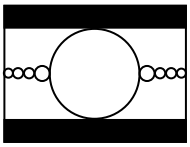
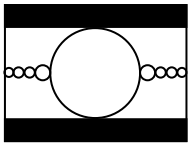
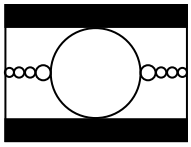
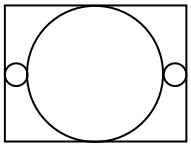
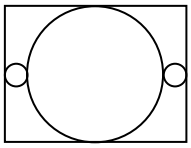
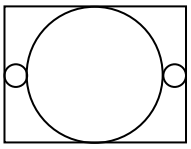
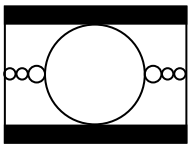
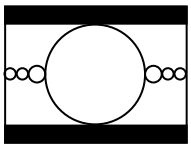
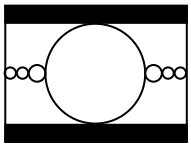
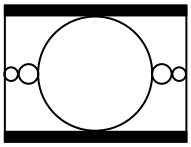
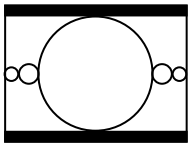
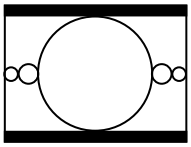
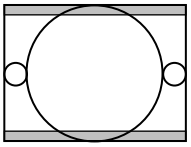
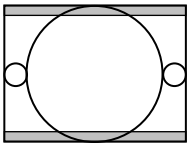
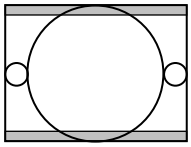
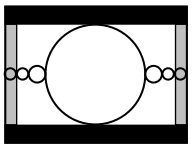
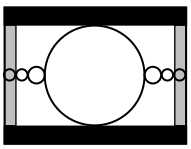
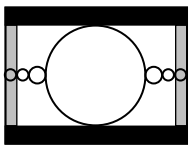
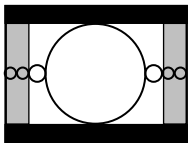
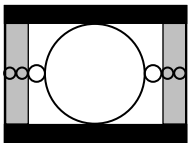
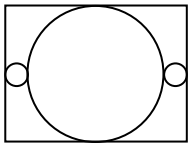
WSS name	FA-505-specified name (VI, S2016)	Illustration in 16:9 frame	Description
None	16:9 L>16:9		Greater than 16:9 aspect ratio vertically centered letterbox image in 16:9 frame.
F 16:9 AMRPH	16:9 F 16:9		Full frame image with same aspect ratio as that of the 16:9 frame.
None	16:9 P 4:3		Horizontally centered 4:3 aspect ratio pillarbox image in 16:9 frame.
None	16:9 F PRTD		Full frame 16:9 aspect ratio image with all image areas protected.
None	16:9 P 14:9		Horizontally centered 14:9 aspect ratio pillarbox image in 16:9 frame.
None	16:9PALT14:9		4:3 aspect ratio, alternative 14:9 centered pillarbox image in 16:9 frame.
None	16:9FALT14:9		16:9 aspect ratio, alternative 14:9 centered image in 16:9 frame.
None	16:9 F ALT4:3		16:9 aspect ratio, alternative 4:3 centered image in 16:9 frame.

12-2. Aspect Ratio Conversion with AFD

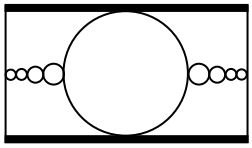
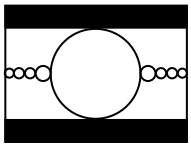
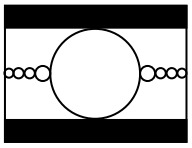
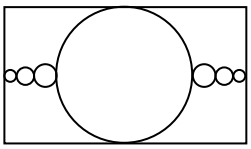
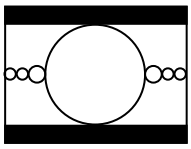
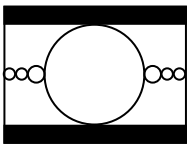
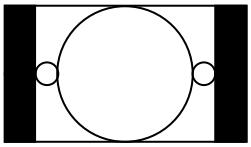
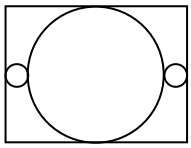
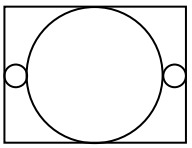
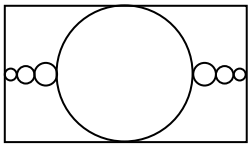
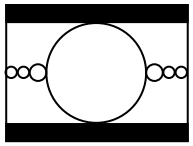
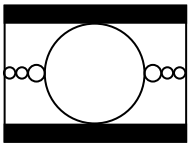
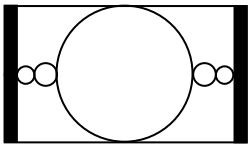
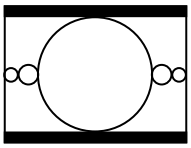
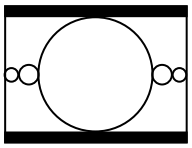
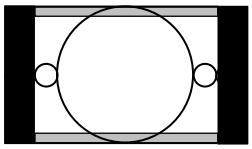
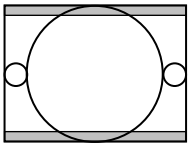
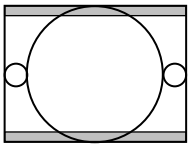
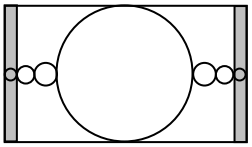
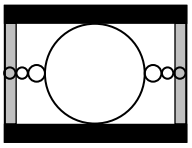
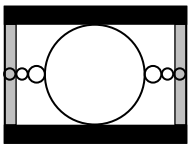
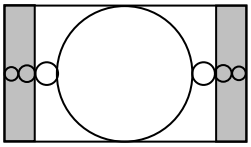
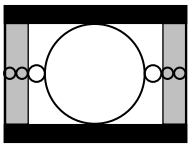
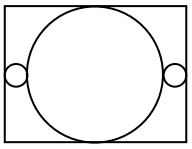
◆ **4:3 to 16:9 conversion**

Input AFD (WSS)	Input AFD (VI, S2016)	Illustration in 4:3 frame	SD: AFD (16:9) conv. HD: AFD conversion	SD: AFD-ALT(16:9) conv. HD: AFD-ALT conversion
BOX 16:9 TOP	4:3 L 16:9 T			
BOX 14:9 TOP	4:3 L 14:9 T			
BOX 16:9 CTR	4:3 L> 16:9			
F 4:3	4:3 F 4:3			
BOX 16:9 CTR	4:3L16:9PRTD			
BOX 14:9 CTR	4:3 L 14:9			
F 14:9 CTR PRTD	4:3 F ALT14:9			
None	4:3 L ALT 14:9			
None	4:3 L ALT 4:3			

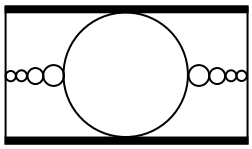
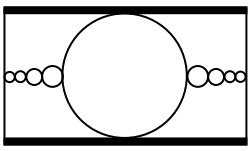
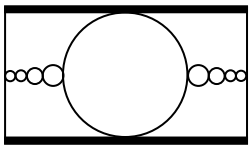
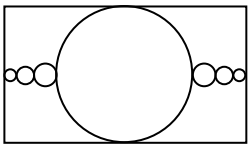
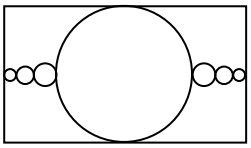
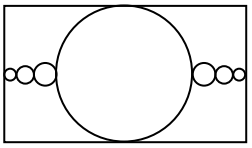
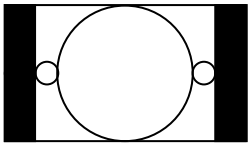
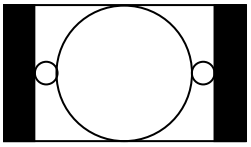
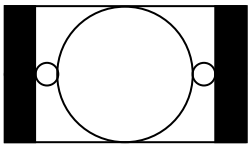
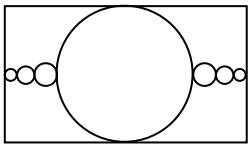
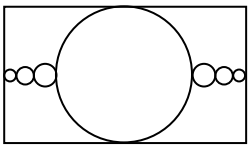
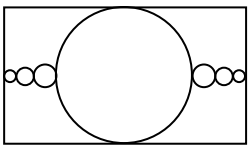
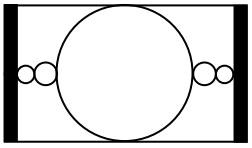
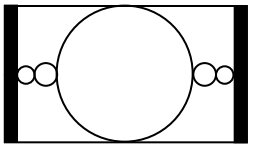
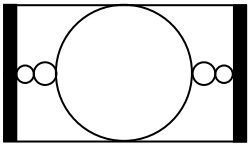
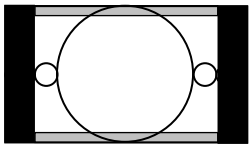
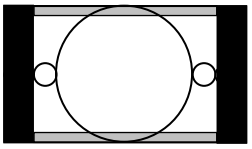
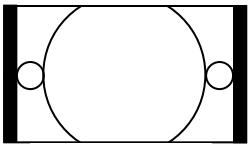
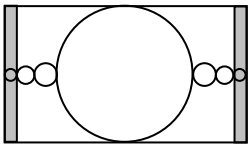
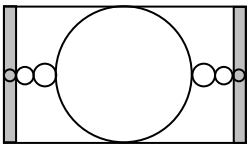
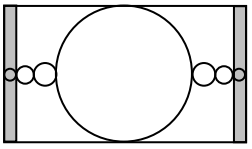
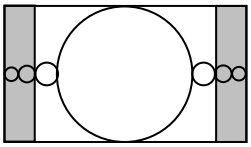
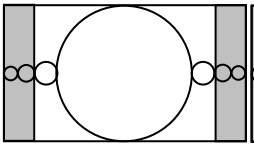
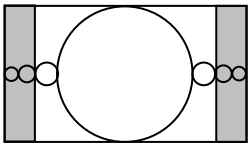
◆ **4:3 to 4:3 conversion**

Input AFD (WSS)	Input AFD (VI, S2016)	Illustration in 4:3 frame	AFD (4:3) conversion	AFD-ALT (4:3) conversion
BOX 16:9 TOP	4:3 L 16:9 T			
BOX 14:9 TOP	4:3 L 14:9 T			
BOX 16:9 CTR	4:3 L> 16:9			
F 4:3	4:3 F 4:3			
BOX 16:9 CTR	4:3L16:9PRTD			
BOX 14:9 CTR	4:3 L 14:9			
F 14:9 CTR PRTD	4:3 F ALT14:9			
None	4:3 L ALT 14:9			
None	4:3 L ALT 4:3			

◆ **16:9 to 4:3 conversion**

Input AFD (WSS)	Input AFD (VI, S2016)	Illustration in 16:9 frame	AFD (4:3) conversion	AFD-ALT (4:3) conversion
None	16:9 L>16:9			
F 16:9 AMRPH	16:9 F 16:9			
None	16:9 P 4:3			
None	16:9 F PRTD			
None	16:9 P 14:9			
None	16:9PALT14:9			
None	16:9FALT14:9			
None	16:9 F ALT4:3			

◆ **16:9 to 16:9 conversion**

Input AFD (WSS)	Input AFD (VI, S2016)	Illustration in 16:9 frame	SD: AFD (16:9) conv. HD: AFD conversion	SD: AFD-ALT(16:9) conv. HD: AFD-ALT conversion
None	16:9 L>16:9			
F 16:9 AMRPH	16:9 F 16:9			
None	16:9 P 4:3			
None	16:9 F PRTD			
None	16:9 P 14:9			
None	16:9PALT14:9			
None	16:9FALT14:9			
None	16:9 F ALT4:3			

12-3. AFD Supported Video Formats

FA-505 supports aspect ratio conversions according to SMPTE S2016-3, SMPTE RP186-2008VI (Video Index), and ITU-R BT1119.2 WSS(Wide-Screen Signaling) standards. AFD formats and their supported video formats are as shown in the table below.

Video Formats and AFD Support

Input video format	S2016-3	RP186-2008 VI	BT1119.2 WSS
525/60	✓	✓	
625/50	✓	✓	✓
1080/59.94i	✓		
1080/50i	✓		
1080/23.98PsF	✓		
1080/24PsF	✓		
720/59.94p	✓		
720/50p	✓		
1080/59.94p	✓		
1080/50p	✓		

13. FA-505 Ancillary Data Packet Name List

FA-505 Indication	DID/SDID (hexadecimal)	Description
S353MMPEG(V)	08/08	MPEG recoding data, VANC space (Picture rate information)
S353M MPEG(H)	08/0C	MPEG recoding data, HANC space (Other part of recording data set)
S305M SD-SDTI	40/01	ARIB STD-B17 Serial Data Transport Interface for Television
S305M HD-SDTI	40/02	ITU-R BT.1557, SMPTE 348M for HD-SDTI
S427 Lk Enc 1	40/04	SMPTE 427 Link Encryption Message 1
S427 Lk Enc 2	40/05	SMPTE 427 Link Encryption Message 2
S427 Lk Meta	40/06	SMPTE 427 Link Encryption Metadata
S352M VPID	41/01	BTA S-004C Video Payload Identification for Digital Interfaces
S2016-3 AFD-Bar	41/05	SMPTE 2016-3 AFD and Bar Data
S2016-4 PanScan	41/06	SMPTE 2016-3 Pan-Scan Data
RP2010 SCTE 104	41/07	SMPTE 2010 ANSI/SCTE 104 messages
S2031 SCTE VBI	41/08	SMPTE 2010 DVB/SCTE VBI data
ITU-R BT.1685	43/01	ITU-R BT.1685 Inter-station control data packets
RDD8 OP47(SDP)	43/02	SMPTE RDD 8 Subtitling Distribution packet(SDP)
RDD8 OP47(Mult)	43/03	SMPTE RDD 8 Transport of ANC packet in an ANC Multipacket
S346M	43/13	Time Division Multiplexing Video Signals and Generic Data over HD-SDI
RP214 KLV(V)	44/04	SMPTE RP 214 KLV Metadata transport in VANC space
RP214 KLV(H)	44/14	SMPTE RP 214 KLV Metadata transport in HANC space
RP223 UMID	44/44	SMPTE RP 223 Packing UMID and Program Identification Label Data into SMPTE 291M Ancillary Data Packets
S2020 Aud	45/01	SMPTE 2020-1 Compressed Audio Metadata
S2020AudPr1/2	45/02	SMPTE 2020-1 Compressed Audio Metadata
S2020AudPr3/4	45/03	SMPTE 2020-1 Compressed Audio Metadata
S2020AudPr5/6	45/04	SMPTE 2020-1 Compressed Audio Metadata
S2020AudPr7/8	45/05	SMPTE 2020-1 Compressed Audio Metadata
S2020AudPr9/10	45/06	SMPTE 2020-1 Compressed Audio Metadata
S2020AudPr11/12	45/07	SMPTE 2020-1 Compressed Audio Metadata
S2020AudPr13/14	45/08	SMPTE 2020-1 Compressed Audio Metadata
S2020 AudP15/16	45/09	SMPTE 2020-1 Compressed Audio Metadata
RP215 Film Xfer	51/01	RP215 Film Codes in VANC space
ARIB TRB.18	5F/CF	Color information packets standardized in ARIB TR-B18 “Color Frame Information for Component Interface of 525/60 Television System”
ARIB B.37	5F/D0 | | 5F/DB	Closed caption data packets (for expansion) standardized in ARIB STD-B37 “Structure and Operation of Closed Caption Data Conveyed by Ancillary Data Packets”
ARIB B.37 Mob	5F/D0	Caption format used in digital television broadcasting for mobile receivers standardized in ARIB STD-B37“Structure and Operation of Closed Caption Data Conveyed by Ancillary Data Packets”
ARIB B.37 Ana	5F/DB	Analog signal closed caption data packets standardized in ARIB STD-B37 “Structure and Operation of Closed Caption Data Conveyed by Ancillary Data Packets”
ARIB B.37 SD	5F/DE	SD signal closed caption data packets standardized in ARIB STD-B37 “Structure and Operation of Closed Caption Data Conveyed by Ancillary Data Packets”
ARIB B.37 HD	5F/DF	HD signal closed caption data packets standardized in ARIB STD-B37 “Structure and Operation of Closed Caption Data Conveyed by Ancillary Data Packets”
ARIB TR-B.22	5F/E0	HD ancillary data packets for transmission standardized in ARIB TR-B22 “Operational Guidelines for Transport of the Ancillary Data for HDTV Contribution”
ARIB TRB23(1)	5F/FA	Dummy packet standardized in ARIB TR-B23 ” Operational Guidelines for Ancillary Data in Inter-Stationary Information Exchange”
ARIB TRB23(2)	5F/FB	User data 2 in user data packets standardized in ARIB TR-B23 “ Operational Guidelines for Ancillary Data in Inter-Stationary Information

FA-505 Indication	DID/SDID (hexadecimal)	Description
		Exchange”
ARIB TRB23(1)	5F/FC	User data 1 in user data packets standardized in ARIB TR-B23 “ Operational Guidelines for Ancillary Data in Inter-Stationary Information Exchange”
ARIBB.35ProgEx	5F/FD	Trigger signal packets for data broadcasting standardized in ARIB STD-B35 “SD Data Program Exchange Specification for Digital Broadcasting”
ARIB B.39	5F/FE	Control signal packets for inter-studio transmission standardized in ARIB STD-B39 “Structure of Inter-Stationary Control Data Conveyed by Ancillary Data Packets”
ARIB B.15	5F/FF	Resource ID packets standardized in ARIB STD-B15 “Resource Identification Conveyed by Ancillary Data Packets for 52/60 and 1125/60 Television Systems”
SMPTE 12-2	60/60	ARIB STD-B41 for time code
S334-1CDP(708)	61/01	ITU-R BT.1619, SMPTE 334-1 closed captioning (EIA-708-B)
S334-1 CEA608	61/02	ITU-R BT.1619, SMPTE 334-1 EIA-608 data
S334-1 Teletxt	61/03	World System Teletext Description Packet
S334 SDE	61/04	Subtitling Data Essence (SDE)
334/207	62/01	ITU-R BT.1619, SMPTE RP207 DTV program description
S334-1 Future	62/02	ITU-R BT.1619, SMPTE 334-1 DTV data broadcasting
S334/RP208	62/03	ITU-R BT.1619, SMPTE RP208 VBI data
RP196/LTC	64/64	Time code
RP196/VITC	64/7F	Time code
RP165EDH	F4/00	SMPTE error detection indication

14. Troubleshooting

If any of the following problems occur while operating the FA-505, follow the described troubleshooting procedures below to see if the problem can be corrected before assuming a unit malfunction has occurred.

IMPORTANT
If the problem is unable to be corrected by the below procedures, turn the unit off and then on again. If this still does not correct the problem, contact your dealer.

Problem	Check	Remedy
Does not operate.	Is the unit powered on?	Turn the power of the unit on referring to Sec. 2-1. “Front Panel.”
	Is the cable properly connecting the FA-505 to a PC?	Connect units referring to Sec. 2-2. “Rear Panel”.
	Is a proper cable being used to connect the FA-505 to a PC?	Verify the cable is shorter than 100 m.
		Verify that a proper cable is being used as described in Sec. 3-5-1. “System Requirements”.
The GENLOCK status LED remains unlit.	Is a genlock signal properly being input to the GENLOCK IN connector?	Verify that a genlock signal is properly connected referring to Sec. 2-2. “Rear Panel”.
The POWER1 / POWER2 status LED is lit red.	Is the power cord properly connected? Normal state LED indications are as follows: PW1 ON -> lit green PW2 OFF -> lit red PW1 ON - > lit green PW2 absent -> unlit	Verify that the power cord is properly connected referring to Sec. 2-2. “Rear Panel”. If the red LED stays lit, the power supply unit may have a problem. Contact your dealer for assistance.
The FAN ALARM LED is lit red.	Is anything obstructing a fan from turning?	Remove the obstruction. If the red LED stays lit, a fan(s) may be experiencing a problem. Contact your dealer for assistance.
Button and text displays are partially missing.	Is the font set to larger than 100%?	Set the font size for the OS to 100%.
Forgot the IP address.		Open the top panel of the unit, then set Dipswitch DS2 pin 3 to ON. The unit can start up with the default IP address (192.168.0.10). Once the unit starts up, change the IP address in the Network settings, then return Dipswitch pin 3 to OFF. Dipswitch settings must be conducted carefully. Refer to Sec. 2-3. “Internal Settings” for details.

15. Specifications and Dimensions

15-1. Specifications

Input Video Formats	525/60, 625/50, 1080/59.94i, 1080/50i, 720/59.94p, 720/50p 1080/23.98p, 1080/24p, 1080/25p, 1080/29.97p, 1080/30p 1080/23.98PsF,1080/24PsF 1080/59.94p(Level-A/B), 1080/50p(Level-A/B), 1080/60p(Level-A) 2x1080/59.94i(Level-B), 2x1080/50i(Level-B)
Output Video Formats	525/60, 625/50, 1080/59.94i, 1080/50i, 720/59.94p, 720/50p 1080/23.98p, 1080/24p, 1080/25p, 1080/29.97p, 1080/30p 1080/23.98PsF,1080/24PsF 1080/59.94p(Level-A/B), 1080/50p(Level-A/B), 1080/60p(Level-A) 2x1080/59.94i(Level-B), 2x1080/50i(Level-B)
Video Input	3G/HD-SDI: 3 Gbps/1.5 Gbps or SD-SDI: 270 Mbps 75Ω BNC x 5
Video Output	3G/HD-SDI: 3 Gbps/1.5 Gbps or SD-SDI: 270 Mbps 75Ω BNC x 10 * Distribution output for each channel
Video Processing	4:2:2 Digital Component
Quantization	3G/HD/SD-SDI: 10-bit
Genlock Input	BB: NTSC: 0.429 Vp-p / PAL: 0.45 Vp-p; or Tri-level Sync: 0.6 Vp-p, 75Ω BNC x 1, loop-through (Terminate with 75Ω terminator, if unused.)
Synchronizer mode	Frame Sync mode, LineSync mode, AVDL mode, and Line (Minimum) mode
Video Delay	Maximum 8 frames (Frame Sync)
Video Processing Functions	Proc Amp Color Corrector
Process Amp	Video level: 0.0% to 200.0% Chroma level: 0.0% to 200.0% Black level: -20.0% to 100.0% HUE: -179.8° to +180°
Video Clip	YPbPr mode RGB mode
Color Correction	Balance mode Differential mode Sepia mode
Audio Input	
Embedded Audio	3G/HD: 16 channels (Group 1 to 4), 48 kHz, 16 to 24-bit, synchronous/asynchronous, (Link A-embedded audio only in 3G Level B) SD: 16 channels (Group 1 to 4), 48 kHz, 16 to 24-bit,, synchronous only
FA-10AES-BL Option (AES/EBU)	Balanced, 0.2-7 Vp-p, 110Ω, 25-pin D-Sub (female) x 1, input/output, 4 pairs of stereo channels, 32/44.1/48 kHz, 16-bit to 24-bit
FA-10AES-UBL Option (AES/EBU)	Unbalanced, 1.0 Vp-p, 75Ω, BNC x 4, input/output, Maximum 4 pairs of stereo channels, 32/44.1/48 kHz, 16-bit to 24-bit
FA-10ANA-AUD Option (Analog)	<Line input> 4 channels (2 pairs of stereo channels) balanced/unbalanced 25-pin D-Sub (female) x 1 (Shared with analog audio output) 600 ohm/high impedence, 48 kHz, 24-bit Input level: -10 dBu to +8 dBu <Mic input> 2 channels (1 pair of stereo channels) balanced/unbalanced (Shared with the analog audio input CH1/2 connector) 600 ohm/high impedence, 48 kHz, 24-bit Input level: -55 dBu to -30 dBu

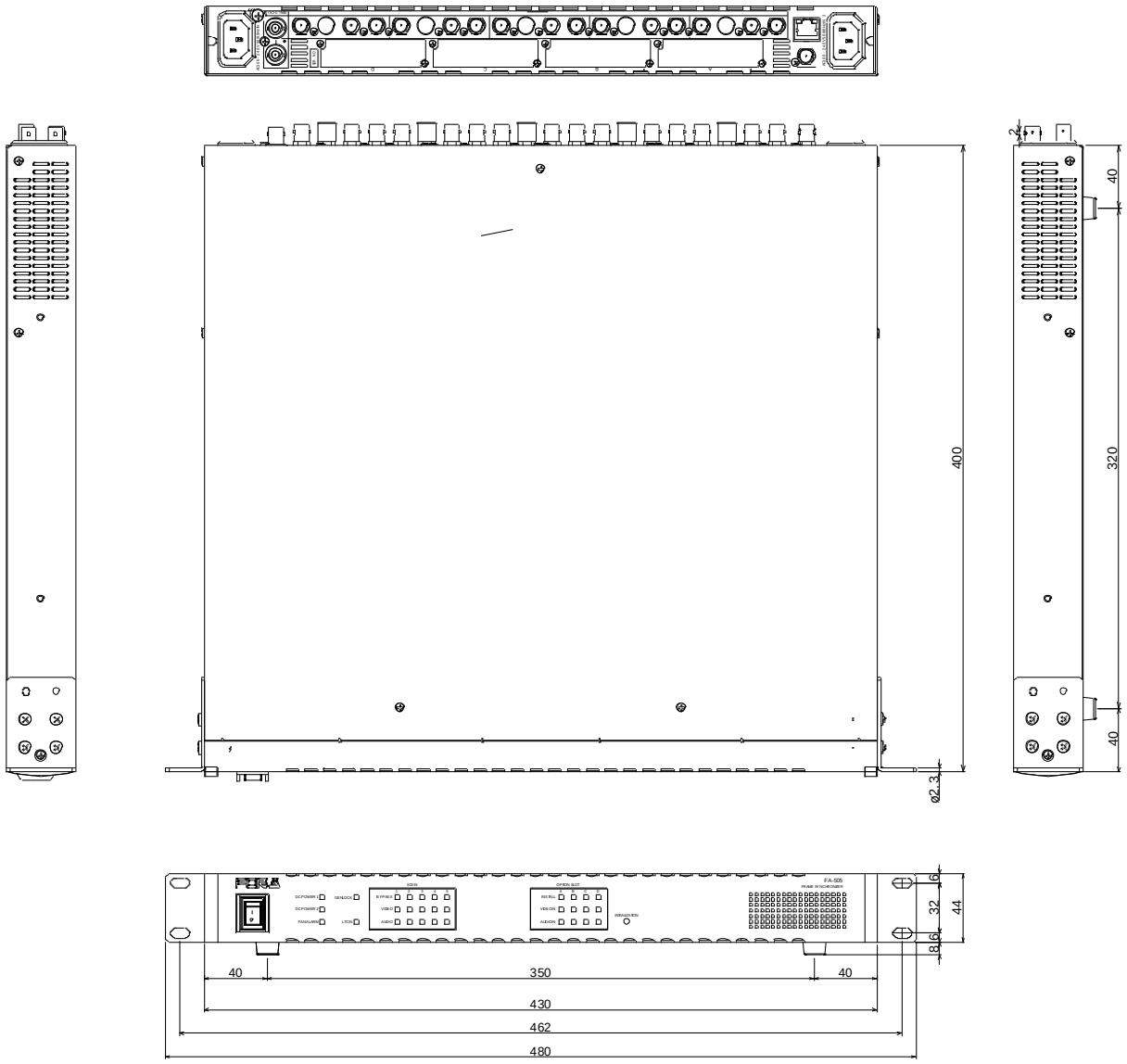
Audio Output	
Embedded Audio	3G/HD: 16 channels (Group 1 to 4), 48 kHz, 16/20/24-bit, synchronous/asynchronous, (Link A-embedded audio only in 3G Level B) SD: 12 channels (Group 1 to 3), 48 kHz, 16/20/24-bit, synchronous only
FA-10AES-BL Option (AES/EBU)	Balanced, 3.3 Vp-p, 110Ω, 25-pin D-Sub (female) x 1, input/output, 4 pairs of stereo channels, 48 kHz, 16/20/24-bit
FA-10AES-UBLC Option (AES/EBU)	Unbalanced, 1.0 Vp-p, 75Ω, BNC x 4, (The FA-10AES-UBL functions as an input card when used with the FA-10AES-UBLC.) 4 pairs of stereo channels, 48 kHz, 16/20/24-bit
FA-10ANA-AUD Option (Analog)	4 channels (2 pairs of stereo channels) balanced/unbalanced 25-pin D-Sub (female) x 1 (Shared with analog audio input) 100 ohm or lower, 48 kHz, 24-bit Output level: -10 dBu to +8 dBu
Audio Delay	5 - 1,000 ms (adjustable in 1 ms steps)
Audio Processing Functions	Sampling rate converter (SRC) Gain control Down mix Channel re-mapping Channel mute
Interface	
Ethernet	100 Base-TX / 1000 Base-T, RJ-45 x 1
FA-10GPI Option	25-pin D-sub (female)
Temperature	0ºC to 40ºC
Humidity	30% to 90% (no condensation)
Power	100 VAC - 240 VAC ±10%, 50/60 Hz
Power Consumption	FA-505: 80 VA (79W) (at 100 - 120 VAC) 90 VA (77 W) (at 220 - 240 VAC) with FA-50PS: 90 VA (86 W) (at 100 - 120 VAC) 108VA (78 W) (at 220 - 240 VAC) Add the amount of power consumption of options installed: FA-10AES-BL: 4.3 VA (4.2 W) (at 100 - 120 VAC) 3.48 VA (3.8 W)(at 220 - 240 VAC) FA-10AES-UBL: 2.86 VA (3 W) (at 100 - 120 VAC) 3.12 VA (3.1 W)(at 220 - 240 VAC) FA-10GPI: 4.6 VA (4.8 W) (at 100 - 120 VAC) 4.1 VA (4.3 W)(at 220 - 240 VAC)
Dimensions	430 (W) x 400 (D) x 44 (H) mm
Weight	FA-505: 7.0 kg (without options) FA-10AES-BL: 0.2 kg FA-10AES-UBL: 0.2 kg FA-10AES-UBLC: 0.1 kg FA-10ANA-AUD: 01 kg FA-10GPI: 0.2 kg
Consumables	(Recommended replacement timespans) Power unit (within 3 years) Cooling fan: P-1439-2 (FAN 1 - 4) (within 5 years)
Accessories	CD-ROM(Windows GUI installation disc (including operation manual), AC cord, rack mount brackets
Options	◇FA-10AES-BL: Digital audio balanced I/O option ◇FA-10AES-UBL: Digital audio unbalanced I/O option ◇FA-10AES-UBLC: Digital audio unbalanced output expansion cable ◇FA-10ANA-AUD: Analog audio input/output option ◇FA-10GPI: GPI 10 each input/ output option

◇FA-50PS: Redundant power supply unit
◇FA-10RU: Remote Control Unit
◇FA-10DCCRU: Color Corrector Remote Control Unit
◇FA-AUX30: Auxiliary Unit

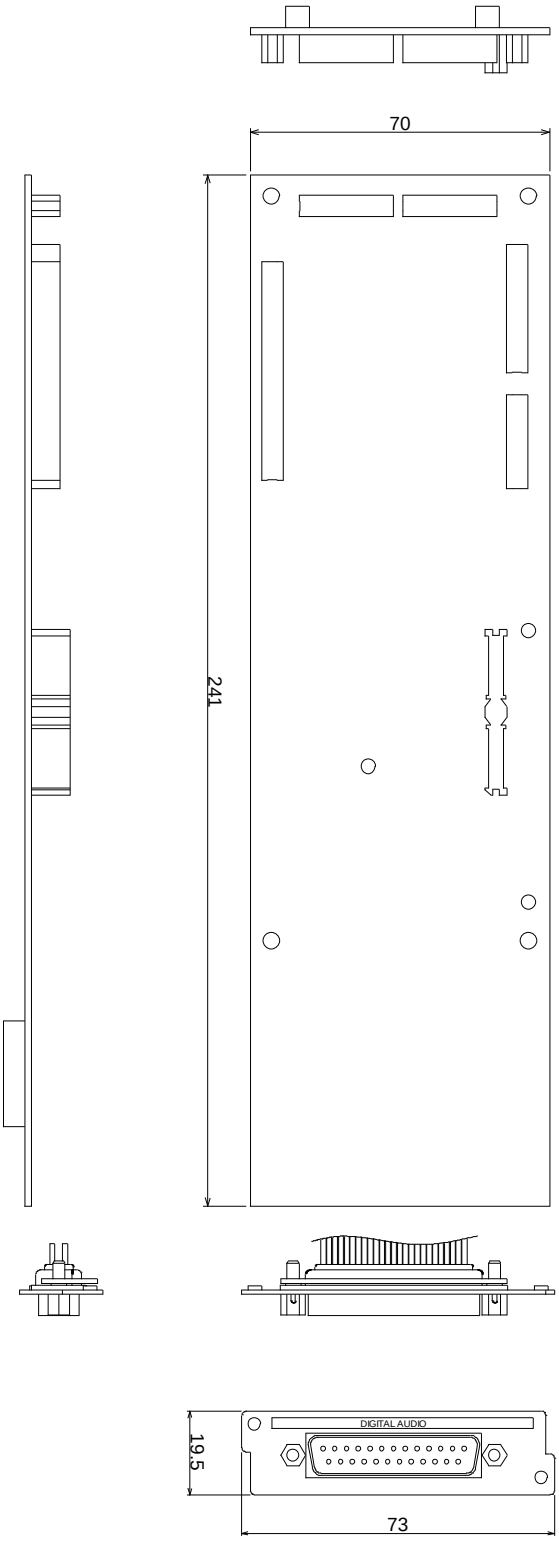
15-2. External Dimensions

15-2-1. FA-505

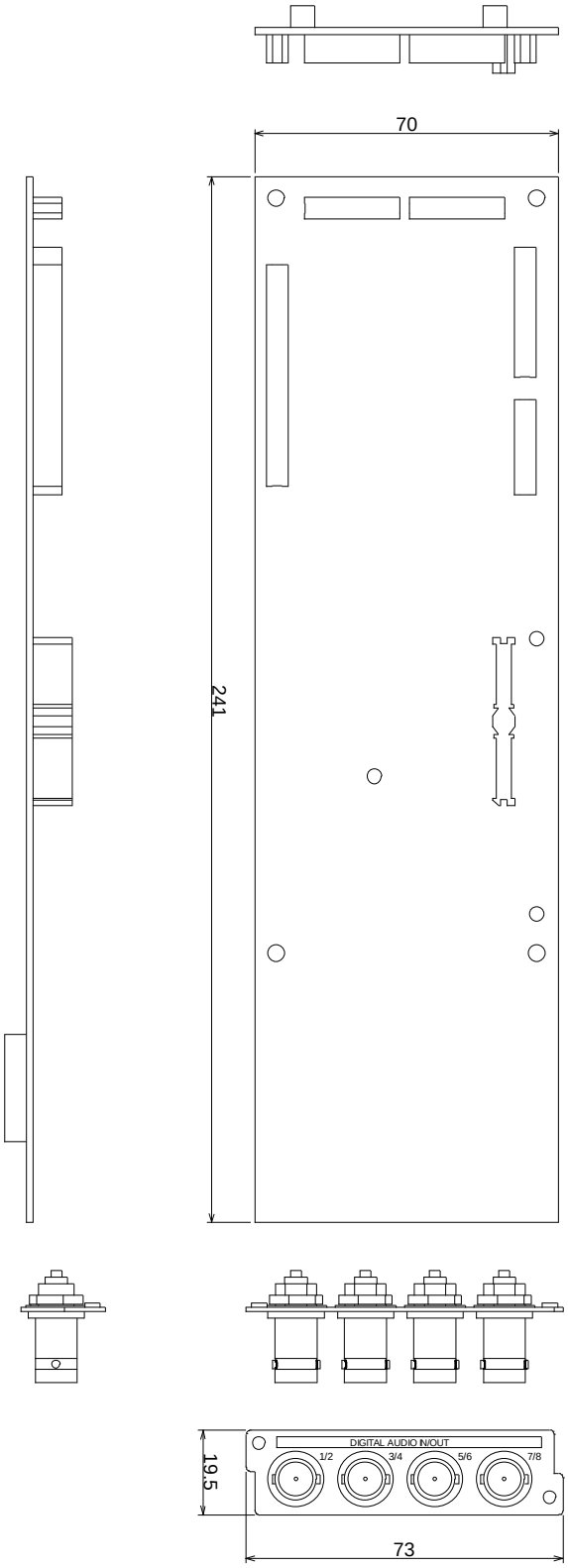
(All dimensions in mm)



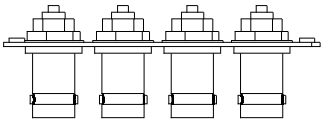
15-2-2. FA-10AES-BL (Option)

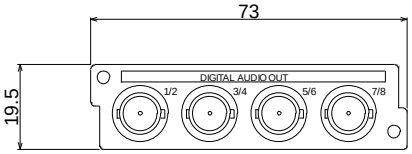


15-2-3. FA-10AES-UBL (Option)

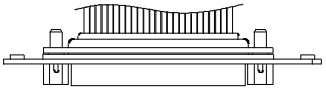


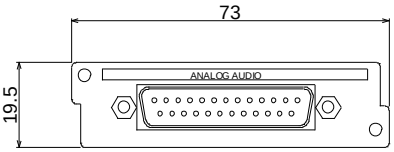
15-2-4. FA-10AES-UBLC (Option)



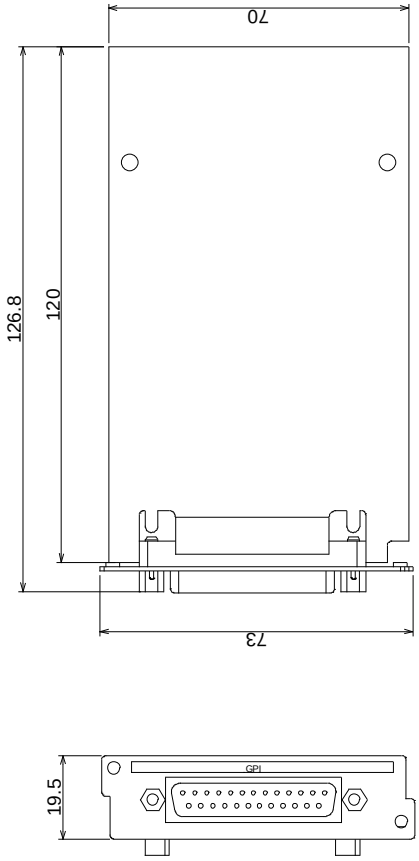


15-2-5. FA-10ANA-AUD (Option)





15-2-6. FA-10GPI (Option)



Warning

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

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