

OPERATION MANUAL

FRC-9100

Frame Rate Converter

FRC-912C

FRC-914K

FRC-90DA

FRC-90DM

3rd Edition





Edition Revision History

Edit.	Rev.	Date	Description	Section/Page
1	-	2019/05/27	First edition	
2	-	2020/07/30	Added SNMP monitoring. Changed Front Panel Auto Reboot description. Changed option names (FRC-912C, FRC-914K)	6-8 8-7-5
3	-	2021/02/02	Changed audio delay settings Supported 12G-SDI.	6-5-1-14 to 16 8-4-7 Throughout



Precautions

Important Safety Warnings




[Power]

 Caution	Operate unit only at the specified supply voltage.
 Caution	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.
 Caution	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]

 Hazard	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]

	<p>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.</p>
 <p>Stop</p>	<p>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.</p>
 <p>Hazard</p>	<p>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.</p>


[Potential Hazards]

 <p>Caution</p>	<p>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.</p>
--	---

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

 <p>Caution</p>	<p>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.</p>
--	--

[Consumables]

 <p>Caution</p>	<p>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.</p>
--	---

Upon Receipt

FRC-9100 units and their accessories are fully inspected and adjusted prior to shipment. 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.

◆ FRC-9100 box

ITEM	QTY	REMARKS
FRC-9100	1	
EIA Rack Mount Brackets	1 set	Includes 8 screws.
AC Cord	2 sets	Includes AC cord clamp (See below for installation instructions).
CD-ROM	1	Operation Manuals (PDF) Dolby Metadata Configure GUI software installer
Packing List	1	

◆ Option

ITEM	QTY	REMARKS
FRC-912C	1	3G/HD/SD-SDI 2ch Option for FRC-9100
FRC-914K	1	4K Option for FRC-9100
FRC-90DA	1	Digital Audio Input / Output card
FRC-90DM	1-4	Dolby® E Encoder/Decoder card

Trademarks

Manufactured under license from Dolby Laboratories. **Dolby** and the **double-D symbol** are trademarks of Dolby Laboratories.

Microsoft, Windows and **Internet Explorer** are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Intel and **Intel Core** are trademarks of Intel Corporation in the U.S. and/or other countries.

Firefox is a registered trademark of the Mozilla Foundation.

Chrome is a registered trademark of Google, Inc.

AC Cord Clamp Installation

- 1) Insert the anchor into the hole next to the AC inlet.
- 2) Plug in the AC cord.
- 3) Adjust the strap length to fit.
- 4) Wrap the AC cord clamp around the AC cord.
- 5) Gently pull on the AC cord to ensure it has been securely plugged in.

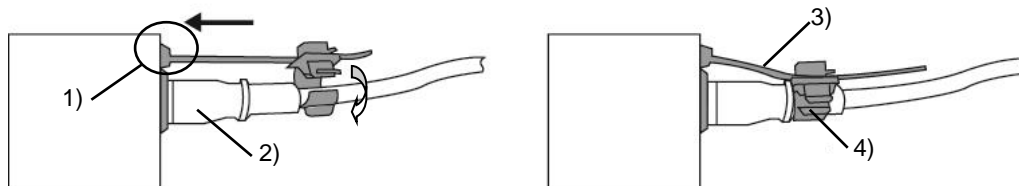


Table of Contents

1. Prior to Starting.....	9
1-1. Overview	9
1-2. Features	9
1-3. Supported Formats	10
2. Panel Descriptions.....	11
2-1. Front Panel.....	11
2-2. Rear Panel	12
3. Connections.....	14
3-1. 3G/HD/SD-SDI 1-Channel Conversions	14
3-2. 3G/HD/SD-SDI 2-Channel Conversions (with FRC-912C).....	14
3-3. Conversions between 4K Signals (with FRC-914K)	15
3-4. Conversions from HD to 4K (with FRC-914K)	16
3-5. Conversions from 4K to HD (with FRC-914K)	17
4. Operation	18
5. System Requirements	18
6. Web Browser Control (SD/HD to HD Mode)	19
6-1. Connection between Web Browser and FRC-9100.....	19
6-2. STATUS Page [Web]	19
6-2-1. [STATUS - General].....	19
6-2-2. [STATUS - Video]	20
6-2-3. [STATUS - Emb. Audio IN]	20
6-2-4. [STATUS - Emb. Audio OUT]	21
6-2-5. [STATUS - Timecode].....	21
6-2-6. [STATUS - AES IN/OUT] (FRC-90DA).....	22
6-2-7. [STATUS - Dolby] (FRC-90DM).....	22
6-2-8. [STATUS - Version]	23
6-3. SYSTEM Page [Web].....	24
6-3-1. [SYSTEM - Channel A]	24
6-3-2. Channel B (SYSTEM).....	26
6-3-3. [SYSTEM - General]	26
6-4. VIDEO Page [Web]	28
6-4-1. [VIDEO - Channel A].....	28
6-4-1-1. Conversion Settings	28
6-4-1-2. Extension Settings.....	30
6-4-1-3. Area Marker Settings.....	30
6-4-1-4. Effective Area Settings	30
6-4-1-5. Text Area 1-4 Settings.....	31
6-4-2. [VIDEO - Channel B].....	32
6-5. AUDIO Page [Web]	33
6-5-1. [AUDIO - Channel A]	34
6-5-1-1. SDI SRC Settings	34
6-5-1-2. AES SRC Settings.....	34
6-5-1-3. SDI Polarity Settings.....	34
6-5-1-4. AES Polarity Settings	35
6-5-1-5. Dolby Decoder Polarity Settings.....	35
6-5-1-6. Down Mix Settings.....	36
6-5-1-7. Mono Sum 1-8 Settings.....	37
6-5-1-8. Mapping SDI Settings.....	38
6-5-1-9. Mapping AES Settings.....	38
6-5-1-10. Mapping Dolby Encoder Settings	39
6-5-1-11. Gain SDI Settings	40

6-5-1-12. Gain AES Settings.....	41
6-5-1-13. Gain Dolby Encoder Settings	41
6-5-1-14. Delay SDI Settings	42
6-5-1-15. Delay AES Settings	44
6-5-1-16. Delay Dolby Encoder Settings.....	45
6-5-1-17. Embedded Audio Multiplex Settings (SDI)	45
6-5-1-18. Test Signal/Mute Settings	46
6-5-1-19. Dolby Decoder Settings.....	46
6-5-1-20. Dolby Encoder Settings.....	47
6-5-1-21. External Metadata Output Settings	48
6-5-2. [AUDIO - Channel B]	48
6-5-3. [AUDIO - General]	49
6-5-3-1. SDI IN 1 Embedded Audio Demultiplex Settings	49
6-5-3-2. SDI IN 2 Embedded Audio Demultiplex Settings	50
6-5-3-3. Digital Audio Settings	50
6-6. ANCILLARY Page [Web]	51
6-6-1. [ANCILLARY - Metadata].....	51
6-6-1-1. Audio Metadata Demultiplexer Settings	51
6-6-1-2. Audio Metadata Multiplexer Settings	52
6-6-2. [ANCILLARY – Timecode]	53
6-6-2-1. TCR Input Settings	53
6-6-2-2. TCG Output Settings	54
6-6-2-3. TCG Mode Settings	54
6-6-2-4. TC Time Settings.....	56
6-7. UTILITY Page [Web].....	57
6-7-1. Event Memory Settings.....	57
6-7-2. Setting Not Saved in Event Memory.....	58
6-7-3. System Reboot	58
6-7-4. Video Test Signal Settings.....	58
6-7-5. Relay Bypass Settings.....	59
6-8. NETWORK Page [Web].....	60
6-8-1. Network Settings.....	60
6-8-2. Factory Shipment Network Settings	61
6-8-3. SNMP Setting	61
6-8-4. Get / Set List	62
6-8-5. Get List.....	66
6-8-6. Trap List.....	68
7. Web Browser Control (Other modes than SD/HD to HD)	69
7-1. Connection between Web Browser and FRC-9100.....	69
7-2. STATUS Page [Web]	69
7-3. SYSTEM Page [Web].....	69
7-4. VIDEO Page [Web]	72
7-5. AUDIO Page [Web].....	73
7-6. ANCILLARY Page [Web]	73
7-7. UTILITY Page [Web].....	73
7-8. NETWORK Page [Web].....	73
8. Front Touch Panel Operation	74
8-1. Front Panel LOCK / UNLOCK.....	74
8-2. SYSTEM Menu [Panel]	74
8-2-1. Channel A/B Selection.....	74
8-2-2. General Settings	75
8-2-3. Miscellaneous Settings	75
8-2-3-1. 3G/HD/SD-SDI Input Format.....	76
8-2-3-2. 3G/HD-SDI Output Format	78
8-2-3-3. Aspect Ratio	79

8-2-3-4. System Phase	79
8-2-3-5. Genlock Input	80
8-2-3-6. Video Genlock Status	80
8-2-3-7. Version Information	80
8-2-3-8. Unit Alarm	81
8-2-3-9. Audio Status	81
8-3. VIDEO Menu [Panel].....	82
8-3-1. Conversion Mode.....	82
8-3-2. Conversion Settings.....	83
8-3-3. Extension Settings	83
8-3-4. Area Marker	83
8-3-5. Effective Area.....	83
8-3-6. Text Area	84
8-4. AUDIO Menu [Panel].....	84
8-4-1. SRC	85
8-4-2. Polarity	85
8-4-3. Down Mix	85
8-4-4. Mono Sum.....	86
8-4-5. Mapping	87
8-4-6. Gain	87
8-4-7. Delay.....	88
8-4-8. Mux	88
8-4-9. SDI Test Signal / Mute (Channel A).....	89
8-4-10. Dolby Decoder	89
8-4-11. Dolby Encoder	90
8-4-12. External Metadata.....	90
8-4-13. Audio (General)	90
8-5. ANCILLARY Menu [Panel].....	92
8-5-1. ANCILLARY Menu [Panel] – Metadata	92
8-5-1-1. Metadata Demultiplex.....	93
8-5-1-2. Metadata Multiplex	93
8-5-2. ANCILLARY Menu [Panel] - Timecode	93
8-5-2-1. TCR Input Settings	94
8-5-2-2. TCG Output Settings	94
8-5-2-3. TCG Counter	94
8-5-2-4. TCG Mode Settings.....	94
8-6. UTILITY Menu [Panel].....	95
8-6-1. Event Control	95
8-6-2. Video Test Signal Settings.....	96
8-6-3. Relay Bypass Settings.....	96
8-6-4. NETWORK Menu.....	97
8-6-5. Front Panel Auto Reboot	97
9. Dolby Metadata Configure GUI	98
9-1. Downloading / Editing / Uploading Metadata	99
9-1-1. Copy Metadata between Programs	100
9-1-2. Copy Metadata between Modules	100
9-2. Dolby Metadata	101
9-3. Installing the Dolby Metadata Configure GUI	103
10. Specifications and Dimensions	105
10-1. Specifications	105
10-2. External Dimensions	106

1. Prior to Starting

1-1. Overview

The FRC-9100 uses motion compensation processing by motion vectors to convert field frequencies and enables conversion between different 12G/3G/HD frame rates, as well as up conversion from SD to 3G/HD. The FRC-9100 is ideal for converting the frame rate prior to transmitting at international sporting events, for example.

1-2. Features

- 4K (12G-SDI, Quad Link 3G/HD-SDI) support (optional)
Various frame-rates conversions, Level A/B and SQD/2SI conversions are supported.
Up/down/cross frame rate conversions between 4K UHD TV (3840 x 2160p) and HD (1920 x 1080p/i, 1280 x 720p).
- 3G/HD/SD multi-format support
3G/HD/SD-SDI input and 3G/HD output
Frame rate conversion of 1080p, 1080i, and 720p
Frame rate and up conversions from SD-SDI to 3G/HD-SDI.
- 2-channel Independent Conversion (option)
Different frame rate conversions of two 3G/HD/SD-SDI systems
- Conversion with Motion Compensation Processing
Suppresses resolution degradation caused by frequency conversion.
- Scene Cut Detection
The Scene Cut Detection feature can detect scene cuts automatically to avoid overcorrection in consecutive frames.
- Moving Text Detection
The Moving Text Detection feature can automatically detect moving texts for correction.
- Genlock
The converted video signals can be synchronized to an external reference signal. Two dedicated reference inputs are provided and Tri-level sync or Black burst signals can be selected for both inputs.
- Interlace-to-Progressive conversion
Adaptive interlace-to-progressive conversion produces clear/smooth progressive output.
- Embedded Audio Support
Supports 16-Channel 48 kHz 24-bit embedded audio for 3G/HD input and 16-Channel 20-bit or 12-Channel 24-bit embedded audio for SD input.
Audio delay allows video and audio synchronous conversions.
- Test signal
Color bar and ramp signals for video and 1 kHz and 500 Hz signals for audio
- FRC-90DA (Option)
AES/EBU digital audio support
- FRC-90DM (Option)
Dolby E audio Encoder/Decoder (FRC-90DA required)

1-3. Supported Formats

		Output			
		2160p/ 59.94, 50, 30, 29.97, 25, 24, 23.98 (*1)	1080p/ 60, 59.94, 50, 30, 29.97, 25, 24, 23.98	1080i/ 60, 59.94, 50	720p/ 60, 59.94, 50
Input	2160p/ 59.94, 50, 30, 29.97, 25, 24, 23.98 (*1)	✓	✓	✓	✓
	1080p/ 60, 59.94, 50, 30, 29.97, 25, 24, 23.98	✓	✓	✓	✓
	1080i/ 60, 59.94, 50	✓	✓	✓	✓
	720p/ 60, 59.94, 50	✓	✓	✓	✓
	525/60		✓	✓	✓
	625/50		✓	✓	✓

(*1) FRC-914K required

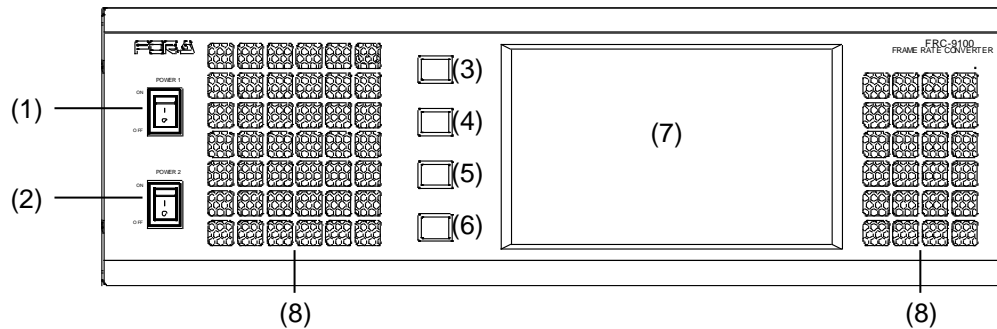
2160p/59.94 and 50 formats support 12G-SDI, 3G/HD-SDI Level-A/B (SQD/2SI) inputs and outputs.





2160p/30, 29.97, 25, 24 and 23.98 formats support Quad 1.5G-SDI (SQD) inputs and outputs.

1080p/60, 59.94 and 50 formats support 3G/HD-SDI Level-A/B inputs and outputs.

2. Panel Descriptions

2-1. Front Panel

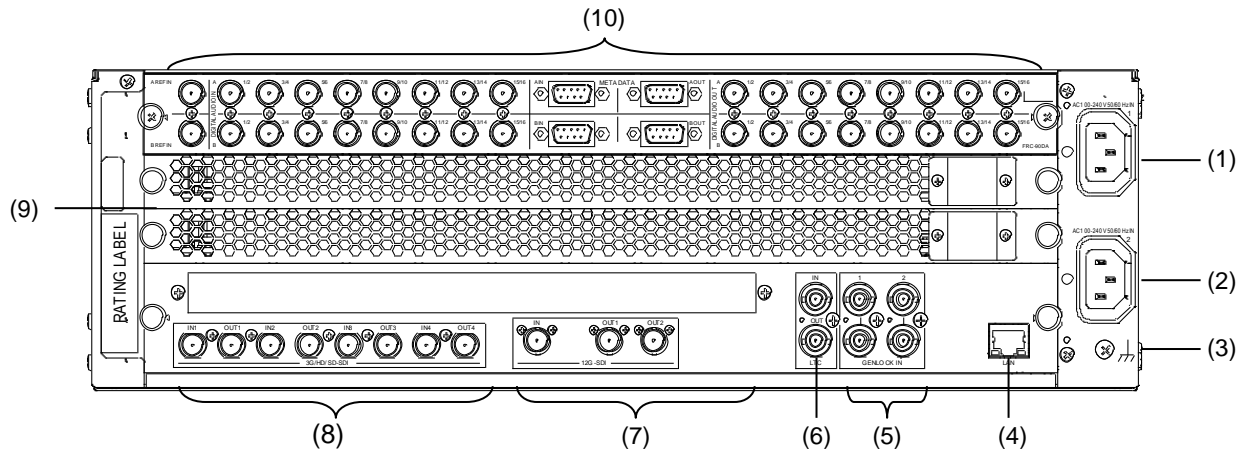


No.	Item	Description	
1	Power Unit 1 switch	Switch used to turn POWER 1 ON / OFF. The FRC-9100 will start at around a minute.	
2	Power Unit 2 switch	Switch used to turn POWER 2 ON / OFF. The FRC-9100 will start at around a minute.	
3	Power indicator	 (Lit blue)	Power is being supplied to the unit.
		POWER1 flashing red	Power failure has occurred on POWER 1. Verify the power connection and turn on the Power 1 switch.
		POWER2 flashing red	Power failure has occurred on POWER 2. Verify the power connection and turn on the Power 2 switch. If a power failure still persists, immediately replace the Power 2 unit.
4	FAN indicator	 (Lit green)	All cooling fans work properly.
		 (Flashing red)	Fan failure has occurred. Contact your FOR-A service representative to replace fan(s). (See Sec. 8-2-3-8. "Unit Alarm.")
5	Video input indicator	 (Lit green)	Video signal is present.
		VIDEO (*1) UNLOCK (Flashing yellow)	Video signal cannot be synced.
		VIDEO (*1) LOSS (Flashing red)	Video signal is not present. (See Sec. 8-2. "SYSTEM Menu [Panel].")
6	Genlock indicator	REF (*2) LOCK (Lit green)	Genlock signal is present and video signals are genlocked.
		REF (*2) UNLOCK (Flashing yellow)	Genlock signal is present, but cannot genlock video signals.
		REF (*2) LOSS (Flashing red)	Genlock signal is not present. (See Sec. 8-2. "SYSTEM Menu [Panel].")
		REF Please Wait ...	Genlock process is in preparation.
		Unlit	Genlock is not working.
7	Touch panel screen	Touch panel screen for displaying menus and enter operational settings. (See Sec. 8 "Front Touch Panel Operation.")	
8	Ventilation Openings	Used to air-cool the device to prevent overheating. Do not block any ventilation openings. Adequate ventilation is required for optimum performance. Ensure no other equipment or object is located, or installed, closer than 5 cm from the front and rear panels of the device.	

(*1) Selecting **Dual Channel** under [SYSTEM - General - General Settings], two video signals are represented as **VID A** and **VID B**.

(*2) Selecting **Dual Channel** under [SYSTEM - General - General Settings], two reference signals are represented as **REF A** and **REF B**.

2-2. Rear Panel



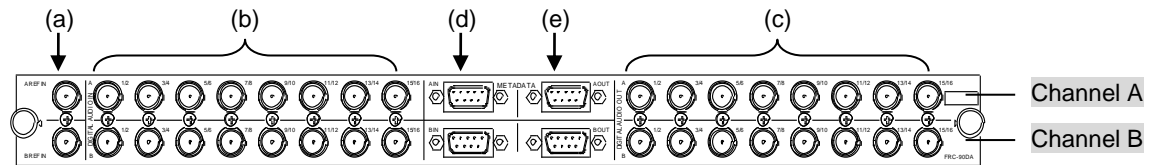
No.	Item	Description
1	AC IN (Power Unit 1)	Used for connection to AC power source via supplied accessory cord. (AC 100 V - 240 V 50/60 Hz)
2	AC IN (Power Unit 2)	Used for connection to AC power source via supplied accessory cord. (AC 100 V - 240 V 50/60 Hz)
3	Ground Terminal	Used to ground the unit to protect operators against static electricity and / or electrical shock.
4	LAN	LAN port (100BASE-TX/1000BASE-T) Used to connect to a computer for web-based control. Default IP address: 192.168.0.10 (See Sec. 6-8. "NETWORK Page [Web]" and 8-6-4. "NETWORK Menu.")
5	GENLOCK IN 1 GENLOCK IN 2	Used to input an external reference signal (Black Burst signal or Tri-level sync signal). The other connector is a loop through of the input. The loop through connector must be 75 ohm terminated if it isn't connected to other system equipment. (GENLOCK IN 1 or GENLOCK IN 2 input signal selectable)
6	LTC IN/OUT	Used to input and output timecode. (Currently unavailable)
7	12G-SDI IN 12G-SDI OUT1-2	Used for 12G-SDI connection. Standard configuration: Not used. FRC-914K enabled: Use 12G-SDI IN to input a single 4K video source, then the converted signal is output from 12G-SDI OUT.
8	3G/HD/SD-SDI IN 1-4 OUT 1-4	Used for serial digital component video (3G/HD/SD-SDI) input connection. Available inputs and outputs change depending on configured options. Standard configuration: Input a video source to 3G/HD/SD SDI IN 1, then the converted signal is distributed from 3G/HD SDI OUT 1-4. FRC-912C enabled: Input video sources to 3G/HD/SD SDI IN 1 and IN 2, then the converted IN 1 signal is distributed from 3G/HD SDI OUT 1 and 3 and the converted IN 2 signal from 3G/HD SDI OUT 2 and 4. FRC-914K enabled: Use 3G/HD/SD SDI IN 1-4 to input a single 4K video source, then the converted signal is output from 3G/HD SDI OUT 1-4. OUT 1-4 can loop-through IN 1-4 inputs when the FRC is powered off. Bypass-through On/Off can also be changed on the front panel operation. 12G-SDI terminal does not have relay bypass function. (See Sec. 6-7-5. "Relay Bypass Settings" and Sec. 8-6-3. "Relay Bypass Settings.")
9	Ventilation Openings	Used to air-cool the device to prevent overheating. Do not block any ventilation openings. Adequate ventilation is required for optimum performance. Ensure no other equipment or object is located, or installed, closer than 5 cm from the front and rear panels of the device.

(10) FRC-90DA (Option)

The top row provides digital audio input/output for Channel A (1st frame rate converter).

The bottom row provides digital audio input/output for Channel B (2nd frame rate converter).

See Sec. 6-3 “SYSTEM Page [Web]” and Sec. 6-5. “AUDIO Page [Web]” for more details.



a	A REF IN B REF IN	Used to input a reference signal (BB or Tri-level Sync). BNC x 2
b	DIGITAL AUDIO IN A DIGITAL AUDIO IN B	Used to input AES digital audio. 16 channels, BNC x 8 for each Channel
c	DIGITAL AUDIO OUT A DIGITAL AUDIO OUT B	Used to output AES digital audio. 16 channels, BNC x 8 for each Channel
d	METADATA A IN METADATA B IN	Used to input audio metadata for Dolby E Encoder. 9-pin D-sub (female) x 2 (See the table below.) To use this data, select Metadata In A/B under Metadata Input . (See Sec. 6-5-1-20. “Dolby Encoder Settings.”)
e	METADATA A OUT METADATA B OUT	Used to distribute audio metadata output from Dolby E Decoder. 9-pin D-sub (female) x 2 (See the table below.) Output data should be selected under Output in the External Metadata Output Settings (See Sec. 6-5-1-21) menu.

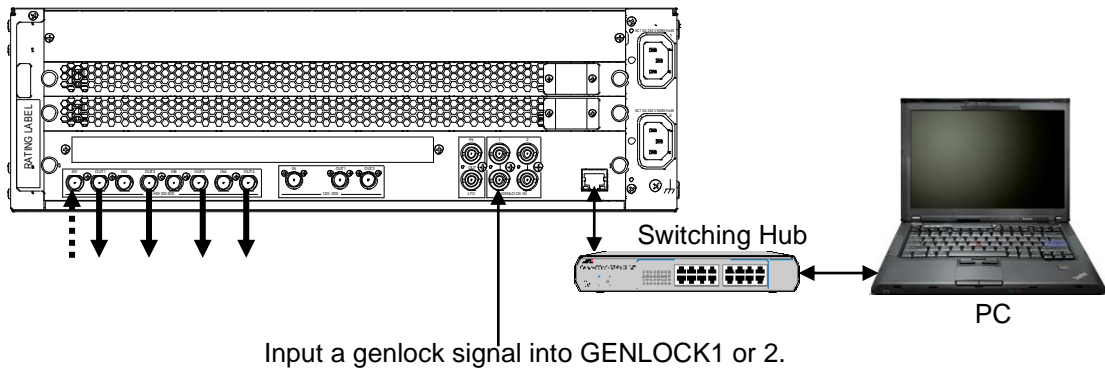
◆ **METADATA (RS-485) connector pin assignments**

METADATA A/B IN	
Pin No.	RS-485
1	Shield
2	TXD -
3	RXD +
4	GND
5	NC
6	GND
7	TXD +
8	RXD -
9	Shield

METADATA A/B OUT	
Pin No.	RS-485
1	Shield
2	RXD -
3	TXD +
4	GND
5	NC
6	GND
7	RXD +
8	TXD -
9	Shield

3. Connections

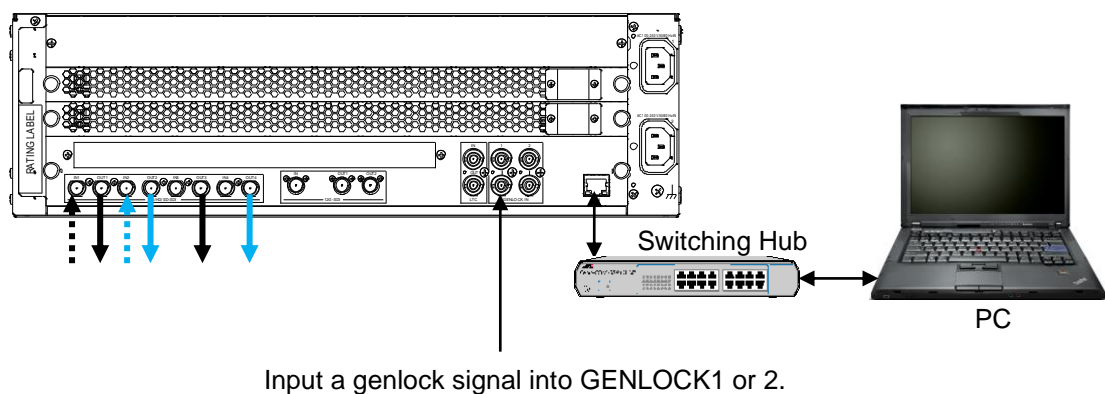
3-1. 3G/HD/SD-SDI 1-Channel Conversions



- ◆ Input a video source into IN 1.
- ◆ The converted signal will be distributed from OUT 1 to 4.
- ◆ When the power is turned off, input signal IN 1 will be output from OUT 1 by a relay bypass.
- ◆ FRC-9100 factory default network settings
IP Address: 192.168.0.10
Subnet mask: 255.255.255.0
Default gateway: 0:0:0:0

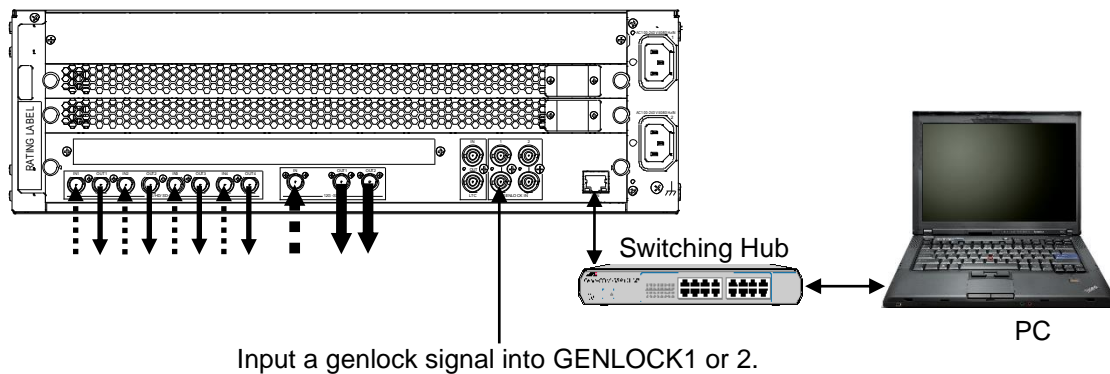
See Sec. 6-8. "NETWORK Page [Web]" or Sec. 8-6-4. "NETWORK Menu" to change FRC-9100 network settings.

3-2. 3G/HD/SD-SDI 2-Channel Conversions (with FRC-912C)



- ◆ Input video sources to IN 1 and IN 2.
- ◆ The converted IN 1 signal will be distributed from OUT 1 and OUT 3.
The converted IN 2 signal will be distributed from OUT 2 and OUT 4.
- ◆ When the power is turned off, IN 1 input will be passed through to OUT 1 and IN 2 to OUT 2 by a relay bypass.
- ◆ FRC-9100 factory default network settings are the same as Sec. 3-1. "3G/HD/SD-SDI 1-Channel Conversions."

3-3. Conversions between 4K Signals (with FRC-914K)

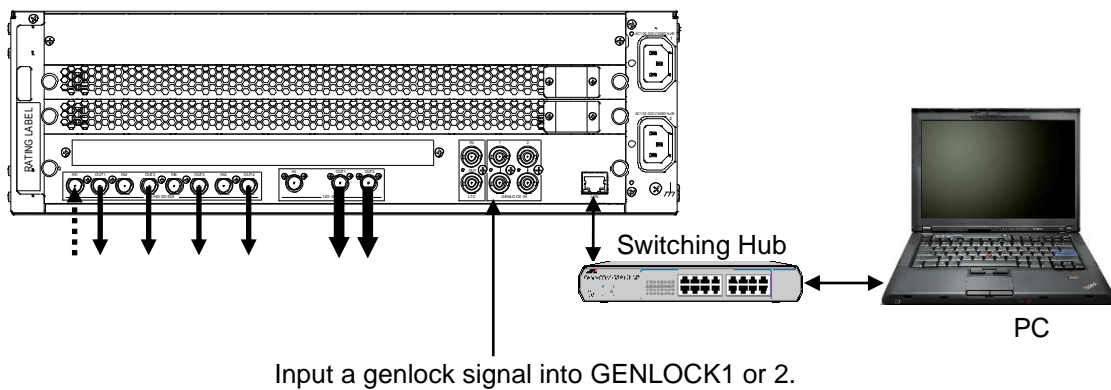


- ◆ Use 3G/HD/SD-SDI IN 1-4 or 12G-SDI IN to input a single 4K video source.
- ◆ The converted 4K signal will be output through 3G/HD/SD-SDI OUT 1-4 or 12G-SDI OUT 1-2.
- ◆ When the power is turned off, 3G/HD/SD-SDI IN 1-4 inputs will be passed through to 3G/HD/SD-SDI OUT 1-4 by a relay bypass. 12G-SDI IN, OUT are not passed through by a relay bypass.
- ◆ FRC-9100 factory default network settings are the same as Sec. 3-1. “3G/HD/SD-SDI 1-Channel Conversions.”
- ◆ Either 3G-SDI or 12G-SDI terminals are available for 4K Input/Output. Select one under Terminal Settings. (See Sec. 6-3-3. “[System – General]” and Sec. 8-2-2. “General Settings” for details.)
Signals are not input or output via unselected terminals.
- ◆ If Output Terminal settings are changed, save settings and reboot the FRC-9100 to apply settings.

There are 3 ways to reboot the FRC-9100 as shown below.

- Turn OFF the power switch on the front panel then ON again. (See Sec. 2-1. “Front Panel” for details.)
- Press the Utility>System Reboot>Reboot button in WEB GUI. (See Sec. 6-7-5. “Relay Bypass Settings” for details.)
- Use the frc9100Reboot in SNMP. (See Sec. 6-8-4. “Get/Set List” for details.)

3-4. Conversions from HD to 4K (with FRC-914K)

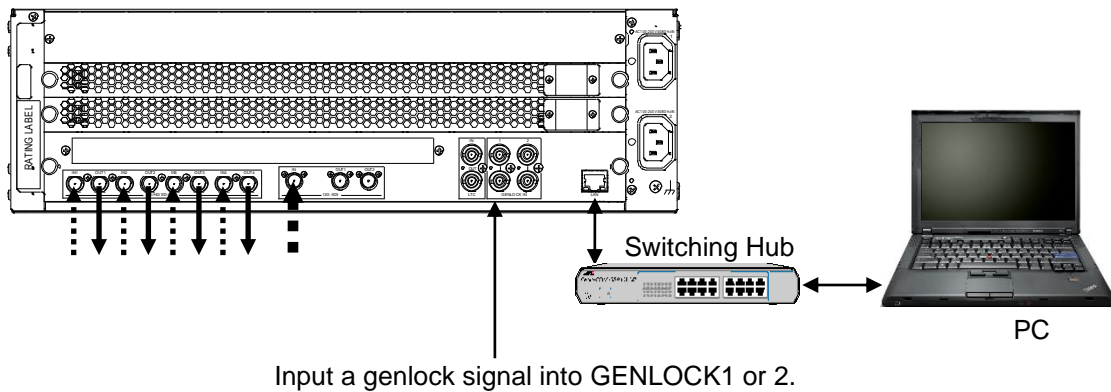


- ◆ Use 3G/HD/SD-SDI IN 1 to input an HD video source.
- ◆ The converted 4K signal will be output through 3G/HD/SD-SDI OUT 1 -4 or 12G-SDI OUT 1-2.
- ◆ When the power is turned off, 3G/HD/SD-SDI IN 1 input will be passed through to 3G/HD/SD-SDI OUT 1 by a relay bypass. 12G-SDI OUT1-2 are not passed through by a relay bypass.
- ◆ FRC-9100 factory default network settings are the same as Sec. 3-1. “3G/HD/SD-SDI 1-Channel Conversions.”
- ◆ Either 3G-SDI or 12G-SDI terminals are available for 4K Output. Select one under Terminal Settings. (See Sec. 6-3-3. “[System – General]” and Sec. 8-2-2. “General Settings” for details.)
Signals are not input or output via unselected terminals.
- ◆ If Output Terminal settings are changed, save settings and reboot the FRC-9100 to apply settings.

There are 3 ways to reboot the FRC-9100 as shown below.

- Turn OFF the power switch on the front panel then ON again. (See Sec. 2-1. “Front Panel” for details.)
- Press the Utility>System Reboot>Reboot button in WEB GUI. (See Sec. 6-7-5. “Relay Bypass Settings” for details.)
- Use the frc9100Reboot in SNMP. (See Sec. 6-8-4. “Get/Set List” for details.)

3-5. Conversions from 4K to HD (with FRC-914K)



- ◆ Use 3G/HD/SD-SDI IN 1-4 or 12G-SDI to input a single 4K video source.
- ◆ The converted HD signal will be output through 3G/HD/SD-SDI OUT 1-4 (4 same video signals).
- ◆ When the power is turned off, 3G/HD/SD-SDI IN 1-4 input will be passed through to 3G/HD/SD-SDI OUT 1-4 by a relay bypass. 12G-SDI OUT1-2 are not passed through by a relay bypass.
- ◆ FRC-9100 factory default network settings are the same as Sec. 3-1. “3G/HD/SD-SDI 1-Channel Conversions.”
- ◆ Either 3G-SDI or 12G-SDI terminals are available for 4K Output. Select one under Terminal Settings. (See Sec. 6-3-3. “[System – General]” and Sec. 8-2-2. “General Settings” for details.)
Signals are not input or output via unselected terminals.
- ◆ If Output Terminal settings are changed, save settings and reboot the FRC-9100 to apply settings.

There are 3 ways to reboot the FRC-9100 as shown below.

- Turn OFF the power switch on the front panel then ON again. (See Sec. 2-1. “Front Panel” for details.)
- Press the Utility>System Reboot>Reboot button in WEB GUI. (See Sec. 6-7-5. “Relay Bypass Settings” for details.)
- Use the frc9100Reboot in SNMP. (See Sec. 6-8-4. “Get/Set List” for details.)

4. Operation

There are two ways to operate FRC-9100, one is via web browser on a computer and another is through the FRC-9100 front touch panel control. See Sec. 6 “Web Browser Control (SD/HD to HD Mode)” and Sec. 7 “Web Browser Control (Other Modes than SD/HD to HD)” for web browser control, and Sec. 8 “Front Touch Panel Operation” for front touch panel control.

When the FRC-912C option is installed, Channels A and B become selectable. Select Channel A for the first frame rate converter and Channel B for the second frame rate converter.

5. System Requirements

To operate FRC-9100 Web GUI and Dolby Metadata Configure GUI, your computer must meet the following requirements.

OS	Windows® 7, 8 ,10 operating system Professional (32/64bit)
CPU	Intel® Core™ 2 Duo processor 2 GHz or faster
Memory	2 GB or more
Display	1280×1024 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
Web browser	Chrome: Ver. 49.0.2622.112m or later Firefox: Ver. 45.0.1 or later IE 11: Ver. 11.0.9600.18230 or later * Do not use Microsoft Edge which is not applicable. * Required for using FRC-9100 Web GUI
.NET Framework	.NET Framework 4.5.1 or later * Required for using Dolby Metadata Configure GUI

* FRC-9100 does not support Mac OS.

6. Web Browser Control (SD/HD to HD Mode)

6-1. Connection between Web Browser and FRC-9100

FRC-9100 factory shipment default network settings are:

IP address	192.168.0.10
Subnet mask	255.255.255.0
Default gateway	0.0.0.0

Set the IP addresses of the computer and peripherals on the same segment so as not to conflict with the FRC-9100 IP address. Connect the FRC-9100 and computer by LAN.

Start the web browser on the computer and connect with 192.168.0.10.

FRC-9100 settings are shown on the web browser. To change FRC-9100 network settings, refer to Sec. 6-8 “NETWORK Page [Web]” or Sec. 8-6-4. “NETWORK Menu” for details. When connection with FRC-9100 is established, Status of Main window opens.

6-2. STATUS Page [Web]

6-2-1. [STATUS - General]

Select **STATUS** then the **General** tab to open a web page as shown below.



- ◆ **Unit Status**
 - Error: Operating status
 - Version: Version information
Selecting **Version** allows you to show detailed information.
 - Serial Number: Unit's serial number
 - MAC Address: Network MAC address
- ◆ **Option Status**
 - Displays the option installation status.
- ◆ **Channel A Status**
 - Displays the convert status of the first frame rate converter.
 - Conversion: Signal formats before and after frame rate conversion
 - Genlock: Genlock status of the output video signal
- ◆ **Channel B Status (FRC-912C required)**
 - Displays the convert status of the second frame rate converter.
 - Conversion: Signal formats before and after frame rate conversion
 - Genlock: Genlock status of the output video signal

6-2-2. [STATUS - Video]

Selecting **Video** in the **STATUS** tab opens a web page as shown below.



◆ Input Video Status

Input video format. Converter input and channels are displayed under Assign.

◆ Genlock Status

Genlock signal format. Converter reference and channels are displayed under Assign.

◆ Output Video Status

Output video format. Converter output and channels are displayed under Assign.

6-2-3. [STATUS - Emb. Audio IN]

Selecting **Emb. Audio IN** in the **STATUS** tab opens the window as shown below.



◆ SDI IN 1 to SDI IN 4 Audio Status is displayed.

Embedded audio status on the SDI IN 1 to SDI IN 4 streams.

Input assignments and signal information is displayed under Assign.

6-2-4. [STATUS - Emb. Audio OUT]

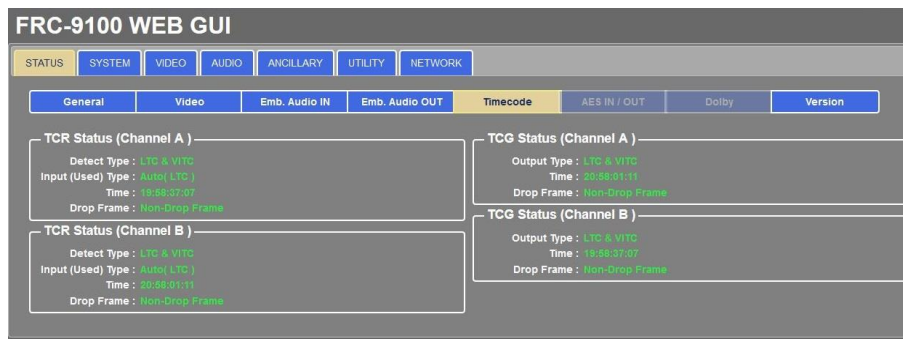
Selecting **Emb. Audio OUT** in the **STATUS** tab opens the window as shown below.



- ◆ **SDI OUT 1 to SDI OUT 4 Audio Status is displayed**
Embedded audio status on the SDI OUT 1 to SDI OUT 4 streams.
Output assignments and signal information is displayed under Assign.

6-2-5. [STATUS – Timecode]

Selecting **Timecode** in the **STATUS** tab opens the window as shown below.



- ◆ **TCR Status (Channel A / B)**
Detect Type : Input video timecode type
Input (Used) Type : Using input video timecode type
Time : Input video timecode
Drop Frame : Input video drop frame type
- ◆ **TCG Status (Channel A / B)**
Output Type : Output video timecode type
Time : Output video timecode
Drop Frame : Output video drop frame type

6-2-6. [STATUS - AES IN/OUT] (FRC-90DA)

Selecting **AES IN/OUT** in the **STATUS** tab opens the window as shown below.

FRC-9000 WEB GUI

STATUS SYSTEM VIDEO AUDIO ANCILLARY UTILITY NETWORK

General Video Emb. Audio IN Emb. Audio OUT TimeCode **AES IN / OUT** Dolby Version

AES IN A Audio Status

Ch. 1 : Non-PCM 32000	Ch. 9 : Non-PCM 32000
Ch. 2 : PCM(Stereo) 44 1000	Ch. 10 : PCM(Stereo) 44 1000
Ch. 3 : PCM 48000	Ch. 11 : PCM 48000
Ch. 4 : Loss	Ch. 12 : Loss
Ch. 5 : Non-PCM 32000	Ch. 13 : Non-PCM 32000
Ch. 6 : PCM(Stereo) 44 1000	Ch. 14 : PCM(Stereo) 44 1000
Ch. 7 : PCM 48000	Ch. 15 : PCM 48000
Ch. 8 : Loss	Ch. 16 : Loss

AES OUT A Audio Status

Ch. 1 : Loss	Ch. 9 : Loss
Ch. 2 : Loss	Ch. 10 : PCM Bypassed
Ch. 3 : PCM Bypassed	Ch. 11 : PCM Bypassed
Ch. 4 : PCM Bypassed	Ch. 12 : PCM(Stereo) Bypassed
Ch. 5 : PCM(Stereo) Bypassed	Ch. 13 : PCM(Stereo) Bypassed
Ch. 6 : PCM(Stereo) Bypassed	Ch. 14 : Non-PCM Bypassed
Ch. 7 : Non-PCM	Ch. 15 : Non-PCM
Ch. 8 : Non-PCM	Ch. 16 : Loss Bypassed

AES IN B Audio Status

Ch. 1 : Non-PCM 32000	Ch. 9 : Non-PCM 32000
Ch. 2 : PCM(Stereo) 44 1000	Ch. 10 : PCM(Stereo) 44 1000
Ch. 3 : PCM 48000	Ch. 11 : PCM 48000
Ch. 4 : Loss	Ch. 12 : Loss
Ch. 5 : Non-PCM 32000	Ch. 13 : Non-PCM 32000
Ch. 6 : PCM(Stereo) 44 1000	Ch. 14 : PCM(Stereo) 44 1000
Ch. 7 : PCM 48000	Ch. 15 : PCM 48000
Ch. 8 : Loss	Ch. 16 : Loss

AES OUT B Audio Status

Ch. 1 : Loss	Ch. 9 : Loss
Ch. 2 : Loss	Ch. 10 : PCM Bypassed
Ch. 3 : PCM Bypassed	Ch. 11 : PCM Bypassed
Ch. 4 : PCM Bypassed	Ch. 12 : PCM(Stereo) Bypassed
Ch. 5 : PCM(Stereo) Bypassed	Ch. 13 : PCM(Stereo) Bypassed
Ch. 6 : PCM(Stereo) Bypassed	Ch. 14 : Non-PCM Bypassed
Ch. 7 : Non-PCM	Ch. 15 : Non-PCM
Ch. 8 : Non-PCM	Ch. 16 : Loss Bypassed

- ◆ **AES IN A/B Audio Status**
Displays the DIGITAL AUDIO IN A/B input audio status.
- ◆ **AES OUT A/B Audio Status**
Displays the DIGITAL AUDIO OUT A/B output audio status.

6-2-7. [STATUS - Dolby] (FRC-90DM)

Selecting **Dolby** in the **STATUS** tab opens the window as shown below.

FRC-9100 WEB GUI

STATUS SYSTEM VIDEO AUDIO ANCILLARY UTILITY NETWORK

General Video Emb. Audio IN Emb. Audio OUT Timecode AES IN / OUT **Dolby** Version

Dolby Module A-1 Decoder Status

Bit Depth : Not Dolby E
Frame Rate : Not Dolby E
Program Config : Not Dolby E

Dolby Module B-1 Decoder Status

Bit Depth : 20 Bit
Frame Rate : 23.97Hz
Program Config : 5.1 + 2

A REF IN Status

Status : Loss

B REF IN Status

Status : S.B. (H130)

- ◆ **Dolby Module A-1/A-2/B-1/B-2 Decoder Status**
Displays the Dolby Module Decoder Status.
- ◆ **A/B REF IN Status**
Displays the reference signal input to A/B REF IN.

6-2-8. [STATUS - Version]

The screenshot displays the FRC-9100 WEB GUI interface. At the top, there is a navigation bar with tabs for STATUS, SYSTEM, VIDEO, AUDIO, ANCILLARY, UTILITY, and NETWORK. Below this, a secondary navigation bar includes tabs for General, Video, Emb. Audio IN, Emb. Audio OUT, Timecode, AES IN / OUT, Dolby, and Version. The Version tab is currently selected and highlighted in yellow.

The main content area is titled "Version Information" and contains a list of system and component details:

```
System Version : 1.00 - BCF9
Serial Number  : 18414095
Front Panel    : 1.00
MAIN DSP      : 19/05/14 15:34:41 MAIN_FH_ S1.00.00
MAIN CPLD     : 18/06/15 15:24:19 MAIN_C3_ D0.01.FF
MAIN FPG1     : 18/10/26 17:08:41 MAIN_F3_ R1.11.04
MAIN FPG2     : 18/10/24 03:25:40 MAIN_F2_ R1.11.01
MAIN FPG3     : 18/10/29 12:54:55 MAIN_F3_ R1.11.00
PROCESS 1 DSP : 18/11/02 19:25:52 PRC12_FH_ R2.00.02
PROCESS 1 CPLD: 18/05/18 10:54:51 PRC12_C1_ D0.01.03
PROCESS 1 FPG1: 18/11/02 09:10:25 PRC12_F1_ R1.12.00
PROCESS 1 FPG2: 18/08/01 19:46:44 PRC12_F2_ R1.12.00
PROCESS 1 FPG3: 18/08/01 13:37:31 PRC12_F3_ R1.12.00
PROCESS 1 FPG4: 18/08/01 15:45:11 PRC12_F4_ R1.12.00
PROCESS 2 DSP : 18/11/02 19:25:52 PRC12_FH_ R2.00.02
PROCESS 2 CPLD: 18/05/18 10:54:51 PRC12_C1_ D0.01.03
PROCESS 2 FPG1: 18/11/02 09:10:25 PRC12_F1_ R1.12.00
PROCESS 2 FPG2: 18/08/01 19:46:44 PRC12_F2_ R1.12.00
PROCESS 2 FPG3: 18/08/01 13:37:31 PRC12_F3_ R1.12.00
PROCESS 2 FPG4: 18/08/01 15:45:11 PRC12_F4_ R1.12.00
FRC-900A CPLD : Not Exist
FRC-900A FPG1 : Not Exist
FRC-900A FPG2 : Not Exist
FRC-900M A-1  : Not Exist
FRC-900M A-2  : Not Exist
FRC-900M B-1  : Not Exist
FRC-900M B-2  : Not Exist
```

- ◆ **FRC-9100 Version information**
FRC-9100 version details

6-3. SYSTEM Page [Web]

FRC-9100 basic operation settings are configured in the SYSTEM tab.

Selecting **Channel A** displays the 1st channel frame rate converter setting page.

Selecting **Channel B** displays the 2nd channel frame rate converter setting page.

To use **Channel B**, install an FRC-912C option and set **SD/HD to HD Dual Channel** in the [SYSTEM - General - Output Settings] menu.

* Installing an FRC-914K option allows you to use **4K to 4K**, **HD to 4K** or **4K to HD** mode. See Sec. 7-3. "SYSTEM Page [Web]" for details on available input/output formats.

6-3-1. [SYSTEM - Channel A]

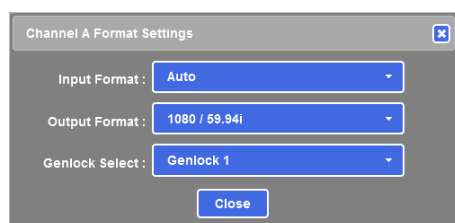
Select **SYSTEM** then the **Channel A** tab to open a web page as shown below.



◆ Format Settings

Channel A input/ output formats and Genlock select are displayed.

Click **Change** to open a window for changing settings.



To change settings, click an item and select a new setting in the pull-down menu.

See the table below for details on settings.

Menu	Setting Range (Highlighted: Default)	Descriptions
Input Format (*2)	Auto 1080/60p-A 1080/59.94p-A 1080/50p-A 1080/60p-B 1080/59.94p-B 1080/50p-B 1080/30p 1080/29.97p 1080/25p 1080/24p 1080/23.98p 1080/60i 1080/59.94i	Selects an input signal format. Auto: Automatically detects the input signal to process. Other formats(Manual): Processes when the specified signals are input. -A: 3G-SDI Level-A -B: 3G-SDI Level-B When invalid video signal is input, black will be output.

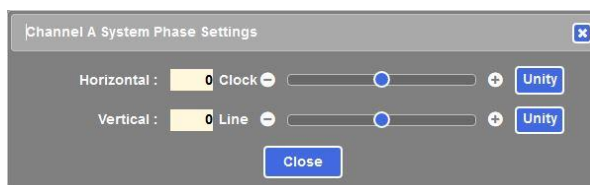
	1080/50i 720/60p 720/59.94p 720/50p 525/59.94i 625/50i	
Output Format (*2)	1080/60p-A 1080/59.94p-A 1080/50p-A 1080/60p-B 1080/59.94p-B 1080/50p-B 1080/30p 1080/29.97p 1080/25p 1080/24p 1080/23.98p 1080/60i 1080/59.94i 1080/50i 720/60p 720/59.94p 720/50p	Selects an output signal format.
Genlock Select (*1) (*2)	Free Run Input Lock Genlock 1 Genlock 2	Sets the synchronous mode. Free Run: Synchronizes to an internally generated signal. Input Lock: Synchronizes to the input signal. Genlock 1: Synchronizes to an external reference signal that is input to Genlock 1. When no signal is input to Genlock 1, synchronizes to an internally generated signal. Genlock 2: Synchronizes to an external reference signal that is input to Genlock 2. When no signal is input to Genlock 2, synchronizes to an internally generated signal.

(*1) **Input Lock** cannot be selected under **Genlock Select** when inputting SD signals.

(*2) Output images will appear distorted if Input Format, Output Format or Genlock Select is changed and flickering may occur on another video output channel. It is recommended to change Input Format from AUTO to a fixed format (Manual) as soon as the input and output formats are determined.

◆ System Phase Settings

Adjusts Channel A horizontal and vertical system timings referring to the genlock input. Click **Change** to open a window for changing settings.

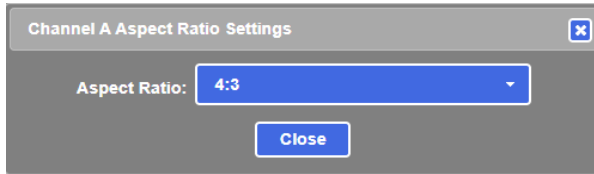


Menu	Setting range	Description
Horizontal	±1400 (Default: 0)	Adjusts horizontal and vertical system timings based on the genlock input. Clicking Unity reset each parameter value.
Vertical	±600 (Default: 0)	

Click **Close** after completing setting change.

◆ **Aspect Ratio Settings**

Select the aspect ratio for **Channel A** output images when converting SD to HD. Click **Change** to open a window for changing settings.



Menu	Setting range (Highlighted: Default)	Description
Aspect Ratio	4:3 Zoom (14:9) Zoom (16:9) Squeeze	Selects the output image aspect ratio in the pull-down menu. Selecting Squeeze displays images in full screen.

* Aspect Ratio setting is enabled in SD/HD to HD mode and only when **Input Format** is set to an SD format or **Auto**.

Click **Close** after completing setting change.

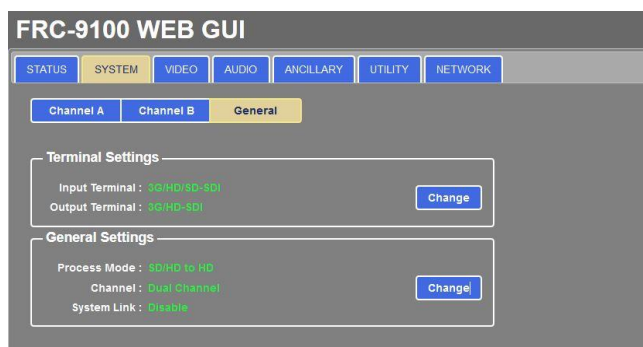
6-3-2. Channel B (SYSTEM)

When the **FRC-912C** option is installed and **SD/HD to HD Dual Channel** is selected in the General tab, the second frame rate converter, **Channel B**, appears in the menu and available. Channel B settings are the same as those for Channel A. Refer to Sec. 6-3-1. “[SYSTEM - Channel A]” for details on settings.

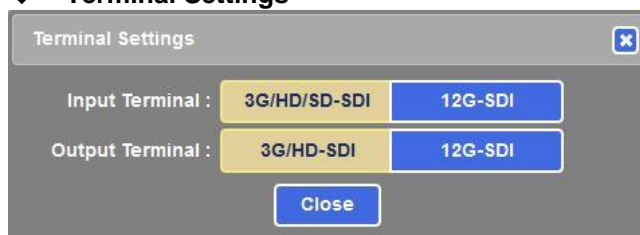
6-3-3. [SYSTEM - General]

Select General in the SYSTEM tab to open a web page as shown below.

* The General tab will appear if FRC-912C and/or FRC-914K option is installed.



◆ **Terminal Settings**



Menu	Setting range (Highlighted: Default)	Description
Input Terminal	3G/HD/SD-SDI 12G-SDI	Selects Input Terminal.
Output Terminal	3G/HD-SDI 12G-SDI	Selects Output Terminal.

◆ General Settings



Menu	Setting Range (Highlighted: Default)	Descriptions
Process Mode	SD/HD to HD 4K to 4K HD to 4K 4K to HD	Selects a processing mode.
Channel	Single Channel Dual Channel	Selects whether to use only Ch A or Ch A and Ch B. Effective when FRC-912C is installed and Process Mode is set to HD to HD . Single Channel: Only one HD converter is available with 4 outputs (SDI OUT1-4). Dual Channel: Two HD converters are available with 2 outputs respectively (SDI OUT1 and 3, and SDI OUT2 and 4).
System Link	Disable Enable	Available when Process Mode is set to SD/HD to HD and set to Dual Channel . Selects whether to synchronize Channel A and Channel B during frame rate conversion. Normally set to Disable . Set to Enable only when synchronizing two frame rate converters by inputting SDI signals with the same format and converting them to the same format signals. Disable: Two converters are not synchronized. Enable: Two converters are synchronized. To set System Link to Enable , the following conditions are required for Channel A and Channel B. If the conditions are not met, set to Disable . <ul style="list-style-type: none"> - Timing difference of two SDI converter inputs is within 2 H. - Two converters use the same genlock signal (Genlock 1 or Genlock 2). - Two converters output the same format signals. - System Phase settings are the same on both converters.

6-4. VIDEO Page [Web]

Sets the video conversion mode.

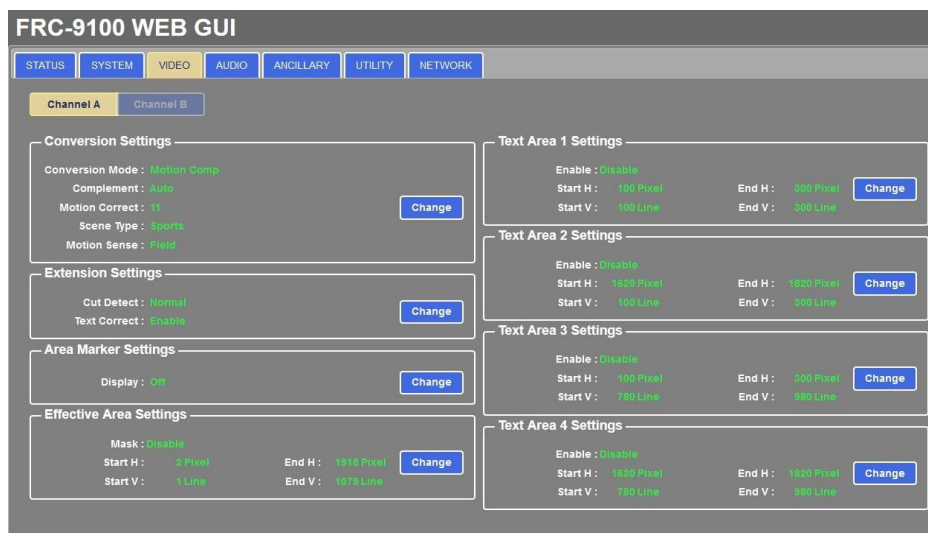
Selecting **Channel A** displays the 1st channel frame rate converter setting page.

Selecting **Channel B**: displays the 2nd channel frame rate converter setting page.

Channel B is selectable when the FRC-912C option is installed and **SD/HD to HD Dual Channel** is selected in the [SYSTEM - General - General Settings] menu.

6-4-1. [VIDEO - Channel A]

Select Channel A in the VIDEO tab to open a web page as shown below, in which the current Channel A video settings are displayed.



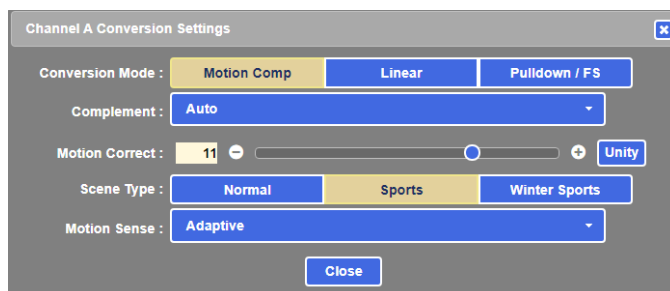
Area	Display contents	Refer to
Conversion Settings	Video conversion settings	6-4-1-1
Extension Settings	Scene cut and moving text settings	6-4-1-2
Area Marker Settings	Text area and effective area marker display On/Off setting	6-4-1-3
Effective Area Settings	Input video effective area settings.	6-4-1-4
Text Area 1-4 Settings	Text area settings	6-4-1-5

Click **Change** in each area to open a setting window.

Click **Close** after completing setting changes.

6-4-1-1. Conversion Settings

Click **Change** in the Conversion Settings area to open the window as shown below.



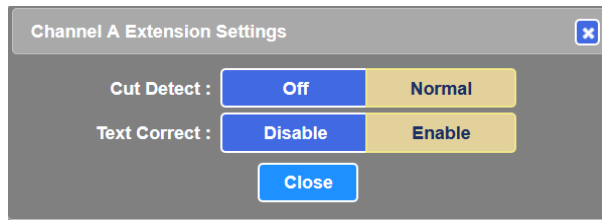
Menu	Setting Range (Highlighted: Default)	Descriptions
Conversion Mode	Motion Comp Linear Pull Down/FS	<p>Selects the conversion mode.</p> <p>Motion Comp: Applies the motion-compensated conversion according to input images. Use the three parameters below (Complement, Motion Correct and Scene Type) to set detailed settings.</p> <p>Linear: Applies the linear conversion (with no motion-compensation).</p> <p>Pull Down/FS: Applies Pull Down/FS. When input and output signal formats are the same frequency, the FRC-9100 applies Pull Down/FS regardless of Conversion Mode setting.</p>
Motion Sense	Field Adaptive	<p>Selects a motion processing method for IP (Interlace to Progressive) conversions.</p> <p>Field: Converts to progressive images using one-sided FIELD images of the interlaced images. The created image has no motion artifacts, but vertical resolution will be reduced.</p> <p>Adaptive: Detects input image motion and stops and creates optimum progressive images.</p>

The following parameters are available if **Conversion Mode** is set to **Motion Comp**.

Complement	Auto Linear Pull Down/FS	<p>When a movie with drastic changes in movement is input, select conversion mode. Auto is the setting that maximize the performance of FRC-9100. Try to select Linear or Pull Down/FS, if the final image sometimes looks broken.</p> <p>Auto: Performs optimal motion-compensated conversion.</p> <p>Linear: Temporarily switches to Linear mode according to input images.</p> <p>Pull Down/FS: Temporarily switches to Pull Down/FS mode according to input images.</p>
Motion Correct	1 to 15 (Default: 11)	<p>Sets the motion correction level.</p> <p>1: Minimum correction</p> <p>15: Maximum correction</p> <p>Selecting +/- moves the pointer in minimum increments. Selecting Unity moves the pointer to default value.</p>
Scene Type	Normal Sports Winter Sports	<p>Selects an input image Scene Type to allow optimal motion compensation.</p> <p>Normal: For video images that only have gradual pans and/or tilts, or are taken as fixed-point observations (monitoring).</p> <p>Sports: For sports videos, or video images with quick pans and/or tilts.</p> <p>Winter Sports: For winter sports video images containing quick motion shots, such as skiing or ice hockey games.</p>

6-4-1-2. Extension Settings

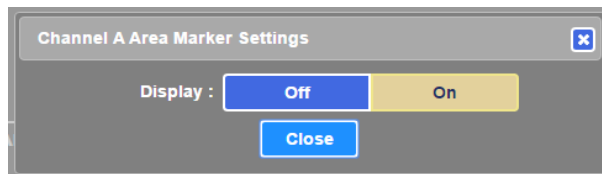
Click **Change** in the Extension Settings area to open the window as shown below.



Menu	Setting Range (Highlighted: Default)	Descriptions
Cut Detect	Off Normal	Off: No cut detection. Normal: Detects cut transitions or rapid image changes and provides a smooth and continuous transition during conversion. Normally set to Normal.
Text Correct	Disable Enable	Disable: No moving text detection. Enable: Detects horizontally or vertically moving texts and preserves the details by interpolation.

6-4-1-3. Area Marker Settings

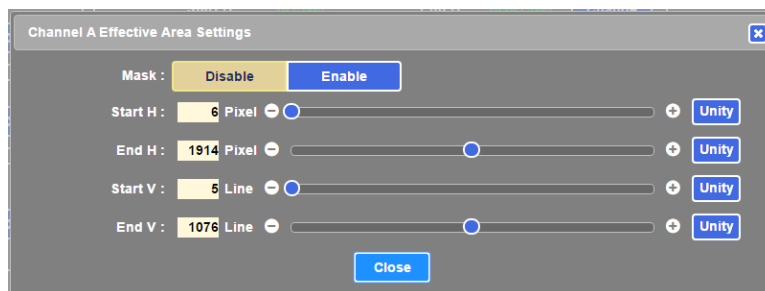
Click **Change** in the Area Marker Settings area to open the window as shown below.



Menu	Setting Range (Highlighted: Default)	Descriptions
Display	Off On	Selects whether to display effective and text area markers. Off: Markers are not displayed. On: Markers are displayed.

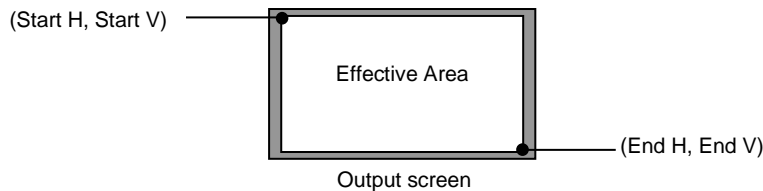
6-4-1-4. Effective Area Settings

Click **Change** in the Effective Area Settings area to open the window as shown below.



Menu		Setting Range (Highlighted: Default)	Descriptions
Mask		Disable Enable	Selects whether to mask with black outside the Effective Area. Disable: Outside region is unmasked. Enable: Outside region is masked.
Effective Area	Start H End H Start V End V	(See below.)	Specifies horizontal / vertical effective area of video signal (see figure below). Outside effective area will not be corrected during a conversion. Note that the distance between start and end points must be more than 50% of the maximum values, even if the points are within their range.

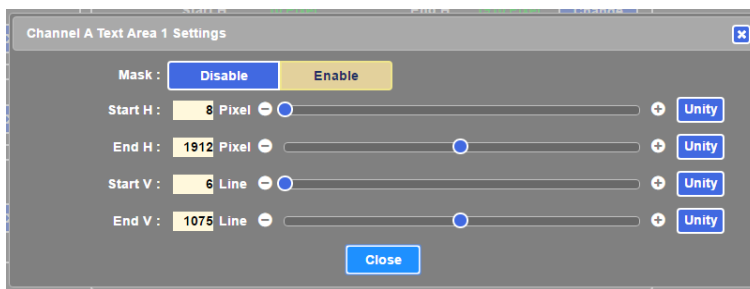
Item	Setting range (Default value)	
	1080 HD output	720 HD output
Start H	0-960(2)	0-640(2)
End H	960-1920 (1918)	640-1280(1278)
Start V	0-540 (1)	0-360(1)
End V	540-1080 (1079)	360-720(719)



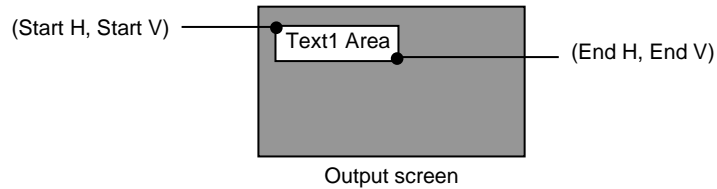
6-4-1-5. Text Area 1-4 Settings

Click **Change** in Text Area 1-4 Settings areas to open windows as shown below.

Text areas are used to specify regular objects that are always placed in fixed positions on the screen, such as logos or texts. The specified text areas are excluded from motion estimation process and the logo or text edges can remain unchanged after correction. Note that, however, the background of logos or texts in text areas may not fit well with surroundings because it also remains unchanged.



Menu		Setting Range (Highlighted: Default)	Descriptions
Mask		Disable Enable	Enables/disables text areas. Disable: Disables text areas. Enable: Enables text areas.
Text Area 1-4	Start H End H Start V End V	(See the following tables.)	Specifies text areas in which correction is not applied. Note that the distance between start and end points must be more than 2 in height and 1 in width, even if the points are within their range.



HD 1080 signals	Setting range	Default value			
		Text Area 1	Text Area 2	Text Area 3	Text Area 4
Start H	0-1918	100	1620	100	1620
End H	2-1920	300	1820	300	1820
Start V	1-1079	100	100	780	780
End V	2-1080	300	300	980	980

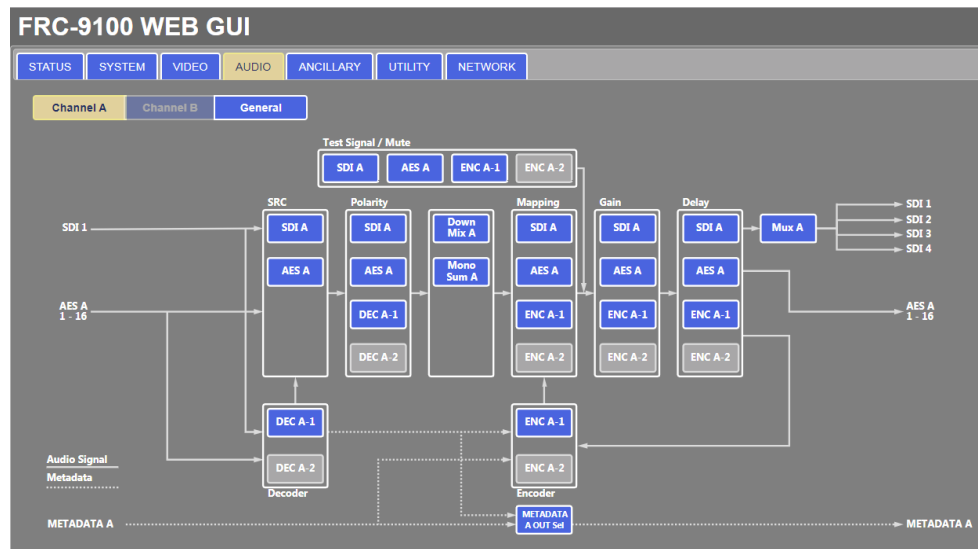
HD 720 signals	Setting range	Default setting			
		Text Area 1	Text Area 2	Text Area 3	Text Area 4
Start H	0-1278	60	1020	60	1020
End H	2-1280	260	1220	260	1220
Start V	1-719	60	60	560	560
End V	2-720	160	160	660	660



6-4-2. [VIDEO - Channel B]

When the FRC-912C option is installed and **SD/HD to HD Dual Channel** is selected in the [SYSTEM - General - Output Settings] menu, **Channel B** (the second frame rate converter) is available. Settings are same as Channel A settings. Refer to Sec. 6-4-1. “[VIDEO - Channel A]” for details.

6-5. AUDIO Page [Web]

Select Channel A in the AUDIO tab to open a web page as shown below.



- * Selecting a light blue box () opens a corresponding setting window. Grey boxes () are optional settings, and turn to light blue if an option is installed.

◆ First, select Channel A, Channel B or General.

Channel A: Uses **SDI IN 1** input audio channels.

In **SD/HD to HD Single Channel** mode, the processed audio is output from **SDI OUT 1-OUT 4**. In **SD/HD to HD Dual Channel** mode (FRC-912C required), the processed audio is output from **SDI OUT 1** and **OUT 3**.

Channel B: Uses **SDI IN 2** input audio channels.

In **SD/HD to HD Dual Channel** mode (FRC-912C required), the processed audio is output from **SDI OUT 2** and **OUT 4**.

General: Sets detailed procedures for audio de-multiplexing from SDI streams and adjusting audio levels.

◆ Audio Options

The following channels are available with audio options.

AES A 1 - 16: AES digital audio input and output for Channel A (FRC-90DA required)

AES B 1 - 16: AES digital audio input and output for Channel B (FRC-912C/90DA required)

DEC A-1 and **DEC A-2:** Dolby E Decoders for Channel A (FRC-90DA/90DM required)

ENC A-1 and **ENC A-2:** Dolby E Encoders for Channel A (FRC-90DA/90DM required)

DEC B-1 and **DEC B-2:** Dolby E Decoders for Channel B (FRC-912C/90DA/90DM required)

ENC B-1 and **ENC B-2:** Dolby E Encoders for Channel B (FRC-912C/90DA/90DM required)

Two Dolby Modules (Decoder & Encoder) can be installed respectively on Channel A and Channel B (FRC-90DM x 4).

DEC A-1 & ENC A-1 and **DEC A-2 & ENC A-2** are Dolby Modules for Channel A.

DEC B-1 & ENC B-1 and **DEC B-2 & ENC B-2** are Dolby Modules for Channel B.

METADATA OUT A Sel is used for the Channel A metadata output selection.

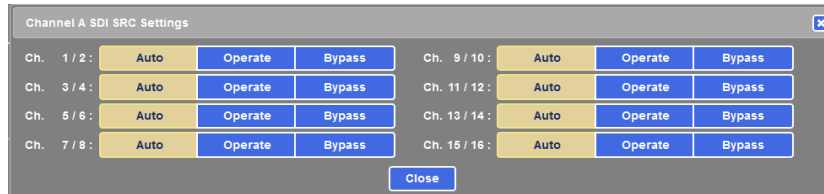
METADATA OUT B Sel is used for the Channel B metadata output selection.

6-5-1. [AUDIO - Channel A]

Open each setting window by clicking the corresponding box on the AUDIO page.
Set items to change referring to tables and click **Close**.

6-5-1-1. SDI SRC Settings

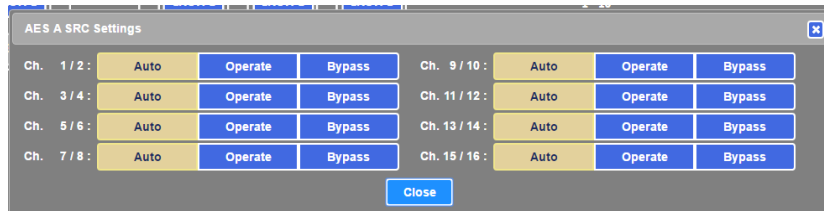
Click **SDI A** in the SRC block to open a window as shown below.



Menu	Setting Range (Highlighted: Default)	Descriptions
SDI Ch. 1/2 to 15/16	Auto Operate Bypass	<p>Bypasses the SRC per channel pair.</p> <p>Auto: PCM audio data will be processed in SRC. Non-PCM audio data will be set to bypass SRC automatically.</p> <p>Operate: Processed in SRC regardless of the input signal as PCM or Non-PCM. When Non-PCM data is processed in SRC, output data will not be normal.</p> <p>Bypass: Bypasses SRC. For asynchronous audio, or Non-PCM audio, set to Bypass.</p>

6-5-1-2. AES SRC Settings

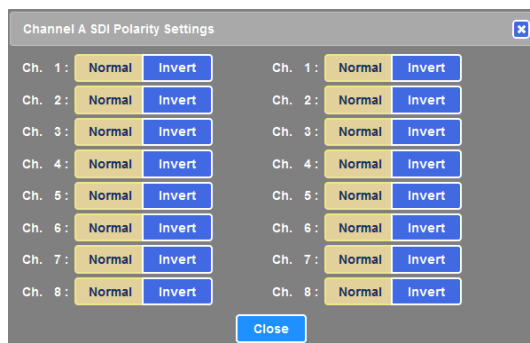
Click **AES A** in the SRC block to open a window as shown below.



See Sec. 6-5-1-1. "SDI SRC Settings" for more details.

6-5-1-3. SDI Polarity Settings

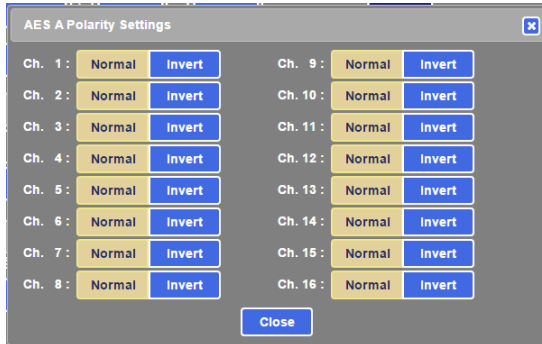
Click the **SDI A** button in the Polarity block to open a window as shown below.



Menu	Setting Range (Highlighted: Default)	Descriptions
Ch. 1 to 16	Normal Invert	Sets the polarity of audio channels that are de-embedded from the SDI input. Normal: Does not reverse polarity. Invert: Reverses polarity.

6-5-1-4. AES Polarity Settings

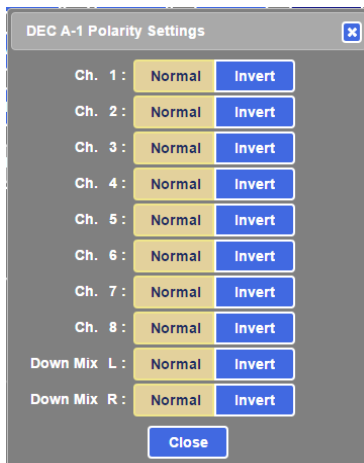
Click **AES A** in the Polarity block to open a window as shown below.



See Sec. 6-5-1-3. "SDI Polarity Settings" for more details.

6-5-1-5. Dolby Decoder Polarity Settings

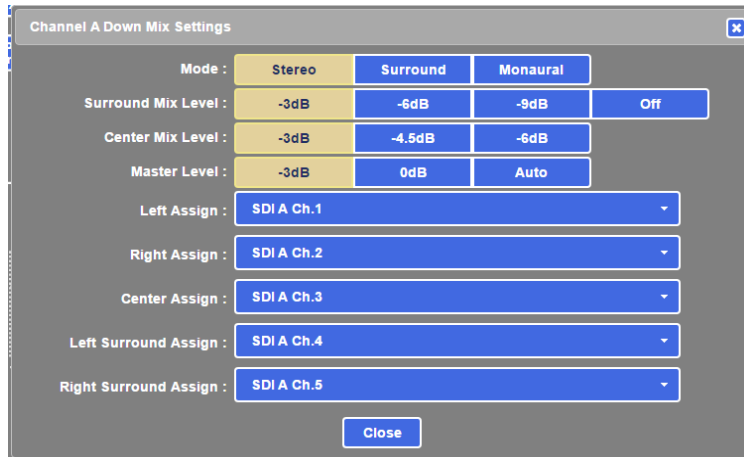
Click **DEC A-1** or **DEC A-2** in the Polarity block to open a window as shown below.



Menu	Setting Range (Highlighted: Default)	Descriptions
Ch. 1-16 Down Mix L/R	Normal Invert	Sets the polarity of audio channels that are decoded from Dolby E input. Normal: Does not reverse polarity. Invert: Reverses polarity.

6-5-1-6. Down Mix Settings

Click **Down Mix A** to open a window as shown below. Down-mixed audio can be generated from input sources. The generated audio can be assigned to output channels as **Down Mix L/R**.



Menu	Setting Range (Highlighted: Default)	Descriptions
Mode	Stereo Surround Monaural	Selects the Downmix mode.
Surround Mix Level	-3dB -6dB -9dB Off	Sets the surround mix level of Ls/Rs (Surround channel). Off (-∞dB): The audio source is not mixed to these channels.
Center Mix Level	-3dB -4.5dB -6dB	Sets the C (Center Channel) mix level. -3dB : Sets output level the same as the level before downmixing. When center channel is mixed to both left and right channels, the volume may feel louder. In such case, select -4.5dB or -6dB.
Master Level	-3dB 0dB Auto	Sets the downmix master level. Auto : The Down Mix Master Level changes correspondingly to the Down Mix Mode and Surround Mix Level.
Left Assign	SDI Ch. 1-16 AES A Ch. 1-16(*1) DEC A-1 Ch.1-8(*2) DEC A-2 Ch.1-8(*3) Silence	Sets the audio signals input into the present selected downmix. Default channels are, Left: SDI Ch. 1 Right: SDI Ch. 2 Center: SDI Ch. 3 Left S: SDI Ch. 5 Right S: SDI Ch. 6
Right Assign		
Center Assign		
Left Surround Assign		
Right Surround Assign		

* The downmixed output signal, Down Mix L/R is to be set in Sec. 6-5-1-8 "Mapping SDI Settings."

(*1) FRC-90DA required

(*2) FRC-90DM (A-1) required

(*3) FRC-90DM (A-2) required

6-5-1-7. Mono Sum 1-8 Settings

Select **Mono Sum A** to open a window as shown below. Up to 8 channels of mono-summed audio can be generated from input sources. The generated audio can be assigned to output channels as **Mono Out1-8**.



Menu	Setting Range	Descriptions
Mono 1-8 L/R	SDI A Ch. 1-16 AES A Ch. 1-16 ^(*1) DEC A-1 Ch.1-8 ^(*2) DEC A-2 Ch.1-8 ^(*3)	Selects audio channel pairs to be processed as a mono sum of L/R. (Default is an SDI channel of the same number as the original.)

* Processed output signals for Mono 1 to 8 are to be set in Sec. 6-5-1-8. "Mapping SDI Settings".

(*1) FRC-90DA required

(*2) FRC-90DM (A-1) required

(*3) FRC-90DM (A-2) required

6-5-1-8. Mapping SDI Settings

Click **SDI A** in the Mapping block to open a window as shown below.
Select audio channels being embedded onto SDI output.



Menu	Setting Range	Descriptions
SDI Ch. 1 to 16	SDI A Ch. 1 to 16 AES A Ch. 1 to 16(*1) DEC A-1 Ch.1 to 8(*2) DEC A-1 Down Mix L/R(*2) DEC A-2 Ch.1 to 8(*3) DEC A-2 Down Mix L/R(*3) Down Mix A L/R Mono Out A 1 to 8 ENC A-1 (*2) ENC A-2 (*3) 500Hz Tone 1kHz Tone Silence	Assign audio sources to SDI A Ch 1-16. (Default: SDI A Ch. 1-16)

* To set all SDI audio channels, Ch1 to Ch 16 as 500Hz Tone/ 1kHz Tone, refer to Sec. 18-1-5-7 .Test Signal/ Mute Settings” for details“

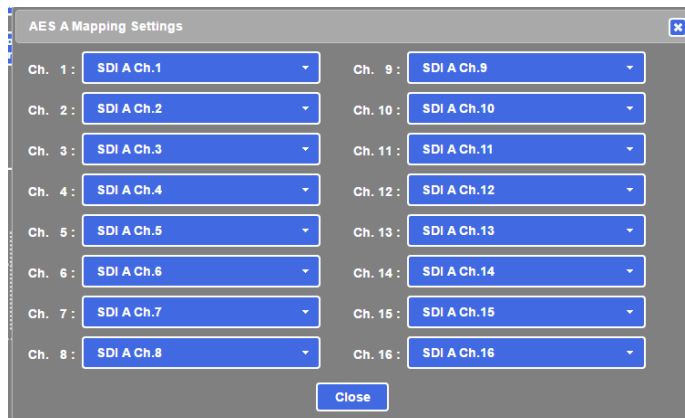
(*1) FRC-90DA required

(*2) FRC-90DM (A-1) required

(*3) FRC-90DM (A-2) required

6-5-1-9. Mapping AES Settings

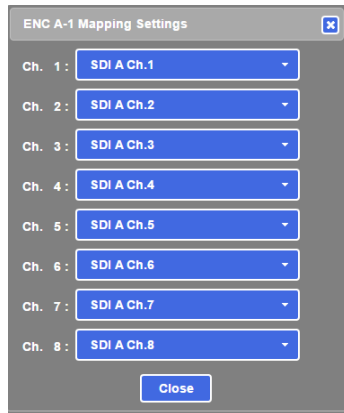
Click **AES A** in the Mapping block to open a window as shown below.
Select audio channels being output from **Digital Audio Out 1-8**.



See the previous section for details on setting.

6-5-1-10. Mapping Dolby Encoder Settings

Click **ENC A-1** or **ENC A-2** in the Mapping block to open a window as shown below. Select 8-channel sources for Dolby E audio. The Dolby E audio generated in **ENC A-1** can be assigned to audio output channels as **ENC A-1**.



Menu	Setting Range	Descriptions
Ch. 1-8	SDI A Ch. 1-16 AES A Ch. 1-16 DEC A-1 Ch.1-8(*1) DEC A-1 Down Mix L/R(*1) DEC A-2 Ch.1-8(*2) DEC A-2 Down Mix L/R(*2) Down Mix A L/R Mono Out A 1-8 500Hz Tone 1kHz Tone Silence (Default: SDI Ch1-8)	Assign audio sources to Dolby Ch 1-8. Audio source encoding depends on the Dolby E Config (Configuration) selection. For example, if 5.1+2 is selected, sources are assigned as shown below. Ch1/2: 1L/1R Ch3/4: 1C/1LEE Ch5/6: 1Ls/1Rs Ch7/8: 2L/2R Select sources in accordance with the Dolby E Config selection. See Sec. 6-5-1-20. "Dolby Encoder Settings" for more details.

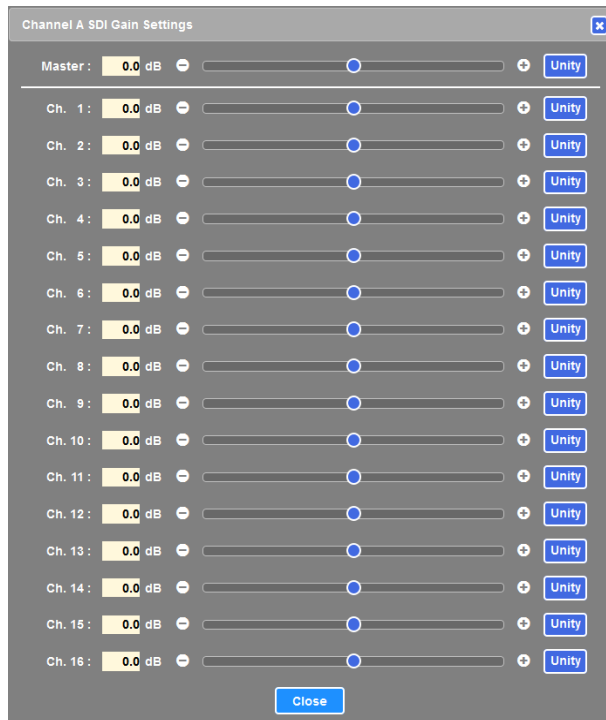
(*1) FRC-90DM (A-1) required

(*2) FRC-90DM (A-2) required

6-5-1-11. Gain SDI Settings

Sets the SDI embedded audio output gain.

Click **SDI A** in the Gain block to open a window as shown below.



Menu	Setting Range	Descriptions
Master	-20.0 to 20.0dB (Default: 0dB)	Sets output gain offset to all the SDI audio channels. Clicking +/- enables you to change settings on a minimum scale. Clicking Unity recalls default.
Ch. 1 to 16	-20.0 to 20.0dB (Default: 0dB)	Sets output gain to each SDI audio channel. Selecting +/- enables you to change settings on a minimum scale. Clicking Unity recalls default.

6-5-1-12. Gain AES Settings

Sets the digital audio output gain.

Click **AES A** in the Gain block to open a window as shown below.

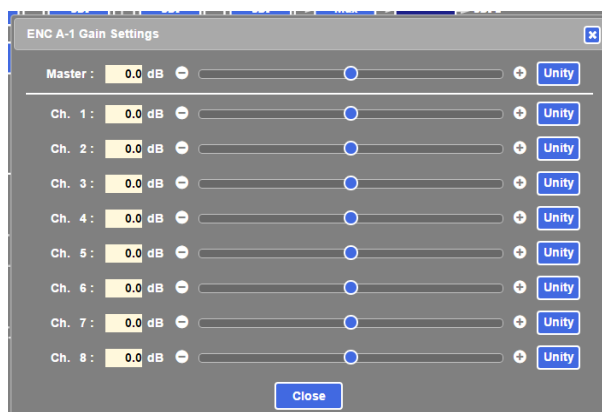


See the previous section for details on setting.

6-5-1-13. Gain Dolby Encoder Settings

Sets the gain of audio source channels that are encoded to Dolby E.

Click **ENC A-1** or **ENC A-2** in the Gain block to open a window as shown below.

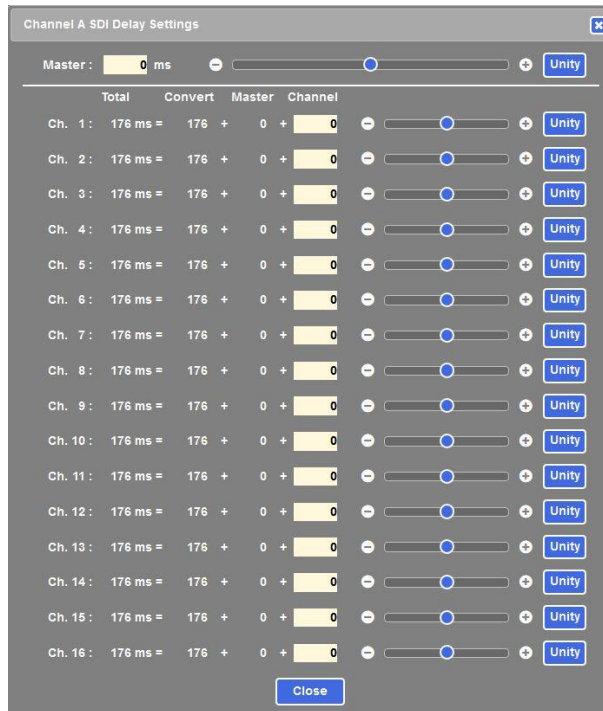


See Sec 6-5-1-11 "Gain SDI Settings" for details on setting.

6-5-1-14. Delay SDI Settings

Sets the amount of embedded audio output delay.

Click **SDI A** in the Delay block to open a window as shown below.



Menu	Setting Range	Descriptions
Total		Total value of Convert , Master and Channel . This value is audio delay of each channel.
Convert		FRC-9100 internal delay value. Value is set by input/output formats. If Input Format is set to Auto and input signal is Loss , audio delay is 5msec.
Master	-1000 to +1000 (Default 0msec)	Sets delay amount for all channels of SDI audio. Clicking the +/- buttons changes setting amount in minimum increment. Clicking the Unity button changes setting amount to default.
Channel	-1000 to +1000 (Default 0msec)	Sets delay amount for each SDI audio channel. Clicking the +/- buttons changes setting amount in minimum increment. Clicking the Unity button changes setting amount to default.

- Internal delay values in FRC-9100 calls up values according to input/ output signal format as shown in the table below. Values are shown under “Convert.” (in msec)

		Output Format							
		2160 (*1)							
		59.94p	50p	30p	29.97p	25p	24p	23.98p	
Input Format	2160 (*1)	59.94p	148	169	210	129	200	229	212
		50p	159	178	218	217	216	239	228
		30p	230	205	241	270	300	350	335
		29.97p	213	240	250	271	319	350	337
		25p	287	270	314	319	352	335	363
		24p	293	324	350	345	350	334	358
		23.98p	259	312	342	364	380	359	348
	1080	60p	123	146	85	192	190	203	215
		50p	131	146	180	87	185	209	199
		50p	130	139	190	206	210	216	220

		Output Format							
		2160 (*1)							
		59.94p	50p	30p	29.97p	25p	24p	23.98p	
Input Format	1080	30p	202	214	247	251	280	302	300
		29.97p	168	231	235	251	285	310	320
		25p	235	228	250	280	300	296	317
		24p	247	244	330	325	325	317	312
		23.98p	240	268	310	320	331	314	332
		60i	171	184	118	226	232	221	247
		59.94i	145	177	200	117	215	217	237
	50i	160	164	210	228	210	250	240	
	720	60p	146	159	130	216	213	224	219
		59.94p	143	164	184	130	200	218	223
		50p	164	174	200	228	235	226	238
	SD	525/60	-	-	-	-	-	-	-
		625/50	-	-	-	-	-	-	-

		Output Format								
		1080								
		60p	59.94p	50p	30p	29.97p	25p	24p	23.98p	
Input Format	2160 (*1)	59.94p	119	120	155	181	69	185	185	176
		50p	147	149	143	188	195	164	188	191
		30p	213	217	213	259	247	274	314	310
		29.97p	217	218	230	249	284	326	311	308
		25p	236	251	260	292	269	320	306	319
		24p	265	283	272	334	333	328	321	338
		23.98p	259	252	298	300	311	349	320	333
	1080	60p	113	109	123	54	147	161	160	166
		59.94p	99	112	130	152	150	73	160	164
		50p	114	112	138	162	175	179	174	176
		30p	170	190	173	231	221	264	276	273
		29.97p	208	177	227	233	228	276	280	285
		25p	222	221	219	253	256	279	279	277
		24p	230	237	252	286	286	301	284	270
		23.98p	242	231	251	287	289	304	276	290
		60i	146	123	163	70	193	195	184	192
		59.94i	131	134	146	193	94	189	195	187
	50i	162	139	158	191	200	197	196	196	
	720	60p	129	129	147	85	169	184	182	175
		59.94p	122	125	142	176	97	174	184	170
		50p	139	140	143	182	188	164	193	183
	SD	525/60	183	168	198	221	168	225	235	239
		625/50	210	229	235	254	270	250	260	260

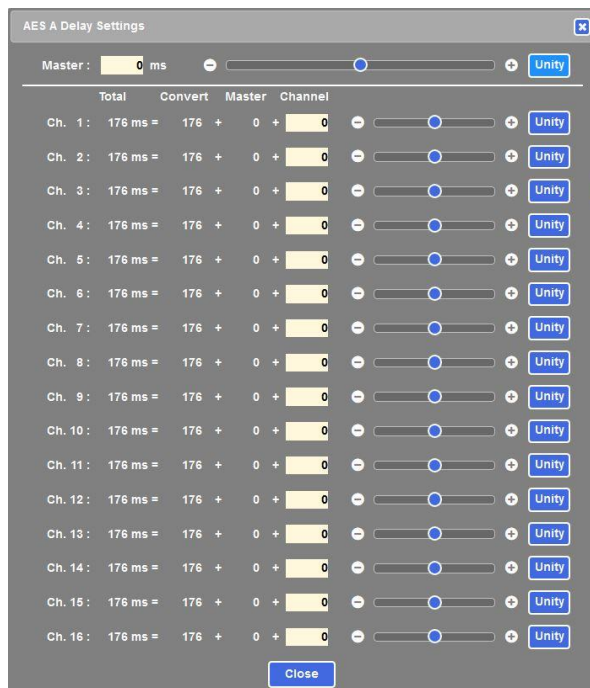
		Output Format						
		1080			720p			
		60i	59.94i	50i	60p	59.94p	50p	
Input Format	2160 (*1)	59.94p	123	120	154	140	137	168
		50p	152	151	143	164	168	162
		30p	217	209	194	276	301	276
		29.97p	205	190	255	270	254	276
		25p	266	238	259	278	314	279
		24p	238	266	284	304	293	321
		23.98p	331	282	316	305	297	323
	1080	60p	111	104	129	122	124	144
		59.94p	103	107	137	120	120	148
		50p	113	121	138	149	150	158
		30p	178	182	181	191	240	242
		29.97p	204	175	220	235	207	250
		25p	220	222	209	268	266	256
		24p	222	237	248	264	280	290
		23.98p	234	221	248	280	263	290
		60i	146	130	139	151	151	178
		59.94i	127	148	140	135	153	181
	720	50i	196	176	178	180	188	177
		60p	116	121	151	113	114	128
		59.94p	119	120	139	102	114	133
	SD	50p	139	147	157	126	117	135
		525/60	186	185	200	168	168	212
		625/50	225	216	232	218	221	232

(*1) FRC-914K required

6-5-1-15. Delay AES Settings

Sets the amount of digital audio output delay.

Click **AES A** in the Delay block to open a window as shown below.



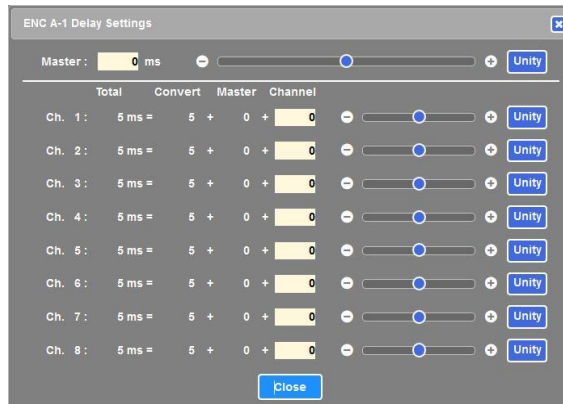
See the previous section for details on setting.

6-5-1-16. Delay Dolby Encoder Settings

Sets the delay of audio source channels that are encoded to Dolby E.

Click **ENC A-1** or **ENC A-2** in the Gain block to open a window as shown below.

Delay value inside of FRC-9100 for **ENC A-1** or **ENC A-2** the “Convert” value is set to 5msec regardless of input/ output formats.

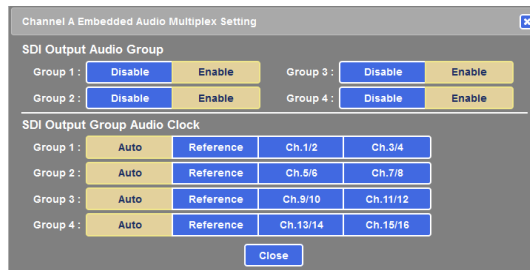


See Sec. 6-5-1-14. “Delay SDI Settings” for details on setting.

6-5-1-17. Embedded Audio Multiplex Settings (SDI)

Sets detailed procedure for embedding audio to SDI streams.

Click **Mux A** to open a window as shown below.



Menu	Setting Range (Highlighted: Default)	Descriptions
SDI Output Audio Group Group1 to 4	Enable Disable	Enables/ disables SDI Audio embedding for each group. Disable: Disabled group audio will not be embedded.
SDI Output Group Audio Clock Group1	Auto Reference Ch1/2 Ch3/4	<p>Auto: If an input NON-PCM signal is selected in a group for SDI embedded audio output, the NON-PCM channel input clock is selected automatically. If all signals are NON-PCM, the smallest channel pair clock is selected. If all signals are PCM, a clock that synchronizes with the output video is selected.</p> <p>Reference clock: Selects a clock synchronizes with the output video. (Synchronous output when SRC is applied.)</p> <p>CH 1/2 to 15/16: Input clock of CH 1/2 to 15/16 is applied. To asynchronous output, Select output channels for asynchronous output.</p>
SDI Output Group Audio Clock Group2	Auto Reference Ch5/6 Ch7/8	
SDI Output Group Audio Clock Group3	Auto Reference Ch9/10 Ch11/12	
SDI Output Group Audio Clock Group4	Auto Reference Ch13/14 Ch15/16	

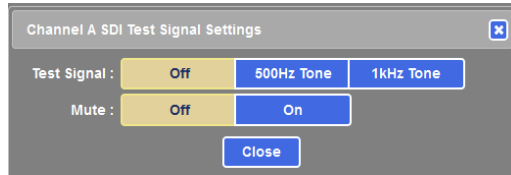
6-5-1-18. Test Signal/Mute Settings

Enables you to mute audio or output a test signal.

To set SDI output, select **SDI A** in the column Test Signal/ Mute to open a setting window.

To set AES output, select **AES A** in the column Test Signal/ Mute.

To set the Dolby Encoder input source, select **ENC A-1** or **ENC A-2** in the column Test Signal/ Mute.



Menu	Setting Range (Highlighted: Default)	Descriptions
Test Signal	Off 500Hz Tone 1kHz Tone	Off: No test signal is output. (Input audio signal will be output.) 500Hz Tone: Outputs the 500Hz tone test signal. 1kHz Tone: Outputs the 1kHz tone test signal.
Mute	Off On	Off: Outputs the input audio signal. On: Outputs the muted audio signal.

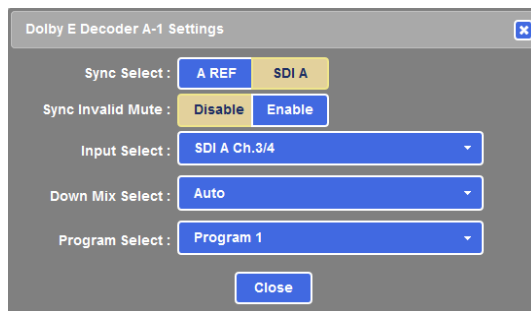
- * The Test Signal/Mute setting is applied to all audio channels.
To set each audio channel, use the following menus: Sec. 6-5-1-7. "Mono Sum 1-8 Settings," Sec. 6-5-1-8. "Mapping SDI Settings" or Sec. 6-5-1-10. "Mapping Dolby Encoder Settings."

6-5-1-19. Dolby Decoder Settings

Selects an audio source for a Dolby Decoder and sets other decoder settings.

The selected 2 channels of Dolby E are decoded into 8 channels of PCM audio. (See Sec. 6-5-1-20. "Dolby Encoder Settings" for channel configuration details.)

Click **DEC A-1** or **DEC A-2** in the Decoder block to open a window as shown below.



Menu	Setting Range (Highlighted: Default)	Descriptions
Sync Select	A REF SDI A	A REF: Uses the A REF IN port input as a reference. (See the (10) FRC-90DA (Option) in Sec. 2-2. "Rear Panel.") SDI: Obtains a reference from the SDI input. NOTE: If Sync Select is changed or the sync signal format is changed in Channel A-1, audio signals are muted in several seconds in Channel A-1 decoder and encoder. This is the same for Channel A-2.

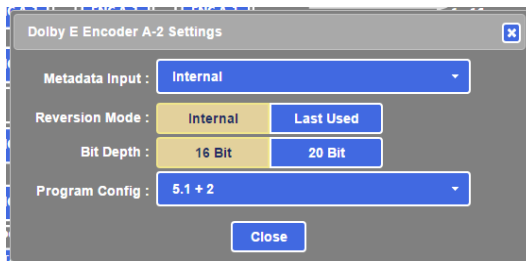
(Continued on next page)

Sync Invalid Mute	Disable Enable	Disable: Continuously outputs decoded audio regardless of the sync status. Enable: Mutes decoded audio output if a sync is missing or channels are not synced.
Input Select	SDI A Ch.1/2 to 15/16 AES A Ch.1/2 to 15/16	Selects an audio source for Dolby Decoder. (Default: SDI A Ch3/4)
Down Mix Select	Auto Lt/Rt Lo/Ro Pro Logic II	Specifies the Dolby Downmix output mode.
Program Select	Program 1 to 8	Selects a metadata program used for downmixing. (Default: Program 1)

6-5-1-20. Dolby Encoder Settings

Sets Dolby E Encoder settings.

Click **DEC A-1** or **DEC A-2** in the Encoder block to open a window as shown below.



Menu	Setting Range (Highlighted: Default)	Descriptions
Metadata Input	Internal METADATA A IN SDI A IN DEC A Out	Selects a metadata for use. Internal: Metadata stored in the Dolby module. Metadata In A: Metadata input to METADATA IN A port (See Sec. 2-2. "Rear Panel.") SDI A IN: Metadata embedded in the SDI input V ANC area. DEC A Out: Metadata received from the decoder.
Reversion Mode	Internal Last Used	Selects which data is used if the metadata input to Encoder interrupts. Internal: Uses the metadata stored in FRC-9100. Last Used: Uses the metadata input to Encoder before interruption.

When **Bit Depth** and **Program Config** (Dolby E program configuration) are set, 8-ch audio source selected under **Mapping Dolby Encoder Settings** (Sec. 6-5-1-10) is encoded into 2 channels of Dolby E as shown below.

Program Config	Bit Depth	Ch 1/2	Ch 3/4	Ch 5/6	Ch 7/8
5.1 + 2	20-bit	1L / 1R	1C / 1LFE	1Ls / 1Rs	2L / 2R
5.1 + 2 x 1		1L / 1R	1C / 1LFE	1Ls / 1Rs	2C / 3C
4 + 4		1L / 1R	1C / 1S	2C / 2S	2L / 2R
4 + 2 x 2		1L / 1R	1C / 1S	3L / 3R	2L / 2R
4 + 2 + 2 x 1		1L / 1R	1C / 1S	3C / 4C	2L / 2R
4 + 4 x 1		1L / 1R	1C / 1S	4C / 5C	2C / 3C
4 x 2		1L / 1R	3L / 3R	4L / 4R	2L / 2R
3 x 2 + 2 x 1		1L / 1R	3L / 3R	4C / 5C	2L / 2R

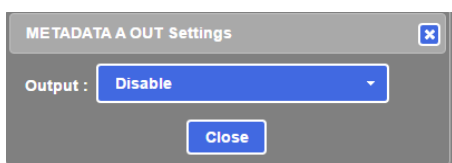
(Continued on next page)

Program Config	Bit Depth	Ch 1/2	Ch 3/4	Ch 5/6	Ch 7/8
2 x 2 + 4 x 1		1L / 1R	3C / 4C	5C / 6C	2L / 2R
2 + 6 x 1		1L / 1R	4C / 5C	6C / 7C	2C / 3C
8 x 1		1C / 2C	3C / 4C	5C / 6C	7C / 8C
5.1	20/16-bit	1L / 1R	1C / 1LFE	1Ls / 1Rs	None
4 + 2		1L / 1R	1C / 1S	None	2L / 2R
4 + 2 x 1		1L / 1R	1C / 1S	None	2C / 3C
3 x 2		1L / 1R	3L / 3R	None	2L / 2R
2 x 2 + 2 x 1		1L / 1R	3C / 4C	None	2L / 2R
2 + 4 x 1		1L / 1R	4C / 5C	None	2C / 3C
6 x 1		1C / 2C	3C / 4C	5C / 6C	None
4		1L / 1R	1C / 1S	None	None
2 + 2		1L / 1R	None	None	2L / 2R
2 + 2 x 1		1L / 1R	None	None	2C / 3C
4 x 1		1C / 2C	3C / 4C	None	None

Program Config is automatically changed to **5.1**, if **Bit Depth** is changed from **20 Bit** to **16 Bit**. Note that if **Program Config** is changed in Channel A-1, **audio signals are muted in several seconds** in Channel A-1 **decoder and encoder**. This is the same for Channel A-2.

6-5-1-21. External Metadata Output Settings

Selects data to be output from METADATA A OUT. (See Sec. 2-2. "Rear Panel.") Click **METADATA A OUT Sel** to open a window as shown below.



Set the items to change referring to the table below and click **Close**.

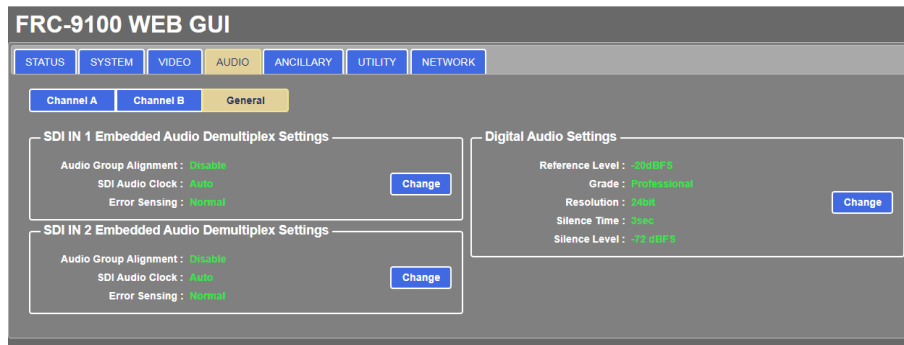
Menu	Setting Range (Highlighted: Default)	Descriptions
Output	DEC A-1 DEC A-2 Bypass Disable	DEC A-1: Outputs the metadata in DEC A-1 decoder. DEC A-2: Outputs the metadata in DEC A-2 decoder. Bypass: Directly passes the metadata input to METADATA A IN. Disable: No metadata output

6-5-2. [AUDIO - Channel B]

Select the Channel B tab in the AUDIO page to open the [AUDIO - Channel B] page. This page allows you to set the audio to be input into SDI 2 and output from SDI OUT 2. The FRC-912C option is required. Setting details are the same as for Channel A. Refer to Sec. 6-5-1 "[AUDIO - Channel A]."

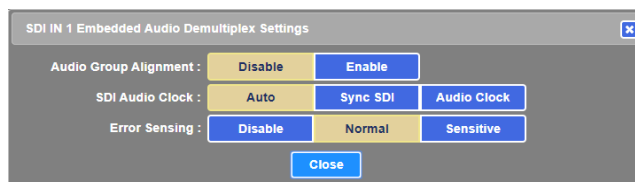
6-5-3. [AUDIO - General]

Select the General tab in the AUDIO page to open a web page as shown below. This page allows you to set detailed procedure for de-multiplexing audio channels from the SDI 1 stream. Open each setting window by clicking Change in each block. Set items to change referring to tables and click **Close**.



6-5-3-1. SDI IN 1 Embedded Audio Demultiplex Settings

Sets how to de-embed SDI IN 1 embedded audio. Click **Change** in SDI IN 1 Embedded Audio Demultiplex Settings to open a window as shown below.



Menu	Setting Range (Highlighted: Default)	Descriptions
Audio Group Alignment	Disable Enable	Switches Automatic phase alignment of input embedded audio groups. Enable: Enables phase alignment. Disable: Disables phase alignment. (normal setting)
SDI Audio Clock	Auto Sync SDI Audio Clock	Allows you to select the embedded audio input sync mode for SDI signals. Auto: De-embeds 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 high. Sync SDI: All audio data in 4 audio groups are always processed as synchronous data without referring to the respective audio clock phase data. *2 Audio CLK: Always uses audio clock phase data in SDI embedded audio data to de-embed the audio data. *3
Error Sensing	Disable Normal Sensitive	Disable: Disables all the mute activated by audio status sensing. Normal: Mute is activated when sensing SDI signal switching, an ADP (Audio Data Packet) change or DBN (Data Block Number) switching. Normally set to Normal. Sensitive: In addition to conditions of Normal, mute is activated when sensing channel status, or EDP (Extended Data Packet) change (SD-SDI only).

* If Audio Group Alignment is enabled, all audio groups may be reset to align phases according to phase difference in input audio groups. In such cases, audio signals are muted in several seconds.

6-5-3-2. SDI IN 2 Embedded Audio Demultiplex Settings

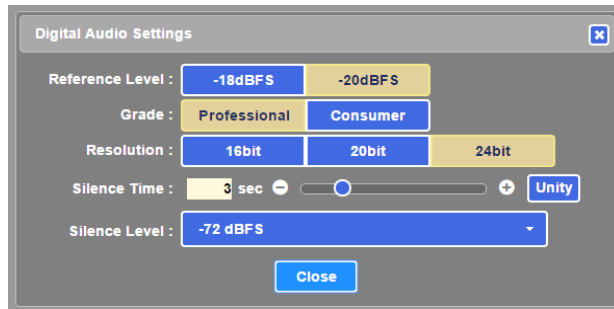
Sets how to de-embed SDI IN 2 embedded audio and enables only in **SD/HD to HD Dual Channel** mode.

Setting details are same as SDI IN 1 Embedded Audio Demultiplex Settings.

Refer to Sec. 6-5-3-1 “SDI IN 1 Embedded Audio Demultiplex Settings” for details.

6-5-3-3. Digital Audio Settings

Sets basic operation of Digital Audio.



Menu	Setting Range (Highlighted: Default)	Descriptions
Reference Level	-18 dBFS -20 dBFS	Selects the digital audio reference level.
Grade	Professional Consumer	Selects the digital audio channel grade. Professional: For broadcasting Consumer: For consumer use
Resolution	16 Bit 20 Bit 24 Bit	Selects a word length for digital audio output signals.
Silence Time	1 – 10 sec (Default: 2 sec)	Sets time to determine silence. When the set seconds have passed, the condition is judged as silence.
Silence Level	-48 dBFS -54 dBFS -60 dBFS -66 dBFS -72 dBFS	Selects audio level of SDI embedded audio input to determine silence.

6-6. ANCILLARY Page [Web]

Sets the audio metadata and timecode in the SDI ancillary area.

Selecting the **Metadata** tab displays the audio metadata setting page.

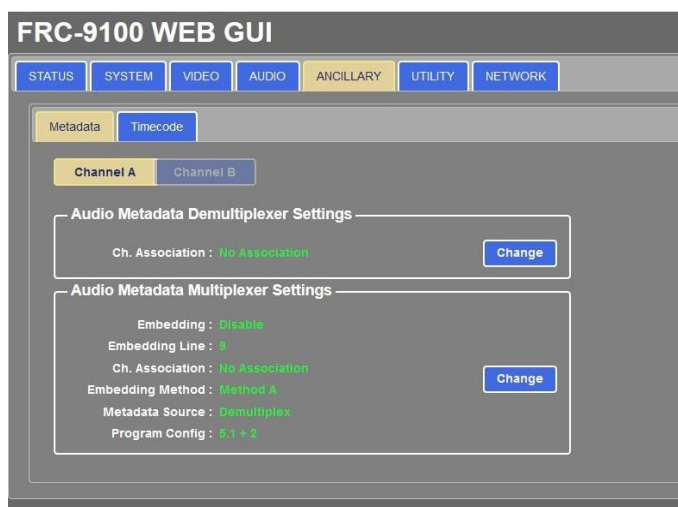
Selecting the **Timecode** tab displays the timecode setting page.

Selecting **Channel A**: displays the 1st channel frame rate converter setting page.

Selecting **Channel B**: displays the 2nd channel frame rate converter setting page. **Channel B** contents are the same as that in Channel A. **Channel B** is available when the FRC-912C option is installed and **SD/HD to HD Dual Channel** is selected in the [SYSTEM - General - Output Settings] menu.

6-6-1. [ANCILLARY - Metadata]

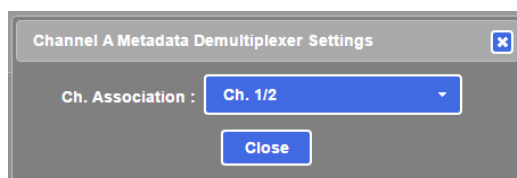
Select Metadata tab in **ANCILLARY** and select a **Channel** button to change settings. A web page as shown below opens. The current ancillary settings of the selected channel are displayed on the page. Set items to change referring to tables and click **Close**.



To use Dolby metadata in a Dolby E Encoder, select an associated Dolby metadata to be de-embedded from the SDI ancillary area in the **Audio Metadata Demultiplexer Settings** block.

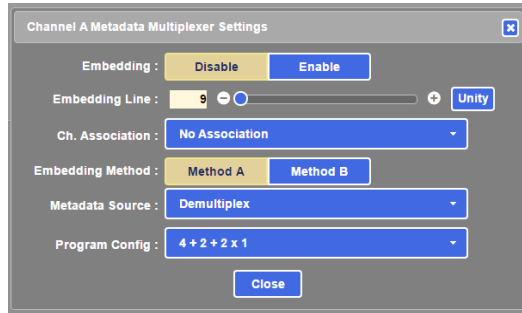
To embed the decoded Dolby metadata into the SDI ancillary area, set the Dolby metadata contents in the **Audio Metadata Multiplexer Settings** block.

6-6-1-1. Audio Metadata Demultiplexer Settings



Menu	Setting Range (Highlighted: Default)	Descriptions
Ch. Association	No Association Ch1/2 to 15/16	Selects an audio metadata (SDID).

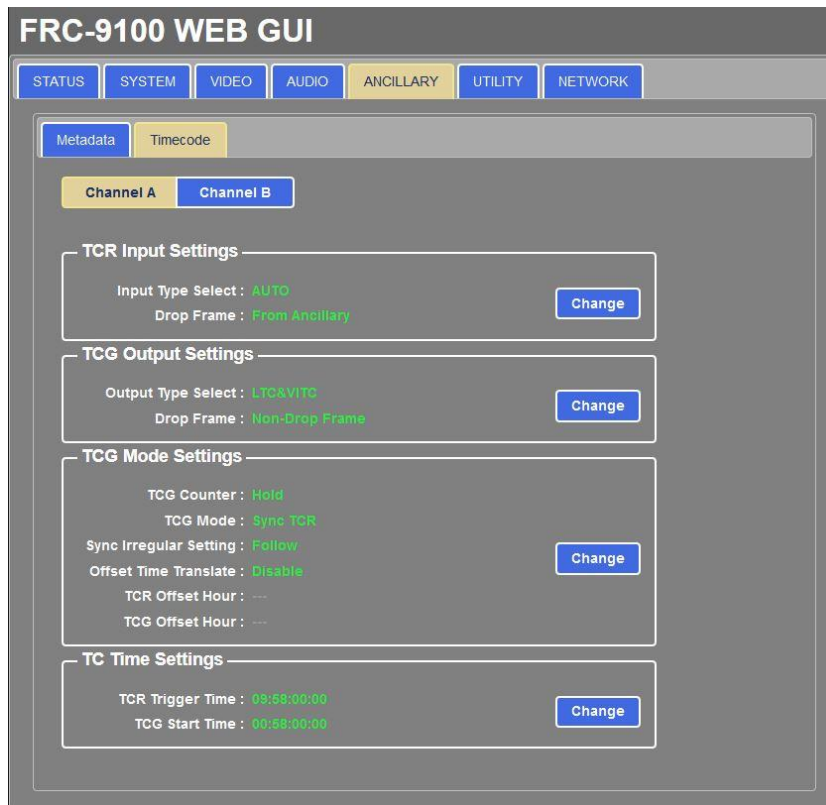
6-6-1-2. Audio Metadata Multiplexer Settings



Menu	Setting Range (Highlighted: Default)	Descriptions
Embedding	Disable Enable	Selects whether to embed audio metadata into the SDI stream.
Embedding Line	Line 9 to 20 (Default: Line 9)	Selects the Dolby metadata line position.
Ch. Association	No Association Ch1/2 to 15/16	Selects the Dolby E channel pair, which is embed as SDID in the audio metadata.
Embedding Method	Method A Method B	Selects the embed method.
Metadata Source	Demultiplex Decoder 1 Decoder 2 Internal 1 Internal 2	Demultiplex: Metadata de-embedded from the SDI input. Decoder 1: Dolby Decoder A-1 metadata Decoder 2: Dolby Decoder A-2 metadata Internal 1: Metadata in Dolby module A-1 Internal 2: Metadata in Dolby module A-2
Program Config	5.1 + 2 5.1 + 2x1 4 + 4 4 + 2x2 4 + 2 + 2x1 4 + 4x1 4x2 3x2 + 2x1 2x2 + 4x1 2 + 6x1 8x1 5.1 4 + 2 4 + 2x1 3x2 2x2 + 2x1 2 + 4x1 6x1 4 2 + 2 2 + 2x1 4x1	Selects how the audio channels are to be grouped within a Dolby E signal (program).

6-6-2. [ANCILLARY – Timecode]

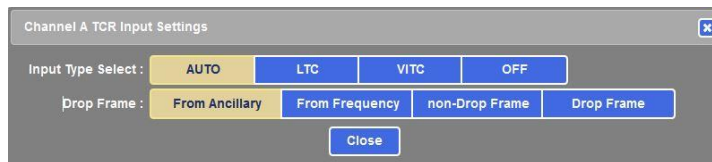
Select the Timecode tab in **ANCILLARY** and select a **Channel** button to change settings. A web page as shown below opens. The current timecode settings of the selected channel are displayed on the page. Set items to change referring to tables and click **Close**.



* TCR: Timecode Reader, TCG: Timecode Generator, DF: Drop Frame

6-6-2-1. TCR Input Settings

Allows you to select the input timecode to be sent to TCR (Timecode Reader).



Menu	Setting Range (Default is highlighted)	Description
Input Type Select	AUTO	Automatically detect the timecode of input signal. Reads LTC timecode if both LTC and VITC timecodes are detected. Reads whichever the embedded timecode if only one timecode is detected. Does not read timecode as OFF if it does not detect any.
	LTC	Reads LTC timecodes.
	VITC	Reads VITC timecodes.
	OFF	Does not read any timecodes.

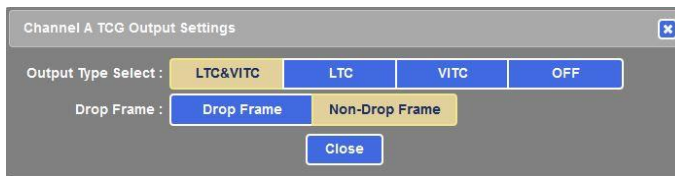
(Continued on next page)

Menu	Setting Range (Default is highlighted)	Description
Drop Frame	From Ancillary	Reads embedded timecode according to input signal timecode DF setting. This setting is normally used.
	From Frequency	Reads timecode according to input format. If input format is 59.94Hz or 29.97Hz, reads embedded timecode in DF. For other frequencies, reads embedded timecode in Non-DF.
	Non-Drop Frame	Reads timecode embedded in Non-DF.
	Drop Frame	Reads timecode embedded in DF.

* DF: Drop Frame, TCR: Time Code Reader, TCG: Time Code Generator

6-6-2-2. TCG Output Settings

Allows you to select which timecode to be embedded and timecode generator counter mode. Drop Frame is selectable when output format is 59.94Hz or 29.97Hz. Non-Drop Frame is automatically selected for other output format regardless of settings.



Menu	Setting Range (Default is highlighted)	Description
Output Type Select	LTC&VITC	Embeds both LTC and VITC timecodes.
	LTC	Embeds LTC timecode.
	VITC	Embeds VITC timecode.
	OFF	Does not embed any timecodes.
Drop Frame	Drop Frame	Counts up in drop frame mode.
	Non-Drop Frame	Counts up in non-drop frame mode.

6-6-2-3. TCG Mode Settings

Allows you to select the output timecode generation mode (TCG mode). Set detailed settings according to the TCG Mode setting.



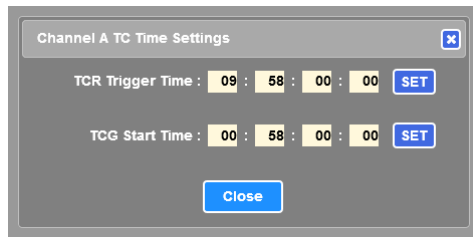
Menu	Setting Range	Description
TCG Mode	Sync TCR (Default)	Sets the output timecode start time, count start time and stop time following the input timecode. See the next page for detailed settings.
TCG Mode	Trigger TCR	Starts output timecode counting when the input timecode coincides with the set time (TCG Trigger Time). Set the timecode start time under TCG Start Time . (See Sec. 6-6-2-4. "TC Time Settings" for details.)
	Free Run	Manually sets the start time and count start time by touching buttons to generate the output timecode. Run: Starts counting from the current time. Hold: Stops counting. Preset: Resets the timecode to the start time (TCG Start Time). (See Sec. 6-6-2-4. "TC Time Settings" for details.)

◆ **If TCG Mode is set to Sync TCR**

Menu	Setting Range (Default is highlighted)	Description
Sync Irregular Setting	Follow	Outputs the timecode following the input timecode. If the input timecode is discontinuous, outputting timecode is also discontinuous.
	Hold	If input timecode becomes discontinuous, stops timecode count up and embedding.
	Free Run	Outputs the continuous timecode although VTR is stopped, JOG or Shutter operation is made or input timecode is discontinuous.
Offset Time Translate	Disable	Disables timecode offset.
	Enable	Enables timecode offset. For example, timecodes may start from "01:00:00:00" in video sequences of NTSC origin (Japan / USA) or from 10:00:00:00 in those of PAL origin (Eurozone). In such cases, to eliminate these regional differences in timecodes, select Auto(xxH) for both TCR Offset Hour and TCG Offset Hour. Selecting Manual allows you to set the desired offset value.
Set the following items if Enable is selected for Offset Time Translate.		
TCR Offset Hour	Auto(xxH) Manual (0 - 23)	Offsets the timecode in the input side to get rid of the regional differences using the following offset values. Auto: Automatically sets the offset value according to the input video format. Eurozone (24/25/50Hz) - 10H Japan/ USA (23.98/29.97/30/59.94/60Hz) - 01H Manual: Manually sets the offset value. Press the Unity button to reset to 0 .
TCG Offset Hour	Auto(xxH) Manual (0 - 23)	Offsets the timecode in the output side to get rid of the regional differences using the following offset values. Auto: Automatically sets the offset value according to the output video format. Eurozone (24/25/50Hz) - 10H Japan/ USA (23.98/29.97/30/59.94/60Hz) - 01H Manual: Manually sets the offset value. Press the Unity button to reset to 0 .

6-6-2-4. TC Time Settings

Allows you to set starting time to embed the input timecode and starting time of outputting timecode. Setting range is different for each format. See TCR Trigger Time and TCG Start Time Setting Range Tables for details.



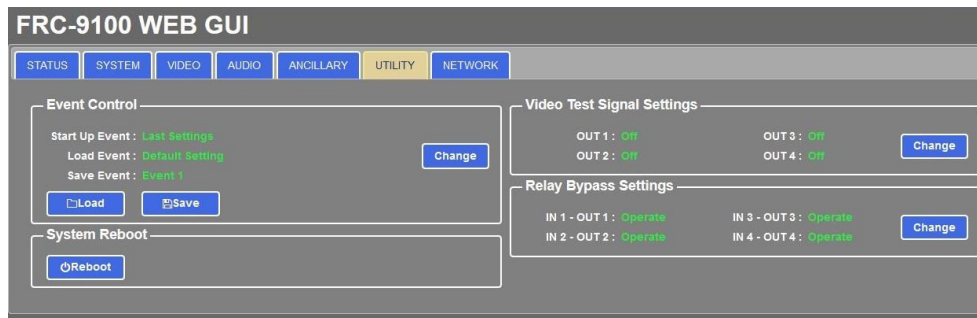
Menu	Setting Range (Default is highlighted)	Description
TCR Trigger Time [h:m:s:f]	00:00:00:00 to 23:59:59:29 (09:58:00:00)	Output timecode starts counting when the input timecode coincides with the time set here. Selectable when TCG Mode is Trigger TCR .
TCG Start Time [h:m:s:f]	00:00:00:00 to 23:59:59:29 (00:58:00:00)	Sets the start time of output timecode Selectable when the TCG Mode is Trigger TCR or Free Run .

TCR Trigger Time and TCG Start Time Setting Range Table

Format	Setting Range
2160/59.94p-A SQD 2160/59.94p-A 2SI 2160/59.94p-B SQD 2160/59.94p-B 2SI 2160/30p SQD 2160/29.97p SQD 1080/60p-A 1080/60p-B 1080/59.94p-A 1080/59.94p-B 1080/30p 1080/29.97p 1080/60i 1080/59.94i 720/60p 720/59.94p	00:00:00:00 to 23:59:59:29
2160/50p-A SQD 2160/50p-A 2SI 2160/50p-B SQD 2160/50p-B 2SI 2160/25p SQD 1080/50p-A 1080/50p-B 1080/25p 1080/50i 720/50p	00:00:00:00 to 23:59:59:24
2160/24p SQD 2160/23.98p SQD 1080/24p 1080/23.98p	00:00:00:00 to 23:59:59:23

6-7. UTILITY Page [Web]

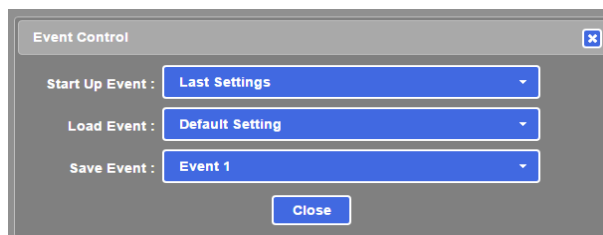
Select the UTILITY tab to open a web page as shown below.



6-7-1. Event Memory Settings

FRC-9100 startup events can be set and FRC-9100 conditions can be saved in a built-in memory. There are two types of settings in event memory. One is “Last Setting” to save the latest settings and the other is “Default Settings” to recall default settings for Event 1 to 4 and all other settings.

Click **Change** to open a window as shown below.



◆ Start Up Event

Sets the FRC-9100 startup settings.

Click **Change** and select an event to recall. Selecting **Load** loads the selected event while starting up the FRC-9100

◆ Load Event

Loads a saved event. Click **Change** to select an event to be loaded. Selecting **Load** starts up loading the selected event.

* Default settings are stored in Events 1 to 4 as factory shipment.

◆ Save Event

Saves FRC-9100 settings to an event. Click **Change** to select an event number. Selecting **Save** saves the current FRC-9100 settings to the selected event number.

IMPORTANT

At least 10 seconds are required to save an event. Wait at least 10 seconds before turning off the power after changing settings or Event Save operation. Wait at least 10 seconds then power off the FRC-9100. Otherwise, events may not be saved properly.

6-7-2. Setting Not Saved in Event Memory

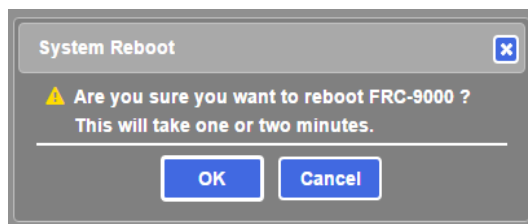
The following listed settings are not saved in event memory.

- ◆ **Signal statuses**
Refer to Sec. 6-2 “STATUS Page [Web]” for details.
- ◆ **Channel A Test Signal/Mute**
Refer to Sec. 6-5-1-18 “Test Signal/Mute Settings” for details.
- ◆ **Video Test Signal Settings**
Refer to Sec. 6-7-4 “Video Test Signal Settings” for details.
- ◆ **Relay Bypass Settings**
Refer to Sec. 6-7-5 “Relay Bypass Settings” for details.
- ◆ **Network Settings**
Refer to Sec. 6-8. “NETWORK Page [Web]” for details.

6-7-3. System Reboot

Click **Reboot** in the UTILITY page.

Click **OK** in the dialog box below to reboot your FRC-9100.



6-7-4. Video Test Signal Settings

Video test signals can be output from SDI OUT 1-4.

Click **Change** to select a test signal in the following window.



To output a test signal from a specified terminal, select a signal in each terminal.

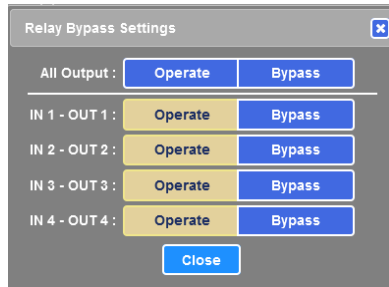
To output a test signal from all terminals, select **Color Bar** (SMPTE) or **Ramp** under **All Output**.

6-7-5. Relay Bypass Settings

3G/HD/SD-SDI terminals of FRC-9100 have relay bypass function to connect input and output terminal.

This function is used to check video signals when installing FRC-9100.

Click **Change** to bypass output video test signals.

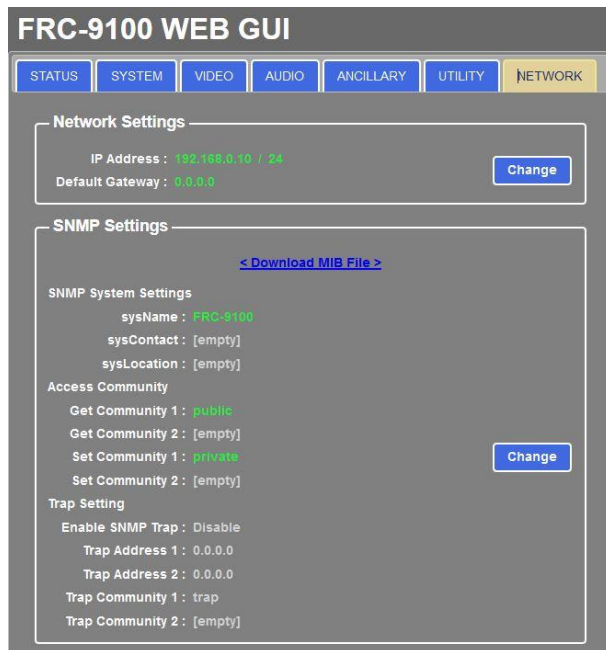


To output test signals for each output terminal respectively, select Bypass in IN 1-OUT 1 to IN 4-OUT 4. To output all terminals, set All Output to Bypass.

12G-SDI terminal does not have relay bypass function.

6-8. NETWORK Page [Web]

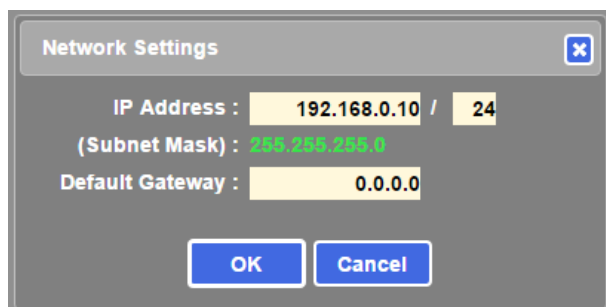
Select the NETWORK tab to open a web page as shown below.



6-8-1. Network Settings



Ethernet IP Address, Subnet Mask and Default Gateway settings are displayed. Click **Change** to change Ethernet settings. A settings window opens.



Change network settings, as necessary.

Note that the subnet mask is not expressed in dotted decimal notation such as "255.255.255.0," but expressed as a prefix length, with the number of significant bits used to identify a network.

Ex. "**255.255.255.0**" corresponds to "**/24**."

Click **OK** when settings are complete.

Click **Cancel** to stop changing the operation.

IMPORTANT

To apply network changes, restart the FRC-9100. To restart the FRC-9100, select Utility > System Reboot in the menu. (See Sec. 6-7-3. "System Reboot.")

6-8-2. Factory Shipment Network Settings

Factory shipment network settings are as follows.

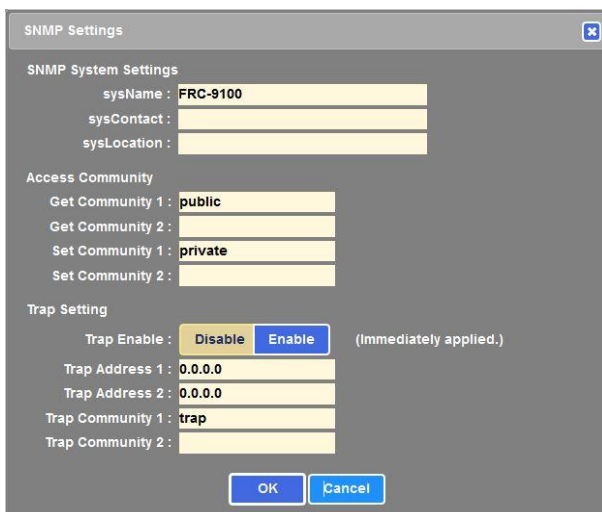
IP Address: **192.168.0.10**
Subnet Mask: **255.255.255.0**
Default Gateway: **0.0.0.0**

6-8-3. SNMP Setting



The screenshot shows the 'SNMP Settings' page. At the top right, there is a link '< Download MIB File >'. Below this, the settings are organized into three sections: 'SNMP System Settings', 'Access Community', and 'Trap Setting'. Under 'SNMP System Settings', 'sysName' is 'FRC-9100', 'sysContact' is '[empty]', and 'sysLocation' is '[empty]'. Under 'Access Community', 'Get Community 1' is 'public', 'Get Community 2' is '[empty]', 'Set Community 1' is 'private', and 'Set Community 2' is '[empty]'. A blue 'Change' button is located to the right of these settings. Under 'Trap Setting', 'Enable SNMP Trap' is 'Disable', 'Trap Address 1' and 'Trap Address 2' are '0.0.0.0', 'Trap Community 1' is 'trap', and 'Trap Community 2' is '[empty]'.

SNMP settings are displayed. Click **Change** to change Ethernet settings. A settings window opens.



The screenshot shows the 'SNMP Settings' dialog box. It has a title bar with a close button. The settings are organized into three sections: 'SNMP System Settings', 'Access Community', and 'Trap Setting'. Under 'SNMP System Settings', 'sysName' is 'FRC-9100', 'sysContact' is an empty text field, and 'sysLocation' is an empty text field. Under 'Access Community', 'Get Community 1' is 'public', 'Get Community 2' is an empty text field, 'Set Community 1' is 'private', and 'Set Community 2' is an empty text field. Under 'Trap Setting', 'Trap Enable' has 'Disable' and 'Enable' buttons, with '(Immediately applied.)' to the right. 'Trap Address 1' and 'Trap Address 2' are '0.0.0.0', 'Trap Community 1' is 'trap', and 'Trap Community 2' is an empty text field. At the bottom, there are 'OK' and 'Cancel' buttons.

The FRC-9100 (SNMP agent) can be remotely monitored by an SNMP manager (software normally running on a computer) using the SNMPv2C protocol. This window allows you to download the MIB (Management Information Base) file for FRC-9100 and manage SNMP network settings.

Menu		Default setting (Max characters)	Description
Download MIB File		-	Allows you to download MIB file.
SNMP System Settings	sysName	FRC-9100 (32 alphanumeric)	Enters the device (SNMP agent) name.
	sysContact	- (32 alphanumeric)	Allows you to add a comment on system manager (Optional)
	sysLocation	- (32 alphanumeric)	Allows you to add a comment on machine location (Optional)
Access Community	Get Community 1	public (20 alphanumeric)	Sets the SNMP Read-Only community name.
	Get Community 2		
	Set Community 1	private (20 alphanumeric)	Sets the SNMP Read-Write community name.
	Set Community 2		
Trap Settings	Enable SNMP Trap	--	Enables / disables traps that are sent whenever a significant status change occurs in the SNMP agent. See Sec. 6-8-6. "Trap List" for available traps.
	Trap Address 1	0.0.0.0	Enters IP addresses of SNMP managers that receive traps.
	Trap Address 2	0.0.0.0	
	Trap Community 1	trap (20 alphanumeric)	Sets the SNMP Trap community name.
	Trap Community 2		

IMPORTANT

To apply SNMP changes, restart the FRC-9100. To restart the FRC-9100, select Utility > System Reboot in the menu. (See Sec. 6-7-3. "System Reboot.")

6-8-4. Get / Set List

Menu	Parameter: Description	OID	TYPE
OID: 1.3.6.1.4.1.20175.1.356.2(frc9100Setting)			
frc9100ProcessModeSetting	Process mode setting 0: HDtoHD 1: 4Kto4K 2: HDto4K 3: 4KtoHD	3	INTEGER
frc9100ChannelSetting	Single/Dual Channel setting 0: Single Channel 1: Dual Channel	4	INTEGER
frc9100SystemLinkSetting	System Link setting 0: Disable 1: Enable	5	INTEGER
frc9100ChAInFormatSetting	Ch A input signal format setting. Available formats vary depending on the Process Mode setting.	11	INTEGER
	All mode		
	240: Auto		
	4Kto4K, 4KtoHD mode		
	204: Sdi2160-59p-LevelA-SQD 208: Sdi2160-50p-LevelA-SQD 205: Sdi2160-59p-LevelA-2SI 209: Sdi2160-50p-LevelA-2SI		

	<p>206: Sdi2160-59p-LevelB-SQD 210: Sdi2160-50p-LevelB-SQD 207: Sdi2160-59p-LevelB-2SI 211: Sdi2160-50p-LevelB-2SI 100: Sdi2160-30p-SQD 102: Sdi2160-29p-SQD 104: Sdi2160-25p-SQD 106: Sdi2160-24p-SQD 108: Sdi2160-23p-SQD</p> <p>HDtoHD, HDto4K mode</p> <p>60: Sdi1080-60p-LevelA 62: Sdi1080-59p-LevelA 64: Sdi1080-50p-LevelA 61: Sdi1080-60p-LevelB 63: Sdi1080-59p-LevelB 65: Sdi1080-50p-LevelB 23: Sdi1080-30p 24: Sdi1080-29p 25: Sdi1080-25p 26: Sdi1080-24p 27: Sdi1080-23p 10: Sdi1080-60i 11: Sdi1080-59i 12: Sdi1080-50i 5: Sdi720-60p 6: Sdi720-59p 7: Sdi720-50p</p> <p>HDtoHD mode</p> <p>1: Sdi525-59.94i 2: Sdi625-50i</p>		
frc9100ChAOutFormatSetting	<p>Ch A output signal format setting Available formats vary depending on the Process Mode setting.</p> <p>4Kto4K, HDto4K mode</p> <p>204: Sdi2160-59p-LevelA-SQD 208: Sdi2160-50p-LevelA-SQD 205: Sdi2160-59p-LevelA-2SI 209: Sdi2160-50p-LevelA-2SI 206: Sdi2160-59p-LevelB-SQD 210: Sdi2160-50p-LevelB-SQD 207: Sdi2160-59p-LevelB-2SI 211: Sdi2160-50p-LevelB-2SI 100: Sdi2160-30p-SQD 102: Sdi2160-29p-SQD 104: Sdi2160-25p-SQD 106: Sdi2160-24p-SQD 108: Sdi2160-23p-SQD</p> <p>HDtoHD, 4KtoHD mode</p> <p>60: Sdi1080-60p-LevelA 62: Sdi1080-59p-LevelA 64: Sdi1080-50p-LevelA 61: Sdi1080-60p-LevelB 63: Sdi1080-59p-LevelB 65: Sdi1080-50p-LevelB 23: Sdi1080-30p 24: Sdi1080-29p 25: Sdi1080-25p 26: Sdi1080-24p 27: Sdi1080-23p</p>	12	INTEGER

	10: Sdi1080-60i 11: Sdi1080-59i 12: Sdi1080-50i 5: Sdi720-60p 6: Sdi720-59p 7: Sdi720-50p		
frc9100ChAGenlockSetting	Ch A genlock setting 0: Freerun 1: InputLock 10: Genlock1 11: Genlock2	13	INTEGER
frc9100ChAAspectRetioSetting	Ch A aspect ratio setting. Effective for SD signal input 0: 4:3 1: Zoom14:9 2: Zoom16:9 3: Squeeze	14	INTEGER
frc9100ChASystemPhaseHSetting	Ch A system H phase setting -1400...+1400	15	INTEGER
frc9100ChASystemPhaseVSetting	Ch A system V phase setting -600...+600	16	INTEGER
frc9100ChBInFormatSetting	Ch B input signal format setting Available formats vary depending on the Process Mode setting. All mode 240: Auto HDtoHD mode 60: Sdi1080-60p-LevelA 62: Sdi1080-59p-LevelA 64: Sdi1080-50p-LevelA 61: Sdi1080-60p-LevelB 63: Sdi1080-59p-LevelB 65: Sdi1080-50p-LevelB 23: Sdi1080-30p 24: Sdi1080-29p 25: Sdi1080-25p 26: Sdi1080-24p 27: Sdi1080-23p 10: Sdi1080-60i 11: Sdi1080-59i 12: Sdi1080-50i 5: Sdi720-60p 6: Sdi720-59p 7: Sdi720-50p 1: Sdi525-60 2: Sdi625-50	21	INTEGER
frc9100ChBOutFormatSetting	Ch A output signal format setting Available formats vary depending on the Process Mode setting. HDtoHD mode 60: Sdi1080-60p-LevelA 62: Sdi1080-59p-LevelA 64: Sdi1080-50p-LevelA 61: Sdi1080-60p-LevelB 63: Sdi1080-59p-LevelB 65: Sdi1080-50p-LevelB 23: Sdi1080-30p 24: Sdi1080-29p 25: Sdi1080-25p	22	INTEGER

	26: Sdi1080-24p 27: Sdi1080-23p 10: Sdi1080-60i 11: Sdi1080-59i 12: Sdi1080-50i 5: Sdi720-60p 6: Sdi720-59p 7: Sdi720-50p		
frc9100ChBGenlockSetting	Ch B genlock setting 0: Freerun 1: InputLock 10: Genlock1 11: Genlock2	23	INTEGER
frc9100ChBAAspectRetioSetting	Ch B aspect ratio setting Effective for SD signal input 0: 4:3 1: Zoom14:9 2: Zoom16:9 3: Squeeze	24	INTEGER
frc9100ChBSystemPhaseHSetting	System H phase setting -1400...+1400	25	INTEGER
frc9100ChBSystemPhaseVSetting	System V phase setting -600...+600	26	INTEGER
frc9100EventStartUpSetting	Startup load event setting 0: LastSettings 1: Event1 2: Event2 3: Event3 4: Event4 200: FactoryDefault	181	INTEGER
frc9100EventLoadNumSetting	Event number to be loaded 1: Event1 2: Event2 3: Event3 4: Event4 200: FactoryDefault	182	INTEGER
frc9100EventLoadRun	0: Idle (Normal state) 1: Load (Load the event) Sending 1 starts to load the selected event. After loading, the parameter is automatically reset to "0."	183	INTEGER
frc9100EventSaveNumSetting	Event number to be used for saving 1: Event1 2: Event2 3: Event3 4: Event4	184	INTEGER
frc9100EventSaveRun	0: Idle (Normal state) 1. Save (Save settings to the event.) Sending 1 starts to save settings to the selected event number. After saving, the parameter is automatically reset to "0."	185	INTEGER
frc9100Reboot	0: Idle (Normal state) 1. Reboot (Reboot the device.) Sending 1 reboots FRC-9100. After rebooting (about 60 seconds later) the parameter is automatically reset to "0."	201	INTEGER

6-8-5. Get List

Menu	Parameter: Description	OID	TYPE
OID: 1.3.6.1.4.1.20175.1.356.1(frc9100Status)			
frc9100Fan1Status	FAN 1 status 0: Normal 1: Failed	1	INTEGER
frc9100Fan2Status	FAN2 status	2	INTEGER
frc9100PS1Status	Power Unit 1 status	11	INTEGER
frc9100PS2Status	Power Unit 2 status	12	INTEGER
frc9100SlotAStatus	Slot A status	13	INTEGER
frc9100SlotBStatus	Slot B status	14	INTEGER
frc9100Temperature	Temperature status	15	INTEGER
frc9100Version	System version	21	OCTET STRING
frc9100Serialnumber	Serial number	22	OCTET STRING
frc9100Option914K	Option information 0: None 1: Install	31	INTEGER
frc9100Option912C	(Same as above)	32	INTEGER
frc9100Option90DA	(Same as above)	33	INTEGER
frc9100Option90DMA1	(Same as above)	34	INTEGER
frc9100Option90DMA2	(Same as above)	35	INTEGER
frc9100Option90DMB1	(Same as above)	36	INTEGER
frc9100Option90DMB2	(Same as above)	37	INTEGER
frc9100ChAInFormat	Ch A input status 0: Loss 250: Unknown 251: Bypass 253: Unsupported 254: NotUsed 204: Sdi2160-59p-LevelA-SQD 208: Sdi2160-50p-LevelA-SQD 205: Sdi2160-59p-LevelA-2SI 209: Sdi2160-50p-LevelA-2SI 206: Sdi2160-59p-LevelB-SQD 210: Sdi2160-50p-LevelB-SQD 207: Sdi2160-59p-LevelB-2SI 211: Sdi2160-50p-LevelB-2SI 100: Sdi2160-30p-SQD 102: Sdi2160-29p-SQD 104: Sdi2160-25p-SQD 106: Sdi2160-24p-SQD 108: Sdi2160-23p-SQD 60: Sdi1080-60p-LevelA 62: Sdi1080-59p-LevelA 64: Sdi1080-50p-LevelA 61: Sdi1080-60p-LevelB 63: Sdi1080-59p-LevelB 65: Sdi1080-50p-LevelB 23: Sdi1080-30p 24: Sdi1080-29p 25: Sdi1080-25p 26: Sdi1080-24p 27: Sdi1080-23p 10: Sdi1080-60i 11: Sdi1080-59i 12: Sdi1080-50i 5: Sdi720-60p	61	INTEGER

	6: Sdi720-59p 7: Sdi720-50p 1: Sdi525-60 2: Sdi625-50)		
frc9100ChAOutFormat	Ch A output status 251: Bypass 254: NotUsed 204: Sdi2160-59p-LevelA-SQD 208: Sdi2160-50p-LevelA-SQD 205: Sdi2160-59p-LevelA-2SI 209: Sdi2160-50p-LevelA-2SI 206: Sdi2160-59p-LevelB-SQD 210: Sdi2160-50p-LevelB-SQD 207: Sdi2160-59p-LevelB-2SI 211: Sdi2160-50p-LevelB-2SI 100: Sdi2160-30p-SQD 102: Sdi2160-29p-SQD 104: Sdi2160-25p-SQD 106: Sdi2160-24p-SQD 108: Sdi2160-23p-SQD 60: Sdi1080-60p-LevelA 62: Sdi1080-59p-LevelA 64: Sdi1080-50p-LevelA 61: Sdi1080-60p-LevelB 63: Sdi1080-59p-LevelB 65: Sdi1080-50p-LevelB 23: Sdi1080-30p 24: Sdi1080-29p 25: Sdi1080-25p 26: Sdi1080-24p 27: Sdi1080-23p 10: Sdi1080-60i 11: Sdi1080-59i 12: Sdi1080-50i 5: Sdi720-60p 6: Sdi720-59p 7: Sdi720-50p	62	INTEGER
frc9100ChAGenlock	Ch A genlock status 0: Loss 250: Unlocked 251: Freerun 252: InputLock 254: NotUsed 1: BB-NTSC 2: BB-PAL 5: Tri-720-60p 6: Tri-720-59p 7: Tri-720-50p 10: Tri-1080-60i 11: Tri-1080-59i 12: Tri-1080-50i 23: Tri-1080-30p 24: Tri-1080-29p 25: Tri-1080-25p 26: Tri-1080-24p 27: Tri-1080-23p	63	INTEGER
frc9100ChBInFormat	Ch B input status	64	INTEGER
frc9100ChBOutFormat	Ch B output status	65	INTEGER
frc9100ChBGenlock	Ch B genlock status	66	INTEGER

6-8-6. Trap List

Menu	Trap report condition	OID	TYPE
OID: 1.3.6.1.4.1.20175.1.356.0(frc9100Trap)			
frc9100Fan1AlarmTrap	FAN1 alarm	1	INTEGER
frc9100Fan2AlarmTrap	FAN2 alarm	2	INTEGER
frc9100PS1AlarmTrap	Power Unit 1 alarm	11	INTEGER
frc9100PS2AlarmTrap	Power Unit 2 alarm	12	INTEGER
frc9100SlotAAlarmTrap	Slot A alarm	13	INTEGER
frc9100SlotBAlarmTrap	Slot B alarm	14	INTEGER
frc9100TemperatureAlarmTrap	Temperature alarm	15	INTEGER
frc9100ChAInFormatTrap	Ch A input format alarm	61	INTEGER
frc9100ChAOutFormatTrap	Ch A output format alarm	62	INTEGER
frc9100ChAGenlockTrap	Ch A genlock alarm	63	INTEGER
frc9100ChBInFormatTrap	Ch B input format alarm	64	INTEGER
frc9100ChBOutFormatTrap	Ch B output format alarm	65	INTEGER
frc9100ChBGenlockTrap	Ch B genlock alarm	66	INTEGER

7. Web Browser Control (Other modes than SD/HD to HD)

This section explains how to operate in **4K to 4K**, **HD to 4K** or **4K to HD** mode. To use these modes, an FRC-914K option is required.

For details on signal input and output in these modes, see Sec. 3-3. "Conversions between 4K Signals (FRC-914K)", Sec. 3-4. "Conversions from HD to 4K (FRC-914K)" and" Sec. 3-5. "Conversions from 4K to HD (FRC-914K)" respectively.

7-1. Connection between Web Browser and FRC-9100

Refer to Sec. 6-1. "Connection between Web Browser and FRC-9100" to connect the FRC-9100 to your PC through LAN.

7-2. STATUS Page [Web]

See Sec. 6-2. "STATUS Page" [Web].

Only one frame rate converter can be used in 4K to 4K, HD to 4K or 4K to HD mode.

7-3. SYSTEM Page [Web]

◆ Changing to Mode

Click **SYSTEM** then the **General** tab to open a web page. Click **Change** to open the menu.

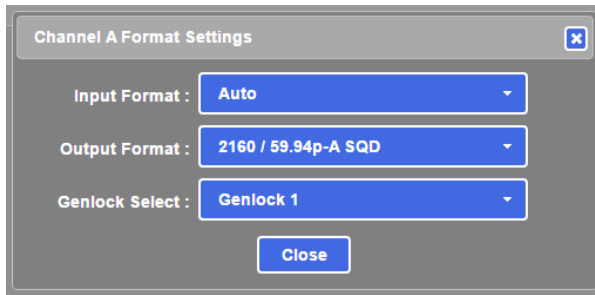


Select a mode under **Process Mode**. (**Channel** and **System Link** are unavailable.)
Click **Close** to close the window.



◆ **Selecting a Signal Format**

Click **SYSTEM** and the **Channel A** tab to open a web page. Click **Change** in the Format Settings block to open a setting window.



Refer to the table below to set the input video format and genlock mode.

Menu	Setting Range (Highlighted: Default)	Descriptions
Input Format	(In 4K to 4K or 4K to HD mode) Auto 2160/59.94p-A SQD 2160/59.94p-A 2SI * 2160/59.94p-B SQD 2160/59.94p-B 2SI 2160/50p-A SQD 2160/50p-A 2SI * 2160/50p-B SQD 2160/50p-B 2SI 2160/30p SQD 2160/29.97p SQD 2160/25p SQD 2160/24p SQD 2160/23.98p SQD	Selects an input signal format. Auto : Automatically detects the input signal to process. -A : 3G-SDI Level-A -B : 3G-SDI Level-B SQD : Square Division method 2SI : 2-Sample Interleave method
	(In HD to 4K mode) Auto 1080/60p-A 1080/60p-B 1080/59.94p-A 1080/59.94p-B 1080/50p-A 1080/50p-B 1080/30p 1080/29.97p 1080/25p 1080/24p 1080/23.98p 1080/60i 1080/59.94i 1080/50i 720/60p 720/59.94p 720/50p	When invalid signals or signals other than the specified are input, black will be output. * When 12G-SDI is selected for input terminal, 2160/59.94p and 2160/50p are displayed and internal operation is set to * marked formats.

(Continued on next page)

Menu	Setting Range (Highlighted: Default)	Descriptions
Output Format	(In 4K to 4K or HD to 4K mode) 2160/59.94p-A SQD 2160/59.94p-A 2SI * 2160/59.94p-B SQD 2160/59.94p-B 2SI 2160/50p-A SQD 2160/50p-A 2SI * 2160/50p-B SQD 2160/50p-B 2SI 2160/30p SQD 2160/29.97p SQD 2160/25p SQD 2160/24p SQD 2160/23.98p SQD (In 4K to HD mode) 1080/60p-A 1080/60p-B 1080/59.94p-A 1080/59.94p-B 1080/50p-A 1080/50p-B 1080/30p 1080/29.97p 1080/25p 1080/24p 1080/23.98p 1080/60i 1080/59.94i 1080/50i 720/60p 720/59.94p 720/50p	Selects an output signal format. * When 12G-SDI is selected for output terminal, 2160/59.94p and 2160/50p are displayed and internal operation is set to * marked formats.
Genlock Select	Free Run Input Lock Genlock 1 Genlock 2	Sets the output signal synchronous mode. Free Run: Synchronizes to an internally generated signal. Input Lock: Synchronizes to the input signal. Genlock 1: Synchronizes to an external reference signal that is input to Genlock 1. When no signal is input to Genlock 1, synchronizes to an internally generated signal. Genlock 2: Synchronizes to an external reference signal that is input to Genlock 2. When no signal is input to Genlock 2, synchronizes to an internally generated signal.

For other system settings, see Sec. 6-3 "SYSTEM Page [Web]."

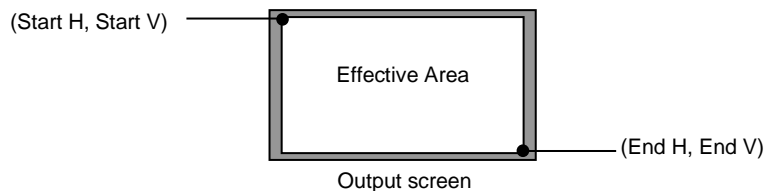
7-4. VIDEO Page [Web]

See Sec 6-4. "VIDEO Page [Web]."

◆ Effective Area Settings

Click **Change** in the Effective Area Settings area in the VIDEO tab to set the Effective Area.

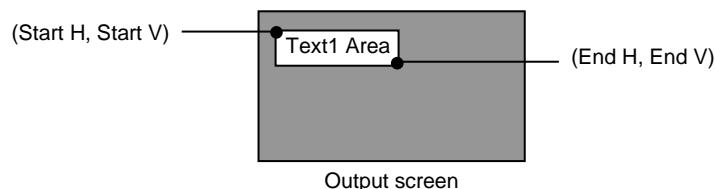
Menu		Setting Range (Highlighted: Default)	Descriptions
Mask		Disable Enable	Selects whether to mask with black outside the Effective Area. Disable: Outside region is unmasked. Enable: Outside region is masked.
Effective Area	Start H	0-1920(2)	Specifies horizontal / vertical effective area of video signal (see figure below). Outside effective area will not be corrected during a conversion. Note that the distance between start and end points must be more than 50% of the maximum values, even if the points are within their range.
	End H	1920-3840(3838)	
	Start V	0-1080(1)	
	End V	1080-2160(2159)	



◆ Text Area 1-4 Settings

Click **Change** in Text Area 1-4 Settings areas to set Text Area areas.

Menu		Setting Range (Highlighted: Default)	Descriptions
Mask		Disable Enable	Enables/disables text areas. Disable: Disables text areas. Enable: Enables text areas.
Text Area 1-4	Start H End H Start V End V	(See the following table.)	Specifies text areas in which correction is not applied. Note that the distance between start and end points must be more than 2 in height and 1 in width, even if the points are within their range.



	Setting range	Default value			
		Text Area 1	Text Area 2	Text Area 3	Text Area 4
Start H	0-3838	200	3240	200	3240
End H	2-3840	600	3640	600	3640
Start V	1-2159	200	200	1560	1560
End V	2-2160	600	600	1960	1960

7-5. AUDIO Page [Web]

See Sec. 6-5. "AUDIO Page [Web] for details.

7-6. ANCILLARY Page [Web]

See Sec. 6-6. "ANCILLARY Page [Web] for details.

7-7. UTILITY Page [Web]

See Sec. 6-7. "UTILITY Page [Web]" for details.

7-8. NETWORK Page [Web]

See Sec. 6-8. "NETWORK Page [Web]" for details.

8. Front Touch Panel Operation

The FRC-9100 settings can be changed by a touch panel screen operation.

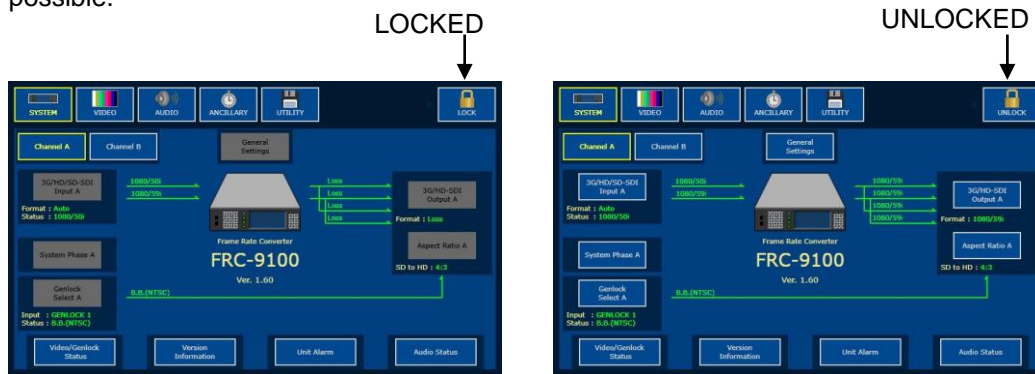
8-1. Front Panel LOCK / UNLOCK

Front panel lock is available to operate error prevention.

Touching the key icon in the top-right corner switches LOCK and UNLOCK.

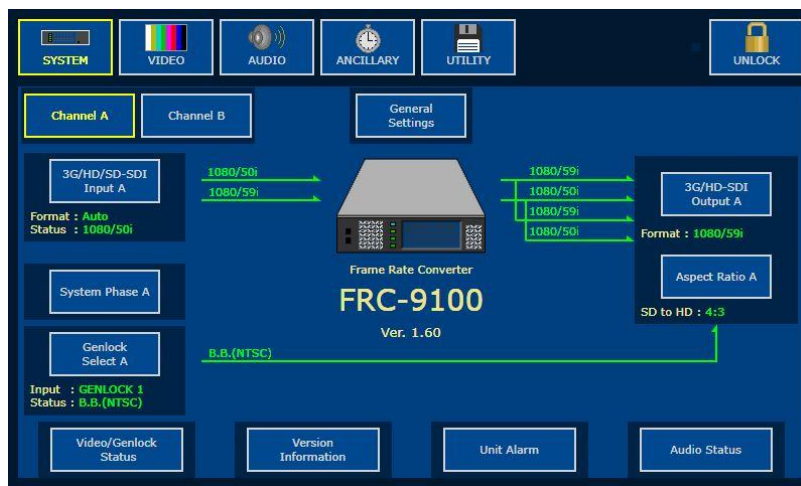
When the front panel is locked, the setting buttons gray out. Setting is not possible.

When the front panel is unlocked, the setting buttons becomes blue and various settings becomes possible.



8-2. SYSTEM Menu [Panel]

Touch SYSTEM to open the SYSTEM menu screen as shown below, in which the current FRC-9100 current status is displayed. Channel A/B selection, Process Mode, input / output signal formats, aspect ratio and Genlock mode can be set here.



8-2-1. Channel A/B Selection



The Channel A and Channel B buttons are displayed when an FRC-912C option is installed.

Selecting **Channel A** enables you to set the 1st channel frame rate converter.

Selecting **Channel B** enables you to set the 2nd channel frame rate converter.

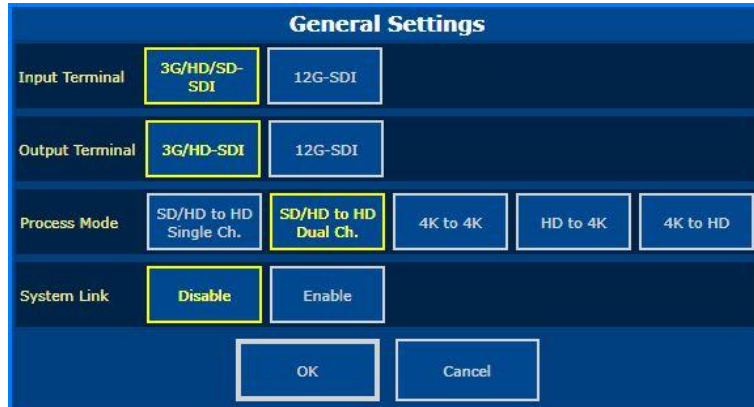
* Before selecting **Channel B**, set **SD/HD to HD Dual Ch.** in the menu (See Sec. 8-2-2. "General Settings.")

Before conversion settings, select Channel A or Channel B.

8-2-2. General Settings



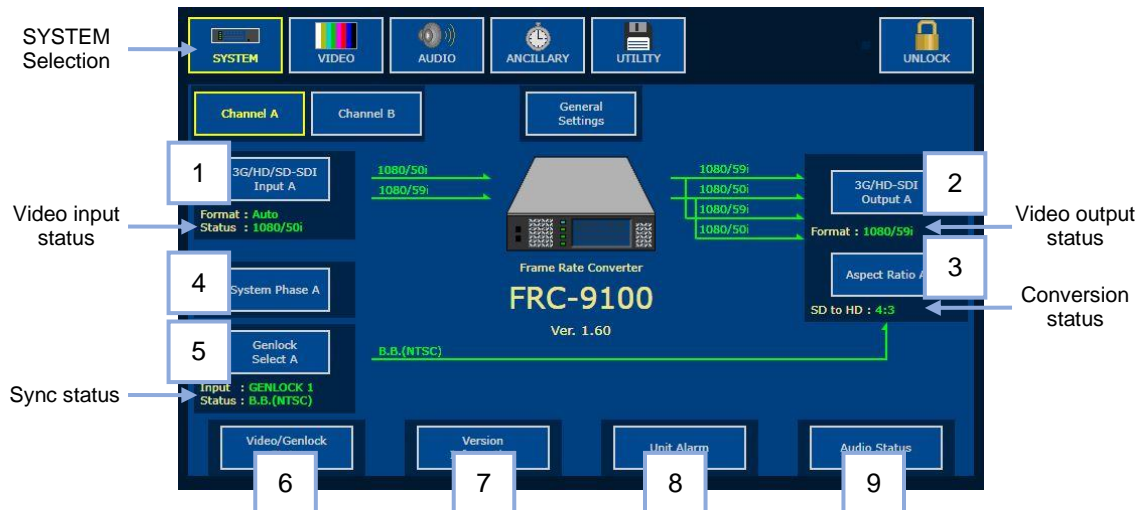
The Output Settings button is displayed when an FRC-912C or FRC-914K option is installed. Touching the button opens a window as shown below.



See General Settings in Sec. 6-3-3 “[SYSTEM - General]” for details on each setting.

- * **12G-SDI** is available with FRC-914K option
- * **SD/HD to HD Dual Ch.** is available with FRC-912C option. **4K to 4K**, **HD to 4K** and **4K to HD** are available with FRC-914K option.
- * **System Link** is enabled when **SD/HD to HD Dual Ch.** is selected under Process Mode.

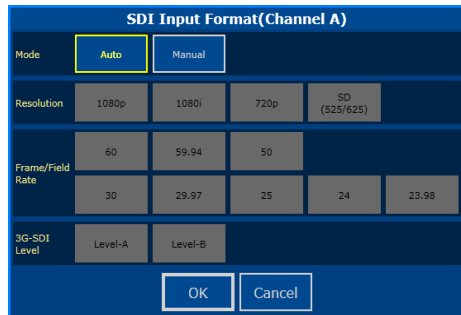
8-2-3. Miscellaneous Settings



8-2-3-1. 3G/HD/SD-SDI Input Format

◆ SD/HD to HD Mode, HD to 4K Mode

Touch **3G/HD/SD-SDI INPUT** (1 in the SYSTEM diagram, see Sec. 8-2-3) to open a window as shown below.



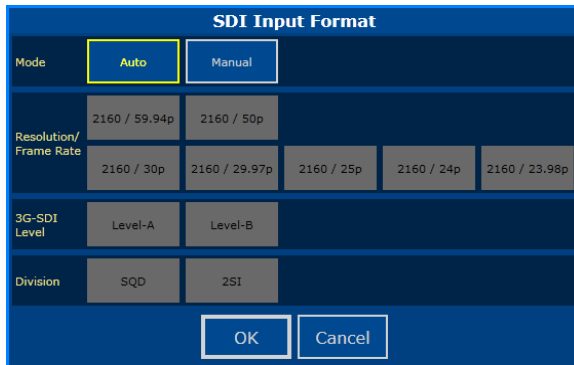
Refer to the table below to select an input signal format, then touch **OK**. Touch **Cancel** to cancel the change.

Menu	Setting Range (Highlighted: Default)	Descriptions
Mode	Auto Manual	Selects an input signal format. Auto: Automatically detects the input signal to process. When invalid video signal is input, black will be output. Manual: Manually sets the input signal format using the following parameters. When another format signal is input, black will be output.
Resolution	1080p 1080i 720p SD (525/625)	Selects the input signal resolution. (SD (525/625) available only in SD/HD to HD mode.)
Frame/Field Rate	60 59.94 50 30 29.97 25 24 23.98	Selects the input signal frame/field rate. If Resolution is set to SD and Frame Rate is set to other than 50 , Frame Rate is automatically changed to 59.94 .
3G-SDI Level	Level-A Level-B	If Resolution is set to 1080p , select the 3G-SDI signal level.

* Output images will appear distorted if Input Format, Output Format or Genlock Select is changed and flickering may occur on another video output channel. It is recommended to change Input Format from AUTO to a fixed format (Manual) as soon as the input and output formats are determined.

◆ **4K to 4K Mode, 4K to HD Mode**

Touch **4K UHD INPUT** (1 in the SYSTEM diagram, see Sec. 8-2-3) to open a window as shown below.



Refer to the table below to select an input signal format, then touch **OK**. Touch **Cancel** to cancel the change.

Menu	Setting Range (Highlighted: Default)	Descriptions
Mode	Auto Manual	Selects an input signal format. Auto: Automatically detects the input signal to process. When invalid video signal is input, black will be output. Manual: Manually sets the input signal format using the following parameters. When another format signal is input, black will be output.
Resolution/ Frame Rate	2160/59.94p 2160/50p 2160/30p 2160/29.97p 2160/25p 2160/24p 2160/23.98p	Selects the input signal resolution/frame rate. When Input Terminal is 12G-SDI, only 59.94p or 50p is selectable.
3G-SDI Level	Level-A Level-B	If 2160/59.94p or 2160/50p is selected under Resolution/Frame Rate, select 3G-SDI Level A or B. Unavailable when Input Terminal is 12G-SDI.
Division	SQD 2SI	Selects the 4K video division method. If 2160/30p , 2160/29.97p , 2160/25p , 2160/24p or 2160/23.98p is selected under Resolution/Frame Rate, set to SQD . Unavailable when Input Terminal is 12G-SDI.

8-2-3-2. 3G/HD-SDI Output Format

◆ SD/HD to HD Mode, 4K to HD Mode

Touch **3G/HD-SDI OUTPUT** (2 in the SYSTEM diagram, see Sec. 8-2-3) to open a window as shown below.

Menu	Setting Range (Highlighted: Default)	Descriptions
Resolution	1080p 1080i 720p	Selects the output signal resolution.
Frame/Field Rate	60 59.94 50 30 29.97 25 24 23.98	Selects the output signal frame/field rate. (30/ 29.97/ 25/ 24/ 23.98: Only if Resolution is set to 1080p)
3G-SDI Level	Level-A Level-B	If Resolution is set to 1080/60p , 1080/59.94p or 1080/50p , select the 3G-SDI signal level.

* Output images will appear distorted if Input Format, Output Format or Genlock Select is changed and flickering may occur on another video output channel. Change these settings only when needed.

◆ 4K to 4K Mode, HD to 4K Mode

Touch **4K UHD OUTPUT** (2 in the SYSTEM diagram, see Sec. 8-2-3) to open a window as shown below.

Menu	Setting Range (Highlighted: Default)	Descriptions
Resolution/ Frame Rate	2160/59.94p 2160/50p 2160/30p 2160/29.97p 2160/25p 2160/24p 2160/23.98p	Selects the output signal resolution/frame rate. When Output Terminal is 12G-SDI, only 59.94p or 50p is selectable.

(Continued on next page)

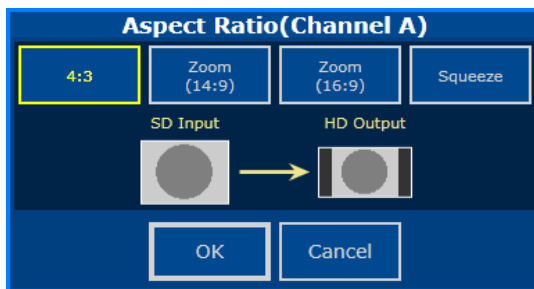
Menu	Setting Range (Highlighted: Default)	Descriptions
3G-SDI Level	Level-A Level-B	If 2160/59.94p or 2160/50p is selected under Resolution/Frame Rate, select 3G-SDI Level A or B. Un-available when Input Terminal is 12G-SDI.
Division	SQD 2SI	Selects the 4K video division method. If 2160/30p , 2160/29.97p , 2160/25p , 2160/24p or 2160/23.98p is selected under Resolution/Frame Rate, set to SQD . Un-available when Input Terminal is 12G-SDI.

8-2-3-3. Aspect Ratio

Aspect Ratio can be selected only when **Input Format** is set to **Auto** or **SD** in HD mode.

Touch **Aspect Ratio** (3 in the SYSTEM diagram, see Sec. 8-2-3) to open a window as shown below.

The below figure shows the current aspect ratio conversion and changes according to the aspect ratio selection. To set the selected aspect ratio, touch **OK**.



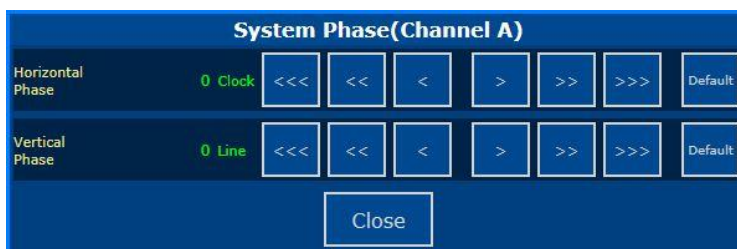
8-2-3-4. System Phase

Adjusts the horizontal and vertical system phases against those of the genlock input.

If **Channel A/B** is selected in “Channel A/B Selection” (see Sec. 8-2-1), signal phases on **Channel A** can be adjusted referring to the Genlock 1 signal and signal phases on **Channel B** can be adjusted referring to the Genlock 2 signal

If **Channel A/B** is not selected, system phases can be adjusted referring to the Genlock 1 signal.

Touch **System Phase** (4 in the SYSTEM diagram, see Sec. 8-2-3) to open the following setting window.



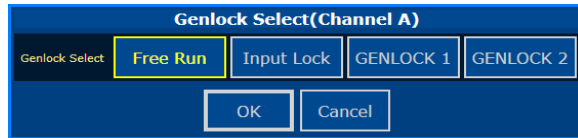
Refer to **System Phase Settings** in Sec. 6-3-1 “[SYSTEM - Channel A]” to adjust system phase.

Use increment / decrement buttons (<<<, <<, <, >, >>, >>>) to adjust the phase type involved. Touch **Close** when confirmation is complete.

8-2-3-5. Genlock Input

Output images will appear distorted if Input Format, Output Format or Genlock Select is changed and flickering may occur on another video output channel. Change these settings only when needed.

Touch **Genlock Input** (5 in the SYSTEM diagram, see Sec. 8-2-3) to open a window as shown below.



Refer to **Format Settings** in Sec. 6-3-1 “[SYSTEM - Channel A]” to select the output video reference mode, then touch **OK**.

8-2-3-6. Video Genlock Status

Touch **Video Genlock Status** (6 in the SYSTEM diagram, see Sec. 8-2-3) to open a window as shown below. Verify the input/output signal and genlock status.



8-2-3-7. Version Information

Touch **Version Information** (7 in the SYSTEM diagram, see Sec. 8-2-3) to open a window as shown below.

Verify the various FRC-9100 various version information.



8-2-3-8. Unit Alarm

Touch **Unit Alarm** (8 in the SYSTEM diagram, see Sec. 8-2-3) to open a window as shown below. Verify the unit's power, fan and temperature status.

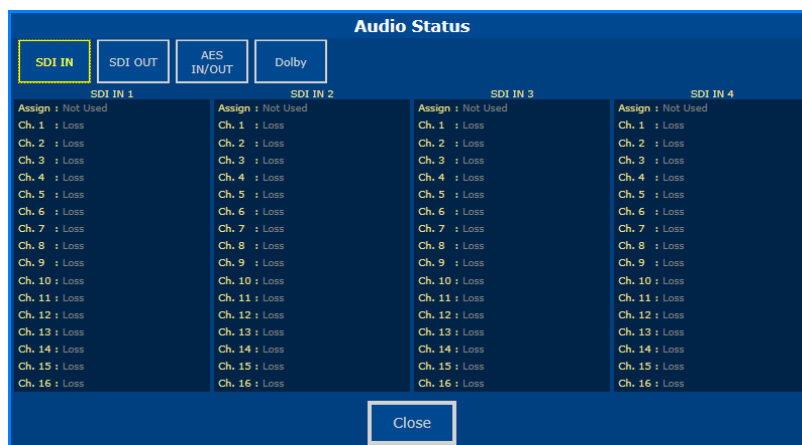


Touch **Close** when confirmation is complete.

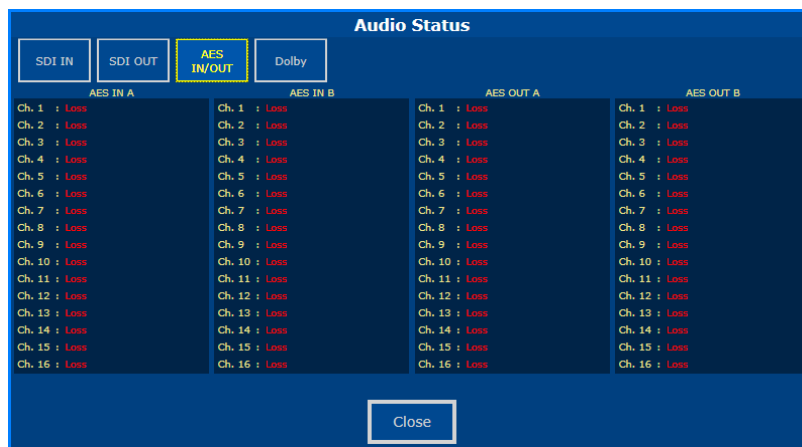
8-2-3-9. Audio Status

Touch **Audio Status** (9 in the SYSTEM diagram, see Sec. 8-2-3) to open a window as shown below.

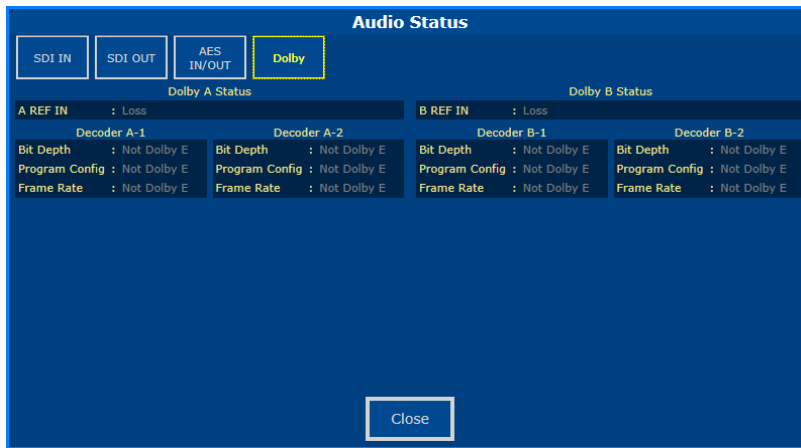
Verify the audio status. Touching **SDI IN** opens the input audio status and touching **SDI OUT** opens the output audio status.



Touch **AES IN/OUT** to display the digital audio input / output status.

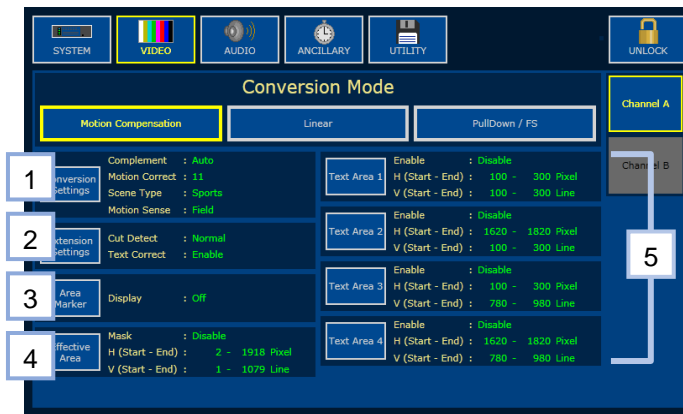


Touch **Dolby** to display the Dolby E audio status.



8-3. VIDEO Menu [Panel]

Touching VIDEO opens the VIDEO menu screen as shown below, in which current FRC-9100 status is displayed. Conversion Mode, Conversion Settings, Extension Settings and Effective Area can be set here.



Channel A and **Channel B** buttons are enabled when the FRC-912C option is installed.

Select **Channel A** or **Channel B** in the top right corner of the screen.

Selecting **Channel A** sets the 1st channel frame rate converter.

Selecting **Channel B** sets the 2nd channel frame rate converter.

* Before selecting **Channel B**, set **SD/HD to HD Dual Ch.** in the menu (See Sec. 8-2-2. "General Settings.")

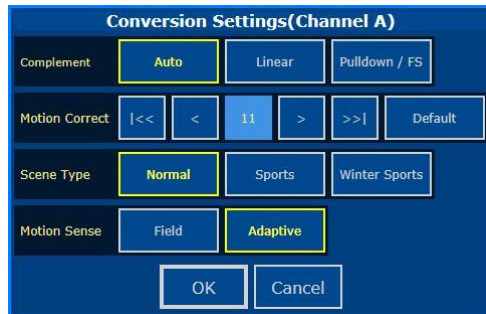
8-3-1. Conversion Mode

Selects conversion mode by Conversion Mode (in the above VIDEO menu).

See Sec. 6-4-1-1. "Conversion Settings" for details on settings.

8-3-2. Conversion Settings

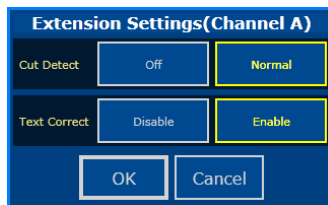
Touch **Conversion Settings** (1 in the VIDEO menu, see Sec. 8-3) to open a screen as shown below.



Touch a setting to change then **OK**.
Touch **Cancel** to cancel the change
See Sec. 6-4-1-1. "Conversion Settings" for details on settings.

8-3-3. Extension Settings

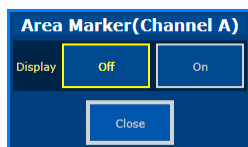
Touch **Extension Settings** (2 in the VIDEO menu, see Sec. 8-3) to open a screen as shown below and set scene cut and moving text detection.



Touch a setting to change then **OK**.
Touch **Cancel** to cancel the change.
See Sec. 6-4-1-2. "Extension Settings" for details on settings.

8-3-4. Area Marker

Touch **Area Marker** (3 in the VIDEO menu, see Sec. 8-3) to open a screen as shown below.



Turn text and effective area marker display on/off.
See Sec. 6-4-1-3. "Area Marker Settings."

8-3-5. Effective Area

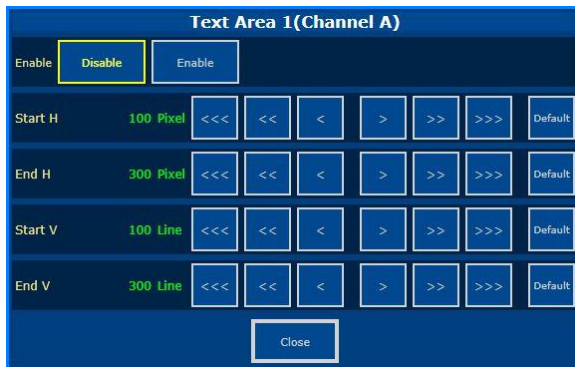
Touch **Effective Area** (4 in the VIDEO menu, see Sec. 8-3) to open a screen as shown below to set the effective area.



Touch **Enable** or **Disable** to turn on/off the effective area.
Use increment / decrement buttons (<<<, <<, <, >, >>, >>>) to change each value. To return a value to its default setting, touch **Default**.
See Sec. 6-4-1-4. "Effective Area Settings" for details on settings.

8-3-6. Text Area

Touch **Text Area 1-4** (5 in the VIDEO menu, see Sec. 8-3) to open a screen as shown below to set a text area.



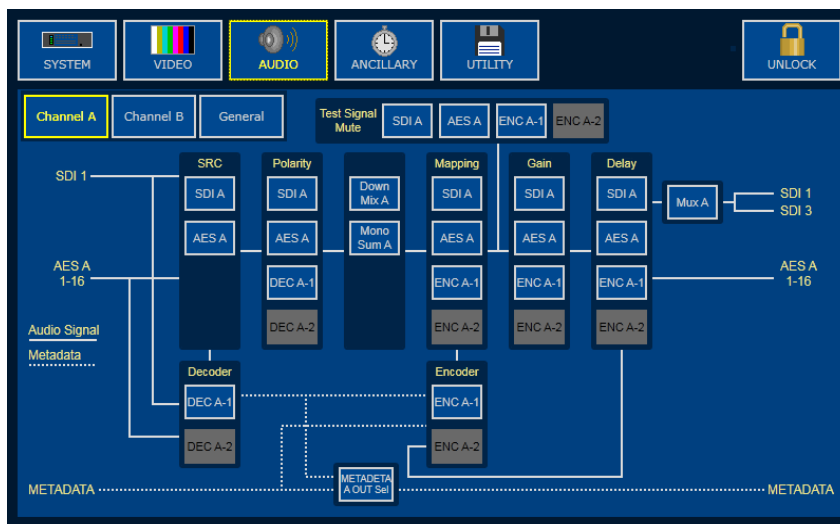
Touch **Enable** or **Disable** to turn on/off text areas.

Use increment / decrement buttons (<<<, <<, <, >, >>, >>>) to adjust each item. To return a value to its default setting, touch **Default**.

See Sec. 6-4-1-5. "Text Area 1-4 Settings" for details on settings.

8-4. AUDIO Menu [Panel]

Touch **AUDIO** to open an audio processing block diagram as shown below.



- ◆ **Select Channel A or Channel B in the top-left corner of the window.**

Selecting **Channel A** sets the SDI 1 input audio.

Selecting **Channel B** sets the SDI 2 input audio (FRC-912C required)

* Before selecting **Channel B**, set **SD/HD to HD Dual Ch.** in the menu (See Sec. 8-2-2. "General Settings.")

- ◆ **Audio Option**

AES A 1 - 16: AES digital audio input and output for Channel A (FRC-90DA required)

AES B 1 - 16: AES digital audio input and output for Channel B (FRC-912C/90DA required)

DEC A-1 and **DEC A-2:** Dolby E Decoders for Channel A (FRC-90DA/90DM required)

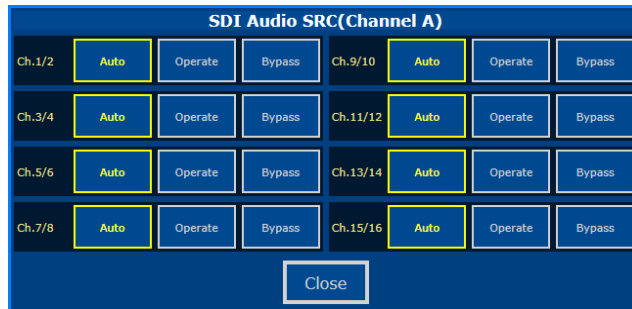
ENC A-1 and **ENC A-2:** Dolby E Encoders for Channel A (FRC-90DA/90DM required)

DEC B-1 and **DEC B-2:** Dolby E Decoders for Channel B (FRC-912C/90DA/90DM required)

ENC B-1 and **ENC B-2:** Dolby E Encoders for Channel B (FRC-912C/90DA/90DM required)

8-4-1. SRC

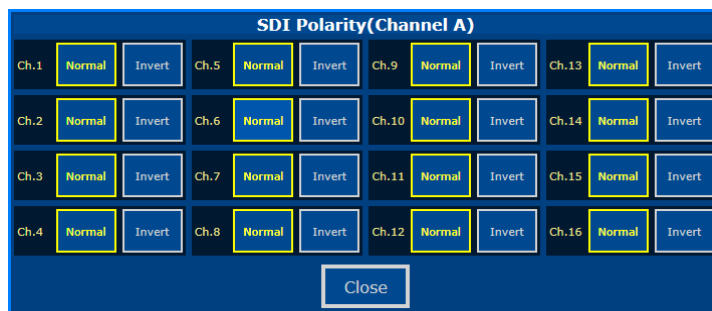
In the AUDIO menu, touch **SDI A** to set SDI input embedded audio settings.
In the AUDIO menu, touch **AES A** to set AES digital input audio settings.



See Sec. 6-5-1-1. "SDI SRC Settings" for details on settings.

8-4-2. Polarity

In the AUDIO menu, touch **SDI A**, **AES A**, **DEC A-1** or **DEC A-2** under Polarity to set Audio Polarity settings.



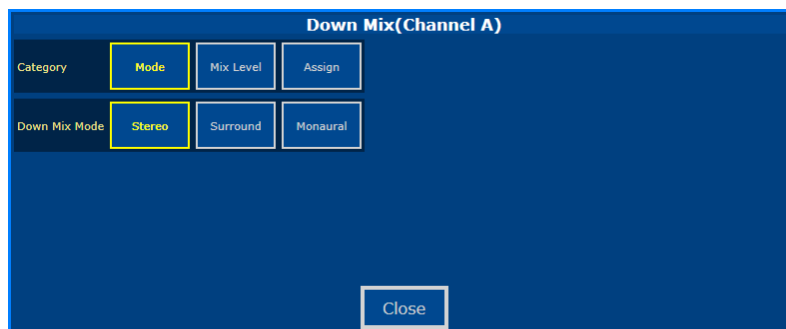
See Sec. 6-5-1-3. "SDI Polarity Settings" for details on settings.

8-4-3. Down Mix

In the AUDIO menu, touch **Down Mix A** to select audio sources, mode, and mix level.

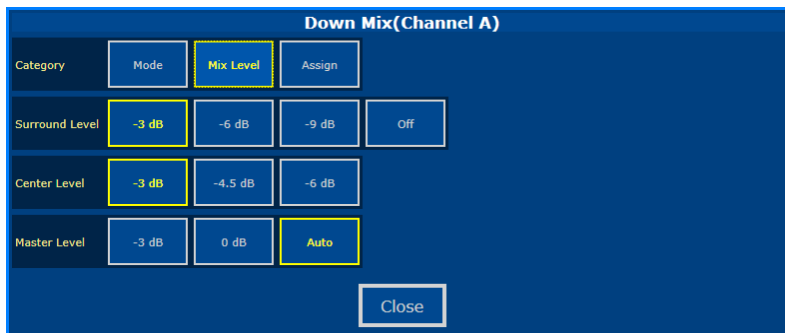
◆ Mode

Sets a Downmix Mode. Touch **Close** when settings are complete.



◆ **Mix Level**

Sets each audio channel level for downmixing. Touch **Close** when settings are complete.

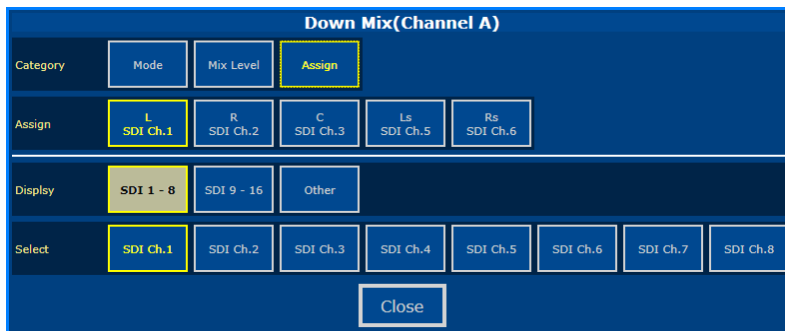


◆ **Assign**

To select multi-channel sources used for L/R/C/Ls/Rs downmixing from input channels:

- (1) Select **L**, **R**, **C**, **Ls** or **Rs** under **Assign**.
- (2) Select an audio source group under Display to display its audio sources under **Select**.
- (3) Select an audio channel under **Select**.

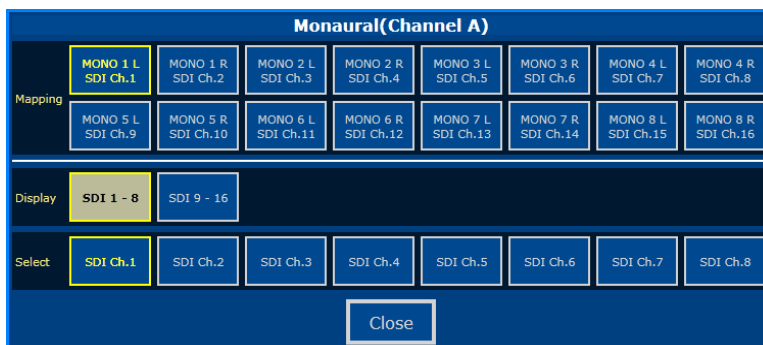
See Sec. 6-5-1-6. "Down Mix Settings" for details on settings.



8-4-4. Mono Sum

In the AUDIO menu, touch **Mono Sum A** to display the menu.

This menu allows you to generate up to 8 mono sum channels from input audio sources.



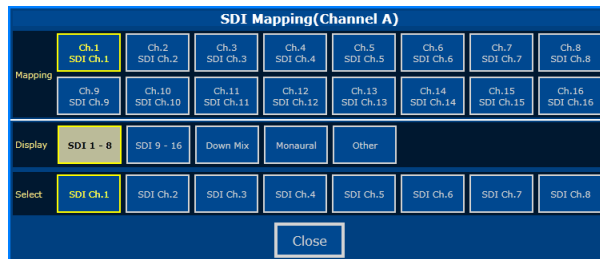
See Sec. 6-5-1-7. "Mono Sum 1-8 Settings" for details on settings.

8-4-5. Mapping

In the AUDIO menu, touch **SDI A** under Mapping to display the setting window.

This menu allows you to assign audio sources to 16 audio channels to be embedded onto the SDI output stream. Down-mixed and Mono-summed audio channels and test and silence signals are also available.

- * In the same manner, touching **AES A** under Mapping in the AUDIO menu allows you to assign audio sources to AES digital audio output channels.
- * Touching **ENC A-1** or **ENC A-2** under Mapping in the AUDIO menu allows you to select audio sources sent to the Dolby E Encoder.



- (1) Touch to select a channel from Ch1-16 under **Mapping**. The audio source currently assigned to the channel will be highlighted.
- (2) To change the source, select an audio source group under **Display** then select an audio source under **Select**. To select a test or silence signal, select **Other** under **Display**.
- (3) Touch **Close** when settings are complete.

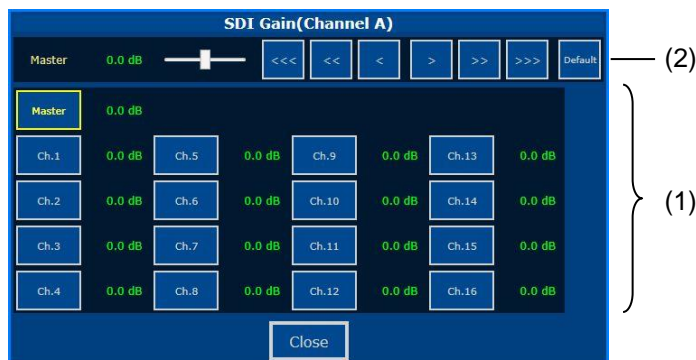
See Sec. 6-5-1-8. "Mapping SDI Settings" for details on settings.

See Sec. 6-5-1-9. "Mapping AES Settings" for details on settings.

See Sec. 6-5-1-10. "Mapping Dolby Encoder Settings" for details on settings.

8-4-6. Gain

In the AUDIO menu, touch **SDI A**, **AES A**, **ENC A-1** or **ENC A-2** under Gain to adjust each audio gain. Adjustable range is from -20 dB to +20 dB and minimum scale is 0.1 dB.



- (1) Select a channel from **CH1** to **CH16** or **Master**.
- (2) Use increment / decrement buttons (<<<, <<, <, >, >>, >>>) to change the level value. The changed value is shown on the left side of the slide bar and also applied.

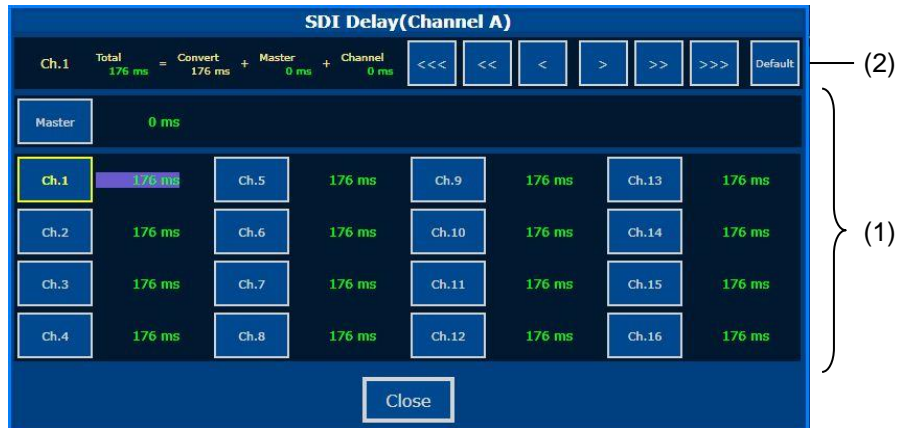
When **Master** is changed, all channel values, from CH1 to CH 16, are changed.

Touching **Default** returns the channel to the default value.

See Sec. 6-5-1-11. "Gain SDI Settings" for details on settings.

8-4-7. Delay

In the AUDIO menu, touch **SDI A**, **AES A**, **ENC A-1** or **ENC A-2** under Delay to adjust Delay. Adjustable range is from 5 to 1000 msec and minimum scale is 1 msec.



- (1) Select a channel from CH1 to CH16 or **Master**.
- (2) Use increment / decrement buttons (<<<, <<, <, >, >>, >>>) to change the delay value. The changed value is shown on the left side of the slide bar and also applied. Touching **Default** returns the channel to the default value.

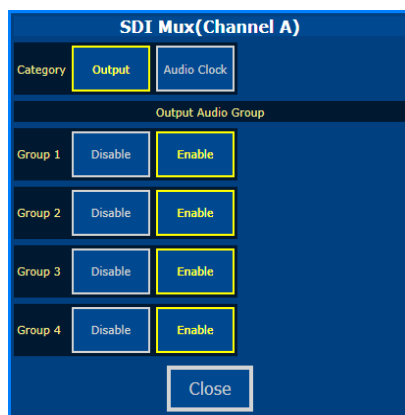
See Sec. 6-5-1-14. "Delay SDI Settings" for details on settings.

8-4-8. Mux

In the AUDIO menu, touch **Mux A** to display the setting window.

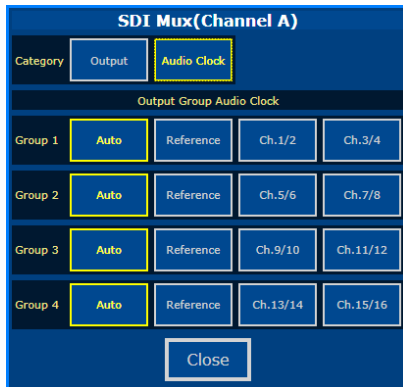
◆ Category

Touch **Output** of Category to **Enable** / **Disable** audio embedding for each audio group.



◆ **Audio Clock**

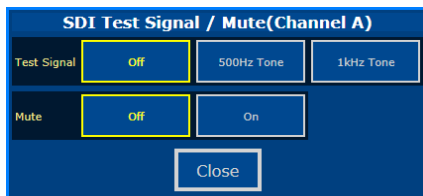
Touch **Audio Clock** of Category to select a reference for each audio group.



See Sec. 6-5-1-17. “Embedded Audio Multiplex Settings” for details on settings.

8-4-9. SDI Test Signal / Mute (Channel A)

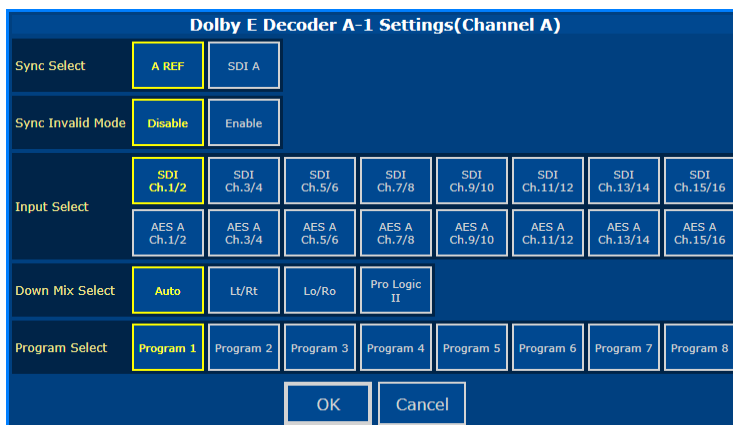
In the AUDIO menu, touch **SDI A**, **AES A**, **ENC A-1** or **ENC A-2** in the Test Signal/Mute block to set test signal and mute settings.



See Sec. 6-5-1-18. “Test Signal/Mute Settings” for details on settings.

8-4-10. Dolby Decoder

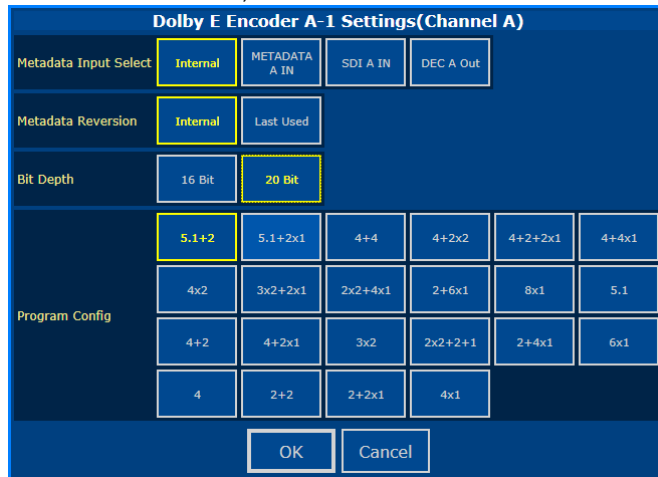
In the AUDIO menu, touch **DEC A-1** or **DEC A-2** under Decoder to set the Dolby E Decoder.



See Sec. 6-5-1-19. “Dolby Decoder Settings” for details on settings.

8-4-11. Dolby Encoder

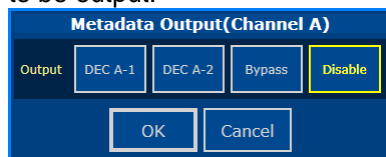
In the AUDIO menu, touch **ENC A-1** or **ENC A-2** under Encoder to set the Dolby E Encoder.



See Sec. 6-5-1-20. "Dolby Encoder Settings" for details on settings.

8-4-12. External Metadata

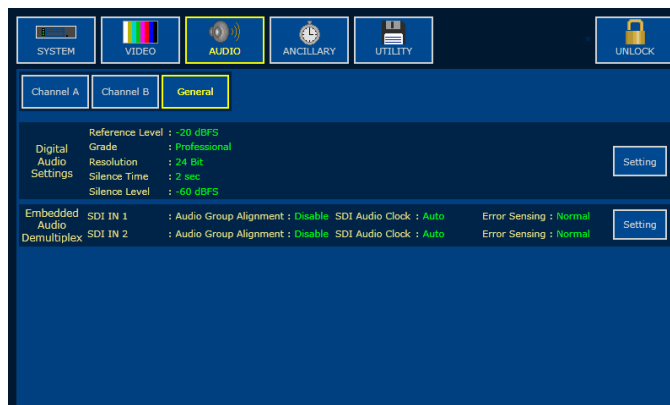
In the AUDIO menu, touch **Metadata A Out Sel** below Encoder to select the audio metadata to be output.



See Sec. 6-5-1-21. "External Metadata Output Settings" for details on settings.

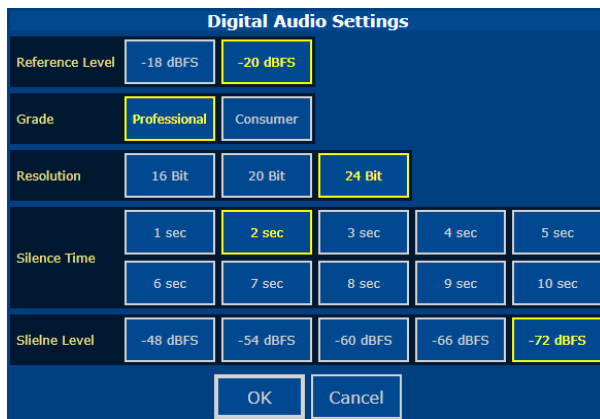
8-4-13. Audio (General)

In the top menu page, touch **AUDIO** and **General** to open the audio general setting window.



◆ **Digital Audio Settings**

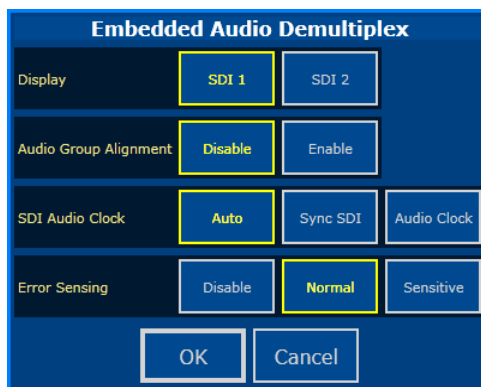
In the **AUDIO General** menu, touch **Setting** in the Digital Audio Settings to display the setting window, in which digital audio basic operation settings can be changed.



See Sec. 6-5-3-3. "Digital Audio Settings" for details on settings.

◆ **Embedded Audio Demultiplex**

In the **AUDIO General** menu, touch **Setting** in the Embedded Audio Demultiplex to display the setting window, in which audio de-embedding settings from SDI IN 1 can be changed. (SDI 2 can be selected only in **SD/HD to HD Dual Ch.** mode)



See Sec. 6-5-3-1. "SDI IN 1 Embedded Audio Demultiplex Settings" for details on settings.

8-5. ANCILLARY Menu [Panel]

Touch **ANCILLARY** to open a screen as shown below. Touch the **Metadata** button to open the Audio metadata setting page. Touch the **Timecode** button to open the timecode setting page.



Channel A and **Channel B** buttons are enabled when the FRC-912C option is installed.

Selecting **Channel A** sets the 1st channel frame rate converter.

Selecting **Channel B** sets the 2nd channel frame rate converter.

- * Before selecting **Channel B**, set **SD/HD to HD Dual Ch.** in the menu (See Sec. 8-2-2. “Output Settings.”)

8-5-1. ANCILLARY Menu [Panel] – Metadata

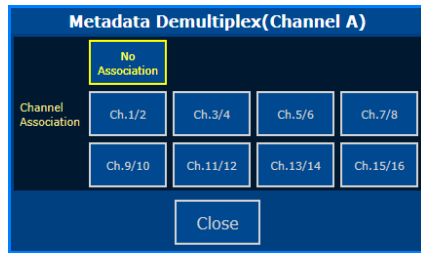
Touch **ANCILLARY** then touch the **Metadata** button to open the Audio metadata setting page.



See Sec. 6-6-1. “[ANCILLARY - Metadata]” for details.

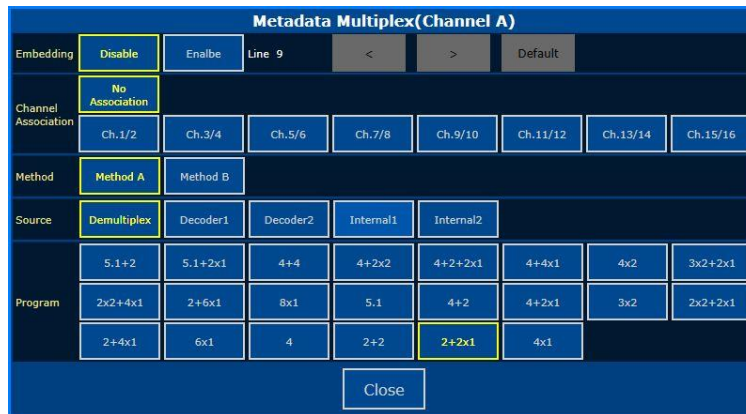
8-5-1-1. Metadata Demultiplex

Select **Channel A**, **Metadata** and **Demultiplex** to display the setting window for Channel A, in which a channel pair that has audio metadata can be specified in the SDI IN1 stream.



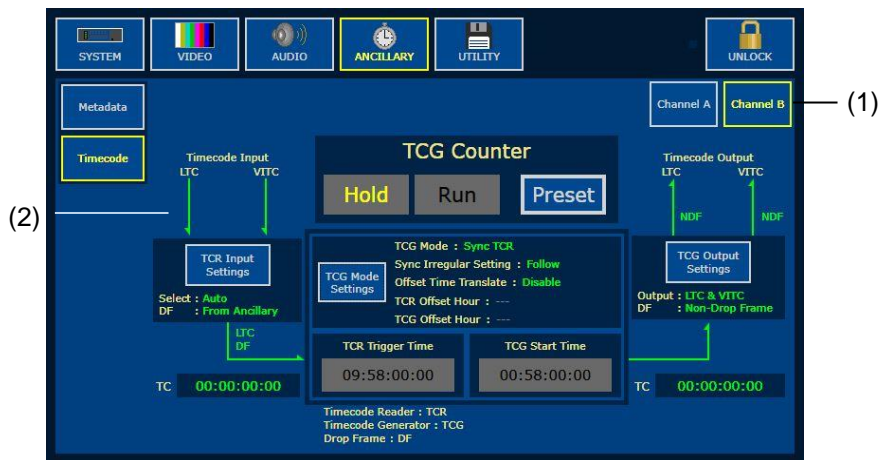
8-5-1-2. Metadata Multiplex

Select **Channel A**, **Metadata** and **Multiplex** to display the setting window for Channel A, in which audio metadata to be embedded onto SDI OUT 1 can be set. To change the line for audio metadata to be embedded, touch **Enable** under Embedding and use “<” and “>” to select the line number.



8-5-2. ANCILLARY Menu [Panel] - Timecode

Touch **ANCILLARY** then touch the **Timecode** button to open the timecode setting page.

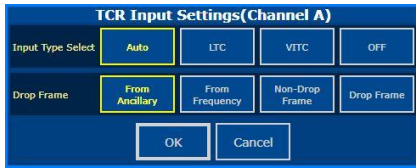


- (1) Select the setting target by touching **Channel A** or **Channel B**.
- (2) A line segment lights green according to the detected timecode.

See Sec. 6-6-2. “[ANCILLARY – Timecode]” for details.

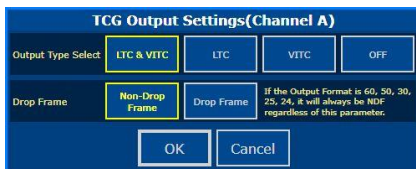
* TCR: Timecode Reader, TCG: Timecode Generator, DF: Drop Frame

8-5-2-1. TCR Input Settings



Select **Channel A**, **Timecode** and **TCR Input Select** to display the setting window for Channel A. Select a timecode to read.

8-5-2-2. TCG Output Settings



Select **Channel A**, **Timecode** and **TCG Output Select** to display the setting window for Channel A. Select a timecode to output and a drop frame setting.

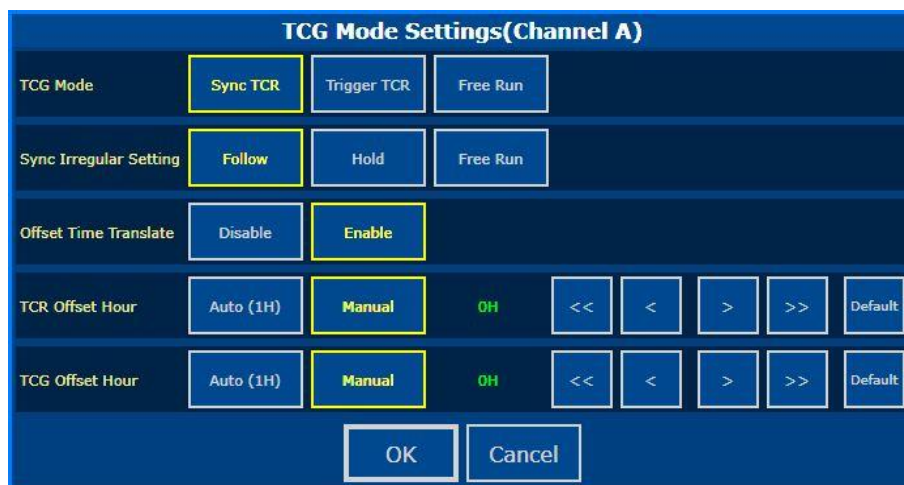
8-5-2-3. TCG Counter



Select **Channel A**, **Timecode** and **TCG Output Select** to display the setting window for Channel A. Allows you to Counter Run, Hold and Reset of timecode **Run** and **Hold** is selectable when TCG Mode is set to other than Sync TCR. **Preset** is selectable in any TCG Mode settings. **Preset** resets embedding timecode to TCG Start Time value.

8-5-2-4. TCG Mode Settings

Select **Channel A**, **Timecode** and **TCG Mode Settings** to display the setting window for Channel A. Allows you to select TCG (timecode generation) Mode from **Sync TCR**, **Trigger TCR** and **Free Run**.



See Sec. 6-6-2-3. "TCG Mode Settings" for setting details.

8-6. UTILITY Menu [Panel]

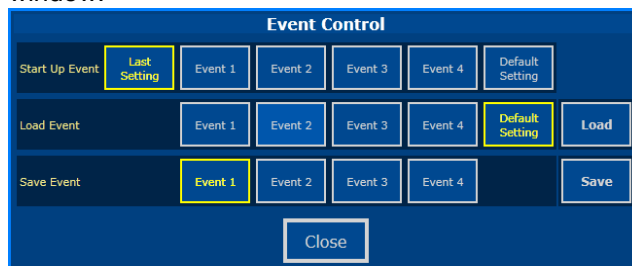
Touch **UTILITY** to open a screen as shown below, in which Event Control, Video Test Signal, Relay Bypass and Network Settings can be performed.



8-6-1. Event Control

The FRC-9100 allows you to specify the startup configuration, or save the last configuration using Event Memory. **Last Setting**, **Event 1-4** and **Default Settings** of the FRC-9100 configuration can be stored in the Event Memory.

To use the Event Control function, touch **Setting** in the Utility menu to display the setting window.



◆ **Startup Event**

Sets the FRC-9100 the power on status.

Select an event to recall.

The FRC-9100 starts up loading the settings in the selected event.

◆ **Load Event**

Loads a saved event. Select an event to load. Touch Load to start loading the selected event contents.

* Default settings are stored in Event 1 to 4 at factory shipment.

◆ **Save Event**

Settings are saved in an event memory. Select an event to save. Touching Save starts saving the selected event contents.

IMPORTANT

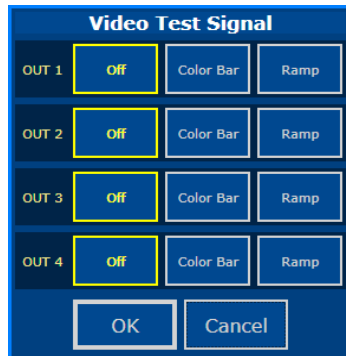
At least 10 seconds are required to save Event Memory. Wait at least 10 seconds before turn of the power after changing settings and Event Save operation. If power is turned off in less than 10 seconds, event may not be saved properly.

Refer to Sec. 6-7-2 "Settings Not Saved in Event Memory" for details on the settings that are not saved in event memory.

8-6-2. Video Test Signal Settings

Video test signals can be output from SDI OUT 1 to 4.

To use video test signals, touch **Setting** in the Utility menu to display the setting window.



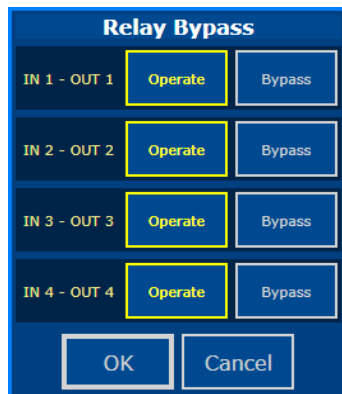
To output a test signal, select **Color Bar** to display the SMPTE color bar or **Ramp** to display the Ramp signal for each output. To stop test signal output, select **Off**.

8-6-3. Relay Bypass Settings

The FRC-9100 allows you to pass through input to output using relay bypass.

This function is useful for checking video signals while installing the FRC-9100.

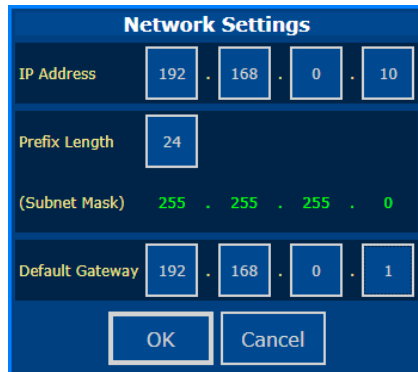
To use relay bypass output, touch **Setting** in the Utility menu to display the setting window.



To set input pass-through output, select Bypass in IN 1-OUT 1 to IN 4-OUT 4. 12G-SDI terminal does not have relay bypass function.

8-6-4. NETWORK Menu

In the UTILITY menu, touch **Settings** in the Network Settings block to change the FRC-9100 network settings.



Network Settings

IP Address: 192 . 168 . 0 . 10

Prefix Length: 24

(Subnet Mask): 255 . 255 . 255 . 0

Default Gateway: 192 . 168 . 0 . 1

OK Cancel

LAN port IP Address, Subnet Mask and Default Gateway settings are displayed. To change network settings, press each number to display the touch panel keypad and change the number between 0 and 255.



IP Address (1st Octet)

192

Setting Range : 1 - 223

C ->

7 8 9

4 5 6

1 2 3

0

OK Cancel

Basic Operation

- Enter numbers using "0-9."
- "C" clears the entry field.
- "->" forward deletes a single-digit number.
- "OK" confirms entered numbers.
- "Cancel" cancels the process and closes the dialog box.

Note that the subnet mask is not expressed in dotted decimal notation such as "255.255.255.0," but expressed as a prefix length, the number of significant bits used to identify a network.

Ex. "255.255.255.0" corresponds to "/24."

Press **OK** when settings are complete. **OK** cannot be pressed if an invalid number is entered.

IMPORTANT

To apply network changes, restart the FRC-9100.

The factory default network settings are as shown below:

IP Address: **192.168.0.10**
Subnet Mask: **255.255.255.0**
Default Gateway: **0.0.0.0**

8-6-5. Front Panel Auto Reboot

When operating the device continuously for more than two months, set to **Enable**. Setting to **Enable** automatically reboots the front panel once in a month (without affecting internal process). If not operating the device continuously for a long term, set to **Disable**.

9. Dolby Metadata Configure GUI

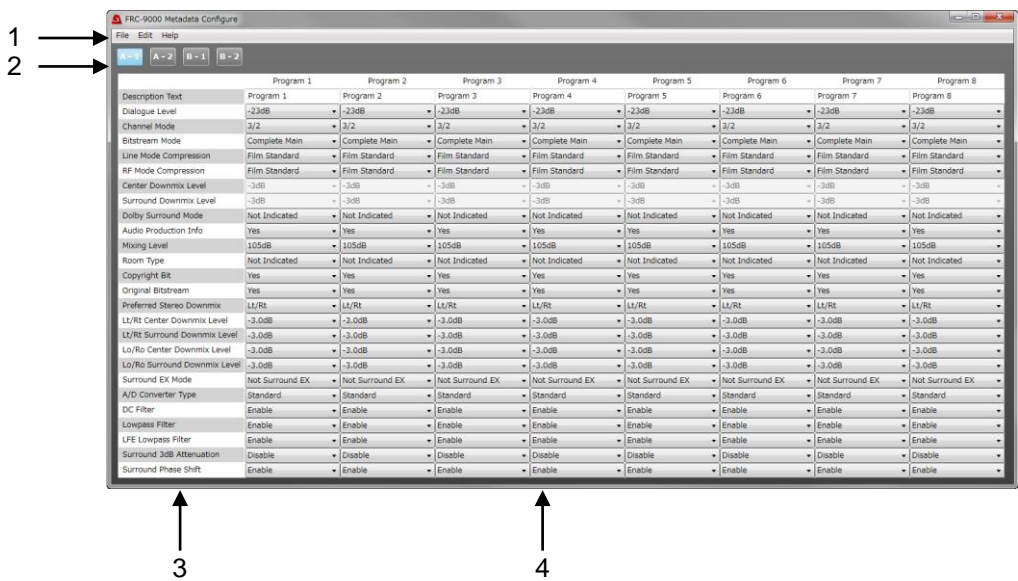
To create or edit Dolby metadata, launch the Dolby Metadata Configure GUI software by clicking the exe file on the computer.

See Sec. 9-3. "Installing the Dolby Metadata Configure GUI" for details on how to install the software.

The software provides the following functions:

- Exporting Dolby metadata to FRC-9100 (The FRC-9100 saves sent values in Last Settings automatically. Same function as SAVE and LOAD in Event Control.)
- Importing Dolby metadata from FRC-9100 to GUI software
- Editing Dolby metadata
- Saving Dolby metadata to the PC
- Loading Dolby metadata in the PC to GUI software

A setting file includes all **four Dolby E** modules data and is stored in **CSV** format.



No.	Item	Description	
1	File menu	New	Creates a new metadata file.
		Open	Opens a metadata file.
		Save	Saves the loaded metadata to a file.
		Save As	Overwrites the loaded metadata.
		Set FRC-9000 settings...	Uploads the metadata on the GUI to an FRC-9000/9100 as the one used in Internal mode.
		Get FRC-9000 settings...	Downloads the metadata used in Internal mode (Metadata Input setting in Sec. 6-5-1-20) from an FRC-9000/9100.
		Get FRC-9000 status...	Obtains the Dolby metadata status output from the Dolby Decoder.
	Edit menu	Copy Program...	Copies metadata settings between programs.
		Copy Card	Copies metadata settings between modules.
	Help menu	Version	Displays the software version
2	Module selection	Allows you to select a Dolby module. Metadata of the module is displayed in the screen.	
3	Metadata parameter	Dolby metadata parameters	
4	Editing area	Allows you to edit Dolby metadata for up to 8 Dolby E audio channels (Program 1-8).	

9-1. Downloading / Editing / Uploading Metadata

◆ Downloading Metadata

- (1) Click **Get FRC-9000 Settings** in the **File** menu.
- (2) Enter the FRC-9100 IP address and click **OK**.

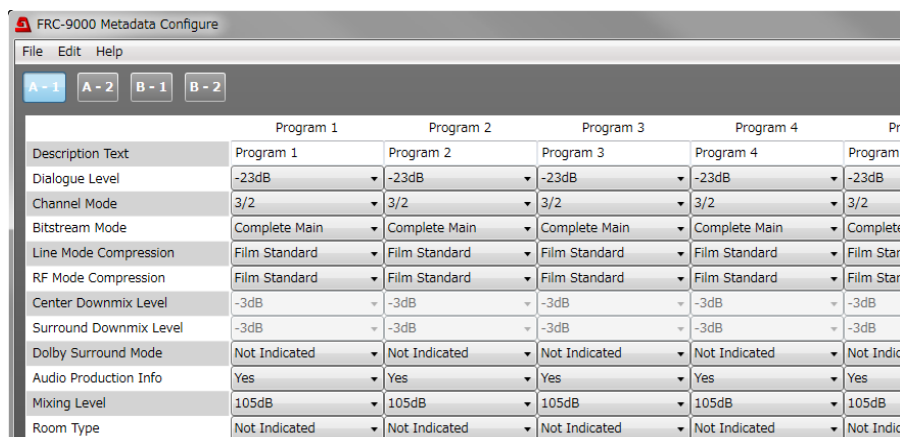
A Dolby metadata set is sent from the FRC-9100 to the computer.



- * Clicking **New** in the **File** menu allows you to create a new metadata file.
- * Clicking **Open** in the **File** menu allows you to load a metadata file stored in the computer.

◆ Editing Metadata

- (3) Select a Dolby Module in the Module selection tab. Clicking **A-1** displays the metadata for Dolby Module 1.
- (4) Enter or change metadata parameters, as necessary.
See Sec. 9-2. "Dolby Metadata" for details on metadata parameters.
Metadata parameters can be copied between programs. (See Sec. 9-1-1. "Copy Metadata between Programs".)



	Program 1	Program 2	Program 3	Program 4	Program 5
Description Text	Program 1	Program 2	Program 3	Program 4	Program 5
Dialogue Level	-23dB	-23dB	-23dB	-23dB	-23dB
Channel Mode	3/2	3/2	3/2	3/2	3/2
Bitstream Mode	Complete Main	Complete Main	Complete Main	Complete Main	Complete Main
Line Mode Compression	Film Standard	Film Standard	Film Standard	Film Standard	Film Standard
RF Mode Compression	Film Standard	Film Standard	Film Standard	Film Standard	Film Standard
Center Downmix Level	-3dB	-3dB	-3dB	-3dB	-3dB
Surround Downmix Level	-3dB	-3dB	-3dB	-3dB	-3dB
Dolby Surround Mode	Not Indicated	Not Indicated	Not Indicated	Not Indicated	Not Indicated
Audio Production Info	Yes	Yes	Yes	Yes	Yes
Mixing Level	105dB	105dB	105dB	105dB	105dB
Room Type	Not Indicated	Not Indicated	Not Indicated	Not Indicated	Not Indicated

- * To edit another module metadata, select a Dolby Module in the Module selection tab.
- * Metadata can be copied between modules. (See Sec. 9-1-2. "Copy Metadata between Modules".)
- * To save metadata in the computer, click **Save** or **Save As** in the **File** menu.

◆ Uploading Metadata

- (6) Click **Set FRC-9000 Settings** in the **File** menu.
- (7) Enter the FRC-9100 IP address and click **OK**.

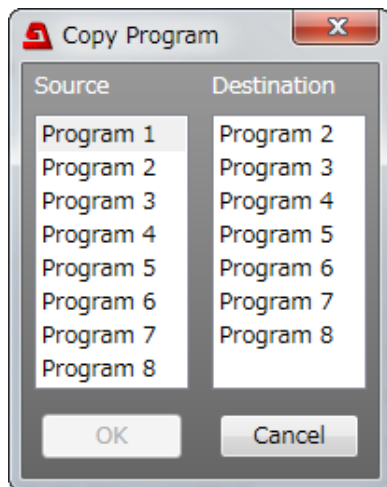
The currently loaded audio metadata set is sent from the computer to the FRC-9100.



- (8) When the file upload is successful, an [Upload Success] message appears.
- (9) To embed the audio metadata onto the SDI output stream, change **Metadata Input** to **Internal** in the Dolby Encoder menu page on the Web GUI or on the Front Panel to enable the uploaded metadata. (See Sec. 6-5-1-20. "Dolby Encoder Settings".)

9-1-1. Copy Metadata between Programs

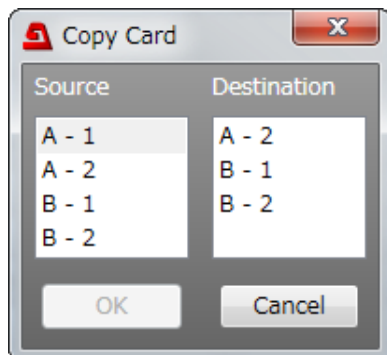
Click **Copy Program** in the **Edit** menu to display the Copy Program dialog box.



- (1) Click to select a source program in the Source block.
- (2) Click to select a destination program in the Destination block. To select multiply programs at a time, click them while pressing the **Ctrl** key.
- (3) Click **OK** to copy the program metadata.

9-1-2. Copy Metadata between Modules

Click **Copy Card** in the **Edit** menu to display the Copy Card dialog box.



- (1) Click to select a source module in the Source block.
- (2) Click to select a destination module in the Destination block. To select multiply modules at a time, click them while pressing the **Ctrl** key.
- (3) Click **OK** to copy the module metadata.

9-2. Dolby Metadata

Parameter	Settings	Default setting
* Description text	(Sets the Program Description text for SDI audio metadata. Up to 32 ASCII text characters.)	-
Dialogue Level	-31 to -1 dB	-23 dB
Channel Mode	1+1 (Dual Mono) 1/0 (Mono) 2/0 (Stereo) 3/0 2/1 3/1 2/2 3/2	3/2
Bitstream Mode	Complete Main Main Music & Effects Visually impaired Hearing impaired Dialogue Commentary Emergency Voice Over	Complete Main
Line Mode Compression	None Film Standard Film Light Music Standard Music Light Speech	Film Standard
RF Mode Compression	None Film Standard Film Light Music Standard Music Light Speech	Film Standard
* RF Overmodulation Protection	Disable Enable	Disable
* Center Downmix Level	-3 dB -4.5 dB -6 dB	-3 dB
* Surround Downmix Level	-3 dB -6 dB 0(-999 dB)	-3 dB
Dolby Surround Mode	Not Indicated Not Dolby Surround Dolby Surround	Not Indicated
Audio Production Info	No Yes	Yes
Mixing Level	80 to 111 dB	105 dB
Room Type	Not Indicated Large Small	Not Indicated
Copyright Bit	No Yes	Yes
Original Bitstream	No Yes	Yes
Preferred Stereo Downmix	Not Indicated Lt/Rt Lo/Ro	Lt/Rt

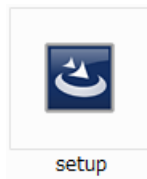
(Continued on next page)

Parameter	Settings	Default setting
Lt/Rt Center Downmix Level	+3.0dB +1.5dB 0.0dB -1.5dB -3.0dB -4.5dB -6.0dB -999dB	-3.0dB
Lt/Rt Surround Downmix Level	-1.5dB -3.0dB -4.5dB -6.0dB -999dB	-3.0dB
Lo/Ro Center Downmix Level	+3.0dB +1.5dB 0.0dB -1.5dB -3.0dB -4.5dB -6.0dB -999dB	-3.0dB
Lo/Ro Surround Downmix Level	-1.5dB -3.0dB -4.5dB -6.0dB -999dB	-3.0dB
Surround EX Mode	Not Indicated Not Surround EX Dolby Surround EX	Not Surround EX
A/D Converter Type	Standard HDCD	Standard
DC Filter	Disable Enable	Enable
Lowpass Filter	Disable Enable	Enable
LFE Lowpass Filter	Disable Enable	Enable
Surround 3dB Attenuation	Disable Enable	Disable
Surround Phase Shift	Disable Enable	Enable

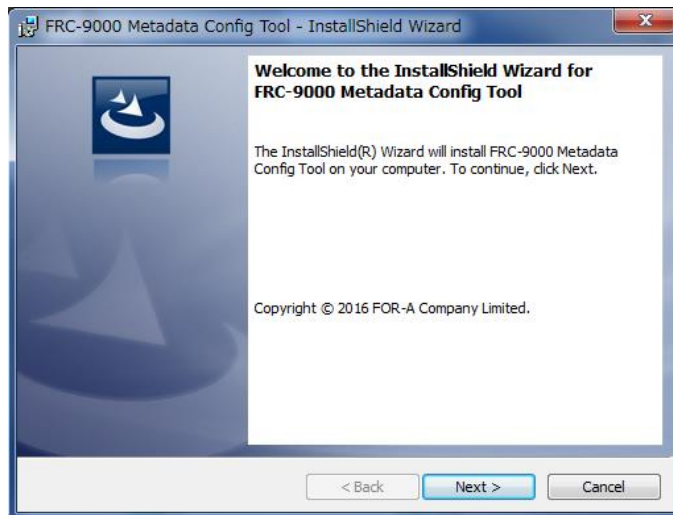
* Display only. The parameter can be obtained by **Get FRC-9000 Status** in the **File** menu.

9-3. Installing the Dolby Metadata Configure GUI

- (1) Open the **FRC-9000 Metadata Config Tool** folder in the supplied CD-ROM and double-click the Setup icon to start the installation wizard.



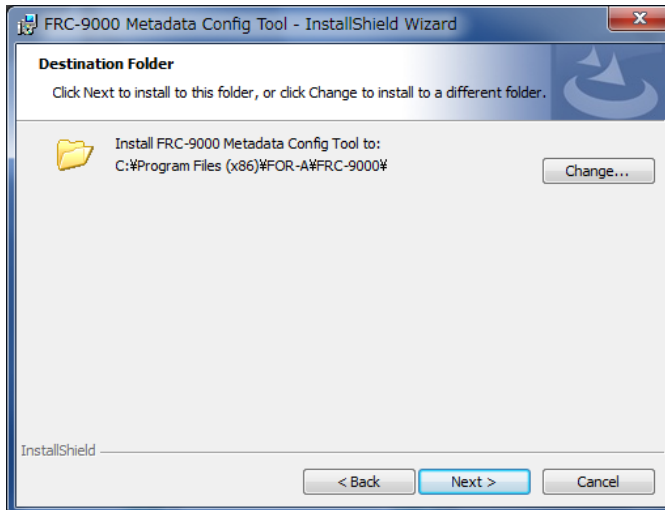
- (2) The following screen will appear. Click **Next**.



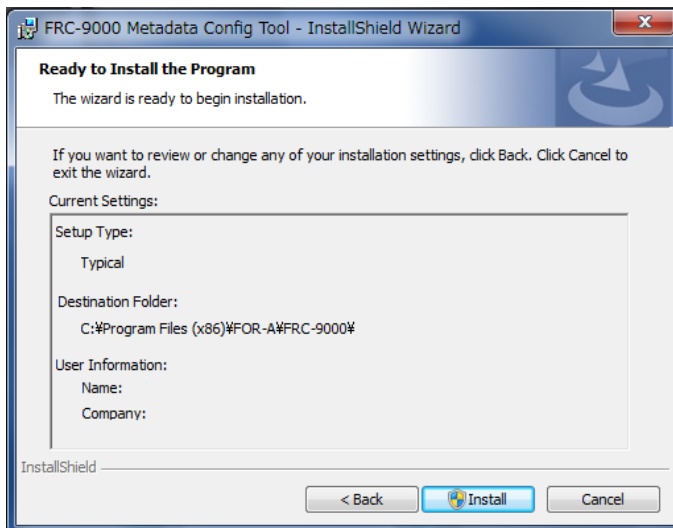
- (3) The following screen will appear. Read the Software License Agreement, check "I accept the terms in the license agreement" and click **Next**.



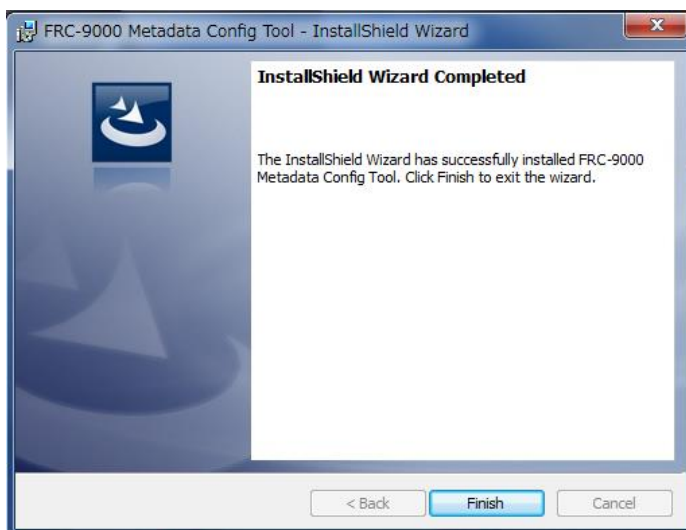
- (4) Select the installation target folder and click **Next**.



- (5) When the Install Shield Wizard opens, click **Install**.



- (6) When the installation is completed, the following screen will appear. Click **Finish** to close the wizard.



10. Specifications and Dimensions

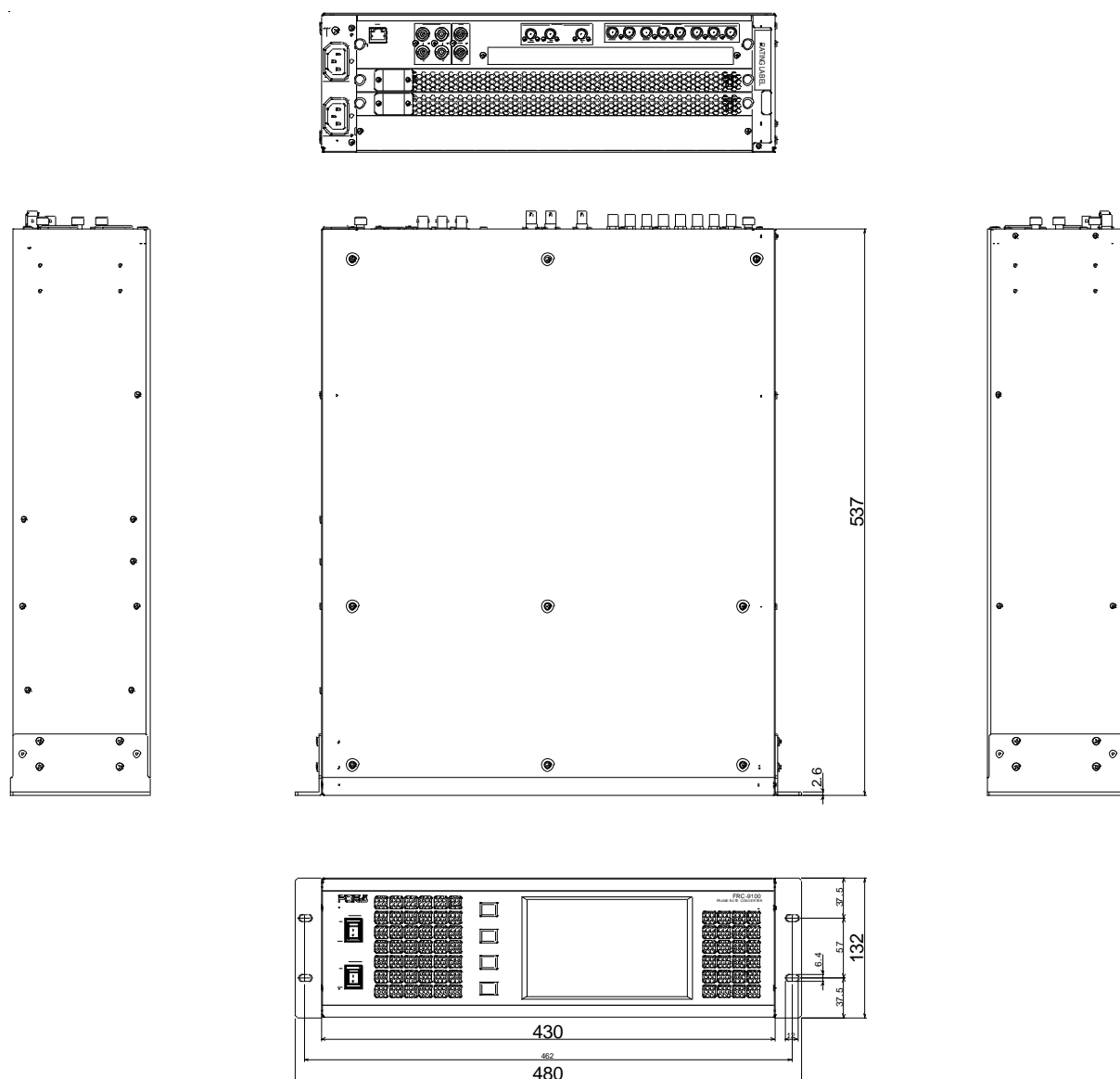
10-1. Specifications

Video formats	4K: 2160p /59.94, 50 (12G-SDI, Quad Link 3G-SDI, Level-A/B, SQD/2SI) 2160p /30, 29.97, 25, 24, 23.98 (Quad Link HD-SDI, SQD) HD: 1080p / 60, 59.94, 50 (Level-A/B) 1080p / 30, 29.97, 25, 24, 23.98 1080i / 60, 59.94, 50, 720p /60, 59.94, 50 SD: 525/59.94i, 625/50i				
Frame rate conversion	<table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>2160p, 1080p 1080i, 720p</td></tr> </table> < - > <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>2160p, 1080p 1080i, 720p</td></tr> </table> <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>525/59.94i 625/50i</td></tr> </table> < - > <table border="1" style="display: inline-table;"> <tr><td>1080p 1080i, 720p</td></tr> </table>	2160p, 1080p 1080i, 720p	2160p, 1080p 1080i, 720p	525/59.94i 625/50i	1080p 1080i, 720p
2160p, 1080p 1080i, 720p					
2160p, 1080p 1080i, 720p					
525/59.94i 625/50i					
1080p 1080i, 720p					
Video input	12G-SDI: 12 Gbps 75Ω BNC x 1 3G/HD/SD-SDI: 3 Gbps/ 1.5 Gbps / 270Mbps 75Ω BNC x 4				
Video output	12G-SDI: 12 Gbps 75Ω BNC x 2 3G/HD-SDI: 3 Gbps/1.5 Gbps 75Ω BNC x 4 Pass-through input to output is possible (relay circuit) in 3G/HD-SDI.				
Quantization	12G/3G/HD/SD-SDI: 10-bit				
Genlock input	BB: 0.429 Vp-p (NTSC) /0.45 Vp-p (PAL) or Tri-level sync: 0.6 V, BNC x 2, loop-through (Terminate with 75Ω terminator, if unused.)				
I/O delay	+5 to +1000 ms (depending on input / output formats)				
Audio input	Embedded audio: 4 groups (16 channels) 48 kHz 16-bit to 24-bit synchronous / asynchronous				
(FRC-90DA)	AES/EBU: 1.0 Vp-p unbalanced 16 stereo pairs 32/44.1/48 kHz 16-bit to 24-bit 75Ω BNC x 16 Metadata input: 9-pin D-sub (female) x 2 Reference input: BB: 0.429 Vp-p (NTSC) /0.45 Vp-p (PAL) or Tri-level sync: 0.6 V, BNC x 2				
Audio output	Embedded audio: 4 groups (16 channels) 48 kHz 16-/20-/24-bit synchronous / asynchronous				
(FRC-90DA)	AES/EBU: 1.0 Vp-p unbalanced 16 stereo pairs 48 kHz 16-/20-/24-bit 75Ω BNC x 16 Metadata output: 9-pin D-sub (female) x 2 Audio delay adjustment +5 to +1000 ms (in 1 ms step) for each channel Gain adjustment -20 dB to +20 dB (in 0.1 dB step) for each channel Audio processing SRC (Sample Rate Converter), Down mix Chanel re-mapping, Channel mute				
Ancillary data	Audio data, Audio metadata embedding / de-embedding, Timecode				
Interface	LAN 100BASE-TX / 1000BASE-T RJ-45 1 port For web browser and Dolby Metadata Configure GUI connections				
Temperature	0°C to 40°C				
Humidity	30% to 85% (no condensation)				

Power	100 V to 240 V AC 50/60 Hz
Consumption	548 VA at 100 V 566 VA at 240 V
Dimensions	430(W)×537(D)×132(H) mm 480(W) (Including rack mount brackets)
Weight	FRC-9100: 20.5 kg FRC-90DA: 2.4 kg
Consumables	Power unit: Replace every 5 years (at room temperature) Cooling fan: Replace every 4 years (at room temperature)

10-2. External Dimensions

(All dimensions in mm.)



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.



FOR-A COMPANY LIMITED

Head Office 3-8-1 Ebisu, Shibuya-ku, Tokyo 150-0013, Japan
Overseas Division Tel: +81(0)3-3446-3936 Fax: +81(0)3-3445-5116
Japan Branch Offices Osaka/Okinawa/Fukuoka/Hiroshima/Nagoya/Sendai/Sapporo
R&D/Production Sakura Center/Sapporo Center

FOR-A Corporation of America Corporate Office/Service Center

11155 Knott Ave., Suite G, H & I, Cypress, CA 90630, U.S.A.
Tel: +1 714-894-3311 Fax: +1 714-894-5399

FOR-A Corporation of America Northeast Office

1360 Clifton Ave., Clifton, NJ 07012, U.S.A.
Tel: +1 973-220-8471 Fax: +1 714-894-5399

FOR-A Corporation of America Southeast Office

Tel: +1-305-773-7608

FOR-A Corporation of America Support Center

2400 N.E. Waldo Road, Gainesville, FL 32609, U.S.A.
Tel: +1 352-371-1505 Fax: +1 714-894-5399

FOR-A Latin America and the Caribbean Miami Office

Tel: +1 657-600-5759

FOR-A Latin America and the Caribbean Sao Paulo Office

Tel: +55 (0)11-99913-3751

FOR-A Europe S.r.l.

Via Volturno, 37, 20861 Brugherio MB, Italy
Tel: +39 039-916-4811 Fax: +39 039-878-140

FOR A UK Limited

Trident Court, 1 Oakcroft Road Chessington, KT9 1BD, U.K.
Tel: +44 (0)20-3044-2935 Fax: +44 (0)20-3044-2936

FOR-A Italia S.r.l.

Via Volturno, 37, 20861 Brugherio MB, Italy
Tel: +39 039-881-086/103 Fax: +39 039-878-140

FOR-A Corporation of Korea

1007, 57-5, Yangsan-ro, Yeongdeungpo-gu, Seoul 07271, Korea
Tel: +82 (0)2-2637-0761 Fax: +82 (0)2-2637-0760

FOR-A China Limited

1618 Huateng Building, No. 302, 3 District, Jinsong, Chaoyang, Beijing 100021, China
Tel: +86 (0)10-8721-6023 Fax: +86 (0)10-8721-6033

FOR-A Middle East Africa Office

Aurora Tower, Office 1407, Dubai Media City, P.O. Box 502688, Dubai, UAE
Tel: +971 (0)4 551 5830 Fax: +971 (0)4 551 5832

FOR-A India Private Limited. Mumbai Office

2nd Floor, Valecha Chambers, Link Road, Andheri (W), Mumbai 400053, India
Tel: +91-(0)22-2673-3623 Fax: +91-(0)22-2639-3415

FOR-A India Private Limited. Delhi Office

8th floor, World Trade Tower, Sector-16, Noida, Uttar Pradesh 201301, India
Tel: +91-(0)12-0423-8674

FOR-A South East Asia Office

Studio 09, Rm. A1, 3/F., Phase 1, Hang Fung Ind. Bldg., 2G Hok Yuen St., Hung Hom, Hong Kong
Tel: +852 2110-1352