FOR.A®
INNOVATIONS IN VIDEO
and AUDIO TECHNOLOGY

OPERATION MANUAL

UFM-30UDC

Digital Up/Down/Cross Converter

2nd Edition

FOR-A COMPANY LIMITED

Edition Revision History

Edit.	Rev.	Ver.	Date	Description	Where
1	-	1.02	2010/01/19		
2	-	2.02	2010/06/10	UFM-30CTL control supported	

Precautions

Important Safety Warnings

[Power]

 Stop	**Do not** place or drop heavy or sharp-edged objects on power cord. A damaged cord can cause fire or electrical shock hazards. Regularly check power cord for excessive wear or damage to avoid possible fire / electrical hazards.

[Circuitry Access]

 Stop	**Do not** touch any parts / circuitry with a high heat factor. Capacitors can retain enough electric charge to cause mild to serious shock, even after power is disconnected. Capacitors associated with the power supply are especially hazardous. Avoid contact with any capacitors.
 Hazard	Unit **should not** be operated or stored with cover, panels, and / or casing removed. Operating unit with circuitry exposed could result in electric shock / fire hazards or unit malfunction.

[Potential Hazards]

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

[Consumables]

 Caution	The consumables used in unit must be replaced periodically. 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, they should be replaced at an early date. For details on replacing the consumables, contact your dealer.

Upon Receipt

Unpacking

UFM-30UDC module units and their accessories are fully inspected and adjusted prior to shipment. Operation can be performed immediately upon completing all required connections and operational settings.

Check your received items against the packing lists below.

ITEM	QTY	REMARKS
UFM-30UDC	1 set	Front module x1 Rear module x1
Operation Manual	1	(This manual)

IMPORTANT
The UFM-30CTL with the following versions can control UFM-30UDC modules. -Web & Control PORT Version 2.00 or higher -SNMP PORT Version 1.21 or higher -FPGA Version 1.00 or higher See the UFM-30CTL manual for how to control UFM-30UDC from a web browser.

Check

Check to ensure no damage has occurred during shipment. If damage has occurred, or items are missing, inform your supplier immediately.

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1. Prior to Starting

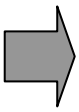
1-1. Welcome

Congratulations! By purchasing UFM-30UDC Up/Down/Cross Converter you have entered the world of FOR-A and its many innovative products. Thank you for your patronage and we hope you will turn to FOR-A products again and again to satisfy your video and audio needs.
FOR-A provides a wide range of products, from basic support units to complex system controllers, which have been increasingly joined by products for computer video based systems. Whatever your needs, talk to your FOR-A representative. We will do our best to be of continuing service to you.

The UFM-30UDC is a plug-in module to be mounted on the UFM frame. It is an up-, down- and cross-converter of 3G/HD/SD-SDI, which is involved with the application of the latest digital technology. It standardly supports 3G-SDI, a next-generation format, and allows you to convert signals between various video formats.

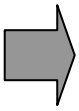
◆ **Available Combinations of Input and Output Format**

Input signal format	
3G-SDI	1080/59.94p Level A 1080/59.94p Level B
HD-SDI	1080/59.94i 720/59.94p
SD-SDI	525/59.94i
Composite	NTSC



Output signal format	
3G-SDI	1080/59.94p Level A 1080/59.94p Level B
HD-SDI	1080/59.94i 720/59.94p
SD-SDI	525/59.94i

Input signal	
3G-SDI	1080/50p Level A 1080/50p Level B
HD-SDI	1080/50i 720/50p
SD-SDI	625/50i
Composite	PAL



Output signal	
3G-SDI	1080/50p Level A 1080/50p Level B
HD-SDI	1080/50i 720/50p
SD-SDI	625/50i

The frame rate conversion between 59.94Hz and 50Hz is not possible.

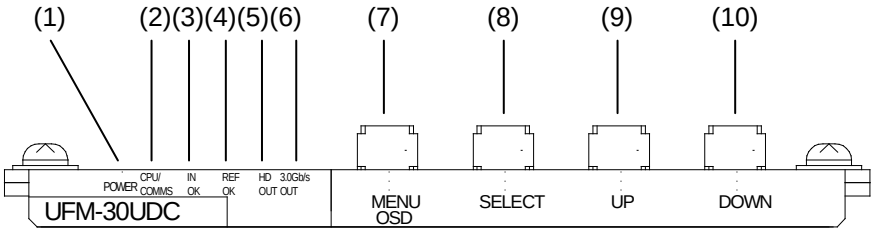
1-2. Features

- 3G/HD/SD-SDI up/down/cross converter. Analog composite input also available.
- 3G/HD/SD-SDI: 1-input/2-output. Composite: 1-input
- 3G-SDI Level A and Level B support (*1)
- 5 aspect ratio selection (4:3,13:9, 14:9, 16:9 and SQUEEZE)
- Embedded audio pass-through: 8 ch (Group1 and 2)
- SDI Preview Out: input or output monitoring selectable
- Analog Composite Out: SD image monitoring and menu operation
- Menu display on Analog Composite Out using OSD (On Screen Display)
- Built-in frame synchronizer (Black Burst and Tri-level Sync)(*2)
- Proc Amp
- Motion adaptive filter and enhancer
- Closed caption pass-through
- Control and monitor with a standard web browser via Ethernet using the WEB control function of UFM-30CTL.

(*1) For Level B, only dual link features from SMPTE 372M are supported.
(*2) With BB input, UFM-30UDC gen-locks signals horizontally (H lock), but does not correct subcarrier phase shifts.

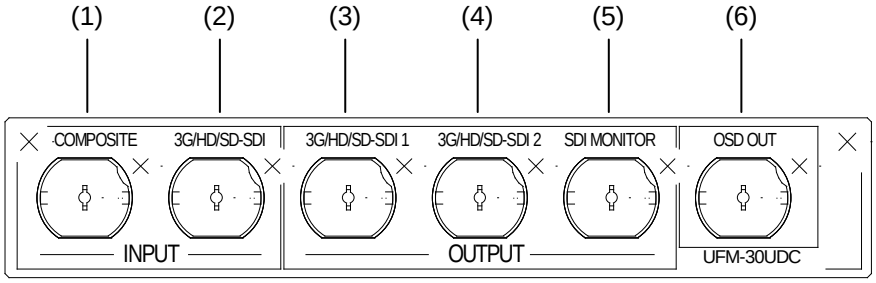
2. Panel Descriptions

2-1. Front Panel



No.	Name	Description
(1)	POWER LED	LED lights up when power is supplied to the module.
(2)	CPU/COMMS LED	Not used
(3)	IN OK LED	LED lights up when an input signal is present.
(4)	REF OK LED	LED lights up when a genlock signal is input to the UFM frame.
(5)	HD OUT LED	LED lights up when outputting HD-SDI signals.
(6)	3Gb/s OUT LED	LED lights up when outputting 3G-SDI signals.
(7)	MENU OSD button	These buttons are used for menu operation. (See section 4-2. "Menu Operation")
(8)	SELECT button	
(9)	UP button	
(10)	DOWN button	

2-2. Rear Panel

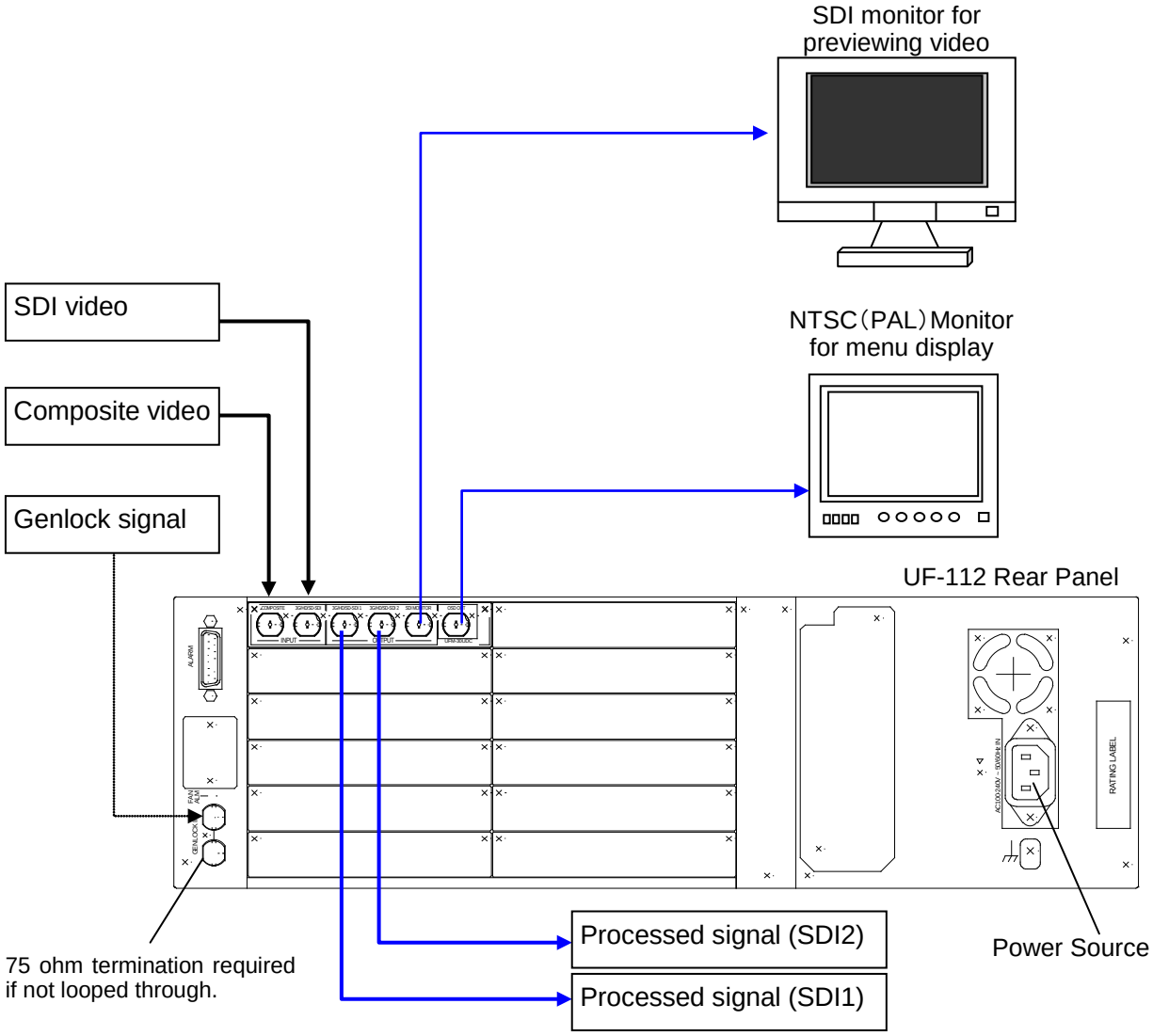


No.	Name		Description
(1)	INPUT	COMPOSITE	Used for Composite signal input.
(2)	INPUT	3G/HD/SD-SDI	Used for 3G/HD/SD-SDI signal input.
(3)	OUTPUT	3G/HD/SD-SDI 1	Used for 3G/HD/SD-SDI signal output.
(4)	OUTPUT	3G/HD/SD-SDI 2	
(5)	OUTPUT	SDI MONITOR	Used for previewing output video (SDI signal). Previewing input signal is also possible. See section 3-4. "SDI Monitor Setup" for details.
(6)	OSD OUT		Used for monitoring output video and displaying menu. See section 3-3. "Composite Monitor Setup."

3. Connection and Setup

3-1. Connection

Turn off the power of all devices in the system before connection.



IMPORTANT
Although two video inputs are provided, only one input can be processed through the UFM-30UDC. The processed video is simultaneously sent to four ports; SDI1, SDI2, SDI MONITOR and OSD OUT. With BB input, the UFM-30UDC gen-locks signals horizontally (H lock), but does not correct subcarrier phase shifts. (See section 7-3. "Output menu .")

3-2. Note on Composite Input

When the NTSC composite signal is input, the setup level should be set manually in the menu. The factory default setting is Off (0IRE). See section 4-2. "Menu Operation" for how to change menu items.

NTSC setup level	Menu item	Setting
0IRE (used in Japan)	Input - NTSC setup	Off (default setting)
7.5IRE (used in USA)	Input - NTSC setup	On

3-3. Composite Monitor Setup

Prepare an **NTSC or PAL monitor** for **displaying menu**. Select NTSC or PAL according to the input signal that you want to process.

Monitor	Input signal
NTSC monitor	Video signals at 59.94Hz frame rate: (NTSC, 525/59.94i, 720/59.94p, 1080/59.94i and 1080/59.94p)
PAL monitor	Video signals at 50Hz frame rate: (PAL, 625/50i, 720/50p, 1080/50i and 1080/50p)

Connect the monitor to the **OSD OUT** on the UFM-30UDC rear panel. If **NTSC monitor** is used, set the setup level. The default setting in the UFM-30UDC is **7.5 IRE**.

◆ **If using an NTSC Monitor with 0 IRE Setup (used in Japan)**
Change the **OSD OUT** item in the Output menu from PAL/NTSC to **PAL/NTSC-J.**
See section 4-2. "Menu Operation" for how to change menu items.

◆ **Monitoring Input Image or Output Image**
The output image is also displayed on the Composite monitor when SD signal is selected for output. However, in some cases, it isn't displayed properly because the OSD OUT images are not phase adjusted by the reference signal.
If the **Monitor** item in the Output menu is set to **Input**, the input image is also displayed on the Composite monitor only when inputting a composite or an SD-SDI signal. (See "3-4. SDI Monitor Setup" below)

3-4. SDI Monitor Setup

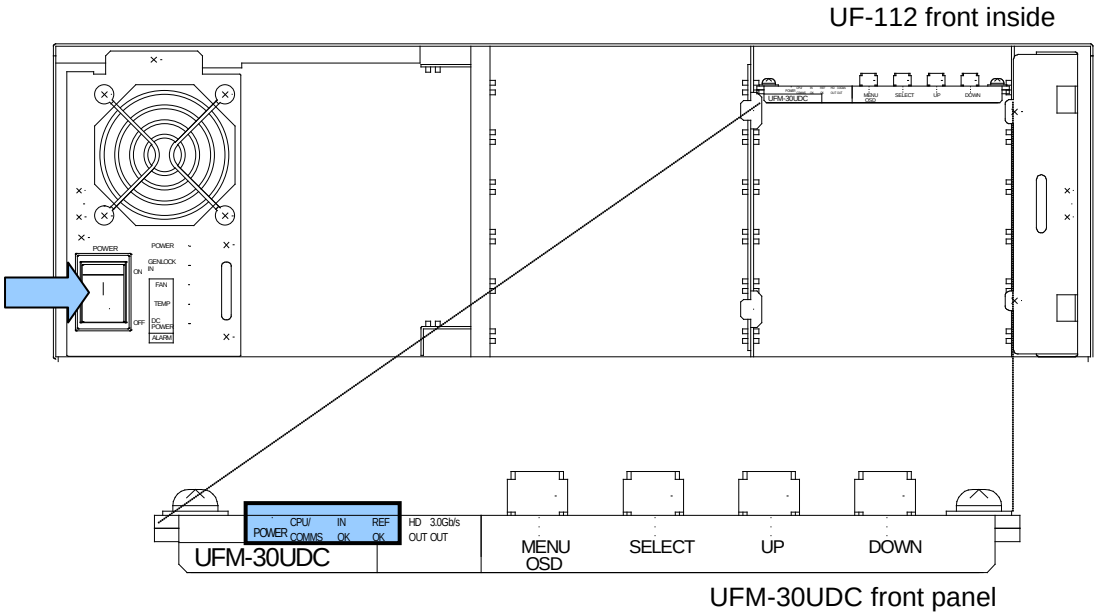
Prepare an SDI monitor for previewing images. The SDI monitor is connected to the **SDI MONITOR OUT** on the UFM-30UDC rear panel. Both input and output images can be previewed on the SDI monitor. The output image is displayed in the factory default setting.

◆ **To Monitor Input Image Before Processing**
Change the **Monitor** item in the Output menu to **Input**. The converted SD-SDI image is sent to the SDI monitor out when inputting a composite image. See section 4-2. "Menu Operation" for how to change menu items.

4. Operations

4-1. Power On

After checking that all system devices are properly connected, open the front panel of the UFM frame and power on the UFM frame.
The indicators on the front panel, POWER LED, IN OK LED and REF OK LED, light up respectively when the power, video source and genlock signal are input.

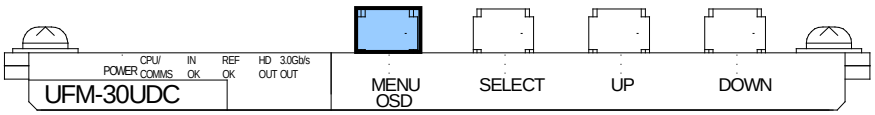


4-2. Menu Operation

4-2-1. Displaying Menu

1) Connect the OSD OUT port on the UFM-30UDC to the NTSC or PAL monitor.

2) Press the MENU OSD button.

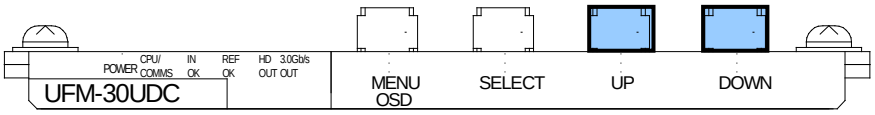


The menu as shown below is displayed on the NTSC (PAL) monitor.

<Menu>
Status
Input
Output
Scaling

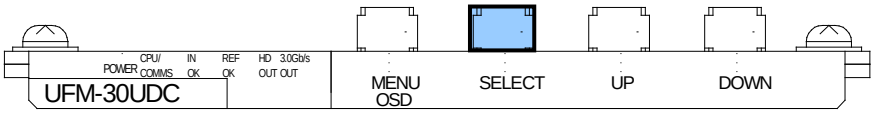
4-2-2. Displaying Status

1) Press the UP or DOWN button to align the cursor to **Status**.



<Menu>
Status
Input
Output
Scaling

2) Press the SELECT button to display the Status page.



<Status>

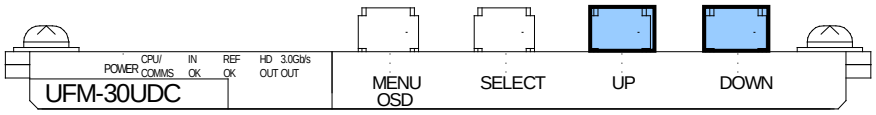
Input standard	525i
Output standard	1080/59.94i
Reference	525i
Input	SDI
SDI Audio	….
Code version	XXXXX

The <Status> menu shows the standard of the current video input and output, the standard of the reference signal input to the UFM frame and the embedded audio status of 8 channels, etc. See section 7-1. "Status Menu (Display only)."

4-2-3. Changing Value

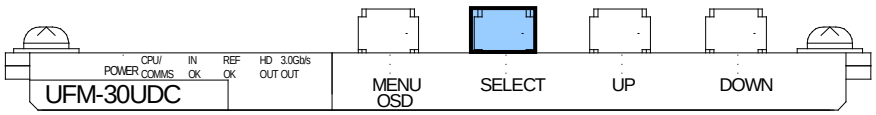
The following procedure illustrates how to change a value in the menu. This procedure uses the input source change from SDI to Composite as an example.

1) Press the UP or DOWN button to align the cursor to **Input** on the <Menu> page.

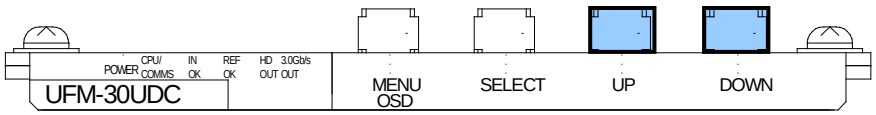


<Menu>
Status
Input
Output
Scaling

2) Press the SELECT button to go to the submenu.



3) Press the UP or DOWN button to move the cursor to **Source**.



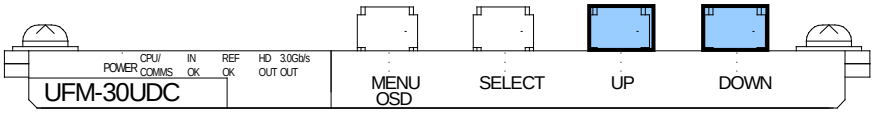
<Input>

Source	SDI
Black level	0.0mV
Video level	0.0dB
Chroma level	0.0dB
NTSC setup	Off

4) Press the SELECT button to move the cursor to right.

<Input>
Source SDI
Black level 0.0mV
Video level 0.0dB
Chroma level 0.0dB
NTSC setup Off

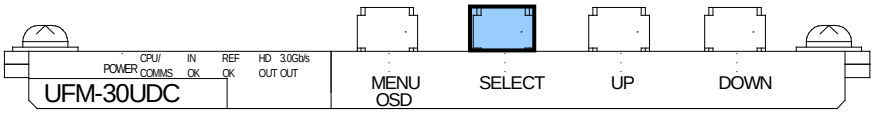
5) Press the UP or DOWN button to change the value to **Composite**.



<Input>
Source Composite
Black level 0.0mV
Video level 0.0dB
Chroma level 0.0dB
NTSC setup Off

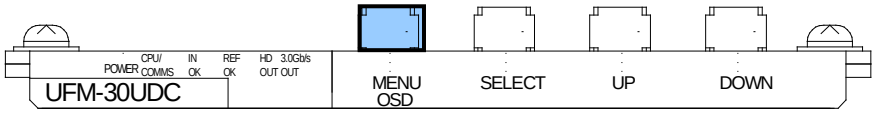
* To return settings to default values press both UP and Down buttons together.

6) Press the SELECT button to confirm the change. The cursor will automatically return to **Source**.



<Input>
Source Composite
Black level 0.0mV
Video level 0.0dB
Chroma level 0.0dB
NTSC setup Off

7) To return to the upper menu, press the MENU OSD button.



<Menu>
Status
Input
Output
Scaling

8) To close the OSD screen, press the MENU OSD button again.

IMPORTANT

Automatic saving of last setting

The UFM-30UDC automatically holds the last setting applied to it. Therefore, when you power off the unit, **wait more than 5 seconds** after the setting change. Otherwise, the last setting may not be preserved and not applied to the UFM-30UDC when you power on the unit again.

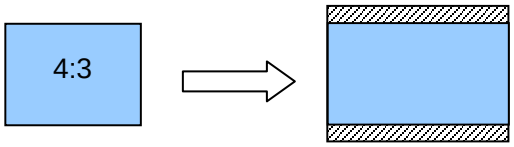
4-2-4. Resetting All Items in the Menu

1) Press the MENU OSD button to display the menu on the composite monitor.
2) Press the MENU OSD button again to close the menu screen.
3) Press and hold down the DOWN button **more than 10 seconds**.
4) With holding down the DOWN button, press the MENU OSD button. The Configuration appears at the bottom of the menu display.
5) Select **Configuration** using the UP and DOWN button. Then press the SELECT button to display the Configuration dialog.
6) Select **Factory Default** in the Configuration dialog and press the SELECT button. When the cursor is automatically moved to **Press Select**, press the SELECT button again to reset the menu. All items in the menu return to their factory default settings.
7) Press the MENU OSD button to quit the Configuration dialog.
8) Press the MENU OSD button again to close the menu screen.

5. Conversion Examples

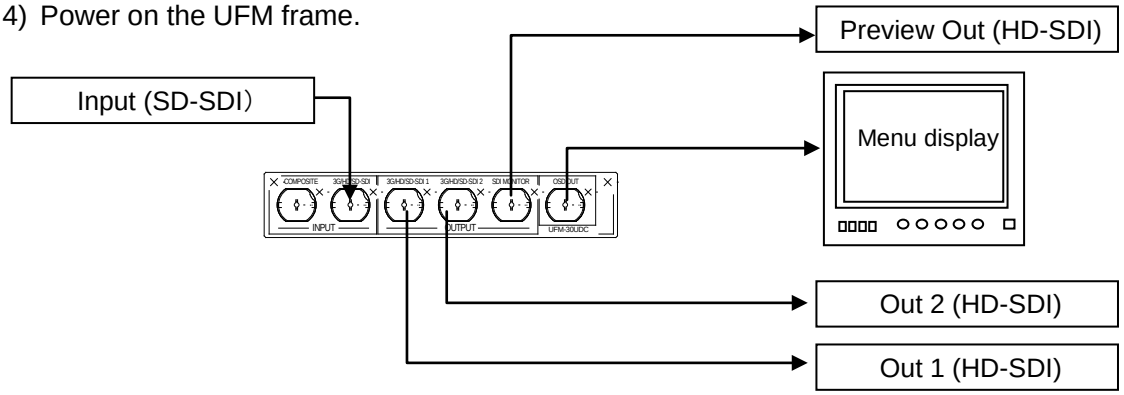
5-1. SD to HD (without Genlock)

This operation example shows how to convert SD-SDI video to HD-SDI video without using a genlock signal. The 4:3 SD video is converted to 16:9 HD video by **horizontally filling** a 16:9 screen.



◆ **Connection**

1) Connect the OSD OUT port to NTSC (PAL) monitor.
2) Input an SD-SDI signal to the [INPUT-3G/HD/SD] port.
3) Connect the [OUTPUT-3G/HD/SD 1] port or [OUTPUT-3G/HD/SD 2] port to a waveform monitor or an SDI monitor.
4) Power on the UFM frame.



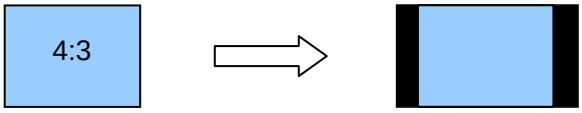
◆ **Coversion Setting**

1) Press the MENU OSD button to display the menu on the NTSC (PAL) monitor.
2) Make settings as shown in the table below. See section 4-2. "Menu Operation" for details on menu operation.

Menu	Item	Setting	Description
Input	Source	SDI	Selects **SDI** for input port. The video format is automatically set.
Output	Output	720P, 1080i	Selects **1080i** or **720P** for output video format.
	Genlock	Free run	Sets reference mode to **Free run**.
Scaling (*1)	SD in format	Normal 4:3	Specifies aspect ratio of input to **4:3**.
	ARC mode	Normal	If set to **Normal**, the aspect ratio of the video is preserved, the right and left edges are fitted and the top and bottom regions are cut off. See section 6-1. "Up-conversion (SD to HD)".

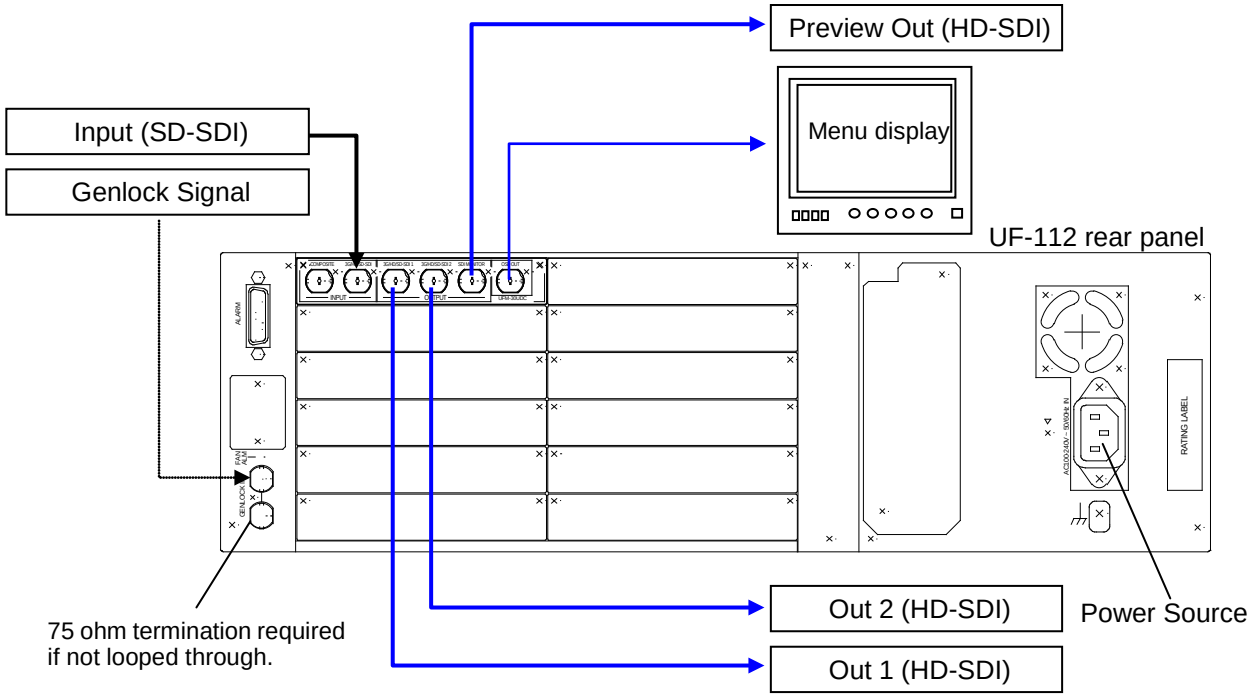
5-2. SD to HD (with Genlock)

This operation example shows how to convert SD-SDI video to HD-SDI video with using a genlock signal. The 4:3 SD video is converted to 16:9 HD video by **vertically filling** a 16:9 screen (pillar box type). The output video is synchronized with the genlock signal. Adjust the genlock phase in the menu.



◆ **Connection**

1) Connect the OSD OUT port to NTSC (PAL) monitor.
2) Input an SD-SDI signal to the [INPUT-3G/HD/SD] port.
3) Connect the [OUTPUT-3G/HD/SD 1] port or [OUTPUT-3G/HD/SD 2] port to a waveform monitor or an SDI monitor.
4) Input a genlock signal (BB) to the UFM frame.
5) Power on the UFM frame.



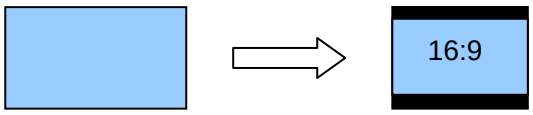
◆ **Conversion Setting**

1) Press the MENU OSD button to display the menu on the NTSC (PAL) monitor.
2) Make settings as shown in the table below. See section 4-2. "Menu Operation" for details on menu operation.

Menu	Item	Setting	Description
Input	Source	SDI	Selects **SDI** for input port. The video format is automatically set.
Output	Output	720P, 1080i	Selects **1080i** or **720P** for output video format.
	Genlock	Reference lock	Sets reference mode to **Reference lock**.
	Genlock H Phase	(±1/2H)	Adjusts horizontal phase and vertical phase monitoring the waveform monitor.
	Genlock V Phase	(±1/2V)	
Scaling	SD in format	Normal 4:3	Sets **Normal 4:3** for input aspect ratio.
	ARC mode	Fit to height	When set to **Fit to height**, the aspect ratio of the video is preserved, the top and bottom edges are fitted and black bars are added to the left and right. See section 6-1. "Up-conversion (SD to HD)."

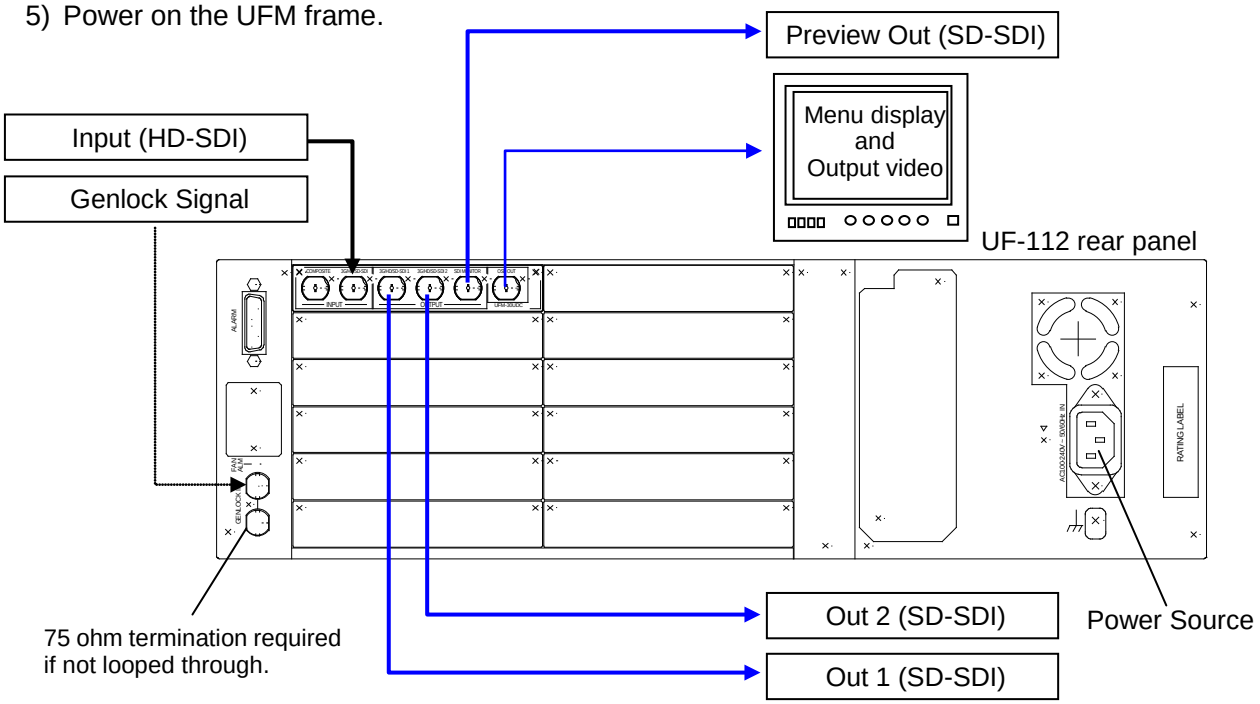
5-3. HD to SD (with Genlock)

This operation example shows how to convert HD-SDI video to SD-SDI video with using a genlock signal. The 16:9 HD video is converted to 4:3 SD video by **horizontally filling** a 4:3 screen (letter box type). . The output video is synchronized with the genlock signal. Adjust the genlock phase in the menu.



◆ **Connection**

1) Connect the OSD OUT port to NTSC (PAL) monitor.
2) Input an HD-SDI signal to the [INPUT-3G/HD/SD] port.
3) Connect the [OUTPUT-3G/HD/SD 1] port or [OUTPUT-3G/HD/SD 2] port to a waveform monitor or an SDI monitor.
4) Input a genlock signal (BB) to the UFM frame.
5) Power on the UFM frame.



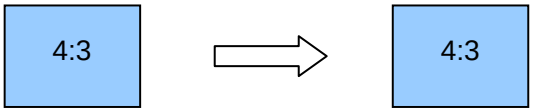
◆ **Conversion Setting**

1) Press the MENU OSD button to display the menu on the NTSC (PAL) monitor.
2) Make settings as shown in the table below. See section 4-2. "Menu Operation" for details on menu operation.

Menu	Item	Setting	Description
Input	Source	SDI	Selects **SDI** for input port. The video format is automatically set.
Output	Output	SD	Selects **SD** for output video format.
	Genlock	Reference lock	Sets reference mode to **Reference lock**.
	Genlock H Phase	(±1/2H)	Adjusts horizontal phase and vertical phase monitoring the waveform monitor.
	Genlock V Phase	(±1/2V)	
Scaling	SD out format	16:9 LB	When set to **16:9 LB**, the aspect ratio of the video is preserved, the left and right edges are fitted and black bars are added to the top and bottom. See section 6-2 Down-conversion (HD to SD),

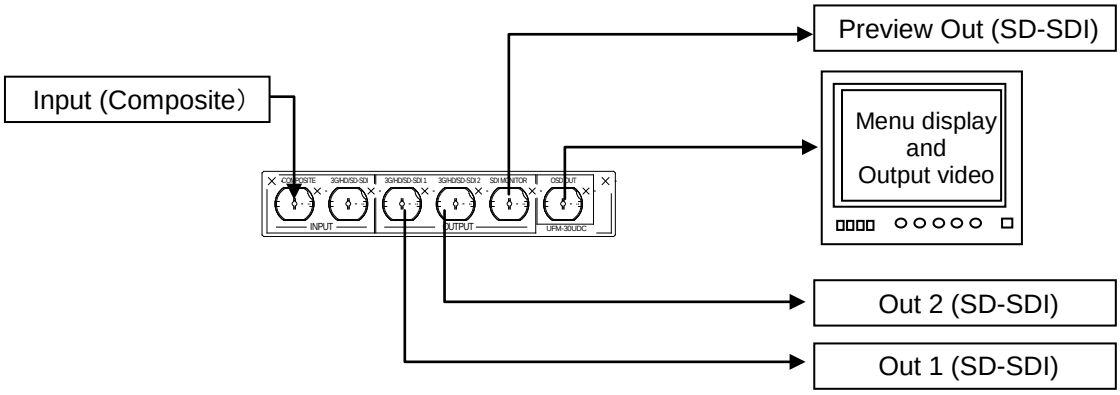
5-4. Composite to SD (without Genlock)

This operation example shows how to convert Composite video to SD-SDI video without using a genlock signal. The aspect ratio of the converted video is 4:3 as well.



◆ **Connection**

1) Connect the OSD OUT port to NTSC (PAL) monitor.
2) Input a comosite signal to the COMPOSITE port.
3) Connect the [OUTPUT-3G/HD/SD 1] port or [OUTPUT-3G/HD/SD 2] port to a waveform monitor or an SDI monitor.
4) Power on the UFM frame.



◆ **Conversion Setting**

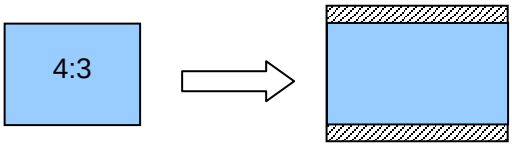
1) Press the MENU OSD button to display the menu on the NTSC (PAL) monitor.
2) Make settings as shown in the table below. See section 4-2. "Menu Operation" for details on menu operation.

Menu	Item	Setting	Description
Input	Source	Composite	Selects **Composite** for input port.
Output	Output	SD	Selects **SD** for output video format.
	Genlock	Free run	Sets reference mode to **Free run**.
Scaling (*1)	SD in format	Normal 4:3	Sets **Normal 4:3** for input aspect ratio.
	SD out format	Normal 4:3	Sets **Normal 4:3** for output aspect ratio.

(*1) See section 6-3. "SD to SD conversion - 4:3 Output",
section 6-4. "SD to SD conversion - 16:9 Anamorphic Output" and
section 6-5. "SD to SD conversion - 16:9 Letter Box Output"
for details about scaling between SD images.

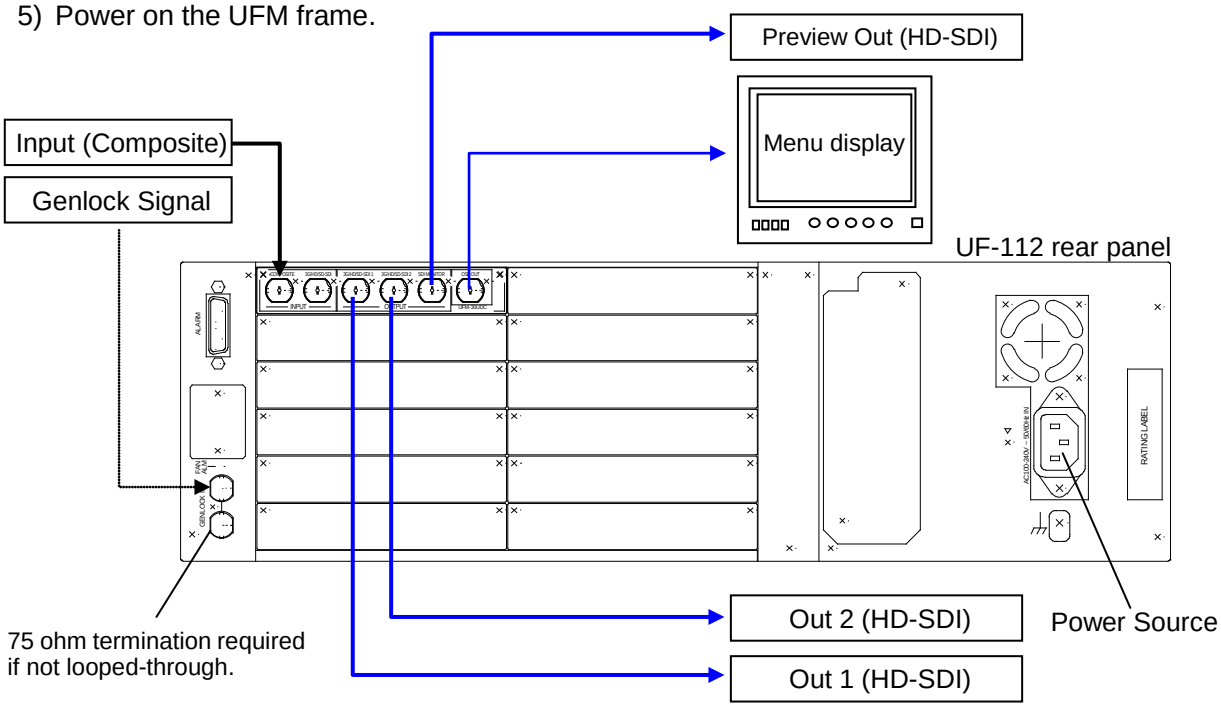
5-5. Composite to HD (with Genlock)

This operation example shows how to convert Composite video to HD-SDI video with using a genlock signal. The 4:3 composite video is converted to 16:9 HD video by **horizontally filling** a 16:9 screen. The output video is synchronized with the genlock signal. Adjust the genlock phase in the menu.



◆ **Connection**

1) Connect the OSD OUT port to NTSC (PAL) monitor.
2) Input a comosite signal to the COMPOSITE port.
3) Connect the [OUTPUT-3G/HD/SD 1] port or [OUTPUT-3G/HD/SD 2] port to a waveform monitor or an SDI monitor.
4) Input a genlock signal (BB) to the UFM frame.
5) Power on the UFM frame.



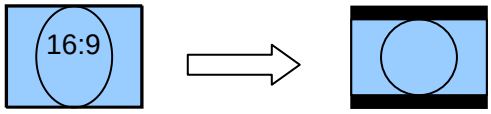
◆ **Conversion Setting**

1) Press the MENU OSD button to display the menu on the NTSC (PAL) monitor.
2) Make settings as shown in the table below. See section 4-2. "Menu Operation" for details on menu operation.

Menu	Item	Setting	Description
Input	Source	Composite	Selects **Composite** for input port.
Output	Output	720P, 1080i	Selects **1080i** or **720P** for output video format.
	Genlock	Reference lock	Sets reference mode to **Reference lock**.
	Genlock H Phase	(±1/2H)	Adjusts horizontal phase and vertical phase monitoring the waveform monitor.
	Genlock V Phase	(±1/2V)	
Scaling	SD in format	Normal 4:3	Sets **Normal 4:3** for input aspect ratio.
	ARC mode	Normal	When set to **Normal**, the aspect ratio of the video is preserved, the right and left edges are fitted and the top and bottom regions are cut off. See section 6-1. "Up-conversion (SD to HD)".

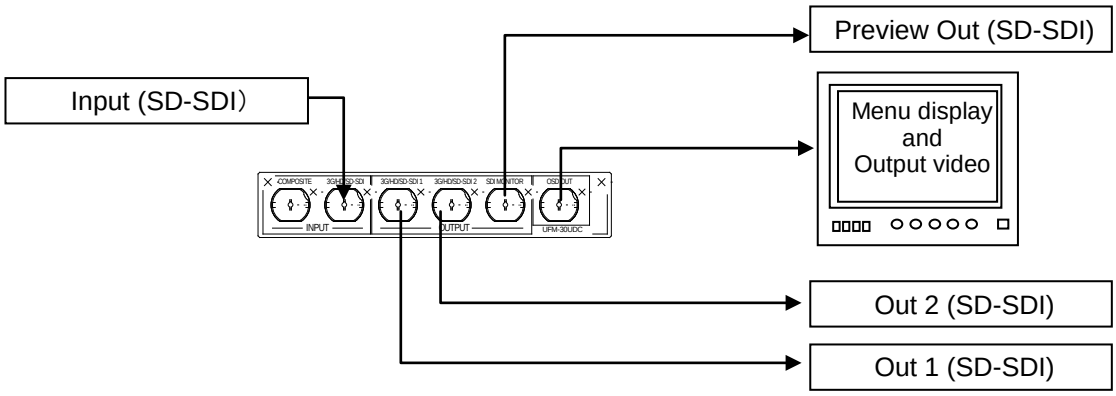
5-6. SD to SD (Aspect Conversion)

This operation example shows how to convert the aspect ratio between SD videos. The 16:9 anamorphic video is converted to 16:9 letter box video.



◆ **Connection**

1) Connect the OSD OUT port to NTSC (PAL) monitor.
2) Input an SD-SDI signal to the [INPUT-3G/HD/SD] port.
3) Connect the [OUTPUT-3G/HD/SD 1] port or [OUTPUT-3G/HD/SD 2] port to a waveform monitor or an SDI monitor.
4) Power on the UFM frame.



◆ **Conversion Setting**

1) Press the MENU OSD button to display the menu on the NTSC (PAL) monitor.
2) Make settings as shown in the table below. See section 4-2. "Menu Operation" for details on menu operation.

Menu	Item	Setting	Description
Input	Source	SDI	Selects **SDI** for input port.
Output	Output	SD	Selects **SD** for output video format.
	Genlock	Free run	Sets reference mode to **Free run**.
Scaling	SD in format	16:9 An	Sets **16:9 An** for input aspect ratio.
	SD out format	16:9 LB	When set to **16:9 LB**, the aspect ratio of the video is changed from 4:3 to 16:9, the left and right edges are fitted and black bars are added to the top and bottom. See section 6-5. SD to SD conversion - 16:9 Letter Box Output."
	Sync mode	Disable	Sync mode must be set to **Disable**. If set to Enable, the aspect conversion between SD images is not performed.

5-7. Other Setting

- NTSC Setup

Menu	Item	Setting	Description
Input	NTSC setup	**Off**	Sets the setup level to 0IRE (used in Japan) when inputting NTSC video signal.
		On	Sets the setup level to 7.5IRE (used in USA) when inputting NTSC video signal.

- Video Level (Proc Amp)

Menu	Item	Setting	Description
Input	Black level	(±100 mV)	Adjusts the black level of the input video.
	Video level	(±6.0dB)	Adjusts the video level of the input video.
	Chroma level	(±6.0dB)	Adjusts the chroma level of the input video.

- Closed Caption

Menu	Item	Setting	Description
Output	Closed caption SD	**Enable** Disable	If the CC (Closed Caption) data is included in the input video, you can select pass (Enable) or blank(Disable) for the data. The default setting is pass (Enable). This setting is only applied to signals at 59.94Hz frame rate, but not to signals at 50Hz frame rate.

- Enhancer

Menu	Item	Setting	Description
Scaling	Enhance	Soft **Normal** Sharp	Selects enhanced mode among three types. Change the enhanced mode setting if video edges look unnatural due to the aspect ratio conversion. The default setting is **Normal**.

- Motion Adaptive Filter

Menu	Item	Setting	Description
Scaling	Motion sense	Off **On**	Sets to **On** for the images with few movements. The default setting is **On**.

- Scaling On/Off

Menu	Item	Setting	Description
Scaling	Sync mode	**Enable** Disable	When input and output videos are the same format and scaling is not needed, set to **Enable**. Then you can minimize the process delay by short-cutting the scaling process. The default setting is **Enable**. If the scaling is needed during conversion, the scaling is processed regardless of this setting. If the scaling is needed during conversion and the 525/59.94i signals are output, the 20th line of the output signals is blank.

IMPORTANT
The UFM-30UDC automatically holds the last setting applied to it. Therefore, when you power off the unit, **wait more than 5 seconds** after the setting change. Otherwise, the last setting may not be preserved and not applied to the UFM-30UDC when you power on the unit again.

5-8. Embedded Audio

◆ **PCM Audio**

Four pairs of synchronous 48kHz audio (groups 1 & 2) are extracted from the incoming SDI stream, and embedded again to SDI stream after a delay in order to match the video delay. Other HANC data is blanked.

◆ **Non-PCM Audio**

Non-PCM pairs are automatically detected and passed with matching delay in one of following two conditions is met.

- The output is clock-locked to the input.
- The output is reference locked.

5-9. Test Signal

Three types of test signals, Ramp, Color bar and Black, can be output using the menu. To output a test signal, select the desired signal in the **Test signal** item in the **Output** menu.

Menu	Item	Setting	Description
Output	Test signal	Off Color Bar Ramp Black	Outputs the selected test signal.

NOTE
If **Monitor** in the Output menu is set to **Input,** the input image is displayed on the Composite monitor (only when the composite or SD-SDI signal is input) and the SDI monitor.

6. Aspect Ratio Scaling

The aspect ratio settings are made in the following three items in the Scaling menu: **ARC mode, SD in format** and **SD out format.**

◆ SD Input Setting

The **ARC mode** selects a type of the Auto aspect Ratio Control mode.

Menu	Item	Setting	Description
Scaling	ARC mode	**Normal**	Automatically changes aspect ratio based on the **width** of video when SD signals are input.
		Fit to height	Automatically changes aspect ratio based on the **height** of video when SD signals are input.

The **SD in format** specifies the aspect ratio of input video when inputting Composite or SD-SDI.

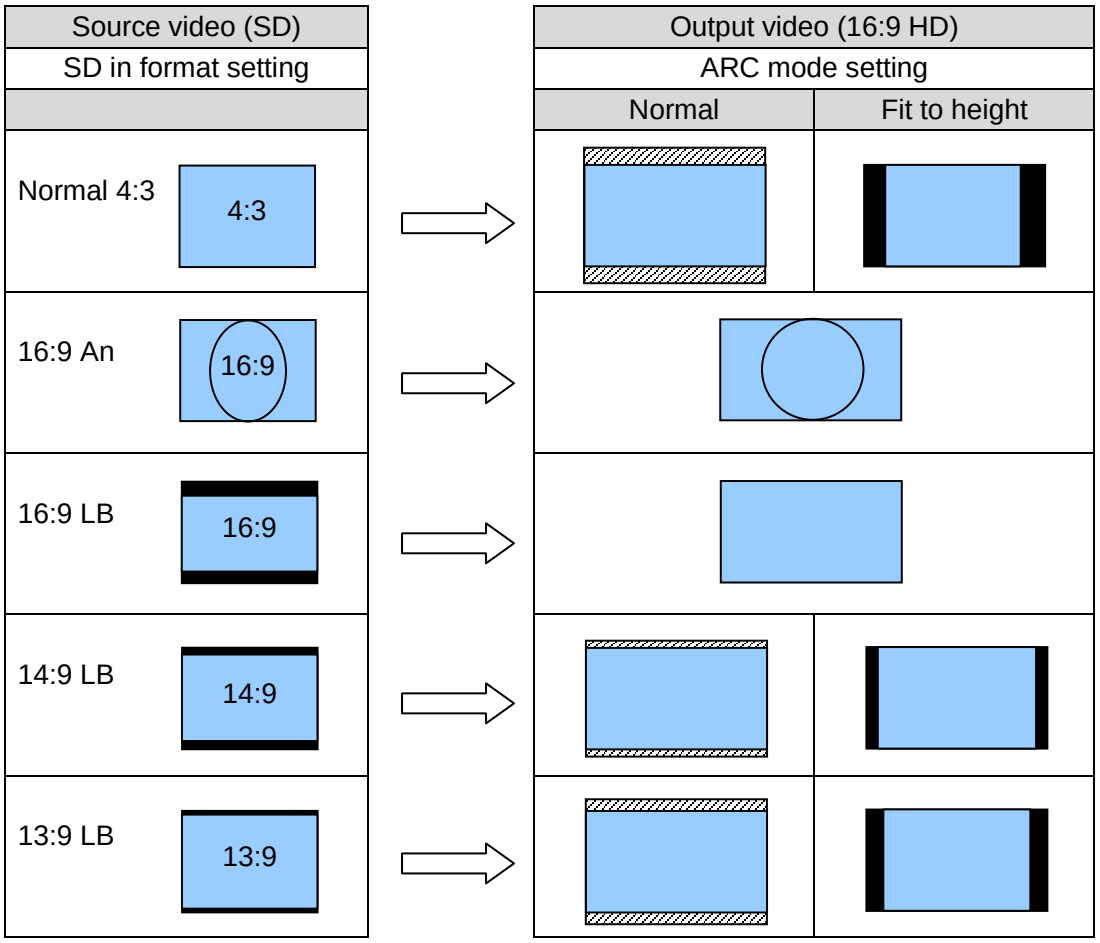
Menu	Item	Setting	Description
Scaling	SD in format	**Normal 4:3**	Specifies the aspect ratio of input to 4:3
		16:9 An (Anamorphic)	Specifies the aspect ratio of input to 16:9 anamorphic (squeezing 16:9 to 4:3)
		16:9 LB (Letter Box)	Specifies the aspect ratio of input to 16:9.
		14:9 LB (Letter Box)	Specifies the aspect ratio of input to 14:9.
		13:9 LB (Letter Box)	Specifies the aspect ratio of input to 13:9.

◆ SD Output Setting

The SD out format specifies the aspect ratio of output video when outputting SD-SDI signals.

Menu	Item	Setting	Description
Scaling	SD out format	**Normal 4:3**	Specifies the aspect ratio of output to 4:3. Both sides of the video are cut off.
		16:9 An (Anamorphic)	Specifies the aspect ratio of output to 4:3. Note that scaling process varies by the ARC mode setting when SD signals are input.
		16:9 LB (Letter Box)	Specifies the aspect ratio of output to 16:9.
		14:9 LB (Letter Box)	Specifies the aspect ratio of output to 14:9.
		13:9 LB (Letter Box)	Specifies the aspect ratio of output to 13:9.

6-1. Up-conversion (SD to HD)

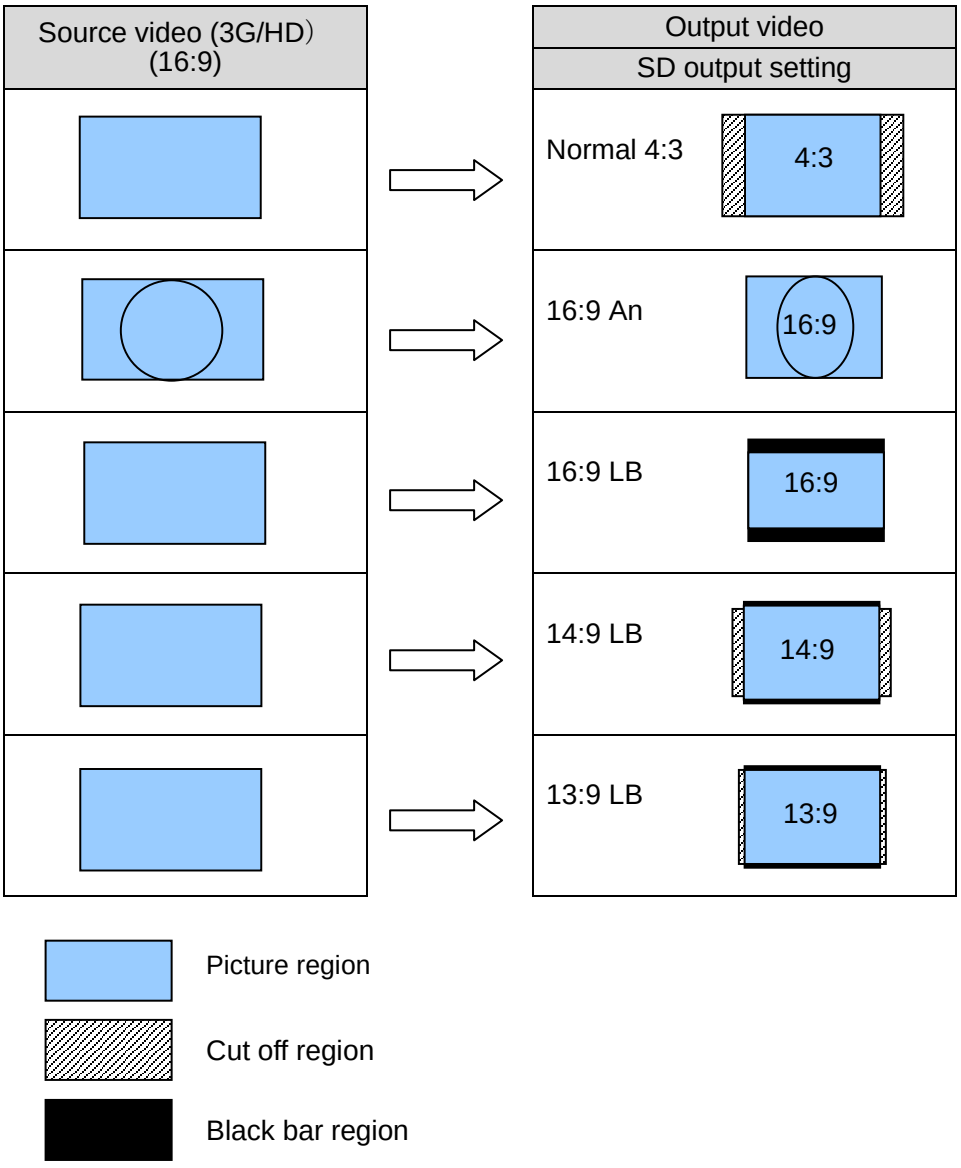


Picture region

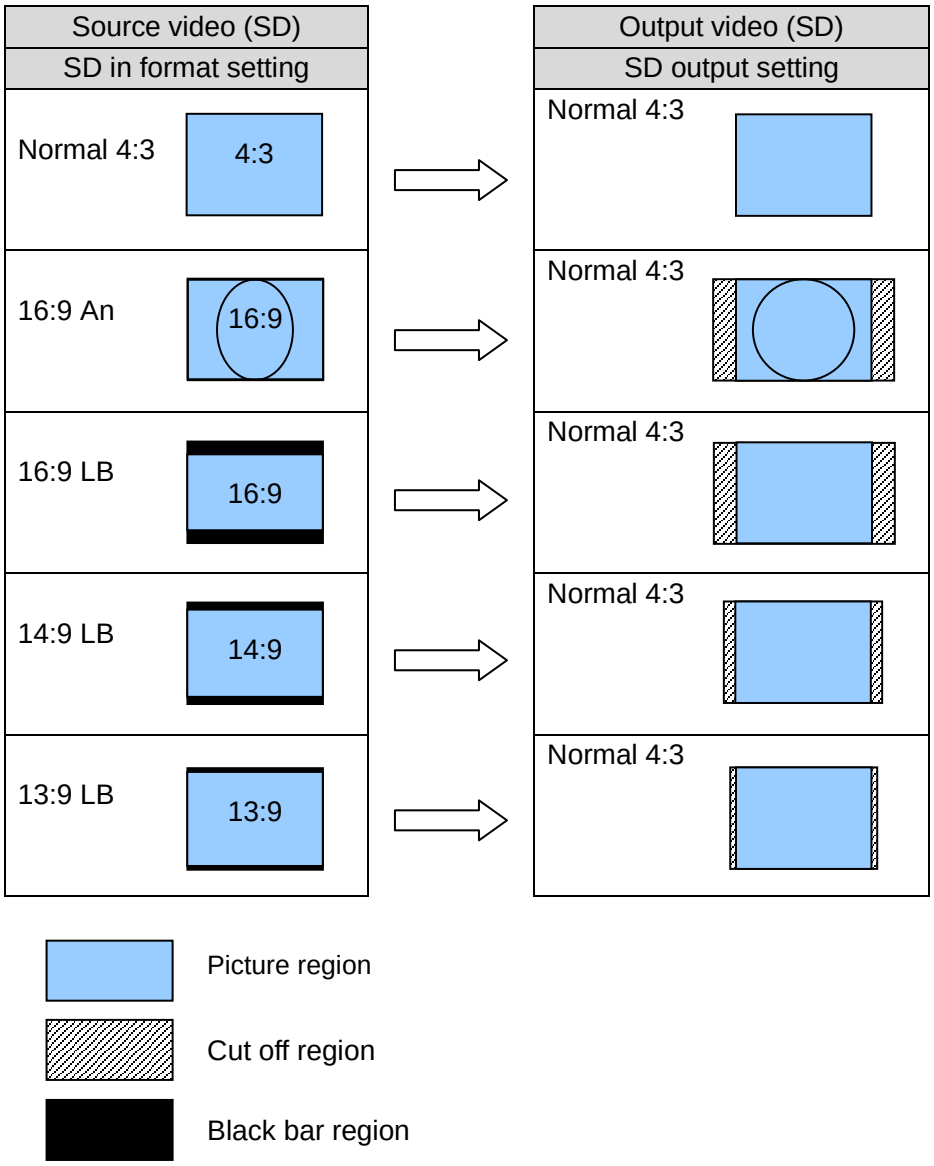
Cut off region

Black bar region

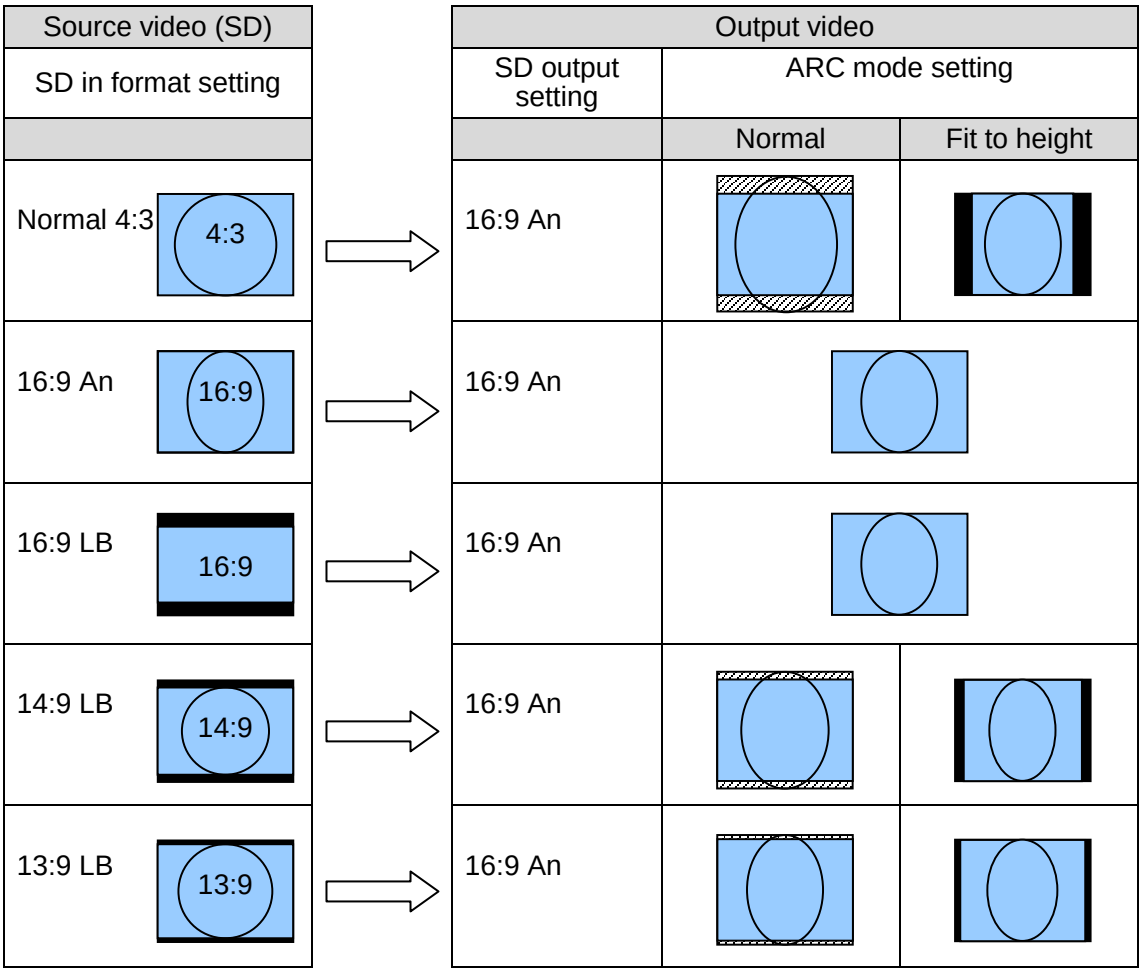
6-2. Down-conversion (HD to SD)

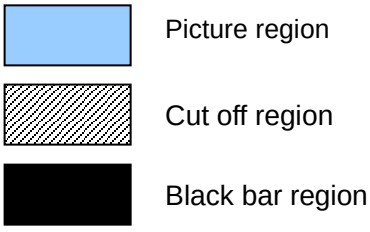


6-3. SD to SD conversion – 4:3 Output

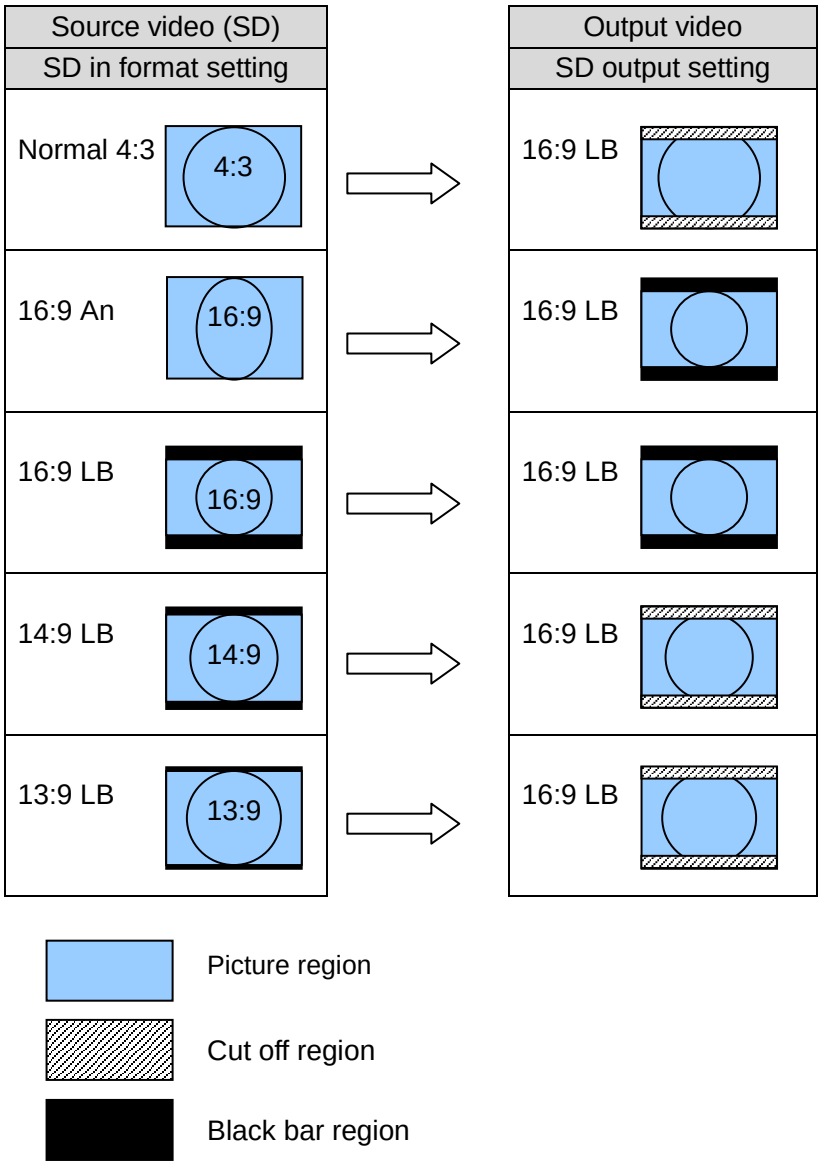


6-4. SD to SD conversion – 16:9 Anamorphic Output





6-5. SD to SD conversion - 16:9 Letter Box Output



7. Menu List

The menu is divided into the following four categories: Status, Input, Output and Scaling.

7-1. Status Menu (Display only)

Item	Display
Input standard	Displays the input video format.
Output standard	Displays the output video format.
Reference	Displays the genlock signal format input to the UFM frame.(It is displayed even when the genlock signal is not used in the UFM-30UDC).
Input	Displays the selected source of input video. (SDI or Composite)
SDI Audio	Displays the embedded audio status of SDI output for each channel.
Code version	Displays the firmware version of UFM-30UDC.

7-2. Input menu

Item	Setting (Default in bold)	Description	Refer to
Source	**SDI** Composite	Selects input video source. (The video format is auto-detected.)	5
Black level	-100 to +100mV **0.0mV**	Adjusts Black level in 0.8mV increments.	5-7
Video level	-6.0 to +6.0dB **0.0dB**	Adjusts Video level in 0.2dB increments.	5-7
Chroma level	-6.0 to +6.0dB **0.0dB**	Adjusts Chroma level in 0.2dB increments.	5-7
NTSC setup	**Off** On	Selects NTSC setup between 0IRE (Off) and 7.5IRE (On) when the NTSC composite signal is input.	3-2

7-3. Output menu

Item	Setting (Default in bold)	Description	Refer to
Output	**SD** 720P 1080i 1080P-A 1080P-B	Selects the output video format. **SD** (525/59.94i or 625/50i) **720P** (720/59.94p or 720/50p) **1080i** (1080/59.94i or 1080/50i) **1080P-A** (1080/59.94p Level A or 1080/50p Level A) **1080P-B** (1080/59.94p Level B or 1080/50p Level B)	5
Monitor	Input **Output**	Selects the monitor image sent to SDI MONITOR and OSD OUT between the signal before processing (**Input**) and the signal after processing (**Output**).	3-4
Genlock	Reference lock Input lock **Free run**	Selects the reference mode. **Reference lock**: Outputs the genlocked video for frame accurate sync. If BB is used for the reference, the sub-carrier phase of composite video is not adjusted. (Horizontal lock only) **Input lock**: Outputs the input-locked video. **Free run**: Outputs the video in free running mode.	5
Genlock H Phase (*1)	-1/2H to +1/2 H **0 pixels**	If Genlock is set to **Reference lock**, adjust the system H phase in 1-pixel increments referring to the genlock signal.	5-2 5-3 5-5
Genlock V Phase (*1)	-1/2V to +1/2 V **0 lines**	If Genlock is set to **Reference lock**, adjust the system V phase in 1-line increments referring to the genlock signal.	
Test signal	**Off** Ramp Color Bar Black	Outputs an internally generated test signal.	5-9
OSD OUT	PAL/NTSC-J **PAL/NTSC**	Selects the NTSC setup level between 0IRE (**PAL/NTSC-J**) and 7.5IRE (**PAL/NTSC**) when using the NTSC composite monitor.	3-2
Closed caption SD (59.94Hz only)	**Enable** Disable	The CC (closed caption) data can be passed (**Enable**) or blanked (**Disable**) The CC data (Line21) in Composite or SD-SDI input is inserted to 3G/HD-SDI output during up-conversion. The CC data (VANC) in 3G/HD-SDI input is inserted to SD-SDI output during down-conversion.	5-7

(*1) The setting range varies by the video signal format. See "Ranges for Genlock Phase Adjustment" in the next page.

◆ **Ranges for Genlock Phase Adjustment**

The menu display shows between -1319 and +1319 (pixels) for **H phase** and between -563 and +562 (lines) for **V phase** in all video signal formats. However, the limits of the range vary by the video formats. If you set a value beyond the range of a format, the limit value is applied. See the table below for the limit values of formats.

Video Format	Genlock H Phase [pixels]	Genlock V Phase [lines]
NTSC	-858 to +858	-263 to +262
PAL	-864 to +864	-313 to +312
525/59.94i	-858 to +858	-263 to +262
625/50i	-864 to +864	-313 to +312
1080/59.94i	-1100 to +1100	-563 to +562
1080/50i	-1319 to +1319	-263 to +262
720/59.94i	-825 to +825	-375 to +375
720/50p	-990 to +990	-375 to +375
1080/59.94i (Level A)	-1100 to +1100	-563 to +562
1080/50p (Level A)	-1319 to +1319	-563 to +562
1080/59.94i (Level B)	-1100 to +1100	-563 to +562
1080/50p (Level B)	-1319 to +1319	-563 to +562

7-4. Scaling menu

Item	Setting (Default in bold)	Description	Refer to
ARC mode	**Normal** Fit to height	Sets automatic scaling mode when inputting SD-SDI signals. **Normal** performs scaling based on the object **width**. **Fit to height** performs scaling based on the object **height**.	6
SD in format	**Normal 4:3** 16:9 An 16:9 LB 14:9 LB 13:9 LB	Specifies the aspect ratio when inputting SD-SDI signals.	6
SD out format	**Normal 4:3** 16:9 An 16:9 LB 14:9 LB 13:9 LB	Specifies the aspect ratio when outputting SD-SDI signals.	6
Enhance	Soft **Normal** Sharp	Selects a level of edge enhancement from three options.	5-7
Motion sense	**On** Off	Sets the motion sense filter On/Off. **On**: This is effective for images with few movements. The vertical resolution for the areas with fewer motions is doubled. **Off**: This is effective for images with a lot of movements. It produces smooth results for these images.	5-7
Sync mode	**Enable** Disable	**Enable**: This allows you to reduce the I/O delay by bypassing the scaling process, if the input and output signals are the same format and the scaling is not needed. It also passes VANC data. The scaling is automatically processed and VANC data is not passed through conversion even when **Sync mode** is set to **Enable**, if the input and output formats are different or scaling is necessary during. **Disable**: This performs scaling and VANC data is not passed through.	5-7

IMPORTANT

Automatic saving of last setting

The UFM-30UDC automatically holds the last setting applied to it. Therefore, when you power off the unit, **wait more than 5 seconds** after the setting change. Otherwise, the last setting may not be preserved and not applied to the UFM-30UDC when you power on the unit again.

IMPORTANT

The 20th line is blanked when the output format is set to 525/59.94i and scaling is necessary.

8. Specifications and Dimensions

8-1. Specifications

Standards	3G-SDI	1080/59.94p LevelA and LevelB 1080/50p LevelA and LevelB
		※1080p LevelB supports only dual mapping defined in SMPTE372M.
	HD-SDI	1080/50i, 59.94i, 720/50p, 59.94p
	SD-SDI	525/59.94i, 625/50i
	Composite	NTSC, PAL (input only)
Video I/O process	2 inputs > 1 processing < 2 outputs	
Quantization	Y: 10-bit, C: 10-bit	
Sampling Frequency	Y: 148.5MHz or 148.5/1.001MHz or 74.25MHz or 74.25/1.001MHz or 13.5MHz	
	C: 74.25MHz or 74.25/1.001MHz or 37.125MHz or 37.125/1.001MHz or 6.75MHz	
Video input (SDI)	75Ω, BNC, 1 input	
	3G-SDI	2.97Gbps or 2.97/1.001Gbps
	HD-SDI	1.485Gbps or 1.485/1.001Gbps
	SD-SDI	270Mbps
Video input (Composite)	1.0Vp-p, 75Ω, BNC, 1 input	
Video output (SDI)	75Ω, BNC, 2 outputs	
	3G-SDI	2.97Gbps or 2.97/1.001Gbps
	HD-SDI	1.485Gbps or 1.485/1.001Gbps
	SD-SDI	270Mbps
Preview output (SDI)	75Ω, BNC, 1 output (input image or output image selectable in menu)	
	3G-SDI	2.97Gbps or 2.97/1.001Gbps
	HD-SDI	1.485Gbps or 1.485/1.001Gbps
	SD-SDI	270Mbps
OSD output (Composite)	NTSC or PAL, 1.0Vp-p , 75Ω, BNC, 1 output Menu display and input/output monitoring (Composite or SD-SDI only)	
Embedded audio	48kHz, 8ch (GROUP1-2)	

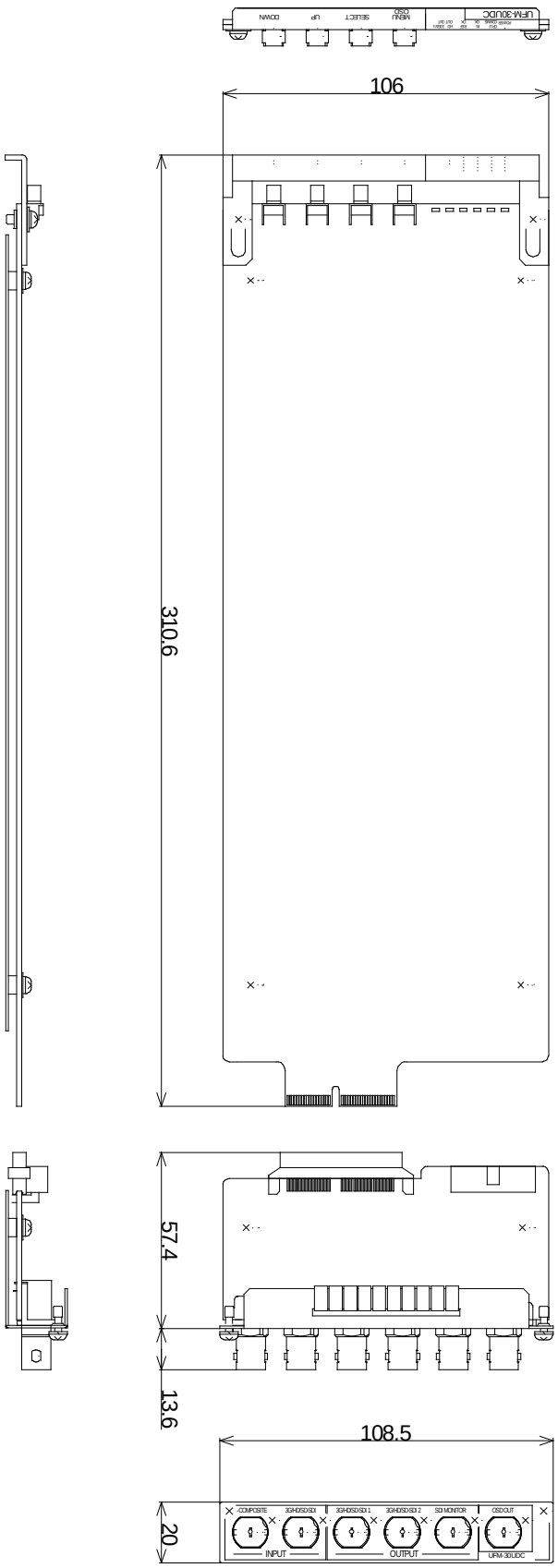
Genlock input	Tri-level sync (HDTV) 0.6Vp-p or BB: 0.429Vp-p (NTSC), 0.45Vp-p (PAL) (BB is used as Bi-level sync) (Supplied from UFM frame)	
Reference mode	Reference lock mode, Input mode, Free run mode	
I/O delay	Reference lock mode	1 or 2 frames plus 200μs
	Input mode	1 frame plus 1ms
	Free run mode	1 or 2 frames plus 200μs
I/O delay (Minimum delay)	Reference lock mode	0 or 1 frame plus 200μs
	Input mode	1ms
	Free run mode	0 or 1 frame plus 200μs
Phase Adjustment	Reference lock mode (Tri-level sync or BB)	Horizontal: ±1/2H, Vertical: ±1/2 frame

Process Amp	Black level:	0mV±100mV (in 0.8mV steps)
	Video (Y) level:	0dB±6dB (in 0.2dB steps)
	Chroma level:	0dB±6dB (in 0.2dB steps)
	Setup level (NTSC only) : 0%, 7.5%	
Temperature	0°C - 40°C	
Humidity	30% - 85% (no condensation)	
Power	+24VDC (Supplied from UFM frame)	
Consumption	Approx. 0.5A	
Dimensions	Front module:	106(W) x 293.2(D) (mm)
	Rear module:	108.5(W) x 105.3(D) x 20(H) (mm)
Weight	Approx. 0.5kg	
Required slot	1 slot	
Comsumables	None	

-

8-2. 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.

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FOR-A COMPANY LIMITED

Head Office : 3-8-1 Ebisu, Shibuya-ku, Tokyo 150-0013, Japan
Overseas Division Phone: +81 (0)3-3446-3936, Fax: +81 (0)3-3446-1470
Japan Branch Offices : Osaka/Okinawa/Fukuoka/Hiroshima/Nagoya/Sendai/Sapporo
R&D/Production : Sakura Center/Sapporo Center

FOR-A America Corporate Office

11155 Knott Ave., Suite G&H, Cypress, CA 90630, USA
Phone: +1 714-894-3311 Fax: +1 714-894-5399

FOR-A America East Coast Office

Two Executive Drive, Suite 670, Fort Lee Executive Park, Fort Lee NJ 07024, USA
Phone: +1 (201) 944-1120 Fax : +1 (201) 944-1132

FOR-A America Distribution & Service Center

2400 N.E. Waldo Road, Gainesville, FL 32609, USA
Phone: +1 352-371-1505 Fax: +1 352-378-5320

FOR-A Corporation of Canada

346A Queen Street West, Toronto, Ontario M5V 2A2, Canada
Phone: +1 416-977-0343 Fax: +1 416-977-0657

FOR-A Latin America & the Caribbean

5200 Blue lagoon Drive,
Suite 760, Miami, FL 33126, USA
Phone: +1-305-931-1700 Fax: +1-305-264-7890

FOR-A UK Limited

UNIT C71, Barwell Business Park, Leatherhead Road, Chessington Surrey, KT9 2NY, UK
Phone: +44 (0)20-8391-7979 Fax: +44 (0)20-8391-7978

FOR-A Italia S.r.l.

Viale Europa 50 20093, Cologno Monzese (MI), Milan, Italy
Phone: +39 02-254-3635/6 Fax: +39 02-254-0477

FOR-A Corporation of Korea

801 Dangsan Bld., 53-1 Dangsan-Dong, Youngdeungpo-Gu, Seoul 150-800, Korea
Phone: +82 (0)2-2637-0761 Fax: +82 (0)2-2637-0760

FOR-A China Limited

708B Huateng Building, No. 302, 3 District, Jinsong, Chaoyang, Beijing 100021, China
Phone: +86 (0)10-8721-6023 Fax: +86 (0)10-8721-6033