

OPERATION MANUAL

FA-147




Frame Synchronizer and Time Base Corrector

1st Edition - Rev.3




Precautions

Important Safety Warnings




[Power]

 Caution	Operate unit only on the specified supply voltage.
	Disconnect power cord by connector only. Do not pull on cable portion.
 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.


[Grounding]

 Caution	Ensure unit is properly grounded at all times to prevent electrical shock hazard.
 Hazard	Do not ground the unit to gas lines, units, or fixtures of an explosive or dangerous nature.
 Caution	Ensure power cord is firmly plugged into AC outlet.




[Operation]

 Hazard	Do not operate unit in hazardous or potentially explosive atmospheres. Doing so could result in fire, explosion, or other dangerous 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 unit malfunction.
	If foreign material does enter the unit, turn power off and disconnect power cord immediately . Remove material and contact authorized service representative if damage has occurred.


[Transportation]

 Caution	Handle with care to avoid shocks in transit. Shocks may cause malfunction. When you need to transport the unit, use the original packing materials or alternate adequate packing.
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[Circuitry Access]

 A black circle with a white lightning bolt and a plug symbol, with a diagonal slash through it, indicating no power.	<p>Do not remove covers, panels, casing, or access circuitry with power applied to the unit! Turn power off and disconnect power cord prior to removal. Internal servicing / adjustment of unit should only be performed by qualified personnel.</p>
 A black circle with a white hand symbol and a diagonal slash through it, indicating no touch. Stop	<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 power is disconnected. Capacitors associated with the power supply are especially hazardous. Avoid contact with any capacitors.</p>
 A black triangle with a white flame symbol inside, indicating a fire hazard. Hazard	<p>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.</p>


[Potential Hazards]

 A black triangle with a white lightning bolt symbol inside, indicating a caution for electrical hazards. Caution	<p>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.</p>
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[Consumables]

 A black triangle with a white exclamation mark symbol inside, indicating a caution. Caution	<p>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.</p>
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[Rubber Feet]

 A black circle with a white exclamation mark symbol inside, indicating a caution. Caution	<p>If this product has come with rubber feet attached by screws, do not insert the screws again without rubber feet after removing the rubber feet and screws. It may cause damage to the internal circuits or components of the unit. To install the rubber feet again to the unit, do not use other than the supplied rubber feet and screws.</p>
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Upon Receipt

Unpacking

FA-147 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
FA-147	1	
AC Cord	1	
Operation Manual	1	

Option

ITEM	QTY	REMARKS
Rack mount bracket set (type 1)	1 set	For mounting single unit to an EIA 1RU rack space.
Rack mount bracket set (type 2)	1 set	For mounting two units to an EIA 1RU rack space.
UFM-147CNT	1	Optional analog component I/O

Check

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

Rack Mounting

The FA-147 can be either single unit or dual unit mounted to EIA standard rack units. Racking mounting requires purchase of one of the two available rack mount kits.

When single unit mounting the single mount kit with one extended rack ear must be used. When two units mounting the dual mount kit with standard size rack ears must be used. Consult your FOR-A supplier to order either of these options.

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1. Prior to Starting

1-1. Welcome

Congratulations! By purchasing FA-147 Frame Synchronizer and Time Base Corrector you have entered the world of FOR-A and its many innovative products. Thank you for your patronage and we hope you will turn to FOR-A products again and again to satisfy your video and audio needs.

FOR-A provides a wide range of products, from basic support units to complex system controllers, which have been increasingly joined by products for computer video based systems. Whatever your needs, talk to your FOR-A representative. We will do our best to be of continuing service to you.

1-2. Features

A compact and very powerful FS/TBC, the FA-147 is capable of analog composite to digital component conversion, and has wide range internal genlock capability, so that almost any VHS signal can be genlocked. Perfect solution for an existing analog system to be upgraded to digital component system.

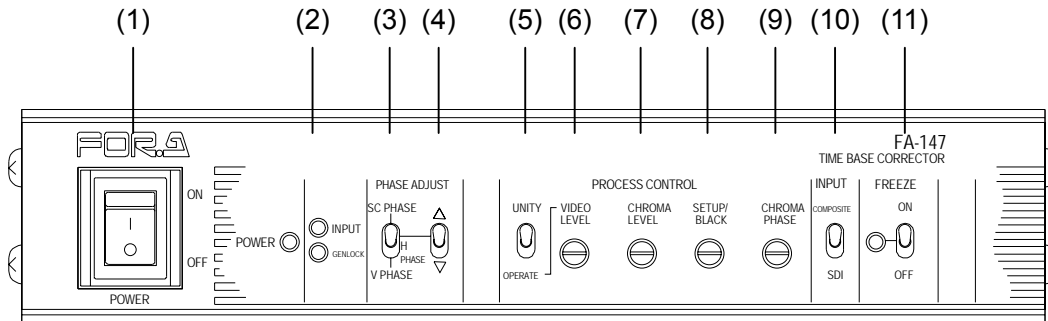
- SD-SDI or Analog composite input
- SD-SDI and Analog composite output
- A/D and D/A converter.
- Line Synchronization (Minimum Delay mode) selectable.
- Internal Processing :10-bit 4:2:2 component
- 10-bit digital Y/C separation/decoding/encoding.
- Full frame memory to prevent picture field inversion during processing.
- 10-bit quantization each for Y and C.
- Auto-detection for NTSC and PAL signals.
- UFM-147CNT: Optional analog component I/O

1-3. About This Manual

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

2. Panel Descriptions

2-1. Front Panel



(1) POWER switch

Switch used to turn unit power ON / OFF.

(2) POWER, INPUT, and GENLOCK indicators

Name	Indicator	Description
POWER	Lit green	Power is applied to the unit.
	Unlit	Power is not applied to the unit.
	Flashing (fan alarm)	The fan motor is not running. Contact your FOR-A supplier.
INPUT	Lit green	The FA-147 is receiving the selected video signal and operating properly.
	Unlit	The selected signal is not present. The signal level is too low. Random noise is present.
GENLOCK	Lit green	The FA-147 is receiving the external reference signal and operating properly.
	Unlit	No signal is present. The signal level is too low. The internal reference signal is used.

(3) SYSTEM PHASE toggle switch

Used to select the system phase.

Up position: SC PHASE

Center position: H PHASE

Down position: V PHASE

See section 4-3-1, "SC PHASE," section 4-3-2, "H PHASE," and section 4-3-3, "V PHASE."

Switch (4) is used to adjust the phase.

(4) PHASE adjustment switch

Used to adjust the phase by moving the switch up and down.

See section 4-3-1, "SC PHASE," section 4-3-2, "H PHASE," and section 4-3-3, "V PHASE."

(5) UNITY / OPERATE toggle switch

UNITY	Resets all settings for VIDEO LEVEL, CHROMA LEVEL, SETUP/BLACK, and CHROMA PHASE to the factory defaults. (UNITY default setting)
OPERATE	Enables all controls for VIDEO LEVEL, CHROMA LEVEL, SETUP/BLACK, and CHROMA PHASE.

(6) VIDEO LEVEL

Used to adjust the video level. See section 4-3-5, "VIDEO LEVEL."

(7) CHROMA LEVEL

Used to adjust the chroma level. See section 4-3-6, "CHROMA LEVEL."

(8) SETUP / BLACK

Used to adjust the setup level. See section 4-3-7, "SETUP/BLACK."

(9) CHROMA PHASE

Used to adjust the chroma phase. See section 4-3-8, "CHROMA PHASE."

(10) INPUT select switch

Used to switch the input signal selection.

Up position: COMPOSITE IN

Down position: SD-SDI IN

*If the UFM-147CNT (option) is installed, COMPONENT IN is selected by setting the switch to the center position.

See section 4-3-9, "INPUT SELECT."

(11) FREEZE switch and indicator

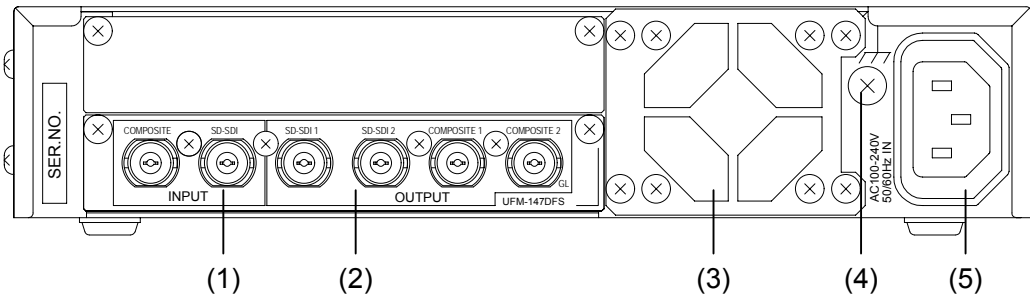
Used to set freeze operation ON / OFF. The indicator lights green whenever freeze is set to ON.

Up position: ON

Down position: OFF

See section 4-3-10, "FREEZE."

2-2. Rear Panel



(1) INPUT

COMPOSITE	Used to input an analog composite signal.
SD-SDI	Used to input an SD-SDI signal.

(2) OUTPUT

SD-SDI 1	Used to output a corrected SD-SDI signal. The signal input to the INPUT SD-SDI is bypassed to SD-SDI 1 when power is turned off or when SW1-1 is set to ON. See section 5-1-1, "SW1."	
SD-SDI 2	Used to output a corrected SD-SDI signal.	
COMPOSITE 1	Used to output a corrected analog composite signal. The signal input to the INPUT COMPOSITE is bypassed to COMPOSITE 1 when power is turned off or when SW1-1 is set to ON. See section 5-1-1, "SW1."	
COMPOSITE 2	COMPOSITE 2 or GL (GENLOCK IN) can be selected by changing the jumper setting. See section 5-2, "Jumper Settings."	
GL	COMPOSITE 2	Used to output a corrected analog composite signal.
	GL (GENLOCK IN)	Used to input a reference signal (black burst).

(3) Cooling Fan

Used to air cool unit and prevent overheating. Do not block fan intake with other equipment or objects.

(4) Ground Terminal

Used to ground unit to protect operators against static electricity and / or electrical shock.

(5) AC IN (100VAC –240VAC 50/60 Hz)


Used for connection to AC power source via supplied accessory cord.

IMPORTANT

The unit circuitry does not have fuse protection. The unit power cord must not be connected directly to the power source. Instead, use one of the following methods.

- Connect to a power connection unit having a fuse.
- Connect to a power connection unit having a breaker that can be easily reached in an emergency.

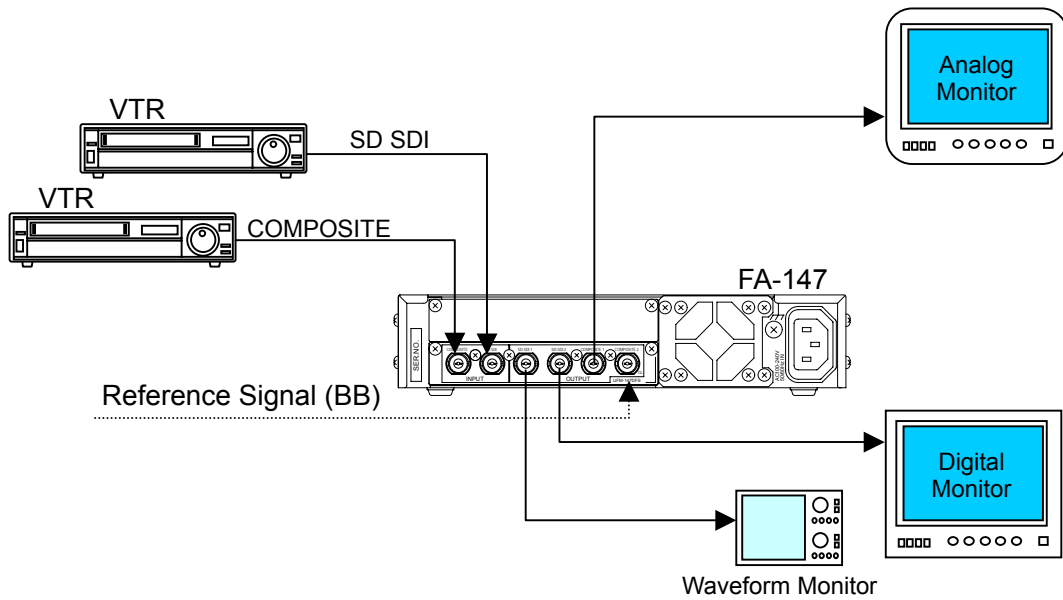
3. Connection

 <p>CAUTION</p>	Turn all the power OFF before making connection.
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3-1. Connection Example

Whether to process the analog composite or SD-SDI input signal is selectable with the INPUT SELECT switch.

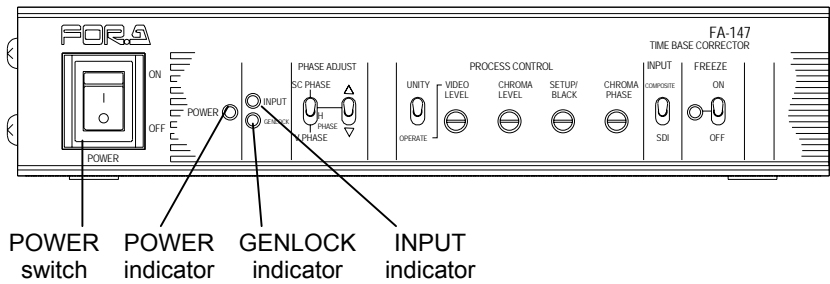
◆ Wiring Diagram



4. Operation

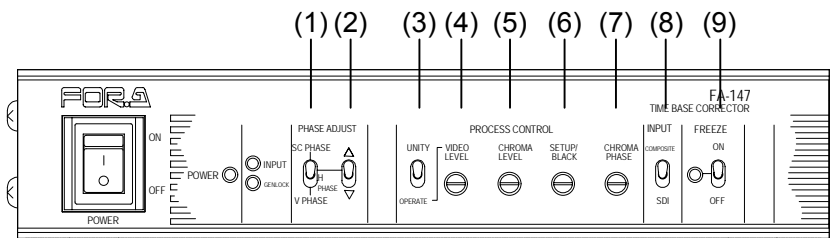
4-1. Power On

Turn the POWER switch to ON after all system connections are complete. When the unit is powered on, the POWER indicator should light up green. If the video signal is input to the unit, the INPUT indicator shown below will light up green. If the reference signal is input to the unit, the GENLOCK indicator shown below will light up green.



4-2. Front Panel Switches and Controls

The switches and controls on the FA-147 front panel can be used to select and change operational settings and levels and to make settings in the operational menus.



Switches and Controls	Factory Default	Refer to
(1) SYSTEM PHASE SELECT	SC PHASE	4-3-1 4-3-2 4-3-3
(2) PHASE ADJUST	CENTER	4-3-1 4-3-2 4-3-3
(3) UNITY/OPERATE	UNITY	4-3-4
(4) VIDEO LEVEL	CENTER	4-3-5
(5) CHROMA LEVEL	CENTER	4-3-6
(6) SETUP/BLACK	CENTER	4-3-7
(7) CHROMA PHASE	CENTER	4-3-8
(8) INPUT SELECT	COMPOSITE	4-3-9
(9) FREEZE	OFF	4-3-10

4-3. Front Panel Operation

4-3-1. SC PHASE

Switches		Description
PHASE ADJUST Up position (SC PHASE)		Adjusts the SC phase of the video signal with respect to the genlock signal.
Move the right switch up and down		<p>Up position: turns the SC phase clockwise. Down position: turns the SC phase counterclockwise.</p> <p>Setting range: -180° to $+180^\circ$ (Default: 0°)</p>

IMPORTANT

SC PHASE is set to 0 at factory shipment. You should reset this parameter to match the reference signal of your system.

Note that it takes approximately 1 second until the new setting takes effect. When turning the unit OFF, wait at least 1 second after the setting.

4-3-2. H PHASE

Switches		Description
PHASE ADJUST Center position (H PHASE)		Adjusts the H phase of the video output signal with respect to the genlock signal.
Move the right switch up and down		<p>Up position: moves H phase forward. Down position: moves H phase backward.</p> <p>*H POSITION can also be adjusted by changing the dipswitch setting. See section 5-1-2, "SW2."</p> <p>Setting range: $-4.0\mu\text{s}$ to $+4.0\mu\text{s}$ (Default: $\pm 0 \mu\text{s}$)</p>

IMPORTANT

H PHASE is set to 0 at factory shipment. You should reset this parameter to match the reference signal of your system.

H POSITION is set to 0 at factory shipment. You should reset this parameter to match your system.

Note that it takes approximately 1 second until the new setting takes effect. When turning the unit OFF, wait at least 1 second after the setting.

4-3-3. V PHASE

Switches		Description
PHASE ADJUST Down position (V PHASE)		Adjusts the V phase of the video output signal with respect to the genlock signal. Up position: moves V phase forward. Down position: moves V phase backward. *V POSITION can also be adjusted by changing the dipswitch setting. See section 5-1-2, "SW2." Setting range: -127 Line to +127 Line (Default: ±0 Line)
Move the right switch up and down		

IMPORTANT

V PHASE is set to 0 at factory shipment. You should reset this parameter to match the reference signal of your system.

V POSITION is set to 0 at factory shipment. You should reset this parameter to match your system.

Note that it takes approximately 1 second until the new setting takes effect. When turning the unit OFF, wait at least 1 second after the setting.

4-3-4. UNITY/OPERATE

Move the switch up and down to switch between UNITY and OPERATE.

Switch and Controls	Description
Up position (UNITY)	
Down position (OPERATE)	

4-3-5. VIDEO LEVEL

Switch and Control		Description
UNITY/OPERATE Down position (OPERATE)	<p style="text-align: center;">PROCESS CONTROL</p> <p style="text-align: center;">OPERATE</p>	<p>Adjusts the video output level.</p> <p>Setting range: -3dB to +3dB</p>
Turn the VIDEO LEVEL control to adjust		

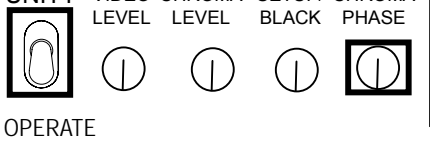
4-3-6. CHROMA LEVEL

Switch and Control		Description
UNITY/OPERATE Down position (OPERATE)	<p style="text-align: center;">PROCESS CONTROL</p> <p style="text-align: center;">OPERATE</p>	<p>Adjusts the chroma level (hue).</p> <p>Setting range: -3dB to +3dB</p>
Turn the CHROMA LEVEL control to adjust		


4-3-7. SETUP/BLACK

Switch and Control		Description
UNITY/OPERATE Down position (OPERATE)	<p style="text-align: center;">PROCESS CONTROL</p> <p style="text-align: center;">OPERATE</p>	<p>Adjusts the setup black level. Turning the control clockwise brightens the setup black level.</p> <p>Setting range: -15 IRE to +15IR</p>
Turn the SETUP/BLACK control to adjust		

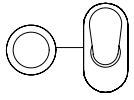
4-3-8. CHROMA PHASE

Switch and Control		Description
UNITY/OPERATE Down position (OPERATE)	<p style="text-align: center;">PROCESS CONTROL</p> <p>UNITY VIDEO CHROMA SETUP/ CHROMA LEVEL LEVEL BLACK PHASE</p> 	<p>Adjusts the chroma phase.</p> <p>Setting range: -30° to +30°</p>
Turn the CHROMA PHASE control to adjust		

4-3-9. INPUT SELECT

Switch	Description
INPUT SELECT	<p>INPUT SELECT COMPOSITE</p>  <p>SD-SDI</p>
	<p>Switches the input signal selection.</p> <p>Up position: COMPOSITE Down position: SD-SDI</p> <p>*If the UFM-147CNT (option) is installed, COMPONENT IN is selected by setting the switch to the center position.</p>

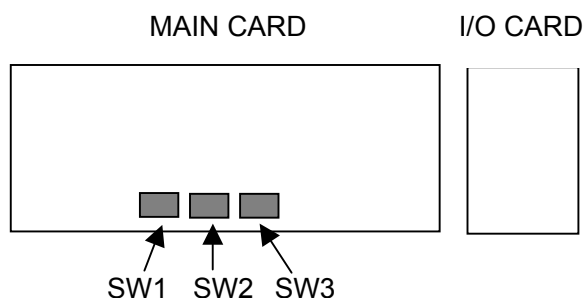
4-3-10. FREEZE

Switch	Description		
Up position (ON)	<p style="text-align: center;">FREEZE</p>  <p style="text-align: center;">ON</p> <p style="text-align: center;">OFF</p>		
Down position (OFF)			
	<p>Sets FREEZE mode ON/OFF. The left indicator is lit green when FREEZE is ON. The FRAME freeze and FIELD freeze are available.</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>FRAME FREEZE FRAME freeze gives a clearer picture if the video contains few moving elements.</p> </td> <td style="width: 50%; vertical-align: top;"> <p>FIELD FREEZE FIELD freeze gives a picture with fewer jitters if the video contains rapid moving elements.</p> </td> </tr> </table> <p>FRAME or FIELD is selected by changing the internal dipswitch settings. The factory default is FRAME. See section 5-1-1, "SW1."</p> <p>ODD or EVEN field can be selected when using the FIELD setting. This is done using the internal dipswitch settings. See section 5-1-1, "SW1."</p>	<p>FRAME FREEZE FRAME freeze gives a clearer picture if the video contains few moving elements.</p>	<p>FIELD FREEZE FIELD freeze gives a picture with fewer jitters if the video contains rapid moving elements.</p>
<p>FRAME FREEZE FRAME freeze gives a clearer picture if the video contains few moving elements.</p>	<p>FIELD FREEZE FIELD freeze gives a picture with fewer jitters if the video contains rapid moving elements.</p>		

5. Internal Settings

5-1. Dipswitch Settings

The following settings can be made with SW1, SW2, and SW3 on the MAIN CARD of the FA-147.



5-1-1. SW1

Dipswitch SW1

Pin No.	Item	Setting		Default
		OFF	ON	
1	BY-PASS	OPERATE	BY-PASS	OFF
2	TEST SIGNAL	OFF	COLOR BAR	OFF
3	FREEZE MODE SELECT	FRAME	FIELD	OFF
4	FIELD SELECT	ODD	EVEN	OFF
5	AUTO FREEZE	OFF	ON	OFF
6	FORCED FIELD	OFF	ON	OFF
7	B/W	OFF	ON	OFF
8	VITS	OFF	ON	OFF

- ◆ **OPERATE/BY-PASS (SW1-1)**
Bypasses the signal output from COMPOSITE OUT 1 and SD-SDI OUT1.
- ◆ **TEST SIGNAL (SW1-2)**
Outputs color bars.
- ◆ **FREEZE MODE SELECT (SW1-3)**
Selects FRAME freeze or FIELD freeze.
- ◆ **FIELD SELECT (SW1-4)**
Selects ODD or EVEN field when SW1-3 is set to FIELD freeze or when SW1-6 (FORCED FIELD) is set to ON.

◆ **AUTO FREEZE (SW1-5)**

Sets AUTO FREEZE ON/OFF.

If set to ON, freezes last received normal field of video input signal to compensate for input dropout due to signal loss.

NOTE
Random noise is considered to be a signal loss.
When the video is frozen, the freeze mode is not released until a normal video input is received or AUTO FREEZE is set to OFF.

◆ **FORCED FIELD (SW1-6)**

Selects either the ODD or EVEN field output from the OUTPUT connectors of the rear panel. ODD or EVEN can be selected with SW1-4.

◆ **B/W (SW1-7)**

Selects B/W or color output from the OUTPUT connectors of the rear panel.

ON: black and white

OFF: color

NOTE
B/W video is output when set to ON even if color video signals are input. In this case, the B/W video output still contains the color burst signal.

◆ **VITS (SW1-8)**

COMPOSITE IN

ON: The VITS signal is passed through from 10 to 21H.

OFF: The blanking is applied from 10 to 20H.

SD-SDI IN

The blanking is not applied regardless of the setting.

5-1-2. SW2

Dipswitch SW2

Pin No.	Item	Setting		Default
		OFF	ON	
1	REMOTE	LOCAL	REMOTE	OFF
2	SET UP	OFF	ON	OFF
3	SYNCHRO MODE	FRAME	LINE	OFF
4	WHITE CLIP 110%	OFF	ON	OFF
5	FACTORY SET	—	—	OFF
6	FACTORY SET	—	—	OFF
7	FACTORY SET	—	—	OFF
8	VIDEO PHASE SEL	H/V PHASE	H/V POSITION	OFF

◆ REMOTE (SW2-1)

Used for remote control. If set to ON (REMOTE), the operation using the controls on the front panel and the dipswitch settings are disabled.

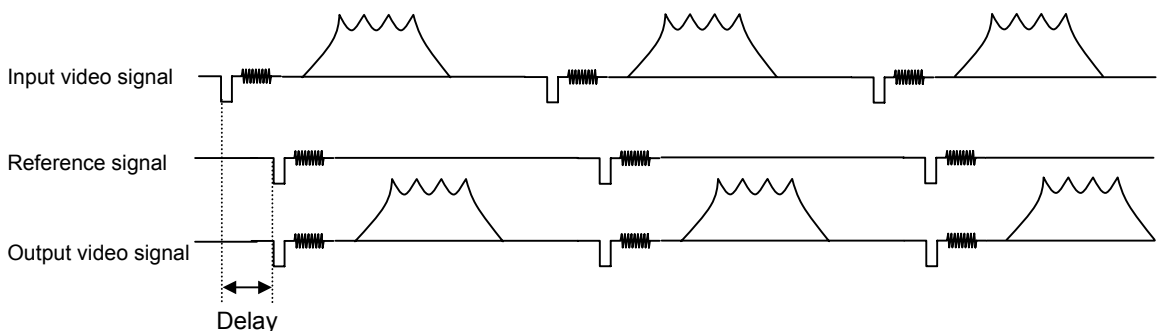
◆ SET UP (SW2-2)

Set to ON when processing the input video signal with setup. (US mode)

◆ SYNCHRO MODE (SW2-3)

Set SYNCHRO MODE = LINE (SW2-3 = ON), if you want to lock input signal to the H sync of the input reference genlock and to minimize input/output delay. In this case, the delay will vary depending on the reference signal delay and video signal format. (See the table below.)

Input video signal	Reference signal delay	Input/Output delay of the video signal
SD SDI	32 μ s or more	Reference signal delay
	Less than 32 μ s	Reference signal delay plus 1H
Composite (NTSC)	32 μ s or more	Reference signal delay plus 1H
	Less than 32 μ s	Reference signal delay plus 2H
Composite (PAL)	32 μ s or more	Reference signal delay plus 2H
	Less than 32 μ s	Reference signal delay plus 3H



IMPORTANT

To use SYNCHRO MODE = LINE in your system, the reference signal must be synchronized with the input video signal. Otherwise, this mode doesn't work properly.

◆ **WHITE CLIP 110% (SW2-4)**

Sets the white clip to 110% for the input signal.

◆ **FACTORY SET (SW2-5, SW2-6, SW2-7)**

Do not change this setting.

◆ **VIDEO PHASE SEL (SW2-8)**

H POSITION: If set to ON and the SELECT switch of PHASE ADJUST on the front panel is set to H PHASE, H POSITION can be adjusted by moving the right switch.

V POSITION: If set to ON and the SELECT switch of PHASE ADJUST on the front panel is set to V PHASE, V POSITION can be adjusted by moving the right switch.

5-1-3. SW3

Dipswitch SW3

Pin No.	Item	Setting		Default
		OFF	ON	
1	FACTORY SET	—	—	OFF
2	FACTORY SET	—	—	OFF
3	FACTORY SET	—	—	OFF
4	NR LEVEL	OFF	ON	OFF
5	NR LEVEL	OFF	ON	OFF
6	NR LEVEL	OFF	ON	OFF
7	FACTORY SET	—	—	OFF
8	FACTORY SET	—	—	OFF

◆ **FACTORY SET (SW3-1, SW3-2, SW3-3, SW3-7, SW3-8)**

Do not change this setting.

◆ **NR LEVEL (SW3-4, SW3-5, SW3-6)**

Enables or disables noise reduction filter by reducing frame-recursive 3D noise in video and sets its reduction level. (*)

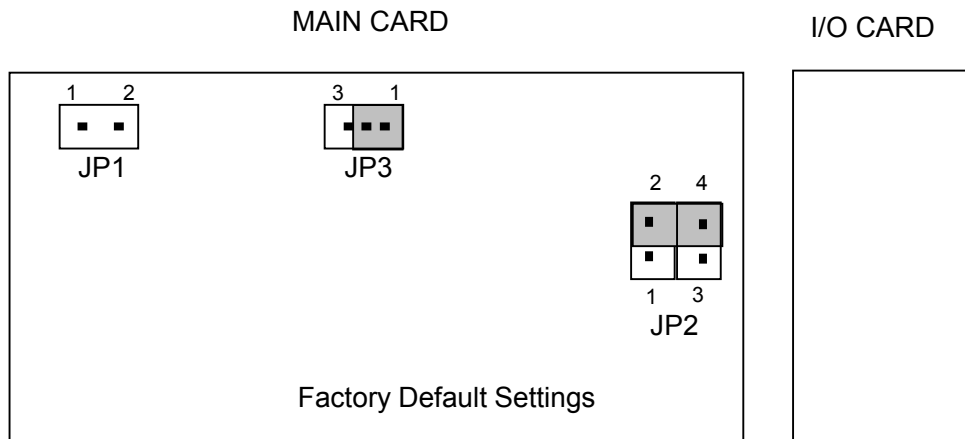
NR LEVEL	Switch Setting		
	SW3-4	SW3-5	SW3-6
OFF	OFF	OFF	OFF
1	ON	OFF	OFF
2	OFF	ON	OFF
3	ON	ON	OFF
4	OFF	OFF	ON
5	ON	OFF	ON

The shaded cells represent the default settings.

(*) If a noise is present, gradually increases the reduction level from 1 (lower) to 5 (higher) while monitoring the video. Basically, the higher the level, the more the noise is reduced, however, the lower the quality of video. An overlap noise will be noticeable especially in moving video if the level is set high.

5-2. Jumper Settings

The following settings can be made with the jumpers on the MAIN CARD of the FA-147.

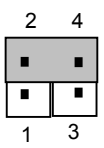
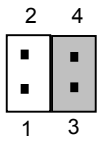


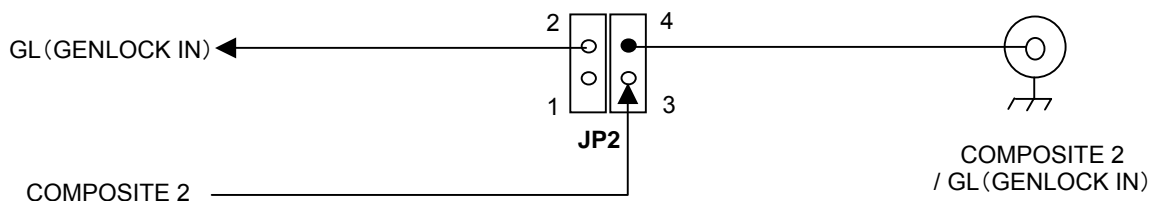
JP NO.	Factory Default
JP1	Open
JP2	2-4 short
JP3	1-2 short

*Do not change JP1 and JP3.

5-2-1. Selecting COMPOSITE2 or GENLOCK

COMPOSITE 2 or GL (GENLOCK IN) can be selected by changing JP2.

GL (GENLOCK IN) (default)	2-4 short 	COMPOSITE 2 is used to input a reference signal.
COMPOSITE 2	3-4 short 	Outputs a corrected composite signal from COMPOSITE 2.



6. If Problems Occur

If any of the following problems occur during operation of your unit, proceed as indicated below to see if problem can be corrected before assuming a unit malfunction has occurred.

Problem	Check	Action
Switches and controls on the front panel are disabled.	REMOTE setting (dipswitch)	If SW2-1 is set to REMOTE, change to LOCAL. See section 5-1-2, "SW2."
Dipswitches are disabled.	REMOTE setting (dipswitch)	If SW2-1 is set to REMOTE, change to LOCAL. See section 5-1-2, "SW2."
Controls for PROCESS CONTROL on the front panel are disabled.	PROCESS CONTROL toggle switch (front panel)	If set to UNITY (up position), change to OPERATE (down position). See section 2-1, "Front Panel."
The SD-SDI input signal is not bypassed at power off.	SD-SDI OUT connection (rear panel)	The bypass function is effective for SD-SDI OUT 1 only. See section 2-2, "Rear Panel."
The output image is black and white even when a color signal is input.	B/W setting (dipswitch)	If set to ON, change to OFF. See section 5-1-1, "SW1."
The output image is frozen even when the FREEZE switch is turned off.	Input signal connection	Verify that the signal is input properly. See section 2-2, "Rear Panel."
	AUTO FREEZE setting (dipswitch)	If AUTO FREEZE is set to ON, and signal has dropout or has been lost, a freeze frame will be output. See section 5-1-1, "SW1."
No signal is output from COMPOSITE2	COMPOSITE2 / GL (GENLOCK IN) setting (jumper setting)	If set to GL (GENLOCK IN), change to COMPOSITE2. See section 5-2, "Jumper Settings."
FREEZE indicator flashes at power on.	FREEZE setting (front panel)	If FREEZE on the front panel is set to ON (up position) at power on, change to OFF (down position). See section 2-1, "Front Panel."

7. Specifications and Dimensions

7-1. Unit Specifications

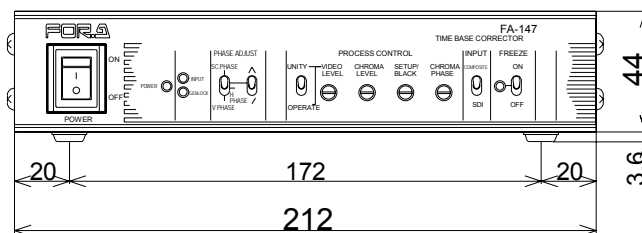
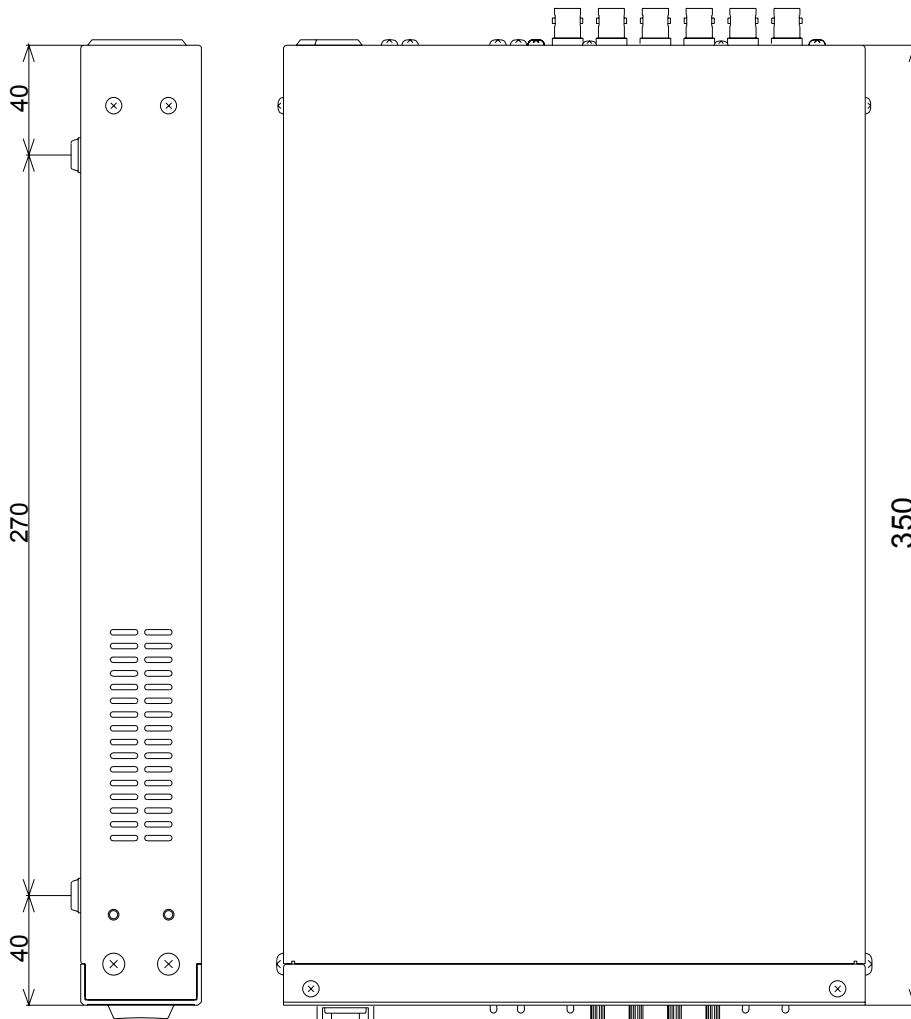
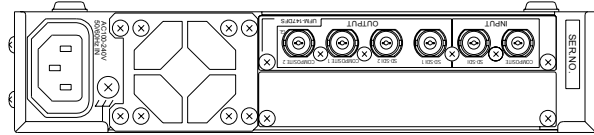
Video Standard	525/60 or 625/50 (auto detect)
Signal Processing	4:2:2 component
Correction Range	2 field (field inversion prevented)
Sampling Frequency	Y: 13.5 MHz, C: 6.75 MHz
Quantization	10 bit
Video Input	Analog composite: 1.0 Vp-p, 75Ω, 1ea., BNC Digital component: 270 Mbps, 75Ω, 1ea., BNC
Video Output	Analog composite: 1.0 Vp-p, 75Ω, 2ea., BNC Digital component: 270 Mbps, 75Ω, 2ea., BNC
Genlock Input	BB: 0.429 Vp-p (NTSC) / 0.45 Vp-p (PAL), 75Ω, 1ea., BNC COMPOSITE2 or GL (GENLOCK IN) is selected with the jumper .
When composite signal is input:	
Frequency Response	100kHz – 5.0MHz : -0.5dB – +0.5dB 5.0MH – 5.5MHz: -1dB – 0dB roll off above 5.5MHz
S/N Ratio	60 dB (without quantization noise)
DG/DP	1% / 1 °
K Factor (2T pulse)	1% or less
H/V Tilt	1% or less
Residual Jitter	Y: ±15 ns C: ±2°
F _{SC} pull-in range	-300Hz to + 300Hz (VIDEO input) -100Hz to + 100Hz (GENLOCK)
Process Control	
Video Level	-3dB to +3dB
Chroma Level	-3dB to +3dB
Setup Level	-15IRE to +15IRE
Chroma Phase	-30° to +30°
Genlock Phase Control	
SC Phase	360°
H Phase	-4.0μs to + 4.0μs
V Phase	-127Line to + 127Line
H Position	-4.0μs to + 4.0μs
V Position	-127Line to + 127Line
Temperature	0°C – 40°C
Humidity	30% – 90% (no condensation)
Power	100VAC– 240VAC ±10 % 50/60 Hz

Consumption	Approx. 24 VAC (13W at 100V-120V) Approx. 31 VAC (15W at 220V-240V)
Dimensions	212 (W) x 44 (H) x 350 (D) mm
Weight	Approx. 2.5 kg
Consumables	Cooling fan: 109P0405M6D01 (change every 5 years at normal temperature).

7-2. External Dimensions

7-2-1. FA-147

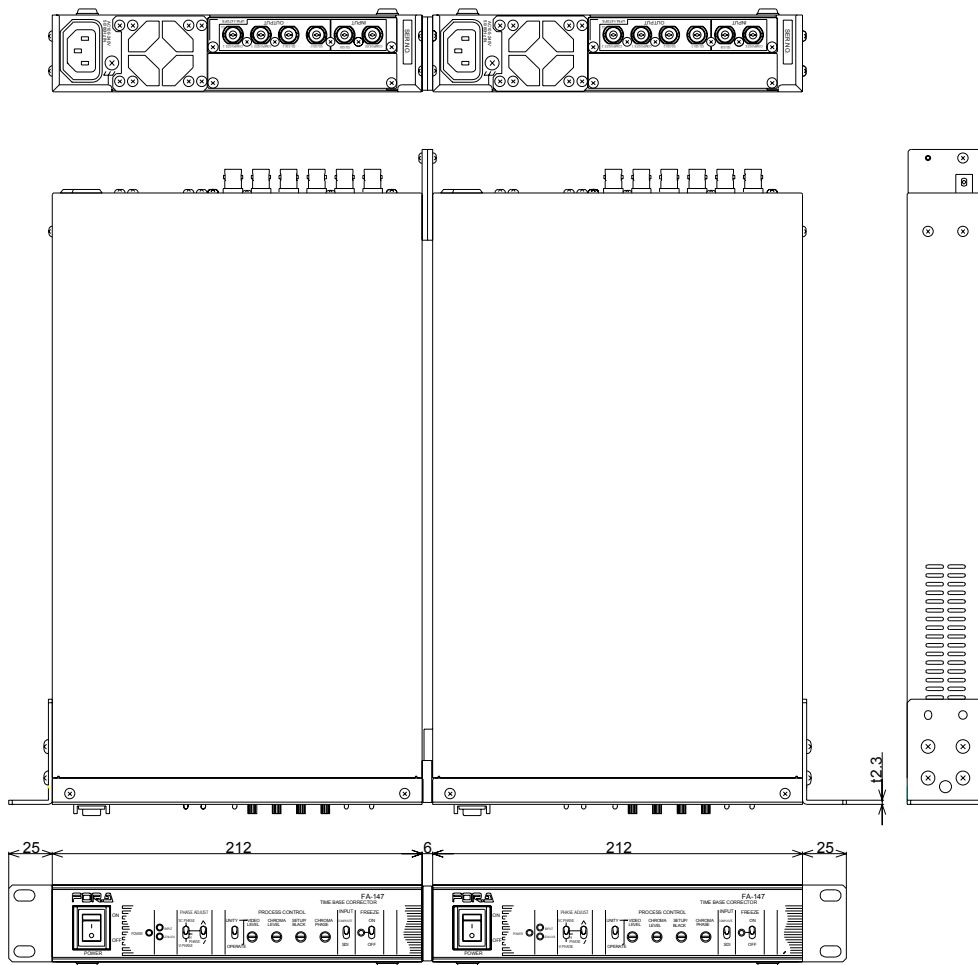
(All dimensions in mm)



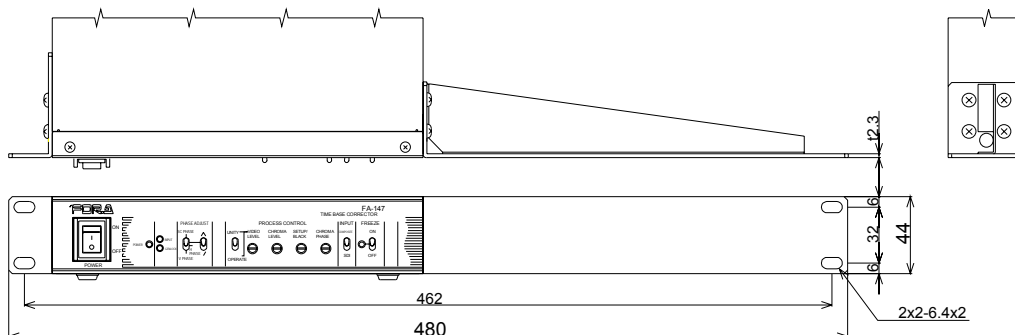
7-2-2. Rack Mounted

(All dimensions in mm)

◆ Two-Unit Configuration



◆ One-Unit Configuration



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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