FOR.A®
INNOVATIONS IN VIDEO
and AUDIO TECHNOLOGY

OPERATION MANUAL

UF-112
Universal Frame

UF-112PS
Power Supply Module

2nd Edition - Rev.1

FOR-A COMPANY LIMITED

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.

[Circuitry Access]

	**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.
 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.

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

 Caution	To rack mount or ground the unit, or to install rubber feet, **do not** use screws or materials other than those supplied. Otherwise, it may cause damage to the internal circuits or components of the unit. If you remove the rubber feet attached on the unit, **do not** reinsert the screws securing the rubber feet.

[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

UF-112/UF-112PS 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.

UF-112

ITEM	QTY	REMARKS
UF-112	1	
AC Cable	1	
Operation Manual	1	

UF-112PS

ITEM	QTY	REMARKS
UF-112PS	1	Front unit for redundant power supply, rear uint
Screw	2	Front and rear units for 1ea. (bind, M3 x 6)
AC Cable	1	

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 UF-112 can be mounted to EIA standard rack units. When rack mounting a unit, remove the rubber feet and use the accessory rack mount brackets (rack ears).

Table of Contents

1. Prior to Starting

1-1. Welcome

Congratulations! By purchasing UF-112 Universal Frame 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. About the UF-112/UF-112PS

The UF-112 Universal Frame allows the building of any system at a low cost and a minimum of space. Up to twelve UFM modules can be installed.
Installation of the optional redundant power supply allows increased safety during operation.

1-3. Features

- Up to twelve UFM modules (boards) can be installed to match system requirements.
- Installation of the UF-112PS enables a redundant power supply (dual power supply) configuration.
- All modules can be replaced from the front. Front power unit and front UFM module both support hot-swapping.
- Alarm sensors (Temperature Error/ Fan Stop/ Power Unit Voltage Error) and status indicators (GENLOCK/ Power) are shown on front LEDs.
- Alarm data can be output from rear connectors. (Two make-contact outputs and two open-collector outputs.)
- GENLOCK input (BB or Tri-Level Sync) with loop-through. (The input GENLOCK can be supplied to all UFM modules installed in the unit.)
- EIA standard 3RU size

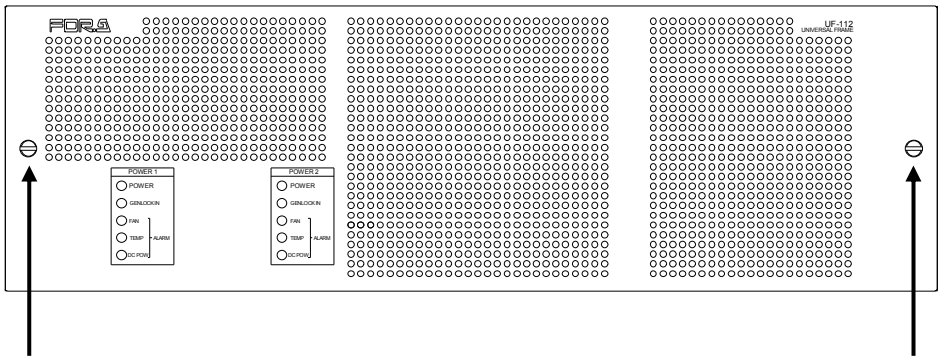
1-4. About This Manual

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

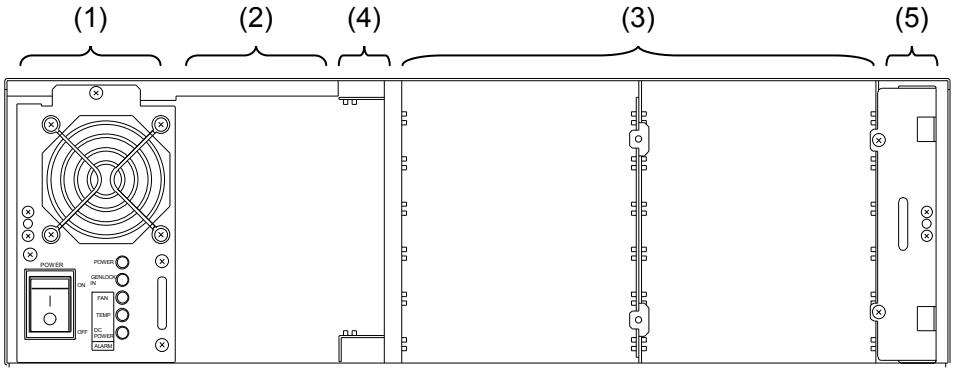
2-1. Front Panel

To remove the front panel, loosen the two knob screws on the front panel face, and then grasp the knob screws to pull them out.



2-2. Front Interior

The slot configuration shown below is revealed when the front panel is removed.



(1) Slot for Power Supply module
Used to mount the front module of standard power supply.

(2) Slot for Power Supply module
Used to mount the front module of redundant power supply (UF-112PS).

(3) Slots for UFM modules
Used to mount the front modules of UFM cards.
For the module operating procedures, refer to the respective module operation manual.

(4) Slot for Control module
Slot is dedicated to UFM-30CTL front module.

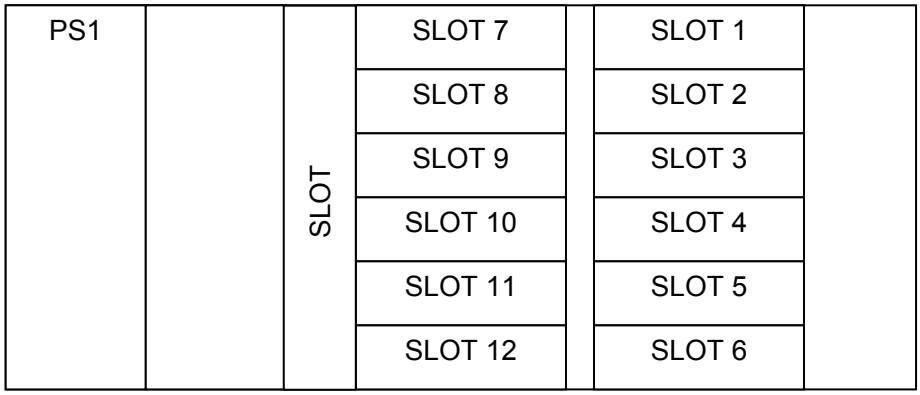
(5) Fan unit
Used to cool modules to prevent overheating. The fan motor should be checked regularly.

◆ **Redundant Power System**
Two power units can be installed in the UF-112. The standard power unit is installed in slot (1) in the standard configuration. Slot (2) is an optional slot for the redundant power supply (UF-112PS). The power unit can be replaced without stopping the supply of power to the main unit, If a problem ever occurs in one of the power units, once the two power units are installed and the two power switches are turned on.

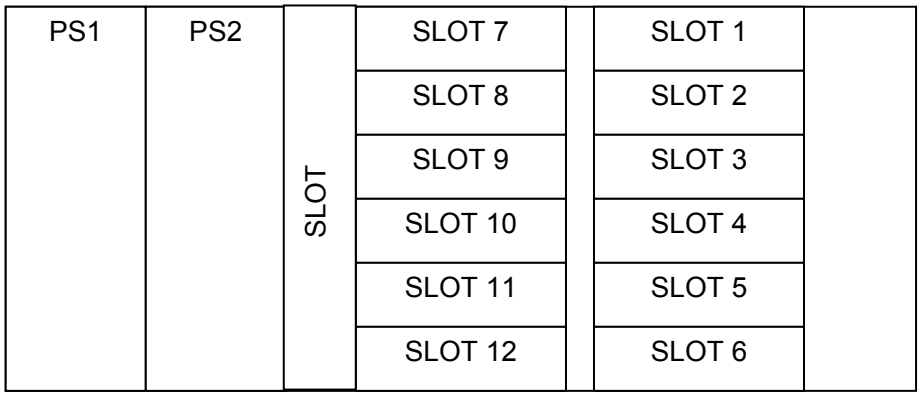
2-3. Slot No.

The slots are numbered 1, 2, 3, … 12 starting from the right side as viewed from the front.

◆ **When one power unit is installed**



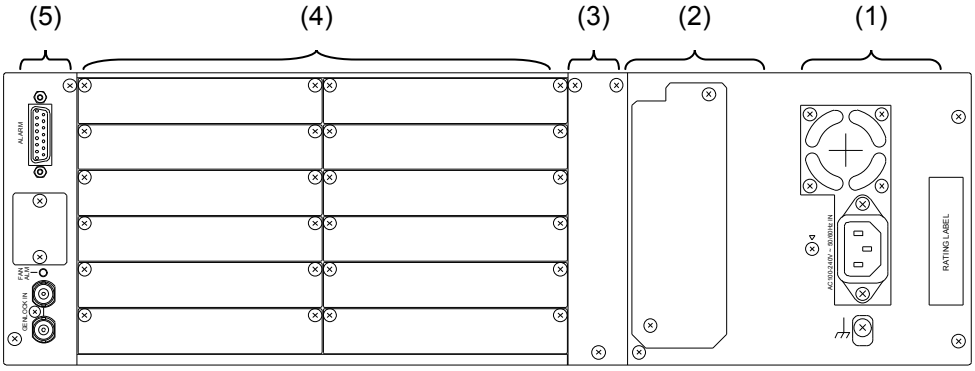
◆ **When two power units are installed**



2-4. Rear Panel

2-4-1. Rear Panel Slot

The rear panel has the following slot configuration.



(1) Slot for Power Supply module
See section 2-4-2. "Connecting Peripherals."

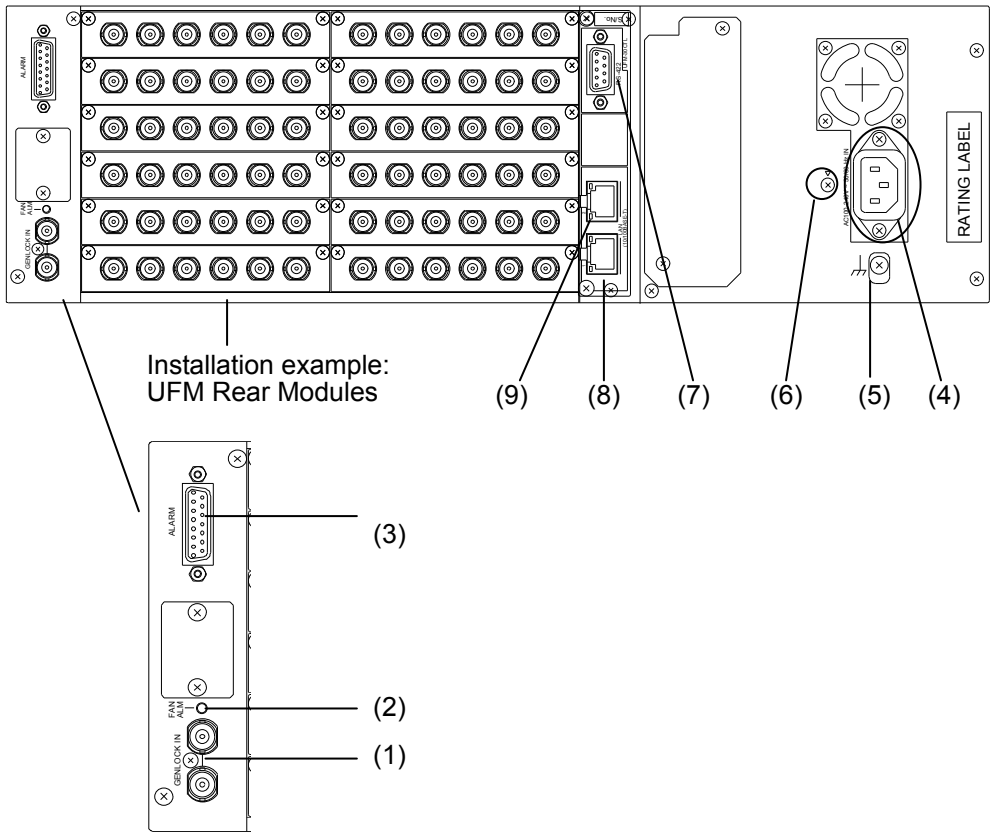
(2) Slot for Power Supply module
Used to mount the rear module of redundant power supply. See section 3-2-1. "Power Unit Installation" for power supply installation.

(4) Slot for Control module
Slot is dedicated to UFM-30CTL rear module.

(4) Slots for UFM modules
Used to mount the rear modules of UFM cards.

(5)GENLOCK IN, ALARM CONNECTOR
See section 2-4-2. "Connecting Peripherals."

2-4-2. Connecting Peripherals



(1) GENLOCK inputs
Used to input the external reference signal (Black Burst or Tri-Level Sync). The genlock signal is distributed to twelve internal modules. Bottom connector is a loopthrough of GENLOCK IN. The loopthrough connector must be 75 ohm terminated if it isn't connected to other system equipment.

(2) FAN ALARM indicator
The indicator turns off during normal operation. If it lights up red, one or more fans fail. Power off the frame and replace the failed fan, if necessary.

(3) ALARM connector
Used to output the alarm signal indicating fan, power or temperture failure. See section 2-7. "ALARM Connector" for the connector pin assignments.

(4) GND terminal
To prevent an electrical shock, be sure to either connect the ground terminal to a ground wire or unplug the AC power cable from the AC outlet before performing any work.

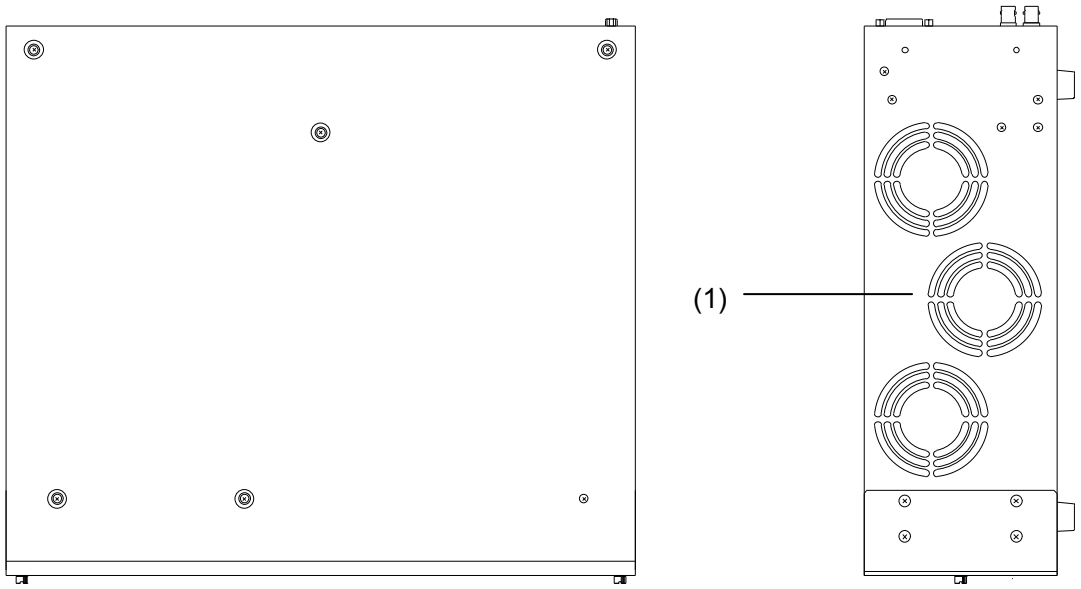
(5) AC IN (AC100V-240V 50/60Hz)
Used for connection to AC power source via supplied cable.

(6) Power unit screw
Used to secure the power unit. See section 3-2. "Redundant Power Supply (UF-112PS) Installation."

2-5. Cooling Fan

(1) Fan

These cooling fans prevents overheating due to heat generated inside the device. Do not block the fan intake with other equipment, since the air inside the main unit is blown out from the intake located on the right side of the unit.



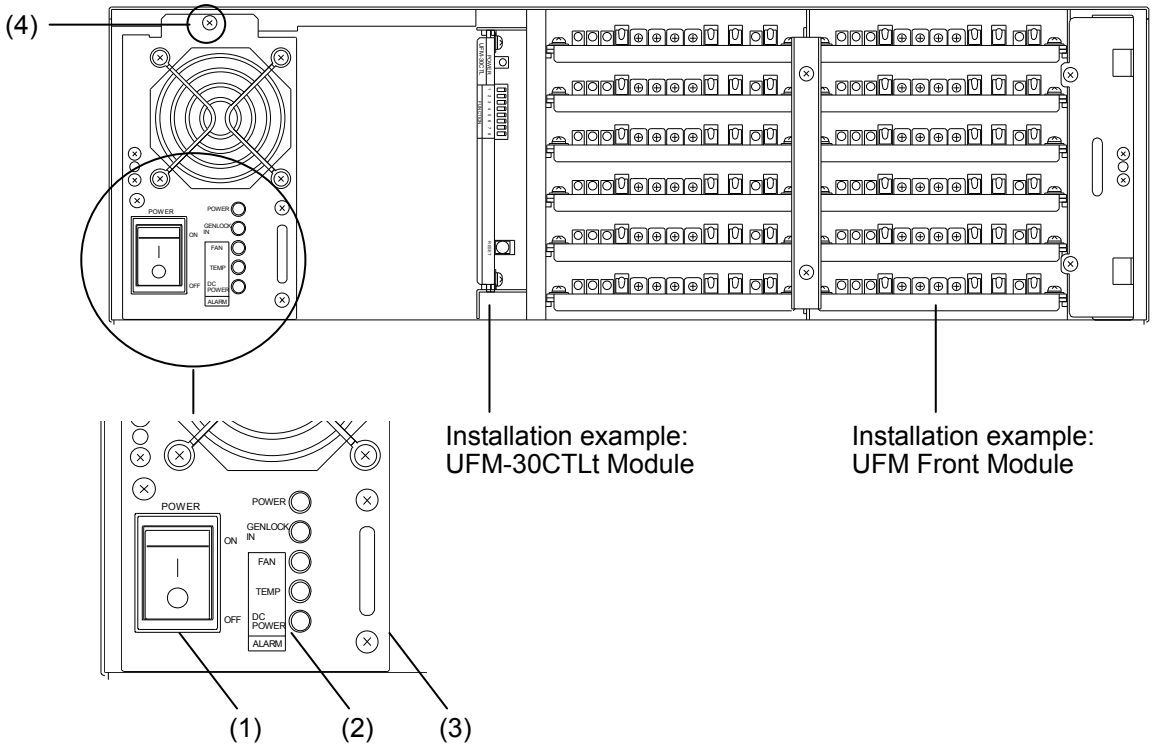
(Front Panel)

◆ **FAN ALARM Indicators**

The Fan Alarm indicators are placed on the front panel of power units and on the left side of the frame rear panel. The indicator turns off during normal operation. If any indicator lights up red, one or more fans fails. (See the table below) If it lights up red, one or more fans fail. Power off the frame and replace the failed fan, if necessary.

FAN ALARM indicators	Normal condition	Error condition
Indicator on Power supply unit	Turns Off	Turns red when a power supply fan error or unit fan error occurs. See section 2-7-2. Alarm Output. If a fan failure occurs in either one of the power units in the the redundant power supply, only the relevant fan indicator turns on. If a fan failure occurs in both units, both fan indicators turn on.
Indicator on UF-112 rear side	Turns Off	Turns red when a power supply fan error or unit fan error occurs.

2-6. Power Unit



(1) POWER ON/OFF switch
This is the ON/OFF switch for the power. The power turns ON when set to the “|” side.

(2) LED indicators
The DC power indicator, Genlock indicator and the power alarm indicators are located here. See section 2-7-2. "Alarm Output" for alarm indication. If any power alarm indicator lights up red, turn off the frame power and check the power supply unit. Change the failed power unit, if necessary.

Indicator LED	Description
POWER	This LED turns green when the DC power is normally supplied to the modules In the redundant power supply both indicators light up green even when only one of the power units is powered on.
GENLOCK	This LED turns green when an external reference signal (Black Burst or Tri-Level Sync) is input to the GENLOCK connector

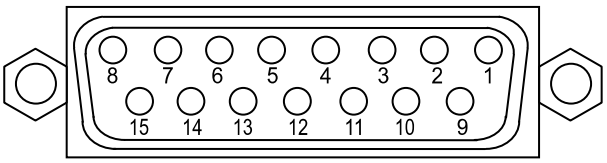
ALARM LED	Normal condition	Error condition
FAN	Turns Off	Turns red. (See section 2-5. "Cooling Fan.")
TEMP	Turns Off	Turns red when a temperature error occurs in the power supply module(s).
DC_POWER	Turns Off	Turns red when a voltage error occurs in the power module(s)..

(3) Power unit eject lever
To remove the power unit, release and take off an screw on the front and rear panel of the power unit respectively, and then pull out the eject lever.

(4) Power unit screw
Tighten this screw to firmly secure the power unit. To remove the power unit, remove both screws at the front and rear panels.

2-7. ALARM Connector

2-7-1. ALARM Connector Specifications



15-pin D-sub female

Compatible connector:
15-pin D-sub male
DA-15PF-N (JAE)
Cover:
Metal hood
Short screw
DA-C4-J10-S1 (JAE)
*Using inch screws

GPI Connector Assignment Table (15-pin D-sub female)

No.	Signal	Signal Details	No.	Signal	Signal Details
1	+24V	+24VDC output (*1)	9	+24V	+24VDC output
2	GND	GND	10	GND	GND
3	GND	GND	11	ALARM2	Power alarm (*2)
4	ALARM1	Fan alarm (*2)	12	GND	GND
5	COM	Common alarm	13	POWALM1-	Common contact alarm1- (*3)
6	POWALM1 +	Contact alarm1+ (*3)	14	POWALM2-	Common contact alarm2- (*4)
7	POWALM2 +	Contact alarm2+ (*4)	15	N/C	N/C
8	N/C	N/C			

(*1)Max. current per pin at +24 VDC output: 125 mA,
Max. current using both pin1 and pin 9: 250mA
(*2)Open collector output. Max 24VDC/50mA
(*3)A short circuit occurs between the pin 6 ‘contact alarm1+’ and pin 13 ‘common contact alarm1-’ whenever a power voltage (Max 24VDC/0.5A) error, fan stoppage, or a temperature error occurs in the power unit.
(*4) A short circuit occurs between the pin 7 ‘contact alarm2+’ and pin 14 ‘common contact alarm2-’ whenever a power voltage (Max 24VDC/0.5A) error, fan stoppage, or a temperature error occurs in the power unit.

2-7-2. Alarm Output

The ALARM connector output and front LED status corresponding to each unit and board status are shown in the tables below.

Standard power supply only

Power ON/OFF		OFF	ON			
Fan operation			○	×	○	○
Power unit temperature			○	○	×	○
Power output voltage			○	○	○	×
Front LED status	**POWER**	—	Green	Green	Green	Green
	GENLOCK IN	*1	*1	*1	*1	*1
	FAN	—	—	Red	—	—
	TEMP	—	—	—	Red	—
	DC_POWER	—	—	—	—	Red
ALARM1		Open	Open	0V	Open	Open
ALARM2		Open	Open	Open	Open	0V
POWALM1+, POWALM1- status		Shorted (Electrical connection)	Open (No Electrical connection)	Shorted (Electrical connection)	Shorted (Electrical connection)	Shorted (Electrical connection)

○: Normal, ×: Error, —: Off
*1 Depends on GENLOCK IN signal status

Redundant power supply installed (Status of PS2 when PS1 is turned ON)

Power ON/OFF		OFF			ON
Fan operation		○	×	○	Same as standard power supply only
Power unit temperature		○	○	×	
Power output voltage		Not output			
Front LED status	**POWER**	Green	Green	Green	
	GENLOCK IN	*1	*1	*1	
	FAN	—	Red	—	
	TEMP	—	—	Red	
	DC_POWER	Red			
ALARM1		Open	0V	Open	
ALARM2		0V	0V	0V	
POWALM2+, POWALM2- status		Shorted (Electrical connection)	Shorted (Electrical connection)	Shorted (Electrical connection)	

○: Normal, ×: Error, —: Off
*1 Depends on GENLOCK IN signal status

Redundant power supply installed (Status of PS1 when PS2 is turned ON)

Power ON/OFF		OFF			ON
Fan operation		○	×	○	Same as standard power supply only
Power unit temperature		○	○	×	
Power output voltage		Not output			
Front LED status	**POWER**	Green	Green	Green	
	GENLOCK IN	*1	*1	*1	
	FAN	—	Red	—	
	TEMP	—	—	Red	
	DC_POWER	Red			
ALARM1		Open	0V	Open	
ALARM2		0V	0V	0V	
POWALM1+, POWALM1- status		Shorted (Electrical connection)	Shorted (Electrical connection)	Shorted (Electrical connection)	

○: Normal, ×: Error, —: Off
*1 Depends on GENLOCK IN signal status

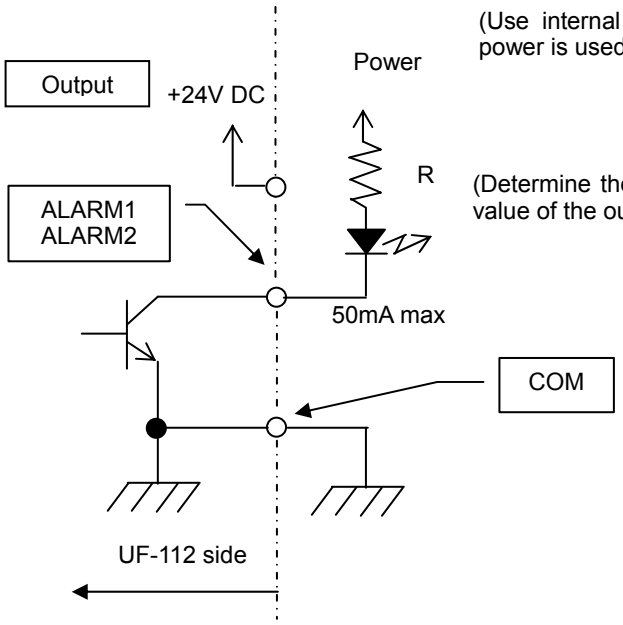
Redundant power supply installed (PS1/PS2)

Power ON/OFF		OFF	ON			
Fan operation			○	×	○	○
Power unit temperature			○	○	×	○
Power output voltage			○	○	○	×
Front LED status	**POWER**	—	Green	Green	Green	Green
	GENLOCK IN	*1	*1	*1	*1	*1
	FAN	—	—	Red	—	—
	TEMP	—	—	—	Red	—
	DC_POWER	—	—	—	—	Red
ALARM1		Open	Open	0V	Open	Open
ALARM2		Open	Open	Open	Open	0V
POWALM1+/2+, POWALM1-/2- status		Shorted (Electrical connection)	Open (No Electrical connection)	Shorted (Electrical connection) *2	Shorted (Electrical connection) *3	Shorted (Electrical connection) *3

○: Normal, ×: Error, —: Off
*1 Depends on GENLOCK IN signal status
*2 When a fan motor fails, the pins are shorted not in both power supply units but only in the failed power supply unit.
*3 The pins are shorted only in the failed power supply unit.

2-7-3. Connection Circuit Example

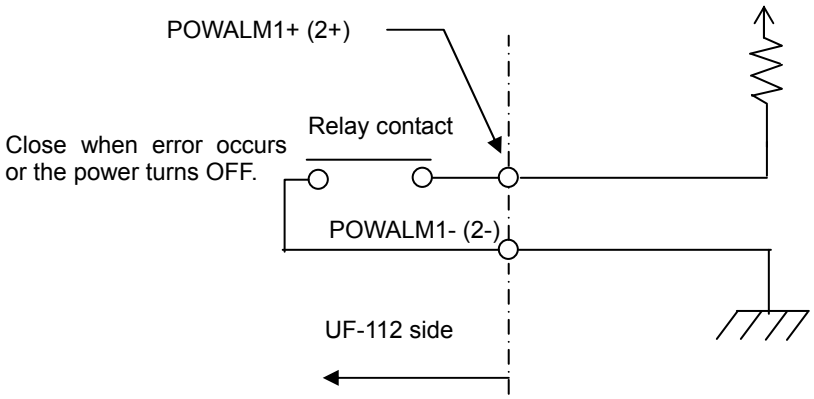
◆ Example of ALARM1/ALARM2 (Open-Collector Output) Circuit



(Use internal +12VDC power supply or, if external power is used, it must not exceed +24DCV.)

(Determine the resistance value, so that the current value of the output pin will not exceed 50mA.)

◆ Example of POWALM1,2 (Alarm Out Contact Relay) Circuit



Rated voltage	Rated current
24VDC	0.5A

3. Installation

 **Caution**	Be careful that the UFM moduls are not damaged by static electricity. Be sure to use a body ground for preventing electrostatic damage by making the UF-112 casing and your body at the same electric potential. After installing UFM modules or a power module, the front panel must be installed before operating the UF-112 in your system. To install the front panel, grasp the two knob screw on the front panel face, and tighten and attach the screws.

3-1. UFM Module Installation

UFM modules can be installed in any empty slots. If there are empty slots, it is better to install the modules with space between them rather than bunched together to prevent internal overheating and simplify the signal connection work from the rear panel.

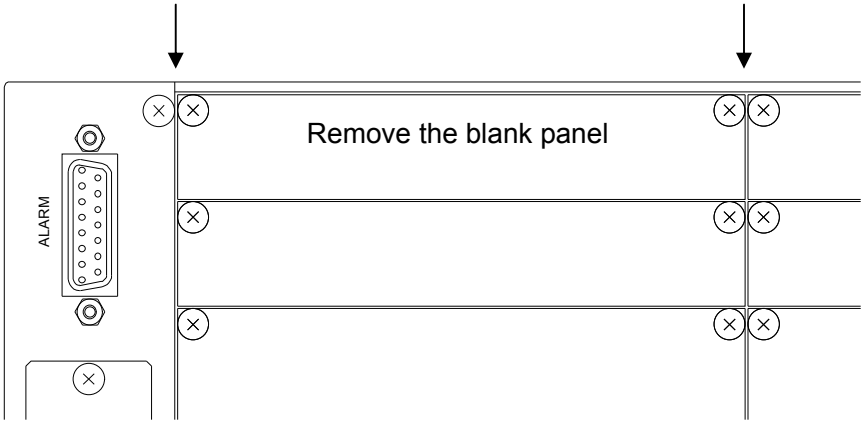
IMPORTANT
A UFM module set consists of a front and rear module. Be sure to always install the front and rear modules in the same slot positions. The front UFM module can be installed with the power on. The power must always be turned off, however, when installing the rear UFM module. Be sure to always install blank panels in the empty slots. This helps to prevent the intrusion of foreign objects and internal overheating. For the UFM-30CTL installation, see the UFM-30CTL operation manual.

3-1-1. Rear UFM Module Installation

(1) Turn OFF the power of the UF-112.

(2) Removing the blank panel

A blank panel is installed in the slot where the rear UFM module will be installed in the UF-112 rear panel. Remove the two set screws on both sides of the blank panel, and then take out the blank panel. Keep the removed blank panel in a safe place.

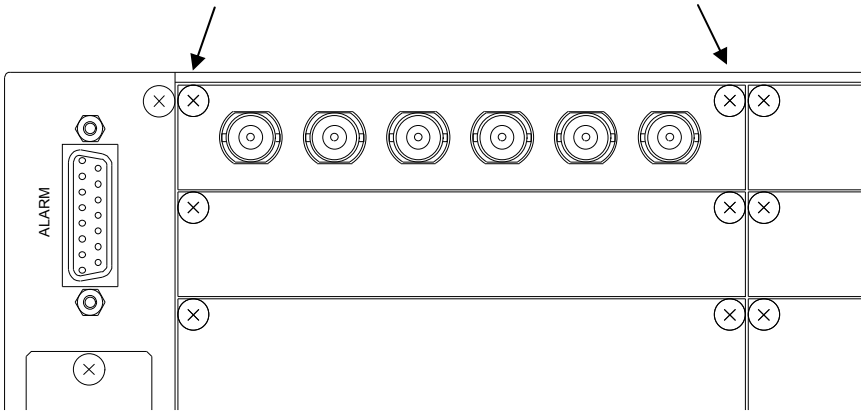


(3) Inserting the rear UFM module

Board guide rails are provided for each slot. Put the board into the guide rail, and then insert slowly and carefully.

(4) Securing the module

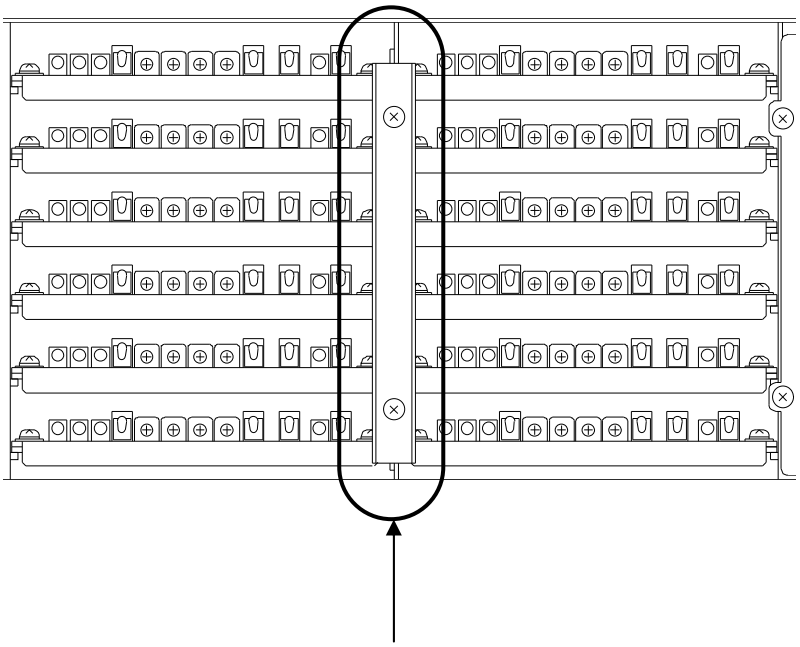
Use the two screws removed in step (1) to secure the board firmly in place on the right and left.



3-1-2. Front UFM Module Installation

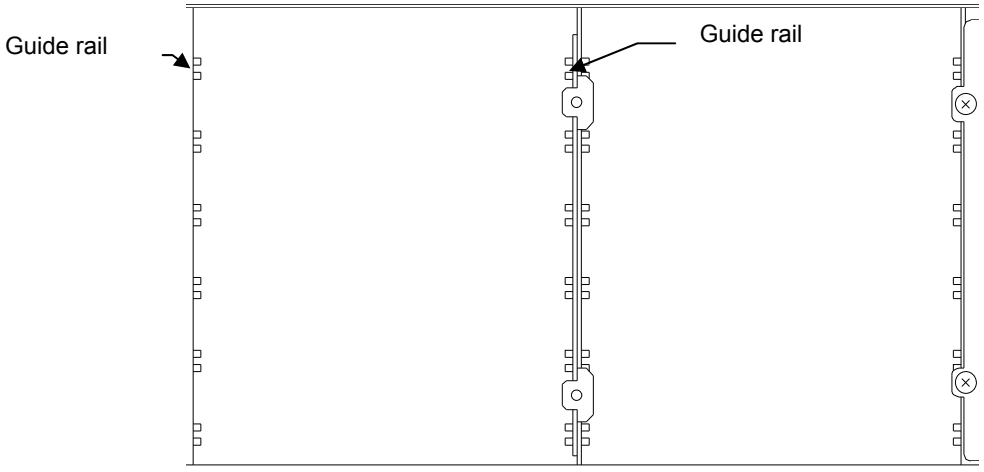
(1) Removing module holder

The slot module holder is provided in the UF-112 front panel. Loosen the top screw and bottom screw securing the holder, and then take it off.



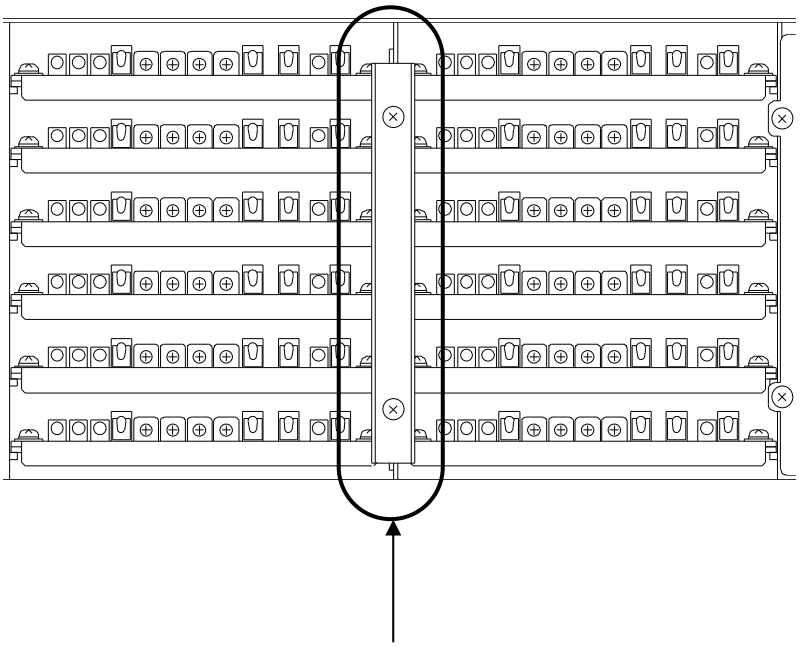
(2) Inserting the front UFM module

Board guide rails are provided for each slot. Put the board into the guide rail, and then insert slowly and carefully.



(3) Securing the modules

Attach the slot module holder that was removed in step (1). Tighten the top screw and bottom screw to firmly secure the holder in place.



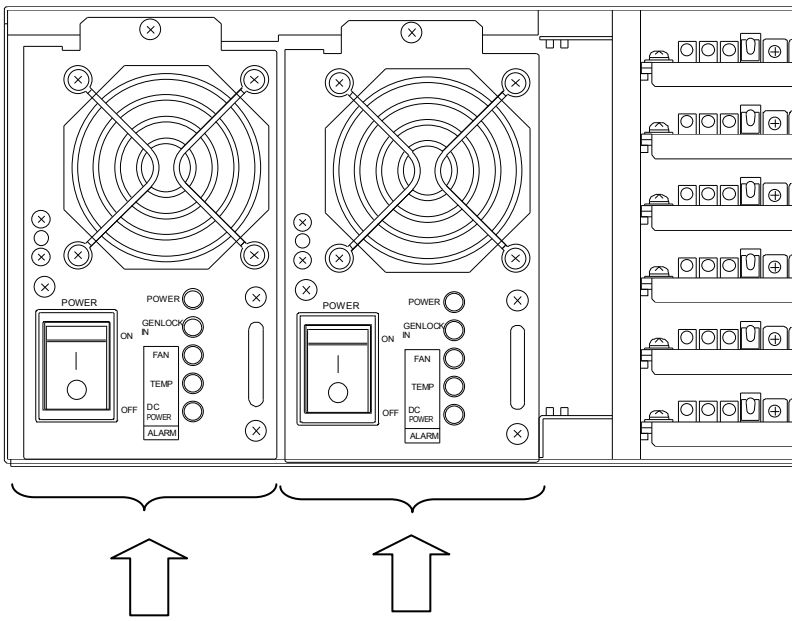
3-2. Power Supply Installation

The UF-112PS (redundant power supply) is installed to the UF-112 frame as shown in the procedure below. Use the same procedure for replacing a power unit.

Cation	To prevent an electrical shock, be sure to either connect the ground terminal to a ground wire or unplug the AC power cable from the AC outlet before performing any work. In case of an emergency, the redundant power supply can be installed with the power on. However, normally the UF-112. power should be turned OFF during installation. After installing UFM modules or a power module, the front panel must be installed before operating the UF-112 in your system. To install the front panel, grasp the two knob screw on the front panel face, and tighten and attach the screws.

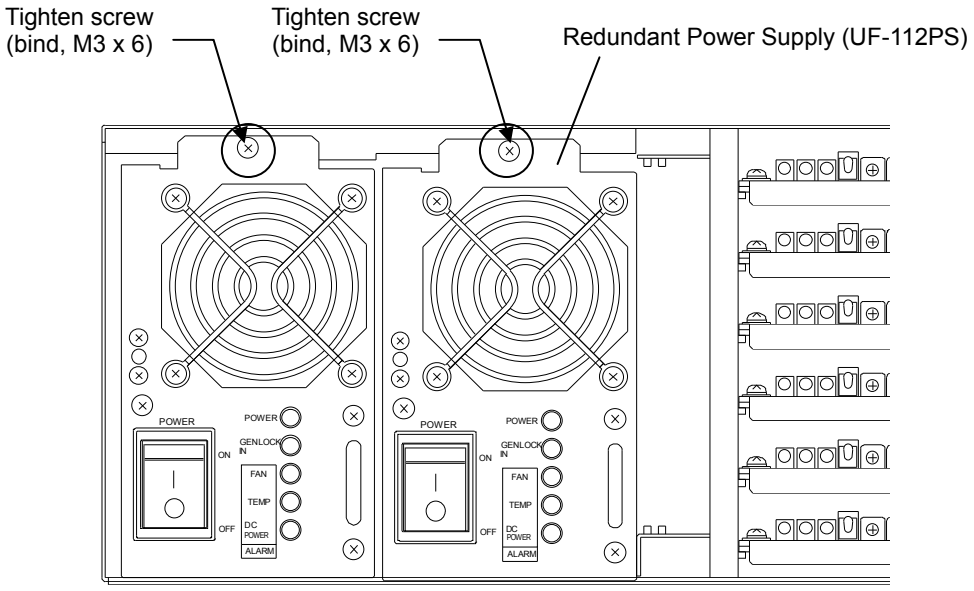
3-2-1. Power Unit Installation

(1) Installing the power unit
Insert the power unit slowly and carefully into each slot.

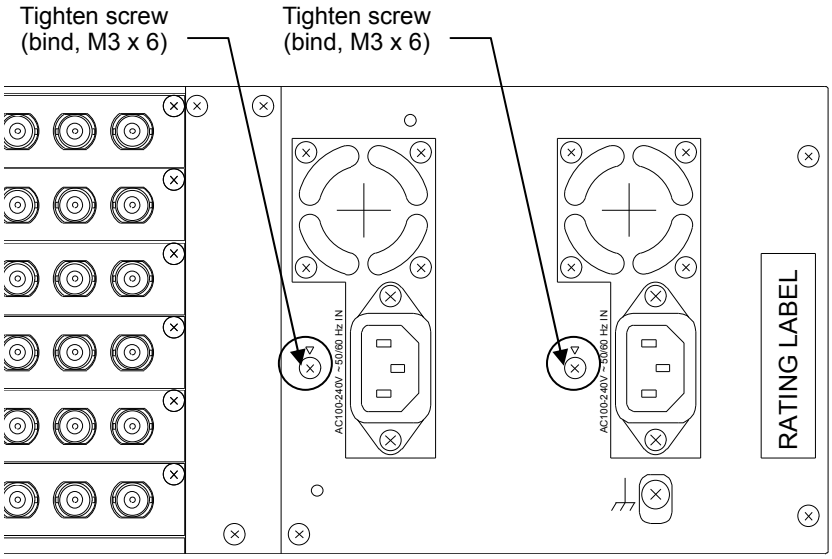


(2) Securing the power unit

Tighten the screw at the front panel of the power unit to firmly secure the unit.



(3) Tighten the screw at the rear panel of the power unit to firmly secure the unit.

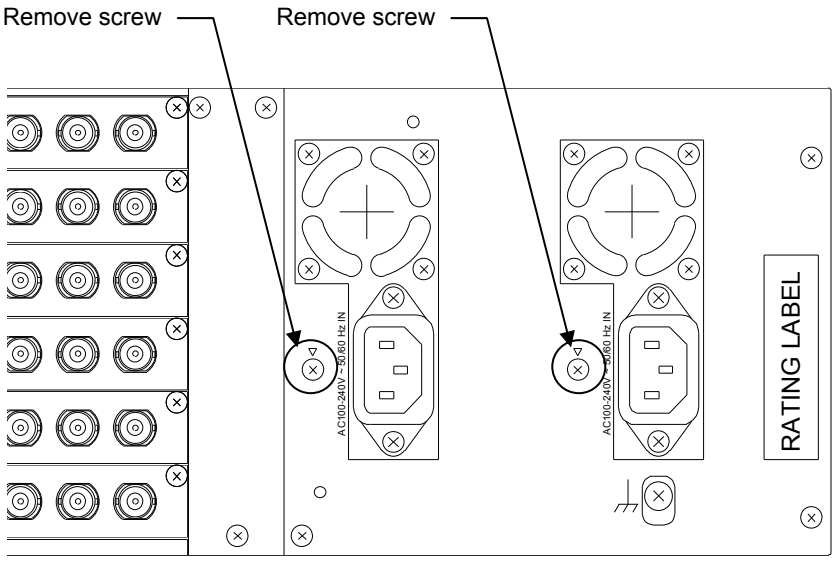


IMPORTANT
Connect the power cable, and then turn on the power switch on the power unit front panel. Turn ON the power switches for both the standard power supply and redundant power supply units. The system will not automatically switch to the redundant power supply when a power supply error occurs unless both power supplies are turned ON.

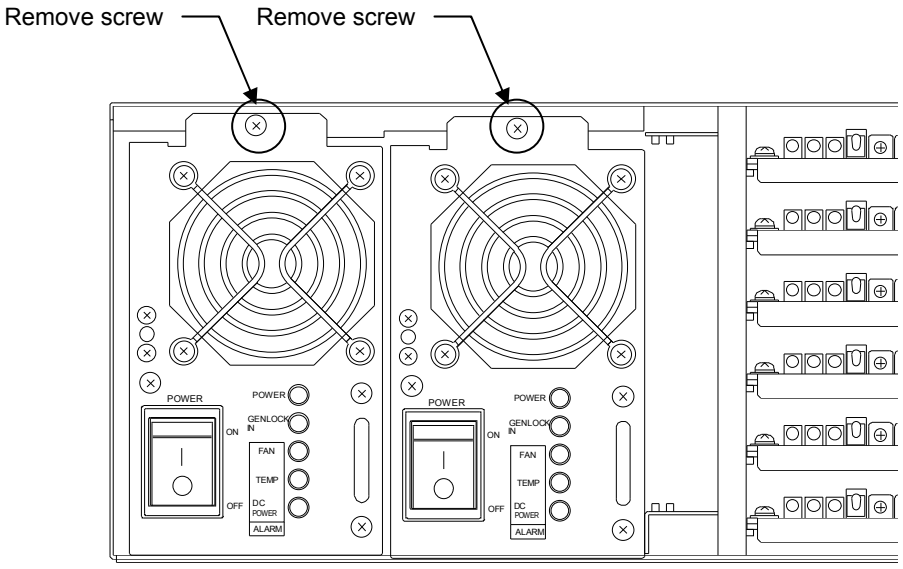
3-2-2. Removing Power Unit

IMPORTANT
Turn off the power unit to be replaced and disconnect the power cable before uninstalling the power unit. The system can operate continuously by leaving the other power supply power on.

(1) Remove the screw securing the power unit at the rear panel.

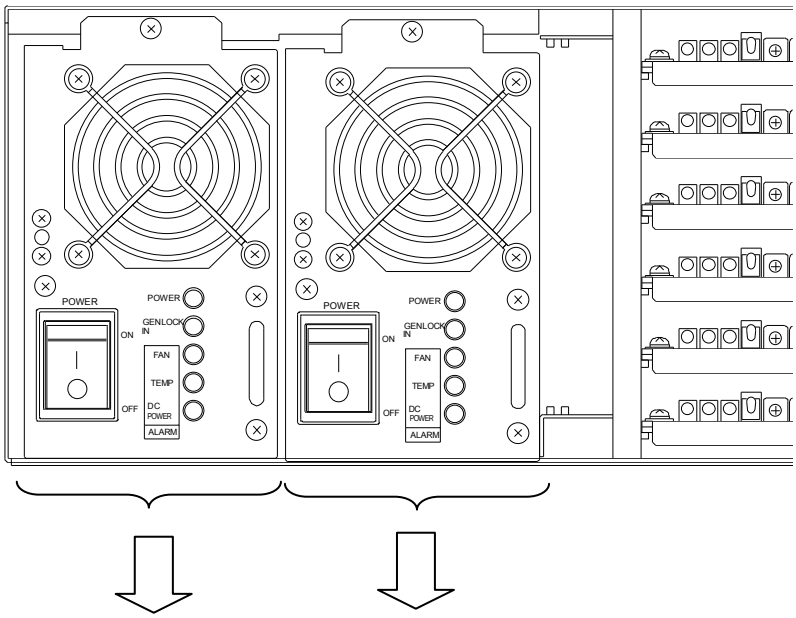


(2) Remove the screw securing the power unit at the front panel.



(3) Removing the power unit

Remove the power unit slowly and carefully from each slot.

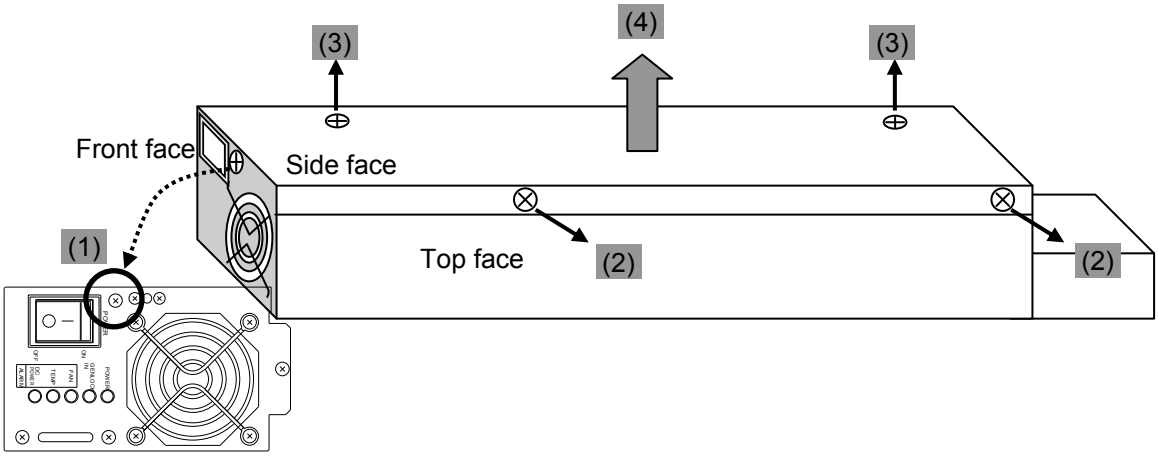


4. Remote Power Monitoring

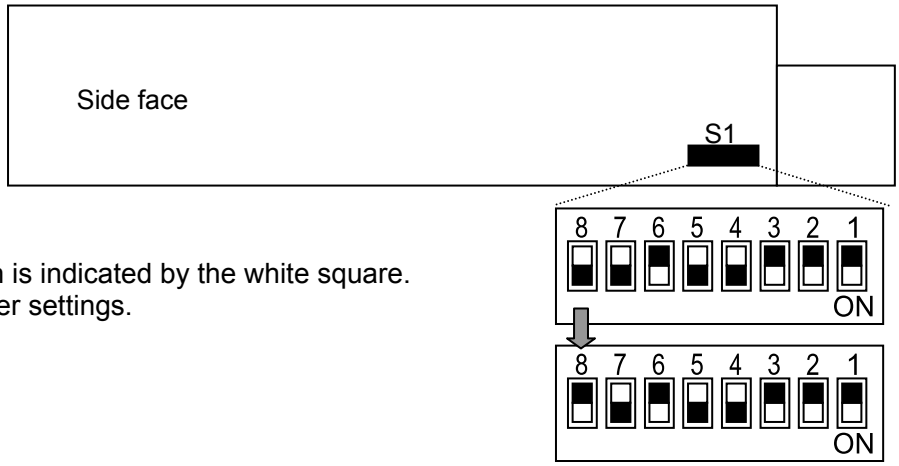
The dipswitch S1 in each power unit inside allows you to remotely monitor the power status via LAN. The remote monitoring is disabled at the factory default setting. To enable the remote monitoring, proceed as follows.

NOTE
To monitor the power status via LAN, the remote control module UFM-30CTL (separate purchase) is required. Use the browser installed on your PC or an optional UF-NETRU for the status monitoring.

1. Remove the power unit from the UF-112. (See section 3-2-2. "Removing Power Unit.")
2. Remove the cover from the power unit as follows.
   (1) Remove the bind screw from the front.
   (2) Remove two bind screws from the top.
   (3) Remove two flat-head screws from the side.
   (4) Take off the cover.



3. Change **Pin 8** of the dipswitch **S1** from Off to **On** (remote monitoring).



The switch position is indicated by the white square.
Do not change other settings.

4. Put back the cover of the power unit. Secure the cover to the unit with the screws removed above.
5. Install the power unit again to the UF-112 frame. (See section 3-2. "Power Supply Installation.")
6. Attach the front panel and secure the panel with two side screws.

5. Specifications and Dimensions

5-1. Specifications

UF-112

Installable Modules	Max. 12 modules + 1 Control card (UFM-30CTL)
Genlock In	BB: 0.429 Vp-p (NTSC) / 0.45 Vp-p (PAL) or Tri-level sync:0.6 Vp-p 75Ω BNC x 1, loop-through (Terminate with 75Ω terminator, if unused.)
Interfaces	ALARM : 15-pin D-sub (female) (power, fan and, temperature alarm)
Temperature	0ºC to 40ºC
Humidity	30% to 90% (no condensation)
Power	100 VAC to 240 VAC ±10%, 50/60 Hz
Consumption	374 VA (366 W) (When 100 VAC, max. draw)
Dimensions	430 (W) x 132 (H) x 375 (D) mm
Weight	10 kg (w/ one power supply unit)
Consumables (if used 24 hours a day at normal temperature)	
	Cooling fan: Replace every 3 years. Power: Replace every 5 years.

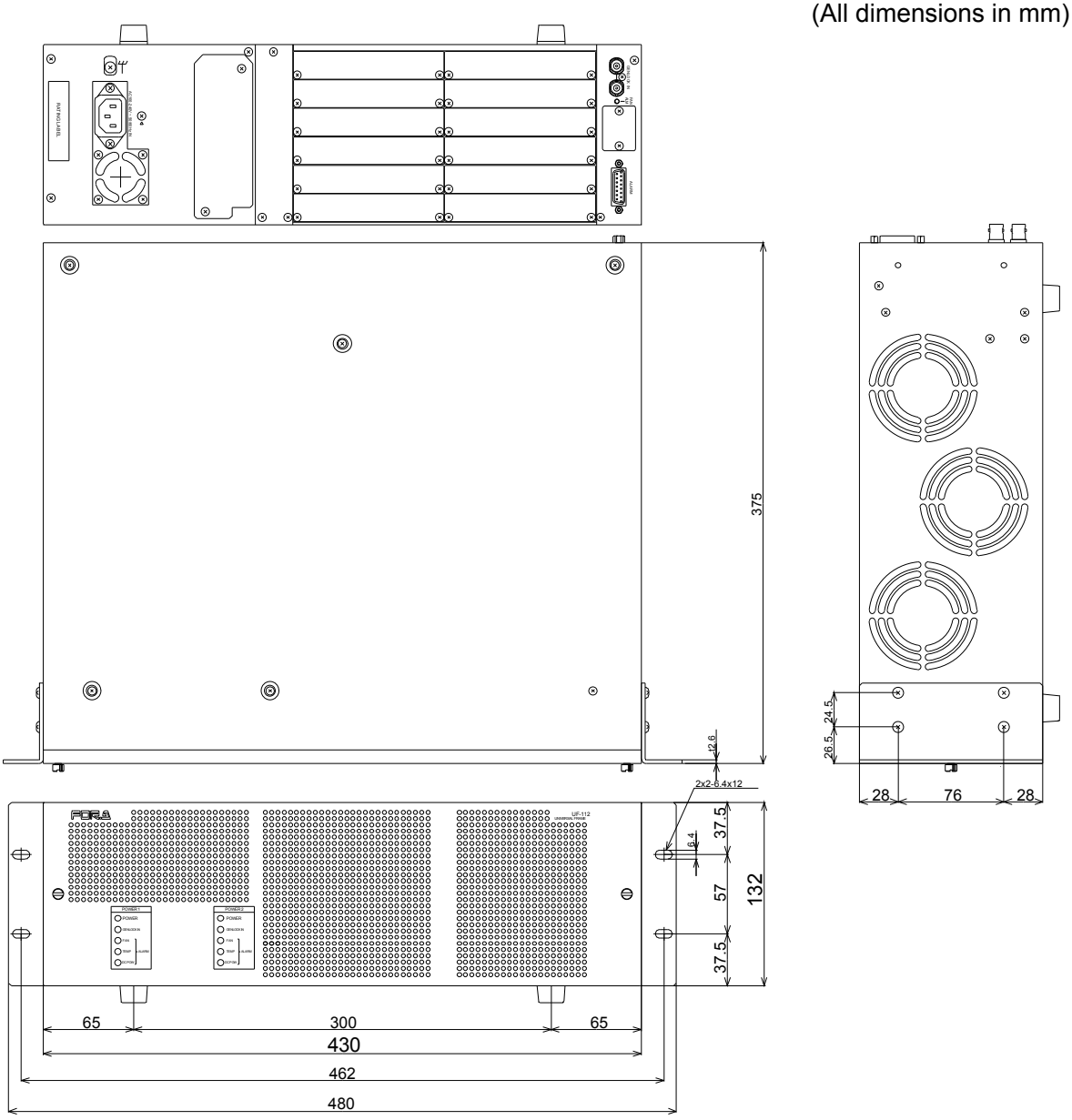
UF-112PS

Power	100 VAC to 240 VAC 50/60Hz
Consumption	374 VA (366W) (If 100 V AC supplied at maximum output current)
Maximum output current	+24VDC 11.2A
Dimensions	72(W) x 117.5(H) x 363.6(D)mm
Weight	2.5kg
Temperature	0°C to 40°C
Humidity	30% to 90% (no condensation)

5-2. External Dimensions

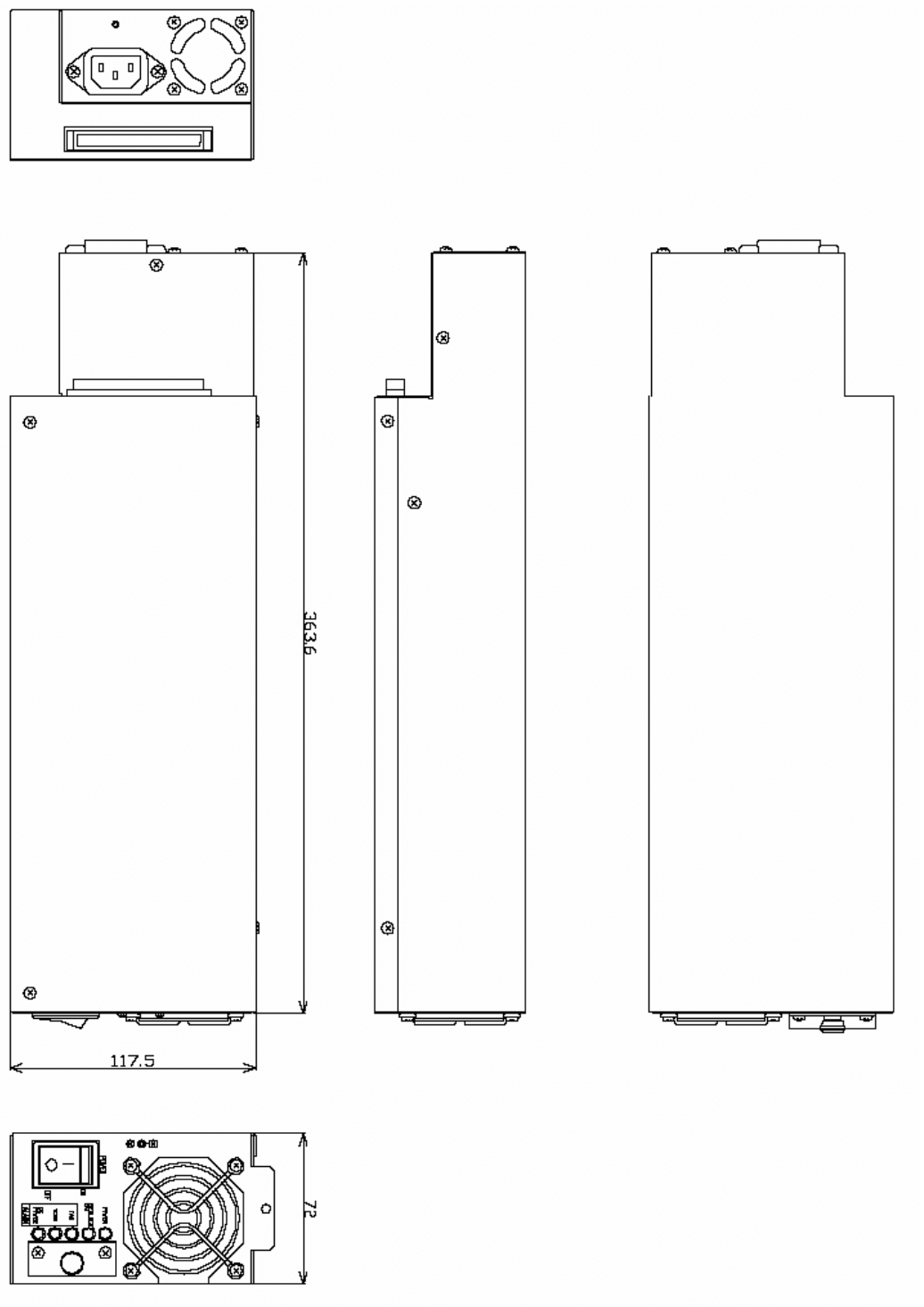
5-2-1. UF-112

(All dimensions in mm)



5-2-2. UF-112PS

(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®

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
2 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.
Via Volturno 37, 20047 Brugherio MB, Italy
Phone: +39-039-881-086/103 Fax: +39-039-878-140

FOR-A Corporation of Korea
1007, 57-5,Yangsan-ro,Yeongdeungpo-gu, Seoul 150-103, Korea
Phone: +82(0)2-2637-0761 Fax: +82(0)2-2637-0760

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

FOR-A Middle East-Africa Office
Jebel Ali Free Zone, LOB-16, Office 619, P. O. Box: 261914 Dubai, UAE
Phone: +971 4 887 6712 Fax: +971 4 887 6713