

EMERGENCY POWER SUPPLY

VX-2000DS

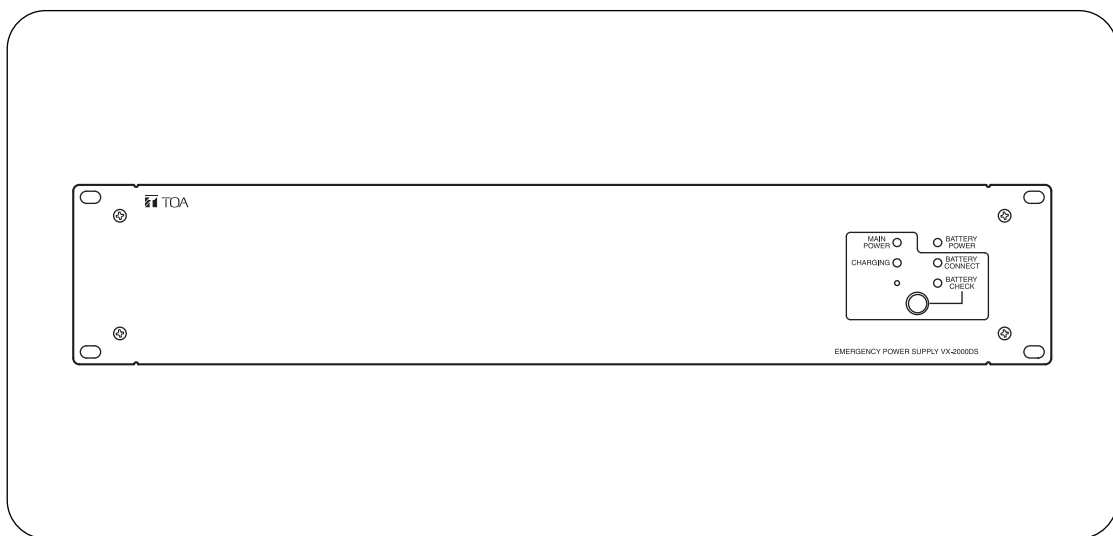


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Thank you for purchasing TOA's Emergency Power Supply.  
Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

# 1. IMPORTANT SAFETY INSTRUCTIONS

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

## INSTRUCTIONS ESSENTIELLES POUR LA SÉCURITÉ

- Lire ces instructions.
- Conserver ces instructions pour référence ultérieure.
- Respecter tous les avertissements.
- Suivre toutes les instructions.
- Ne pas utiliser cet appareil à proximité d'eau.
- Nettoyer uniquement à l'aide d'un chiffon sec.
- Ne pas obstruer les orifices de ventilation. Installer conformément aux instructions du fabricant.
- Ne pas installer à proximité de sources de chaleur telles que des radiateurs, des registres thermiques, des chaudières ou d'autres appareils (notamment des amplificateurs) produisant de la chaleur.
- Ne pas contourner la fonction de sécurité de la fiche polarisée ou de mise à la terre. Une fiche polarisée est équipée de deux broches, dont l'une est plus large que l'autre. Une fiche de mise à la terre est équipée de deux broches et d'une troisième pour la mise à la terre. Cette dernière, la plus large, est prévue à des fins de sécurité. Si la fiche fournie ne peut être insérée dans la prise électrique souhaitée, consulter un électricien pour faire remplacer cette dernière.
- Protéger le cordon d'alimentation pour éviter qu'il ne soit piétiné ou pincé, notamment au niveau des fiches, des prises de courant ou de son point de sortie de l'appareil.
- Utiliser uniquement les accessoires spécifiés par le fabricant.
- Débrancher cet appareil pendant les orages ainsi que lorsqu'il reste inutilisé pendant une période prolongée.
- La maintenance de l'appareil doit être confiée à un technicien après-vente qualifié. Une maintenance s'avère nécessaire si l'appareil est endommagé (au niveau du cordon d'alimentation ou de la fiche), a été mouillé par un liquide, un objet est tombé à l'intérieur, s'il a été exposé à la pluie ou l'humidité, s'il ne fonctionne pas normalement ou s'il est tombé.

## 2. SAFETY PRECAUTIONS

- Before installation or use, be sure to carefully read all the instructions in this section for correct and safe operation.
- Be sure to follow all the precautionary instructions in this section, which contain important warnings and/or cautions regarding safety.
- After reading, keep this manual handy for future reference.

### Safety Symbol and Message Conventions

Safety symbols and messages described below are used in this manual to prevent bodily injury and property damage which could result from mishandling. Before operating your product, read this manual first and understand the safety symbols and messages so you are thoroughly aware of the potential safety hazards.

#### **WARNING**


Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.

#### **AVERTISSEMENT**

Indique une situation risquant d'entraîner des blessures graves, voire la mort, en cas de mauvaise manipulation.

### When Installing the Unit

- Do not expose the unit to rain or an environment where it may be splashed by water or other liquids, as doing so may result in fire or electric shock.
- Ne pas exposer l'appareil à la pluie et le protéger de tout contact avec de l'eau ou d'autres liquides afin d'éviter un incendie ou une électrocution.
- Use the unit only with the voltage specified on the unit. Using a voltage higher than that which is specified may result in fire or electric shock.
- Do not cut, kink, otherwise damage nor modify the power supply cord. In addition, avoid using the power cord in close proximity to heaters, and never place heavy objects -- including the unit itself -- on the power cord, as doing so may result in fire or electric shock.
- Since the unit is designed for indoor use, do not install it outdoors. If installed outdoors, the aging of parts causes the unit to fall off, resulting in personal injury. Also, when it gets wet with rain, there is a danger of electric shock.
- The apparatus shall be connected to a mains socket outlet with a protective earthing connection.
- L'appareil doit être branché à une prise d'alimentation avec mise à la terre de protection.
- The socket-outlet shall be installed near the equipment and the plug shall be easily accessible.
- La prise doit être installée à proximité de l'équipement et la fiche doit être facilement accessible.

- External wiring connected to the terminals marked with  requires installation by an instructed person.

### When the Unit is in Use

- Should the following irregularity be found during use, immediately switch off the main power (or circuit breaker), disconnect the battery, and contact your nearest TOA dealer. Make no further attempt to operate the unit in this condition as this may cause fire or electric shock.
  - If you detect smoke or a strange smell coming from the unit.
  - If water or any metallic object gets into the unit
  - If the unit falls, or the unit case breaks
  - If the power supply cord is damaged (exposure of the core, disconnection, etc.)
  - If it is malfunctioning (no tone sounds.)
- To prevent a fire or electric shock, never open the unit case nor modify the unit. Refer all servicing to qualified service personnel.
- Do not place cups, bowls, or other containers of liquid or metallic objects on top of the unit. If they accidentally spill into the unit, this may cause a fire or electric shock.
- Ne pas placer de tasses, bols ou autres récipients remplis de liquides ou d'objets métalliques au-dessus de l'appareil. S'ils se répandent par accident sur l'appareil, ils peuvent provoquer un incendie ou une électrocution.
- Do not insert nor drop metallic objects or flammable materials in the ventilation slots of the unit's cover as this may result in fire or electric shock.
- Do not touch a power supply plug during thunder and lightning, as this may result in electric shock.
- Handle or use the batteries properly. Doing otherwise may cause leakage or explosion of the batteries, resulting in a fire, personal injury, damage to peripheral equipment, or contamination of environment.

## CAUTION

Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.

## ATTENTION

Indique une situation risquant d'entraîner des blessures moyennement graves ou mineures, et/ou des dommages matériels.

### When Installing the Unit

- Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.
- When unplugging the power supply cord, be sure to grasp the power supply plug; never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.
- Do not block the ventilation slots in the unit's cover. Doing so may cause heat to build up inside the unit and result in fire.
- Ne pas obstruer les fentes de ventilation sur le capot de l'unité sous peine de provoquer une accumulation de chaleur à l'intérieur de l'appareil, pouvant aboutir à un incendie.
- Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, near the heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.
- Éviter d'installer l'appareil dans un endroit humide ou poussiéreux, en plein soleil, à proximité d'un radiateur, ou dans un endroit dégageant de la fumée noire ou de la vapeur sous peine de provoquer un incendie ou une électrocution.
- System units (except remote microphones) are designed exclusively to be mounted in an equipment rack.  
Be sure to observe the following instructions when rack-mounting the unit. Failure to do so may cause a fire or personal injury.
  - Install the equipment rack on a stable, hard floor. Fix it with anchor bolts or take other arrangements to prevent it from falling down.
  - When connecting the power cord of the DC power supply panel for the units to an AC outlet, ensure that the total load current never exceeds the AC outlet's allowable current capacity.
  - The VX-2000DS can be mounted in an EIA-Standard equipment rack (2 U\* size).
    - \* 2 U size = 89 mm (reference size)
  - L'unité VX-2000DS peut être montée dans un bâti conforme au standard EIA (taille 2 U\* ).
    - \* Taille 2 U = 89 mm (taille de référence)

- The supplied rack-mounting screws can be used for the TOA equipment rack only. Do not use them for other racks.
- Note correct polarity (positive and negative orientation) when connecting the power supply cord. Reversed polarity connections will cause damage to the system.

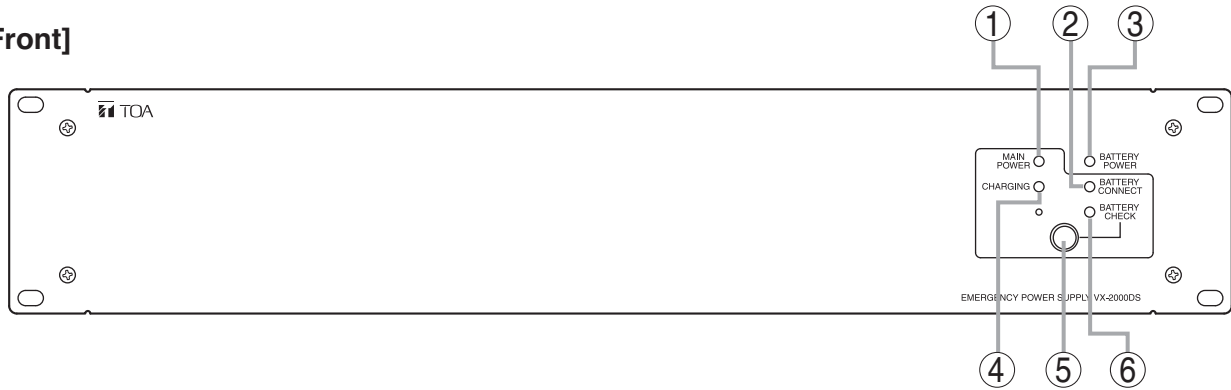
### When the Unit is in Use

- Use the specified power supply unit for the system. Note that the use of other power supply unit may cause a fire.
- Make sure to observe the following handling precautions so that a fire or personal injury does not result from leakage or explosion of the battery.
  - Do not short, disassemble, heat nor put the battery into a fire.
  - Avoid using both new and old batteries together.
  - Never charge batteries of the type which are not rechargeable.
  - Do not solder a battery directly.
  - Be sure to use the specified type of batteries.
  - Note correct polarity (positive and negative orientation) when connecting a battery to the unit.
  - Avoid locations exposed to the direct sunlight, high temperature and high humidity when storing batteries.
- Observez les précautions de manipulation qui suivent pour éviter toute fuite ou explosion de la batterie susceptible de provoquer un incendie ou une blessure corporelle.
  - La batterie ne doit pas faire l'objet d'un court-circuit, démontée, chauffée ni jetée dans un feu.
  - Évitez d'utiliser simultanément des batteries neuves et usées.
  - Ne chargez jamais des batteries non rechargeables.
  - Ne pratiquez pas de soudure directement sur une batterie.
  - Utilisez des batteries du type spécifié.
  - Ne corrigez pas la polarité (orientation positive et négative) lors de la connexion d'une batterie à l'unité.
  - Pour le stockage des batteries, évitez les emplacements directement exposés aux rayons du soleil, à une température et une humidité élevées.

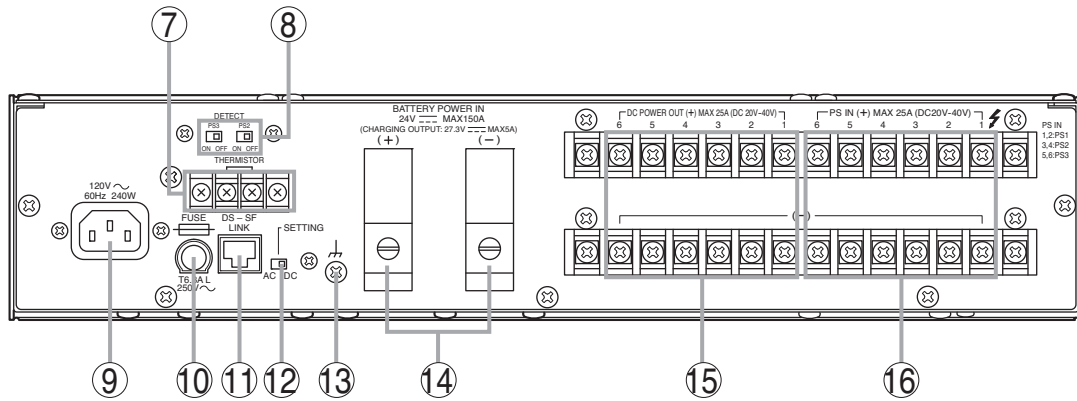
### 3. NOMENCLATURE AND FUNCTIONS

- Detects charging circuitry or battery failures, and transmits failure signals to the DS LINK of the VM-3000 TOA Voice Evacuation System.
- Keeps a 2 x 12 V sealed lead-acid battery charged while maintaining temperature compensation for the charging voltage.
- Automatically disconnects the battery if its voltage reaches a discharge final level.

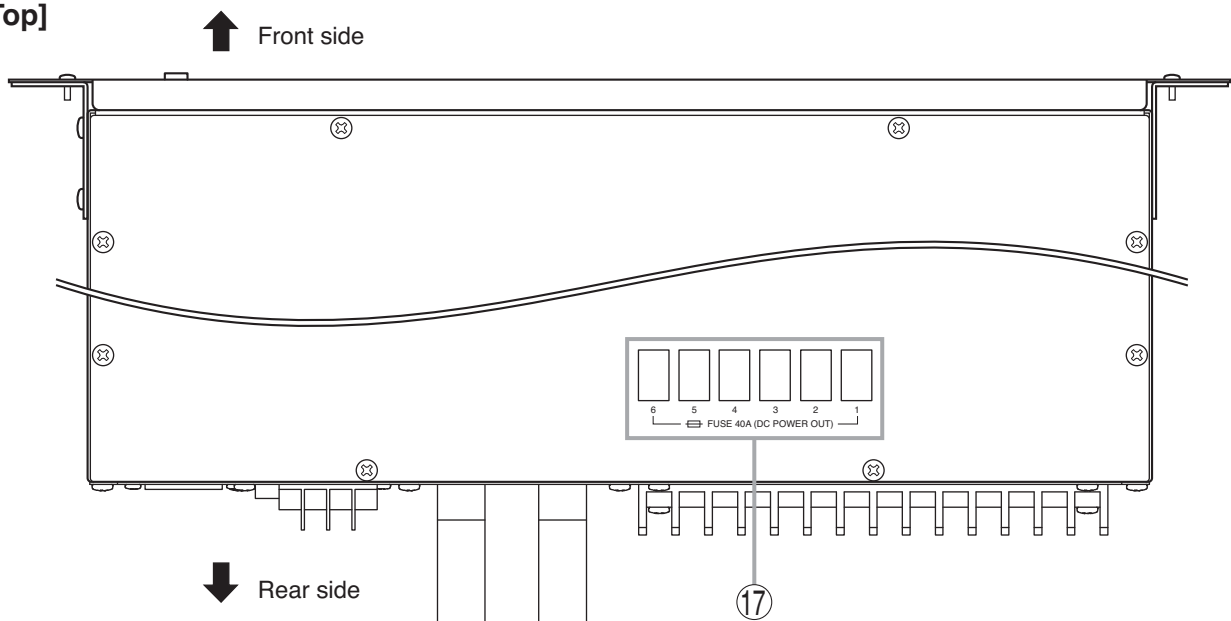
[Front]



[Rear]



[Top]



**1. Power indicator [MAIN POWER]**

Lights green when both DC power from the VM-3240VA or VM-3240E and AC power are supplied.

**2. Battery connect indicator [BATTERY CONNECT]**

Lights green when the battery is connected.

### 3. Battery indicator [BATTERY POWER]

Indicates the state of battery usage. Lights red when the DC power supply is interrupted and switched over to the backup power supply.

### 4. Charging indicator [CHARGING]

Indicates battery charging status. Flashes green while charging, and continuously lights green after charging completion.

### 5. Battery check button

Used to check internal resistance state of the backup battery.

Pressing the button permits measuring of the internal resistance value. The Battery check indicator goes off if the measurement exceeds the specified value.

In automatic mode, the unit performs battery check every 3 and a half hours.

When the DS-SF LINK is connected to the VM-3000 system, the resistance measurement is activated by the equipment, not by the unit itself.

#### Note

Battery check cannot function for 1 minute after it has been activated once. In this case, wait a few minutes, then reactivate it.

### 6. Battery check indicator [BATTERY CHECK]

In the AC operated system, the internal resistance value of the battery is measured automatically or manually to check whether the battery is faulty. The Battery check indicator indicates the result.

- Before measurement:
  - Flashes green at 2-second intervals.
- During measurement:
  - Flashes green at 1-second intervals.
- Normal: Lights green.
- Abnormal: Remains unlit.

In the battery-operated system, the battery voltage is constantly monitored and its level is indicated by the indicator as shown below without pressing the Battery check button.

- Lights green: 25 V or more
- Flashes green: 20 – 25 V
- OFF: 20 V or less

### 7. Thermistor connection terminal [THERMISTOR]

Detects the ambient temperature of the backup battery, and performs temperature compensation for the charging voltage. For the installation instructions, refer to [p. 10](#).

### 8. PS detect switches

Always connect a power supply to the terminals 1 + 2 of the DC INPUT. When connecting a power supply to the terminals 3 + 4 of the DC INPUT, set the PS2 switch to ON. When connecting a power supply to the terminals 5 + 6 of the DC INPUT, set the PS3 switch to ON.

### 9. AC inlet

Using the supplied AC power cord, connect this AC line receptacle to a power source of 120 V AC 60 Hz.

### 10. Fuse holder

Requires an AC fuse.  
Type: 250 V, T6.3 A L

### 11. Control connector [DS-SF LINK]

This RJ45 connector connects to DS-SF LINK connector of the VM-3000 system.

### 12. Setting switch [SETTING]

Select the DC position (factory set) when using the unit in the VM-3000 system.

When the system power (DC) needs to be switched off for maintenance, shift this switch to the "AC" position. (Refer to [p. 13](#).)

### 13. Ground terminal

### 14. Battery connection terminal [BATTERY POWER IN]

Connects to the backup battery.  
Recommended battery: Panasonic LC-X1265PG/APG or YUASA NP series sealed lead-acid battery

### 15. DC output terminal [DC POWER OUT]

Supplies the DC power to the DC-operated devices.

### 16. DC input terminal [PS IN]

Connects to the DC output terminal of the VM-3240VA or VM-3240E.

Be sure to connect the first VM-3240VA or VM-3240E amplifier to the terminals 1 and 2, the second amplifier to the terminals 3 and 4, and the third amplifier to the terminals 5 and 6.

### 17. Fuse

Provided in each DC output.  
Capacity: Blade-Type Fuse 40 A

### [Fault indication]

If any of the Power indicator [MAIN POWER], Battery connect indicator [BATTERY CONNECT], Charging indicator [CHARGING], or Battery check indicator [BATTERY CHECK] on the front panel remains unlit, the unit is judged failed. In such cases, remove the cause of the failure, and restore the unit to normal operation.

#### Note

Even if any of these indicators flashes, this does not indicate malfunction.

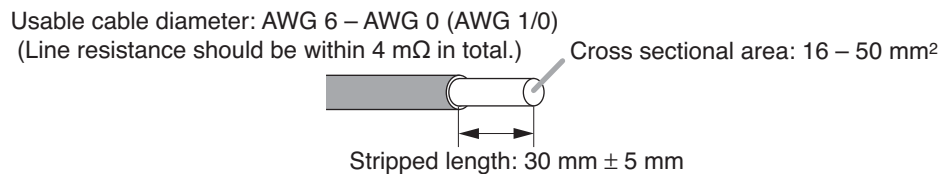
## 4. BATTERY INSTALLATION

### WARNING

- Take special care to prevent the battery from being shorted by misconnection of the battery cable. If the short occurs, the unit may fail. Follow the instructions in this section for safe and secure connection.
- Be sure to switch off the system power before battery connection. For the procedure, refer to [p. 13 "SWITCHING OFF SYSTEM POWER."](#)
- After completing the battery connection, be sure to attach a terminal cover onto each battery terminal to prevent shorts between positive and negative terminals.

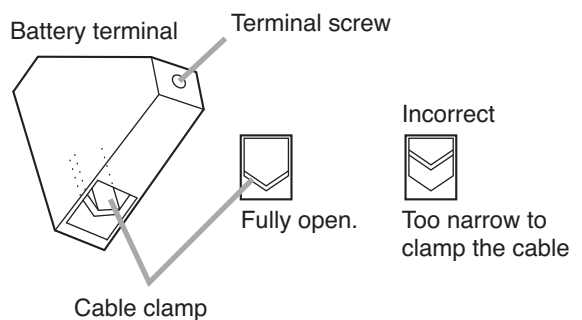
#### [Cable end treatment]

To secure the connection between the battery terminal and cable, be sure to use the cable of specified diameter and treat its end as follows.



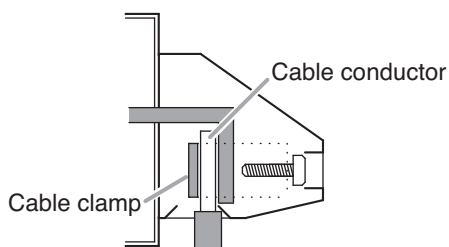
#### [Cautions on cable connection to the battery terminal]

- Before connecting the battery cable to the battery terminal, be sure to fully open the cable clamp by turning the terminal screw counterclockwise.



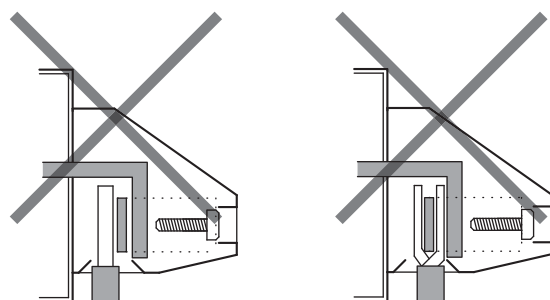
- Insert the battery cable into the correct position in the battery terminal referring to the terminal's cross sectional diagrams below.

#### Correct position of the cable insertion

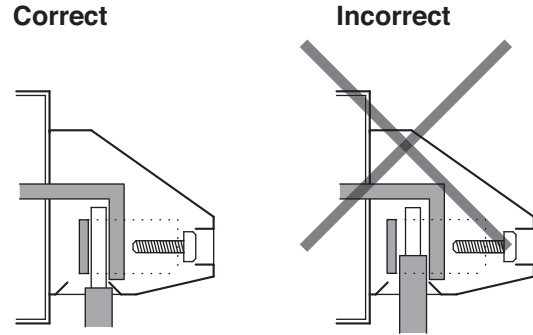


#### Incorrect position of the cable insertion

Wrong insertion position of the cable or a forked cable insertion causes poor contact or insufficient connection tightness, making the cable come off to possibly cause short-circuit accident.



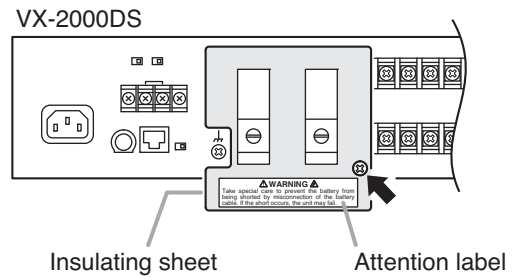
- Strip the cable end long enough (30 mm ± 5 mm) to be fully clamped. Otherwise, its outer jacket prevents the cable conductor from being tightly secured, causing poor contact.



**[Attaching the insulating sheet]**

To prevent the battery cable from being shorted to the rear panel due to misconnection, attach the supplied insulating sheet in place following the procedures below.

- Step 1.** Remove the screw indicated by the arrow.
- Step 2.** Put the supplied insulating sheet over the battery terminals, and fix it with the removed screw.



**[Connecting the battery]**

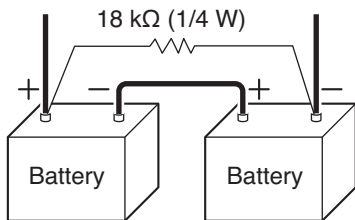
**⚠ CAUTION**

Note correct polarity (positive and negative orientation) when connecting the power supply cord. Reversed polarity connections will cause damage to the system.

**Notes**

To avoid battery failure and charger failure, take care of the following points.

- If batteries not recommended by the manufacturer are used and a charger failure occurs, connect a resistor of 18 kΩ (1/4 W) parallel to the batteries.

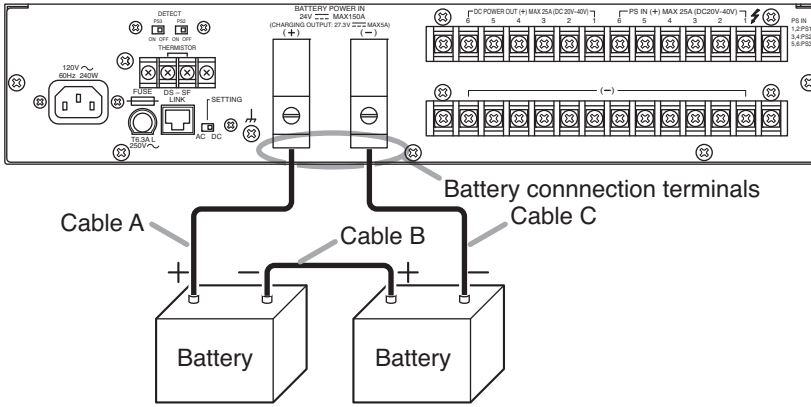


- Use the specified type of batteries and capacity.



- Use the battery connection cables as short in length and as large in diameter as possible.

VX-2000DS



AWG	Cable cross sectional area	Length (2 mΩ)	Example of wire length	
			Cable A, Cable C	Cable B
AWG 6	16 mm <sup>2</sup>	180 cm	80 cm each	20 cm
AWG 4	25 mm <sup>2</sup>	280 cm	130 cm each	20 cm
AWG 2	35 mm <sup>2</sup>	400 cm	190 cm each	20 cm
AWG 0 (AWG 1/0)	50 mm <sup>2</sup>	570 cm	275 cm each	20 cm

- Total resistance of the battery connection path should be less than 4 mΩ, which includes resistance of all of wire, terminal, fuse, and terminal points.

For reference, refer to each resistance as follows.

Resistance of terminal, fuse (if provided): 1 – 2 mΩ

Resistance of terminal point: 0.1 – 0.5 mΩ

- Tighten the bolts, nuts, and screws of the unit's battery connection terminals and battery terminals with the torque as shown below.

VX-2000DS' Battery connection terminals	6 – 8 Nm
Battery terminals	4.1 – 5.6 Nm (M6)
	8.2 – 5.6 Nm (M8)

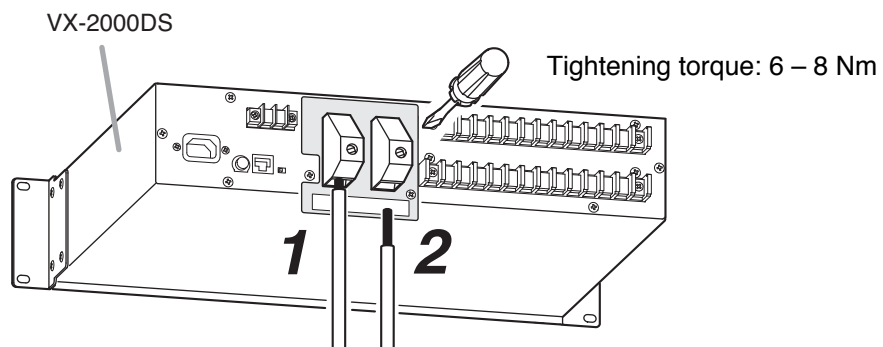
**Step 1.** Allow more than 10 seconds to elapse after removing the power cord from the VX-2000DS' rear-mounted AC inlet.

**Step 2.** Insert the positive battery cable into the VX-2000DS' rear-mounted BATTERY POWER IN positive terminal from the bottom side of the connector, then tighten the terminal screw with a flat screwdriver.

**Note**

Never connect the negative cable first to avoid battery short-circuit that occurs if the positive cable should contact the unit chassis or equipment rack.

**Step 3.** Connect the negative battery cable to the negative terminal in the same manner as **Step 2**.



**[Disconnecting the battery]**

**Step 1.** Confirm that battery power is not in use by means of the VX-2000DS' front-mounted BATTERY POWER LED, which is unlit in this case.

**Step 2.** Loosen the VX-2000DS' BATTERY POWER IN negative terminal screw, then pull out the negative battery cable.

**Notes**

- Never remove the positive cable first to avoid battery short-circuit that occurs if the positive cable should contact the unit chassis or equipment rack.
- Insulate the exposed end of the removed cable with insulating tape to avoid shorting to the other cable.

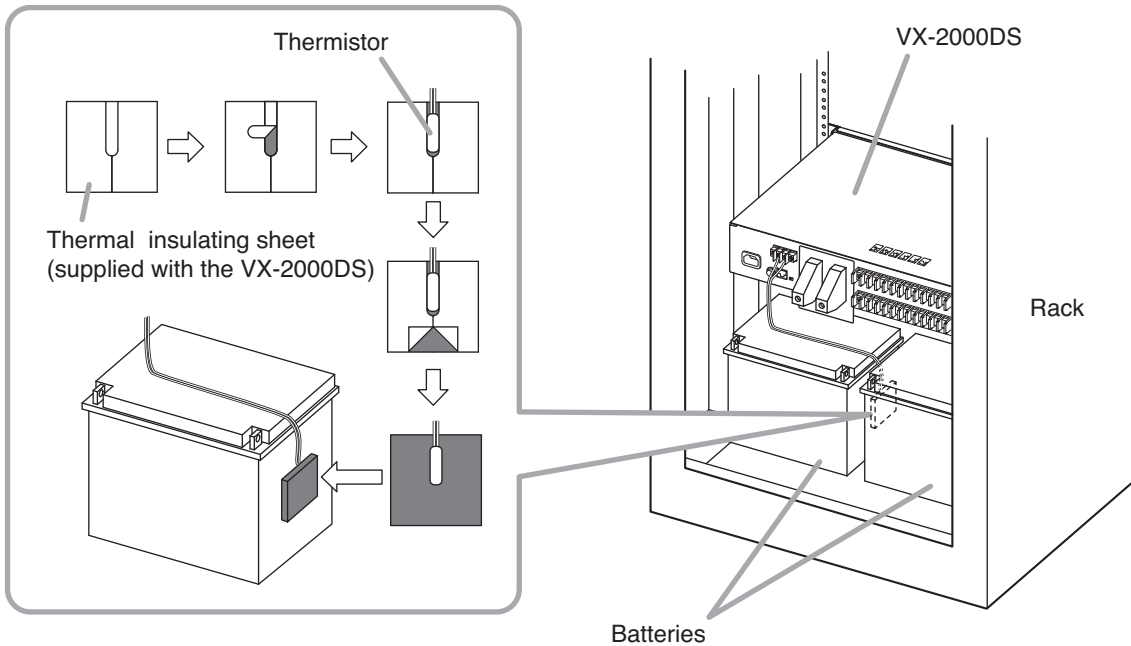
**Step 3.** Remove the positive battery cable from the positive terminal in the same manner as **Step 2**.

**Note**

Insulate the exposed end of removed cable with insulating tape to avoid shorting to the other cable.

**[Installing a thermistor]**

The thermistor located on the VX-2000DS' rear panel is designed to compensate for temperature changes when charging the battery. It should be mounted on the side of one battery in between 2 batteries using the supplied thermal insulating sheet to avoid ambient temperature change, thereby maintaining the temperature of the thermistor relatively constant.



**Step 1.** Clean the exterior surface of the battery using a soft damp cloth.

**Note**

Avoid using chemical cleaners and solvents that may cause the battery cases to crack or leak.

**Step 2.** Follow the procedure shown above to attach the thermistor to the adhesive side of thermal insulating sheet, then attach the sheet to the side of the battery.

**Note**

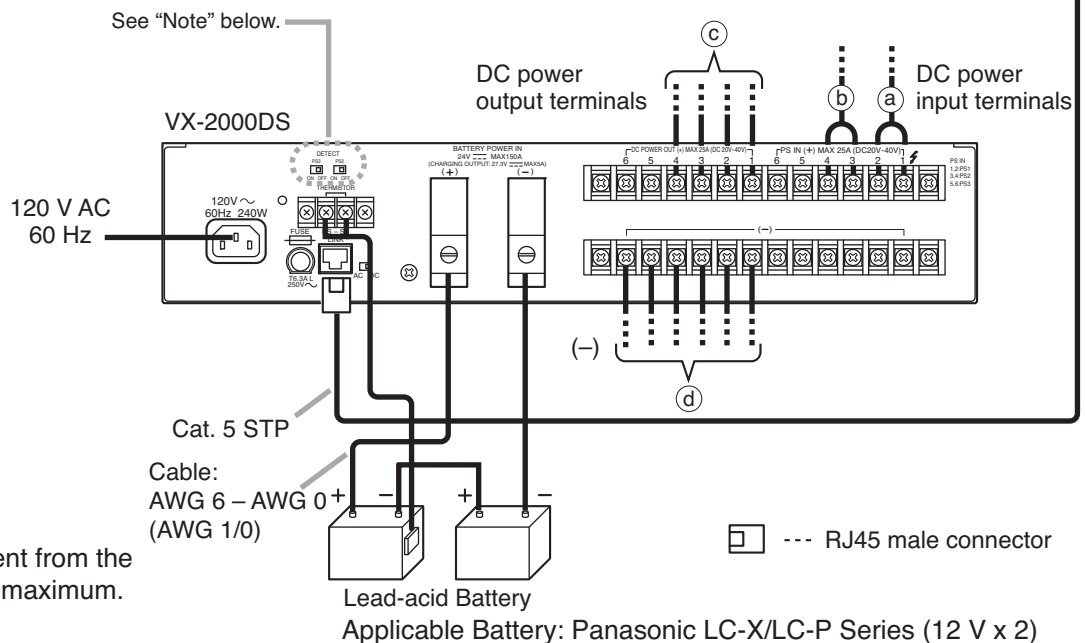
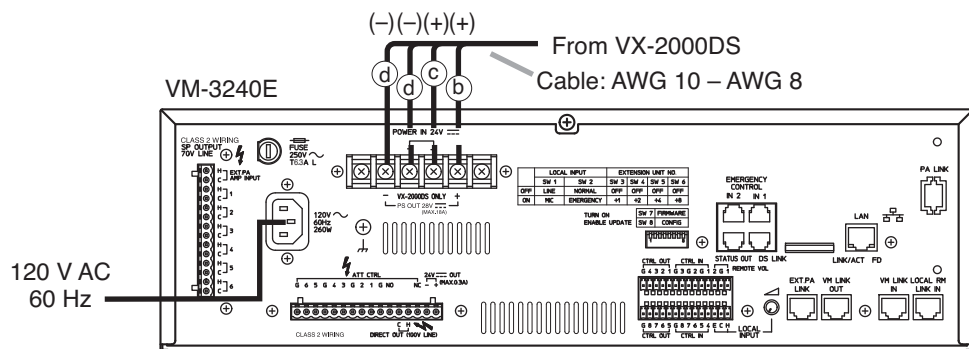
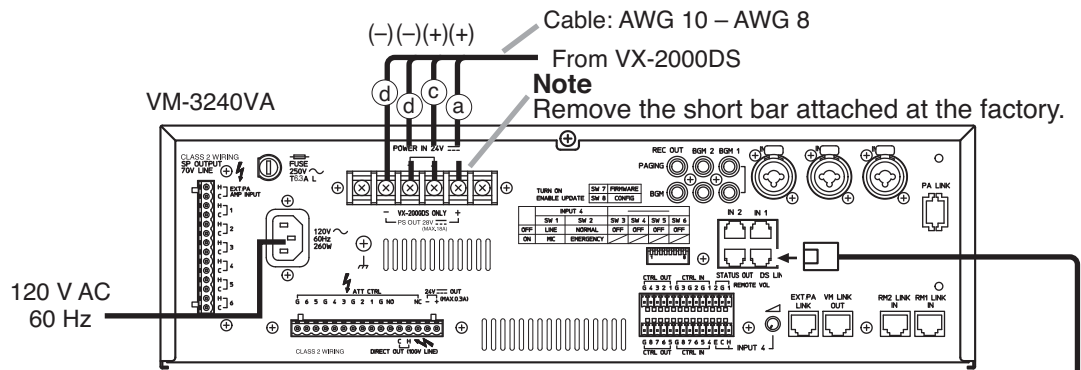
The thermal insulating sheet is extremely difficult to remove after attached.

**[Replacing the battery]**

When replacing the batteries, a thermal insulating sheet listed below is also required. Consult your nearest TOA dealer on how you can obtain them.

Part code	Part name
131-27-891-2	VX-2000DS THERMAL INSULATING SHEET

## 5. CONNECTIONS WHEN USING WITH THE VM-3000 SYSTEM



### Caution

The charging current from the VX-2000DS is 5 A maximum.

### Attention

Le courant de charge de l'unité VX-2000DS est de 5 A au maximum.

### Note

Make PS2 and PS3 switch settings according to the total number of connected power supply units VM-3240VA and VM-3240E (power supply unit incorporated); set PS2 to ON for 2 units, and PS2 and PS3 to ON for 3 units. Note that these power supply units should be connected to the PS IN (+) terminals 1 and 2 for the 1st unit, 3 and 4 for the 2nd unit, and 5 and 6 for the 3rd unit.

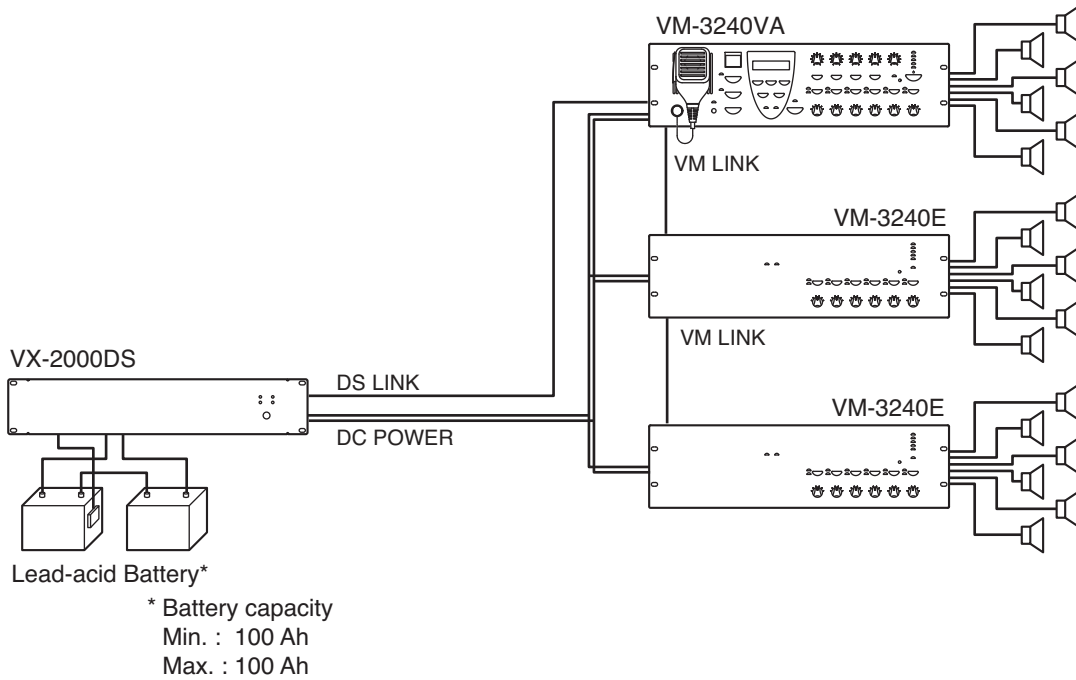
**[Required number of VX-2000DS units]**

The required number of the VX-2000DS Emergency Power Supply units is determined depending on the application of the system configured with the VM-3240VA and/or VM-3240E (hereinafter called "VM amplifier").

One VX-2000DS is required every 3 VM amplifiers.

Number of VX-2000DS units		1			2			3			4
Number of VM amplifiers		1	2	3	4	5	6	7	8	9	10
Battery capacity	Min. [Ah]	28	65	100	28	65	100	28	65	100	28
	Max. [Ah]	100	100	100	100	100	100	100	100	100	100

Below is an example showing that one VX-2000DS is used in a system including 3 VM amplifiers.



**6. CONNECTION CABLE LIST**

Terminal to Connect		Cable Type			Equipment to be Connected to		
Terminal Name	Equipment Receptacle	Plug	Cable Type	Plug	Equipment	Terminal Name	Equipment Receptacle
AC IN	3P inlet	—	Supplied cable	—	120 V AC, 60 Hz	—	—
DS-SF LINK	RJ45 (female)	RJ45 (male)	Cat. 5 STP	RJ45 (male)	VM-3240VA VM-3240E	DS-SF LINK	RJ45 (female)
BATTERY POWER IN	Screw terminal	Unprocessed cable end	AWG 6 – AWG 0 (AWG 1/0) 16 – 50 mm <sup>2</sup> (line resistance within 4 mΩ/total)	Unprocessed cable end	Lead-acid battery	Electrode (+, -)	—
DC POWER OUT	Screw terminal	Round terminal	AWG 10 – AWG 8 5.5 – 8.0 mm <sup>2</sup>	Round terminal	VM-3240VA VM-3240E	DC POWER IN	2P screw terminal
PS IN	Screw terminal	Round terminal	AWG 10 – AWG 8 5.5 – 8.0 mm <sup>2</sup> (line resistance within 10 mΩ)	Round terminal	VM-3240VA VM-3240E	PS OUT	Screw terminal
Connect cables to 2 PS IN (+) terminals.				Connect 2 cables to PS OUT (+) terminal.			

**[DS-SF LINK connections]**

Connector Name	RJ45 Pin No.	Colour	Pair	Assignment	Direction/Level
DS-SF Link	1	Orange/white	[Diagram: Pins 1-2 pair]	Connection Check	Output/0 – 3.3 V
	2	Orange		Battery Failure	
	3	Green/white	[Diagram: Pins 3-6 pair]	Charging Circuitry Failure	
	4	Blue		DC Off	
	5	Blue/white		AC Off	
	6	Green	[Diagram: Pins 7-8 pair]	3.3 V DC Input	Input (DC)/3.3 V
	7	Brown/white		NC	—
	8	Brown	Battery Check Activation	Input/0 – 3.3 V	
	Shield	Shield		Chassis GND	—

**7. SWITCHING OFF SYSTEM POWER (DC)**

When the system power (DC) needs to be switched off in such cases as maintenance or unit configuration change, shift the Setting switch on the VX-2000DS to the "AC" position following the procedure below.

**[To switch off the system power]**

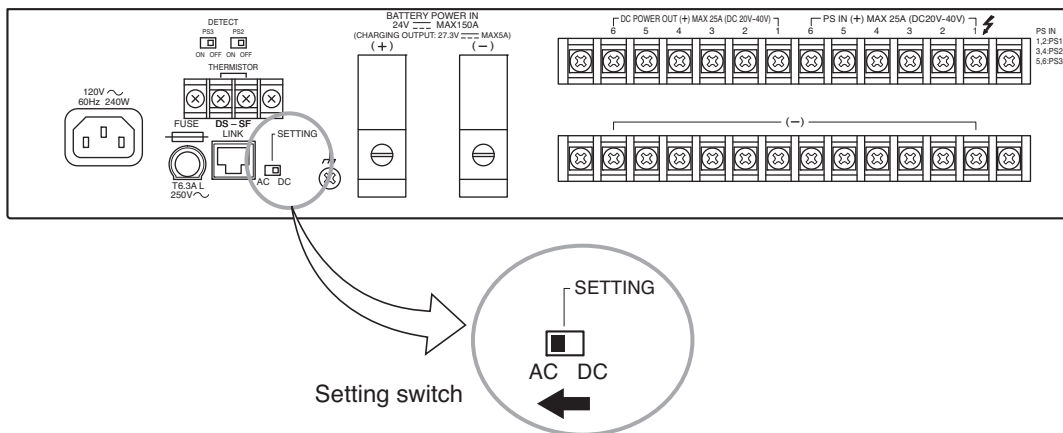
**Step 1.** Terminate all current broadcasts to stop system operation.

**Step 2.** Shift the Setting switch on the VX-2000DS rear panel to the "AC" position. This permits the system power to be switched off without switching over to battery operation.

**Note**

Never stop the AC power supply to the VX-2000DS as doing so causes the system power source to be maintained by the battery.

VX-2000DS

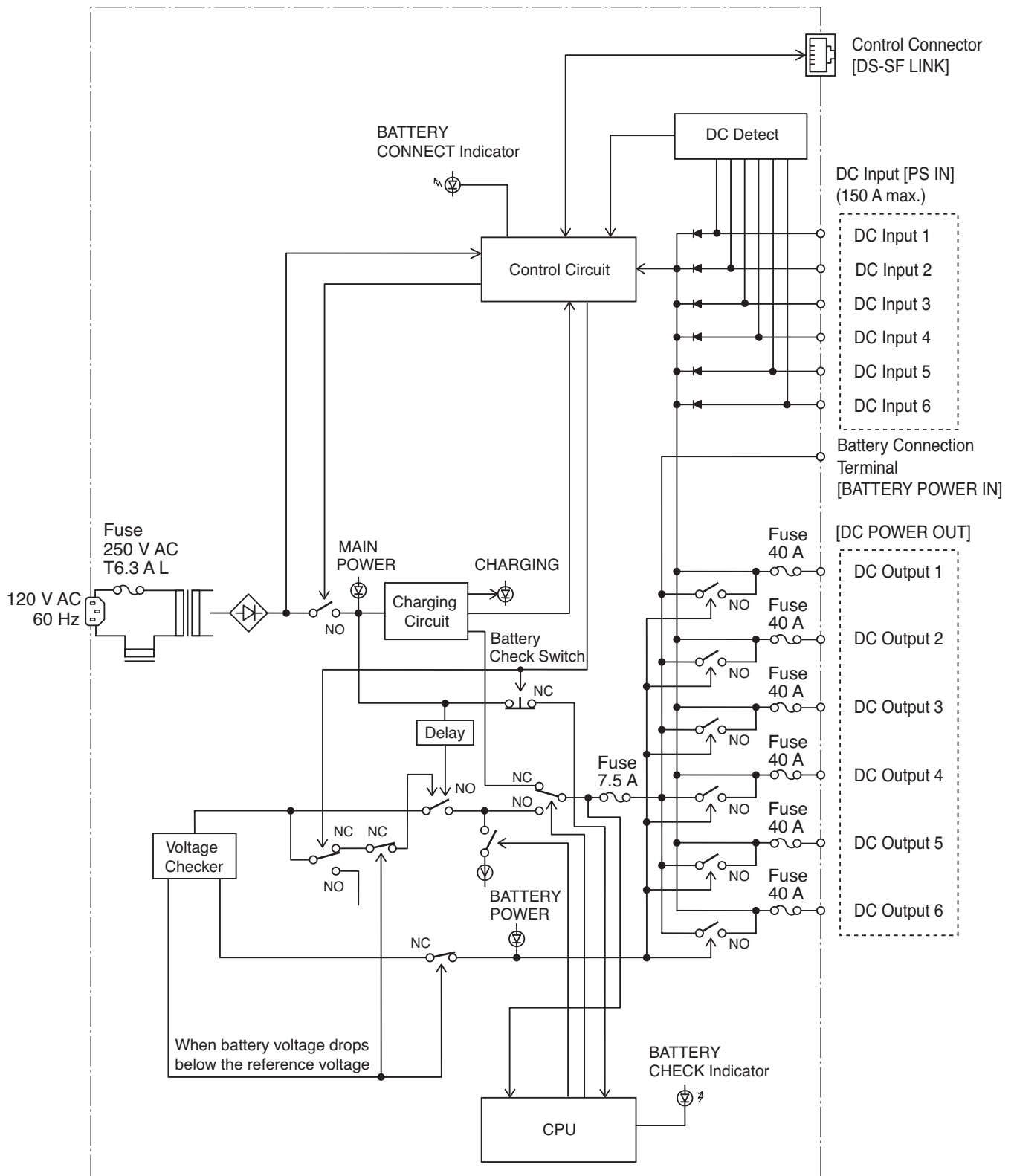


**[To restore the power supply to the system]**

**Step 1.** Shift the Setting switch on the VX-2000DS rear panel back to the "DC" position.

**Step 2.** Operate the system normally.

# 8. BLOCK DIAGRAM



## 9. SPECIFICATIONS

Power Source	120 V AC, 60 Hz
Power Consumption	240 W max.
Applicable Battery	Panasonic LC-X/LC-P Series (12 V x 2)
Charging Method	Trickle charging
Charging Current	5 A max.
Charging Output Voltage	27.3 V $\pm$ 0.3 V (at 25°C) Temperature correction coefficient: -40 mV/°C
Power Supply Input	6, M4 screw terminal, distance between barriers: 11 mm
DC Power Output	Number of connectable equipment: Up to 3 VM-3240 VA/E, M4 screw terminal, distance between barriers: 11 mm
Control Connector	RJ45 female connector for connecting the VM-3000 system Twisted-pair straight cable (TIA/EIA-568A standard) Type of control signal: Battery check, AC power status, DC power status, charging circuit failure, and battery failure
Battery Connection	1 pair of positive and negative terminals Applicable cable diameter: AWG 6 – AWG 0 (AWG 1/0) (Line resistance within 4 m $\Omega$ /total) Cross sectional area: 16 – 50 mm <sup>2</sup>
Operating Temperature	0 to +40°C
Finish	Panel: Surface-treated steel plate, black (30% gloss), paint
Dimensions	482 (w) x 88.4 (h) x 377.6 (d) mm
Weight	10.5 kg

Fuse ratings	Blade fuse (40 A), Blade fuse (7.5 A), Fuse (7.5 A)
Maximum output current draw from the battery	43.5 A
Maximum internal resistance of the battery and its associated circuitry, Ri max	50 m $\Omega$
Recommended cable parameter for DS-SF Link	Twisted-pair straight cable (TIA/EIA-568A standard)

**Note:** The design and specifications are subject to change without notice for improvement.

### • Accessories

Rack mounting screw (5 x 12) .....	4	Insulating sheet .....	1
Fiber washer .....	4	Thermal insulating sheet .....	1
Blade fuse (40 A) .....	3	Power cable (2 m) .....	1
Fuse (T6.3 A L) .....	1		

## **FCC REQUIREMENTS**

### **Note**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the 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.

### **Modifications**

Any modifications made to this device that are not approved by TOA Corporation may void the authority granted to the user by the FCC to operate this equipment.

### **Note**

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

URL: <http://www.toa.jp/>



**TOA Corporation**

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