

# TOSHIBA

## G9000 SERIES

TOSHIBA SYNC KIT  
INSTALLATION MANUAL  
480/480 V 80/100/160/225 kVA



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## IMPORTANT NOTICE

Never attempt to install, operate, maintain or dispose of this equipment until you have first read and understood all of the relevant product warnings and user directions that are contained in this Installation manual.

The installation of this equipment must only be performed by qualified personnel.

The Instructions contained in this manual are not intended to cover all of the details or variations in equipment or to provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further information be required or should particular problems arise which are not covered sufficiently the matter should be referred to the local TOSHIBA sales office.

**Nothing in this manual shall alter Toshiba International Corporation's standard terms and conditions or the conditions of any written sales contract.**

***Any Electrical or mechanical modifications to this equipment without prior written consent of TOSHIBA will void all warranties and may void UL/CUL listing. Unauthorized modifications may also result in personal injury, death, or equipment damage.***

## UNINTERRUPTIBLE POWER SYSTEM

If additional information or technical assistance is required call TOSHIBA Customer Support Center at 877-867-8773, or write to: Toshiba International Corporation, 13131 West Little York Road, Houston, TX 77041-9990 Attn: UPS Product Manager.

Please complete the following information for your records.

Keep this manual with the UPS equipment.

Job Number: \_\_\_\_\_

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Application: \_\_\_\_\_

Shipping Date: \_\_\_\_\_

Date of Installation: \_\_\_\_\_

Inspected By: \_\_\_\_\_

## Purpose and Scope of Manual

This manual provides information on how to safely install, operate, and maintain your TOSHIBA power electronics product. This manual includes a section on General Safety Instructions that describes the warning labels and symbols that are used throughout the manual. Read the manual completely before installing, operating, or performing maintenance on this equipment.

This manual and the accompanying drawings should be considered a permanent part of the equipment and should be readily available for reference and review. Dimensions shown in the manual are in metric and/or the English equivalent.

TOSHIBA reserves the right, without prior notice, to update information, make product changes, or to discontinue any product or service identified in this publication.

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## Contacting TOSHIBA Customer Support Center

The TOSHIBA Customer Support Center can be contacted to obtain help in resolving any **Uninterruptible Power System** problem that you may experience or to provide after sales service support.

### **Toshiba Customer Support Center**

8 a.m. to 5 p.m. (CST) – Monday through Friday

Tel (877) 867-8773

Fax (713) 896-5212

E-mail – [TIC-UPSservice@toshiba.com](mailto:TIC-UPSservice@toshiba.com)

You may contact TOSHIBA by writing to:

TOSHIBA INTERNATIONAL CORPORATION.

SOCIAL INFRASTRUCTURE SYSTEMS GROUP

POWER ELECTRONICS DIVISION

13131 West Little York Rd.

Houston, TX 77041-9990

Attn: UPS Product Manager

For further information on Toshiba products and services, please visit our website at:

<http://www.toshibaups.com/>

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## 1 How to use this Manual

This manual is designed for ease of use, giving the user easy and quick reference to information.

This manual uses notice icons to draw attention to the user important information regarding the safe operation and installation of the UPS.

### 1.1 Notice Icons

The notice icons used in this manual are explained below, and should be taken into account and adhered to whenever they appear in the text of this manual.



**WARNING**

**Warning:** A warning symbol shows potentially hazardous situation or condition which could result in personal injury or death, if not avoided.



**CAUTION**

**Caution:** A caution symbol shows potentially hazardous situation or condition which could result in personal injury or equipment damage, if not avoided.



**NOTE**

**Note:** A Note symbol shows the information the user or the service personnel should observe during the UPS operation or service work.



**PROHIBIT**

**Prohibit:** A prohibit symbol shows the act the user or the service personnel should NEVER perform during the UPS installation, operation or service work.

**Safety Recommendations:** If any problems are encountered while following this manual, contact the Toshiba Customer Support Center.

## 1.2 Qualified Personnel

Only qualified persons are to install, operate or service this equipment according to all applicable codes and established safety practices.

### **A qualified person must:**

- 1) Read this entire instruction manual carefully.**
- 2) Be skilled in the installation, construction or operation of the equipment and aware of the hazards involved.
- 3) Be trained and authorized to safely energize, de-energize, clear, ground, lockout and tag circuits in accordance with established safety practices
- 4) Be trained and authorized to perform the service, maintenance or repair of this equipment
- 5) Be trained in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses, face shield, flash clothing, etc. in accordance with established practices
- 6) Be trained in rendering first aid.



## 2 OVERVIEW

TOSHIBA G9000 Uninterruptible Power Supply Systems (UPS) need a TOSHIBA SYNC KIT whenever two SMS UPSs are installed in a synchronous operation configuration.

Each TOSHIBA SYNC KIT contains all hardware necessary for one pair of master and slave UPS to operate in a synchronous configuration. Each additional UPS unit will require another sync kit, if applicable. This manual contains kit installation and startup information specifically for 80-225kVA capacity models of the G9000 Series UPS.



### CAUTION

*The UPSs must be de-energized when the TOSHIBA SYNC KITs are installed and the synchronous operation configuration is established between the UPSs.*

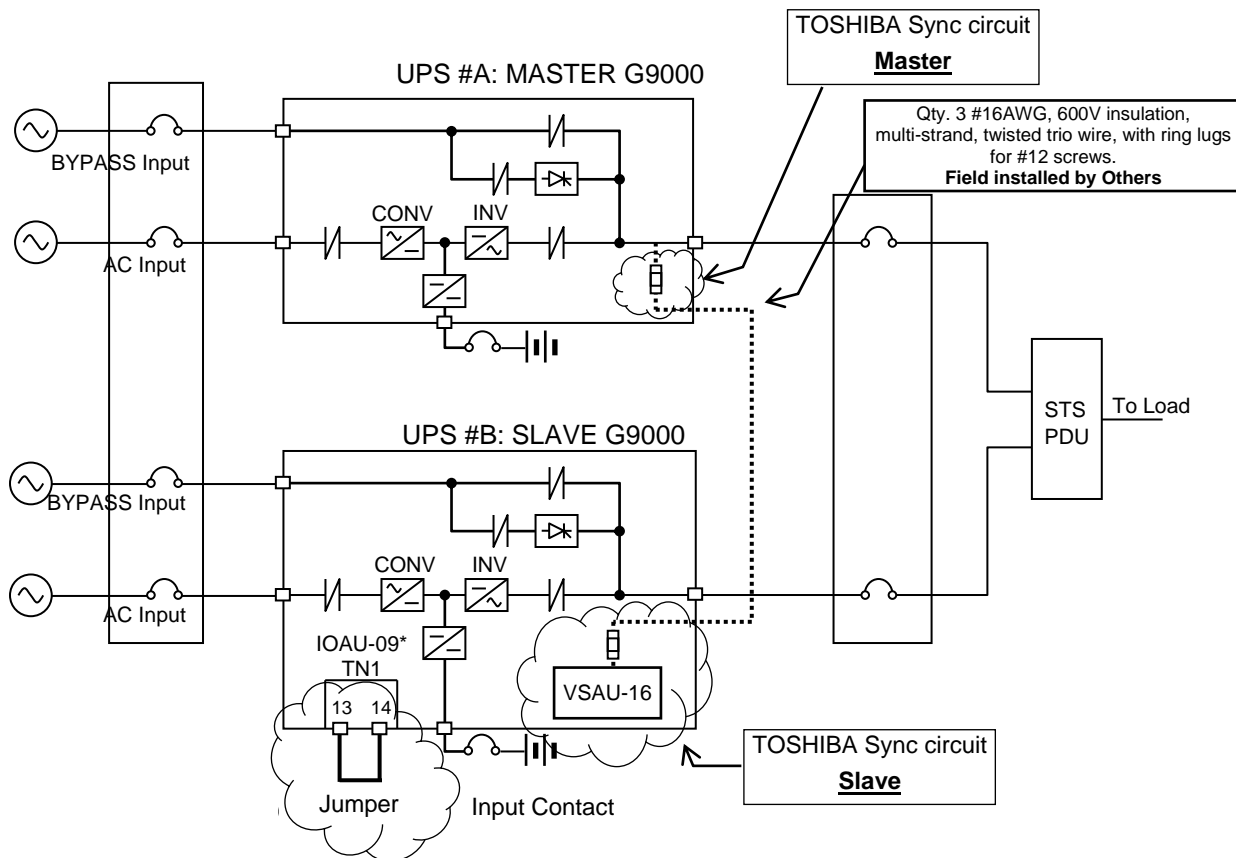


Figure 2-1: Synchronous operation configuration













## 3 TOSHIBA Sync KIT Parts List





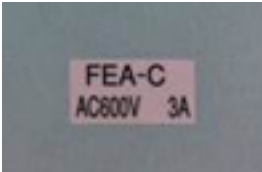
Table 3-1: Parts list of TOSHIBA Sync KIT

Parts No.	Part name	Qty		Remarks
		Master	Slave	
1	VS1 PCB: Sensor Board (VSAU-16*)	-	1	
2	Mounting Metallic Plate	1	1	
3	Flat Cable (UPGR-M* - VSAU-16*)	-	1	
4	Wire (VSAU-16* - Fuses) 3-twisted	-	1	
5	Wire (Terminal Jumper for VSAU-16*)	-	3	
6	Wire (GNDC - FG)	-	1	
7	Wire (Bus bars – Fuse holder) 3-twisted	1	-	
8	Wire (Terminal Jumper for IOAU-09*)	-	1	
9	Fuses holder	1	1	
10	Fuses	3	3	
11	Supports	-	4	
12	Screws (M3) with spring washer and flat washer	-	5	For supports: 4 For Grounding: 1
13	Screws (M4) with spring washer and flat washer	2	2	For Fuses holder: 2x2
14	Screws (M5) with spring washer and flat washer	4	4	For Metallic plate: 4x2
15	Spring washers (M3)	-	4	For supports
16	Flat washers (M3)	-	4	For supports
17	Fuse label	1	1	

Note – Part number followed by “\*” denotes any letter A to Z.

Figure 3-2: TOSHIBA Sync KIT (main) parts appearance

<p>Part No. 1: VSAU-16*: Sensor Board</p> 	<p>Part No. 2: Mounting Metallic Plate</p> 
<p>Part No. 3: Flat Cable (UPGR-M* - VSAU-16*)</p> 	<p>Part No. 4: Wire (VSAU-16* - Fuses) 3-twisted</p> 
<p>Part No. 5: Wire (Terminal Jumper for VSAU-16*)</p> 	<p>Part No. 6: Wire (GNDC - FG)</p> 
<p>Part No. 7: Wire (Bus bars - Fuse holder) 3-twisted</p> 	<p>Part No. 8: Wire (Terminal Jumper for IOAU-09*)</p> 
<p>Part No. 9: Fuses holder</p> 	<p>Part No. 10: Fuses</p> 
<p>Part No. 11: Supports</p> 	<p>Part No. 12: Screws (M3) with spring washer and flat washer</p> 

<p>Part No. 13: Screws (M4) with spring washer and flat washer</p> 	<p>Part No. 14: Screws (M5) with spring washer and flat washer</p> 
<p>Part No. 15: Spring washers (M3)</p> 	<p>Part No. 16: Flat washers (M3)</p> 
<p>Part No. 17: Fuse label</p> 	

## 4 TOSHIBA Sync KIT Parts Location

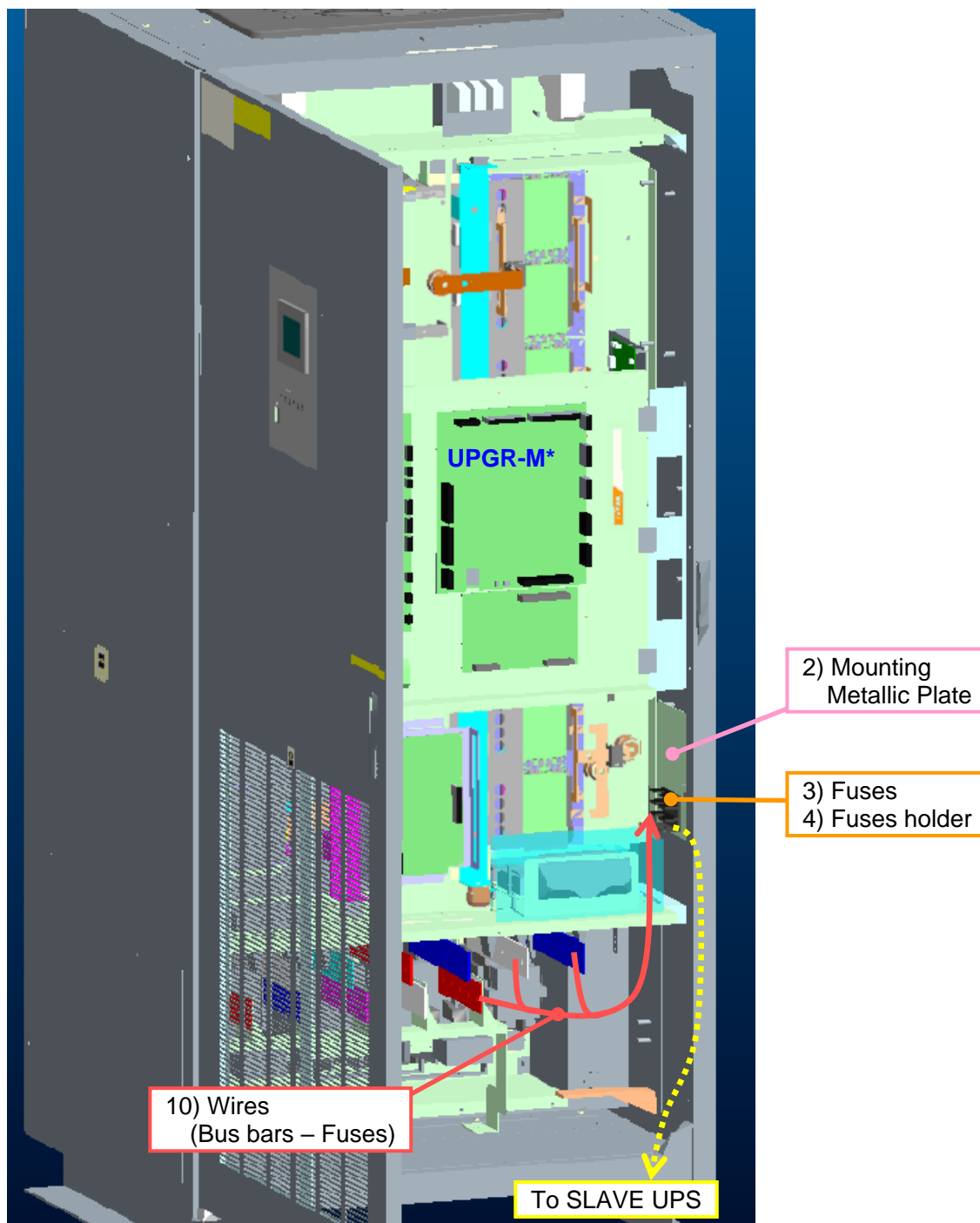


Figure 4-1: TOSHIBA Sync main parts location (MASTER UPS)

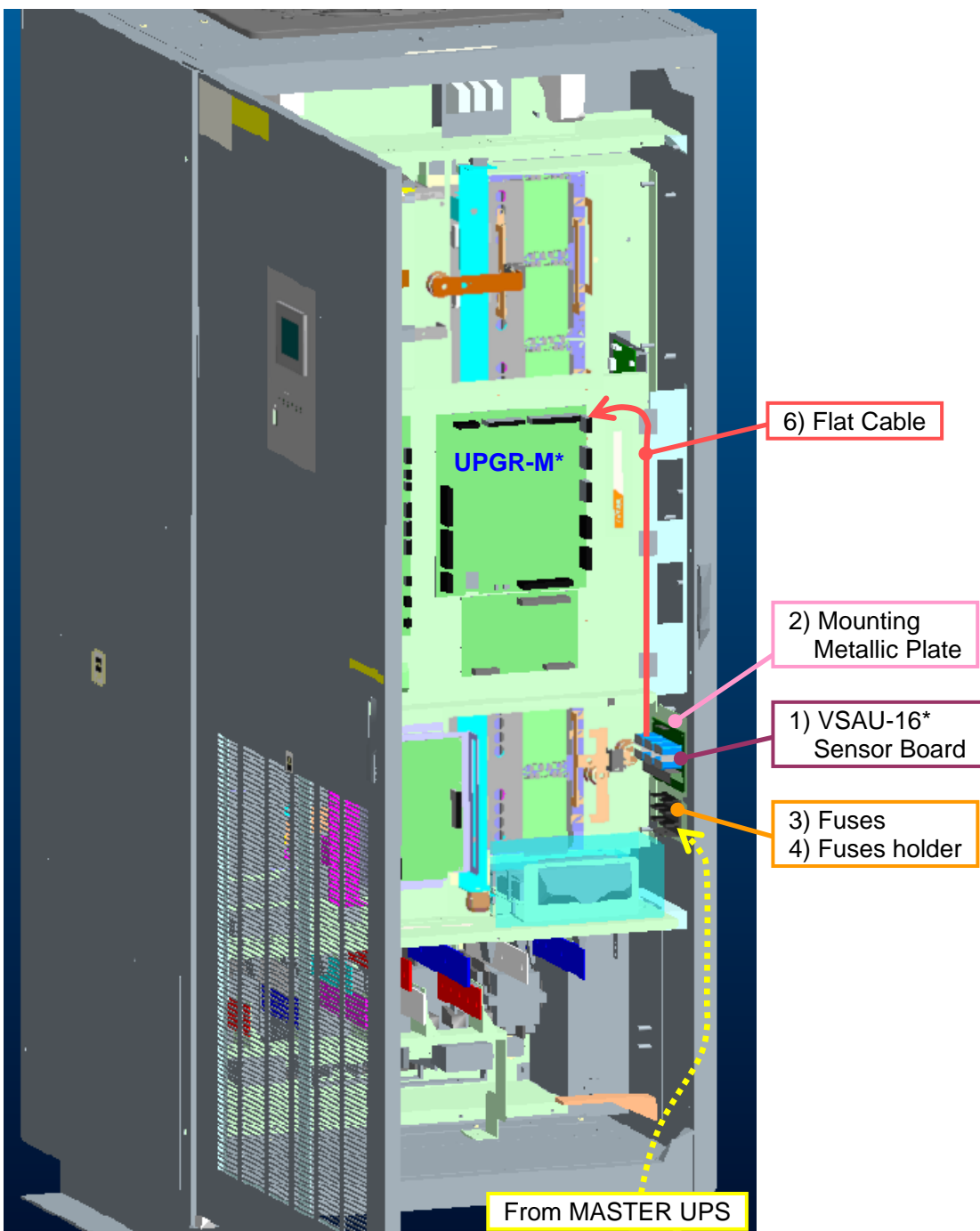


Figure 4-2: TOSHIBA Sync main parts location (SLAVE UPS)

## 5 MASTER UPS Installation Procedure



**CAUTION**

1. Prior to the installation of the parts, confirm that the AC input breaker, AC output breaker, Bypass input breaker and DC breaker are turned off. (De-energize the interior of the UPS.)
2. Then remove the metal cover plates from UPS.

1. Install the Fuse holder on the Mounting Metallic Plate.
  2. Insert three (3) Fuses into the Fuse holder.
  3. Stick the Fuse label on the Mounting Metallic Plate.
- .....
4. Install an assembly of Mounting Metallic Plate, which is mentioned above, into the UPS.
  5. Connect the wiring between the Bus-bars and the Fuse holder.
  6. Connect the field-installed wirings (between MASTER and SLAVE UPS) to the Fuse holder. Note: wires (qty. 3) should have 600V insulation and be #16AWG, multi-strand, twisted trio with ring lugs sized for #12 screws.

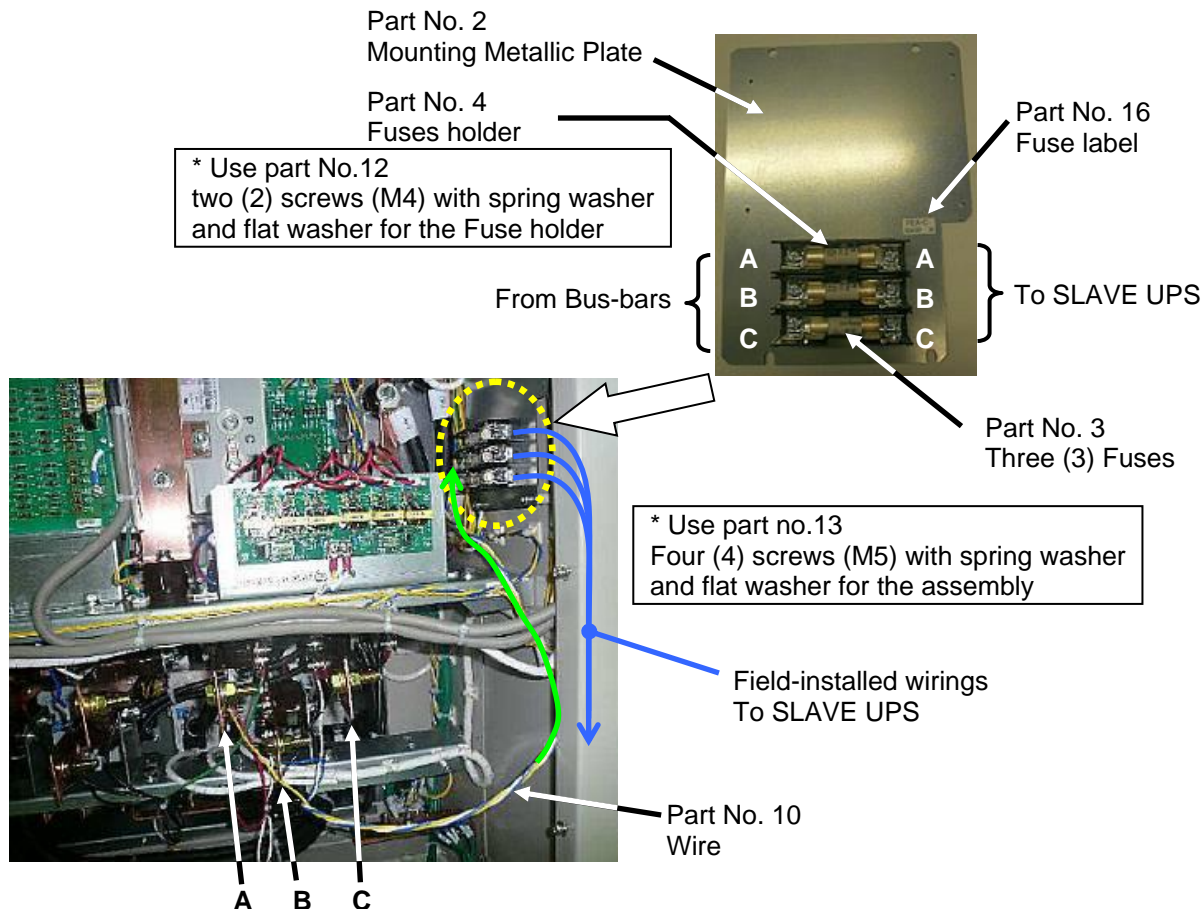


Figure 5-1: Installation procedure for MASTER UPS

## 6 SLAVE UPS Installation Procedure



### CAUTION

1. Prior to the installation of the parts, confirm that the AC input breaker, AC output breaker, Bypass input breaker and DC breaker are turned off. (De-energize the interior of the UPS.)
2. Then remove the metal cover plates from UPS.

1. Install the Fuse holder on the Mounting Metallic Plate.
  2. Insert three (3) Fuses into the Fuse holder.
  3. Stick the Fuse label on the Mounting Metallic Plate.
  4. Screw four (4) supporters with Spring washers (M3) and Flat washers (M3) on the Mounting Metallic Plate.
  5. Install the VS1 PCB, Sensor Board (VSAU-16\*), onto the supporters.
  6. Connect the wiring between the VS1 PCB and the Mounting Metallic Plate for grounding.
  7. Connect the wirings between the Fuse holder and the VS1 PCB.
  8. Connect the wirings between the terminals (UN and V, VN and W, WN and U) on the VS1 PCB.
- 
9. Install an assembly of Mounting Metallic Plate, which is mentioned above, into the UPS.
  10. Connect the Flat cable between the CN1 of VS1 PCB and the CN50 of UP1 PCB (UPGR-M\*).
  11. Connect the field-installed wirings (from MASTER UPS) to the Fuse holder.  
**Note:** wires (qty. 3) should have 600V insulation and be #16AWG, multi-strand, twisted trio with ring lugs sized for #12 screws.
  12. Connect the Jumper wiring between the terminal 13 and 14 of TN1 on IO1 PCB (IOAU-09\*).



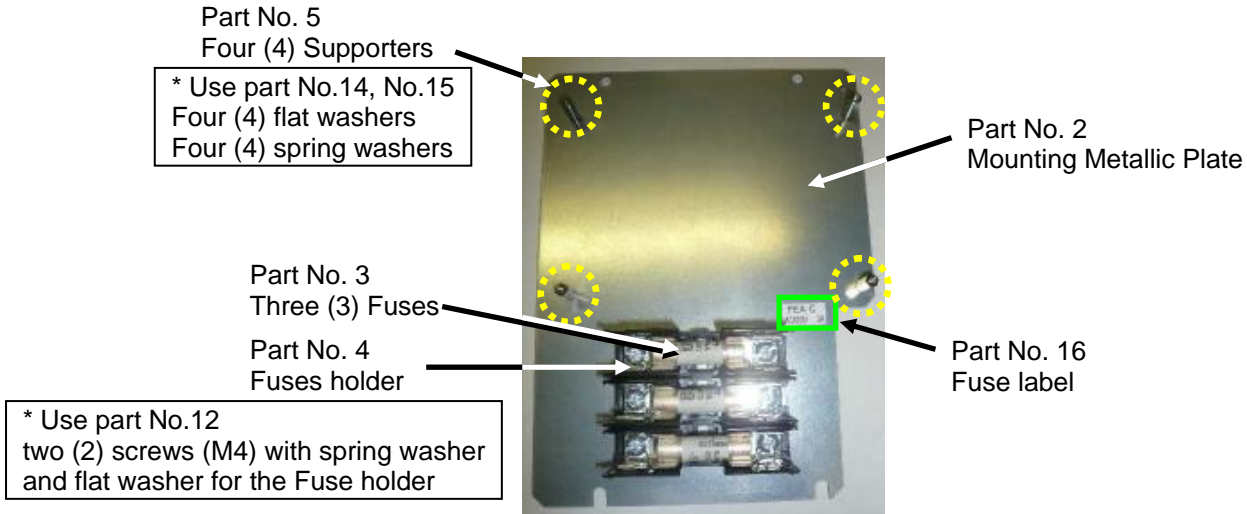


Figure 5-a. Installation procedure for SLAVE UPS (1)

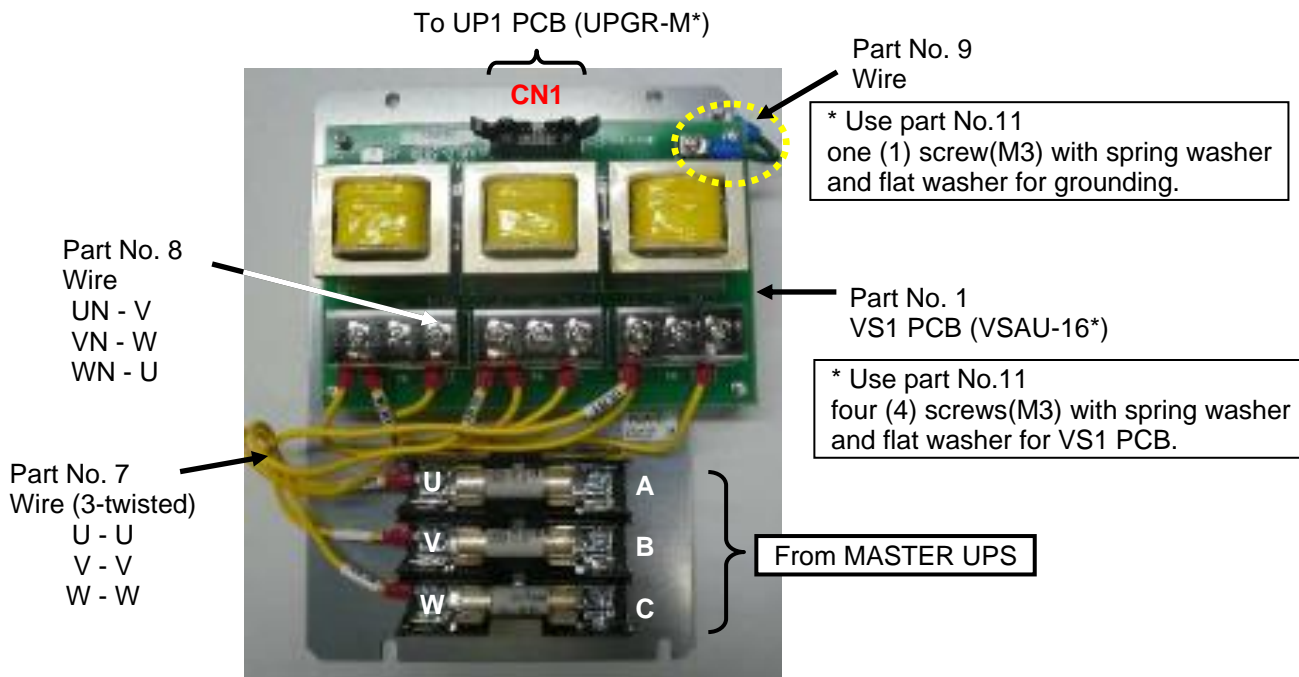


Figure 6-1: Installation procedure for SLAVE UPS (2)

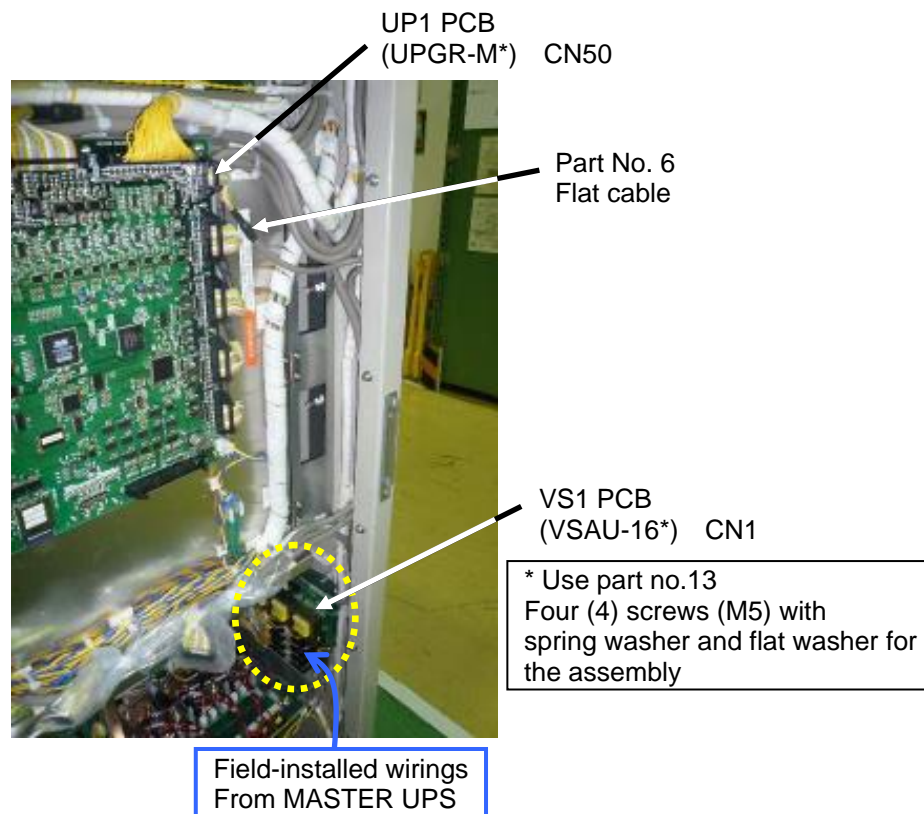


Figure 5-c. Installation procedure for SLAVE UPS (3)

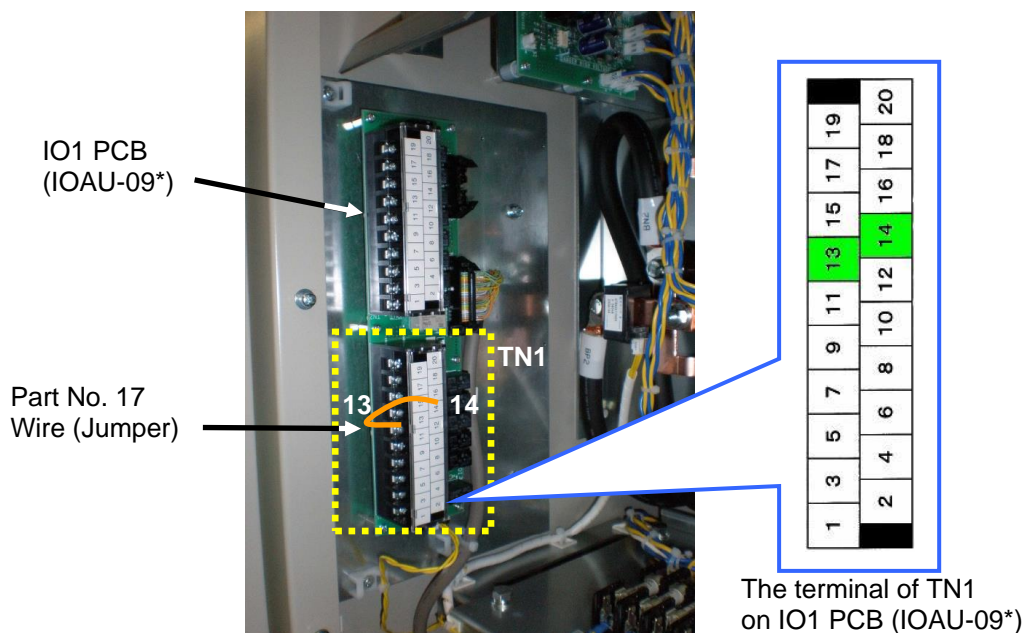



Figure 6-2: Installation procedure for SLAVE UPS (4)

## 7 SLAVE UPS Setting Procedure

\*The setting for MASTER UPS is unnecessary.

 <p><b>CAUTION</b></p>	<ol style="list-style-type: none"> <li>1. Before the UPS setting, install the metal cover plates for the UPS.</li> <li>2. Keep door closed except when the "MAINT" button located on the SW1 PCB (DPAU-81*) is pressed.</li> </ol>
---	--

### 1. Supply the AC input and the Bypass input voltage to the UPS.

Initialization will start. Under initializing, the UPS will automatically:

- Turn on contactor CB1;
- Initialize converter operation;
- Initialize inverter operation;

After initialization, LCD screen should appear.

(Refer to the **SERVICE MANUAL, 6-1. SMS Start-up Procedure** for details.)


### 2. Press the "MAINT" button located on the SW1 PCB (DPAU-81\*).

Maintenance screen will appear.

### 3. Press the "SETUP" tab on the Maintenance screen, then press the "INPUT PORT" button.

### 4. Press the "IN4" button, and select item "9: ANOTHER BUS. SYNC." by pressing

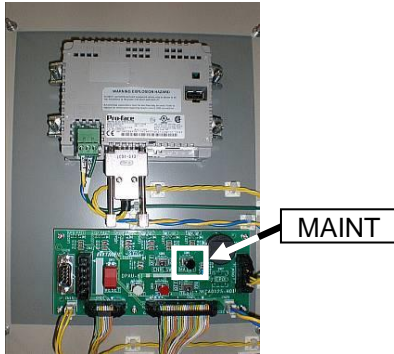
" ▼ " key then press "OK" button.

 <p><b>ATTENTION</b></p>	<ol style="list-style-type: none"> <li>1. As the "IN4" default setting, it may be "POWER DEMAND".</li> <li>2. Before making a change of the "IN4" setting, make sure that the POWER DEMAND function is defunct. (Contact Toshiba International Corporation, if POWER DEMAND function is under service.)</li> </ol>
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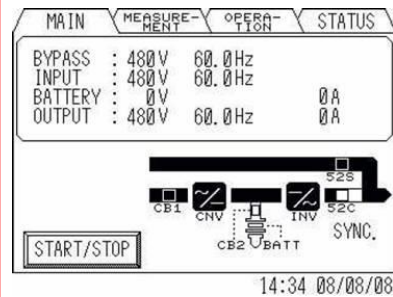
### 5. Press the "CLOSE" button, and confirm that "9: ANOTHER BUS. SYNC." is lay out.

### 6. Press the "MAINTENANCE" tab, then press the "MAIN MENU" button for completion of SLAVE UPS SETTING.

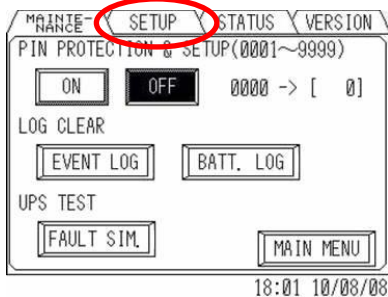
Press the "MAINT" button



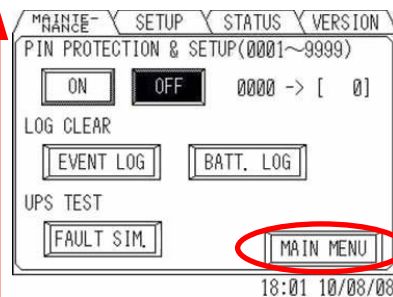
Return to "MAIN" screen



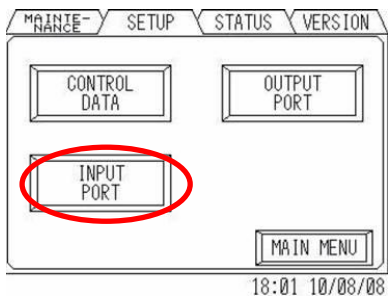
Press the "SETUP" tab



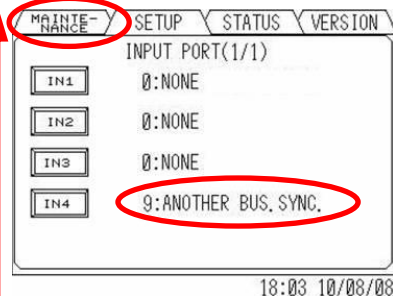
Return to "MAINTENANCE" screen



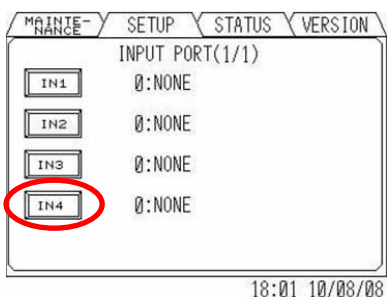
Press the "INPUT PORT" button



Confirm "9: ANOTHER BUS. SYNC."



Press the "IN4" button



Select item "9: ANOTHER BUS. SYNC."

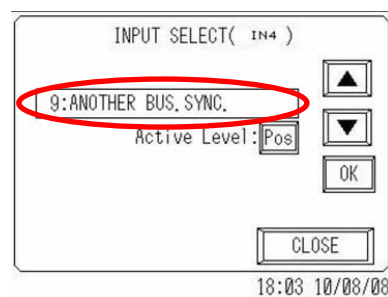


Figure 7-1: SLAVE UPS setting procedure

## 8 Verify Proper Setup

To confirm that the TOSHIBA SYNC circuit is functioning properly, during TOSHIBA SYNC operation, “Ath Bus Sync.” is displayed at the bottom of LCD screen as shown in Figure 8-1.

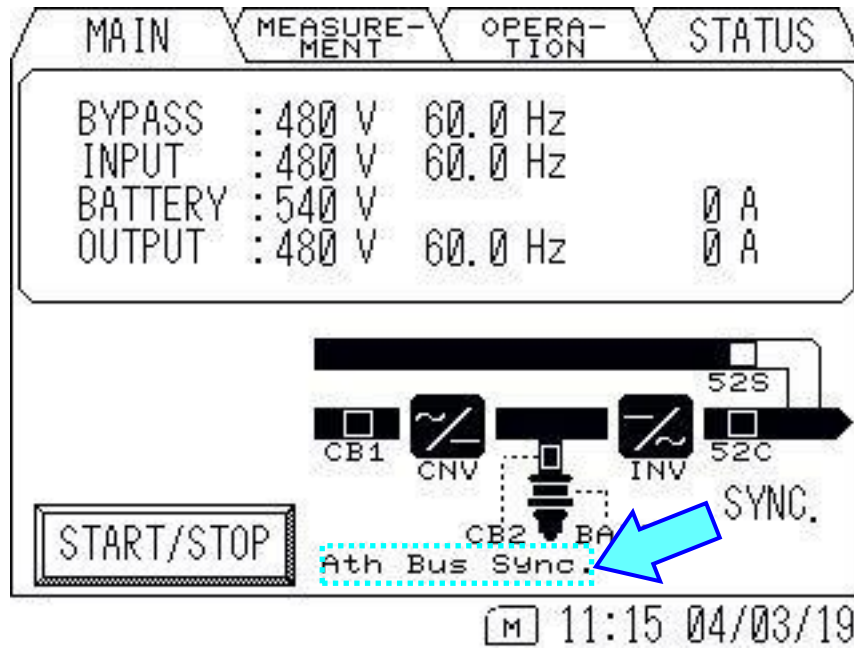


Figure 8-1: Example of TOSHIBA SYNC operation display

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# TOSHIBA

**TOSHIBA INTERNATIONAL CORPORATION**

**SOCIAL INFRASTRUCTURE SYSTEMS GROUP**

**POWER ELECTRONICS DIVISION**

13131 West Little York Rd., Houston, TX 77041

Tel: 855-803-7087 Fax 713-896-5212

US 800/231-1412 Canada 800/872-2192 Mexico 01/800/527-1204

[www.toshibaups.com](http://www.toshibaups.com)

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