

TOSHIBA

Toshiba G8000 Series Installation Manual

Uninterruptible power system (ups)

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February 2005 **TOSHIBA**

Uninterruptible Power System (UPS)

G8000 Series

Installation Manual

REQUIREMENT

Read this operation manual carefully before installing the UPS.

Retain this manual with the UPS for easy reference when required.

This manual was written for the consulting
engineer, architect, and electrical contractor.
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Related Manuals for Toshiba G8000 Series

[UPS Toshiba G8000 SERIES Installation And Operation Manual](#)

480/480 v 80/100/125/150/225/300/500 kw (120 pages)

[UPS Toshiba G8000 SERIES Installation And Operation Manual](#)

480/208 v 100/150 kw (74 pages)

[UPS Toshiba MBSB80-225-43 Dimensions](#)

150kva g8000 series ups 3-breaker maintenance bypass panel (1 page)

[Power Supply Toshiba Uninterruptible Power System\(UPS\) G9 Series Brochure & Specs](#)

Adjustable speed drives (6 pages)

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[Power Supply Toshiba TOSVERT VF-AS1 Instruction Manual](#)

Commercial power supply backup and commercial power supply/inverter switching (10 pages)

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(29 pages)

[Power Supply Toshiba W7 Series Brochure & Specs](#)

Toshiba adjustable speed drives product brochure (6 pages)

[Power Supply Toshiba TOSVERT VF-FS1 Series Function Manual](#)

Lonworks option unit - communication function manual (38 pages)

[Power Supply Toshiba Power TS4 Specifications](#)

Toshiba ts matching cabinet instruction manual (2 pages)

[Power Supply Toshiba QX7 Series Brochure & Specs](#)

Adjustable speed drives (6 pages)

Summary of Contents for Toshiba G8000 Series

[Page 1](#) Read this operation manual carefully before installing the UPS. Retain this manual with the UPS for easy reference when required. This manual was written for the consulting engineer, architect, and electrical contractor. Document Number: 57490-000 February 2005 © TOSHIBA Corporation 2005 All Rights Reserved.

[Page 2: Introduction](#)

The contents of this instruction manual shall not become a part of or modify any prior or existing agreement, commitment, or relationship. The sales contract contains the entire obligation of Toshiba International Corporation's UPS Division. The warranty contained in the contract between the parties is the sole warranty of Toshiba International Corporation's UPS

Division and any statements contained herein do not create new warranties or modify the existing warranty.

[Page 3](#) UNINTERRUPTIBLE POWER SUPPLY Complete the information below for the UPS system received. Unless otherwise specified, the warranty period for the UPS or UPS part is 36 months from the shipment date (see TIC bill of lading). Unless otherwise specified, the warranty period for a UPS battery is 24 months from the shipment date (see TIC bill of lading).

[Page 4](#) TOSHIBA is a registered trademark of the Toshiba Corporation. All other product or trade references appearing in this manual are registered trademarks of their respective owners.

[Page 5: General Safety Instructions](#)

2. General Safety Instructions DO NOT attempt to install, operate, maintain or dispose of this equipment until you have read and understood all of the product safety information and directions that are contained in this manual. Safety Alert Symbol The Safety Alert Symbol indicates that a potential personal injury hazard exists. The symbol is comprised of an equilateral triangle enclosing an exclamation mark.

[Page 6: Important Safety Instructions](#)

Misuse of this equipment could result in personal injury and/or CAUTION equipment damage. In no event will Toshiba Corporation be responsible or liable for either indirect or consequential damage or injury that may come from the use of this equipment.

[Page 7: Safety Precautions](#)

Special considerations are required when applying this UPS to the equipment (***) that affect human safety and/or maintain public services. Be sure to contact/inform Toshiba if it is such a case. The application without special consideration may cause serious accidents.

[Page 8](#) Do NOT modify the UPS, relocate after initial installation or replace parts by untrained personnel. Electrical shock, injury or UPS faults may result if non-certified technicians attempt to modify or relocate the UPS. Please contact Toshiba if you need UPS modifications or plan to move the UPS. PROHIBITED Transportation...

[Page 9: Installation Precautions](#)

Installation Precautions Personnel WARNING Please have a certified/qualified electrician install the UPS per local and/or national electric codes. UPS faults or improper operation may occur if not installed properly per codes and the installation manual. MANDATORY Transportation/Unpacking CAUTION Do not transport, move, store, or place the UPS on its side. Excessive force applied from heavy objects inside may damage the UPS.

[Page 10](#) Installation Environment CAUTION The UPS is to be installed in a controlled environment. Improper storage and installation environment may deteriorate insulation, shorten component life and cause malfunctions. Keep the installation environment per standard described in Table MANDATORY 5.1. Table 5.1 - UPS Installation Environment Standard Item Environment standard Installation location Indoors...

[Page 11](#) Do NOT install the UPS close to a water source. It may cause electrical shock, UPS fault, or other accidents. PROHIBITED Please ask Toshiba or authorized representatives where the UPS and/or components are to be disposed. It is illegal to dispose of certain components without conforming to environmental regulation for industrial/commercial waste.

[Page 12](#) Wiring/Connection WARNING Be careful when connecting the UPS to the battery panel. A wrong connection may cause damage to the UPS, battery, or charger. Perform wiring and connections with correct polarity. PROHIBITED The tightening torque of screws must conform to the tightening criteria. Loose connections may cause fire due to heating.

[Page 13](#) Warning label check (1) Warning label locations on the UPS are shown in the Figures below. Please make sure these warning labels are placed in specified spots. (2) Please read all warning labels and understand what they mean. (3) Make sure warning labels are always legible. Do NOT allow the labels to be removed or covered.

[Page 14](#) Locations of the Warning Labels (150/180/225 kVA). Figure 5.2 - 150/180/225kVA UPS exterior/interior showing warning labels. Figure 5.3 - 250/300kVA UPS exterior/interior

showing warning labels.

[Page 15](#) The meanings of the following label symbols are as follows: The lightning flash with arrowhead within a triangle is intended to tell the user or the service personnel that parts inside the product are a risk of electric shock to personnel. The ground symbol in a blue circle is intended to tell the user or the service personnel the location of the equipment-grounding conductor.

[Page 16](#) DANGER DANGER RISK OF ELECTRIC SHOCK RISK OF ELECTRIC SHOCK OR ELECTRIC ENERGY-HIGH CURRENT LEVELS Capacitors stay charged after power has been shut off. Dangerous electric charge may be stored in capacitor and associated circuitry. Accidental contact with live parts can cause personal injury and death.

[Page 17: Table Of Contents](#)

6. Contents Introduction GENERAL SAFETY INSTRUCTIONS IMPORTANT SAFETY INSTRUCTIONS Safety Precautions Installation Precautions Contents Dimensions and Weight Transportation Transportation by a crane Transportation by a forklift Storage 10.0 Installation 10.1 Unpacking 10.2 UPS Clearance 10.3 Anchor Bolts 11.0 Wiring 11.1 Overview 11.2 Terminal Blocks and Power Cables...

[Page 18: Dimensions And Weight](#)

7. Dimensions and Weight Figure 7.1~7.3 show the outline dimensions and weights of G8000 UPS. Weight 100kVA: 1,000kg (2,200lbs) (50.4") 125kVA: 1,200kg (2,640lbs) (31.5") (74.8") (41.3") (3.9") Earth Ground Bus Figure 7.1 - 100/125kVA UPS Exterior dimensions (front & right side).

[Page 19](#) Weight 150kVA: 1,200kg (2,640lbs) (55.1") 180/225kVA: 1,500kg (3,300lbs) (31.5") (74.8") (3.9") (46") Earth Ground Bus Figure 7.2 - 150/180/225kVA UPS Exterior dimensions (front & right side).

[Page 20](#) (76.8") (35.4") Weight: 2,000kg (4,400lbs) Earth Ground Bus (74.8") (3.9") Earth Ground Bus Figure 7.3 - 250/300kVA UPS Exterior dimensions (front & right side).

[Page 21: Transportation](#)

8. Transportation Avoid vibration or shock exceeding 0.5 G to the UPS. Failing to observe this precaution may cause damage to the unit. Do NOT expose the UPS to water. CAUTION Exposing the UPS to water may damage or deteriorate the UPS. The UPS is packed in a crate to bear external force well during transportation.

[Page 22](#) Figure 8.2 and 8.3 show unacceptable examples for lifting. More than Uneven 60deg. Wires Figure 8.2 - Angle more than 60 Figure 8.3 - Uneven wires Make sure that the UPS doesn't swing or tilt. Then lift the UPS. Keep UPS level while lifting. Minimize the impact of a sudden stop when lowering the UPS to a resting surface.

[Page 23: Transportation By A Forklift](#)

8.2 Transportation by a forklift Space for the forks is provided underneath the UPS. Insert the forks into the space shown in Figure 8.6. Make sure forklift's maximum load is enough to carry UPS. Refer to chapter 7 "Dimension and Weight" for UPS weight.

[Page 24: Storage](#)

9. Storage Observe following points when storing the UPS. (1) Be sure to store UPS indoors. (2) The best temperature at storing location is 20~25° C (68~77° F). In case this temperature is difficult to be maintained, a temperature window of 0~40° C (32~104° ...

[Page 25: Installation](#)

10. Installation When transporting the UPS, do not tilt the UPS more than 10 from upright. Tilt the UPS more than 10 may cause personal injury in the event that it falls or is overturned. Do not transport, move, store, or place the UPS on its side. Excessive force applied from heavy objects placed inside of the cabinet may damage the UPS.

[Page 26: Unpacking](#)

(4) Do not remove the polyvinyl chloride cover, if provided, until installation. (5) Packing materials should be disposed by the appropriate means after unpacking. (6) In case of any abnormalities, immediately report this information to Toshiba or authorized representatives.
10.2 UPS Clearance When the UPS is installed, maintain the clearance around the UPS as shown in Figure 10.1.

[Page 27: Anchor Bolts](#)

10.3 Anchor bolts Tighten the anchor bolts to secure the UPS on the floor. Tightening detail is shown in Figure 10.2. Anchor bolts of 12mm (1/2") diameter are to be used, clearance holes of 16mm (5/8") diameter are provided in the UPS base. 4 screw holes 4 of 16mm-diameter (Side View)

[Page 28: Wiring](#)

11. Wiring 11.1 Overview Figure 11.1 shows the external wiring diagram of G8000 UPS. Wiring work is summarized below. 1) Power cable connection for AC input, Bypass Input, AC output, and DC input at terminal blocks or buses. 2) External breaker provision at AC input, Bypass Input, AC output, and DC input. 3) Earth ground wire at grounding electrode.

[Page 29: Terminal Blocks And Power Cables](#)

11.2 Terminal Blocks and Power Cables The terminal blocks are shown in Figure 11.2 and are located inside at the bottom of each 100/125/150/180/225kVA UPS. External cable size and tightening torque are recommended in the Table 11.1~11.5. Only copper wires are allowed for external cables.

[Page 30](#) Table 11.2 Recommended Cable Size and Tightening Torque for 125kVA UPS. Block Number Cable Size Tightening Torque AWG 4/0 or larger 3.2 kg-m (275 in-lbs) AWG 4/0 or larger 3.2 kg-m (275 in-lbs) AWG 4/0 or larger 3.2 kg-m (275 in-lbs) AWG 4/0 or larger 3.2 kg-m (275 in-lbs) AWG 4/0 or larger...

[Page 31](#) Table 11.4 Recommended Cable Size and Tightening Torque for 180kVA UPS. Block Number Cable Size Tightening Torque Two 2/0 or larger 5.8 kg-m (500 in-lbs) Two 2/0 or larger 5.8 kg-m (500 in-lbs) Two 2/0 or larger 5.8 kg-m (500 in-lbs) Two 2/0 or larger 5.8 kg-m (500 in-lbs) Two 2/0 or larger...

[Page 32](#) Three cable knockout plates are provided at bottom of each 100/125/150/180/225kVA UPS. Holes are recommended in Figure 11.3. The installing electrical contractor must punch the 5 holes. Plate #1 Plate #2 Plate #3 4" Dia 0.8" 2" Dia. 0.4" Control Battery AC Output AC Input...

[Page 33](#) Table 11.6 Recommended Cable Size and Tightening Torque for 250kVA UPS. Torque to tighten Bus Number Cable Size the terminal bus Two 250MCM or larger 2.5~4.5 kg-m (215~386 in-lbs) Two 250MCM or larger 2.5~4.5 kg-m (215~386 in-lbs) Two 250MCM or larger 2.5~4.5 kg-m (215~386 in-lbs) Two 350MCM or larger 2.5~4.5 kg-m (215~386 in-lbs)

[Page 34](#) Table 11.8 Recommended Lugs. Recommendation At Terminal Bus # Vendor Catalog # TA-600 ILSCO AU-600 TA-600 ILSCO T3A2-600N TA-600 AU-600 ILSCO TA-600, T3A2-600N TA-600 AU-600 Four cable knockout plates are provided at the top of the 250/300kVA UPS. See Figure 11.5 for hole information.

[Page 35: External Breakers](#)

11.3 External Breakers The G8000 UPS units are not equipped with circuit breakers. The electrical contractor should provide the external breakers for AC input, Bypass input, DC input, and AC output. See Figure 11.1 for the position of the breakers. Table 11.9 shows the minimum rating for each capacity of G8000 UPS breakers.

[Page 36: Grounding Wire](#)

11.4 Grounding Wire Be sure to ground the UPS as specified. Using the UPS without a proper ground will deteriorate the WARNING insulation and may cause electric shock due to leakage currents. The resistance to ground should be 10 or less. A grounding bus is provided on the inside of the each unit.

[Page 37: Control Wires](#)

11.5 Control Wires The terminal layout of control wires at TB1 is shown in Table 11.10. Table 11.10 External Connections Signal Name Operation Output Low Battery Close at Low Battery Output Backup Operation Close while Backup Operation Output Fault Close by Faults Output Inverter Supply Close during Normal Operation...

[Page 38: Grounding Configuration](#)

11.6 Grounding configuration This section describes the grounding configuration with AC input service entrance. As inadequate grounding configuration causes problems on start-up, connections for the ground line and the neutral line must be done properly according to the system configuration. 11.6.1 Recommended configuration with input neutral grounded Figure 11.8 shows recommended grounding configuration with input neutral grounded.

[Page 39](#) 11.6.2 Grounding configuration without input neutral When the neutral line cannot be fed to the bypass input from the input source which is wye-connected, the neutral terminal in the UPS cabinet must be connected to the ground bus in order to stabilize the UPS potential as shown in Figure 11.10.

[Page 40](#) 11.6.4 Grounding configuration with corner-grounded delta-input If a phase of delta-input source is grounded (B-phase for example), the ground bus in the UPS cabinet should NOT be connected to the neutral terminal of UPS output. So, the jumper cable should be disconnected.

[Page 41](#) Comments: Creation Date: 01/19/05 1:00 PM Change Number: Last Saved On: 02/07/05 7:12 AM Last Saved By: Toshiba Total Editing Time: 317 Minutes Last Printed On: 02/07/05 8:47 AM As of Last Complete Printing Number of Pages: Number of Words: 5,307 (approx.)