

VAX 6000: Installing the H7236-A Battery Backup Option

Order Number EK-60BBA-IN-001

This manual is intended for Digital customer service engineers and self-maintenance customers installing the H7236-A battery backup option.

**digital equipment corporation
maynard, massachusetts**

First Printing, December 1990

The information in this document is subject to change without notice and should not be construed as a commitment by Digital Equipment Corporation.


Digital Equipment Corporation assumes no responsibility for any errors that may appear in this document.

The software, if any, described in this document is furnished under a license and may be used or copied only in accordance with the terms of such license. No responsibility is assumed for the use or reliability of software or equipment that is not supplied by Digital Equipment Corporation or its affiliated companies.

Copyright ©1990 by Digital Equipment Corporation.

All Rights Reserved.
Printed in U.S.A.

The following are trademarks of Digital Equipment Corporation:

DEMNA	PDP	VAXcluster
DEC	ULTRIX	VAXELN
DEC LANcontroller	UNIBUS	VMS
DECnet	VAX	XMI
DECUS	VAXBI	

FCC NOTICE: The equipment described in this manual generates, uses, and may emit radio frequency energy. The equipment has been type tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such radio frequency interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference, in which case the user at his own expense may be required to take measures to correct the interference.

Contents

Preface	v
---------	---

Chapter 1 Introduction

1.1 Battery Backup Unit Specifications	1-2
1.2 Battery Backup Kit Contents	1-5

Chapter 2 Battery Backup Unit Installation

2.1 Battery Backup Unit Installation Overview	2-2
2.2 Step 1, Remove the H405 AC Power Controller, if Necessary	2-4
2.3 Step 2, Install the H405-E/F AC Power Controller, if Necessary	2-6
2.4 Step 3, Install the Guide Rail Plate Assembly	2-8
2.4.1 Move the ESD Strap, if Necessary	2-8
2.4.2 Install the Guide Rail Plate Assembly	2-10
2.4.3 Install the Chassis Retainer Brackets	2-12
2.5 Step 4, Install the H7236-A Battery Backup Unit	2-14
2.5.1 Install the Rear Clamping Assembly	2-14
2.5.2 Install the Battery Backup Unit	2-16
2.5.3 Secure the Battery Backup Unit	2-18

Chapter 3 Battery Backup Unit Indicators and Switches

3.1 Battery Backup Unit Indicators	3-2
3.2 Battery Backup Unit Switches	3-4

Index

Figures

1-1	Battery Backup Unit Location	1-2
2-1	Overview of BBU Installation	2-2
2-2	H405 AC Power Controller Removal	2-4
2-3	H405-E/F AC Power Controller Replacement	2-6
2-4	Relocate the Front ESD Strap	2-8
2-5	Install the Guide Rail Plate Assembly	2-10
2-6	Shim Orientation and Chassis Retainer Brackets	2-12
2-7	Rear Clamping Assembly	2-14
2-8	Chassis Retainer Assembly	2-15
2-9	H7236-A Battery Backup Unit Installation	2-16
2-10	BBU Cabling	2-18
3-1	BBU Indicators (Rear View)	3-2
3-2	Internal BBU Switches (Front View)	3-4

Tables

1	VAX 6000 Series Documentation	vi
2	VAX 6000 Model Level Documentation	vii
3	Associated Documents	viii
1-1	H7236-A Battery Backup Unit Specifications	1-3
1-2	Battery Backup Kit H7236-A	1-5
2-1	H405-E/F Replacement Table	2-3
3-1	H7236-A Indicators	3-3

Preface

Intended Audience

This manual is intended for Digital customer service engineers and self-maintenance customers installing the H7236-A battery backup option.

Document Structure

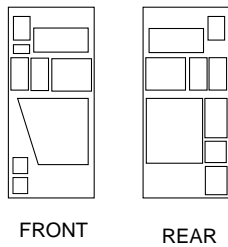
This manual uses a structured documentation design. There are many topics, organized into small sections for efficient reference. Each topic begins with an abstract. You can quickly gain a comprehensive overview by reading only the abstracts. Next is an illustration or example, which also provides quick reference. Last in the structure is descriptive text.

This manual has three chapters, as follows:

- **Chapter 1, Introduction**, gives an overview of the H7236-A battery backup unit, including specifications.
- **Chapter 2, Battery Backup Unit Installation**, gives instructions on how to install the battery backup unit in the system cabinet.
- **Chapter 3, Battery Backup Unit Indicators and Switches**, describes the battery backup unit indicators and switches and their functions.

Conventions Used in This Document

The icons shown below are used in illustrations for designating part placement in VAX 6000 series systems. A shaded area in the icon shows the location of the component or part being discussed.



VAX 6000 Series Documents

There are two sets of documentation: manuals that apply to all VAX 6000 series systems and manuals that are specific to one VAX 6000 model. Table 1 lists the manuals in the VAX 6000 series documentation set.

Table 1: VAX 6000 Series Documentation

Title	Order Number
Operation	
<i>VAX 6000 Series Owner's Manual</i>	EK-600EA-OM
<i>VAX 6000 Series Vector Processor Owner's Manual</i>	EK-60VAA-OM
<i>VAX 6000 Vector Processor Programmer's Guide</i>	EK-60VAA-PG
Service and Installation	
<i>VAX 6000 Platform Technical User's Guide</i>	EK-600EA-TM
<i>VAX 6000 Series Installation Guide</i>	EK-600EA-IN
<i>VAX 6000 Installationsanleitung</i>	EK-600GA-IN
<i>VAX 6000 Guide d'installation</i>	EK-600FA-IN

Table 1 (Cont.): VAX 6000 Series Documentation

Title	Order Number
Service and Installation	
<i>VAX 6000 Guia de instalacion</i>	EK-600SA-IN
<i>VAX 6000 Platform Service Manual</i>	EK-600EA-MG
Options and Upgrades	
<i>VAX 6000 XMI Conversion Manual</i>	EK-650EA-UP
<i>VAX 6000: Installing MS65A Memories</i>	EK-MS65A-UP
<i>VAX 6000: Installing the H7236-A Battery Backup Option</i>	EK-60BBA-IN
<i>VAX 6000: Installing the FV64A Vector Option</i>	EK-60VEA-IN
<i>VAX 6000: Installing the VAXBI Option</i>	EK-60BIA-IN

Manuals specific to models are listed in Table 2.

Table 2: VAX 6000 Model Level Documentation

Title	Order Number
Models 200/300/400	
<i>VAX 6000 Model 300 and 400 Service Manual</i>	EK-624EA-MG
<i>VAX 6000: Installing Model 200/300/400 Processors</i>	EK-6234A-UP
Model 500	
<i>VAX 6000 Model 500 Mini-Reference</i>	EK-650EA-HR
<i>VAX 6000 Model 500 Service Manual</i>	EK-650EA-MG
<i>VAX 6000 Model 500 System Technical User's Guide</i>	EK-650EA-TM
<i>VAX 6000: Installing Model 500 Processors</i>	EK-KA65A-UP

Associated Documents

Table 3 lists other documents that you may find useful.

Table 3: Associated Documents

Title	Order Number
System Hardware Options	
<i>VAXBI Expander Cabinet Installation Guide</i>	EK-VBIEA-IN
<i>VAXBI Options Handbook</i>	EB-32255-46
System I/O Options	
<i>CIBCA User Guide</i>	EK-CIBCA-UG
<i>CIXCD Interface User Guide</i>	EK-CIXCD-UG
<i>DEC LANcontroller 200 Installation Guide</i>	EK-DEBNI-IN
<i>DEC LANcontroller 400 Installation Guide</i>	EK-DEMNA-IN
<i>InfoServer 100 Installation and Owners Guide</i>	EK-DIS1K-IN
<i>KDB50 Disk Controller User's Guide</i>	EK-KDB50-UG
<i>KDM70 Controller User Guide</i>	EK-KDM70-UG
<i>RRD40 Disc Drive Owner's Manual</i>	EK-RRD40-OM
<i>RA90/RA92 Disk Drive User Guide</i>	EK-ORA90-UG
<i>SA70 Enclosure User Guide</i>	EK-SA70E-UG
Operating System Manuals	
<i>Guide to Maintaining a VMS System</i>	AA-LA34A-TE
<i>Guide to Setting Up a VMS System</i>	AA-LA25A-TE
<i>Introduction to VMS System Management</i>	AA-LA24A-TE
<i>ULTRIX-32 Guide to System Exercisers</i>	AA-KS95B-TE
<i>VMS Upgrade and Installation Supplement: VAX 6000 Series</i>	AA-LB36C-TE
<i>VMS Networking Manual</i>	AA-LA48A-TE
<i>VMS System Manager's Manual</i>	AA-LA00A-TE
<i>VMS VAXcluster Manual</i>	AA-LA27B-TE

Table 3 (Cont.): Associated Documents

Title	Order Number
Peripherals	
<i>HSC Installation Manual</i>	EK-HSCMN-IN
<i>H4000 DIGITAL Ethernet Transceiver Installation Manual</i>	EK-H4000-IN
<i>Installing and Using the VT320 Video Terminal</i>	EK-VT320-UG
<i>RV20 Optical Disk Owner's Manual</i>	EK-ORV20-OM
<i>SC008 Star Coupler User's Guide</i>	EK-SC008-UG
<i>TA78 Magnetic Tape Drive User's Guide</i>	EK-OTA78-UG
<i>TA90 Magnetic Tape Subsystem Owner's Manual</i>	EK-OTA90-OM
<i>TK70 Streaming Tape Drive Owner's Manual</i>	EK-OTK70-OM
<i>TU81/TA81 and TU/81 PLUS Subsystem User's Guide</i>	EK-TUA81-UG
VAX Manuals	
<i>VAX Architecture Reference Manual</i>	EY-3459E-DP
<i>VAX Systems Hardware Handbook — VAXBI Systems</i>	EB-31692-46
<i>VAX Vector Processing Handbook</i>	EC-H0739-46

Chapter 1

Introduction

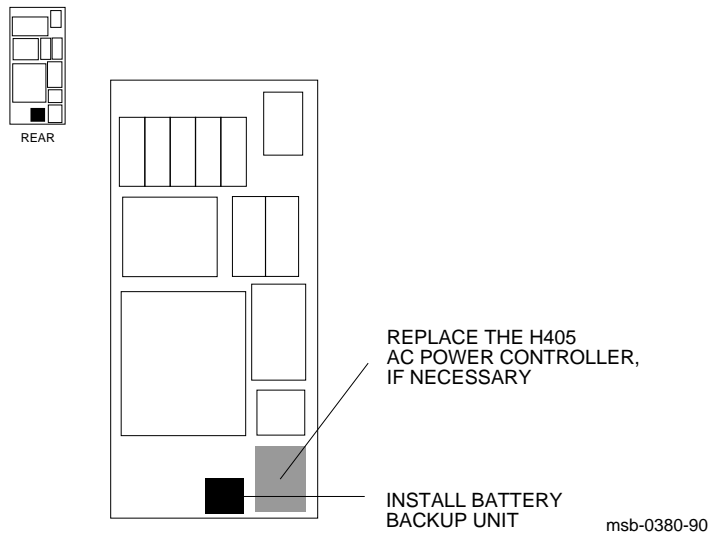
This chapter describes the H7236-A battery backup unit. Sections include:

- Battery Backup Unit Specifications
- Battery Backup Kit Contents

1.1 Battery Backup Unit Specifications

The battery backup unit (BBU) is installed adjacent to the H405 AC power controller. If the system has imbedded storage in one slot, install the BBU next to the SA70.

Figure 1-1: Battery Backup Unit Location



The H7236-A BBU is a new battery backup unit for the VAX 6000 series. It can be installed in an XMI-2 VAX 6000 (cabinet number H9657-CA/CB) or in a Model 200, 300, or 400 that has been upgraded to a Model 500 using the full power and packaging upgrade kit H9657-CU. If the H405 AC power controller is not at the required revision (see Table 2-1), it must be replaced.

NOTE: *If an earlier model has been upgraded to a Model 500 using the H9657-CX upgrade kit, battery backup is not supported.*

The BBU will not provide backup power for an expander cabinet configuration.

The H7236-A provides system ride-through capabilities for power losses of up to one second. Momentary lapses in power, therefore, have no effect on the system. For power losses greater than one second, the BBU provides power for up to 10 minutes to the entire XMI side of the system. If power does not return after one second, an orderly shutdown of the VAXBI side is initiated. The caches are then flushed and memory is saved. If power is returned within 10 minutes, the system performs a warm restart.

Table 1–1 lists the battery backup unit specifications.

Table 1–1: H7236-A Battery Backup Unit Specifications

Physical		cm (in)
	Height	20.8 (8.2)
	Width	26.7 (10.5)
	Depth	63.5 (25.0)
	Weight	45.5 kg (100 lbs)
<hr/>		
Environmental		
Operating temperature		10° to 40°C (50° to 104°F)
Operating humidity		10% to 90% relative humidity
Altitude	Non-operating	0 to 9.1 km (0 to 30,000 ft)
	Operating	0 to 2.4 km (0 to 8000 ft)

Table 1–1 (Cont.): H7236-A Battery Backup Unit Specifications

BBU Cooling System

Type	Air moving device	
Air mover	Single fan, operates when BBU is supplying power	
Air source	Ambient air	

Electrical

AC current (max)	60 Hz	4 A (120 V)
	50 Hz	2 A (240 V)
Input voltage	60 Hz	120 VRMS nominal
	50 Hz	240 VRMS nominal
Output voltage	220 V DC to 360 V DC	
Output energy	2.2 Kw for 2 seconds 1.0 Kw for up to 10 minutes	
Output current	15 A DC max 5 A typical during 10 minute run	
Battery life	5 years at	25°C
	4 years at	30°C
	2.3 years at	35°C
	1.3 years at	40°C

1.2 Battery Backup Kit Contents

To add battery backup to a VAX 6000 Model 500 you need the H7236-A battery backup unit kit. Table 1-2 lists the components in the BBU kit.

Be sure all items required for installing the BBU are present before starting the installation procedure. Table 1-2 lists the H7236-A BBU kit contents.

WARNING: *The H7236-A battery backup unit weighs 100 pounds. Use two people to lift or move this unit.*

Table 1-2: Battery Backup Kit H7236-A

Part Number	Quantity	Description
30-31264-01	1	Power system, standby uninterrupt
70-25686-01	1	Rail chassis assembly
70-25687-01	1	Bracket rail assembly
74-36464-01	1	Bar, insert nut
90-00039-26	4	Screw, Mach 10-32 FLT
90-06078-01	2	Screw, Mach 10-32 PAN
90-06664-00	2	Washer, flat SST
90-07906-00	2	Washer, helical split steel
74-36160-01	2	Block wedge
74-35857-02	1	Bracket, chassis retaining, bot
74-35857-01	1	Bracket, chassis retaining, top
74-35860-01	2	Bracket, chassis retainer, rear
90-06637-00	6	Washer, lock internal steel
12-24007-02	4	Screw, SHLD 10-32 CAP
12-24007-01	2	Screw, SHLD 10-32 CAP
12-21368-02	2	Screw, sems 10-32 PAN

Table 1–2 (Cont.): Battery Backup Kit H7236-A

Part Number	Quantity	Description
90-06074-02	2	Screw, MACH 10-32 FLT
17-00442-27	1	Power cord 3 ft.
74-39395-01	2	Shim
90-07880-00	1	Cable tie
90-08264-00	1	Cable tie mount, adhesive backed
90-09228-10	6	Screw, sem 10-32 PAN
17-02975-01	1	Cable assy, 15 cond, molded, shielded
17-02485-01	1	Wire harn assy 04conn 16AWG 6pos U
90-07082-00	4	Clamp, cable, screw mtd. 5/16"
EK-60BBA-IN	1	<i>VAX 6000: Installing the H7236-A Battery Backup Option</i>

Chapter 2

Battery Backup Unit Installation

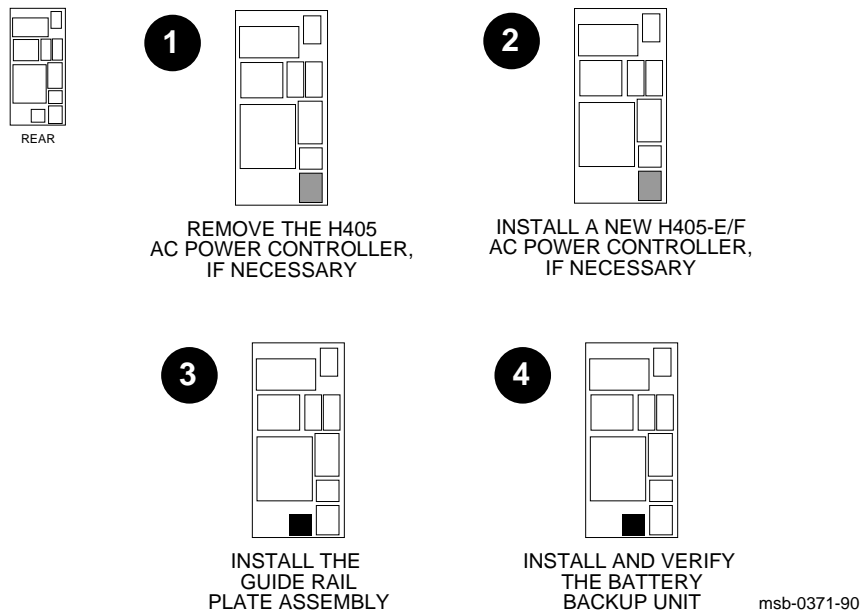
This chapter describes the installation of the H7236-A battery backup unit. The H405 AC power controller must be replaced (Steps 1 and 2) if it is not at the minimum revision level listed in Table 2-1. Sections include:

- Battery Backup Unit Installation Overview
- Step 1, Remove the H405 AC Power Controller, if Necessary
- Step 2, Install the H405-E/F AC Power Controller, if Necessary
- Step 3, Install the Guide Rail Plate Assembly
 - Move the ESD Strap, if Necessary
 - Install the Guide Rail Plate Assembly
 - Install the Chassis Retainer Brackets
- Step 4, Install the H7236-A Battery Backup Unit
 - Install the Rear Clamping Assembly
 - Install the Battery Backup Unit
 - Secure the Battery Backup Unit

2.1 Battery Backup Unit Installation Overview

The H7236-A battery backup unit can be installed in an XMI-2 VAX 6000 or in a Model 200, 300, or 400 that has been upgraded to a Model 500 (with the full power and packaging upgrade kit H9657-CU).

Figure 2-1: Overview of BBU Installation



2-2 VAX 6000: Installing the H7236-A Battery Backup Option

If you are installing the BBU in an XMI-2 VAX 6000, go to Section 2.4.

If you are installing the BBU in a system that has undergone a full power and packaging upgrade, the following should have been done:

1. The H7231-N BBU should have been removed
2. The H7206-A power and logic unit should have been replaced by an H7206-B power and logic unit

These two hardware changes are both needed to install the H7236-A BBU in a full power and packaging upgrade. If for some reason these two steps have not been completed, complete them now. See the *VAX 6000 XMI Conversion Manual*, EK-650EA-UP.

Next, you will examine the revision level of the H405 AC power controller, and upgrade if necessary.

Table 2-1: H405-E/F Replacement Table

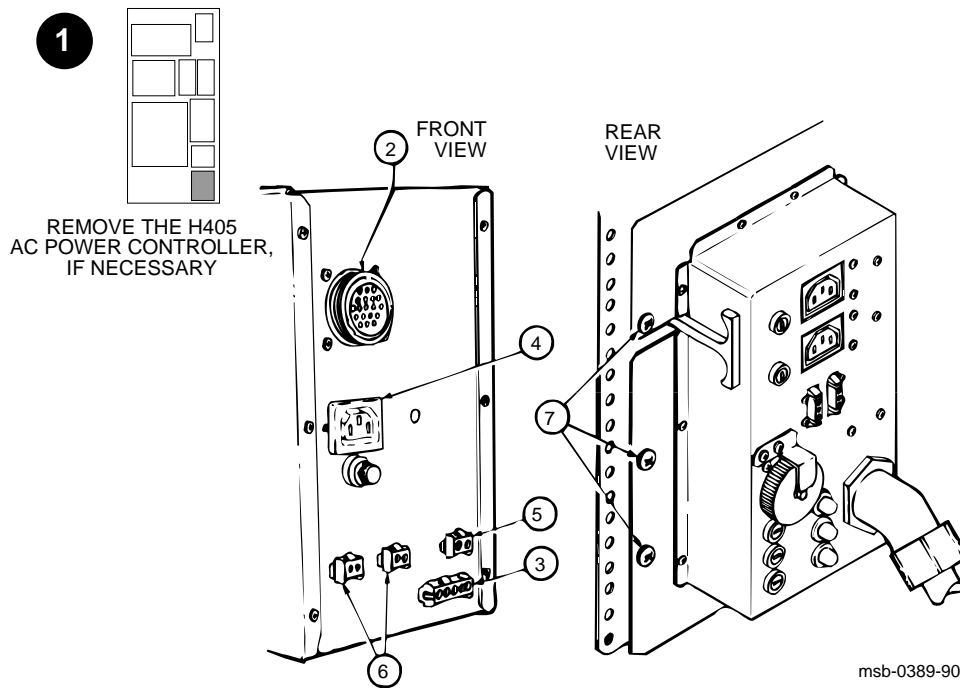
Unit	Minimum Revision	Replacement Information
H405-E, 208V 60 Hz	Rev F07	Replace if at revision A, B, C, D, or E
H405-F, 380/416V 50 Hz	Rev H07	Replace if at revision A, B, C, D, E, F, or G

2.2 Step 1, Remove the H405 AC Power Controller, if Necessary

Remove the H405 AC power controller using a large Phillips screwdriver. The assembly has six captive screws and seven cables.

NOTE: Remove the H405-E only if it is revision A through E. Remove the H405-F only if it is revision A through G. Other revisions need NOT be removed. The revision level is printed on the AC power controller unit.

Figure 2-2: H405 AC Power Controller Removal



1. Perform an orderly shutdown of the system.
 - Turn the upper key switch on the front control panel to the Off (0) position.
 - Pull the circuit breaker on the H405 AC power controller to the Off position.
 - Unplug the system power cord.

WARNING: *High voltages are present in the H7206-B power and logic unit. Before performing the following steps, wait 2 minutes after power has been removed from the system before working on the system.*

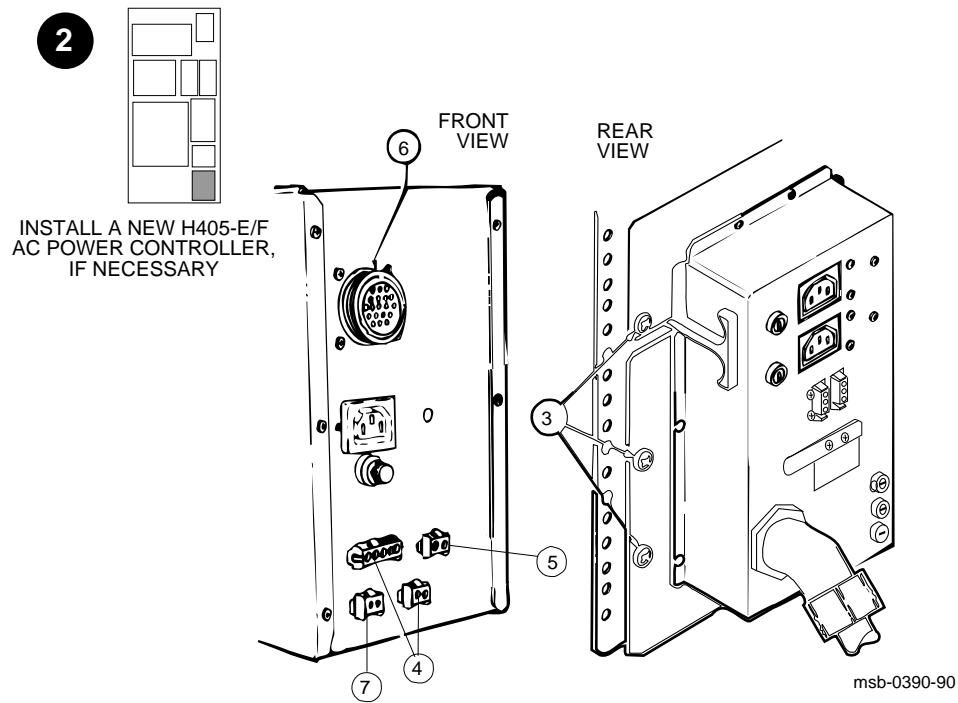
2. Working from the front of the cabinet, disconnect the 17-01501-01 AC input cable from J2 by twisting the black connector ring counterclockwise. See ❷ in Figure 2–2.
3. Disconnect the 17-01549-01 DEC power bus cable from J1. See ❸.
4. You should have removed the 17-00365-03 cable from J5. If a power cord is attached here, remove it now. See ❹.
5. Disconnect the 17-01844-01 temperature sensor cable from J9. See ❺.
6. Disconnect the 17-01833-01 fail safe enable cable from J6 and J7 and set aside to discard. See ❻.
7. Working from the rear of the cabinet, use a large Phillips screwdriver to remove the six screws that hold the AC power controller in place. See ❼.
8. Pull the AC power controller toward you and remove. Put the unit aside. After you have installed the new H405, put the old H405 in the shipping box for the H405 and return it to the Digital Field Service Defective Returns Stockroom for upgrade.

WARNING: *The H405 AC power controller is heavy. Exercise caution when lifting and moving this unit.*

2.3 Step 2, Install the H405-E/F AC Power Controller, if Necessary

Working from the rear of the cabinet, install the new H405-E/F AC power controller. This unit provides switching capability for the battery backup unit.

Figure 2-3: H405-E/F AC Power Controller Replacement



WARNING: *The H405 AC power controller is heavy. Exercise caution when lifting and moving this unit.*

1. Remove the 17-01833-01 cable from system completely.
2. Place the new H405 AC power controller into the designated space in the lower righthand rear corner of the cabinet.
3. Using a large Phillips screwdriver, replace the six screws that hold the AC power controller in place. See ❸ in Figure 2–3.
4. Working from the front of the cabinet, attach one connector of the 17-02759-01 fail safe enable cable at J6 and the other connector at J1. See ❹.
5. Connect the 17-01844-01 temperature sensor cable at J9. See ❺.
6. Connect the 17-01501-01 AC input cable to J2 by inserting the cable and twisting the black connector ring clockwise. If the system has a 50 Hz transformer, connect the 17-01815-01 cable to J2. See ❻.
7. Plug the connector from the 17-02521-01 cable into J7 on the H405. See ❼.

NOTE: *Route the 17-01844-01 and 17-02759-01 cables away from the transformer (50 Hz systems only).*

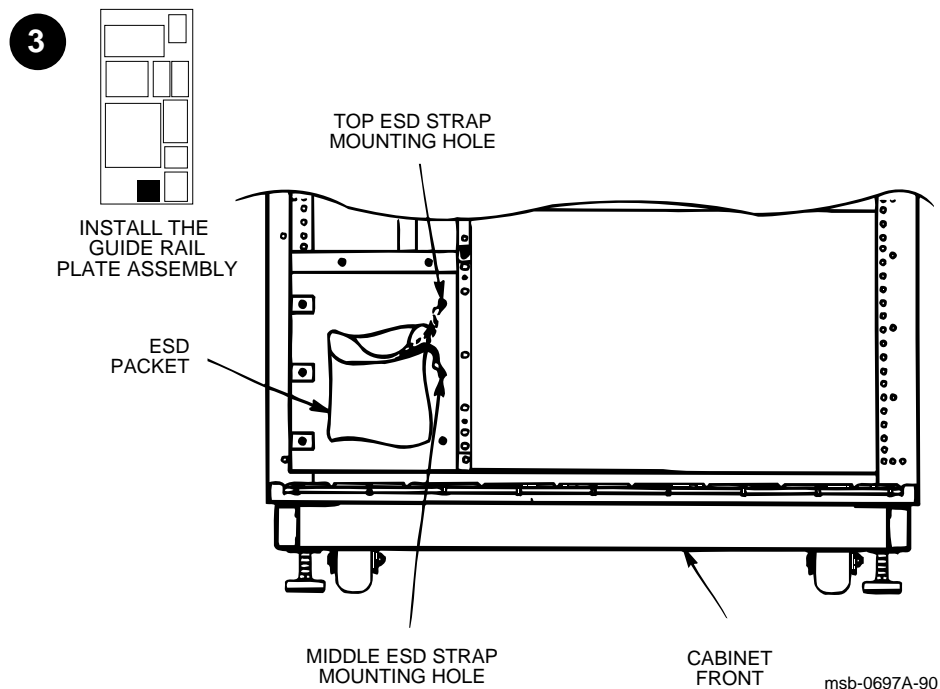
2.4 Step 3, Install the Guide Rail Plate Assembly

The BBU is attached to the guide rail plate assembly. Relocate the ESD strap, if necessary, before installing the guide rail plate assembly.

2.4.1 Move the ESD Strap, if Necessary

The electrostatic discharge (ESD) strap must be attached to the middle hole on the transformer shield plate. If necessary, remove it from the top hole and relocate it to the middle hole.

Figure 2-4: Relocate the Front ESD Strap



The ESD ground strap must be attached to the middle hole on the transformer shield plate. If it is attached to the top hole, use the following procedure to disconnect and reattach the ESD strap:

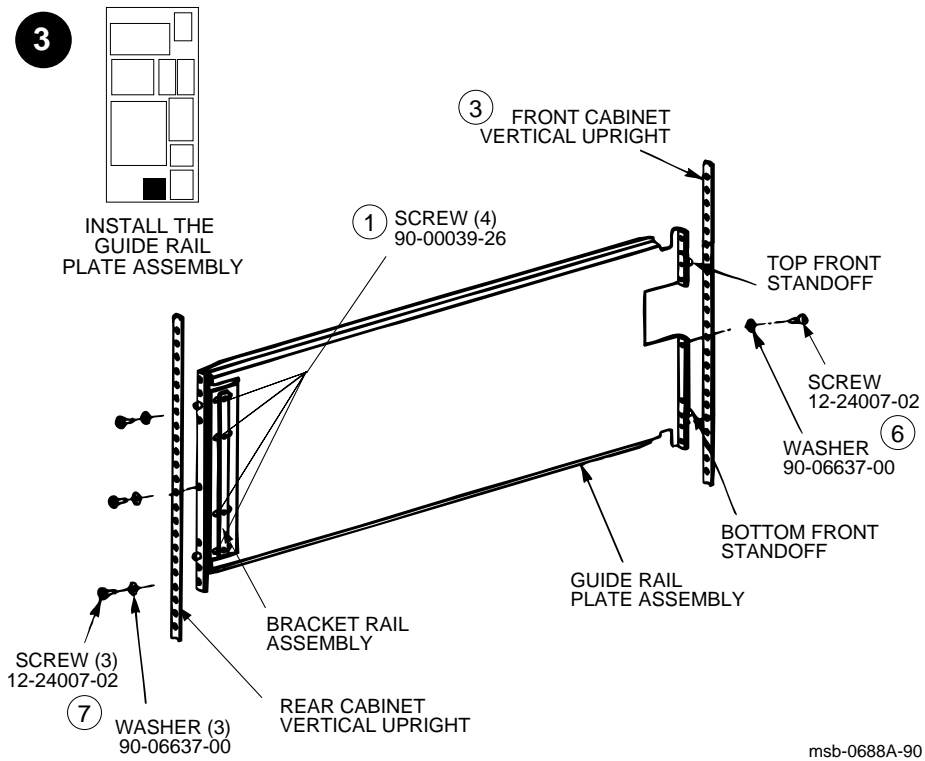
1. Working at the front of the cabinet, locate the front ESD packet (see Figure 2-4). The packet is attached to a sheet metal transformer shield plate located left of the drive cavity. The packet contains the ESD ground strap, which is attached to the transformer shield plate in the top right corner.
2. Move the front ESD ground strap from the top hole to the middle hole on the transformer shield plate, as shown in Figure 2-4. Remove the screw located below the ESD mounting screw and discard it and the top screw.

If the system does not have an in-cabinet storage device, install the BBU into the left position, viewed from the front. If the system contains an SA70, install the BBU in the remaining space.

2.4.2 Install the Guide Rail Plate Assembly

The guide rail plate assembly consists of the rail chassis assembly, the bracket rail assembly, the insert nut bar, and four mounting screws.

Figure 2-5: Install the Guide Rail Plate Assembly



This description and illustrations assume the BBU is being installed next to the H405 AC power controller. To install the guide rail plate assembly:

1. Attach the bracket rail assembly (70-25687-01) to the rail chassis assembly (70-25686-01) using four screws (90-00039-26) (see ❶) that go through to the insert nut bar (74-36464-01). Do not tighten the screws yet.
2. Slide the guide rail plate assembly into the cabinet next to the AC power controller. The guide rail plate assembly mounts from the inside of the cabinet uprights. See Figure 2–5.

NOTE: *The guide rail plate assembly is marked with an up arrow for proper installation. When the BBU is installed next to the power controller, the arrow on the rail sheet metal must point up. The bracket rail assembly is at the rear of the cabinet.*

3. Count four holes up from the bottom of the cabinet upright. See ❸.

NOTE: *All references to holes refer to the cabinet upright mounting holes. Always start counting from the bottom of the cabinet upright.*

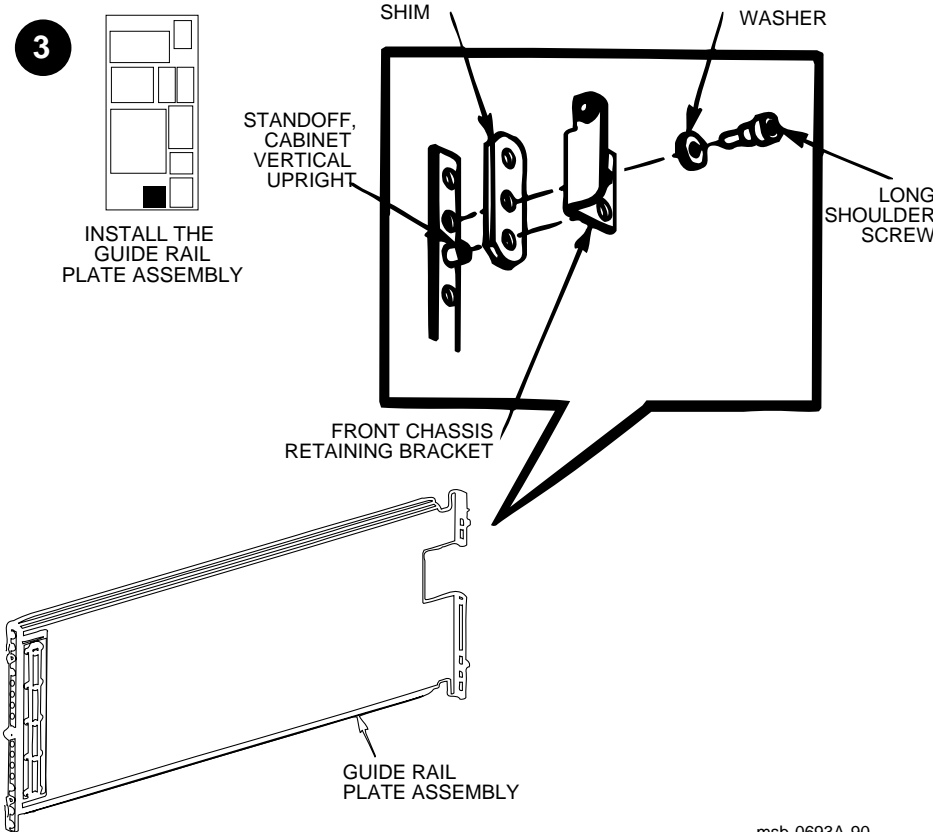
4. Insert the bottom rear standoff of the guide rail plate assembly through hole 4.
5. Insert the top rear standoff of the guide rail plate assembly through hole 15. Standoffs through these holes hold the guide rail plate assembly in place.
6. Install washer (90-06637-00) and shoulder screw (12-24007-02) into the front center hole of the guide rail plate assembly and through hole 9 of the cabinet upright. See ❹.
7. At the rear of the cabinet, install three washers (90-06637-00) and three shoulder screws (12-24007-02) (see ❺) into the following rear holes of the guide rail plate assembly:
 - Hole 3 (hole below standoff)
 - Hole 9
 - Hole 16

This secures the guide rail plate assembly to the cabinet.

2.4.3 Install the Chassis Retainer Brackets

After you have installed the guide rail plate assembly, install the shims and chassis retainer brackets.

Figure 2-6: Shim Orientation and Chassis Retainer Brackets



To install the shims and chassis retainer brackets:

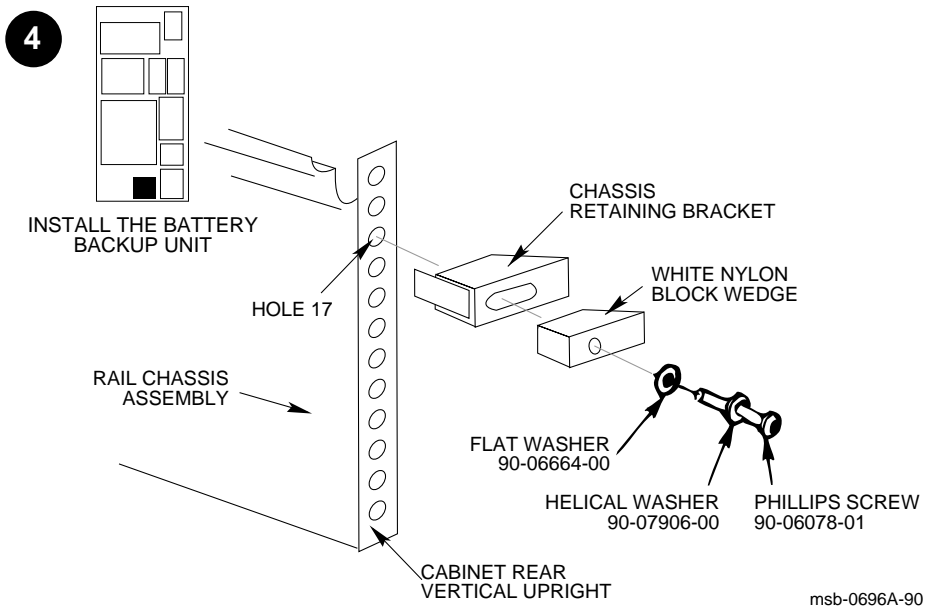
1. At the front of the cabinet, install the top shim (74-39395-01) over the top front standoff of the guide rail plate assembly (hole 15). Place the bottom hole of the shim over the top front standoff. See Figure 2–6.
2. Install the bottom shim (74-39395-01) over the bottom front standoff of the guide rail plate assembly (hole 4). Place the top hole of the shim over the bottom front standoff.
3. Install the top front chassis retaining bracket (74-35857-01) over the shim.
4. Install the washer (90-06637-00) and shoulder screw (12-24007-01) through the top hole of the top chassis retaining bracket and into the middle hole of the shim (hole 16 of the cabinet upright). Torque the shoulder screw to 30 inch-pounds.
5. Install the bottom front chassis retaining bracket (74-35857-02) over the bottom shim.
6. Install the washer (90-06637-00) and shoulder screw (12-24007-01) through the bottom hole of the chassis retaining bracket and into the middle hole of the shim (hole 3 of the cabinet upright). Torque the shoulder screw to 30 inch-pounds.
7. At the rear of the cabinet, torque the three screws on the rail-mounting assembly and the four bracket rail assembly screws (90-00039-26) to 30 inch-pounds.

2.5 Step 4, Install the H7236-A Battery Backup Unit

2.5.1 Install the Rear Clamping Assembly

Install the rear clamping assembly, which stops the BBU when the BBU is slid into position.

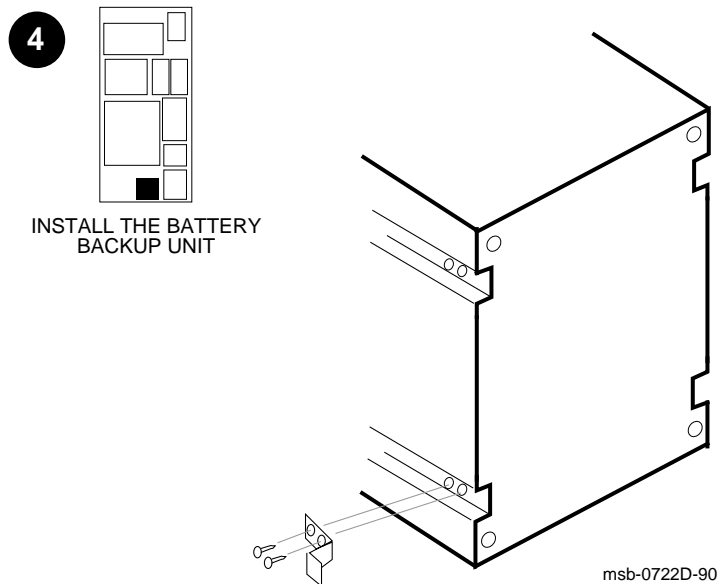
Figure 2-7: Rear Clamping Assembly



Install the rear clamping assembly as follows:

1. Insert the following parts, in order, through the retainer chassis bracket and into hole 17 of the cabinet upright:
 - White nylon wedge block (74-36160-01)
 - Flat washer (90-06664-00)
 - Helical washer (90-07906-00)
 - Pan-head Phillips screw (90-06078-01)
2. Install the bottom chassis retainer (74-35858-01) on the BBU by inserting two Phillips screws (90-09228-10) through the chassis retainer and into the top left front BBU guide slot. See Figure 2–8. Repeat for the top chassis retainer.

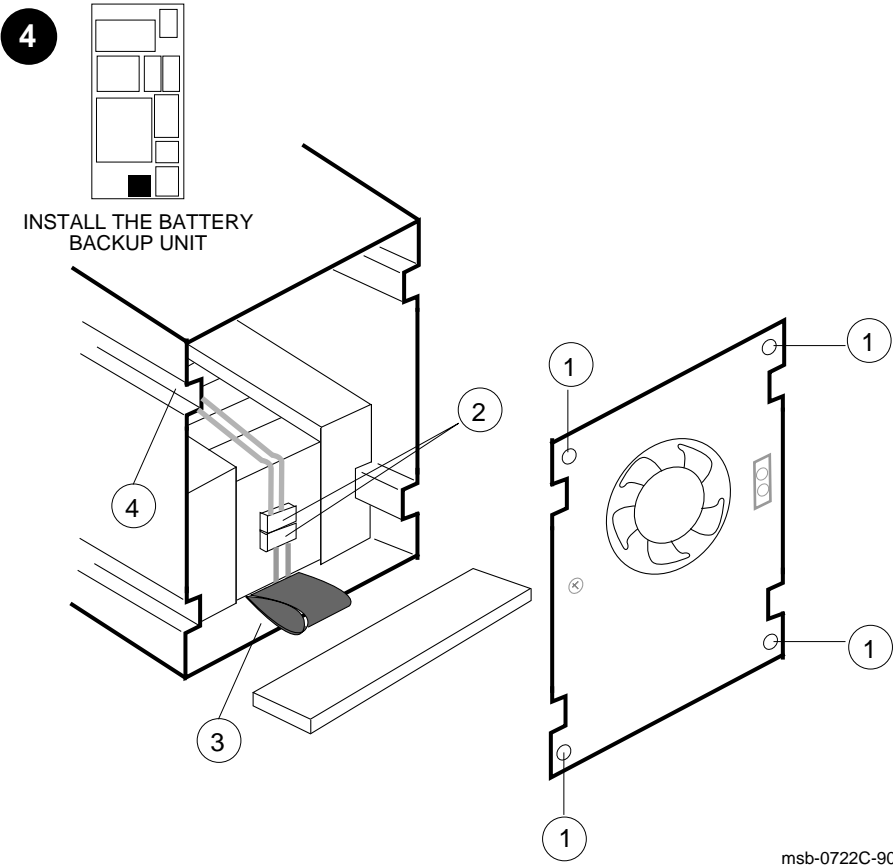
Figure 2–8: Chassis Retainer Assembly



2.5.2 Install the Battery Backup Unit

WARNING: *The battery backup unit is heavy and requires two people to handle it.*

Figure 2-9: H7236-A Battery Backup Unit Installation



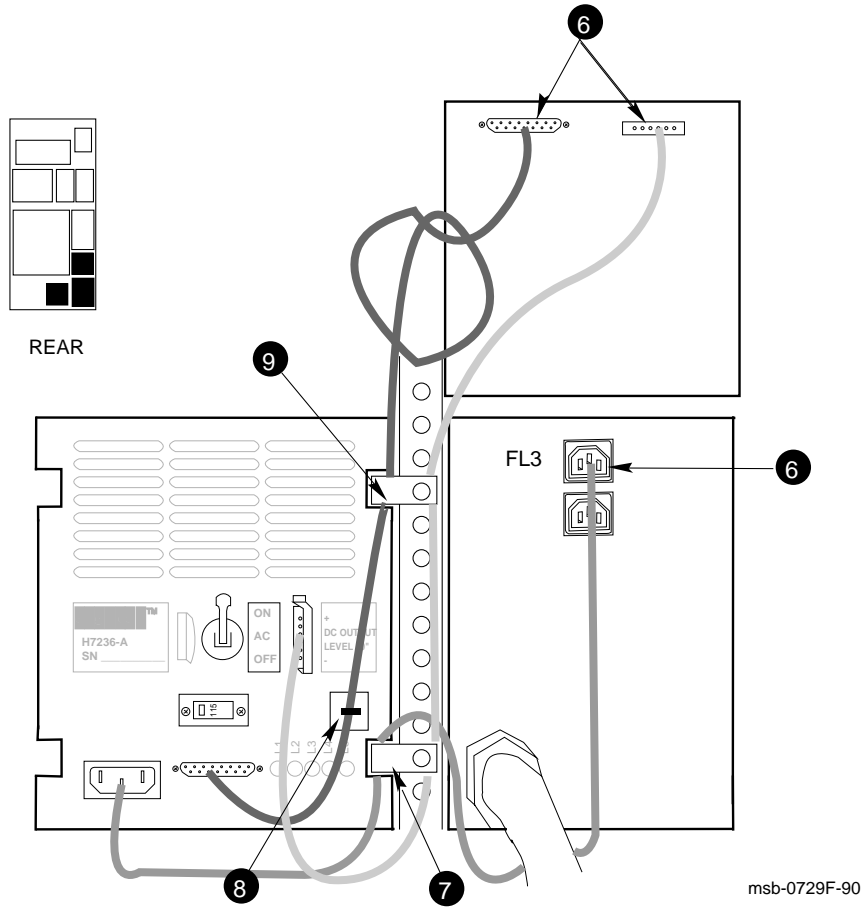
1. To simplify handling the new BBU, remove the battery pack (which accounts for more than half the weight) by first removing the four Phillips screws holding the front panel of the BBU. See ❶ in Figure 2–9.
2. Lift the front panel away from the BBU and disconnect the red/black power pack cable (see ❷) from the battery pack and set the front panel on top of the BBU enclosure.
3. You are now ready to remove the battery pack from the BBU. See ❸. Exercise care, as the battery pack is heavy. Reattach the front panel temporarily after removing the battery pack.
4. Working from the front of the cabinet, place the BBU guide slot (see ❹) on the guide rail plate assembly and guide the BBU into the system cabinet (next to the H405 AC power controller) with the cooling fan end toward the front of the system cabinet. Have one person push from the front and the other pull from the rear.
5. Working from the front, reverse the steps in Step 1 to replace the BBU's battery pack and front panel. When reconnecting the red/black power pack cable, be sure to support the bottom of the receptacle.
6. Working from the rear, connect the black AC power cord (17-00442-27) from the BBU to the H405 power controller (FL3). Connect the blue and brown power cable (17-02485-01) from the DC connector and the white 15-pin logic cable (17-02975-01) on the BBU to the H7206-B power and logic unit. See ❺, Figure 2-10 in Section 2.5.3.
7. Install the connector retaining bracket (74-39125-01) to the rear of the BBU using two Phillips screws (90-09228-01). Place the bracket over the brown and blue cable (17-02485-01) with the round hole on top and the slotted mounting hole on the bottom.
8. Set the voltage select switch to the proper voltage. See Chapter 3.

NOTE: *The BBU fan is turned on only when the BBU is supplying power to the system.*

2.5.3 Secure the Battery Backup Unit

Once you have installed the battery backup unit, secure the BBU.

Figure 2–10: BBU Cabling



Use the following procedure to secure the BBU:

1. Slide the rear retainer chassis bracket (74-35860-01) into the BBU chassis, as shown in Figure 2-7.
2. Tighten the pan-head screw to secure the rear of the enclosure to the cabinet upright.
3. Repeat these steps for the bottom rear clamping assembly, installing the assembly through hole 2 of the cabinet upright.
4. Secure the BBU to the rail by installing #10-32 x 5/8 inch flathead Phillips screws (90-06074-02) through the top and bottom chassis retainers and into the top and bottom chassis retainer brackets, as shown in Figure 2-8. Tighten the screws.
5. Install the #10-32 x 5/8 inch pan-head sems screws (12-21368-02) into holes 2 and 17, through the top and bottom chassis retainers and into the guide rail plate assembly. Tighten the screws. See Figure 2-8.
6. Working at the rear of the cabinet, tighten the screws in the two rear retainer chassis brackets.
7. Remove the pan head screw installed in hole number 2 and place cable clamps on the AC power cord and on the brown and blue cable. See ⑦, Figure 2-10. Replace the pan head screw after passing it through the mounting holes in the clamps.
8. Attach the adhesive-backed cable tie (90-08264-00) to the lower right rear corner of the BBU (see ⑧) and attach the signal bus cable (17-02975-01) to it using the cable tiewrap (90-07880-00).
9. Remove the pan head screw in hole number 17 and place a cable clamp (90-07082-00) on the blue and brown cable (17-02485-01) and another on the signal bus cable (17-02975-01). See ⑨. Replace the screw after passing it through the mounting holes in the two clamps.

Refer to the *VAX 6000 Series Owner's Manual* for system power-up instructions. Chapter 3 discusses the BBU self-test, indicators, and switches.

Chapter 3

Battery Backup Unit Indicators and Switches

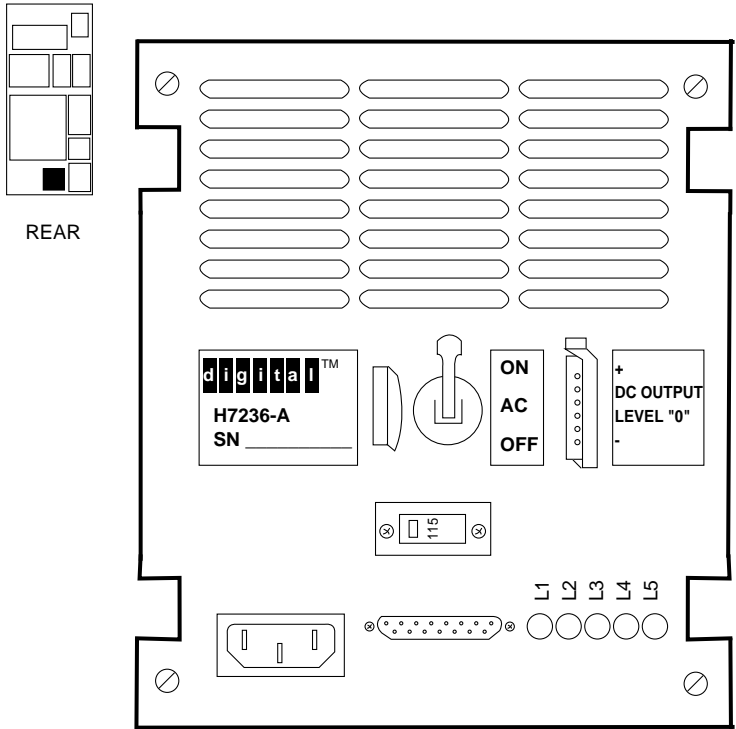
This chapter discusses the battery backup unit's indicators and switches. Sections include:

- Battery Backup Unit Indicators
- Battery Backup Unit Switches

3.1 Battery Backup Unit Indicators

The H7236-A battery backup unit has five LED indicators on the lower righthand corner of the front of the unit.

Figure 3-1: BBU Indicators (Rear View)



msb-0729-90

Table 3–1 describes the five LEDs of the H7236-A. Refer to Figure 3–1 for LED numbering.

Table 3–1: H7236-A Indicators

LED	Color	On indicates:
L1	Green	Batteries supplying power.
L2	Green	BBU CHARGE. On steady when BBU charged to at least 98%. Blinking at 1 Hz when charging but less than 98% charged. Blinking at 10 Hz when BBU needs service.
L3	Red	OVER TEMP. Blinking when the external ambient temperature has exceeded 40 degrees C or the BBU fan has failed while the BBU is supplying power.
L4	Red	ELECTRONIC FAIL. On steady when BBU detects an error related to its electronics.
L5	Red	BATTERY SERVICE. Blinking at 1 Hz when battery has less than 40% original capacity or when BBU has failed. On steady when BBU has detected a disconnected battery or an open front cover interlock switch on self-test.

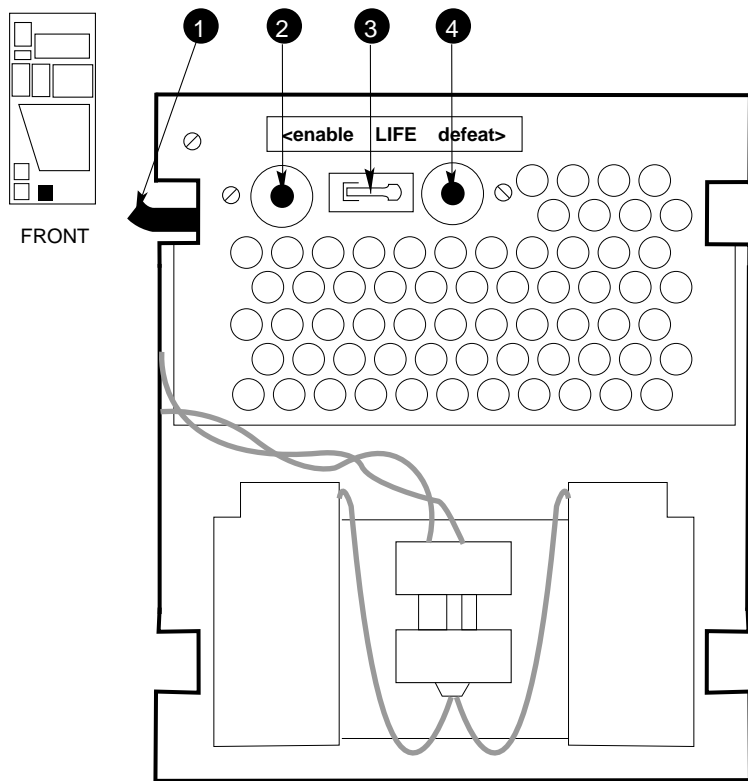
LEDs 3 and 5 are latched on to indicate BBU faults. You reset these LEDs by pressing the Alarm Reset switch inside the H7236-A (see Figure 3–2).

When the system is powered up, the BBU automatically initiates self-test. During self-test, which is completed within 60 seconds, the five LEDs cycle in a sequential pattern.

3.2 Battery Backup Unit Switches

The H7236-A battery backup unit has six switches: two external switches are visible at the rear of the unit, and four internal switches are visible when the fan housing is removed from the front of the unit.

Figure 3-2: Internal BBU Switches (Front View)



msb-0729D-90

The two external switches are the voltage selection switch and the AC power switch, visible at the cabinet rear (see Figure 3–1).

NOTE: *Switch the AC power switch (toggle switch) Off when you are removing or installing the BBU option.*

Before power-up, set the voltage selection switch to the proper value for the system (115V at 60 Hz or 230V at 50 Hz).

The four internal switches (see Figure 3–2), which are visible at the front of the unit when the fan housing is removed, are:

- **Fan Panel Interlock Switch** — Shuts down the BBU when the fan housing cover is removed. See ❶.
- **Alarm Reset Switch (pushbutton switch)** — Resets either of the two latched alarm conditions (OVERTEMP, L3, and BATT SERVICE, L5). See ❷.
- **Battery Life Switch (toggle switch)** — Activates the battery life enhancement mode, which provides a longer battery life in return for a reduction in the available reserve time at the start of the operation. The BBU normally runs in battery life enable mode. See ❸.
- **New Battery Reset Switch (pushbutton switch)** — Resets the battery aging information in the EEPROM. This switch is activated *only* when the battery pack is replaced with a new one. The battery life switch must be in the Enable position for this switch to function. See ❹.

For BBU service information, refer to the *VAX 6000 Platform Service Manual*.

Index

17-00365-03
 removal, 2-5
17-00442-27
 connection, 2-17
17-01501-01
 removal, 2-5
 replacement, 2-7
17-01549-01
 removal, 2-5
17-01815-01
 removal, 2-5
 replacement, 2-7
17-01833-01
 removal, 2-5, 2-7
17-01844-01
 removal, 2-5
 replacement, 2-7
17-02485-01
 connection, 2-17
17-02759-01
 replacement, 2-7
17-02975-01
 connection, 2-17

A

AC input cable
 removal, 2-5
 replacement, 2-7
AC power controller
 See H405 AC power controller,
 2-4
AC power cord
 connection, 2-17
AC power switch, 3-5
Alarm reset switch, 3-3, 3-5
Altitude, 1-4

B

Battery
 life enable switch, 3-5
 pack removal, 2-17
 power pack cable, 2-17
 reset switch, 3-5
Battery backup
 upgrade, 2-19
Battery backup unit
 cabling, 2-18
 dimensions, 1-4
 environmental characteristics,
 1-4
 faults, 3-3
 guide slot, 2-15, 2-17
 indicators, 3-2
 installation, 2-14 to 2-19
 installation kit contents, 1-5
 installation overview, 2-2 to 2-3
 location, 1-1
 physical description, 1-1 to 1-4
 self-test, 3-3
 specifications, 1-2
 switches, 3-2
Battery life, 1-4, 3-5
BBU fan, 1-4, 2-17

C

Chassis retainer
 assembly, 2-15
 bracket installation, 2-12
Cooling system
 characteristics, 1-4

D

- DC power cable
 - connection, 2-17
- DEC power bus cable
 - removal, 2-5

E

- EEPROM reset, 3-5
- Electrical specifications, 1-4
- ESD ground strap relocation, 2-8, 2-9
- Expander cabinet, 1-3
- External switches, 3-4

F

- Fail safe enable cable
 - removal, 2-5, 2-7
 - replacement, 2-7
 - routing, 2-7
- Fan housing, 3-4
- Fan panel interlock switch, 3-5
- Faults, 3-3

G

- Guide rail plate assembly
 - installation, 2-10

H

- H405 AC power controller, 1-2, 2-4 to 2-7
 - installation, 2-6 to 2-7
 - removal, 2-4 to 2-5
 - return, 2-5
 - revision level, 2-4, 2-6
- H7206-B power and logic unit, 2-17
- H7231
 - cable from J5, 2-5
- H7236-A
 - BBU kit contents, 1-6
 - installation, 2-2 to 2-3, 2-14 to 2-19
 - upgrade, 2-19

- Humidity, 1-4

I

- Indicators, 3-2
- Input voltage, 1-4
- Internal switches, 3-4

L

- Latched LEDs, 3-3
- LED indicators, 3-2
- Logic signal cable
 - connection, 2-17

R

- Rear clamping assembly, 2-14
- Revision level, H405, 2-3

S

- Self-test, 3-3
- Shim installation, 2-12
- Switches, 3-2

T

- Temperature
 - maximum, 1-4
 - operating, 1-4
- Temperature sensor cable
 - removal, 2-5
 - replacement, 2-7

V

- Voltage selection switch, 2-17, 3-5

W

- Weight, 1-4