Safety Requirements

- Use ONLY the Carrier Access Charger or Carrier Access Adit 600 to recharge the Carrier Access battery unit.
- NEVER short circuit batteries!
- DO NOT crush, incinerate, or dismantle a battery. The battery contains sulfuric acid which can cause serious damage to eyes and skin. Should contact occur with battery acid, flush profusely with water and contact a physician immediately.
- Avoid Contact with a battery that is damaged and leaking. Use gloves and eye protection for clean up.
- Never touch uninsulated telephone wires and terminals unless the telephone line has been disconnected at the Network Interface (NI) as voltage potentials as high as 300 VAC may be present across the transmit and receive pairs.

Refer to the installation section of this manual for a safe and proper installation procedure. All wiring external to this equipment should follow the current provision of the National Electrical Code.

DANGER! BATTERIES CONTAIN SULFURIC ACID. NEVER DISASSEMBLE BATTERIES! BATTERY OUTPUT CONNECTOR TERMINALS ARE ALWAYS ENERGIZED. SHORT-CIRCUITING THEM CAN CAUSE SPARKS AND BURNS.

Compliance

Safety

The CPE Battery Backup System is in compliance with CSA C22.2 No. 60950 and UL60950 2000, "Safety of Technology Equipment, Including Electrical Business Equipment.

Only the 48V Battery Component of the Battery Backup System complies with CSA C22.2 No. 60950, UL60950, EN60950 200 and is CE marked.
Self-Declaration of Conformity for CE

We,
Supplier: Carrier Access
5955 Pearl Parkway
Boulder, Colorado 80301
USA

declare under our sole responsibility that the product,
48V Battery Unit

to which this declaration relates, conforms with the following standards or normative documents:

<table>
<thead>
<tr>
<th>Document No.</th>
<th>Title</th>
<th>Edition/Date of Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 60950</td>
<td>Safety of Information Technology Equipment</td>
<td>2000</td>
</tr>
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</table>

The product is in accordance with the provisions of the following directives:

<table>
<thead>
<tr>
<th>Directive No.</th>
<th>Title</th>
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<tbody>
<tr>
<td>73/23/EEC</td>
<td>Low Voltage Directive</td>
</tr>
<tr>
<td>91/157/EEC</td>
<td>Battery Directive</td>
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</tbody>
</table>

In Boulder, Colorado, USA on November 18th, 2003
(Signature, Date)
(Mildred Gonzalez, Quality Manager)

Betty Shubert
(Signature, Date)
(VP of Customer Assurance)
Warning Notices

This manual contains information and warnings that must be followed to ensure safe operation of the CPE Battery Backup System while retaining the equipment in a safe condition.

**DANGER!** The **DANGER!** sign denotes a hazard to the user and calls attention to a procedure, practice, or the like, which, if not correctly performed, could result in injury or loss of life. Do not proceed beyond a **DANGER!** sign until the noted conditions are fully understood and met.

**CAUTION!** The **CAUTION!** sign denotes the possibility of network service interruption and calls attention to a procedure or practice, which, if not correctly performed, could result in interruption of network service.

**WARNING!** The **WARNING!** sign indicates the possibility of equipment damage and calls attention to a procedure or practice, which, if performed improperly, could result in equipment damage.

**NOTE:** The NOTE sign precedes explanatory comments or supplementary instructions.
Warranty

Carrier Access warrants to BUYER that Product Hardware will be free from substantial defect in material and workmanship under normal use in accordance with its Documentation and given proper installation and maintenance for period of five years from the date of shipment by Carrier Access.

Carrier Access warrants that the Licensed Software, when used as permitted under its License Terms and in accordance with the instructions and configurations described in the Documentation (including use on Carrier Access product or a computer hardware and operating system platform supported by Carrier Access), will operate substantially as described in the Documentation for a period of ninety (90) days after date of shipment of the Licensed Software to BUYER.

This warranty shall not apply to Products or Software that have been either resold or transferred from BUYER to any other party. Any such transfer voids the above warranty and related licenses. Carrier Access offers expanded product care beyond what is covered by the warranty through different support plans. The plans are designed to maximize network availability through advance replacement for defective equipment. Please contact your Carrier Access representative for support program details.

Warranty Procedure

BUYER must promptly notify Carrier Access of any defect in the Product or Software and comply with Carrier Access' return/repair policy and procedures. Carrier Access or its agent will have the right to inspect the Product or workmanship on BUYER's premises. With respect to a warranty defect in Product hardware reported to Carrier Access by BUYER during the warranty period, Carrier Access, as its sole obligation and BUYER's exclusive remedy for any breach of warranty, will use commercially reasonable efforts, at its option, to:

a. repair, replace, or service at its factory or on the BUYER's premises the Product, or component therein, or workmanship found to be defective so that the Product hardware operates substantially in accordance with Carrier Access Documentation; or

b. credit BUYER for the Product in accordance with Carrier Access's depreciation policy.

With respect to a warranty defect in the Licensed Software reported to Carrier Access by BUYER during the 90-day software warranty period, Carrier Access, at its own expense and as its sole obligation and BUYER's exclusive remedy for any breach of the software warranty, will use commercially reasonable efforts to, at its option,

a. correct any reproducible error in the Licensed Software, or

b. replace the defective Licensed Software, as follows:
   Should a Severity 1 or 2 warranty defect with the Software occur during the 90-day warranty period, Carrier Access will provide, in its sole determination, either
   1. software to resolve the defect to be downloaded into the affected units by the BUYER or
   2. a documented workaround to address the issue.
Preface

Warning Notices

Severity 1 issues are failures of the Licensed Software to comply with the Carrier Access software specifications and that completely or severely affect the Carrier Access Product and its traffic or service capacity, or maintenance or monitoring capabilities.

Severity 2 issues are failures of the Licensed Software to comply with the Carrier Access software specifications and that result in a major degradation of the Carrier Access Product so as to impact its system or service performance, or significant impairments to network operator control or effectiveness. Should a Severity 3 warranty defect with the Licensed Software occur during the 90-day warranty period, Carrier Access will provide assistance to Buyer to determine if a solution or workaround will be provided in a subsequent software release following the reported issue.

Severity 3 issues are defined as failures of the Licensed Software to comply with the Carrier Access software specifications but that do not significantly impair the function or service of the Carrier Access Product or the system.

Determination of Severity 1, 2 or 3 shall be made solely by Carrier Access following receipt of the reported problem. Refurbished material may be used to repair or replace the Product. BUYER shall bear the risk of loss for Products or Software returned to Carrier Access for repair, replacement, or service, and the same must be shipped pre-paid by BUYER.

Requests for warranty services and troubleshooting must be made to, and will be provided by, the Carrier Access Customer Support Center via telephone during the warranty period and during normal business hours. Normal business hours for Carrier Access Customer Support Center are 7:00 a.m. to 6:00 p.m. Mountain Standard Time, Monday through Friday, excluding weekends and standard Carrier Access recognized holidays.

Limitation of Warranty & Limitation of Remedies

Correction of defects by repair, replacement, or service will be at Carrier Access's option and constitute Carrier Access' sole obligation and BUYER's sole and exclusive remedy under the limited warranty. Any such error correction or replacement provided to BUYER does not extend the original warranty period for hardware or software, respectively.

Carrier Access assumes no warranty or other liability with respect to defects in the Product or Software caused by:

a. modification, repair, storage, installation, operation, or maintenance of the Product or Software by anyone other than Carrier Access or its agent, or as authorized and in accordance with the Carrier Access Documentation; or
b. the negligent, unlawful or other improper use or storage of the Product or Software, including its use with incompatible equipment or software; or
c. fire, explosion, power failures, acts of God, or any other cause beyond Carrier Access' reasonable control; or
d. handling or transportation after title of the Product passes to BUYER.
Other manufacturer's equipment or software purchased by Carrier Access and resold to BUYER will be limited to that manufacturer's warranty. Carrier Access assumes no warranty liability for other manufacturer's equipment or software furnished by BUYER.

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THE REMEDIES CONTAINED IN THIS AGREEMENT WILL BE THE SOLE AND EXCLUSIVE REMEDIES WHETHER IN CONTRACT, TORT, OR OTHERWISE, AND CARRIER ACCESS WILL NOT BE LIABLE FOR INJURIES OR DAMAGES TO PERSONS OR PROPERTY RESULTING FROM ANY CAUSE WHATSOEVER, WITH THE EXCEPTION OF INJURIES OR DAMAGES CAUSED BY THE GROSS NEGLIGENCE OF CARRIER ACCESS. THIS LIMITATION APPLIES TO ALL SERVICES, SOFTWARE, AND PRODUCTS DURING AND AFTER THE WARRANTY PERIOD. IN NO EVENT WILL CARRIER ACCESS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF DATA, OR COMMERCIAL LOSSES EVEN IF CARRIER ACCESS HAS BEEN ADVISED THEREOF.

No agent, BUYER, or representative is authorized to make any warranties on behalf of Carrier Access or to assume for Carrier Access any other liability in connection with any of Carrier Access's Products, software, or services.

The foregoing summarizes Carrier Access' entire product and software warranties, which are subject to change without notice.

**Warranty Product Returns**

Before returning any equipment to Carrier Access Corporation, first contact the distributor or dealer from which you purchased the product.

A Return Material Authorization (RMA) number is required for all equipment returned to Carrier Access Corporation. Call Carrier Access Corporation Customer Support at (800) 786-9929 or (303) 442-5455 for RMA number, repair/warranty information and shipping instructions. Be prepared to provide the following information:

- Carrier Access Corporation serial number(s) from the system chassis or circuit card(s)
- Name of distributor or dealer from which you purchased the product
- Description of defect
TABLE OF CONTENTS

Preface
Safety Requirements ........................................ iii
Compliance ...................................................... iii
Safety .......................................................... iii
Warning Notices ............................................... v
Warranty ........................................................ vi
Warranty Procedure .......................................... vi
Limitation of Warranty & Limitation of Remedies ............ vii
Warranty Product Returns ................................ viii

1 Overview
Product Description ........................................... 1-2
Physical Characteristics ...................................... 1-4
Battery Charger ............................................... 1-4
Battery Unit ................................................... 1-4
Dimensions and Weight ....................................... 1-4
Features and Functionality ................................... 1-5
Maintenance ................................................... 1-5
Operating Temperature ..................................... 1-5
Power Features ............................................... 1-6
Transportation ............................................... 1-6

2 Installation
Installation Hints ............................................... 2-2
Installation Check List ....................................... 2-2
CPE Battery Backup System Part Numbers ............... 2-2
Table of Contents

Wall Mounting ....................................................... 2-3
Units with Battery Backup and Charger ......................... 2-3
Speedway Wall Mounting .......................................... 2-7
Adit 600 Wall Mounting .......................................... 2-8
Adit 600 Speedway .................................................. 2-8
Rack Mounting ........................................................ 2-9

3 Maintenance

Operational Life and Capacity ...................................... 3-2
Discharge ............................................................... 3-2
Temperature ........................................................... 3-2
Storage and Operating Time ........................................ 3-2
Shelf Life and Storage ............................................... 3-2
Recycling ............................................................... 3-2
CHAPTER 1

Overview

In this Chapter

- Product Description
- Physical Characteristics
- Features and Functionality
Overview
Product Description

Product Description

The Customer Premise Equipment (CPE) Battery Backup System is comprised of two individual components: the Power Supply/Battery Charger and the Battery Unit. Together, the system continuously supplies -48 VDC power to the attached Carrier Access product, while simultaneously trickle-charging the sealed rechargeable lead-acid batteries. Thus, product operation will not be affected in the event of 120 VAC "line" power interruption.

The CPE Battery Backup System supports the following Carrier Access Products:

- Access Bank™ I
- Access Bank™ II
- Access Exchange™
- Wide Bank® 28 DS3
- Wide Bank® 28 STS-1
- Adit® 600

NOTE: The Adit 600 has a built-in power supply/battery charger and therefore only requires the use of the battery backup unit.
Overview
Product Description

CPE Battery Backup System

CPE Battery Backup System with the Adit 600
Note: the Adit 600 does not require the charger unit
Physical Characteristics

The physically separate battery and power converter/battery charger units permit flexible installations, and allows you to add a battery unit while the powered device remains operational. Each CPE Battery Backup System includes:

- AC power “line” cable (US grounded 3-pronged 120 VAC outlet only)
- AC to DC power converter/battery charger unit with external “telco ground” stud
- -48 VDC power cable with quick connect for battery charging
- -48 VDC battery unit
- -48 VDC power cable for unit power connection
- Limited 5 year warranty for the Power Converter/Battery Charger and 90 days for the battery unit. Refer to the introduction of this manual for additional warranty information

Battery Charger

The Carrier Access Corporation 115 VAC/60Hz to -48 VDC Power Converter/Battery Charger, part number 730-0116 (do not use the Carrier Access AB115 Power Converter Cube to power a unit with battery backup) can supply power to a Carrier Access unit without battery backup connected. A battery backup unit can be added later if required. Both the charger and battery unit are designed for both wall and rack mounting. See Chapter 2, Installation for installation instructions.

Battery Unit

The battery unit, part number 730-0114, must be used in combination with the previously described converter/battery charger to provide non-interruptible power.

Dimensions and Weight

Power Converter/Battery Charger Unit
3.25" H x 4" W x 5" D - Weight 6 lbs (8.25 cm x 10 cm x 12.7 cm - 2.7 kg)

Battery Unit
3" H x 17" W x 6.25" D - 30 lbs (7.6 cm x 43 cm x 15.8 cm - 13.6 kg)
Overview
Features and Functionality

Features and Functionality

The CPE Battery Backup System features and functionality include:

- Maintenance
- Operating Temperature
- Power Features
- Transportation

Maintenance

The rechargeable, sealed lead acid batteries in the battery unit require no in-service maintenance.

Operating Temperature

The operational temperature range is 32° to 122°F (0° to 50°C) with an ideal operating temperature of 68°F (20°C); temperatures outside this range will significantly decrease battery life and/or backup time.
Overview
Features and Functionality

**Power Features**

- 120 VAC power input with continuous –48 VDC power output.
- Typical continuous power operation limits during AC “line” power loss under normal (0.5 Erlangs) operating conditions:
  - Access Bank I & II: 8-12 hours
  - Access Exchange: 8-12 hours
  - Wide Bank 28: 6-8 hours (one BBS/system)
  - Wide Bank 28: 8-12 hours (two BBS/system)
  - Adit 600: 4-8 hours
  - * see note below
- Recharge time of fully discharged batteries is approximately 24 hours.
- Battery Unit installation and replacement is accomplished with no interruption of unit operation, if the unit is already operating on power from a converter/battery charger.
- LED on power converter/battery charger unit indicates recharging status.
- Converter/battery charger AC fail alarm output indicates loss of AC “line” power.
- Battery unit incorporates battery drain limit to prevent full depletion of the batteries for longer life.
- Built in circuit breaker prevents damage to the battery charger unit due to AC power surges.
- UL, NEC, and CSA safety listed.

**NOTE:** The Wide Bank can have one BBS per unit if both Controllers are wired in parallel, or one BBS per Controller. For further information regarding installation for the Wide Bank, see the Wide Bank User Manual.

**Transportation**

The batteries used in the battery unit are listed as “non-spillable” and can be shipped via ground or air with no special requirements.
In this Chapter

- Installation Hints
- Installation Check List
- Wall Mounting
  - Units with Battery Backup and Charger
  - Adit 600 Wall Mounting
- Adit 600 Speedway
Installation

Installation Hints

- Heat kills battery life - avoid locating the battery pack near heat-generating devices. The ideal operating temperature is 68° F.
- Do NOT install the battery pack in an air tight container.
- Remove vinyl safety cap from battery unit cable connector before plugging it into the converter/battery charger.

DANGER! WHEN INSTALLING THE CPE BATTERY BACKUP UNIT, BE SURE TO OBSERVE STANDARD SAFETY PROCEDURES FOR WORKING WITH HAZARDOUS ELECTRICAL EQUIPMENT.

Installation Check List

When the Battery Backup Unit arrives, check the contents of the shipping carton against the Packing Materials List.

- Inspect the Battery Backup Unit for signs of damage. If there is damage, report the damage to the shipping company.
- Retain all packaging materials in case you need to ship or relocate the unit in the future.

CPE Battery Backup System Part Numbers

<table>
<thead>
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<th>Description</th>
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<td>-48V Battery Unit (includes the following)</td>
<td>730-0114</td>
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<tr>
<td>Wall Mounting Template</td>
<td></td>
</tr>
<tr>
<td>Installation Guide</td>
<td></td>
</tr>
<tr>
<td>Power Converter/Battery Charger</td>
<td>730-0116</td>
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</table>
Wall Mounting

Units with Battery Backup and Charger

The CPE Battery Backup system is designed for wall mounting. Mount it directly onto a 3/4 inch plywood backboard.

Recommended Wall Mounting Layout
Installation
Wall Mounting

NOTE: For mounting please use #8 x 3/4” pan-head wood screws.

To mount the battery unit on a nearby wall, locate the battery unit within 5.5 feet of the Power Converter/Battery Charger and use screws or anchors appropriate to the mounting surface. To mount the battery unit on a 3/4” piece of plywood, use four #8 x 3/4” pan-head wood screws.

1. Using the template included with the battery unit, clearly mark the locations of the four screws on the plywood. If this template is misplaced, a scaled copy of the template, with dimensions, is on the following page.

DANGER! WHEN PERFORMING THE FOLLOWING STEP, VERIFY THAT THE DRILL BIT IS THE CORRECT SIZE FOR #8 WOOD SCREWS (7/64” OR 1/8” MAXIMUM). IF A LARGER BIT IS USED, THE PROVIDED SCREWS WILL NOT HOLD THE WEIGHT. THE BATTERY UNIT CAN CAUSE SERIOUS INJURY OR DAMAGE IF NOT MOUNTED PROPERLY AND FALLS.

2. Pre-drill pilot holes for all four screws using a drill bit of appropriate size for mounting screws.

3. Screw the lower two #8 x 3/4” pan-head wood screws into the lower pilot holes until the heads are within 1/8” of the plywood.
Mounting Template

4. Carefully lift the battery unit and hang it on the two screws installed in step 3, using the two keyhole screw slots in the lower corners of the battery unit back plate.

DANGER! DO NOT RELEASE THE BATTERY UNIT UNTIL STEP 5 (BELOW) IS COMPLETED. IF THE BATTERY UNIT SHOULD FALL, IT CAN CAUSE SERIOUS INJURY OR DAMAGE.
Installation
Wall Mounting

5. Fasten the top of the battery unit to the plywood with two #8 x 3/4” pan-head wood screws in the upper pilot holes.

Wall Mounting - Exploded View
**Speedway Wall Mounting**

The Speedway™ installation kit provides all of the components required to quickly install up to two units (Access Bank, Access Exchange or Wide Bank), two battery units and two power converters. Special features include easy-to-use locking tabs and pins instead of screws to secure the components in the bracket, making installation a snap. In addition to the unique mounting bracket, the Speedway also includes a 50-pin Amphenol cable, one wiring terminal block, cable guides, a built-in four-outlet power strip and mounting hardware for wood and masonry applications. A second 50-pin Amphenol cable and terminal block are provided as an option for mounting two units.
Installation
Wall Mounting

Adit 600 Wall Mounting

The Adit 600 has a charger built into the unit, therefore it only requires the Battery as a backup. The Adit 600 and Battery are mounted as shown below.

Adit 600 Speedway

The Adit 600 Speedway Installation Kit (P/N 710-0024) is designed to reduce the time of installation and to strengthen the assembly to the wall.

The Speedway holds one Adit 600 and one Battery, with an optional second Battery shelf (P/N 710-0025). The Adit is secured to a Swing Plate, that allows the Adit to swing away from the wall to give full access to the unit. The Battery sits below the Adit on a shelf secured by front pins. The second Battery option sits on a shelf below the first Battery.

Adit 600 Speedway with one battery

Adit 600 Speedway with second battery option
Rack Mounting

The Power Converter and Battery unit can be mounted in EIA or WECO racks using heavy-duty mounting brackets and a power supply shelf, as shown in the graphic.
Installation

Rack Mounting
In this Chapter

- Operational Life and Capacity
- Recycling
Operational Life and Capacity

Discharge
Deep discharge of the batteries decreases operational life. To minimize this, Carrier Access uses a shut-off relay to prevent discharging batteries below 40V. Additionally, frequency of battery discharge decreases operational life.

Temperature
The ideal ambient temperature for battery life and capacity is 20º C (68º F). Higher temperatures decrease battery life. It is estimated that battery life is halved for each 10º to 15 º C above normal room temperature. Similarly, low temperatures decrease battery capacity.

Storage and Operating Time
Both storage time and operational time decrease the capacity of the batteries, reducing the amount of time for continuous unit operation.

Shelf Life and Storage
Shelf life increases at lower temperatures:
- Capacity drops to 80% retention:
  - after 18 months @ 41º F
  - after 6 months @ 68º F
  - after 2 months @ 104º F.

Store batteries in a cool place above freezing.

Recycling
Please note that lead and sulfuric acid can leach into landfills, potentially causing a hazardous buildup of these materials. Carrier Access is an environmentally conscious company, and advocates recycling of both hazardous and non-hazardous materials. There are two battery recycling options. The first option is to open the battery unit and recycle the batteries with your local battery recycler (automotive). The second option is to return the battery unit to Carrier Access for recycling with the battery manufacturer.