



ИБП Eaton Blade UPS - Соединение внешних батарей Eaton BladeUPS - Пользовательское руководство

Постоянная ссылка на страницу: <https://eaton-power.ru/catalog/online/eaton-bladeups/>

Powerware Series

Eaton® BladeUPS®
External Battery Interconnect
User's Guide



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Units that are labeled with a CE mark comply with the following harmonized standards and EU directives:

- Harmonized Standards: IEC 61000-3-12
- EU Directives: 73/23/EEC, Council Directive on equipment designed for use within certain voltage limits
93/68/EEC, Amending Directive 73/23/EEC
89/336/EEC, Council Directive relating to electromagnetic compatibility
92/31/EEC, Amending Directive 89/336/EEC relating to EMC

The EC Declaration of Conformity is available upon request for products with a CE mark. For copies of the EC Declaration of Conformity, contact:

Eaton Power Quality Oy
Koskelontie 13
FIN-02920 Espoo
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Special Symbols

The following are examples of symbols used on the UPS or accessories to alert you to important information:



RISK OF ELECTRIC SHOCK - Observe the warning associated with the electric shock symbol.



CAUTION: REFER TO OPERATOR'S MANUAL - Refer to your operator's manual for additional information, such as important operating and maintenance instructions.



This symbol indicates that you should not discard the UPS or the UPS batteries in the trash. This product contains sealed, lead-acid batteries and must be disposed of properly. For more information, contact your local recycling/reuse or hazardous waste center.



This symbol indicates that you should not discard waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.

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Chapter 1 Introduction

The Eaton® BladeUPS® 12i uninterruptible power system (UPS) is compatible with a customer-supplied external battery only when used with the External Battery Interconnect. This arrangement of customer-supplied external battery and External Battery Interconnect is not for use with the BladeUPS 12 module. The addition of customer-supplied external batteries can extend battery runtime to one hour.

The External Battery Interconnect is a DC connection box that provides a landing for the wires from an external battery. The External Battery Interconnect converts external battery input wires to a plug that is compatible with the Eaton BladeUPS 12i module (see Figure 1).

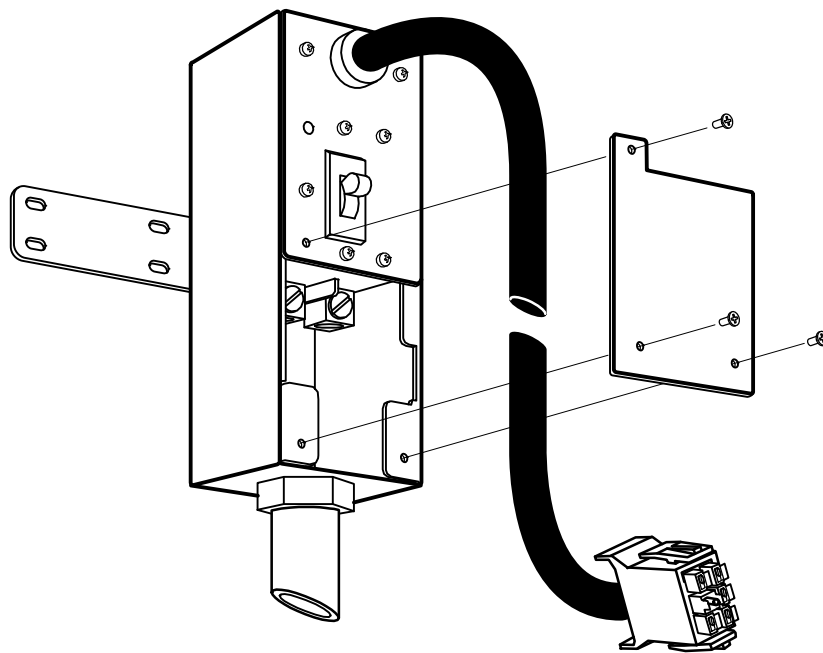


Figure 1. External Battery Interconnect

Note the following guidelines when configuring a BladeUPS 12i module with a customer-supplied external battery and External Battery Interconnect.

- Connect the External Battery Interconnect plug directly to the BladeUPS 12i module. Because there is a single UPS battery connector on the rear panel of the BladeUPS 12i module, you cannot use a combination of customer-supplied external batteries and Eaton-supplied Extended Battery Modules (EBMs) with the same BladeUPS 12i module.
- Never connect the External Battery Interconnect plug to an EBM.
- The same customer-supplied external batteries cannot be shared by multiple BladeUPS 12i modules.
- For consistent runtimes, each BladeUPS 12i module in parallel systems must have the same amount of battery runtime.
- The customer-supplied external batteries are charged through the UPS internal charger.
- To configure the BladeUPS 12i module for customer-supplied external batteries, configure the user setting for Watts per cell. For information on user settings, refer to the user's guide for the BladeUPS module.
- A Commissioning Test is not required when using customer-supplied external batteries as long as the Advanced Battery Management® (ABM) feature is not disabled.
- Internal BladeUPS batteries must be installed when using the External Battery Interconnect.

Chapter 2 Safety Warnings

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

This manual contains important instructions that you should follow during installation and maintenance of the UPS and batteries. Please read all instructions before operating the equipment and save this manual for future reference.



DANGER

The UPS contains **LETHAL VOLTAGES**. All repairs and service should be performed by **AUTHORIZED SERVICE PERSONNEL ONLY**. There are **NO USER SERVICEABLE PARTS** inside the UPS.

Sikkerhedsanvisninger

VIGTIGE SIKKERHEDSANVISNINGER GEM DISSE ANVISNINGER

Denne manual indeholder vigtige instruktioner, som skal følges under installation og vedligeholdelse af UPS'en og batterierne. Læs venligst alle instruktioner inden betjening af udstyret og gem denne manual mhp. fremtidige opslag.



FARE

Denne UPS indeholder **LIVSFARLIG HØJSPÆNDING**. Alle reparationer og vedligeholdelse bør kun udføres af en **AUTORISERET SERVICETEKNIKER**. Ingen af UPS'ens indvendige dele kan repareres af brugeren.

Belangrijke Veiligheidsinstructies

BELANGRIJKE VEILIGHEIDSINSTRUCTIES BEWAAR DEZE INSTRUCTIES

Deze handleiding bevat belangrijke instructies die u dient te volgen tijdens de installatie en het onderhoud van de UPS en de accu's. Lees alle instructies voordat u de apparatuur in bedrijf neemt en bewaar deze handleiding als naslagwerk.



GEVAAR

Deze UPS bevat LEVENSGEVAARLIJKE ELEKTRISCHE SPANNING. Alle reparaties en onderhoud dienen UITSLUITEND DOOR ERKEND SERVICEPERSONEEL te worden uitgevoerd. Er bevinden zich GEEN ONDERDELEN in de UPS die DOOR DE GEBRUIKER kunnen worden GEREPAREERD.

Tarkeita Turvaohjeita

TÄRKEITÄ TURVAOHJEITA - SUOMI SÄILYTÄ NÄMÄ OHJEET

Tämä käyttöohje sisältää tärkeitä ohjeita, joita on noudatettava UPS-virtalähteen ja akkujen asennuksen ja huollon yhteydessä. Lue kaikki ohjeet ennen laitteiston käyttöä ja säilytä ohje myöhempää tarvetta varten.



VAARA

Tämä UPS sisältää HENGENVAARALLISIA JÄNNITTEITÄ. Kaikki korjaukset ja huollot on jätettävä VAIN VALTUUTETUN HUOLTOHENKILÖN TOIMEKSI. UPS ei sisällä MITÄÄN KÄYTTÄJÄN HUOLLETTAVIA OSIA.

Consignes de sécurité

CONSIGNES DE SÉCURITÉ IMPORTANTES CONSERVER CES INSTRUCTIONS

Ce manuel comporte des instructions importantes que vous êtes invité à suivre lors de toute procédure d'installation et de maintenance des batteries et de l'onduleur. Veuillez consulter entièrement ces instructions avant de faire fonctionner l'équipement et conserver ce manuel afin de pouvoir vous y reporter ultérieurement.



DANGER!

Cet onduleur contient des TENSIONS MORTELLES. Toute opération d'entretien et de réparation doit être EXCLUSIVEMENT CONFIEE A UN PERSONNEL QUALIFIE AGRÉÉ. AUCUNE PIÈCE RÉPARABLE PAR L'UTILISATEUR ne se trouve dans l'onduleur.

Sicherheitswarnungen

WICHTIGE SICHERHEITSANWEISUNGEN AUFBEWAREN

Dieses Handbuch enthält wichtige Anweisungen, die Sie während der Installation und Wartung des USV (Unterbrechungsfreies Stromversorgungssystem) und der Batterien befolgen müssen. Bitte lesen Sie alle Anweisungen des Handbuchs bevor sie mit dem Gerät arbeiten. Bewahren Sie das Handbuch zum Nachlesen auf.



WARNUNG

Die USV führt lebensgefährliche Spannungen. Alle Reparatur- und Wartungsarbeiten sollten nur von Kundendienstfachleuten durchgeführt werden. Die USV enthält keine vom Benutzer zu wartenden Komponenten.

Avvisi di sicurezza

IMPORTANTI ISTRUZIONI DI SICUREZZA CONSERVARE QUESTE ISTRUZIONI

Il presente manuale contiene importanti istruzioni da seguire durante l'installazione e la manutenzione dell'UPS e delle batterie. Leggere integralmente le istruzioni prima di utilizzare l'apparecchiatura e conservare il presente manuale per futuro riferimento.



PERICOLO

La TENSIONE contenuta in questo gruppo statico di continuità è LETALE. Tutte le operazioni di riparazione e di manutenzione devono essere effettuate ESCLUSIVAMENTE DA PERSONALE TECNICO AUTORIZZATO. All'interno del gruppo statico di continuità NON vi sono PARTI RIPARABILI DALL'UTENTE.

Viktig Sikkerhetsinformasjon

VIKTIGE SIKKERHETSINSTRUKSJONER GJEM DISSE INSTRUKSJONENE

Denne håndboken inneholder viktige instruksjoner som du bør overholde ved montering og vedlikehold av UPS-enheten og batteriene. Les alle instruksjoner før utstyret tas i bruk, og gjem håndboken til fremtidig referanse.



FARLIG

Denne UPS'en inneholder LIVSFARLIGE SPENNINGER. All reparasjon og service må kun utføres av AUTORISERT SERVICEPERSONALE. BRUKERE KAN IKKE UTFØRE SERVICE PÅ NOEN AV DELENE i UPS'en.

Regulamentos de Segurança

INSTRUÇÕES DE SEGURANÇA IMPORTANTES GUARDE ESTAS INSTRUÇÕES

Este manual contém instruções importantes que devem ser seguidas durante a instalação e manutenção do no-break e das baterias. Leia todas as instruções antes de operar o equipamento e guarde este manual para consultá-lo futuramente.



CUIDADO

A UPS contém VOLTAGEM MORTAL. Todos os reparos e assistência técnica devem ser executados SOMENTE POR PESSOAL DA ASSISTÊNCIA TÉCNICA AUTORIZADO. Não há nenhuma PEÇA QUE POSSA SER REPARADA PELO USUÁRIO dentro da UPS.

Предупреждения по мерам безопасности

ВАЖНЫЕ УКАЗАНИЯ ПО МЕРАМ БЕЗОПАСНОСТИ СОХРАНИТЕ ЭТИ УКАЗАНИЯ

В данном руководстве содержатся важные инструкции по установке и обслуживанию источника бесперебойного питания (ИБП) и батарей. Перед работой с оборудованием прочтите все инструкции. Сохраните данное руководство для дальнейшего использования.



ОПАСНО

В данном ИБП имеются СМЕРТЕЛЬНО ОПАСНЫЕ НАПРЯЖЕНИЯ. Все работы по ремонту и обслуживанию должны выполняться ТОЛЬКО УПОЛНОМОЧЕННЫМ ОБСЛУЖИВАЮЩИМ ПЕРСОНАЛОМ. Внутри ИБП нет узлов, ОБСЛУЖИВАЕМЫХ ПОЛЬЗОВАТЕЛЕМ.

Advertencias de Seguridad

INSTRUCCIONES DE SEGURIDAD IMPORTANTES GUARDE ESTAS INSTRUCCIONES

Este manual contiene instrucciones importantes que debe seguir durante la instalación y el mantenimiento del SIE y de las baterías. Por favor, lea todas las instrucciones antes de poner en funcionamiento el equipo y guarde este manual para referencia en el futuro.



PELIGRO

Este SIE contiene VOLTAJES MORTALES. Todas las reparaciones y el servicio técnico deben ser efectuados SOLAMENTE POR PERSONAL DE SERVICIO TÉCNICO AUTORIZADO. No hay NINGUNA PARTE QUE EL USUARIO PUEDA REPARAR dentro del SIE.

Säkerhetsföreskrifter

VIKTIGA SÄKERHETSFÖRESKRIFTER SPARA DESSA FÖRESKRIFTER

Den här anvisningen innehåller viktiga instruktioner som du ska följa under installation och underhåll av UPS-enheten och batterierna. Läs alla instruktioner innan du använder utrustningen och spara den här anvisningen för framtida referens.



FARA

Denna UPS-enhet innehåller LIVSFARLIG SPÄNNING. ENDAST AUKTORISERAD SERVICEPERSONAL får utföra reparationer eller service. Det finns inga delar som ANVÄNDAREN KAN UTFÖRA SERVICE PÅ inuti UPS-enheten.

Chapter 3 Installation

This section explains:

- Customer-supplied external battery
- Required tools
- Choosing a mounting option
- Attaching the mounting bracket
- Attaching the External Battery Interconnect
- Wiring the External Battery Interconnect
- Connecting the External Battery Interconnect to the Eaton BladeUPS 12i

Customer-Supplied External Battery

When configuring a BladeUPS 12i module with external batteries, use either Eaton-supplied EBMs only or customer-supplied external batteries only. You cannot use a combination of EBMs and customer-supplied external batteries with the same BladeUPS 12i module. See Table 5 on page 30 for specifications related to customer-supplied external batteries.



NOTE *If using customer-supplied external batteries, configure the BladeUPS user setting for Watts per cell. For information on customer-supplied external battery setup, refer to the user's guide for the BladeUPS module.*

Required Tools

The following tools are required for installing the External Battery Interconnect:

- Phillips® #2 screwdriver
- Wrench or sockets to accommodate M4 and M5 hex nuts
- Torque driver for slotted screws, to accommodate settings of 47.5 ± 2.7 and 61.0 Nm (35 ± 2 and 45 lb in)

Choosing a Mounting Option

The mounting bracket has five pairs of mounting holes (see Figure 2):

- Two pairs of mounting holes for attaching the assembly to the vertical rail (determines the left-to-right offset when facing the back of the rack)
- Three pairs of mounting holes for attaching the mounting bracket to the External Battery Interconnect (determines front-to-back offset when facing the back of the rack)

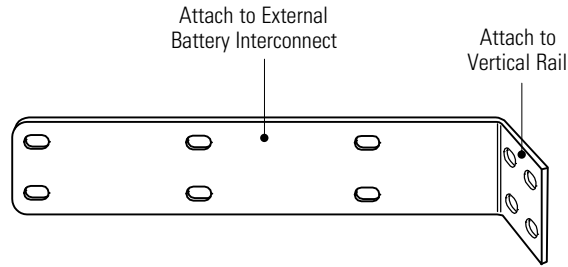


Figure 2. Mounting Bracket

The combination of mounting holes allows for 12 mounting options. However, the design of the rack may not allow the use of some options.

Your conduit routing needs determine which mounting options to use. When mounting multiple External Battery Interconnects on the same vertical rail, offset the boxes to provide adequate room for conduit routing. Consider the following:

- The number of External Battery Interconnects to attach to the vertical rail
- The vertical spacing of the External Battery Interconnects
- Whether the conduits are rigid or flexible

For an example of a rack with three External Battery Interconnect devices installed, see Figure 13 on page 25.



NOTE These procedures describe installation from the perspective of facing the rear of the rack. However, the External Battery Interconnect is designed to be attached to the vertical rail at the right-rear of the rack, as shown in Figure 3. Use this figure to locate the proper rail for attaching the External Battery Interconnect.

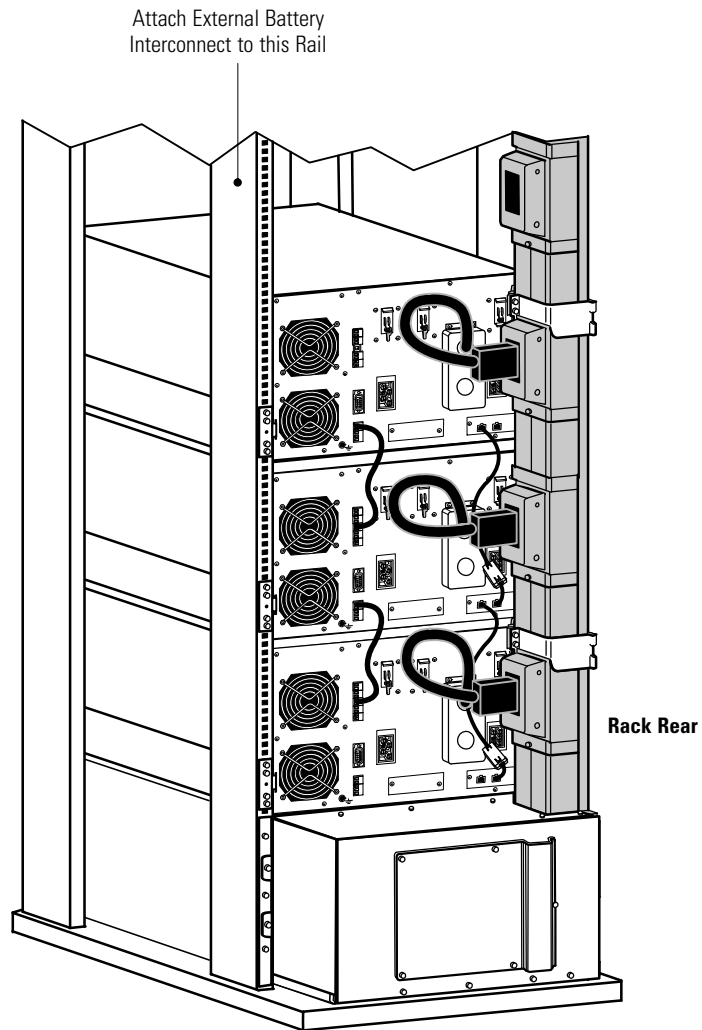


Figure 3. Locating the External Battery Interconnect

Attaching the Mounting Bracket to the Vertical Rail

The left-to-right orientation is controlled by the short flange on the mounting bracket. This flange attaches to the vertical rail. Although there are only two pairs of mounting holes on the short flange, there are four left-to-right options by flipping the mounting bracket with the flange facing left or right.

To attach the mounting bracket to the vertical rail:

1. Determine the left-to-right position and select the appropriate orientation and mounting holes on the short flange (see Figure 4).

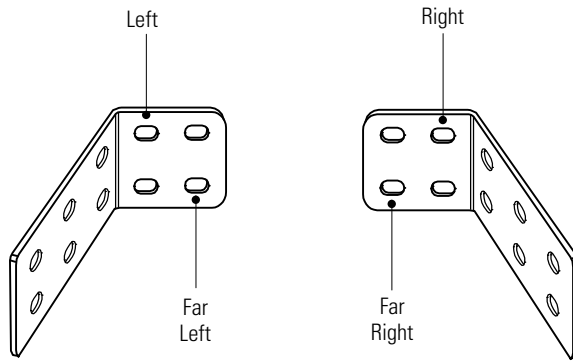


Figure 4. Positioning, Left-to-Right



NOTE Eaton recommends left or far left mounting to minimize restriction of the UPS exhaust air flow. When using right or far right mounting options, locate the External Battery Interconnect toward the back of the rack, away from the UPS. Note that you can attach the External Battery Interconnect on either side of the mounting bracket.

2. Align the mounting holes in the short flange with the desired holes in the vertical rail.

3. Insert two M5 hex head bolts (supplied) through the flat washers (supplied) and mounting holes in the short flange and the holes in the vertical rail (see Figure 5).

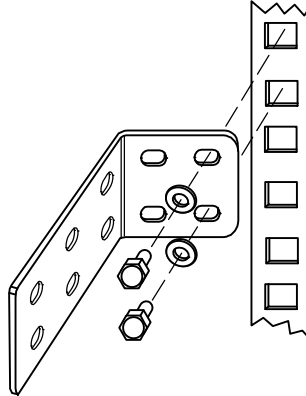


Figure 5. Insert M5 Hex Head Bolts (Far-Left Position Shown)

4. Secure the mounting bracket to the vertical rail using two M5 flat washers (supplied) and two M5 hex nuts with captured star washers (supplied). See Figure 6.

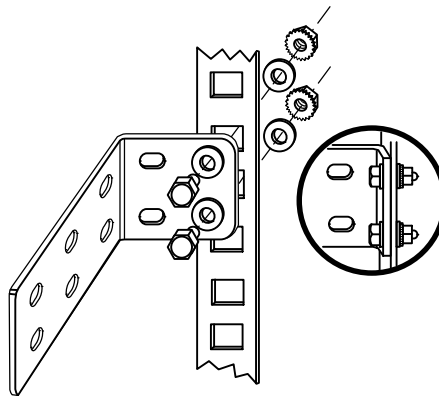


Figure 6. Secure Mounting Bracket to Rail

5. Continue to the following section, "Attaching the External Battery Interconnect to the Mounting Bracket."

Attaching the External Battery Interconnect to the Mounting Bracket

The front-to-back orientation is controlled by the long flange on the mounting bracket. This flange attaches to the External Battery Interconnect.

To attach the External Battery Interconnect to the mounting bracket:

1. Determine the front-to-back position and select the appropriate mounting holes on the long flange (see Figure 7).

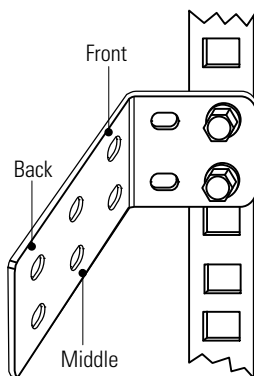


Figure 7. Positioning, Front-to-Back

2. Remove the two M4 hex nuts with captured star washers that are shipped already attached to the threaded studs on the back of the External Battery Interconnect (see Figure 8).

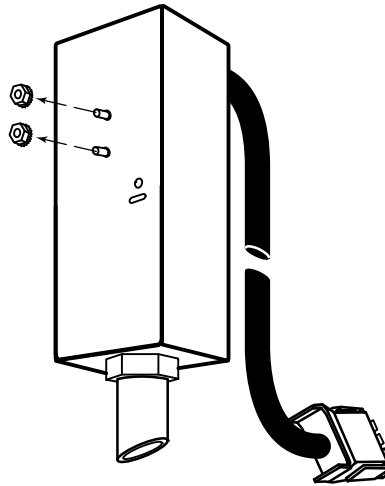


Figure 8. Remove M4 Hex Nuts with Captured Star Washers

3. With the External Battery Interconnect facing to the right, insert the threaded studs through the desired holes in the long flange of the mounting bracket (see Figure 9).

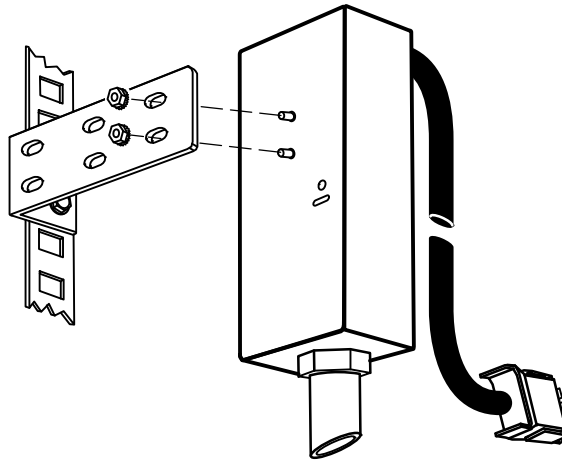


Figure 9. Insert Threaded Studs (Back Position Shown)

4. Secure the External Battery Interconnect to the long flange of the mounting bracket using the two M4 hex nuts with captured star washers that were removed from the threaded studs earlier (see Figure 9 and Figure 10).

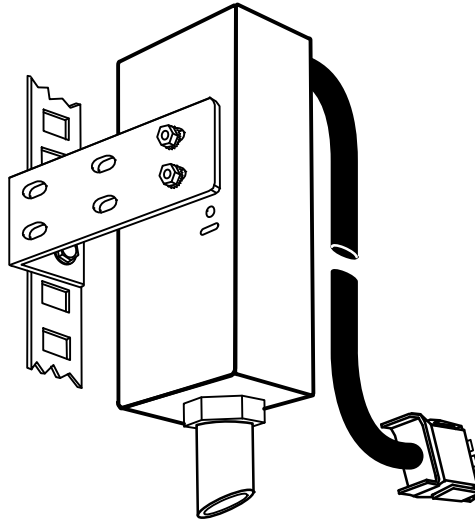


Figure 10. External Battery Interconnect Secured to Mounting Bracket

5. Continue to the following section, “Wiring the External Battery Interconnect.”

Wiring the External Battery Interconnect



NOTE Eaton recommends that the external batteries be supplied with overcurrent protection and a disconnect device at their source. If this protection is not provided, do not connect the wiring to the external battery source until all other wiring is complete.

NOTE Observe safety guidelines for electrical devices and all local electrical wiring codes that may be applicable to this installation.

To wire the External Battery Interconnect:

1. Verify that the External Battery Interconnect breaker is open (OFF), as shown in Figure 11.
2. Verify that the BladeUPS battery breaker is open (O), as shown in Figure 15 on page 27.
3. As needed, attach a 21 mm (3/4”) conduit to the base of the External Battery Interconnect. Use conduit (either rigid or flexible). The conduit length varies for each installation site.

4. Remove the three Phillips screws to obtain access to the customer landing section (see Figure 11).

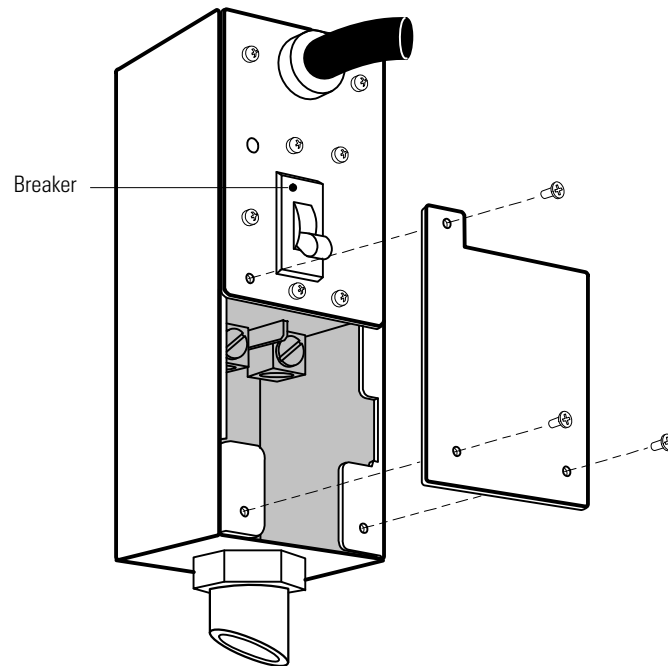


Figure 11. Access Customer Landing Section with Breaker Open (OFF)

5. Remove the protective cover from the front of the External Battery Interconnect.

6. Land the wires from the customer-supplied external battery at the three landing sites—ground, positive, and negative (see Figure 12).

Use 90°C copper conductors only. The positive and negative terminals accept 50–2.5 mm² (2/0–14 AWG) wire. The ground terminal accepts 16–2.5 mm² (6–14 AWG) wire.

Connect the opposite end of the ground connection to the frame of the external battery supply.

7. Torque the slotted screws of the wire terminals as follows:

Positive and negative: 61.0 Nm (45 lb in)

Ground: 47.5 ± 2.7 Nm (35 ± 2 lb in)

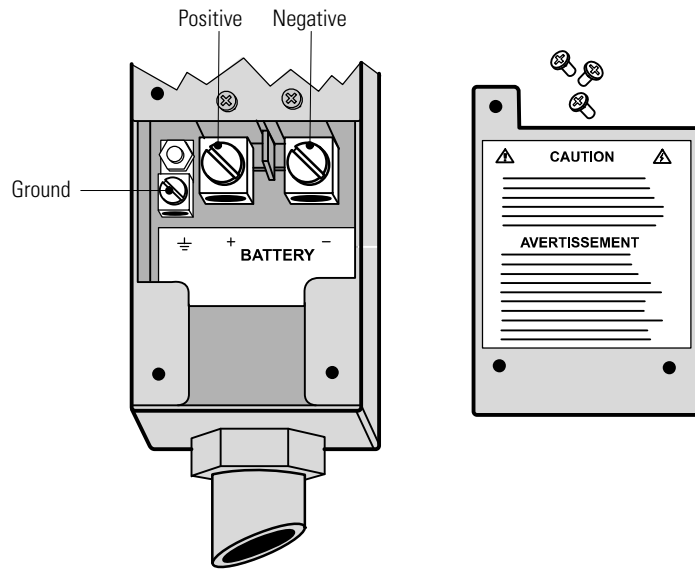


Figure 12. Landing Sites

8. Replace the protective cover. See Figure 13 for an example of three External Battery Interconnect devices assembled and attached to the rack.

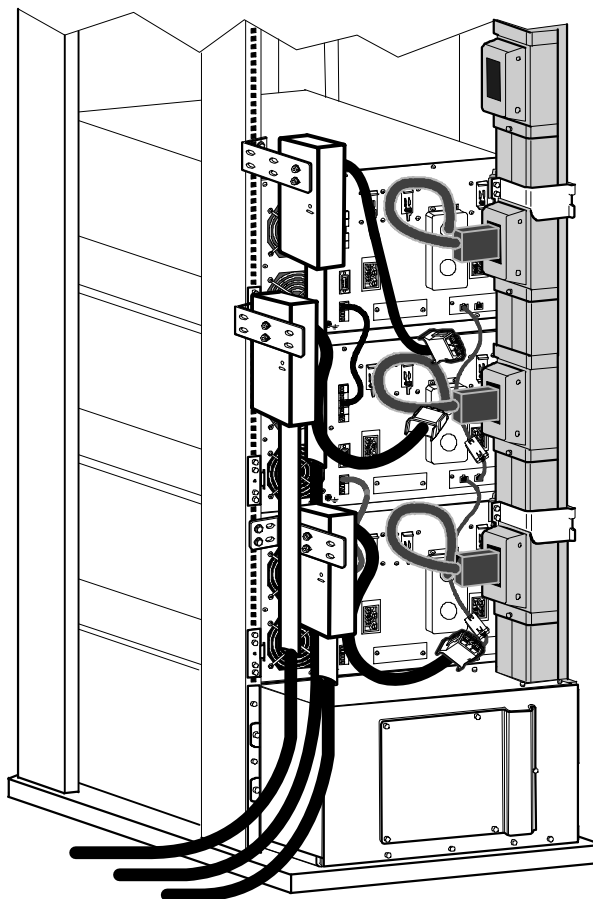


Figure 13. External Battery Interconnect Devices Attached



CAUTION

Do not connect the External Battery Interconnect to the BladeUPS module at this time.

9. Continue to the following section, “Connecting the External Battery Interconnect to the BladeUPS 12i Module.”

Connecting the External Battery Interconnect to the BladeUPS 12i Module



NOTE Refer to the user's guide for the BladeUPS module to configure the UPS for external batteries before connecting the External Battery Interconnect.

To connect the External Battery Interconnect to the BladeUPS module:

1. Verify that the External Battery Interconnect breaker is open (OFF), as shown in Figure 14.

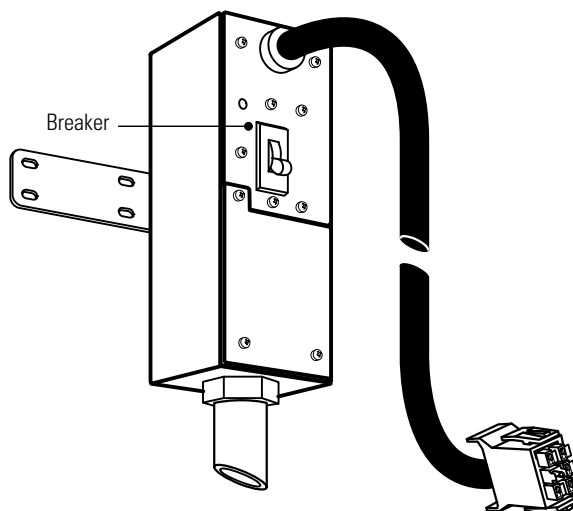


Figure 14. External Battery Interconnect with Breaker Open (OFF)

2. Verify that the BladeUPS battery breaker is open (O), as shown in Figure 15.

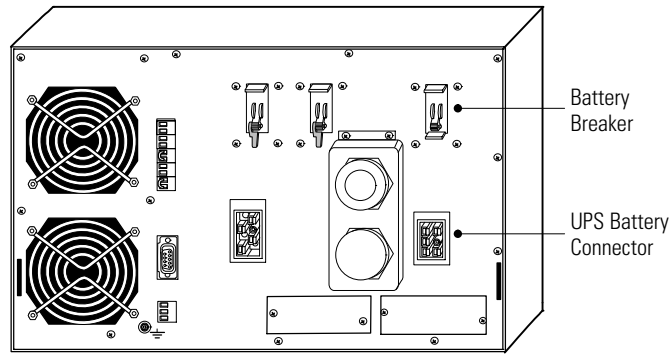


Figure 15. BladeUPS Module Rear Panel

3. Connect the External Battery Interconnect to the UPS Battery Connector on the BladeUPS module.
4. Close the disconnect device at the external battery source, if present.
5. Close the External Battery Interconnect breaker (ON), as shown in Figure 16.

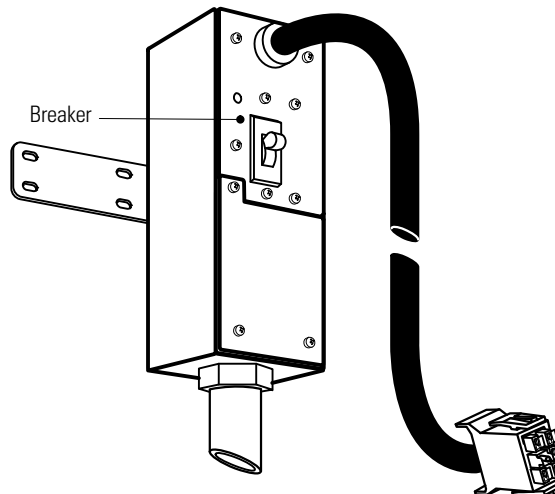


Figure 16. External Battery Interconnect with Breaker Closed (ON)

6. Close the BladeUPS battery breaker () (see Figure 15).

Chapter 4 Specifications

Model Specifications

This section provides the following External Battery Interconnect specifications:

- Dimensions and weight
- Electrical input and output
- Environmental and safety

This section also provides customer-supplied external battery specifications.

Table 1. Dimensions and Weight

Dimensions (WxDxH)	6.67 × 8.89 × 19.05 cm 2.63" × 3.5" × 7.5"
Weight	1.45 kg (3.2 lb)

Table 2. Electrical Input

Voltage Rating	250 Vdc
Current Rating	60A
Connection	Compression Lug
Nominal Voltage	240 Vdc

Table 3. Electrical Output

Voltage Rating	250 Vdc
Current Rating	60A
Connection	Anderson Connector
Nominal Output Voltage	240 Vdc

Table 4. Environmental and Safety

Operating Temperature	0°C to 40°C (32°F to 104°F)
Transit/Storage Temperature	-25°C to 55°C (-13°F to 131°F)
Relative Humidity	5–95% noncondensing
Operating Altitude	Up to 3,000 meters (0–9843 ft) above sea level without derating
Safety Conformance	UL 1778 4 th Edition, IEC/EN 62040-1-1
Agency Markings	cULus, CE

Table 5. Customer-Supplied External Battery

Configuration	120 cell battery string (2V per cell)
Voltage	240 Vdc
Maximum Ah Rating	280 Watts per cell (70 Ah)
Type	Sealed, valve-regulated, lead-acid (VRLA)
Maximum Charger Current	7.5A

Table 6. BladeUPS 12kW Battery Discharge Times (in Minutes)

Load (Watts)	Battery Type 280 W/Cell (with 5 Ah Internal Battery)*
12000	73.2
11000	80.8
10000	90.0
9000	101
8000	115
7000	134
6000	160
5000	196

* Average discharge times are shown in Figure 17.

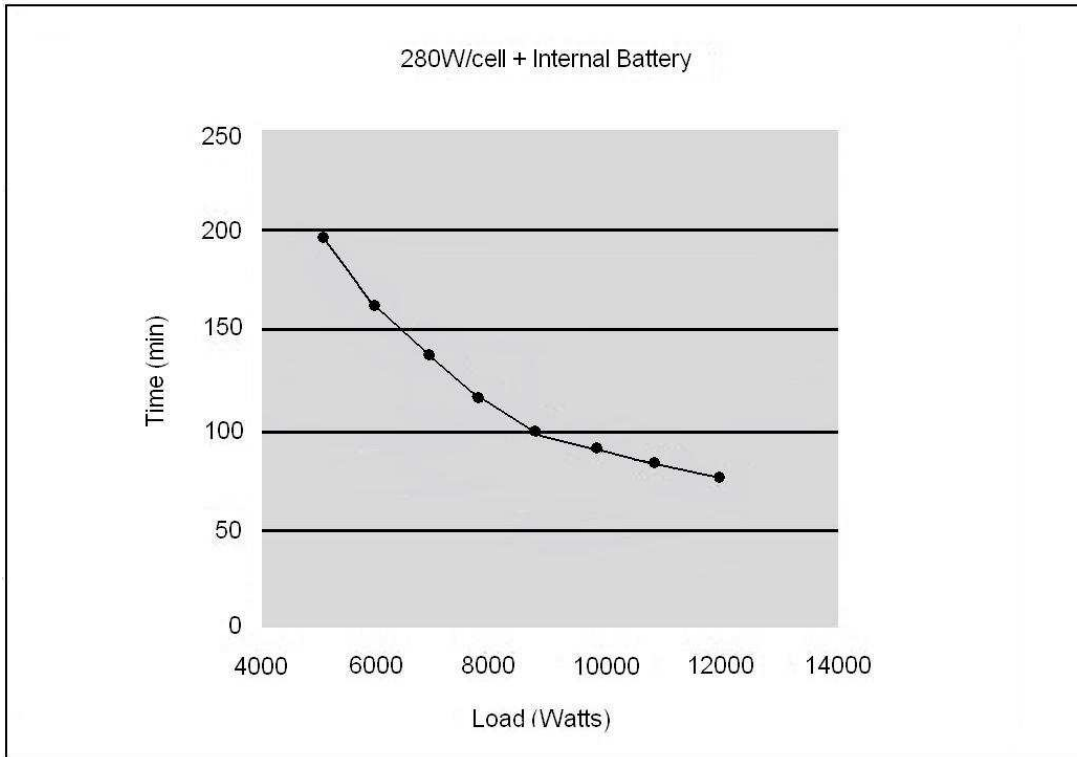


Figure 17. Average Discharge Times (in Minutes) with a Wye Connected, Constant Power, and Linear Load

Chapter 5 Warranty

Limited Warranty

Eaton® UPS Model: BladeUPS® (Global)

WARRANTOR: The warrantor for the limited warranties set forth herein is Eaton Corporation, an Ohio Corporation ("Eaton").

LIMITED WARRANTY: This limited warranty (this "Warranty") applies only to the original Purchaser (the "End-User") of any Eaton BladeUPS Products (individually and collectively, the "Product") purchased and registered with Eaton and cannot be transferred. This restriction applies even in the event that the Product is initially sold by Eaton for resale to an End-User. This Warranty gives you specific legal rights, and you may also have other rights which vary from State to State (or jurisdiction to jurisdiction).

LIMITED WARRANTY PERIOD: The period covered by this Warranty for the Product is eighteen (18) months from the date of Product shipment.

WHAT THIS LIMITED WARRANTY COVERS: Eaton warrants that the Product and battery (individually and collectively, the "Warranted Items") are free of defects in material and workmanship. If, in the opinion of Eaton, a Warranted Item is defective and the defect is within the terms of this Warranty, Eaton's sole obligation will be to repair or replace such defective Warranted Item (including providing service, parts and labor, as applicable), at the option of Eaton.

PROCEDURES FOR REPAIR OR REPLACEMENT OF WARRANTED ITEMS: The Warranted Item will be repaired or replaced at an Eaton site or such other location as determined by Eaton.

If the Warranted Item is to be replaced by Eaton, and the End-User supplies a credit card number or purchase order for the value of the replacement product, Eaton will use commercially reasonable business efforts to ship (via standard ground shipment and at no cost to the End-User) the replacement Warranted Item to the End-User within one (1) business day after Eaton receives notice of the warranty claim. In such case, the End-User must return (at Eaton's expense) the defective Warranted Item to Eaton in the same packaging as the replacement Warranted Item received by the End-User or as otherwise instructed by Eaton. If Eaton does not receive the defective Warranted Item, Eaton will either charge the End-User's credit card, or send the End-User an invoice (which the End-User agrees to pay), for the value of the replacement product.

If the Warranted Item is to be replaced by Eaton, but the End-User is unwilling or unable to supply a credit card number or purchase order for the value of the replacement product, Eaton will use commercially reasonable business efforts to ship (via standard ground shipment and at no cost to the End-User) the replacement Warranted Item to the End-User within one (1) business day after Eaton receives the defective product from the End-User.

In any case, Eaton will provide shipping instructions and will pay its designated carrier for all shipping charges for return of defective equipment and replacement of Warranted Items. Any returned Warranted Item or parts that are replaced may be new or re-conditioned. All Warranted Items returned to Eaton and, in any replacement endeavor, all parts removed by Eaton shall become the property of Eaton.

WHAT THIS LIMITED WARRANTY DOES NOT COVER: This Warranty does not cover any defects or damages caused by: (a) failure to properly store the Product before installation, including the charge of batteries no later than the date indicated on the packaging; (b) shipping and delivery of the Product if shipping is FOB Factory; (c) damage caused by fire, flood, lightning, vandalism, acts of God, End-User's neglect, misuse, misapplication, incorrect connection, or external damage, or that has been subject to repair or alteration by End-User (or a third party) not authorized by Eaton in writing; (d) repair or alteration not performed by an authorized Eaton Customer Service Engineer or Agent; (e) improper testing, operation, maintenance, adjustment, or modification of any kind not authorized in writing by Eaton personnel or performed by an authorized Eaton Customer Service Engineer or Agent; or (f) use of the Product under other than normal operating conditions or in a manner inconsistent with the Product's labels or instructions.

This Warranty is not valid if the Product's serial numbers have been removed or are illegible. Any Warranted Items repaired or replaced pursuant to this Warranty will be warranted for the remaining portion of the original Warranty subject to all the terms thereof.

Eaton shall not be responsible for any charges for testing, checking, removal, or installation of Warranted Items.

EATON DOES NOT WARRANT EQUIPMENT NOT MANUFACTURED BY EATON. IF PERMITTED BY THE APPLICABLE MANUFACTURER, EATON SHALL PASS THROUGH SUCH MANUFACTURER'S WARRANTIES TO END-USER.

EATON DOES NOT WARRANT SOFTWARE, INCLUDING SOFTWARE EMBEDDED IN PRODUCTS, THAT IS NOT CREATED BY EATON. WITHOUT LIMITING THE FOREGOING, EATON SPECIFICALLY DOES NOT WARRANT SOFTWARE (SUCH AS LINUX) THAT WAS CREATED USING AN "OPEN SOURCE" MODEL OR IS DISTRIBUTED PURSUANT TO AN OPEN SOURCE LICENSE.

THIS WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY OFFERED BY EATON WITH RESPECT TO THE PRODUCTS AND SERVICES AND, EXCEPT FOR SUCH FOREGOING WARRANTY, EATON DISCLAIMS ALL OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, TITLE, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE. CORRECTION OF NON-CONFORMITIES IN THE MANNER AND FOR THE PERIOD OF TIME PROVIDED ABOVE SHALL CONSTITUTE EATON'S SOLE LIABILITY AND END-USER'S EXCLUSIVE REMEDY FOR FAILURE OF EATON TO MEET ITS WARRANTY OBLIGATIONS, WHETHER CLAIMS OF THE END-USER ARE BASED IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY), OR OTHERWISE. SOME STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE LIMITED WARRANTY PERIOD. SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS AND/OR EXCLUSIONS MAY NOT APPLY TO YOU.

LIMITATION OF LIABILITY: The remedies of the End-User set forth herein are exclusive and are the sole remedies for any failure of Eaton to comply with its obligations hereunder. In no event shall Eaton be liable for any indirect, incidental, special, or consequential damages of any kind or type whatsoever, resulting from, or in connection with, any claim or cause of action, whether brought in contract or in tort (including negligence or strict liability). Some States or jurisdictions do not allow the exclusion of limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. Eaton shall not be responsible for failure to provide service or parts due to causes beyond Eaton's reasonable control. In no case will Eaton's liability under this Warranty exceed the replacement value of the Warranted Items.

END-USER'S OBLIGATIONS: In order to receive the benefits of this Warranty, the End-User must register the product warranty (via mail or online at www.eaton.com/powerquality "Register a Product"); use the Product in a normal way; follow the Product's operation and maintenance manual; and protect against further damage to the Product if there is a covered defect.

OTHER LIMITATIONS: Eaton's obligations under this Warranty are expressly conditioned upon receipt by Eaton of all payments due from End-User (including interest charges, if any). During such time as Eaton has not received payment of any amount due to it for the Product, in accordance with the contract terms under which the Product is sold, Eaton shall have no obligation under this Warranty. Also during such time, the period of this Warranty shall continue to run and the expiration of this Warranty shall not be extended upon payment of any overdue or unpaid amounts.

COSTS NOT RELATED TO WARRANTY: The End-User shall be invoiced for, and shall pay for, all services not expressly provided for by the terms of this Warranty, including without limitation, site calls involving an inspection that determines no corrective maintenance is required. Any costs for replacement equipment, installation, materials, freight charges, travel expenses, or labor of Eaton representatives outside the terms of this Warranty will be borne by the End-User.

OBTAINING WARRANTY SERVICE: In the United States, call the Customer Reliability Center 7x24 at 800-356-5737. Outside of the United States, contact your local Eaton product sales or service representative. For comments or questions about this Warranty, write to the Customer Quality Representative, 3301 Spring Forest Road, Raleigh, North Carolina 27616 USA.

