Intel® RAID Smart Battery AXXRSBBU3 Installation Guide

A Guide for Technically Qualified Assemblers of Intel® Identified Subassemblies/Products

Intel Order Number: C95291-008

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Safety Information

Important Safety Instructions

Read all caution and safety statements in this document before performing any of the instructions. See also Intel Server Boards and Server Chassis Safety Information on the *Intel® Server Deployment Toolkit 2.0 CD* and/or at http://support.intel.com/support/motherboards/server/sb/cs-010770.htm.

Wichtige Sicherheitshinweise

Lesen Sie zunächst sämtliche Warn- und Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen. Beachten Sie hierzu auch die Sicherheitshinweise zu Intel-Serverplatinen und Servergehäusen auf der *Intel® Server Deployment Toolkit 2.0 CD* oder unter http://support.intel.com/support/motherboards/server/sb/cs-010770.htm.

Consignes de sécurité

Lisez attention toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction. Consultez Intel Server Boards and Server Chassis Safety Information sur le *Intel® Server Deployment Toolkit 2.0 CD* ou bien rendez-vous sur le site http://support.intel.com/support/motherboards/server/sb/cs-010770.htm.

Instrucciones de seguridad importantes

Lea todas las declaraciones de seguridad y precaución de este documento antes de realizar cualquiera de las instrucciones. Vea Intel Server Boards and Server Chassis Safety Information en el *Intel® Server Deployment Toolkit 2.0 CD* y/o en http://support.intel.com/support/motherboards/server/sb/cs-010770.htm.

重要安全指导

在执行任何指令之前，请阅读本文件中的所有注意事项及安全声明。并参阅
http://support.intel.com/support/motherboards/server/sb/CS-010770.htm 上的 *Intel Server
Boards and Server Chassis Safety Information*（《Intel 服务器主板与服务器机箱安全
信息》）。

Warnings

Heed safety instructions: Before working with your server product, whether you are using this guide or any other resource as a reference, pay close attention to the safety instructions. You must adhere to the assembly instructions in this guide to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this guide. Use of other products / components will void the UL listing and other regulatory approvals of the product and will most likely result in noncompliance with product regulations in the region(s) in which the product is sold.

System power on/off: The power button DOES NOT turn off the system AC power. To remove power from system, you must unplug the AC power cord from the wall outlet. Make sure the AC power cord is unplugged before you open the chassis, add, or remove any components.

Hazardous conditions, devices and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the server and disconnect the power cord, telecommunications systems, networks, and modems attached to the server before opening it. Otherwise, personal injury or equipment damage can result.

Electrostatic discharge (ESD) and ESD protection: ESD can damage disk drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground any unpainted metal surface on your server when handling parts.

ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

Installing or removing jumpers: A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that you can grip with your fingertips or with a pair of fine needle nosed pliers. If your jumpers do not have such a tab, take care when using needle nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool you use to remove a jumper, or you may bend or break the pins on the board.

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1 About the Intel® RAID Smart Battery AXXRSBBU3

Intel® RAID Controllers and Intel® Integrated Server RAID Modules provide reliability, high performance, and fault-tolerant disk subsystem management. A complete fault-tolerant strategy requires protection for all data, including the unwritten cached data in the RAM cache. If power is lost, the data in RAM is lost. To avoid this data loss, a battery can be added to supply power to the RAID RAM during an AC power outage or if the AC power cord is removed.

The Intel® RAID Smart Battery AXXRSBBU3 is a small battery pack accessory for the Intel® Integrated Server RAID and the RAID on Motherboard (ROMB) solutions used on specific Intel® Server Systems. The Intel® RAID Smart Battery AXXRSBBU3 preserves the contents of the RAID DIMM in the event of a power failure. Once power is restored, all of the preserved data in the RAID Cache DIMM is flushed to the RAID drives. The AXXRSBBU3 circuit ensures that the backup battery is maintained at full charge for optimal performance when it is activated.

The Intel® RAID Smart Battery has a compact package and contains the following components:

- Battery pack: The Lithium-Ion (Li-Ion) battery pack supplies power to the RAM if AC power is lost. The pack includes a smart refresh circuit and charger. The refresh circuit is based on the Texas Instruments bq2060A SBS v1.1-compliant Gas Gauge IC Software, which is used to monitor and inform the user of RSB activities.

- Plastic battery holder: The holder is designed to fit the following Intel® ROMB-based server chassis and platforms:
  - Intel® Entry Server Chassis SC5650
  - Intel® Server Chassis SC5400
  - Intel® Server Chassis SC5600
  - Intel® Server System SR1600UR
  - Intel® Server System SR1625UR
  - Intel® Server System SR2600UR
  - Intel® Server System SR2625UR
  - Intel® Server System SR1550AL (Product codes: SR1550ALSAS or SR1550ALSASR)
  - Intel® Server System SR2500ALLX (Product codes: SR2500ALLX or SR2500ALLXR)
  - Intel® Server System SR4850HW4 with Intel® Integrated RAID SROMBU42E (Product code: SHW4UR/M)

— Intel® Server System SR6850HW4 with Intel® Integrated RAID SROMBU42E (Product code: SHW6UR/M)

— Intel® Server System SR4850HW4/M with Intel® Integrated RAID SROMBSAS18E (SAS) (Product code: SHW4URM3SA)

— Intel® Server System SR6850HW4/M with Intel® Integrated RAID SROMBSAS18E (SAS) (Product code: SHW6URM3SA)

The battery pack fits inside the plastic clamshell, which slides onto connectors inside the server chassis.

• Connecting cables: 20-pin cables of multiple lengths are supplied in the kit to support various server configurations. These cables are connected between the battery pack and a connection point in the Intel® Server System.

2   Installing the Hardware

Preparing the Server

1. Observe all safety and ESD precautions at the beginning of this guide and in the documentation for your server board and chassis.

2. If your server system is running, power off all peripheral devices attached to the server, power down the server, and disconnect the AC power cord.

3. Remove the chassis cover. See your server chassis documentation for instructions.

Installing the Intel® RAID Smart Battery AXXRSBBU3

Connecting the Battery Cable

1. Locate the closure tabs on the clamshell. For the location of the closure tabs, see letters "A" and "B" in Figure 1.

   The clamshell is designed to close securely to ensure that the battery is secure. Due to this design, the clamshell can be difficult to open.

2. Flex the inner edges of the clamshell to release the closure tabs.

Caution: *Do not exert excessive force when flexing the edges of the clamshell. Excessive pressure can break the clamshell.*

3. Open the Intel® RAID Smart Battery AXXRSBBU3 clamshell (see letter "C" in Figure 1).

4. Check to see if the wire from the battery is connected to the circuit board. If it is not installed, connect the wire from the battery to the circuit board (see letter "D" in Figure 1). Use the appropriate cable from the list below for your server system, and attach the cable to the connector at the rear of the clamshell:

For the	Use
Intel® Server Systems SR1550AL and SR2500ALLX that include Intel® Integrated RAID SROMBSAS18E	the 11-inch cable
Intel® Server Systems SR1600UR, SR1625UR, SR2600UR, SR2625UR, SR1550AL, and SR2500ALLX that include Intel® Integrated RAID SROMBSASMP2	the 11-inch cable
Intel® Server Systems SR1600UR, SR1625UR, SR2600UR, and SR2625UR with Intel® Integrated RAID SROMBSASMR	the 20-inch cable

For the	Use
Intel® Server Systems SR4850HW4 and SR6850HW4 with Intel® Integrated RAID SROMBU42E	the 11-inch cable
Intel® Server Systems SR4850HW4/M and SR6850HW4/M with Intel® Integrated RAID SROMBSAS18E	the 27-inch cable
Intel® Server Chassis SC5400	the 11-inch cable
Intel® Server Chassis SC5600 and Intel® Entry Server Chassis SC5650	the 20-inch cable
Add-in Intel® RAID Controllers SRCSAS144E, SRCSASJV, and SRCSASPH16I with the Intel® RAID Smart Battery	the 20-inch cable

Note: *An 11-inch and a 20-inch cable are included with the product, but a 27-inch cable is no longer included. Contact your local technical support if you need assistance.*

Note: *The 20-pin cable connector is keyed for proper orientation during insertion and can only go in one way. Before inserting into the connector, note the keyed orientation of this plug and avoid forcing it into the connector upside down, as doing so may damage the connector and battery circuitry.*
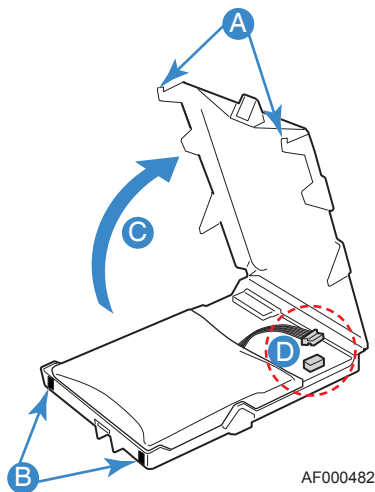

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Figure 1. Connecting the Battery Cable

Connecting the Clamshell to the Chassis

The Intel® RAID Smart Battery AXXRSBBU3 is designed for easy attachment to either an Intel® pedestal or rack mount chassis. Follow the appropriate instructions below for your server.

If you are installing this component into a third-party chassis, you will first need to install an attachment mechanism, such as industrial-grade Velcro*. Refer to your server chassis documentation or discuss an appropriate attachment mechanism with your server chassis manufacturer to ensure that the attachment mechanism complies with the chassis requirements.

Intel® Server Chassis SC5400, Intel® Server Chassis SC5600, Intel® Server Chassis SC5650, Intel® Server Systems SR1600UR, SR1625UR, SR2600UR and SR2625UR with Intel® Integrated RAID Controller SROMBSASMR, Intel® Server Systems SR4850HW4, SR6850HW4, SR4850HW4/M, and SR6850HW4/M

1. Locate the installation clips inside the chassis. They are on the left side of the chassis, near the rear. Remove the mylar pad if there is a mylar pad covering the mounting hole.
2. Align the tabs on the clamshell with the clips on the chassis (see Figure 2).
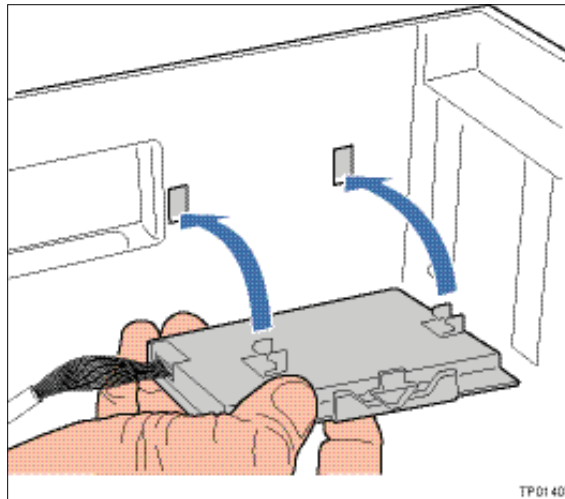

Figure 2. Aligning Clamshell Tabs to the Chassis Clips

3. Slide the clamshell toward the front of the system until the tabs engage with the clips in the chassis (see Figure 3).
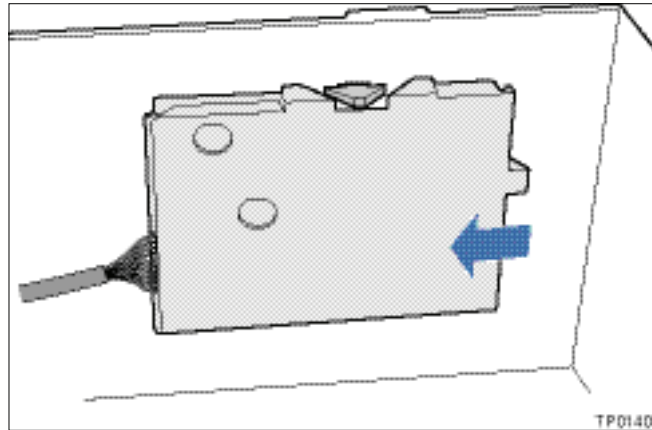
Figure 3. Engaging Clamshell Tabs with the Chassis Clips

Intel® Server Systems SR1600UR, SR1625UR, SR2600UR, SR2625UR, SR1550AL and SR2500ALLX with Intel® Integrated RAID SROMBSASMP2, Intel® Server Systems SR1550AL and SR2500ALLX with Intel® Integrated RAID SROMBSAS18E

1. Locate the installation clips inside the chassis. They are located on the inside floor of the hassis, on the left side, near the front of the chassis by the power supply.

2. Align the tabs on the clamshell with the clips on the chassis.

3. Slide the clamshell toward the rear of the system until the tabs engage with the clips in the chassis (see Figure 4).
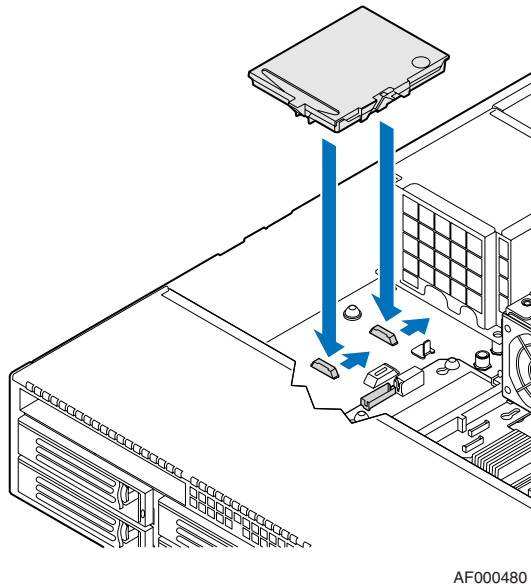

Figure 4. Engaging Clamshell Tabs with the Chassis Clips

Attaching the Connecting Cable to the Server System

Follow the appropriate set of instructions below for your server.

Note: *The connector will only fit in one position.*

Intel® Server Systems SR4850HW4 and SR6850HW4 (SCSI ROMB)

1. Route the cable through the cable holder (see letter "A" in Figure 5).
2. Connect the cable to the main board (see letter "B" in Figure 5).
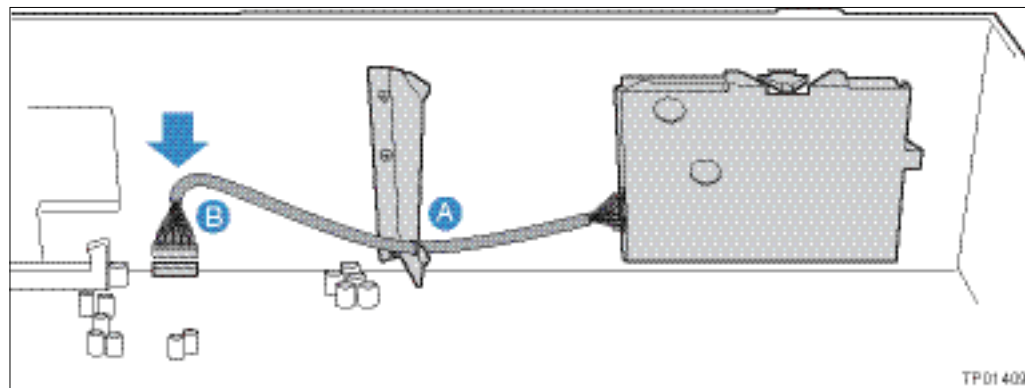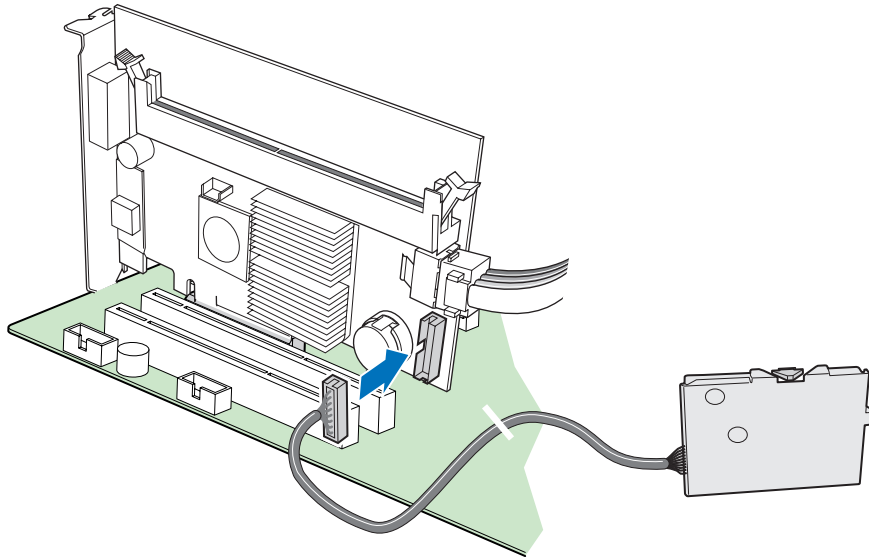

Figure 5. Routing and Connecting the Cable inside the Chassis

Intel® Server Chassis SC5400, Intel® Server Systems SR4850HW4/M and SR6850HW4/M

Connect the cable to the SAS ROMB board as shown in Figure 6.

Note: *RAM is required in the DIMM socket.*

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Figure 6. Routing and Connecting the Cable inside the Chassis

Intel® Server Chassis SC5600, Intel® Server Chassis SC5650

Connect the cable to the SAS RAID module card as shown in Figure 7.

Note: *The 20-pin cable connector is keyed for proper orientation during insertion and can only go in one way. Before inserting into the connector, note the keyed orientation of this plug and avoid forcing it into the connector upside down, as doing so may damage the connector and battey circuitry.*
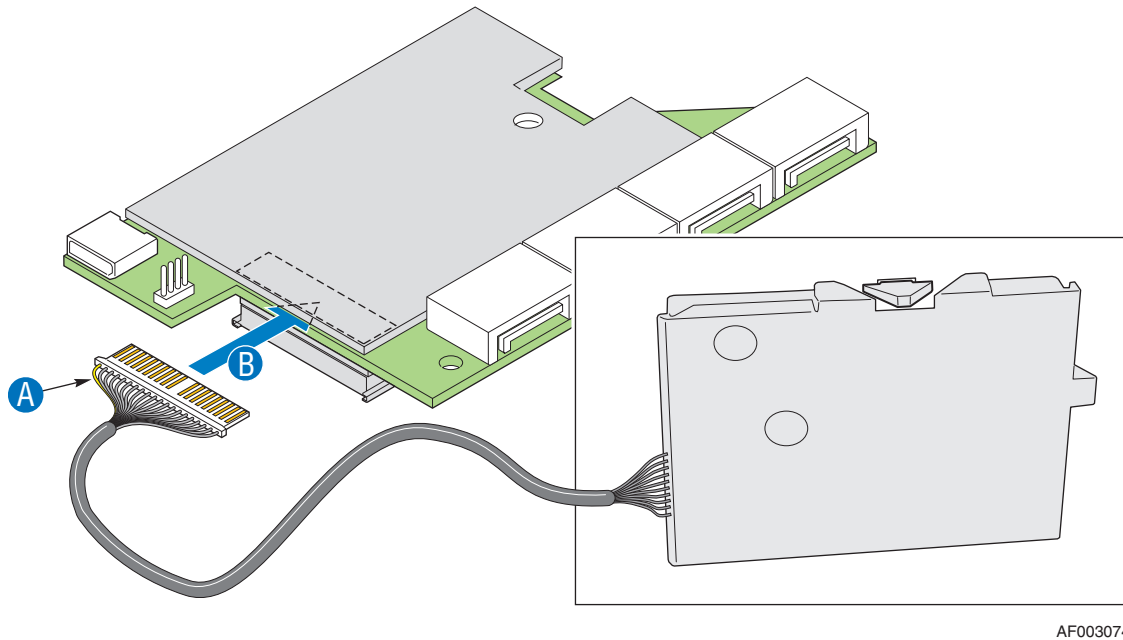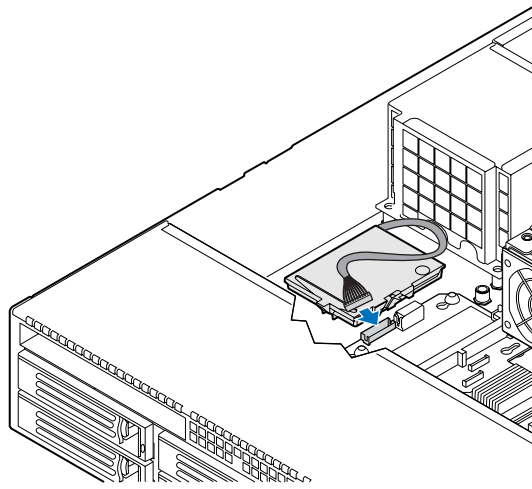

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Figure 7. Routing and Connecting the Cable inside the Chassis

Connect the cable to the active midplane (Intel® Integrated RAID SROMBSA18E) or active midplane 2 (Intel® Integrated RAID SROMBSASMP2) board as shown below.

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Figure 8. Routing and Connecting the Cable inside the Chassis

Finishing the Installation

1. Reinstall any components that were removed from the chassis. Refer to your server board or chassis documentation for instructions.

2. Install the server chassis cover and connect the AC power supply.

3 Battery Backup Unit Specifications

Table 1. BBU Specifications

Battery Technology	Lithium-Ion (Li-Ion)
Battery Operating Environment	10-45°C dry bulb temperature (the maximum dry bulb temperature shall be derated by 3.3° C per 1000 m above 500 m)
	20% to 80% relative humidity non-condensing
Battery Storage Temperature	Depends on storage time: • < 30 days: 0-50°C • 30-90 days: 0-40°C • > 90 days: 0-30°C
Fast Charge Rate	512 mA
Battery Voltage	Nominal Battery Voltage: 3.7 V
Mechanical	Maximum 2.749 inches by 2.63 inches
Battery Capacity	1050 mAH
Memory Technology	DDR SDRAM (2.5 V) DDR2 SDRAM (1.8 V)
Battery Charge Time	Typical: ~6 hours to charge from 3.6 V OCV to 4.2 V OCV Completely depleted: 10 hours
Battery Shelf Life	1 year
Battery Operational Life	Intel provides a 1 year warranty on the Intel® RAID Smart Battery AXXRSBBU3

Battery Life and Data Retention Time

The Intel® RAID Web Console utility displays a counter showing the number of times a BBU has been recharged. When you replace a BBU, you should run the utility program and reset this counter to zero for the new BBU. Intel recommends that you replace the battery pack on the BBU once a year or after 500 recharging cycles, whichever comes first. Intel provides a one year warranty on the Intel® RAID Smart Battery AXXRSBBU3.

The data retention time is 72 hours (low power). This rating is approximate and can vary based on battery load, ambient temperature, and number of discharge cycles associated with the battery.