BPN-SAS3-946SEL1/EL2 Backplane

USER'S GUIDE

Revision 1.0
Table of Contents

Contacting Supermicro.................................................................................................iv
Returning Merchandise for Service..............................................................................v

Chapter 1 Safety Guidelines ......................................................................................1-1
  1-1 ESD Safety Guidelines .........................................................................................1-1
  1-2 General Safety Guidelines ..................................................................................1-1
  1-3 An Important Note to Users ...............................................................................1-2
  1-4 Introduction to the BPN-SAS3-946SEL1/EL2 Backplane ....................................1-2

Chapter 2 Connectors and LEDs ..............................................................................2-1
  2-1 Connector Side Components ..............................................................................2-1
  2-2 Connector Side Component Definitions ..............................................................2-2
  2-3 Connector Side LED Indicators and SAS Connectors .........................................2-3
  2-4 Expander Chip Side Components ......................................................................2-5
  2-5 Expander Chip Side Component Definitions ......................................................2-6

Chapter 3 Cascading Configurations ........................................................................3-1
  3-1 Cascading Two Backplanes via One SAS Controller .........................................3-1
  Cascading Configuration ..........................................................................................3-1
  Single HBA Configuration Cables ...........................................................................3-3
Contacting Supermicro

Headquarters
Address: Super Micro Computer, Inc.
980 Rock Ave.
San Jose, CA  95131 U.S.A.
Tel: +1 (408) 503-8000
Fax: +1 (408) 503-8008
Email: marketing@supermicro.com (General Information)
support@supermicro.com (Technical Support)
Website: www.supermicro.com

Europe
Address: Super Micro Computer B.V.
Het Sterrenbeeld 28, 5215 ML
's-Hertogenbosch, The Netherlands
Tel: +31 (0) 73-6400390
Fax: +31 (0) 73-6416525
Email: sales@supermicro.nl (General Information)
support@supermicro.nl (Technical Support)
rma@supermicro.nl (Customer Support)
Website: www.supermicro.nl

Asia-Pacific
Address: Super Micro Computer, Inc.
3F, No. 150, Jian 1st Rd.
Zhonghe Dist., New Taipei City 235
Taiwan (R.O.C)
Tel: +886-(2) 8226-3990
Fax: +886-(2) 8226-3992
Email: support@supermicro.com.tw
Website: www.supermicro.com.tw
Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (http://www.supermicro.com/support/rma/).

Whenever possible, repack the backplane in the original Supermicro box, using the original packaging materials. If these are no longer available, be sure to pack the backplane in an anti-static bag and inside the box. Make sure that there is enough packaging material surrounding the backplane so that it does not become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.
Chapter 1

Safety Guidelines

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

1-1 ESD Safety Guidelines

*Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.*

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing a component from the antistatic bag.
- Handle the backplane by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the card and peripherals back into their antistatic bags when not in use.

1-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the BPN-SAS3-946SEL1/EL2 series backplane.
- Make sure that the backplane is properly and securely on the motherboard to prevent damage to the system due to power outages.
1-3 An Important Note to Users

All images and layouts shown in this user's guide are based upon the latest backplane revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this manual.

1-4 Introduction to the BPN-SAS3-946SEL1/EL2 Backplane

The BPN-SAS3-946SEL1/EL2 backplane has been designed to utilize the most up-to-date technology available, providing your system with reliable, high-quality performance.

This manual reflects BPN-SAS3-946SEL1/EL2 Revision 1.00, the most current release available at the time of publication. Always refer to the Supermicro website at www.supermicro.com for the latest updates, compatible parts and supported configurations.
Chapter 2
Connectors and LEDs

2-1 Connector Side Components

Figure 2-1. BPN-SAS3-946SEL1/EL2 Connector Side Components

1. HDD Connectors J1 - J15.
2. HDD Connectors J16 - J30.
3. 12V Power Cable Input: NI_TP1 and NI_TP2.
5. SDB Connector for the Primary Expander: J803.
7. DIP Switch: S5401
2-2 Connector Side Component Definitions

1. - 2. HDD Connectors
The HDD connectors are designated J1 through J30. These are for SAS, SATA and SAS2 drives.

3. 12V Power Connector
The power connectors are designated NI-TP1 and NI-TP2 provide power to the backplane.

4. Ground Cable Input Connector
The ground cable input connectors are designated NI_TP3 and NI_TP4.

5. - 6. SDB Connector
The Serial Debug (SDB) connector for the primary and secondary expander are designated J803 and JB803 respectively. The debug connector is for the manufacturer's diagnostic purposes only.

7. DIP Switch
The DIP switch S5401 is reserved for manufacturer's configuration purposes only.

2-3 Connector Side LED Indicators and SAS Connectors

<table>
<thead>
<tr>
<th>SAS Connector</th>
<th>SAS Drive Number</th>
<th>SAS Connector</th>
<th>SAS Drive Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1</td>
<td>SAS HDD #0</td>
<td>J16</td>
<td>SAS HDD #15</td>
</tr>
<tr>
<td>J2</td>
<td>SAS HDD #1</td>
<td>J17</td>
<td>SAS HDD #16</td>
</tr>
<tr>
<td>J3</td>
<td>SAS HDD #2</td>
<td>J18</td>
<td>SAS HDD #17</td>
</tr>
<tr>
<td>J4</td>
<td>SAS HDD #3</td>
<td>J19</td>
<td>SAS HDD #18</td>
</tr>
<tr>
<td>J5</td>
<td>SAS HDD #4</td>
<td>J20</td>
<td>SAS HDD #19</td>
</tr>
<tr>
<td>J6</td>
<td>SAS HDD #5</td>
<td>J21</td>
<td>SAS HDD #20</td>
</tr>
<tr>
<td>J7</td>
<td>SAS HDD #6</td>
<td>J22</td>
<td>SAS HDD #21</td>
</tr>
<tr>
<td>J8</td>
<td>SAS HDD #7</td>
<td>J23</td>
<td>SAS HDD #22</td>
</tr>
<tr>
<td>J9</td>
<td>SAS HDD #8</td>
<td>J24</td>
<td>SAS HDD #23</td>
</tr>
<tr>
<td>J10</td>
<td>SAS HDD #9</td>
<td>J25</td>
<td>SAS HDD #24</td>
</tr>
<tr>
<td>J11</td>
<td>SAS HDD #10</td>
<td>J26</td>
<td>SAS HDD #25</td>
</tr>
<tr>
<td>J12</td>
<td>SAS HDD #11</td>
<td>J27</td>
<td>SAS HDD #26</td>
</tr>
<tr>
<td>J13</td>
<td>SAS HDD #12</td>
<td>J28</td>
<td>SAS HDD #27</td>
</tr>
<tr>
<td>J14</td>
<td>SAS HDD #13</td>
<td>J29</td>
<td>SAS HDD #28</td>
</tr>
<tr>
<td>J15</td>
<td>SAS HDD #14</td>
<td>J30</td>
<td>SAS HDD #29</td>
</tr>
</tbody>
</table>
### Connector Side LED Indicators

<table>
<thead>
<tr>
<th>SAS Connector</th>
<th>Hard Drive Activity LED</th>
<th>Failure LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1</td>
<td>LEDA1</td>
<td>LEDF1</td>
</tr>
<tr>
<td>J2</td>
<td>LEDA2</td>
<td>LEDF2</td>
</tr>
<tr>
<td>J3</td>
<td>LEDA3</td>
<td>LEDF3</td>
</tr>
<tr>
<td>J4</td>
<td>LEDA4</td>
<td>LEDF4</td>
</tr>
<tr>
<td>J5</td>
<td>LEDA5</td>
<td>LEDF5</td>
</tr>
<tr>
<td>J6</td>
<td>LEDA6</td>
<td>LEDF6</td>
</tr>
<tr>
<td>J7</td>
<td>LEDA7</td>
<td>LEDF7</td>
</tr>
<tr>
<td>J8</td>
<td>LEDA8</td>
<td>LEDF8</td>
</tr>
<tr>
<td>J9</td>
<td>LEDA9</td>
<td>LEDF9</td>
</tr>
<tr>
<td>J10</td>
<td>LEDA10</td>
<td>LEDF10</td>
</tr>
<tr>
<td>J11</td>
<td>LEDA11</td>
<td>LEDF11</td>
</tr>
<tr>
<td>J12</td>
<td>LEDA12</td>
<td>LEDF12</td>
</tr>
<tr>
<td>J13</td>
<td>LEDA13</td>
<td>LEDF13</td>
</tr>
<tr>
<td>J14</td>
<td>LEDA14</td>
<td>LEDF14</td>
</tr>
<tr>
<td>J15</td>
<td>LEDA15</td>
<td>LEDF15</td>
</tr>
<tr>
<td>J16</td>
<td>LEDA16</td>
<td>LEDF16</td>
</tr>
<tr>
<td>J17</td>
<td>LEDA17</td>
<td>LEDF17</td>
</tr>
<tr>
<td>J18</td>
<td>LEDA18</td>
<td>LEDF18</td>
</tr>
<tr>
<td>J19</td>
<td>LEDA19</td>
<td>LEDF19</td>
</tr>
<tr>
<td>J20</td>
<td>LEDA20</td>
<td>LEDF20</td>
</tr>
<tr>
<td>J21</td>
<td>LEDA21</td>
<td>LEDF21</td>
</tr>
<tr>
<td>J22</td>
<td>LEDA22</td>
<td>LEDF22</td>
</tr>
<tr>
<td>J23</td>
<td>LEDA23</td>
<td>LEDF23</td>
</tr>
<tr>
<td>J24</td>
<td>LEDA24</td>
<td>LEDF24</td>
</tr>
<tr>
<td>J25</td>
<td>LEDA25</td>
<td>LEDF25</td>
</tr>
<tr>
<td>J26</td>
<td>LEDA26</td>
<td>LEDF26</td>
</tr>
<tr>
<td>J27</td>
<td>LEDA27</td>
<td>LEDF27</td>
</tr>
<tr>
<td>J28</td>
<td>LEDA28</td>
<td>LEDF28</td>
</tr>
<tr>
<td>J29</td>
<td>LEDA29</td>
<td>LEDF29</td>
</tr>
<tr>
<td>J30</td>
<td>LEDA30</td>
<td>LEDF30</td>
</tr>
</tbody>
</table>
2-5  Expander Chip Side Component Definitions

1. - 2. Primary and Secondary Expander Chips
These chips allow connectivity to the primary and secondary components on the backplane.

3.-4. Primary SAS Slim Line Connectors
These primary SAS slim line connectors are designated CN5, CN6, CN7 and CN8.

5. - 6. Secondary SAS Slim Line Connectors
These secondary SAS slim line connectors are designated CN1, CN2, CN3 and CN4.

7.-8. Primary and Secondary UART Connectors
The primary and secondary UART connectors are designated J802 and JB802 and are used for manufacturer's diagnostic purposes only.

9. I2C Connectors
The I2C connectors are designated J501 and J503. These connectors are used to monitor hard drive activity and status through LEDs. See the table on the right for pin definitions. Connect to J501 by default. J503 is for the manufacturer's use only.

<table>
<thead>
<tr>
<th>I2C Connector Pin Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin#</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

10. JTAG Connector
The JTAG connector is designated J5301 and is for manufacturer's diagnostic purposes only.
3-1 Cascading Two Backplanes via One SAS Controller

The BPN-SAS3-946SEL1/EL2 can be cascaded to a second BPN-SAS3-946SEL1/EL2 backplane and an AOM-S3108-H8L-P SAS RAID or AOM-S3008-L8-SB HBA controller using the primary and secondary expander components of both backplanes. Note that the connectors are located on the underside of the boards in the following illustrations.
Chapter 3: Cascading Configurations

Cascading Configuration, EL1 Backplane to Controller

Connecting EL1 Backplanes to the SAS Controller

1. Power down the system and remove the power cords from the rear of the power supplies. Open the chassis cover and access the backplanes as described in your system manual.

2. Locate connectors CN7 and CN8 on the underside of the primary backplane.

3. Plug the cables into connectors CN7 and CN8, then route the cables to connectors CN1 and CN2 on the underside of the AOM-S3108-H8L-P SAS controller as illustrated in Figure 3-1.

4. Locate connectors CN5 and CN6 on the underside of the 1st backplane.

5. Connect the cables to CN5 and CN6, then route them to CN7 and CN8 on the underside of the 2nd backplane as illustrated in Figure 3-1.

6. Close the chassis cover, plug the power cords into the rear of the power supplies and power up the system.

Figure 3-1. Backplane Cascading Configuration (EL1 Version)

Cascading Configuration EL2 Backplane to Controller

Connecting EL2 Backplanes to the SAS Controller

1. Power down the system and remove the power cords from the rear of the power supplies. Open the chassis cover and access the backplanes as described in your system manual.

2. Locate connector CN8 on the underside of the primary expander, and CN4 on the underside of the secondary expander on the first backplane.

3. Plug the cables into connector CN8 and CN4, then route the cables to connectors CN1 and CN2 on the underside of the AOM-S3108-H8L-P SAS controller as illustrated in Figure 3-2.

4. Locate connectors CN5 and CN6 on the underside of the 1st backplane.

5. Connect the cables to CN5 and CN6, then route them to CN7 and CN8 on the underside of the 2nd backplane as illustrated in Figure 3-2.
6. Locate connectors CN1 and CN2 on the underside of the 1st backplane.

7. Connect the cables to CN1 and CN2, then route them to CN3 and CN4 on the underside of the 2nd backplane as illustrated in Figure 3-2.

8. Close the chassis cover, plug the power cords into the rear of the power supplies and power up the system.

Chapter 3: Cascading Configurations

Connecting EL2 Backplanes to the Dual HBA

1. Power down the system and remove the power cords from the rear of the power supplies. Open the chassis cover and access the backplanes as described in your system manual.

2. Locate connector CN7 and CN8 on the underside of the primary expander, and CN3 and CN4 on the underside of the secondary expander on the first backplane.

3. Plug the cables into connector CN7 and CN8 then CN3 and CN4, then route the cables to connectors CN1 and CN2 on the undersides of both AOM-S3008-L8-SB HBAs as illustrated in Figure 3-3.

4. Locate connectors CN5 and CN6 on the underside of the 1st backplane.

5. Connect the cables to CN5 and CN6, then route them to CN7 and CN8 on the underside of the 2nd backplane as illustrated in Figure 3-3.
6. Locate connectors CN1 and CN2 on the underside of the 1st backplane.

7. Connect the cables to CN1 and CN2, then route them to CN3 and CN4 on the underside of the 2nd backplane as illustrated in Figure 3-3.

8. Close the chassis cover, plug the power cords into the rear of the power supplies and power up the system.
Disclaimer (cont.)

The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.