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California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate”

WARNING: Handling of lead solder materials used in this product may expose you to lead, a chemical known to the State of California to cause birth defects and other reproductive harm.

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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.
This chapter offers guidelines for personal and equipment safety, and notes about the BPN-SAS3-827HD-N4 version documented in this manual.

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 backplane.

- Disconnect the power cable before installing or removing any cables from the backplane.

- Make sure that the backplane is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.
1-3 Version Information

The BPN-SAS3-827HD-N4 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-SAS3-827HD-N4, Revision 1.00, the most current release available at the time of publication. Refer to the Supermicro Web site at www.supermicro.com for the latest updates, compatible parts and supported configurations.
Chapter 2
Connectors, Jumpers and LEDs

This section documents BPN-SAS3-827HD-N4 with NVMe capabilities.

2-1 Rear Connector Locations

The following connectors are on the side of the backplane that faces the rear of the chassis. They are identified by silkscreen labels.

1. Main Power Connector: JPW12 (24-pin)
2. Secondary Power Connector: JPW9 (2x4 pin)
3. Secondary Power Connector: JPW10 (2x4 pin)
4. Secondary Power Connector: JPW11 (2x6 pin)
5. Chassis Fan Connector: Fan1 JP54 (4-pin)
7. Chassis Fan Connector: Fan3 JP56 (4-pin)
8. Chassis Fan Connector Fan4 JP57 (4-pin)
9. Power Supply SM Bus Connector: JPI2C1 (5-pin)
10. Node A connector: J12
11. Node B connector: J13
12. Backplane to front panel connector for node A: JF5 (20-pin)
13. Backplane to front panel connector for node B: JF6 (20-pin)
14. CPLD JTAG port: J30 (6-pin)
15. MCU firmware upgrade port JP69 (6-pin)
2-2  Rear Connector Definitions

1-4. Power Supply Connectors
These connectors, designated JPW1, JPW2, JPW3, and JPW4 supply power to the two motherboard nodes and to the drives.

5-8. Chassis Fan Connectors
These connectors, designated JP54, JP55, JP56 and JP57 supply power to the cooling fans.

9. Power Supply SM Bus Connector
The 5-pin connector, designated JPI2C1, connects the power supply SMbus to the MCU.

10-11. Motherboard to Backplane Connectors
J12 connects motherboard A to the backplane on the chassis. J13 connects motherboard B to the backplane.

12-13. Backplane to Front Panel Headers
These headers connect by cables to the chassis front control panels. JF5 connects to the panel on the right side of the chassis, JF6 connects to the panel on the left side.

14. CPLD JTAG port:
The J30 connector is for manufacturer use.

15. MCU Upgrade Port
JP69 is a port to upgrade the MCU firmware.

Figure 2-2. Default Configuration--Fans Connected Directly to the Backplane
2-3 Rear Jumpers and Pin Definitions

Figure 2-3. Rear Jumpers

Explanation of Jumpers
To modify the operation of the backplane, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

Jumper Settings

<table>
<thead>
<tr>
<th>Jumper</th>
<th>Jumper Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP36</td>
<td>Open: Default</td>
</tr>
<tr>
<td></td>
<td>Closed: Any one button for power on</td>
</tr>
<tr>
<td>JP38</td>
<td>Open: Default; Close for LED testing only</td>
</tr>
<tr>
<td>JP39</td>
<td>Open: Default; for testing purposes</td>
</tr>
<tr>
<td>JP40</td>
<td>Open: Default; Close for programming only</td>
</tr>
</tbody>
</table>

Figure 2-3

3 2 1
Connector
Pins

3 2 1
Jumper

3 2 1
Setting
2-3 Rear LED Indicators

Figure 2-4. Rear LEDs

<table>
<thead>
<tr>
<th>Rear LEDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>L3</td>
</tr>
</tbody>
</table>
2-4 Front Connectors and LED Indicators

**SAS/SATA/NVMe**

The front of the backplane has 12 sockets to connect hard disk drives, along with LEDs indicators. The BPN-SAS3-827HD-N4 is designed to work with two separate computing nodes, each with an independent motherboard. The backplane supports six drives for each node. The drive ports designated SAS(NVMe)#0 through 5 are managed by node A, The drive ports designated SAS(NVMe)#6 through 11 are managed by node B.

**Figure 2-5. Motherboard Locations In the Chassis**

**Figure 2-6. Front Connectors**
(SAS3/SATA3/NVMe Hybrid Ports in red boxes)
### Drive Connectors and LED Indicators

<table>
<thead>
<tr>
<th>Drive Number</th>
<th>Label</th>
<th>HDD Activity LED (blue)</th>
<th>Failure LED (red)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAS/NVMe #0*</td>
<td>J0</td>
<td>ACT#0</td>
<td>FAIL#0**</td>
</tr>
<tr>
<td>SAS/NVMe #1*</td>
<td>J1</td>
<td>ACT#1</td>
<td>FAIL#1**</td>
</tr>
<tr>
<td>SAS/NVMe #2*</td>
<td>J2</td>
<td>ACT#2</td>
<td>FAIL#2**</td>
</tr>
<tr>
<td>SAS/NVMe #3*</td>
<td>J3</td>
<td>ACT#3</td>
<td>FAIL#3**</td>
</tr>
<tr>
<td>SAS #4</td>
<td>J4</td>
<td>ACT#4</td>
<td>FAIL#4</td>
</tr>
<tr>
<td>SAS #5</td>
<td>J5</td>
<td>ACT#5</td>
<td>FAIL#5</td>
</tr>
<tr>
<td>SAS/NVMe #6*</td>
<td>J6</td>
<td>ACT#6</td>
<td>FAIL#6**</td>
</tr>
<tr>
<td>SAS/NVMe #7*</td>
<td>J7</td>
<td>ACT#7</td>
<td>FAIL#7**</td>
</tr>
<tr>
<td>SAS/NVMe #8*</td>
<td>J8</td>
<td>ACT#8</td>
<td>FAIL#8**</td>
</tr>
<tr>
<td>SAS/NVMe #9*</td>
<td>J9</td>
<td>ACT#9</td>
<td>FAIL#9**</td>
</tr>
<tr>
<td>SAS #10</td>
<td>J10</td>
<td>ACT#10</td>
<td>FAIL#10</td>
</tr>
<tr>
<td>SAS #11</td>
<td>J11</td>
<td>ACT#11</td>
<td>FAIL#11</td>
</tr>
</tbody>
</table>

*Hybrid ports; NVMe or SAS

**For hybrid ports, this failure LED is bi-color, as described below.

### Failure LED States

<table>
<thead>
<tr>
<th>Color and State</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red, solid</td>
<td>Failure</td>
</tr>
<tr>
<td>Red, blinking at 1Hz</td>
<td>Rebuild</td>
</tr>
<tr>
<td>Red, blinking at 4Hz</td>
<td>Identify</td>
</tr>
<tr>
<td>Amber, blinking**</td>
<td>Attention! Do not remove NVMe device</td>
</tr>
<tr>
<td>Green**</td>
<td>NVMe device ready be removed</td>
</tr>
</tbody>
</table>

** For NVMe only

---

Figure 2-7. Front Connectors and LEDs

---

2-6
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.