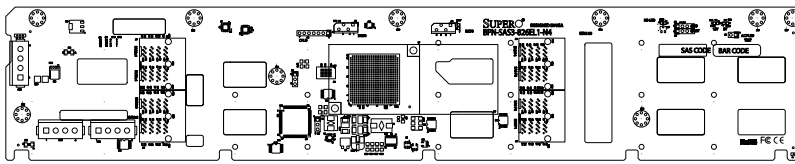
BPN-SAS3-826EL1-N4
BACKPLANE



USER'S GUIDE

Rev. 1.0

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our web site at www.supermicro.com.**

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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.

Notes

Chapter 1

Guidelines

This chapter offers guidelines for personal and equipment safety, and notes about the BPN-SAS3-826EL1-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 cord before installing or removing any cables from the backplane.
- Make sure that the backplane is securely and properly installed on the mounting frame in the chassis to prevent damage to the system due to power shortage.

1-3 Version Information

The BPN-SAS3-826EL1-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-SAS3-826EL1-N4, 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, Jumpers and LEDs

This manual covers BPN-SAS3-826EL1-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 marked by silkscreen labels.

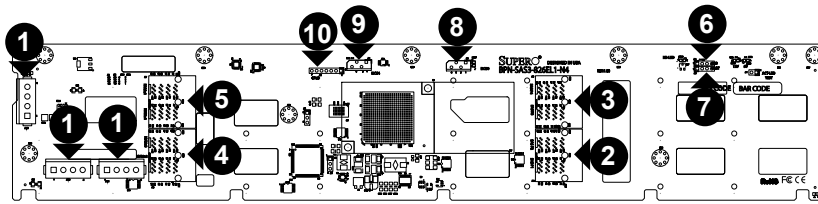


Figure 2-1. Rear Connectors

1. Power Connectors, 4-pin: JPW1, JPW2 and JPW3.
2. SAS Connector for SASP1-SASP2: J14.
3. SAS Connector for SASP3-SASP4: J15.
4. NVMe Connector for NVMe2 and NVMe3: J16. Note: Top connects to NVMe3, bottom connects to NVMe2.
5. NVMe Connector for NVMe1 and NVMe4: J17. Note: Top connects to NVMe1 and bottom connects to NVMe4.
6. SDB Connector: J18.
7. UART Connector: J22.
8. I²C Connector I2C#0: J20.
9. I²C Connector I2C#4: J21.
10. CPLD Upgrade Connector: JP2.

2-2 Rear Connector and Pin Definitions

1. Main Power Connectors

The 4-pin connectors, designated JPW1, JPW2 and JPW3, provide power to the backplane. See the table on the right for pin definitions.

Backplane Main Power 4-Pin Connector	
Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

2-3. SAS Connectors

SAS connectors are used to connect the SAS drive cables and are designated J14 and J15. Each of the two connectors has two ports for a total of four ports. These four ports are designated as follows, Connector J14 has ports SASP1 and SASP2. Connector J15 has ports SASP3 and SASP4. These connectors are also compatible with SATA drives.

4.-5. NVMe Connectors

Two NVMe connectors are used to connect the NVMe drive cables. Each connector controls two NVMe SSDs for a total of four SSDs. Connector J16 is for SSDs NVMe2 and NVMe3. Connector J17 is for SSDs NVMe1 and NVMe4.

6. SDB Connector

The serial debug or SDB connector is designated J18 and is used for the manufacturer's diagnostic purposes.

8.-9. I²C Connectors

The I²C connectors are designated J20 I2C#0, and J21 I2C#4.

10. CPLD Upgrade Connector

The CPLD upgrade connector is designated JP2 CPLD.

2-3 Rear Jumper Locations and Pin Definitions

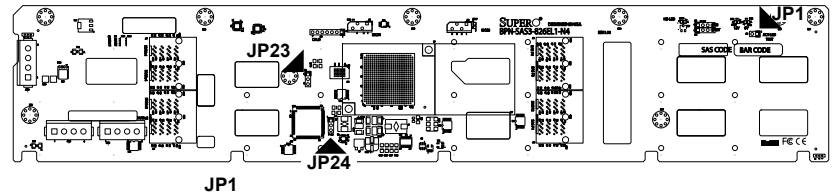


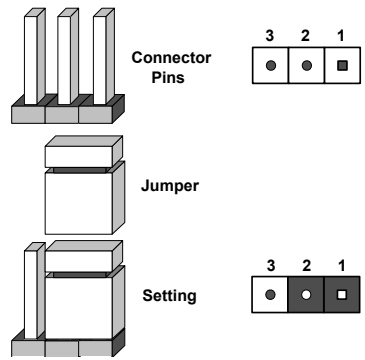
Figure 2-2. Rear Jumpers

Jumper Settings		
Jumper	**Settings**	**Note**
JP1	Pins 1-2	Activity LED test jumper, designated ACT-LED TEST
JP23, JP24	see table below	NVMe mapping to CPU

Jumpers		NVMe to CPU Connection	NVMe Cables	
J23 Pins	**J24 Pins**	**NVMe Drive Slots**	**VPP from CPU1**	**VPP from CPU2**
2-3	2-3	NVMe# 1-4 connected to CPU 1	:4	0
2-3	1-2	NVMe# 1-3 connected to CPU 1 NVMe# 4 connected to CPU 2	:1	3
1-2	2-3	NVMe# 1-2 connected to CPU 1 NVMe# 3-4 connected to CPU 2	:2	2
1-2	1-2	NVMe# 1 connected to CPU 1 NVMe# 2-4 connected to CPU 2	:3	1

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.



2-4 Front Connectors and LED Indicators

All connectors support SAS3. Connectors for SAS #9 through #12 are hybrid ports that support both SAS3 and NVMe.

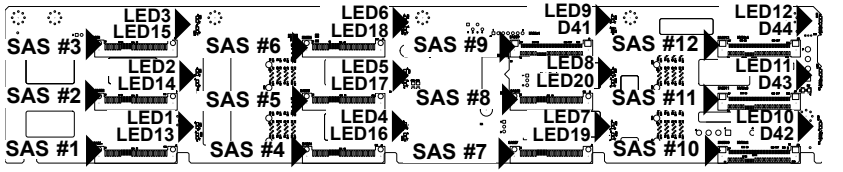


Figure 2-4. Front Connectors and LEDs

Front SAS/SATA Connectors and LED Indicators			
Connector Number and HDD Number	**Label**	**HDD Activity LED (Blue)**	**Failure LED (Red)**
SAS #1	J1	ACT#0	FAIL#0
SAS #2	J2	ACT#1	FAIL#1
SAS #3	J3	ACT#2	FAIL#2
SAS #4	J4	ACT#3	FAIL#3
SAS #5	J5	ACT#4	FAIL#4
SAS #6	J6	ACT#5	FAIL#5
SAS #7	J7	ACT#6	FAIL#6
SAS #8	J8	ACT#7	FAIL#7
SAS #9/NVMe #1*	J9	ACT#8	FAIL#8**
SAS #10/NVMe #2*	J10	ACT#9	FAIL#9**
SAS #11/NVMe #3*	J11	ACT#10	FAIL#10**
SAS #12/NVMe #4*	J12	ACT#11	FAIL#11**

*Hybrid ports; SAS or NVMe

**This failure LED is multi-colored, as described in the table below.

Color and State	Indication
Red, solid	Failure
Red, blinking at 1Hz	Rebuild
Red, blinking at 4Hz	Indentify
Amber, blinking	Attention! Do not remove NVMe device
Green	NVMe device ready be removed

Chapter 3

Cascading Configurations

3-1 Single Port Expanders

SAS connectors SASP1 through SASP4 are bidirectional and can be treated as input or output.

Single Ports

BPN-SAS3-826EL1 backplanes have a single port expander that accesses all of the drives and supports cascading.

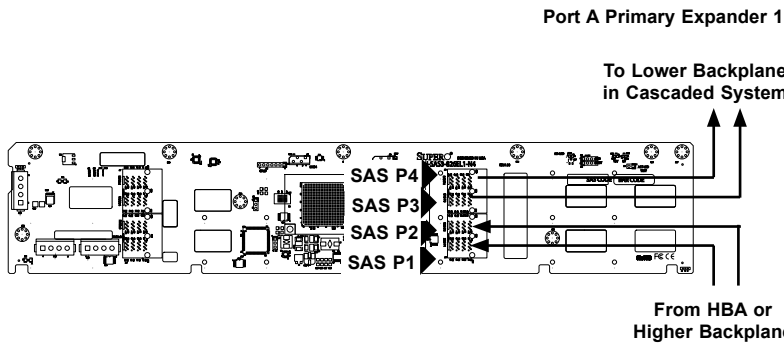


Figure 3-1. BPN-SAS3-826EL1 Single Port Configuration

Connecting an External HBA to the Backplane

This backplane supports external host bus adapters. In this configuration, the HBA and the backplane are in different physical chassis. This allows a JBOD (Just a Bunch Of Drives) configuration from an existing system.

Single External Host Bus Adapter

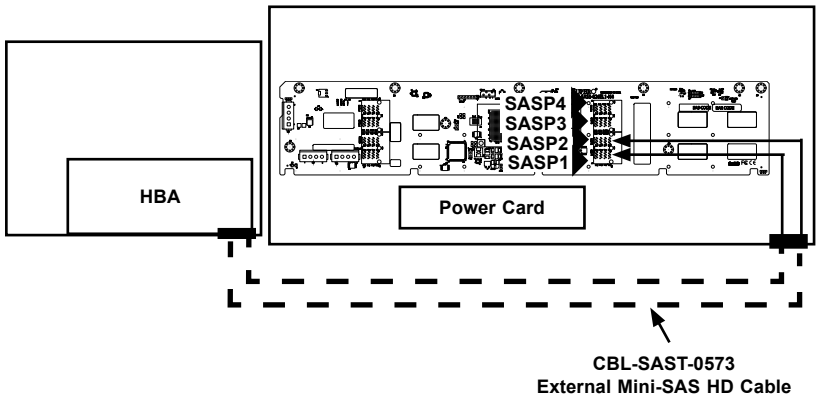


Figure 3-2. Single External Host Adapter

Connecting Multiple Backplanes in a Single Channel Environment

This section describes the cables used when cascading from a single HBA. These connections use CBL-SAST-0531 internal cables and CBL-SAST-0573 external cables.

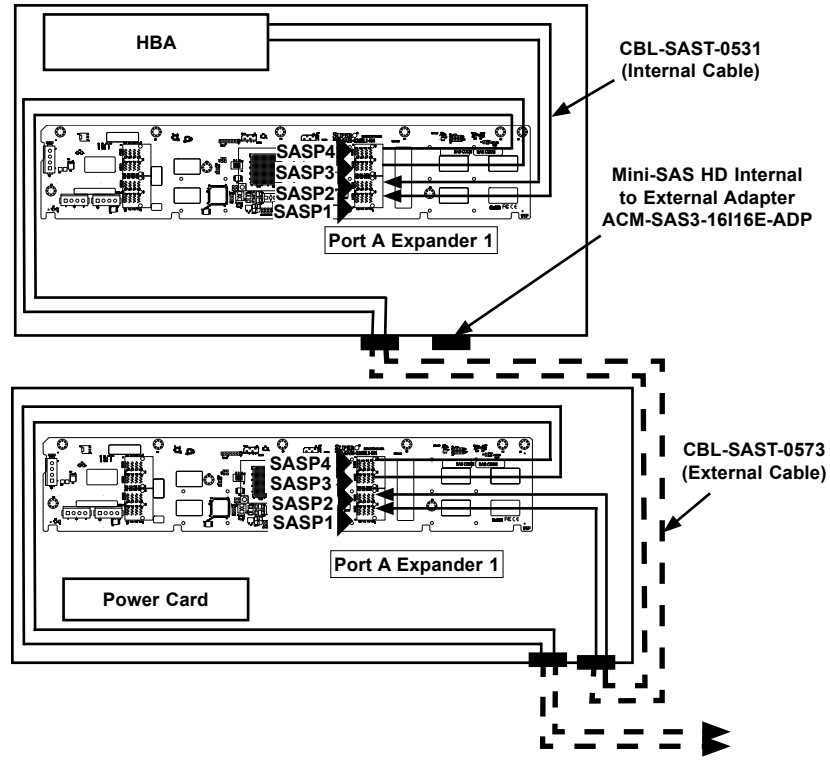


Figure 3-3. Single HBA Configuration

Single HBA Configuration Cables

Figure 3-4. External Mini-SAS HD to External Mini-SAS HD Cable

Cable Name: 1 Meter External Mini-SAS HD to External Mini-SAS HD Cable

Part #: CBL-SAST-0573
Ports: Single
Placement: External Cable
Description: External cascading cable, connects ports between servers and JBODs.

Figure 3-5. Mini-SAS HD Internal to External Adapter

Cable Name: 16-port Mini-SAS HD Internal to External Cable Adapter with LP Bracket

Part #: AOM-SAS3-16I16E-LP
Ports: Four wide-ports (sixteen ports total)
Placement: Internal cable with adapter
Description: Internal cable, connects the SAS3 backplane to external ports.

Notes

Disclaimer (cont.)

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