SR209 Plus Series

Server Chassis **User Manual**

January 2020 Version 2.4

CHENBRO

A document provides an overview of product features, functions, architecture, and support specifications.

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1. Product Overview

The SR209 chassis has been modified to support both tool-less 3.5" HDD tray and PCIe 3.0 slot, and transformed to feature-advanced SR209 Plus. Beneath the chassis, an information sticker reads revision and manufacturing codes which are necessary for technical support. This chapter provides a high-level overview of the system features and available options. More details for each major sub-system, feature or options are provided in the following chapters.

Table 1 Chenbro SR209 Plus specifications

Feature	Description
MB Form Factor	· ATX (12" x 9.6")
Dimension	· 465.0 x 198.0 x 425.0 (mm)
(Dx W x H)	18.31" x 7.80" x 16.73" (w/o bezel)
Drive Bay	· 3 x 5.25" External, 4 x 3.5" Hot-swap (Option), 4 x 3.5" Internal (Option)
Storage Backplane	· 1 x 3.5" 4-port 12Gbps Mini-SAS HD Passive Backplane
	· 1 x 3.5" 4-port 12Gbps SAS/SATA Passive Backplane
PSU Form Factor	· PS/2 Single or N+1 Redundant
Indicator	· 1 x Power Status, 2 x LAN Activity, 1 x HDD Status, 1 x System Alarm
Front Control	· 1 x Power On/Off, 1 x System Reset, 1 x Alarm Mute, 2 x USB2.0/USB3.0 (Option)
Cooling Fan	· HDD Cage: 80 x 25 mm (1), PCI: 80 x 25 mm (1) (Option), Rear: 120 x 25 mm (1)
System Security	· Intrusion Switch, Key Lock, Kensington Slot
Expansion Slot Opening	· 7 x Full Height (5 x Full Length + 2 x Half Length)
Net Weight	· 7.8 kg/17.18 lb
Gross Weight	· 9.8 kg/21.59 lb
Cubic Feet	· 2.94
Container Loading	· 20': 350, 40': 734, 40'H: 820 (Single Packing)
Slide Rail	· Supported

1-1 Front Panel

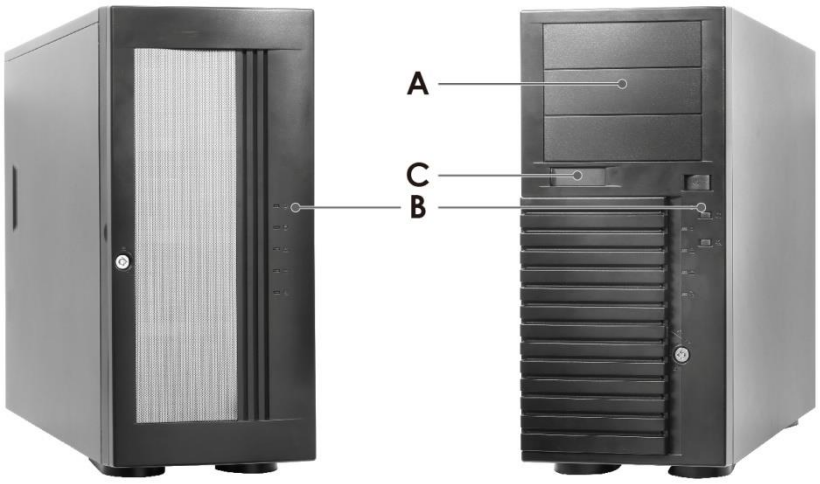


Figure 1 Front panel (enclosed)

A. 5.25" Storage Drive Bay

B. Front Control Panel

C. USB Port Blank

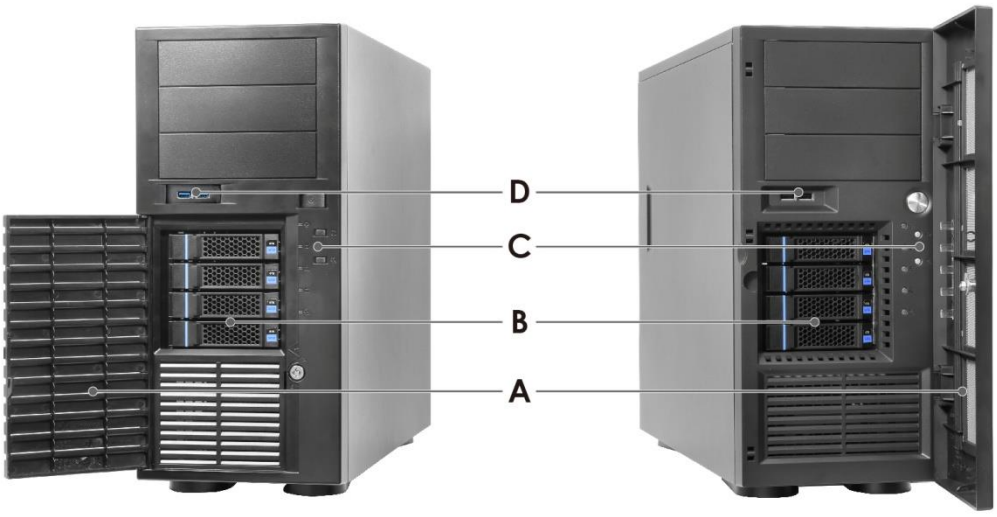


Figure 2 Front panel (open)

A. Bezel Door

B. 3.5" Storage Drive Bay

C. Front Control Panel

D. USB3.0

1-2 Back Panel

Figure 3 Back panel with redundant PSU

A. 1+1 Redundant PSU

B. Rear I/O

C. Rear Fan

D. Expansion Slot Opening

1-3 Security Features

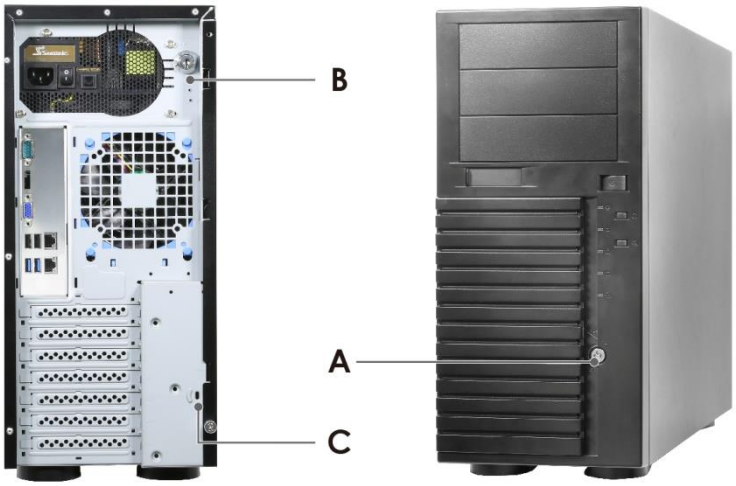


Figure 4 Key lock and Kensington Slot location

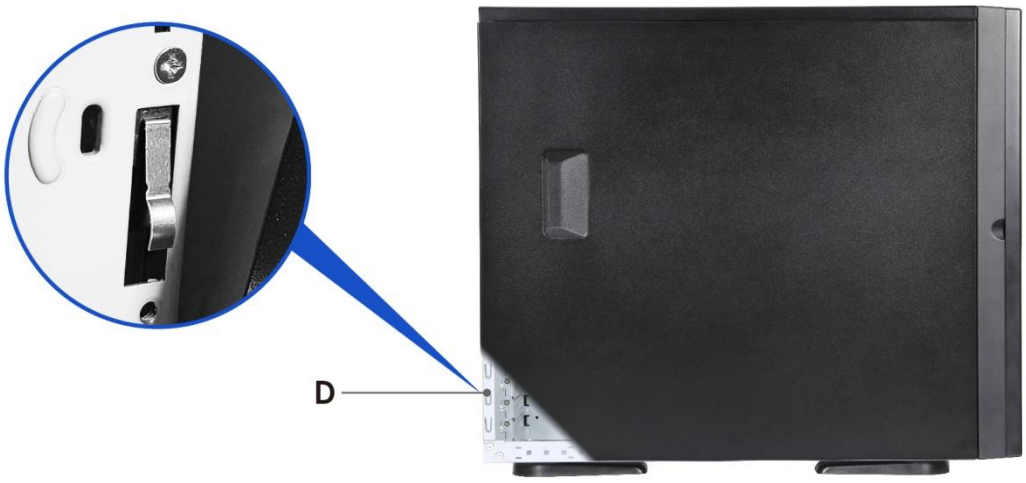


Figure 5 Intrusion switch location

A. Key Lock

B. Side Cover Lock

C. Kensington Slot

D. Intrusion Switch

1-4 Front Control Panel

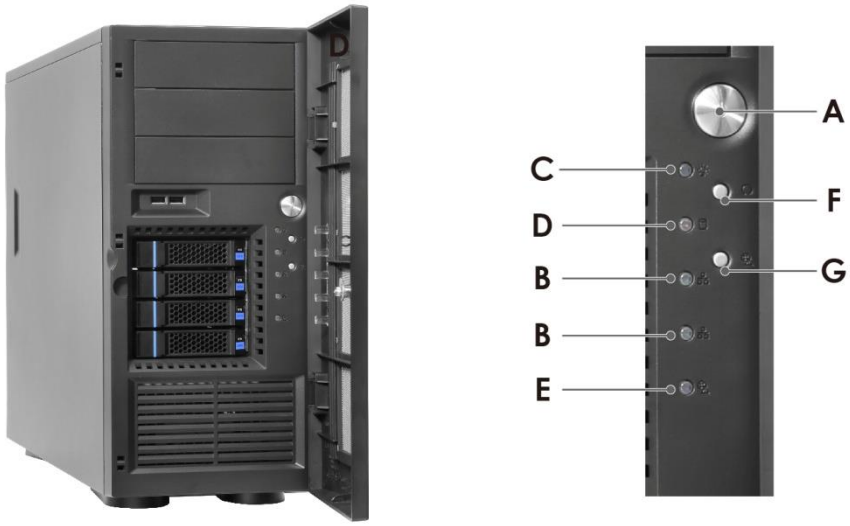


Figure 6 Front control panel

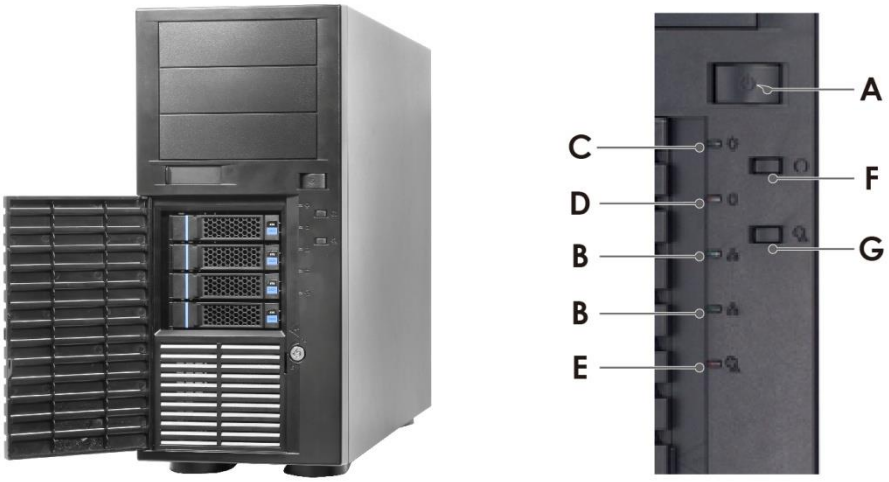


Figure 7 Front control panel

Table 2 Front control panel

Label	ICON	Indicator, button or connector
A		Power Button
B		LAN1, LAN 2 Activity LED
C		Power LED
D		HDD Activity LED
E		Fan Alarm LED
F		System Reset Button
G		Fan Alarm Reset Button

1-5 Chassis Dimensions

Figure 8 Chassis dimensions

1-6 Interior View

Figure 9 Chassis components

A. 3.5" HDD Cage Slot
B. Power Supply Unit
C. 5.25" Storage Drive Bay
D. PCIe Fan (Option)
E. System Board

1-7 System Level Environmental Specifications

The following table defines the system level specification under operating and non-operating environments.

Table 3 System environmental specifications summary

Parameter		Specification
Temperature	Operating	5° C to 35° C (41° F to 95° F)
Temperature	Non-Operating	-40° C to 70° C (-40° F to 158° F)
Humidity	Non-Operating	50% to 90%, non-condensing with a maximum wet bulb of 28° C (at temperatures from 25° C to 35° C)
Unpackaged Shock	Non-Operating	Trapezoidal, 25 g, velocity change is based on product weight
Vibration	Operating	5 Hz @ 0.0002 g2/Hz to 350 Hz @ 0.0002 g2/Hz Input acceleration is 0.26 g RMS 10 minutes per axis for all 3 axes on all samples Random control limit tolerance is ± 3 dB
Sag & Bow	Non-Operating	Tolerance analysis among rack, rail and chassis Actual on rack test with EIA Go-NoGo fixture
EMI Pre-scan	Radiated Emissions	CISPR CLASS A (under 6 dB): 30~1000 MHz vertical/horizontal 1G~6G GHz vertical/ horizontal 1G~18G GHz vertical/horizontal
RVI	Operating	HDD class · Class 1: Highest performance, reliability, and data integrity · Class 2: A second tier of performance, reliability, and data integrity HDD I/O throughput degradation SPEC Pass/Fail Criteria · No functional failure during test or post-test diagnostics. · Requirement to pass test is based on IOMeter data throughput (in IO's per second) expressed as a percent of Test HDD maximum theoretical baseline performance · Class1: > 90% of baseline for 4K random writes and > 80% of baseline for 128K sequential writes. · Class2: > 85% of baseline for 4K random writes and > 75% of baseline for 128K sequential writes. · Mix: > 80% of baseline for 4K random writes and > 70% of baseline for 128K sequential writes.
Packaged Vibration	Non-Operating	ISTA (weight over 68 kg, 1B; weight equal or less than 68 kg, 1A)
Packaged Drop	Non-Operating	Drop height change is based on product weight Non-palletized product: · Investigation: Test requirement is 6 face drops, 8 corner drops and 12 edge drops for a total of 26 drops. · Validation: Test requirement is 6 face drops, 2 corner drops and 3 edge drops for a total of 11 drops. Palletized product: (Both investigation and validation) · Perform two bottom drops at the specified height, 10 bottom drops at one half of the specified height. · Perform 4 rotational edge drops (one per edge) at the specified height.

1-8 System Packaging

The original Chenbro packaging, where the server system is delivered, is designed to provide protection to a fully configured system and tested to meet ISTA (International Safe Transit Association) Test Procedure 1A. The packaging is also designed to be reused for shipment after system integration has been completed.

The original packaging includes the shipping box, and various protective inner packaging components, which are designed to function together as a protective packaging system. When reused, all of the original packaging material must be used, including box and each inner packaging component. In addition, all inner packaging components MUST be reinstalled in the proper location to ensure adequate protection of the system for subsequent shipment.

Table 4 System packing information

Part Number	Single/Bulk	Form Factor (mm)	Support Level
387-20969-2100A0	Single	350 x 734 x 820	L5

⚠ **NOTE:** The design of the inner packaging components does not prevent improper placement within the packaging assembly. There is only one correct packaging assembly that will allow the package to meet the ISTA (International Safe Transit Association) Test Procedure 1A (2008). Failure to follow the specified packaging assembly instructions may result in damage to the system during the shipment.

Table 5 Product weight information

Product	Unpackaged Net Weight （kg）	Packaged Gross Weight （kg）	Unpackaged Net Weight (lb)	Packaged Gross Weight (lb)
SR209 Plus	7.8	9.8	17.18	21.59

⚠ **NOTE:** A L5 system does not include motherboard, processors, memory, drives, or add-in cards. It is the system configuration as shipped from Chenbro. Weights of integrated system (system configurations that include the items above) will vary depending on the final system configuration.

2. System Components Installation and Removal

SR209 Plus supports up to 4 x 3.5" hot-swap SAS/SATA HDD or 4 x 3.5" Internal SAS/SATA HDD. Support for different storage and peripheral options will vary depending on the system model and/or available accessory options installed.

2-1 Side Cover Installation

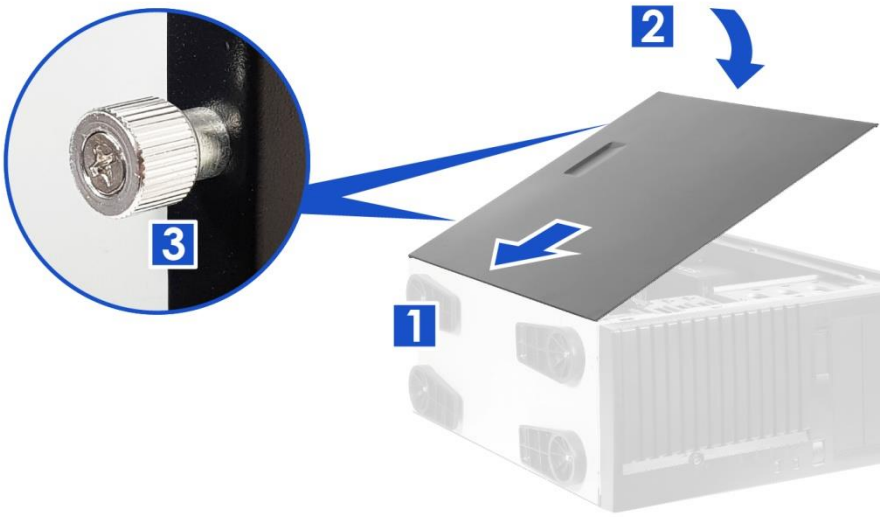


Figure 10 Side cover installation

1. Insert the cover along the bottom groove.
2. Place down the cover toward the chassis.
3. Secure the thumb screws on the top and bottom as shown.

2-2 Front Bezel Installation & Removal

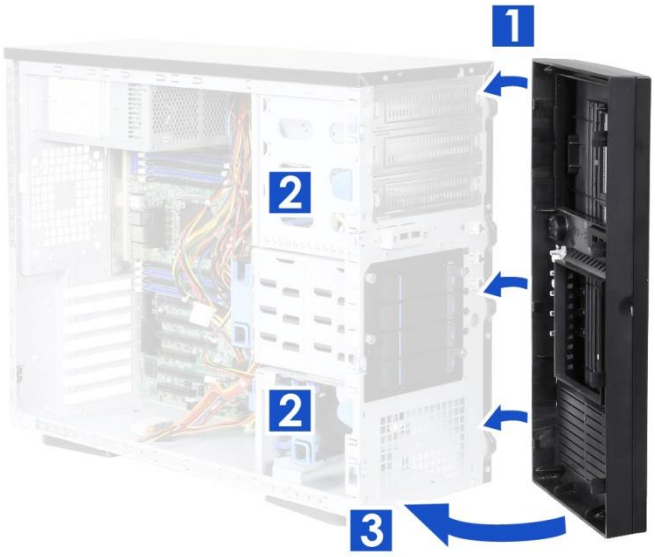


Figure 11 Bezel installation

1. Lean the right side of the bezel on the front of the chassis.
2. Fully attach the bezel on the front of the chassis, and make sure two internal latches are up.
3. Push down the bezel until it is secured into place.

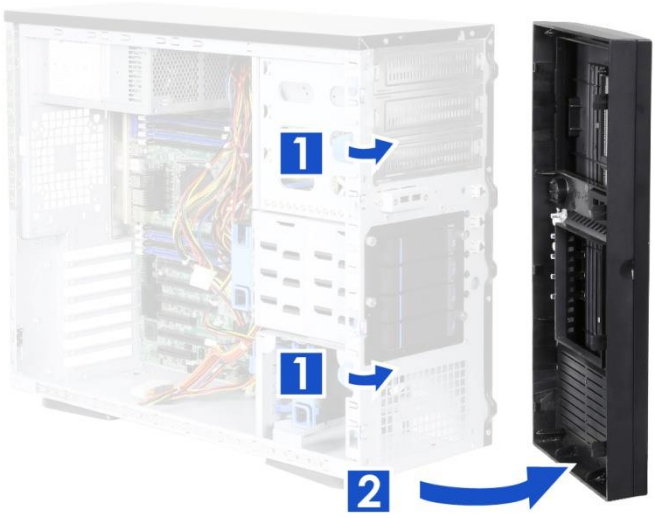


Figure 12 Bezel removal

1. Lift two internal latches up as shown.
2. Detach the bezel tabs and remove the bezel.

2-3 5.25” Device Installation

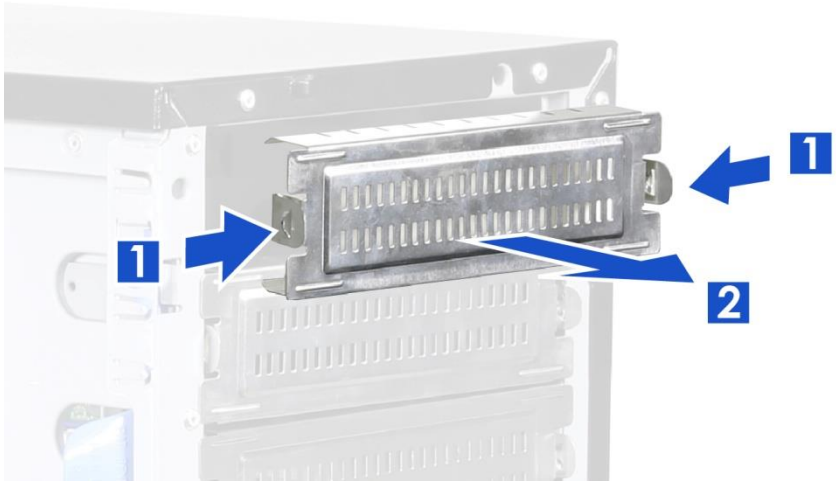


Figure 13　5.25” device blank removal

1. Press two sides of the latch of the blank to release it as shown.
2. Pull the blank out.

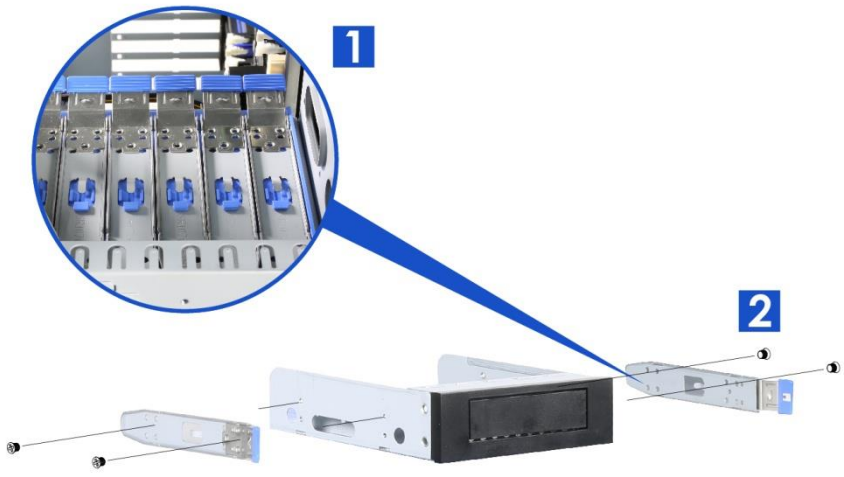


Figure 14　5.25” device side rail installation

1. Take the reserved side rails located inside the drive slot.
2. Attach and secure the side rails on both sides of the 5.25” device.

Figure 15　5.25″ device installation

1. Insert the 5.25″ device into the drive bay.

⚠ **Note:** Make sure both side rails are clipped on the latch.

2-4 HDD Cage Installation & Removal

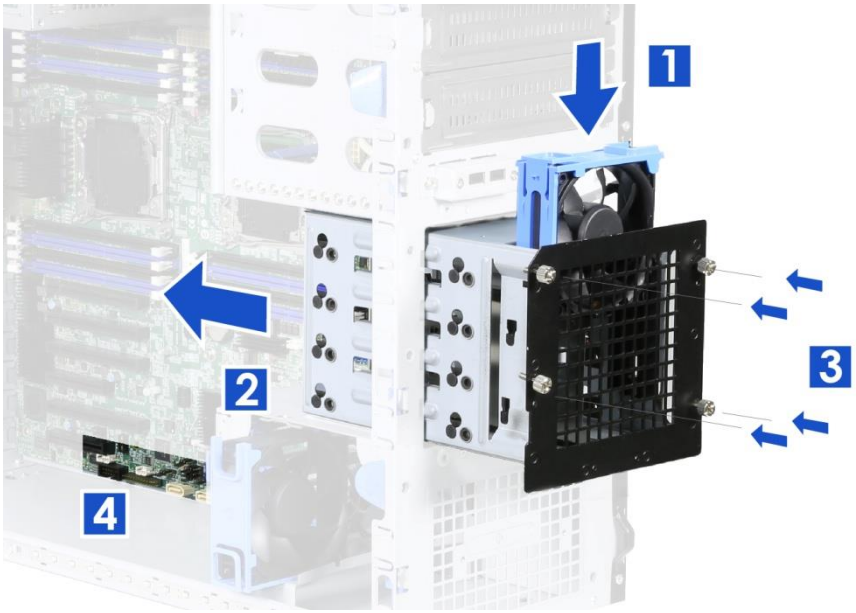


Figure 16　3.5” internal HDD cage installation

1. Insert the fan into the reserved slot.
2. Insert the HDD cage into the chassis.
3. Secure four thumb screws on the HDD cage as shown.
4. Plug the fan power connector in the system board.

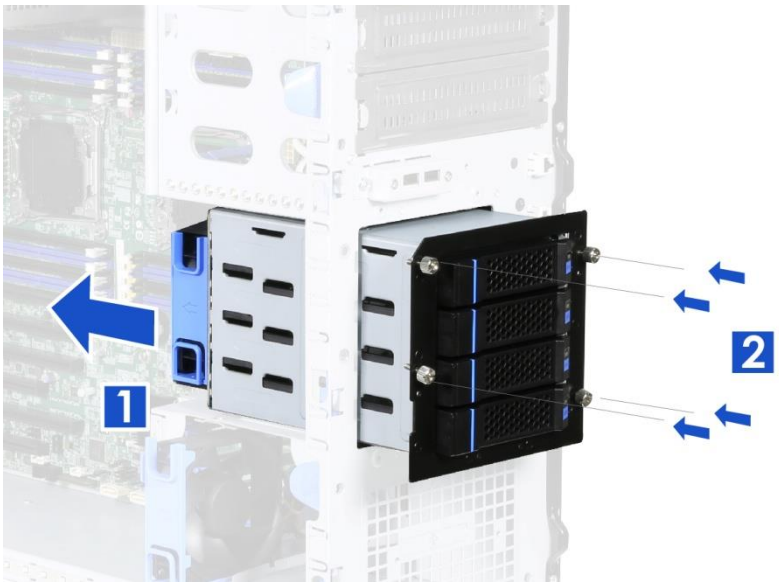


Figure 17　3.5” hot-swap HDD cage installation

1. Insert the HDD cage into the chassis.
2. Secure four thumb screws on the HDD cage as shown.

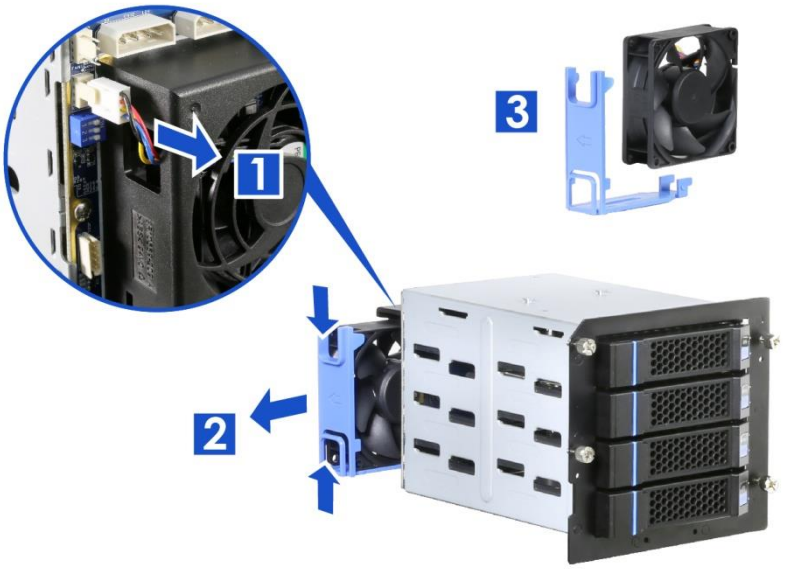


Figure 18　3.5″ hot-swap HDD cage fan maintenance step-1

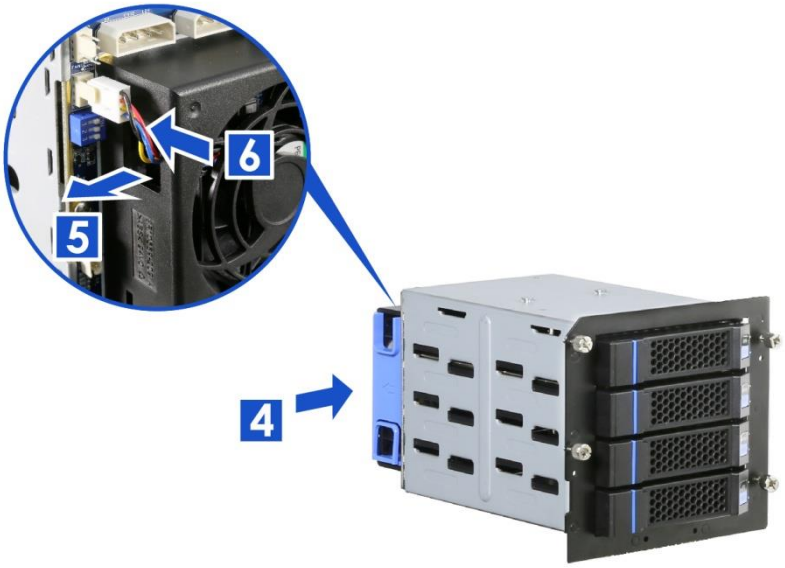


Figure 19　3.5″ hot-swap HDD cage fan maintenance step-2

1. Unplug the power connector from the backplane.
2. Release the fan latch and pull the fan module out of the fan cage.
3. Remove the tool-less fan holder and replace with a new fan.
4. Insert the fan module into the fan cage.
5. Make sure the power connector go through the hole on the other side of the fan cage.
6. Plug the power connector in the backplane.

Figure 20　3.5" hot-swap HDD tray removal

1. Press the tray button to release the tray.
2. Pull the lever to remove the tray from the HDD cage.

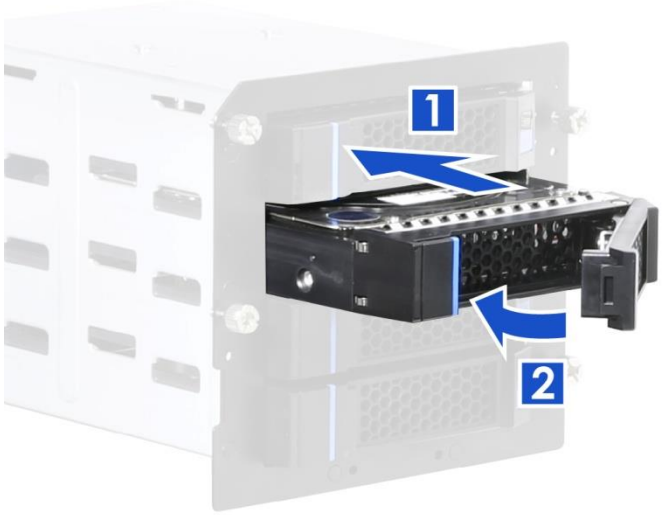


Figure 21　3.5" hot-swap HDD tray installation

1. Insert the HDD tray into the cage.
2. Push down the lever to secure the HDD tray into place.

Figure 22　3.5” HDD installation (tool-less type)

1. Engage two embossed pins with the side dimples on the HDD as shown.
2. Carefully push down the other side of the HDD until another two embossed pins and side dimples lock into place.

⚠ **NOTE:** Due to degraded performance and reliability concerns, the use of the 3.5” drive tray as a 2.5” drive tray is intended to support SSD type storage devices only. Installing a 2.5” hard disk drive into the 3.5” drive tray cannot be supported.

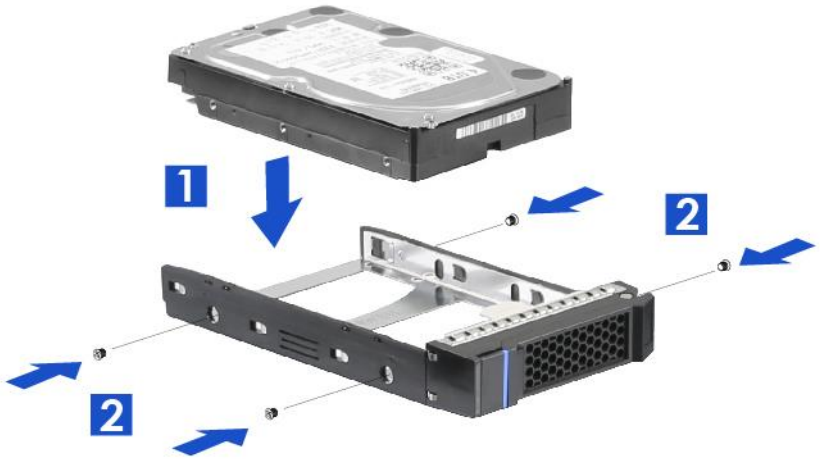


Figure 23　3.5” HDD installation (screw type)

1. Align the front of the HDD with the anchor point on the tray.
2. Secure the 3.5” HDD with the tray by four screws as shown.

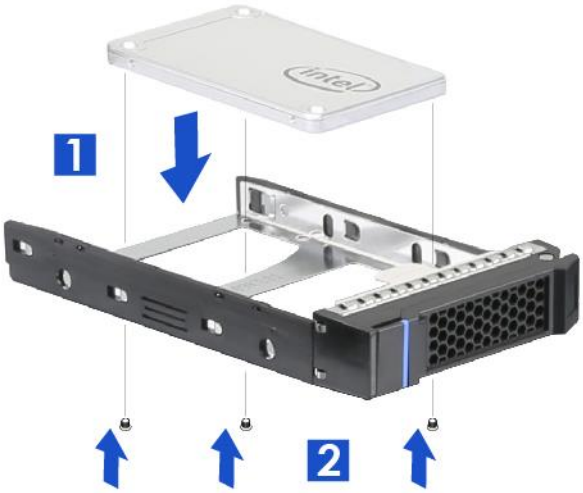


Figure 24 2.5" HDD/SSD installation (screw type)

1. Align the front of the HDD/SSD with the anchor point on the tray.
2. Secure the 2.5" HDD/SSD into the tray by three screws from the bottom as shown.

⚠ **NOTE:** Dedicated screw type is required for 2.5" HDD/SSD Installation, Chenbro P/N: 384-14602-3143A0.

2-5 Optional Fan (Add-In-Card Area) Installation & Removal

Figure 25 Optional fan installation

1. Attach the fan with the tool-less fan holder as shown.
2. Insert the fan module into the reserved fan slot.

⚠ **NOTE:** Please notice the arrow on the fan holder indicating the rear of chassis.

3. Plug the power connector in the system board.

Figure 26 Optional fan removal

1. Unplug the power connector.
2. Release the fan latch and pull the fan module out.
3. Remove the tool-less fan holder as shown and replace the fan.

2-6 Rear Fan Maintenance

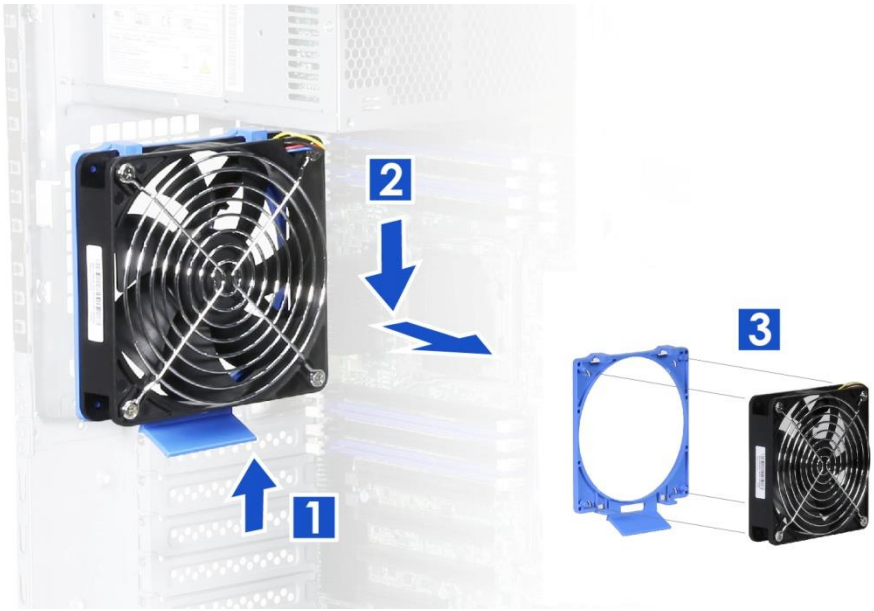


Figure 27 Rear fan maintenance step- 1

Figure 28 Rear fan maintenance step- 2

1. Lift up the fan latch at the bottom of the fan module without release.
2. Push the fan module down to remove it from the chassis.
3. Detach the fan from the tool-less fan holder as shown and replace the fan.
4. Secure the fan module by aligning four embossed pins with four holes on the chassis, and pushing it upward as shown.

2-7 Power Supply Installation

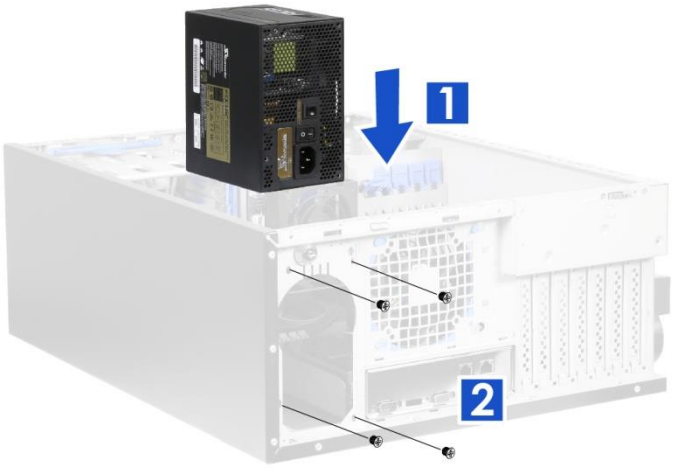


Figure 29 Single PSU installation

1. Place the PSU inside the chassis, and ensure the alignment for four screw holes of PSU with the bracket of the chassis.
2. Secure the four screws as shown.

3. Backplane

Each drive tray includes separate LED indicators for drive activity and drive status. Light pipes integrated into the drive tray assembly direct light emitted from the LEDs mounted next to each drive connector on the backplane to the drive tray faceplate, making them visible from the front of the system.

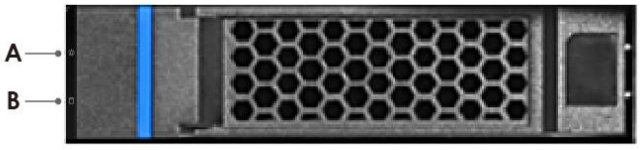


Figure 30 Drive tray LED identification

Table 6 Drive power LED/activity LED behavior

LED	ICON	LED	Color	Behavior	Condition
A		Power LED	N/A	Stay off	Fault
			Blue	Solid on	Present
B		Activity LED	Green	Solid on	Access
			Red	Solid on	Failure
				1Hz blink	Rebuild
				4Hz blink	Locate

⚠ **NOTE:** The drive activity LED is driven by signals from the drive itself. Drive vendors may choose to operate the activity LED differently from what is described in the table above. Should the activity LED on a given drive type behave differently than what is described, customers should take the drive vendor specifications as a reference for the specific drive model to determine what the expected drive activity LED operation should be.

3-1 Storage Backplane Options

SR209 Plus supports the below backplanes:

- 1 x 3.5" 4-port 12Gbps Mini-SAS HD backplane
- 1 x 3.5" 4-port 12Gbps SAS/SATA backplane

All available SAS/SATA compatible backplanes include the following common features:

- 12Gbps SAS and 6Gbps SAS/SATA
- 29-pin SFF-8680 12Gbps rated drive interface connectors, providing both power and I/O signals to attached devices
- Hot-swap support for SAS/SATA devices
- I2C interface from a 4-pin connector for device status communication to the BMC over SMBus
- LEDs to indicate drive activity and status for each attached device

3-2 3.5” 4-Port 12Gbps Mini-SAS HD Backplane

Table 7 Backplane specifications

	Specification
Host Interface	Mini-SAS HD (SFF-8643)
HDD Interface	SFF-8680 (SAS 29-pin)
Hot-Swap	Yes, allows users to replace devices online
Display	LED indicates storage device status Power LED – Off (Fault) – Blue (Present) Activity LED – Green on (Access) – Red on (Failure) – Red 1Hz blink (Rebuild) – Red 4Hz blink (Locate)
Environment Monitor	Temperature sensor TMP75
Connector	1. 1 x Mini-SAS HD 2. 4 x SFF-8680 3. 2 x 4-pin peripheral power connector for +5V, +12V from power supply 4. 1 x pin header 2.54 mm (2 x 3) 5. 1 x 4-pin Wafer 2.5 mm 6. 2 x 2-pin Wafer 2.54 mm 7. 2 x 4-pin Wafer 2.54 mm 8. 1 x I2C
Dimension (L x W x H)	106.0 x 114.0 x 2.4 (mm)
Material	FR4 4 layers

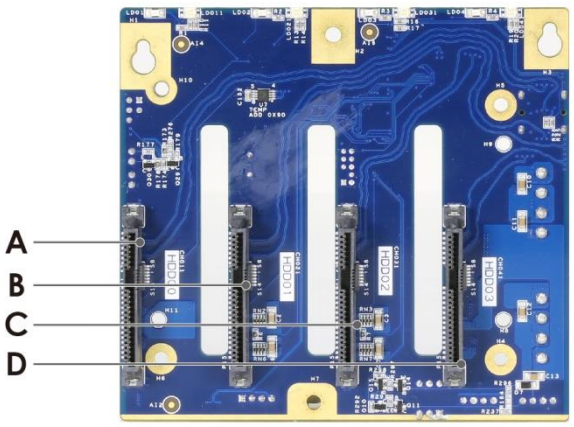


Figure 31 Backplane front view

A. HDD_00
B. HDD_01
C. HDD_02
D. HDD_03

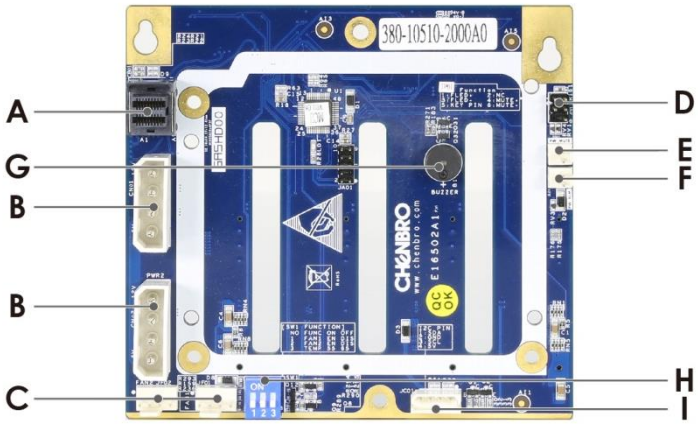
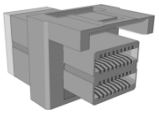
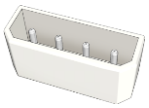
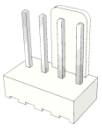
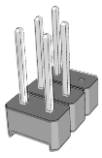
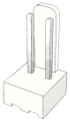
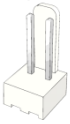
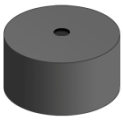
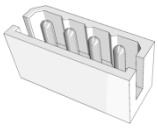


Figure 32 Backplane rear view

Table 8 Connector and pin header function description

Label	Description	Description	Drawing
A	Mini-SAS HD	For connecting to a mainboard or HBA, this Mini-SAS HD connector is applied. A proper cable selection is essential as well to make sure good signal integrity, which can be maintained for the whole connection path from a mainboard or HBA/RAID card to the HDD devices.	
B	Power	These two connectors are used to power four 3.5" hard disks, connected to this backplane, and each can ensure that all drives are supplied with stable power inputs. If the chassis fan is also powered by fan header (JF01), this configuration is highly recommended.	
C	Fan	There are two 4-pin headers for the PWM fan, and it is an alternative solution that the chassis fan can be powered and monitored by this backplane instead of a motherboard. If the chassis fan is connected to a mainboard, users need to disable the fan monitoring function of backplane by DIP switch (SW1).	
D	Signal Indicator	The event LED with red/black wire is located on the front bezel of SR209 Plus and can be configured through this pin header.	
E	Power Fail Mute	Transfer mute signal from a backplane to PSU.	
F	Power Fail Alarm	Send alarm signal to PSU.	
G	Buzzer	Buzzer will alarm when fan and temperature become abnormal.	

Label	Description	Description	Drawing
H	DIP Switch	The settings of on-board hardware monitor can be controlled and configured through this DIP switch. It can manage the functions of PWM fan & temperature threshold.	
I	I2C	The motherboard can monitor HDD temperature and fan status through this connector. However, the I2C connector on the motherboard side is dependent on vendors, so please contact our field application engineers to fully utilize this feature.	

3-3 3.5” 4-Port 12Gbps SAS/SATA Backplane

Table 9 Backplane specifications

	Specification
Host Interface	SATA 7-pin
HDD Interface	SFF-8680 (SAS 29-pin)
Hot-Swap	Yes, allows users to replace devices online
Display	LED indicates storage device status Power LED – Off (Fault) – Blue on (Present) Activity LED – Green on (Access) – Red on (Failure) – Red 1Hz blink (Rebuild) – Red 4Hz blink (Locate)
Environment Monitor	Temperature sensor TMP75
Connector	1. 4 x 7-pin SATA 2. 4 x SFF-8680 3. 4 x big 4-pin power connectors for +5V, +12V from power supply 4. 1 x pin header 2.0 mm (1 x 3) 5. 1 x pin header 2.0 mm (2 x 3) 6. 1 x pin header 2.54 mm (2 x 3) 7. 1 x pin header 2.54 mm (2 x 5) 8. 1 x 4-pin Wafer 2.5 mm 9. 2 x 2-pin Wafer 2.54 mm 10. 1 x 4-pin Wafer 2.54 mm
Dimension (L x W x H)	106.0 x 114.0 x 2.4 (mm)
Material	FR4 4 layers

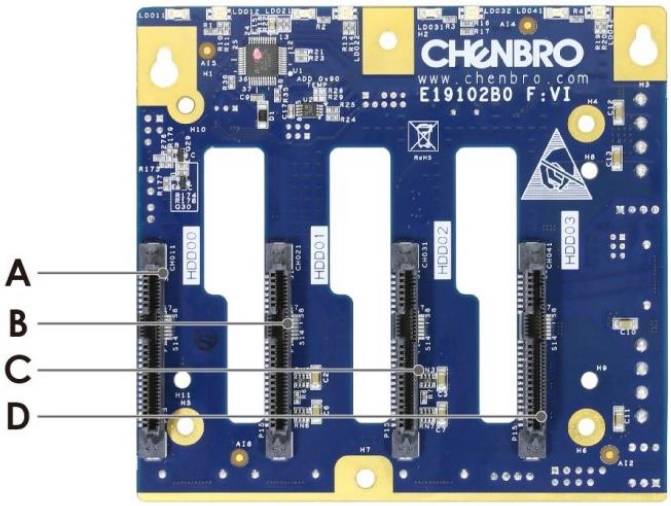


Figure 33 Backplane front view

A. HDD_00

B. HDD_01

C. HDD_02

D. HDD_03

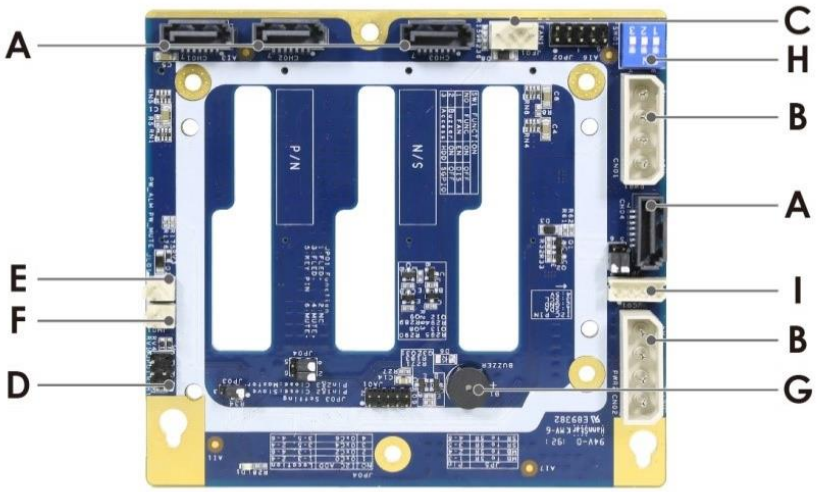
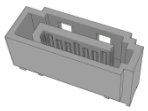
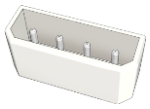
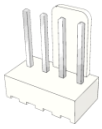
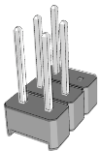
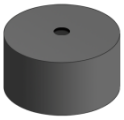
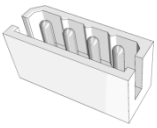


Figure 34 Backplane rear view

Table 10 Connector and pin header function description

Label	Description	Description	Drawing
A	SATA/SAS	For connecting to a mainboard, this SATA 7-pin connector is applied. A proper cable selection is essential as well to make sure good signal integrity, which can be maintained for the whole connection path from mainboard HDD devices.	
B	Power	These two connectors are used to power four 3.5" hard disks, connected to this backplane, and each can ensure that all drives are supplied with stable power inputs. If the chassis fan is also powered by fan header (JF01), this configuration is highly recommended.	
C	Fan	There are two 4-pin headers for the PWM fan, and it is an alternative solution that the chassis fan can be powered and monitored by this backplane instead of a motherboard. If the chassis fan is connected to a mainboard, users need to disable the fan monitoring function of backplane by DIP switch (SW1).	
D	Signal Indicator	The event LED with red/black wire is located on front bezel of SR209 Plus and can be configured through this pin header.	
E	Power Fail Mute	Transfer mute signal from a backplane to PSU.	
F	Power Fail Alarm	Send alarm signal to PSU.	
G	Buzzer	Buzzer will alarm when fan and temperature become abnormal.	
H	DIP Switch	The settings of on-board hardware monitor can be controlled and configured through this DIP switch. It can manage the functions of PWM fan & Buzzer On/Off.	
I	I2C	The motherboard can monitor HDD temperature and fan status through this connector. However, the I2C connector on the motherboard side is dependent on vendors, so please contact our field application engineers to fully utilize this feature.	

4. Maintenance and Service

DOA (Dead on Arrival)

If the products are found Defect On Arrival, please contact Chenbro's regional sales or CQE and indicate the defective status via email along with product photos and description. You may need to return the defective item by request.

The customer should ensure that the products are Defect On Arrival for up to three months from Chenbro's shipping date and the damage is not caused by shipping or failures resulting from accident, misuse, abuse, neglect, mishandling, misapplication, modification, improper operation, improper repair or rework. CHENBRO is not responsible for the cost of replacement including the delivery cost.

CHENBRO also reserves the right to examine the DOA products. If the damage of DOA products is caused by improper action as described above, the customer will be liable for paying the related charge having occurred or paying the fee of the replacements if the DOA products are totally scrapped.

Apply a RMA number | **Return the product for repair** | **Receive service charge notice** | **Receive the repaired product**

TECHNICAL SUPPORT

Please provide following information when you apply our technical support:

- Product model name and/or part number
- Product serial number and bar code
- Buzzer beeping pattern and/or failure LED flashing pattern
- Detailed and specific questions

www.chenbro.com

You may also contact Chenbro's regional technical supports as below:

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