SR301 Plus Series

Server Chassis **User Manual**

January 2020 Version 2.3

CHENBRO

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

DISCLAIMERS

No license (express or implied, by estoppel or otherwise) to any intellectual property rights is granted by this document.

Chenbro disclaims all express and implied warranties, including without limitation, the implied warranties of merchantability, fitness for a particular purpose, and non-infringement, as well as any warranty arising from course of performance, course of dealing, or usage in trade.

This document contains information on products, services and/or processes in development. All information provided here is subject to change without notice. Contact your Chenbro representative to obtain the latest Configuration Guide.

The products and services described may contain defects or errors known as errata which may cause deviations from published specifications. Current characterized errata are available on request.

Table of Contents

List of Figures

List of Tables

1. Product Overview

The SR301 chassis has been modified to support both tool-less 3.5" HDD carrier and PCIe 3.0 slot, and transformed into feature-advanced SR301 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 SR301 Plus specifications

Feature	Description
MB Form Factor	· Mini-ITX (6.7" x 6.7")
Dimension	· 310.0 x 200.0 x 270.0 (mm)
(D x W x H)	12.20" x 7.87" x 10.63" (w/o bezel)
Drive Bay	· 4 x 3.5" Hot-swap, 2 x 2.5" Internal
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 (with 120 mm Fan)
Indicator	· 1 x Power Status, 1 x HDD Status, 1 x System Alarm
Front Control	· 1 x Power On/Off, 1 x System Reset, 2 x USB2.0/USB3.0 (Option)
Cooling Fan	· Front: 120 x 25 mm (1)
System Security	· Intrusion Switch, Key Lock, Padlock Loop, Kensington Slot
Expansion Slot Opening	· 1 x Low Profile
Net Weight	· 5.2 kg/11.45 lb
Gross Weight	· 7.0 kg/15.42 lb
Cubic Feet	· 1.85
Container Loading	· 20': 564, 40': 1134, 40'H: 1284 (Single Packing)
Slide Rail	· Supported

1-1 Front Panel

Figure 1 Front panel (enclosed)

A. Indicator

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 single PSU

A. PS/2 Single PSU

B. Rear I/O

C. Expansion Slot Opening (Low Profile)

1-3 Security Features

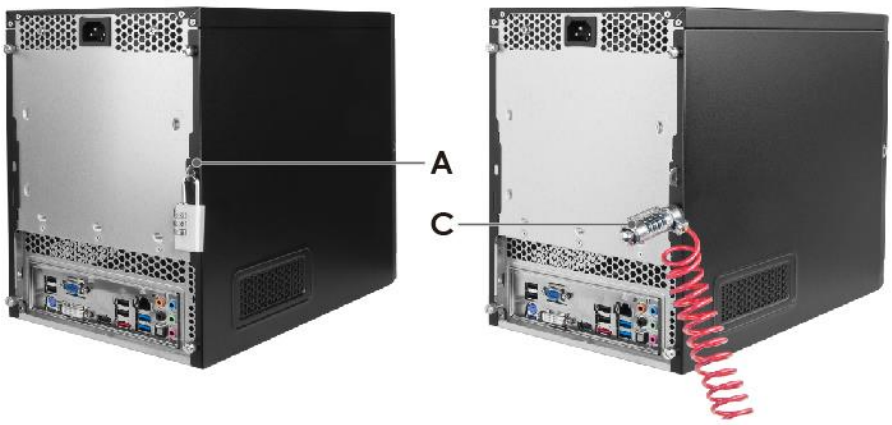


Figure 4 Padlock Loop and Kensington Slot location

Figure 5 Padlock Loop and intrusion switch location

A. Padlock Loop

B. Key Lock

C. Kensington Slot

D. Intrusion Switch

1-4 Front Control Panel

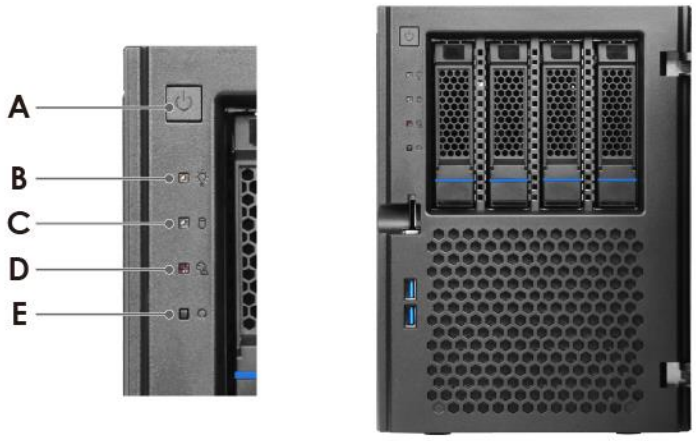


Figure 6 Front control panel

Table 2 Front control panel

Label	ICON	Indicator, button or connector
A		Power Button with LED
B		Power LED
C		HDD Activity LED
D		Fan Alarm LED
E		System Reset Button

1-5 System Dimensions

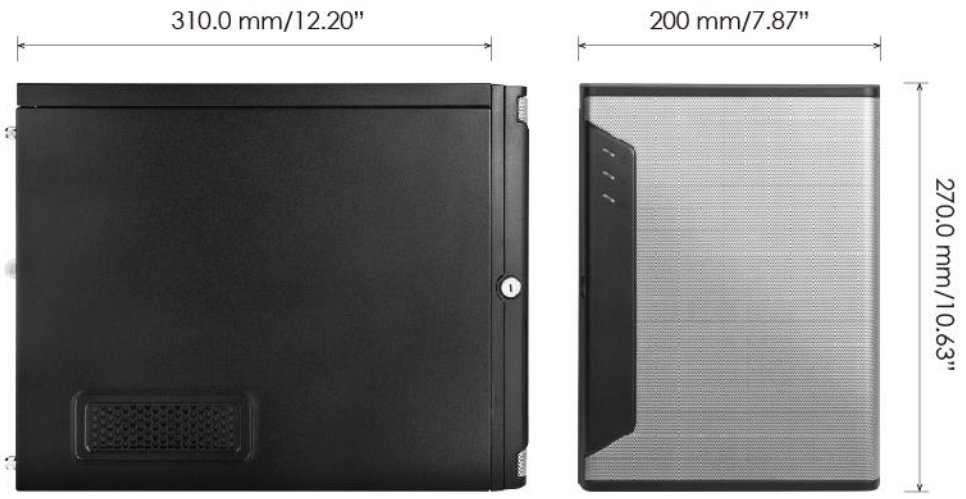


Figure 7 Chassis dimensions

1-6 Interior View

Figure 8 Chassis components

A. 3.5" HDD Cage

B. HDD Fan Assembly & Air Duct

C. Power Supply Unit

D. System Board

1-7 System Level Environmental Specifications

The following table defines the system level specifications 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 packaging information

Part Number	Single/Bulk	Form Factor (mm)	Support Level
87H230169-102	Single	380 x 300 x 450	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 shipment.

Table 5 Product weight information

Product	Unpackaged Net Weight （kg）	Packaged Gross Weight （kg）	Unpackaged Net Weight (lb)	Packaged Gross Weight (lb)
SR301 Plus	5.2	7.0	11.45	15.42

⚠ **NOTE:** A L5 system does not include motherboards, 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

SR301 Plus supports up to 4 x 3.5" hot-swap 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

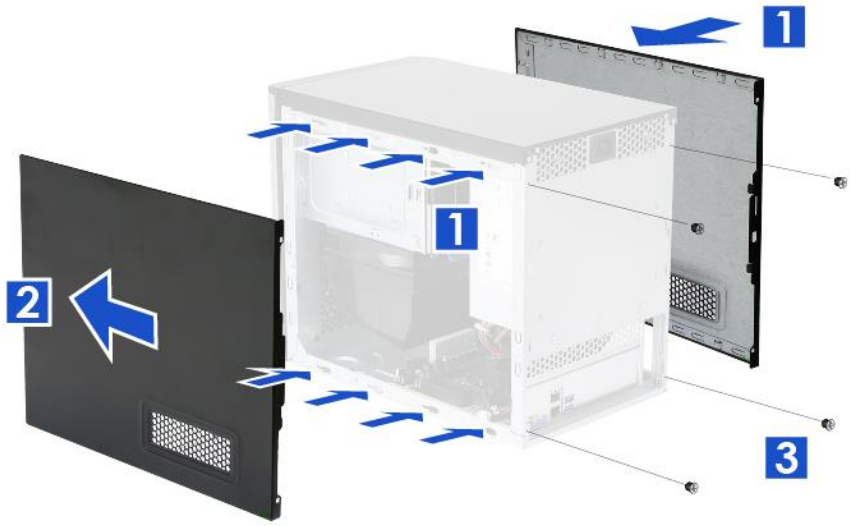


Figure 9 Side cover installation

1. Align eight latches on the top & bottom of each cover with eight grooves on both sides of the chassis as shown.
2. Slide the cover toward the front panel.
3. Secure each cover with two thumb screws as shown.

2-2 Front Bezel Installation & Removal

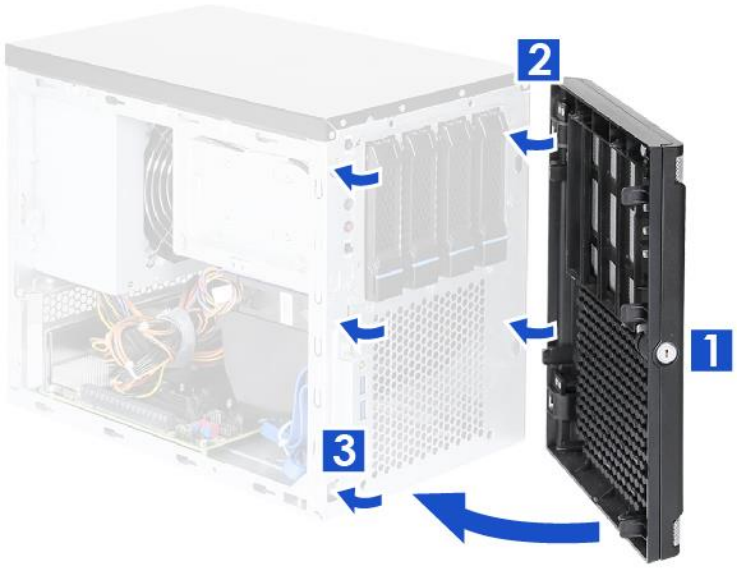


Figure 10 Bezel installation

1. Make sure the key lock of the bezel is on your left side.
2. Lean the right side of the bezel as shown, and align two latches on the bezel with two grooves on the chassis.
3. Push down the bezel until it is secured with three internal latches.

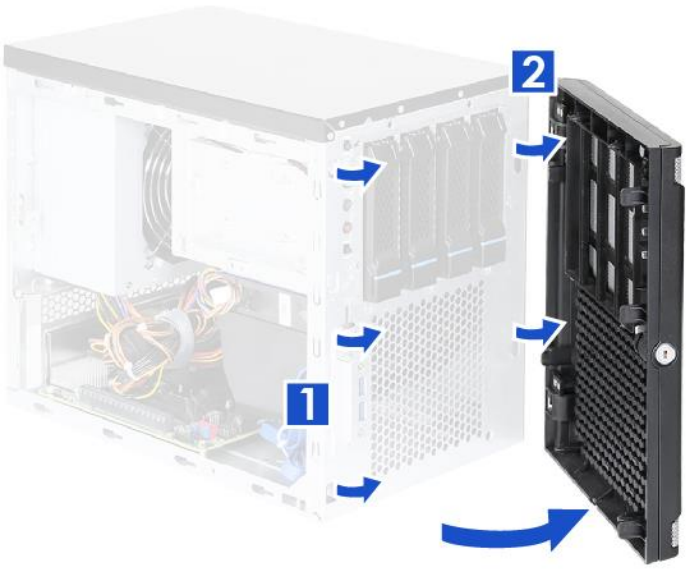


Figure 11 Bezel removal

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

2-3 HDD Tray Installation & Removal

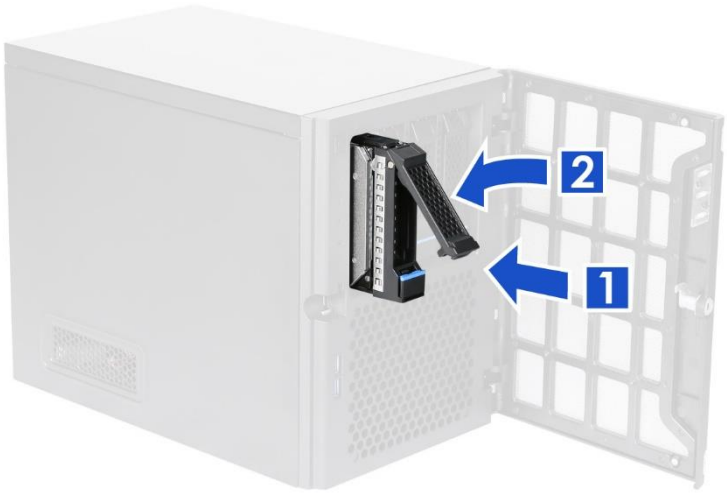


Figure 12　3.5″ Hot-swap HDD tray installation

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

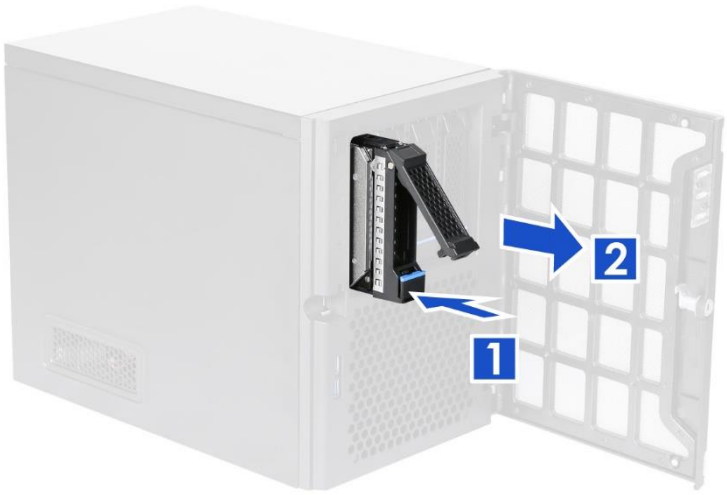


Figure 13　3.5″ Hot-swap HDD tray removal

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

Figure 12　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.

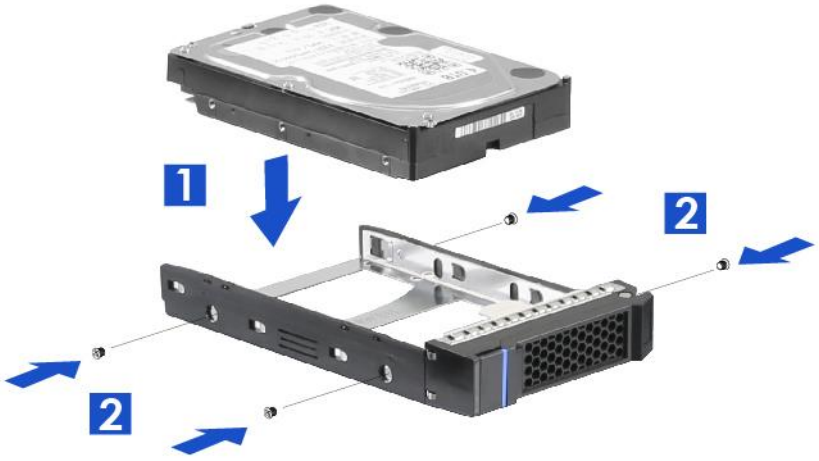


Figure 13　3.5” HDD installation (screw type)

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

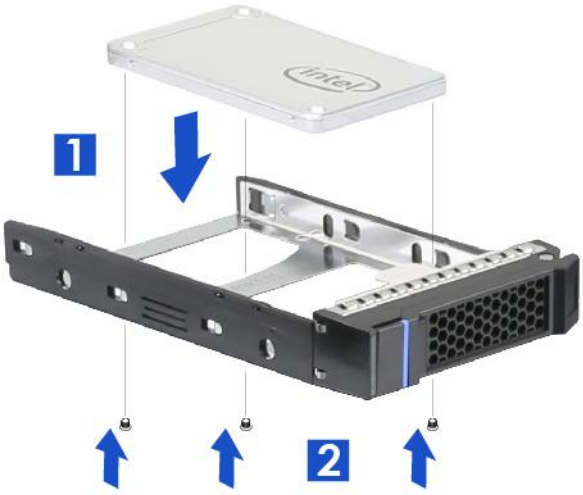


Figure 14 2.5" HDD/SSD installation (screw type)

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

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

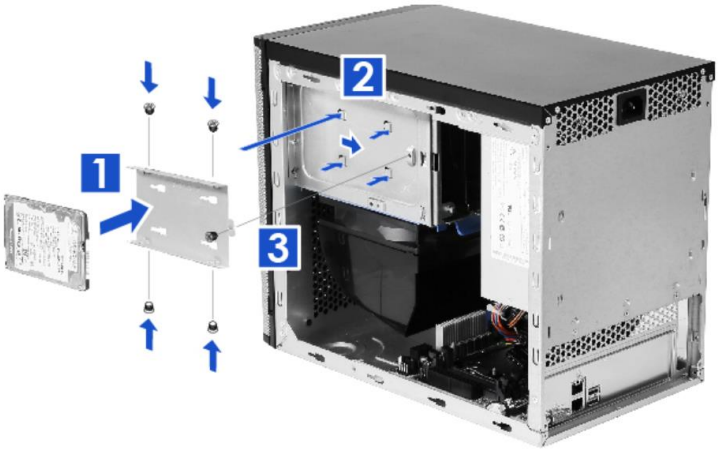


Figure 15 Side 2.5" HDD/SSD installation (screw type)

1. Align the 2.5" HDD/SSD with the anchor point on the tray and secure the HDD/SSD by four designated screws.
2. Place the HDD/SSD assembly on the side of the storage cage as shown, and slide toward the rear of chassis.
3. Secure the screw on the storage cage to engage the HDD/SSD assembly.

2-4 HDD Fan (below Storage Cage) Maintenance

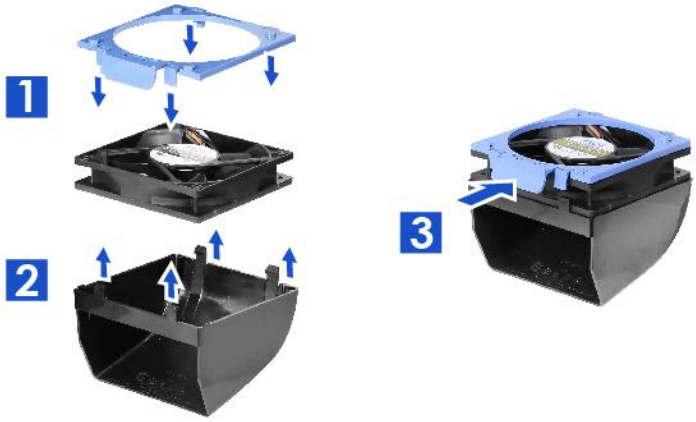


Figure 16 HDD fan installation (fan assembly)

Figure 17 HDD fan installation (chassis)

1. Attach the fan with the tool-less fan holder as a fan module.
2. Attach the fan module with the tool-less air duct as a fan assembly.
3. Align the four hooks on the fan holder with four holes on the storage cage as shown.
4. Push the fan assembly toward the front panel until it is locked into place.
5. Plug the fan power connector in the backplane.

Figure 18 HDD fan maintenance

1. Unplug the fan power connector.
2. Press the tab of the fan holder without release, and pull the fan assembly toward the rear of the chassis.
3. Detach the fan assembly from the storage cage as shown.

2-5 Power Supply Installation

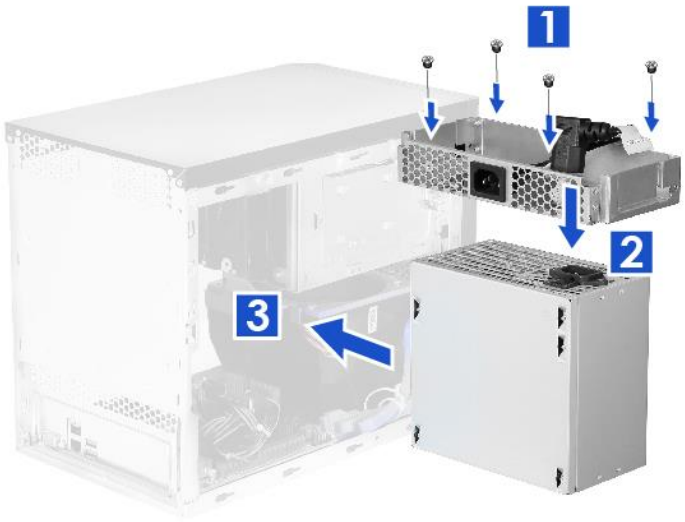


Figure 19 Single PSU installation-1 (PSU assembly)

Figure 20 Single PSU installation-2

1. Secure the PSU on the power adapter plate with four designated screws as shown.
2. Plug in the power connector.
3. Insert the PSU assembly toward the rear of the chassis until it is locked into place.
4. Secure the power adapter plate with the designated screws.

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.

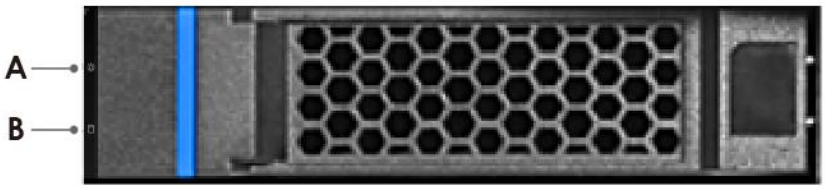


Figure 21 Drive tray LED identification

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 coming 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 driver 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

SR301 Plus supports the below backplanes:

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

All available SAS/SATA 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), Right Angle
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 4. 1 x SGPIO jumper 5. 1 x 4-pin PWM fan header 6. 1 x hardware monitor display header 7. 1 x hardware monitor DIP switch 8. 1 x I2C
Dimension (L x W x H)	130.1 x 104.5 x 2.4 (mm)
Material	FR4 4 layers

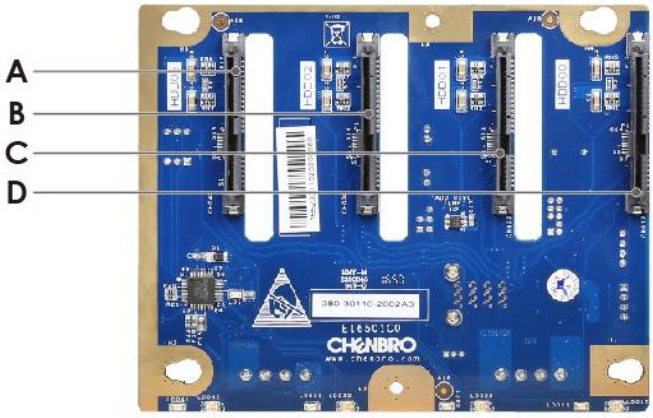


Figure 22 Backplane front view

A. HDD_00

B. HDD_01

C. HDD_02

D. HDD_03

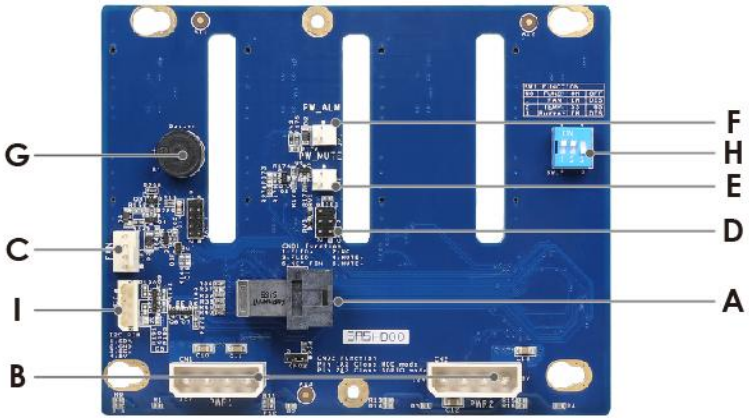
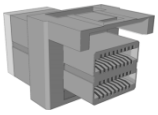
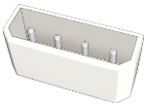
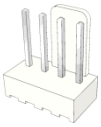
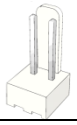
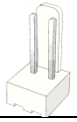
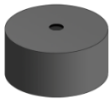
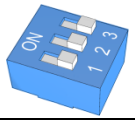
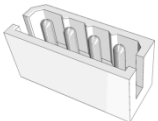


Figure 23 **Backplane rear view**

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 SR301 Plus and can be configured through this pin header.	
E	Power Mail 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 & 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. 2 x 4-pin peripheral power 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. 2 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
Dimension (L x W x H)	130.1 x 104.5 x 2.4 (mm)
Material	FR4 4 layers

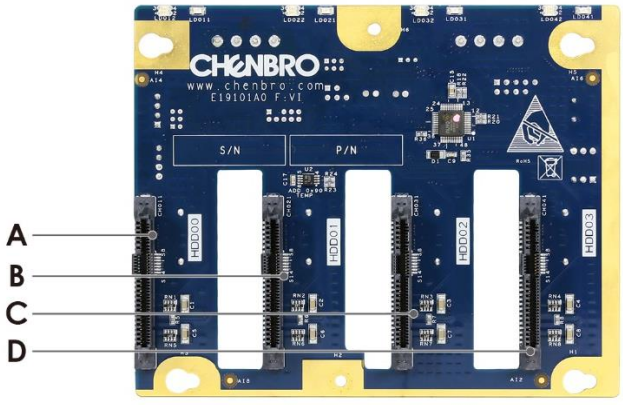


Figure 24 Backplane front view

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

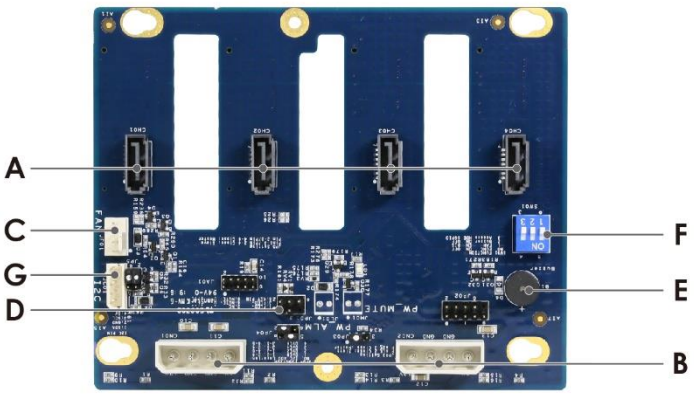
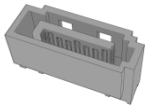
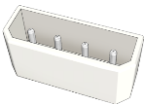
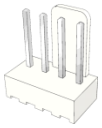
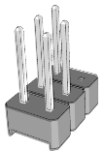
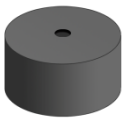
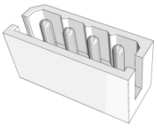


Figure 25 Backplane rear view

Table 10 Connector and pin header function description

Label	Description	Description	Drawing
A	SAS/SATA	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, which 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 SR301 Plus and can be configured through this pin header.	
E	Buzzer	Buzzer will alarm when fan and temperature become abnormal.	
F	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.	
G	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:

CENBRO MICOM CO., LTD.
Email: fae@chenbro.com
Tel: +886-2-82265500
Fax: +886-2-82265392

CHENBRO MICOM (USA) INC.
Email: usfae@chenbro.com
Tel: +1-909-947-3200
Fax: +1-909-947-4300

CHENBRO GmbH
Email: defae@chenbro.com
Tel: + 49-2154-8142730