SK32303 Series

Storage Expansion Kit **User Manual**

January 2020 Version 1.1

CHENBRO

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

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1. Product Overview

The SK32303 series is designed with standard mounting holes for converting 2 x 5.25" drive bay into 3 x 3.5" SATA hot-swap hard drive bay. This chapter provides a high-level overview of the system features and available options as support for different storage configurations within this product series. More details for each major component, feature, or option are provided in the following chapters.

Table 1 Chenbro SK32303 series specifications

Feature	Description
Dimension (D x W x H)	· 218.7 x 146.0 x 84.4 (mm) 8.61" x 5.75" x 3.32"
Drive Bay	· 3 x 3.5" HDD Tray
Indicator	· 1 x Power Status, 1 x HDD Status
System Security	· 1 x System Alarm
Front Control	· Alarm Mute
Cooling Fan	· 60 x 25 mm (1)
Material	· SGCC
Net Weight	· 1.4 kg
Backplane	· 12Gbps SAS/SATA
Connector (To Drive)	· 3 x SFF8680
Connector (To Host)	· 3 x SATA 7-pin
Package Contents	· 1 x SK32303, 3 x 700 mm SATA Cable, 1 x 600 mm Signal Cable

1-1 Front Panel

Figure 1 Front panel

A. Alarm Mute

B. 3.5" Storage Drive Bays

C. Indicator

1-2 Back Panel

Figure 2 Back panel

A. Power Connector

B. SATA 3.0 Connectors

C. Fan Connector

D. Cooling Fan

1-3 Front Control Panel

Figure 3 Front control panel

Table 2 Front control panel

Label	ICON	Indicator, button or connector
A		Alarm Off Switch
B		Temperature Alarm LED
C		Fan Alarm LED
D		HDD Alarm LED

1-4 System Dimensions

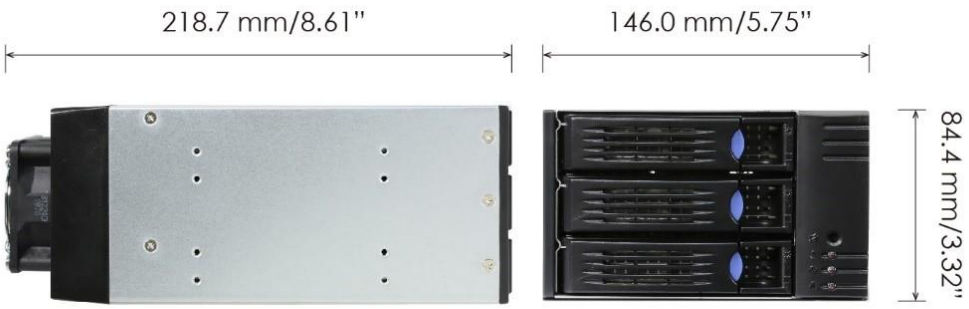


Figure 4 Chassis dimensions

1-5 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
Unpackaged 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.

1-6 System Packaging

The original Chenbro packaging, where the storage kit is delivered, is designed to provide protection to a fully configured chassis and tested to meet ISTA (International Safe Transit Association) Test Procedure 1A (2008). 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
387-32303-5403A0	Single	N/A	Stand Alone

⚠ **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)
SK32303 series	1.4	N/A	3.09	N/A

2. Installation and Removal

SK32303 series supports up to 3 x 3.5" hot-swap SAS/SATA HDD, with an additional cooling fan module as a peripheral component.

2-1 Storage Kit Installation

Figure 5 Storage kit installation-1

Figure 6 Storage kit installation-2

Figure 7 Storage kit installation-3

1. Insert the storage kit into the 5.25" 3-bay drive cage.
2. Align the mounting holes and secure with screws as shown.
3. Note: If the system chassis comes with tool-less installation rails for 5.25" bays, secure the storage kit with rails before inserting.

2-2 HDD Tray Installation & Removal

Figure 8 3.5″ HDD installation (screw type)

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

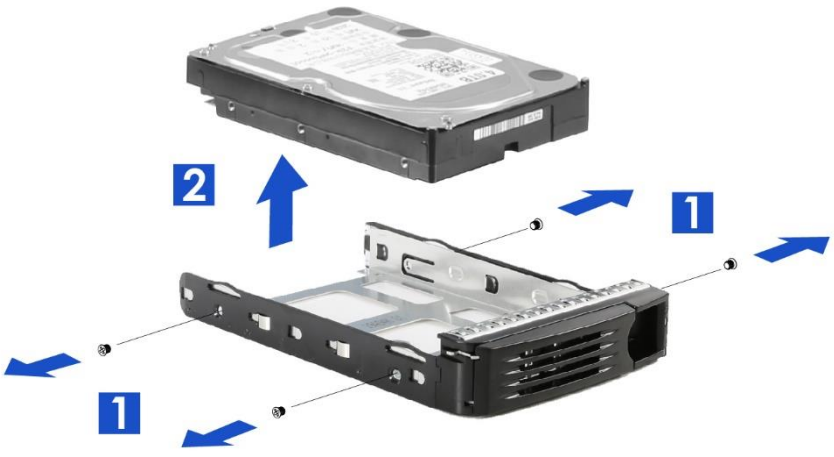


Figure 9 3.5″ HDD removal (screw type)

1. Loosen four screws as shown.
2. Detach the 3.5″ HDD from the tray.

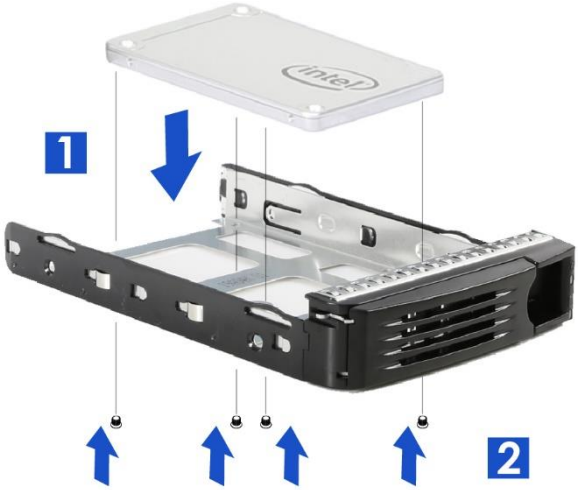


Figure 10　2.5″ HDD/SSD installation (screw type)

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

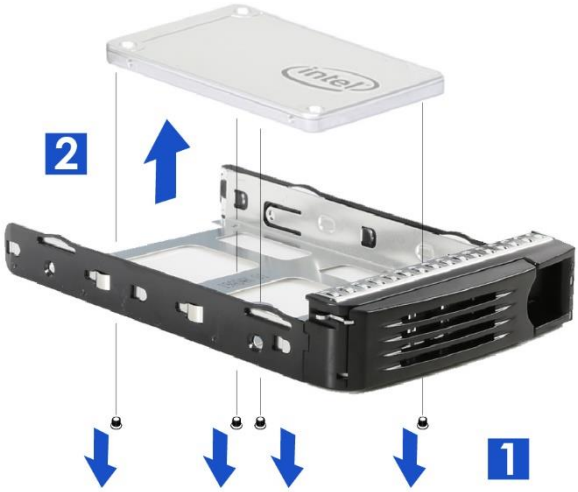


Figure 11　2.5″ HDD/SSD removal (screw type)

1. Loosen four screws as shown.
2. Detach the HDD/SSD from the tray.

2-3 Storage Kit Fan Module Maintenance

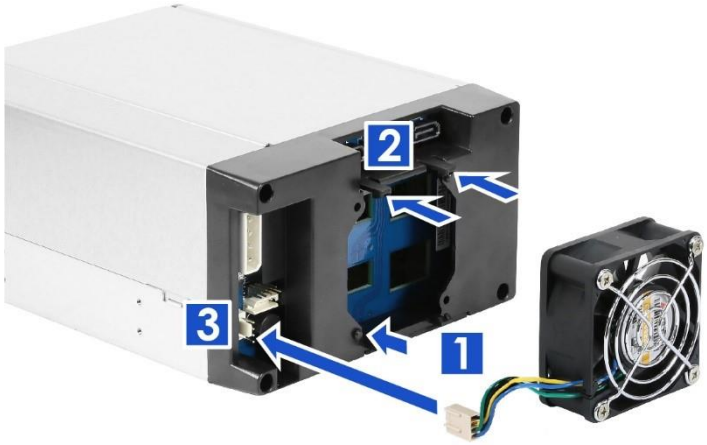


Figure 12 Storage kit fan module installation

1. Attach the bottom of the fan module to the rear of the storage kit as shown.
2. Align and press the fan module until it is fully attached.
3. Plug the fan power connector in the backplane.

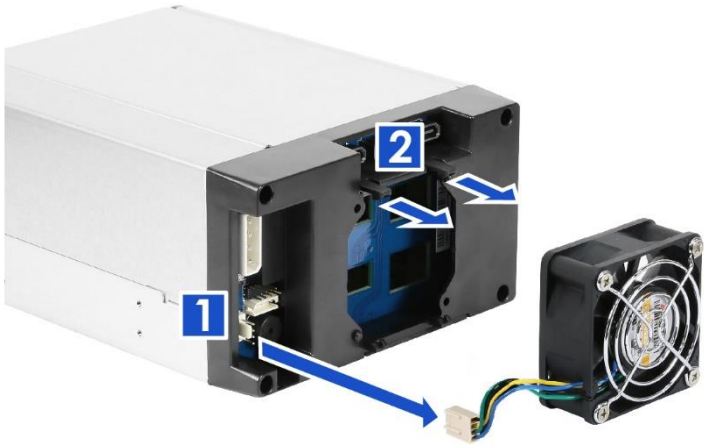


Figure 13 Storage kit fan module removal

1. Unplug the fan power connector.
2. Lift the two tabs on the fan quad and release the fan carefully away from the module as shown.

3. Backplane

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

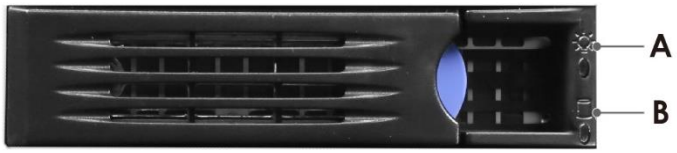


Figure 14 Drive tray LED identification

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 different 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

SK32303 series supports the below backplanes:

- 1 x 3.5" 3-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

3-2 3.5" 3-Port 12Gbps SAS/SATA Backplane

Table 7 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)
Environment Monitor	Temperature senor TMP75 detection (U2)
Connector	1. 3 x SATA 7-pin 2. 3 x SFF-8680 3. 1 x Standard 4P power connector for +5V, +12V from power supply 4. 1 x pin header 2.54 mm (2 x 5) 5. 1 x pin header 2.0 mm (2 x 8) 6. 1 x pin header 2.0 mm (1 x 3) 7. 1 x I2C Connector wafer 2.54 mm (1 x 4)
Dimension (L x W x H)	142.0 x 80.7 x 2.4 (mm)
Material	FR4 2 layers

Figure 15 Backplane front view

A. HDD_00 **B.** HDD_01 **C.** HDD_02

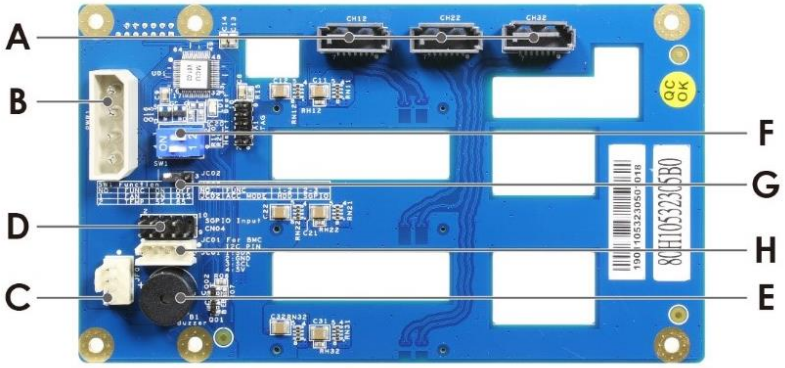
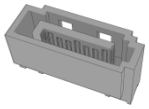
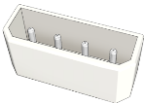
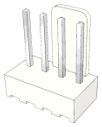
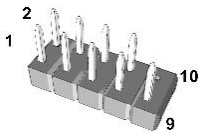
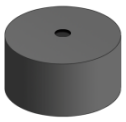
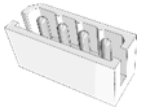


Figure 16 Backplane rear view

Table 8 Connector and pin header function description

Label	Description	Description	Drawing
A	SATA/SAS	For connecting to a mainboard, this 7-pin SATA/SAS 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	This one connector is used to power three 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 is one 4-pin header for the PWM fan, and it is 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 SK32303 series and can be configured through this pin header.	
E	Buzzer	Buzzer will alarm when fan and temperature become abnormal.	
F	Hardware Monitor 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	HDD Display	Direct HDD access signal and Decode RAID/HBA SGPIO status.	
H	I2C	JC01 Data Signal switch	

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

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

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