3.5" Form Factor Mirror Drive

Serial-ATA MODEL

SVRE-D032SA Series

User's Manual

P/N A204377

Revision 1.0

Introduction

Thank you for selecting the **3.5" Form Factor Mirror Drive SVRE-D032SA Series Serial-ATA Model**. This manual describes the proper installation procedures, operation and maintenance of your **SATA Mirror Drive**, and will help you familiarize with its features.
Hereinafter, Serial-ATA will be referred as SATA and SVRE-D032SA as SATA Mirror Drive respectively.

NOTE

Please be sure to read first the user's manual before using your **SATA Mirror Drive**.
This manual describes the basic precautions, handling methods, setting methods for various functions, etc. so that you can maximize the performance of the mirror drive.
If you encounter any problems with your mirror drive, please refer to this instruction manual before contacting the support desk as described at the end of this manual. "6 Troubleshooting" section describes the solutions to the most common problems that might occur while using the mirror drive.

PACKAGING MATERIALS

The original packaging materials protect the **SATA Mirror Drive** from damage during shipment.
After unpacking the **SATA Mirror Drive**, please retain the packaging materials in case you need to ship the **SATA Mirror Drive** in the future.
In addition, this product is sealed in an antistatic and moisture-proof bag before shipping. Open the bag only when you are ready to set it up.

RECORDING THE PRODUCT NAME, VERSION & SERIAL NUMBER

Before installing the **SATA Mirror Drive** to the host computer, please jot down the model name, version, and serial numbers in the spaces provided for at the last page of this user's manual. Keep the information for record purposes.
Refer to Section " 2.1 Part Names " for the location of the model name, version, and serial number.

To ensure the safe use of this product:

This user's manual uses the following symbols to highlight the important points related to the safe use of this product. Please observe all safety information as indicated.

SAFETY SYMBOLS

To protect against personal injury and product damage, the following symbols are used throughout this manual to highlight safety information.

⚠ **Warning**	Indicates a potentially hazardous situation that may result in death or serious injury to the user or severe damage to the product.
⚠ **Caution**	Indicates a potentially hazardous situation that may result in serious injury to the user or damage to the product.
❗ **Important**	Indicates important information wherein failure to observe may result to improper product function.

WARNING / CAUTION LABELS

Labels with black lettering against a yellow background affixed either to the exterior or interior of the product are **Warning** or **Caution** labels that provide important safety information. Observe all the directions given on these labels.

In cases where **Warning** or **Caution** labels can be found aside from those written in the manual, be sure to follow the directions as mentioned.

⚠ **Warning**

- If you detect any abnormal conditions, such as smoke or foul odors, turn off immediately the power of the host computer.
  It may cause fire, electric shock or damage.

- If any foreign substance or material (metal, water, liquid, etc.) seeps into the **SATA Mirror Drive**, turn off immediately the power of the host computer.
  It may cause fire, electric shock or damage.

- Do not use the **SATA Mirror Drive** in a high temperature or high humidity environment.
  It may cause fire, electric shock or damage.

- Do not disassemble or modify this product. STR-V cannot guarantee the performance or safety of any product that has been repaired by the customer or by an unauthorized third party.
  It may cause fire, electric shock or damage.

- Be sure to turn off first the power of the host computer and any other connected devices before connecting or disconnecting the cables. Also, to avoid putting excessive stress on the printed circuit board of the **SATA Mirror Drive**, push or pull the connector only along the axis perpendicular to the board.
  It may cause fire, electric shock or damage.

⚠ **Caution**

- Do not use the **SATA Mirror Drive** in locations wherein it will be subjected to vibration or shock exceeding the specifications.
  It may cause a malfunction or disk failure.

- Rapid temperature change may cause condensation. Do not use the **SATA Mirror Drive** in an environment or location that is susceptible to condensation.
  It may cause a malfunction or disk failure.
  If you think condensation has occurred, allow the **SATA Mirror Drive** to acclimate to the new environment and make sure that it is completely dry before using it.

- Do not place the **SATA Mirror Drive** near electronic devices that generates strong electromagnetic fields, such as televisions or loudspeakers.
  It may cause a malfunction or disk failure.

- Turn off the power before moving the unit enclosing the **SATA Mirror Drive** to avoid vibration or shock.
  It may cause a malfunction or disk failure.

- If the power is turned on and off repeatedly for a short period of time, this may damage the spindle motor and head of the drive which may shorten its service life. If you turn off the power, wait some time (about 15 seconds) for the media inside the drive unit to stop before turning it on again.
  When removing a drive unit for replacement, turn off the power and wait for at least 20 seconds before pulling it out to avoid malfunction or failure.

- Do not leave or store the product for a long period of time (3 months or more) without energizing it.
  It may cause a malfunction or disk failure.

- Avoid applying excessive pressure to the cover of the drive unit.
  It may cause a malfunction or disk failure.

- After unpacking from transport, ensure first that each disk drive is properly inserted before turning on the power. Refer to Section " 3.4 Turning On The Power "

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⚠ **Important**

- Back up all important data stored in the **SATA Mirror Drive** to a suitable storage medium such as tape drive or optical medium. The **Mirror Drive's** mirroring technology prevents data loss even if one drive unit fails. However, if two drive units fail at the same time or if a non-redundant component fails, data loss may still occur. Additionally, accidental deletion of data or equipment damage may also result in data loss

- Do not block the hole ventilation on the surface of the HDD. Lack of cooling airflow may lead to hard disk drive failure or malfunction.

- The cache memory of the installed drives is enabled (as default factory setting). Except in emergencies, make sure to follow the operating system's proper shutdown procedure or wait at least 10 seconds after the access indicator has stopped flashing before turning off the power. Failure to do so may result in loss of data in the drive's cache memory.

- Each drive unit is managed through serial number. Do not remove or exchange the drive units, except only when replacing a failed controller unit or drive unit. It may result in a boot up failure of the host computer

- Use the mounting screws provided to firmly secure the **SATA Mirror Drive** in the mounting bay inside the host computer (0.49 Nm torque is recommended)
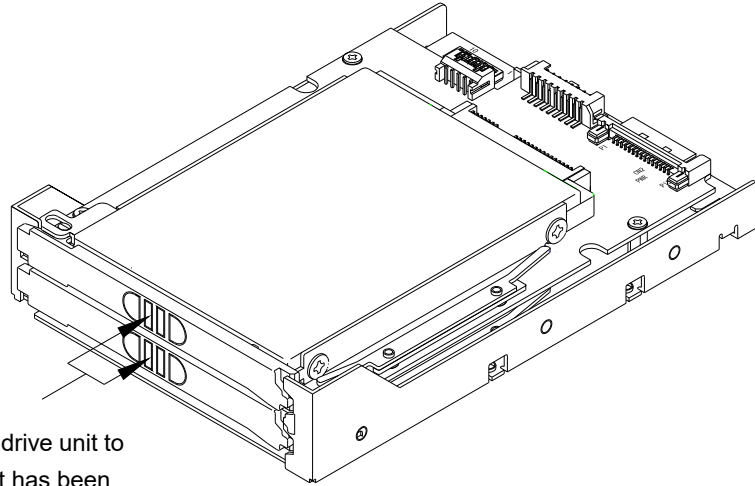
Handling Static-Sensitive Device

To prevent damage to components due to static electricity, please observe the following precautions when handling this product.

● Before handling the **SATA Mirror Drive** or other static-sensitive devices, touch a metal object, such as the metal enclosure of the host computer, to discharge any static electricity from your body.

● Handle the **SATA Mirror Drive** carefully by holding it at the edge of its housing. Never touch the circuit board or any exposed circuitry.

● When replacing the controller unit or drive unit, or when placing the **SATA Mirror Drive** in another location after opening the product, use the antistatic moisture-proof bag used in wrapping the product during shipment. Place it on a flat level surface. Use this as your **SATA Mirror Drive** working area.

Important Points During Mirror Drive Installation

Install the product in a horizontal position as shown in the figure below (the inclination with the horizontal plane is within 5 degrees).

Gently push the drive unit to make sure that it has been securely mounted

Gravitational Direction

Table of Contents

1   3.5" Form Factor Mirror Drive Introduction

The **3.5" Form Factor SATA Mirror Drive** utilizes two SATA 2.5-inch Hard Disk Drives and uses mirroring technology to safeguard data and to provide uninterrupted operation.
Since the host computer will recognize the **SATA Mirror Drive** as a standard SATA HDD, installing the **SATA Mirror Drive** simply involves connecting it to a SATA cable from the host computer

1.1   Features

● The 3.5" form factor makes the **SATA Mirror Drive** easy and convenient to install that will improve the reliability of the Host system and allows continuous operation for a long time (SVRE-D032SA / SA1).
   Moreover, there is also a separate model that can be installed in a 5.25" open drive bay (half-height) and have an easy front access (SVRE-D032SA / SA1-B).

● Even if one drive unit fails, the **SATA Mirror Drive** will continue to function and no data is lost. When the failed drive unit is replaced with a new one, data will be rebuilt automatically.

● The **SATA Mirror Drive** uses the industry standard Serial ATA interface and can be used like any other standard SATA HDD. No special device drivers will be needed and can be used on any host computer or operating system.

● Conforms to Serial ATA Interface ATA/ATAPI-7 Specifications (maximum data transfer rate: 6Gbps)
   It also has a Dip-switch selectable operation mode and function that allows the host side to be configured as either 6Gbps or 3Gpbs.

● Mirroring technology (RAID Level 1) is implemented via hardware thereby minimizing any overhead on the system side

1.2   Mirroring

Mirroring technology writes the same data to two drive units simultaneously. If one drive unit fails, data can still be accessed and read from the other drive unit.

1.3 Data Reconstruction

Data rebuilding (the copying of all data from the fully functional drive unit to the new replacement drive unit) will start automatically and the Mirror Drive is fully usable even if the rebuild process ongoing. During data rebuild, the drive status indicator of the fully functional drive unit will light green while the drive status indicator of the replacement drive unit will flash orange.
Also, if the Mirror Drive is rebooted while the data rebuild is in progress, rebuilding will not resume from the start but from the block prior to the last completed block recorded.
（Refer to 「5.1 LED Display」 for more information）

⚠ Caution	Please make sure to perform the proper shutdown procedure if you want to turn off the host computer while the **SATA Mirror Drive** is still rebuilding the data. Failure to do so may cause the data of the normal drive unit to be corrupted and rebuilding may not be completed.

When a sector of the fully functional drive unit could not be read during data reconstruction, the **SATA Mirror Drive** skips copying that bad sector and continues to reconstruct the remaining data. These skipped sectors will no longer be readable. However, once another data is written to that sector, it can be read correctly again.

❗ Important	If the data reconstruction process skips any sector during data rebuilding, the data on this sector will be lost. Therefore, periodic backup is recommended

1.4 Revival Reconstruction

When something goes wrong in a drive unit and the mirror controller cannot get a response from the drive within the specified time (30 seconds), the controller will issue a reset command to the drive to check its status (Background Retry).
If the drive is recovered, the **SATA Mirror Drive** returns to the normal operation. But if it is not, the **SATA Mirror Drive** will shift to revival reconstruction mode.
Revival Reconstruction turns the power of the appropriate drive OFF/ON and if the drive status becomes ready, reconstruction is automatically started. The **SATA Mirror Drive** will still respond to the host normally even during reconstruction. Once reconstruction is completed, the **SATA Mirror Drive** returns to normal mode automatically
Revival reconstruction is executed up to two times. On the third time, it will not proceed with the data rebuild process and will treat the drive as a failed drive. The failed drive status indicator (LED) of the corresponding drive will light orange.
The revival reconstruction setting function can be Enabled/Disabled by Dip Switch. The default factory setting is "Enabled",
（See 「4.1.3 Revival Reconstruction Setting」 for more information）

2 Outline Figure

2.1 Part Names

ACCESS LED

DRIVE 2 LED

DRIVE 1 LED

Controller Unit

Mounting Screw Holes (x4)
4- #6-32UNC
Unified Coarse Screw

Drive Interface

DIP Switch

Mounting Screw Holes (x3)
4- #6-32UNC
Unified Coarse Screw
Same for Both Sides

SVRE-D***SA* ← Model Name
EC: YB**** ← Version
S/N: ********* ← Serial number

Buzzer Stop Signal Connector

Status Signal Connector

External LED Status Signal Connector

SATA Connector (Host Interface)

Power Connector

MAIN CARD

SUBCARD

2.2　External Dimensions

2.2.1　SATA Mirror Drive

＜SVRE-D032SA/SA1＞

Mounting Screw Holes (x4)
4- #6-32UNC
Unified Coarse Screw

Mounting Screw Holes (x3)
4- #6-32UNC
Unified Coarse Screw
Same for Both Sides
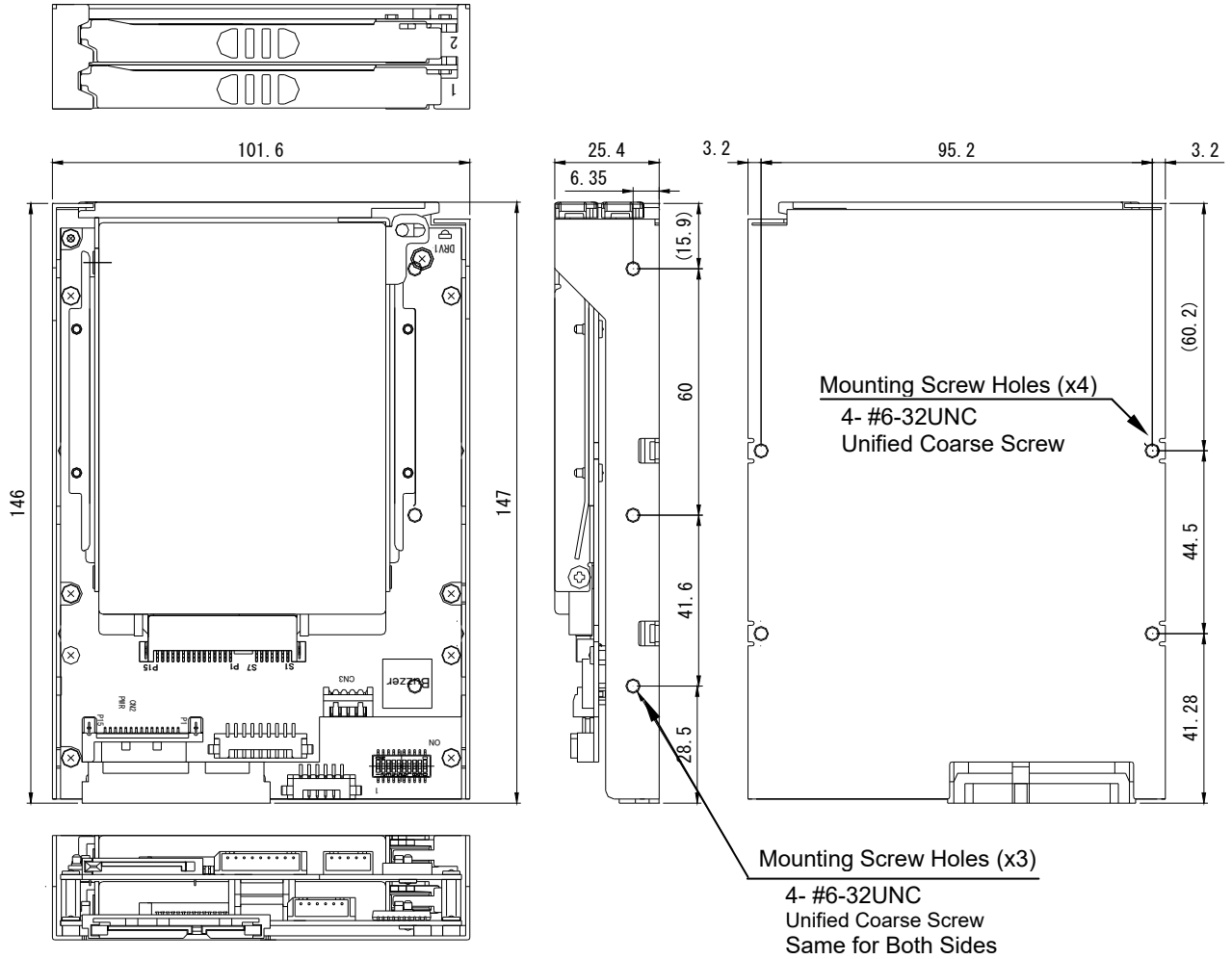
Unit: mm

2.2.2   5-inch Bay Mirror Drive Installation Fitting

<SVRE-D032SA/SA1-B>

Mounting Screw Holes (x4)
4- #6-32UNC
Unified Coarse Screw
Same for Both Sides
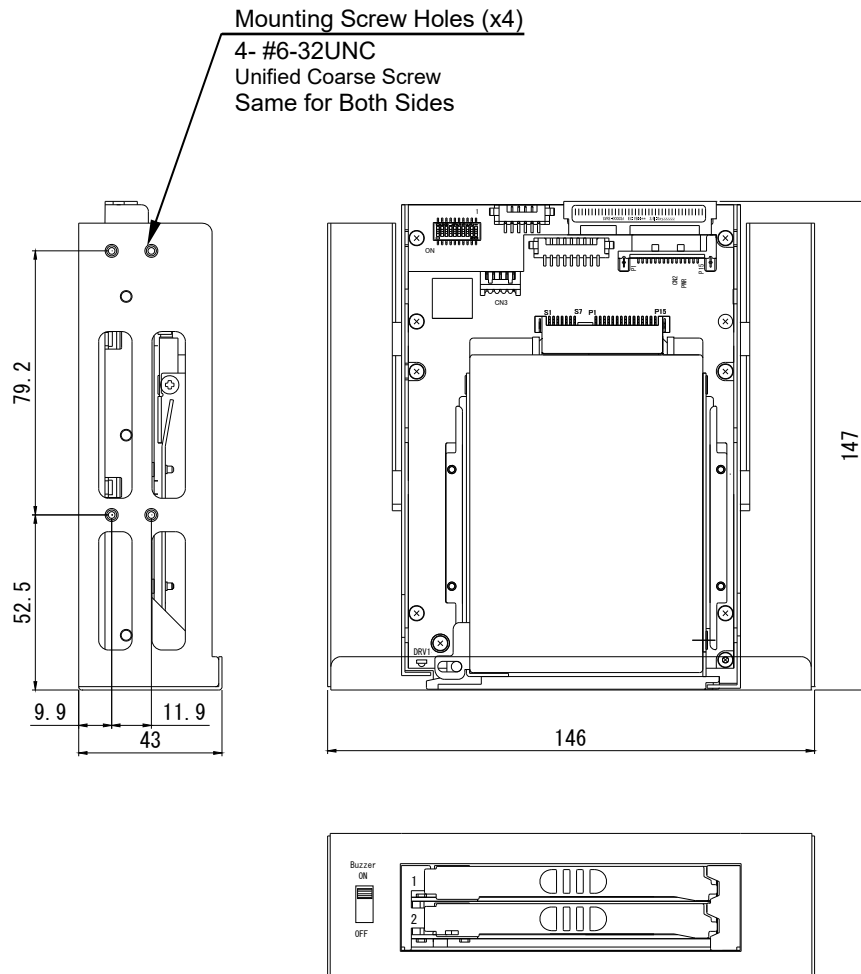
Unit: mm

2.2.3   Drive Unit
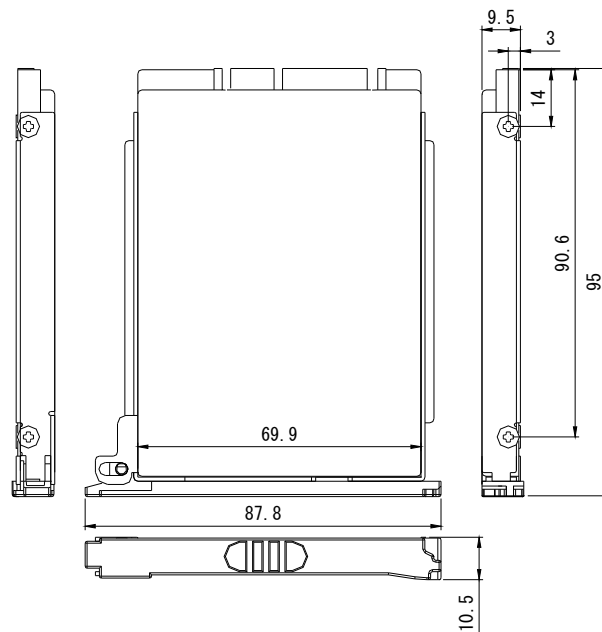
Unit: mm

3 Connecting To Host Computer

3.1 Operation Mode Setting

Refer to 「4 Settings」 for the various settings of the DIP switch. For the default factory settings, refer to 「Appendix C: Factory Default Setting」 .

3.2 Mounting in the Host Computer

Use the provided mounting screws into the specified mounting holes when assembling into the host computer. Refer to sample figures below when using the side mounting screw holes

When Using the Side Mounting Screws
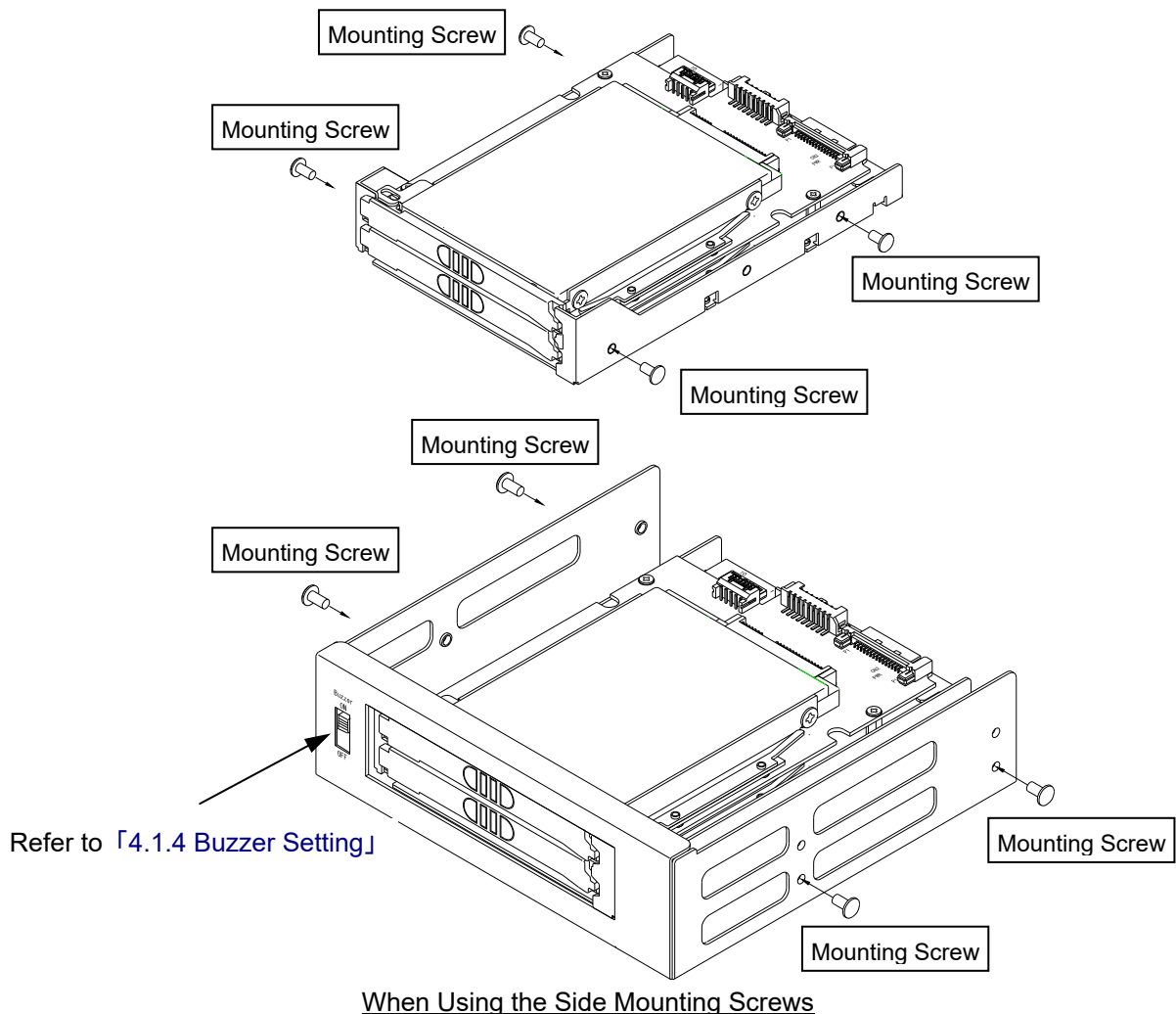
⚠ Caution	When installing into the host computer, provide sufficient cooling in order to ensure that the surface temperature of the drive unit remains below 60°C.

3.3 Cable Connection

1. The power supply uses DC +5V only. Connect the power cable to the power connectors of both the main card and sub card. The sub card connection must come from a separate cable as that of the main card but from the same power supply.
   （Refer to 「2.1 Part Names」 for the location of the connectors）

2. Connect the SATA signal cable to the SATA connector and before connecting to the host computer.
   （Refer to 「2.1 Part Names」 for the location of the connectors）

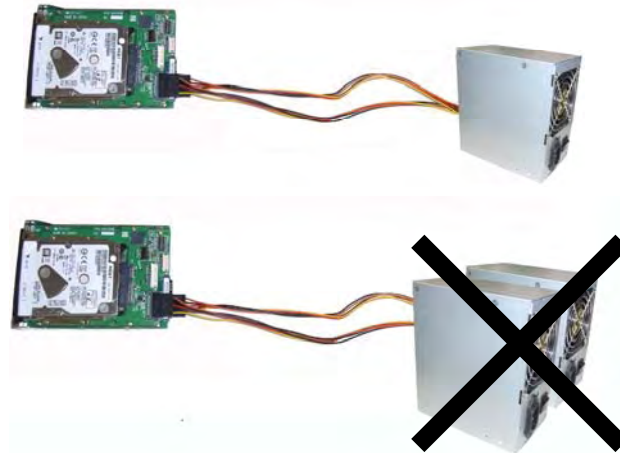| ⚠ Caution	When setting the switches and attaching the cables, ensure first that the power supply of the host computer is turned off.

3.4 Turning On the Power

Before turning on the host computer, press lightly the front face of each drive unit to confirm that these are firmly inserted and verify if the lever has locked in.
Next, turn on the host computer's main power supply and check if the host computer detects the unit correctly.

Gently push the drive unit to make sure that it has been securely mounted.
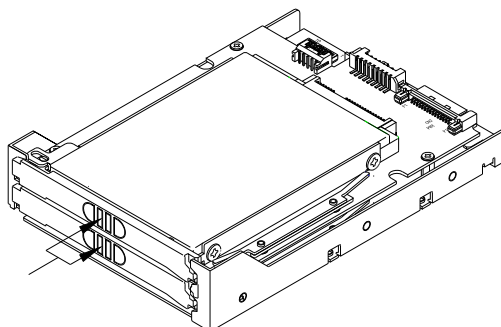
⚠ Caution	Before turning on the host computer, make sure that both the Signal and power cables are attached properly.

4 Settings

4.1 DIP Switch

The DIP Switch can be used to change the settings of SATA Speed (Host Side), Write Cache mode of the installed drive, Revival Reconstruction and Buzzer Features of the **SATA Mirror Drive**. Except with the Buzzer, please turn off the power before changing the Dip Switch setting.

DIP Switch	Functions	Default Shipment Setting
4	Host Side SATA Speed Setting	6Gbps
6	Drive Write Cache	Write Back
7	Revival Reconstruction	Enabled
9	Buzzer	Enabled

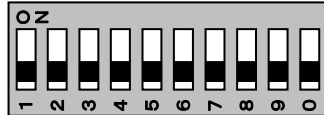| ! Important	Do not change the setting of Dip Switch # 1, 2, 3, 5, 8 & 0. Please note that making changes in any of these may result in the loss of stored data.

4.1.1 Host Side SATA Speed Setting (Dip Switch: 4)

Host side speed can be set to 6Gpbs or 3Gbps.

4.1.2 Drive Write Cache Setting (Dip Switch: 6)

When the Dip Switch is OFF, the mounted Drive operates in write-back mode (Cache Function Enabled). When it is set to ON, the drive operates in write-through mode (Cache Function Disabled).

! Important	Always observe the shutdown procedure specified for the host computer's operating system. Except during emergency, try to wait at least 10 seconds to be sure that both the access LED and the drive LEDs have stopped flashing before shutting off the power. Turning off the power while the access LED or the drive LED is still lighting may result in loss of data currently located in drive's cache memory.

4.1.3 Revival Reconstruction Setting (Dip Switch: 7)

When Revival Reconstruction is enabled, the **SATA Mirror Drive** will attempt to do data reconstruction even if the cause of error to the drive is determined to be unrecoverable. The **SATA Mirror Drive** will not remain in Degraded Mode but instead, will automatically try to revive the drive up to two times.
If it is disabled, the drive will not be revived and will be treated as a failed drive and the **SATA Mirror Drive** will enter into Degraded Mode.

4.1.4 Buzzer Setting (Dip Switch: 9)

If the Buzzer is enabled, the buzzer will sound when Drive 1 or Drive 2 fails or the **SATA Mirror Drive** is in System Halt state. In the event of a drive unit failure, the buzzer will continue to sound until the failed drive unit is replaced. The buzzer can be stopped if the switch position is changed to disable setting. Make sure to return the buzzer back to Enabled position after the failed drive unit has been replaced.
If the Buzzer is disabled, the buzzer will not emit any sound at all.
When using an external bracket for the 5" Drive Bay installation, please make sure that Dip Switch 7 is set to enable. The buzzer sound can be turned ON and OFF through the Buzzer switch in the external bracket. If the buzzer is turned OFF prior to drive replacement, slide it back to ON after the new drive unit has been inserted

5 Status Display

5.1 LED Display

The status of the controller unit and the drive unit is indicated by the LED on the front.

5.1.1 Access LED

Display	Description
Green	<1> When the power is turned on. [*1] <2> Processing a command from the host computer. Either of the above.
Orange	Controller unit failure.

Orange Flashing	<1> When both drive units have failed or both drive units are not correctly inserted.
	<2> When the configuration information of the controller unit, Drive 1 unit and Drive 2 unit are all different from each other.
	   (Both drive status indicators show green simultaneously.)
	<3> When one drive unit has failed and the fully functional drive unit has been erroneously replaced or both drive units have been replaced.
	   (Both drive status indicators show green simultaneously.)
	Any of the above.

[*1] When the power is turned on, both the access indicator drive status indicators lights up green. When **SATA Mirror Drive** boot up process is complete, all will be turned off.

5.1.2 Drive LED

Display	Description
Green	<1> When the power is turned on. [*1] <2> Processing a command from the host computer. <3> Then **SATA Mirror Drive** is processing an internal command. Either of the above
Orange	<1> Drive unit failure
Orange Flashing	Target drive unit of data rebuilding. [*2] (Source drive unit LED is green at the same time)

[*1] When the power is turned on, both the access indicator drive status indicators lights up green. When **SATA Mirror Drive** boot up process is complete, all will be turned off.

[*2] Drive Status Indicator will go out after data rebuilding.

! Important	If the drive status indicator lights orange, replace immediately that drive unit. Leaving the **SATA Mirror Drive** with a failed drive unit will result in data loss if the other drive unit will also fail.

5.2 LED & Buzzer Status Display Examples

STATE		LED			BUZZER
		ACCESS LED	DRIVE1 LED	DRIVE2 LED	
Normal Operation (Host Access)	None	○	○	○	No Sound
	Yes [*1]	●	●	●	
Normal Operation (Background Verify)		○	☀ (green blink)	☀ (green blink)	No Sound
Normal Read/Write	Read	●	●	○	No Sound
	Write	●	●	●	
Drive1 Fail (Degrade Mode)		○	● (orange)	○	⊓ 3.2s ⊓
Drive2 Fail (Degrade Mode)		○	○	● (orange)	0.3s 0.3s 3.1s ⊓⊓ 0.3s —
System Halt [*2]		☀ (orange blink) 0.1sec int	○	○	0.1s ⊓ — — — — — 0.1s
Rebuilding [*3]	D1→D2	○	●	☀ (orange blink) 1sec int	No Sound
	D2→D1	○	☀ (orange blink) 1sec int	●	
Skip Reconstruction (After Rebuilding)	D1→D2	○	☀ (orange blink) 2sec int	○	2s ⊓ 2s ⊓
	D2→D1	○	○	☀ (orange blink) 2sec int	

● : Steady   ☀ : Blinking   ● : Steady   ☀ : Blinking   ○ : Off

[*1] Both the access LED and Drive 1/2 LED will light green when there is access from the host during normal operation but will turn off once the access has been completed. The LED may also appear to be blinking Green during the repetitive operation.

[*2] Drive 1/2 LED may be green (aside from Off state).

[*3] Although it can be generally described as blinking orange, green will also light up during Write operation throughout the reconstruction process. Therefore, orange and green may appear to be blinking alternately. ☀

6 Troubleshooting

6.1 Failure Status Checking

If the **SATA Mirror Drive** fails, the access LED will light orange or blink orange and the drive LED will light orange.
If the buzzer switch is enabled, the buzzer will emit a beeping sound. Check these conditions to isolate the cause of failure.

ACCESS LED	DRIVE LED		**SATA Mirror Drive** status and measures
	DRIVE1	DRIVE2	
---	Green	Orange flashing / Green	Rebuilding data from Drive 1 unit to Drive 2 unit. (See Sections 6.2.1-9 / 6.2.2-9 / 6.2.2-16 for more details)
---	Orange flashing / Green	Green	Rebuilding data from Drive 2 unit to Drive 1 unit. (See Sections 6.2.1-9 / 6.2.2-9 / 6.2.2-16 for more details)
---	Orange	---	Drive 1 unit failure. Replace the Drive 1 unit with a new drive unit.
---	---	Orange	Drive 2 unit failure. Replace the Drive 2 unit with a new drive unit.
Orange	---	---	Controller unit failure. Replace the controller unit with a new controller unit.
OFF	OFF	OFF	When the **SATA Mirror Drive** does not respond to the host, check the condition of the power supply. If problem persists, please contact your distributor.
Orange flashing	OFF	OFF	Check the condition of both drive units. If problem persists, please contact your distributor.
Orange flashing	Green	Green	Wrong drive unit was replaced. Double-check and confirm. Return to the original state and repeat the process.
Other LED indications not mentioned			Contact your distributor.

--- : Normally off but will light up green or flash green when accessed.

If replacing the drive unit does not fix the problem, contact your distributor.

6.2 Replacing A Drive Unit

A failed drive unit can be replaced while the host computer is running.
When the failed drive unit is replaced with a new drive unit, data rebuilding will begin automatically.
During data rebuilding, the host computer can still access the **SATA Mirror Drive**.
Note: Make sure that the drive status indicator (LED) lights orange before replacing a failed unit

⊕ Important	Before replacing the failed drive unit, prepare the replacement drive unit designated by Storage Vision as described in "Appendix-D Replacement Parts ". Do not use other HDDs even if the capacity, manufacturer or model number is the same. It may cause malfunction or failure and will not be covered by warranty.
	In the event of a failure in one drive unit, immediately replace the failed drive unit with a new drive unit. If a failure occurs in the remaining good drive unit, data cannot be reconstructed or recovered.

⚠ Caution	Before handling the drive unit, touch a metal object first, such as the metal enclosure of the host computer, to discharge static electricity from your body
	Do not subject the replacement drive unit or controller unit to vibration or shock. It may cause malfunction or failure.

＜How to remove the drive＞

＜How to insert the drive＞
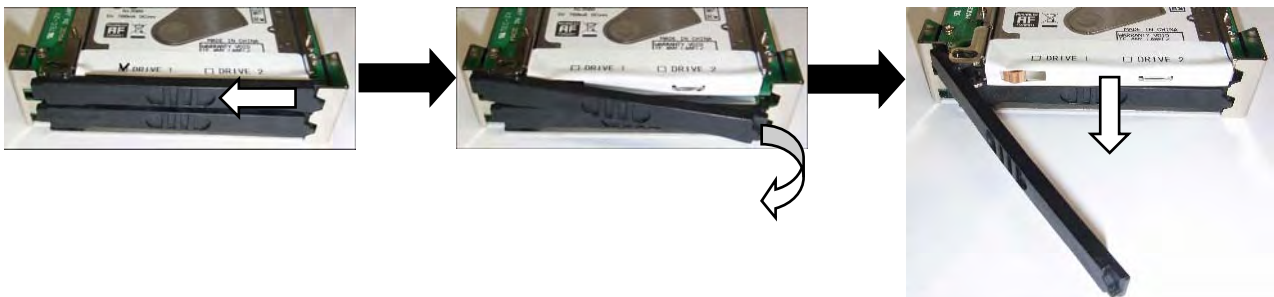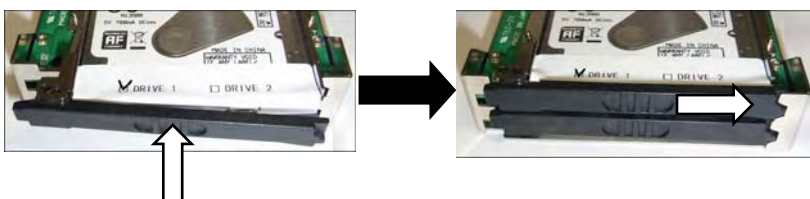
6.2.1 Replacement of One Drive Unit

Replacement can be performed even while the host computer is running.
(If the failed drive unit cannot be removed while the power is ON, turn off the power supply of the host computer and remove the **SATA Mirror Drive**.)

1. Prepare a new drive unit as specified in " Appendix-D Replacement Parts".

2. Confirm correct identification of the failed drive unit through the drive status indicator or buzzer

3. Slide the lever of the failed drive to the left to release the lever
   （Refer to ＜How to remove the drive＞）

4. When you raise the lever, the drive will come out. Pull out the drive unit and replace with a new one.

5. Push the replacement drive firmly into the unit as far as it will go with both hands.
   （Refer to ＜How to insert the drive＞）

6. Slide the drive unit lever to the left and push it all the way in. Then slide the lever to the right to secure the drive unit

7. Confirm that the drive unit lever is securely closed.

8. A few seconds after the drive unit has been replaced, the Drive LED indicator of the replaced drive will blink orange (every 1 second) and data reconstruction will begin.（See 「5.1 LED Display」）

� Important	Do not remove the drive unit while data rebuilding is underway.

9. During data rebuilding, the drive LED of the fully functional drive unit will light green while the drive LED of the replaced drive will flash orange at 1-second interval. At certain points, the drive LED may appear yellow because the green LED also lights up whenever the replaced drive unit is being accessed.

10. When data rebuilding is complete, the drive LEDs will both turn off to signify that replacement work has been completed.

⊙ Important	If you have accidentally replaced the correctly functioning drive unit, the drive LEDs of both drive units will light green and the access LED will flash orange. The host computer will be unable to access the **SATA Mirror Drive**. In this case, turn off the host computer. Replace the failed drive unit with the new drive unit and return the fully functional drive unit. Data rebuilding will immediately start after turning on the host computer.

6.2.2   Replacement of Both Drive Units

If both drive units are determined to have failed, replace the units according to the following procedure. This is an emergency recovery attempt; data corruption may have already occurred and there is no guarantee of a complete data recovery.
It is assumed that one drive unit was already in a failed state and the other one running also failed eventually. This recovery process will only be applicable when the drive unit that failed later can still be accessed by the restarting the power supply.
If you are not sure which drive unit failed first or if the mirror drive is not recognized in step 6 below, contact your distributor for assistance.

⚠ Important	Once a drive unit fails, replace it immediately. If both drive units fail, there is a high possibility that data cannot be reconstructed or recovered
	To avoid data loss, back up your data in a suitable medium, such as tape or MO drive. Make sure to use the drive unit supplied by Storage Vision as replacement. Refer to "Appendix-D Replacement Parts" for more details.

1. Prepare the two new drive units as specified in " Appendix-D Replacement Parts".

2. Turn off the power supply of the host computer.

3. Remove the drive unit that failed first. Refer to steps 3 & 4 of 「6.2.1 Replacement of One Drive Unit」. Recovered data will be based from the drive unit that failed later.

4. Install the drive replacement unit. Refer to steps 5 & 6 of 「6.2.1 Replacement of One Drive Unit」

5. Make sure that the drive unit lever is securely closed.

6. Turn on the power supply of the host computer.

7. Confirm that the host computer recognizes the **SATA Mirror Drive**.

8. A few seconds after the drive unit has been replaced, the Drive LED indicator of the replaced drive will blink orange (every 1 second) and data reconstruction will begin.（See 「5.1 LED Display」）

⚠ Important	Do not remove the drive unit while data rebuilding is underway.

9. During data rebuilding, the drive LED of the non-replaced drive unit will light green while the drive LED of the replaced drive will flash orange at 1-second interval. At certain points, the drive LED may appear yellow because the green LED also lights up whenever the replaced drive unit is being accessed.

10. When data rebuilding is complete, the drive LEDs will both turn off. After confirming that the drive status indicators have gone off, turn off the power supply of the host computer.

11. Remove the drive unit that failed later. Refer to steps 3 & 4 of 「6.2.1 Replacement of One Drive Unit」

12. Install the drive replacement unit. Refer to steps 5 & 6 of 「6.2.1 Replacement of One Drive Unit」

13. Make sure that the drive unit lever is securely closed.

14. Turn on the power supply of the host computer.

15. A few seconds after the drive unit has been replaced, the Drive LED indicator of the replaced drive will blink orange (every 1 second) and data reconstruction will begin.（See 「5.1 LED Display」）

! Important	Do not remove the drive unit while data rebuilding is underway.

16. During data rebuilding, the drive LED of the non-replaced drive unit will light green while the drive LED of the replaced drive will flash orange at 1-second interval. At certain points, the drive LED may appear yellow because the green LED also lights up whenever the replaced drive unit is being accessed.

17. When data rebuilding is complete, the drive LEDs will both turn off to signify that replacement work has been completed.

6.3 Controller Unit Replacement

If the access LED or the drive LED lights orange even after drive replacement, the controller may have a problem. In this case, replace the controller unit.
When replacing the controller unit, data can be kept safe by following the correct replacement procedure.
Please note that the replacement procedure will differ depending on the condition of the drive units.

<1> If both drive units are functioning normally:
 Transfer both drive units to a new controller unit.
 Ensure that each drive unit is inserted into exactly the same drive bays as before.

<2> If one drive unit has failed:

1. When it has been confirmed that one drive unit has failed, transfer only the correctly functioning drive unit and insert it into the same bay of the new controller.

⚠ Caution	When replacing controller units, make sure to turn off the power of the host computer, and the AC power cable is removed from the socket。
	Before replacing the controller unit or drive units, touch a metal object first, such as the metal enclosure of the host computer, to discharge static electricity from your body.
	Do not subject the drive units or the controller to vibration or shock. It may result in malfunction or disk failure。
	If you install the **SATA Mirror Drive** into the host computer after replacing the controller unit, secure it in the mounting bay inside the host computer (0.49 Nm torque is recommended).

The replacement procedure for each drive unit is explained in the succeeding pages.

6.3.1 When both drive units are functioning normally

1. Prepare a new controller unit as specified in " Appendix-D Replacement Parts".

2. Turn off the power supply of the host computer.

3. Unplug the AC cable, disconnect the power and SATA signal cables from the **SATA Mirror Drive** and remove it from the host computer.

4. Remove the drive unit from Bay 1. Refer to steps 3 & 4 of 「6.2.1 Replacement of One Drive Unit」）

5. Install the removed drive unit to Bay 1 of the replacement controller. Refer to steps 5 & 6 of 「6.2.1 Replacement of One Drive Unit」

6. Remove the drive unit from Bay 2. Refer to steps 3 & 4 of 「6.2.1 Replacement of One Drive Unit」）

7. Install the removed drive unit to Bay 2 of the replacement controller. Refer to steps 5 & 6 of 「6.2.1 Replacement of One Drive Unit」

8. Make sure that the drive unit levers are securely closed.

9. Install the **SATA Mirror Drive** into the host computer and connect the SATA signal and power cables.

10. Turn on the power supply of the host computer.

6.3.2 When one drive unit has failed

1. Prepare a replacement drive unit and a replacement controller unit as specified in " Appendix-D Replacement Parts".

2. Check the Drive LED and Buzzer to determine the failed drive unit.

3. Turn off the power supply of the host computer.

4. Unplug the AC cable, disconnect the power and SATA signal cables from the **SATA Mirror Drive** and remove it from the host computer.

5. Remove the drive unit that was operating normally. Refer to steps 3 & 4 of 「6.2.1 Replacement of One Drive Unit」

6. Install the good drive unit pulled out in step 5 into the same drive bay location in the replacement controller unit. Refer to steps 5 & 6 of 「6.2.1 Replacement of One Drive Unit」

7. Make sure that the drive unit levers are securely closed.

8. Install the **SATA Mirror Drive** into the host computer and connect the SATA signal and power cables.

9. Turn on the power supply of the host computer.

10. Confirm that the host computer recognizes the **SATA Mirror Drive**.

11. Install the replacement drive unit into the empty drive bay in the replacement controller unit. Refer to steps 5 & 6 of 「6.2.1 Replacement of One Drive Unit」

12. Make sure that the drive unit levers are securely closed.

13. A few seconds after the drive unit has been replaced, the Drive LED indicator of the replaced drive will blink orange (every 1 second) and data reconstruction will begin.（See 「5.1 LED Display」）

> **(!) Important** | Do not remove the drive unit while data rebuilding is underway.

14. During data rebuilding, the drive LED of the non-replaced drive unit will light green while the drive LED of the replaced drive will flash orange at 1-second interval. At certain points, the drive LED may appear yellow because the green LED also lights up whenever the replaced drive unit is being accessed.

15. When data rebuilding is complete, the drive LEDs will both turn off to signify that replacement work has been completed.

6.4 Other problems

If the problem persists even after you have replaced the drive unit or the controller unit, it is possible that there is a poor contact somewhere in the controller unit or in the connector area. Recheck the replacement process. If it is not resolved, please contact your distributor immediately.
In addition, if you also happen to encounter other types of problems not mentioned in this manual, please contact your distributor immediately.

Appendix-A Specifications

●Product Specifications

Features / Model Name		SVRE-D032SA(-B)	SVRE-D032SA1(-B)
RAID Level		1	
Storage Capacity		320 GB	
Number of LBAs		625,138,304	
Number of Cylinders		16,383	
Number of Heads		16	
Sector Count		63	
Host Interface		Serial ATA (SATA) Interface Maximum data transfer rate: 6Gbps / 3Gbps (Selectable by Dip Switch)	
Power Supply Voltage Requirement		4.85 V_{DC} ～ 5.25V_{DC}	
Power supply ripple [*1]		Max. 100mV p-p（0～20MHz）	
Power startup time [*2]		5～100 ms	
Current Requirements	Startup（max.）	2.2 A	
	Idle（typ.）	1.4 A	
	Read/Write（typ.）	1.6 A	
Dimensions (W x L x H)	SVRE-D032SA/SA1	101.6 mm x 147 mm x 25.4 mm	
	SVRE-D032SA/SA1-B	146 mm x 147 mm x 43 mm	
Approximate Weight (Body)	SVRE-D032SA/SA1	450 g	490 g
	SVRE-D032SA/SA1-B	655 g	695 g
Ambient Temperature	Operating	5 to 45 °C [*3]	
	Non Operating	-40 to 60 °C	
Humidity	Operating	8 ～ 90 %RH, Max wet-bulb temp 29 °C [*4]	
	Non Operating	5 ～ 95 %RH, Max wet-bulb temp 40 °C	
Maximum Temperature Gradient		15 ℃/h	

Notes:

[*1]: Including startup time.

[*2]: Time it takes for V_{CC} to reach 4.85 V_{DC}.

[*3]: Ensure sufficient airflow so that the temperature of the HDD top cover is below 60°C at all times

[*4]: No condensation should occur under any conditions
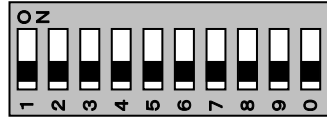
Appendix-B Accessories

●The **SATA Mirror Drive** is shipped with following accessories

1. Mounting screws (4pcs.)

Appendix-C Default Factory Setting

The factory default DIP Switch settings of the **SATA Mirror Drive** are as follows.

● DIP Switch

DIP Switch	Function / Setting		Setting Position
1	SF (Special Functions) Changing is Prohibited	—	OFF
2		—	OFF
3			OFF
4	Host Side SATA Speed Setting	6Gbps	OFF
5	SF (Changing is Prohibited)	—	OFF
6	Drive Write Cache	Write Back	OFF
7	Revival Reconstruction	Enabled	OFF
8	SF (Changing is Prohibited)	—	OFF
9	Buzzer	Enabled	OFF
0	SF (Changing is Prohibited)	—	OFF

Appendix-D Replacement Parts

The following products have available user-replaceable parts。

MODEL NAME	Parts Name	Parts Number
SVRE-D032SA（-B） SVRE-D032SA1（-B）	320GB Drive Unit	A204361
		A204376
	320GB Controller Unit	A204362

Inquiries

For more information about this product, please contact your local distributor.
When sending inquiries, please be ready to provide the following information:

● Required Information
1. Your Company Name / Department / Name of Contact Person / Telephone Number & Email Address
2. Product Name, Version and Serial Number
(Refer to 「2.1 Part Names」 for the location of product name, version & serial number)
3. The host operating system and version
4. Current status (what happened at what time, screen status, error messages, etc)

Refer to 「2.1 Part Names」 of this manual & take a note of the product name, version & serial number.

Product Name	
Version	
Serial Number	

Ikefuji Building 7F
4-5-8 Shiba, Minato-ku
Tokyo 108-0014 Japan
Homepage: https://www.str-v.com

● For technical questions, please contact the customer support desk.
TEL: 03-5427-6500   FAX: 03-5427-6501
e-mail：Click "Contact Us" button found in Storage Vision's homepage

Business Hours: Monday-Friday 9:00-16:30 (Excluding Japan & company holidays)

Write below the name and contact information of the distributor and the designated maintenance company.

Distributor Company　　：

Phone Number　　：

Maintenance Company　：

Phone Number　　：