OWC Flex 1U4

Support Manual

Introduction

1.1 System Requirements

Operating System

- Mac

  : macOS 10.15 or later

Hardware

- Works with any Mac with a Thunderbolt (USB-C) port

Supported Drives

- 4 Drive Bays

  : 3.5”/ 2.5” SATA, SAS, and NVMe U.2 SSDs/adapters

Supported PCIe Devices

- Dimensions

  : Supports one card up to half-length, single-width, full-height

- Mechanical

  : x16 PCIe slot

- Electrical

  : x4 PCIe 3.0

- NOTE

  : Cards with drivers must be Thunderbolt-aware & GPUs are not supported

1.2 Package Contents

- (1)

  OWC Flex 1U4

- (1)

  Thunderbolt 4 cable

- (1)

  Power supply cable

- 19" Deep Rack Mounting Hardware

- (

  1)

  3 Years of SoftRAID Premium Access (License located on bottom of device)

1.3 Front View

A. (2) **-** Use to pull and remove the Callisto from a rack server cabinet.

B Drive Status LEDs - **Data activity on SATA**= Flashing Green / **Data activity on U.2** = Flashing Blue

C. (4) **Drive Bays**

1.4 Rear View

(1) **PCIe Slot Cover** – Becomes replaced by available I/O ports of any installed PCIe card. GPUs are not supported.

B. (2) **OWC ClingOn-ready cable stabilizer mount** – Affix ClingOn to help prevent accidental cable disconnections (sold separately)

C. (2) **USB 3.2 Gen 2 (10Gb/s) Type-C Ports** – Supports USB devices with a Type-C connection

D. (3) **USB 3.2 Gen 2 (10Gb/s) Type-A Ports** – Supports USB devices with a Type-A connection

E. (1) **85W Thunderbolt 4 Port** – Connect a compatible host. Connect Thunderbolt devices to the 15W port.

F. (1) **15W Thunderbolt 4 Port** – Connect a Thunderbolt device.

G. (1) **DisplayPort 1.4** – connect a DisplayPort display here.

H. (1) **Power Switch** – Engage and disengage power to the device.

(1) **Power Port** – Connect the power cable to power the device

Getting Started

2.1 Device Setup

- This section describes the process of setting up the OWC Flex 1U4 if purchased with pre-installed drives. The OWC Flex 1U4 is available assembled with a variety of configurations.
    - Plug the power cable into the OWC Flex 1U4 power port located on the back and into a power outlet.
    - Connect the included Thunderbolt cable the 85W Thunderbolt 4 port located on the back of the OWC Flex 1U4 and into a computer.
- The OWC Flex 1U4 is configured as an OWC SoftRAID RAID 5. Downloading and installing the latest version of SoftRAID is recommended to experience the best performance.
    - NOTE

      : OWC Flex 1U4 devices come bundled with "

      3 Years of SoftRAID Premium Access

      ". Please visit

      OWC SoftRAID Product Details

      for more information regarding SoftRAID and the bundled Premium Access.
    - NOTE

      : The OWC SoftRAID license is located on the bottom of the OWC Flex 1U4.

Mac OWC SoftRAID Setup

- Download

  OWC SoftRAID for Mac
    - Please review and follow the steps outlined in

      OWC SoftRAID Installation for Mac

2.2 Assembly Steps

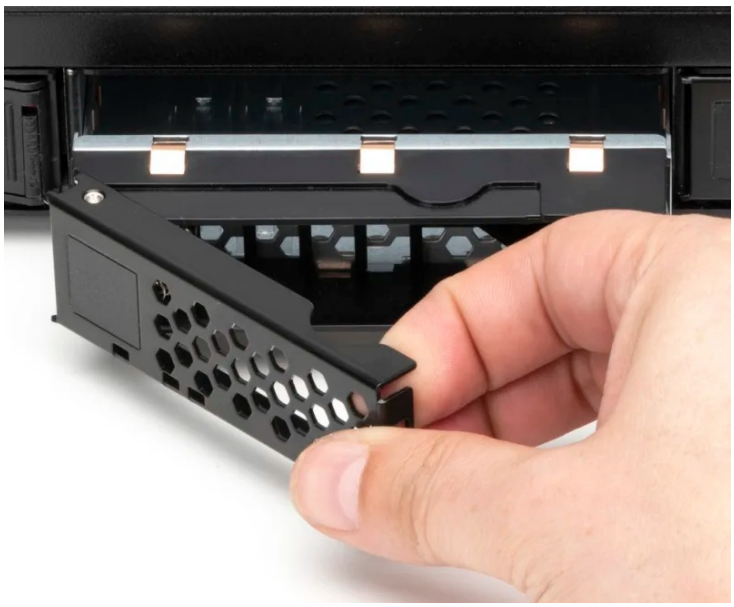
Drive Installation

This section describes the process of installing drives into the OWC Flex 1U4 if purchased as a bare enclosure.

1. Begin by placing the OWC Flex 1U4 on a static free work surface. Careful remove the drive trays from the packaging.

2. The drive trays have locking mechanisms. Press down on the locking mechanism to lock the drive tray. A small amount of red will show indicating the drive tray is locked. Press up to unlock the drive tray. The small amount of red will no longer appear indicating the drive tray is unlocked.
NOTE : Ensure the drive tray locking mechanisms is disengaged.

3. Disengage the drive tray by pushing the tray tab to the right. The drive tray will protrude slightly from the chassis. Carefully remove the drive tray and place on a flat surface.
NOTE : Ensure the drive tray locking mechanisms is disengaged.



4. Lay the drive tray on a flat surface and place a drive into the drive tray with the label facing upwards. Secure the drive to the drive tray.
NOTE : 2.5-inch drives have screws installed on the bottom of the drive tray. They are also installed with a spacer. The spacer will need to be removed and secured to use with the new drive installation.

3.5-Inch Drive

2.5-Inch Drive

5. Insert the drives, with the drive label facing upwards. Carefully push the drive tray forward into the drive bay. Do not force the drive as a minimal amount is needed. The drive will rest slightly protruded outside the drive bay.
NOTE : The drive trays have locking mechanisms. Ensure the locks are not engaged before installing the drive trays. The lock is disengaged when the locking mechanism is in the up position.

6. Press the drive tray door to finish pushing the drive into the drive bay and completing the connection.

7. The installed drives are ready to be formatted. Move onto **Section 2.4 “RAID Configuration Options”** for instructions on how to format and configure the OWC Flex 1U4.

2.3 PCIe Card Assembly Steps (Optional)

This is an optional section that describes the process of installing a PCIe card in the OWC Flex 1U4.

1. Remove the five screws securing the chassis lid. There are three screws to remove from the top and two screws to remove from the back. Once removed, the lid can be slid to the side and taken off the body.

2. Remove the screw holding the PCIe slot cover.
NOTE : Keep the slot cover in case an authorized return is needed.

3. Align the PCIe connector on the card with the PCIe slot of the OWC Flex 1U4. If there is resistance, do not force the card into the slot. Remove it, re-align the card's connector and try again.

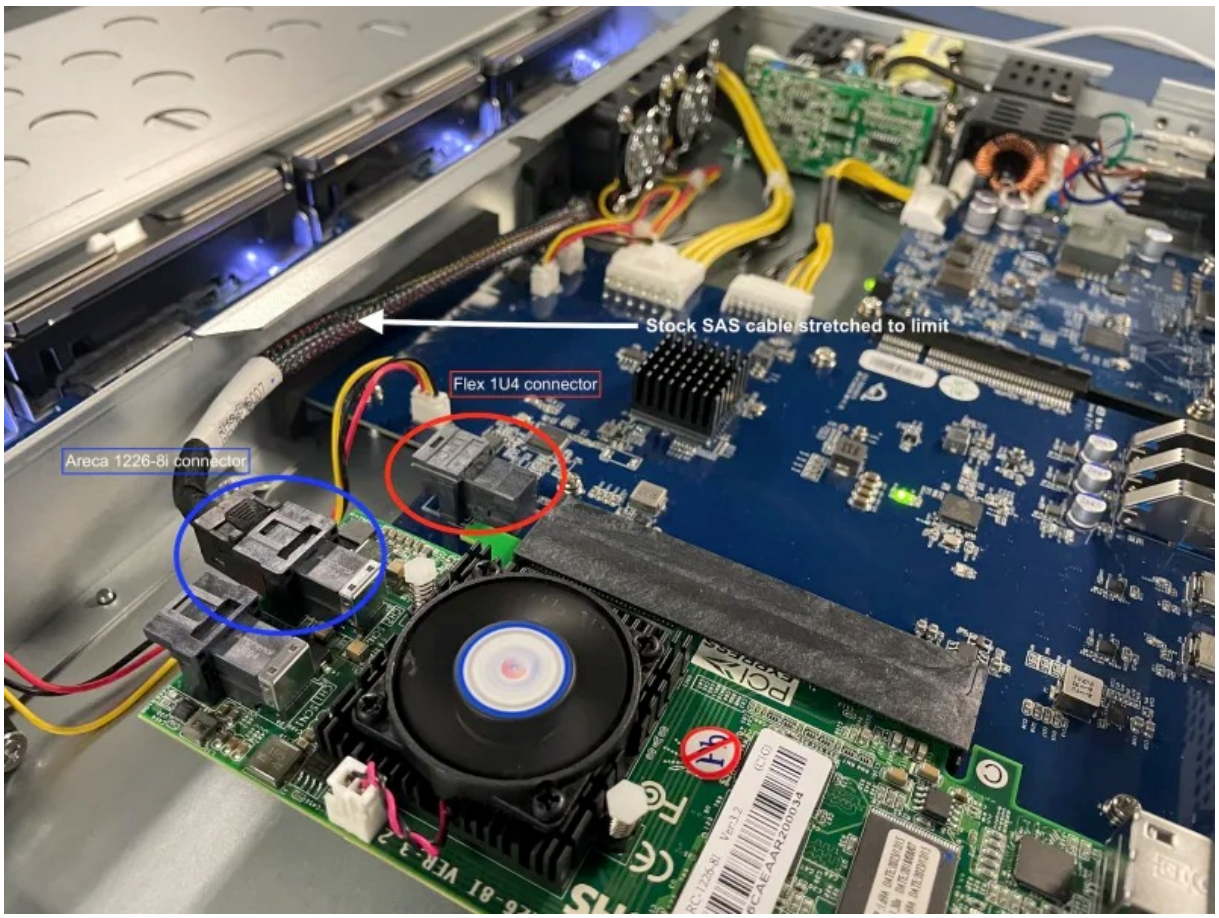
4. Once the card is fully seated, reaffix the screw to the bracket. Place the lid back onto the chassis and secure the five screws that were removed. Three screws secure the top, and two screws secure the back.

Optional Step: SAS RAID Controller Card

- An additional step is required if installing a SAS RAID Controller Card. The cable connected to the onboard SATA controller needs to be disconnected and connected to the SAS RAID Controller Card.
  - NOTE

    : A longer cable will need to be acquired If the stock cable isn’t long enough.
  - NOTE

    : Please consult the SAS RAID Controller Card manufacture for hardware RAID utility & driver management.



2.4 RAID Configuration Options

OWC SoftRAID RAID Configuration

- Downloading and installing the latest version of OWC SoftRAID is recommended to experience the best performance from the OWC Flex 1U4.
    - NOTE

      : OWC Flex 1U4 devices come bundled with "

      3 Years of SoftRAID Premium Access

      ". Please visit

      OWC SoftRAID Product Details

      for more information regarding SoftRAID and the bundled Premium Access.
- SoftRAID will assist with formatting the installed drives and setting up a RAID volume.

- NOTE

  : The OWC SoftRAID license is located on the bottom of the OWC Flex 1U4.

Mac RAID Configuration

1. Open the “Disk Utility” application on your Mac.
2. Choose “File” and select “RAID Assistant”.
3. Select a set type:

- Striped (RAID 0) set:

  A

  striped RAID set

  can speed up access to your data. You can’t create a RAID set on your startup disk; you must first start up your computer from another disk.

- Mirrored (RAID 1) set:

  Protect your data against hardware failure with a

  mirrored RAID set

  When you create a mirrored RAID set, your data is written to multiple disks so the information is stored redundantly. You can’t create a RAID set on your startup disk; you must first start up your computer from another disk.

- Concatenated (JBOD) set:

  Increase storage space with a

  concatenated disk set

  If you need one large disk, but you have several smaller disks, you can create a concatenated disk set to use as one large disk.

5. Select the checkboxes of the disks you want to include in the set.
6. For each disk, click the pop-up menu in the Role column and choose “RAID slice” or “Spare” to designate the disk as a standard member or spare in the set, then click Next.
7. Enter a name for the RAID set in the RAID Name field.
8. Click the Format pop-up menu, then choose a volume format that you want for all the disks in the set. (See

   File system formats available in Disk Utility

   .)

9. Click the “Chunk size” pop-up menu, then choose a disk chunk size that you want used for all the disks.

    1. When you create a striped set, chunks of data from the same file are distributed across the drives. Ideally, you want data distributed across drives evenly and at an optimum size so that it can be efficiently accessed. If you want high data throughput from your set, choose a smaller chunk size so that data is spread across the drives and one drive can be accessing data while another is seeking the next chunk. With mirrored disk sets, choose a chunk size that matches the data you’re accessing. For example, when working with video files, your Mac is accessing large chunks of data, whereas when using a database of many small records, your disks may be accessing smaller chunks of information.

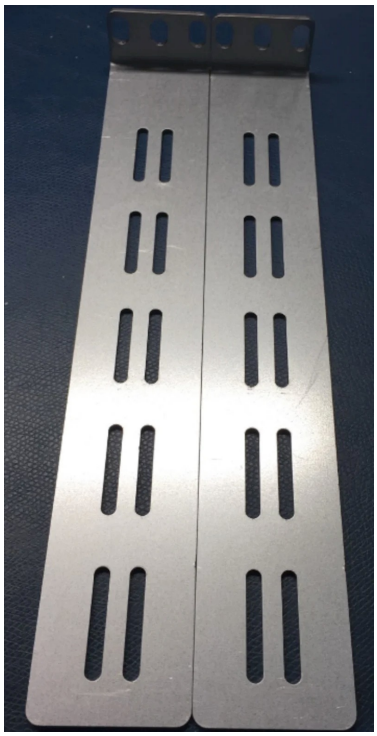
10. If you are creating a mirrored RAID set, select the “Automatically rebuild” checkbox to allow the set to be automatically rebuilt when member disks are reconnected.

11. Click "Create" and then click "Done".

2.5 Rack Ear Installation (Optional)

This is an optional section that describes the process of installing the 19-26" rack ears to the OWC Flex 1U4.

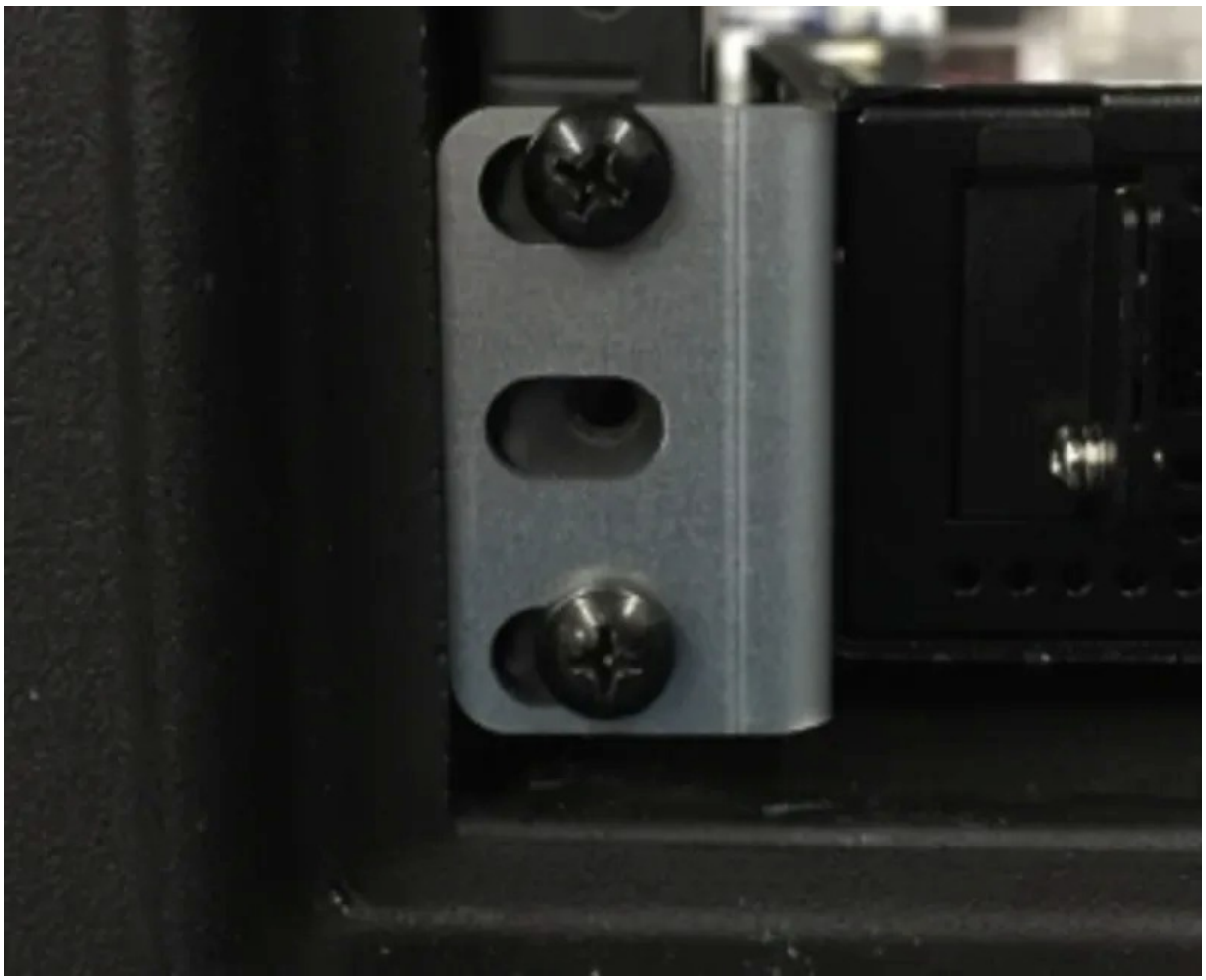
1. Gather the rack ear screws and (2) rack ears.



2. Align the rack ears over the (4) rack ear mounting holes. Adjust the placement of the rack ears to accommodate the rack cabinet. **NOTE** : The angled ends of the rack ears for attaching the OWC Flex 1U4 to a rack cabinet should be going outwards.

3. Affix the rack ears with the rack ear screws to the OWC Flex 1U4 once the desired placement is achieved.

4. Carefully place the OWC Flex 1U4 in a rack cabinet. Affix the other end of the rack ears to the rack cabinet.



Device Management

3.1 Drive Failure

- If the OWC Flex 1U4 was configured as a RAID 0, the data on the array is lost and the disk is no longer usable.
- If the OWC Flex 1U4 was configured as a RAID 5, the RAID card will alert the user with a beeping tone. The RAID can continue to be used, but the drive should be replaced immediately.

3.2 Replacing Drives

- The Hot-Swap function can be used to rebuild disk drives in arrays with data redundancy such as RAID level 1, 3, 5, 6, 10, 30, 50 and 60. The data will remain accessible via the functioning drive until the array is rebuilt with a new drive.
    - If the enclosure was purchased with drives and it is still under warranty, contact OWC technical support for assistance (see

      section 4.4 “Contacting Support”

). If the unit is outside its warranty or was purchased without drives, follow the assembly instructions to access and replace the failed drive.

- NOTE

  : A failed drive must be replaced with an identical drive (model, capacity, firmware). Refer above to

  section 2.2 “Assembly Steps”

  for drive replacement steps.

- NOTE

  : The OWC Flex 1U4 needs an active data signal to remain powered on. If it is disconnected from the computer, or if the computer goes to sleep or turns off, the device will power off. To minimize the rebuild time, it is recommended to keep the device connected to the computer (with the computer powered on), and disable any drive sleep settings on the computer for the duration of the rebuild.

3.3 OWC Disk Management

As of Windows 10 v. 1809 the default Disk Removal Policy is ‘Quick removal’ instead of ‘Better performance’.

NOTE : OWC storage solutions that are experiencing slow read/write speeds should consider checking and changing the Windows disk removal policy. Changing from "Quick removal" to "Better performance" can increase disk performance. OWC offers the application OWC Disk Performance to help change the Disk Removal Policy. Changing from "Quick removal" to "Better performance" can also be changed through OWC SoftRAID or manually through the operating system.

Please review the support article Storage Solutions: OWC Disk Performance for additional details.

3.4 Manually Unmounting Volumes

To ensure no data is lost during normal use, always eject or unmount the corresponding volume(s) from the operating system before powering off and disconnecting the device. Unmounting options are provided below.

macOS

1. Drag the icon for the device you wish to unmount to the trash can; OR

2. Right-click the device icon on the desktop, then click “Eject”; OR

3. Highlight the device on your Desktop and press Command-E.

3.5 Usage Notes

- SAS drives are supported with SAS drive controller card (available separately).
- Up to four U.2 drives are supported. M.2 drives are also supported with M.2 to U.2 adapter such as the

  OWC U2 Shuttle

  and

  OWC U2 ShuttleOne

  (available separately).
- Full DisplayPort 1.4 capabilities depends on host computer support of DisplayPort 1.4 specification through its Thunderbolt 3 connection, host computer GPU capabilities, and connecting cable capabilities.
- Thunderbolt 2/Thunderbolt compatibility requires a certified

  Thunderbolt 3 (USB-C) to Thunderbolt 2 (mDP) adapter

  and a Thunderbolt 2 cable (available separately). This configuration provides data transfer at up to 20Gb/s but does not support notebook charging.
- Select SSDs have been tested by OWC and shown to be incompatible with Mac systems running macOS 10.14 'Mojave' and later regardless of how they are connected to the host computer. Please consult the article "

  Incompatible SSD List: macOS 10.14 'Mojave' and Later

  " for a list of affected SSDs.

Support Resources

4.1 Troubleshooting

- Begin troubleshooting by verifying that the power cable is connected to the OWC Flex 1U4 and to a power source. If the power cable is connected to a power strip, make sure that the power switch on the strip is turned on. Then, verify that the Thunderbolt 4 cable is properly plugged into the computer and the OWC Flex 1U4.

- If the OWC Flex 1U4 is still not working properly, try connecting to another computer or using another Thunderbolt 4 cable. When the computer goes to sleep, the OWC Flex 1U4 will go to sleep. If you are still experiencing problems, consult

  section 4.4 "Contacting Support"

  for OWC technical support contact information.

- If the OWC Flex 1U4 volume isn't appearing on the Mac system, ensure the driver is installed by going to System Information > PCIe, and verify that "Driver Installed" says yes.

4.2 Online Resources

- OWC Flex 1U4 Product Lander
- OWC Flex 1U4 Support Guide Page
- SoftRAID Quick Start Guide
- SoftRAID Knowledgebase
- Thunderbolt 3 to Thunderbolt 2 Adapter

4.3 About Data Backup

To ensure that your files are protected and to prevent data loss, we strongly suggest that you keep two copies of your data: one copy on your OWC Flex 1U4 and a second copy on your internal drive or another storage medium, such as an optical backup, or on a second external storage unit. Any data loss or corruption while using the Flex 1U4 is the sole responsibility of the user, and under no circumstances may OWC, its parent, partners, affiliates, officers, employees, or agents be held liable for loss of the use of data including compensation of any kind or recovery of the data.

4.4 Contacting Support

- Phone, Chat, and Email support is available by visiting (owc.com/support)

4.5 About This Manual

The images and descriptions may vary slightly between this manual and the unit shipped. Functions and features may change depending on the firmware version. The latest product details and warranty information can be found on the product web page. OWC’s Limited Warranty is not transferable and

General Use Precautions

- To avoid damage, do not expose the device to temperatures outside the following ranges:
  - Environmental (Operating)
    - Temperature (ºF): 41º — 95º
    - Temperature (ºC): 5º — 35º
  - Environmental (Non-Operating)
    - Temperature (ºF): -4º — 140º
    - Temperature (ºC): -20º — 60º
- Always unplug the device from the electrical outlet if there is a risk of lightning or if it will be unused for an extended period-of-time. Otherwise, there is an increased risk of electrical shock, short-circuiting, or fire.
- Protect your device from excessive exposure to dust during use or storage. Dust can build up inside the device, increasing the risk of electrical shock, short-circuiting, or fire.
- Do not block any ventilation openings on the device. These help to keep the device cool during operation. Blocking the ventilation openings may increase the risk of electrical shock, short-circuiting, or fire.

Safety Precautions

- Use proper anti-static precautions when handling this device. Failure to do so can increase the risk of electrical shock or short-circuiting.
- Never expose your device to rain, or use it near water, or in damp wet conditions. Never place objects containing liquids on the device, as they may spill everywhere and into the openings. This will increase the risk of electrical shock, short-circuiting, fire, or personal injury.
- To avoid any risk of electrical shock, short-circuiting, fire, or dangerous emissions, never insert any metallic object into the device.

- Please cease use of the device and contact

  OWC Support

  if it appears to be malfunctioning.

Terms & Conditions of Sale

Warranty

The OWC Flex 1U4 has a 3 Year OWC Limited Warrantyif it was bundled with drives. OWC Flex 1U4 enclosures that do not ship with drives have a1 Year OWC Limited Warranty For up-to-date product and warranty information, please visit OWC Flex 1U4 Product Details

Changes

The material in this document is for information purposes only and subject to change without notice. While reasonable efforts have been made in the preparation of this document to assure its accuracy, OWC, its parent, partners, affiliates, officers, employees, and agents assume no liability resulting from errors or omissions in this document, or from the use of the information contained herein. OWC reserves the right to make changes or revisions in the product design or the product manual without reservation and without obligation to notify any person of such revisions and changes.

FCC Statement

Warning ! Modifications not authorized by the manufacturer may void the user's authority to operate this device.
NOTE : This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

Copyrights and Trademarks