SUNIX OCuLink Kit Series

Quick Installation Guide   Ver.1

Please visit https://www.sunix.com with product model for detail and latest manual update

Introduction

OCUE4221 is a standard PCIe x4 HH card with full height bracket (OCUE4221L is low profile bracket), OCUM4221 is a M.2 2280 Gen4x4 to SFF 8612 adapter board, they support PCIe Gen4 x4 and connect to an SFF-8612 OCuLink port, enabling external PCIe expansion. Paired with OCUD4241— a PCIe device board, this kit allows users to extend the PCIe bus outside of the system—supporting external graphics card or SAS/SATA storage RAID card—without the need to upgrade their existing PC or workstation.

Hardware Installation - follow as below

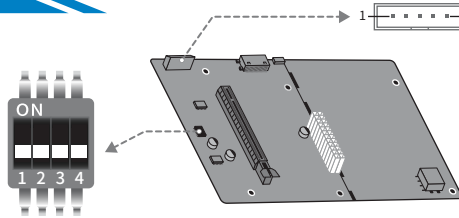### OCUD4241 - Extended SFF - DIP Switch Configuration

User have to configure the DIP Switch base on OCuLink cable length before putting OCUD4241 into ITX case.

For OCUMKIT1

Switch	Cable	Length
	M.2	50cm
	M.2	100cm

For OCUEKIT1&2

Switch	Cable	Length
	PCIE	50cm
	PCIE	100cm

ON
1 2 3 4

1 □ □ □ □ □ 5

USB Pin Assignment
Pin Header (Pitch 2.54mm)

	PIN	Pin Header
USB	1	5V
	2	USB D-
	3	USB D+
	4	GND
	5	NC

*Reserved for firmware update

OCUEKIT1 - OCuLink PCIe Kit(Low-Profile)

OCUE4221L
Host in PCIe Gen4x4

OCUEKIT2 - OCuLink PCIe Kit

OCUE4221
Host in PCIe Gen4x4

OCUD4241
Host Extended
SFF to PCIe Gen4x4

OCUMKIT1 - OCuLink M.2 Kit

OCUM4221
Host in M.2 (PCIe) Gen4x4
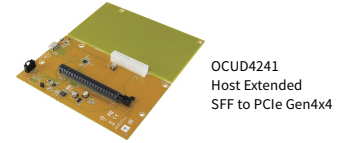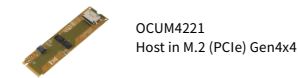
⚠ SAFETY FIRST

To avoid damages, please make sure to remove any power connection before card installation, and follow the detailed steps given below before turn on your computer.

OCUMKIT1 - In-host - M.2 Card

Step 1: Remove the screw attached to the motherboard.
Step 2: Insert M.2 Card tightly into the M.2 slot with 20° angle.
  (M.2 M key port with 2280 form factor)
Step 3: Push the M.2 card down to the screw hole.
Step 4: Lock screw on M.2 card that you remove from motherboard in step1.
Step 5: Connect OCuLink female board onto M.2 card.
Step 6: Secure OCuLink female board to host chassis.
Step 7: Connect OCuLink cable between host and device board.
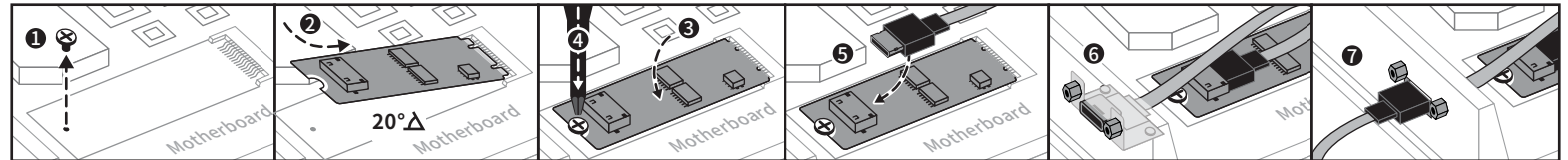
OCUEKIT1&2 - In-host - PCIe Card

Step 1: Turn your PC's power off, and shut off the power to any peripheral.
Step 2: Remove the power plug from the plug socket.
Step 3: Remove the cover from the computer case.
Step 4: If fitted. Remove the metal cover plate on the rear of a free PCIe slot.
Step 5: Insert I/O Control Board into the free PCIe slot and screw it firmly on the bracket side.
Step 6: Place the cover back onto the computer.
**Step 7**: Insert the plug into the plug socket.
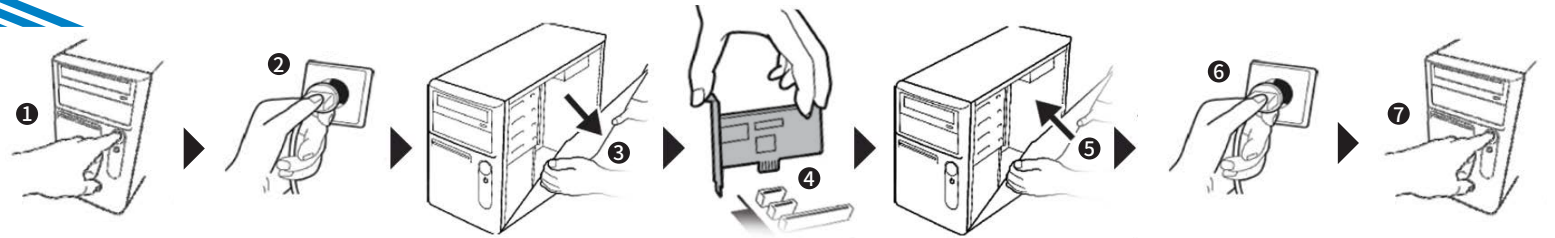
OCUD4241 - Extended SFF - PCB Device Board

PCB design complies with the Mini-ITX (Prepared by user) and fixing screw holes, and the power supply design adopts ATX 24pin. Users can choose the appropriate standard PC case and power supply for installation and use according to the size and power consumption of the GPU card or PCIe card.

Remove any power to Mini-ITX (Prepared by user).
Step 8: Open your Mini-ITX, place in & screw-on OCUD4241 device board.
Step 9: Connect OCuLink cable between host and device board.
Step 10: Insert the ATX power cable from Mini-ITX.
Step 11: Insert your Graphics card or RAID card (Prepared by user).
Step 12: Check the Power Switch of the Device Board.
  Auto = power turns on / off automatically with the host unit (default)
  ON = power always on

I/O Shield (optional)

OCuLink(female)
Power Switch(default)
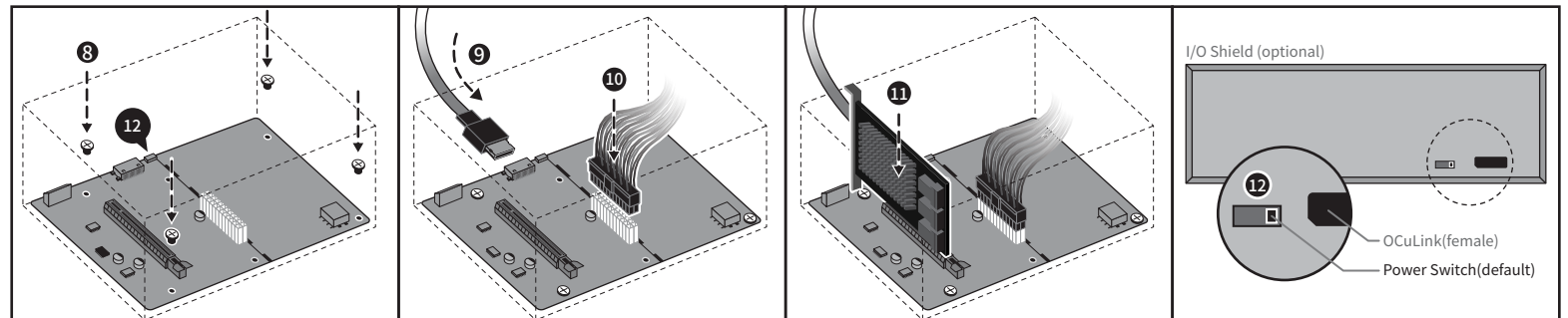
SUNIX OCuLink Kit Series

System Fails to Detect Device via OCuLink.
If the system fails to detect a device connected via OCuLink, please refer to the following possible causes and corresponding solutions:

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a. Loose or Improper OCuLink Cable Connection
Ensure that the OCuLink cable is properly and firmly inserted into both the host and device ports. Avoid tilted or incomplete connections.
Make sure you hear a clear "click" sound to confirm the cable is fully locked in place.

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b. OCuLink Port on the Host Is Faulty or Incompatible
The host system must be equipped with the SUNIX-provided OCUM4221 or OCUE4221 OCuLink module to ensure full compatibility and stable operation.
⚠ Do not connect the device to other non-designated OCuLink ports, as it may cause abnormal behavior or incompatibility issues.

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c. Incorrect BIOS Settings
Enter the BIOS setup and verify the following configurations:
· PCIe lanes are enabled — set to Auto or Gen4 as appropriate for your motherboard
· NVMe support is enabled (if connecting an SSD)
· Sufficient IRQ resources are available for PCIe devices

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d. DIP Switch Settings Do Not Match Cable Length (Especially for 50cm / 100cm Cables)
When using a 50cm or 100cm OCuLink cable, the DIP switch (signal EQ switch) on the host or adapter must be properly configured
according to cable length to ensure stable PCIe signal transmission.
Incorrect DIP switch settings may lead to:
· Device not being detected by the system
· Intermittent device connection or instability
· PCIe signal errors or link down issues (e.g., Link Training Failed)

  ※ **Suggested Configuration Steps**:
  1. Confirm the actual OCuLink cable length (50cm or 100cm)
  2. Refer to the DIP switch configuration guide provided by the adapter vendor
  3. Set the DIP switches according to the recommended EQ level for the cable length
  4. After configuration, reboot the system and check if the device is recognized correctly

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e. Faulty Device or Cable
1. Try replacing the cable or device to perform cross-testing. It is recommended to use **certified**, **high-shielding**, **low-loss OCuLink cables**,
especially when using cables longer than 50cm. Avoid using low-quality or unshielded cables.
2. If the system still fails to detect the device, try using a **shorter or higher-quality cable** to verify signal integrity.

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