EB4400 5-SLOT GEN4

INSTALLATION GUIDE

EB4400 5-SLOT Gen4

ONE STOP SYSTEMS

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1 Introduction

This 5-slot expansion platform provides PCIE expansion in a dense, rugged form factor. The EB4400 supports ONE or TWO PCIe 4.0 x16 host connections to PCIe 4.0 slots from 1m to 2m away from the host server. The system supports 4 dual-width or 7 single-width full-length PCIe add-in cards (AICs) such as GPU card, NVME flash and industrial I/O. Two PWM Fans providing high-power add-in card cooling up to 350W per AIC. Two 1600W or 2600W power supplies provide redundant hot-swap system power with either AC or DC input.

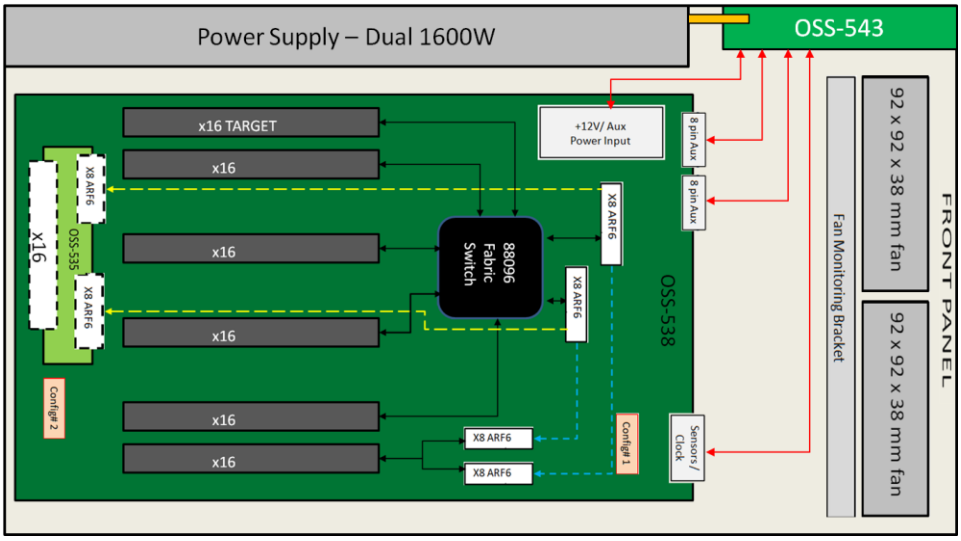
1.1 General Specifications

Item	Description				
System	4U Custom Form Factor (10.7" x 7.0" x 18.5") Net weight 25 lbs.				
Host Options	1x PCIe4 x16 Host-to-Target uplink (32 GB/s)	2x PCIe4 x16 Host-to-Target uplinks (64 GB/s)	SmartNIC Host		
Backplane Options	OSS-538: • 1x single-width PCIe 4.0 x16 FHFL upstream slot • 4x dual-width PCIe 4.0 x16 FHFL downstream slots				
	OSS-521: • 1x single-width PCIe 4.0 x16 FHFL upstream slot • 6x single-width PCIe 4.0 x16 FHFL downstream slots • 1x dual-width PCIe 4.0 x16 FHFL downstream slot				
Slot Configuration Options	Flex • Modifies one dual-width PCIe 4.0 x16 FHFL downstream slot to two single-width PCIe 4.0 x16 FHFL downstream slots per backplane	Riser • Adds an additional single-width PCIe 4.0 FHFL downstream slot per backplane			
Environmental Specifications	Temperature: • Operating temp 0 ° to 35 °C ambient. • Short-term (30 mins) operating temp –5°C to 40°C ambient. • Storage temp –40°C to 70°C. Operational Humidity: • Operating humidity 5-95% (non-condensing) • Storage humidity 0-95% (non-condensing) Operational altitude: • Operating altitude 6000 ft. at operating temp, 15,000ft. at derated temp. Storage altitude 40,000 ft. Fans: • 3x 180CFM 92mm fans • Default PWM controlled based on built-in temperature sensors • Optional IPMI system monitoring and control				
Power Options	Single/Dual AC 1600W	Single/Dual DC 1600W			
System Monitoring	Default –automatic dynamic temperature-based fan speed control	Optional–IPMI system monitoring with power, temperature, and fan speed control and monitoring			
Fan Filters	Optional Quadra foam 45 PPI Replaceable Fan Filters				
PCIe 4.0 Cable Lengths	1m	2m	3m		
Power Cords	6' US 110V	6' US 240V	6' UK	2' IEC	6' IEC
Agency Compliance	Agency Certifications (testing pending): FCC Class A CE Safety & Emissions UL, Cul RoHS3				
Warranty	1 Year Return to Factory. Extended Warranty is available and sold separately. Upon purchased of a new unit you can buy an extended warranty.				

1.2 Features

- PCIe Gen4 architecture
- Small, rugged frame design
- Dynamic fan speed control
- Configurable slot and host uplinks to optimize throughput
- Integrated IPMI based systems monitoring
- AC and DC power inlet options

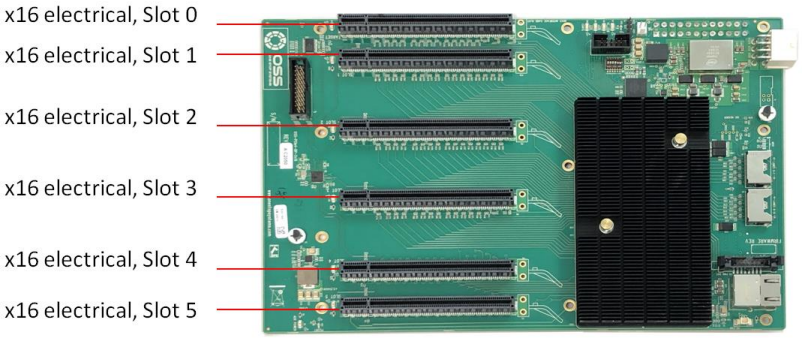
1.3 EB4400 Architecture (5 Slot)



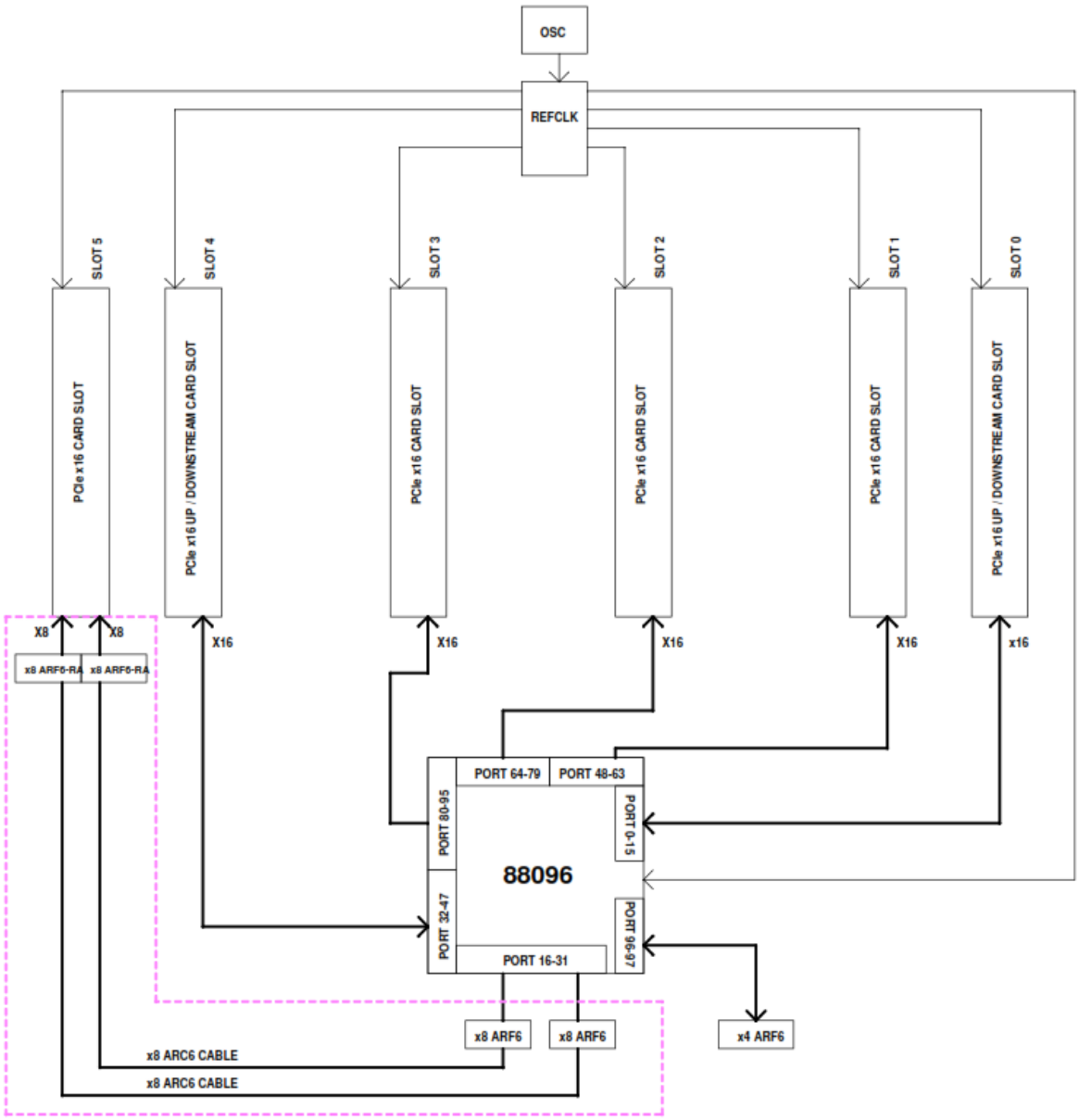
1.4 PCIe Slots

Slot Type: Closed-ended PCIe slot / connector, all the slots are x16 mechanical.

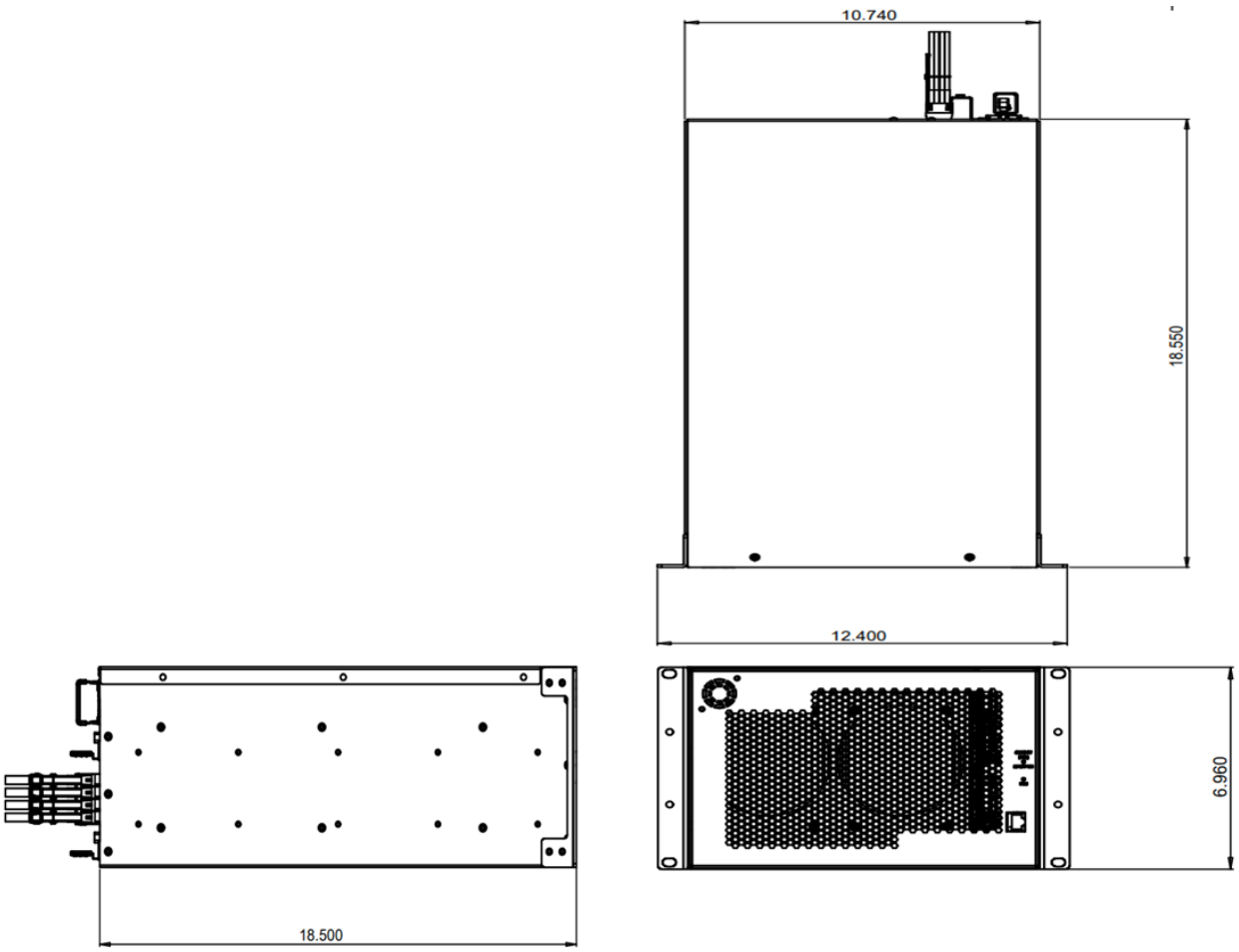
- Six x8 electrical slots (slots 1, 2, 3, 4, 5 and 6)
- Three x16 electrical slots(slots 0, 7 and 8)



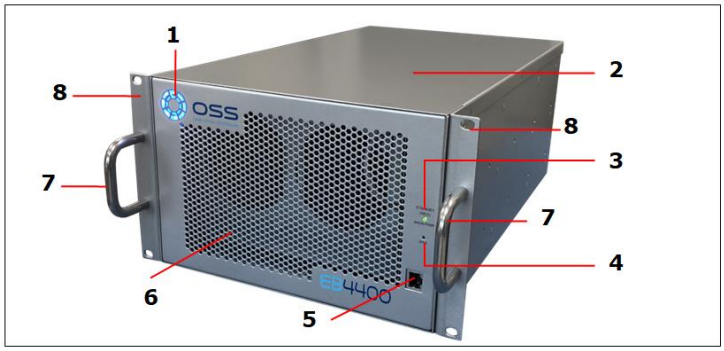
1.5 Backplane Block Diagram



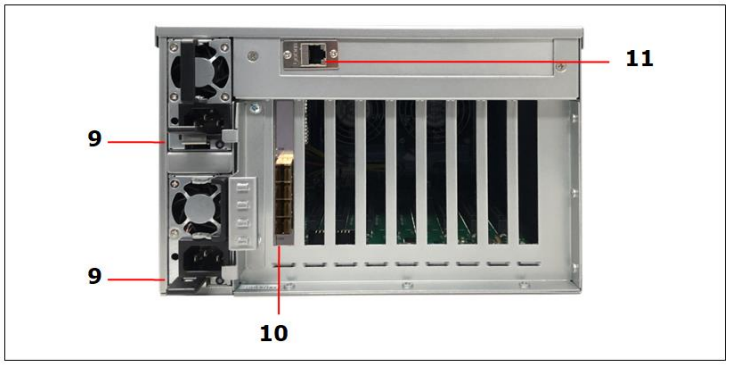
1.6 Dimensions



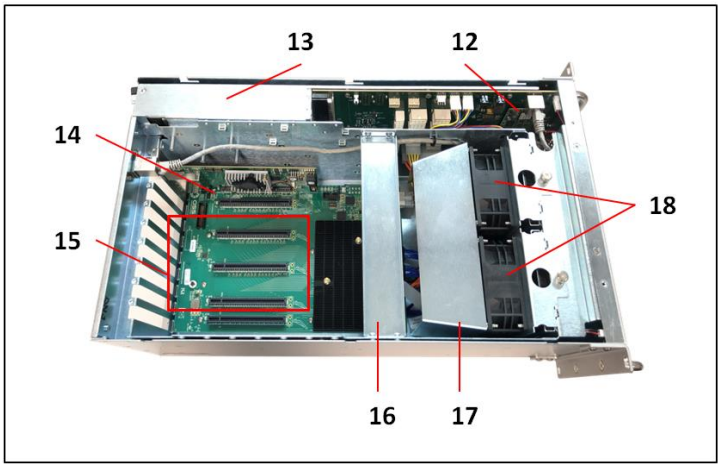
1.7 Parts Overview



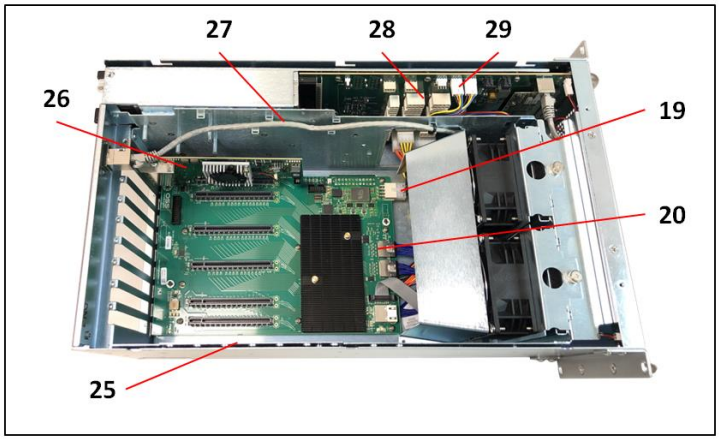
Number	Description
1	OSS LOGO-LED
2	Top Cover
3	Standby / Main Power LED
4	IPMI LED
5	RJ45 Port – Access to IPMI
6	Front Panel
7	Front Handles
8	Front Rack-Ears



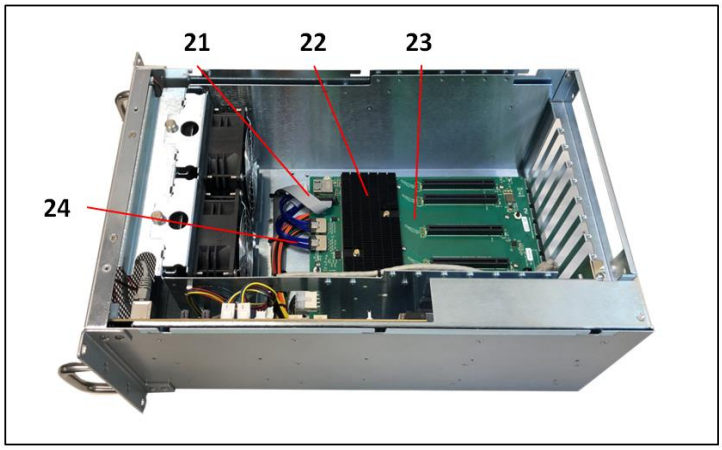
Number	Description
9	Power Supply Modules
10	OSS Target Card
11	Rear RJ45 Port – Access to IPMI



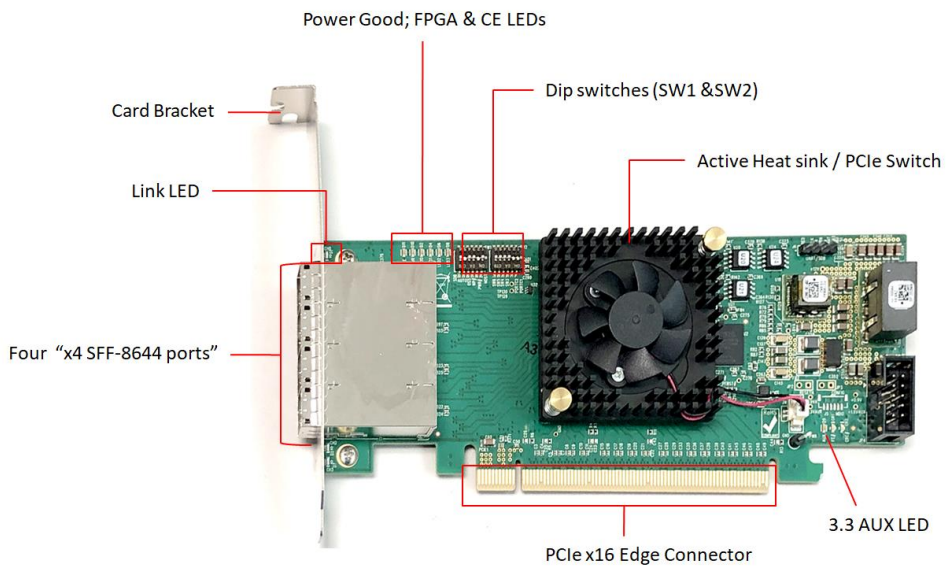
Number	Description
12	IPMI Module / Board
13	Power Supply Housing
14	SLOT 0 – Upstream Slot
15	Downstream Slots
16	Hold-down Card Bracket
17	Air Baffle
18	Removal Fans



Number	Description
19	12V Input Power Connector
20	ARF6 Connectors
21	Flat Gray Sensor Cable
22	Passive Heat sink – PCIe Switch
23	OSS-538 Backplane
24	ARC6 Cables(Blue)
25	Option Slot-Configurable to Upstream or Downstream modes
26	OSS HIB Target card
27	IPMI Ethernet Cable
28	Auxiliary Power Connectors (Qty. 10)
29	Fan Power Connectors



1.8 HIB x16 Gen 4 Card



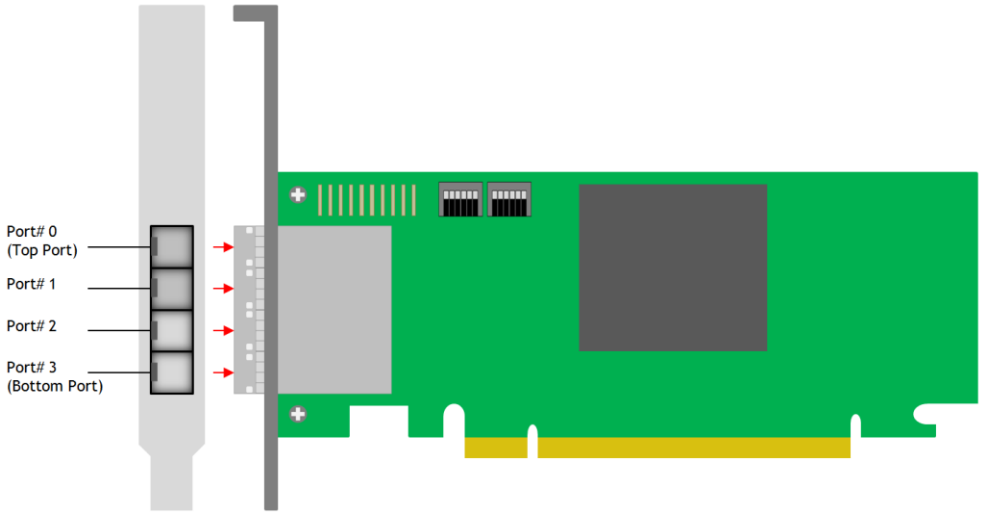
x4 cable Ports

There are four x4 cable ports /connectors available on the HIB Gen4 card. **Port #0** is located nearest to the Link LED.

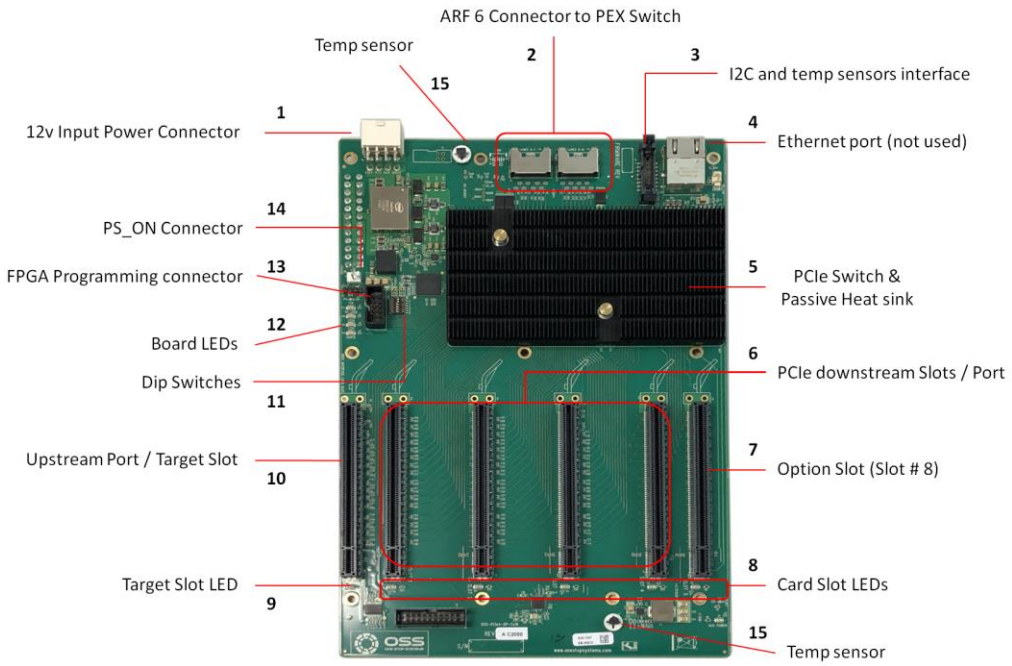
- A single x4 SFF-8644 cable must be inserted into port#0 of the Target card.
- On the Host card side, you can plug in a single x4 cable to any port as long as the Host card switch is set to x4 mode.

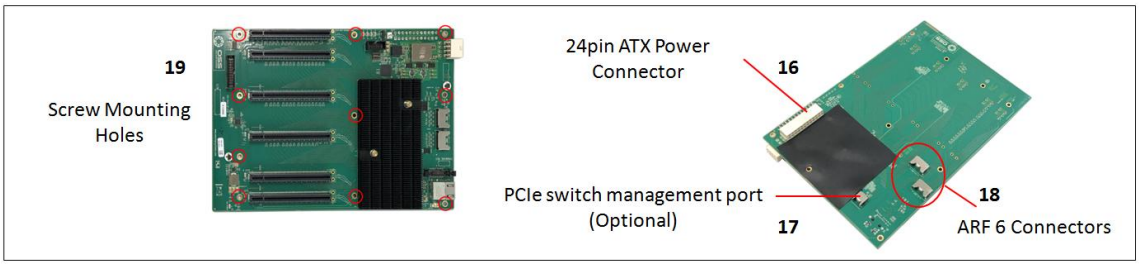
When using two x4 SFF-8644 cables, it must be connected to port#0 and port#1 of the Target card only.

- On the Host card side, plug-in the two cables to port#0 and portt#1 **OR** port#2 and port#3.



1.9 Backplane



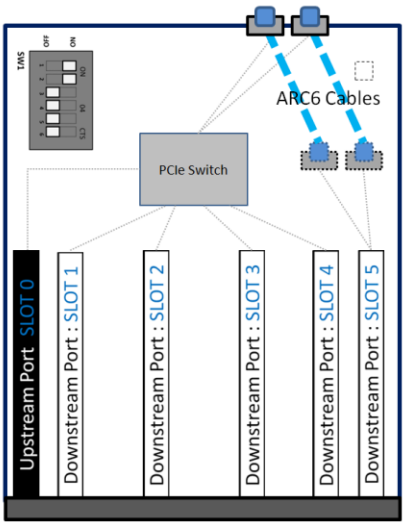


Item	Name	Description
1	12V Input Power	12V input power for the 538 board. Not to be used for external GPU aux.
2	ARF 6 Top Connectors	For connecting ARC 6 cables between ”Option slot” and PEX switch
3	I2C and temp sensors interface	Connector for I2C and temp sensors interface to the power backplane
4	Ethernet port	Not used
5	Passive Heat sink	Moves **heat** away from the PCIe chip
6	PCIe Downstream Slots / Port	PCIe card slot for 3rd Party PCIe cards
7	Option Slot	Configurable card slot to operate either as an Upstream or Downstream modes
8	Card Slot LED	LED status indicator when slot is populated or not. Solid green when card is present. Off, when no card.
9	Target Slot LED	LED status indicator for Target card. Solid green when Gen 4 adapter card is installed
10	Upstream Port / Target Slot	Designated slot for Target card only
11	Dip Switches	For slot configuration
12	Board LEDs	LED status indicator for the board
13	FPGA Connector	FPGA Programming connector
14	PS_ON	Enable to force power ON the backplane by placing a jumper on the connector
15	Temperature Sensor	Sensor for detecting temperature on the board
16	24-pin ATX Power Connector	For connecting ATX Power Supply
17	PCIe Switch Port	PCIe switch management port, optional
18	ARF 6 Bottom Connectors	For connecting ARC 6 cables between ”Option slot” and PEX switch
19	Screw-Mounting Holes	For securing the board on to an enclosure

1.10 Slot Configurations

Configuration# 1: Default slot configuration. One Upstream slot and five Downstream slots.

You must have the ARC6 cables attached between the edge of the board and the slot connectors under the backplane. Without those ARC6 cables nothing will work in SLOT 5.

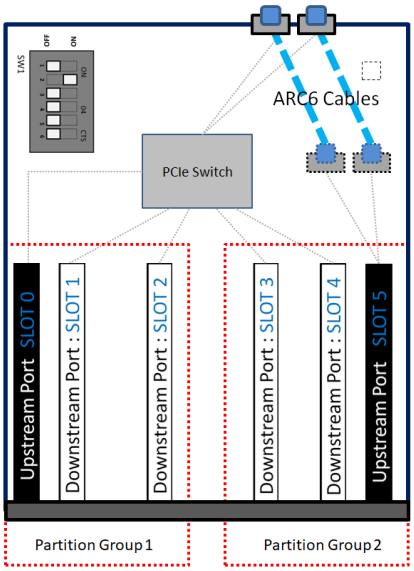


1 Upstream Slot (SLOT 0)
- One partition

5 Downstream Slots
- Slots # 1, 2, 3, 4 and 5

Configuration# 2: Two Upstream slots (Slot 0 and SLOT 5) with two partitions.

- Slot 0: Partition #1 with two Downstream slots
- Slot 5: Partition #2 with two Downstream slots



2 Upstream Slots (SLOT 0 and SLOT 5)
- Two partitions

4 Downstream Slots
- **2 Downstream** slots for **partition group 1**
  - Slots # 1 and 2
- **2 Downstream** slots for **partition group 2**
  - Slots # 3 and 4

1.11 Use Case Diagrams

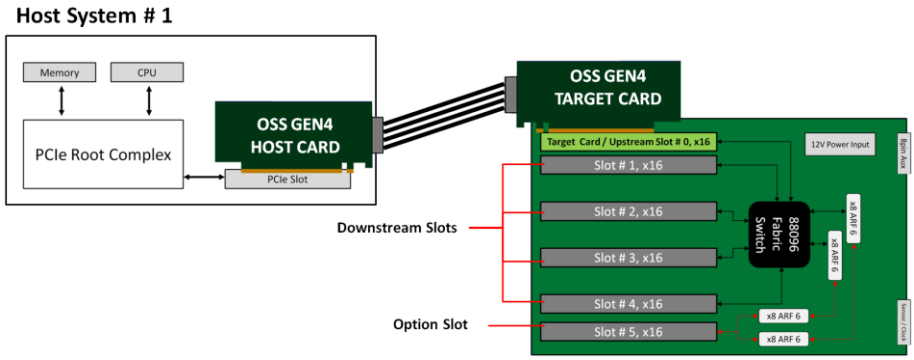
Configuration 1

OSS-538 backplane is linked to a single host computer.

Four x4 link cables are connected between OSS Gen4 Host card and Target card.

4 Downstream slots and 1 Option slot

- 4 x16 slots (Slot 1, 2, 3 and 4)

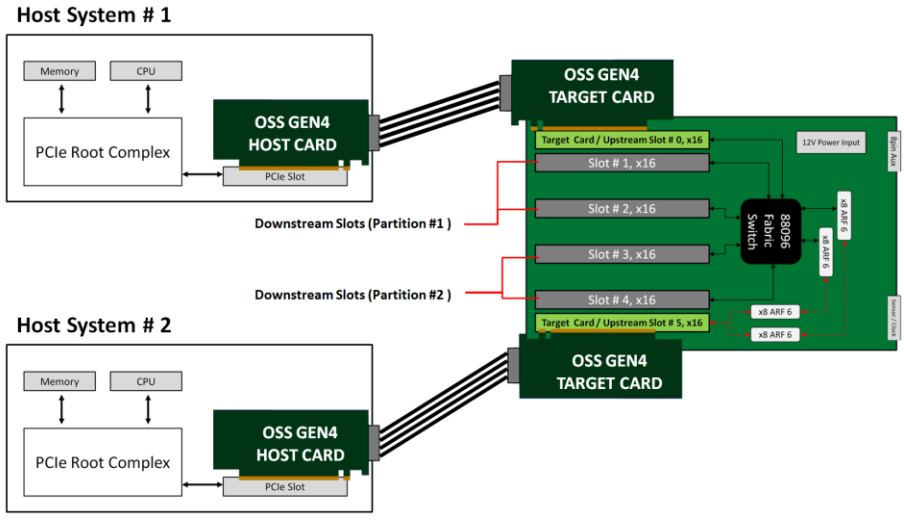


Configuration 2

OSS-538 backplane is linked to two host computers, see diagram below.

Two partitions / two Upstream slots (Slot 0 and SLOT 5) with a total of 4 downstream slots.

- Slot 0: Partition #1 with two Downstream slots
  - 2 x16 slots (Slot 1 and 2)
- Slot 5: Partition #2 with two Downstream slots
  - 2 x16 slots (Slot 3 and 4)



1.12 Main Components

a. The EB4400 unit is composed of following major components
b. 5-slot Backplanes (OSS-538)
c. One or Two Target Cards : PCIe 4.0 x16
d. One or Two Host Cards: PCIe 4.0 x16 (Installed in the host systems)
e. Four or eight SFF-8644 PCIe Gen4 PCIe Cables
f. One or Two 1600W or 2600W Power Supplies
g. Two 92 x 92 x 32mm fans
h. Features including additional hosts, filters, or system monitoring are configurable.

1.13 Pre-Installation Information

Before using the One Stop Systems expansion unit, you should perform the following steps:

- Inventory the shipping carton contents for all of the required parts
- Gather all of the necessary tools required for installation
- Read this manual

1.14 Tools Required for Installation

To complete the installation of the product you will need a Phillips-head screwdriver and ESD wrist strap to prevent electrostatic discharge.

1.15 Items List

Item	Qty	Description
1	2 or 4	Full-height PCI Express Adapter Cards
2	4 or 8	SFF – 8644 x16 PCIe Gen4 cable
3	1 or 2	U.S. Standard 125V or 250V

2 Getting Started

Installation procedure on how to set up the expansion unit. You will find instructions for the following procedures:

- How to Remove Top Cover
- Target Card Installation
- Host Card Installation
- GPU / PCIe Cards Installation
- Mini-SAS HD SFF-8644 cable Installation
- Powering Up the unit / system
- Hardware LED Check
- Device Verification via OS

3 Installation Overview

1. Remove the top cover.
    a. Check inside the unit for loose components or damaged parts.

2. Check the Target card, make sure it is firmly installed and secured.
    a. By default, the Target is already installed in the unit. If the Target card is not installed or missing, please go to section on how to install the target card.

3. Install the Host card.
    a. You should have another card that is configured as host card.
    b. Check the dipswitches make sure it is set to host mode prior to installing the card.

4. Install PCIe / GPU cards.
    a. Plug in your PCIe or GPU cards in the expansion unit.

5. Connect the external link cables.
    a. Plug in the Mini-SAS HD SFF-8644 cables between Target and Host cards.

6. Connect the power cords.
    a. The unit is supplied with power cord(s). You should have either one or two, depending on the number of power supplies installed in the unit.
    b. The standard unit is assembled with AC power supplies installed.

7. Power ON the host computer.

8. Check the hardware by verifying all LED status indicators.
    a. Boards LED
    b. Target & Host cards
    c. Unit front power LED
    d. Power supplies LED

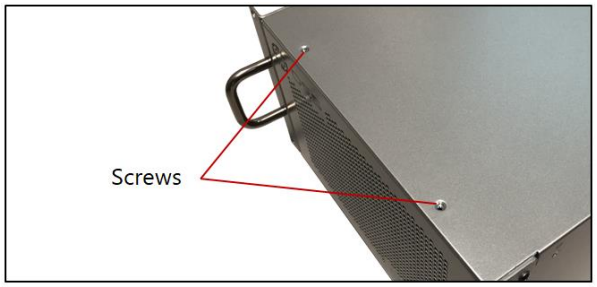
9. Check the OSS devices via operating system, verifying all OSS devices are properly recognized.

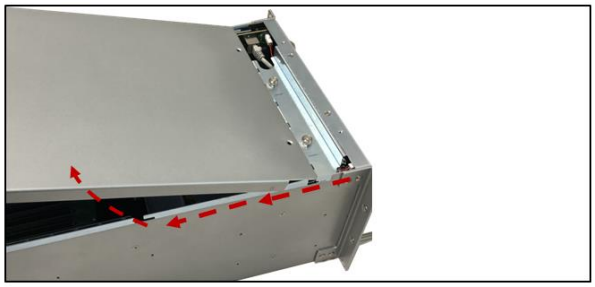
4 Hardware Set-up / Installation

The following steps will guide you through the installation of your One Stop Systems expansion system.

4.1 Remove Top Cover

Remove the two (2) mounting screws on top of the chassis. Slide the enclosure cover towards the back of the unit to disengage it from the guides and then lift the cover off.

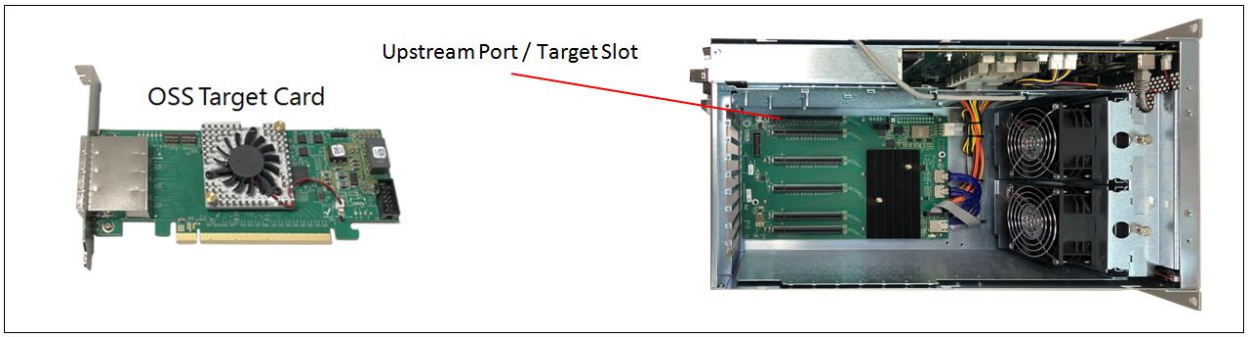




4.2 Install Target Card

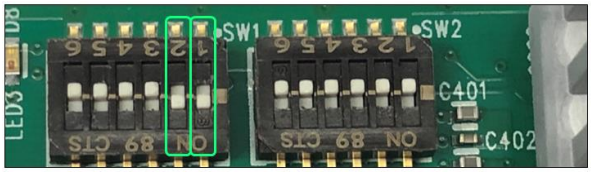
By default, the Target card is installed in the unit. The Target card is plugged in or installed in the Target slot. If the Target card is missing or not installed, follow these steps.

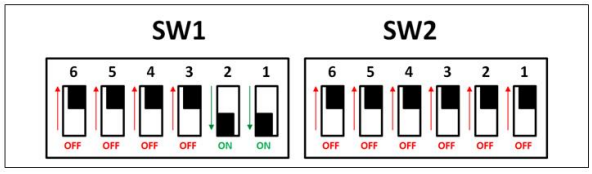
- Configure the card first; set the card switches to Target mode.
- Plug in the Target card in the designated target slot (upstream slot) of the expansion system.



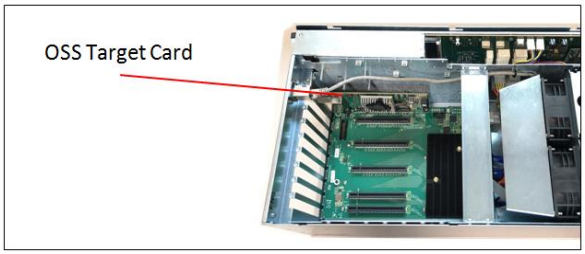
4.2.1 Target Card Configuration

- SW1 #1 = ON; #2= ON
- SW2 = All OFF



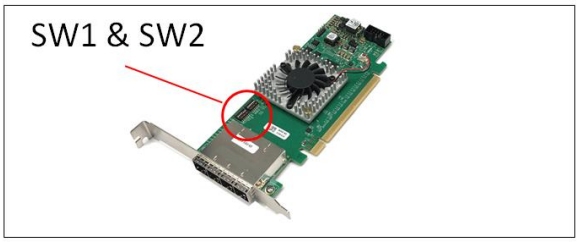


Once the dipswitches are set correctly, plug in the target card, make sure it is fully seated in the PCie slot.



4.3 Install Host Card

- Before installation, you must check the switches on the Host card.
- By default, all the switches on the Host card are set to OFF position ("Auto-Negotiation" mode).
- You can leave the switches to default or you can set the switches (SW1 and SW2) on the card for the desired Host operating mode. See "Host Card Configuration" section for more details.

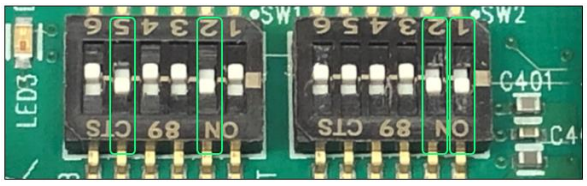


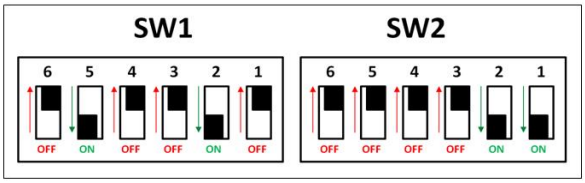
4.3.1 Host Card Configuration

The following are switch settings for the Host card.

x16 Dip switch Settings:

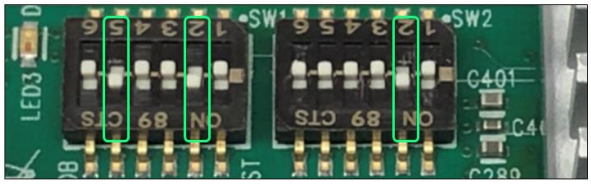
- SW1 #2 = ON; #5 =ON.
- SW2 #1 = ON; #2 = ON

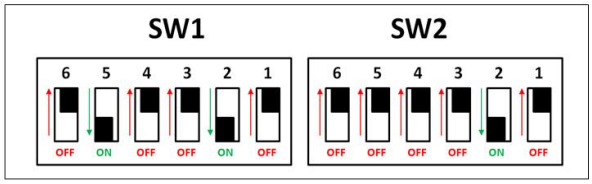




x8 Dip switch Settings:

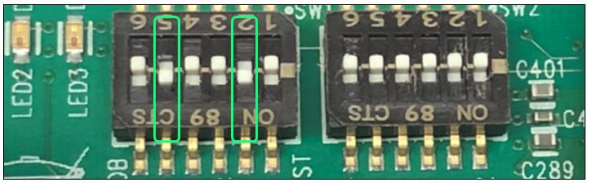
- SW1 #2 = ON; #5 = ON
- SW2 #1 = OFF; #2 = ON or #2 = OFF and #1 = ON

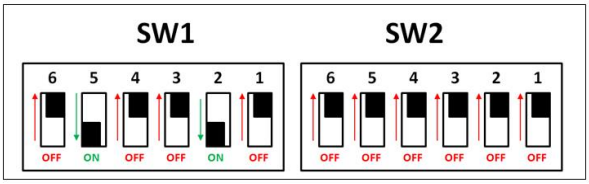




x4 Dip switch Settings:

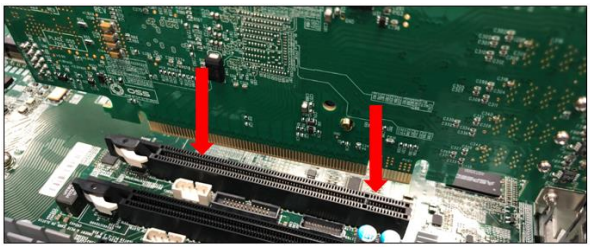
- SW1 #2 = ON; #5 = ON
- SW2 = All OFF

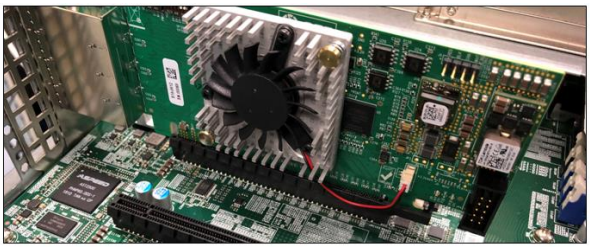




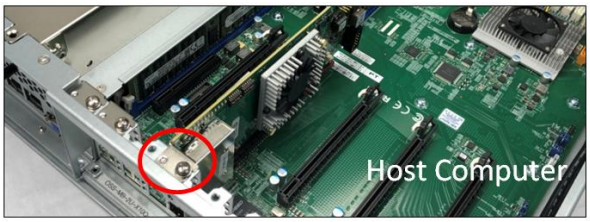
Once the Host-card is configured, install the card into a x16 Gen4 PCIe slot on a computer motherboard.

- Check the PCIe slot for any foreign debris as this can damage the card during installation.
- Align the host card PCIe connector on top of the PCIe slot and carefully push the card down until it is firmly seated.

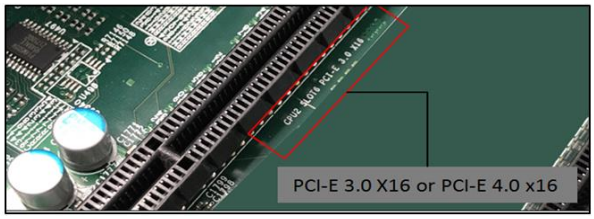




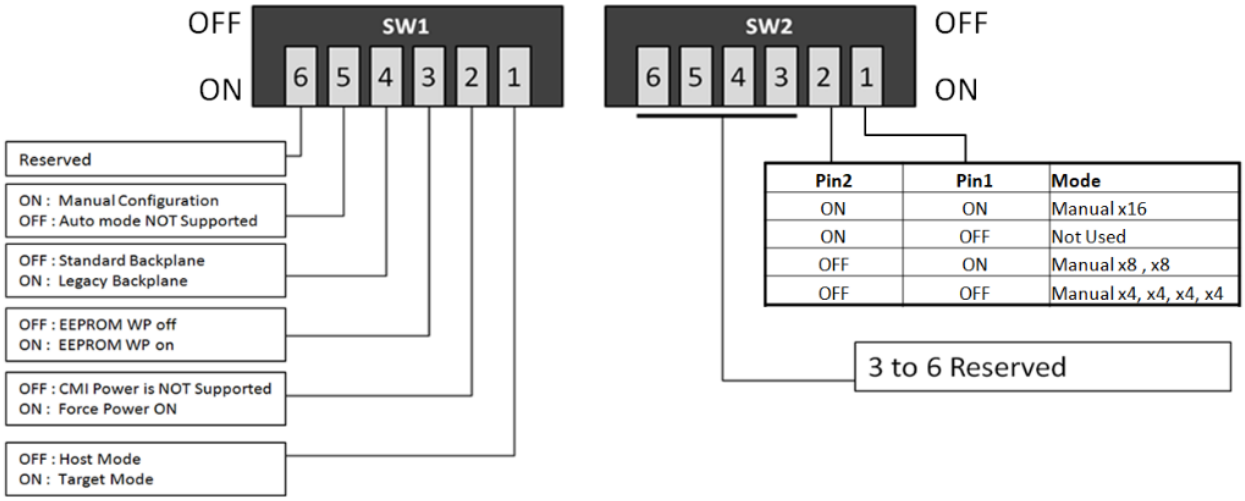
Secure the card with the screw.



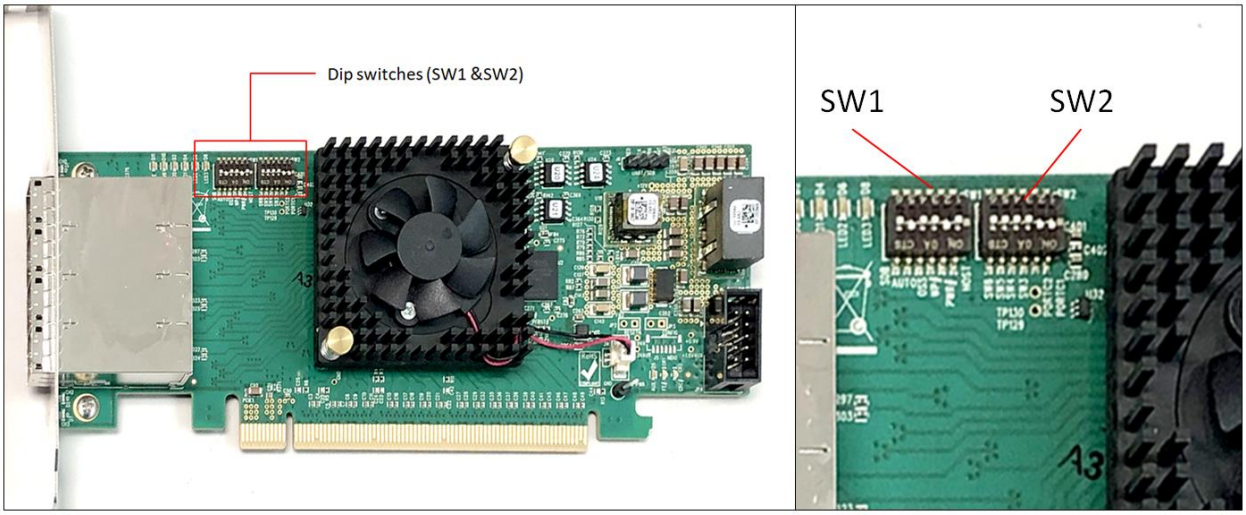
Below photo is an example of a x16 PCIe slot connectors. The photo on the right is a PCI-E 3.0 x16 slot. The specification of the PCIe slot is printed on the board next to connector for easy identification. Use a x16 PCIe slot for the host card to achieve stable performance.



4.4 Dip switch Settings



- SW1-5 must always be ON. Auto mode not supported
- SW2-3 to 6 are not used.
- Legacy backplane: Magma Gen3 backplane

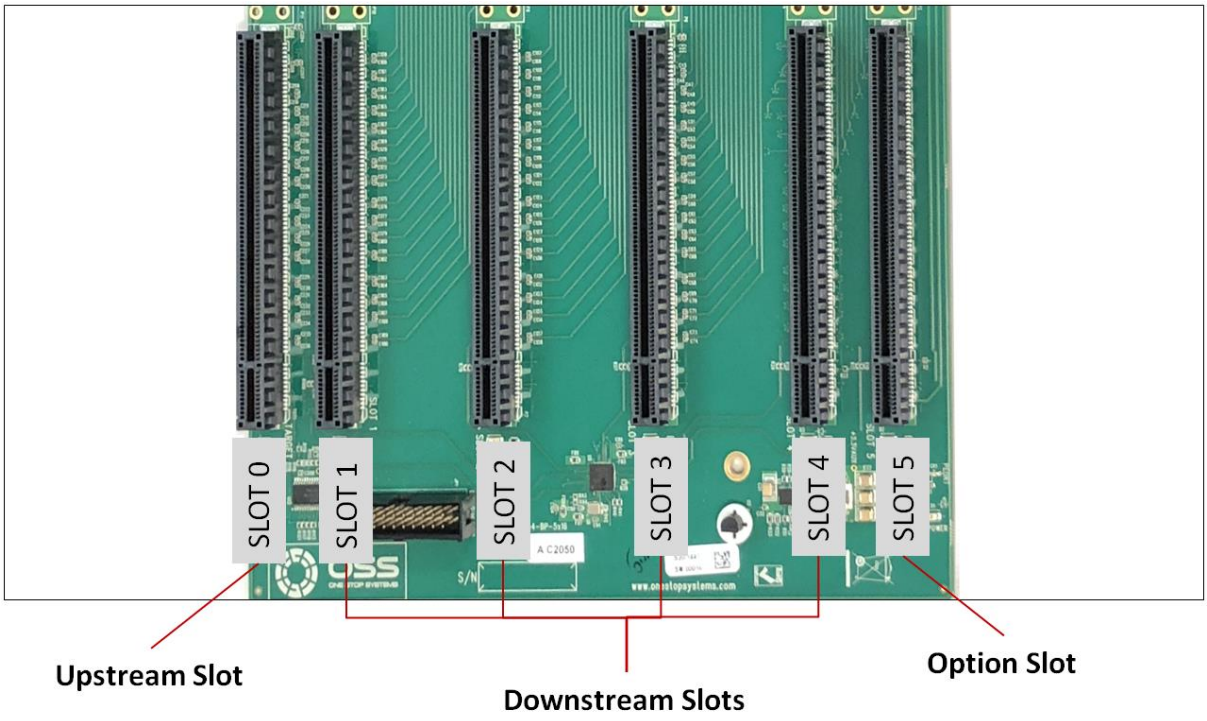


5 GPU / PCIe Cards Installation

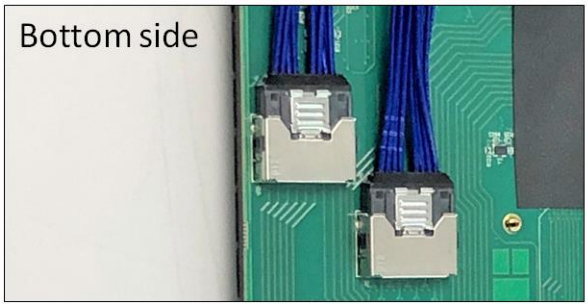
This chapter provides information on how to install GPU cards or PCIe cards into your One Stop Systems expansion chassis. More details on the installation of individual cards are provided by the card's manufacturer.

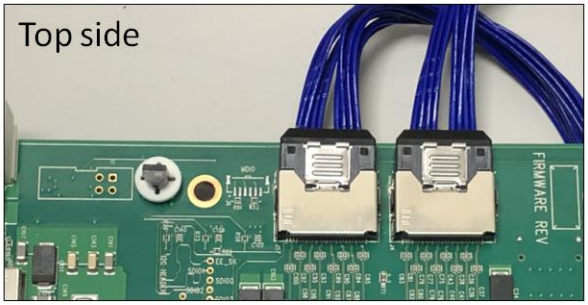
Install or plug your PCIe cards in the downstream PCIe slot. There are 7 available downstream slots and one option slot.

- **Slot 0** is the Upstream slot (aka: Target Slot)
- **Slots 1, 2, 3** and **4** are downstream slots.
- **Slot 5** is an option slot. Configurable to upstream or downstream modes.
    - Downstream mode: Use downstream slot for an end-point device (i.e. video card, Ethernet, sound card and etc).
    - Upstream mode: Use upstream slot for an OSS Gen4 target card only.



IMPORTANT: You need the ARC6 cables attached between the edge of the board and the slot connectors under the backplane. Without those cables nothing will work in slot 8. For more information on the option slot configuration, you can download the installation guide from the OSS support website.



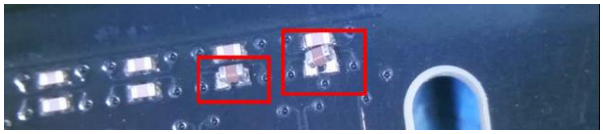


5.1 Before you begin

The EB4400 unit can accommodate standard full length PCIe cards and either single-width or dual-width GPUs.

- When installing multiple double-width GPUs, begin placing the GPU in the far right end of the backplane (looking from the rear).
- This will allow you to see the slot location and align the GPU connector easily on top of the slot.

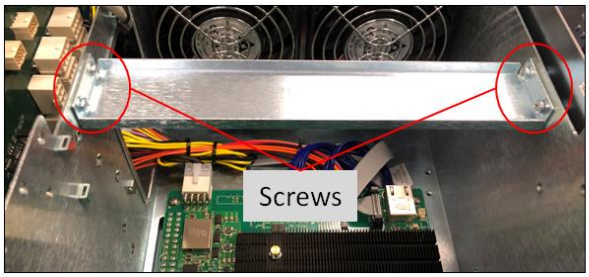
Be careful and cautious when plugging in a GPU into a PCIe slot. Failure to align the GPU on the slot can damage the connector or some of the components on card. See picture below as an example of a detached / damaged components.



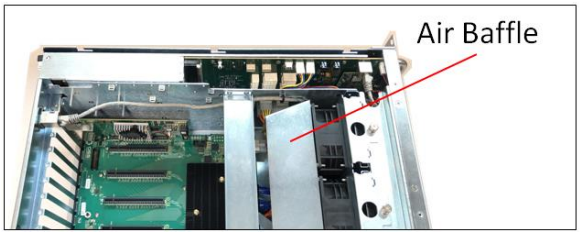
5.2 Install GPU or PCIe card

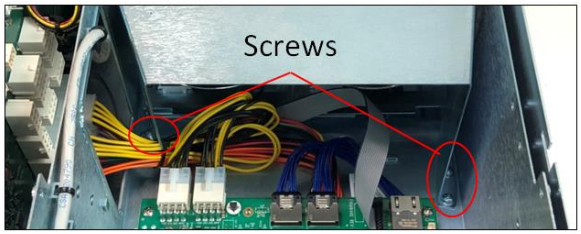
Prior to installing a full length PCIe cards or GPUs, you must remove the top bracket and the air baffle.

To dismount top bracket, remove four screws located on both sides.

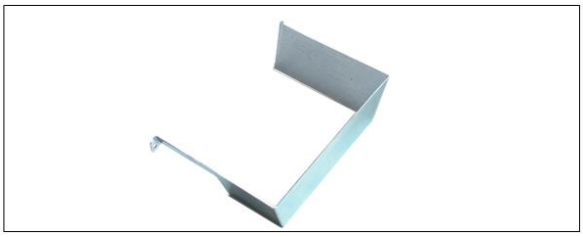


Remove the air baffle. There are three screws securing the baffle, one left side and two on the right side.



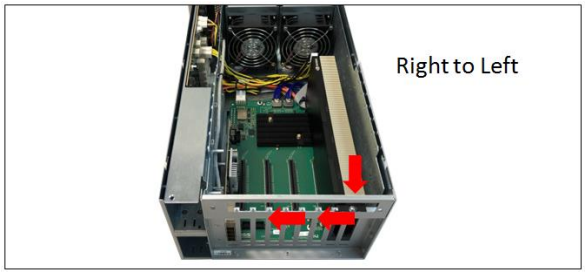


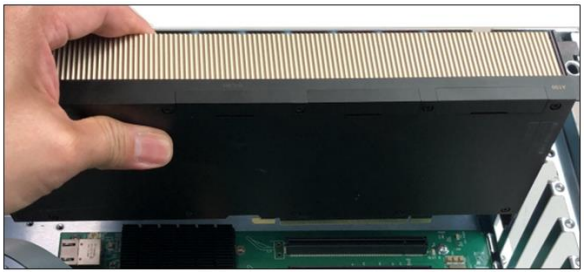
Once the screws are removed, slowly lift the baffle out of the unit.



Install the GPU card or PCIe card in the downstream slot one at a time.

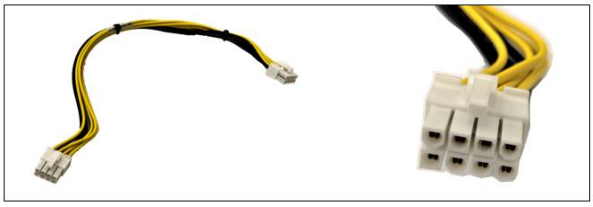
a. When installing multiple double-width GPUs, begin placing the GPU in the far right-end of the backplane (looking from the rear).
   - This will allow you to see the slot location and align the GPU connector easily on top of the slot.
b. Align the card on top of the slot.
c. Gently push the card down until it is firmly seated.
d. Secure the cards.



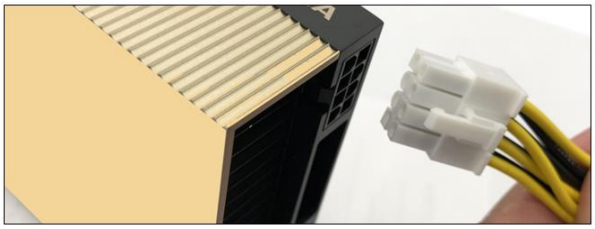


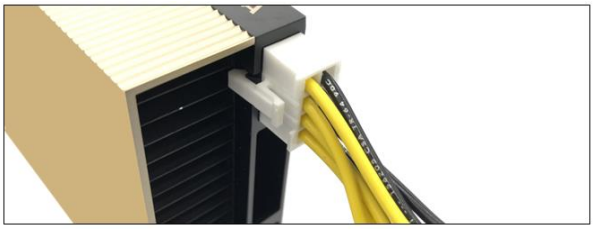
5.3 Connect Auxiliary Power Cables

- Use the supplied compatible auxiliary power cable for your GPU or PCIe card.
- Photos below is an example of an auxilirary power cable available from OSS for purchase.



Plug in the auxiliary cable to the GPU.





Plug in the other end of the auxiliary cable to any of the available auxiliary power connectors on the power distribution board (see photo below)in the expansion unit.

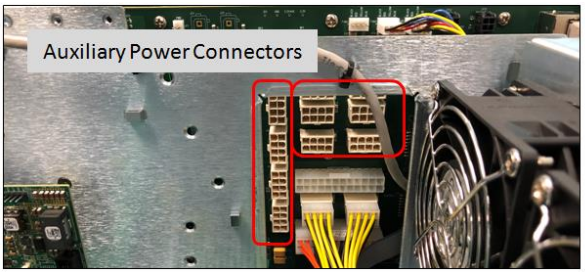
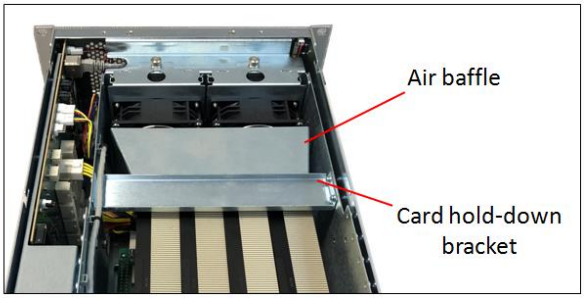


Photo below shows the GPU auxiliary power cable connected to the expansion unit auxiliary power distribution board.

Reinstall the air-baffle and card hold-down top bracket when done installing all the GPU / PCIe cards.



6 Connect Link Cables

Use Gen4 Cables

6.1 Mini-SAS HD SFF-8644 Cable Installation

Connect all the appropriate PCIe link cables needed for the system.

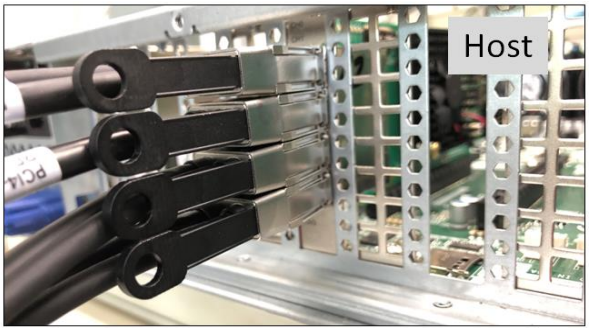
- When the host card is configured to operate at x16 mode, connect all four link cables.
- Configured to operate at x8 mode, connect two link cables.
- Configured to operate at x4 mode, connect one link cable.

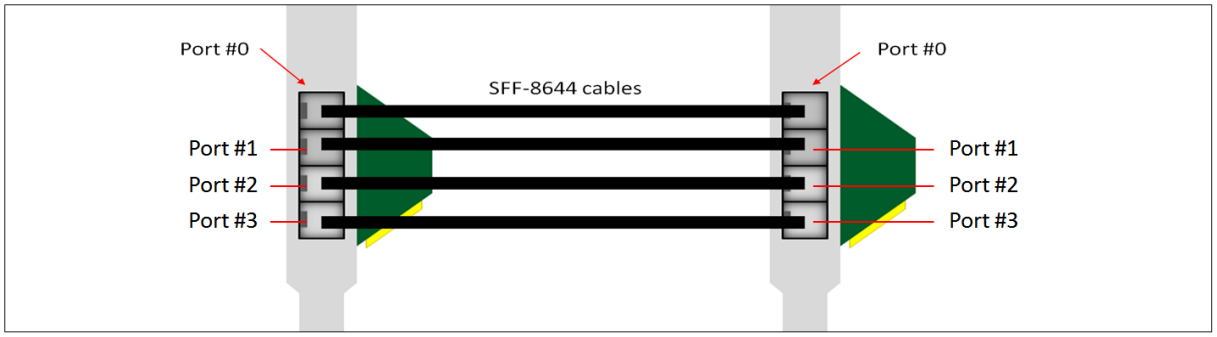
See the following cable configurations for more details.

6.1.1 x16 Configuration: FOUR cables

- Plug-in the 1st cable to Port#0 (Top port) on both Target and Host cards.
- Plug-in the 2nd cable to Port#1 on both Target and Host cards.
- Plug-in the 3rd cable to Port#2 on both Target and Host cards.
- Plug-in the 4th cable to Port#3 (Bottom port) on both Target and Host cards

Note: It is easier to plug in the cables starting from bottom to top.





6.1.2 x8 Configuration: TWO cables

Note: Make sure the HIB616-x16 host card is manually set to x8 configuration, see the x8 switch setting section for more details

- Plug-in the 1st cable to Port#0 (Top port) on both Target and Host cards.
- Plug-in the 2nd cable to Port#1 on both Target and Host cards..

On the host card side, you can also use the two bottom ports (PORTS # 2 & # 3)

- 1st Cable to PORT #2
- 2nd cable to PORT #3

Note: The two cables on the TARGET card must remain connected on PORT #0 and PORT #1. See diagrams below as an example.

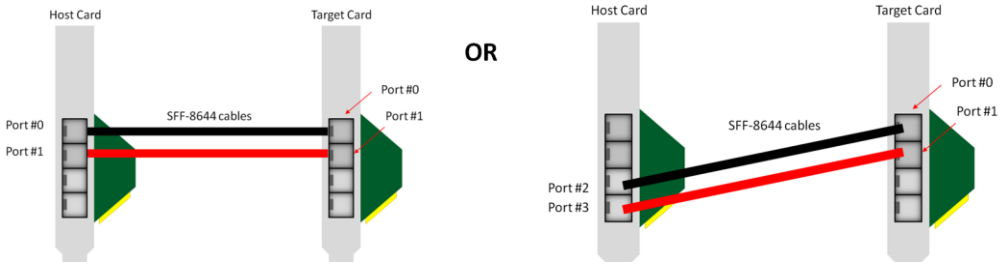
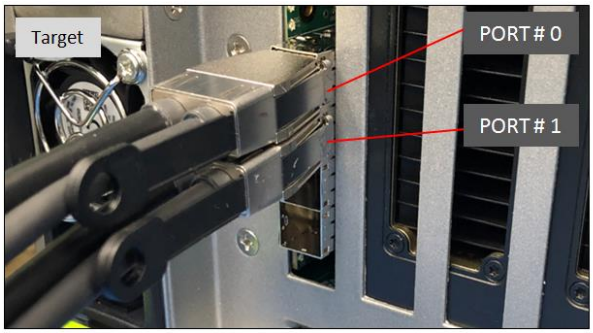


Photo B1: The two cables are connected on the Target card PORTS # 0 and # 1. The other end of the cables are connected on the Host card PORTS # 2 and # 3.



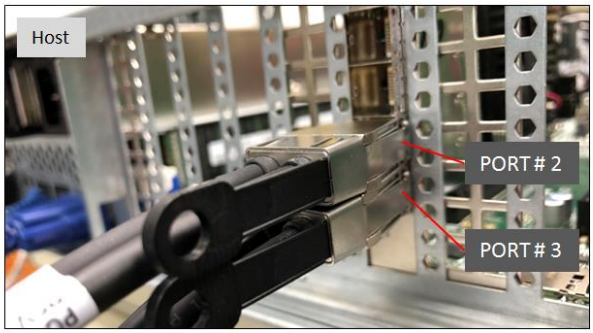
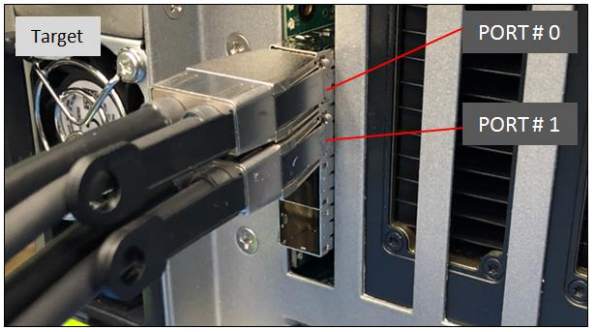
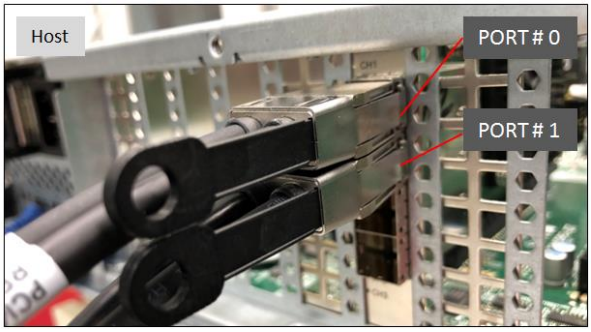


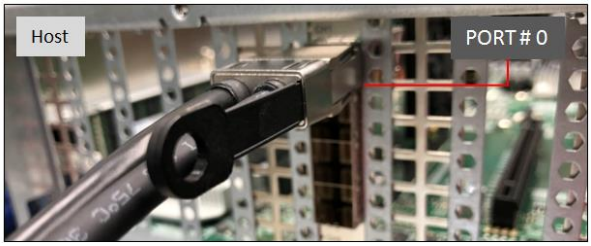
Photo B2: The two cables are connected on the Target card PORTS # 0 and # 1. The other end of the cables are connected on the Host card PORTS # 0 and # 1.





6.1.3 x4 Configuration: ONE cable

- Plug-in the single cable to Port # 0 (Top port) on both Target and Host cards



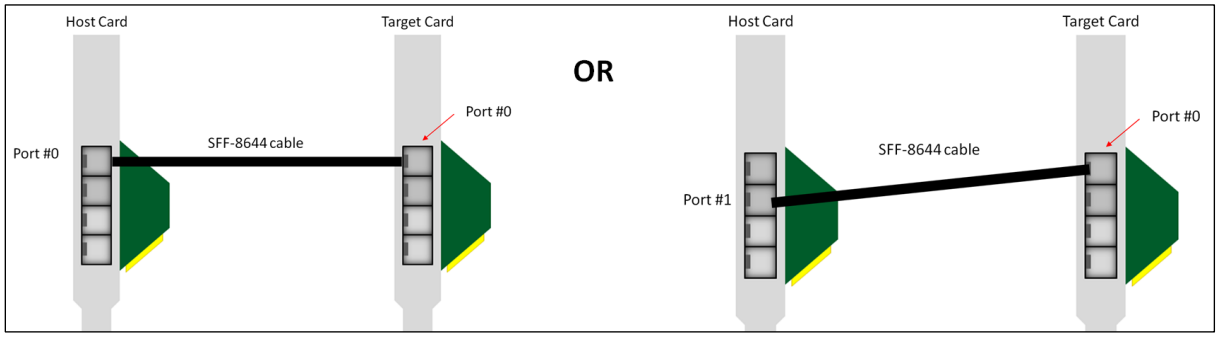
You can move the x4 cable on the HOST card to any available port. The other end of the cable stays connected on Target card PORT # 0.

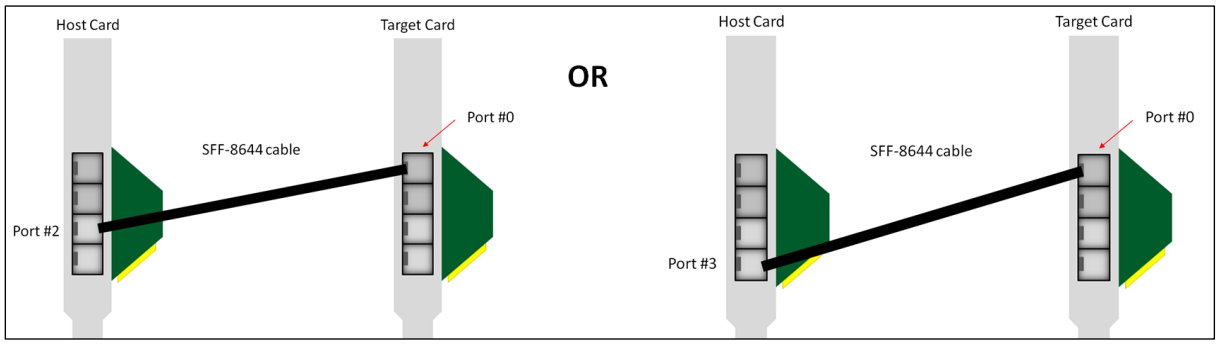
Photo A1: Cable is connected on the Target card PORT # 0. The other end of the cable is connected on the Host card PORT # 1

Photo B1: Cable is connected on the Target card PORT # 0. The other end of the cable is connected on the Host card PORT # 2.

Photo C1: Cable stays connected on the Target card PORT # 0. The other end of the cable is connected on the Host card PORT # 3.

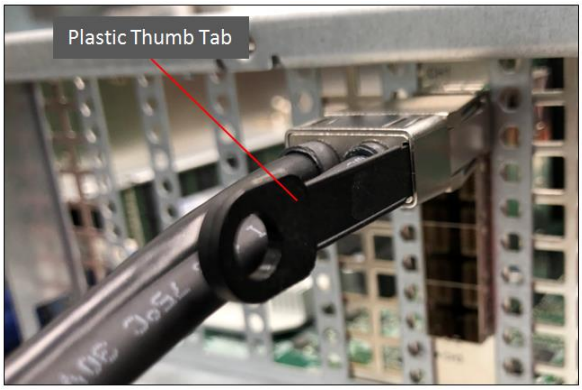
Diagrams below are different x4 cable configurations.

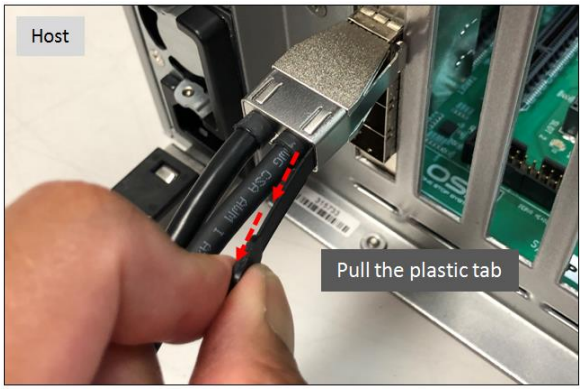




6.2 Disconnecting Mini-SAS HD SFF-8644 Cable

To disconnect the link cable, pull back the PLASTIC thumb tab to release metal clamp while slowly pulling the cable out.

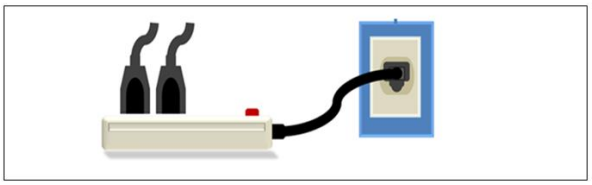




7 Applying Power Correctly

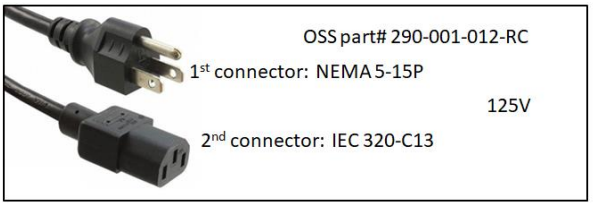
7.1 Connecting to electrical outlet

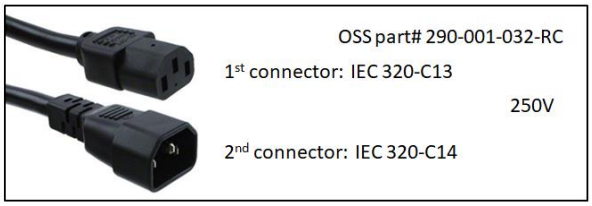
It is highly recommended using a power surge to protect your gear against random power spike damage. This product is provided with a power supply that **automatically adjusts to input voltages between 100 to 240 Vac**. A U.S. and Canadian 125V or 250V power supply cord is provided with this product. If you are using a 250V power cord, you would need to connect that to a PDU (power distribution unit). You can buy the PDU on any online electronic stores. OSS does not sell the PDU.



7.2 Connect Power Cord(s)

Connect the supplied power cord to the back of the power supply. Ensure that the system's power supply unit is fully secured before connecting the power cord. You should have either the 125v or the 250v power cord. If you only have the 125V power cord and you require the 250V please contact our Sales Team (sales@onestopsystems.com) to place an order.





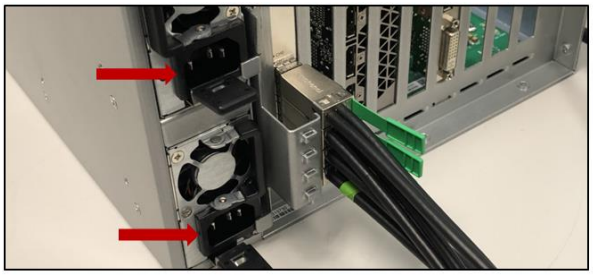
Power Cord Voltage Table

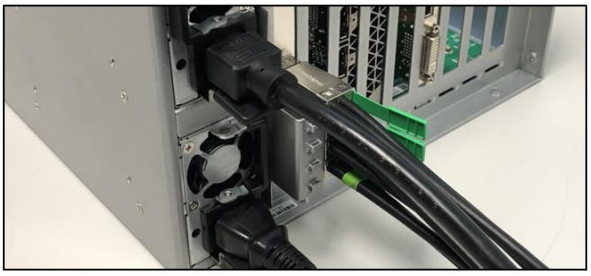
Power Cord	PSU Watt	Voltage	AMPS	Hz
125V	1000W	100-127V	12-9.5A	50-60Hz
250V	1800W	200-220V	10-9.5A	50-60Hz
250V	1980W	220-230v	10-9.8A	50-60Hz
250V	2000W	230-240V	10-9.8A	50-60Hz

NOTE: When using 115-125V power cord, the output power is limited.

Plug in the power cords to the power supplies. Upon connecting the power cords, the entire unit will power UP.

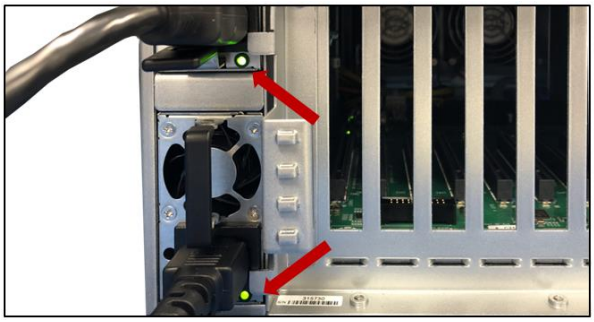
- Power supplies are ON
- All fans spin up
- Backplane ON





The power supply LEDs will come up as solid green, see photos below.

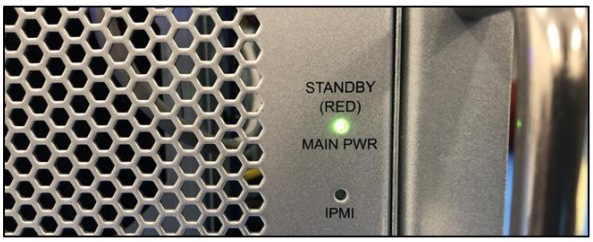
Green LED: PSU Good



Amber LED: PSU fault or power issue

If Power LED indicator is showing “Amber” in color, it indicates a fault or power issue.

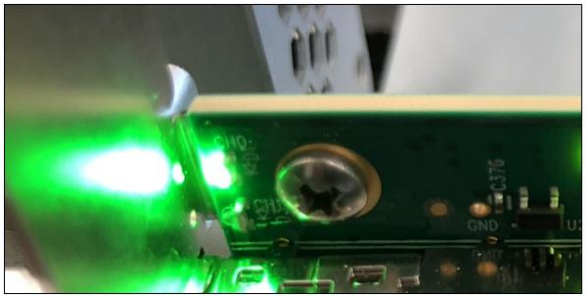
The two front LEDs , the OSS logo will illuminate as blue and the “STANDBY”(MAIN PWR) will come ON as “solid-green”.



8 Powering UP the Computer

Before powering UP or turning ON the Host computer, make sure the Host adapter card is seated properly in a x16 Gen3 / Gen4 PCIe slot and the cables are firmly connected. Upon powering up the Host computer, it will initialize a link between the target and the host. The Link LED on both target and host cards will illuminate as solid green.

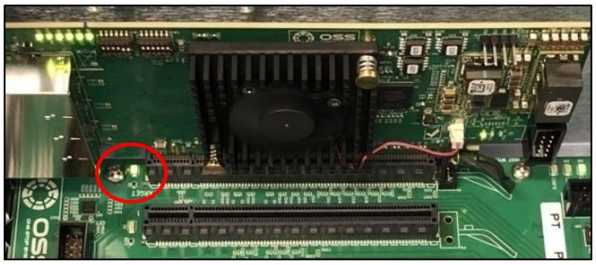
- Solid green Link LED, it means the negotiated link width between host and target card is x16.
- Blinking green Link LED, the link width is x8



9 Hardware Check

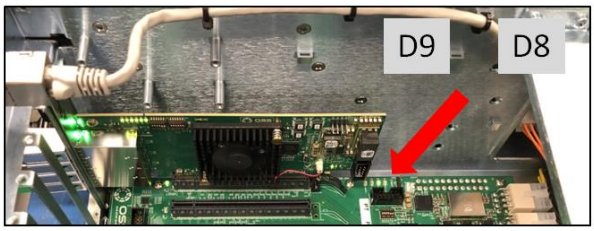
9.1 Verify Board LEDs

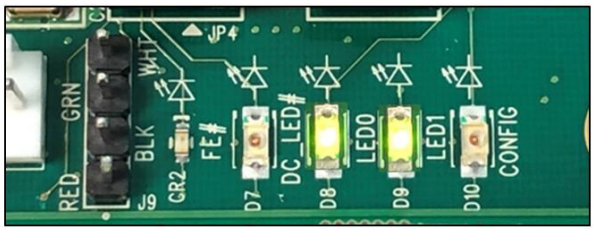
Check the Target SLOT LED, when a PCIe card is installed in the target slot, the LED will illuminate as solid green.

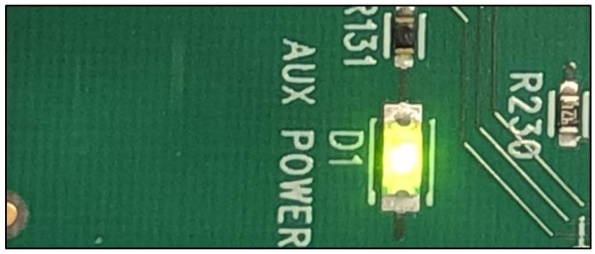


A fully operational back plane will illuminate the following LEDs. Check LEDs D19, D18 and D16, make sure they are correctly illuminated.

- D19- Blinking green (LED 1). This will blink 8 times, then will pause for 2 seconds and blink 8 times again.
- D18-Solid green(LED 0).
- D16- AUX power, solid green.



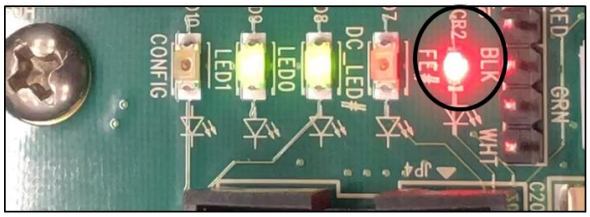




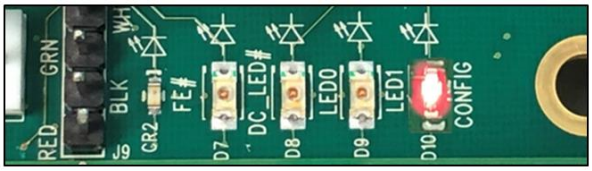
9.2 Fault LEDs (RED)

A solid RED led on the backplane signifies a fault or an error. Below photos are list of RED LED locations and definitions.

CR2 / FE (Fatal Error) LED
Solid RED: Something wrong with the board



D10 / CONFIG LED
Solid RED
- The backplane is not programmed
- Or the FW image is corrupted



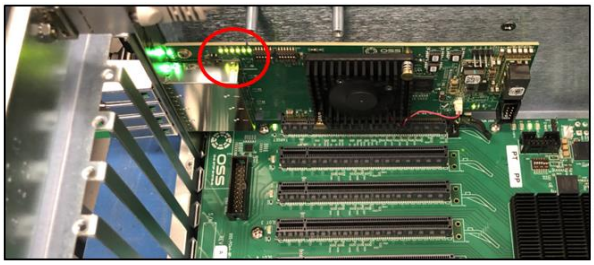
RED LED (CR1 / PEDRT):
The backplane is not getting initialized due to
* Faulty Target card
* Board is not programmed

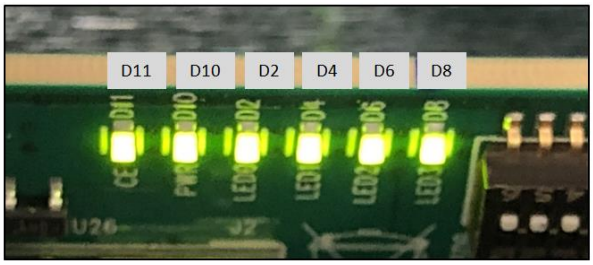
9.3 Verify Adapter Card LEDs

A working HIB adapter cards will illuminate the following LEDs (on both Host and Target cards).

D11	CE(Card edge)	Solid green
D10	PWR (Power)	Blinking green
D2	LED 0	Solid green
D4	LED1	Solid green
D6	LED2	Solid green
D8	LED3	Solid green
CHO	Link LED	Solid green
D9	Aux Power	Solid green

x16 configuration (Four x4 Cables connected)

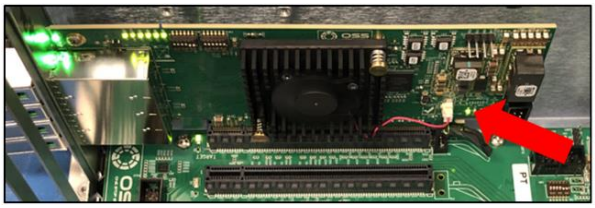


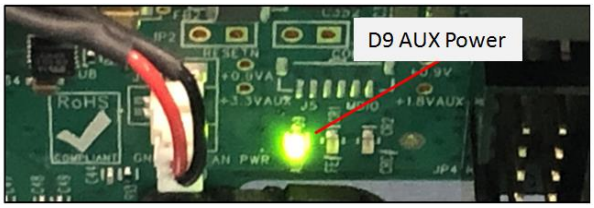


CHO LED will illuminate as solid green, indicates of a stable LINK between Target and Host cards.

When there is no link between Target and Host cards, the CHO LED is turned OFF.

The D9-Aux power LED will illuminate as solid green, which is an indication of power is present on the card.





9.4 Adapter Card LED Definitions

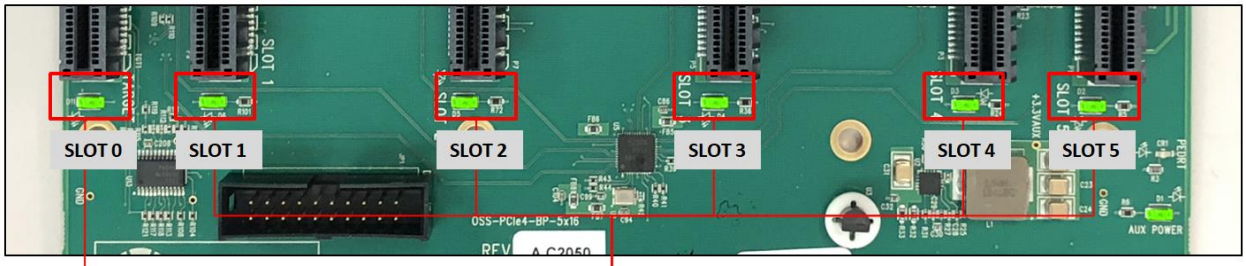
LED		Status	Description
CH0	D1	ON (Solid Green)	Link LED. Indicates a connectivity between OSS Host and Target cards.
LED0	D2	ON (Solid Green)	Power Good
LED1	D4	ON (Solid Green)	Power Good
LED2	D6	ON (Solid Green)	Power Good
LED3	D8	ON (Solid Green)	Power Good
CE	D11	**ON (Solid Green)**	Solid Green: The CARD EDGE connector is communicating to Gen4 PCIe switch on the host computer motherboard.
			Blinking Green: The CARD EDGE connector is communicating to Gen3 PCIe switch on the expansion board / backplane
PWR	D10	ON (Blinking Green)	Power Good / FPGA Healthy
AUX	D9	ON (Solid Green)	AUX Power Good

LEDs for SFF-8644 Cable Link cases:

1. Target mode (x16): D1 is the link indicator
2. Host Mode, x16: D1 is the link indicator
3. Host Mode, x8x8: D1 or D5 are the link indicators (one for each corresponding group of two SFF cages)
4. Host Mode, x4x4x4x4: D1, D3, D5, D7 are the link indictors (one for each SFF cage)

9.5 Slot LEDs

- The SLOT LEDs will illuminate either solid green or blinking green depending on the Generation of the PCIe card that is occupying the slot.
- By default, the Target SLOT LED will illuminate as solid green (Gen 4).

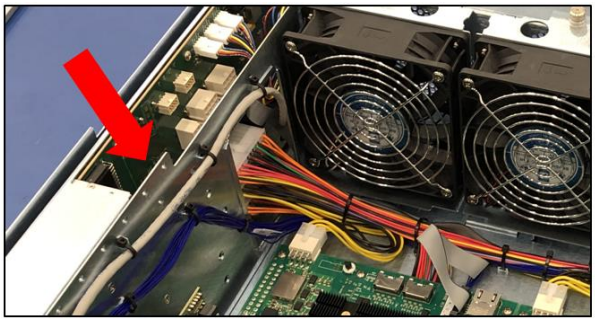


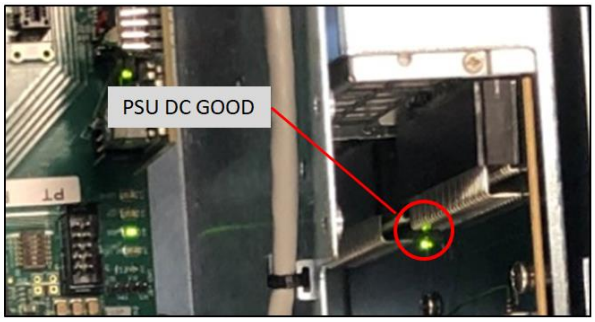
Solid	Gen4 Link
Blink 2Hz	Gen3 Link
Blink 1Hz	Gen2 Link
Blink 0.5Hz	Gen1 Link (Slow Blinking)
OFF	No card installed

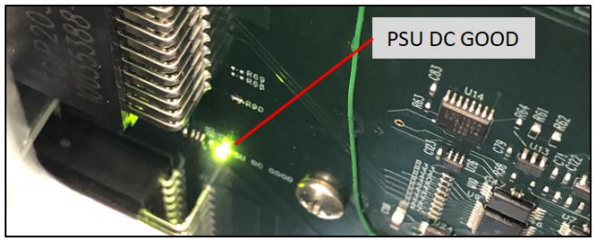
9.6 Power Distribution Board LED

- When the PSU DC GOOD led is not illuminated, it is an indication of a faulty power supply and the unit will not power ON.
- Solid green- the PSU is working properly.

See photos below for the location of the “PSU DC GOOD” led.



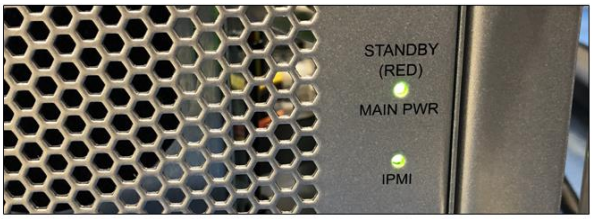




9.7 Front LED

There are three visible LEDs located on the front of the unit.

- The LOGO led, will illuminate as solid BLUE.
- Standby / MAIN PWR—Solid green when unit is fully powered ON. Red when the unit is on standby mode.
- IPMI – This is optional. Will only illuminate as solid green when IPMI module is installed in the unit and ready to use

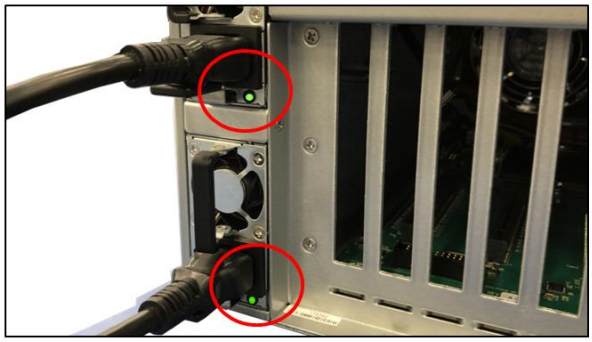


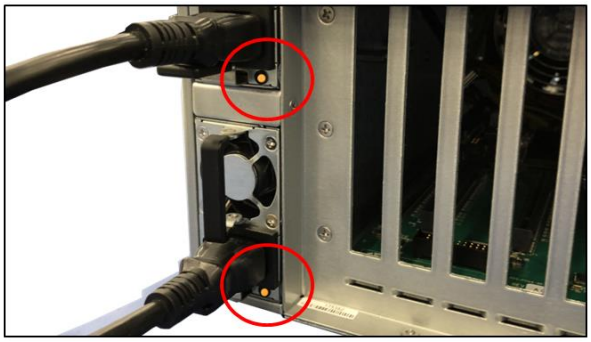
9.8 Power Supply LED Indicator

Both LEDs on the Power Supply should be ON as solid green, it indicates the OK status of the DC GOOD signal. The LED shall continue to glow under normal operation of the power supply.

During protection mode (main 12V rail), the LED should be amber.

- During protection mode (5Vsb rail), the LED should be OFF
- When protection is cleared, the LED should go back to the original intended status.
- When the unit is on standby with AC is present, the LED should be amber.
- When the unit is on standby with no AC is present, the LED should be OFF.
- When the unit is turned ON properly, the LED is green.
- During wakeup redundancy mode, the LED should be green.
- During wakeup redundancy sleep mode, the LED should be blinking green in 1Hz.





10 Software Installation

10.1 Software Driver Installation

One Stop Systems EB4400 expansion unit requires no driver on Windows 7, Windows 8, Windows 10, Windows Server, Linux, Unix, Centos and Mac OS.

Before attempting to install any software / drivers , you should ensure that you have set a Restore Point or created a backup of your system / data..

11 Verify HIB Device

This sections contains information on how to check / verify the OSS devices on Linux and Windows OS environments.

11.1 Linux OS

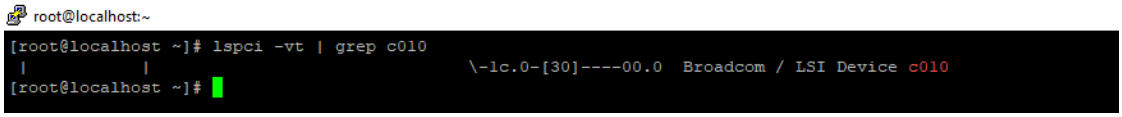
To check if the OSS HIB cards and backplane are detected, use the following commands on the terminal window. Make sure you are logged-in as “super user (or as root)” when running the lspci command.

- **#lspci –tv | grep c010.** The c010 is the Device number of the OSS hardware.

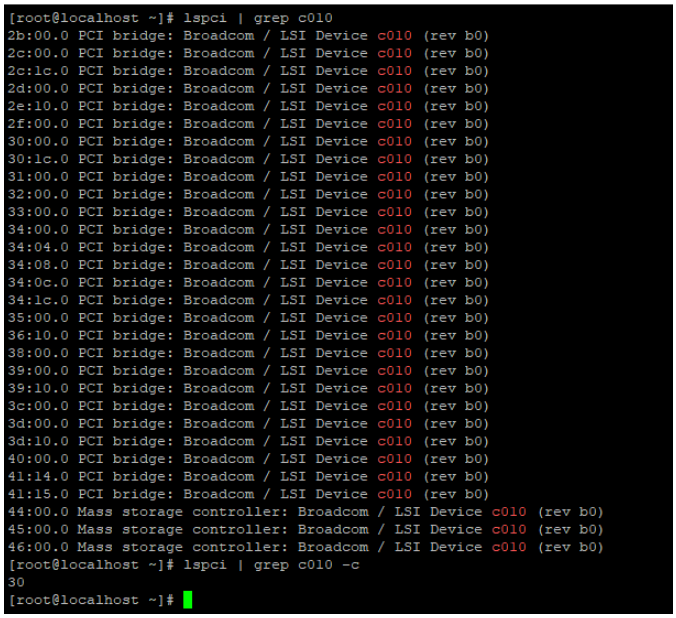
The output below gives you a tree-like structure of the PCI Device B/D/F numbers of b8:00.0 and bd:00.00 (B=Bus number. D=Device number. F=Function number). **The /B/D/F numbers will vary from system to system**.

When the OSS HIB cards and backplane are detected, you should see three instances of devices enumerated, see photo below. If you are only seeing one device, the host card is not linking up with the target device.

The output below shows that the operating system is only detecting the Host card in a tree-like structure.



#lspci –vvv | grep c010. The output below shows that the operating system is recognizing the OSS Host card, Target card and backplane.



The output below shows that the operating system is only detecting the Host card. No link between Target card and Host card.

```
[root@localhost ~]# lspci | grep c010
2b:00.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
2c:00.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
2c:1c.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
2d:00.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
2e:10.0 PCI bridge: Broadcom / LSI Device c010 (rev b0)
30:00.0 Mass storage controller: Broadcom / LSI Device c010 (rev b0)
[root@localhost ~]# lspci  | grep c010 -c
6
[root@localhost ~]#
```

11.2 Windows 10 / Server

On Windows, find the '**My Computer**' icon and "right-click" on it.

- Then select '*Manage*' from the pop-up menu.
- Next, click on '*Device Manager*' in the leftmost Computer Management window.
- Finally, click on the *View Menu* and select *View Devices by Connection.*

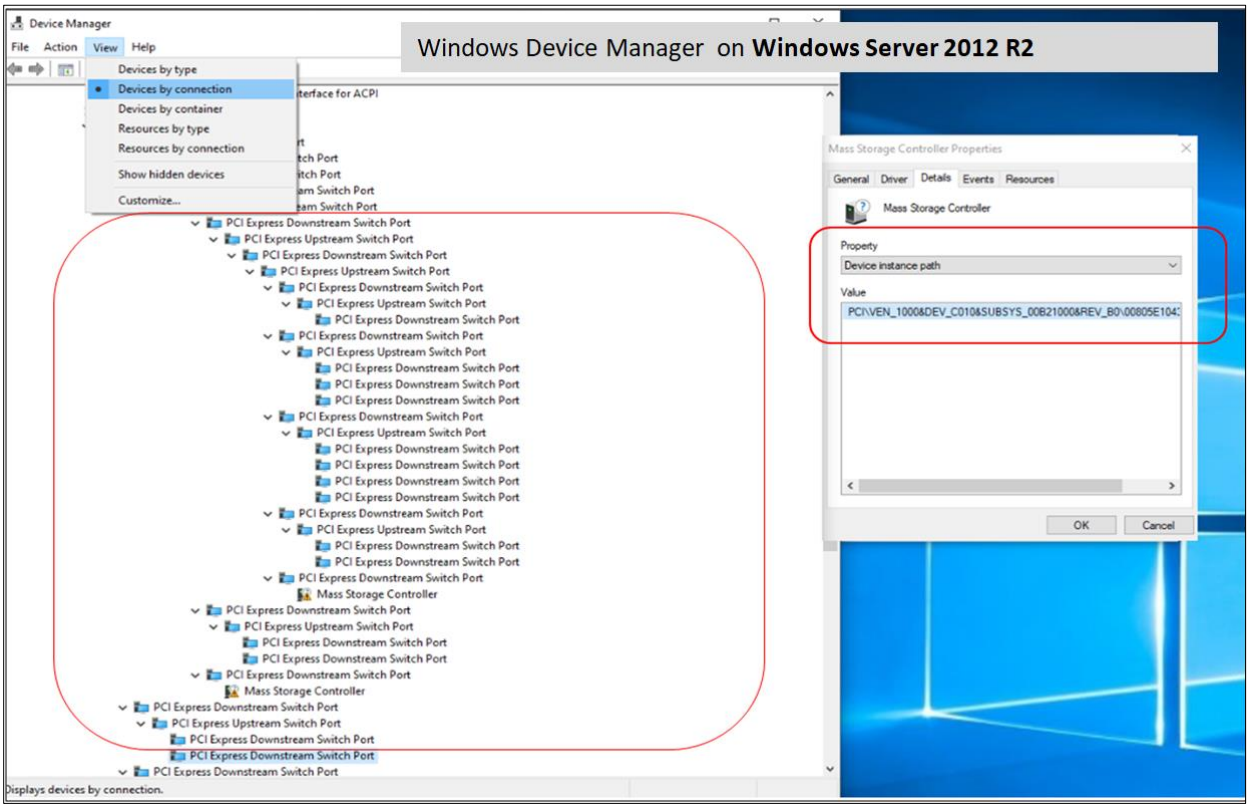
When everything is functioning correctly, your Windows Device Manager should look something like the screenshot below.

- You will see multiple PCI standard PCI-to PCI bridge or PCI Express standard Upstream Switch Ports and PCI Express standard Downstream Switch Ports.

11.2.1 HIB Cards and Backplane

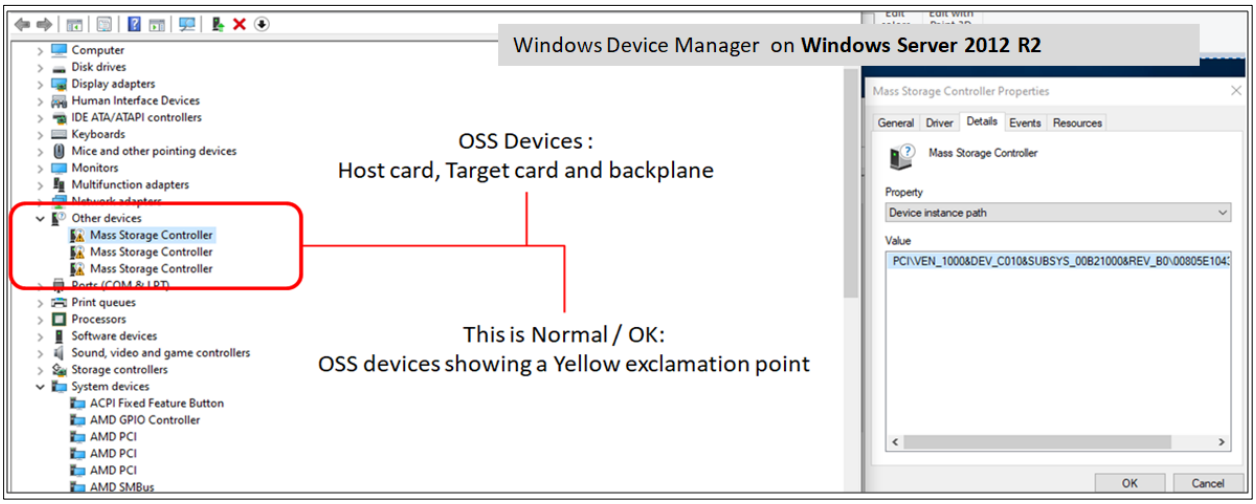
Viewing devices by connection

- Displaying a link between Host and Target cards.
- OSS backplane / board with **no** PCIe cards installed—the downstream slots on the backplane are not populated.
- Showing multiple layers of PCI Express standard Upstream Switch Port and PCI Express standard Downstream Switch Port.



Viewing devices by type

Both adapter cards (host and target cards) and backplane are recognized / detected.
The devices are coming up with a Yellow Exclamation point, this is normal. No need to install any drivers.



12 Verify PCIe cards

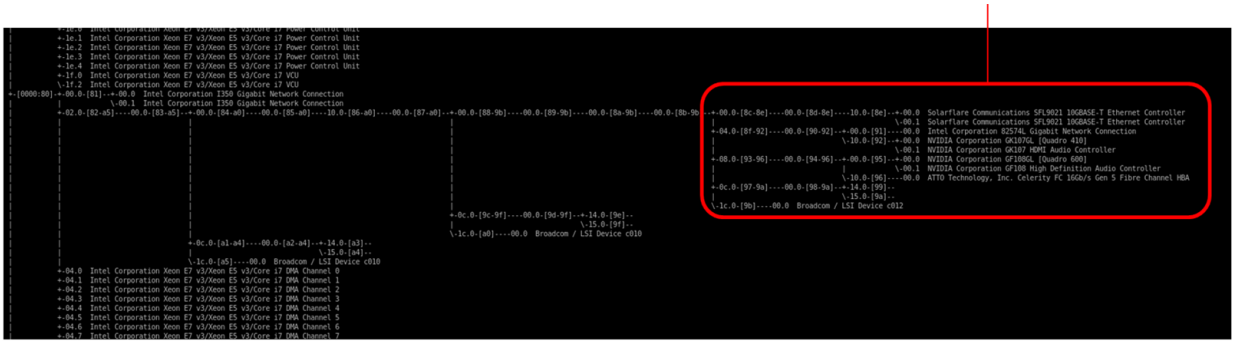
This section contains information on how to check / verify your PCIe cards are detected or not.

12.1 Linux

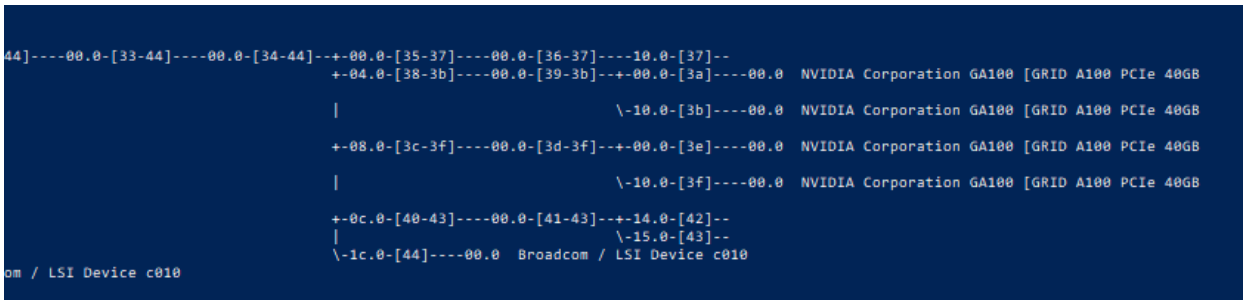
To check your PCIe cards use the following commands on the terminal window.

- lspci –vtt" command. Output below is a screenshot of the "lspci –vtt" showing the OSS backplane with five cards installed.

OSS backplane populated with PCIe cards



Output below shows four NVIDIA A100 are recognized.



You can also grep the vendor name of the PCIe card. For example, if you have an NVIDIA GPUs, run the command on the terminal window " lspci –vvv | grep NVIDIA".

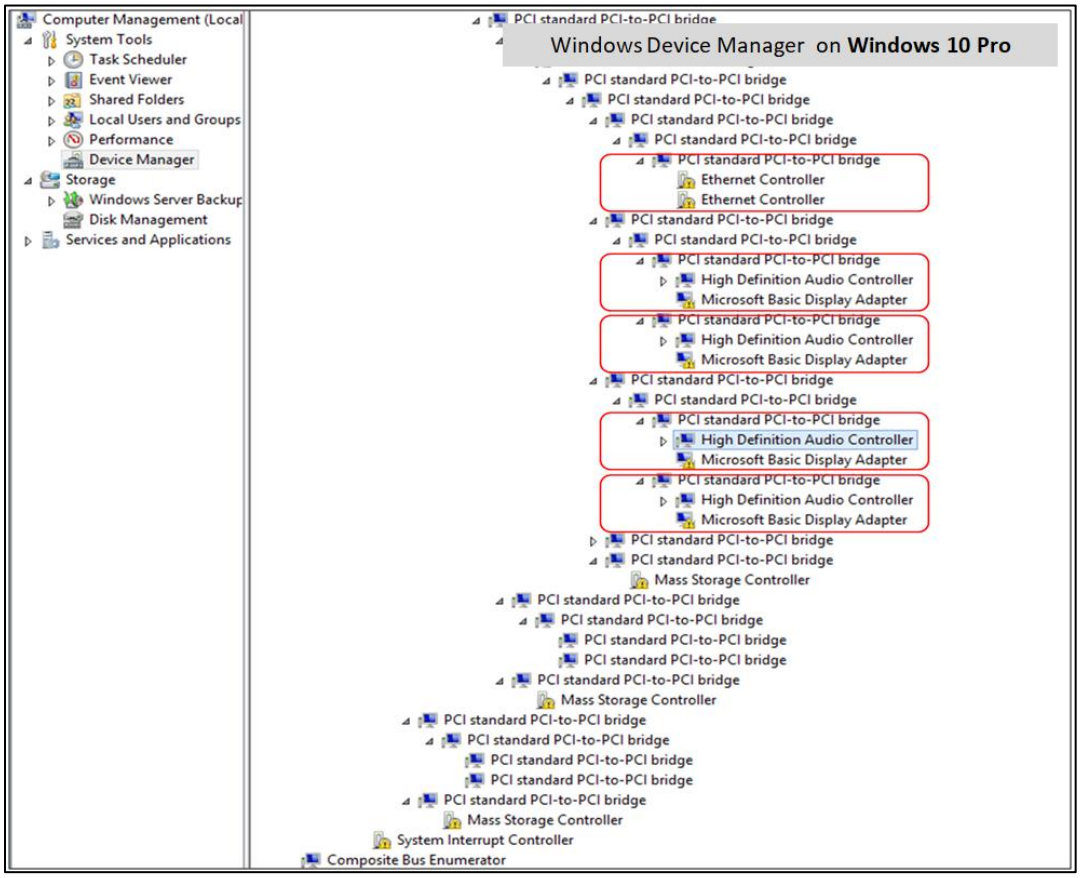
12.2 Windows

Find the 'My Computer' icon and "right-click" on it. Then select 'Manage' from the pop-up menu.

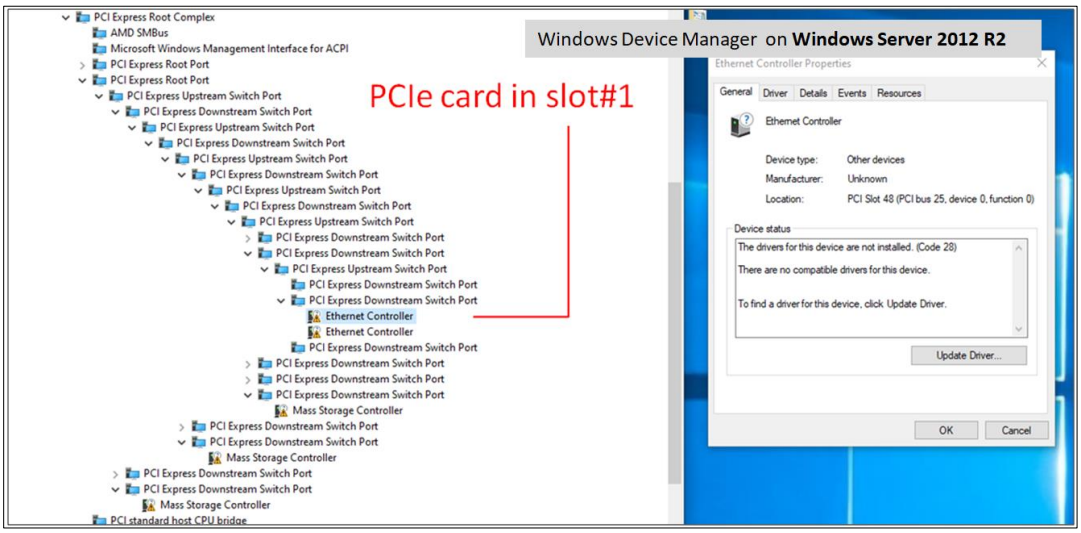
- Next, click on 'Device Manager' in the left most Computer Management window.
- Finally, click on the View Menu and select View Devices by Connection
- Open ACPI (BIOS) → Open PCI Bus→ Click the '+' or '>" sign several times until you reach a PCI Express Root Port Complex.
- Then click or collapse all the '+' or '>' until you see multiple subsets of PCI standard PCI-to-PCI bridge. See screenshot below.

Collapse or click the '+' or '>' sign next to PCI standard PCI-to-PCI bridge or PCI Express Upstream Switch Port and Downstream Switch Port and you will find all the PCIe devices that are detected.

The screenshot below shows the OSS backplane is populated with five PCIe cards (but showing a yellow exclamation mark next to it, which means the driver is not loaded). You can obtain the driver from the card manufacturer or you can download it from the vendor's website. OSS does not provide 3rd party driver / software.



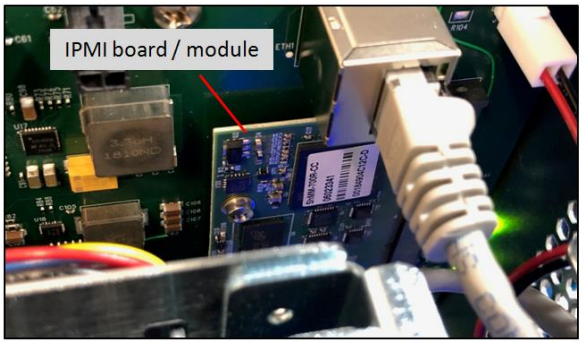
The screenshot below shows an Ethernet card is detected and it installed in slot#1. The image below was captured on a computer running Windows Server OS.



13 IPMI

IPMI is a configurable feature and it is not included with the base model. The IPMI module is installed during assembly.
If you require this feature, select this option or contact your One Stop Systems sales representative at sales@onestopsystems.com.

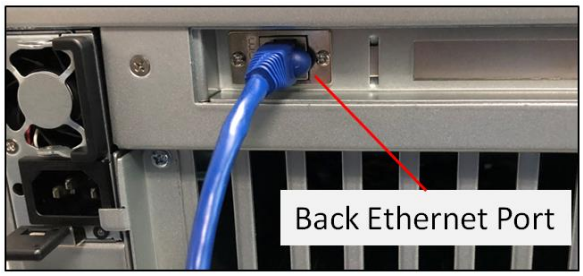
Unit equipped with IPMI, below photo shows the location of IPMI module installed in the unit.

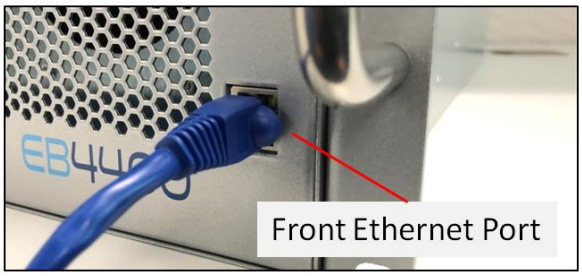


How to setup and access IPMI, follow instructions below.

13.1 Connect Ethernet Cables

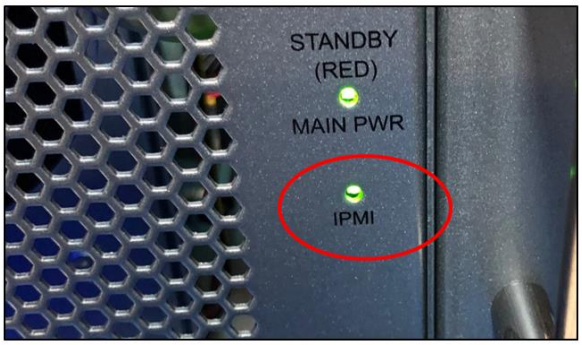
1. Connect Ethernet cable to either front or back Ethernet port; you can only use one or the other. You must plug-in the Ethernet cable first before you connect the power to the unit.
2. Plug in the other end of the Ethernet cable to your network (running DHCP)





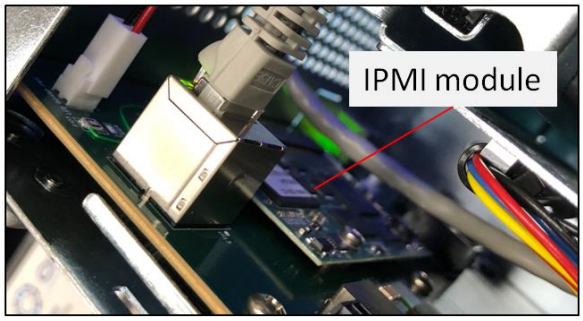
3. Connect the power cord on the back of the unit.

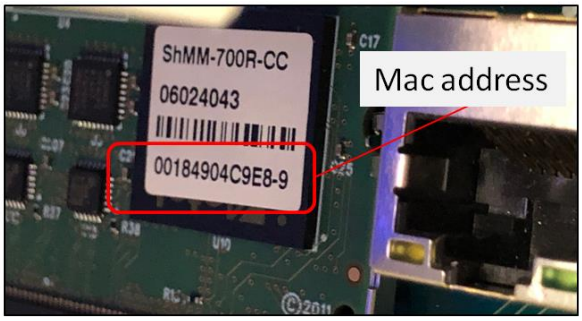
Upon connecting the power, the IPMI LED, will illuminate from solid red to blinking green and to solid green. When the led status is solid green, the IPMI is ready.



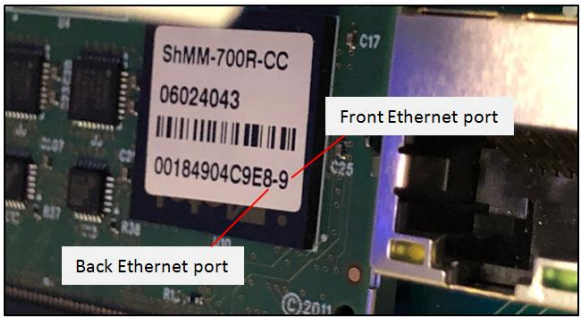
13.2 Locate Mac Address & IP Address

- Locate the Mac address sticker. Each Ethernet port will have a unique Mac address, the label will have the Mac address.
- If you don't see the label, check the IPMI module inside the unit that has a label containing the Mac address. The photo below shows the location of the label with the Mac address numbers.





- There are two Mac addresses, one for each port. Below photo shows thirteen characters 00184904C9E8-9. The last digit is the designated number for the Ethernet port location on the unit.
- Based on the photo below, number **8** is for the back end Ethernet port. The last number **9** is for the front end Ethernet port. The number is unique for every module in the expansion unit.
- The Mac address for the front Ethernet is 00184904C9E9 (00:18:49:04:C9:E9 or 00-18-49-04-C9-E9).
- The Mac address for the back Ethernet port is 00184904C9E8 (00:18:49:04:C9:E8 or 00-18-49-04-C9-E8).



Use the Mac address to find the IP address assigned to that port over the network to access the IPMI web interface.
You can use “arp –a” command on Windows and “arp – n” on Linux.

- From the output arp table, search for the Mac address of your IPMI module and match that to the assigned IP address
- Once you have identified the Mac address and the IP address, use the IP address to access the IPMI web interface.

Below photo is an example of Windows powershell cmdlet for querying the IP address using the Mac address.

```
PS C:\WINDOWS\system32> Get-NetNeighbor -LinkLayerAddress 00-18-49-04-c1-2c

ifIndex IPAddress                                          LinkLayerAddress      State       PolicyStore
------- ---------                                          ----------------      -----       -----------
7       192.168.1.153                                      00-18-49-04-C1-2C     Reachable   ActiveStore


PS C:\WINDOWS\system32> 2c is the Mac address for the back ethernet port
```

13.3 Start Internet browser

Launch your internet browser and type the IP address for example 192.168.1.153.
Below photo is the Web interface of the IPMI monitoring the following hardware;

1. Fan status and speed
2. Backplane temperature
3. Power supply voltage and temperature

ADM1026 Internal Temperature Sensor	21C

Fan 1 Status	OK
Fan 1 Speed	5100RPM

Fan 2 Status	OK
Fan 2 Speed	5100RPM

+3V3 STBY Voltage	3.3V
+3V3 MAIN Voltage	3.3V
+5VSB Voltage	5.1V
+12V Voltage	12V

Backplane 2 Temperature 1	25C
Backplane 2 Temperature 2	23C

PSU 1 Input Voltage	0V
PSU 1 Output Voltage	0.9V
PSU 1 Output Current	1A
PSU 1 Input Power	0W
PSU 1 Output Power	1W
PSU 1 Temperature 1	24C
PSU 1 Temperature 2	29C
PSU 1 Temperature 3	28C

PSU 2 Input Voltage	117V
PSU 2 Output Voltage	11.9V
PSU 2 Output Current	3A
PSU 2 Input Power	68W
PSU 2 Output Power	31W
PSU 2 Temperature 1	28C
PSU 2 Temperature 2	31C
PSU 2 Temperature 3	24C

14 Other Technical Information

14.1 Upstream and Downstream Slots

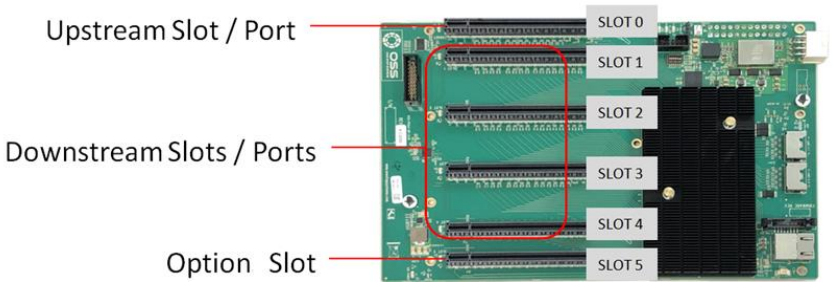
Upstream Slot: Also known as target slot. This is the designated slot for the Target adapter card. The Upstream slot can only run a compatible OSS Gen4 host interface card.

- Slot 0 is the default slot number for the Upstream slot.

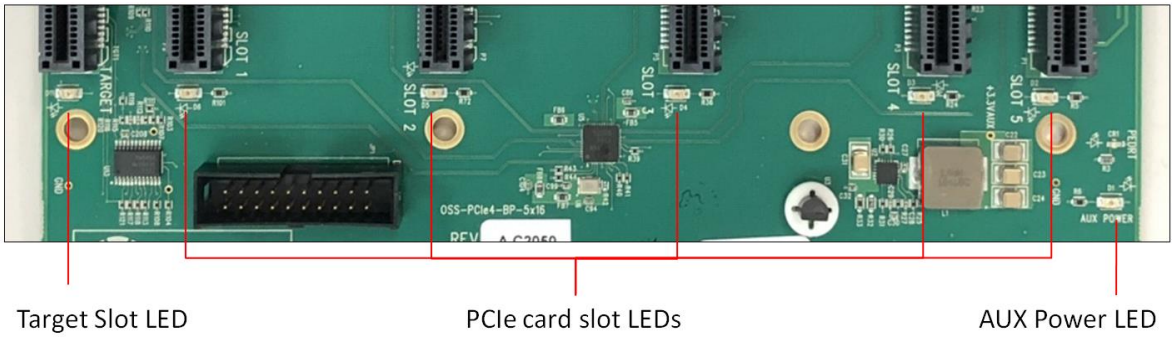
Downstream Slots: These are PCIe card slots # 1, 2, 3, 4 and 5. Do not use any of the downstream slots for Target card unless the slot is programmed to operate in an Upstream mode.

Option Slot: Slot 5 can be programmed to operate in an Upstream or Downstream modes.

- Configured as a Downstream slot: only plug in an end-point device or a 3rd party PCIe card.
- Configured as an Upstream slot: only OSS Host card can be used in this slot.

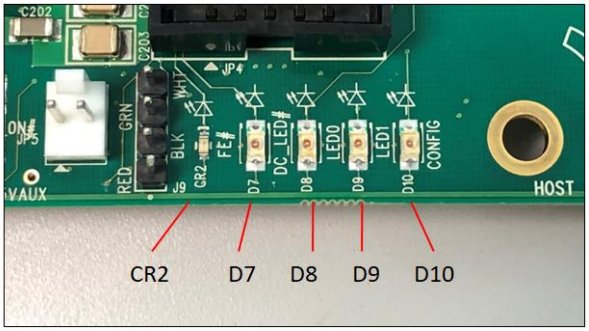


14.2 Slot LEDs



Item	Name	Description	When Lit (Solid Green or Blinking)	When Off
1	Target Slot LED	Upstream Slot LED	Solid = Gen4 Link	OFF - Not Linked / No Card present in the slot
			Blink 2Hz = Gen3 Link	
			Blink 1Hz = Gen2 Link	
			Blink 0.5Hz = Gen1 Link (Slow Blinking)	
2	Downstream LED	PCIe slot LEDs	Solid = Gen4 Link	OFF - Not Linked / No Card present in the slot
			Blink 2Hz = Gen3 Link	
			Blink 1Hz = Gen2 Link	
			Blink 0.5Hz = Gen1 Link (Slow Blinking)	
3	Aux Power LED	Auxiliary Board power LED	This is GREEN, denotes existence of auxiliary power +5VAUX	Board is at fault / error

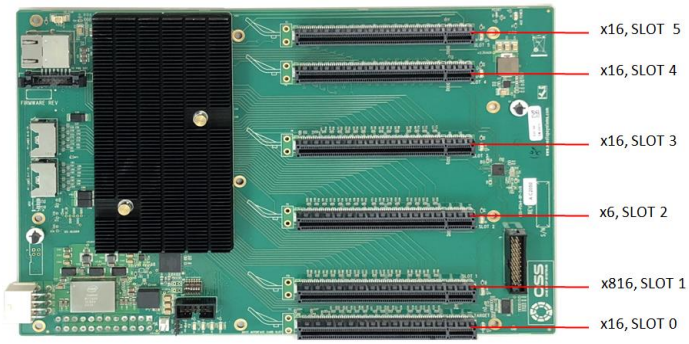
14.3 Board LEDs



LED#	NAME	Description
CR2	FE LED	FE-Fault Error (SYS_ERROR#) LED
D7	DC LED	PCIe slot LEDs Daisy Chain Port Link Status LED
D8	LED 0	All Power Good
D9	LED 1	FPGA Blinking LED (When FPGA code is loaded and working: 8 blinks, 2 pause counts, 8 blinks
D10	CONFIG	Config output from the FPGA, but enabled as an FPGA option. When RED, board is not programmed. OFF, board is programmed.

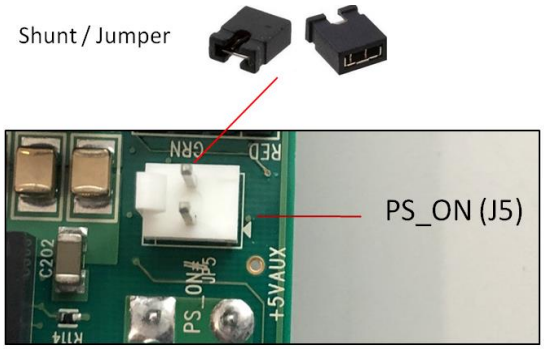
14.4 Slot Type

Slot Type: Closed-ended PCIe slot / connector, al slots are x16 mechanical and x16 electrical Gen 4



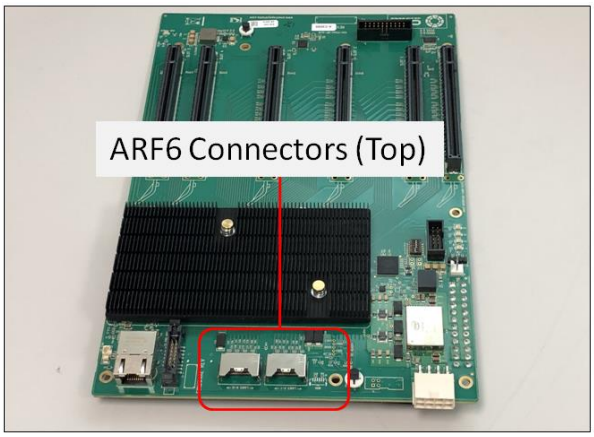
14.5 PS_ON

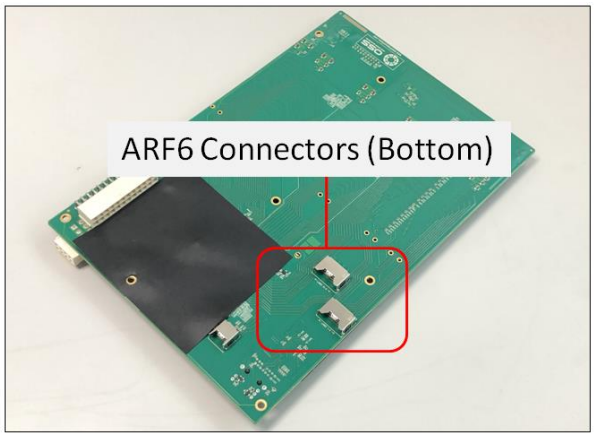
A two-pin connector for a shunt / jumper, which allows the backplane to force power ON when the ATX supply is switched ON. See photos below for the location of the JP5 connector on the backplane



14.6 ARF6 Connector

ARF6 Connector - For connecting ARC6 cable to daisy chain two backplanes together and to create a bridge or connection between OPTION SLOT and the PCIe switch.

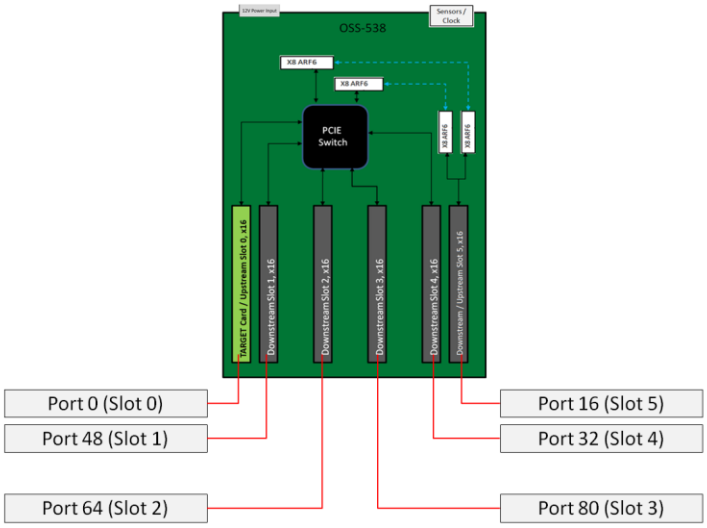




14.6 Slot Number and Port Mapping

Each slot on the OSS backplane is mapped to a PCIe port on the 88096 PCIe switch. Port mapping is hard-coded, it is essentially fixed. No means of changing or modifying it.

Port / Slot	Slot Mapping: 88096 Port
Slot 0	0
Slot 1	48
Slot 2	64
Slot 3	80
Slot 4	32
Slot 5	16 (Daisy chain) If slot 5 is cabled to the daisy chain port, it becomes port 16 of the 88096 (regardless of pstream/downstream configuration).NA: If not enabled, no port assignment



14.7 Power Cords

Two types of power cords can be used with this expansion unit, 125V and 250V. This is only applicable to AC power supplies

125V

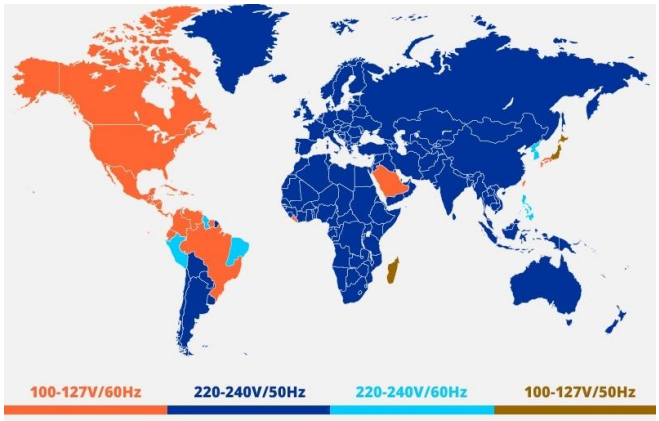
250V

14.7.1 Specifications

OSS PART#: 290-001-012-RC (125V)	
Description: CORD NEMA5-15P C-13SJT	
Part Status	Active
Style	Male pins (Blades) to Female Sockets (slots)
1st Connector	NEMA 5-15P
2ND Connector	IEC 320-C13
Number of Conductors	3
Cord Type	SJT
Wire Gauge	14 AWG
Shielding	Unshielded
Approval Marks	CSA, UL
Approved Countries	Canada, USA
Voltage Rating	125V
Current Rating	15A
Operating Temperature	60°C
Digi-Key Part#	Q944-ND

OSS PART#: 290-001-032-RC (250V)	
Description: CORD PWR MALE-FEMALE SJT	
Part Status	Active
Style	Male pins (Blades) to Female Sockets (slots)
1st Connector	IEC 320-C14
2ND Connector	IEC 320-C13
Number of Conductors	3
Cord Type	SJT
Wire Gauge	14 AWG
Shielding	
Approval Marks	CSA, UL
Approved Countries	
Voltage Rating	250V
Current Rating	15A
Operating Temperature	105°C
Digi-Key Part#	1175-1312-ND

14.7.2 Power cord socket and voltage tables world standards



14.8 Power Supply

Power Options

- Single/Dual AC 1600W
- Single/Dual DC 1600W
- Single/Dual AC 2600W

AC Power Supply

DC Power Supply

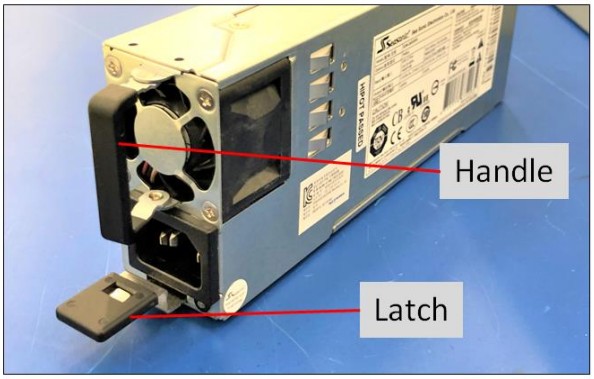
Standard EB4400 unit comes with one or two replaceable AC power supply modules.

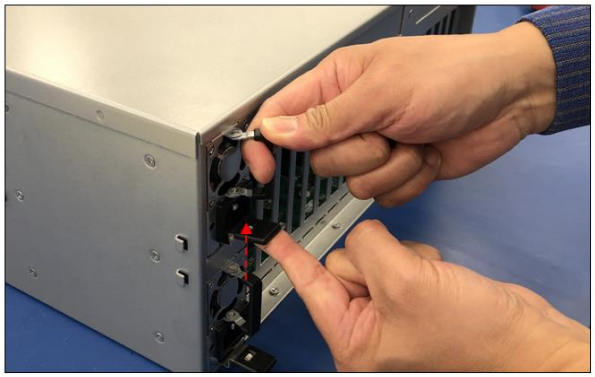
- With two power supply modules installed:
  - Share the power load requirements during normal operations.
  - Should one module fail for any reason, the power load will be shifted to the other module.

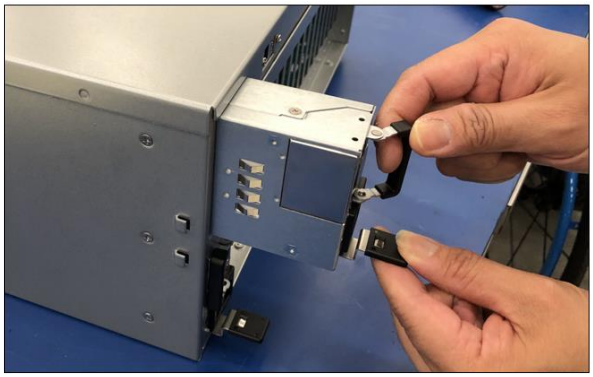
- LED indicator to keep you informed on normal/abnormal conditions for your PSU.
  - An indicator for the failure would be the LEDs on the back panel of the power supply behind the chassis.
  - For non-functioning equipment, these indicators would not show

14.9 Removing AC Power Supply

1. Disconnect the power cord from the power supply you are removing.
2. Grasp the power-supply handle.
3. Press the black release latch **upward** and hold it.
4. Pull the power supply out of the bay.







14.9.1 Specifications

Input Rating

The power supply shall operate within all specified limits over the following input range. Harmonic distortions of up to10% of the rated line voltage must not cause the power supply to go out of specified limits.

The power supply shall power off if the AC input is below VAClow_limit and shall start (auto recovery) if the VACrecover is reached. Input of VAC below VACrecover shall not cause any damage to the power supply, including the input fuse. The power supply shall also operate at Vin 240Vdc.

Parameter	Minimum Input	Rated Input	Maximum Input
115Vac	90Vac	100-127Vac	140Vac
230Vac	180Vac	200-240Vac	264Vac
Frequency	47Hz	50/60Hz	63Hz

240VDC Input Rating

PARAMETER	MIN	RATED	MAX
Voltage	192VDC	240VDC	288VDC
Current	10A	8.5A	

Maximum Input Current

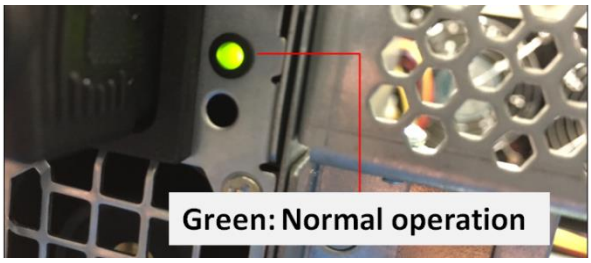
Input Voltage	Input Current	Maximum Power
90Vac	15A	1000W
100-127Vac	13~10A	1000W
140Vac	9A	1000W
180Vac	11.5A	1600W
200-240Vac	10~8.5A	1600W
264Vac	7.5A	1600W

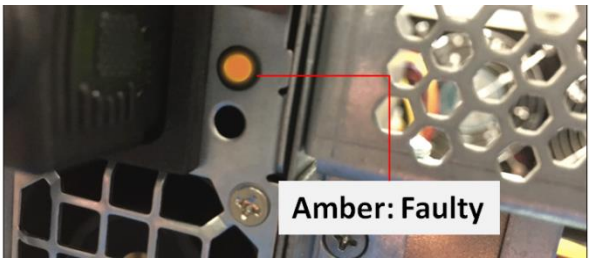
Output Rating (1600W Power Supply)

GROUP	1		2
OUTPUT VOLTAGE	+12V		+12VSB
INPUT VOLTAGE	100~127Vac	200~240Vac	100~240Vac
MAX.LOAD	83.3A	133.3A	2.1A
CLST Peak20sec duration*	89.3A	139.3A	2.4A
Pmax.app Peak10msec duration*	103.3A	153.3A	
Pmax Peak100μsec duration*	128.3A	178.3A	
MIN.LOAD	0A		0A
VOLTAGE REGULATION	±5%		±5%
RIPPLE & NOISE	120mV		120mV
Max. Capacitive Loads	50000uF		3100uF
Min. Capacitive Loads*	2000uF		10uF
Dynamic Load Capacitive Load	2000uF		20uF

14.9.2 LED Indicator

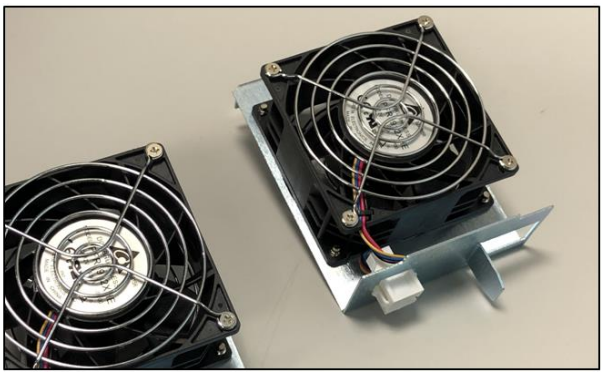
Power Supply Condition	LED State
Output ON and OK	GREEN
No AC power to all power supplies	OFF
PSU standby state AC present / Only 12VSB on	1Hz Blink GREEN
Power supply is cold standby state or always standby state as defined in the Cold Redundancy section of the CRPS Common Requirements Specification	1Hz Blink GREEN
AC cord unplugged or AC power lost; with a second power supply in parallel still with AC input power.	AMBER
Power supply critical event causing a shutdown; failure, over current, short circuit, over voltage, fan failure, over temperature	AMBER
Power supply warning events where the power supply continues to operate; high temp, high power, high current, slow fan.	1Hz Blink Amber
Power supply FW updating	2Hz Blink GREEN





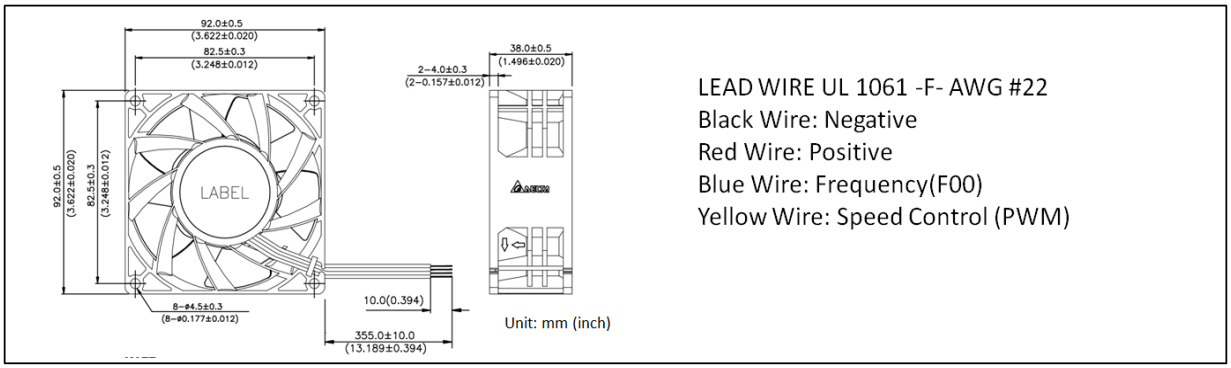
14.10 Fan

The expansion unit has two fans installed with sufficient capacity to provide cooling to the extreme-high-heat- generating GPUs. These are high CFM / RPM replaceable fans. The fans have a PWM controlled fan speed (4x lead wires), regulated by the temperature sensors within the system.



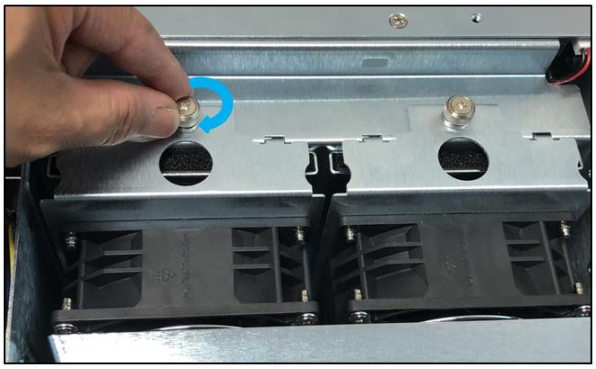
14.10.1 Fan Specifications

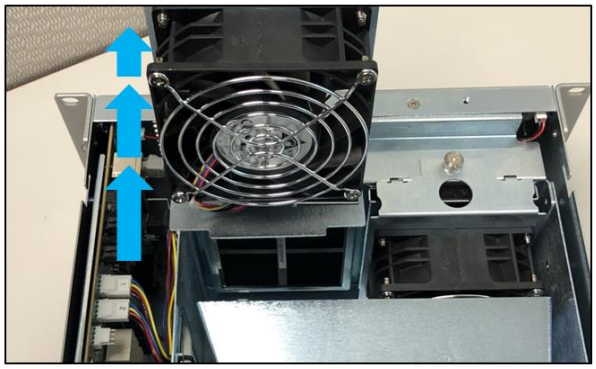
Series	PFR	Power (Watts)	44.40W
Part Status	Active	RPM	11500RPM
Voltage Rated	12 VDC	Termination	4 Wire Leads
Size / Dimension	Square-92mm L X 92mm H	Ingress Protection	--
Width	38.00mm	Operating Temperature	-10~+70°C
Air Flow	185.55CFM (5.255 m3/min)	Weight gram (g)	260g
Static Pressure	2.523inchH2O (64.10mmH2O)	Current Rating	3.70A
Bearing Type	Ball	Voltage Rating	07.0-13.2VDC
Fan Type	Axial	Material Frame	Plastic
Features	Speed Sensor (Tach), PWM control	Material Blade	--
Noise	71.0dB(A)	Lifetime @ Temp	70000 Hrs@40°C



14.10.2 How to remove Fan

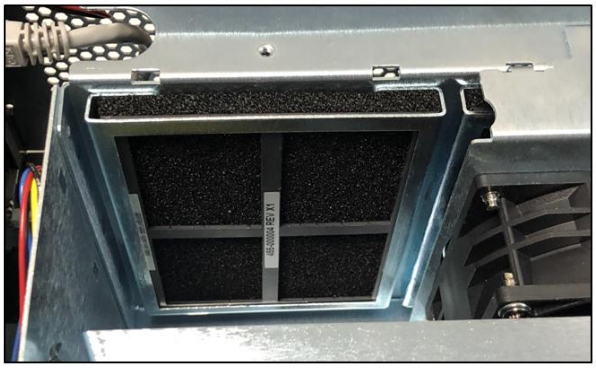
Loose n the thumbscrew and slowly pull the fan out, see photos below.

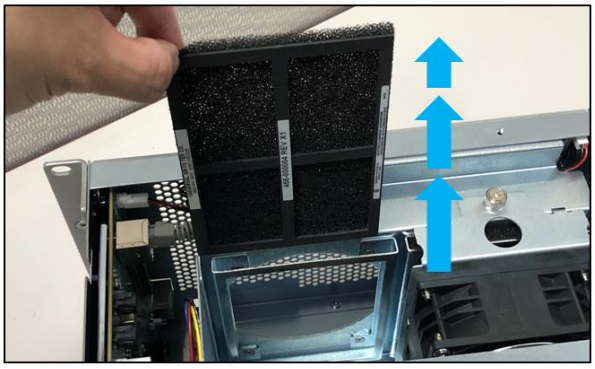


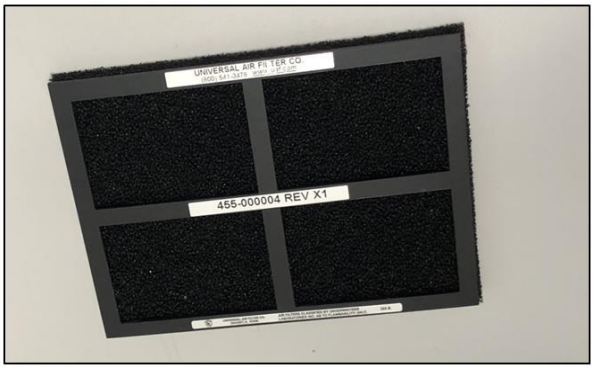


14.11 Fan Foam Air Filter

The EB4400 can be configured to come with fan foam air filters with minimal airflow resistance to prevent dust from entering the expansion unit. You can easily remove and clean the filter. To access the foam air filter, simply remove the fan first and pull the filter out, see photos below.







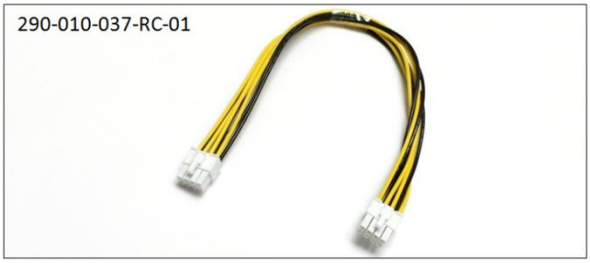
14.12 Auxiliary power cables

Auxiliary power cables are available for the unit but are not included. They are optional and sold separately. If your card requires an auxiliary power, please contact our Sales team.

There are two different sets of aux power cables, see table below.

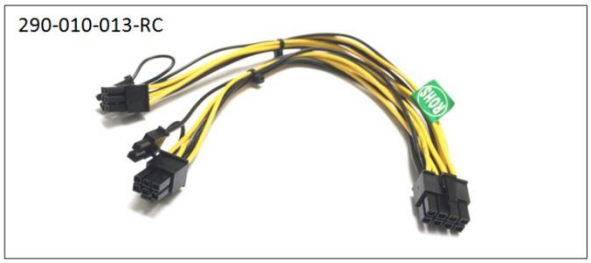
Aux Power Cable	Part Number	Description	Connector	#of Connector
8 pin	290-010-037-RC-01	Cable Assy, Aux Pwr, 8 Pin, NVIDIA 2.0, 12", Expansion System, M176 (OSS)	8-pin male to 8-pin male	One 8-pin connector
	290-010-037-RC-02	Cable Assy, Aux Pwr, 8 Pin, NVIDIA 2.0, 24" Expansion System, M176 (OSS)	8-pin male to 8-pin male	One 8-pin connector
6+2 pin	290-010-013-RC	Cable Assy, Canister, External Pwr, Dual 6+2 PCIe Graphics Only	8-pin male to 2 6+2-pin male	Two 6+2 pin connectors
	290-010-036-RC	Cable Assy, Aux Pwr, 6+2 Pin, 24", Expansion System, M176 (OSS)	8-pin male to 2 6+2-pin male	Two 6+2 pin connectors

290-010-037-RC-01



290-010-037-RC-02

290-010-013-RC

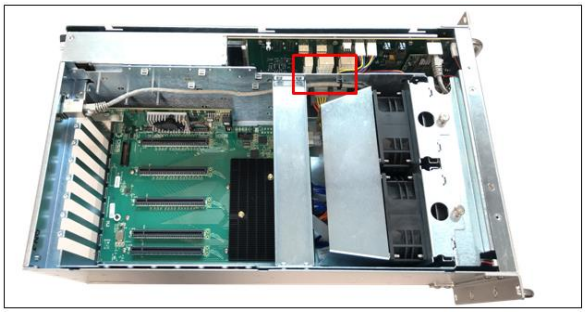


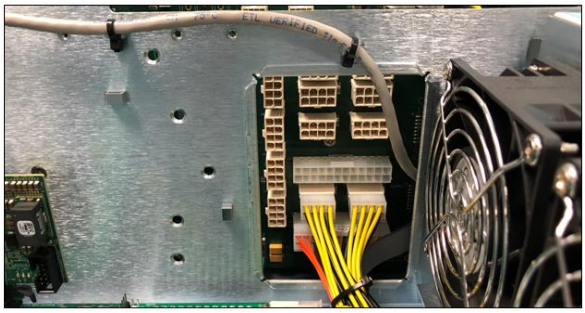
290-010-036-RC

	Connectors	Can provide power of
	8 pin	150 Watts
	Two 6+2 pin	300 Watts
	6 pin	75 Watts

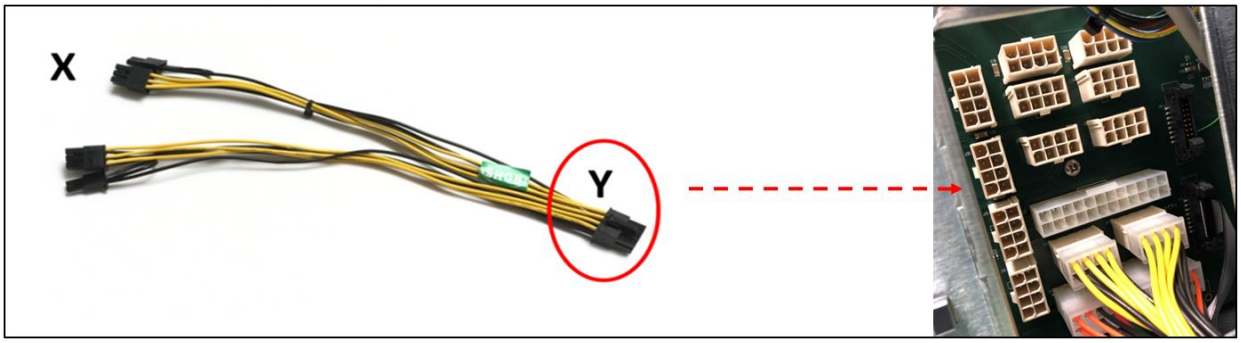
14.12.1 Aux power cable installation

The auxiliary power is supplied directly from the power supply backplane and there are 10 available AUX power connections / ports in which the auxiliary power cables are plugged in, see photo below.

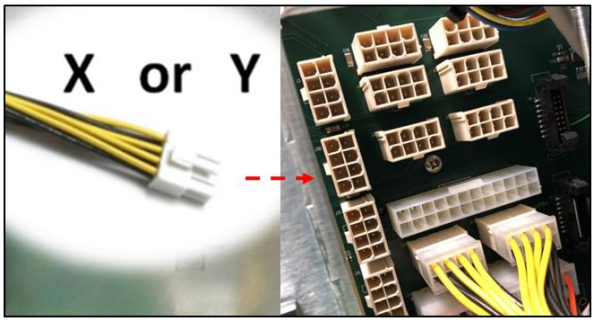




To plug in the 6+2 pin cable correctly, connect the **Y** end connector of the cable to the power distribution board, see photos below.



To plug in the 8-pin cable correctly, you can use either **X** or **Y** end of the cable, see photos below.



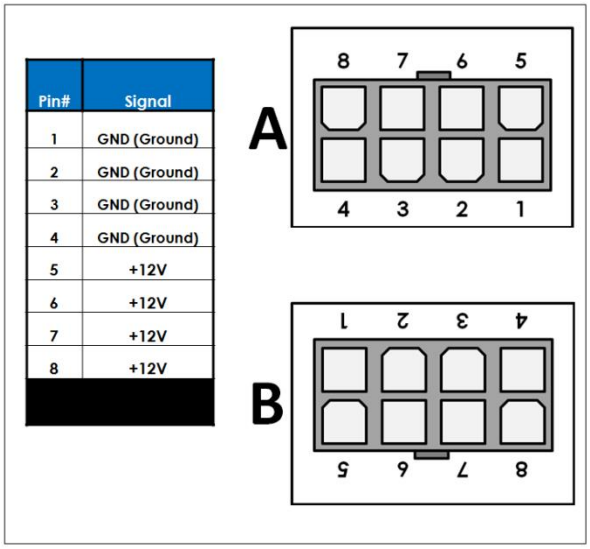
Ensure the cable is fully seated and secured.

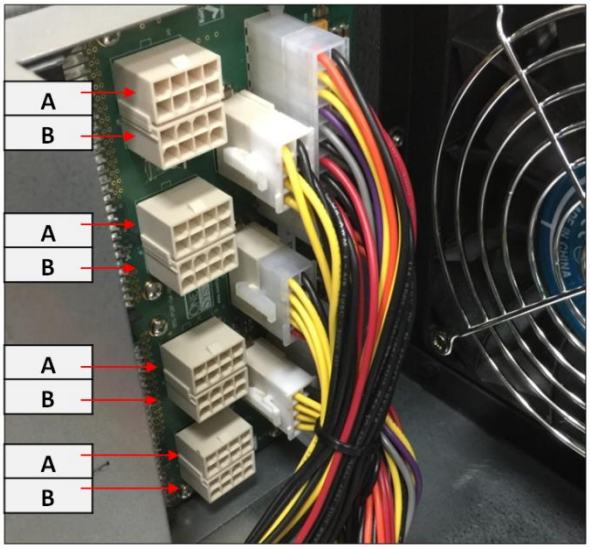
NOTE

Route cables away from FANs. For safety and proper airflow avoid blocking the fans.

14.12.2 Pin Outs

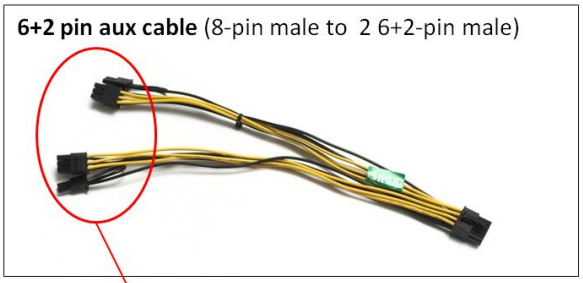
PSU board aux port pin outs





8-pin aux power cable and pin outs

Figure A1



Pin#	Color	Signal
1	Yellow	+12V
2	Yellow	+12V
3	Yellow	+12V
4	Black	GND
5	Black	GND
6	Black	GND
7	Black	GND
8	Black	GND

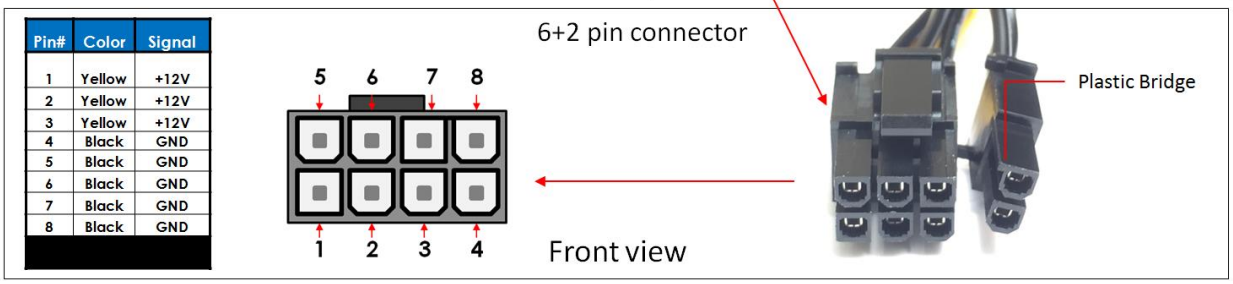
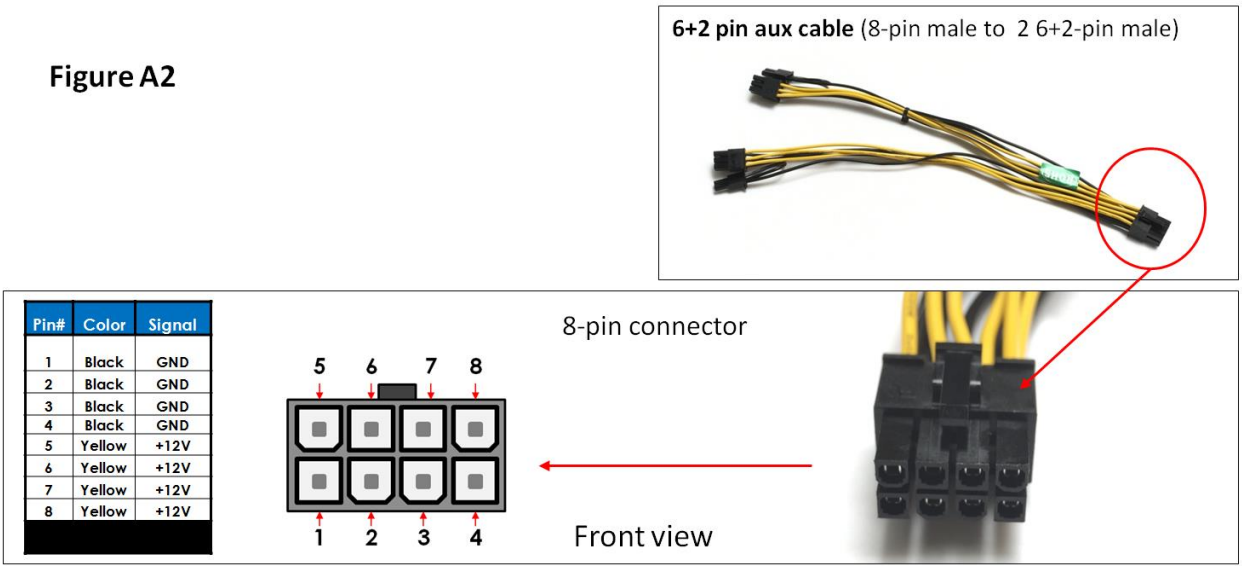


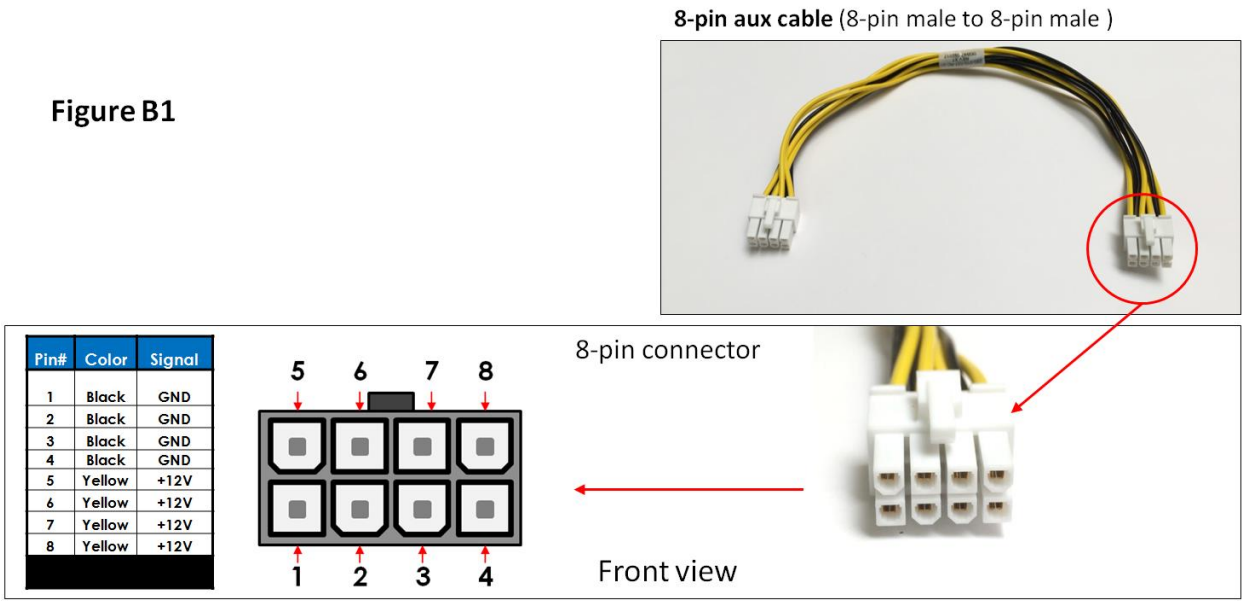
Figure A2



Pin#	Color	Signal
1	Black	GND
2	Black	GND
3	Black	GND
4	Black	GND
5	Yellow	+12V
6	Yellow	+12V
7	Yellow	+12V
8	Yellow	+12V

6+2-pin aux power cable and pin outs

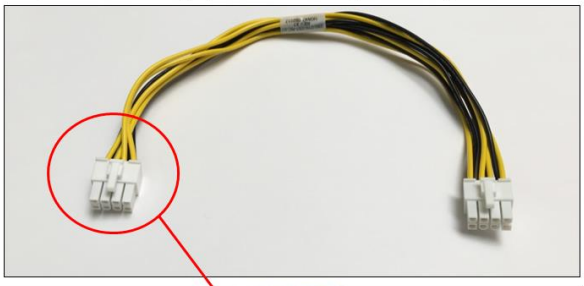
Figure B1

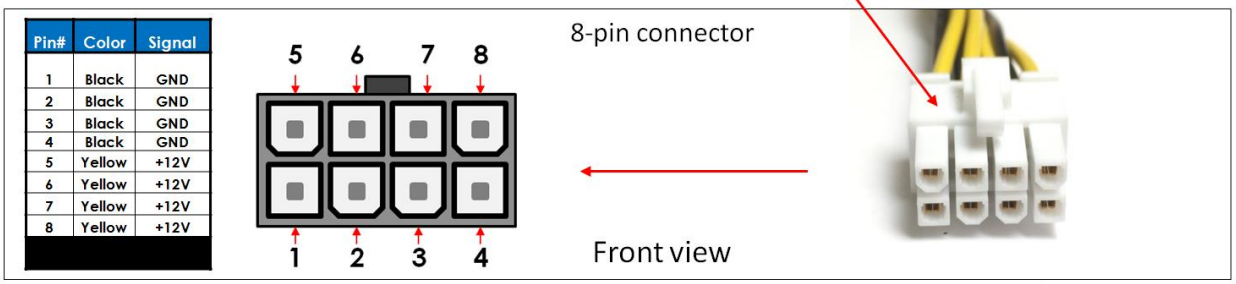


Pin#	Color	Signal
1	Black	GND
2	Black	GND
3	Black	GND
4	Black	GND
5	Yellow	+12V
6	Yellow	+12V
7	Yellow	+12V
8	Yellow	+12V

Figure B2

8-pin aux cable (8-pin male to 8-pin male)





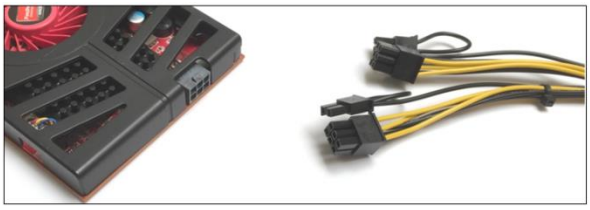
14.12.3 Using the Auxiliary Power Cable

When using a PCIe card such an FPGA GPU cards that requires additional power, you may need auxiliary power cables . Depending on the power requirement of your PCIe card, it will have a different built-in aux power port in which you attach the aux power cable.

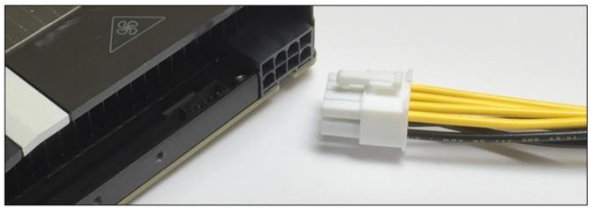
A PCIe slot provides 75 watts of slot power, which is not enough to meet the power requirement for a high-end add-in card with power consumption. A direct connection to the power system is needed to obtain additional power. This can be done by using the 6+ 2 pin or 8 pin auxiliary power cables. The below photos represent how the 6+2 pin connector and 8 pin aux power cables are attached to the PCIe card or GPU card.

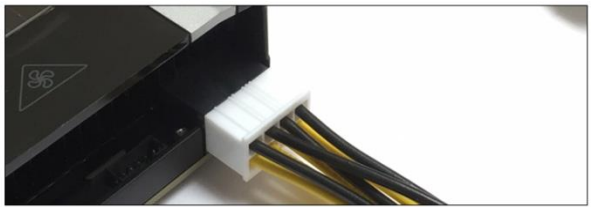
The photo below is an example of a PCIe card or GPU card that has two 6-pin power connectors.

The photos below are example of a PCIe card or GPU card that has a 6pin power connector. You need one 6+2pin aux cable to provide extra power.



The photo below is an example of a PCIe card that has an 8pin power connector. You need one 8-pin aux cable to provide extra power.



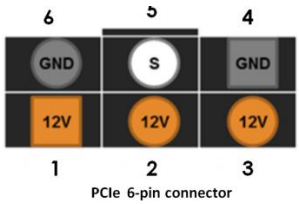


Each PCIe x16 slot on the backplane provides 75 Watts of power which is adequate for most video cards. But a high-end GPU cards usually need more power. To accommodate graphics cards needing more than 75 watts, the **PCI-SIG (Special Interest Group)** introduced two standards for supplying additional power to a video card via additional graphics power connectors:

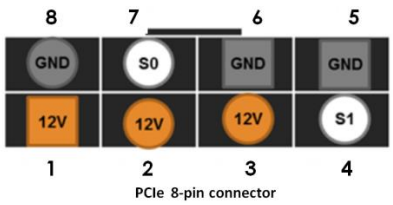
- **PCI Express x16 Graphics 150 W-ATX Specification**—Published in October 2004, this standard defines a six-pin (2x3) auxiliary power connector capable of delivering an additional 75 W to a graphics card directly from the power supply, for a total of 150 W to the card.
- **PCI Express 225 W/300 W High Power Card Electromechanical Specification**—Published in March 2008, this standard defines an eight-pin (2x4) auxiliary power connector capable of supplying an additional 150 W of power, for a total of either 225 watts (75+150) or 300 watts (75+150+75) of available power.

Graphics Card Auxiliary Power Connector Configurations	
Maximum Power Draw	**Auxiliary Power Connector Configuration**
75 Watts	None
150 Watts	One six-pin connector
225 Watts	Two six-pin connectors*
300 Watts	One eight-pin connector + one six-pin connector
375 Watts	Two eight-pin connectors
450 Watts	Two eight-pin connectors + one six-pin connector
***May optionally use one eight-pin connector instead**	

GPU Card Power Connectors



PCIe 6-pin connector



PCIe 8-pin connector

Pin	PEX 6-pin	PCe 8-pin
1	12V	12V
2	12V	12V
3	12V	12V
4	GND	SENSE1
5	SENSE	GND
6	GND	SENSE0
7	--	GND
8	--	GND

Example below, when using a GPU card that has a maximum power consumption of 300 Watt. It has an 8-pin and 6-pin power connectors.

Number of Pins	Watt
6 pin connector	provides 75 Watts
8 pin connector	provides 150 Watts

To provide additional power, you need two 6+2pin cable connectors, see Figure A.

Note:300 Watt power needed = 75 Watt from PCIe slot + 75 Watt from 6-pin + 150 Watt from 8-pin.

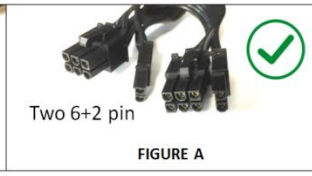


FIGURE A

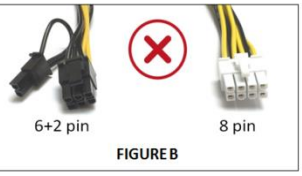


FIGURE B

Figure B shows the wrong power cable to use due to special keying on the eight-pin connector. The GPU power connector has a different keying to prevent interchanging with the +12 V power connectors.

NOTE: We do not provide different aux power cables (i.e. 8pin to 4pin Molex) other than what we offer. If your PCIe card requires a different power adapter or aux power cable, you would have to buy it from other electronic stores.

14.13 Expansion Unit Power Consumption

The EB4400 expansion unit draws a maximum of 304 Watts (*2 Fans + 1Backplane + 1Interface board + IPMI board*) of power without any boards / cards installed.

14.14 Power consumption breakdown per hardware

Item	Hardware	Power Consumption
1	Target Card OSS Gen 4	60 Watts
2	Fans	88.80 Watts (44.40 Watt per fan)
3	Backplane	150 Watt per backplane
4	IPMI board	6 Watts

15 Troubleshooting

15.1 Device is not detected or recognized

1. Shutdown the system
2. Disconnect the cables
3. Disconnect the power from the unit
4. Remove the HIB card from the unit and host computer
5. Re-insert the HIB card
6. Reconnect the cables
7. Turn ON the unit

15.2 My PCIe devices are showing UP with a Yellow Exclamation mark

1. Obtain the software / driver from the 3rd party vendor.
2. Install or re-install the driver
3. Reboot the system after installing the driver

15.3 No link between host and target cards

1. Check the dipswitches on each card. Make sure the Target card is set to target mode and Host card is set to host mode.
2. Check the Target card is installed in the target slot / upstream slot.
3. Use a validated / certified OSS HIB Cable adapter Gen4 cards
4. Reseat the Cables. Makes sure you are using a Gen4 cables.
5. Swap or replace the host card, target card and Link cables.
6. If you are still having the same issue after replacing the host card, target card and cables, your next step is to replace the backplane with a known good board or contact Technical Support for assistance.

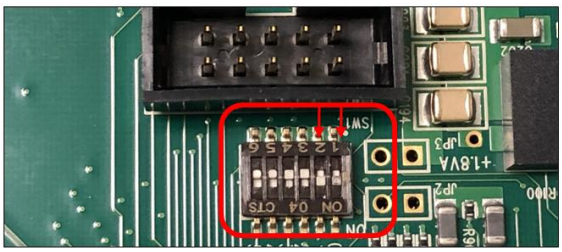
15.4 Broken OSS-Backplane

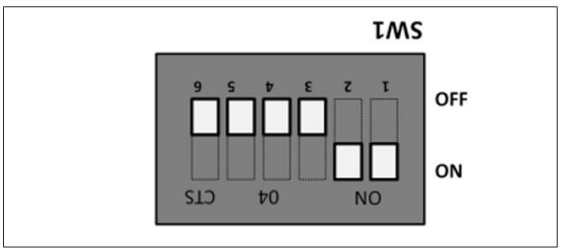
1. If you received a brand new DOA (Dead on Arrival) board, please contact OSS to RMA board and request for a replacement.
2. If you have an out of warranty board, please contact OSS Sales team and buy a new replacement board.
    - Standard warranty is 1 year, unless you have an SLA or extended warranty coverage.
3. If you purchased a second-hand / used board and it is broken, please contact OSS Sales team to buy a replacement.
    - Note: Purchasing a second-hand / used product is not covered under warranty.

15.5 My PCIe cards are not detected

Both Target and Host cards are linked, the LINK LED on both cards are illuminated and all the LED indicators on the cards are working. However, the Operating System is not recognizing all of my PCIe cards that are installed on the backplane.

1. Check the Dip switches on the backplane make sure they are set correctly, see photos below for the correct settings.





15.6 Windows Error Codes

If you are having a problem with one of your devices, and the Device status box shows a Windows Error Code, refer to the following list of error codes for guidance. These Windows error codes would help in troubleshooting and isolating the problem.

Error Code	Description/Action
10	**This code indicates that there is a problem with the 3rd Party PCIe Card driver.** If necessary, contact the card's manufacturer for updated software drivers. If all else fails, contact One Stop Systems Technical Support for further assistance.
28	The driver for the PCIe card is not installed on your system. Reinstall the card driver following the manufacturer's instructions. If that fails to fix the problem, call the card manufacturer for new drivers.
1	The PCIe host card or expansion chassis are not working correctly. Reinstall the PCIe host card into the computer's slot and recheck all cable connections. If the error code remains, try another PCIe slot. If the error persists, call One Stop Systems Technical Support.
12	**On the Bridge:** If you receive error code 12 on the first PCI to PCI Bridge, call One Stop Systems Technical Support. **On the Card**: This usually means the memory, I/O, or prefetch is more than has been allocated. Call One Stop Systems Technical Support

When your PCIe device or card is showing up with error, we highly recommend that you contact the vendor or manufacturer of the PCIe card for technical assistances.

Any PCI or PCI Express expansion scheme requires the cooperation of the computer system's BIOS in order to operate properly, regardless of the platform (PC/Laptop/Server) or operating system (MS Windows/MAC OS/LINUX etc.)

The BIOS hosts the first and the most fundamental code (firmware) that a computer executes upon boot-up. It is then that each PCI/PCIe add-in card (be it located on the host system or on One Stop Systems expansions chassis) is allocated Input/output memory space for proper operation.

By installing multiple add-in cards in one chassis or chaining multiple One Stop Systems chasses, we are requesting more and more resources from the BIOS and thus must make sure we pre-allocate them sufficiently.

It is therefore imperative that our computing platform allocates **at least 32KB** of I/O memory space to allow multiple add in cards to operate properly. This setting may be editable or preset by your BIOS (or computer) vendor. If you are having this problem it is recommended that you first update your system to the latest firmware provided by your vendor. Instruction on how to do that (as well as making a backup of your current BIOS firmware) should be provided by your computer vendor on their web site. In case this property is editable, you computer vendor should also be able to tell you how to select at least 32KB using their BIOS interface.

15.7 System board fails to power UP

A faulty OSS board can cause the expansion system not to power UP properly. For troubleshooting, you can force power ON the OSS board by placing a jumper on J1 connector, see photos below. This will help you determine whether the board is functioning properly. You need the following items to perform this task.

- Standard ATX power supply with 24pin ATX power cable/connector .
- Jumper or shunt, not provided by One Stop Systems. You can buy this from any online electronic stores.

The board has a connector for a shunt / jumper, which allows the backplane to force the ATX supply to power ON. See photos below for the location of the PS_ON connector on the backplane.

15.8 PCIe Upstream and Downstream Ports are not detected

1. Shutdown the system
2. Remove all PCIe cards from the slot.
3. Reseat the Target card and host card.
4. Reseat the cables.
5. Power UP the system.
6. Check the LEDs on the back of the Target cards and Host cards. Make sure both LEDs are illuminated as solid green.

If the upstream and downstream ports are still not detected, you would need to move the host card to another PCIe slot.
You can try another computer. If you are still having problem try the following.

1. Replace the target and host cards
   - See if it fixes the problem. If problem prevails go to step 2
2. Replace the link cables
   - See if it fixes the problem. If the problem prevails go to step 3
3. Replace the backplane
4. Send the unit for service / repair

15.9 Support for 3rd Party PCIe Cards

One Stop Systems will provide reasonable technical support to with 3rd Party PCIe cards. However, if you have verified a successful installation of the One Stop Systems expansion system, but experience difficulty installing your 3rd Party PCIe cards, the card manufacturer should be able to provide the best support.

16 How to Get More Help

You can visit the Technical Support FAQ pages on the Internet at https://www.onestopsystems.com/support

16.1 Contacting Technical Support

Our support department can be reached by phone at 1 (760) 745-9883. Support is available Monday through Friday, 8:00 AM to 5:00 PM PT. When contacting Technical Support make sure to include the following information:

1. Exact and correct serial #
2. Service Ticket or Case # (if you already submitted an online request)
3. Computer Type & Model: Operating System
4. Make & Model of PCI/PCIe cards: Application
5. Problem description

When submitting an online technical support request always provide a valid working e-mail address, phone number, shipping address and proper contact name. Check your e-mail for an automated response containing the case # and updates. You can also visit our web site at: https://www.onestopsystems.com/support for a quick response, use the Technical Support and RMA Request Form available in the Support Section of the website. Simply complete the form with all required information. Please make sure that your problem description is sufficiently detailed to help us understand your problem.

Shipping or Transporting of Expansion Unit with PCI / PCIe cards
Any PCIe cards in **should be removed** (or not to be installed) prior to shipment to avoid or prevent possible damage. Note: Expansion board and PCIe / PCI cards that arrive damaged in shipment will not be covered under warranty.

16.2 Returning Merchandise

If factory service is required, a Service Representative will give you a Return Merchandise Authorization (RMA) number. Put this number and your return address on the shipping label when you return the item(s) for service. Please note that One Stop Systems WILL NOT accept COD packages, so be sure to return the product freight and duties-paid. Ship the well-packaged product to the address below:

Attention:RMA # _____, One Stop Systems
2235 Enterprise Street, #110
Escondido, CA 92029
USA

It is not required, though highly recommended, that you keep the packaging from the original shipment of your product. However, if you return a product for warranty repair/ replacement or take advantage of the 30-day money back guarantee, you will need to package the product in a manner similar to the manner in which it was received from our plant. We cannot be responsible for any physical damage to the product or component pieces of the product (such as the host or expansion interfaces for the expansion chassis) that are damaged due to inadequate packing. Physical damage sustained in such a situation will be repaired at the owner's expense in accordance with Out of Warranty Procedures. Please, protect your investment, a bit more padding in a good box will go a long way to insuring the device is returned to use in the same condition you shipped it in. Please call for an RMA number first.

16.3 Third Party Hardware & Software Support Policy

OSS tests, certifies and bundles many popular third party hardware and software products with OSS hardware for ease of use and guaranteed operation. OSS encourages customer innovation by combining OSS products in new and interesting ways with third party and customer developed hardware and software. Unfortunately, with virtually infinite combinations of hardware and software, OSS cannot test and validate every possible configuration. OSS is committed to supporting its products and identifying if any technical issue may be related to third-party hardware or software. In order to isolate technical issues, OSS may request that the system be returned to the same configuration that shipped from the OSS factory and any non-OSS supplied third-party hardware or software be removed from the system during troubleshooting.

We test, certify and support many third party hardware and software products along with OSS hardware and are happy to integrate a fully supported system. Ask us about that service and we would be happy to help. If an OSS product is fully functional and a support issue is related to third-party hardware or software that did not ship from the OSS factory, the customer requesting support should reach out to the third-party vendor for assistance to fully troubleshoot the issue.

16.4 Online Support Resources

As a product user and customer, listed below are our Online Support Resources
https://www.onestopsystems.com/support provides Knowledgebase Articles such as troubleshooting methods, compatibility, FAQ, documentation, and product technical information.

2235 Enterprise Street, Suite#110, Escondido CA 92029

Toll-Free : +1(800)285-8900 US • Main: +1 (760) 745-9883 • Fax: +1 (760) 745-9824

www.onestopsystems.com