EB3600-P

User Manual

PCIe to PCIe Expansion

MODEL

EB3600-P

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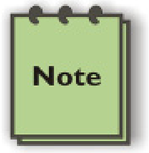
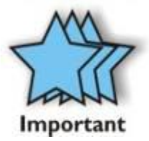
Preface

Advisories

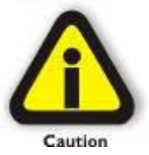
Five types of advisories are used throughout this manual to provide helpful information, or to alert you to the potential for hardware damage or personal injury.



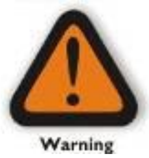
NOTE
Used to amplify or explain a comment related to procedural steps or text.



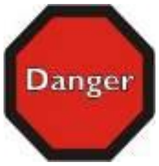
IMPORTANT
Used to indicate an important piece of information or special “tip” to help you



CAUTION
Used to indicate and prevent the following procedure or step from causing damage to the equipment.



WARNING
Used to indicate and prevent the following step from causing injury.



DANGER or STOP
Used to indicate and prevent the following step from causing serious injury or significant data loss

Disclaimer: We have attempted to identify most situations that may pose a danger, warning, or caution condition in this manual. However, Magma does not claim to have covered all situations that might require the use of a Caution, Warning, or Danger indicator.

Safety Instructions

Always use caution when servicing any electrical component. Before handling the Magma Expansion chassis, read the following instructions and safety guidelines to prevent damage to the product and to ensure your own personal safety. Refer to the "Advisories" section for advisory conventions used in this manual, including the distinction between Danger, Warning, Caution, Important, and Note.

Always use caution when handling/operating the computer. Only qualified, experienced, authorized electronics personnel should access the interior of the computer and expansion chassis.

WARNING
Never modify or remove the radio frequency interference shielding from your workstation or expansion unit. To do so may cause your installation to produce emissions that could interfere with other electronic equipment in the area of your system.

When Working Inside a Computer

1. Before taking covers off a computer, perform the following steps:
2. Turn off the computer and any peripheral devices.
3. Disconnect the computer and peripheral power cords from their AC outlets or inlets in order to prevent electric shock or system board damage.

In addition, take note of these safety guidelines when appropriate:

To help avoid possible damage to systems boards, wait five seconds after turning off the computer before removing a component, removing a system board, or disconnecting a peripheral device from the computer.

When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs. If you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before connecting a cable, make sure both connectors are correctly oriented and aligned.

CAUTION
Do not attempt to service the system yourself except as explained in this manual. Follow installation instructions closely.

Protecting Against Electrostatic Discharge

Warning

Electrostatic Discharge (ESD) Warning
Electrostatic Discharge (ESD) is the enemy of semiconductor devices. You should always take precautions to eliminate any electrostatic charge from your body and clothing before touching any semiconductor device or card by using an electrostatic wrist strap and/or rubber mat.

Static electricity can harm system boards. Perform service at an ESD workstation and follow proper ESD procedures to reduce the risk of damage to components. Magma strongly encourages you to follow proper ESD procedures, which can include wrist straps and smocks, when servicing equipment.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

When unpacking a static-sensitive component from its shipping carton, do not remove the component's anti-static packaging material until you are ready to install the component in a computer. Just before unwrapping the anti-static packaging, be sure you are at an ESD workstation or are grounded.

When transporting a sensitive component, first place it in an anti-static container or packaging.

Handle all sensitive components at an ESD workstation. If possible, use anti-static floor pads and workbench pads.

Handle components and boards with care. Do not touch the components or contacts on a board. Hold a board by its edges or by its metal mounting bracket.

Chapter 1 Introduction

EB3600-P

Magma's ExpressBox 3600-P provides partitioned support for server grade GPUs and other HPC peripherals to existing host computer systems. Designed to support full Gen 3 x16 PCIe connectivity to all devices, the EB3600-P supports 128 Gbps communication between the host and all peripherals. The EB3600-Psupports eight total peripherals with four host links for support of one to four independent hosts.

OVERVIEW

- EB3600-P-P: Eight total peripherals; one to four hosts
- PCIe Gen 3 x16 (128Gbps) for all connections
- Optimized for server class (passively coded) GPUs
- Magma Express I/O System Management is included in all configurations

FEATURES

- Dedicated connectivity for up to four independent hosts
- Passive host interface; no PCIe switch on host link cards provides lowest latency possible.
- Two 1200W/1500W hot swappable power supplies provided standard. Up to two, more can be configured, for support of up to 4800W/6000W.
- Direct flow through air-cooling is provided for passively cooled server class GPUs.

BENEFITS

- Design optimized for GPU applications - concentrate your HPC investment in a chassis that will support full GPU performance utilization.
- Each partition supports better ratio of Peripheral: Host connection of 2:1.
- Low-profile host card allows for easy installation into low-profile computers.
- Supports peer-to-peer transfers between cards in the expansion chassis to provide full bandwidth potential among I/O cards.
- Supports daisy-chaining of fan-out configuration of multiple expansion chassis.

EB3600-P Technical Specification

BASE MODEL	
EB3600-P	-Two partitioned backplanes composed of two segments per backplane with two peripheral slots per segment. Four total segments, eight total peripherals; Supports up to 8 GPUs. - Two 1200W (2400W total) PSUs
TECHNOLOGY	
PCI Express Bus Specification	PCI Express Bus Specification 3.0, 2.3; | PCI Bridge Architecture Revision 1.2
HARDWARE	
Backplane	Partitioned backplane: Four segments with two peripheral slots (GPUs) per segment; Four host links (1 per segment) (All Gen 3 x16).
Interconnect Bandwidth	PCIe Gen 3 x16: 128 Gbits/sec to all peripherals and host link
ENCLOSURE	
Material	Steel Chassis
Dimension	16.8" Wide by 7" High (4U) by 22.125" Deep | 50lbs/2.7kg
HOST CONNECTION	
Host side: Any PCIe based host-equipped computer (preferably Gen 3 x16)	Expansion side: All host links are Gen 3 x16 capable and will train down to Gen 2 or 1 as needed.
Switchless host link adapter is designed for minimal host/expansion latency 1m or 2m cable lengths are supported for host interface.	
POWER SUPPLY	
1200W PSU	1200W@120V/ 1500W@240V AC power PSU. Can be added to base models above. Up to four total (4800W@120V/ 6000W@240V)
ENVIRONMENT	
Ambient Temperature	0° to 50° C
Storage Temperature	-55° to 125° C
Relative Humidity	0% to 90% non-condensing
REGULATORY COMPLIANCE	
FCC Class A Verified	RoHS Compliant
CE Certified	
SUPPORTED OPERATING SYSTEMS	
Windows	Mac OS
Linux	

Pre-Installation Information

Before using the Magma Expansion chassis, you should perform the following steps:

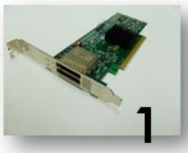
- Inventory the shipping carton contents for all of the required parts
- Gather all of the necessary tools required for installation
- Read this manual

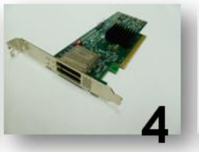
Parts List

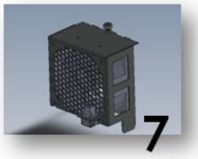
#	Item Description	EB3600-P-P Quantity
1	Host Interface card	4
2	1-meter High Speed / HD IO cable	16
3	U.S. Standard 115V Power Cord	2
4	Expansion Interface card	4
5	Quick Start Guide	1
6	1200W Power Supply Modules (installed)	Requires 2
7	Replaceable Fan (installed)	4

Important

For EB3600-P-P, it ships with 2 power supply bricks / modules. To support 4 GPUs it requires 2 power supply bricks.







Components of EB3600-P unit

Once you have completed your inventory, your next step is to be familiarized with components of the Magma EB3600-P expansion unit.

The expansion unit is composed of the following integral components

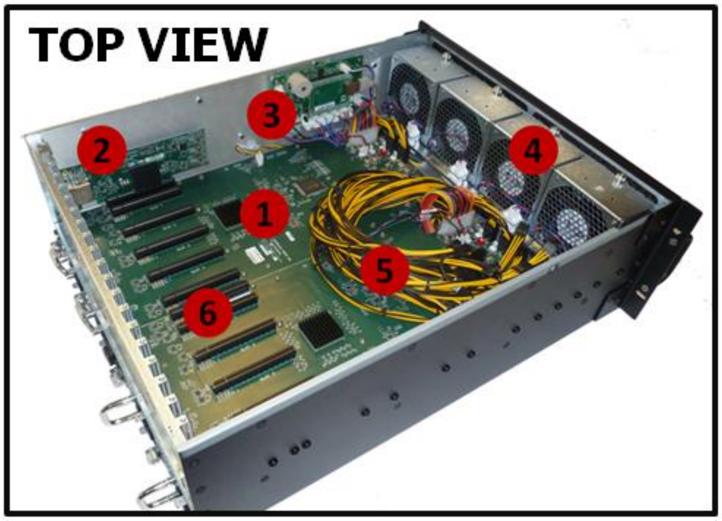
1. **Expansion Backplane**
    a. 10 PCIe x16 slot (electronic and mechanical)
    b. Two designated Link-Up SLOTs for Interface card
    c. Slot LEDs, Link and Activity LEDs (30 LEDs)
    d. Thermistor control switch
2. **Interface card**
    a. Expansion and Host mode DIP switch
    b. Speed Toggle switches
    c. Two Cable ports: one for x8 and the other is x16
3. **Power Supply, redundant and replaceable**
    a. Power cord socket
    b. LED status indicator
    c. Locking Thumb screw
    d. 18 (6+2 pin) PCIe connectors
    e. Replaceable
4. **Replaceable Fans**
    a. 175 CFM
    b. Locking Thumb screw
    c. Air Flow: from outside going inside
5. **SNMP Interface module**
    a. Netburner
    b. RJ45 port

Front panel: you will find the following

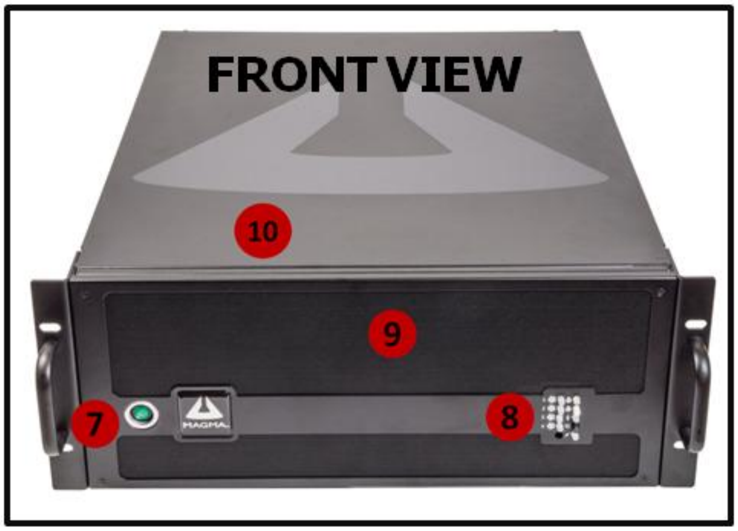
1. Push button On/Off switch
2. Front Panel Status LED
3. Front Grill cover (Dust-Foam filter behind the cover)

Rear Panel, you will see the following

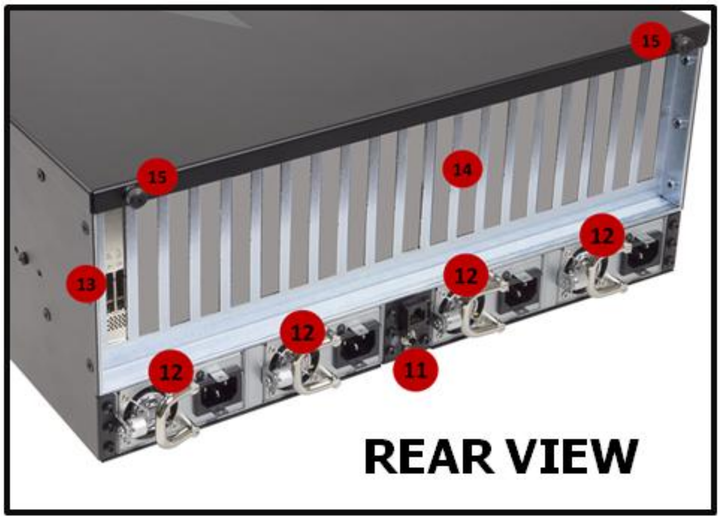
1. PCI Express card slot opening
2. Interface card cable ports (x8 and x16)
3. Power Supply
4. RJ-45 Ethernet port
5. Top cover Thumb Screws
6. Power Rating
7. Serial number


TOP VIEW
1
2
3
4
5
6

1. Backplane
2. Expansion Interface Card
3. SNMP module
4. Hot-Swappable Fans (4)
5. PCI-e power Connectors
6. PCI-e Slots (x16)


FRONT VIEW
7
8
9
10
MAGMA

7. Push Button ON/OFF
8. LED Status Indicator
9. Front Grill Cover
10. Top Cover


REAR VIEW
11
12
12
12
12
13
14
15
15

11. RJ-45
12. Power Supply (4)
13. Interface Cable Port
14. Slot Opening / Cover
15. Thumb Screw

Pre-Installation Information

Before using the Magma Expansion chassis, you should perform the following steps:

a. Inventory the shipping carton contents for all of the required parts
b. Gather all of the necessary tools required for installation
c. Read this manual

Tools Required for Installation

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

Chapter 2 Hardware Installation

The following steps will guide you through the installation of your Magma Expansion System.

CAUTION
Hardware installation shall be performed only by qualified service personnel.

Electrostatic Discharge (ESD) Warning
All add-in cards are susceptible to electrostatic discharge. When moving cards, it is best to carry the cards in anti-static packaging. If you need to set a circuit card down, be sure to place it inside or on top of an anti-static surface. For more information, see "Protecting Against Electrostatic Discharge" in the Preface.

WARNING
High voltages are present inside the expansion chassis when the unit's power cord is plugged into an electrical outlet. Disconnect the power cord from the AC outlet before removing the enclosure cover. Turning the system power off at the power on/off switch does not remove power to components. High voltage is still present.

CAUTION
Before touching anything inside the enclosure, move to an ESD station and follow proper ESD procedures. Failure to do so may result in electrostatic discharge, damaging the computer or its components. For more information, see "Protecting Against Electrostatic Discharge" in the Preface.

Installation-Procedures Overview

Below is the concise version on how to set up the EB3600-P.

1. Open Enclosure
2. Install Expansion Interface card(s) (If not installed).
3. Install Host Interface card(s) into host computer
4. Install Cable (Connect A to A and B to B on interface cards between the host and expansion chassis)
5. Install PCIe cards (see notes below)
6. Attach Power Cords
7. Connect to Electrical Outlet – verify adequate circuit capacity for wattage needed (this may require multiple circuits)
8. Turn on EB3600-P
9. Power on Computer
10. Hardware Check
11. Verify Installation (via Operating System)

NOTE
It is highly recommended to install any 3rd party PCI-E cards / High Power PCIe cards after you have verified and tested the Magma expansion is functional and no hardware failures.

When installing 3rd Party PCIe card, start with one card first just to see if there are any software and hardware issues or incompatibility problems that may occur. This way you can troubleshoot the problem more easily and efficiently. If everything works well and there are no configuration issues, you can proceed with the installation of the remaining 3rd party PCIe cards.

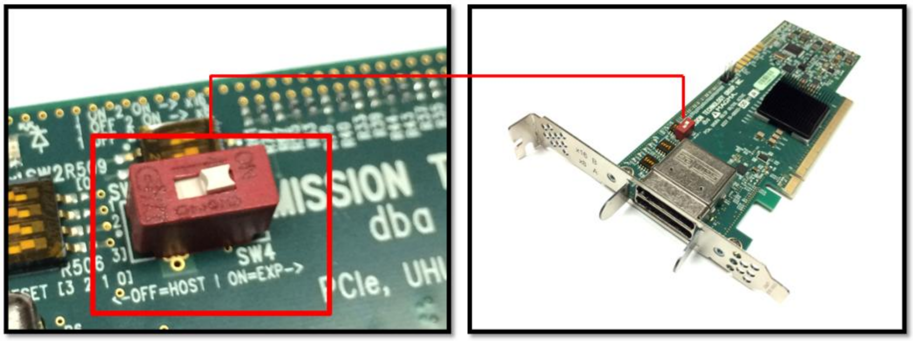
Always refer to or read "3rd party manufacturer installation guide" for further instructions.

Open Enclosure

Loosen the thumbscrews that retain the top cover of the chassis and slide the lid towards you as shown below:

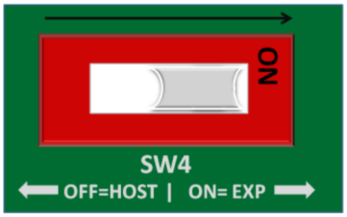
Expansion Interface card Installation

The Magma "Expansion" interface is the same card as the "Host" interface card only that its SW4 switch is set to "ON=EXP." By default, the expansion interface card should already be installed in the Magma Expansion chassis.



EB3600-Pcomes with 2 Expansion Interface cards. There are two separate PCB backplanes side-by-side in the chassis. Each PCB backplane requires one Expansion Interface card linked to the host computer / server. It is Gen3 x16; it has two available cable ports for linking either by x8 or x16 connection.

Should you need to install the expansion interface card, make sure to check the dip switch (SW4) is set to proper configuration. The toggle switch should be "ON=EXP" position as shown from the picture below. Apply the same configuration with the second Expansion Interface card (for EB3600-Pmodel).



By default the Expansion Interface card is set to "ON=EXP" and configured as x16. User should not alter or change the settings of SW3. If you encounter problems, for troubleshooting purposes only check SW3; verify the dip switches are set to x16.

Note

NOTE

The following settings on SW3 are not supported by the first edition of Interface card. Link width will not change regardless of the setting you select.
Second edition of Interface card will support the below settings.

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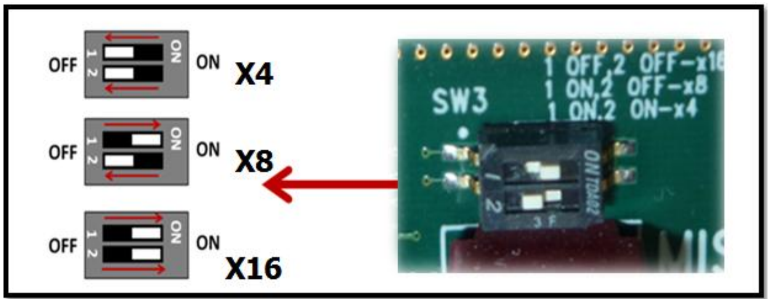
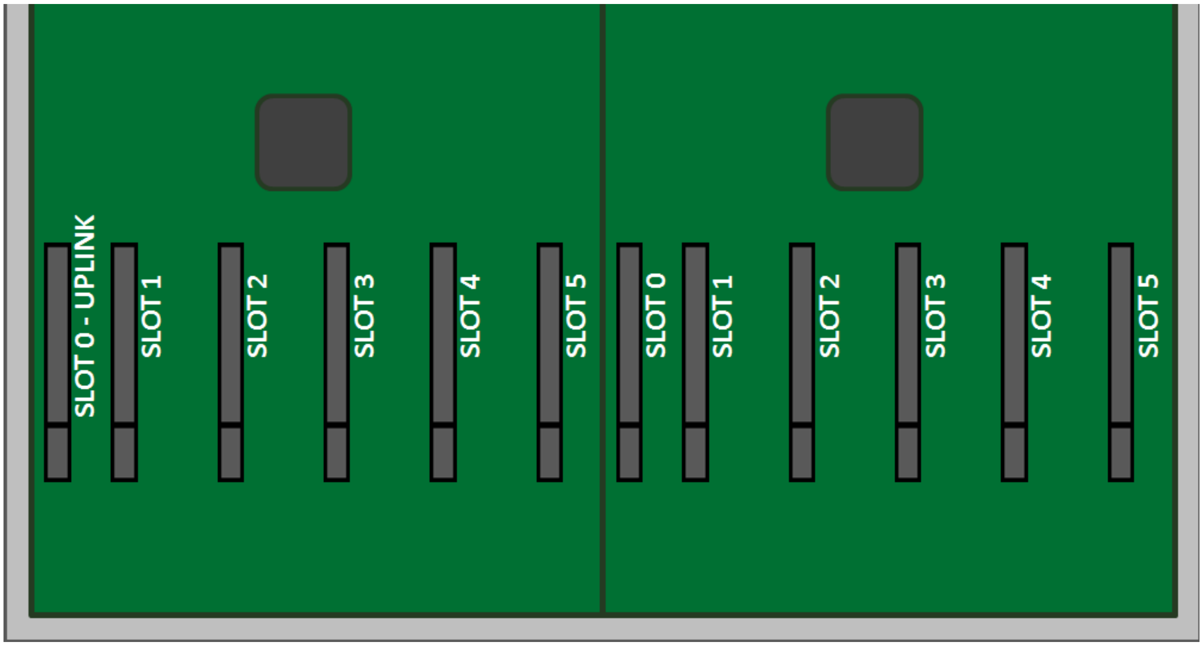


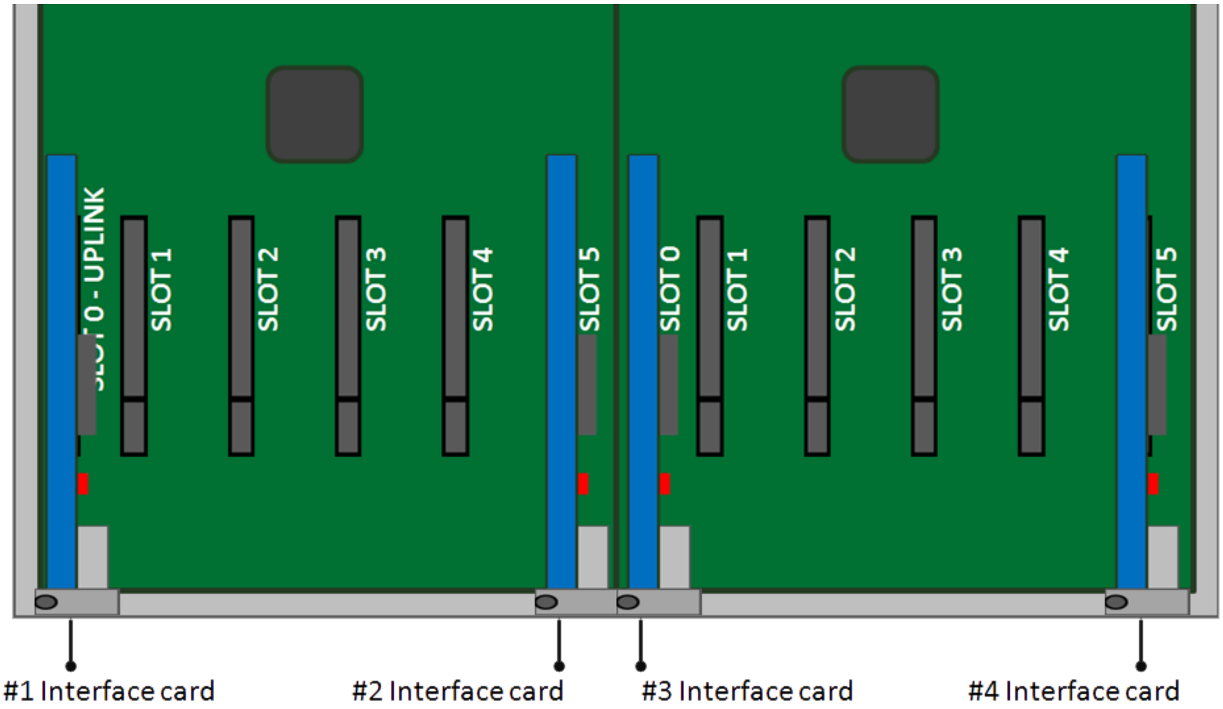
The expansion interface cards are already installed. The EB3600-P requires 4 Expansion Interface cards. Should you need to install, make sure to plug them in to their assigned slots on the backplane. For stability, make sure to secure the cards with a retaining screw.

#1 Interface card - SLOT 0-Uplink
#2 Interface card - SLOT 5
#3 Interface card - SLOT 0
#4 Interface card - SLOT 5

See pictures below.


SLOT 0 - UPLINK
SLOT 1
SLOT 2
SLOT 3
SLOT 4
SLOT 5
SLOT 0
SLOT 1
SLOT 2
SLOT 3
SLOT 4
SLOT 5

Backplane with Expansion Interface cards installed, see picture below


SLOT 0 - UPLINK
SLOT 1
SLOT 2
SLOT 3
SLOT 4
SLOT 5
SLOT 0
SLOT 1
SLOT 2
SLOT 3
SLOT 4
SLOT 5
#1 Interface card
#2 Interface card
#3 Interface card
#4 Interface card

Host Interface Card Installation

You need 4 Host interface cards. Begin installation by powering down your host computer. Use the procedures for shutting down your operating system and shutting off power to your system provided in your owner's manual or system documentation.
The host interface card is mounted to a "full-height" bracket as shown below. For low profile case applications, you may need to change the mounting bracket to the low profile bracket that shipped with your system. Remove the screws that hold the card to the bracket. Be sure you are using proper ESD procedures when completing this action.

Low Profile Bracket

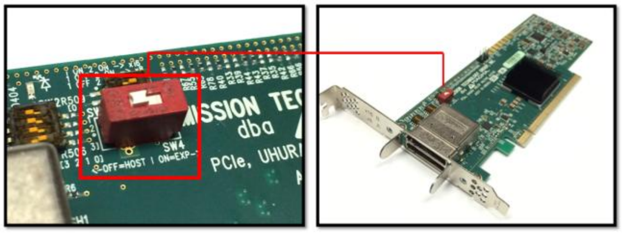
When the host computer is off and all power cords are disconnected from the AC outlet, remove the cover and prepare your host card for insertion into a PCIe slot.

When the Magma interface card is used as "Host" interface i.e. installed in the host computer, the RED switch should remain OFF. Check the DIP switch and make sure it is set to OFF=HOST.

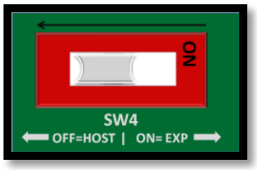
This version of Host Interface card has a mini built-in configurable toggle switch that can be set to x4, x8 and x16.

NOTE
There is no need to make changes to the link width, the card will automatically negotiate the link width if different than x16.

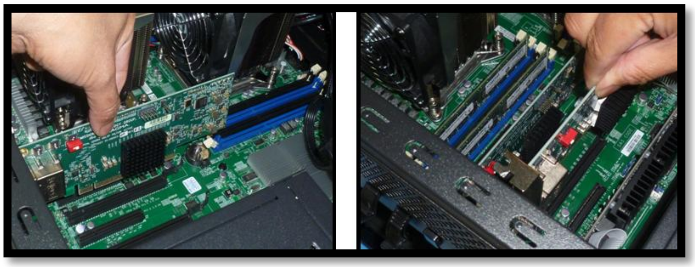
The Default setting for the host card is x16 and OFF=HOST. This setting should be left alone and not to be changed. Verify the interface card is set correctly for normal operation.



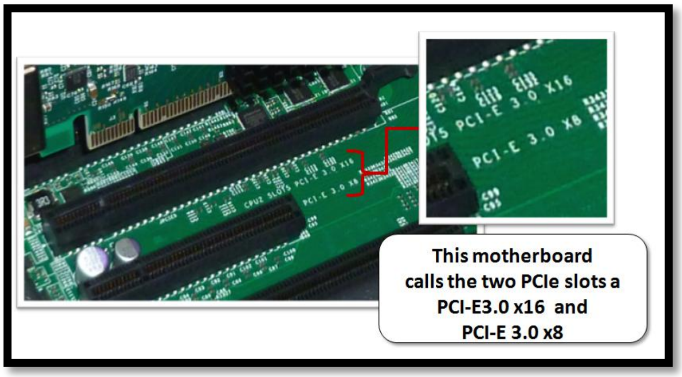
Note: The expansion chassis will NOT function if the red dip switch on the Interface card is set to ON and the card is inserted into the host computer. As shown from the picture below, the Host Interface card is set to OFF=HOST.



Install the two Magma PCIe host interface cards into the host computer. Use available x16 PCIe slot for both Host Interface cards. Plug in the host card to the PCIe slot closest to the PCIe CPU, this allows the BIOS to enumerate the host card first. Secure it with a retaining screw.



It is important to know how many lanes the host computer slot can support. The host card does not need to be configured for the same number of lanes as the host computer slot. The host card will train down to whatever the PCIe slot speed is that it recognizes. For example, if the host interface card is installed in a x8 lane card slot; leave the host card setting as is. The host computer dictates what link width and speed the expansion system will operate in.



This motherboard calls the two PCIe slots a PCI-E3.0 x16 and PCI-E 3.0 x8

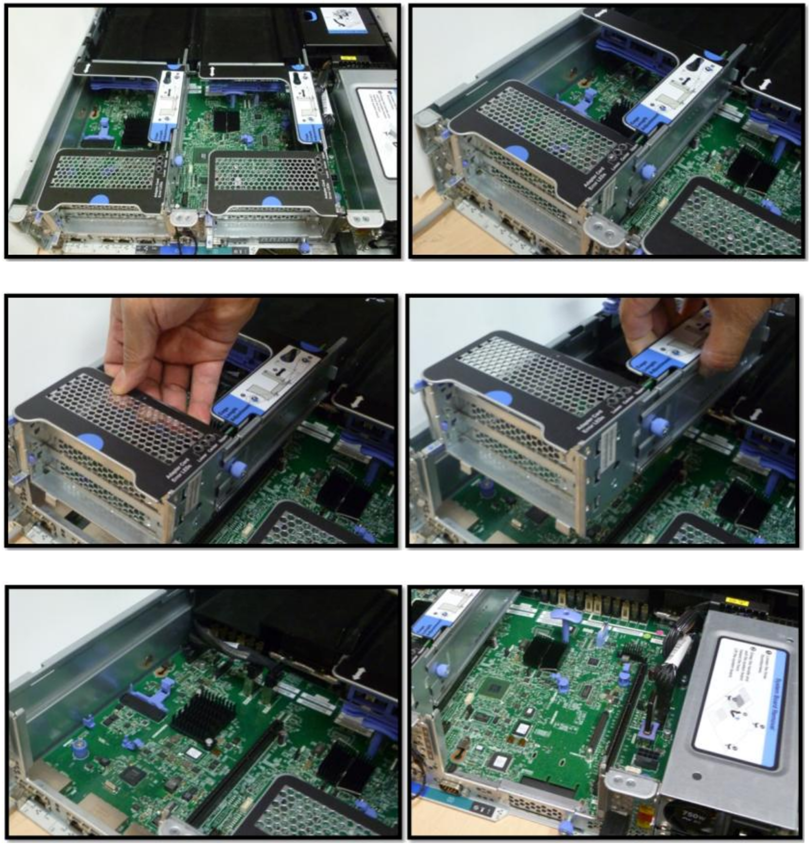
IMPORTANT
There is no need to change the dip switch setting when plugging in the Host Interface card into x4 or x8 PCIe slots. It is ok to plug in the Host card into a PCIe slot with no identification whether it is GEN1, GEN2, x4 or x8. The host card will instantly and automatically train down to whatever the speed is of the PCIe slot it recognizes.

DANGER or STOP
YOU MUST ONLY INSTALL THE PCIe HOST CARD INTO A PCI EXPRESS SLOT. Only use cards WITH brackets. This will ensure that your PCIe host card can only be inserted into a PCIe slot. Although PCI Express cards without brackets may fit into conventional PCI slots, you run the risk of damaging the PCI Express host card if you insert it into a PCI slot. Please ensure that your host computer has PCI Express slots and install the host card only into a PCI Express slot.

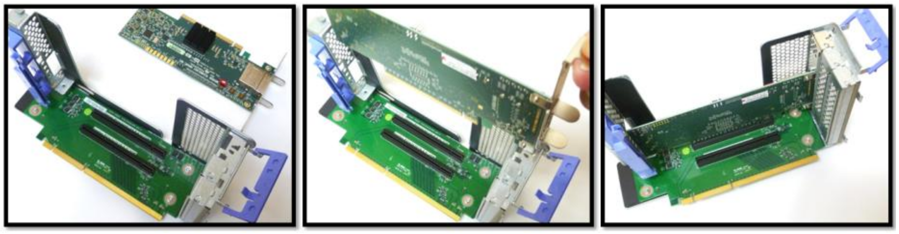
Host Card installation in a Slot-Carrier housing

You have to remove the slot-carrier housing from the host server in order to install the interface card.

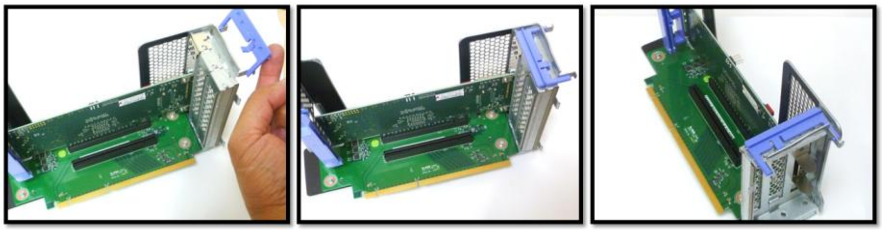
Remove slot-carrier housing



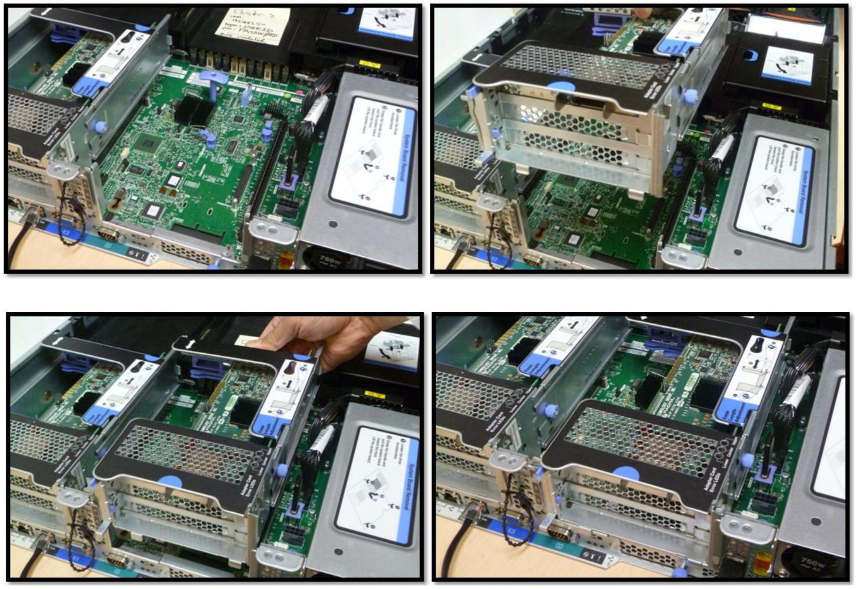
Install Interface card



Secure Interface card



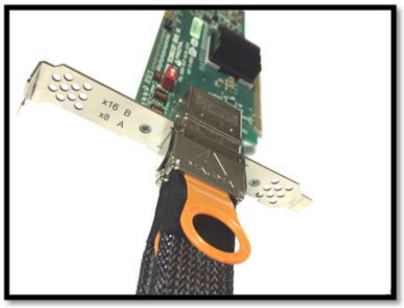
Put the slot-carrier housing back into the host server



Cable Installation

The EB3600-P expansion unit uses High Speed / High Density IO cables (HDLSP- High Density Low Skew Pair cable) that deliver superior performance. It is an ideal solution for super-computing and data storage applications including servers, blade servers, and server clusters, providing vast modularity between systems and subsystem.

The cable is available in 1 meter length.



Connect Cables to Expansion Interface cards and connect the other end to Host Interface cards. Be attentive which port to plug in the cable to. The Interface card has two cable ports labeled with x8 A and x16 B. Connecting the cable to the wrong port can lead the system to not operate properly. One simple method on which Interface port to correctly plug in the cable is by remembering the formula "A to A" and "B to B" ports. Proper way of connecting the High Speed / HD cable to Interface card is shown from the picture below.

Connect cables to expansion unit

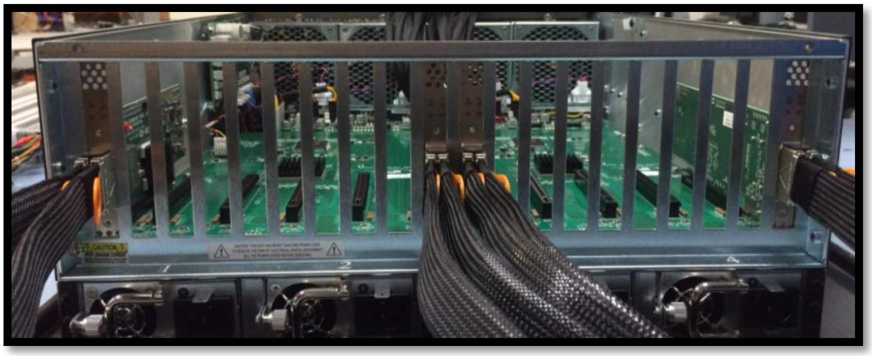
FOR EB3600-P, you need four cables. Plug in cables to Magma EB3600-P unit

Connect the first set of cable to the expansion interface card installed in SLOT 0-UPLINK of the expansion unit.
- Connect the 1st cable to port X8 A
- Connect the 2nd cable to port X6 B

Connect the second set of cable to the expansion card installed in SLOT 5 of the expansion unit.
- Connect the 1st cable to port X8 A
- Connect the 2nd cable to port X16 B

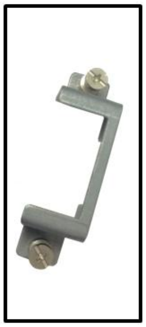
Connect the third set of cable to expansion card installed in SLOT 0 of the expansion unit.
- Connect the 1st cable to port X8 A
- Connect the 2nd cable to port X16 B

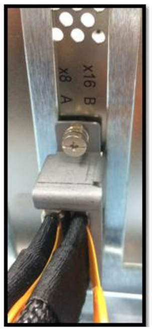
Connect the 4th set of cable to expansion card installed in SLOT 5 of the expansion unit.
- Connect the 1st cable to port X8 A
- Connect the 2nd cable to port X16 B

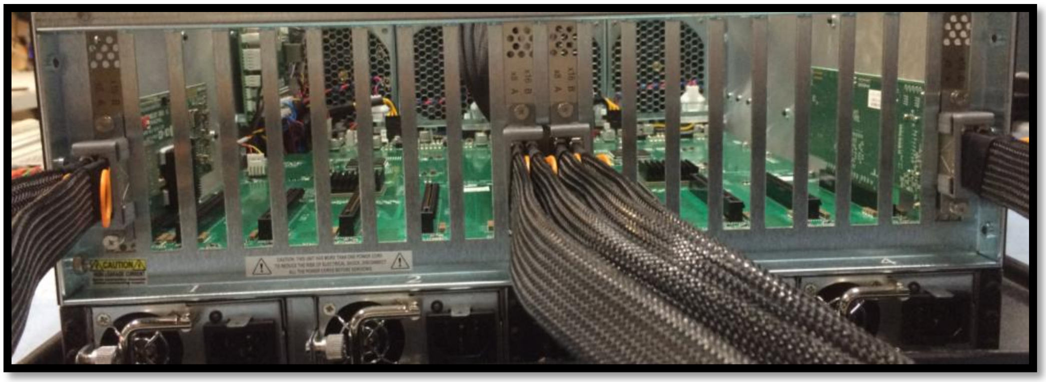


Install Clamp

Secure all the cables with a retainer clamp.







Connect cables to computer / server

For the 1st set of cable

1. Take one end of the 1st cable and connect that to port X8 A of the host interface card.
2. Take the other end of the 2nd cable and connect that to port X16 B of the host interface card.

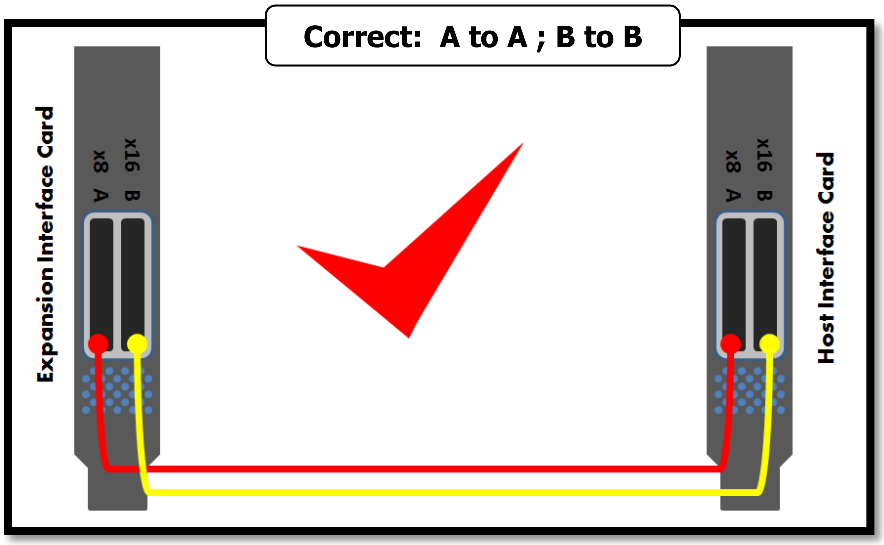
For the 2nd, 3rd and 4th set of cables

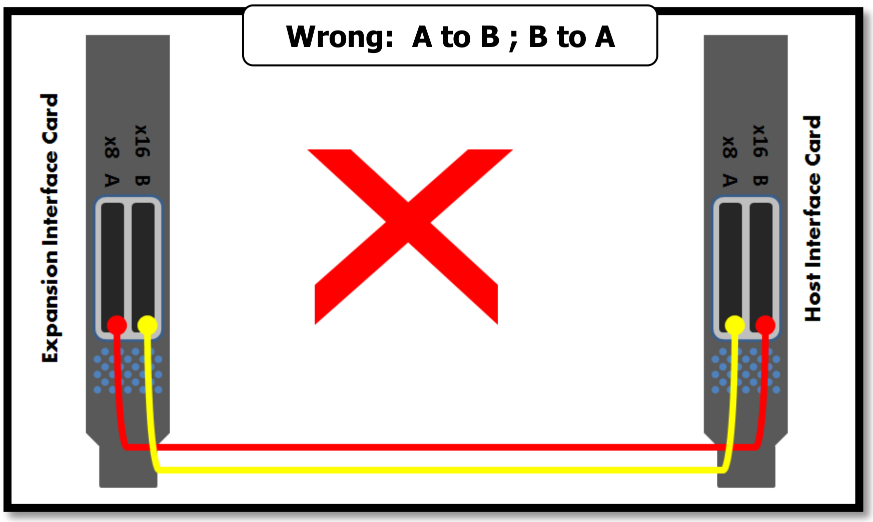
1. Follow the above methods for the remaining 2nd, 3rd and 4th set of cables. Make sure to connect the end of the cables to the appropriate ports.

Secure all the cables with a retainer clamp.

Cable Configurations

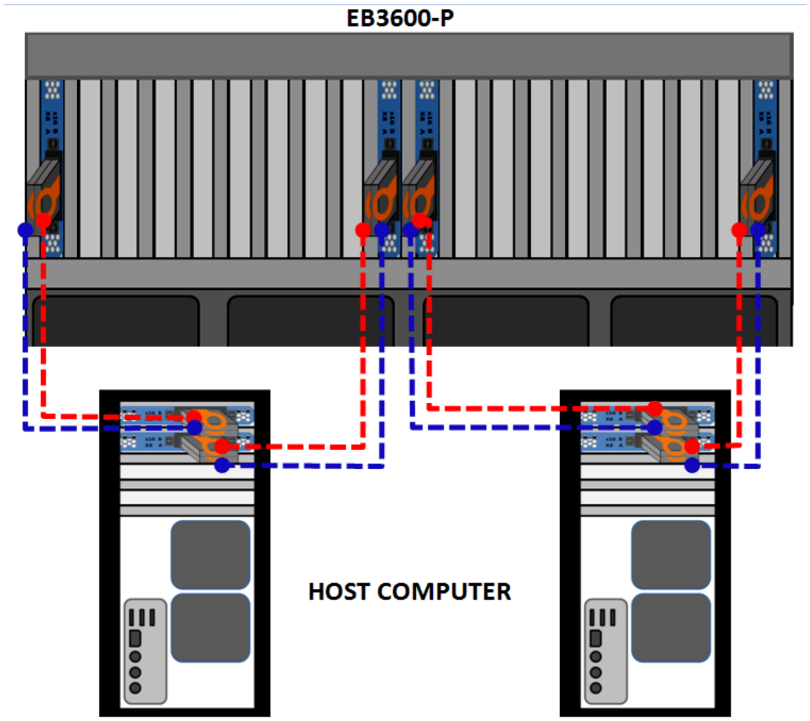
The picture below shows the correct & wrong ways to connect the cables to interface cards (host and expansion).


Correct: A to A ; B to B
Expansion Interface Card
x8 A
x16 B
Host Interface Card
x8 A
x16 B

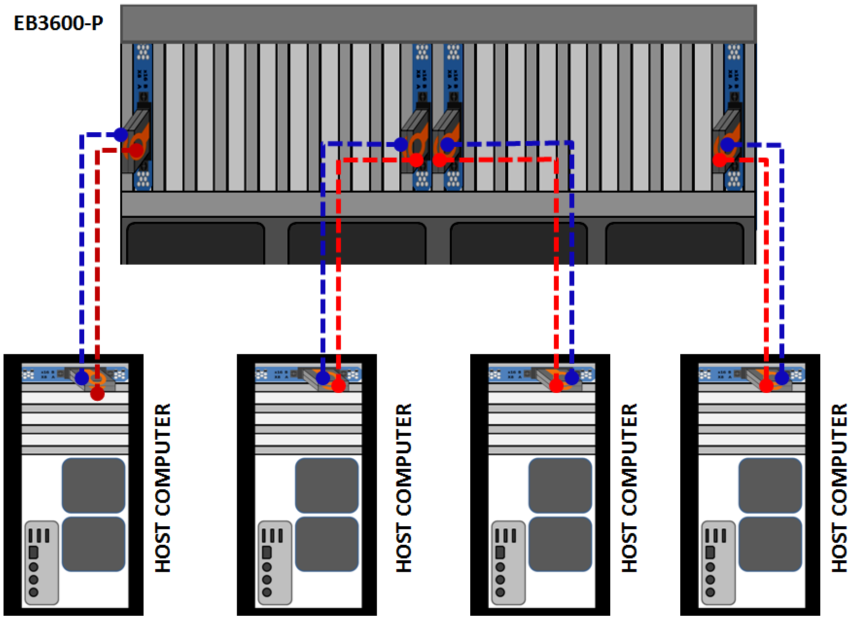

Wrong: A to B ; B to A
Expansion Interface Card
x8 A
x16 B
Host Interface Card
x8 A
x16 B

Configuration for EB3600-P

Two Host computers attached


EB3600-P
HOST COMPUTER

Four Host computers attached

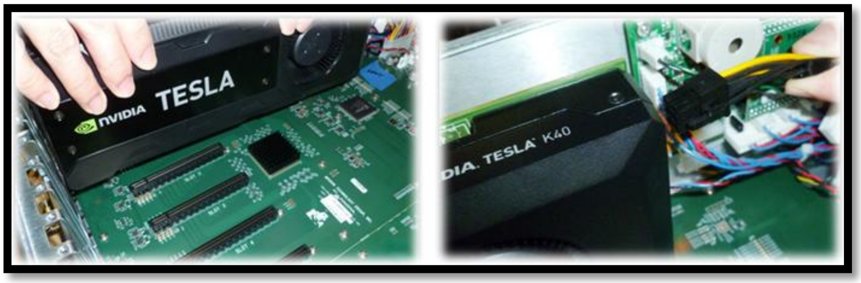

EB3600-P
HOST COMPUTER
HOST COMPUTER
HOST COMPUTER
HOST COMPUTER

PCIe Card Installation

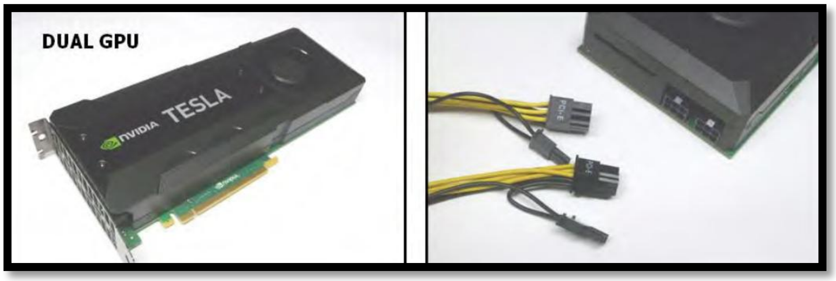
Remove filler bracket for the expansion slot you wish to use in the chassis. Install PCI Express card into the slot connector. All slots support any combination of x1, x4, x8 and x16 PCIe cards. All slots are physically x16, but any add-in card is supported.

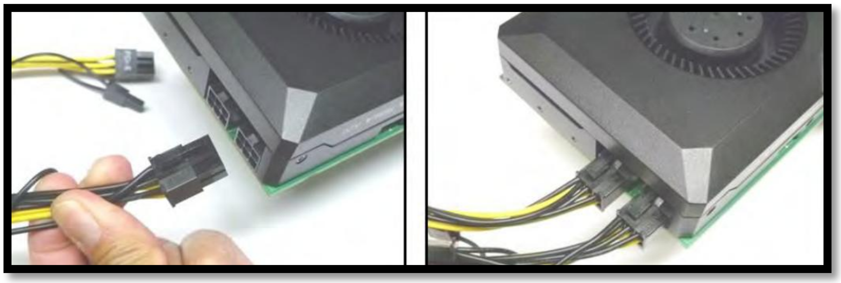
Make sure that all cards are fully seated in their connectors. When correctly seated, there will be a firm resistance when you pull up gently on the card. To keep the cards in place, secure them in the enclosure with their retaining screws.

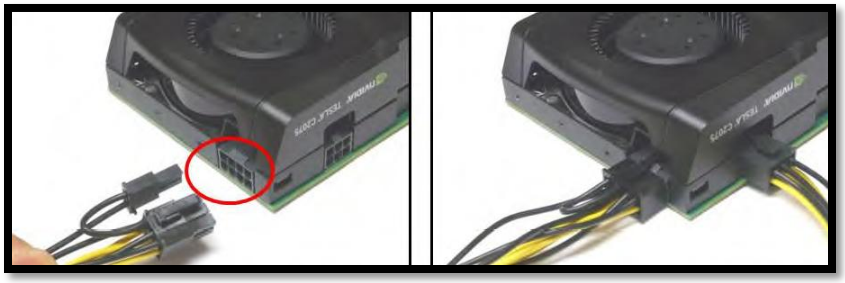
Connect Auxiliary power to PCIe card if required. A high power PCIe card such as a GPU requires additional power.



Aside from the power being supplied by the PCI-Express slot, which is 75 watts, there is not enough to meet the power requirement for a high-end GPU with power consumption of over 125 Watts. A direct connection to the power supply is needed to obtain additional power. This can be done by using the 6+ 2 pin PCIe cable connector from the expansion unit. Top-of-the-line graphics processing units or GPUs have a built-in AUX power port in which you may attach the PCIe cable connector. The picture below shows how the 6+2 pin connector is attached to the GPU.







PCIe card Memory Requirements

Always check the general system and hardware requirements as well as optimal CPU and GPU settings when using High Power GPUs. For example, you are using five XYZ brand Double wide GPUs and each GPU requires 16GB of PCI Memory Address space. In order for these 5 XYZ GPUs to operate properly, a total of 80G of host system memory is needed during system boot. The system BIOS, during POST, will typically check for equivalent host system memory to be able to support PCI address space. The host computer should match or exceed the memory requirements of the total GPU PCI address space to achieve better performance and avoid problems that may cause the entire system to malfunction. Random crashes and other unexpected errors can occur if GPU memory requirements are not met or the system may not boot at all if the BIOS checks for and sees a mismatch on PCI address space and host system memory capacity. Check with GPU manufacturers for details on memory and systems requirements.

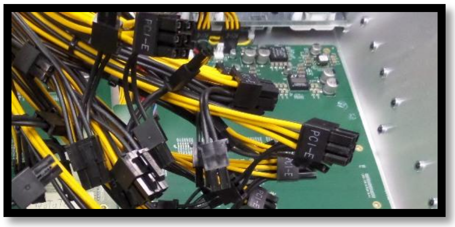
Note

NOTE
Increasing the size of the memory may not be enough for some systems, adjusting the settings in BIOS of the host system accordingly might be required (i.e. enable above 4G memory as well as increase MMIO space accordingly).

PCIe card Power Requirements

Power consumption is crucial for all CPUs and GPUs and other High-End Power Hungry PCIe cards. GPUs consume a great deal of power. As the processing power of graphic cards has increased, so has their demand for electrical power. Due to the limitations of the card slot PCI-Express connector that only supplies 75 Watts of power, present GPU cards with power consumption of over 75 Watts now includes a combination of six-pin (75 W) and or eight-pin (150 W) connectors. If these are not available, you can use the internal AUX power connectors in the expansion unit (see picture below).

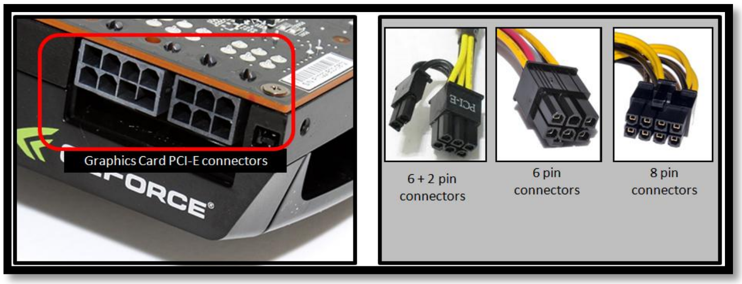
There are **18 (6+2 pin) PCIe AUX** power connectors available in the expansion unit for providing extra power to PCIe cards / GPUs.



For example, when using a GPU card that has a maximum power consumption of 225W you would need to use two six-pin power connectors.

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

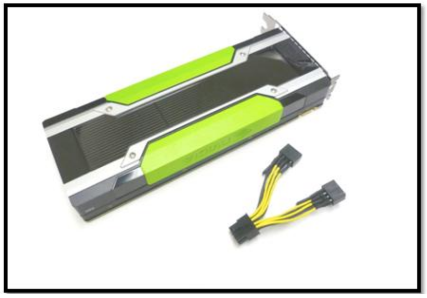
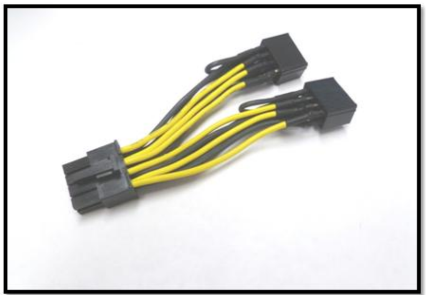
Magma EB3600-P uses a 6+2 pin PCIe power connectors. It can be used as 6-pin or 8-pin connector depending on what the PCI-E card or GPU required.



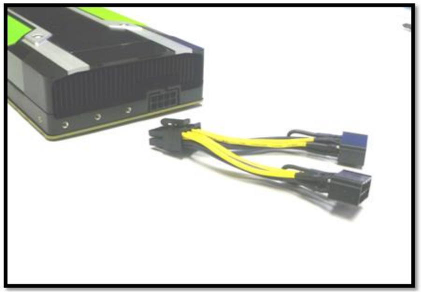
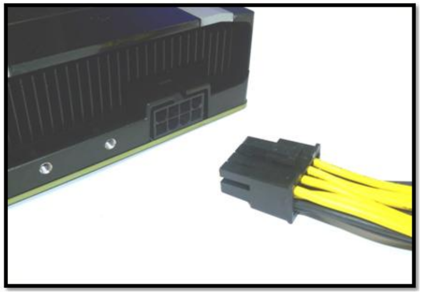
K80 Installation

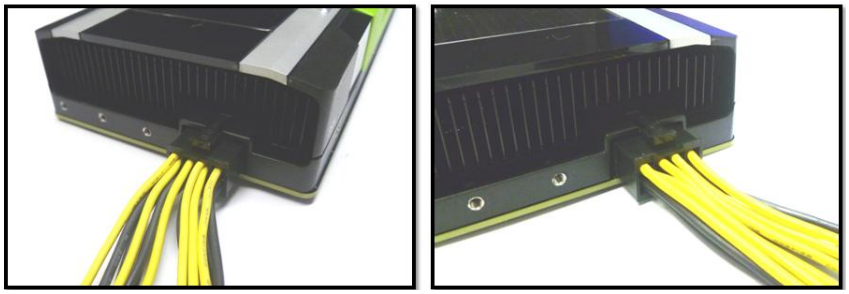
1. Connect breakout auxiliary power adapter to K80 power connector.
2. Remove slot fillers.
3. Align K80 on top of the PCIe slot and slowly push it down until firmly seated.
4. Secure it with the two screws.
5. Connect the EB3600-P-AB auxiliary power connector to the K80 breakout auxiliary power adapter.

The K80 comes with a breakout auxiliary power adapter.

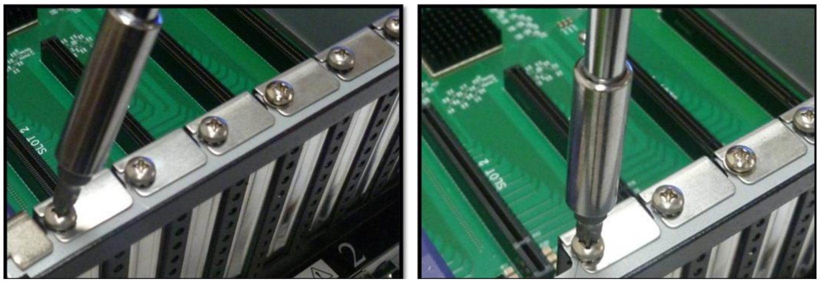



Connect the breakout auxiliary power adapter to K80 power connector.

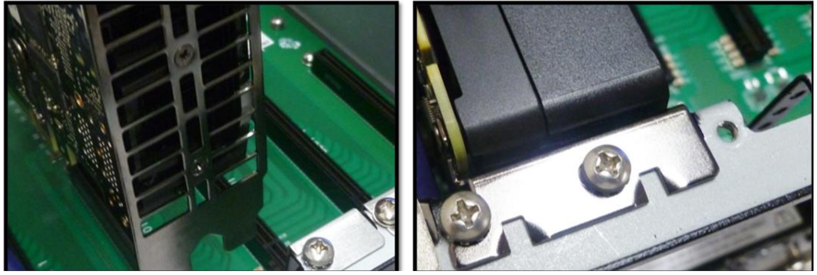





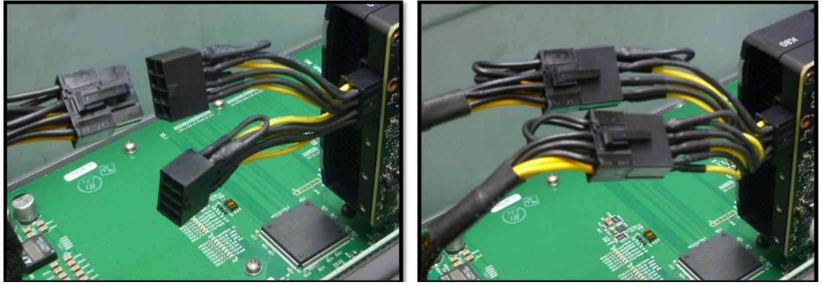
Remove slot fillers



Align K80 on top of the PCIe slot and slowly push it down until firmly seated and secure it.



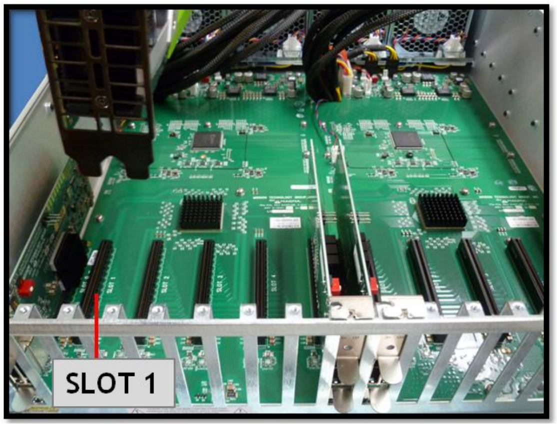
Connect the auxiliary power connector to the K80 breakout auxiliary power adapter.

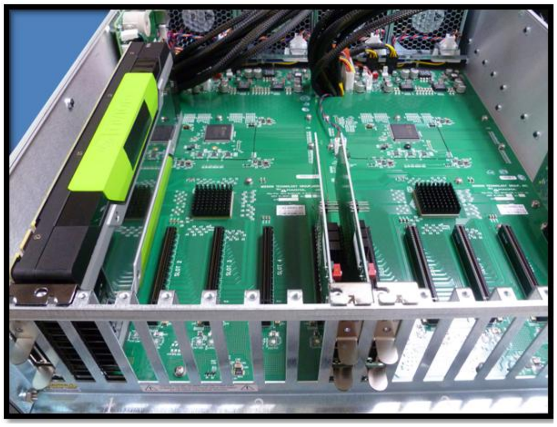


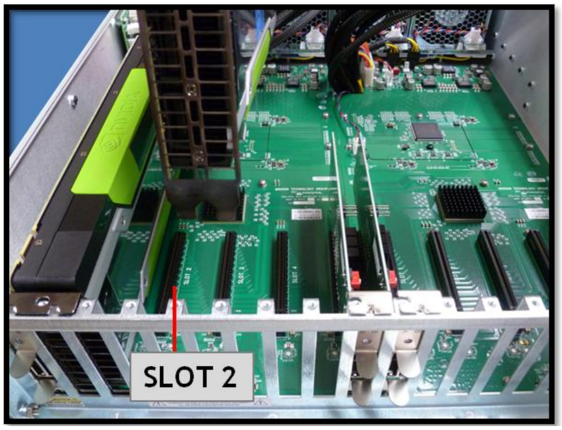
Placement of GPUs on the backplane

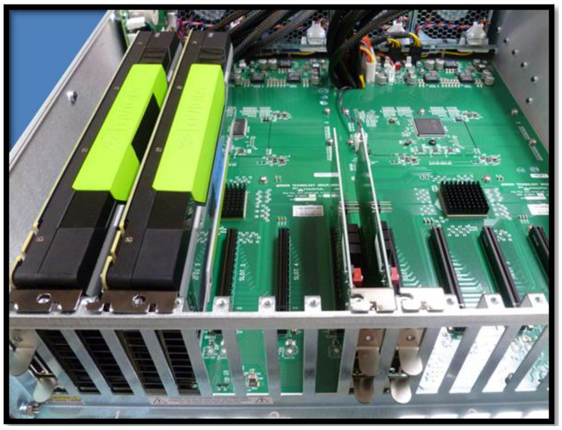
Proper placement of doublewide GPUs across the two backplane or how to populate all PCIE slots with series of doublewide GPUs, see pictures below.

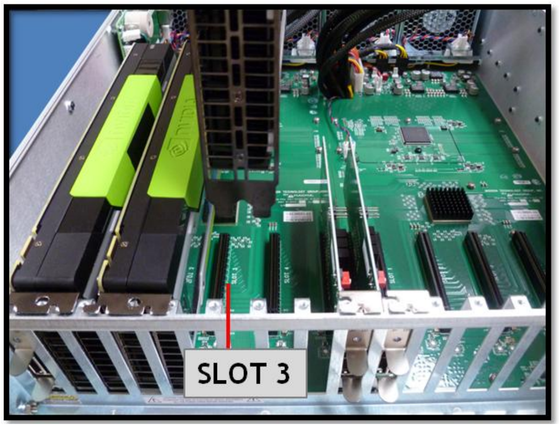
When installing a doublewide GPU, start with the PCIe slot from the far- end left. There are two backplanes in the expansion chassis. Backplane A & B both can accommodate 4 doublewide GPUs.

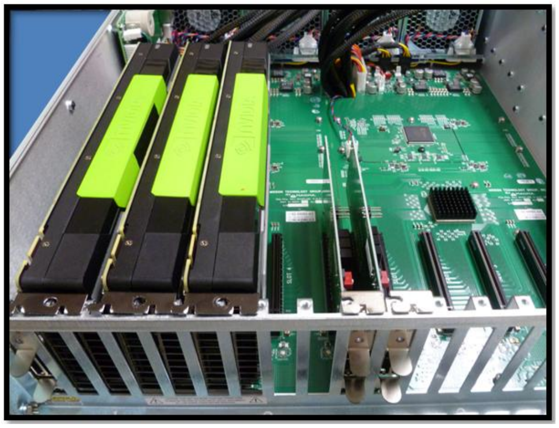


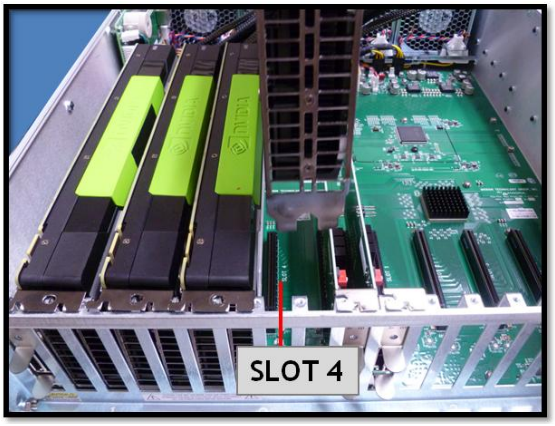


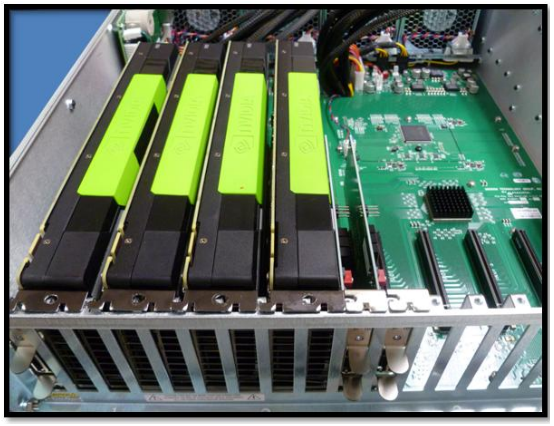


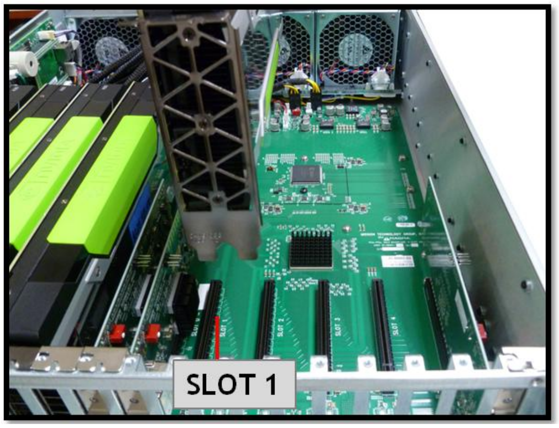


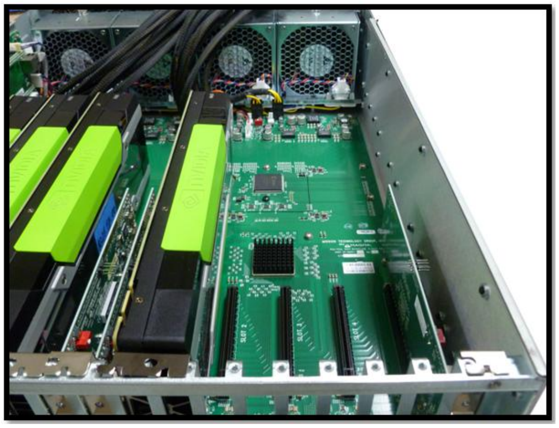


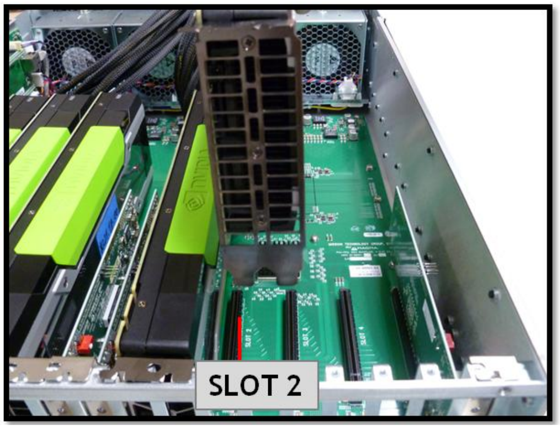


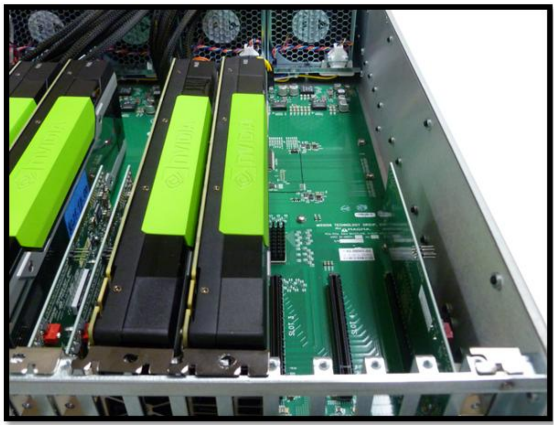

SLOT 4

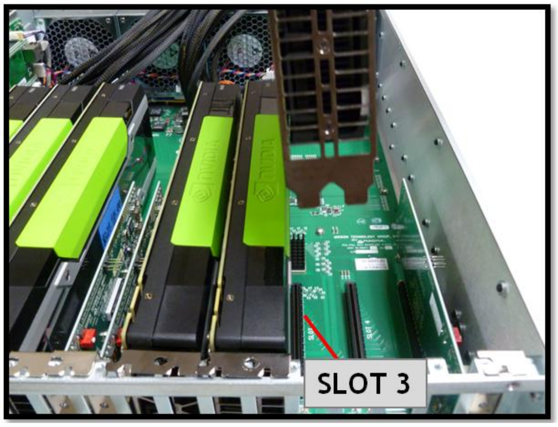


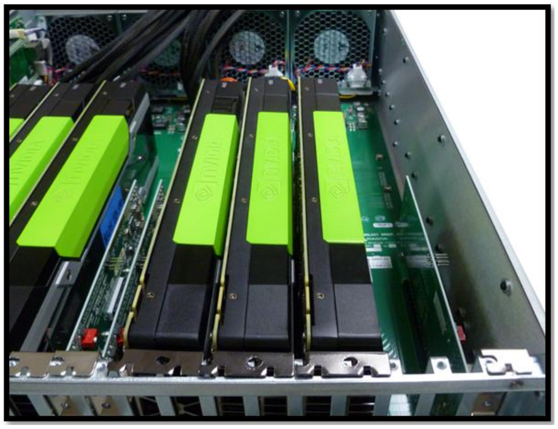

SLOT 1

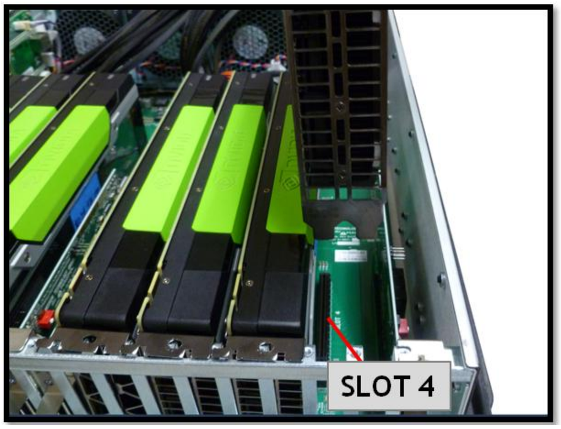


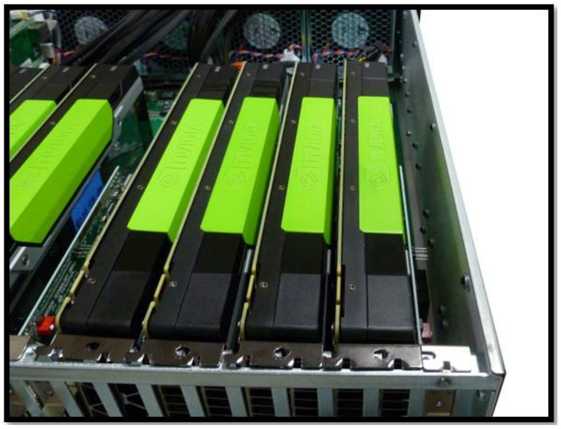

SLOT 2

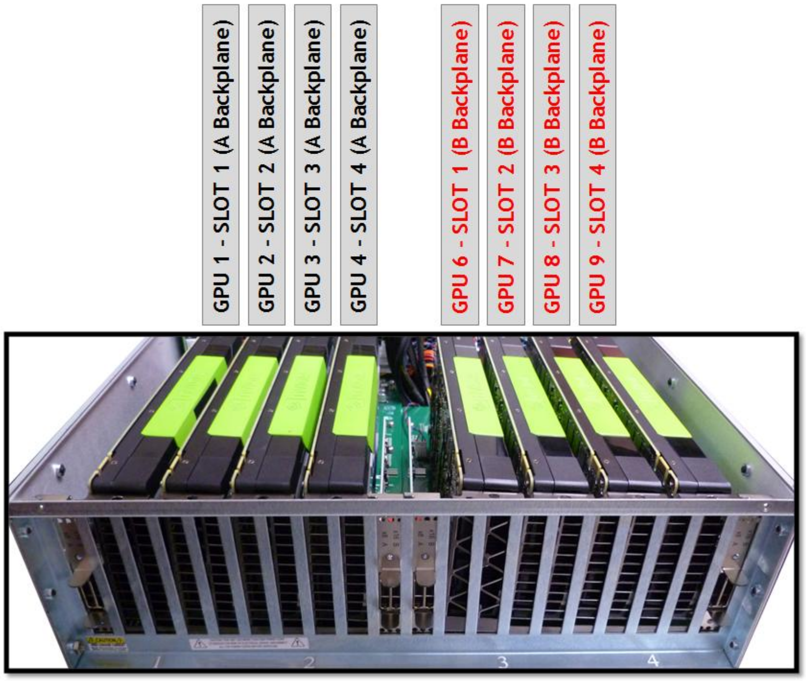



SLOT 3




SLOT 4




GPU 1 - SLOT 1 (A Backplane)
GPU 2 - SLOT 2 (A Backplane)
GPU 3 - SLOT 3 (A Backplane)
GPU 4 - SLOT 4 (A Backplane)
GPU 6 - SLOT 1 (B Backplane)
GPU 7 - SLOT 2 (B Backplane)
GPU 8 - SLOT 3 (B Backplane)
GPU 9 - SLOT 4 (B Backplane)

Connect Power Cord / Cable

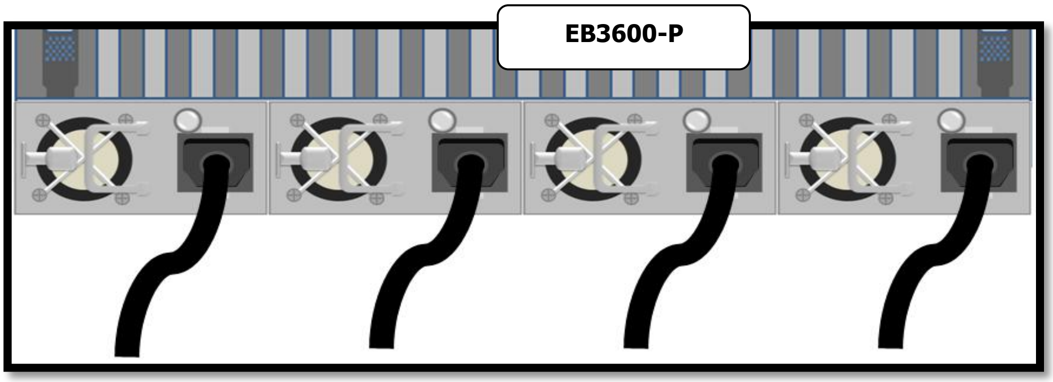
- Plug: 15A 110-120V | Connector: 15A 110-120v. Magma only provides the 110-120v power cord.

NOTE
User can also use 15A 220v-230v power cord / plug. Power Plug and Electrical outlets vary from country to country.

.

110-120 volt power cord

Plug-in all power cords to the expansion chassis. Each supplied power supply will come with a power cord.
Up to four Power Cords for EB3600-P-P.
A single expansion backplane has two power supply modules that require 2 power cords.



Connecting to Electrical Outlets

Connect power cords to electrical outlets. When using four 110v power cords it is highly recommended to connect them into two or more 110v electrical outlets on different circuit lines to prevent electrical overloads. This also applies to 220v power plug. Be cautious, practice safe and correct methods when powering up your EB3600-P expansion unit. Pictures below are different configurations of supplying power to the expansion unit.

Is it ok to connect four 1200W Power Supply modules to 120V?

Answer:

110V	220V
15 amps x 110 volts = 1650 watts	15 amps x 220 volts = 3300
20 amps x 110 volts = 2200 watts	20 amps x 220 volts = 4400
30 amps x 110 volts = 3300 watts	30 amps x 220 volts = 6600
120V	**230V**
15 amps x 120 volts = 1800 watts	15 amps x 230 volts = 3450
20 amps x 120 volts = 2400 watts	20 amps x 230 volts = 4600
30 amps x 120 volts = 3600 watts	30 amps x 230 volts = 6900

Using the above mathematical equations you can only run a single 1200W device on either 15 or 20 amp lines regardless of whether it is 120 or 110 volts. One circuit for each 1200 watt device. The power supplies will support up to 240V operation for other geographies.

If you have 30 amp, 110 or 120 volt lines you can run two 1200 watt devices.

WARNING

DO NOT use anything that uses the same amount of watts that your circuit can handle, for example, if you have a 120 volt outlet on a 15 amp circuit the max for that outlet is 1800, thus you need to stay WELL UNDER that amount. If you use exactly 1800 watts and the breaker does not trip then the resistance of the wires and connections can heat up causing a fire. The further from the breaker box the greater the resistance.

volts times amps = watts
watts divided by volts = amps
watts divided by amps = volts

Prior to powering up the system, we recommend that you check your breaker box for the amps for each circuit, commercial buildings or homes are rated 120 volts (note that double breakers are double the current, if your household voltage is 120 then double breakers are 240 volts)

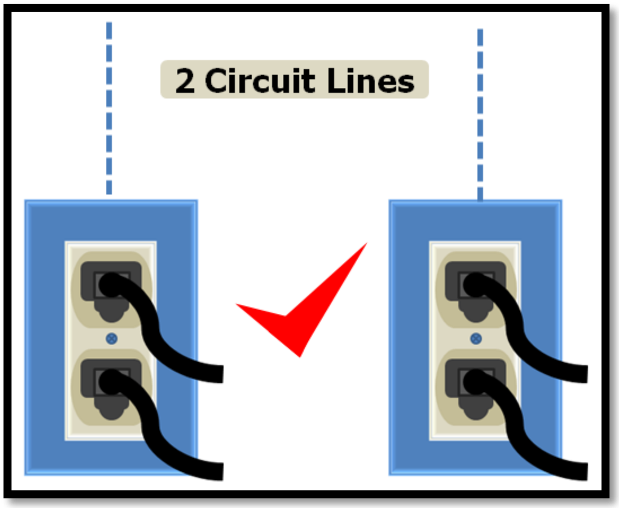
IMPORTANT

Electrical equipment or appliances require a set amount of volts, you must make sure you plug it into the right voltage.

In order to power up the system you would need sufficient circuits. Like other appliances, EB3600-P expansion unit requires a set amount of volts.

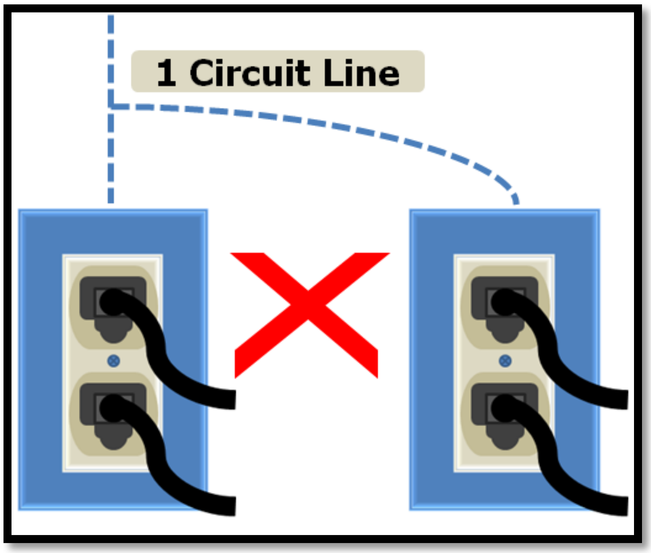
Use two separate circuit lines.

This applies to 110v-120V and 220V-230V . **The image below is just an example. Electrical outlets vary from country to country.**



Do not use multiple electrical outlets on one circuit line.

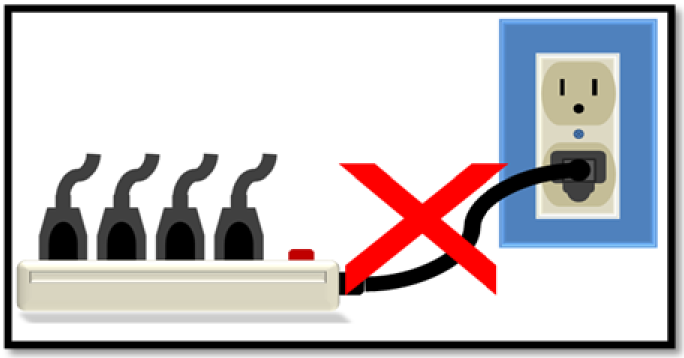
This applies to 110v-120V and 220V-230V . **The image below is just an example. Electrical outlets vary from country to country.**



A power strip populated with four power cords should not be connected on a single electrical outlet.

This applies to 110v-120V and 220V-230V.

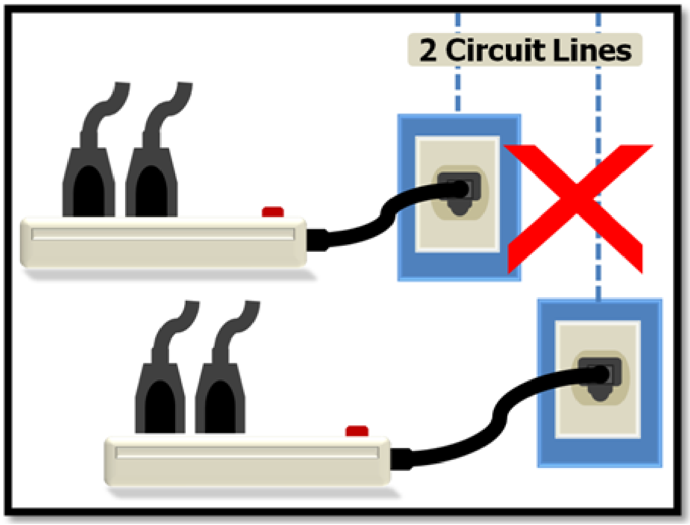
The image is just an example. Electrical outlets varies from country to country.



Not recommended (especially for 110-120V) since each power strip is limited to 15 Amps.

This applies to 110v-120V and 220V-230V.

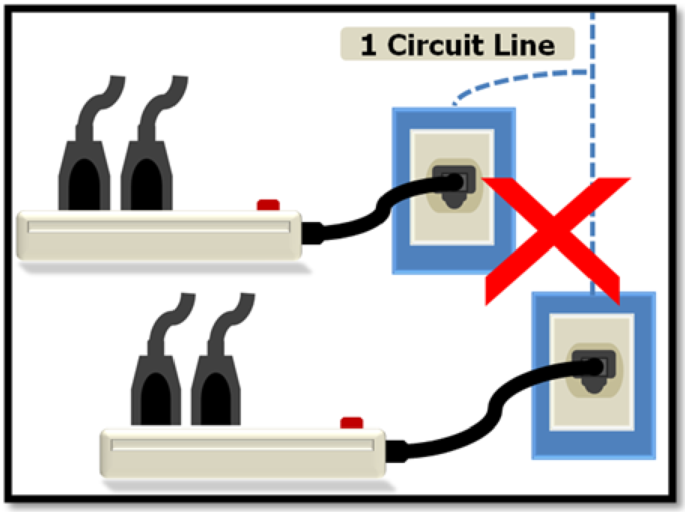
The image is just an example. Electrical outlets varies from country to country.



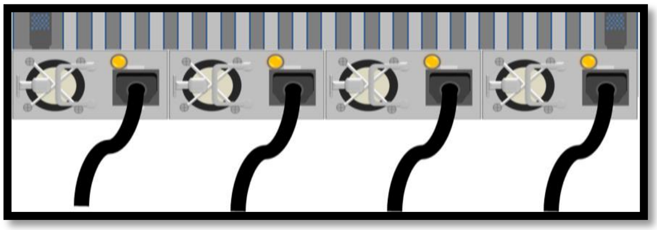
Avoid using two electrical outlets on one circuit line.

This applies to 110v-120V and 220V-230V.

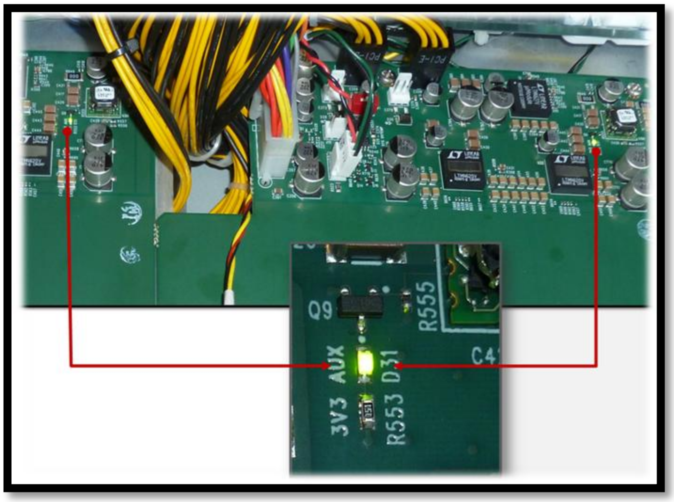
The image is just an example. Electrical outlets varies from country to country.



Once you have plugged in all power cables to proper electrical outlets or turned the power strip switch to ON position, all AMBER LEDs are immediately illuminated on the back of the power supply unit. Each power supply module is designated with one indicator LED (see picture below).

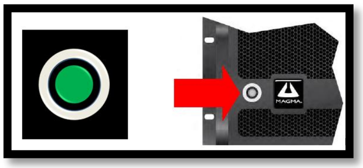


Two Solid Green LEDs (3.3V) are illuminated on both backplanes when the power cable is connected (see picture below). This signifies the unit is on "standby mode".



Power on EB3600-P

Press the Power Button on the front switch to power up the EB3600-P unit. Turn on the Magma chassis first before powering ON the host computer.

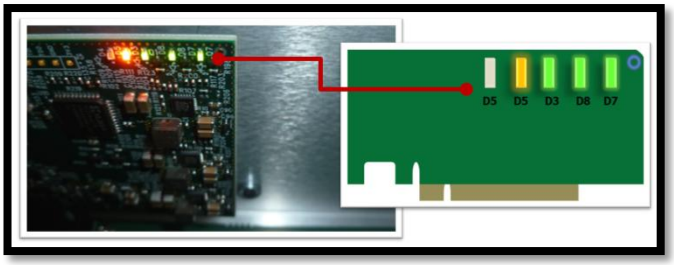


Check your installation **before** powering up the Magma Expansion chassis for the first time. Although the power supply has an over voltage protection device built into it, it may not "trip" in time to fully protect a device that has been improperly connected, or whose power cable has been damaged.

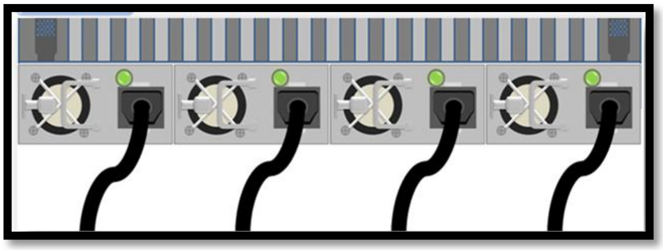
You must apply power to the expansion chassis BEFORE you power up your computer. This will allow the higher numbered buses in the bus hierarchy to be at a stable state when the host computer issues its master power-on bus reset.

Each power supply has individual power LEDs to indicate its power status. The power supply has no power switch that you can flip ON and OFF. Once the expansion unit (power cable) is plugged into an electrical outlet the entire system is ready to be powered up through the main power switch (push button) located on the front panel.

One solid Amber LED (D5) and three solid Green LEDs (D3, D8, and D7) are illuminated on the expansion interface card. Upon connecting the power cable to an electrical outlet and applying power to the expansion unit, the following LEDs are lit. (see picture below).



The LED on the top should turn AMBER when the power cord is connected to the device from the outlet. When the front button On/Off switch is activated or pressed, the AC POWER LED should turn green (see picture below).



Power on Computer

To effectively use your Magma chassis as part of your computer system, ensure that all the proper connections are made. Then power on your computer. This will enable your Magma chassis to turn ON.

Hardware Check

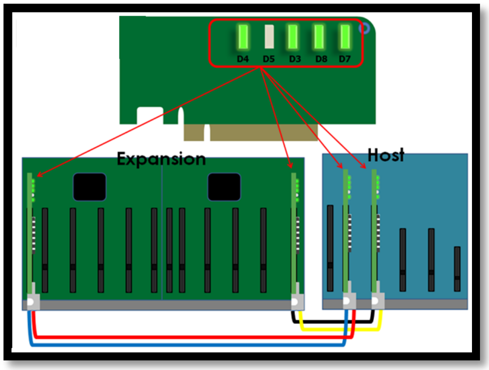
Once you have turned ON the Magma EB3600-P and the host computer, the next thing to do is to check the LED status on the hardware. Verify that the following LEDs on the expansion card, host card, backplane, and front panel are illuminated.

- Interface Card and Expansion card operating normally should show up with four Solid Green LEDs (see picture below). Reset is de-asserted, LED D5 is turned off.
- 15 Solid Green LEDs on each backplane are illuminated (see picture below).
- Check LED "PORT 0 - D9" status, see if it is illuminated solid green or blinking fast. Go to page 41 for LED status descriptions.
- 6 solid Green LEDs are lit on the front Panel Status LED indicator (see picture below).

Host & Expansion Interface cards LEDs

The picture below shows the number of Solid Green LEDS illuminated on both expansion an host interface cards.

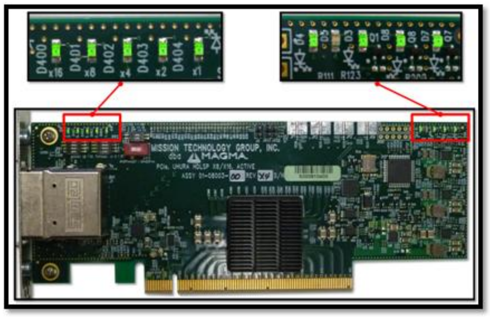
LED	STATUS	COLOR
D4, D3, D8, and D8	ON	**Solid Green**
D5	OFF	**None**


D4
D5
D3
D8
D7
Expansion
Host

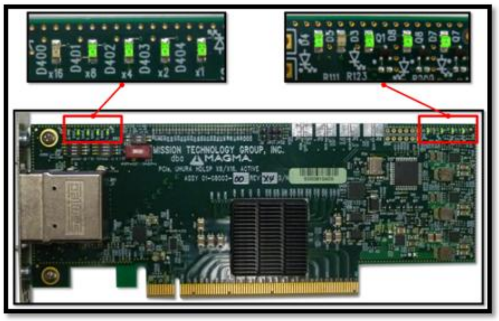
Check Expansion and Host Cards LEDs

The picture below shows the number of Solid Green LEDS that are illuminated on the Expansion and Host Interface cards when operating normally.

X16 link

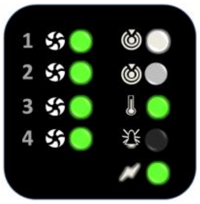

D400
D401
D402
D403
D404
x16
x8
x4
x2
x1

X8 link


D400
D401
D402
D403
D404
x16
x8
x4
x2
x1

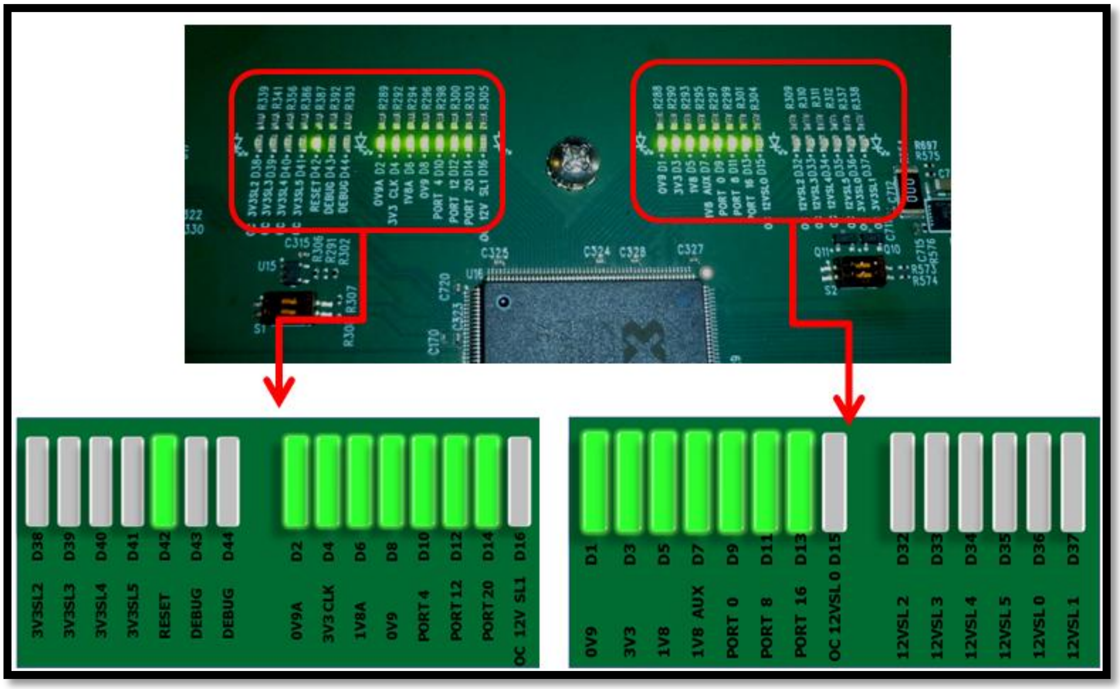
Check Front Panel Status LEDs

6 solid Green LEDs are illuminated on the Front Panel Status indicator when the system is up and running.



Check Backplane LEDs

15 Solid Green LEDs (on each backplane) are illuminated when the system is turned on.


D38 3V3SL2
D39 3V3SL3
D40 3V3SL4
D41 3V3SL5
D42 RESET
D43 DEBUG
D44 DEBUG
D2 0V9A
D4 3V3CLK
D6 1V8A
D8 0V9
D10 PORT 4
D12 PORT 12
D14 PORT 20
D16 OC 12V SL1
D1 0V9
D3 3V3
D5 1V8
D7 1V8 AUX
D9 PORT 0
D11 PORT 8
D13 PORT 16
D15 OC 12VSL 0
D32 12VSL 2
D33 12VSL 3
D34 12VSL 4
D35 12VSL 5
D36 12VSL 0
D37 12VSL 1

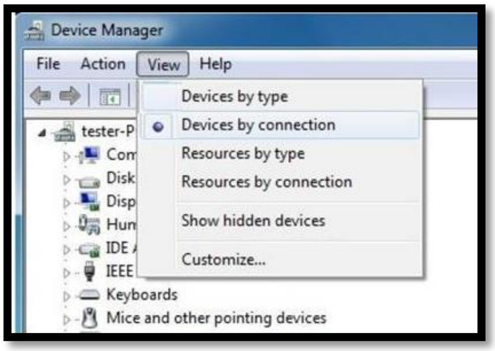
LED	STATUS	COLOR
D14, D12, D10, D8, D6, D4, D2, D42	ON	**Solid Green**
D1, D3, D5, D7, D9, D11, D13	ON	**Solid Green**
D33, D39, D40, D41, D43, D44, D16	OFF	**None**
D37, D36, D35, D33, D32, D15	OFF	**None**

Verify Installation

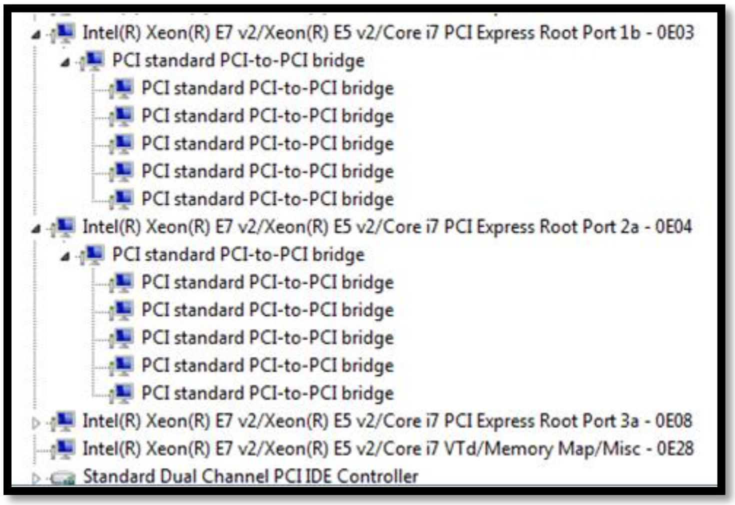
Windows

No additional software or drivers are needed. The operating system should automatically recognize the Magma expansion chassis.

To verify a successful installation 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.


Device Manager
File
Action
View
Help
Devices by type
● Devices by connection
Resources by type
Resources by connection
Show hidden devices
Customize...
tester-P
Com
Disk
Disp
Hun
IDE
IEEE
Keyboards
Mice and other pointing devices

Open ACPI (BIOS) Open PCI BusClick the ‘+’ sign several times until your reach a PCI Express Root Port with a PCI Standard PCI-to-PCI Bridge beneath it.



```
Intel(R) Xeon(R) E7 v2/Xeon(R) E5 v2/Core i7 PCI Express Root Port 1b - 0E03
    PCI standard PCI-to-PCI bridge
        PCI standard PCI-to-PCI bridge
        PCI standard PCI-to-PCI bridge
        PCI standard PCI-to-PCI bridge
        PCI standard PCI-to-PCI bridge
        PCI standard PCI-to-PCI bridge
Intel(R) Xeon(R) E7 v2/Xeon(R) E5 v2/Core i7 PCI Express Root Port 2a - 0E04
    PCI standard PCI-to-PCI bridge
        PCI standard PCI-to-PCI bridge
        PCI standard PCI-to-PCI bridge
        PCI standard PCI-to-PCI bridge
        PCI standard PCI-to-PCI bridge
        PCI standard PCI-to-PCI bridge
Intel(R) Xeon(R) E7 v2/Xeon(R) E5 v2/Core i7 PCI Express Root Port 3a - 0E08
Intel(R) Xeon(R) E7 v2/Xeon(R) E5 v2/Core i7 VTd/Memory Map/Misc - 0E28
Standard Dual Channel PCI IDE Controller
```

The Device Manager will display the available slots within the chassis. As reference, you can determine which slot you inserted your PCIe card in by following the outline that is shown below.

The Magma chassis has 2 PCIe Switch devices that enable the slots to work:

- The 1st PCIe Switch controls Slots 1,2,3,4,5
- The 2nd PCIe Switch controls slots 0,1,2,3,4,

If the verification is successful, you can install 3rd Party cards as well as auxiliary peripherals, such as hard drives into the chassis.

Linux

Once the EB3600-P expansion unit has been installed in a Linux-based system, its installation can be verified by typing the following command lines:

lspci –t Displays the overall structure of the PCIe expansion system

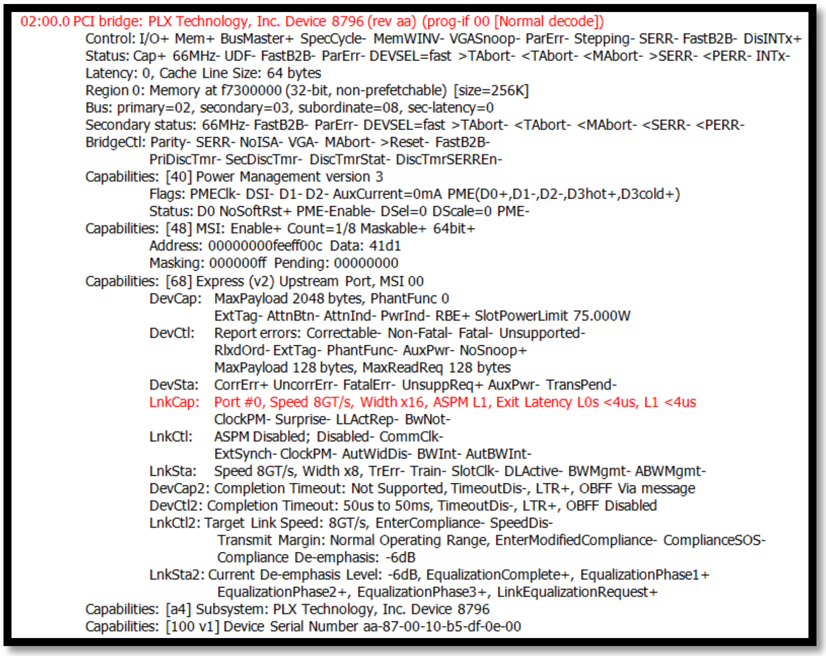
lspci –vv Lists additional information about the PCIe switch (in our case it will list the Integrated Device Technology (IDT) information.

lspci –vvv Displays the most comprehensive information about the expansion system.

Typical output from lspci –vvv is verbose, but you can dig through the information to find very important information. There are so many registers and settings associated with PCI Express Switches.

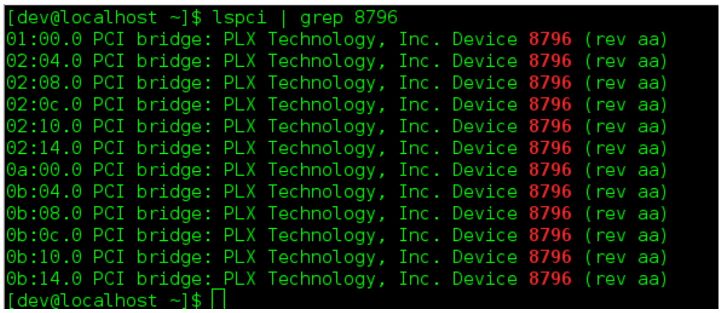
For example, the image below is showing the Magma Chassis on Bus 2, Device 0, and Function 0. Some information has been deleted, but notice the **Link Supported Speed is 8GT/s, Width x16** . This is helpful to know that the chassis is configured for x8 PCI Express Speeds highlighted in red

In order to obtain detailed information you must login as a sudo user in Linux and type "lspci –vv"



```
02:00.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa) (prog-if 00 [Normal decode])
        Control: I/O+ Mem+ BusMaster+ SpecCycle- MemWINV- VGASnoop- ParErr- Stepping- SERR- FastB2B- DisINTx+
        Status: Cap+ 66MHz- UDF- FastB2B- ParErr- DEVSEL=fast >TAbort- <TAbort- <MAbort- >SERR- <PERR- INTx-
        Latency: 0, Cache Line Size: 64 bytes
        Region 0: Memory at f7300000 (32-bit, non-prefetchable) [size=256K]
        Bus: primary=02, secondary=03, subordinate=08, sec-latency=0
        Secondary status: 66MHz- FastB2B- ParErr- DEVSEL=fast >TAbort- <TAbort- <MAbort- <SERR- <PERR-
        BridgeCtl: Parity- SERR- NoISA- VGA- MAbort- >Reset- FastB2B-
                PriDiscTmr- SecDiscTmr- DiscTmrStat- DiscTmrSERREn-
        Capabilities: [40] Power Management version 3
                Flags: PMEClk- DSI- D1- D2- AuxCurrent=0mA PME(D0+,D1-,D2-,D3hot+,D3cold+)
                Status: D0 NoSoftRst+ PME-Enable- DSel=0 DScale=0 PME-
        Capabilities: [48] MSI: Enable+ Count=1/8 Maskable+ 64bit+
                Address: 00000000feeff00c  Data: 41d1
                Masking: 000000ff  Pending: 00000000
        Capabilities: [68] Express (v2) Upstream Port, MSI 00
                DevCap:   MaxPayload 2048 bytes, PhantFunc 0
                          ExtTag- AttnBtn- AttnInd- PwrInd- RBE+ SlotPowerLimit 75.000W
                DevCtl:   Report errors: Correctable- Non-Fatal- Fatal- Unsupported-
                          RlxdOrd- ExtTag- PhantFunc- AuxPwr- NoSnoop+
                          MaxPayload 128 bytes, MaxReadReq 128 bytes
                DevSta:   CorrErr+ UncorrErr- FatalErr- UnsuppReq+ AuxPwr- TransPend-
                LnkCap:   Port #0, Speed 8GT/s, Width x16, ASPM L1, Exit Latency L0s <4us, L1 <4us
                          ClockPM- Surprise- LLActRep- BwNot-
                LnkCtl:   ASPM Disabled; Disabled- CommClk-
                          ExtSynch- ClockPM- AutWidDis- BWInt- AutBWInt-
                LnkSta:   Speed 8GT/s, Width x8, TrErr- Train- SlotClk- DLActive- BWMgmt- ABWMgmt-
                DevCap2: Completion Timeout: Not Supported, TimeoutDis-, LTR+, OBFF Via message
                DevCtl2: Completion Timeout: 50us to 50ms, TimeoutDis-, LTR+, OBFF Disabled
                LnkCtl2: Target Link Speed: 8GT/s, EnterCompliance- SpeedDis-
                           Transmit Margin: Normal Operating Range, EnterModifiedCompliance- ComplianceSOS-
                           Compliance De-emphasis: -6dB
                LnkSta2: Current De-emphasis Level: -6dB, EqualizationComplete+, EqualizationPhase1+
                           EqualizationPhase2+, EqualizationPhase3+, LinkEqualizationRequest+
        Capabilities: [a4] Subsystem: PLX Technology, Inc. Device 8796
        Capabilities: [100 v1] Device Serial Number aa-87-00-10-b5-df-0e-00
```

Use the "lspci | grep 8796" command to check that the Magma card slot devices are detected (see image below).



```
[dev@localhost ~]$ lspci | grep 8796
01:00.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa)
02:04.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa)
02:08.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa)
02:0c.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa)
02:10.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa)
02:14.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa)
0a:00.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa)
0b:04.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa)
0b:08.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa)
0b:0c.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa)
0b:10.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa)
0b:14.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa)
[dev@localhost ~]$ 
```

Below is the output text of "lspci-vv". Showing all Magma card slot devices with two GPU cards installed. Magma devices are highlighted in **red**. Two GPUs plugged in are highlighted in **green.**

```
01:00.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev a) (prog-if 00 [Normal decode])
        Flags: bus master, fast devsel, latency 0
        Memory at f7100000 (32-bit, non-prefetchable) [size=256K]
        Bus: primary=01, secondary=02, subordinate=07, sec-latency=0
        I/O behind bridge: 0000e000-0000efff
        Memory behind bridge: f6000000-f70fffff
        Prefetchable memory behind bridge: 00000000e0000000-00000000f1ffffff
        Capabilities: [40] Power Management version 3
        Capabilities: [48] MSI: Enable+ Count=1/8 Maskable+ 64bit+
        Capabilities: [68] Express Upstream Port, MSI 00
        Capabilities: [a4] Subsystem: PLX Technology, Inc. Device 8796
        Capabilities: [100] Device Serial Number aa-87-00-10-b5-df-0e-00
        Capabilities: [fb4] Advanced Error Reporting
        Capabilities: [138] Power Budgeting <?>
        Capabilities: [10c] #19
        Capabilities: [148] Virtual Channel
        Capabilities: [e00] #12
        Capabilities: [b00] Latency Tolerance Reporting
        Capabilities: [b70] Vendor Specific Information: ID=0001 Rev=0 Len=010 <?>
        Kernel driver in use: pcieport
        Kernel modules: shpchp



02:04.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa) (prog-if 00 [Normal decode])
        Flags: bus master, fast devsel, latency 0
        Bus: primary=02, secondary=03, subordinate=03, sec-latency=0
        Capabilities: [40] Power Management version 3
        Capabilities: [48] MSI: Enable+ Count=1/8 Maskable+ 64bit+
        Capabilities: [68] Express Downstream Port (Slot+), MSI 00
        Capabilities: [a4] Subsystem: PLX Technology, Inc. Device 8796
        Capabilities: [100] Device Serial Number aa-87-00-10-b5-df-0e-00
        Capabilities: [fb4] Advanced Error Reporting
        Capabilities: [138] Power Budgeting <?>
        Capabilities: [10c] #19
        Capabilities: [148] Virtual Channel
        Capabilities: [e00] #12
        Capabilities: [f24] Access Control Services
        Capabilities: [b70] Vendor Specific Information: ID=0001 Rev=0 Len=010 <?>
        Kernel driver in use: pcieport
        Kernel modules: shpchp

02:08.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev aa) (prog-if 00 [Normal decode])
        Flags: bus master, fast devsel, latency 0
        Bus: primary=02, secondary=04, subordinate=04, sec-latency=0
        Capabilities: [40] Power Management version 3
        Capabilities: [48] MSI: Enable+ Count=1/8 Maskable+ 64bit+
        Capabilities: [68] Express Downstream Port (Slot+), MSI 00
        Capabilities: [a4] Subsystem: PLX Technology, Inc. Device 8796
        Capabilities: [100] Device Serial Number aa-87-00-10-b5-df-0e-00
        Capabilities: [fb4] Advanced Error Reporting
        Capabilities: [138] Power Budgeting <?>
        Capabilities: [10c] #19
        Capabilities: [148] Virtual Channel
        Capabilities: [e00] #12
        Capabilities: [f24] Access Control Services
        Capabilities: [b70] Vendor Specific Information: ID=0001 Rev=0 Len=010 <?>
        Kernel driver in use: pcieport
        Kernel modules: shpchp
```

```
02:0c.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev a) (prog-if 00 [Normal decode])
        Flags: bus master, fast devsel, latency 0
        Bus: primary=02, secondary=05, subordinate=05, sec-latency=0
        Capabilities: [40] Power Management version 3
        Capabilities: [48] MSI: Enable+ Count=1/8 Maskable+ 64bit+
        Capabilities: [68] Express Downstream Port (Slot+), MSI 00
        Capabilities: [a4] Subsystem: PLX Technology, Inc. Device 8796
        Capabilities: [100] Device Serial Number aa-87-00-10-b5-df-0e-00
        Capabilities: [fb4] Advanced Error Reporting
        Capabilities: [138] Power Budgeting <?>
        Capabilities: [10c] #19
        Capabilities: [148] Virtual Channel
        Capabilities: [e00] #12
        Capabilities: [f24] Access Control Services
        Capabilities: [b70] Vendor Specific Information: ID=0001 Rev=0 Len=010 <?>
        Kernel driver in use: pcieport
        Kernel modules: shpchp

02:10.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev a) (prog-if 00 [Normal decode])
        Flags: bus master, fast devsel, latency 0
        Bus: primary=02, secondary=06, subordinate=06, sec-latency=0
        Capabilities: [40] Power Management version 3
        Capabilities: [48] MSI: Enable+ Count=1/8 Maskable+ 64bit+
        Capabilities: [68] Express Downstream Port (Slot+), MSI 00
        Capabilities: [a4] Subsystem: PLX Technology, Inc. Device 8796
        Capabilities: [100] Device Serial Number aa-87-00-10-b5-df-0e-00
        Capabilities: [fb4] Advanced Error Reporting
        Capabilities: [138] Power Budgeting <?>
        Capabilities: [10c] #19
        Capabilities: [148] Virtual Channel
        Capabilities: [e00] #12
        Capabilities: [f24] Access Control Services
        Capabilities: [b70] Vendor Specific Information: ID=0001 Rev=0 Len=010 <?>
        Kernel driver in use: pcieport
        Kernel modules: shpchp


02:14.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev a) (prog-if 00 [Normal decode])
        Flags: bus master, fast devsel, latency 0
        Bus: primary=02, secondary=07, subordinate=07, sec-latency=0
        I/O behind bridge: 0000e000-0000efff
        Memory behind bridge: f6000000-f70fffff
        Prefetchable memory behind bridge: 00000000e0000000-00000000f1ffffff
        Capabilities: [40] Power Management version 3
        Capabilities: [48] MSI: Enable+ Count=1/8 Maskable+ 64bit+
        Capabilities: [68] Express Downstream Port (Slot+), MSI 00
        Capabilities: [a4] Subsystem: PLX Technology, Inc. Device 8796
        Capabilities: [100] Device Serial Number aa-87-00-10-b5-df-0e-00
        Capabilities: [fb4] Advanced Error Reporting
        Capabilities: [138] Power Budgeting <?>
        Capabilities: [10c] #19
        Capabilities: [148] Virtual Channel
        Capabilities: [e00] #12
        Capabilities: [f24] Access Control Services
        Capabilities: [b70] Vendor Specific Information: ID=0001 Rev=0 Len=010 <?>
        Kernel driver in use: pcieport
        Kernel modules: shpchp

07:00.0 VGA compatible controller: NVIDIA Corporation GK107 [NVS 510] (rev a1) (prog-if 00 [VGA controller])
        Subsystem: NVIDIA Corporation Device 0967
        Flags: bus master, fast devsel, latency 0, IRQ 60
        Memory at f6000000 (32-bit, non-prefetchable) [size=16M]
        Memory at e0000000 (64-bit, prefetchable) [size=256M]
        Memory at f0000000 (64-bit, prefetchable) [size=32M]
```

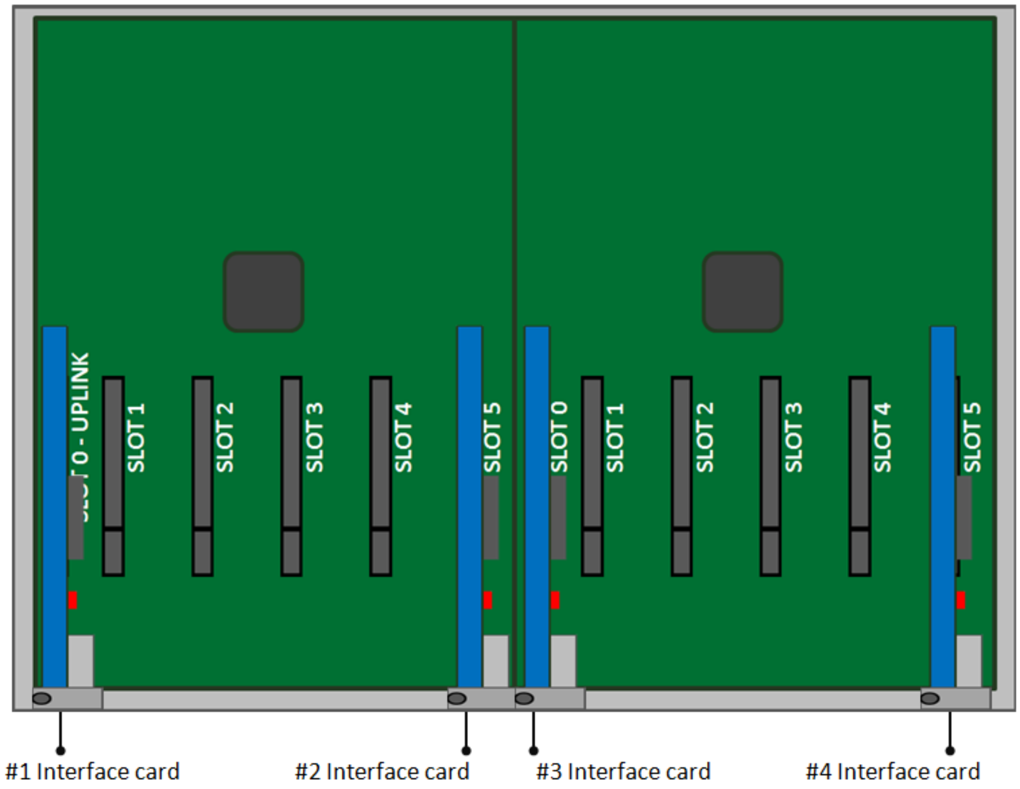
```
          I/O ports at e000 [size=128]
          [virtual] Expansion ROM at f7000000 [disabled] [size=512K]
          Capabilities: [60] Power Management version 3
          Capabilities: [68] MSI: Enable+ Count=1/1 Maskable- 64bit+
          Capabilities: [78] Express Endpoint, MSI 00
          Capabilities: [b4] Vendor Specific Information: Len=14 <?>
          Capabilities: [100] Virtual Channel
          Capabilities: [128] Power Budgeting <?>
          Capabilities: [600] Vendor Specific Information: ID=0001 Rev=1 Len=024 <?>
          Capabilities: [900] #19
          Kernel driver in use: nvidia
          Kernel modules: nouveau, nvidia

07:00.1 Audio device: NVIDIA Corporation GK107 HDMI Audio Controller (rev a1)
          Subsystem: NVIDIA Corporation Device 0967
          Flags: bus master, fast devsel, latency 0, IRQ 17
          Memory at f7080000 (32-bit, non-prefetchable) [size=16K]
          Capabilities: [60] Power Management version 3
          Capabilities: [68] MSI: Enable- Count=1/1 Maskable- 64bit+
          Capabilities: [78] Express Endpoint, MSI 00
          Kernel driver in use: snd_hda_intel
          Kernel modules: snd_hda_intel

0a:00.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev a) (prog-if 00 [Normal decode])
          Flags: bus master, fast devsel, latency 0
          Memory at f5100000 (32-bit, non-prefetchable) [size=256K]
          Bus: primary=0a, secondary=0b, subordinate=10, sec-latency=0
          I/O behind bridge: 0000d000-0000dfff
          Memory behind bridge: f4000000-f50fffff
          Prefetchable memory behind bridge: 00000000c0000000-00000000d1ffffff
          Capabilities: [40] Power Management version 3
          Capabilities: [48] MSI: Enable+ Count=1/8 Maskable+ 64bit+
          Capabilities: [68] Express Upstream Port, MSI 00
          Capabilities: [a4] Subsystem: PLX Technology, Inc. Device 8796
          Capabilities: [100] Device Serial Number aa-87-00-10-b5-df-0e-00
          Capabilities: [fb4] Advanced Error Reporting
          Capabilities: [138] Power Budgeting <?>
          Capabilities: [10c] #19
          Capabilities: [148] Virtual Channel
          Capabilities: [e00] #12
          Capabilities: [b00] Latency Tolerance Reporting
          Capabilities: [b70] Vendor Specific Information: ID=0001 Rev=0 Len=010 <?>
          Kernel driver in use: pcieport
          Kernel modules: shpchp

0b:04.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev a) (prog-if 00 [Normal decode])
          Flags: bus master, fast devsel, latency 0
          Bus: primary=0b, secondary=0c, subordinate=0c, sec-latency=0
          Capabilities: [40] Power Management version 3
          Capabilities: [48] MSI: Enable+ Count=1/8 Maskable+ 64bit+
          Capabilities: [68] Express Downstream Port (Slot+), MSI 00
          Capabilities: [a4] Subsystem: PLX Technology, Inc. Device 8796
          Capabilities: [100] Device Serial Number aa-87-00-10-b5-df-0e-00
          Capabilities: [fb4] Advanced Error Reporting
          Capabilities: [138] Power Budgeting <?>
          Capabilities: [10c] #19
          Capabilities: [148] Virtual Channel
          Capabilities: [e00] #12
          Capabilities: [f24] Access Control Services
          Capabilities: [b70] Vendor Specific Information: ID=0001 Rev=0 Len=010 <?>
          Kernel driver in use: pcieport
          Kernel modules: shpchp

0b:08.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev a) (prog-if 00 [Normal decode])
          Flags: bus master, fast devsel, latency 0
          Bus: primary=0b, secondary=0d, subordinate=0d, sec-latency=0
```

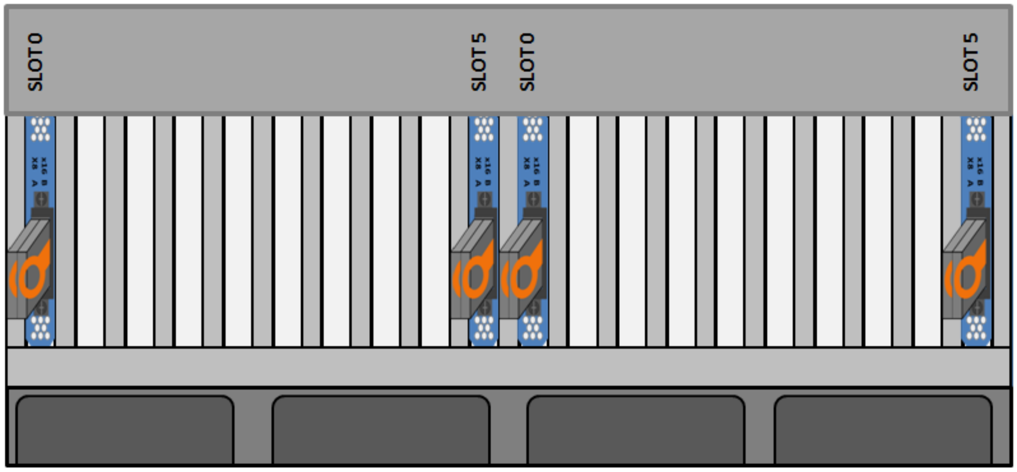
```
        Capabilities: [40] Power Management version 3
        Capabilities: [48] MSI: Enable+ Count=1/8 Maskable+ 64bit+
        Capabilities: [68] Express Downstream Port (Slot+), MSI 00
        Capabilities: [a4] Subsystem: PLX Technology, Inc. Device 8796
        Capabilities: [100] Device Serial Number aa-87-00-10-b5-df-0e-00
        Capabilities: [fb4] Advanced Error Reporting
        Capabilities: [138] Power Budgeting <?>
        Capabilities: [10c] #19
        Capabilities: [148] Virtual Channel
        Capabilities: [e00] #12
        Capabilities: [f24] Access Control Services
        Capabilities: [b70] Vendor Specific Information: ID=0001 Rev=0 Len=010 <?>
        Kernel driver in use: pcieport
        Kernel modules: shpchp

0b:0c.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev a) (prog-if 00 [Normal decode])
        Flags: bus master, fast devsel, latency 0
        Bus: primary=0b, secondary=0e, subordinate=0e, sec-latency=0
        Capabilities: [40] Power Management version 3
        Capabilities: [48] MSI: Enable+ Count=1/8 Maskable+ 64bit+
        Capabilities: [68] Express Downstream Port (Slot+), MSI 00
        Capabilities: [a4] Subsystem: PLX Technology, Inc. Device 8796
        Capabilities: [100] Device Serial Number aa-87-00-10-b5-df-0e-00
        Capabilities: [fb4] Advanced Error Reporting
        Capabilities: [138] Power Budgeting <?>
        Capabilities: [10c] #19
        Capabilities: [148] Virtual Channel
        Capabilities: [e00] #12
        Capabilities: [f24] Access Control Services
        Capabilities: [b70] Vendor Specific Information: ID=0001 Rev=0 Len=010 <?>
        Kernel driver in use: pcieport
        Kernel modules: shpchp

0b:10.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev a) (prog-if 00 [Normal decode])
        Flags: bus master, fast devsel, latency 0
        Bus: primary=0b, secondary=0f, subordinate=0f, sec-latency=0
        I/O behind bridge: 0000d000-0000dfff
        Memory behind bridge: f4000000-f50fffff
        Prefetchable memory behind bridge: 00000000c0000000-00000000d1ffffff
        Capabilities: [40] Power Management version 3
        Capabilities: [48] MSI: Enable+ Count=1/8 Maskable+ 64bit+
        Capabilities: [68] Express Downstream Port (Slot+), MSI 00
        Capabilities: [a4] Subsystem: PLX Technology, Inc. Device 8796
        Capabilities: [100] Device Serial Number aa-87-00-10-b5-df-0e-00
        Capabilities: [fb4] Advanced Error Reporting
        Capabilities: [138] Power Budgeting <?>
        Capabilities: [10c] #19
        Capabilities: [148] Virtual Channel
        Capabilities: [e00] #12
        Capabilities: [f24] Access Control Services
        Capabilities: [b70] Vendor Specific Information: ID=0001 Rev=0 Len=010 <?>
        Kernel driver in use: pcieport
        Kernel modules: shpchp

0b:14.0 PCI bridge: PLX Technology, Inc. Device 8796 (rev a) (prog-if 00 [Normal decode])
        Flags: bus master, fast devsel, latency 0
        Bus: primary=0b, secondary=10, subordinate=10, sec-latency=0
        Capabilities: [40] Power Management version 3
        Capabilities: [48] MSI: Enable+ Count=1/8 Maskable+ 64bit+
        Capabilities: [68] Express Downstream Port (Slot+), MSI 00
        Capabilities: [a4] Subsystem: PLX Technology, Inc. Device 8796
        Capabilities: [100] Device Serial Number aa-87-00-10-b5-df-0e-00
        Capabilities: [fb4] Advanced Error Reporting
        Capabilities: [138] Power Budgeting <?>
        Capabilities: [10c] #19
        Capabilities: [148] Virtual Channel
```

```
	Capabilities: [e00] #12
	Capabilities: [f24] Access Control Services
	Capabilities: [b70] Vendor Specific Information: ID=0001 Rev=0 Len=010 <?>
	Kernel driver in use: pcieport
	Kernel modules: shpchp

0f:00.0 VGA compatible controller: NVIDIA Corporation GK107 [NVS 510] (rev a1) (prog-if 00 [VGA controller])
	Subsystem: NVIDIA Corporation Device 0967
	Flags: bus master, fast devsel, latency 0, IRQ 61
	Memory at f4000000 (32-bit, non-prefetchable) [size=16M]
	Memory at c0000000 (64-bit, prefetchable) [size=256M]
	Memory at d0000000 (64-bit, prefetchable) [size=32M]
	I/O ports at d000 [size=128]
	[virtual] Expansion ROM at f5000000 [disabled] [size=512K]
	Capabilities: [60] Power Management version 3
	Capabilities: [68] MSI: Enable+ Count=1/1 Maskable- 64bit+
	Capabilities: [78] Express Endpoint, MSI 00
	Capabilities: [b4] Vendor Specific Information: Len=14 <?>
	Capabilities: [100] Virtual Channel
	Capabilities: [128] Power Budgeting <?>
	Capabilities: [600] Vendor Specific Information: ID=0001 Rev=1 Len=024 <?>
	Capabilities: [900] #19
	Kernel driver in use: nvidia
	Kernel modules: nouveau, nvidia

0f:00.1 Audio device: NVIDIA Corporation GK107 HDMI Audio Controller (rev a1)
	Subsystem: NVIDIA Corporation Device 0967
	Flags: bus master, fast devsel, latency 0, IRQ 17
	Memory at f5080000 (32-bit, non-prefetchable) [size=16K]
	Capabilities: [60] Power Management version 3
	Capabilities: [68] MSI: Enable- Count=1/1 Maskable- 64bit+
	Capabilities: [78] Express Endpoint, MSI 00
	Kernel driver in use: snd_hda_intel
	Kernel modules: snd_hda_intel
```

Chapter 3 Advanced Technical Information

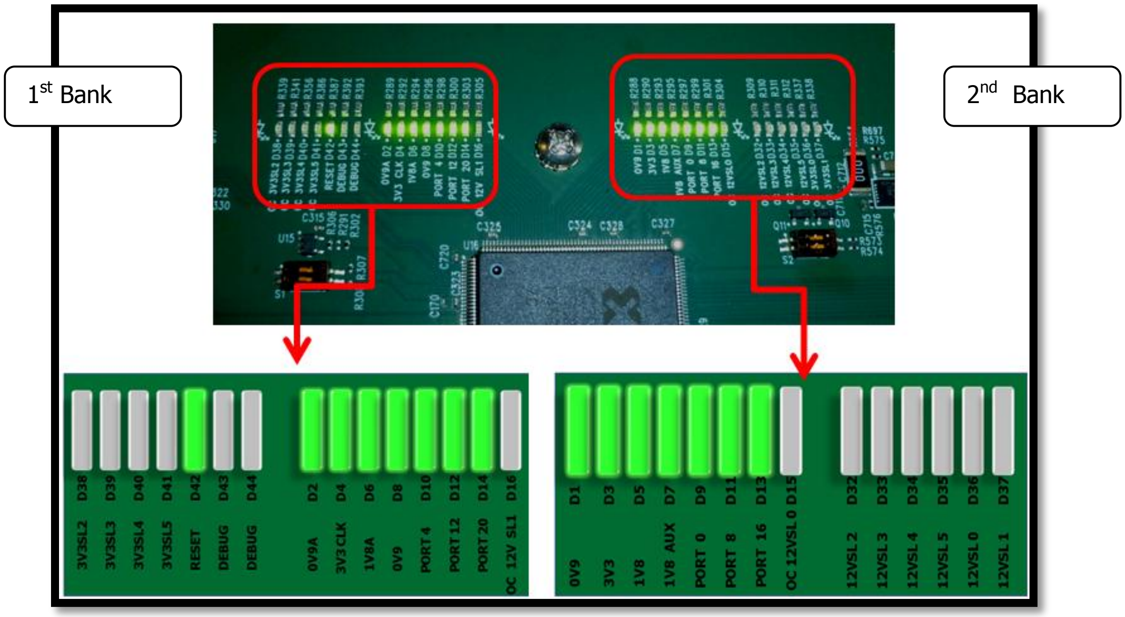
EB3600-P Chassis Layout


SLOT 0 - UPLINK
SLOT 1
SLOT 2
SLOT 3
SLOT 4
SLOT 5
SLOT 0
SLOT 1
SLOT 2
SLOT 3
SLOT 4
SLOT 5
#1 Interface card
#2 Interface card
#3 Interface card
#4 Interface card


SLOT 0
SLOT 5
SLOT 0
SLOT 5

Backplane and LEDs

a. 10 PCIe x16 slot (electrical and mechanical)
b. Two designated Link-Up SLOTs for Interface card (see picture below)
c. Slot LEDs, Link and Activity LEDs (see below)

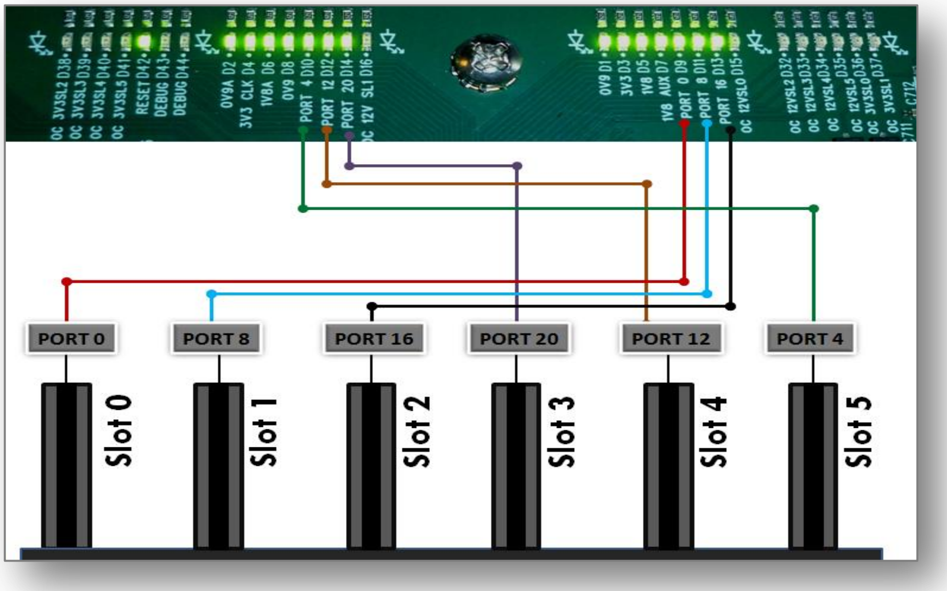

1st Bank
2nd Bank
D38 3V3SL2
D39 3V3SL3
D40 3V3SL4
D41 3V3SL5
D42 RESET
D43 DEBUG
D44 DEBUG
D2 0V9A
D4 3V3 CLK
D6 1V8A
D8 0V9
D10 PORT 4
D12 PORT 12
D14 PORT 20
D16 OC 12V SL1
D1 0V9
D3 3V3
D5 1V8
D7 1V8 AUX
D9 PORT 0
D11 PORT 8
D13 PORT 16
D15 OC 12VSL0
D32 12VSL 2
D33 12VSL 3
D34 12VSL 4
D35 12VSL 5
D36 12VSL 0
D37 12VSL 1

LEDs	DESCRIPTION	When Lit (Solid Green or blinking)	When Off
		1st Bank	
3v3SL2 (D38)	Debug	N/A	NA
3V3SL3 (D39)	Debug	N/A	NA
3V3SL4 (D40)	Debug	N/A	NA
3V3SL5 (D41)	Debug	N/A	NA
RESET (D42)	PCIe Reset	EB3600-P is in reset	EB3600-P is out of reset
DEBUG (D43)	Debug	N/A	NA
0V9A (D2)	900 mV Analog Power	Solid - power rail OK	OFF - power rail out of range
3V3 CLK (D4)	3.3V Clock Power	Solid - power rail OK	OFF - power rail out of range
1V8A (D6)	1.8V Analog Power	Solid - power rail OK	OFF - power rail out of range
0V9 (D8)	Debug	N/A	N/A
PORT4 (D10)	Slot 5 Link	Solid - Gen 3 Link;Fast Blinking - Gen 2 Link, Slow Blinking - Gen 1 Link	OFF - not Linked
PORT 12 (D12)	Slot 4 Link	Solid - Gen 3 Link;Fast Blinking - Gen 2 Link, Slow Blinking - Gen 1 Link	OFF - not Linked
PORT 20 (D14)	Slot 3 Link	Solid - Gen 3 Link;Fast Blinking - Gen 2 Link, Slow Blinking - Gen 1 Link	OFF - not Linked
12V SL1 (D16)	Debug	NA	NA
LEDs	**DESCRIPTION**	**When Lit (Solid Green or blinking)**	**When Off**
		2nd Bank	
0V9 (D1)	900mV I/O Power	Solid - power rail OK	OFF - power rail out of range
3V3 (D3)	3.3V System Power	Solid - power rail OK	OFF - power rail out of range
1V8 (D5)	1.8V System Power	Solid - power rail OK	OFF - power rail out of range
1V8 AUX (D7)	1.8V Aux System Power	Solid - power rail OK	OFF - power rail out of range
PORT 0 (D9)	Slot 0 Link	Solid - Gen 3 Link; Fast Blinking - Gen 2 Link, Slow Blinking - Gen 1 Link	OFF - Not Linked
PORT 8 (D11)	Slot 1 Link	Solid - Gen 3 Link; Fast Blinking - Gen 2 Link,	OFF - Not Linked

		Slow Blinking - Gen 1 Link	
PORT 16 (D12)	Slot 2 Link	Solid - Gen 3 Link; Fast Blinking - Gen 2 Link, Slow Blinking - Gen 1 Link	OFF - Not Linked
12VSL0 (D15)	Debug	NA	NA
12VSL2 (D32)	Debug	NA	NA
12VSL3 (D33)	Debug	NA	NA
12VSL4 (D34)	Debug	NA	NA
12VSL5 (D35)	Debug	NA	NA
3V3SL0 (D36)	Debug	NA	NA
RESET (D42)	PCIe Reset	EB3600-P is in reset	EB3600-P is out of reset
DEBUG (D43)	Debug	NA	NA
DEBUG (D44)	Debug	NA	NA
0V9A (D2)	900 mV Analog Power	Solid - power rail OK	OFF - power rail out of range
3V3 CLK (D4)	3.3V Clock Power	Solid - power rail OK	OFF - power rail out of range
1V8A (D6)	1.8V Analog Power	Solid - power rail OK	OFF - power rail out of range

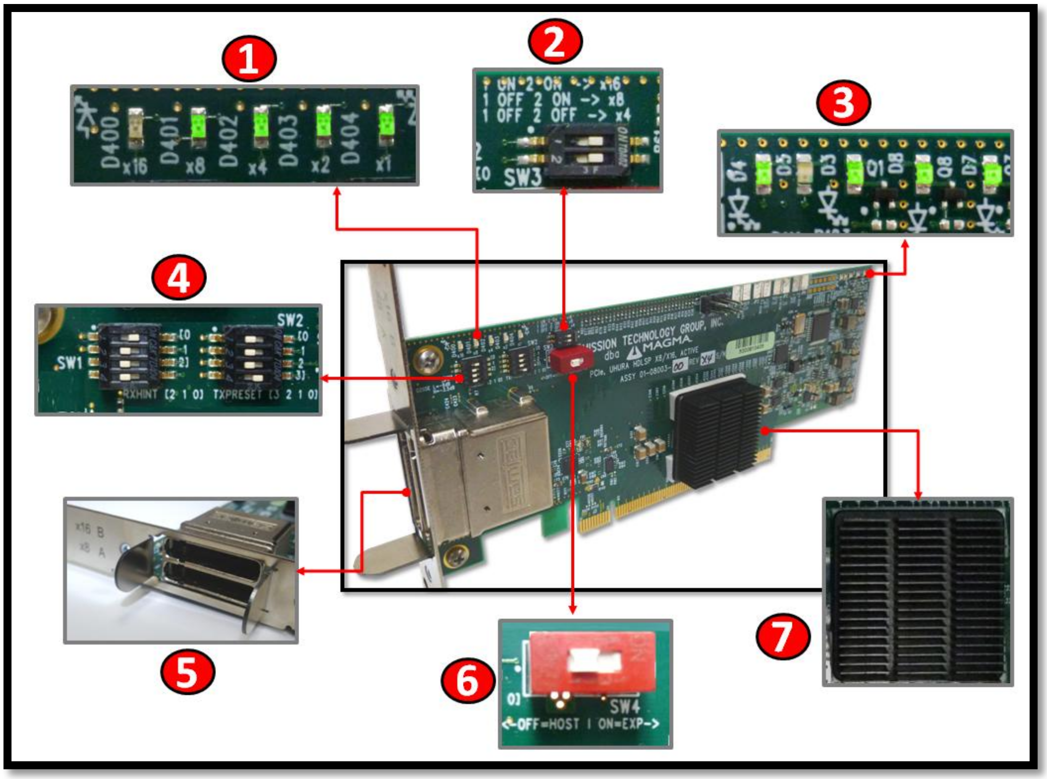
Card Slot Link LEDs

SLOT#	LED	Description	When Lit (Solid Green or blinking)	When Off
Slot 0	**PORT 0 (D9)**	**Slot 0 Link**	Solid - Gen 3 Link; Fast Blinking - Gen 2 Link, Slow Blinking - Gen 1 Link	OFF - Not Linked
Slot 1	**PORT 8 (D11)**	**Slot 1 Link**	Solid - Gen 3 Link; Fast Blinking - Gen 2 Link, Slow Blinking - Gen 1 Link	OFF - Not Linked
Slot 2	**PORT 16 (D12)**	**Slot 2 Link**	Solid - Gen 3 Link; Fast Blinking - Gen 2 Link, Slow Blinking - Gen 1 Link	OFF - Not Linked
Slot 3	**PORT 20 (D14)**	**Slot 3 Link**	Solid - Gen 3 LinkFast Blinking - Gen 2 Link, Slow Blinking - Gen 1 Link	OFF – not Linked
Slot 4	**PORT 12 (D12)**	**Slot 4 Link**	Solid - Gen 3 LinkFast Blinking - Gen 2 Link, Slow Blinking - Gen 1 Link	OFF – not Linked
Slot 5	**PORT4 (D10)**	**Slot 5 Link**	Solid - Gen 3 LinkFast Blinking - Gen 2 Link, Slow Blinking - Gen 1 Link	OFF – not Linked



Interface Card and LEDs

- Interface card is x16
- It is capable of operating at x16, x8 , x4 , x2 and x1 link widths
- When the Amber LED (D5) is ON, the Reset is Asserted
- When the Amber LED (D5) is OFF, it is de-asserted
- When Interface card is being used as Host, need to set to OFF. For expansion set to ON.


1
D400
x16
D401
x8
D402
x4
D403
x2
D404
x1
2
ON 2 ON -> x16
1 OFF 2 ON -> x8
1 OFF 2 OFF -> x4
SW3
3
D4
D5
D3
Q1
D8
D7
4
SW1
SW2
RXHINT
TXPRESET
5
6
SW4
OFF=HOST I ON=EXP
7

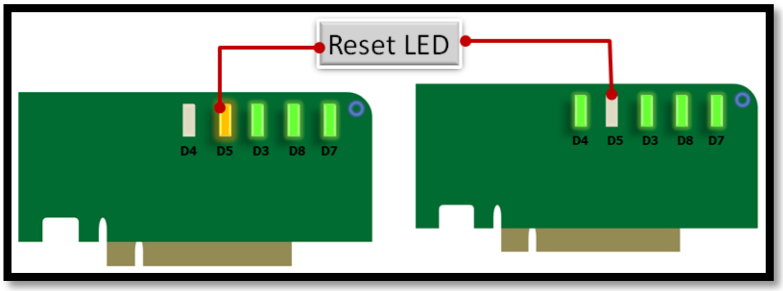
Interface Card	
1	Link Width LED indicators
2	SW3, dip switches for speed / lane settings
3	Reset & Power Status LEDs
4	Rx Hint and Tx presets
5	Cable ports, x8-A and x16-B
6	SW4, toggle switch for interface mode setting (host or expansion)
7	Heatsink

During normal operation LEDs D7, D8 and D3 should be on and solid green at all times. If any of these LEDs are off it means that there is a power problem with the unit.

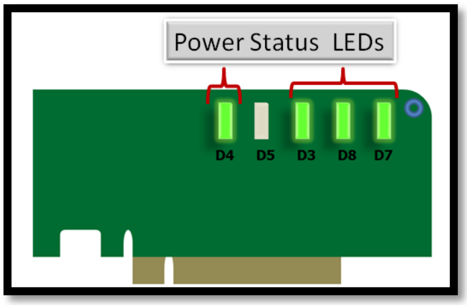
LED D5 will turn on (Amber) when PCIe reset is asserted and turn off when the reset is de-asserted.

If any of the Interface cables are not connected correctly, the LED D5 will stay ON (Amber). Once the cables are connected correctly and the expansion board is powered on and the host is turned on then the amber LED D5 should be off.

Reset & Power Status LEDs



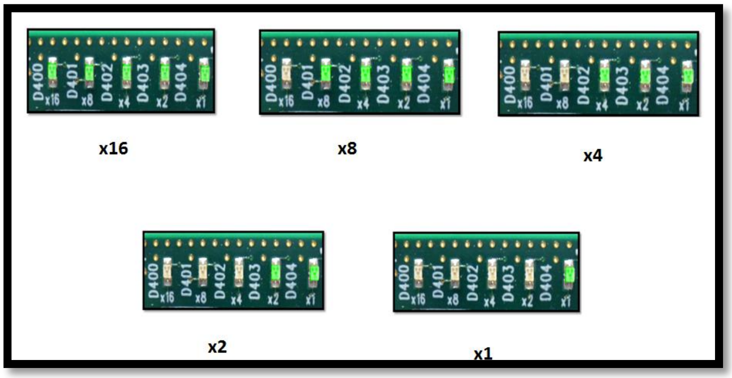
LEDs D4, D3, D8, AND D7 when illuminated signify "power is good" (see table below).



LED	Name	Description / Functions	When OFF	When ON
D5	reset	PCIe fundamental reset. When ON system is in reset and/or the high speed cables have been connected incorrectly. When off while the main power is ON, the system is out of PCIe reset	de-asserted	asserted
D4	PCIe clock present	Lights up if a PCIe clock has been detected	No clock present	Clock is present
D3	3.3V good	When on means that the locally generated 3.3V is good and within specification. When off means that there is a problem with the local 3.3V	3.3V is bad	3.3V is good
D8	1.0V good	When on means that the locally generate 1.0V is good and within specification. When off means that there is a problem with the local 1.0V	1.0V is bad	1.0V is good
D7	1.0V good	When on means that the locally generate 1.0V is good and within specification. When off means that there is a problem with the local 1.0V	1.0V is bad	1.0V is good

Display Functions of Interface card LEDs

1. Link width mode.



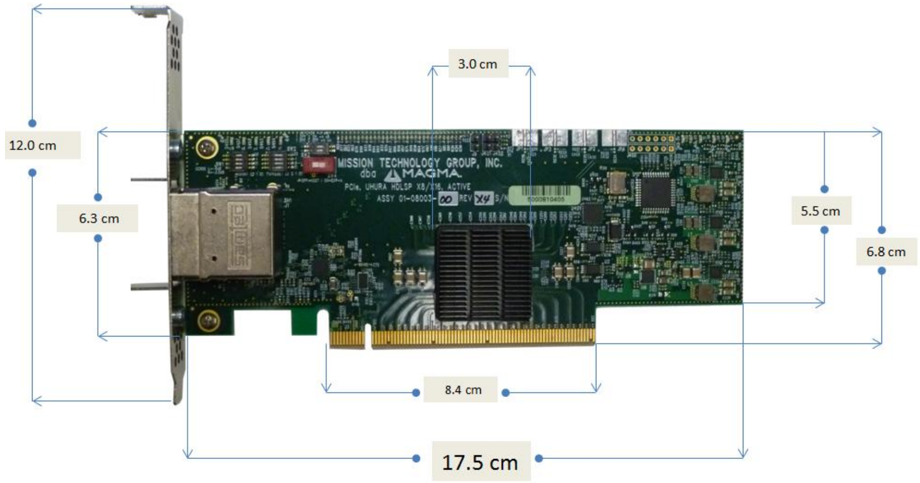
If the LEDs are lit solid, then it is a gen 3 link. If not the alternate display will be activated.

2. Phase equalization mode.

D400: will not be lit.
D401: Phase equalization complete.
D402: Phase 3 successful.
D403: Phase 2 successful.
D404: Phase 1 successful.

For any link below gen 3, the display will alternate between these two. A 75% on 25% off duty cycle indicates a gen 2 link whereas a 25% on 75% off duty cycle is a gen 1 link.

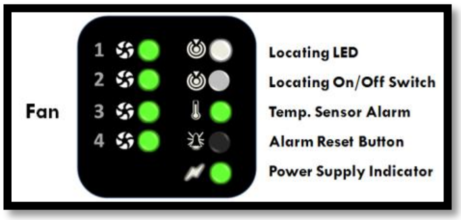
Interface card Dimensions



Front Panel Status LEDs

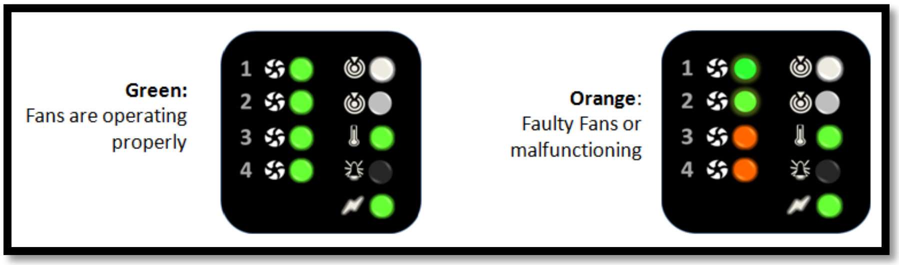
LEDs on the front panel monitor internal temperature and show status of fans and power supplies. All LED's should be green at all times. An orange LED means a fault of the corresponding item. The locator LED and locator switches on the front and back panel locate the chassis in a rack installation. Push the switch on either end of the chassis and the LED will blink on both front and back. Pressing either switch again, on either side of the chassis will turn the LED off.

Should a problem occur with the chassis we included below explanations as to what all these items are and how they should be treated.

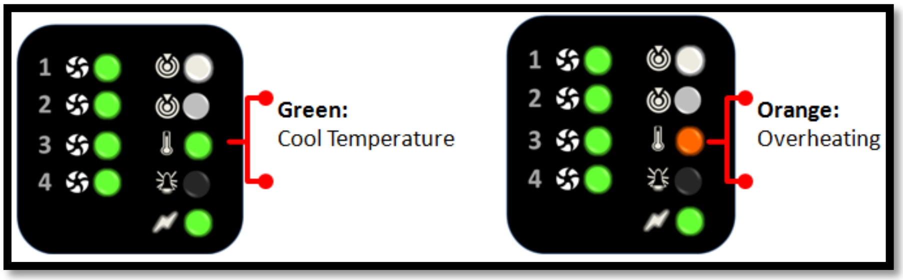

Fan
1
2
3
4
Locating LED
Locating On/Off Switch
Temp. Sensor Alarm
Alarm Reset Button
Power Supply Indicator

Under normal operating conditions the status indicator LED's should be green at all times.
An orange LED means a fault of the corresponding item listed in the picture above. If the chassis is functioning improperly, you have the option of resetting the entire system by pressing and holding the Alarm Reset button (shown in the above diagram) until the LEDs blink. The color of the LEDs will turn orange. This will enable the entire device to reboot to its default settings. You can only do this once the chassis is turned off, but still operates on standby power. So, ensure the power cable is connected between the chassis and the AC outlet.

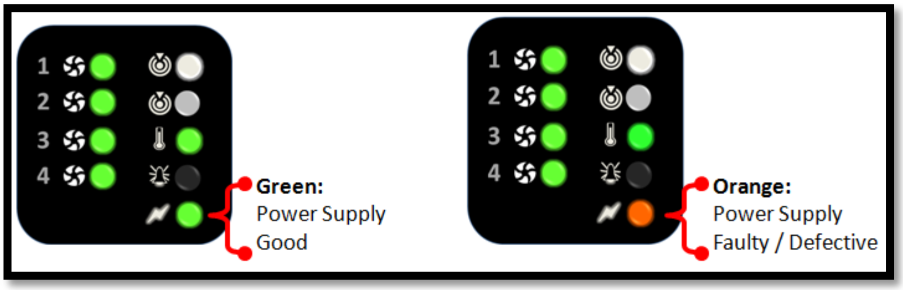
Fan LEDs


Green:
Fans are operating properly
1
2
3
4
Orange:
Faulty Fans or malfunctioning
1
2
3
4

Temperature Sensor Alarm LEDs


1
2
3
4
Green:
Cool Temperature
1
2
3
4
Orange:
Overheating

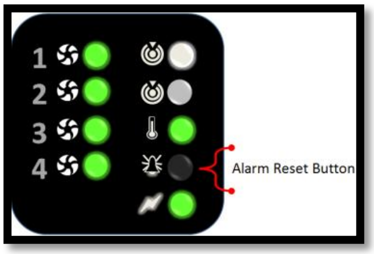
Power Supply Indicator LEDs



Green: Power Supply Good

Orange: Power Supply Faulty / Defective

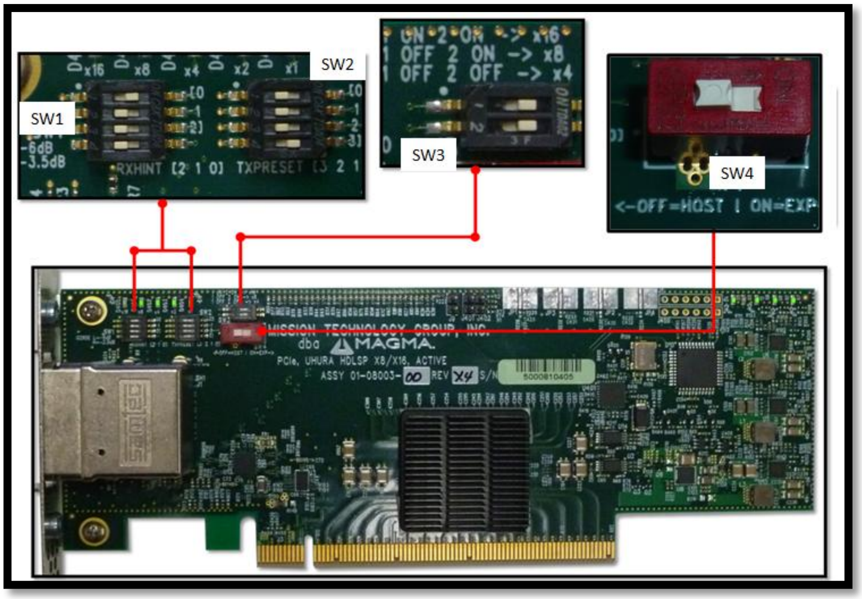
If the LED stays Orange after replacing or swapping the faulty component, you have to reset the SNMP to factory default settings. Hold the Alarm Reset button (see picture below) until the LEDs blink. The color of the entire LEDs will turn orange and the device will reboot to its default settings, all LEDs should turn on solid Green.



Alarm Reset Button

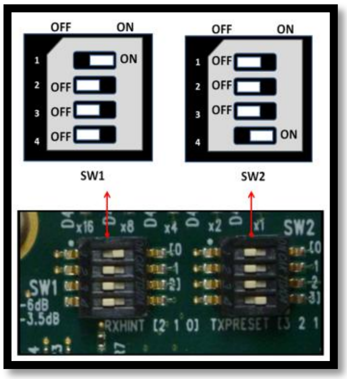
Control Switches

There are four control switches on the interface card: SW1, SW2, SW3 and SW4


SW1
SW2
SW3
SW4
x16 x8 x4 x2 x1
-6dB
-3.5dB
RXHINT [2 1 0]
TXPRESET [3 2 1
ON 2 ON -> x16
1 OFF 2 ON -> x8
1 OFF 2 OFF -> x4
<-OFF=HOST | ON=EXP
MISSION TECHNOLOGY GROUP, INC.
dba MAGMA
PCIe, UHURA HDLSP X8/X16, ACTIVE

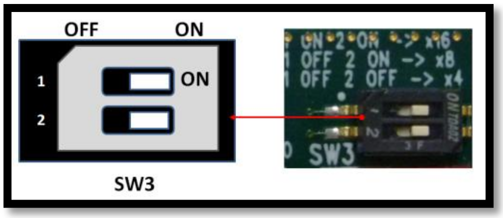
SW1 and SW2

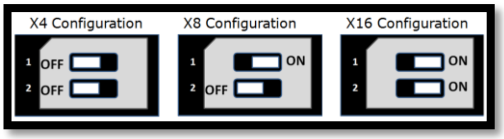
SW1 and SW2 should not be altered or changed.
See screenshot below for their corresponding combination of dip switch settings.


OFF
ON
1 ON
2 OFF
3 OFF
4 OFF
SW1
OFF
ON
1 OFF
2 OFF
3 OFF
4 ON
SW2
x16
x8
x4
x2
x1
SW1
-6dB
-3.5dB
RXHINT [2 1 0]
TXPRESET [3 2 1
SW2

SW3

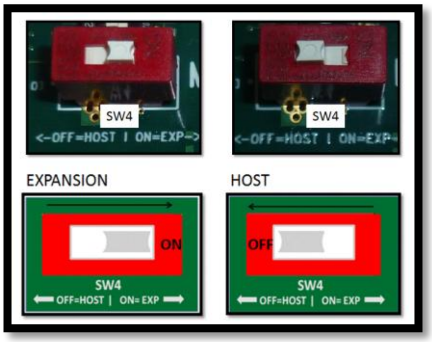
Link width can be changed by using the following dip switch settings. By default, the card is set to x16.


OFF
ON
1
2
ON
SW3
ON 2 ON -> x16
1 OFF 2 ON -> x8
1 OFF 2 OFF -> x4
SW3


X4 Configuration
1 OFF
2 OFF
X8 Configuration
1 ON
2 OFF
X16 Configuration
1 ON
2 ON

SW4

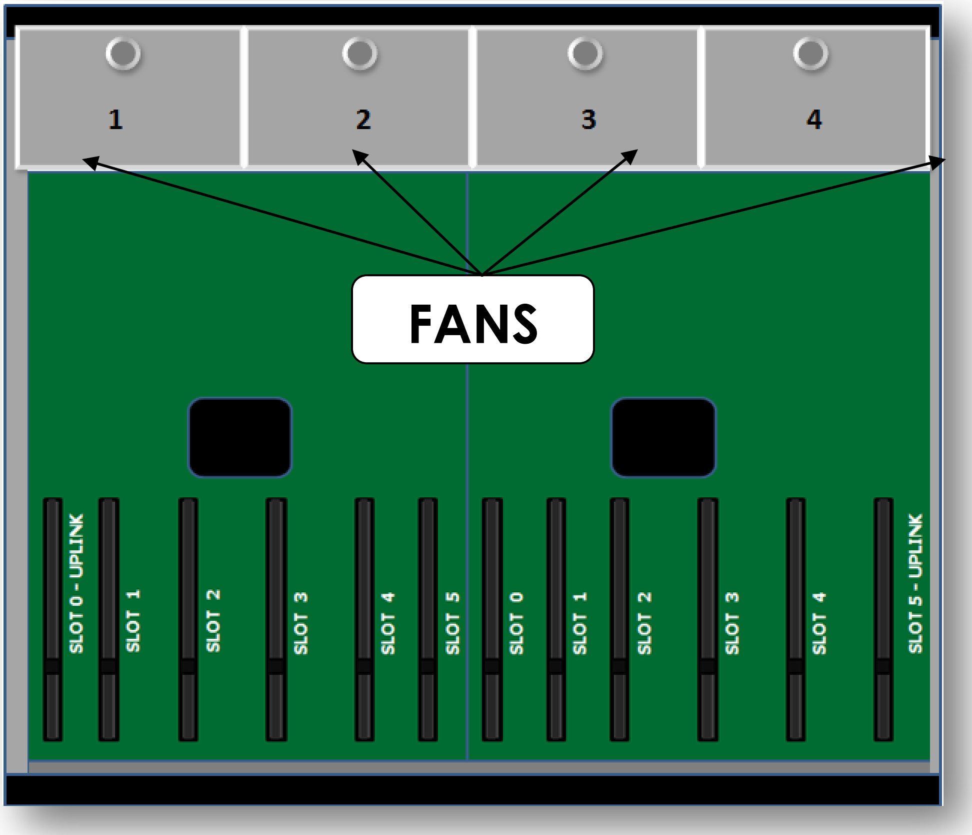
Toggle switch for interface mode setting , the interface card can be used either host or expansion . Below are the two mode-settings for the interface card.

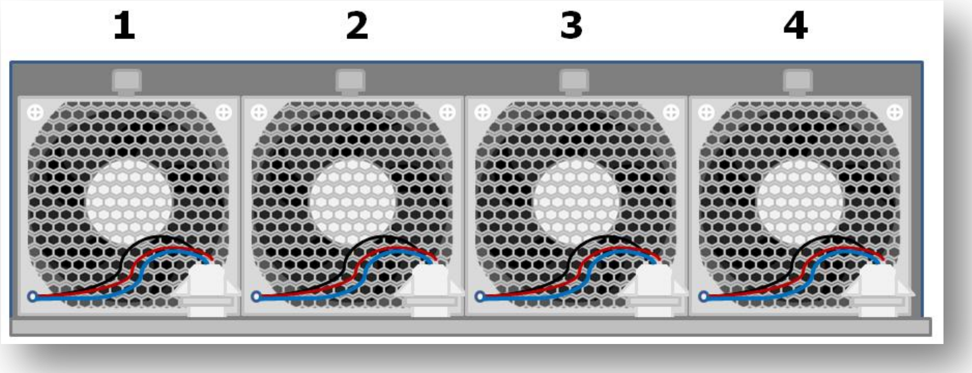

SW4
<-OFF=HOST | ON=EXP->
SW4
<-OFF=HOST | ON=EXP-
EXPANSION
ON
SW4
OFF=HOST | ON= EXP
HOST
OFF
SW4
OFF=HOST | ON= EXP

Fan

EB3600-Pexpansion unit has four fans installed enough to provide cooling to the extreme-high-heat-generating GPUs. These are high CFM / RPM and replaceable fans.

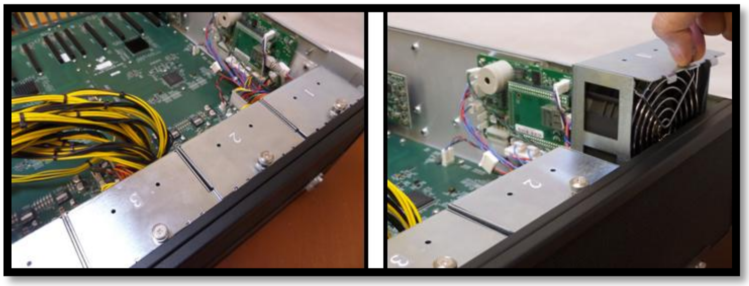
The picture below is the top view of the EB3600-Punit (viewing from the back-end) showing the order of fans starting from left to right. Each fan is labeled with a number that corresponds to their fan-slot assignment on SNMP web management. Fan#1 is located on the far left side of the expansion chassis and Fan#4 is on the far right side of the expansion unit.

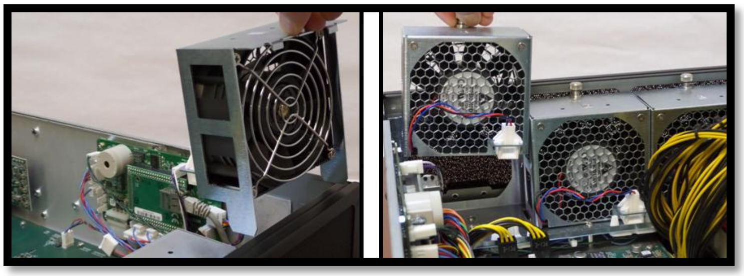

1
2
3
4
FANS
SLOT 0 - UPLINK
SLOT 1
SLOT 2
SLOT 3
SLOT 4
SLOT 5
SLOT 0
SLOT 1
SLOT 2
SLOT 3
SLOT 4
SLOT 5 - UPLINK

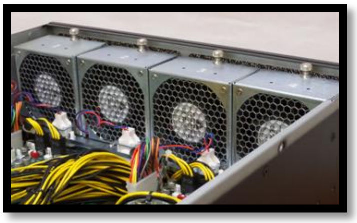


Fan Replacement

EB3600-P is designed to allow fan replacement while the chassis is powered on. First you will need to remove the chassis lid. Then locate the fan that has failed, unlock its thumbscrew, lift up its metal tab and pull it out. Insert the new fan in and secure it in place. Verify the new fan is spinning and restore the chassis lid







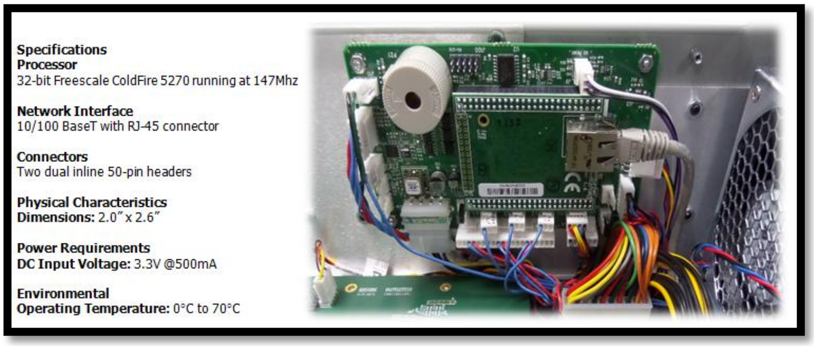
Fan Specs

92mm X 92mm X 38mm FAN, 175 CFM.

ITEM	DESCRIPTION
Rated Voltage	12 VDC
Operation Voltage	7.0-13.2 VDC
Input Current	3.10 (3.72 max) A
Input Power	37.20 (44.64 max) W
Speed	8000 RPM
Max Air Flow (at Zero Static Pressure)	4.957 (min 4.461) m3/min 175.03 (min 157.52)CFM
Max Air Pressure (at Zero Air Flow)	46.21 (min 37.43) mnH20 1.819 (min 1.473) inchH20 |
Acoustical Noise (AVG)	66.5 (Max 71.5) dB-A
Installation Type	UL: Class A
Operating Temp	10 to +60 Deg C
Storage Temp	-40 to +70 Deg C
Operating Humidity	5 to 90% RH
Storage Humidity	5 to 95 RH

SNMP / Netburner

The Interface board for the netburner module provides simple Ethernet connectivity allowing you to have direct and quick access to control devices such as the fan, power supply, and temperature and PCIe slots via the SNMP Web Management. The netburner is programmed with custom SNMP Web GUI for managing and monitoring devices.



Specifications
Processor
32-bit Freescale ColdFire 5270 running at 147Mhz

Network Interface
10/100 BaseT with RJ-45 connector

Connectors
Two dual inline 50-pin headers

Physical Characteristics
Dimensions: 2.0″ x 2.6″

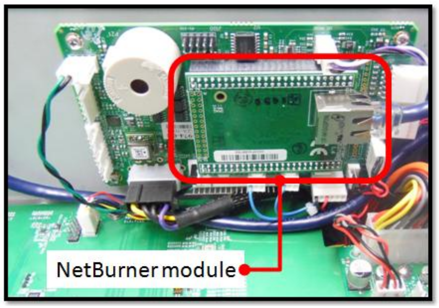
Power Requirements
DC Input Voltage: 3.3V @500mA

Environmental
Operating Temperature: 0°C to 70°C

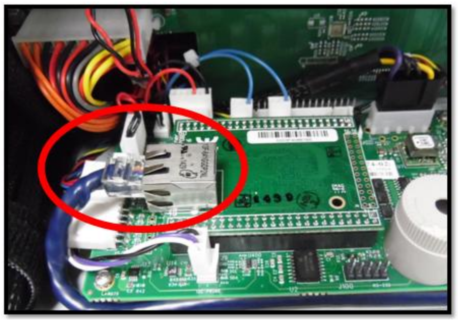
NetBurner Module

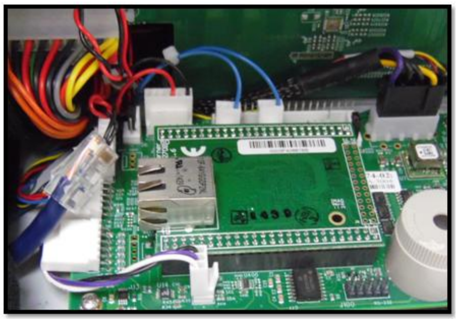
Replacing the NetBurner

If you need to replace your defective or non-functional NetBurner module follow the instructions below.

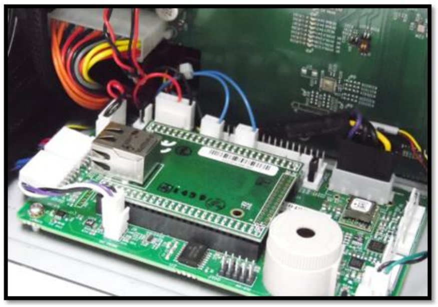
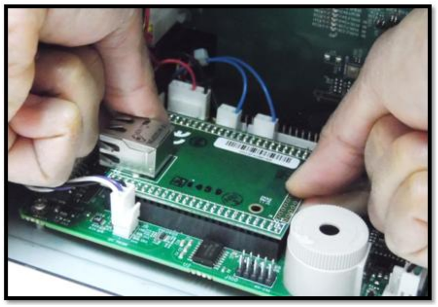


1. Position the expansion unit on its side to gain access to the NetBurner module.
2. Unplug the Ethernet cable.

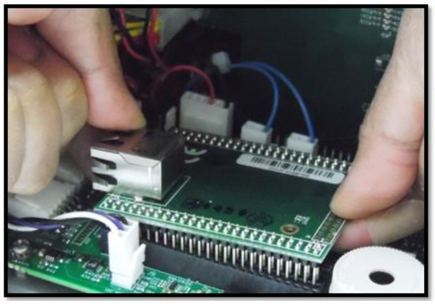
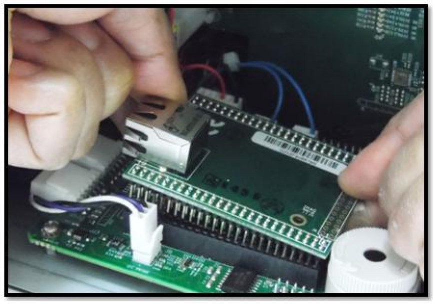
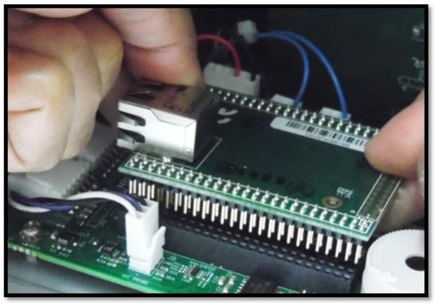




3. Lift the NetBurner card out of the interface board with two hands by placing both index fingers underneath the side of the card and both thumbs on the topside of the card, see pictures below.

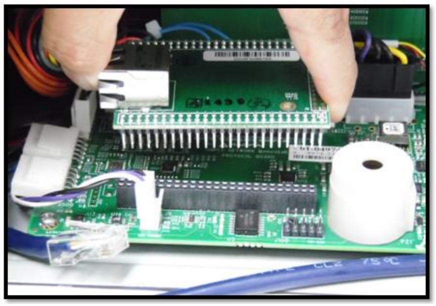
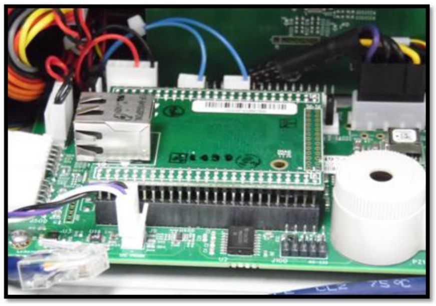



4. Use firm upward pressure underneath the card and a gentle rocking motion until the card comes loose, see pictures below.

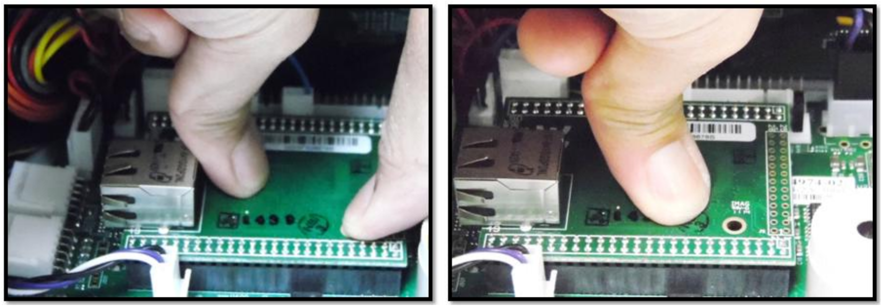




NetBurner Installation

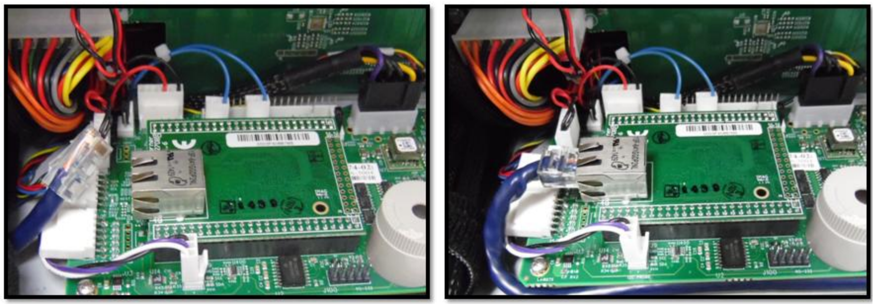
1. Align the NetBurner module on top of the Interface board connectors.

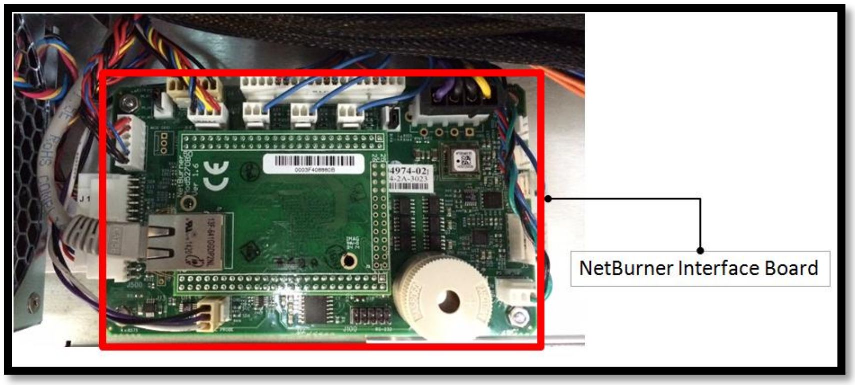
2. Gently apply pressure on top of the NetBurner module and slowly press it down until the board is firmly seated.



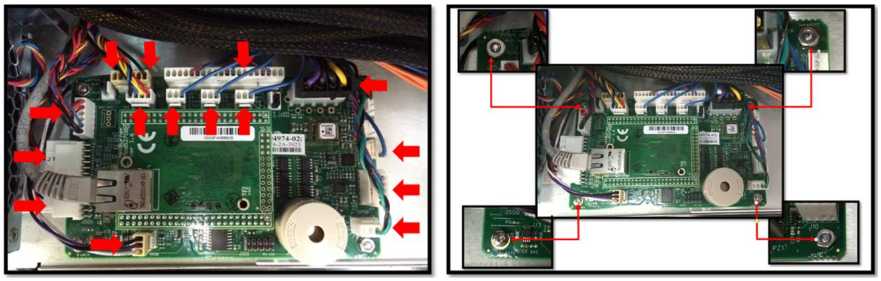
3. Reconnect the Ethernet cable to the RJ45 port.



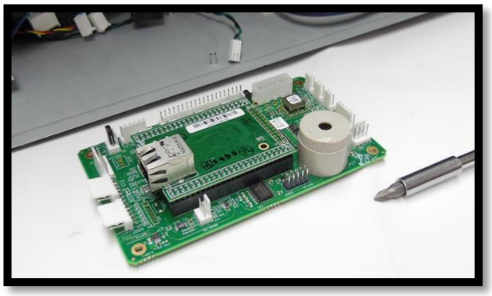
Replacing the Interface Board



1. Disconnect all the wires including the Ethernet cable from the board, see picture below.
2. Remove screw and nuts, see picture below.



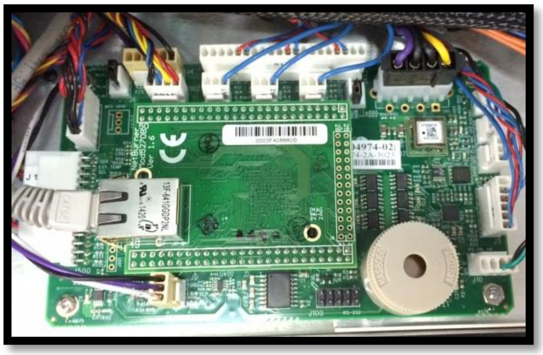
3. Remove the interface board.



NetBurner Interface Board Installation

To install the new Interface board, just follow the previous steps in reverse order.

1. Place the board in the chassis and align it on top of the 4 mounting screw-holes.
2. Secure the board. Connect all wires and plug in the Ethernet cable.



Power Supply unit

Configurable and replaceable power supply solutions of (1200W, 2400W, 3600W or 4800W).

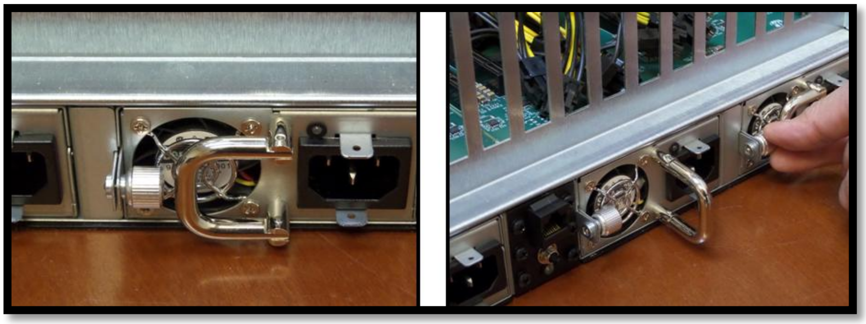
Magma EB3600-P Expansion chassis uses a redundant power supply with the ability to easily replace a power module in the event of a failure. To replace a failed power supply, unscrew the thumbscrews located on the back, simply grab the handle, and pull. Replace the failed module with a new one.

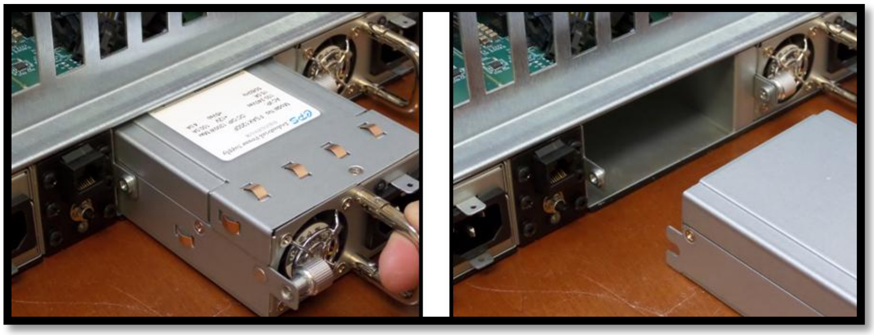
The redundant power supply includes two replaceable modules that share the power load requirements during
normal operations. Should one module fail for any reason, the power load will be shifted to the other module. An indicator for the failure would be the LEDs on the back panel of the power supply behind the chassis. For non-functioning equipment, these indicators would not show.

In case of power supply failure the audible alarm would be initiated to alert you on this condition. If this is the
case, press the black button on the status panel on the front of the unit to stop the audible alert.

How to replace the power supply module

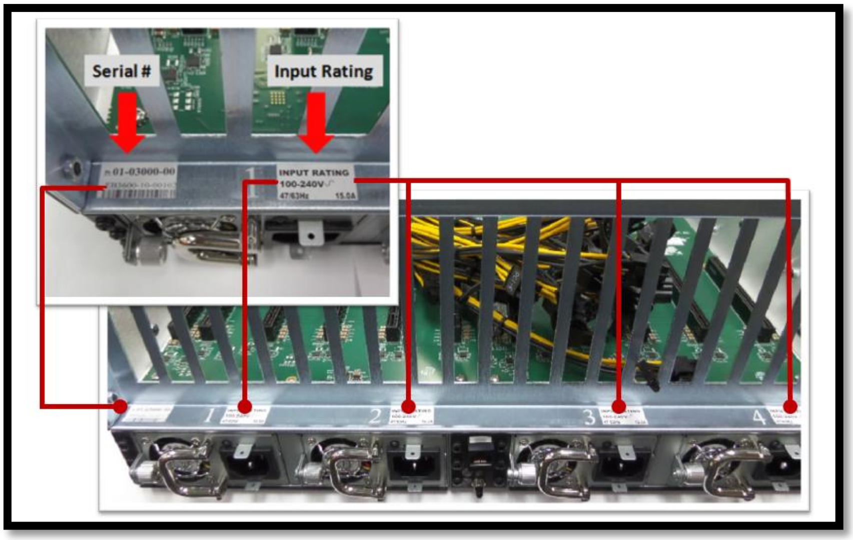
1. Put the Magma EB3600-P-AB to standby mode or turn it OFF.
2. Unscrew the thumbscrews located on the back, simply grab the handle, and pull.
3. Insert the new power supply module. Secure the power supply
4. Turn ON the Magma EB3600-P-AB expansion unit.





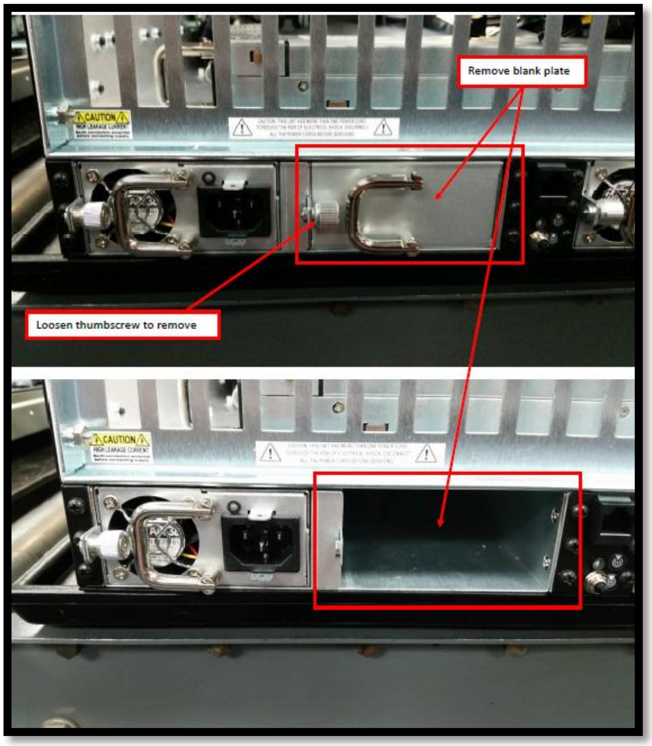
If the alarm continues, you need to reset the system to default setting by pressing and holding the Alarm Reset button (shown in the above diagram) until the LEDs blink. The color of the LEDs will turn orange. This will enable the entire device to reboot to its default settings. You can only do this once the chassis is turned off, but is still operating in standby power. So, ensure the power cable is connected between the chassis and the AC outlet.

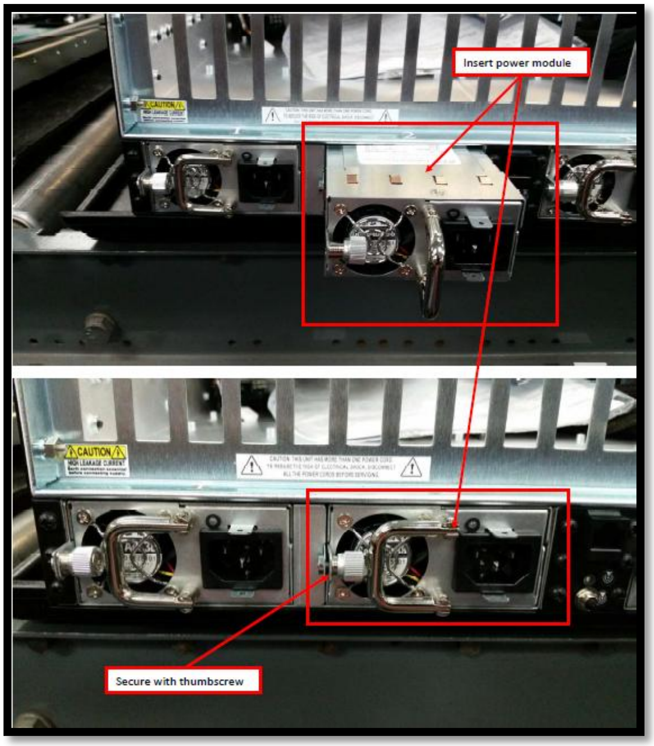
Each power supply module is labeled with a number that corresponds to their PSU-slot assignment on SNMP web management. PSU#1 is located on the far left side of the expansion chassis and PSU#4 is on the far right side of the expansion unit. The “Input Rating” (110-240) label is located on top of the power supply module.



How to Add Power Module to EB3600

Steps on how to add two additional power supply modules to EB3600-10 unit. This applies to EB3600-10 unit that has two power supply modules.


Remove blank plate
Loosen thumbscrew to remove


Insert power module
Secure with thumbscrew

Power Supply Specifications

Scope

This document defines a series of power supply systems with the output power of up to 1200W and with +12V & +5Vsb output rails or ATX output rails for 1U system application.

The power supply system consists of one (1), or two (2) power supply modules providing the +12V & +5Vsb output rails and one (1) power distribution backplane providing the removable or redundancy function of the power supply modules and also generating the +5V, +3.3V, and -12V output rails which are powered by +12V output.

The power supply module is capable of “HOT SWAP” exchanging with active current sharing and/or isolation MOSFETs built in for +12V output, and droop current sharing and/or isolation diode built in for +5Vsb output. The AC input is rated 90-264Vrms with power factor corrected (PFC > 0.95). A 38mm high reliable Sanyo Denki fan is installed to the power supply module for cooling the power supply module, power devices on the distribution backplane and part of the system.

AC Input

Table 1 lists AC input voltage and frequency range for continuous operation. The power supply is capable of supplying full-rated output power over the input voltage ranges specified.

Parameter	Min	Nominal Input	Max	Unit
V_{in} Voltage	90	100-240	264	Vrms
V_{in} Frequency	47	50/60	63	Hz
V_{in} Current /1200W		15.0		A

a) The inrush current of power supply module is less than 120A under the conditions of 240Vrms input and 25oC
ambient cold start. The inrush current is limited to the extent that no damage will be done to the power supply
under any specified line, load, and temperature conditions.
b) The leakage current of the power supply module is less than 1.5 mA measured at 264Vac input.
c) The repetitive ON/OFF cycling of AC input voltage will not damage the power supply.
d) The power supply can automatically recover from AC power loss.
e) The power supply is equipped with primary fuse for input over-current protection, and meets product safety
requirement.

DC Output

DC Output Voltage Regulations

The DC output voltages remain within the regulation ranges shown in Table 2 for both the power supply module and the completed power system when measured at the load end of the output connectors under all AC line, O/P loads, and environmental conditions.

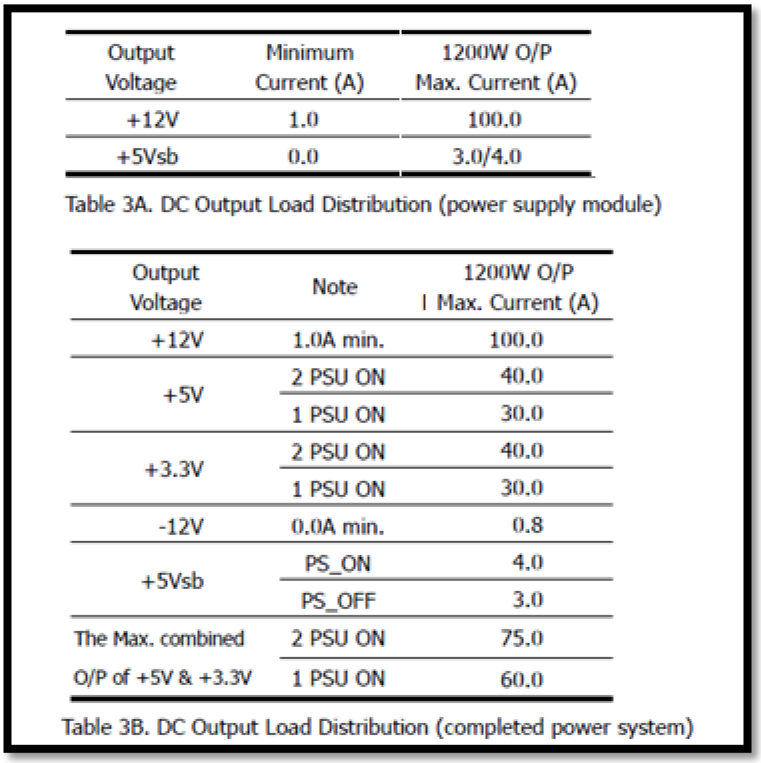
	+12V	+5V	+3.3V	-12V	+5Vsb	Unit
Range	±5%	±5%	±5%	±10%	±5%	Volt
Min	+11.40	+4.75	+3.14	-10.80	+4.75	Volt
Nom	+12.00	+5.00	+3.30	-12.00	+5.00	Volt
Max	+12.60	+5.25	+3.46	-13.20	+5.25	Volt

Table 2. DC Output Voltage Regulations

a) The remote sensing is provided to +12V, +5V, and +3.3V outputs to compensate for excessive cable drops.
b) +5V, +3.3V, and -12V outputs are located on the power distribution backplane.

DC Output Load Distributions

The Table 3 defines the power supply typical output load distribution.



Output Voltage	Minimum Current (A)	1200W O/P Max. Current (A)
+12V	1.0	100.0
+5Vsb	0.0	3.0/4.0

Table 3A. DC Output Load Distribution (power supply module)

Output Voltage	Note	1200W O/P I Max. Current (A)
+12V	1.0A min.	100.0
+5V	2 PSU ON	40.0
	1 PSU ON	30.0
+3.3V	2 PSU ON	40.0
	1 PSU ON	30.0
-12V	0.0A min.	0.8
+5Vsb	PS_ON	4.0
	PS_OFF	3.0
The Max. combined	2 PSU ON	75.0
O/P of +5V & +3.3V	1 PSU ON	60.0

Table 3B. DC Output Load Distribution (completed power system)

a) The total continuous output power is 750W~1200W max. For one (1) or two (2) modules installed.
b) The peak current of +12V output is 110% of max rated current and may last for 15 msec.
c) No minimum load is required to +5V, +3.3V, -12V and +5Vsb outputs.

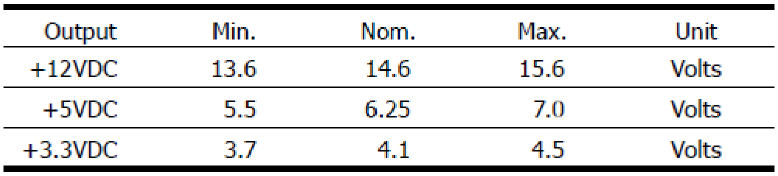
DC Output Efficiency (power supply module)

The power supply efficiency is 80% minimum measured at 20%, 50%, full load and nominal line input, which is 115Vrms and 230Vrms conditions.

Output Protection

Over Voltage Protection

The power supply can provide latch-mode over voltage protection as defined in Table 8.



Output	Min.	Nom.	Max.	Unit
+12VDC	13.6	14.6	15.6	Volts
+5VDC	5.5	6.25	7.0	Volts
+3.3VDC	3.7	4.1	4.5	Volts

Table 8. Over Voltage Protection

Over Current Protection

130% maximum for +12V output
150% maximum for +3.3V and +5V outputs

Short-circuit Protection

The power supply will shut down and latch off for shorting the +12VDC, +5VDC, and +3.3VDC rails to return or any other rails. Shorts between main output rails and +5Vsb will not cause any damage to the power supply. The power supply will shut down and latch off for shorting the negative rail. +5Vsb is capable of being shorted indefinitely, but when the short is removed, the power supply will recover automatically or by cycling PS_ON. The power supply is capable of withstanding a continuous short circuit to the outputs without damage or overstress to the unit.

No-load Operation

No damage or hazardous condition will occur with all the DC output connectors disconnected from the load. The power supply may latch into the shutdown state.

Isolation

Primary to Secondary 4242Vdc
Primary to Earth GND 2800Vdc

Output Signals (Redundant System)

Audible Alarm & Power Fail Signal

The Audible alarm and Power Fail signal are available from the signal card located on the backplane. The audible alarm is silent and the Power Fail signal is "High" when all power modules are functioning properly. The audible alarm will sound and the Power Fail signal will be "Low" under the following conditions :

a. One of the power supply modules is not functioning and is still attached to the backplane.
b. One of the power supply modules is attached to the backplane without an AC power cord plugged in.
Removing the not functioning power module from the backplane or pushing the reset switch provided will reset the audible alarm and the Power Fail signal.

LED light

The LED light installed on the power supply module is functioning as following:

a. Green color – Power module is ON and working properly.
b. Amber color – Power module is under Standby Mode or has default.
c. No color – No AC Power Connection.

Environmental

The following subsections define recommended environmental specifications and test parameters. Based on the typical conditions to which a power supply may be subjected during operation or shipment.

Temperature

Operating -10°C to +50°C
Non-operating -40°C to +85°C

Humidity

Operating 10% to 90% relative humidity (non-condensing)
Non-operating 5% to 95% relative humidity (non-condensing)

Altitude

Operating 0 to 16,000 feet (5000 meter)
Storage 0 to 50,000 feet

Mean Time between Failures (MTBF)

100K hours minimum at full load 25°C

Chapter 4 Express I/O Manager

EB3600-P contains extra features that could be utilized to monitor the status of the components on the backplane and the items in the chassis such as the state of the power supplies, fan status, and temperature. It is observed on a remote computer if an equipment malfunction has occurred.

Web Server and SNMP Features

EB3600-P supports the Simple Network Management Protocol (SNMP) for remote monitoring and administration by offering the following features:

- Internal Temperature monitoring
- Clear Alarm button monitoring
- Replaceable fan status (for fans 1,2,3 and 4 in the front)
- Power supply 1 status
- Power supply 2 status
- Power supply 3 status
- Power supply 4 status
- Traps are defined to alert the SNMP server in case of overheating or failure in any of the subsystems mentioned above
- Remote chassis turn on
- Remote Audible Alarm
- Remote Turn on Locator LED

Web Access and SNMP Configuration

To ensure that you can successfully monitor your new system, you will need to connect it to a local or private hub using a standard RJ-45 Ethernet Cable. To obtain access to the Magma chassis, direct your web browser to the given IP address: **192.168.1.10**. You must configure your network on this same domain for this to work. Later, you can change the IP address to another domain or to use DHCP

Supported Internet Browser

- Google Chrome
- Firefox

Important

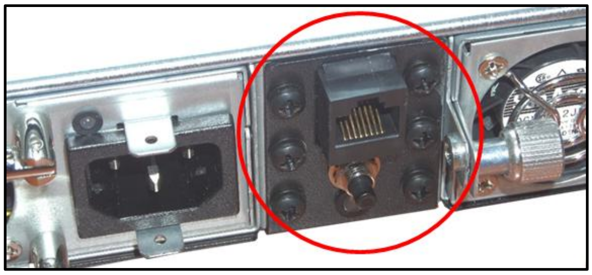
IMPORTANT
For compatibility and best performance it is highly recommended to use Google Chrome as the primary web browser and Firefox as the secondary.

To Access Express IO Manager

1. Connect Ethernet cable to Magma EB3600-P-AB and Host computer.
2. Configure Network adapter settings
3. Launch Internet browser (recommend to use Google Chrome or Firefox). Enter the IP address in the URL **192.168.1.10**, then press "ENTER"
4. Authentication login comes up.
    - For the previous Express IO Manager Console, username is **"default"** and password is **"magma".**
    - For the new Express IO Manager Console, username is **"Admin"** and password is **"magma".**
5. The user will be directed to the MAGMA Express IO Manager default home webpage.

Connect Ethernet Cable

Connect one end of the cable to the RJ-45 port, located to the top of the Expansion Interface card (back of the chassis). Connect the other end to your local area network connector or any computer. In case you connect the chassis to a local computer/laptop, be sure to use a Hub with a regular network cable ***or*** a crossover cable without a Hub.



Configure Network Setting

Configure your computer's network setting to correlate to the default IP address of the Magma chassis . The IP address of the Magma chassis is **192.168.1.10.**

Set your network settings to configure manually and enter an IP address for your computer of 192.168.1.40 where 40 can really be any free number other than 10. To verify we have successfully detected the Magma Expansion chassis on our network open your web browser and direct it to the IP address of the chassis that is **192.168.1.10**.

How to configure your network setting in Windows OS

This setting is applicable to Windows 7, 8 and Windows server.

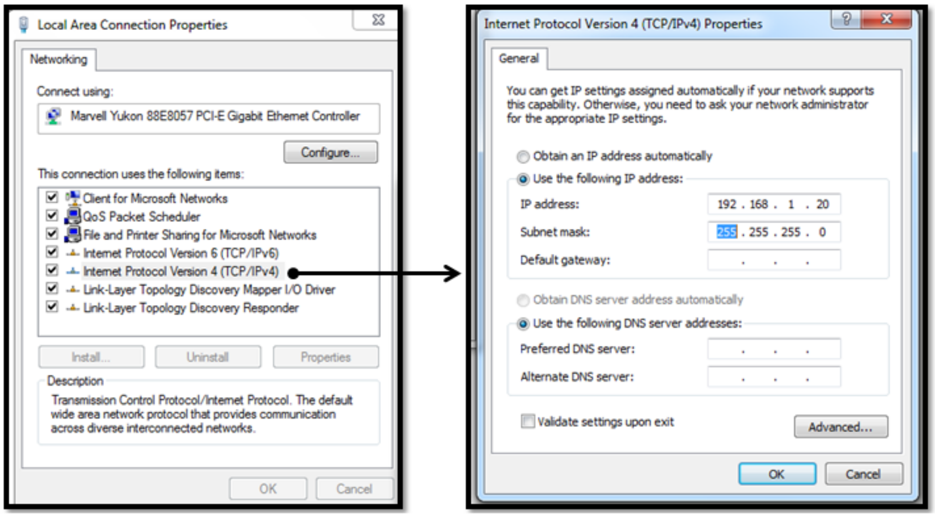
You need to disconnect your laptop or desktop computer prior to setting up the Network adapter.

1. Go to your computer
2. Right click the " network icon" below the system tray
3. Click "Open Network & Sharing Center"
4. Click Local Area Network
5. Click Properties
    a. Select "Internet Protocol Version 4 (TCP/IPV4)
    b. Click Properties

6. Select "Use the following IP address"

   a. For IP address enter 192.168.1.20
   b. For Subnet mask enter 255.255.255.0

7. Click OK



Connect using:
Marvell Yukon 88E8057 PCI-E Gigabit Ethernet Controller

This connection uses the following items:
☑ Client for Microsoft Networks
☑ QoS Packet Scheduler
☑ File and Printer Sharing for Microsoft Networks
☑ Internet Protocol Version 6 (TCP/IPv6)
☑ Internet Protocol Version 4 (TCP/IPv4)
☑ Link-Layer Topology Discovery Mapper I/O Driver
☑ Link-Layer Topology Discovery Responder

Description
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

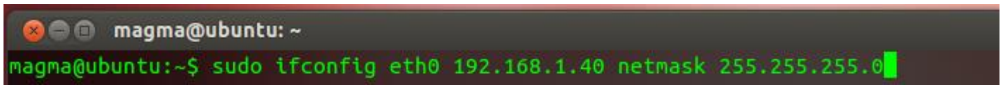
○ Obtain an IP address automatically
● Use the following IP address:
IP address: 192 . 168 . 1 . 20
Subnet mask: 255 . 255 . 255 . 0
Default gateway: . . .

○ Obtain DNS server address automatically
● Use the following DNS server addresses:
Preferred DNS server: . . .
Alternate DNS server: . . .

☐ Validate settings upon exit

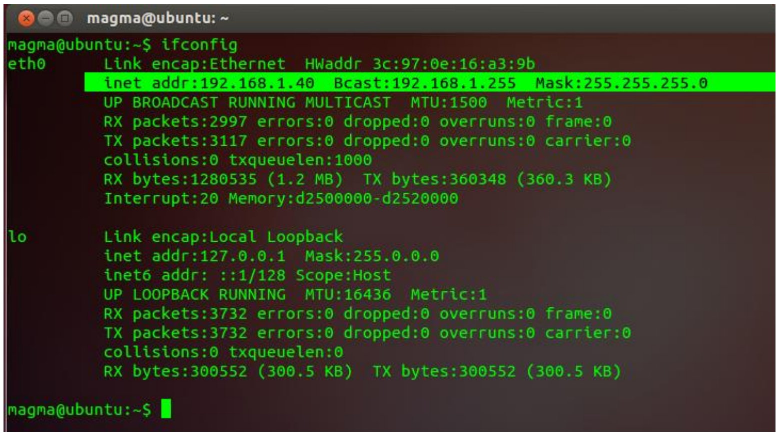
How to configure your network setting in Linux / Ubuntu

1. Start or launch the Terminal window.
2. Stop Network Manager by typing **service NetworkManager stop** command in the terminal.
3. Type **sudo ifconfig eth0 192.168.1.40 netmask 255.255.255.0** (see screenshot below).
4. Type **route add default gw 192.168.1.1**
5. Then press enter to accept the new settings.



```
magma@ubuntu:~$ sudo ifconfig eth0 192.168.1.40 netmask 255.255.255.0
```

6. You need to restart the network by typing **service network restart** command in the terminal.
7. Type **ifconfig**, to check and verify that the new IP address and Subnet mask have been accepted (see screenshot below).



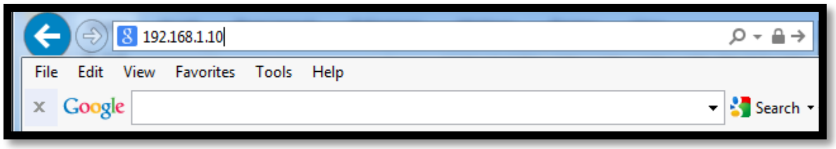
```
magma@ubuntu:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 3c:97:0e:16:a3:9b
          inet addr:192.168.1.40  Bcast:192.168.1.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:2997 errors:0 dropped:0 overruns:0 frame:0
          TX packets:3117 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:1280535 (1.2 MB)  TX bytes:360348 (360.3 KB)
          Interrupt:20 Memory:d2500000-d2520000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:3732 errors:0 dropped:0 overruns:0 frame:0
          TX packets:3732 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:300552 (300.5 KB)  TX bytes:300552 (300.5 KB)

magma@ubuntu:~$
```

When done, you can reset the Network Adapter IP address and restart your Network Manager.

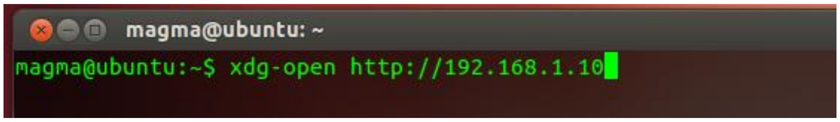
- reset the Network Adapter IP address, **sudo ip addr flush eth0** command in the terminal.
- restart your Network Manager , type **service NetworkManager start** command in the terminal.

Launch Internet Browser

For Windows OS, open your internet browser and enter the IP address in the URL 192.168.1.10 window.



For Linux / Ubuntu, type xdg-open http://192.168.1.10 on the terminal window (see screenshot below).



```
magma@ubuntu: ~
magma@ubuntu:~$ xdg-open http://192.168.1.10
```

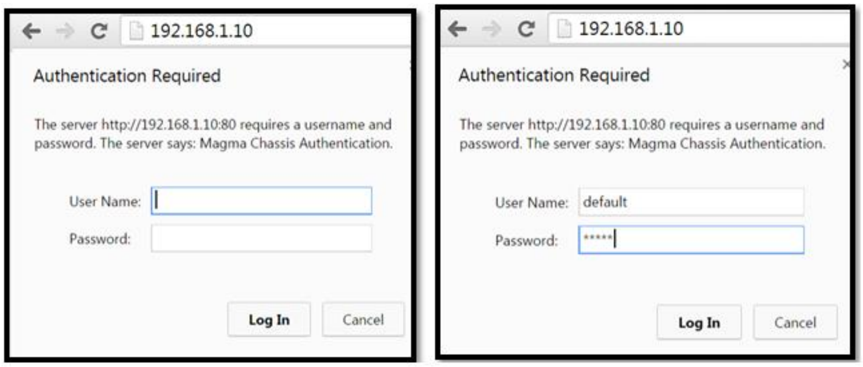
If you are getting an error or unable to start the Express IO Manager check your Ethernet cable connection. Make sure the Ethernet cable is plugged in and firmly inserted. Check to see if the cable has been cut, chewed, or otherwise damaged. If it is damaged or broken please replace it with a known good cable.

Authentication Log-in

The Authentication login for the browser will appear.

- For the previous Express IO Manager Console, username is **"default"** and password is **"magma".**
- For the new Express IO Manager Console, username is **"Admin"** and password is **"magma".**

Windows Log-in screen:



Authentication Required

The server http://192.168.1.10:80 requires a username and password. The server says: Magma Chassis Authentication.

User Name:

Password:

192.168.1.10

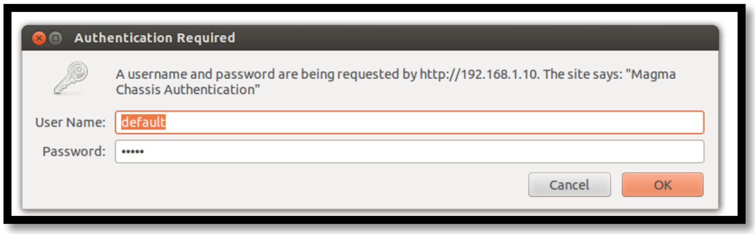
Authentication Required

The server http://192.168.1.10:80 requires a username and password. The server says: Magma Chassis Authentication.

User Name: default

Password: *****

Linux / Ubuntu Log-in screen:


Authentication Required
Cancel
OK

A username and password are being requested by http://192.168.1.10. The site says: "Magma Chassis Authentication"

User Name: default

Password: •••••

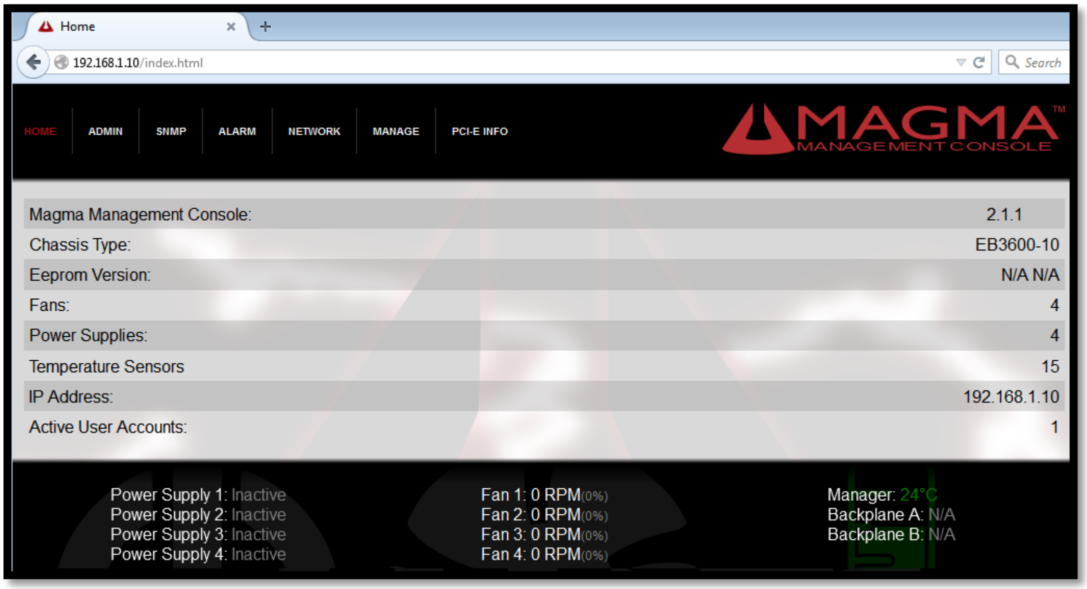
Default Home Webpage

The user will be directed to the MAGMA home webpage for the expansion device. See screenshot below as the default home webpage.

Management Console / Web page

HOME

The HOME page provides an overview for the status of the chassis. It allows you to view the number of fans, power supplies, and temperature sensors that are attached to your chassis along with the number of users that have access to the device.


Home
Search
HOME
ADMIN
SNMP
ALARM
NETWORK
MANAGE
PCI-E INFO
MAGMA
MANAGEMENT CONSOLE

192.168.1.10/index.html

Magma Management Console:	2.1.1
Chassis Type:	EB3600-10
Eeprom Version:	N/A N/A
Fans:	4
Power Supplies:	4
Temperature Sensors	15
IP Address:	192.168.1.10
Active User Accounts:	1

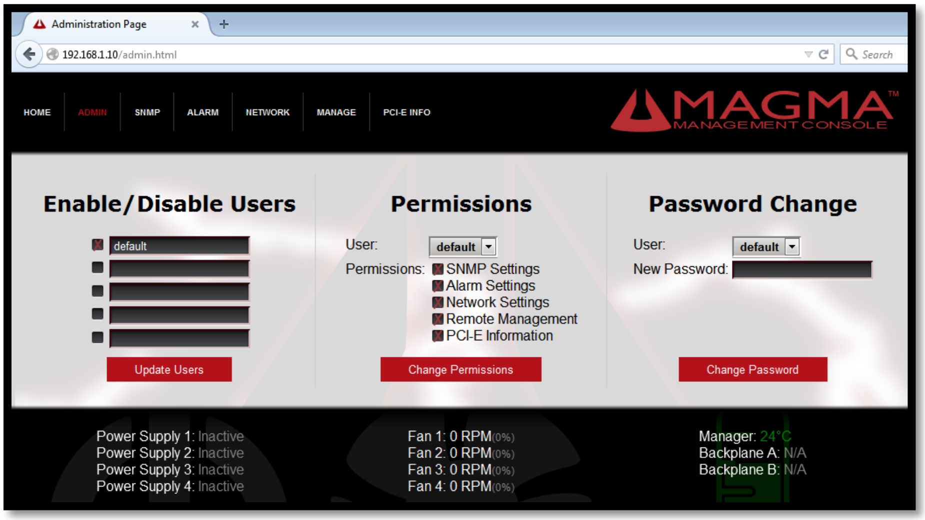
Power Supply 1: Inactive
Power Supply 2: Inactive
Power Supply 3: Inactive
Power Supply 4: Inactive

Fan 1: 0 RPM(0%)
Fan 2: 0 RPM(0%)
Fan 3: 0 RPM(0%)
Fan 4: 0 RPM(0%)

Manager: 24°C
Backplane A: N/A
Backplane B: N/A

ADMINISTRATOR

The device is capable of allowing separate users have access to the PCIe system. Based on the MODE that the device is operating in, a maximum of four users could share the same Expansion set. To add users, click on the check-box and then enter their name under **Enable/Disable Users**. You would then configure their setting based on login information and remote monitoring. The configuration is displayed on the Administration tab or **Admin**.


Administration Page
HOME
ADMIN
SNMP
ALARM
NETWORK
MANAGE
PCI-E INFO
MAGMA
MANAGEMENT CONSOLE
Update Users
Change Permissions
Change Password

192.168.1.10/admin.html

Enable/Disable Users

☒ default
☐
☐
☐
☐

Permissions

User: default
Permissions: ☒ SNMP Settings
☒ Alarm Settings
☒ Network Settings
☒ Remote Management
☒ PCI-E Information

Password Change

User: default
New Password:

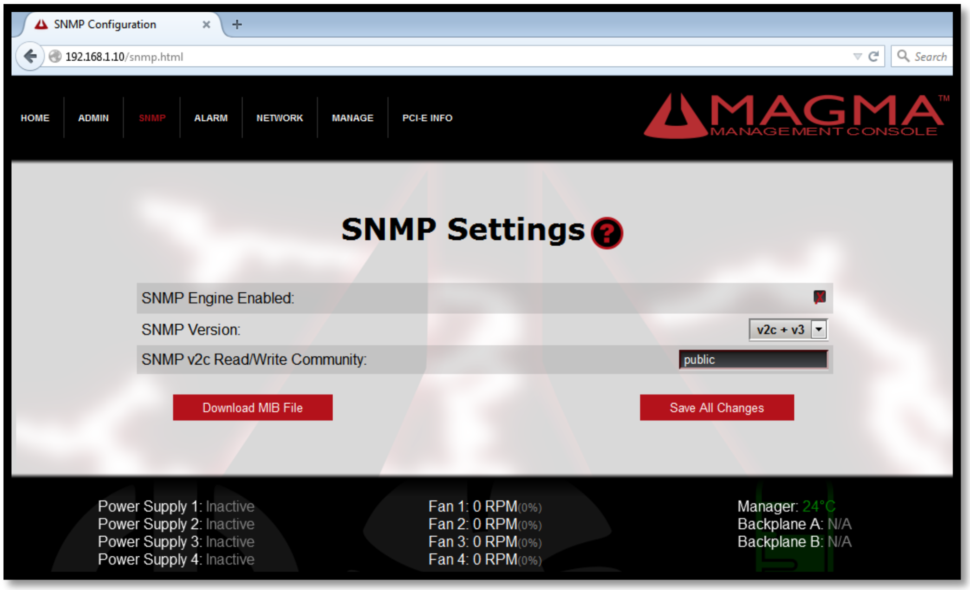
Power Supply 1: Inactive
Power Supply 2: Inactive
Power Supply 3: Inactive
Power Supply 4: Inactive

Fan 1: 0 RPM(0%)
Fan 2: 0 RPM(0%)
Fan 3: 0 RPM(0%)
Fan 4: 0 RPM(0%)

Manager: 24°C
Backplane A: N/A
Backplane B: N/A

SNMP SETTINGS

In the **SNMP Settings**, the main administrator of the device can either activate or deactivate the monitoring system by using the check-box option. You can also obtain an MIB file in text format for a report.


SNMP Configuration
HOME
ADMIN
SNMP
ALARM
NETWORK
MANAGE
PCI-E INFO
MAGMA
MANAGEMENT CONSOLE
Download MIB File
Save All Changes

192.168.1.10/snmp.html

SNMP Settings

SNMP Engine Enabled: ☒
SNMP Version: v2c + v3
SNMP v2c Read/Write Community: public

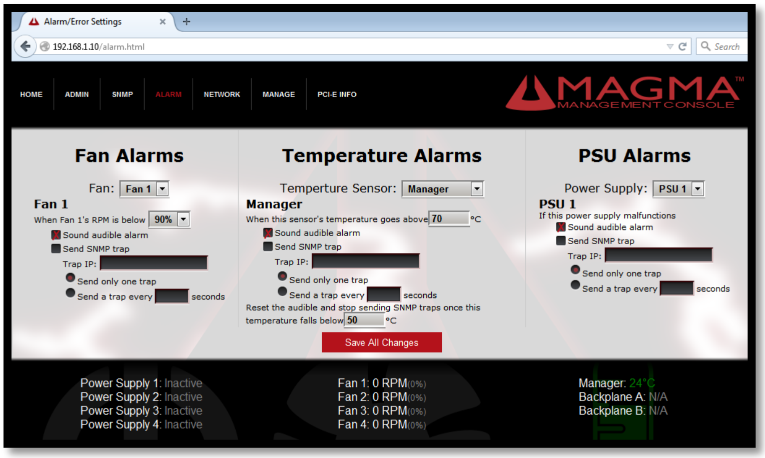
Power Supply 1: Inactive
Power Supply 2: Inactive
Power Supply 3: Inactive
Power Supply 4: Inactive

Fan 1: 0 RPM(0%)
Fan 2: 0 RPM(0%)
Fan 3: 0 RPM(0%)
Fan 4: 0 RPM(0%)

Manager: 24°C
Backplane A: N/A
Backplane B: N/A

ALARM SETTINGS

With the SNMP built into the chassis, you can oversee the configurations that are used to set off an alarm whenever there is a malfunction with the equipment pertaining to the interior of the chassis. This feature is shown on **Alarm Settings**. These settings are recommended to stay at its default condition.


Alarm/Error Settings
192.168.1.10/alarm.html
Search
HOME
ADMIN
SNMP
ALARM
NETWORK
MANAGE
PCI-E INFO
MAGMA
MANAGEMENT CONSOLE
Save All Changes

Fan Alarms

Fan: Fan 1

Fan 1

When Fan 1's RPM is below 90%

☒ Sound audible alarm

☐ Send SNMP trap

Trap IP:

● Send only one trap

○ Send a trap every seconds

Temperature Alarms

Temperture Sensor: Manager

Manager

When this sensor's temperature goes above 70 °C

☒ Sound audible alarm

☐ Send SNMP trap

Trap IP:

● Send only one trap

○ Send a trap every seconds

Reset the audible and stop sending SNMP traps once this temperature falls below 50 °C

PSU Alarms

Power Supply: PSU 1

PSU 1

If this power supply malfunctions

☒ Sound audible alarm

☐ Send SNMP trap

Trap IP:

● Send only one trap

○ Send a trap every seconds

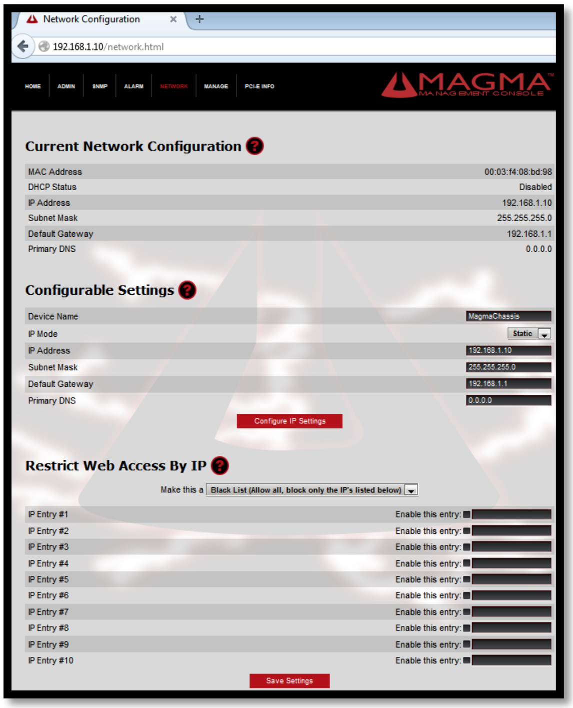
Power Supply 1: Inactive
Power Supply 2: Inactive
Power Supply 3: Inactive
Power Supply 4: Inactive

Fan 1: 0 RPM(0%)
Fan 2: 0 RPM(0%)
Fan 3: 0 RPM(0%)
Fan 4: 0 RPM(0%)

Manager: 24°C
Backplane A: N/A
Backplane B: N/A

NETWORK

The **Network** tab allows you to change your IP address. It can also permit or prevent certain IP addresses from accessing the extended feature of the chassis.


Network Configuration
192.168.1.10/network.html
HOME
ADMIN
SNMP
ALARM
NETWORK
MANAGE
PCI-E INFO
MAGMA
MANAGEMENT CONSOLE
Configure IP Settings
Save Settings

Current Network Configuration

MAC Address	00:03:f4:08:bd:98
DHCP Status	Disabled
IP Address	192.168.1.10
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary DNS	0.0.0.0

Configurable Settings

Device Name	MagmaChassis
IP Mode	Static
IP Address	192.168.1.10
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary DNS	0.0.0.0

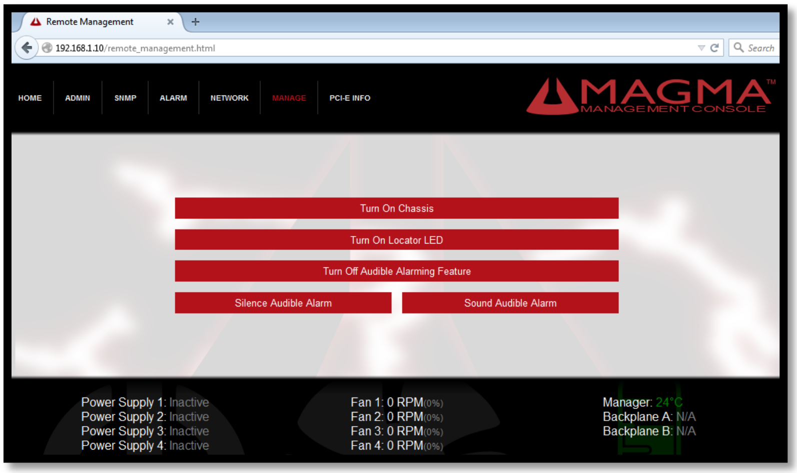
Restrict Web Access By IP

Make this a Black List (Allow all, block only the IP's listed below)

IP Entry #1	Enable this entry: ☐
IP Entry #2	Enable this entry: ☐
IP Entry #3	Enable this entry: ☐
IP Entry #4	Enable this entry: ☐
IP Entry #5	Enable this entry: ☐
IP Entry #6	Enable this entry: ☐
IP Entry #7	Enable this entry: ☐
IP Entry #8	Enable this entry: ☐
IP Entry #9	Enable this entry: ☐
IP Entry #10	Enable this entry: ☐

REMOTE MANAGEMENT

Remote Management is a feature that is available through the SNMP. You have the option of configuring the alarm to be ON and in alert mode while the chassis is powered by clicking the **Turn On Audible Alarming Feature**. By default, this alarm should already be activated. If any problems occur, an alarm from the chassis will emit an alerting sound. Ensure the conditions of the internal fans, power supplies, or electrical components on the PCIe backplane are functional by following ***Chapter 3: Advanced Technical Information***. To verify what is causing the chassis to respond improperly, you can turn off the alarm by pressing **Silence Audible Alarm**.


Remote Management
192.168.1.10/remote_management.html
Search
HOME
ADMIN
SNMP
ALARM
NETWORK
MANAGE
PCI-E INFO
MAGMA
MANAGEMENT CONSOLE
Turn On Chassis
Turn On Locator LED
Turn Off Audible Alarming Feature
Silence Audible Alarm
Sound Audible Alarm

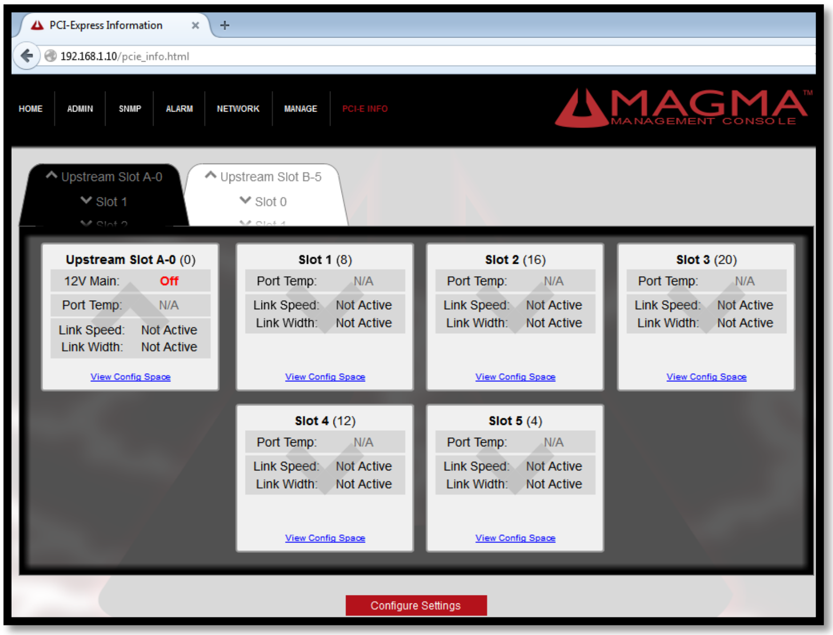
Power Supply 1: Inactive
Power Supply 2: Inactive
Power Supply 3: Inactive
Power Supply 4: Inactive

Fan 1: 0 RPM(0%)
Fan 2: 0 RPM(0%)
Fan 3: 0 RPM(0%)
Fan 4: 0 RPM(0%)

Manager: 24°C
Backplane A: N/A
Backplane B: N/A

PCI-E INFO

The **PCI-E Info** page contains status on the individual slots of the backplane device. The information that is available on this page provides you with an overview of what speed it is running on and how many lanes the slot is using. This variation is based on the PCI-Express card that is inserted into the slot.


PCI-Express Information
192.168.1.10/pcie_info.html
HOME
ADMIN
SNMP
ALARM
NETWORK
MANAGE
PCI-E INFO
MAGMA
MANAGEMENT CONSOLE
Upstream Slot A-0
Slot 1
Upstream Slot B-5
Slot 0
View Config Space
Configure Settings

Upstream Slot A-0 (0)
12V Main: Off
Port Temp: N/A
Link Speed: Not Active
Link Width: Not Active

Slot 1 (8)
Port Temp: N/A
Link Speed: Not Active
Link Width: Not Active

Slot 2 (16)
Port Temp: N/A
Link Speed: Not Active
Link Width: Not Active

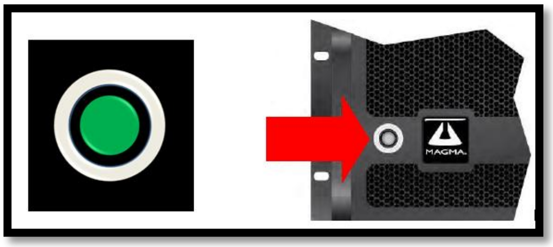
Slot 3 (20)
Port Temp: N/A
Link Speed: Not Active
Link Width: Not Active

Slot 4 (12)
Port Temp: N/A
Link Speed: Not Active
Link Width: Not Active

Slot 5 (4)
Port Temp: N/A
Link Speed: Not Active
Link Width: Not Active

Reset the chassis to default parameters

Restore your chassis to the factory default values by pressing front button 10 time continuously . When all values have been restored, the expansion will shut down and reboot back up.



Below are steps on how to reset the chassis to default parameters / values.

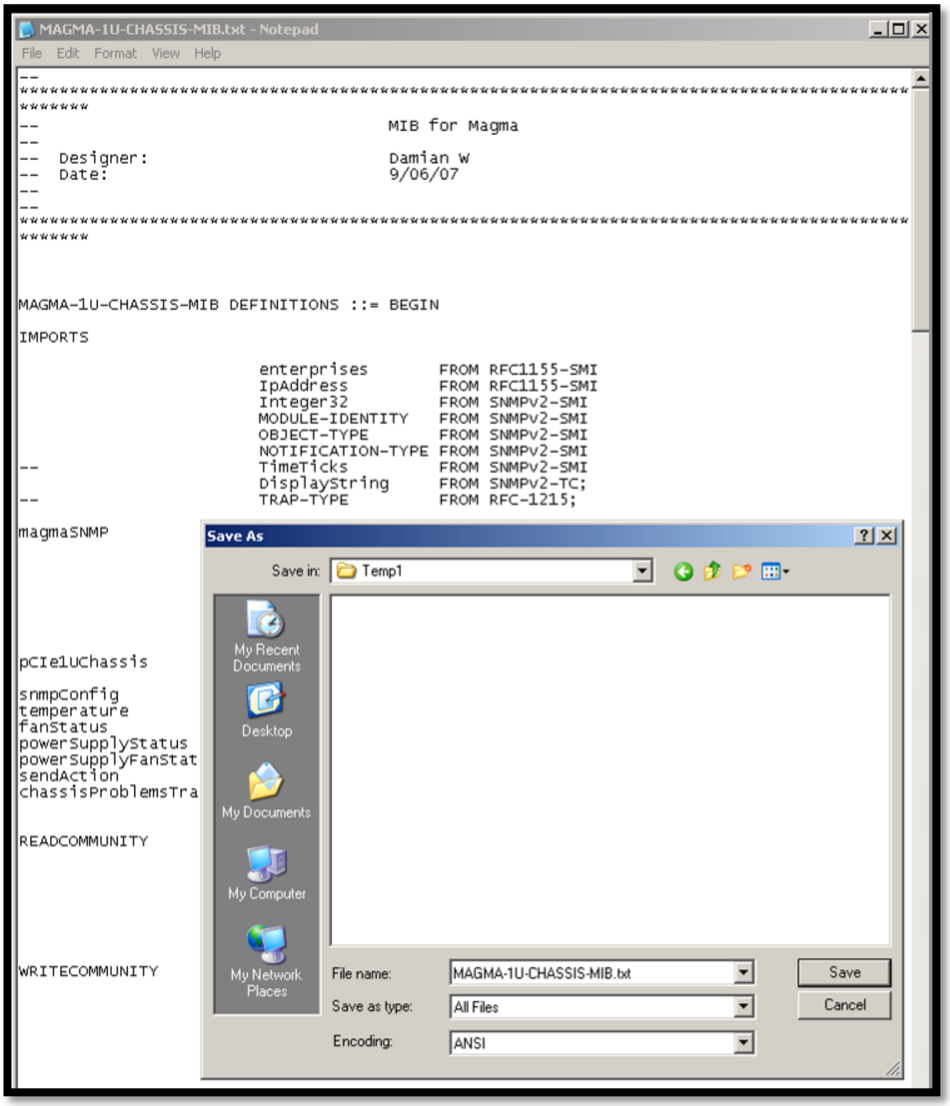
A. Turn OFF the Host computer.
B. Turn OFF the expansion unit.
C. Disconnect the expansion unit from the Host computer.
D. Turn ON the expansion unit.
E. Press the front "Button" (a.k.a Power On Button / Front LED) **ten times** continuously.
F. The expansion unit will shut down and reboot back up. If it doesn't power up, press the front button to power it up.
G. Start your Internet Browser
    a. Type 192.168.1.10
    b. Enter User name: Admin
    c. Enter password: magma
    d. You should be able to login. Check, the SNMP make sure it is set back to default configuration.

Configure your SNMP Agent

If you use an SNMP agent to help you monitor your network, you will find all necessary monitoring information in the MIB file.

Retrieving the MIB File

The MIB file is available for download at: http://www.magma.com/drivers.asp in the SNMP section of that page.
After you click on the MIB file link, save the file as type "All Files" to your preferred location. You may then open the file (using Notepad, or equivalent text editor) and all the information needed to configure your SNMP agent will be displayed on the screen:


MAGMA-1U-CHASSIS-MIB.txt - Notepad
File
Edit
Format
View
Help
Save As
My Recent Documents
Desktop
My Documents
My Computer
My Network Places
Save
Cancel

```
--
*****************************************************************************************
*******
--                                   MIB for Magma
--
--  Designer:                        Damian W
--  Date:                            9/06/07
--
--
*****************************************************************************************
*******


MAGMA-1U-CHASSIS-MIB DEFINITIONS ::= BEGIN

IMPORTS

                        enterprises       FROM RFC1155-SMI
                        IpAddress         FROM RFC1155-SMI
                        Integer32         FROM SNMPv2-SMI
                        MODULE-IDENTITY   FROM SNMPv2-SMI
                        OBJECT-TYPE       FROM SNMPv2-SMI
                        NOTIFICATION-TYPE FROM SNMPv2-SMI
--                      TimeTicks         FROM SNMPv2-SMI
                        DisplayString     FROM SNMPv2-TC;
--                      TRAP-TYPE         FROM RFC-1215;

magmaSNMP




pCIe1UChassis

snmpConfig
temperature
fanStatus
powerSupplyStatus
powerSupplyFanStat
sendAction
chassisProblemsTra


READCOMMUNITY







WRITECOMMUNITY
```

Save in: Temp1

File name: MAGMA-1U-CHASSIS-MIB.txt

Save as type: All Files

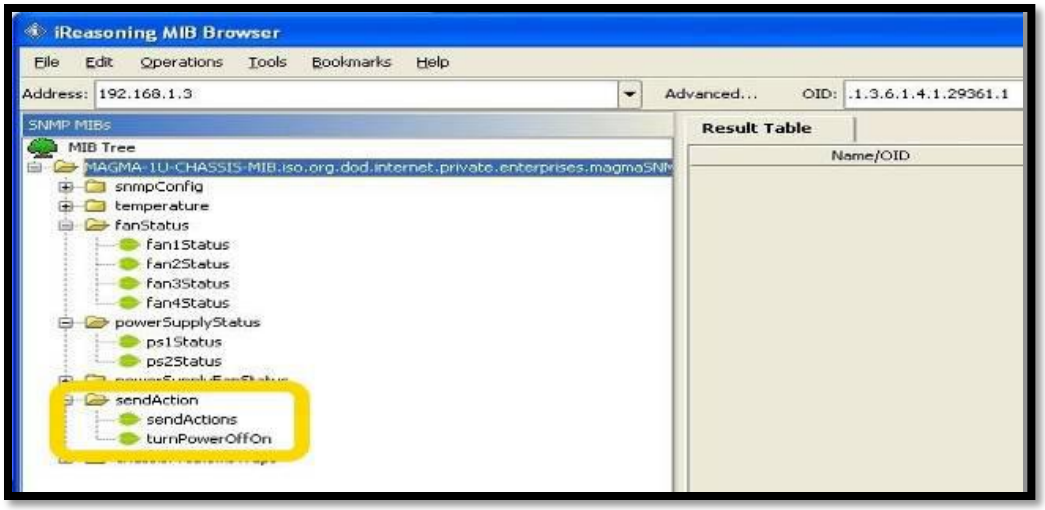
Encoding: ANSI

Once the MIB file is saved it can now be copied and loaded locally or to a remote server.

Accessing the various SNMP functions

Once the MIB file has been loaded to an SNMP server (via front-end software typically called a MIB Browser) we can read status information and set up specific functions otherwise not available via the Web interface.

The MIB Browser (or equivalent front-end SNMP software) will display the Magma chassis MIB contents in an explorer-like, Tree interface. A snapshot from the MIB Browser by iReasoning is shown below:


iReasoning MIB Browser
File
Edit
Operations
Tools
Bookmarks
Help
Advanced...
SNMP MIBs
MIB Tree
MAGMA-1U-CHASSIS-MIB.iso.org.dod.internet.private.enterprises.magmaSNM
snmpConfig
temperature
fanStatus
fan1Status
fan2Status
fan3Status
fan4Status
powerSupplyStatus
ps1Status
ps2Status
sendAction
sendActions
turnPowerOffOn
Result Table
Name/OID

Address: 192.168.1.3

OID: .1.3.6.1.4.1.29361.1

Under the MIB Tree, the Magma Chassis will have status information that can be read by expanding the respective folders. This information is also available in the Web interface mentioned previously. In addition, if we expand the *sendAction* folder (as shown above) we gain access to “writable” functions that essentially allow us to remote-control the chassis.

Chapter 5 Functional / Benchmark Tests

Here are simple functional tests that you can perform with your expansion unit.

1. Net burner / SNMP Verification Test
2. Replaceable Fan Test
3. Replaceable PSU Test
4. Express IO Manager "radio button" Test
5. Express IO Manager Administration Test
6. Benchmark & Slot Link Tests

See next pages for steps on how to perform these tests.

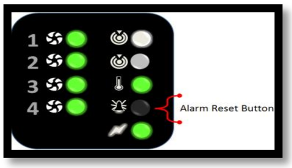
SNMP Verification Test

Accessing the SNMP Express IO Manager

A. Plug-in Ethernet cable (or use cross-over cable) to chassis RJ-45 port.
B. Plug-in all power cords to expansion chassis.
C. Do not turn ON the expansion chassis yet.
D. Connect the other end of the Ethernet cable to Laptop PC.
E. Go to your Laptop PC and Change the Internet Protocol version.
    a. Right click on the network icon from the system tray
    b. Select Open Network and Sharing Center
    c. Select Local Area Connection
    d. Select Properties
    e. Select Internet Protocol Version 4 (TCP/IPv4)
    f. Select Properties
    g. Select " Use the following IP address"
        i. IP Address: 192.168.1.20
        ii. Subnet mask: 255.255.255.0
        iii. Click OK
A. Start "internet browser" and then type 192.168.1.20
    a. For the previous Express IO Manager Console, username is "default" and password is "magma".
    b. For the new Express IO Manager Console, username is Admin and password is "magma"
B. Express I/O Manager web interface shows up
C. Turn the expansion chassis ON
    a. Click Home Tab
    b. Click Details (PSU) and Fan Details.
    c. PSU's Details, should show "GOOD" for power supply 1, power supply 2, power supply 2, and power supply 4
    d. Fan Details, should show RPM values per each fan.
        i. FAN 1-8057 RPM (example only)
        ii. FAN 2 -8192 RPM (example only)
        iii. FAN 3 – 8192 RPM (example only)
        iv. FAN 4 – 8333 RPM (example only)

Replaceable Fan Test

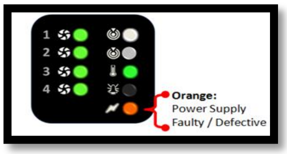
A. Pull all the fans out, do it one at a time. Start with Fan#1 first.
    a. Audible Alarm sound off
    b. Check FAN Details. It should show "FAN 1- 0 RPM' in red font
    c. Check Front Panel Status LED: FAN 1 LED is lit as solid ORANGE
B. Put the FAN 1 back into the fan slot holder.
    a. Check Front Panel Status LED: FAN 1 LED turns to solid Green
    b. Check Fan Details (via Express IO Manager). FAN 1 should show RPM value (i.e. FAN 1: 8057 RPM)
    c. Press the "Alarm Reset Button" to turn on Audible Alarm



C. Perform the same methods with the three remaining FANs. All Four Fans should be tested.

Power Supply Test

A. Disconnect power cord or pull out the power supply from housing, do this one at a time. Start with power cord#1 or power supply #1
    a. Power Supply audible alarm reverberates.
    b. Power Supply LED turns to Orange.
    c. PSU Details (via Express IO Manager) should show "Failure".
    d. Front Panel Status LED for PSU turns to Orange.



B. Put the power cord or power supply module.
    a. Press the Alarm Reset Button, this should silence the alarm.
    b. Power Supply LED turns to solid Green.
    c. PSU Details (via Express Io Manager) should show "Power Supply is Good"
    d. Front Panel Status LED turn to solid Green.

1
2
3
4
Green:
Power Supply
Good

Express IO Manager “radio button” Test

A. Click “Manage” Tab
B. Click “Turn OFF chassis”
  a. Chassis should turn off
C. Click “Turn ON Chassis”
  a. Chassis should turn on
D. Click “Turn ON Locator LED”
  a. Flashing LEDs comes on from the back of the unit below RJ-45 port.
  b. Front Panel Status – Locator LED flashes
E. Click “Turn Off Locator LED”
  a. Locator LED should turn OFF.
F. Click “Turn ON Audible Alarming Feature”
  a. Click “Sound Audible Alarm”, alarm should sound off
  b. Click “ Silence Audible Alarm”

Express IO Manager Administration Test

A. Under “Enable / Disable Users”
  a. Enter “test” in the provided space.
  b. Check the box.
  c. Click Save.
B. Under “Permissions”
  a. Select the pull down arrow.
  b. Select test.
  c. Check all Permissions (box)
  d. Click Change Permissions
C. Under “Password Change”
  a. Select the pull down arrow.
  b. Select “test”, if it is not selected yet.
  c. Enter new password as “test”
  d. Click Save Password.
D. Close the Internet Browser
  a. Re-launch Internet Browser
  b. Type 192.168.1.10
  c. Log in using the “test” account
    i. User name: test
    ii. Password: test
  d. You should be able to log in.

Chapter 6 Rack Slide Installation

Installing the EB3600-P Chassis in a Rack

This section shows you how to install the EB3600-P chassis in a rack-mount cabinet.

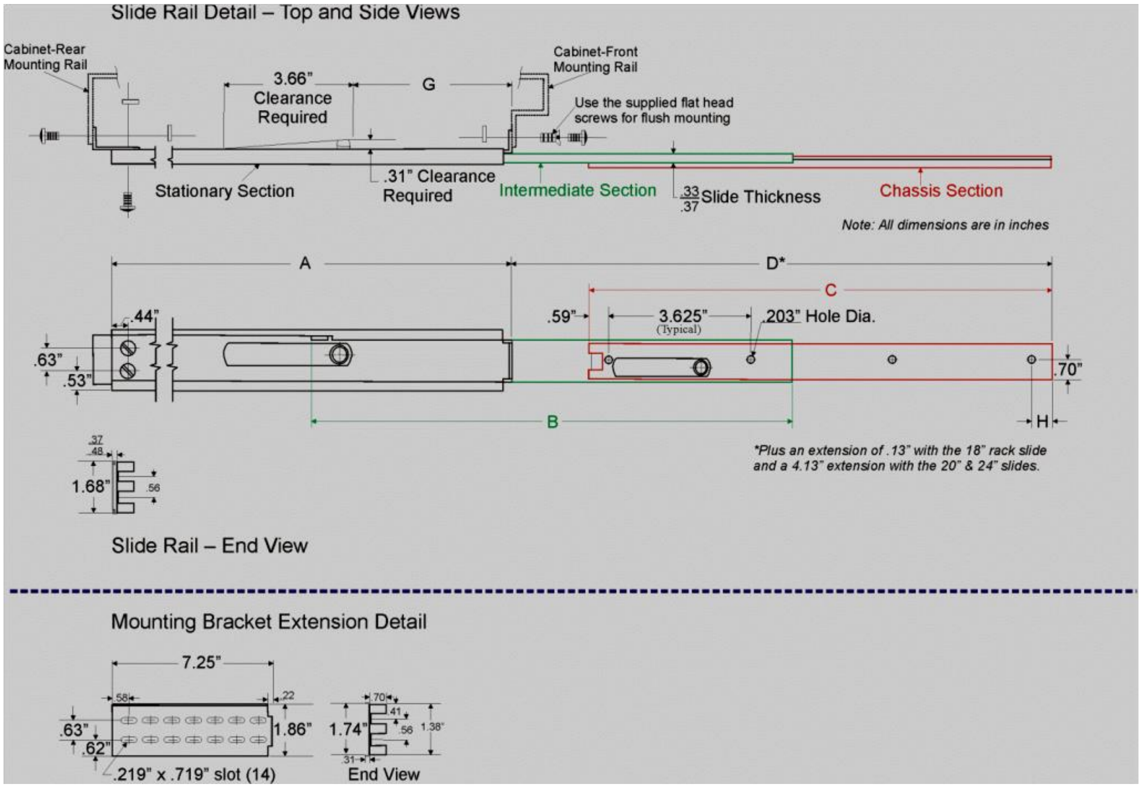
Rack Mounting

The PCIe expansion chassis can be installed in a rackmount cabinet that conforms to Electronic Industries Alliance (EIA) standards for computer equipment. The cabinet must be tall enough to accommodate the computer's height and deep enough to accommodate the system's depth, while providing the proper clearances for air flow and cabling. A cabinet with a standard depth of 31.5 inches (800mm) should be sufficient; however, a rack with a non-standard depth dimension of at least 28 inches (660mm) will provide the suggested minimum front and rear chassis clearances needed for an installation. The PCIe expansion chassis is designed to be supported in the cabinet with rack slides

Rack Slides

Two different rack slide kits are available, 26" and 28" Rack slide kits. Each rack slide kit comes with two 7.25" adjustable mounting bracket extensions for use with the rack slides.

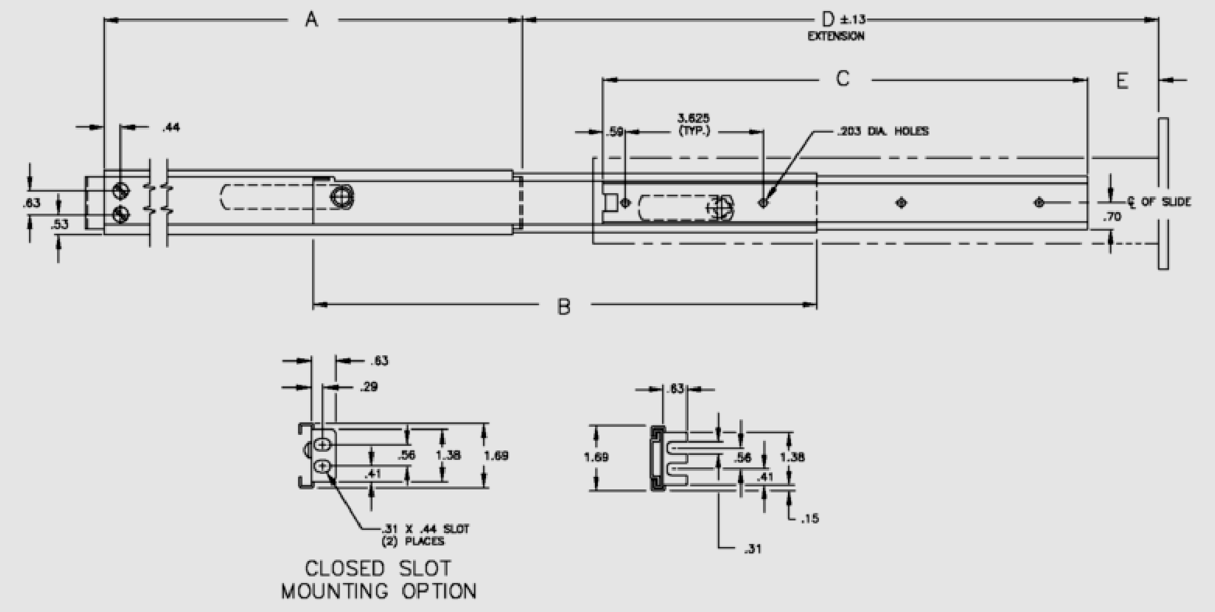
Slide Rail Dimension Information


Slide Rail Detail – Top and Side Views
Cabinet-Rear Mounting Rail
3.66" Clearance Required
G
Cabinet-Front Mounting Rail
Use the supplied flat head screws for flush mounting
Stationary Section
.31" Clearance Required
Intermediate Section
.33 .37 Slide Thickness
Chassis Section
Note: All dimensions are in inches
A
D*
C
.44"
.59"
3.625" (Typical)
.203" Hole Dia.
.63"
.53"
.70"
B
H
*Plus an extension of .13" with the 18" rack slide and a 4.13" extension with the 20" & 24" slides.
.37 .48
1.68"
.56
Slide Rail – End View
Mounting Bracket Extension Detail
7.25"
.58
.22
.63"
.62"
1.86"
.219" x .719" slot (14)
.70
.41
1.74"
.56
1.38"
.31
End View

Specifications

Slide Rail Specs	
Stationary Section	Closed Slot
Material	Cold Rolled Steel
Slide Length - A	28.00 in
Intermediate Length - B	25.25 in
Forward Extension - D (min)	27.00 in
Forward Extension - D (max)	29.00 in
Weight Capacity	80 lbs

- Standard hardware packages include all hardware necessary to mount your Chassis:
  - Rear mounting brackets
  - Bar nuts (CA8056-06-0017)
  - #10-32 x 0.50 F.H.M.S. (flush front rail mounting)
  - #10-32 x 0.38 B.H.M.S.
  - #10-32KEPS® nuts


A
D ±.13
EXTENSION
C
E
.44
.59
3.625
(TYP.)
.203 DIA. HOLES
.63
.53
℄ OF SLIDE
.70
B
.63
.29
.56
1.38
1.69
.41
.31 X .44 SLOT
(2) PLACES
CLOSED SLOT
MOUNTING OPTION
.63
1.69
.56
1.38
.41
.15
.31

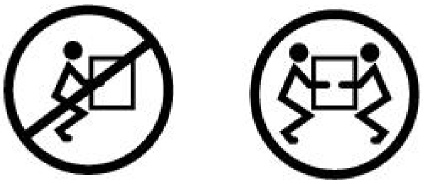
Safety Instructions

Always use caution when servicing any electrical component. Before handling the Magma Expansion chassis, read the following instructions and safety guidelines to prevent damage to the product and to ensure your own personal safety.

Materials handling

To reduce the risk of personal injury or damage to the equipment:

1. Practice local occupational health and safety requirements and guidelines for handling materials.
2. Obtain assistance to lift and stabilize the product during installation or removal.
3. The weight of this part or unit is between 60 to 70 lbs. It takes two people to safely lift this part or unit. To prevent personal injury or damage to the chassis, never attempt to lift expansion chassis alone.



4. Disconnect all cabling and pluggable power supplies and modules to reduce the weight of the product.
5. Be careful when pressing the rail release latches and sliding the product into the rack. The slide rails could pinch your fingertips.
6. Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
7. Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.

Rack Stability

To reduce the risk of personal injury or damage to the equipment, the rack must be secured adequately to prevent it from becoming unstable and/or falling over.

1. Extend the leveling jacks to the floor.
2. Ensure that the full weight of the rack rests on the leveling jacks.
3. Install stabilizing feet on the rack.
4. In a multiple-rack installation, fasten the racks together securely.
5. Extend only one rack component at a time. Racks can become unstable if more than one component is extended.
6. Load the rack from the bottom up, starting with the heaviest component.
7. Ensure that the component is properly mated with the rails, or the rails may be unstable.
8. Do not attempt to move a fully loaded rack. Remove components from the rack before moving it.
9. Do not attempt to move a rack on an incline that is greater than 10 degrees from horizontal.

CAUTION

Elevated Operating Ambient Temperature: If the expansion is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified for the expansion.

CAUTION

Reduced Air Flow: Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised

CAUTION

Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or over current protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.

CAUTION

Reliable Earthing: Reliable earthing of rackmounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).

Tools and Supplies Needed

1. Phillips* (cross head) screwdriver (#1 bit and #2 bit)
2. Measuring Tape

Parts List

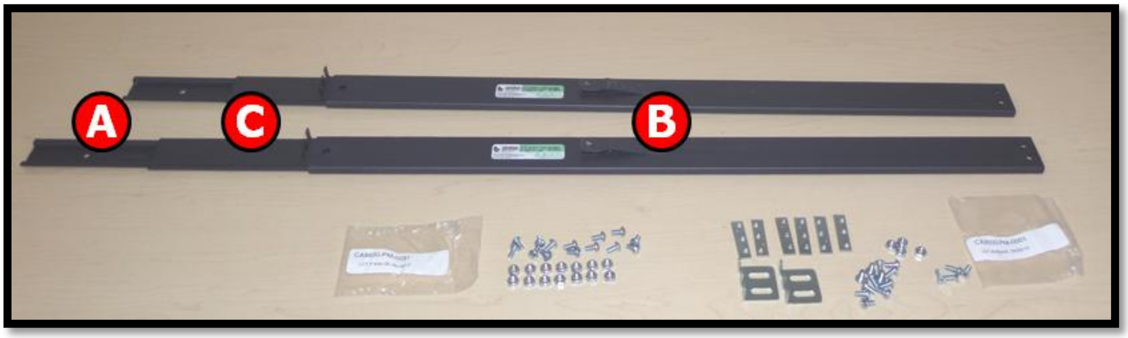
2 - Slide Rails
4 - End Brackets (2-long, 2-short)
2 - Bags of Assorted Nuts & Bolts

Slide Rail Installation Instructions

Prepare Slide Rails for Assembly (STEP 1)

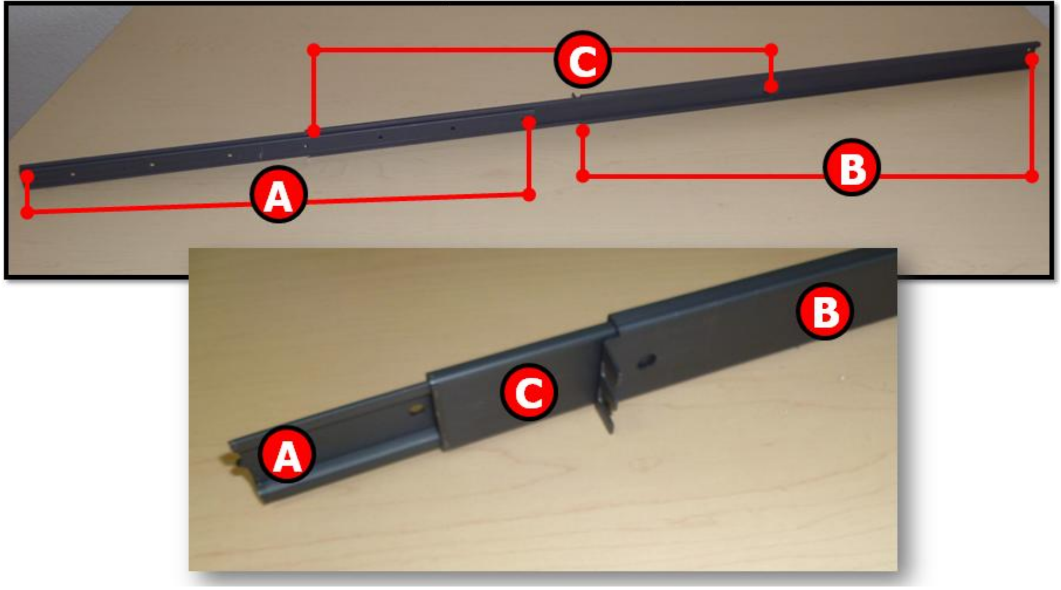
1. Remove slide rails and end bracket from the box.
2. Slide rail kits include the following items

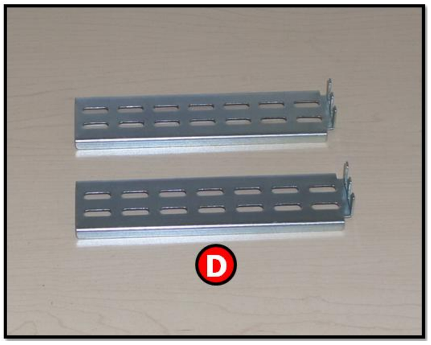
Remove slide piece **A** from the assembly. Slide the inside portion of the rail completely out until you hear an audible click. On the inside of the rail, you will see a rail stop hook, push the hook up to release and detach the inside portion of the slide completely from the outside portion of the rack slide. Set aside slide A. You will be mounting this part of the expansion chassis.



The remaining assembly includes slide piece **C** inside slide piece **B**.
Prepare the end bracket extension. The end bracket **D** will be added to slide piece **B** in **Step 3**.

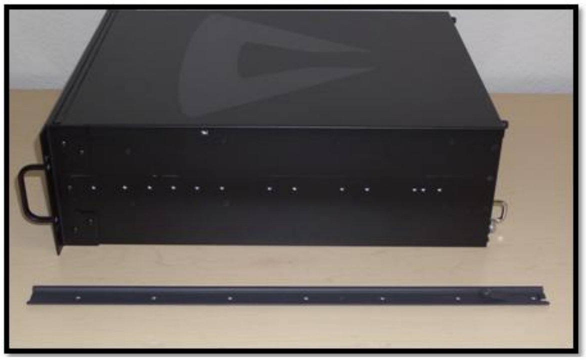
Rack Slide / Rails

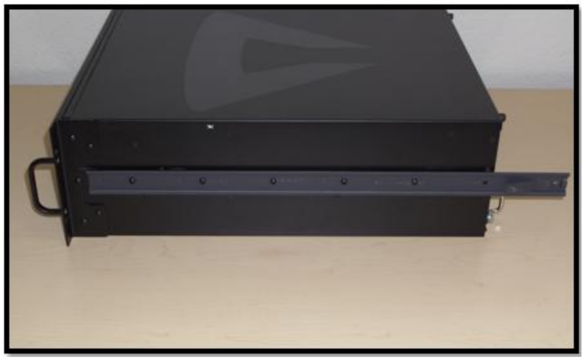


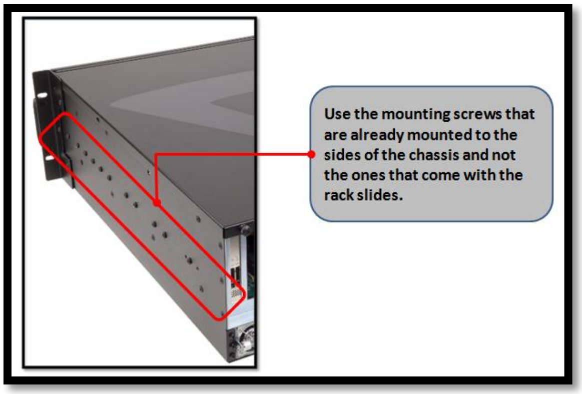


Attach Rail to Chassis (STEP 2)

Attach Slide piece **A** to the side of the chassis. Position the spring end toward the rear of chassis. Place as far forward as the whole alignment allows. Attach rail section to both sides of chassis before continuing.



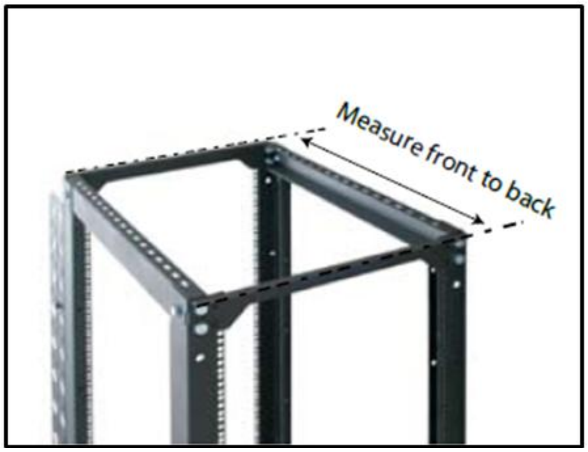



Use the mounting screws that are already mounted to the sides of the chassis and not the ones that come with the rack slides.

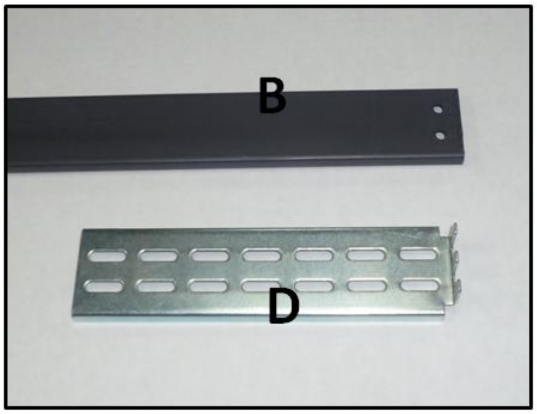
The screws that come with the slides will be too long and could potentially touch the Host PCB's. If you reuse the screws that are already on the sides, you will be fine. These screws have Sems Lock washers and get 2 full turns into the threads and there are several that can be used on any rack slides. They do not protrude deep into the chassis, but they give enough support.

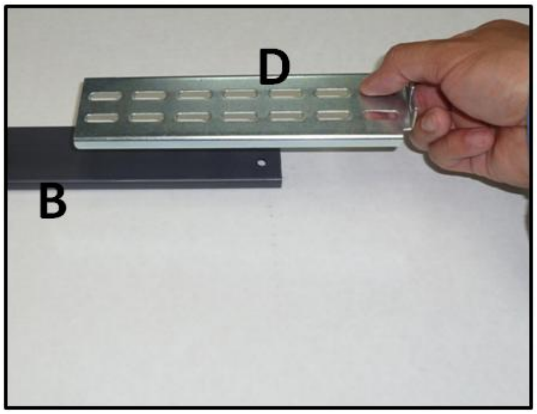
Assemble Slide Rails (STEP 3)

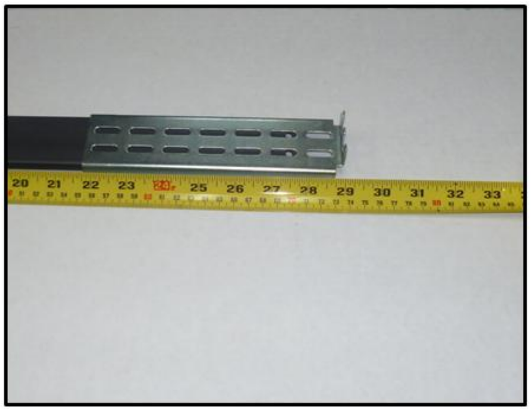
Measure the rack from front to back so you can confirm how long the rail must be to fit properly.

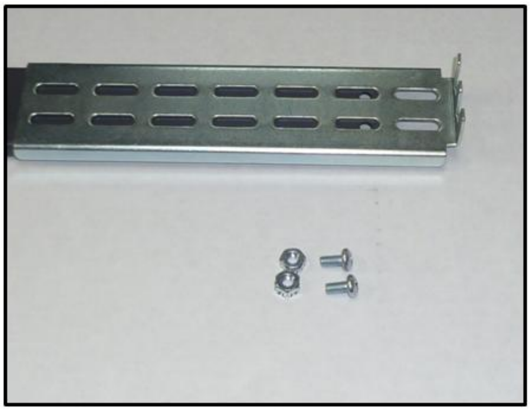

Measure front to back

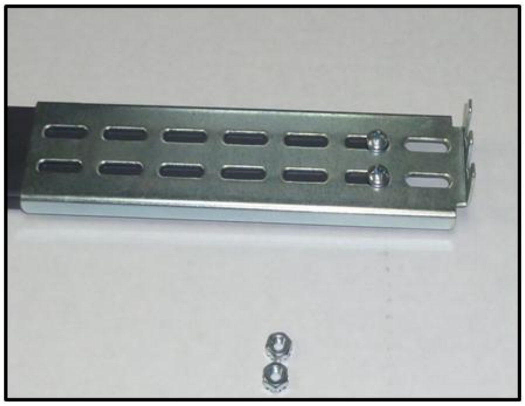
Next, assemble Slide piece **B** with end bracket **D** as shown below and secure with 2 Panhead screws and locking nut. Ensure the Phillips screw head is located on the "open" side of the Slide pieces as shown below. Tighten finger tight only to allow for minor adjustment during assembly in the **Step 5.**

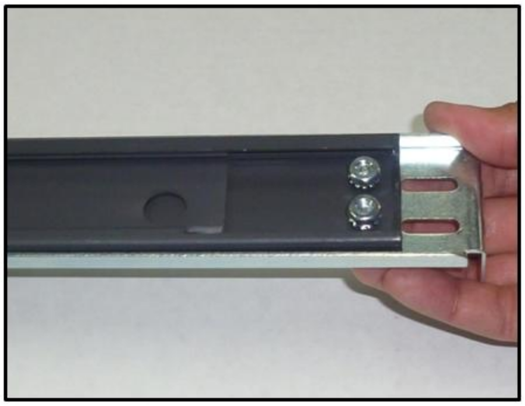

B
D


D
B


20 21 22 23 24 25 26 27 28 29 30 31 32 33

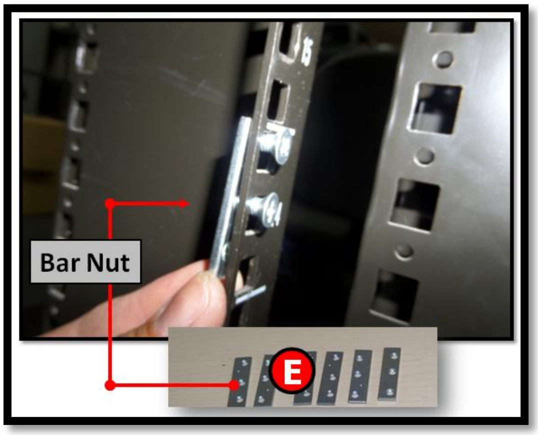


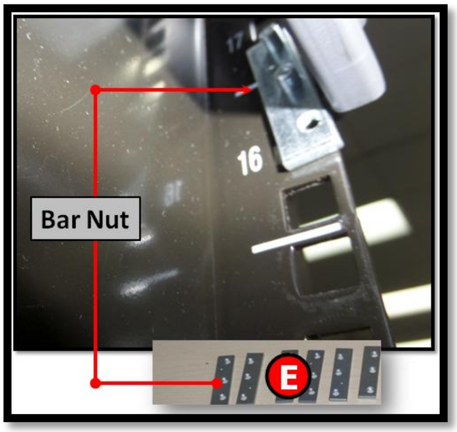




Add Screws to Rack Post (STEP 4)

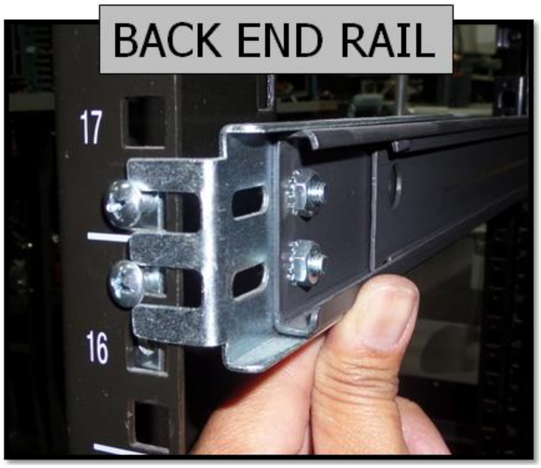
Attach 2 Panhead screws into the rack post where you want the chassis mounted. Be sure you have measured accurately to ensure that everything fits in the rack correctly. Leave the screws untightened until after you place the slide rail's fingers (Step 5) between the screws as shown. If your rack has holes too large for the screws, you can use the Bar Nut to secure your mounting by inserting the Panhead screw through the rack hole and screwing it into the Bar Nut on the reverse side of the rack post, as shown. Notice that the holes on the Bar Nut are spaced unevenly to accommodate different racks.

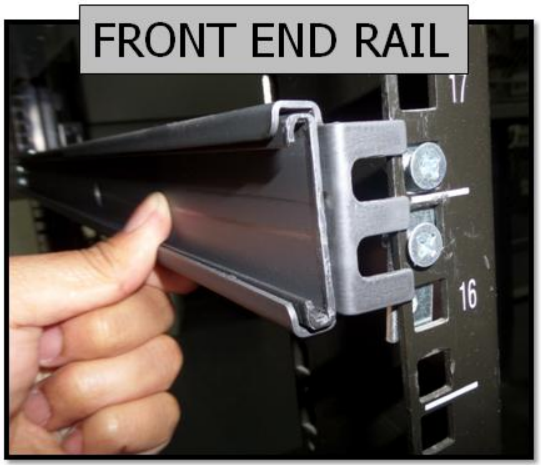


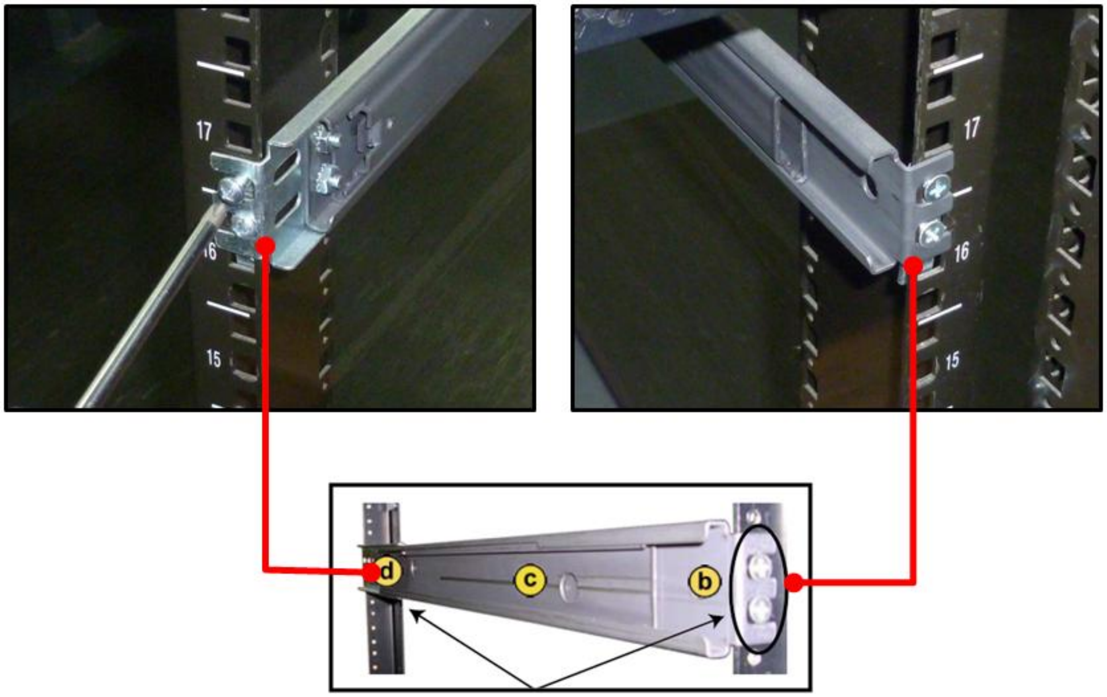


Attach Slide Rail to Rack (STEP 5)

Attach to inside of rack with "fingers" pointing "out" and the end bracket to the rear. Secure each Slide Mount with 4 screws as shown below.







Secure with 2 screws to both front and rear posts. After you have secured the slide rail fingers to the rack posts, tighten the 2 screws used to attach slide rail **B** to the end bracket **D**.

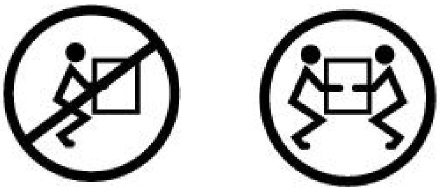
Attach Chassis to Slide Rail / Rack (STEP 6)

CAUTION

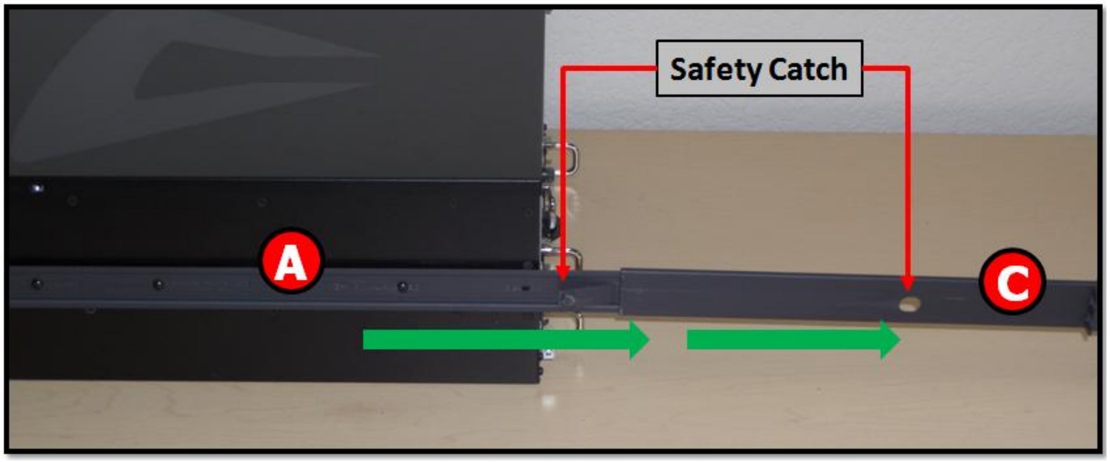
Install the system as low as possible into the rack enclosure. For best stability, do not install the system above equipment that weighs less than it does.

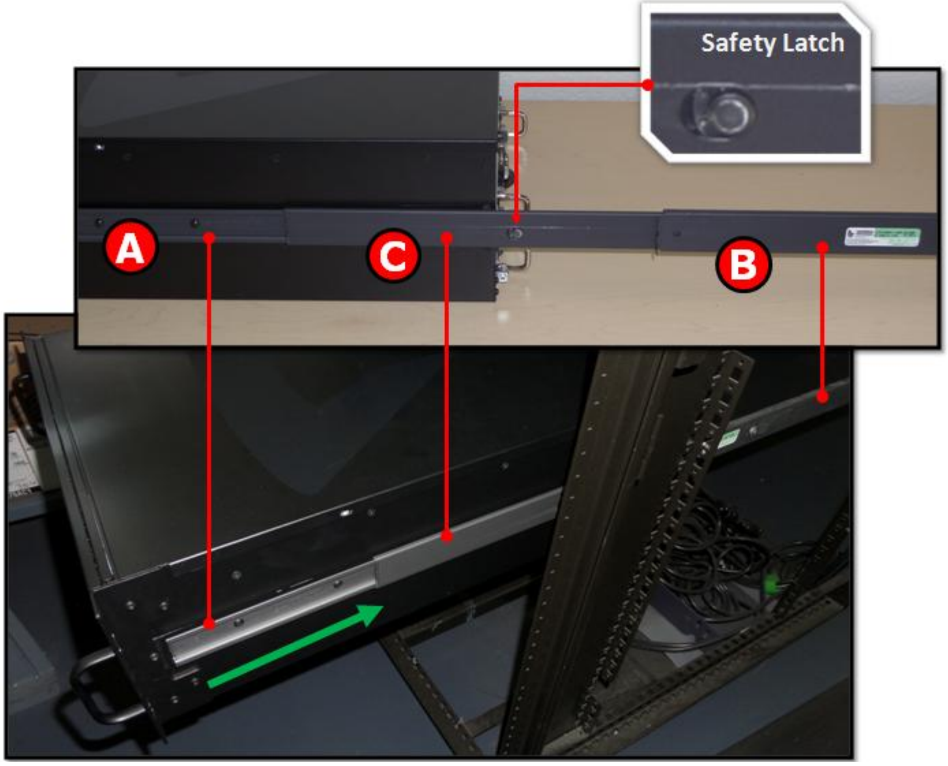
CAUTION

The system is heavy, it weighs about 60 lbs. In the following procedures, two people are required to move the system. Two people are also required to align and install the slide assemblies into the rack.



Extend slide piece **C** out until the safety catch engages. Do this for both sides. Next, insert the slide rail **A** inside the grooves on slice part **C** as shown below. Push in until it stops.

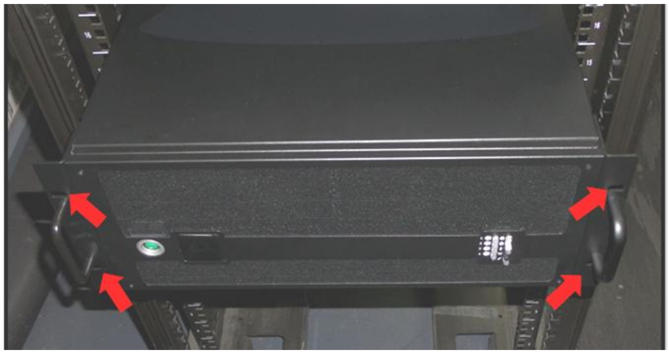




Next, press on the safety catch on slide piece A and continue to push until it stops again. Press on the safety catch again to allow the chassis to slide all the way into the rack.

Secure the Chassis to the Rack (STEP 7)

Use 2 Panhead screws, on each side, to secure the chassis to the rack as shown below.



Earth Leakage Current

To reduce the risk of electric shock due to high leakage currents, ensure that there is a reliable grounded (earthed) connection before connecting power distribution products to AC power.

Grounding the EB3600-P Expansion Chassis

This equipment must be grounded properly for proper operation in accordance with local electrical safety standard.

CAUTION

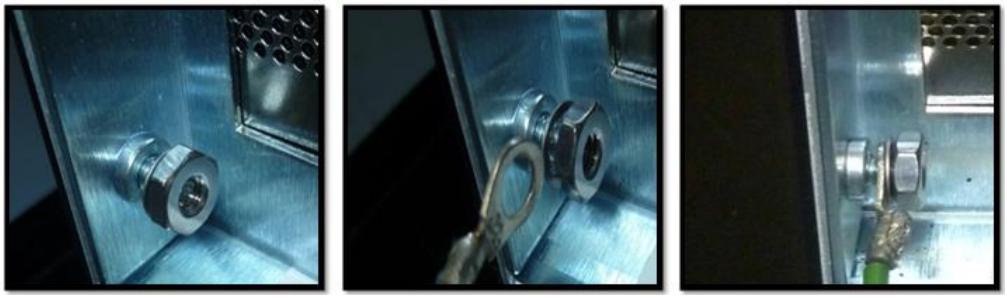
The system chassis must be securely grounded to the rack cabinet frame. Do not attempt to connect power to the system until grounding cables are connected. Completed power and safety ground wiring must be inspected by a qualified electrical inspector. An energy hazard will exist if the safety ground cable is omitted or disconnected.

CAUTION

Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

CAUTION

This unit has more than one power cord. To reduce the risk of electrical shock, disconnect all power cords before servicing.



Regulatory Safety Requirements

The equipment as evaluated is found to classify as "Stationery Pluggable equipment A" based on the IEC.EN 60950-1:2005

Note

NOTE
In Finland, Norway and Sweden, TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment:
- STATIONARY PLUGGABLE EQUIPMENT TYPE A that
  • is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre,
  • has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR, and
  • is provided with instructions for the installation of that conductor by a SERVICE PERSON;
- STATIONARY PLUGGABLE EQUIPMENT TYPE B;
- STATIONARY PERMANENTLY CONNECTED EQUIPMENT.

Note

NOTE
In Denmark, TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. is permitted only for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B.
In also to sell to Denmark, the equipment shall be re-designed to meet the requirements.
.

RESTRICTED ACCESS LOCATION meaning:

Location for equipment where both of the following apply:
– access can only be gained by SERVICE PERSONS or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken; and
– access is through the use of a TOOL or lock and key, or other means of security, and is controlled by the authority responsible for the location.

PLUGGABLE EQUIPMENT TYPE A

Equipment that is intended for connection to a MAINS SUPPLY via a non-industrial plug (like CEE7 plug) or a non-industrial appliance coupler (like IEC 60320-1 connector), or both.

PLUGGABLE EQUIPMENT TYPE B

Equipment that is intended for connection to a MAINS SUPPLY via an industrial plug and socket-outlet or an appliance coupler, or both, complying with IEC 60309 or with a comparable national standard.

Chapter 7 Troubleshooting

Locate the Problem

If you are having trouble with the Magma Expansion chassis, first verify that all cards and cables are seated properly. Be sure you followed the instructions in earlier sections of this manual. Always remember to power **On** and **Off** correctly when rechecking your installation. If you are still having problems, try these troubleshooting steps:
The Magma expansion chassis is correctly displayed as a "PCI standard PCI-to-PCI bridge" in Windows Device Manager and as a "pci-bridge" in Linux.

Computer Hangs During Power Up

If your computer "hangs" while being turned on and you cannot even start, follow the following steps to try to fix this problem:

1. Shut off the computer and then the expansion chassis and verify that all cards and cables are connected and seated correctly.
2. If it still hangs and you have added one or more hard drives in addition to several cards, ensure that you have not exceeded the power capabilities of the expansion chassis power supply. You can verify the capacity of your power supply by checking the label on the power supply. If you are not certain about the power consumption of your peripherals, it is best to remove them one by one (starting with those you suspect of being most "power hungry") until the system powers up.
3. If you have removed all 3rd Party cards from the Magma Expansion chassis and it still hangs, try the following:
    a. Remove the Magma host interface card from the computer and try booting up without the expansion chassis attached.
    b. If it boots up OK without the expansion chassis attached, its either you have a faulty host card or defective expansion chassis. You may need to replace the interface card or the chassis.
    c. If it still hangs, the problem is in the computer and not with the expansion chassis or the 3rd Party cards.
4. If it boots up OK without any 3rd Party cards installed, try adding only one card and see if it boots up.
    a. If it boots up OK with one card in it, shut it down and swap cards. Repeat this until all cards have been tested. If they all test OK, then add them back one at a time until you find the combination that doesn't work. If you find a bad card, call Technical Support. If you do not – congratulations, you fixed it!.

    a. If it still hangs up, try a different card – this one is probably bad (or has driver problems). If the second cards works, troubleshoot the first card. If the second card also fails, call Technical Support.

Computer Doesn’t Detect Expansion Chassis

If the expansion chassis is not visible in your Windows Device Manager, you will need to turn off your computer (first) and then the Magma Expansion chassis (second) and test all cords and cables to ensure you have everything connected correctly. If everything seems to be connected correctly, and you are sure you have applied power correctly (power up the expansion chassis first and then the computer), then try the following troubleshooting steps:

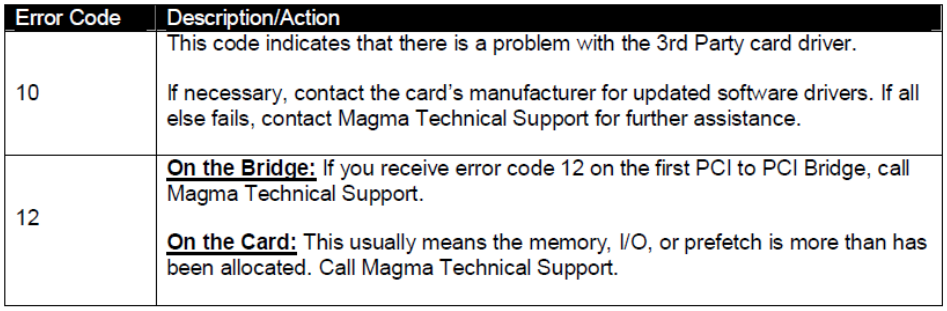
- Verify that the required LEDs on the backplane of the chassis are lit as explained in **Advanced Technical Information**. The most important indicators are the LEDs that indicate the cards are inserted in the slots. These LEDs are relevant to the speed and the amount of data lanes available on the cards.
- Also verify the Magma host interface card is properly inserted into the host computer slot. In case any other LED is off, ensure the respective card is functional and properly seated in its slot.
- Try moving the host interface card to a different slot.

Add-in card does not work

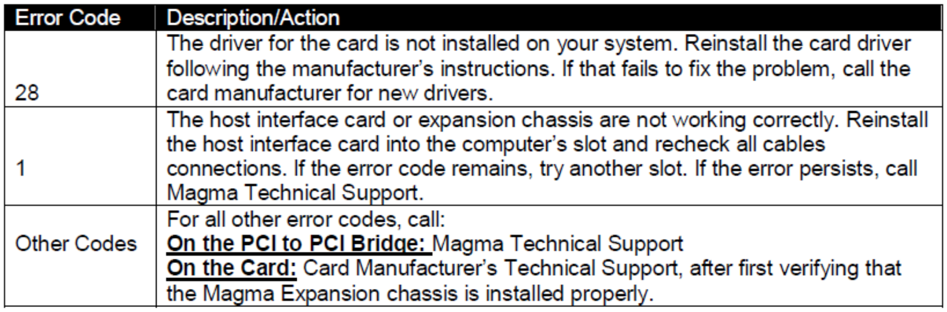
1. Shut down the computer followed by the Magma Expansion chassis.
2. Remove the card displaying a problem.
3. Replace the “problem card” with a simple card, such as an Ethernet card that has drivers built into the operating system. (Using this “type of card” will avoid any future questions about drivers possibly being installed incorrectly.)
4. Turn on the Magma Expansion chassis, and then turn on the computer

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.



Error Code	Description/Action
10	This code indicates that there is a problem with the 3rd Party card driver. If necessary, contact the card’s manufacturer for updated software drivers. If all else fails, contact Magma Technical Support for further assistance.
12	**On the Bridge:** If you receive error code 12 on the first PCI to PCI Bridge, call Magma Technical Support. **On the Card:** This usually means the memory, I/O, or prefetch is more than has been allocated. Call Magma Technical Support.



Error Code	Description/Action
28	The driver for the 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 host interface card or expansion chassis are not working correctly. Reinstall the host interface card into the computer’s slot and recheck all cables connections. If the error code remains, try another slot. If the error persists, call Magma Technical Support.
Other Codes	For all other error codes, call: **On the PCI to PCI Bridge:** Magma Technical Support **On the Card:** Card Manufacturer’s Technical Support, after first verifying that the Magma Expansion chassis is installed properly.

Chapter 8 Chassis Maintenance

Like all computer systems, you will need to perform some routine maintenance tasks. Some of these include making sure that the air vents in the chassis are clear of obstructions and that the cooling air from the fans flows freely. You will also need to check the foam filter behind the front panel to ensure it is clean, thus allowing for unrestricted air flow to the fans. You should always keep an eye on all cables to make sure they are not damaged and are securely connected. Occasionally, you should remove the chassis cover and check for loose cards, and remove any dust build-up.

Always remember to power down your computer and the expansion system BEFORE you attempt to perform any maintenance tasks.

General Chassis Cleaning

The environment where your Magma chassis is operating should be the determining factor as to how often you should perform a general cleanup of the chassis. To perform a routine general cleaning of your chassis, you will need the following:

1. Can of compressed air (proper distance, 6 inches)
2. Cotton Swabs
3. Isopropyl (alcohol)
4. Anti static wipes.
5. Warm water (for filter)
6. Dish soap (for filter)

Do not use a vacuum because vacuums create ESD.

First, remove the thumbscrews and the top chassis cover. Next, use a can of compressed air from your local computer store to blow out any dust that may have accumulated in the chassis fans.

Be sure to keep the can of compressed air about six inches from the parts being sprayed with air. Pay particular attention to the fans in the chassis and power supply because they are critical to air movement and to keeping your chassis cool. Also spray the PCIe slots on the backplane.

Next, you can use anti static wipes to wipe down any open areas inside and outside of the chassis to remove any remaining dust or dirt. If you have dust or dirt remaining in any “hard to reach area”, such as corners of a fan blade, you can use the cotton swabs, dipped in the isopropyl (alcohol), to gently rub the area clean.

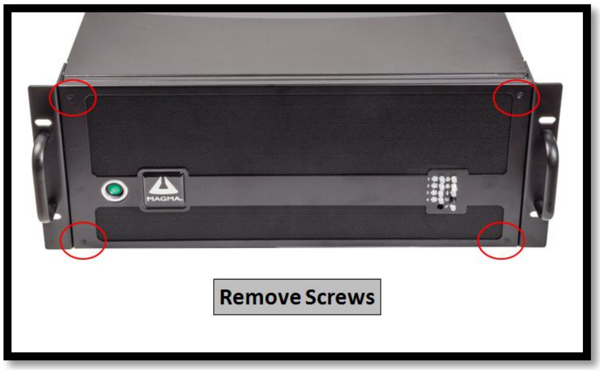
Lastly, if the chassis was extremely dirty, you can remove any installed 3rd Party cards and wipe the PCIe slots with a soft bristle brush (like a toothbrush), dipped in the isopropyl (alcohol), to gently clean each slot. When finished, blow the slots with compressed air from about six inches away until dry.

Finally, clean the air filter following the instructions later in this chapter. When finished, replace the cover and turn on power to the system.

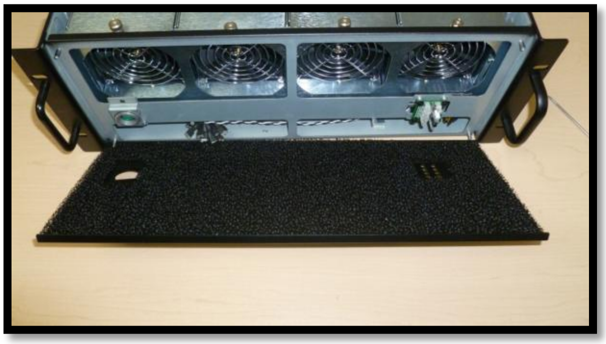
Cleaning the Air Filter

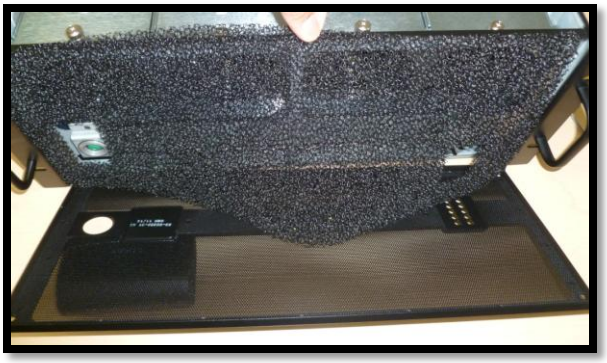
The chassis is equipped with an air filter that is easy to remove and clean. To keep your chassis running at its coolest, you should clean this filter regularly. How often the filter requires cleaning depends on environmental conditions where your Magma Expansion chassis is located. To clean this filter, follow these simple steps.

First, power down the chassis and then remove the screws on the front panel with a Phillips screwdriver.



Next, open the faceplate slowly





Then remove the foam filter, located behind the faceplate, and clean it with a solution of warm water and mild dish soap. Finally, replace the filter, reconnect the LED panel. Secure faceplate with Phillips screws. Tighten screws until snug and turn on power to the chassis (see above picture).

Chapter 9 Frequently Asked Questions (FAQ)

1. **What is the size of the PCI Express Host Card?**
   Answer: The host interface is standard half height/half length. Length: 7 inches (17.78 cm) Height: 2.25 inches (5.72 cm)

2. **Does the host card contain an onboard switch?**
   Answer: The host interface card uses low latency retimers (no switch) for cable interfacing, resulting in a lower latency than competitive switch based solutions.

3. **What is the cable interface?**
   Answer: Magma has designed a special Gen 3 cable with improved signaling characteristics over previous generation cables. This x8 or x16 cable interface allows true 0 bit error rate transmission for ultimate performance at Gen 3 signaling rates.

4. **What length is the host cable?**
   Answer: The initial release cable will be 1 meter

5. **How many boards are supported in the expansion chassis?**
   Answer: For the ExpressBox 3600-10, up to 10 peripherals are supported. For double wide (GPU) usage, up to 9 GPUs are supported). For the ExpressBox 3600-5, up to 5 peripherals or GPUs are supported.

6. **What types of GPUs are supported?**
   Answer: Any PCI Express supported GPU may be used. The ExpressBox 3600 supports NVIDIA Tesla, GeForce and Quadro GPUs and full access to all GPUs is provided at the rear of the chassis. AMD FirePro and Intel Phi co-processors are supported

7. **What type of cooling is provided for peripheral boards?**
   Answer: The chassis provides N+ 1 redundant cooling fan. 4 fans are supplied, each with 175 cfm.

8. **Are there any imitations to the types of boards that can be used in the ExpressBox 3600?**
   Answer: Although optimized for double wide GPU modules, any PCI Express board may be used within the system. The ExpressBox 3600 support Gen 3, Gen 2 and Gen 1 boards of any data width (x1/x4/x8/x16)

9. **What size is the enclosure?**
   Answer: The enclosure is 16.8" (42.7 cm) wide x 22.125 (56.2cm) deep x 7" (17.8 cm) high (4U)

10. **How are the power supplies configured?**
    Answer: Up to 4 1200W replaceable AC input PSUs may be configured, for a total of 4800W, or 3600W at N+1 redundant

11. **How many PCI Aux cables are provided for peripheral/GPU use?**
    Answer: Nine pairs of PCI AUX cables are supplied with the system, with each slot being supported by two 8-pin PCI AUX connectors. Total cable pairs: 18.

12. **Can I use iPass cable?**
    Answer: The EB3600-P x16 host card is Gen3 and it has different cable ports and will NOT accept i-Pass cable. The x16Gen2 host card can be used with the EB3600-P chassis but performance will train down to Gen2.

13. What is the dimension of the EB3600-P enclosure?

Answer: Width: 19 inches (chassis is 16.8 inches plus “ears” for rack mounting = 19.0 inches) Length 22.25 inches, Height: 4U

14. How many Fans are available? What is the CFM of the fan?

Answer: Four replaceable fans. Each fan 175 CFM.

15. What is Express IO Manager Ethernet interface ?

Answer: Express I/O Manager provides an Ethernet interface to monitor the status of the components on the backplane and the items in the chassis from any location with either direct or internet access via SNMP (simple network management protocol). The following may be monitored/selected via the Express Manager Software. Traps may be configured to alarm at specified threshold values.

- Internal Temperature monitoring
- Clear Alarm button monitoring
- Replaceable fan status (for fans 1,2,3 and 4) Does not monitor power supply fan performance
- Power Supply #1 Status
- Power Supply #2 Status
- Power Supply #3 Status (when installed)
- Power Supply #4 Status (when installed)
- Traps are defined to alert the SNMP server in case of overheat or failure in any of the subsystems mentioned above
- Remote chassis turn on
- Input /Output switching for partitioned chassis

16. Does it support Japan Voltage?

Answer: Power supply input range: 100-240 VAC

17. Can I connect the Interface cable to host computer while it is on?

Answer: Do not connect the Interface cable while the computer is on as it can cause the system to crash and can damage the end-connector of the cable.

18. Can I disconnect the cable while the host computer and EB3600-P unit are ON?

Answer: Do not disconnect the Interface cable while system is running as this can cause failure and damage the hardware.

19. Can I plug in a GPU or any PCIe cards while the EB3600-P is On?

Answer: Do not plug any PCIe cards while the EB3600-P is on as this can cause electrical short and damage on the PCIe card and PCIe slot.

20. Can I turn off the Magma EB3600-P while the host computer is ON?

Answer: You have to turn off the host computer first before turning off the Magma EB3600-P.

Chapter 10 How to Get More Help

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

Contacting Technical Support

Our support department can be reached by fax at (858) 530-2733 or by phone at (858) 530-2511. Support is available Monday through Friday, 8:00 AM to 5:00 PM PT. When contacting MAGMA Technical Support make sure to include the following information:

1. Exact and correct Magma 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: www.magma.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.

Returning Merchandise to MAGMA

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. **Magma will return any product that is not accompanied by an RMA number.** Please note that Magma 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 # ________, MAGMA
9918 Via Pasar
San Diego, CA 92126
USA

It is not required, though highly recommended, that you keep the packaging from the original shipment of your Magma product. However, if you return a product to Magma 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. Magma 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.

Appendix A Compliance

FCC

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user‘s authority to operate the equipment.

NOTE
The assembler of a personal computer system may be required to test the system and/or make necessary modifications if a system is found to cause harmful interferences or to be noncompliant with the appropriate standards for its intended use.

Industry Canada

This Class A digital apparatus complies with Canadian ICES-003.

Cetappareilnumériqué de la classe A estconformé à la norme NMB-003 du Canada

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives. Magma will not retest or recertify systems or components that have been reconfigured by customers

MAGMA™

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