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OSS-PCIe-ECA-x8-G3 PCIe x8 Gen3 Embedded Cable Adapter Installation Guide

Contents

OSS-PCIe-ECA-x8-G3 PCIe x8 Gen3 Embedded Cable Adapter

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, the company 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 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 per UL and IEC 60950-1

- The power supplies produce high voltages and energy hazards, which can cause bodily harm.

- Use extreme caution when installing or removing components. Refer to the installation instructions in this manual for precautions and procedures. If you have any questions, please contact Technical Support.

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

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. We strongly encourage 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.

Hardware Requirements

The following steps will guide you through the installation of your OSS-PCIe-ECA-x8-G3 board.

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.

Hardware & System Requirements
You need the following hardware when setting up the OSS-PCIE-ECA-X8-G3

1. OSS x8 Host Adapter Card (Model: OSS-PCIe-HIB25-x8)
2. One OSS x8 iPass cable
3. ATX Power Supply (with 24pin connector)
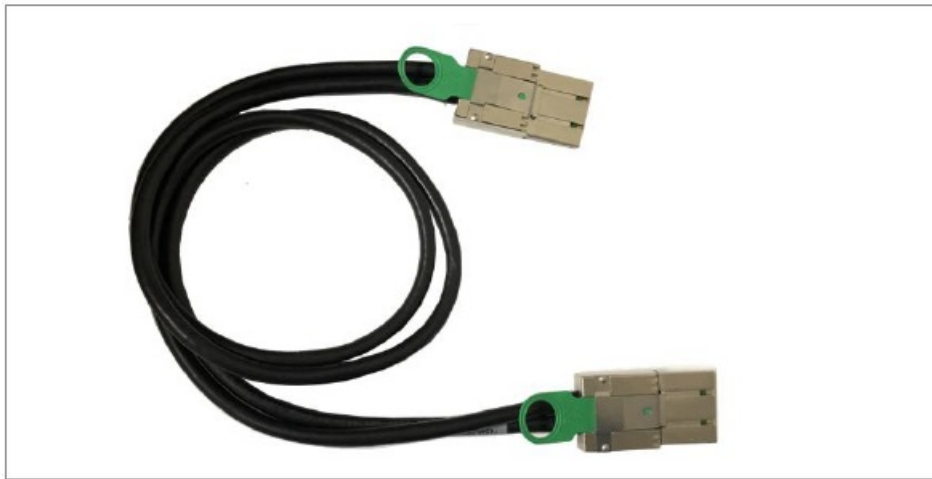4. Gen3 x16 PCIe slot (computer motherboard)

OSS-PCIe-HIB25-x8

A x8 host adapter card is needed in order to connect the OSS-PCIE-ECA-X8-G3 to the host computer. It is strictly recommended to use the appropriate OSS host adapter card to achieve proper operation. See photo below of the OSS-PCIe-HIB25-x8 card to use.

OSS-PCIe-HIB25-x8-H (Host Card)

x8 iPass Cable

Use x8 iPass cable for connecting creating a link between host card and OSS-PCIE-ECA-X8-G3
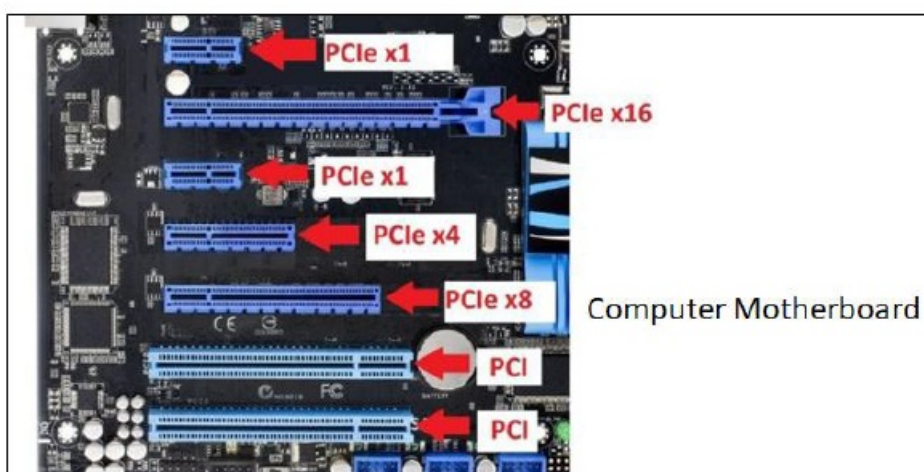
ATX Power Supply (24pin Connector)

Standard ATX 24-pin Power Supply (i.e. 500 Watt PSU)


PCIe Slot & Motherboard Requirement
For Host Adapter card: Use a server-computer type motherboard that has a Gen3 or Gen2 x16 PCIe slot in order for the card to operate to its max performance. The Host adapter card is recommended to be installed in a x16 connector.

Installation-Procedure

Configuration / Setup
The diagram or drawing below shows how to setup and use the hardware.
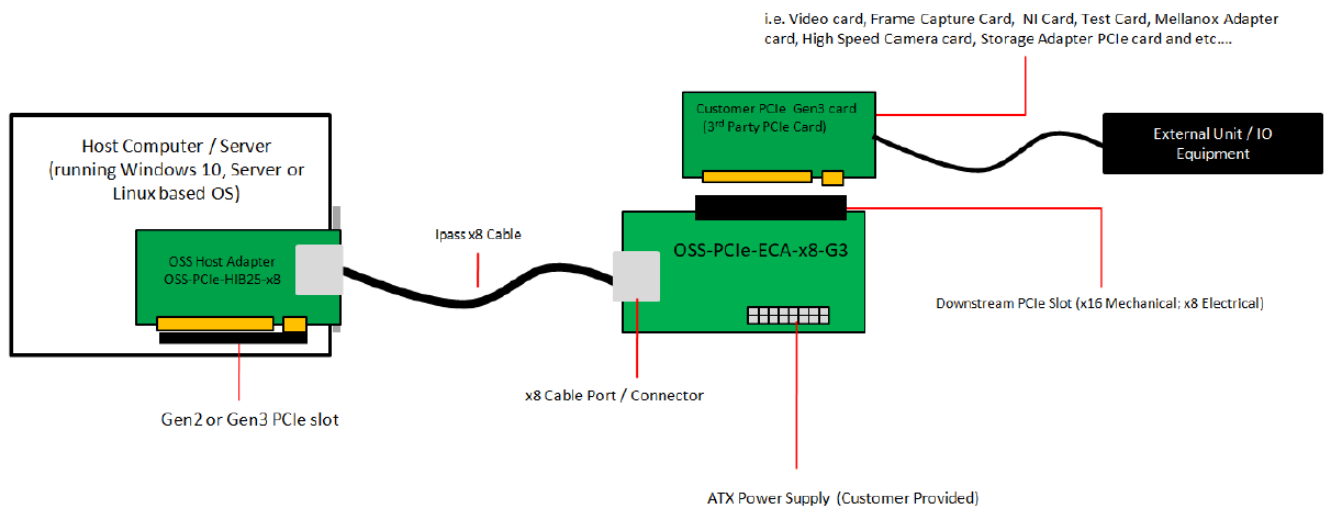
The OSS-PCIe-ECA-x8G3 supports x1,x4,x8 and x16 PCIe cards as long as the PRSNT is implemented properly on the installed PCIe card, see section 5.3 (PCIe Connector Pin outs).

- On the ECA board, the PRSNT2 x1, x4, x8 and x16 are all connected together. So as long as the PCIe card being plugged-in connects PRSNT1 to any PRSNT2 pin then the redriver will be enabled and its code downloaded from EEPROM.

Install Host Adapter Card
Plug-in the card to the PCIe slot of the host computer's motherboard. Make sure to install in a PCIe x16 or x8 Gen2 or Gen3 slot and the slot. Ensure the card is well seated and secure with the screw.
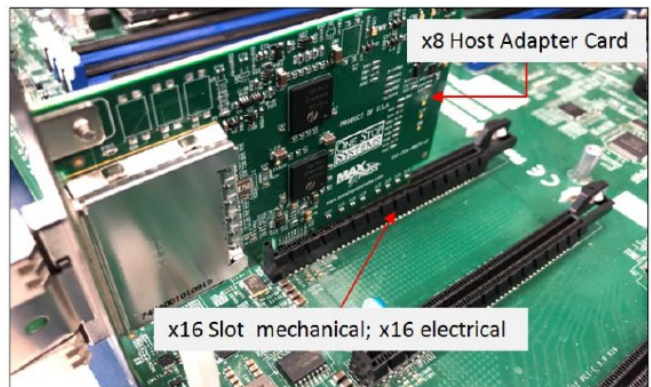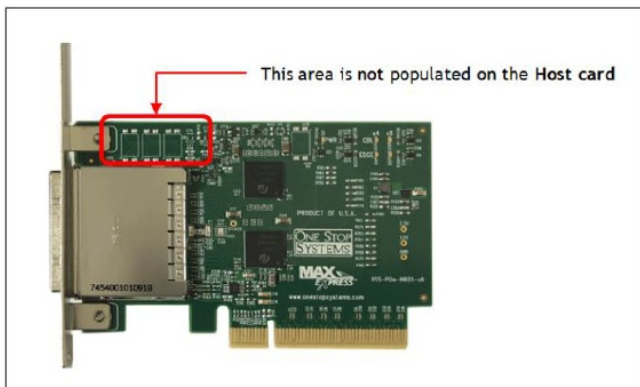
Connect the x8 Cable
Use a x8-to-x8 lpass cable. Attach the cable by first pulling back on the retractor ring. With the keyed slot aligned with the connector key ridge on the slot cover, insert the cable connector into the connector shell on the board until the connector teeth snap securely into the holes in the cable shell.
Connect the cable to the ECA-X8 board

Connect the other end of the cable to the host adapter card.

x8-to-x8 iPass Cable

Disconnecting x8 Cable
To remove the cable, pull down the green plastic tab and slowly pull the cable out

Install PCIe card
Plug in the add-in card or PCIe card into the available IO x16 slot (Endpoint slot: also known as expansion slot and / or downstream slot) of the ECA-X8 board.
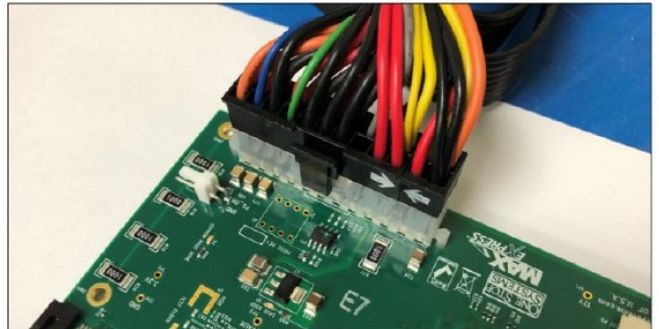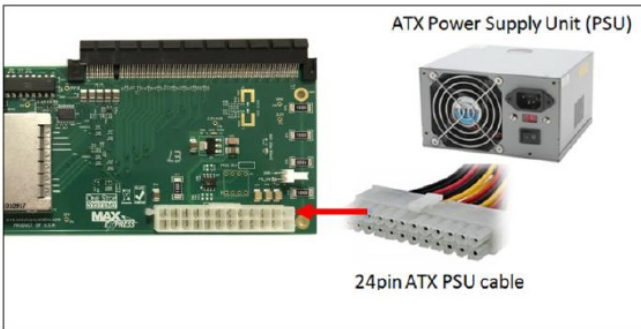
Downstream / endpoint card slot

Connect ATX Power Supply

Plug-in the ATX power supply cable into the 24pin ATX power connector on the ECA board

Note: Sometimes an external load is necessary for ATX power supplies to regulate properly. (i.e. connecting hard drive power).

ATX Power Supply Unit (PSU)
24pin ATX PSU cable

Connect power to the PSU and turn the switch to ON position. The "3AUX GOOD" LED comes ON.

3.3VAUX
TP3
R80   3AUX GOOD
D1
C52   C53

Turn ON the Host Computer

Turn ON the host computer / server. Two "bracket LEDs" will illuminate as solid green.

Powering UP the ECA board

The ECA expansion board is switched ON remotely by the Host computer.

- A Power ON / Sideband signal is sent from the cable upon turning ON the host, triggering the ECA expansion board to Power ON.
  When using a different brand or a non-OSS host adapter card and a non-OSS cable, the sideband signals may not operate properly which can cause the ECA board not to initialize and generate power and link failures.
- The ECA expansion board will turn ON automatically upon powering UP the computer and it will power OFF when the computer is shutdown.
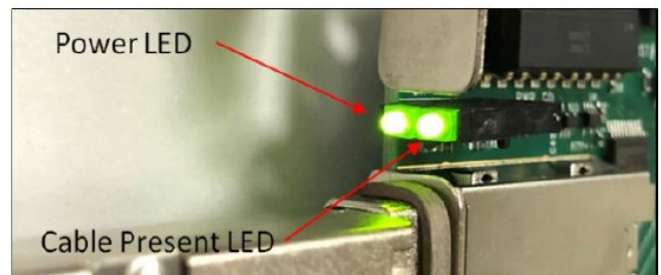- **Verify Hardware**
  To verify a working hardware, check the LEDs on the "host card" and "ECA board". A working ECA board will have three solid Green LEDs. The 3AUX GOOD LED will illuminate as solid green.
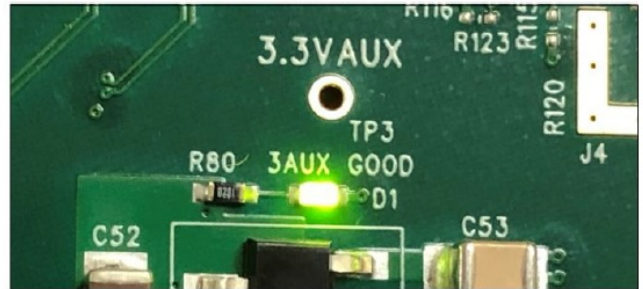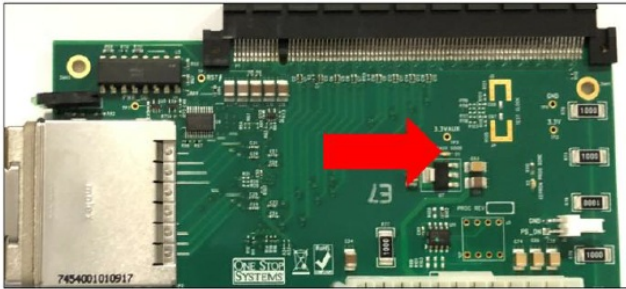
ECA board LEDs
Power LED and Cable Present LED are ON (as solid green)
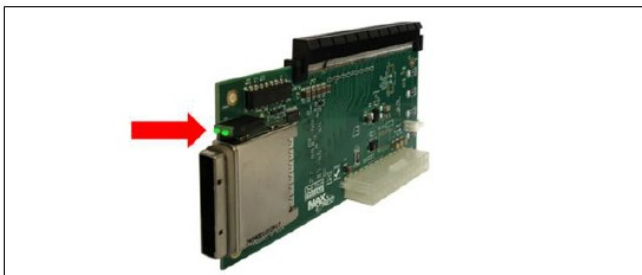
Host Card LEDs
A fully linked and functional Host card will have 5 solid green LEDs, see photos below.

- PWR LED: When "ON" indicates the board is powered UP.
- CBL LED: Cable is present / detected
- EDGE LED: This indicates that there is a link between the HIB and device connected to the card edge. This is typically a server or a switch on an expansion chassis. A solid light indicates that it is linked at the maximum speed possible. Blinking light indicates that it is linked a slower rates.
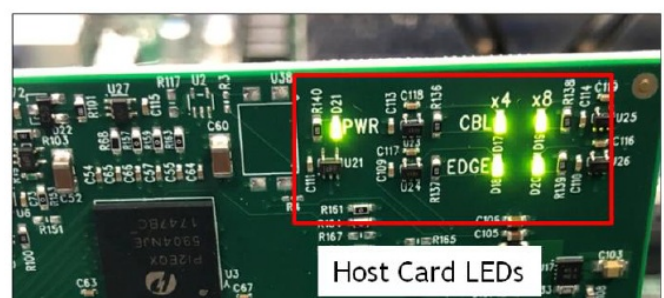
- If only x4 CBL and EDGE LEDs are illuminated, this indicates that you are linking up to x4 only.
- To achieve a x8 link, you must use (highly recommended) an OSS x8 Ipass cable and an OSS HIB25-x8 adapter card.

Identify ECA Device

The host card and ECA board are both transparent to the system. The system will only detects the third party PCIe card that is plugged-in to the x16 slot of the ECA board.

Board and cable are only x8, it will only Link to x8, not a x16 link.

- If you are using a x8-x4 cable (one side of the cable is connected to x4), you'll have a x4 Link, x8 Link will not work.
- If you are not using an OSS product (cable or adapter card) , the sideband signals will not provide proper operation.

Software Installation

No software or driver is required for the Host Adapter card and for the ECA board.

Additional Technical Information

Connectors and LED Indicators
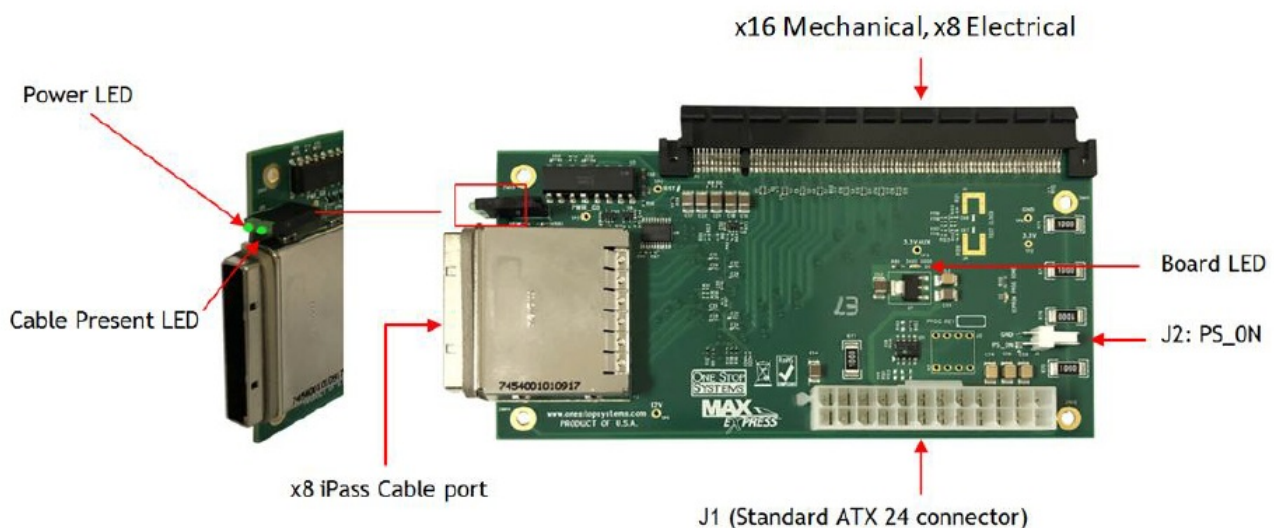
	Connectors / LEDs	Description
1	J2: PS_0N	Forces the power on signal to the ATX power supply, overrides PWRON IIC message from host. Shorting the two pins or by installing a jumper on the connector.
2	x16 PCIe slot	x16 Mechanical and x8 Electrical, Generation 3. Slot can accommodate x1, x4, x8 and x16 PCIe cards.
3	x8 Cable Port	Use for connecting an iPass x8 cable
4	Cable Present LED:	When "ON" indicates that cable is detected.
5	Power LED	When "ON" indicates the board is powered UP.
6	J1	Standard onboard ATX 24-pin connector.
7	Board LED	3.3V Aux Power LED

Power Connector Pin Outs
Standard ATX 24-pin power connector pin outs

Standard ATX 24pin power connector
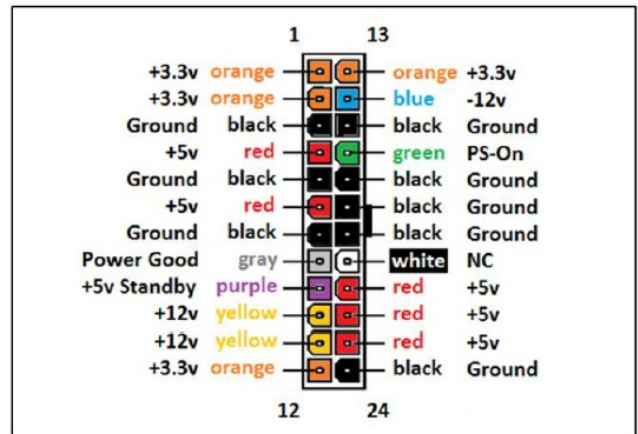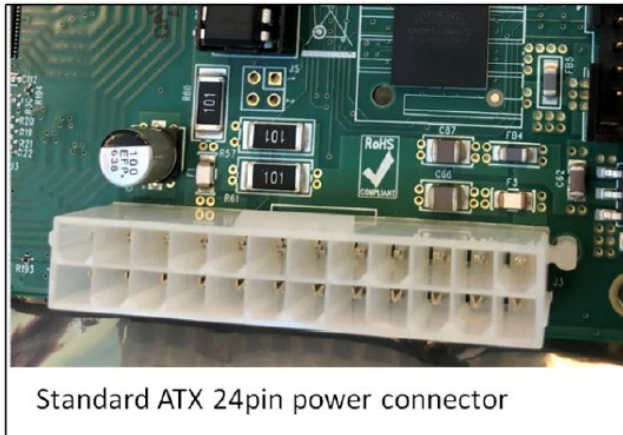
PCIe Connector Pin outs
Table below shows the pin out definition for the x1, x4, x8, and x16 PCI Express connectors. The auxiliary pins are identified in the shaded areas. For further details on Card edge connector pin outs see PCI Express CEM Specification, Revision 3.0, pages 83-86 Based on the information presented below, the PRSNT2 x1, x4 x8 and x16 are all connected together.

- So as log as the PCIe card / board being plugged-in connects PRSNT1 to any PRSNT2 pin then the redriver will be enabled and its code downloaded from EEPROM.
- Generally, this means all types of PCIE card (x1, x4, x8 and x16) should work if PRSNT is implemented properly on the installed PCIe card.

Pin#	Side B		Side A	
	Name	**Description**	**Name**	**Description**
1	+12V	12 V power	PRSNT1#	Hot-Plug presence detect
2	+12V	12 V power	+12V	12 V power
3	+12V	12 V power	+12V	12 V power
4	GND	Ground	GND	Ground
5	SMCLK	SMBus (System Management Bus) clock	JTAG2	TCK (Test Clock), clock input for JTAG interface
6	SMDAT	SMBus (System Management Bus) data	JTAG3	TDI (Test Data Input)
7	GND	Ground	JTAG4	TDO (Test Data Output)
8	+3.3V	3.3 V power	JTAG5	TMS (Test Mode Select)
9	JTAG1	TRST# (Test Reset) resets the JTAG interface	+3.3V	3.3 V power
10	3.3Vaux	3.3 V auxiliary power	+3.3V	3.3 V power
11	WAKE#	Signal for Link reactivation	PERST#	Fundamental reset
			Mechanical key	
12	RSVD	Reserved	GND	Ground
13	GND	Ground	REFCLK+	Reference clock (differential pair)
14	PETp0	Transmitter differential pair, Lane 0	REFCLK-	
15	PETn0		GND	Ground
16	GND	Ground	PERp0	Receiver differential pair, Lane 0
17	PRSNT2#	Hot-Plug presence detect	PERn0	
18	GND	Ground	GND	Ground
			End of the x1 connector	
19	PETp1	Transmitter differential pair, Lane 1	RSVD	
20	PETn1		GND	Ground

Pin#	Side B		Side A	
	Name	**Description**	**Name**	**Description**
21	GND	Ground	PERp1	Receiver differential pair, Lane 1
22	GND	Ground	PERn1	
23	PETp2	Transmitter differential pair, Lane 2	GND	Ground
24	PETn2		GND	Ground
25	GND	Ground	PERp2	Receiver differential pair, Lane 2
26	GND	Ground	PERn2	
27	PETp3	Transmitter differential pair, Lane 3	GND	Ground
28	PETn3		GND	Ground
29	GND	Ground	PERp3	Receiver differential pair, Lane 3
30	RSVD	Reserved	PERn3	
31	PRSNT2#	Hot-Plug presence detect	GND	Ground
32	GND	Ground	RSVD	Reserved
			End of the x4 connector	
33	PETp4	Transmitter differential pair, Lane 4	RSVD	Reserved
34	PETn4		GND	Ground
35	GND	Ground	PERp4	Receiver differential pair, Lane 4
36	GND	Ground	PERn4	
37	PETp5	Transmitter differential pair, Lane 5	GND	Ground
38	PETn5		GND	Ground
39	GND	Ground	PERp5	Receiver differential pair, Lane 5
40	GND	Ground	PERn5	
41	PETp6	Transmitter differential pair, Lane 6	GND	Ground
42	PETn6		GND	Ground
43	GND	Ground	PERp6	Receiver differential pair, Lane 6
44	GND	Ground	PERn6	
45	PETp7	Transmitter differential pair, Lane 7	GND	Ground
46	PETn7		GND	Ground
47	GND	Ground	PERp7	Receiver differential pair, Lane 7
48	PRSNT2#	Hot-Plug presence detect	PERn7	
49	GND	Ground	GND	Ground
			End of the x8 connector	
50	PETp8	Transmitter differential pair, Lane 8	RSVD	Reserved
51	PETn8		GND	Ground
52	GND	Ground	PERp8	Receiver differential pair, Lane 8
53	GND	Ground	PERn8	
54	PETp9	Transmitter differential pair, Lane 9	GND	Ground
55	PETn9		GND	Ground
56	GND	Ground	PERp9	Receiver differential pair, Lane 9
57	GND	Ground	PERn9	
58	PETp10	Transmitter differential pair, Lane 10	GND	Ground
59	PETn10		GND	Ground
60	GND	Ground	PERp10	Receiver differential pair, Lane 10
61	GND	Ground	PERn10	
62	PETp11	Transmitter differential pair, Lane 11	GND	Ground
63	PETn11		GND	Ground
64	GND	Ground	PERp11	Receiver differential pair, Lane 11
65	GND	Ground	PERn11	
66	PETp12	Transmitter differential pair, Lane 12	GND	Ground
67	PETn12		GND	Ground
68	GND	Ground	PERp12	Receiver differential pair, Lane 12
69	GND	Ground	PERn12	
70	PETp13	Transmitter differential pair, Lane 13	GND	Ground
71	PETn13		GND	Ground

Pin#	Side B		Side A	
	Name	**Description**	**Name**	**Description**
72	GND	Ground	PERp13	Receiver differential pair, Lane 13
73	GND	Ground	PERn13	
74	PETp14	Transmitter differential pair, Lane 14	GND	Ground
75	PETn14		GND	Ground
76	GND	Ground	PERp14	Receiver differential pair, Lane 14
77	GND	Ground	PERn14	
78	PETp15	Transmitter differential pair, Lane 15	GND	Ground
79	PETn15		GND	Ground
80	GND	Ground	PERp15	Receiver differential pair, Lane 15
81	PRSNT2#	Hot-Plug presence detect	PERn15	
82	RSVD	Reserved	GND	Ground
			End of the x16 connector	

Board Mechanical Dimensions
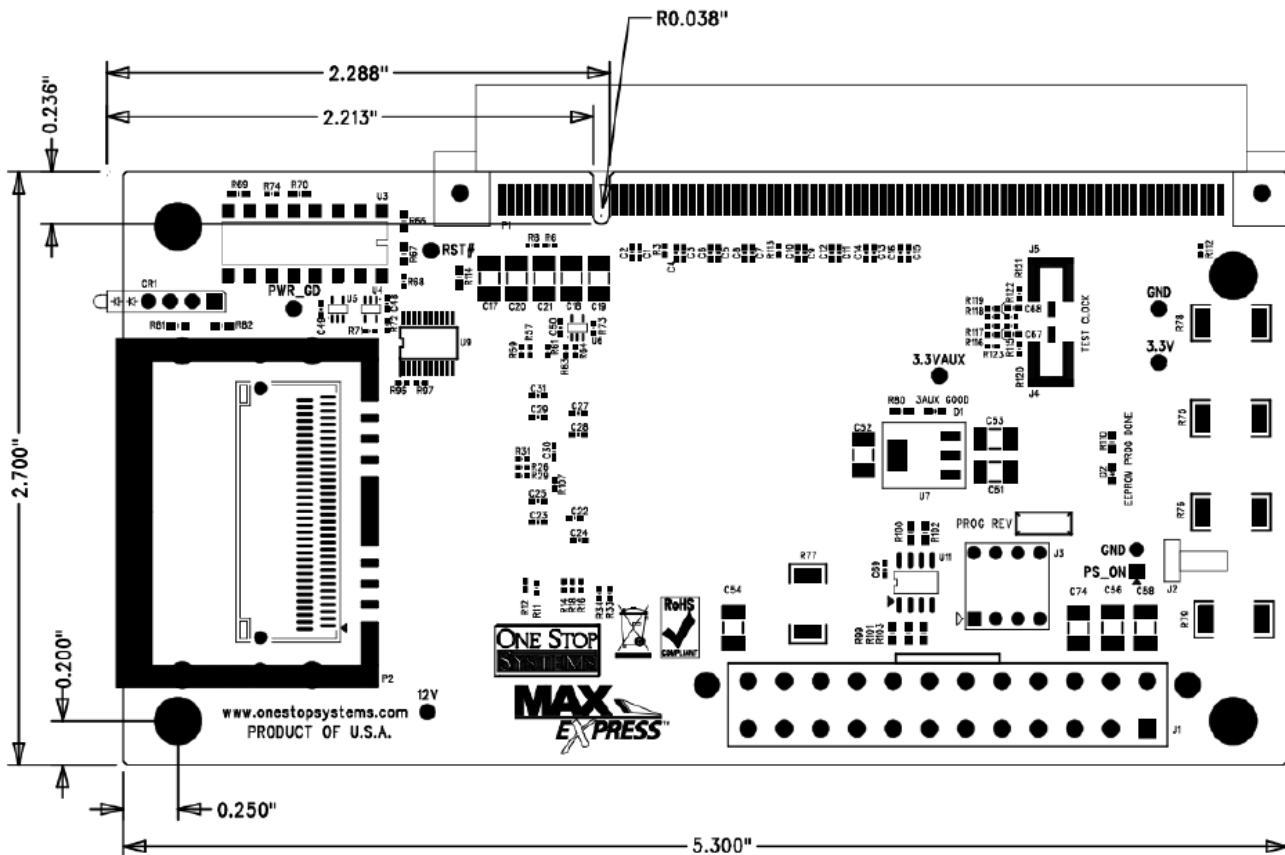
How to Get More Help
You can visit the Technical Support FAQ pages on the Internet at **https://www.onestopsystems.com/support**

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

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

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

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

Returning Merchandise

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

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

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

Online Support Resources
As a product user and customer, listed below are our Online Support Resources

https://www.onestopsystems.com/support provides Knowledgebase Articles such as troubleshooting methods, compatibility, FAQ, documentation, and product technical information. If you need technical support, product assistance or have a technical inquiry we encourage you to submit it on-line using our Technical Support Form. If you need to send a unit for repair or diagnostic evaluation, fill out our RMA (Return Material Authorization) online request form. **https://www.onestopsystems.com/support**

2235 Enterprise Street, Suite#llO, Escondido CA 92029 Toll-Free: +1(800)285-8900 US• Main: +l (760) 745-9883 • Fax: +l (760) 745-9824 **www.onestopsystems.com**

Documents / Resources

OSS OSS-PCIe-ECA-x8-G3 PCIe x8 Gen3 Embedded Cable Adapter [pdf] Installation Guide OSS-PCIe-ECA-x8-G3 PCIe x8 Gen3 Embedded Cable Adapter, OSS-PCIe-ECA-x8-G3, PCIe x8 Gen3 Embedded Cable Adapter, PCIe x8 Gen3 Cable Adapter, Embedded Cable Adapter, Cable Adapter, Adapter

References

- ✪ **One Stop Systems**