

# **PXle Chassis**

## **PXCe4006 6 Slot 1U 19”**

### **High Power Version**

#### **User Manual**

## Revision History

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Hartmann Electronic is a longstanding partner of the Embedded industry and has a variety of different backplanes. With our wide selection of backplanes and enclosure you can Build your perfect system platform

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# 1. Safety




## Intended Application

PXI Express PXCe4006 series chassis are not end-products with independent functionality according the EMC regulations, an operational system is achieved only by combining the chassis with appropriate plug-in PCI/PXIe instruments. As a consequence formal certification requirements as the for instance the CE marking do not apply to it.


The completion and final testing of the units has to be carried out, or at least supervised, by a qualified technician. The following instructions are directed exclusively to this qualified personal, i.e. engineers, trained and qualified electricians etc.

Make sure that the finished system complies with the safety regulations currently applicable in the country in which it will be used.

## Safety Symbols

	<p><b>Hazardous voltage!</b></p> <p><i>Familiarise yourself with the danger of electrical voltages and the safety precautions before starting to work with parts that carry dangerous voltages</i></p>
	<p><b>Caution!</b></p> <p><i>This symbol indicates a condition where damage of the equipment or injury of the service personnel could occur. To reduce the risk of damage or injury, follow all steps or procedures as instructed.</i></p>
	<p><b>Danger of electrostatic discharge!</b></p> <p><i>Static electricity can damage sensitive components in a system. To avoid damage, wear ESD wrist straps or at regular intervals touch blank enclosure parts.</i></p>

## General Safety Precautions

	<p><b>Warning!</b></p> <p><i>Voltages over 60 VDC can be present in this equipment. This equipment is intended to be accessed, to be installed and maintained by qualified and trained service personnel only.</i></p> <p><i>This equipment is designed in accordance with protection class 1!</i></p> <p><i>It must therefore be operated only with protective GND/earth connection!</i></p>
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## Safety Instructions

The intended audience of this User's Manual is system Integrators and hardware/software engineers.

The product has been designed to meet relevant standard industrial safety requirements. It must not be used except in its specific area of office telecommunication industry and industrial control. It shall not be used in safety-critical applications, life-sustaining appliances or in aircraft.

Only trained personnel or persons qualified in electronics or electrical engineering are authorized to install, operate or maintain the product.

This section provides safety information about:

- Protection Against Electromagnetic Interference (EMI)
- Electrostatic Discharge Precautions
- System Installation

### Protection Against Electromagnetic Interference (EMI)



The product has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules, EN 55022 Class A.

To ensure proper EMC shielding, operate the chassis only with all free slots populated with filler panels.

Ensure that all EMI gaskets make correct contact.

### Electrostatic Discharge Precautions



Electronic components can easily be destroyed by electrostatic discharge which can occur between chassis components and a person.

- Before working on the chassis make sure that you are working in an ESD-safe environment.

### Installation

To avoid chassis damage verify that the system environment meets the environmental and power requirements given in this guide before installation consider these guidelines:

#### Location

Locate the system in a stable area free of excessive movement and jarring, dust, smoke, and electrostatic discharge (ESD). Make sure that the temperature does not exceed the operating temperature given in the environmental requirements in this guide and allow room for proper air flow for cooling.

### Voltage Hazards



The system is powered with a power supply the mains voltage is 115/230VAC.  
(Voltage range 90VAC to 264VAC)

This voltage is considered hazardous.

### System Overheating

Ensure clearance of at least 10 cm to the air inlet on the left side of the chassis, and a free path of at least 10 cm for the air exhaust on the right.

Shelf ambient temperature may not exceed 50°C.

### Mounting Considerations

During the course of handling, shipping, and assembly, parts could become loose or damaged. Do not operate a shelf in this condition, as this may cause damage to other equipment.

## Electrical Hazards

The caution label on the system's rear near the grounding studs shows that you have to create an earth connection because there may be a high leakage current which is considered hazardous.



High leakage current can cause injuries.

Ensure that the system is properly grounded at all times, the following conditions shall be met:

- This equipment shall be connected directly to the AC supply system earth ground

## Board Installation

Electrostatic discharge and incorrect board installation or removal can damage circuits or shorten their life.



- Before touching the boards or electronic components, make sure that you are working in an ESD-safe environment

Boards should be inserted and removed using their handles, do not force the board by applying pressure to the front panel.

## 2. Product Description

The PXCe4006 series Chassis is a six Slot PXI Express Chassis. The Chassis fully complies with the *PXI-5 PXI Express Hardware Specification*.

To reduce space in modern test systems the PXCe4006 features a very compact 1U 19" design. There are one PXIe System Slot, one PXIe Peripheral Slot and four fully Hybrid peripheral slots available. This provides the user the highest flexibility to configure his test system with PXI and PXI Express.

The key features of the PXCe4006 Series Chassis include the following:

- Optional Rear Panel PXI\_TRIG[7:0] SMB I/O Connector
- Rear Panel PXI\_CLK10 I/O Connector
- Removable Fan Tray to reduce MTTR
- Complies with PXI and CompactPCI Specification
- 0-50°C Temperature Range
- The PCI bus VIO is available with +3.3V and +5V
- On/Standby momentary power switch on the front panel for easy use
- Low jitter PXI Express Clocks with 25 ppm stability
- Software multi-vendor interoperability
- Module multi-vendor interoperability

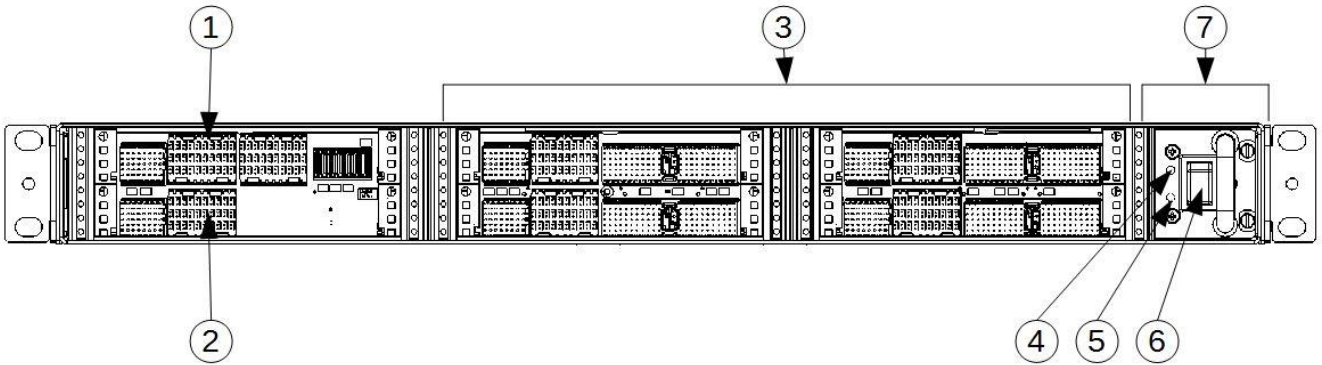
### ***Related Documentation***

- *PXI-5 PXI Express Hardware Specification*
- CompactPCI PICMG 2.0 R. 3.0
- *CompactPCI Express Specification PICMG EXP.0 Revision 2.0*



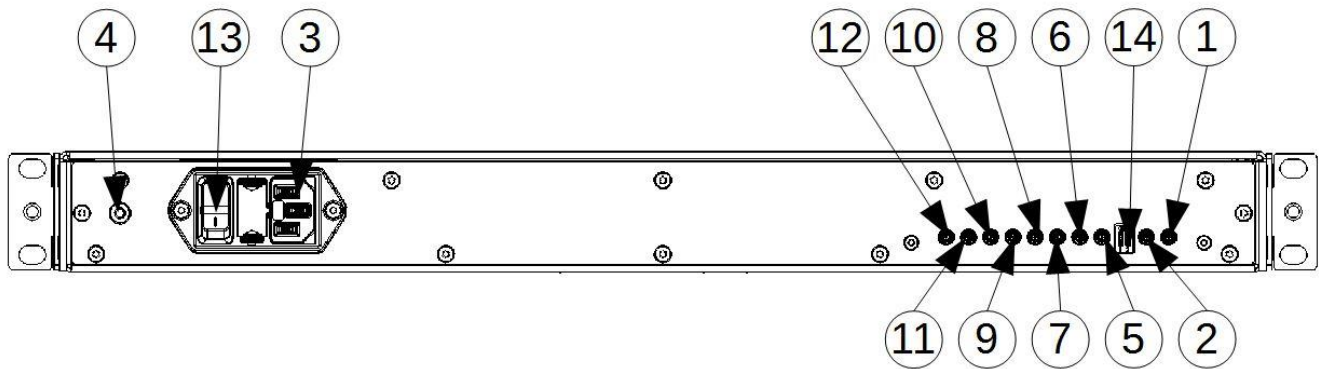
## Chassis Description

Figure 2-1 Front view of the PXCe4006 series Chassis



- |   |                      |   |                                   |
|---|----------------------|---|-----------------------------------|
| 1 | System slot          | 5 | Power LED                         |
| 2 | PXIe peripheral slot | 6 | On/Standby momentary power switch |
| 3 | PXIe hybrid slots    | 7 | Removable fan tray                |
| 4 | Fan LED              |   |                                   |

Figure 2-2 Rear view of the PXCe4006 series Chassis



- |                        |                    |                                     |
|------------------------|--------------------|-------------------------------------|
| 1 10 MHz REF IN SMB    | 6 PXI_TRIG[1] SMB  | 11 PXI_TRIG[6] SMB                  |
| 2 10 MHz REF OUT SMB   | 7 PXI_TRIG[2] SMB  | 12 PXI_TRIG[7] SMB                  |
| 3 AC-Input             | 8 PXI_TRIG[3] SMB  | 13 OFF/Standby Power Switch         |
| 4 Chassis Ground Screw | 9 PXI_TRIG[4] SMB  | 14 Dip Switch Auto Mode/Fan Control |
| 5 PXI_TRIG[0] SMB      | 10 PXI_TRIG[5] SMB |                                     |

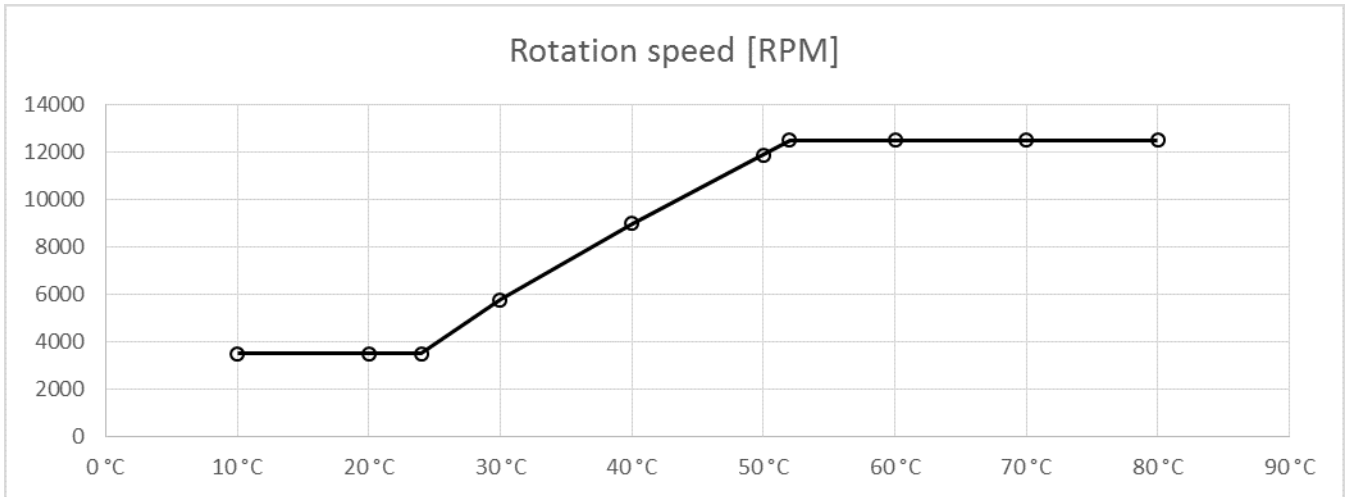
#### 14 - Dip Switch Settings

Position	Function	ON	OFF
Position 1	Power Control	Auto Mode Chassis is turned on through the AC-Power Switch	Chassis can be turned on and off through the momentary switch (6) at the front Panel
Position 2	Fan Control	The Chassis' cooling fans are running at full speed	Fan control is enabled

### ***Fan Control***

The Chassis' Cooling Fans are controlled through two temperature sensors. One sensor is located left next to the System Controller Slot. The other temperature sensor is located right next to the System Controller Slot. If there is a difference between the measured temperatures of one of each temperature sensors, the Fan controller adjust the rotation speed of the fans according to the higher measured temperature value. The Fans are running at lowest speed at a temperature of 24 °C or less. If the temperature reaches 52 °C or more the fans are running at highest rotation speed.

Figure 2-3 shows the fan control curve



## **System Controller Slot**

The System Controller slot is Slot 1 of the chassis and is a 4-Link configuration system slot as defined in CompactPCI Express and PXI Express Specification.

The backplane connects the system slot using three times PCIe X4 to the peripheral slots. One PCIe link of the system slot connects to a PCIe Switch using PCIe Gen 2 X1. This switch distributes PCIe Gen2 X1 connection to one fully PXIe Hybrid Slot, one PXIe Peripheral Slot and a PCIe to PCI Bridge. The PCIe to PCI bridge provides PCI connection to the PXIe hybrid slots.

The PXIe hybrid slots 3-6 are connected to the PCI Bus. The PCIe- to PCI bridge provides a 32-bit, 33Mhz PCI Bus.

The system controller slot has also connectivity to PXI\_CLK10, PXI Trigger Bus and PXI Local Bus 6.

The mechanical momentary switch at the front panel transitions the PWRBTN# from open-circuit to GND to open circuit. The system board uses this ON/OFF state to control the PS\_ON# signal. The PS\_ON# signal turns on the chassis' main power supply.

Alternatively, the chassis can be turned on without the momentary switch on the front panel. Therefore the auto mode of the chassis has to be turned on. The auto mode can be turned on by changing the DIP-Switch's position 1, on the chassis' rear panel, into the ON-state.

## **PXIe Peripheral Slot**

The chassis provides one PXIe peripheral slot 2. The peripheral slot is fully compliant with the *PXI-5 PXI Express Hardware Specification*. The backplane connects the PCIe Switch using PCIe Gen2 X1 to the PXIe peripheral slot. The PXI Express peripheral slot can accept the following modules:

- A PXI Express peripheral module.
- A PXI Express hybrid peripheral module.
- A CompactPCI Express Type-2 Peripheral module.
- A CompactPCI 32-bit peripheral with +3.3 V or +5 V V(I/O).

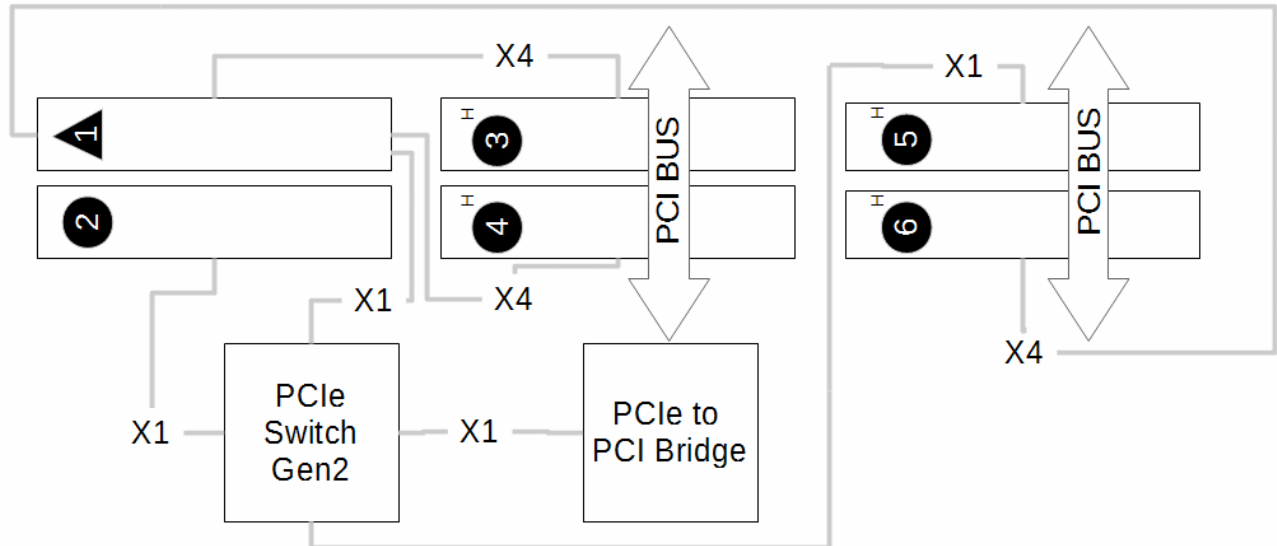
## **Hybrid Peripheral Slots**

The PXCe4006 provides 4 PXIe hybrid peripheral slots that are fully compliant with the *PXI-5 PXI Express Hardware Specification*. The PXI Express hybrid peripheral slots can accept the following modules:

- A PXI Express peripheral module.
- A CompactPCI Express Type-2 Peripheral module.
- A hybrid-compatible PXI peripheral module that has been modified by replacing the J2 connector with an XJ4 connector installed in the upper eight rows of J2. Refer to PXI Express specification for details. The PXI peripheral communicates through the backplane's 32-bit PCI bus.

## PCI Express Backplane Diagram

Figure 2-4 shows the PXCe4006 series backplane's PCIe interface.



Slot 3, 4 and 6 are connected with the system slot using PCIe X4. These slots have up to 2 GB/s (single direction) dedicated bandwidth (X4 Gen-2 PCI Express).

Slots 2 and 5 are connected with the system slot using PCIe X1. These slots have up to 500MB/s (single direction) dedicated bandwidth (X1 Gen-2 PCI Express).

## PXI Local Bus

The PXIe backplane local bus is a daisy-chained bus, that connects each peripheral slot with adjacent peripheral slots to the left and right.

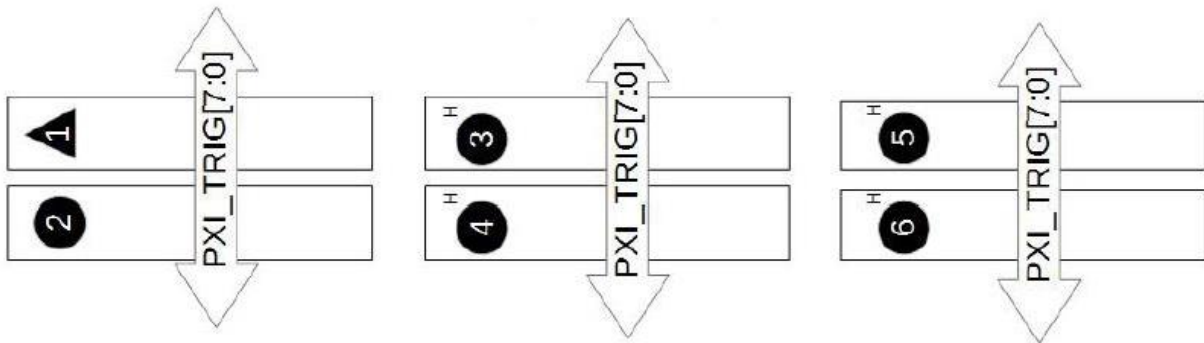
The backplane routes PXI Local Bus 6 between all slots. The left Local Bus 6 from Slot 1 is not routed anywhere and the right local bus signal from slot 6 is not routed anywhere.

Local bus signals may range from high-speed TTL signals to analog signals as high as 42 V.

## PXI Trigger Bus

All slots share eight trigger lines.

Figure 2-5 shows the PXCe4006 series backplane's Trigger interface.

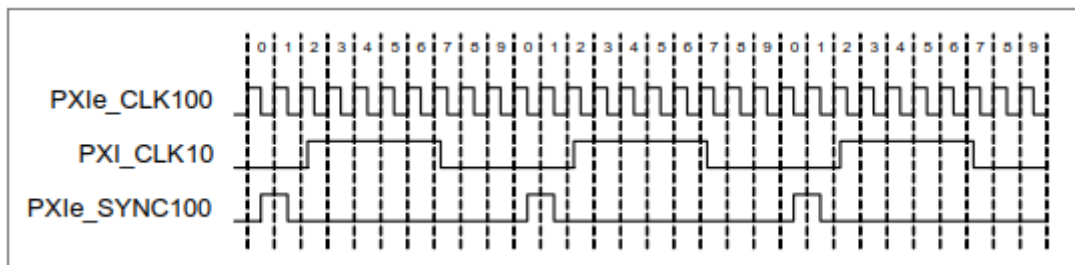


## System Reference Clock

The PXCe4006 Chassis chassis supplies PXI\_CLK10, PXIE\_CLK100, and PXIE\_SYNC100 independently driven to each slot.

PXI\_CLK10, PXIe\_CLK100 and PXIe\_SYNC100 have the default timing relationship according to *PXI-5 PXI Express Hardware Specification*.

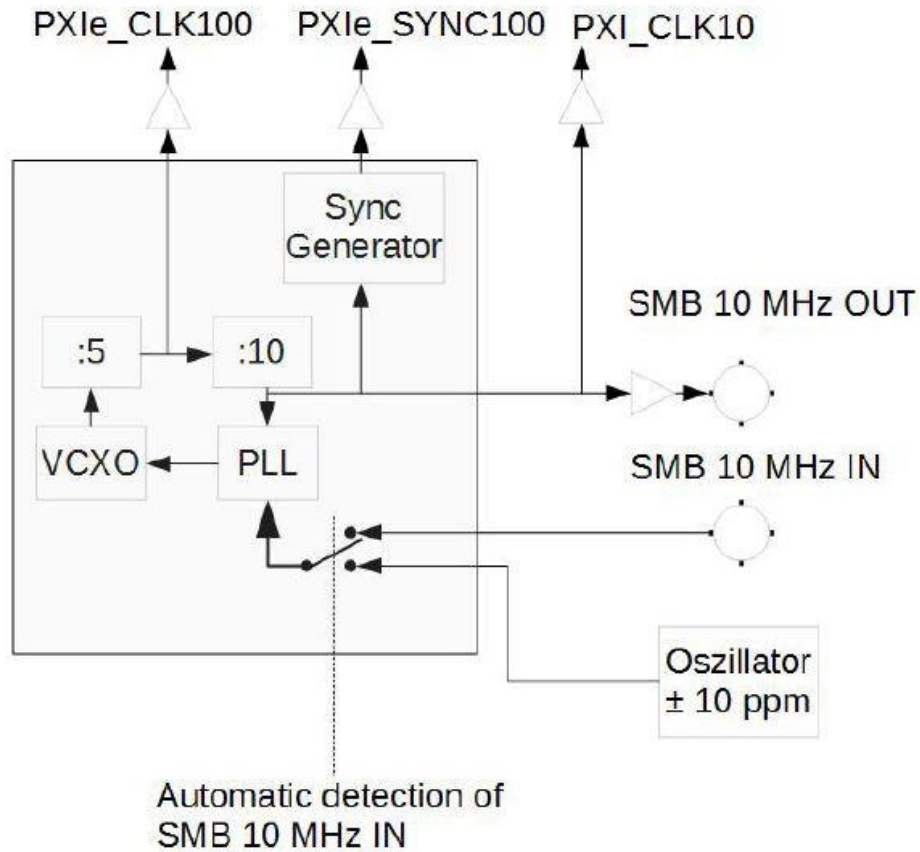
The timing relations are as shown in Figure 2-6.



The PXCe4006 Series Chassis provides an external 10 MHz, PXI\_CLK10 SMB Clock input. If a Clock signal is detected on the rear panel SMB connector, the backplane automatically phase-locks the PXI\_CLK10, PXIE\_CLK100, and PXIE\_SYNC100 signal to this external clock input and distributes the clocks to all slots. Additionally a 10 MHz clock is distributed through the backplane to an external SMB Connector (10 MHz Clock Out).

The backplane allows the 10 MHz reference clock to be derived from an external SMB clock input or an internal clock oscillator.

Figure 2-7 shows the Clock architecture of the PXCe4006 Series Chassis.



The PLL is connected to the SMB 10 MHz input clock if the input clock is present. The presence of the input clock is automatically detected. If there is no input clock present, the clock source to the PLL is a 10 MHz Clock oscillator.

Each of the clocks PXI\_CLK10, PXIE\_CLK100, and PXIE\_SYNC100 are driven with an independent buffers.

## Front Panel LEDs

Figure 2-8 shows the location of the front panel LEDs.

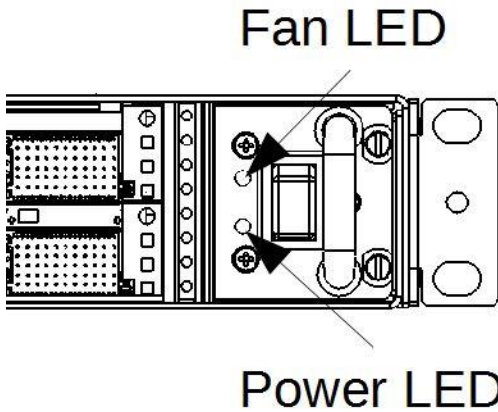


Table 2-1 describes the front panel LED states

LED	State	Description
Fan LED	Off	Chassis is powered off
	Red	One or more chassis fans have failed
Power LED	Off	Chassis is powered off
	Green	Power supply is active, and all voltages are within normal operating ranges.

## Interoperability with CompactPCI

The PXCe4006 series chassis allows you the flexibility to use the following devices in a single PXI Express system:

- PXI Express compatible products
- CompactPCI Express compatible Type-2 peripheral products
- PXI hybrid slot compatible products
- Standard CompactPCI peripheral products

The PCI Clock has a frequency of 33 MHz. Therefore, the M66EN Pin of the CompactPCI bus is tied to Ground at the backplane.

The VIO Voltage is either +5V or +3.3V. Refer to the CompactPCI PICMG 2.0 R. 3.0 specification for details regarding V(I/O) and frequency selection.




### 3. Installation

#### **Connecting Chassis Grounding**

The system contains gaskets at the chassis and board level to guard against electromagnetic interference (EMI). Each of the chassis' individual components makes contact with the gaskets and to the PE-stud on the rear panel.


The card guides are outfitted with electrostatic discharge (ESD) contacts on each rail. These ESD contacts ensure that the boards are fully discharged as they are plugged into the chassis in order to prevent static build-up.

	<p><b>Caution!</b></p> <p><i>The chassis is designed in accordance with protection class 1!! It must therefore be operated with protective earth/GND connection. Use only a three conductor AC power cable with a protective earth conductor that meets the IEC safety standards!</i></p>
---	---

There is a 4 mm stud on the rear panel. This stud is only for potential equalization. Proper grounding is achieved through the protective earth conductor of the power cable!

#### **Inspecting the Chassis Components**

During the course of handling, shipping, and assembly, pins, shrouds, mounting screws, fans and other items can become damaged and/or loose.

	<p><b>WARNING:</b> Before utilizing the chassis, perform a thorough inspection to ensure the chassis and its components are not damaged.</p>
---	--

- To inspect the chassis:
  1. Visually inspect the chassis to ensure that all of the connector pins are straight, screws are tight, and so on.
  2. Check to ensure none of the EMI gaskets is damaged.

#### **Protection Against Electromagnetic Interference**

The chassis contains gaskets at the shelf and board level to guard against electromagnetic interference (EMI). Ensure that the chassis is grounded and that each of the chassis individual components make contact with the gaskets.

Follow the proper grounding and ESD handling procedures.

## Installing Hardware

- 1.) Attach input power to the rear AC input using an appropriate AC power cable before installing the system controller.
- 2.) Install the PXIe Remote Controller into the system controller slot. Slot 1 is indicated with the red card guides. First, place the system controller into the front of the card guides. Slide the Remote Controller into chassis, making sure that the injector handle is pushed down.
- 3.) When you begin to feel resistance, pull up on the injector handle to seat the system controller fully into the chassis frame. Secure the system controller front panel by tightening the front panel mounting screws.
- 4.) Install the peripheral modules into the appropriate slots.



**WARNING:** Boards should slide easily when installing or removing them from the shelf. Forcing the boards may cause damage to the interface connector pins.

- 5.) Install filler panels in unused or empty slots.

Filler panels consists of a front panel (with or w/o air baffles), EMC gasket and mounting screws.



**WARNING:** Close all empty chassis slots with filler panels. The filler panel prevents fan air from escaping out open slots.

- 6.) Connect the PXIe Remote controller with your PC as shown in the concerning user manual.
- 7.) Turn on the power switch at the rear panel to turn the chassis into standby state.

Before inserting boards, power the shelf to ensure that it is operating properly. The power connections and the mains switch are located at the bottom right rear of the shelf

- Ensure that the AC switch is set to the off (O) position.
- Connect the mains AC cable (C14, 10 Amp, not supplied) to the AC inlet.
- Ensure that the mains AC feed (90-264VAC, 47-63Hz) is on.
- Turn the AC switch to the on (I) position. All the system fans will begin to operate.

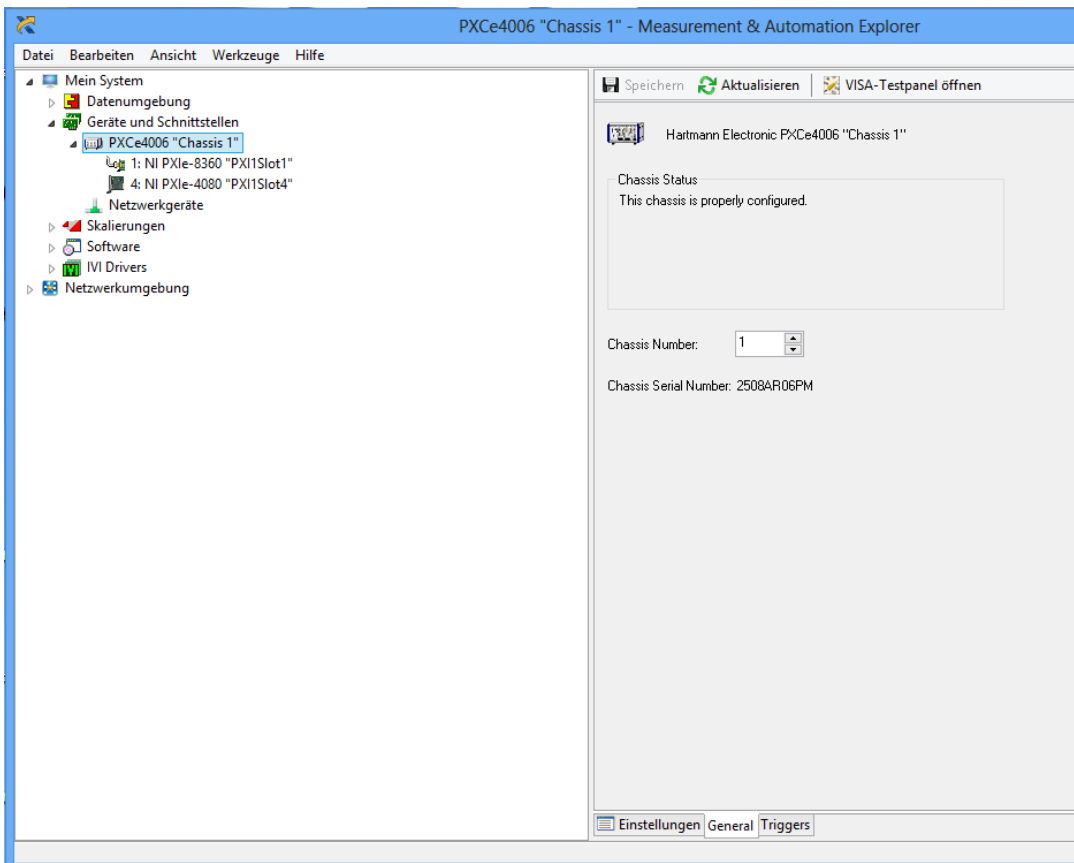
- 8.) Turn on the chassis through the momentary power switch at the front panel. The chassis must be powered up before the host PC is powered up.
- 9.) Turn on your connected host PC.

## Installing Software

In order to achieve vendor software interoperability, an installation package is provided with the PXCe4006 series chassis.

It is recommended that the NI PXI Platform Services is installed before the Hartmann Electronic installer is executed. Make sure that the installer is executed within its original folder location.

After running the Hartmann Electronic installer the PXCe4006 series chassis is automatically detected through the National Instruments Measurement and Automation Explorer as shown in the Image below.



## 4. Maintaining the Chassis

### *Replacing the Fan Tray*

The fan tray can be accessed from the front on the right side of the chassis.

#### **Removing the Fan Tray**

- Loosen the four mounting screws (top and bottom) on the front of the fan tray.
- With the fan tray handle, pull the fan tray out partially toward the front of the shelf until the interface connector disengages. Wait until the fans have stopped and then remove the fan tray from the shelf.
- 



**WARNING:**

Extreme care should be taken while handling the fan tray. It is recommended to wait until the fan's open impellers have stopped spinning before removing the fan tray.

#### **Installing the Fan Tray**

- Insert the replacement fan tray into the shelf and ensure that the interface connectors align. Insert the fan tray gently until fully seated.
- Tighten the two mounting screws (top and bottom) on the front of the fan tray.

## 5. Service

### ***Technical support and Return for Service Assistance***

Please return the complete chassis system. For all product returns and support issues, please contact your Hartmann sales distributor or [www.hartmann-electronic.com](http://www.hartmann-electronic.com)

Please use the original packing material. Shipping without the original packing material might void the warranty.

### ***Declaration of Conformity***

The HARTMANN PXCe4006 Series Chassis are developed and manufactured according to EN 60950-1.

HARTMANN PXCe4006 Series Chassis are not end-products with independent functionality according the EMC regulations, therefore CE marking is not required. Not before CPCI / PXI Express boards are plugged into the chassis, the systems fulfill the requirements in accordance with EMC Directive 2004/108/EG and Low-voltage Directive 2006/95/EG.

With the EMC optimized enclosure design and the high quality power input filters for the mains connection offers HARTMANN PXI Express chassis serve an ideal base for system Integrators, which comply with the limits of EN 61000-6-3 and EN 61000-6-2

A functionality test and protective earth test is carried out on each system.

## 6. Specification

### *Electrical*

#### AC Input

Operating Voltage Range	90 VAC to 264 VAC
Operating frequency Range	47 Hz - 63 Hz
Input Current	6 A
Efficiency	>86% @ full load

#### DC Output

Short Circuit protection on all outputs.  
Over Voltage protection on +5 V, +12 V, +3.3 V.

#### Power Supply

Main Power: EFORE, RCB600-AABB

### Power available for Backplane

Table 6-2 shows the available Power over the specified operating temperature Range

Voltage	Maximum Current	Maximum Power
+5V AUX	2 A	10 W
+5V	9 A	45 W
+3.3V	14 A	45 W
+12V	12 A	135 W
-12V	2 A	25 W

As shown in Table 6-2 The Backplane can deliver 260 W of total power to the Modules, over the specified temperature range.

The power consumption of all PXIe modules that are installed into the chassis must not exceed the limits in table 6-2.

## System Synchronization Clocks

### PXI\_CLK10

Maximum slot-to-slot skew: 250 ps  
Accuracy:  $\pm 25$  ppm  
Duty-factor: 45 % - 55 %

### PXIe\_CLK100

Maximum slot-to-slot skew: 100ps  
Accuracy:  $\pm 25$  ppm  
Duty-factor: 45%-55%

### PXIe\_SYNC100

Maximum slot-to-slot skew: 100 ps  
Accuracy:  $\pm 25$  ppm  
Duty-factor: 45 %-55 %

### External PXI\_CLK10 output (SMB Rear panel connector)

Frequency: 10 MHz  $\pm 25$  ppm  
Accuracy:  $\pm 25$  ppm  
Output Impedance: 50  $\pm 10$   $\Omega$

### External PXI\_CLK10 Input (SMB Rear panel connector)

Frequency: 10 MHz  $\pm 25$  ppm  
Input: sine wave or square wave  
3.5V RMS into 50  $\Omega$   
(-10 - +24) dBm

## Operating Environment

Operating temperature range: 0... +50 °C  
Storage temperature range: -20 °C... +70 °C

## Cooling Capacity

Over complete Operating temperature range: Up to 40W / Slot

### Simulation procedure:

Figure 6-1 shows the setup for determining the systems' cooling capacity per slot. In order to achieve robust simulation results, each slot is equipped with a load card. Each load card has a mounted heat sink. That reduces the air flow, that is pushed from the fan tray through the modules. The resulting lack of air flow reduces the cooling capacity per slot. Therefore the simulation setup takes the reduction of the air flow through a typical Measurement setup into account in a simplified way.

Figure 6-1 shows the setup for the thermal flow analysis

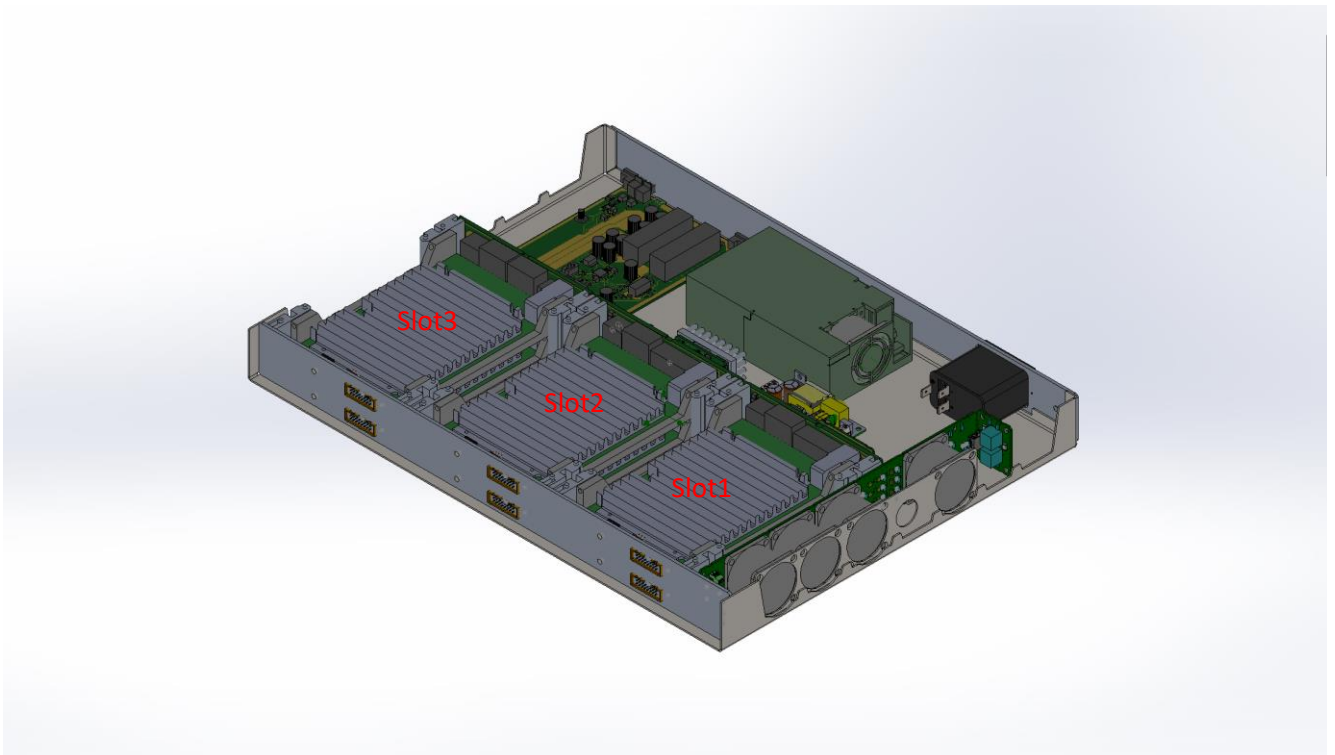
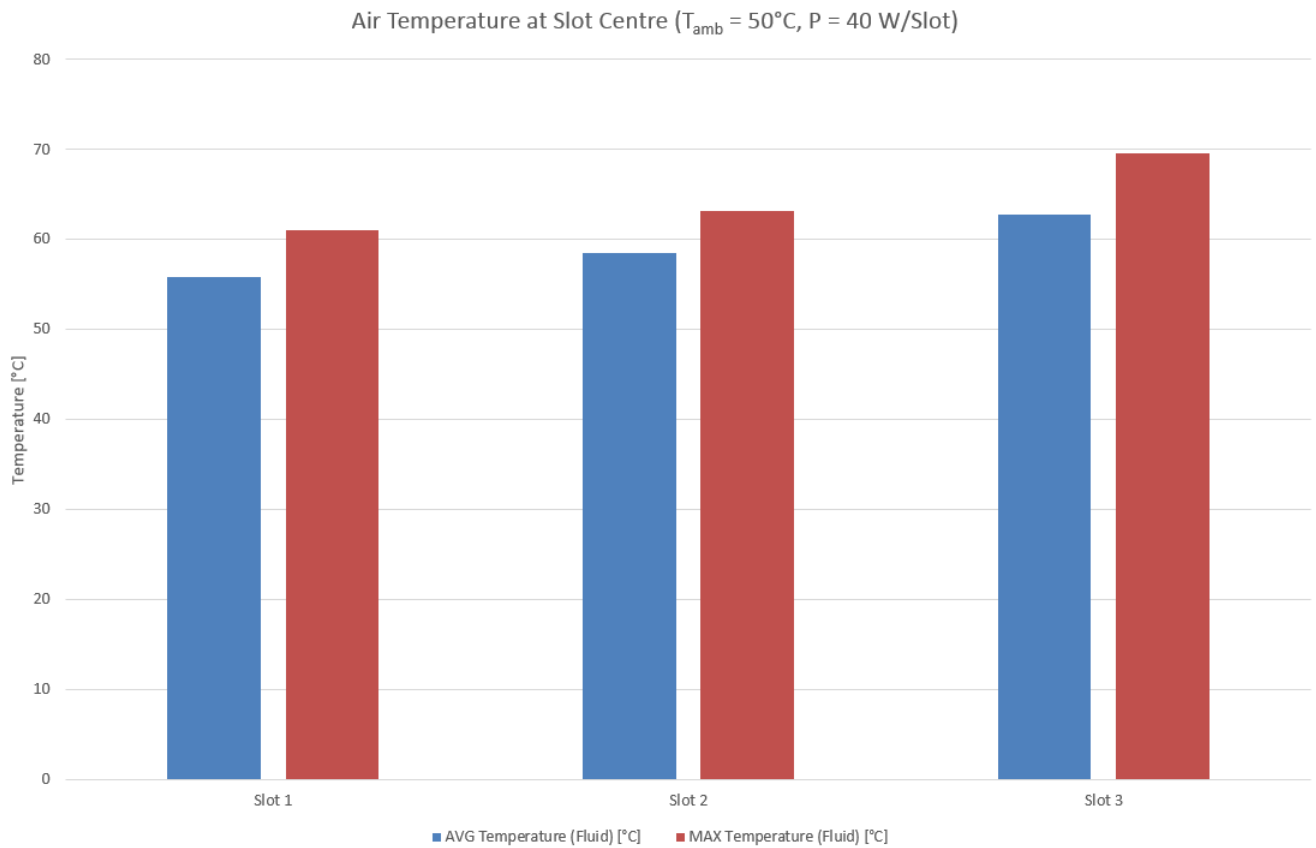




Diagram 6-2 shows the simulated heat distribution for the slot pairs shown in Figure 6-1



The graph shows the heat distribution in the chassis. The graph results out of an operating temperature range of  $50^{\circ}\text{C}$ . Each Load card is configured to produce a heat dissipation of  $40\text{ W / Slot}$ . As shown in the graph, the maximum temperature, in the heat center of each slot, does not exceed  $70^{\circ}\text{C}$ .

In order to achieve the maximum cooling performance the Fan Control has to be disabled. This will force the fans to run at full speed.

## **Electromagnetic Compatibility**

- EN 61326-1 (IEC 61326-1): Class A emission
- EN 55011 (CISPR 11): Group 1, Class A emission
- EN 55022 (CISPR 22): Class A emission
- EN 55024 (CISPR 24): Immunity
- AS/NZS CISPR 11: Group 1, Class A emission
- AS/NZS CISPR 22: Class A emission
- FCC 47 CFR Part 15B: Class A Emission
- ICES-001: Class A emission

**Mechanical**

Chassis weight: ca. 6 kg

Figure 6-1 PXCe4006 series Chassis Dimensions Front (Dimensions are in Millimeter).

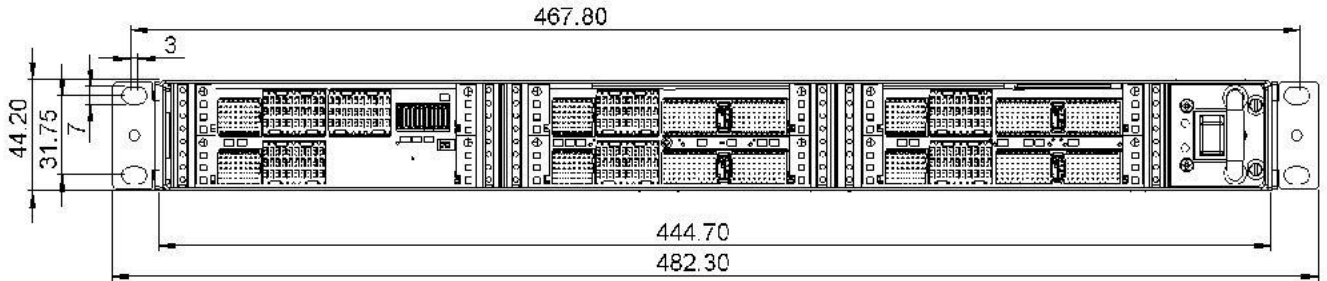


Figure 6-2 PXCe4006 series Chassis Dimensions Side (Dimensions are in Millimeter).

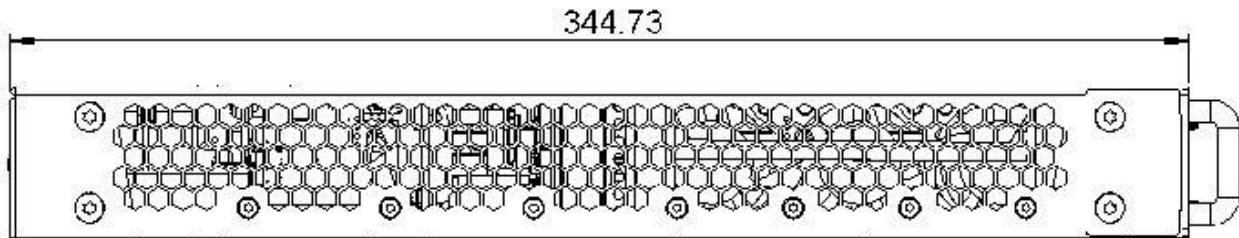
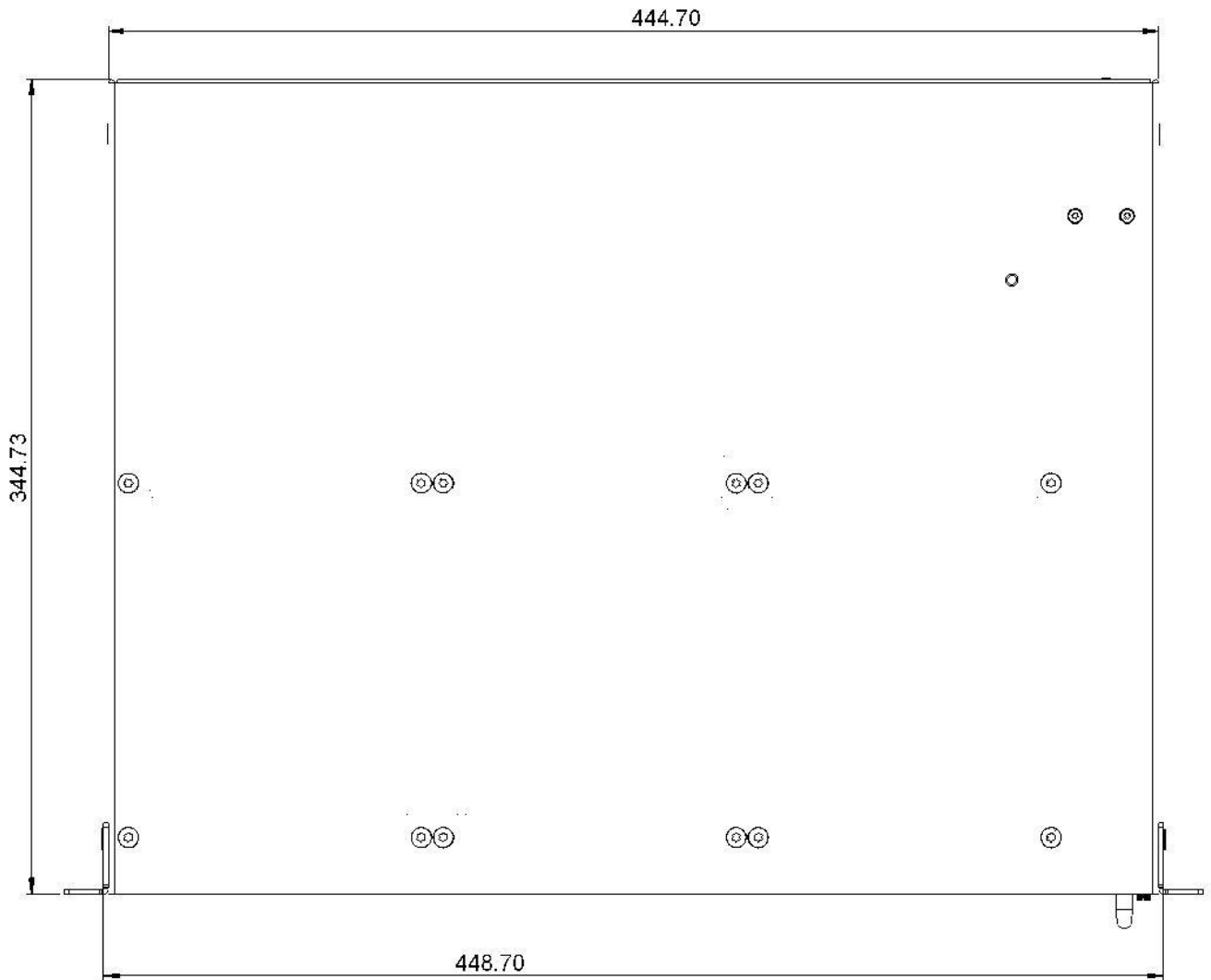


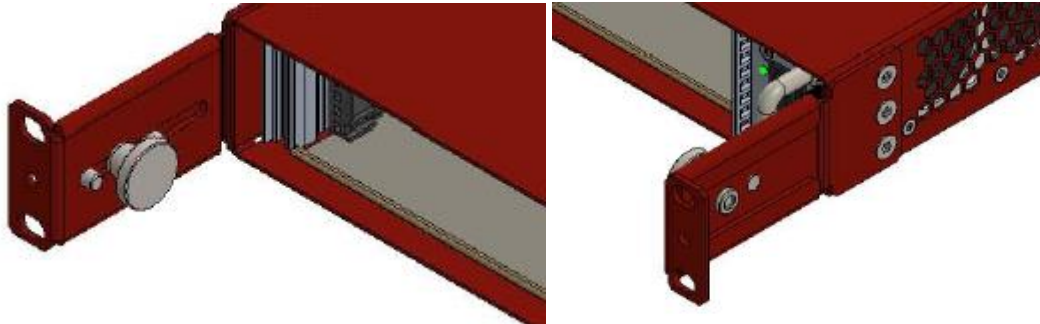
Figure 6-3 PXCe4006 series Chassis Dimensions Bottom (Dimensions are in Millimeter).



## Recessed Mounting

The Chassis provides a recessed mounting option.

Figure 6-4 shows the recessed mounting equipment for the chassis.




The equipment allows the chassis to be mounted recessed into a 19" Rack. The depth of the chassis in the rack can be adjusted through the milled screw shown in figure 6-4. The depth of the chassis in the rack can be adjusted in a continuously way.

## **Cooling**

The PXI Express front I/O boards are cooled by forced air convection through 3 VDC axial fans (40 x 40x 28 mm, 11.3 CFM, 37 dB(A)).

## **Airflow**

Airflow from right to left.

	<p><b>Caution!</b> To ensure proper air flow within the system make sure that all slots are populated with either boards or filler panels.</p>
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## **Chassis Material**

1.0330, st12 03 +ZE

## **Humidity**

Operating: 5% to 80% non-condensing  
Storage: 5% to 80% non-condensing  
Tested in accordance with IEC-60068-2-56

## **Operational Shock**

30g peak, half sine, 11ms pulse (Tested in accordance with IEC-60068-2-27.  
Meets MIL-PRF-28800F class 2 limits)

## **Random Vibration**

5 to 500 MHz, 0.3 g<sub>RMS</sub>

## **Safety**

EN 61010-1, IEC 61010-1, UL 61010-1, CSA 61010-1

## 7. Pin Assignment

The Pin assignment applies with the *PXI-5 PXI Express Hardware Specification* and the *CompactPCI PICMG 2.0 R. 3.0* specification.

- System Controller Slot (4 Link Configuration)
- PXI Express Hybrid Peripheral Slot
- PXI Express Peripheral Slot

## System Controller Slot (4 Link Configuration)

Pin	Z	A	B	C	D	E	F	XP4 Connector
1	GND	GA4	GA3	GA2	GA1	GA0	GND	
2	GND	+5Vaux	GND	SYSEN#	WAKE#	ALERT#	GND	
3	GND	RSV	RSV	RSV	RSV	RSV	GND	
4	GND	RSV	RSV	RSV	RSV	RSV	GND	
5	GND	PXI_TRIG3	PXI_TRIG4	PXI_TRIG5	GND	PXI_TRIG6	GND	
6	GND	PXI_TRIG2	GND	RSV	NC	PXI_CLK10	GND	
7	GND	PXI_TRIG1	PXI_TRIG0	RSV	GND	PXI_TRIG7	GND	
8	GND	RSV	GND	RSV	RSV	PXI_LBR6	GND	

Pin	A	B	ab	C	D	cd	E	F	ef	XP3 Connector
1	RSV	RSV	GND	RSV	RSV	GND	RSV	RSV	GND	
2	RSV	RSV	GND	PWR_OK	PS_ON#	GND	LINKCAP	PWRBTN#	GND	
3	SMBDAT	SMBCLK	GND	4REFCLK+	4REFCLK-	GND	2REFCLK+	2REFCLK-	GND	
4	RSV	PERST#	GND	3REFCLK+	3REFCLK-	GND	1REFCLK+	1REFCLK-	GND	
5	1PETp0	1PETn0	GND	1PERp0	1PERn0	GND	1PETp1	1PETn1	GND	
6	1PETp2	1PETn2	GND	1PERp2	1PERn2	GND	1PERp1	1PERn1	GND	
7	1PETp3	1PETn3	GND	1PERp3	1PERn3	GND	2PETp0	2PETn0	GND	
8	2PETp1	2PETn1	GND	2PERp1	2PERn1	GND	2PERp0	2PERn0	GND	
9	2PETp2	2PETn2	GND	2PERp2	2PERn2	GND	2PETp3	2PETn3	GND	
10	3PETp0	3PETn0	GND	3PERp0	3PERn0	GND	2PERp3	2PERn3	GND	

Pin	A	B	ab	C	D	cd	E	F	ef	XP2 Connector
1	3PETp1	3PETn1	GND	3PERp1	3PERn1	GND	3PETp2	3PETn2	GND	
2	3PETp3	3PETn3	GND	3PERp3	3PERn3	GND	3PERp2	3PERn2	GND	
3	4PETp0	4PETn0	GND	4PERp0	4PERn0	GND	NC	NC	GND	
4	NC	NC	GND	NC	NC	GND	NC	NC	GND	
5	NC	NC	GND	NC	NC	GND	RSV	RSV	GND	
6	RSV	RSV	GND	RSV	RSV	GND	RSV	RSV	GND	
7	RSV	RSV	GND	RSV	RSV	GND	RSV	RSV	GND	
8	RSV	RSV	GND	RSV	RSV	GND	RSV	RSV	GND	
9	RSV	RSV	GND	RSV	RSV	GND	RSV	RSV	GND	
10	RSV	RSV	GND	RSV	RSV	GND	RSV	RSV	GND	

Pin	Signals	XP1 Connector
G	GND	
F	12V	
E	12V	
D	GND	
C	5V	
B	3.3V	
A	GND	



## PXI Express Hybrid Peripheral Slot

Pin	Z	A	B	C	D	E	F	XP4 Connector
1	GND	GA4	GA3	GA2	GA1	GA0	GND	
2	GND	+5Vaux	GND	SYSEN#	WAKE#	ALERT#	GND	
3	GND	12V	12V	GND	GND	GND	GND	
4	GND	GND	GND	3.3V	3.3V	3.3V	GND	
5	GND	PXI_TRIG3	PXI_TRIG4	PXI_TRIG5	GND	PXI_TRIG6	GND	
6	GND	PXI_TRIG2	GND	ATNLED#	NC	PXI_CLK10	GND	
7	GND	PXI_TRIG1	PXI_TRIG0	ATNSW#	GND	PXI_TRIG7	GND	
8	GND	RSV	GND	RSV	PXI_LBL6	PXI_LBR6	GND	

Pin	A	B	ab	C	D	cd	E	F	ef	XP3 Connector
1	PXle_CLK100+	PXle_CLK100-	GND	PXle_SYNC100+	PXle_SYNC100-	GND	NC	NC	GND	
2	PRSNT#	PWREN#	GND	NC	NC	GND	NC	NC	GND	
3	SMBDAT	SMBCLK	GND	RSV	RSV	GND	RSV	RSV	GND	
4	MPWRGD	PERST#	GND	RSV	RSV	GND	1REFCLK+	1REFCLK-	GND	
5	1PETp0	1PETn0	GND	1PERp0	1PERn0	GND	1PETp1	1PETn1	GND	
6	1PETp2	1PETn2	GND	1PERp2	1PERn2	GND	1PERp1	1PERn1	GND	
7	1PETp3	1PETn3	GND	1PERp3	1PERn3	GND	1PETp4	1PETn4	GND	
8	1PETp5	1PETn5	GND	1PERp5	1PERn5	GND	1PERp4	1PERn4	GND	
9	1PETp6	1PETn6	GND	1PERp6	1PERn6	GND	1PETp7	1PETn7	GND	
10	RSV	RSV	GND	RSV	RSV	GND	1PERp7	1PERn7	GND	

Pin	Z	A	B	C	D	E	F	P1 Connector
25	GND	5V	REQ64#	ENUM#	3.3V	5V	GND	
24	GND	AD[1]	5V	V(I/O)	AD[0]	ACK64#	GND	
23	GND	3.3V	AD[4]	AD[3]	5V	AD[2]	GND	
22	GND	AD[7]	GND	3.3V	AD[6]	AD[5]	GND	
21	GND	3.3V	AD[9]	AD[8]	M66EN	C/BE[0]#	GND	
20	GND	AD[12]	GND	V(I/O)	AD[11]	AD[10]	GND	
19	GND	3.3V	AD[15]	AD[14]	GND	AD[13]	GND	
18	GND	SERR#	GND	3.3V	PAR	C/BE[1]#	GND	
17	GND	3.3V	IPMB_SCL	IPMB_SDA	GND	PERR#	GND	
16	GND	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND	
15	GND	3.3V	FRAME#	IRDY#	BD_SEL#	TRDY#	GND	
12-14	Key Area							
11	GND	AD[18]	AD[17]	AD[16]	GND	C/BE[2]#	GND	
10	GND	AD[21]	GND	3.3V	AD[20]	AD[19]	GND	
9	GND	C/BE[3]#	IDSEL	AD[23]	GND	AD[22]	GND	
8	GND	AD[26]	GND	V(I/O)	AD[25]	AD[24]	GND	
7	GND	AD[30]	AD[29]	AD[28]	GND	AD[27]	GND	
6	GND	REQ#	GND	3.3V	CLK	AD[31]	GND	
5	GND	BRSVP1A5	BRSVP1B5	RST#	GND	GNT#	GND	
4	GND	IPMB_PWR	HEALTHY#	V(I/O)	INTP	INTS	GND	
3	GND	INTA#	INTB#	INTC#	5V	INTD#	GND	
2	GND	TCK	5V	TMS	TDO	TDI	GND	
1	GND	5V	-12V	TRST#	+12V	5V	GND	

## PXle Peripheral Slot

Pin	Z	A	B	C	D	E	F	XP4 Connector
1	GND	GA4	GA3	GA2	GA1	GA0	GND	
2	GND	+5Vaux	GND	SYSEN#	WAKE#	ALERT#	GND	
3	GND	12V	12V	GND	GND	GND	GND	
4	GND	GND	GND	3.3V	3.3V	3.3V	GND	
5	GND	PXI_TRIG3	PXI_TRIG4	PXI_TRIG5	GND	PXI_TRIG6	GND	
6	GND	PXI_TRIG2	GND	ATNLED#	NC	PXI_CLK10	GND	
7	GND	PXI_TRIG1	PXI_TRIG0	ATNSW#	GND	PXI_TRIG7	GND	
8	GND	RSV	GND	RSV	PXI_LBL6	PXI_LBR6	GND	

Pin	A	B	ab	C	D	cd	E	F	ef	XP3 Connector
1	PXle_CLK100+	PXle_CLK100-	GND	PXle_SYNC100+	PXle_SYNC100-	GND	NC	NC	GND	
2	PRSNT#	PWREN#	GND	NC	NC	GND	NC	NC	GND	
3	SMBDAT	SMBCLK	GND	RSV	RSV	GND	RSV	RSV	GND	
4	MPWRGD	PERST#	GND	RSV	RSV	GND	1REFCLK+	1REFCLK-	GND	
5	1PETp0	1PETn0	GND	1PERp0	1PERn0	GND	1PETp1	1PETn1	GND	
6	1PETp2	1PETn2	GND	1PERp2	1PERn2	GND	1PERp1	1PERn1	GND	
7	1PETp3	1PETn3	GND	1PERp3	1PERn3	GND	1PETp4	1PETn4	GND	
8	1PETp5	1PETn5	GND	1PERp5	1PERn5	GND	1PERp4	1PERn4	GND	
9	1PETp6	1PETn6	GND	1PERp6	1PERn6	GND	1PETp7	1PETn7	GND	
10	RSV	RSV	GND	RSV	RSV	GND	1PERp7	1PERn7	GND	

## 8. Ordering Information

Ordering Number	Description	PCI V(I/O)
LMH0000910	PXI Express 6 Slot 1U Chassis HiPow	+5 V