PXES-2780

18-slot PXI Express Chassis

User's Manual



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Revision History

Revision	Release Date	Description of Change(s)
2.00	2015-05-08	Initial Release
2.1	2020-06-17	Update specifications; add TUV safety content
2.2	2020-09-24	Updated specifications

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Preface

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Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.



Additional information, aids, and tips that help users perform tasks.



Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.



Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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1 Introduction

The ADLINK PXES-2780 18-slot PXI Express chassis is compliant with PXI Express and cPCI Express specifications, and offers one system slot, one system timing slot, six PXIe peripheral slots, and ten hybrid peripheral slots for versatile testing and measurement applications requiring enhanced bandwidth. The hybrid-slot design accepts installation of CompactPCI, PXI, CompactPCI Express, and PXI Express modules into any peripheral slot, maximizing flexibility. The PXES-2780 provides a configurable PCIe switch fabric and is configurable in two-link and four-link PXI express deployments, with 8GB/s system bandwidth and up to 4GB/s slot bandwidth for dedicated peripheral slots, thanks to second generation PCIe signaling technology.

The PXES-2780 implements a smart system monitoring controller, reporting full chassis status, including fan speed, system voltages, and internal temperature.

Equipped with an industrial grade AC power supply, the PXES-2780 delivers 800W of power in environments from 0°C to 55°C, and features an innovative cooling scheme providing superior heat dissipation. Three 185.9CFM fans in the rear section of the chassis draw cool air from apertures on the bottom and front of the chassis, over the PXI/PXIe modules, to be exhausted to the rear. This innovative cooling design provides, not only exceptional efficiency of heat dissipation, but also superior uniformity for each PXI slot. BNC connectors for 10 MHz clock input/output on the rear panel increase chassis flexibility, enabling synchronization with supplementary devices.

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1.1 Features

- PXI™-5 PXI Express hardware specification Rev.1.0 compliant
- 18-slot PXI Express chassis with one system slot, one system timing slot, ten hybrid peripheral slots, and six PXI Express peripheral slots.
- Configurable PCIe switch fabric, can be configured as four-link x4, two-link x8 PXI Express chassis
- Up to 8 GB/s system bandwidth
- Up to 4 GB/s peripheral bandwidth for dedicated slots
- 0°C to 55°C operating temperature range
- Intelligent chassis management
- Automatic fan speed control
- Chassis status monitoring and reporting
- Remote chassis power on/off control
- BNC connectors for 10 MHz clock input/output
- Maximum total usable power of 800W at 55°C or less
- Power, temperature, and fan monitoring LEDs

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1.2 Specifications

The PXES-2780 complies with the PXI™-5 Specification Rev.1.0 and accepts all modules compliant with the PXI™-5, CompactPCI, and PICMG 2.0 specifications.

Power Supply

AC Input	
Rated Input	100-240 VAC, 50-60Hz, 1200W max.

Entrée d'alimentation CA	
Entrée nominale	*100-240 VAC, 50-60Hz, 1200W max.*

DC Output			
Max. total usable power		800 W	
VDC	**Maximum**	**Load Regulation**	**Maximum Ripple & Noise**
+5V	29.0 A	±5%	50 mV
+12V	45.0 A		120 mV
+3.3V	60.0 A		50 mV
-12V	2.5 A		120 mV

10 MHz System Reference Clock (10 MHz REF)

Maximum clock skew between slots	300 ps
Built-in 10 MHz clock Accuracy	±25 ppm
BNC Output amplitude	1 Vpk-pk ±20% square-wave into 50 Ω 2 Vpk-pk unloaded
BNC Output impedance	50 Ω ±5 Ω

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External 10 MHz clock source input requirements

Frequency input	10 MHz ±100 PPM
Input signal (10MHz REF In BNC)	100 mVPP to 5 VPP(square or sine)
Input impedance (10MHz REF In BNC)	High impedance
Input signal (PXI_CLK10_IN on 10th slot)	5 V or 3.3 V TTL signal

100 MHz System Reference Clock: PXIe_CLK100

Maximum slot-to-slot skew	100 ps
Accuracy	±25 ppm

Cooling

Fans	3 sets of 185.9 CFM fans
Per-slot cooling capacity	38.2 W (verified by 55°C chamber test)

Physical

Slots	18 total, as follows: ▶ 1 x system ▶ 1 x system timing ▶ 10 x hybrid peripheral ▶ 6 x PXI Express peripheral
Dimensions	464.3 (W) x 191.4 (H) x 465.3 (D) mm (18.1 x 7.46 x 18.14 in.)
Weight	11.9 kg (26.2 lb), net weight without accessories

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Environmental

Storage	Ambient temperature: -20 to 70°C Relative humidity: 10 to 90%, noncondensing
Operating	Ambient temperature: 0 to 55°C Relative humidity10 to 90%, noncondensing
Functional shock	30 G, half-sine, 11 ms pulse duration
Random Vibration	Operating: 5 to 500 Hz, 0.3 Grms, 3 axes Nonoperating: 5 to 500 Hz, 2.46 Grms, 3 axes
Sound Pressure Level (at operator position) Tested in accordance with ISO 7779	Auto fan (up to 25 °C ambient) 46.3 dBA High fan 64.5dBA
Sound Power	Auto fan (up to 25 °C ambient) 56.0 dBA High fan 76.0 dBA

Certification

Safety	EN 61010-1
Electromagnetic Compatibility	Emissions: EN 55011 Class A Immunity:EN 61326-1
CE Compliance	Meets essential requirements of applicable European Directives, as amended for CE Marking: Low-Voltage Directive (safety): 73/23/EEC Electromagnetic Compatibility Directive (EMC): 9/336/EEC

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1.3 Schematics

NOTE:

All dimensions are shown in mm (millimeters)

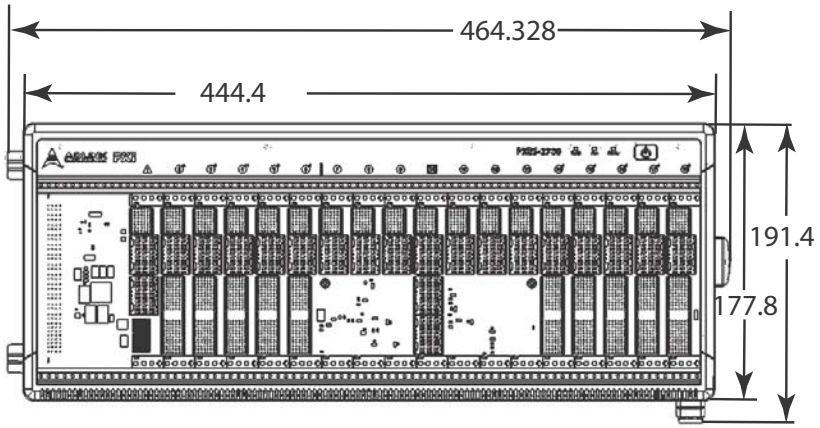


Figure 1-1: Front View

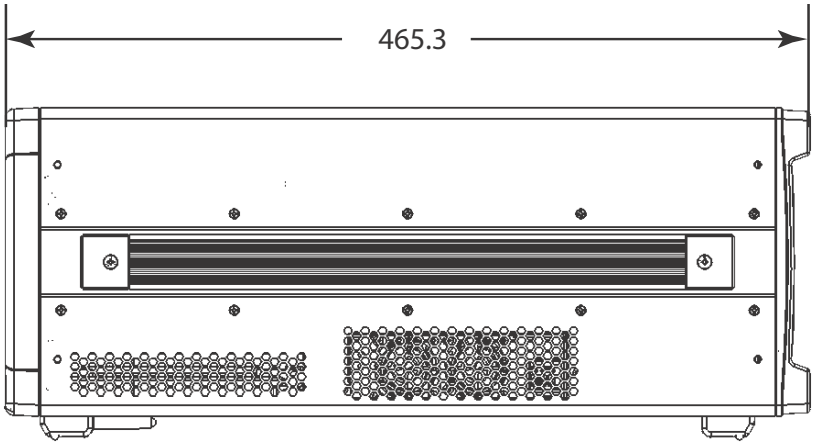


Figure 1-2: Right Side View

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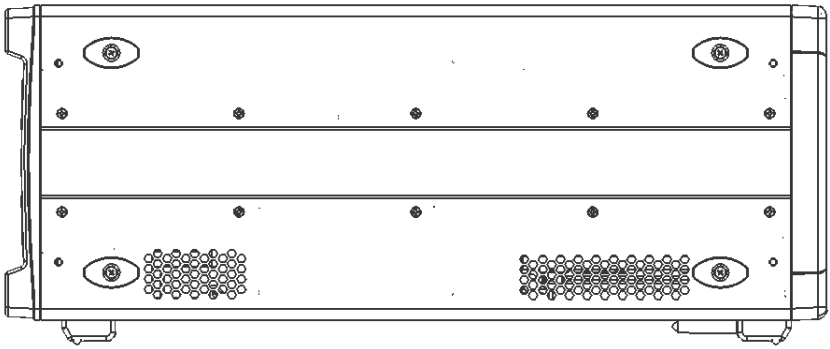


Figure 1-3: Left Side View

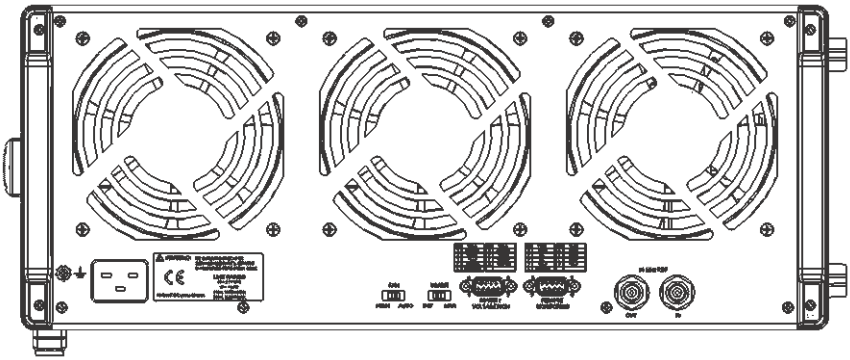


Figure 1-4: Rear View

1.4 Connectors, I/O, and Controls

1.4.1 Front Panel

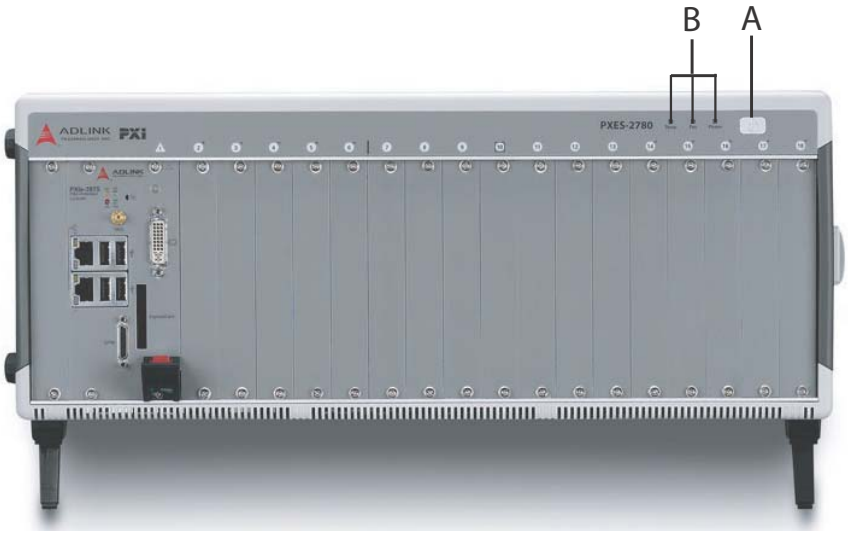


Figure 1-5: PXES-2780 Front Panel

	Feature	Details
A	Power	Powers the chassis on/off (when INHIBIT on rear panel (not shown) is set to “DEF”)
B	Chassis Status	Temperature, Fan, and Power (L to R), functions as follows

Table 1-1: Front Panel Legend

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Status	Temperature (Amber)	Fan (Green)	Power (Blue)
On (Lit)	N/A	Fans operating normally	DC voltage supply is normal
Off	Temperature is normal	Chassis is powered down	Chassis is powered down
Blinking	One or more temperature sensors exceeds threshold temperature (default 70°C)	One or more fans falls below threshold speed (default is 800RPM)	One or more power rails exceeds threshold settings (defaults are ±5% for 5V, 3.3V, +12V, and -12V)

Table 1-2: Front Panel Indicators

1.4.2 Rear Panel



Figure 1-6: PXES-2780 Rear Panel Connectors

	Feature	Details
C	10MHz Reference Clock Input	The BNC connector acts as a 10MHz reference clock input, whereby the backplane 10MHz clock is overridden in the presence of an external 10MHz clock
D	10MHz Reference Clock Output	The BNC connector acts as 10MHz reference clock output

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	Feature	Details
E	Remote Monitoring Connector	The D-sub9 connector acts as a remote monitoring connector, when connected to a remote computer using a standard D-sub9 cable, with pin assignments shown in Figure 1-7 Note: The remote monitor port is Rx-Tx/Tx-Rx crossed, such that a RS-232 cable with Rx-Rx/Tx-Tx connection must be used
F	Inhibit/Voltage Monitoring DB-9 Connector	The DB-9 connector monitors the four main voltage rails via digital multimeter ▶ voltage rail pin assignments shown in Figure 1-7 ▶ 10 kΩ current limiting resistors on each voltage rail prevent accidental overload ▶ one Inhibit (active low) pin is provided to power the chassis on/off when the Inhibit Switch is in the MAN (manual) position, such that chassis is powered on when Inhibit pin is logic high or open, and off when Inhibit pin is grounded
G	Inhibit Switch	In the DEF (default) position, the front panel power button turns the power supply on/off, and in the MAN (manual) position, the INHIBIT pin on the DB-9 connector turns the power supply on/off
H	Fan Switch	In the HIGH position, fans operate at maximum speed, and in AUTO, the fans run based on the monitored chassis temperature
I	Universal Power Inlet	Accepts IEC 60320-1 C19 power outlet-equipped connection
J	Chassis Ground Lug	The ground wire can be crimped to the ground lug, using a crimp tool of the appropriate size, with the other end connected to ground

Table 1-3: Rear Panel Legend

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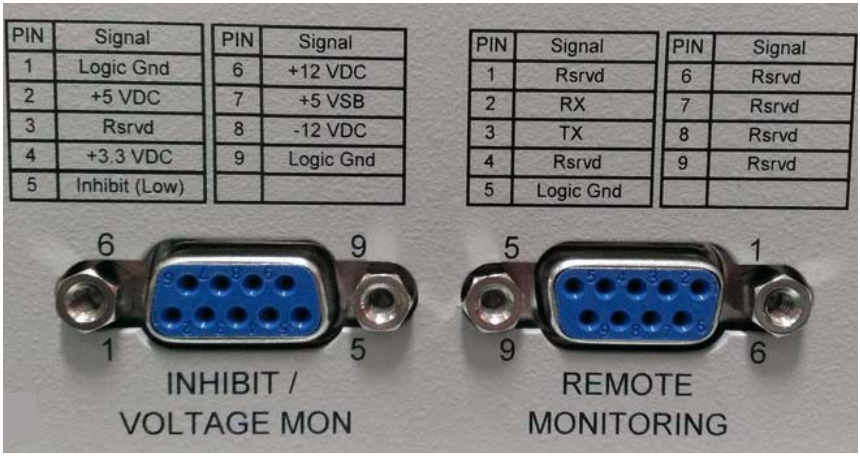


Figure 1-7: Inhibit/ Voltage & Remote Monitoring Connectors

1.4.3 Backplane

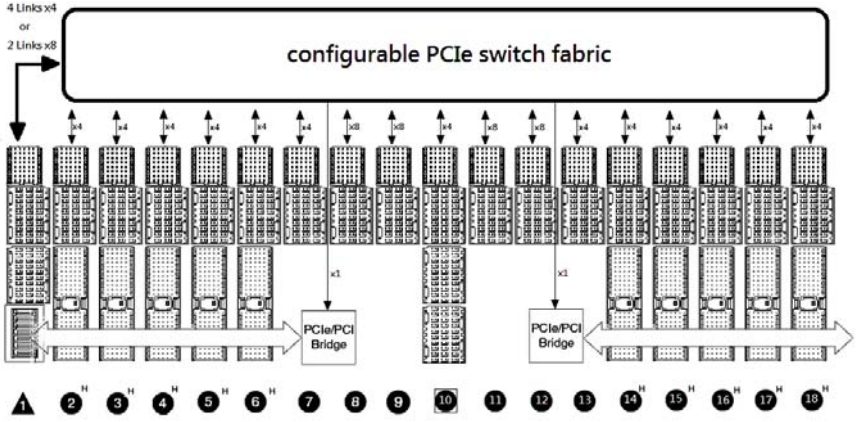


Figure 1-8: PXES-2780 Backplane

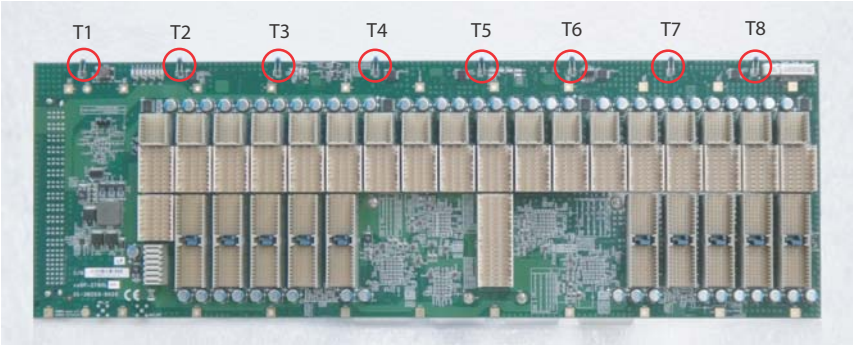


Figure 1-9: Temperature Sensors on Backplane

NOTE:

For details of chassis temperature detection, please see “Chassis Temperature” on page 37

PCI Express Link Capability

The PXES-2780 backplane provides a configurable PCIe switch fabric, allowing PCI express link configuration between system slot and PCIe switch fabric to change from 4-link x 4 lanes (factory default) to 2-link x 8 lanes.

4-link x 4 lanes configuration delivers the most balanced PCI express topology, with all the peripheral slots sharing equally in system bandwidth.

2-link is installed into PCIe x8 peripheral slots, providing the module with the highest throughput. For more details, please see “PXIe Link” on page 35.

NOTE:

Connector pin assignments of the PXI Express System Controller Slot, PXI Express System Timing Slot, PXI Express Hybrid Peripheral Slots, and PXI Express Peripheral Slots comply with the default pin assignments as defined in PXI-5 PXI Express hardware specification Rev.1.0.

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PXI Express System Controller Slot

The System Controller slot is Slot 1 of the chassis as defined by the PXI specification. The PXES-2780 chassis can accommodate a PXI Express system controller that occupies width up to 4 slots. As defined in the PXI specification, three controller expansion slots allow the controller to expand to the left to prevent the controller from using up peripheral slots.

PXI Express System Timing Slot

The System Timing (ST) slot is Slot 10, providing one dedicated single-ended star trigger and 3 pairs of differential star trigger lines to each peripheral slot. Routing of single ended star trigger signals (PXI_STAR) and differential star trigger signals (PXIe_DSTAR) are as follows.

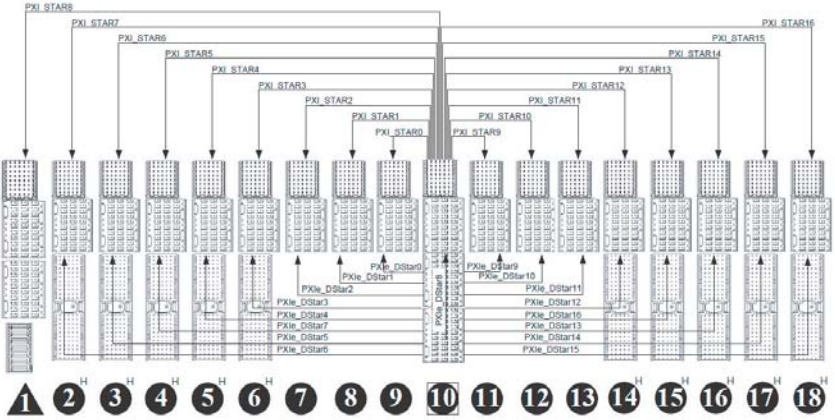


Figure 1-10: Star Trigger Routing

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Slot	PXI_Star	PXIe_DStar
1	8	N/A
2	7	6
3	6	5
4	5	7
5	4	4
6	3	3
7	2	2
8	1	1
9	0	0
10	N/A	8
11	9	9
12	10	10
13	11	11
14	12	12
15	13	16
16	14	13
17	15	14
18	16	15

Table 1-4: PXI Star Trigger Line Assignment

Star trigger functionality provides a precise trigger signal to the peripheral modules by installation of a specific star trigger controller module in the ST slot. The system timing slot can also be used as a general PXI Express (x4 lanes) peripheral slot if star trigger functionality is not required.

PXI Express Hybrid Peripheral Slots

10 PXI Express hybrid peripheral slots are provided in the PXES-2780, all connected with PCIe x4 lanes. Each can accommodate a 3U PXI Express/CompactPCI Express/ hybrid slot compatible PXI-1/CompactPCI peripheral module.

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PXI Express Peripheral Slots

6 PXI Express peripheral slots are provided in the PXES-2780, with 8th, 9th, 11th, and 12th slots connected with PCIe x8 lanes, and the other four peripheral slots connected with PCIe x4 lanes. Each can only accommodate a 3U PXI Express/ CompactPCI Express peripheral module.

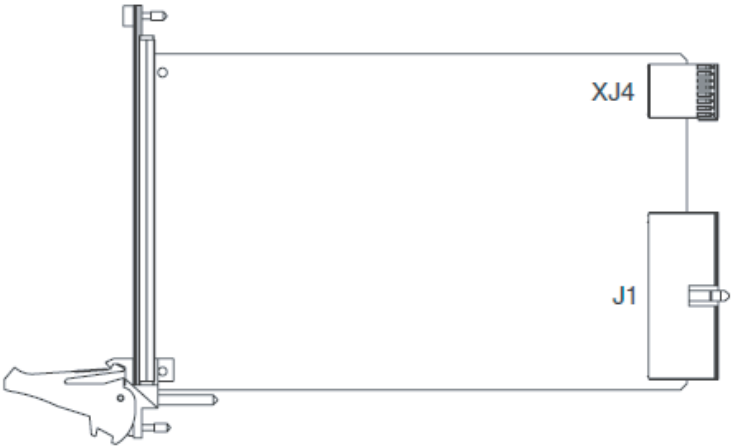


Figure 1-11: 3U Hybrid Slot Compatible PXI-1 Peripheral Module

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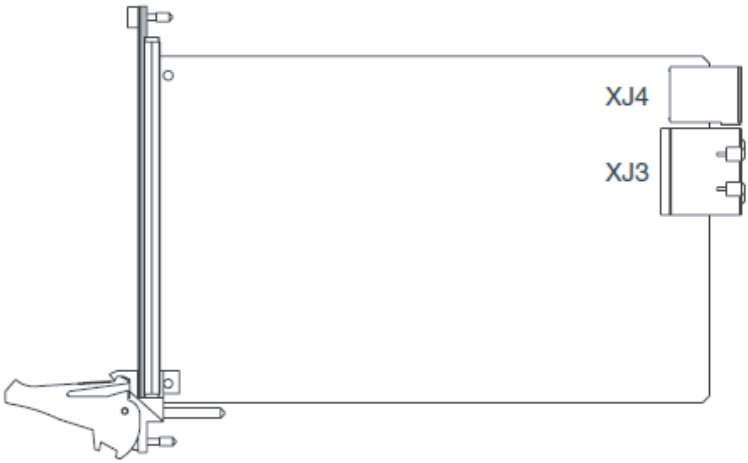


Figure 1-12: 3U PXI Express Peripheral Module

Local Bus

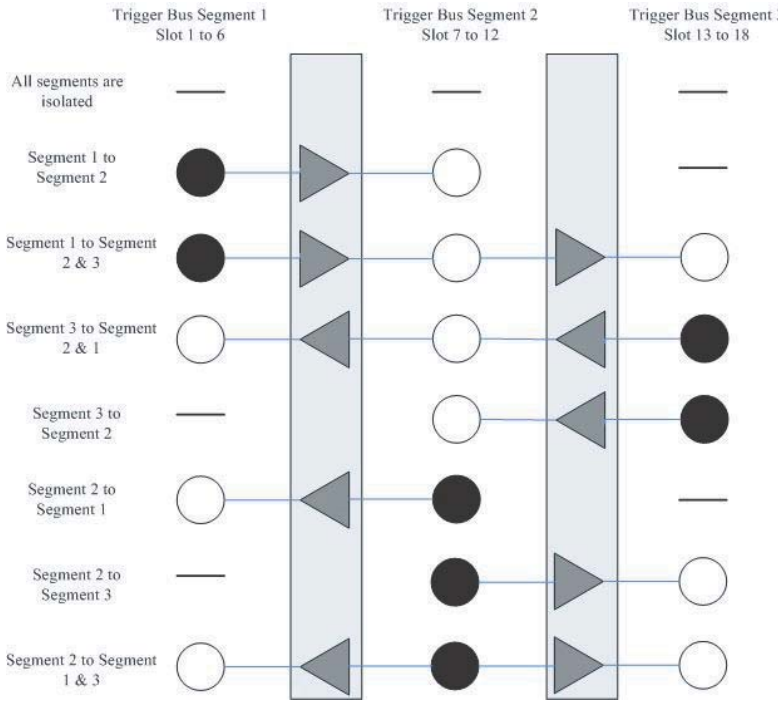
The local bus on a PXI backplane is a daisy-chained bus that connects each peripheral slot with adjacent peripheral slots to the left and right. The quantity of local bus lines is decreased from thirteen to one on a PXI Express backplane. The remaining local bus line can transmit analog or digital signals between modules.

Trigger Bus

Three trigger bus segments on the PXES-2780 consist of a first segment from 1st to 6th slots, a second from 7th to 12th slots, and a third from 13th to 18th slots, with each trigger bus segment containing 8 trigger lines connecting all slots on the same segment, providing inter-module synchronization. PXI and PXI Express modules can exchange trigger or clock signals through the trigger bus, allowing precisely timed response to asynchronous external events. Two trigger bus buffers can connect or disconnect the trigger lines of adjacent segments.

As shown, eight combinations of trigger bus segment connections are possible between the three bus segments, with any applicable to each of the eight trigger lines.

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NOTE: The solid circle shown represents the source of the trigger and the transparent circle the trigger destination.

Figure 1-13: Trigger Bus Bridge Capability

For details regarding configuration of trigger bus bridge routing please see “Trigger Bus” on page 34 .

Reference Clock

The PXES-2780 backplane supplies a single-ended 10MHz reference clock (PXI_CLK10) and differential 100MHz clock (PXIe_CLK100) to each peripheral slot for inter-module syn-

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chronization. The independent buffers drive the clock signal to each peripheral slot.

These common reference clock signals can synchronize multiple modules in a PXI Express chassis. PXI modules with phase-lock loop circuits can lock reference clocks to generate an in-phase timebase.

The PXI_CLK10 and PXIe_CLK100 clocks are in-phase according to the PXI™ specification. Since the external 10MHz clock input can override the onboard 10MHz clock source, a phase-lock loop (PLL) circuit on the backplane synchronizes the PXIe_CLK100 and external 10MHz clock.

The PXES-2780 PXI chassis automatically selects the 10 MHz reference clock source from among:

- ▷ Built-in accurate 10 MHz clock source
- ▷ External 10 MHz clock through a BNC connector
- ▷ PXI_CLK10_IN pin on the system timing slot

Priority of the 10MHz reference clock is as follows.

System Timing Slot (10th slot)	BNC Connector on Rear Panel	10mhz Clock Driven to Peripheral Slots
No clock present	No clock present	10MHz clock is generated by backplane
No clock present	10MHz clock present	Clock from BNC connector is driven to all peripheral slots
10MHz clock present	No clock present	Clock from system timing slot is driven to all peripheral slots
10MHz clock present	10MHz clock present	Clock from system timing slot is driven to all peripheral slots

Table 1-5: PXES-2780 Reference Clock Priority

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2 Getting Started

This chapter describes procedures for installing the PXES-2780 and making preparations for its operation. Please contact ADLINK or authorized dealer if there are any problems during the installation.



Diagrams and illustrated equipment are for reference only. Actual system configuration and specifications may vary.

2.1 Package Contents

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from your dealer before returning any product to ADLINK.

Please ensure that the following items are included in the package.

- PXES-2780 Chassis
- Power cords
- Filler panel kit for unused/reserved slots including one 3-slot panel and eighteen 1-slot panels
- ADLINK All-in-One CD

If any of these items are missing or damaged, contact the dealer from whom you purchased the product. Save the shipping materials and carton in case you want to ship or store the product in the future.



Do not install or apply power to equipment that is damaged or missing components. Retain the shipping carton and packing materials for inspection. Please contact your ADLINK dealer/ vendor immediately for assistance and obtain authorization before returning any product.

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2.2 Cooling Considerations

The PXES-2780 features an innovative design for heat dissipation, with cooling fans in the rear section of the chassis, drawing cool air through apertures on the bottom for exhaust through the back. This design provides uniform airflow for each PXI slot and exceptional cooling capability. When the chassis is installed in a rack, the cooling design minimizes drawing of hot air from the rear area, where other devices exhaust, while maintaining a steady temperature inside the chassis. For optimal cooling efficiency, retain support feet.

When rack mounting the PXES-2780, at least 1U (44.5 mm/1.75 in.) clearance below the intake apertures is required. Also keep other objects or equipment at a minimum of 76.2 mm (3 in.) away from the outlet apertures in the rear region of the chassis.



NOTE:

To maintain expected air flow, please always install filler panels in unused slots. The filler panels can be found in the chassis package.

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2.3 Hardware Installation

2.3.1 Installing the System Controller

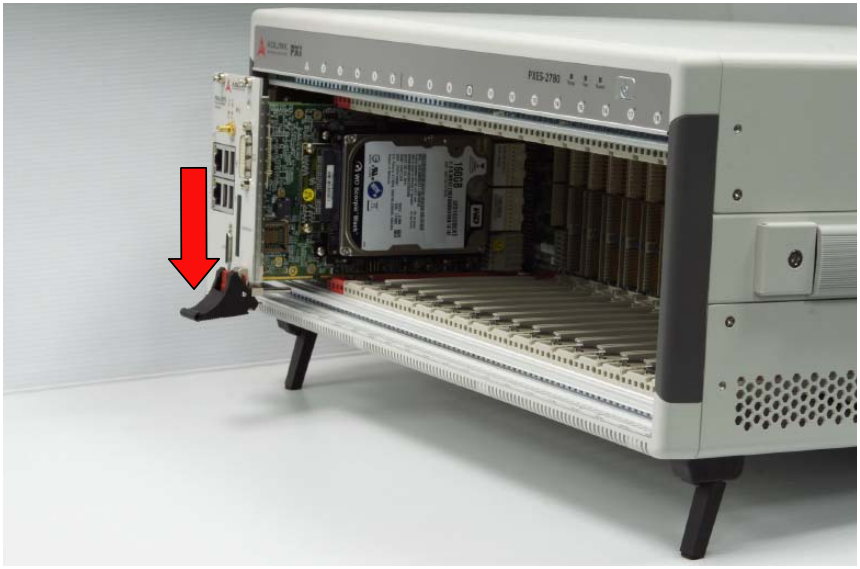
The PXES-2780 incorporates a system controller slot supporting a PXI Express system controller of up to 4 slot width.

1. Ensure the CPU, memory module(s), and storage device(s) are properly installed on the system controller
2. Locate the system controller slot (Slot 1).



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3. Depress the system controller module's latch to release.



4. Align the module's top and bottom edges with the card guides, and carefully slide the module into the chassis.



5. Lift the latch until the module is securely seated in the chassis backplane

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6. Fasten the screws on the module front panel, and connect all devices to the system controller.

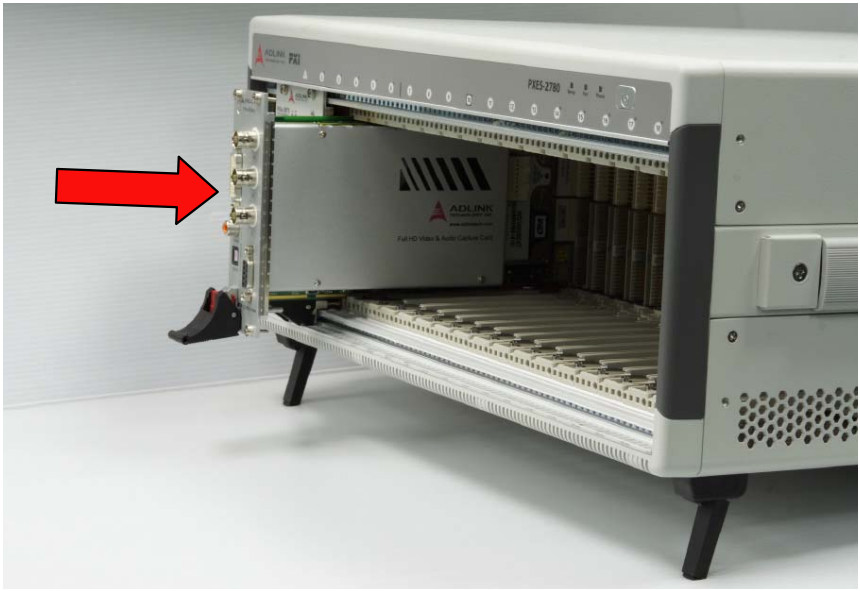


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2.3.2 Installing Peripheral Modules

The PXE-2780 supports up to seventeen peripheral modules, including a system timing module.

1. Select an available peripheral slot (2 to 18)
2. Depress the peripheral module's latch and align the module's top and bottom edges with the card guides.
3. Carefully slide the module into the chassis.



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4. Lift the latch until the module is securely seated in the chassis backplane.



5. Fasten the screws on the module's front panel.



6. Repeat steps 1 to 5 to install additional PXI orPXIe peripheral modules.

.

NOTE: To improve efficiency of heat dissipation, after installing all PXI modules, please install filler plates for any unused slots.

2.4 Rack Mounting

ADLINK provides hardware for optional installation of the PXES-2780 to a rack. The kit (order name PXES-2780 Rack Mount Kit) flexibly recesses the PXES-2780 in the rack, accommodating external mechanical parts on the front side, such as cables and mass interconnect modules.

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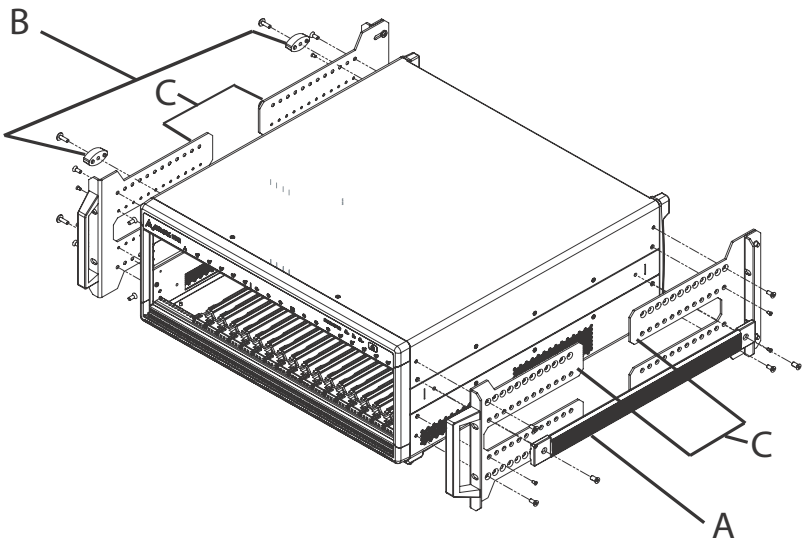


Figure 2-1: Rack Mount Assembly

A	Carrying Handle
B	4 Rubber Feet (only 2 shown)
C	Mounting Brackets

Table 2-1: Rack Mount Assembly Legend

1. Remove carrying handle from the right side
2. Remove the four rubber feet from the left side
3. Install the mounting brackets on both sides of the chassis using the provided M4 screws. Position of the mounting brackets can be adjusted via a range of screw holes to recess the chassis in the rack by any distance
4. Install the chassis in the rack using eight screws (not included).

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2.4.1 Powering Up the System

The PXES-2780 is equipped with a 100 VAC to 240 VAC universal power supply unit requiring no input voltage selection.

1. Connect one end of the supplied power cord to the power inlet located at the rear side of the chassis.
2. Plug the other end of the AC power cord to a properly grounded wall socket or power strip.
3. Press the power button. The Power LED (blue) lights up immediately
4. To power off the chassis, press the power button.

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3 System Management & Configuration

The PXES-2780 chassis provides advanced system monitoring and control. Chassis conditions, including internal temperature, fan speed, and DC voltage can all be monitored on the system controller or remote PC.

The PXES-2780 provides software configurable trigger bus bridges, whereby the user can set the status of each trigger bus line as shown in Figure 1-13. The PXES-2780 backplane can also be configured between 4-link x 4 lanes or 2-link x 8 lanes by the configurable PCIe switch fabric.

Communication with the chassis monitoring control unit is available using an embedded controller, such as the ADLINK PXIe-3975, to access the SMBus located on the system slot (1st slot), or, alternatively, using a remote PC to communicate via the RS-232 serial port (D-SUB9 connector on the rear panel).

Please note that the RS-232 serial port can only monitor chassis status, but does not provide the capability to change the trigger bus bridges and PCIe switch fabric settings. Function comparison between the SMBus interface and RS-232 serial port is as follows.

Function	SMBus	RS-232 Serial Port
Chassis status monitoring	Yes	Yes
Alarm threshold setting	Yes	Yes
Trigger Bus setting	Yes	No
PXIe link setting	Yes	No

Table 3-1: Supported Function Comparison Between SMBus Interface and RS-232 Serial Port

3.1 Installing the Monitor Utility

The remote monitoring utility and function library are provided on the ADLINK All-in-One CD.

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To install the monitoring utility:

1. Connect a USB CD-/DVD-ROM drive to the system controller.
2. Place the ADLINK All-in-One CD in the drive.
3. Locate the monitoring utility in the folder X:\Driver Installation\PXI Platform\PXI chassis\PXES-2780\xxxx\
   (where X: denotes the CD-ROM drive)
4. Double-click the **Setup.exe** file to begin installation.


NOTE:

The PXES-2780 Chassis Remote Monitoring utility is only compatible with ADLINK PXI Express controllers such as the PXIe-3975. 3rd party embedded controllers require dedicate programming to enable system monitoring, as listed in the PXES-2780 Function Library Reference documentation, or use of a remote PC to monitor the PXES-2780 via RS-232 serial port.

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3.2 Monitoring the PXES-2780

ADLINK provides the PXES-2780 Chassis Remote Mon. Utility to monitor the status of the PXES-2780.

As shown, the utility is divided into three interface categories: Connect Control, Remote Status & Control, and Chassis Status.



Figure 3-1: PXES-2780 Chassis Remote Mon. Utility

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3.2.1 Connect Control

Interface

Selects the communication interface between PXES-2780 and utility. Select Set to apply.

SMBus

Selecting Connect reserves system SMBus.

Selecting Start initializes SMBus communication.

Selecting Stop ends communication.

Selecting Disconnect releases system SMBus.


NOTE:

This section is available while Interface is set to SMBus.

RS-232 Com Port

Pull-down list shows available serial ports registered in operating system. Select the serial port connected to the PXES-2780.

Selecting Connect reserves the selected serial port.

Selecting Run initializes serial port communication.

Selecting Stop ends communication.

Selecting Disconnect releases serial port.


NOTE:

- This section is available while Interface is set to RS232
- Baud rate for RS232 is set to 9600 automatically for PXES-2780

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Chassis Status Log

With the Chassis Status Log function, monitored data can be recorded. Selecting Log Chassis Status opens the Log Options dialog, as shown.

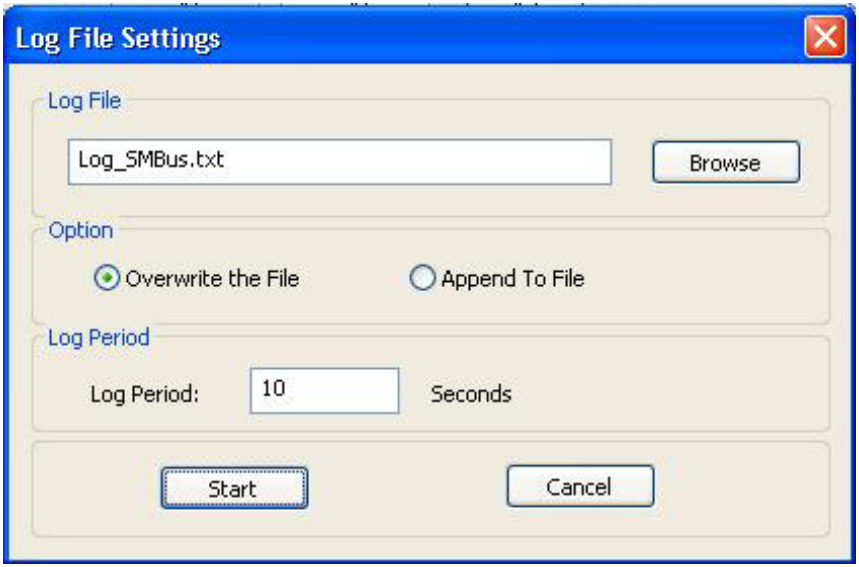


Figure 3-2: Log Options Dialog

The name of the log file can be entered, overwritten, or appended to selected operations. The log period can further be entered, in seconds. Selecting Start begins the log.

Over Threshold Statistics, when selected, displays statistics exceeding the threshold.

Save/Load Threshold

All Threshold & Control settings can be saved or loaded here.

Selecting Save Threshold Settings saves all current settings.

Selecting Load Threshold Settings loads all settings from the saved file.

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Selecting Load Default Threshold resets all threshold settings to the default values XXXX f3.1.

Version Info

Displays the current firmware version.

3.2.2 Chassis Control and Alarm Threshold Setting

Provides operational and threshold settings for the PXES-2780, including trigger bus, PXIe link, target temperature, and fan mode, and threshold settings for DC voltage, temperature, and cooling fan speed.

Trigger Bus

PXI trigger bus routing settings are shown. Between trigger bus segments - TRIG BUS A (slot 1st to 6th), B (slot 7th to 12th), and C (slot 13th to 18th), each PXI trigger bus line can be individually configured as different routing topologies. Trigger bus routing settings can be easily saved as templates and loaded quickly.

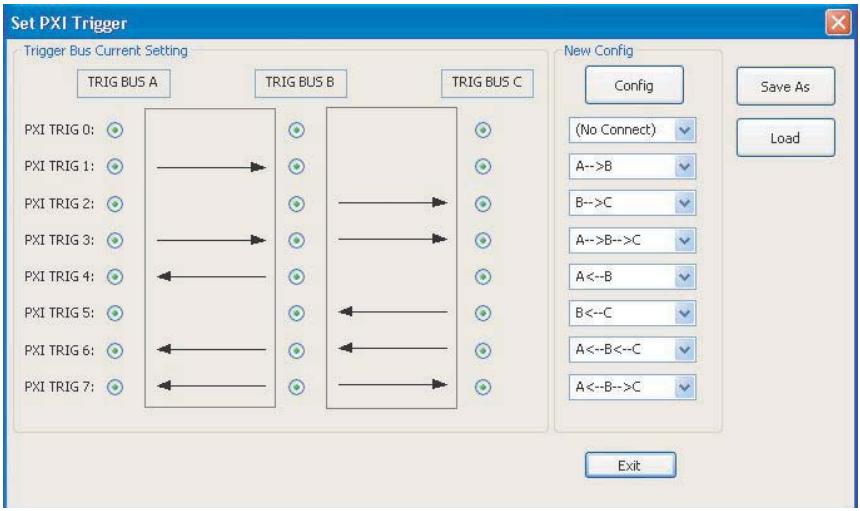


Figure 3-3: PXI Trigger Routing Interface

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PXIe Link

Displays PCI express switch fabric settings for the PXES-2780 backplane.

Selecting required configuration (four-link x4 or two-link x8) and Config applies new settings.



The new setting will not be valid until system is restarted.

Target Temperature

When the Fan switch on the rear panel is set to AUTO, fans run at different speeds based on the measured temperature.

Target Temp indicates the temperature at which fans run at 100%. Using the default 50°C as an example, fans run at 40% when all temperature readings are less than 25°C, and begin rampup when any reading exceeds 25°C.

Fans reach 100% speed if any temperature reading exceeds 50°C (i.e. Target Temperature).

Setting parameters are as shown.

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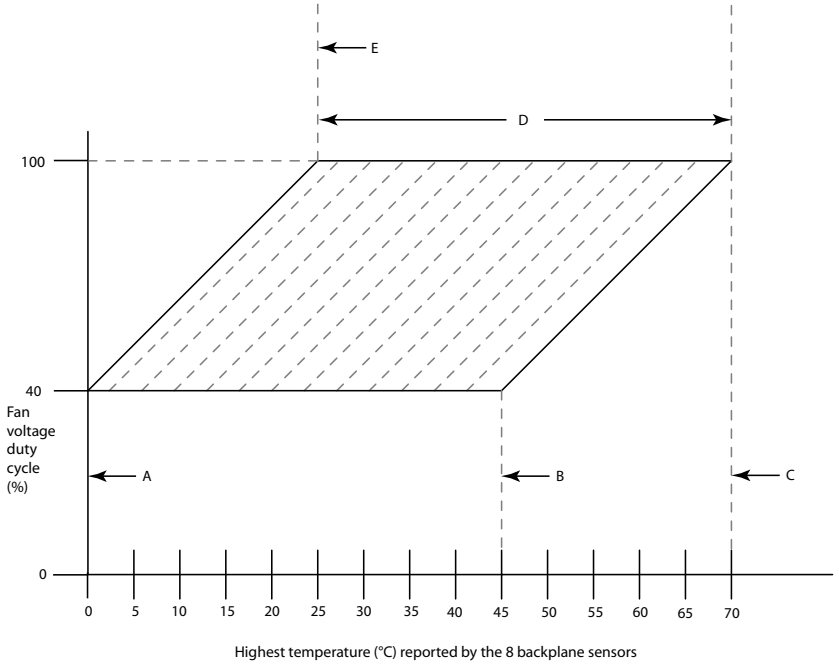


Figure 3-4: Target Temperature Parameters

Mark	Temperature	Event
A	0°C	Lowest chassis temperature at which fan speeds commence ramping up for final 25° temperature mark (see E)
B	45°C	Highest chassis temperature at which fan speeds commence ramping up for final 70° temperature mark (see C)
C	70°C	Highest chassis temperature at which fan speeds reach maximum speed
D	25°C to 70°C (45° range)	Range over which maximum chassis temperature (at which fan speeds reach maximum speed) can be set
E	25°C	Lowest chassis temperature at which fan speeds reach maximum speed

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Table 3-2: Target Temperature Parameters Legend

Target Temp can be set by entering the desired target temperature value in the field and selecting Set.

Fan Speed

Displays Auto/Full fan speed setting status of the PXES-2780. Auto is displayed when fans are set to auto mode and Full when the fans are set to run at full speed.

Selection of Auto or Full values and selecting Set directly changes cooling fan mode.

Alarm Threshold

Displays Active alarm threshold settings, including DC voltage, temperature, and fan speeds. The updated threshold setting can also be set here, by entering the desired value and selecting Set Threshold Settings.

3.2.3 Chassis Status

DC Voltage

Displays monitored 5V Standby, 3.3V, 5V, 12V, and -12V power rail readings. The status displays as normal when the readings are within the threshold range, and abnormal when the threshold range is exceeded.

Chassis Temperature

Temperature sensors T1 to T8 (left to right, as shown in Figure 1-9 on page 12) located on the backplane provide status, displaying as normal when under the threshold value (70°C in the Figure), and abnormal when the threshold value is exceeded.

Fan Speed

Displays monitored readings of the three cooling fans. Status displays as normal when readings exceed threshold value (800 RPM in the Figure), and abnormal when the readings fall below the threshold value.

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Appendix A - Troubleshooting and Maintenance

This Appendix describes basic troubleshooting techniques, as well as instructions for the maintenance of the PXES-2780 chassis.

A.1 Installation Problems

Inability to start the system frequently results from incorrect installation of the system controller, peripheral modules, and other components. Before starting the system, please ensure that:

- The system controller is properly installed and secured
- All peripheral modules are properly seated on the slots
- All cables are properly connected to the system controller and peripheral modules
- All installed peripheral modules are compatible for use in the chassis
- The power cord is securely plugged into the chassis power connector and power outlet/wall socket/power strip

If the system fails to start when all installation conditions are met, remove all installed peripheral modules and try again. If the system starts normally, install one peripheral module at a time followed by powering up. You may also try installing the modules into different slots until the desired result is obtained.

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A.2 Basic Troubleshooting

Problem	Ensure that:
System fails to power up	▶ The power cord is securely plugged into the chassis power connector and wall socket/power strip ▶ The wall socket/power strip is live ▶ The power button on the chassis front panel is activated
No video output in the external display	▶ The external display is functioning properly ▶ Display settings support external video.
Power LED (blue) is blinking	▶ There is no short circuit by removing all PXI modules (PXI controller and peripheral modules) If the signal persists, contact your dealer for further assistance
Fan LED (green) is blinking	▶ The fan is unobstructed If the signal persists, contact your dealer for further assistance.
Temperature LED (amber) is blinking	▶ Airflow from the outlet apertures is unobstructed and steady; if not, ensure that adequate clearance for the intake apertures is provided If the temperature of exhausted air is normal (70°C in Default setting) but the temperature LED is still blinking, contact your dealer for further assistance.

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A.3 Maintenance

A.3.1 Handling the Chassis

The PXES-2780 is designed for both rack-mount and benchtop use. When transporting or carrying the chassis, it is recommended that the handle be used, being designed to support the weight of the chassis for superior portability and balance.

The PXES-2780 weights 11.9 kg (26.2 lb). Please be careful when moving the chassis to avoid any possible injury.

A.3.2 Cleaning the Exterior

Make sure that the system is turned off before cleaning the chassis exterior. Wipe the exterior with a clean cloth starting from areas that easily accumulate dust or dirt such as the area in and around the chassis and power supply air intake apertures.

A.3.3 Power Requirements

Make sure that the power cord is in good condition before plugging it into the system. It is important to check the reliability of the power source. The PXES-2780 power supply is capable of handling 100 to 240 V AC within the 50 Hz to 60 Hz range. Do not connect the PXES-2780 to an already overloaded circuit.

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Important Safety Instructions

For user safety, please read and follow all instructions, Warnings, Cautions, and Notes marked in this manual and on the associated device before handling/operating the device, to avoid injury or damage.

- Read these safety instructions carefully.
- Keep the User's Manual for future reference.
- Read the Specifications section of this manual for detailed information on the recommended operating environment.
- The device can be operated at an ambient temperature of 55ºC.
- For indoor use only.
- Altitude during operation: up to 2000m.
- Pollution degree: PD2.
- Equipment maintenance and service:
  - Maintenance and inspection can only be performed by qualified and authorized technicians or personnel.
  - Before performing maintenance tasks, it is imperative to turn off the power switch and remove the power cord from the unit to prevent possible electric shock leading to injury or death.
- When installing/mounting or uninstalling/removing device, or when removal of a chassis cover is required for user servicing (See "Getting Started" on page 19.):
  - Turn off power and unplug any power cords/cables.
  - Reinstall all chassis covers before restoring power.
- To avoid electrical shock and/or damage to device:
  - Keep device away from water or liquid sources.
  - Keep device away from high heat or humidity.
  - Keep device properly ventilated (do not block or cover ventilation openings).
  - Always use recommended voltage and power source settings.
  - Always install and operate device near an easily accessible electrical outlet.

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- ▷ Secure the power cord (do not place any object on/over the power cord).
- ▷ Only install/attach and operate device on stable surfaces and/or recommended mountings.

- ▶ If the device will not be used for long periods of time, turn off and unplug it from its power source
- ▶ Never attempt to repair the device, which should only be serviced by qualified technical personnel using suitable tools
- ▶ A Lithium-type battery may be provided for uninterrupted backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type; please dispose of used batteries appropriately.
Risque d'explosion si la pile est remplacée par une autre de type incorrect. Veuillez jeter les piles usagées de façon appropriée.

- ▶ The device must be serviced by authorized technicians when:
  - ▷ The power cord or plug is damaged.
  - ▷ Liquid has entered the device interior.
  - ▷ The device has been exposed to high humidity and/or moisture.
  - ▷ The device is not functioning or does not function according to the User's Manual.
  - ▷ The device has been dropped and/or damaged and/or shows obvious signs of breakage.
- ▶ Disconnect the power supply cord before loosening the thumbscrews and always fasten the thumbscrews with a screwdriver before starting the system up.
- ▶ It is recommended that the device be installed only in a server room or computer room where access is:
  - ▷ Restricted to qualified service personnel or users familiar with restrictions applied to the location, reasons therefor, and any precautions required.
  - ▷ Only afforded by the use of a tool or lock and key, or other means of security, and controlled by the authority responsible for the location.

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	**BURN HAZARD** Touching this surface could result in bodily injury. To reduce risk, allow the surface to cool before touching.

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Consignes de Sécurité Importante

S'il vous plaît prêter attention stricte à tous les avertissements et mises en garde figurant sur l'appareil , pour éviter des blessures ou des dommages.

- *Lisez attentivement ces consignes de sécurité.*
- *Conservez le manuel de l'utilisateur pour référence future.*
- *Lisez la section Spécifications de ce manuel pour des informations détaillées sur l'environnement d'exploitation recommandé.*
- *L'appareil peut être utilisé à une température ambiante de 55° C.*
- *Pour une utilisation en intérieur uniquement.*
- *Altitude en fonctionnement: jusqu'à 2000m.*
- *Degré de pollution: PD2.*
- *Maintenance et entretien des équipements:*
  - *L'entretien et l'inspection ne peuvent être effectués que par des techniciens ou du personnel qualifiés et autorisés.*
  - *Avant d'effectuer des tâches de maintenance, il est impératif de couper l'interrupteur d'alimentation et de retirer le cordon d'alimentation de l'appareil pour éviter tout choc électrique pouvant entraîner des blessures ou la mort.*
- *Lors de l'installation / du montage ou de la désinstallation / retrait du périphérique, ou lorsque le retrait d'un capot du châssis est requis pour la maintenance par l'utilisateur (See “Getting Started” on page 19.):*
  - *Coupez l'alimentation et débranchez tous les cordons / câbles d'alimentation.*
  - *Réinstallez tous les couvercles de châssis avant de rétablir l'alimentation.*
- Pour éviter les chocs électriques et / ou les dommages à l'appareil:
  - *Gardez l'appareil éloigné de l'eau ou des sources de liquide.*

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- ▷ *Gardez l'appareil éloigné de la chaleur ou de l'humidité élevée.*
- ▷ *Gardez l'appareil correctement ventilé (ne bloquez pas et ne couvrez pas les ouvertures de ventilation).*
- ▷ *Utilisez toujours les paramètres de tension et de source d'alimentation recommandés.*
- ▷ *Installez et utilisez toujours l'appareil à proximité d'une prise électrique facilement accessible.*
- ▷ *Fixez le cordon d'alimentation (ne placez aucun objet sur / sur le cordon d'alimentation).*
- ▷ *Installez / fixez et utilisez l'appareil uniquement sur des surfaces stables et / ou des supports recommandés.*

- ▶ *Si l'appareil n'est pas utilisé pendant de longues périodes, éteignez-le et débranchez-le de sa source d'alimentation*
- ▶ *N'essayez jamais de réparer l'appareil, qui ne doit être entretenu que par du personnel technique qualifié à l'aide d'outils appropriés.*
- ▶ *Une batterie de type lithium peut être fournie pour une alimentation de secours ou une alimentation de secours ininterrompue.*



Risque d'explosion si la pile est remplacée par une autre de type incorrect. Veuillez jeter les piles usagées de façon appropriée.

- ▶ *L'appareil doit être réparé par des techniciens autorisés lorsque:*
  - ▷ *Le cordon d'alimentation ou la fiche est endommagé.*
  - ▷ *Du liquide a pénétré à l'intérieur de l'appareil.*
  - ▷ *L'appareil a été exposé à une humidité et / ou une humidité élevées.*
  - ▷ *L'appareil ne fonctionne pas ou ne fonctionne pas selon le manuel de l'utilisateur.*
  - ▷ *L'appareil est tombé et / ou endommagé et / ou montre des signes évidents de casse.*
- ▶ *Débranchez le cordon d'alimentation avant de desserrer les vis moletées et serrez toujours les vis moletées avec un tournevis avant de démarrer le système.*

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- *Il est recommandé d'installer l'appareil uniquement dans une salle de serveurs ou une salle informatique où l'accès est:*
  - *Réservé au personnel de maintenance qualifié ou aux utilisateurs familiers avec les restrictions appliquées à l'emplacement, les raisons de celles-ci et les précautions nécessaires.*
  - *Seulement permis par l'utilisation d'un outil ou d'une serrure et d'une clé, ou d'autres moyens de sécurité, et contrôlé par l'autorité responsable de l'emplacement.*

	***RISQUE DE BRÛLURES*** *Ne touchez pas cette surface, cela pourrait entraîner des blessures.* *Pour éviter tout danger, laissez la surface refroidir avant de la toucher.*

Getting Service

Ask an Expert: http://askanexpert.adlinktech.com

ADLINK Technology, Inc.
9F, No.166 Jian Yi Road, Zhonghe District
New Taipei City 235, Taiwan
Tel: +886-2-8226-5877
Fax: +886-2-8226-5717
Email: service@adlinktech.com

Ampro ADLINK Technology, Inc.
5215 Hellyer Avenue, #110
San Jose, CA 95138, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200 (USA only)
Fax: +1-408-360-0222
Email: info@adlinktech.com

ADLINK Technology (China) Co., Ltd.
300 Fang Chun Rd., Zhangjiang Hi-Tech Park
Pudong New Area, Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5132-3588
Email: market@adlinktech.com

ADLINK Technology GmbH
Hans-Thoma-Straße 11
D-68163 Mannheim, Germany
Tel: +49-621-43214-0
Fax: +49-621 43214-30
Email: emea@adlinktech.com

Please visit the Contact page at www.adlinktech.com for information on how to contact the ADLINK regional office nearest you:

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