PXIS-2719A

19-slot 3U PXI Chassis

User's Manual

Manual Rev.: 2.00

Revision Date: May 7, 2012

Part No: 50-17037-1000

Recycled Paper

Advance Technologies; Automate the World.

Revision History

Revision	Release Date	Description of Change(s)
2.00	May 7, 2012	Initial Release

Preface

Disclaimer

The information in this document is subject to change without prior notice in order to improve reliability, design, and function and does not represent a commitment on the part of the manufacturer.

In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

Environmental Responsibility

ADLINK is committed to fulfill its social responsibility to global environmental preservation through compliance with the European Union's Restriction of Hazardous Substances (RoHS) directive and Waste Electrical and Electronic Equipment (WEEE) directive. Environmental protection is a top priority for ADLINK. We have enforced measures to ensure that our products, manufacturing processes, components, and raw materials have as little impact on the environment as possible. When products are at their end of life, our customers are encouraged to dispose of them in accordance with the product disposal and/or recovery programs prescribed by their nation or company.

Trademarks

Product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

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.

Table of Contents

List of Tables

This page intentionally left blank.

List of Figures

This page intentionally left blank.

1 Introduction

The ADLINK PXIS-2719A is a 3U PXI chassis with advanced features and function. Compliant with PXI and CompactPCI specifications, the PXIS-2719A provides one system slot and eighteen peripheral slots, and fully meets or exceeds demands for large capacity, wide operating temperature range, uniformity of heat dissipation and exceptional chassis weight and robustness.

The PXIS-2719A also offers intelligent chassis control, enabling automatic fan speed according to inner chassis temperature, and monitoring of DC voltage, fan speed, and inner temperature, with results exportable to a remote computer via a standard RS-232 port.

The ADLINK PXIS-2719A features an innovative cooling mechanism for superior heat dissipation. Three 185.9CFM fans in the rear section of the chassis draw cooling air through apertures on the bottom and front of the chassis, with airflow past PXI modules, for exhaust to the rear. This cooling mechanism provides not only exceptional heat dissipation efficiency, but also improved uniformity for each PXI slot.

The PXIS-2719A provides an industrial grade AC power supply for reliability, a BNC connector for an external 10 MHz reference clock input, front panel LEDs, and easy-access PXI/CompactPCI slots with card guides for convenient installation and use. It is designed to accommodate a 3-slot PXI controller, with ADLINK PXI-3950/3920 PXI controllers highly recommended. With innovative features and robust design, the PXIS-2719A provides an excellent choice for a PXI platform meeting all test and measurement requirements.

1.1 Features

- PXI Specification Rev. 2.2-compliant
- Rack-mountable 19-slot PXI chassis with one system slot and eighteen PXI/CompactPCI peripheral slots
- Advanced forced-cooling mechanism for efficient and uniform heat dissipation
- External 10 MHz reference clock input via BNC connector
- 0 to 55°C extended operating temperature range
  - Intelligent chassis monitoring/control
  - Automatic fan speed control
  - Chassis status monitoring and exporting
  - Remote chassis power on/off control
- 600 W industrial-grade AC power supply
- Power, temperature and fan monitoring LEDs

1.2 Specifications

The PXIS-2719A complies with PXI Specification Rev. 2.2 and accepts modules compliant with CompactPCI and PICMG 2.0 specifications.

General Specifications			
Power Supply			
AC Input (*guaranteed by power supply design)			
Input voltage range		100 to 240 VAC	
Operating voltage range*		85 to 264 VAC	
Input voltage frequency		50 to 60 Hz	
Operating voltage frequency*		47 to 63 Hz	
Input current rating			
115 VAC		12 A	
230 VAC		12 A	
DC Output			
Maximum total usable power		600 W	
VDC	Maximum	Load Regulation	Maximum Ripple & Noise
+5V	45.0 A	±3%	20 mV
+12V	15.0 A	±3%	50 mV
+3.3V	42.0 A	±3%	20 mV
-12V	4.75 A	±3%	50 mV
10 MHz System Reference Clock (10 MHz REF)			
Maximum clock skew between slots		300 ps	
Built-in 10 MHz clock accuracy		±50 ppm	
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)		50 Ω ±5 Ω	
Input signal (PXI_CLK10_IN on second slot)		5 V or 3.3 V TTL signal	
Cooling			
Fans		3 sets of 185.9 CFM fans	

General Specifications	
Per-slot cooling capacity	25 W (verified by 55°C chamber test)
Physical	
Slots	19 (1 x system slot, 18 peripheral slots)
Dimensions	444.4 (W) x 177.8 (H) x 455 (D) mm (17.5 x 7 x 17.9 in.)
Weight	14.5 kg (31.9 lb)
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, 0.31 Grms, 3 axes Nonoperating: 5 to 500 Hz, 2.46 Grms, 3 axes
Certification	
Safety	EN 61010-1
Electromagnetic Compatibility	Emissions: EN 55011 Class A Immunity: EN 61326-1

General Specifications	
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

1.3 Schematics

NOTE: Please note that all dimensions shown are in mm (millimeters).

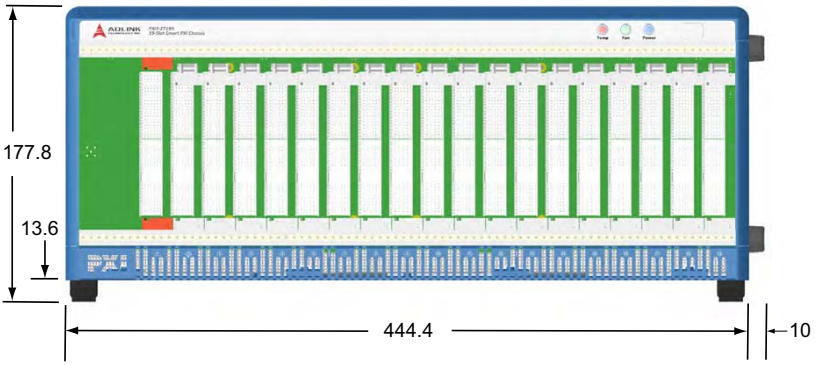


Figure 1-1: Front View

Figure 1-2: Right Side View (showing rackmount screw holes)

Figure 1-3: Left Side View (showing rackmount screw holes)

Figure 1-4: Rear View

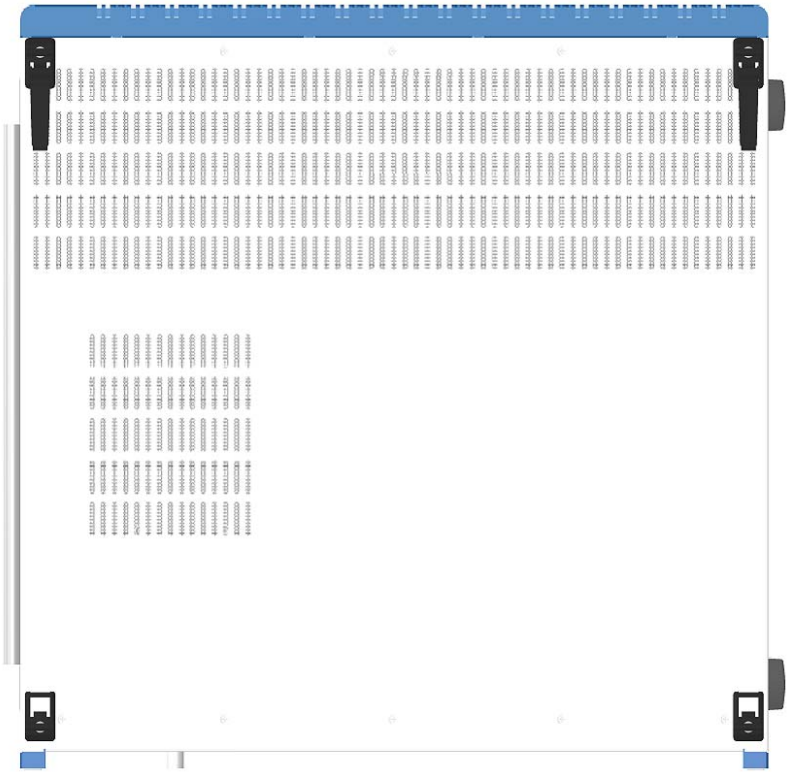


Figure 1-5: Underside View

1.4 Connectors, I/O, and Controls

1.4.1 Front Panel

Figure 1-6: PXIS-2719A 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

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

Status	Temperature (Amber)	Fan (Green)	Power (Blue)
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%, -3% for 5V and 3.3V ±5% for +12V and -12V)

Table 1-2: Front Panel Indicators

1.4.2 Rear Panel

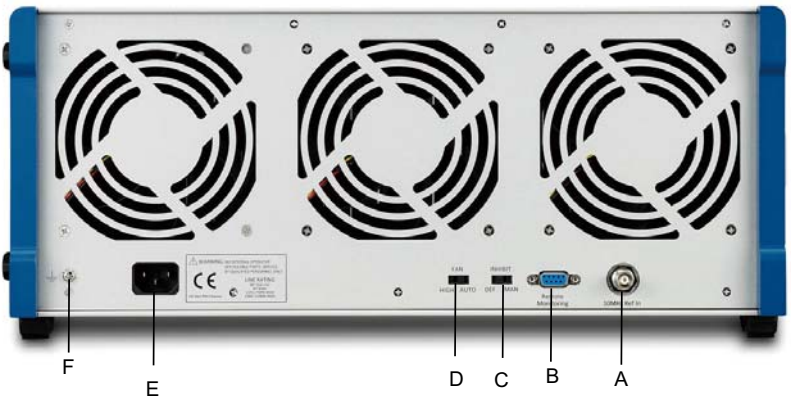


Figure 1-7: PXIS-2719A Rear Panel

	Feature	Details
A	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

	Feature	Details
B	Remote Monitoring Connector	The D-sub9 connector acts as a remote monitoring connector. To remotely monitor and control the PXIS-2719A, the remote monitoring port must be connected to a remote computer using a standard RS-232 cable. ▶ 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 for remote monitoring.
C	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 remote controller turns the power supply on/off via RS-232 connection (D)
D	Fan Switch	In the HIGH position, fans operate at maximum speed, and in AUTO, the fans run based on the monitored chassis temperature
E	Universal Power Inlet	Accepts C13 power outlet-equipped connection
F	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

1.5 Backplane Overview

1.5.1 Interoperability with CompactPCI

PXIS-2719A is compatible for use with both PXI-compatible products and standard CompactPCI products, with PXI Specification Rev. 2.2-compliant backplanes.

Signals on the P1 connector of the backplane meet the requirements of the CompactPCI specification for both peripheral and system modules.

The PXI-specific signals are located on P2. Only the signals reserved or not used in the CompactPCI 64-bit specification are found on PXI-specific signals. Therefore, peripheral modules that

meet the requirements of the CompactPCI 64-bit specification will function in the PXIS-2719A.


NOTE:

CompactPCI peripheral modules which operate with rear I/O modules can NOT be installed in the PXIS-2719A, due to possible conflict between rear I/O signals and PXI-specific signals on J2.

1.5.2 System Controller Slot

The System Controller slot is Slot 1 as defined by the PXI specification. The PXIS-2719A chassis can accommodate a PXI system controller occupying up to 3 slots. As defined in the PXI specification, two controller expansion slots allow the controller to expand to the left to avoid occupying peripheral slots.

1.5.3 Star Trigger Slot

The Star Trigger (ST) slot is Slot 2. This slot has dedicated trigger lines between ST slot itself and slots 3-15. The star trigger functionality provides a precise trigger signal to the peripheral modules by installing a specific star trigger controller module in the ST slot. The star trigger slot can be also used as a general peripheral slot if star trigger functionality is not required.

1.5.4 Peripheral Slots

The PXIS-2719A provides 18 peripheral slots (including the Star Trigger controller slot). Each peripheral slot can accommodate a 3U PXI/CompactPCI peripheral module.


CAUTION:

DO NOT install a 3U CompactPCI module with rear I/O function in the PXIS-2719A chassis.System damage may result.

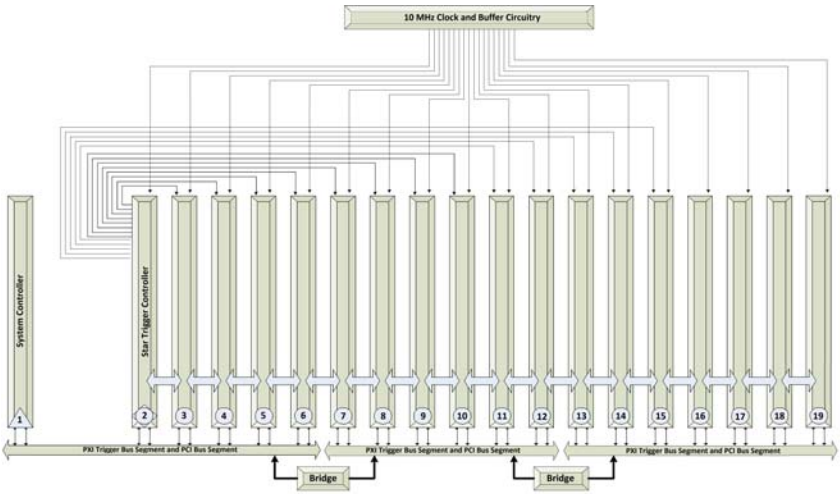


Figure 1-8: Instrument Signal Routing

1.5.5 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. Each local bus has 13 lines and can transmit analog or digital signals between modules. It can also provide a high-speed sideband communication path that does not affect the PCI bandwidth.

In accordance with the PXI specification, the local bus connects all adjacent slots except slots 1 and 2.

1.5.6 Trigger Bus

The trigger bus is an 8-line bus that connects all PXI slots in the same PCI segment. The trigger bus can be used to provide intermodule synchronization. PXI modules can transmit trigger or clock signals to one another through the trigger bus, allowing precisely timed responses to asynchronous external events the system is monitoring or controlling.

The PXIS-2719A provides three trigger bus segments, connected by two trigger bus buffers. The first segment is from slot 1 to slot 6,

the second from slot 7 to slot 12, and the last from slot 13 to slot 19. Switch SWY1 shown is the on-board switch, controlling the configuration of these two buffers.

Switch	Function
P2 on switch	Enables/Disables (On/Off) bus buffer between first and second segments
P3 on switch	Enables/Disables (On/Off) bus buffer between second and third segments
P4 on switch	Determines direction of the bus buffer between first and second segments, with high left to right and low right to left
P5 on switch	Determines direction of the bus buffer between second and third segments, with high left to right and low right to left

Table 1-4: Trigger Bus Switch Functions

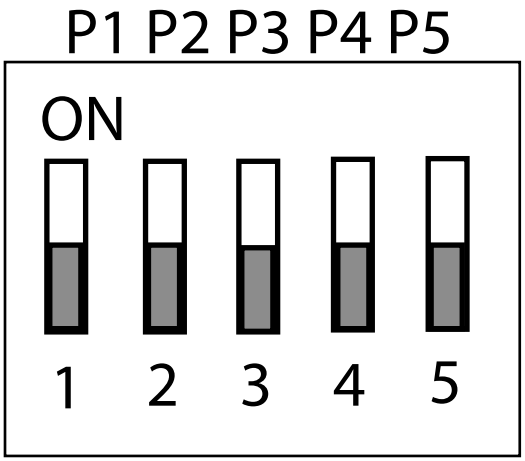


Figure 1-9: Trigger Bus Switching

P2	P3	P4	P5	Configuration	Description
x	x	x	x	N/A	N/A
OFF	OFF	x	x	All Segments Isolated	All Segments Isolated
ON	ON	ON	ON	1 → 2 → 3	Segment 1 to 2 & 3
ON	OFF	ON	OFF	1 → 2	Segment 1 to 2
ON	OFF	OFF	OFF	1 ← 2	Segment 2 to 1
OFF	ON	OFF	ON	2 → 3	Segment 2 to 3
OFF	ON	OFF	OFF	2 ← 3	Segment 3 to 2
ON	ON	OFF	OFF	1 ← 2 ← 3	Segment 3 to 1 & 2
ON	ON	OFF	ON	1 ← 2 → 3	Segment 2 to 1 & 3

Table 1-5: Trigger Bus Settings

1.5.7 System Reference Clock

The PXIS-2719A supplies a PXI 10MHz system reference clock (PXI_CLK10) to each peripheral slot for inter-module synchronization. An independent buffer (having source impedance matched to the backplane and a skew of less than 1 ns between slots) drives the clock signal generated from a high-precision oscillator to each peripheral slot.

This common reference clock signal can synchronize multiple modules in a PXI chassis. The 10 MHz reference clock is important to the PXI specification for inter-module synchronization. PXI modules which have phase-locker loop circuit can lock the 10 MHz reference clock to generate an in-phase timebase.

The PXIS-2719A PXI chassis automatically selects the source of the 10 MHz reference clock from

- Built-in accurate 10 MHz oscillator
- External 10 MHz clock through a BNC connector
- PXI_CLK10_IN pin on the star trigger slot

Priority of the 10MHz reference clock is as shown.

System Timing Slot (2nd slot)	BNC connector on rear panel	10MHz clock driven to peripheral slots
No clock present	No clock present	The 10MHz clock is generated by backplane.
No clock present	10MHz clock present	Clock from BNC connector is driven to all the peripheral slots
10MHz clock present	No clock present	Clock from system timing slot is driven to all the peripheral slots
10MHz clock present	10MHz clock present	Clock from system timing slot is driven to all the peripheral slots

Table 1-6: 10MHZ Reference Clock Priority

Three indicators on the backplane indicate the 10MHz clock source driven to all peripheral slots, as shown.

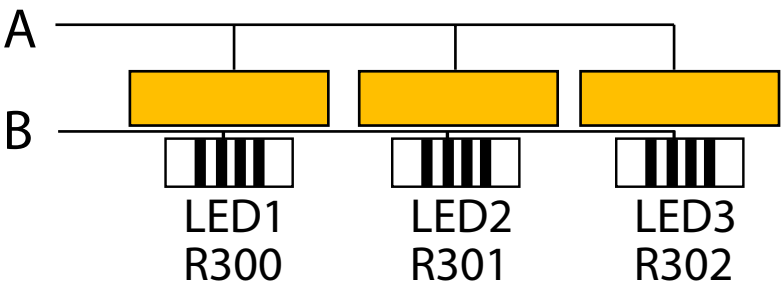


Figure 1-10: Clock Source Indicators

A	LEDs
B	Resistors

Table 1-7: Clock Source Indicators Legend

The right indicator lights when the clock is generated by back-plane, the middle when the 10MHz clock from BNC connector is the source of the 10MHz clock, and the left when the 10MHz clock is present on the system timing slot.

2 Getting Started

This chapter describes procedures for installing the PXIS-2719A 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.

- PXIS-2719A 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
- User's Manual

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.

2.2 Cooling Considerations

The PXIS-2719A 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 PXIS-2719A, 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 airflow, please always install filler panels in unused slots. The filler panels can be found in the chassis package.

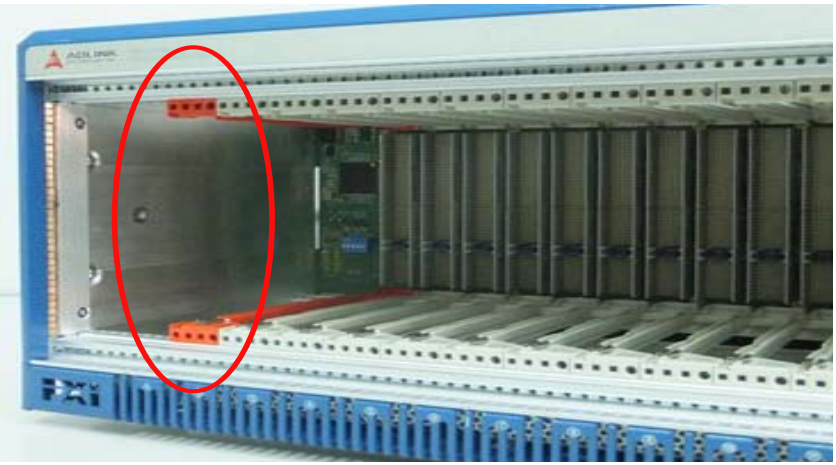
2.3 Hardware Installation

2.3.1 Installing the System Controller

The PXIS-2719A provides a system controller slot supporting a 3-slot wide PXI system controller. We recommend the following system controllers for use with the PXIS-2719A:

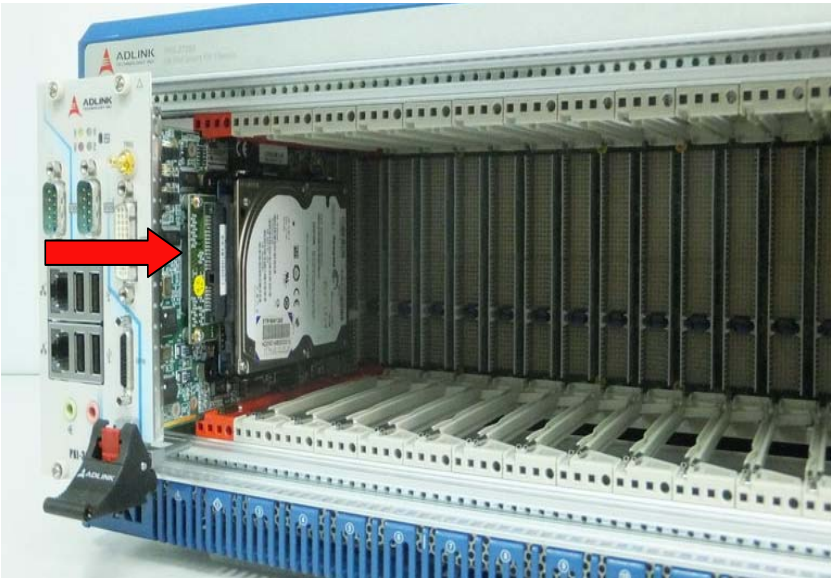
- ADLINK PXI-3950 Core 2 Duo PXI controller
- ADLINK PXI-3920 Pentium M PXI controller

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).

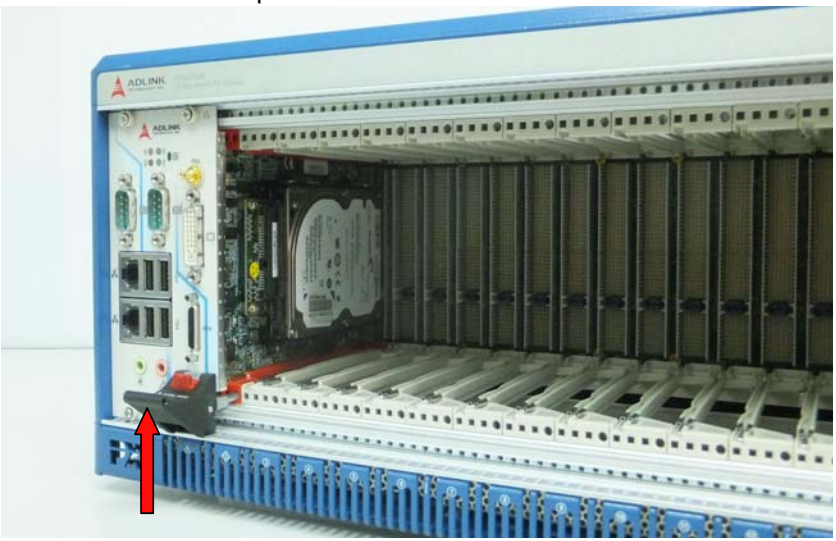


3. Depress the system controller module's latch to release.

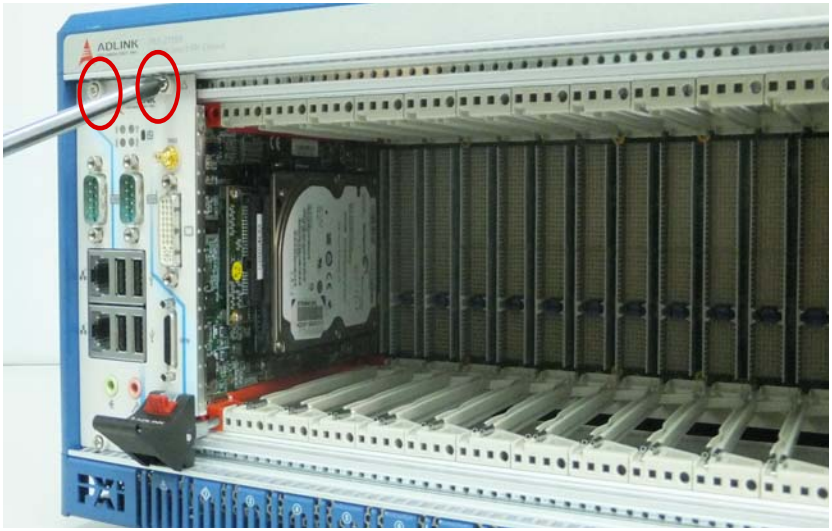
4. Align the module's top and bottom edges with the card guides, and carefully slide the module into the chassis.



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



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



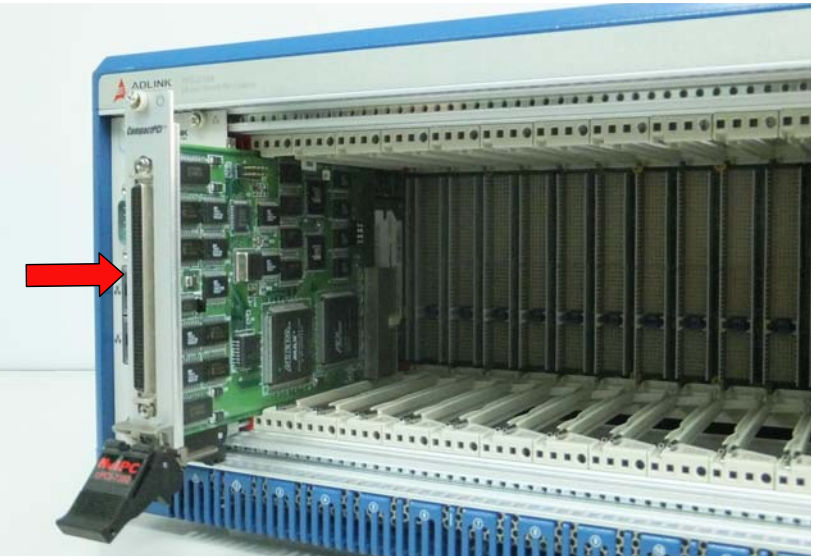
2.3.2 Installing Peripheral Modules

The PXIS-2719A supports up to eighteen PXI/CompactPCI peripheral modules, including a star trigger module.

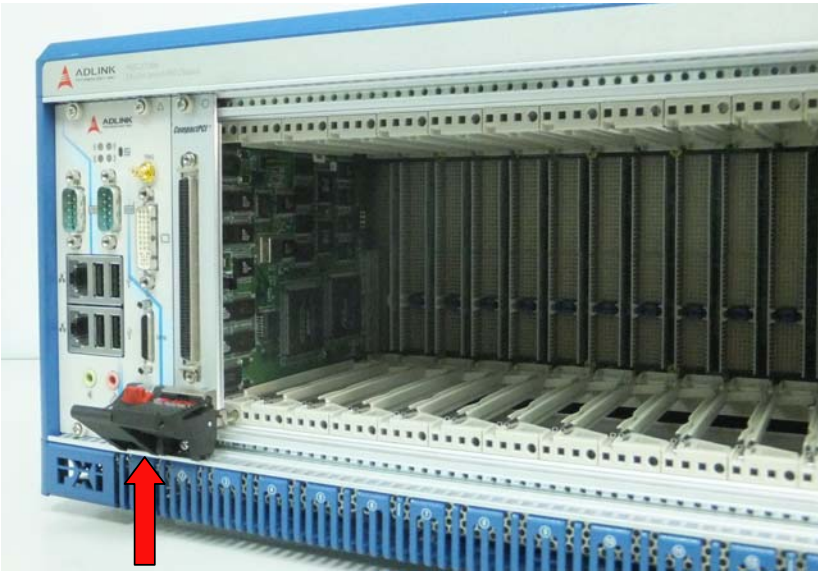
CAUTION:

The PXIS-2719A chassis does not support installation of a 3U CompactPCI module with rear I/O function.

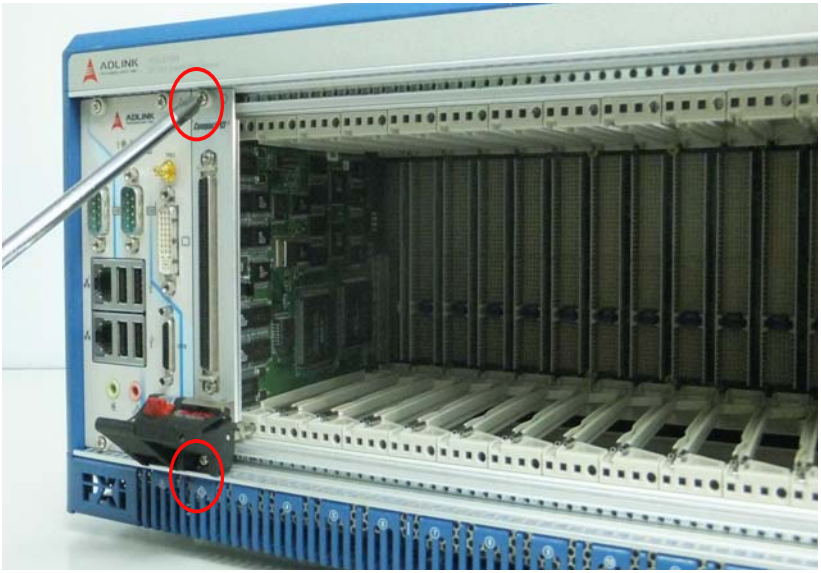
1. Select an available peripheral slot (2 to19)
2. Depress the peripheral module's latch and align the module's top and bottom edges with the card guides.
3. Carefully slide the module into the chassis.



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 peripheral modules.


NOTE:

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

2.3.3 Powering Up the System

The PXIS-2719A 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 standby power switch. The Power LED (blue) lights up immediately
4. To power off the chassis, press the standby power switch.

2.4 Rack Mounting

ADLINK provides hardware for optional installation of the PXIS-2719A to a rack. The rack-mount kit flexibly recesses the PXIS-2719A in the rack, accommodating external mechanical parts on the front side, such as cables and mass interconnect modules.

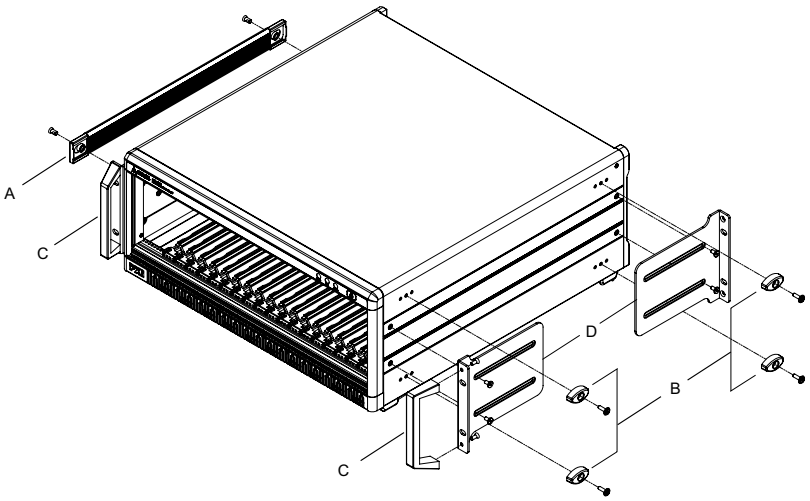


Figure 2-1: Rack Mount Assembly

A	Carrying Handle
B	Rubber Feet
C	Handles
D	Mounting Brackets

Table 2-1: Rack Mount Assembly Legend

1. Unscrew and remove the carrying handle from the left side
2. Remove the four rubber feet from the right side
3. Fasten both handles to the mounting brackets using the provided M4 screws
4. Install the mounting brackets to both sides of the chassis using the provided M4 screws. Position of the mounting brackets can be adjusted to recess the chassis in the rack by any distance

5. Install the chassis in the rack using eight screws (not included).

3 System Management

The PXIS-2719A provides advanced remote monitoring and control of chassis status, including internal temperature, fan speed, and DC voltages, all exported via a standard RS-232 port, allowing the system to be monitored on a remote computer. The remote computer can also be used to turn the system on or off through the monitoring port via software commands.

Remote monitoring and control of the PXIS-2719A requires connection of the remote monitoring port to a remote computer by a standard RS-232 cable.


NOTE:

The remote monitor port is Rx-Tx/Tx-Rx crossed, requiring a Rx-Rx/Tx-Tx connected RS-232 cable for remote monitoring.

ADLINK provides an interface-based program (PXISRemoteMonUtil.exe) to monitor the status of PXIS-2719A via a remote computer. As shown, the utility is divided into three interface categories:

- Connect Control
- Threshold & Control
- Chassis Status.

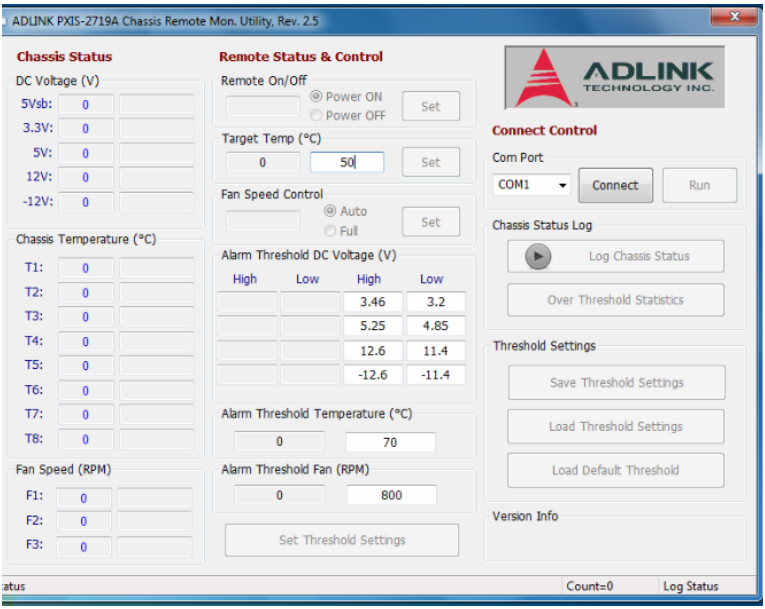


Figure 3-1: Remote Monitor Utility Interface

3.1 Installing the Monitor Utility

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

To install the monitoring utility:

1. Connect a USB CD-/DVD-ROM drive to the system controller.
2. Place the ADLINK All-in-Once CD in the drive.
3. Locate the monitoring utility in the folder X:\Driver Installation\PXI Platform\PXI chassis\PXIS-2719A\RemoteMon\
   (where X: denotes the CD-ROM drive)
4. Double-click the **Setup.exe** file to begin installation.

3.2 Connect Control

The Connect Control section connects and disconnects the link between the PXIS-2719A and the remote computer, displays chassis status log data, and saves and loads threshold settings.

3.2.1 Com Port Setting

To establish a connection between the remote computer and the PXIS-2719A:

1. Ensure functional connection between the remote monitoring port of the PXIS-2719A and the remote computer
2. Launch PXISRemoteMonUtil.exe on the remote computer.
3. Select “COM Port” on the remote computer connected to the PXIS-2719A
4. Select “Connect” to initiate connection
5. Select “Run” to commence monitoring system status
6. Select “Stop” to cease monitoring
7. Selecting Start initializes monitoring, and selecting Stop ends the operation.

3.2.2 Chassis Status Log

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

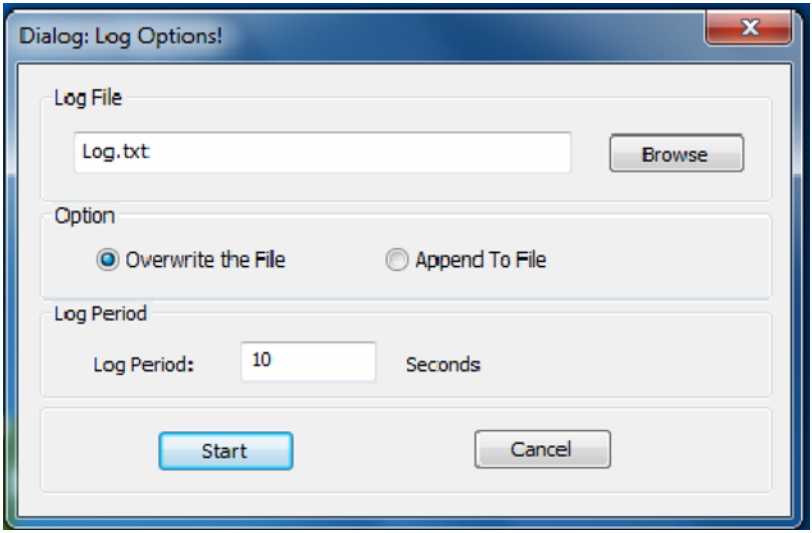


Figure 3-2: Log Options Dialog

The name of the log file can be entered, and overwrite or append to operations selected. The log period can further be entered, in seconds. Clicking Start begins the log.

Over Threshold Statistics, when selected, displays information regarding threshold being exceeded.

Save/Load Threshold

All Threshold & Control settings can be saved or loaded here. Clicking Save Threshold Settings saves all current settings. Clicking Load Threshold Settings loads all settings from the saved file. Clicking Load Default Threshold resets all threshold settings to the default values.

Version Info

Displays the current firmware version.

3.3 Remote Status and Control

Sets operations and threshold settings for PXIS-2719A, including remote chassis on/off, target temperature, fan mode, and threshold settings for DC voltage, temperature, and cooling fan speed.

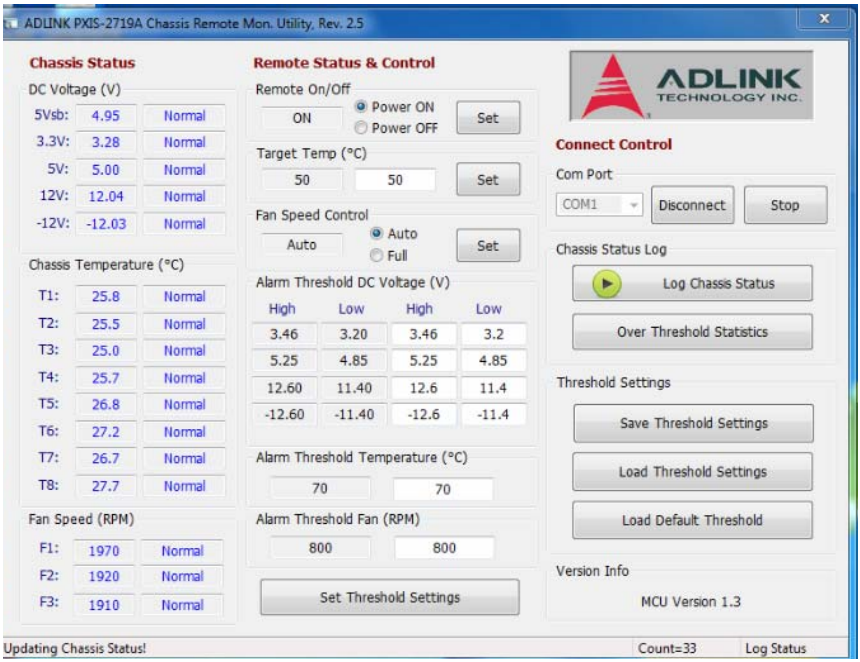


Figure 3-3: Remote Status and Control Interface

3.3.1 Remote On/Off

On/off status of the PXIS-2719A is displayed. Choosing “Power ON” or “Power OFF” and selecting “Set” directly powers the chassis on or off.

Target Temperature

Fans run at different speeds based on the monitored temperature, when the Fan switch on the rear panel is set to AUTO. Target Temp indicates the temperature when the fans are 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. The fans run 100% speed if any temperature reading exceeds 50°C (Target Temperature). Target temperature setting operations are as shown. Target Temp can be set by entering the desired target temperature value in the field and clicking Set.

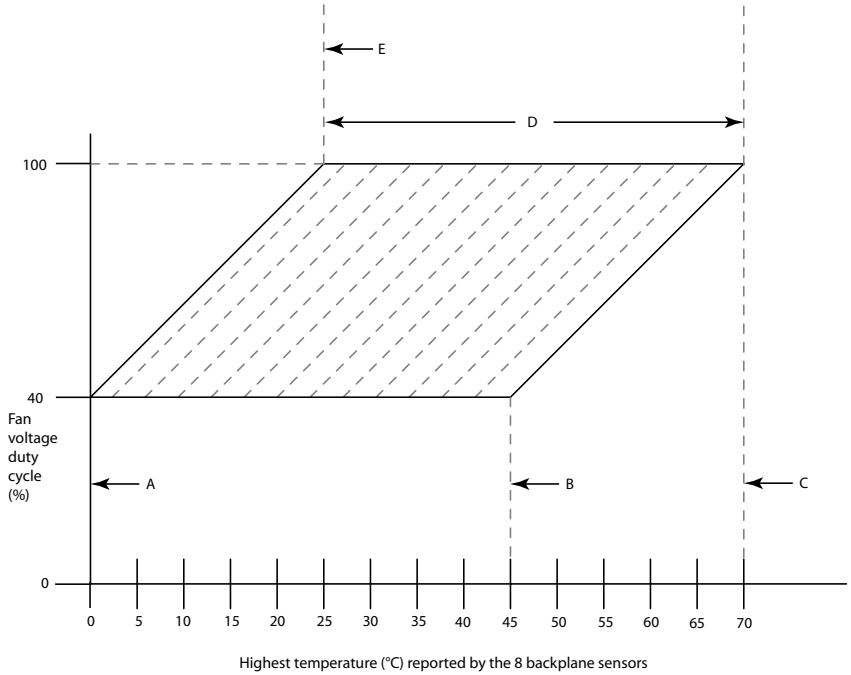


Figure 3-4: PXIS-219A Temperature Setting Parameters

	Temp	Parameter
A	0°C	Minimum chassis temperature at which the fan speeds begin ramp-up to the 25°C setting above
B	45°C	Maximum chassis temperature at which the fan speeds begin ramp-up to the 70°C setting above
C	70°C	Highest maximum chassis temperature at which fans reach maximum speed
D	25°C to 70°C	45° range within which maximum chassis temperature (at which the fans reach maximum speed) can be set
E	25°C	Lowest maximum chassis temperature at which fans reach maximum speed

Table 3-1: PXIS-219A Temperature Parameter Legend

Fan Speed

Auto/Full status of the PXIS-2719A is shown here, Auto is displayed when the cooling fans are set to auto mode and Full when the fans are set to run full speed. Selection of Auto or Full values and clicking Set directly changes cooling fan mode.

Alarm Threshold

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

3.3.2 Chassis Status

DC Voltage

The monitored 5V AUX, 3.3V, 5V, 12V, and -12V power rail readings are shown here. The status shows as normal when the readings are within the threshold range, and abnormal when the readings exceed the threshold range.

Chassis Temperature

Eight temperature sensors on the top of the backplane, T1 to T8 from left to right, provide readings, with status showing normal when the readings are within the threshold value (70°C in the figure), and abnormal when the readings exceed the threshold value.

Fan Speed

Monitored readings of the three cooling fans appear here. Status shows as normal when readings exceed threshold value (800 RPM in the figure), and abnormal when the readings fall below the threshold value.

This page intentionally left blank.

4 Monitoring/Control Functions

The monitoring/control function library can be used to create a customized program for monitoring and controlling the PXIS-2719A. The data structure and function library follow.

4.1 Data Structure

In the function library, 3 data structures are defined, as follows.

4.1.1 ChassisStatus

Includes Power, Fan Status, Temperature Status, and Power Status:

```
typedef struct tagChassisStatus
{
BYTEPowerStatus;//Power On/Off status
//Fan status and speed in RPM
BYTEFan1Status;//Fan#1 status
BYTEFan2Status;//Fan#2 status
BYTEFan3Status;//Fan#3 status
intFan1RPM;//Fan#1 speed in RPM
intFan2RPM;//Fan#2 speed in RPM
intFan3RPM;//Fan#3 speed in RPM
//Temperature sensor status and reading in degree centigrade
BYTETemp1Status;//Temperature sensor#1 status
BYTETemp2Status;//Temperature sensor#2 status
BYTETemp3Status;//Temperature sensor#3 status
BYTETemp4Status;//Temperature sensor#4 status
BYTETemp5Status;//Temperature sensor#5 status
BYTETemp6Status;//Temperature sensor#6 status
BYTETemp7Status;//Temperature sensor#7 status
BYTETemp8Status;//Temperature sensor#8 status
floatTemp1Reading;//Temperature sensor#1 reading (°C)
floatTemp2Reading;//Temperature sensor#2 reading (°C)
floatTemp3Reading;//Temperature sensor#3 reading (°C)
```

```
floatTemp4Reading;//Temperature sensor#4 reading (°C)
floatTemp5Reading;//Temperature sensor#5 reading (°C)
floatTemp6Reading;//Temperature sensor#6 reading (°C)
floatTemp7Reading;//Temperature sensor#7 reading (°C)
floatTemp8Reading;//Temperature sensor#8 reading (°C)

//DC status and reading
BYTEDC1Status;//DC 5Vsb status
BYTEDC2Status;//DC 3.3V status
BYTEDC3Status;//DC 5V status
BYTEDC4Status;//DC 12V status
BYTEDC5Status;//DC -12V status
floatDC1Reading;//DC 5Vsb voltage
floatDC2Reading;//DC 3.3V voltage
floatDC3Reading;//DC 5V voltage
floatDC4Reading;//DC 12V voltage
floatDC5Reading;//DC -12V voltage

} ChassisStatus;
```

4.1.2 ChassisSetting

Includes Target Temperature, Temperature Threshold, Fan Speed Threshold and Power Threshold:

```
typedef struct tagChassisSetting
{
     int  TargetTemp;//Target Temerature
     int  ThresholdTemp;//Temperature Threshold
     int  ThresholdFan;//Fan Speed Threshold

     int  Threshold5V_H;//5V High Threshold
     int  Threshold5V_L;//5V Low Threshold
     int  Threshold3V3_H;//3.3V Hight Threshold
     int  Threshold3V3_L;//3.3V Low Threshold
     int  Threshold12V_H;//12V High Threshold
     int  Threshold12V_L;//12V Low Threshold
     int  ThresholdN12V_H;//-12V High Threshold
     int  ThresholdN12V_L;//-12V Low Threshold
```

```
        BYTE FanFullSpeed; //Fan in Full or Auto
        Speed Mode
} ChassisSetting;
```

4.1.3 MCUVersion

Includes MCU Code Version, Major Number, and Minor Number

```
typedef struct tagMCUVersion
{
        BYTE MajorNo;
        BYTE MinorNo;
} MCUVersion;
```

4.1.4 Data Structure Variables

Variables in the Data Structure are as follows

Variable	Description	Type	Value
PowerStatus	Power On/Off status	BYTE	0: Off 1: On
Fan1Status	Fan#1 operating status	BYTE	0: Normal 1: Abnormal 2: Disabled 3: Stopped
Fan2Status	Fan#2 operating status	BYTE	
Fan3Status	Fan#3 operating status	BYTE	
Fan1RPM	Fan#1 speed in RPM	int	RPM value
Fan2RPM	Fan#2 speed in RPM	int	
Fan3RPM	Fan#3 speed in RPM	int	
Temp1Status	Temperature sensor #1 status	BYTE	0: Normal 1: Abnormal
Temp2Status	Temperature sensor #2 status	BYTE	
Temp3Status	Temperature sensor #3 status	BYTE	
Temp4Status	Temperature sensor #4 status	BYTE	
Temp5Status	Temperature sensor #5 status	BYTE	
Temp6Status	Temperature sensor #6 status	BYTE	
Temp7Status	Temperature sensor #7 status	BYTE	
Temp8Status	Temperature sensor #8 status	BYTE	

Variable	Description	Type	Value
Temp1Reading	Reading of temperature sensor#1 in °C	float	Temperature value
Temp2Reading	Reading of temperature sensor#2 in °C	float	
Temp3Reading	Reading of temperature sensor#3 in °C	float	
Temp4Reading	Reading of temperature sensor#4 in °C	float	
Temp5Reading	Reading of temperature sensor#5 in °C	float	
Temp6Reading	Reading of temperature sensor#6 in °C	float	
Temp7Reading	Reading of temperature sensor#7 in °C	float	
Temp8Reading	Reading of temperature sensor#8 in °C	float	
DC1Status	DC 5 V standby status	BYTE	0: Normal 1: Abnormal
DC2Status	DC 3.3 V status	BYTE	
DC3Status	DC 5 V status	BYTE	
DC4Status	DC 12 V status	BYTE	
DC5Status	DC -12 V status	BYTE	
DC1Reading	DC 5 V standby voltage reading	float	Voltage value
DC2Reading	DC 3.3 V voltage reading	float	
DC3Reading	DC 5 V voltage reading	float	
DC4Reading	DC 12 V voltage reading	float	
DC5Reading	DC -12 V voltage reading	float	
TargetTemp	Target Temperature in °C	int	Temperature value
ThresholdTemp	Temperature Threshold in °C	int	Temperature value
ThresholdFan	Fan Speed Threshold in RPM	int	RPM value
Threshold5V_H	5V High Threshold	int	0.01 Voltage
Threshold5V_L	5V Low Threshold	int	0.01 Voltage
Threshold3V3_H	3.3V High Threshold	int	0.01 Voltage
Threshold3V3_L	3.3V Low Threshold	int	0.01 Voltage

Variable	Description	Type	Value
Threshold12V_H	12V High Threshold	int	0.01 Voltage
Threshold12V_L	12V Low Threshold	int	0.01 Voltage
ThresholdN12V_H	-12V High Threshold	int	0.01 Voltage
ThresholdNV12_L	-12V Low Threshold	int	0.01 Voltage
FanFullSpeed	Fan in Full Speed	BYTE	1:Full, 0:Auto
MajorNo	MCU code Version Major Number	BYTE	Number
MinorNo	MCU code Version Minor Number	BYTE	Number

Table 4-1: Data Structure Variables

4.2 Function Library

InitCOM

Description

Initializes the remote computer COM port connected to the remote monitoring port of the PXIS-2719A.

Syntax

```
HANDLE InitCOM(LPCSTR com)
```

Parameter

com:

A string denotes the COM port. Can be COM1 ~ COM8

Return Value

A handle to the initialized COM port. If the function returns NULL, the initialization of COM port failed.

Example

```
HANDLEhCOM;
hCOM= InitCOM("COM1");
```

GetChassisStatus

Description

Acquires chassis status and stores the result in a ChassisStatus structure. Can be invoked periodically to update chassis status.

Syntax

```
BOOL GetThreshold(HANDLE hCom, ChassisSetting*
setting)
```

Parameters

hCom:

The initialized COM port.

Status:

ChassisStatus data structure that stores the chassis status in which PowerStatus, Fan1Status, Fan2Status, Fan3Status, Fan1RPM, Fan2RPM, Fan3RPM, Temp1Status ~ Temp8Status, Temp1Reading ~ Temp8Reading, DC1Status ~ DC5Status, DC1Reading ~ DC8Reading will be updated.

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
ChassisStatus   status; BOOL    ret;
ret= GetChassisStatus(hCom, &status);
```

GetThreshold

Description

Acquires chassis fan speed, temperature, and voltage threshold settings and stores the results in a ChassisSetting structure.

Syntax

```
WD_AD_Auto_Calibration_ALL (ByVal CardNumber
As Integer) As Integer
```

Parameters

hCom:

The initialized COM port.

Status:

ChassisSetting data structure that stores the chassis status in which TargetTemp, ThresholdTemp, ThresholdFan, Threshold5V_H, Threshold5V_L, Threshold3V3_H, Threshold3V3_L, Threshold12V_H, Threshold12V_L, ThresholdN12V_H, ThresholdN12V_L will be updated

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
ChassisSettingsetting; BOOLret;
ret= GetThreshold(hCom, &setting);
```

GetMCUVersion

Description

Acquires the MCU code version number and stores the result in a ChassisStatus structure.

Syntax

```
BOOL GetMCUVersion(HANDLE hCom, MCUVersion *
Version)
```

Parameters

hCom:

The initialized COM port.

Status:

ChassisStatus data structure that stores the chassis status in which MajorNo, MinorNo will be updated.

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
MCUVersionversion; BOOLret;
ret= GetMCUVersion(hCom, &version);
```

SetChassisPowerOn

Description

Powers on the PXIS-2719A

Syntax

```
BOOL SetChassisPowerOn (HANDLE hCom)
```

Parameter

com:

The initialized COM port.

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
BOOL ret;
ret= SetChassisPowerOn (hCom);
```

SetChassisPowerOff

Description

Powers off the PXIS-2719A.

The system controller should be shut down via the operating system before turning off chassis power.

Syntax

```
BOOL SetChassisPowerOff (HANDLE hCom)
```

Parameter

com:

The initialized COM port.

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
BOOL ret;
ret= SetChassisPowerOff (hCom);
```

SetFanSpeedMax

Description

Sets fan speed to Max mode (forcing fans to operate at full speed)

Syntax

```
BOOL SetFanSpeedMax (HANDLE hCom)
```

Parameters

com:

An initialized COM port.

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
BOOL ret;
ret= SetFanSpeedMax (hCom);
```

SetFanSpeedAuto

Description

Sets fan speed to Auto mode (automatically adjusting fan speed according to internal temperature)

Syntax

```
BOOL SetFanSpeedAuto (HANDLE hCom)
```

Parameter

com:

An initialized COM port.

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
BOOL ret;
ret= SetFanSpeedAuto (hCom);
```

SetTargetTemp

Description

Sets a Chassis target temperature that fan speed will automatically adjust to meet.

Syntax

```
BOOL SetTargetTemp(HANDLE hCom ,int temp)
```

Parameters

com:

An initialized COM port.

temp:

Target temperature (from 25 to 70°C)

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
BOOL ret;
int temp = 50;
ret= SetTargetTemp(hCom,temp);
```

SetFanAlarm

Description

Sets chassis fan speed threshold, fan speeds under which will trigger the alarm.

Syntax

```
BOOL SetFanAlarm(HANDLE hCom ,int speed)
```

Parameters

com:

An initialized COM port.

speed:

Fan speed threshold (in rpm, multiples of 100, such as 500, 600, 700…, range 0 to 10000)

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
BOOL ret;
int  speed = 1000;
```

```
ret= SetFanAlarm(hCom,speed);
```

SetTempAlarm

Description

Sets chassis temperature threshold, which, if exceeded in a sensor reading, triggers the temperature alarm.

Syntax

```
BOOL SetTempAlarm(HANDLE hCom ,int temp)
```

Parameters

com:

An initialized COM port.

temp:

Temperature alarm threshold (unit: °C, range : 0~100)

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
BOOL ret;
int  temp = 60;
ret= SetTempAlarm(hCom,temp);
```

Set5VAlarm

Description

Sets the chassis DC 5V threshold, beyond which the DC 5V voltage triggers the alarm.

Syntax

```
BOOL Set5VAlarm(HANDLE hCom ,float H, float L)
```

Parameters

com:

An initialized COM port.

H:

DC 5V alarm upper threshold (voltage, range 0 to 1.0)

L:

DC 5V alarm lower threshold (voltage, range 0 to 1.0)

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
BOOL ret;
float high = 0.25;
float low = 0.25;
ret= Set5VAlarm(hCom, high, low);
```

Set3V3Alarm

Description

Sets the chassis DC 3.3V threshold, beyond which the DC 5V voltage triggers the alarm.

Syntax

```
BOOL Set3V3Alarm(HANDLE hCom ,float H, float L)
```

Parameters

com:

An initialized COM port.

H:

DC 3.3V alarm upper threshold (voltage, range 0 to 0.66)

L:

DC 3.3V alarm lower threshold (voltage, range 0 to 0.66)

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
BOOL ret;
float high = 0.15;
float low = 0.15;
ret= Set3V3Alarm(hCom, high, low);
```

Set12VAlarm

Description

Sets the chassis DC 12V threshold, beyond which the DC 12V voltage triggers the alarm.

Syntax

```
BOOL Set12VAlarm(HANDLE hCom ,float H, float
L)
```

Parameters

com:

An initialized COM port.

H:

DC 12V alarm upper threshold (voltage, range 0 to 2.4)

L:

DC 12V alarm lower threshold (voltage, range 0 to 2.4)

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
BOOL ret;
float high = 0.6;
float low = 0.6;
ret= Set12VAlarm(hCom, high, low);
```

SetN12VAlarm

Description

Sets the chassis DC -12V threshold, beyond which the DC -12V voltage triggers the alarm.

Syntax

```
BOOL SetN12VAlarm(HANDLE hCom ,float H, float L)
```

Parameters

com:

An initialized COM port.

H:

DC 12V alarm upper threshold (voltage, range 0 to 2.4)

L:

DC 12V alarm lower threshold (voltage, range 0 to 2.4)

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
BOOL ret;
float high = 0.6;
float low = 0.6;
ret= SetN12VAlarm(hCom, high, low);
```

CloseCOM

Description

Closes the initialized COM port.

Syntax

```
BOOL CloseCOM(HANDLE hCom)
```

Parameters

com:

The initialized COM port.

Return Value

TRUE if the function succeeded, FALSE if failed.

Example

```
ret= CloseCOM (hCom);
```

Appendix - Troubleshooting and Maintenance

This Appendix describes basic troubleshooting techniques, as well as instructions for the maintenance of the PXIS-2719A chassis.

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, instal 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

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 main power switch on the back of the chassis is turned on ▶ The standby power button on the chassis front panel is turned on
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 (below 50°C) but the temperature LED is still blinking, contact your dealer for further assistance.

3 Maintenance

3.1 Handling the Chassis

The PXIS-2719A is designed for both rack-mount and benchtop use. When transporting or carrying the chassis, it is recom-

mended that the handle be used, being designed to support the weight of the chassis for superior portability and balance.

The PXIS-2719A weighs 14.5 kg. Please be careful when moving the chassis to avoid any possible injury.

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.

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 PXIS-2719A power supply is capable of handling 100 to 240 V AC within the 50 Hz to 60 Hz range. Do not connect the PXIS-2719A to an already overloaded circuit.

This page intentionally left blank.

Important Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

- Read these safety instructions carefully.
- Keep this user's manual for future reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment:
  - Turn off power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources;
  - Keep equipment away from high heat or high humidity;
  - Keep equipment properly ventilated (do not block or cover ventilation openings);
  - Make sure to use recommended voltage and power source settings;
  - Always install and operate equipment near an easily accessible electrical socket-outlet;
  - Secure the power cord (do not place any object on/over the power cord);
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings; and,
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.

- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.
- A Lithium-type battery may be provided for uninterrupted, backup or emergency power.

Risk of explosion if battery is replaced with an incorrect type; please dispose of used batteries appropriately.

- Equipment must be serviced by authorized technicians when:
  - The power cord or plug is damaged;
  - Liquid has penetrated the equipment;
  - It has been exposed to high humidity/moisture;
  - It is not functioning or does not function according to the user's manual;
  - It has been dropped and/or damaged; and/or,
  - It has an obvious sign of breakage.

Getting Service

Contact us should you require any service or assistance.

ADLINK Technology, Inc.
Address: 9F, No.166 Jian Yi Road, Zhonghe District
New Taipei City 235, Taiwan
新北市中和區建一路 166 號 9 樓
Tel: +886-2-8226-5877
Fax: +886-2-8226-5717
Email: service@adlinktech.com

Ampro ADLINK Technology, Inc.
Address: 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.
Address: 上海市浦东新区张江高科技园区芳春路 300 号 (201203)
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 Beijing
Address: 北京市海淀区上地东路 1 号盈创动力大厦 E 座 801 室(100085)
Rm. 801, Power Creative E, No. 1, B/D
Shang Di East Rd., Beijing, 100085 China
Tel: +86-10-5885-8666
Fax: +86-10-5885-8625
Email: market@adlinktech.com

ADLINK Technology Shenzhen
Address: 深圳市南山区科技园南区高新南七道 数字技术园
A1 栋 2 楼 C 区 (518057)
2F, C Block, Bldg. A1, Cyber-Tech Zone, Gao Xin Ave. Sec. 7,
High-Tech Industrial Park S., Shenzhen, 518054 China
Tel: +86-755-2643-4858
Fax: +86-755-2664-6353
Email: market@adlinktech.com

ADLINK Technology (Europe) GmbH
Address: Nord Carree 3, 40477 Duesseldorf, Germany
Tel: +49-211-495-5552
Fax: +49-211-495-5557
Email: emea@adlinktech.com

ADLINK Technology, Inc. (French Liaison Office)
Address: 15 rue Emile Baudot, 91300 Massy CEDEX, France
Tel: +33 (0) 1 60 12 35 66
Fax: +33 (0) 1 60 12 35 66
Email: france@adlinktech.com

ADLINK Technology Japan Corporation
Address: 〒101-0045 東京都千代田区神田鍛冶町 3-7-4
神田 374 ビル 4F
KANDA374 Bldg. 4F, 3-7-4 Kanda Kajicho,
Chiyoda-ku, Tokyo 101-0045, Japan
Tel: +81-3-4455-3722
Fax: +81-3-5209-6013
Email: japan@adlinktech.com

ADLINK Technology, Inc. (Korean Liaison Office)
Address: 서울시 서초구 서초동 1675-12 모인터빌딩 8 층
8F Mointer B/D,1675-12, Seocho-Dong, Seocho-Gu,
Seoul 137-070, Korea
Tel: +82-2-2057-0565
Fax: +82-2-2057-0563
Email: korea@adlinktech.com

ADLINK Technology Singapore Pte. Ltd.
Address: 84 Genting Lane #07-02A, Cityneon Design Centre,
Singapore 349584
Tel: +65-6844-2261
Fax: +65-6844-2263
Email: singapore@adlinktech.com

ADLINK Technology Singapore Pte. Ltd. (Indian Liaison Office)
Address: 1st Floor, #50-56 (Between 16th/17th Cross) Margosa Plaza,
Margosa Main Road, Malleswaram, Bangalore-560055, India
Tel: +91-80-65605817, +91-80-42246107
Fax: +91-80-23464606
Email: india@adlinktech.com

ADLINK Technology, Inc. (Israeli Liaison Office)
Address: 6 Hasadna St., Kfar Saba 44424, Israel
Tel: +972-9-7446541
Fax: +972-9-7446542
Email: israel@adlinktech.com