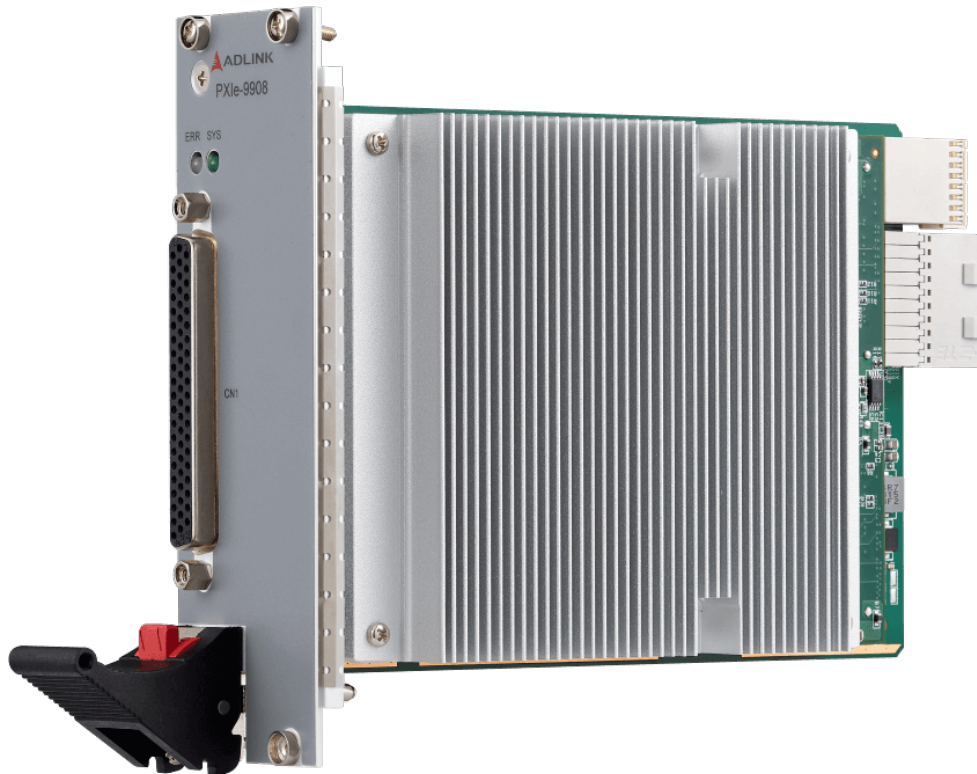


PXIe-9908

User's Manual

8-Channel, 4-Quadrant
High-Density Source Measurement Unit (SMU) Module



Manual Rev.:	1.0
Revision Date:	December 23, 2025
Part Number:	50M-38010-1000

Preface

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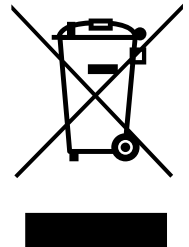
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Disclaimer

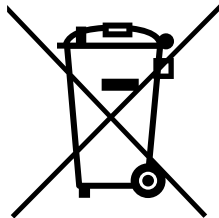
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Battery Labels (for products with battery)



California Proposition 65 Warning



WARNING: This product can expose you to chemicals including acrylamide, arsenic, benzene, cadmium, Tris(1,3-dichloro-2-propyl)phosphate (TDCPP), 1,4-Dioxane, formaldehyde, lead, DEHP, styrene, DINP, BBP, PVC, and vinyl materials, which are known to the State of California to cause cancer, and acrylamide, benzene, cadmium, lead, mercury, phthalates, toluene, DEHP, DIDP, DnHP, DBP, BBP, PVC, and vinyl materials, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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.



NOTE:

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



CAUTION:

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

ATTENTION: Informations destinées à prévenir les blessures corporelles mineures, les dommages aux composants, la perte de données et/ou la corruption de programme lors de l'exécution d'une tâche.



WARNING:

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

AVERTISSEMENT: Informations destinées à prévenir les blessures corporelles graves, les dommages aux composants, la perte de données et/ou la corruption de programme lors de l'exécution d'une tâche spécifique.

Revision History

Revision	Description	Date	By
1.0	Initial release	2025-12-23	AL

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1 Introduction

The PXle-9908 is an 8-channel, 4-quadrant, high-density source measurement unit (SMU) module featuring integrated remote (4-wire) sensing, designed for automated testing and mini/microLED wafer probing applications. It supports precision sourcing and measurement up to ± 100 V and 100 mA, with scalable configurations. With compatibility across major operating systems and programming languages, it delivers fast, accurate, and reliable testing performance tailored for automated test systems and next-generation display technologies.

1.1 Features

The PXle-9908 is a high-precision system source measure unit (SMU) with following features:

- Voltage range:
 - -10 V to 20 V
 - -30 V to 30 V in cascade mode
 - -100 V to 100V (measurement only, in the 10 μ A current range)
- Current ranges:
 - 100mA, 10mA, 2mA, 200uA, 40 μ A, 10 μ A, 5 μ A, 1 μ A, 100nA
- High-speed sampling rate
 - Up to 1MS/s maximum measurement sampling rate per channel
- High-speed updating rate
 - Up to 100KHz maximum update rate per channel
- 4-wire remote sensing and guarding

1.2 Applications

Automated Test Equipment (ATE)

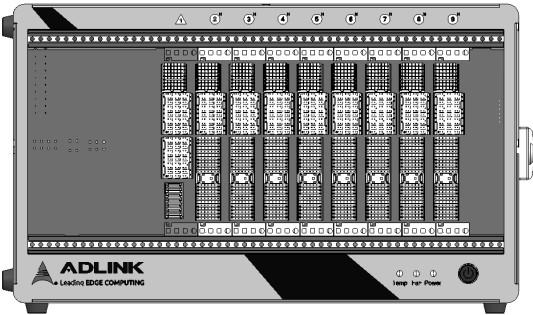
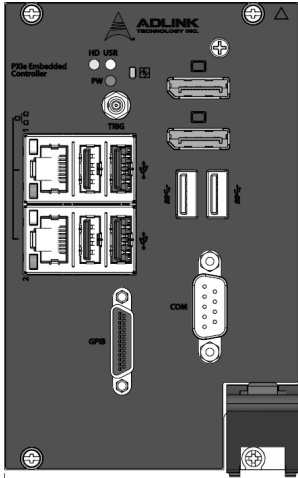
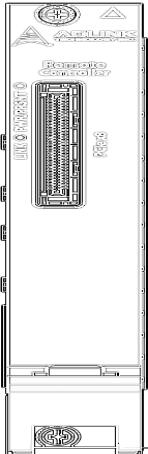
Mini/micro LED wafer probing

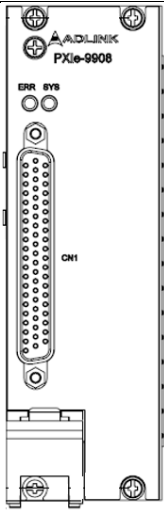
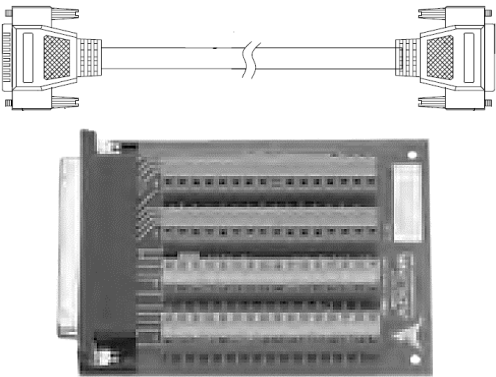
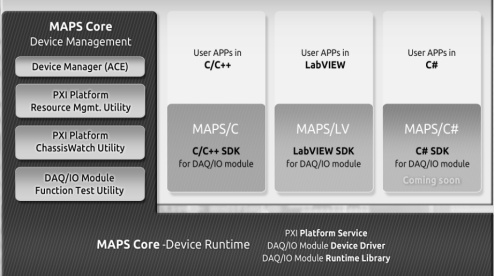
Laboratory automation

Industrial process control and monitoring

IC testing

1.3 PXIe-9908 System Components

Component	Description
PXIe chassis 	The PXIe or hybrid chassis hosts the PXIe-9908, providing the power, communication, and timing support required for its operation.
PXIe controller 	The PXIe controller is used as a host PC to control the peripheral device, the PXIe-9908. This component is installed in the same PXIe chassis as the PXIe-9908.
Remote controller 	You can also use a PXIe remote controller to control the PXIe-9908 from a host PC. This component is installed in the same PXIe chassis as the PXIe-9908.

	The SMU instrument.
Cables and Accessories 	Cables and accessories provide connectivity to and from your instrument for measurements. Cable: ACL-10262-1 Terminal: TB-6221 Termination Board with 62-pin D-Sub Connector (cables not included) ACL-10262*1 D-Sub 62 Pin (Male) to D-Sub 62 Pin (Female), 1M Note: Using TB-6221 and ACL-10262 may cause unstable output and measurements when operating in the low current range (below 2 mA). If operation in this low current range is required, it is recommended to design dedicated cables and connection boards.
Driver and Application 	ADLINK provides MAPS/SMU SDK, an all-in-one software solution that includes drivers, device management, utilities, and examples. Platform: - Windows 10/11 (64-bit) Supported programming language: - C++ - C# - LabVIEW

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2 Specifications

Specifications are valid under the following conditions unless otherwise noted.

- Ambient temperature: $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
- Calibration interval: 1 year
- Warm-up time: 30 minutes
- Fans set to the highest setting when the PXI Express chassis offers multiple fan speed settings

2.1 Quadrant Diagram

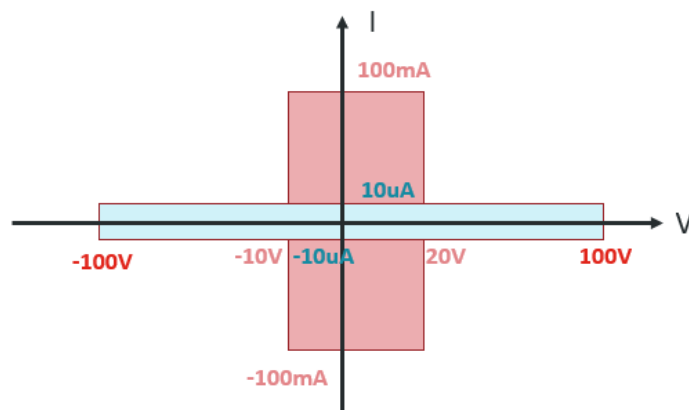


Figure 1: Quadrant diagram

- Cascade mode

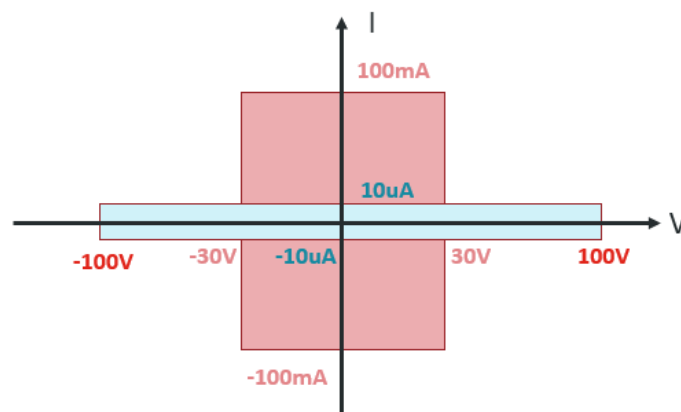


Figure 2: Cascade mode diagram

2.2 Device capabilities

Channels	8 channels
Power Output	Single channel: 2 W max 8 channels: 16 W max
Voltage Source Range	-10 to +20V
Voltage Measure Range	-10 to +20V
Current Source Range	100mA, 10mA, 2mA 200 μ A, 40 μ A, 5 μ A, 1 μ A 100nA
Current Measure Range	100mA, 10mA, 2mA 200 μ A, 40 μ A, 5 μ A, 1 μ A 100nA
Voltage Measure Range	$\pm$ 100V
Current Source Range	10 μ A
Current Measure Range	10 μ A

2.2.1 Cascade Mode

Channels	4 channels
Power Output	Single channel: 3 W max. 4 channels: 12 W max.
Voltage Source Range	$\pm$ 30V
Voltage Measure Range	$\pm$ 30V
Current Source Range	100mA, 10mA, 2mA 200 μ A, 40 μ A, 5 μ A, 1 μ A 100nA
Current Measure Range	100mA, 10mA, 2mA 200 μ A, 40 μ A, 5 μ A, 1 μ A 100nA
Voltage Measure Range	$\pm$ 100V
Current Source Range	10 μ A
Current Measure Range	10 μ A

2.3 Supplemental Specifications

Resolution	18-bit
Max Measure Rate	1M SPS
Max Source Update Rate	100K SPS
Source Event Delay	5 μ s
Input Triggers	Start Source Sequency Advance Measure
Output Triggers	Source Complete Sequence Iteration Complete Sequence Engine Done Measure Complete

2.4 Additional Specifications

Dimensions (L x W x H)	209.9 mm × 40.3 mm × 130.6 mm, dual-slot 209.9 mm × 20 mm × 130.6 mm, single-slot
Front Panel Connector	62-position D-SUB, female
Power Consumption	Typical: 3.3V/2.804mA 12V/1280.22mA
	Max: 3.3V/2.814mA 12V/4225.45mA
Operating Temperature	0°C to 50°C
Storage Temperature	-20°C to 70°C
Operating Humidity	10% to 90%, non-condensing
Storage Humidity	5% to 95%, non-condensing
Certificate	CE EN 55032/ 55035
	FCC Part 15B

2.5 Accuracy

Voltage range	Source Accuracy	Sink Accuracy
-10 to +20V	0.02% ± 2mV	0.02% ± 2mV
±30V	0.02% ± 2mV	0.02% ± 2mV
±100V		0.02% ± 15mV

Current range	Source Accuracy	Sink Accuracy
100mA	0.05% ± 20μA	0.05% ± 20μA
10mA	0.05% ± 2μA	0.05% ± 2μA
2mA	0.05% ± 500nA	0.05% ± 500nA
200uA	0.05% ± 50nA	0.05% ± 50nA
40uA	0.05% ± 10nA	0.05% ± 10nA
5uA	0.05% ± 3nA	0.05% ± 3nA
1uA	0.05% ± 300pA	0.05% ± 300pA
100nA	0.1% ± 100pA	0.1% ± 100pA

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3 Mechanical Layout

3.1 Mechanical Dimensions

3.1.1 Dual-Slot PCB Dimensions

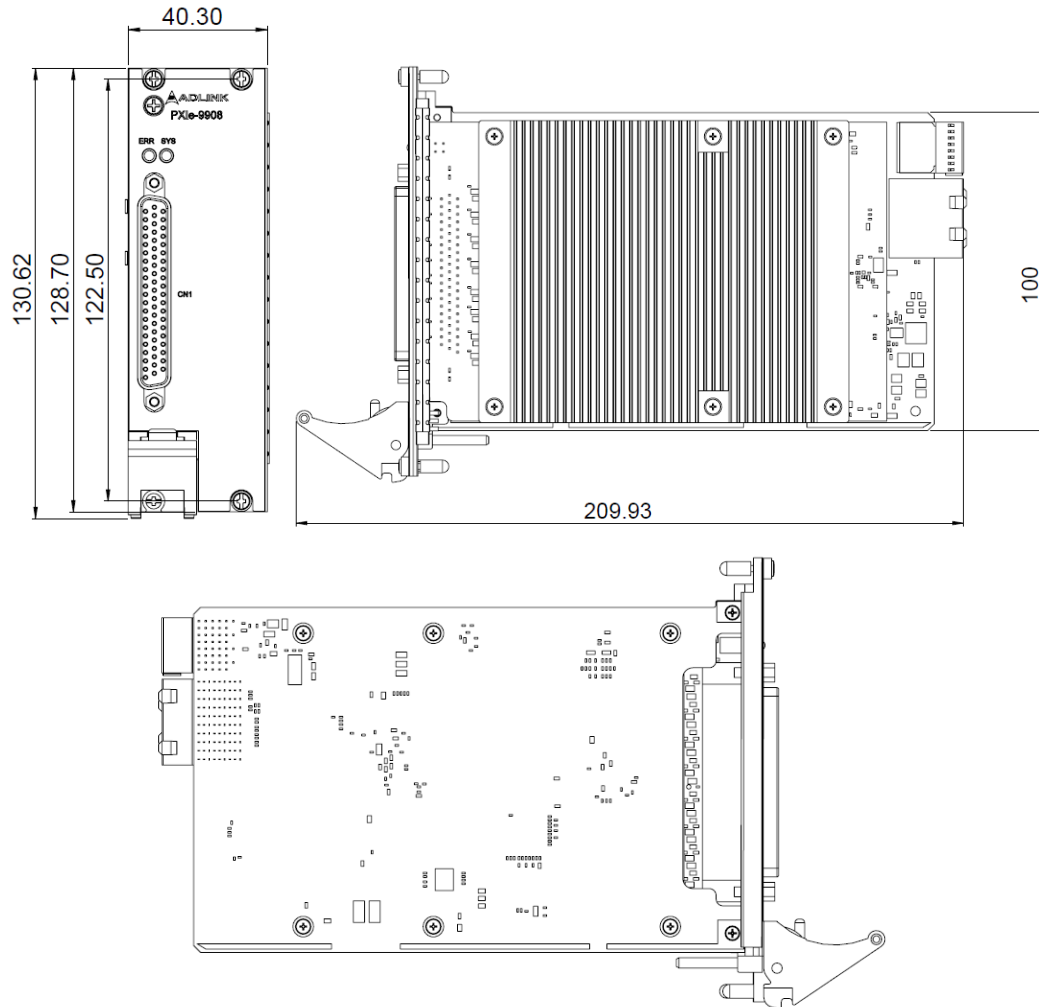


Figure 3: Dual-slot PCB dimensions

3.1.2 Single-Slot PCB Dimensions

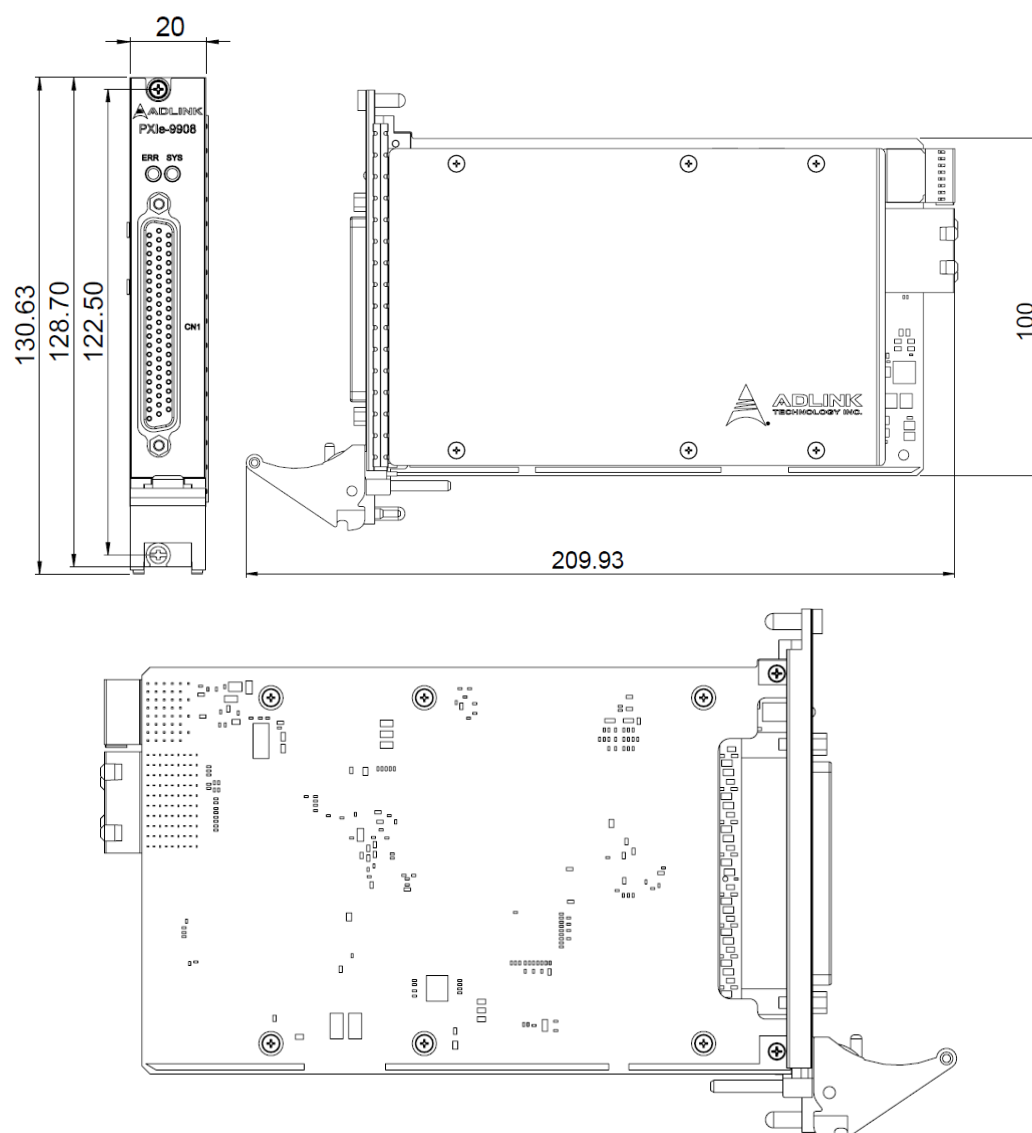


Figure 4: Single-slot PCB dimensions

4 Connector Pinouts

4.1 Pin Assignments

The PXle-9908 comes equipped with one 62-pin D-Sub Male connector, CN1. CN1 is located on the faceplate and is used for sensing, output, guard, and calibration signals. The pin assignments are illustrated in the figure below.

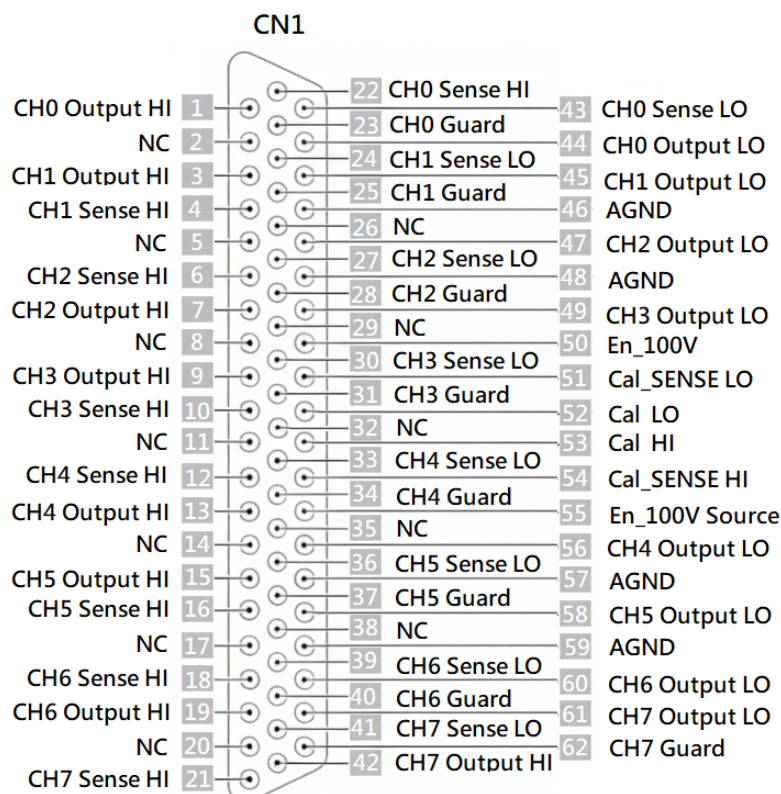


Figure 5: CN1 pin assignments

Table 1: CN1 pin assignment legend

Signal Name	I/O	Description
CH<0...7> Output HI	O	The primary sourcing terminal (positive) for voltage or current.
CH<0...7> Output LO	O	The return terminal (negative) of the source output.
CH<0...7> Sense HI	I	The positive remote sensing terminal.
CH<0...7> Sense LO	I	The negative remote sensing terminal.
CH<0...7> Guard	O	A driven shield terminal used to reduce leakage current and improve low-level measurement accuracy.
En_100V	I	Enable +/-100V measurement
En_100V Source	O	Connect to En_100V if need to enable +/-100V measurement or leave it unconnected.
Cal HI/ Cal LO/ Cal sense HI/ Cal sense LO	I/O	For external calibration use only, otherwise leave unconnected.
NC		No connect

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5 Getting Started

5.1 Package Contents

- PXIe-9908
- Product Warranty Card

5.2 Unpacking

The card contains electrostatic-sensitive components that can be easily damaged by static electricity. Therefore, it should be handled on a grounded anti-static mat. The operator must wear an anti-static wristband grounded at the same point as the mat.

Inspect the card module carton for visible damage. Shipping and handling may cause damage to your module, so ensure there are no signs of damage before proceeding.

After opening the carton, carefully remove the system module and place it only on a grounded anti-static surface with the component side up. Inspect the module again for any damage. Press down on all socketed ICs to ensure they are properly seated. This should be done only with the module on a firm, flat surface.



NOTE:

Please DO NOT attempt to install a damaged board in the computer.

5.3 Installation

5.3.1 Device Installation Procedure

1. **Verify that the chassis is connected to an AC power source before installing the module.** The AC power cord provides proper grounding and protects the chassis from electrical hazards during installation.
2. **Turn off the chassis** before proceeding with any installation steps.
3. **Inspect the slot pins on the chassis backplane** for any signs of bending or damage. **Do not** install the module if any damage is present.
4. **Ensure that the chassis inlet and outlet vents are unobstructed.**
5. **Remove the black plastic caps** from all captive screws on the module's front panel.
6. **Locate a supported slot in the chassis.** The PXIe-9908 can be installed in PXI Express hybrid peripheral slots or PXI Express peripheral slots.
7. **Discharge any static electricity** by touching an unpainted metal surface on the chassis.
8. **Confirm that the ejector handle** is in the unlatched position.
9. **Align the module with the upper and lower card guides** and carefully slide it into the selected slot until fully seated.
10. **Latch the module** by lifting the ejector handle upward.
11. **Install filler panels or slot blockers** in any unused slots to maintain proper airflow and EMC performance.

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6 Driver Installation and Software Support

6.1 Driver Installation

Download the drivers for your system from the PXIe-9908 product page at:

https://www.adlinktech.com.cn/products/pxi_pxie_platform/pxi_pxie_modules/pxie-9908

1. Download SMU_SDK from the driver section on the PXIe-9908 product page on the ADLINK website.
2. Double-click the installation file.
3. Follow the instructions until the installation procedure is complete.

6.2 Software Support

ADLINK provides versatile software drivers and packages to suit various user approaches to building a system. In addition to programming libraries, such as DLLs for most Windows-based systems, ADLINK also provides drivers for other application environments, such as LabVIEW. ADLINK Measurement, Automation & Platform Service (MAPS) is a software service package designed for data acquisition, automation, and PXI platforms. By leveraging low-level kernel management and a user-friendly API, users can easily manage devices under a Windows environment and focus on developing applications.

6.2.1 ADLINK MAPS Core

ADLINK MAPS Core is a software package that includes all device drivers for Windows and ADLINK Connection Explorer (ACE), a system-level management tool. With MAPS Core installed, the operating system can correctly identify ADLINK devices and assign the necessary resources for low-level access, such as I/O read/write or direct memory access. MAPS Core is required for all ADLINK DAQ modules. To ensure the user has the latest software, visit the ADLINK product webpage or contact ADLINK technical service.

Through ACE, users can discover and manage ADLINK DAQ modules. For example, to reserve a certain size of memory buffer for DMA operations or to set a user alias name for operating the module in a LabVIEW environment. ACE also provides a ready-to-use soft front panel for digitizer products. By clicking the Launch button in the lowest utility block, this soft front panel allows users to control digitizers through the UI and display the acquired waveform/data on the screen.

6.2.2 ADLINK MAPS/LV, LabVIEW Support

For customers who develop their own programs in LabVIEW, the MAPS/LV software package must be installed. MAPS/LV, also called DAQ-LabVIEW Plus, includes the software library and sample programs for LabVIEW. Download and install the latest MAPS/LV software and refer to the MAPS/LV manual for more information.

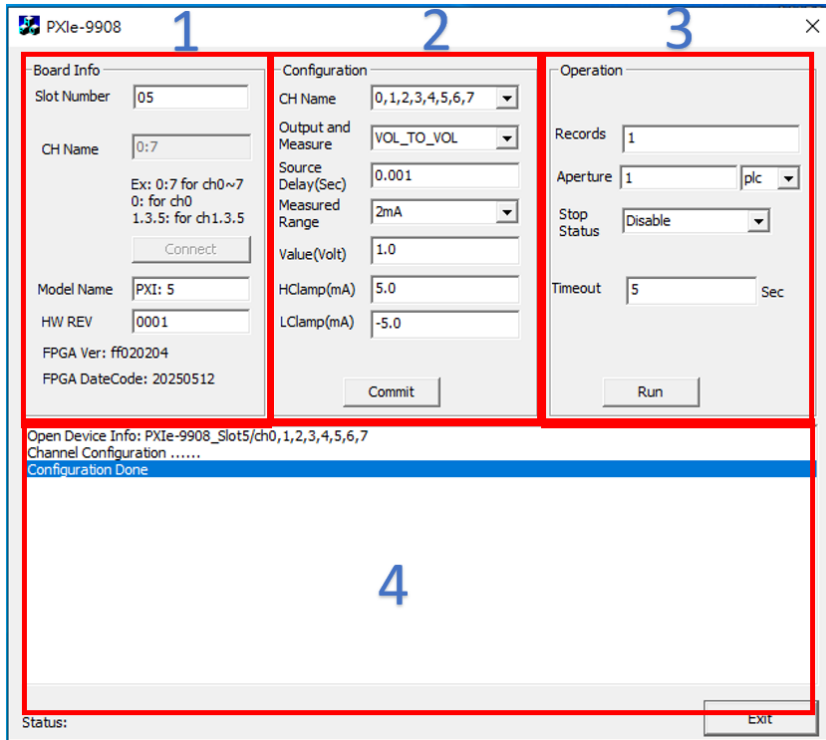
6.2.3 MAPS/C, C & C++ Support

For users who develop their own programs in C or C++ environments, the MAPS/C software package must be installed. MAPS/C includes all software components required for developing applications in C/C++, such as header files, a device API library, and versatile sample programs for understanding how to manipulate the device correctly. The latest version of MAPS/C is available on the ADLINK website.

6.2.4 Utility

The PXIe-9908 driver installation package includes a ready-to-use graphical utility called the Software Front Panel (SFP).

The Software Front Panel allows users to configure the hardware according to user-defined operating conditions and immediately apply the configured settings.



The Software Front Panel is divided into four functional areas:

1. **Hardware Information Panel:** Used to retrieve and display hardware-related information, including the firmware version installed on the board.
2. **Channel Configuration Panel:** Used to configure the operating mode and the voltage/current operating range for each channel.
3. **Parameter Application Panel:** Used to apply the configured channel parameters.
4. **Message Panel:** Operation messages appear in this area.

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.

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.

- ▶ 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.
- ▶ When installing/mounting or uninstalling/removing device; or when removal of a chassis cover is required for user servicing:
 - [> 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.
 - [> Secure the power cord (do not place any object on/over the power cord) and connect it to a socket-outlet with earthing connection.
 - [> 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 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.

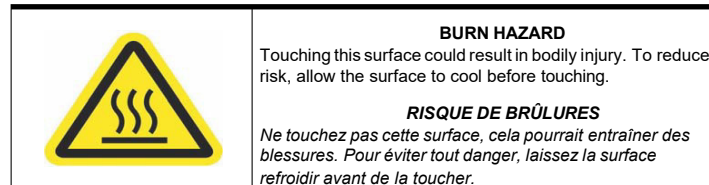


CAUTION:

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.
 - [> The equipment is not intended to be installed or used in a home, school, or public area accessible to the general population.
 - [> The knurled thumb screws with slotted heads for each Node module should be tightened with a tool after both initial installation and subsequent use.
- ▶ 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 therefore, 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.
- ▶ Please use an approved power source certified by IEC or UL. If you need an adapter, optional accessories, or further assistance, please contact ADLINK for more information.



- ▶ Lisez attentivement ces consignes de sécurité
- ▶ Conservez le manuel de l'utilisateur pour pouvoir le consulter ultérieurement
- ▶ Lisez la section Spécifications de ce manuel pour des informations détaillées sur l'environnement d'exploitation recommandé
- ▶ Lors de l'installation/montage ou de la désinstallation/retrait de l'appareil ; ou lorsque le retrait d'un boîtier est nécessaire pour l'entretien par l'utilisateur (voir Mise en route) :
 - ▶ Éteignez l'alimentation et débranchez tous les cordons/câbles d'alimentation.
 - ▶ Réinstallez tous les panneaux du boîtier avant de remettre l'alimentation sous tension.
- ▶ Pour éviter les chocs électriques et/ou d'endommager l'appareil :
 - ▶ Tenez l'appareil à l'écart de toute source d'eau ou de liquide
 - ▶ Tenez l'appareil à l'écart d'une forte chaleur ou d'une humidité élevée
 - ▶ Maintenez l'appareil correctement ventilé (n'obstruer ou ne couvrez pas les ouvertures de ventilation)
 - ▶ Utilisez toujours les réglages de tension et de source d'alimentation recommandés
 - ▶ Installez et utilisez toujours l'appareil près d'une prise de courant facilement accessible
 - ▶ Fixez le cordon d'alimentation (ne placez aucun objet sur/au-dessus du cordon d'alimentation) et connectez-le à une prise de courant avec mise à la terre
- ▶ N'essayez jamais de réparer l'appareil, qui doit être réparé uniquement par du personnel technique qualifié et utilisant des outils appropriés.
 - ▶ Lors de l'installation/montage ou de la désinstallation/retrait d'un périphérique, ou lorsque le retrait d'un couvercle de châssis est requis pour l'entretien par l'utilisateur :
 - ▶ Coupez l'alimentation et débranchez tous les cordons/câbles d'alimentation.
- ▶ Réinstallez tous les capots du châssis avant de rétablir l'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 une longue période, éteignez-le et débranchez-le de sa source d'alimentation.
- ▶ Une batterie de type lithium peut être fournie pour une alimentation de secours ou de secours ininterrompue.
 - ▶ L'appareil doit être réparé par des techniciens agréés lorsque :
 - ▶ Le cordon d'alimentation ou la fiche est endommagé.
 - ▶ Du liquide est entré dans l'appareil. € L'appareil a été exposé à une humidité élevée et/ou à l'humidité.
 - ▶ L'appareil ne fonctionne pas ou ne fonctionne pas conformément au manuel de l'utilisateur.
- ▶ L'appareil est tombé et/ou a été endommagé et/ou présente des signes évidents de casse.
- ▶ Débranchez le cordon d'alimentation avant de desserrer les vis moletées et fixez toujours les vis moletées avec un tournevis avant de démarrer le système.
 - ▶ L'équipement n'est pas destiné à être installé ou utilisé dans une maison, une école ou une zone publique accessible au grand public.
 - ▶ Les vis à molette avec têtes fendue pour chaque module Node doivent être serrées avec un outil après l'installation initiale et lors de l'utilisation suivante.
- ▶ Il est recommandé d'installer l'appareil uniquement dans une salle de serveurs ou une salle informatique dont l'accès est :
 - ▶ Réservé au personnel de service qualifié ou aux utilisateurs familiers avec les restrictions appliquées à l'emplacement, les raisons de celles-ci et les précautions requises.
 - ▶ Autorisé uniquement 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 du lieu.

Veuillez utiliser une source d'alimentation approuvée et certifiée par la norme IEC ou UL. Si vous avez besoin d'un adaptateur, d'accessoires en option ou d'une assistance supplémentaire, veuillez contacter ADLINK pour plus d'informations.

Getting Service

Ask an Expert: <https://www.adlinktech.com/en/Askanexpert>

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Fax: +886-3-328-5723
Email: service@adlinktech.com

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