

# PXle-9848/9848H

## 8-CH 14-Bit 100 MS/s High-Speed PXI Express Digitizer



PXle-9848

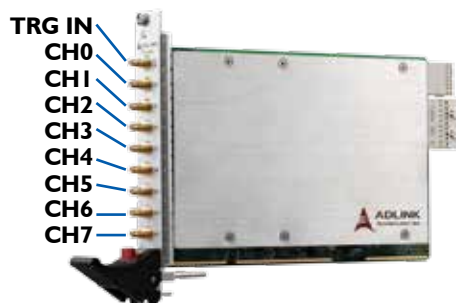


PXle-9848H

### Features

- PXI Express specification Rev. 1.0 compliant
- Up to 100 MS/s sampling rate
- 8 simultaneously analog inputs
- High resolution 14-bit ADC
- Up to 100 MHz bandwidth for analog input
- 512 MB onboard storage memory
- Programmable input voltage range of  $\pm 0.2$  V or  $\pm 2$  V, or  $\pm 100$  V Max (PXle-9848H)
- Scatter-Gather DMA data transfer for high speed data streaming
- One external digital trigger input
- Full auto-calibration
- Supported Operating System
  - Windows 7/8 x64/x86, Linux
- Driver and SDK
  - LabVIEW, MATLAB, C/C++, Visual Basic, Visual Studio.NET

### IO connector definition



### Introduction

The ADLINK PXle-9848/9848H is an 8-channel, 14-bit, 100 MS/s digitizer delivering both high-accuracy measurement results and high-dynamic performance. With a PXI Express bus interface and ample onboard acquisition memory up to 512 MB, the PXle-9848/9848H can easily manage simultaneous 8-CH data streaming. High density and high speed digitizer features ideally position the PXle-9848/9848H for applications such as LIDAR, radar signal acquisition, and PSU (Power Supply Unit) testing applications.

The PXle-9848 provides a flexible set of input ranges from  $\pm 0.2$  V to  $\pm 2$  V, software selectable 50  $\Omega$  or 1 M $\Omega$  input impedance, a wide variety of triggering options and tight synchronization capability, all maximizing convenience of use. In addition, ADLINK provides the PXle-9848H, features a x15/x50 signal conditioning module providing both high input voltage range of  $\pm 100$  V and high dynamic performance, delivering the optimum solution to measurement range expansion in a PXI system.

### Highlights

#### Flexible Use Options

The PXle-9848 provides a flexible input range from  $\pm 0.2$  V to  $\pm 2$  V, software selectable 50  $\Omega$  or 1 M $\Omega$  input impedance, a wide variety of triggering options, and tight synchronization capability, all maximizing convenience of use.

#### High Density Simultaneous 8-CH Data Streaming

Benefiting from PXle architecture, the PXle-9848 easily manages simultaneous 8-CH data streaming. Users can synchronize multiple PXle-9848 digitizers to mount a test system providing up to 64 channels in a single 9-slot PXI Express chassis.

#### Extra Buffering

The PXle-9848 provides built-in memory up to 512 MB for massive data storage, enabling users to extend acquisition for preset durations.

#### x15/x50 Signal Conditioning Module of PXle-9848H

The PXle-9848H's signal conditioning module provides 8 simultaneous analog inputs and 15:1 or 50:1 attenuation ratio, implemented with solid product design and strict verification testing to ensure maximum performance, thereby enabling the high dynamic performance of 63.5 dB SFDR and 55.5 dB SINAD while supporting high input voltage range of  $\pm 100$  V.



Equipped with ADLINK PXES-2590 PXle chassis and PXle-9848 modules, high density testing system with up to 64 channels can be implemented. Note: For PXES-2590 details, please refer to pages 1-13.



PXle-9848H

### Specifications

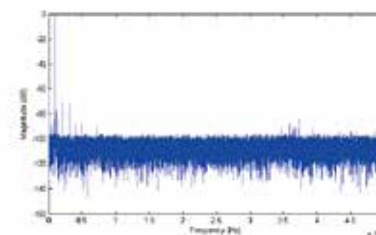
#### Analog Input

- Number of channels: 8 single-ended
- Input impedance: 50  $\Omega$  or 1 M $\Omega$ , software selectable
- Input Coupling: AC or DC, software selectable
- Input signal range:  $\pm 0.2$  V or  $\pm 2$  V, or  $\pm 100$  V Max (PXle-9848H)
- Overvoltage protection:  $\pm 5$  V
- ADC resolution: 14 bits, 1 in 16384
- Crosstalk: from DC to 1 MHz, for all input ranges

| PXle-9848 | PXle-9848H |
|-----------|------------|
| < -80 dB  | < -60 dB   |

- -3 dB bandwidth:

| PXle-9848 | PXle-9848H (15:1) | PXle-9848H (50:1) |
|-----------|-------------------|-------------------|
| 100 MHz   | 45 MHz            | 35 MHz            |



Typical values are measured using 1 MHz sine wave input with amplitude at -1 dB of full scale on a  $\pm 2$  V range. Acquired data lengths are in 64k points at 100 MS/s sampling rate, calculated with Hanning window FFT.

## ■ Offset error:

| PXIe-9848 | PXIe-9848H |
|-----------|------------|
| < ± 1 mV  | < ± 2 mV   |

## ■ Gain error:

| PXIe-9848 | PXIe-9848H |
|-----------|------------|
| < ± 0.5%  | < ± 1%     |

## ■ System noise: Standard Deviation

| Impedance | PXIe-9848 | PXIe-9848H (15:1) | PXIe-9848H (50:1) |
|-----------|-----------|-------------------|-------------------|
| 1 MΩ      | < 18 LSB  | < 38 LSB          | < 25 LSB          |
| 50 Ω      | < 15 LSB  | Not supported     | Not supported     |

## ■ Spectral Characteristics

- Sampling rate: 100 MS/s, 1 MHz -1 dBFS input signal

|       | PXIe-9848  | PXIe-9848H (15:1) | PXIe-9848H (50:1) |
|-------|------------|-------------------|-------------------|
| SINAD | 65 dB      | 55 dB             | 58 dB             |
| SNR   | 66 dB      | 55 dB             | 58 dB             |
| THD   | -72 dB     | -75 dB            | -78 dB            |
| ENOB  | 10.58 bits | 9.0 bits          | 9.5 bits          |
| SFDR  | 74 dB      | 59 dB             | 68 dB             |

- Passband flatness: DC to 10 MHz (without 20 MHz digital filter)

| Impedance | PXIe-9848  | PXIe-9848H (15:1) | PXIe-9848H (50:1) |
|-----------|------------|-------------------|-------------------|
| 1 MΩ      | < ± 1 dB   | < ± 0.4 dB        | < ± 0.4 dB        |
| 50 Ω      | < ± 0.2 dB | Not supported     | Not supported     |

- Additional Characteristics for Attenuator

| Impedance | 15:1     | 50:1   |
|-----------|----------|--------|
| 1 MΩ      | 1 MΩ     | 920 kΩ |
| 50 Ω      | 13.75 pF | 15 pF  |

## Trigger

## ■ Trigger Source

- Software
- External digital trigger
- Analog trigger from CH0 ~ CH7
- PXI\_STAR
- PXI trigger bus [0..7]
- PXIe\_DSTARB

## ■ Trigger Modes

- Post-trigger
- Pre-trigger
- Middle trigger
- Delay trigger

## ■ External Digital Trigger Input

- Source: Front panel SMB connector
- Configurable threshold: 0.8 mV to 3.3 V, default 1.67 V
- Maximum input overload: -0.5 V to +5.5 V
- Trigger polarity: rising or falling edge
- Pulse width: 20 ns minimum

## Timebase

## ■ Sample clock source

- Internal: on-board clock (oscillator)
- External: PXI\_CLK10 or PXIe\_CLK100
- Timebase frequency: 100 MHz
- Sampling rate: 100 MS/s to 1025.9 S/s
- Internal timebase accuracy: < ± 25 ppm

## Data Storage and Transfer

- 512 MB onboard memory, shared among the eight analog inputs (64 MB/per channel)
- Scatter-Gather DMA data transfer

## Onboard Reference

- +2.5 V onboard reference voltage
- < 3.0 ppm/°C reference temperature drift
- 15 minutes recommended warm-up

## General Specifications

- I/O Connector:
  - SMB x 8 for analog inputs
  - SMB x 1 for external digital input
- Dimensions (not including connectors):
  - 160 (W) x 100 (H) mm (6.24" x 3.9") (PXIe-9848)
  - 271.24 (W) x 100 (H) mm (10.57" x 3.9") (PXIe-9848H)
- Bus Interface:
  - PCI Express gen 1 x4
- Ambient Temperature (Operational):
  - 0°C to 55°C (32°F to 131°F)
- Ambient Temperature (Storage):
  - -20°C to 80°C (-4°F to 176°F)
- Relative Humidity:
  - 10% to 90%, non-condensing
- Power consumption:

| Power Rail | Standby current (mA) | Full load (mA) |
|------------|----------------------|----------------|
| +3.3 V     | 5350                 | 5900           |
| +12 V      | 470                  | 500            |

## Certifications

- EMC/EMI: CE, FCC Class A

## Ordering Information

## ■ PXIe-9848

8-CH 14-Bit 100 MS/s High-Speed PXI Express Digitizer

## ■ PXIe-9848H

8-CH 14-Bit 100 MS/s High Speed PXI Express Digitizer with x15/x50 attenuator

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