

PCIE-1843 20MS/s/ch, 14-bit, 8-ch Analog Input PCIe Card

PCIE-1843L 20MS/s/ch, 14-bit, 4-ch Analog Input PCIe Card

Startup Manual

Packing List

Before installation, please make sure that you have received the following:

- PCIE-1843 DAQ card
- Quick Start Manual

If anything is missing or damaged, contact your distributor or sales representative immediately.

User Manual

For more detailed information on this product, please refer to the PCIE-1843 User Manual on Advantech Support Portal: <https://support.advantech.com>.

Declaration of Conformity

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user is required to correct interference at his own expense.

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

For more information on this and other Advantech products, please visit our website at:

<http://www.advantech.com>

For technical support and service, please visit our support website at:

<http://support.advantech.com>

This manual is for the PCIE-1843 and PCIE-1843L.

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Overview

The PCIE-1843 is a high-resolution, high-channel-count analog input PCIe card. It provides 4 or 8 channels of simultaneous voltage measurements, with up to 20 MS/s sampling rate and 14-bit resolution for analog inputs. The card features a variety of input ranges designed for precise voltage measurement. It is well suited for use in most industrial applications.

Specifications

Analog Input

- **Channels:** 4/8 differential
- **Analog-to-digital converter (ADC) resolution:** 14-bit
- **Input coupling:** DC
- **Input range:** ± 10 V, ± 5 V, ± 2.5 V, or ± 1 V, software configurable per channel
- **Maximum input voltage:** ± 10 V
- **Acquisition type:** Instant or buffered, software configurable
- **Buffered acquisition:**
 - Enabled channel combination: Each channel can be enabled/disabled independently by software
 - Sample clock rate: 20 MHz max., for all channels, simultaneous sampling, software configurable

Triggers

- **Trigger action:** Start, delay to start, stop, or delay to stop
- **Trigger delay range:** 0 ~ 16,777,215 samples
- **Sample number:** 0 ~ 16,777,215 samples

Analog Trigger

- **Source:** One of the analog input channels, software configurable
- **Input range:** Full scale of analog input range
- **Resolution:** 14-bit
- **Minimum width:** 1/(sample clock rate)

Specifications (Cont.)

Digital Trigger

- **Source:** 1 x External pins
- **Input logic level:**
 - Logic high: 2.0 V min.
 - Logic low: 0.8 V max.
- **Working voltage:** -0.25 V ~ 5.25 V
- **Polarity:** Rising edge or falling edge, software configurable
- **Input protection voltage:** -0.5 V ~ 6.5 V
- **Pull-down resistor:** 10 kΩ
- **Minimum width:** 100 ns

General

- **Bus Type:** PCI Express x4
- **I/O connectors:** SMA
- **Dimensions (L x H):** 167 x 111 x 18 mm³ (6.57 x 4.37 x 0.7 in³)
- **Operating Temperature:** 0 ~ 60°C (32 ~ 140°F)
- **Storage Temperature:** -20 ~ 70°C (-4 ~ 158°F)
- **Storage Humidity:** 5 ~ 95 % RH, non-condensing

Driver Installation

The product's user manual, drivers, and programming SDK are available on the Advantech website, and can be accessed using the link below. Simply search by product name — "PCIE-1843".

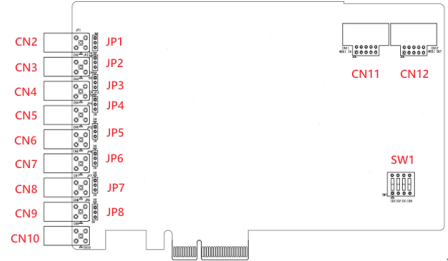
<http://support.advantech.com.tw>

Hardware Installation

1. Turn off your computer and unplug the power cord and cables BEFORE installing or removing any components.
2. Remove the cover of your computer.
3. Remove the slot cover on the back panel of your computer.
4. Touch the metal part on the surface of your computer to neutralize the static electricity that might be on your body.
5. Insert the PCIE-1843 card into a PCI Express slot. Hold the card only by its edges and carefully align it with the slot. Insert the card firmly into place. Use of excessive force must be avoided; otherwise, the card might be damaged.
6. Fasten the bracket of the PCIE-1843 card on the back-panel rail of the computer with screws.
7. Connect appropriate accessories (such as source/sync signal cables, wiring terminals, etc. if necessary) to the card.
8. Replace the cover of your computer chassis. Re-connect the cables you removed in step 1.
9. Plug in the power cord and turn on the computer.

Card Layout and Settings

Card Layout



List of Connectors and Switches

Component	Description	Function
JP1-8	Jumper for impedance	Impedance setting
CN2-10	SMA Connector	Main-function signal connection
CN11	MDSI IN	Interface for MDSI synchronization
CN12	MDSI OUT	Interface for MDSI synchronization
SW1	Board ID (BID)	Board ID function

Switch (SW1)

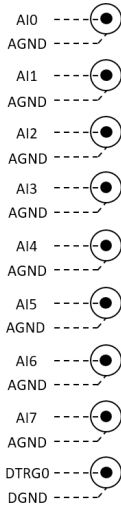
- SW1, Board ID

Board ID	Switch Position			
	1	2	3	4
0*	UP	UP	UP	UP
1	UP	UP	UP	DOWN
2	UP	UP	DOWN	UP
3	UP	UP	DOWN	DOWN
4	UP	DOWN	UP	UP
5	UP	DOWN	UP	DOWN
6	UP	DOWN	DOWN	UP
7	UP	DOWN	DOWN	DOWN
8	DOWN	UP	UP	UP
9	DOWN	UP	UP	DOWN
10	DOWN	UP	DOWN	UP
11	DOWN	UP	DOWN	DOWN
12	DOWN	DOWN	UP	UP
13	DOWN	DOWN	UP	DOWN
14	DOWN	DOWN	DOWN	UP
15	DOWN	DOWN	DOWN	DOWN

* Default setting.

Pin Assignment

• SMA connectors



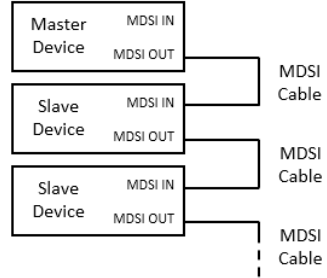
List of Pin Assignments

Pin Name	Description
A10	Analog input 0 terminal.
A11	Analog input 1 terminal.
A12	Analog input 2 terminal.
A13	Analog input 3 terminal.
A14	Analog input 4 terminal.
A15	Analog input 5 terminal.
A16	Analog input 6 terminal.
A17	Analog input 7 terminal.
AGND	Ground terminals for analog signals.
DTRG0	Digital Trigger. The pin is the digital input. It is used to start or stop a data acquisition.
DGND	Ground terminals for digital signals.

Pin Assignment (Cont.)

- CN11 & CN12, MDSI (multi-device synchronization interface)

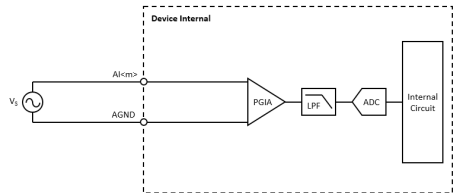
The MDSI provides synchronization function over single cabling. CN11 is MDSI input connector, and CN12 is MDSI output connector. Below are the topologies and software settings in order to enable this feature.



Card	Master	Slave
Convert Clock Source	Internal Clock	External Digital Clock from MDSI pin
Trigger Source	None One of AI channels External Digital Trigger 0/1	MDSI Trigger 0/1

Signal Connections

Analog Input



Digital Trigger

