PCIE-1884 32-bit, 4-Ch Encoder Counter PCI Express Card
Startup Manual

Packing List

Before card installation, please ensure that the following items are included in your shipment:

1. 1 x PCIE-1884 card
2. 1 x Startup manual

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

User Manual

For more detailed information about this product, refer to the PCIE-1884 user manual provided on the DVD ROM (PDF format). DVD:\Documents\Hardware Manuals\PCIE

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 such cases, users are required to correct the interference at their own expense.

CE

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

For more information about this or other Advantech products, please visit our website at

http://www.advantech.com

For technical support services, please visit our support website at

http://support.advantech.com

This manual is for PCIE-1884.

Part No. 2041188400 Edition 1
October 2018

Specifications

Counter

Channels	4 channels (independent)	
Resolution	32-bit	
Digital Input Filter	1.28 us, 10.24 us, 163.84 us, or 1.31 ms (each channel can be individually enabled/disabled)	
Counter Measurements	Event counting, frequency measurement, pulse width measurement	
Position Measurements	Quadrature encoding (X1, X2, and X4; Channel Z reload), two-pulse encoding, signed pulse encoding	
Output Applications	One shot, timer/pulse, pulse width modulation, position comparison	
Preload FIFO Size	1024 values	
Isolation Protection	2500 V_{DC}	
Base Clock	Internal 20 MHz or external clock (10 MHz max.) Selectable via software	
Output Frequency	Max. 10 MHz	
Input Voltage (Single Ended)	Low	0.8 V max.
	High	2.8 V min. (12 V max.)
Input Voltage (Differential)	Low	"CH+"-"CH-" < -0.5 V max.
	High	"CH+"-"CH-" > 0.5 V min.
	Max. Input Voltage	±12 V
Counter Output (Shared with ID/O)	Low	0.8 V max. @+24mA
	High	2.0 V min. @ -24mA
Error in Advanced Functions	Frequency Measurement	0.1% when input signal frequency ≥ 40 KHz
	Pulse Width Measurement	0.1% when input signal frequency ≤ 40 KHz
	Pulse Output	within 2% when output frequency > 1 MHz
	PWM Output	within 2% when output frequency > 1 MHz

Specifications (Cont.)

Digital Input

Channels	4 (shared with CNTn_SCLK pins)	
Isolation Protection	2,500 V_{DC}	
Opto-Isolator Response	100 ns	
Input Voltage	Logic 0	2V max.
	Logic 1	5 V min. (50 V max.)

Digital Output

Channels	4 (shared with CNTn_OUT pins)
Isolation Protection	2,500 V_{DC}
Opto-Isolator Response	100 ns
Output Type	5 V/TTL
Sink/Source Current	24 mA max.

General

I/O Connector Type	37-pin D-sub female connector	
Dimensions	167.7 x 100 mm (6.6 x 3.9 in)	
Power Consumption	Typical	+3.3 V @ 290 mA +12 V @ 95 mA
	Max	+3.3 V @ 360 mA +12 V @ 245 mA
Temperature	Operating	0 ~ 60 °C (32 ~ 158 °F)
	Storage	-20 ~ 70 °C (-4 ~ 185 °F)
Relative Humidity	Operating	5 ~ 85% RH non-condensing
	Storage	5 ~ 95% RH non-condensing
Form Factor	PCI Express x1	

Board ID Switch

PCIE-1884 is equipped with a built-in DIP switch (SW1) for defining the board ID of each module. When multiple cards are installed on the same chassis, the board ID switch can be used to identify the device number of each card.

SW1	Position 1	Position 2	Position 3	Position 4
Board ID	ID3	ID2	ID1	ID0
15	OFF	OFF	OFF	OFF
14	OFF	OFF	OFF	ON
13	OFF	OFF	ON	OFF
:	:	:	:	:
1	ON	ON	ON	OFF
0*	ON	ON	ON	ON

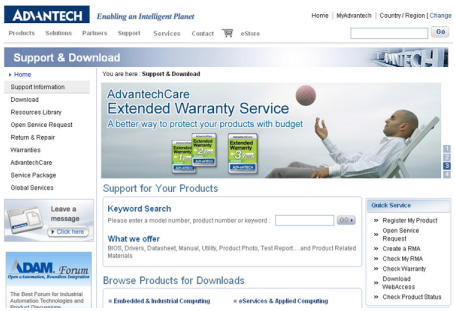
* The default setting is 0.

Installation

Software Installation

PCIE-1884 is a bridge input multifunction card. 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 the product name "PCIE-1884".

http://support.advantech.com.tw



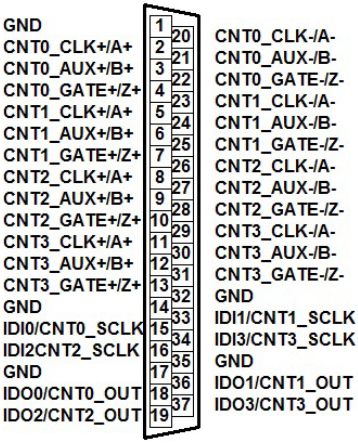
Hardware Installation

After the device driver is installed, you can now install the PCIE-1884 card in your computer.

Please follow the steps below to install the PCIE-1884 card.

1. Touch any metal part of your computer to neutralize the static electricity that may be in your body.
2. Plug the card into a PCI Express slot. Do not use excessive force to avoid damaging the card.

Pin Assignments



Pin Assignments

I/O Connector Signal Descriptions			
Pin Name	**Type**	**Pin#**	**Description**
Counter			
CNT0_CLK+/A+	I	2	Positive input of clock input (general purpose counter) or signal A input (encoder counter) of counter channel 0
CNT0_CLK-/A-	I	20	Negative input of clock input (general purpose counter) or signal A input (encoder counter) of counter channel 0
CNT1_CLK+/A+	I	5	Positive input of clock input (general purpose counter) or signal A input (encoder counter) of counter channel 1
CNT1_CLK-/A-	I	23	Negative input of clock input (general purpose counter) or signal A input (encoder counter) of counter channel 1
CNT2_CLK+/A+	I	8	Positive input of clock input (general purpose counter) or signal A input (encoder counter) of counter channel 2
CNT2_CLK-/A-	I	26	Negative input of clock input (general purpose counter) or signal A input (encoder counter) of counter channel 2
CNT3_CLK+/A+	I	11	Positive input of clock input (general purpose counter) or signal A input (encoder counter) of counter channel 3
CNT3_CLK-/A-	I	29	Negative input of clock input (general purpose counter) or signal A input (encoder counter) of counter channel 3
CNT0_AUX+/B+	I	3	Positive input of signal B input (encoder counter) of counter channel 0
CNT0_AUX-/B-	I	21	Negative input of signal B input (encoder counter) of counter channel 0
CNT1_AUX+/B+	I	6	Positive input of signal B input (encoder counter) of counter channel 1
CNT1_AUX-/B-	I	24	Negative input of signal B input (encoder counter) of counter channel 1
CNT2_AUX+/B+	I	9	Positive input of signal B input (encoder counter) of counter channel 2
CNT2_AUX-/B-	I	27	Negative input of signal B input (encoder counter) of counter channel 2
CNT3_AUX+/B+	I	12	Positive input of signal B input (encoder counter) of counter channel 3
CNT3_AUX-/B-	I	30	Negative input of signal B input (encoder counter) of counter channel 3
CNT0_GATE+/Z+	I	4	Positive input of gate input (general purpose counter) or signal Z input (encoder counter) of counter channel 0
CNT0_GATE-/Z-	I	22	Negative input of gate input (general purpose counter) or signal Z input (encoder counter) of counter channel 0
CNT1_GATE+/Z+	I	7	Positive input of gate input (general purpose counter) or signal Z input (encoder counter) of counter channel 1
CNT1_GATE-/Z-	I	25	Negative input of gate input (general purpose counter) or signal Z input (encoder counter) of counter channel 1
CNT2_GATE+/Z+	I	10	Positive input of gate input (general purpose counter) or signal Z input (encoder counter) of counter channel 2
CNT2_GATE-/Z-	I	28	Negative input of gate input (general purpose counter) or signal Z input (encoder counter) of counter channel 2
CNT3_GATE+/Z+	I	13	Positive input of gate input (general purpose counter) or signal Z input (encoder counter) of counter channel 3
CNT3_GATE-/Z-	I	31	Negative input of gate input (general purpose counter) or signal Z input (encoder counter) of counter channel 3
IDI0/CNT0_SCLK	I	15	Isolated digital input channel 0 or sample clock input (general purpose counter) or (encoder counter) of counter channel 0
IDI1/CNT1_SCLK	I	33	Isolated digital input channel 1 or sample clock input (general purpose counter) or (encoder counter) of counter channel 1

Pin Assignments (Cont.)

IDI2/CNT2_SCLK	I	16	Isolated digital input channel 2 or sample clock input (general purpose counter) or (encoder counter) of counter channel 2
IDI3/CNT3_SCLK	I	34	Isolated digital input channel 3 or sample clock input (general purpose counter) or (encoder counter) of counter channel 3
IDO0/CNT0_OUT	O	18	Isolated digital output channel 0 of output of counter channel 0
IDO1/CNT1_OUT	O	36	Isolated digital output channel 1 of output of counter channel 1
IDO2/CNT2_OUT	O	19	Isolated digital output channel 2 of output of counter channel 2
IDO3/CNT3_OUT	O	37	Isolated digital output channel 3 of output of counter channel 3
Power and Ground			
GND	-	1, 14, 17, 32, 35	Reference ground for all signals