



## PCI-1602U

Universal PCI, 100 kS/s, 32-ch, 16-bit Analog Input  
Multifunction Board (8 K word FIFO)

## PCI-1602FU

Universal PCI, 200 kS/s, 32-ch, 16-bit Analog Input  
Multifunction Board (8 K word FIFO)

### Introduction

The PCI-1602U/FU is a high-performance multifunction card providing high-speed Analog and Digital I/O functions. The PCI-1602U/FU is based on the Universal PCI interface, supporting both the 3.3 V and the 5 V PCI bus, and features a continuous 100 kS/s (200 kS/s for the F version) 16-bit resolution AD converter, an 8 K-sample hardware FIFO, a MagicScan controller (for multi-channel scanning), a 2-channel 16-bit DA converter, and 16-channel Digital Input and 16-channel Digital Output.

The PCI-1602U/FU provides either 32-channel single-ended or 16-channel differential Analog Inputs that are jumper selectable, and a programmable high-speed PGA that is equipped for gain controls (1, 2, 4 and 8). The PCI-1602U/FU is fully compatible with the PCI-1602/F, and is designed as a direct replacement without requiring any modification to the software or the driver.

The PCI-1602U/FU also includes an onboard Card ID switch that enables the board to be recognized via software if two or more PCI-1602U/FU cards are installed in the same computer. The pull-high/low resistors allow the DI status to be predefined instead of remaining floating if the DI channels are disconnected or interrupted.

### Pin Assignments

Pin Assignment	Terminal No.	Pin Assignment	Pin Assignment	Terminal No.	Pin Assignment
AI_0	01	20 AI_16	DO 0	01	DO 1
AI_1	02	21 AI_17	DO 2	03	DO 3
AI_2	03	22 AI_18	DO 4	05	DO 5
AI_3	04	23 AI_19	DO 6	07	DO 7
AI_4	05	24 AI_20	DO 8	09	DO 9
AI_5	06	25 AI_21	DO 10	10	DO 10
AI_6	07	26 AI_22	DO 12	12	DO 14
AI_7	08	27 AI_23	DO 14	14	DO 16
AI_8	09	28 AI_24	GND	16	DO 18
AI_9	10	29 AI_25	+5 V	18	DO 20
AI_10	11	30 AI_26			+12 V
AI_11	12	31 AI_27			
AI_12	13	32 AI_28			
AI_13	14	33 AI_29			
AI_14	15	34 AI_30			
AI_15	16	35 AI_31			
A.GND	17	36 Da2 out			
Da1 out	18	37 D.GND			
Ext_Trg	19				

### Features

- Universal PCI (3.3 V/5 V) Interface
- Supports Card ID (SMD Switch)
- 2-channel, 12-bit Analog Output
- 16-channel 5 V/TTL Digital Output
  - Pull-high and Pull-low Resistors for DI Channels
- 16-channel 5 V/TTL Digital Input
  - 32 Single-ended/16 Differential Analog Input Channels
    - 12-bit, 100 kS/s or 200 kS/s AD Converter
    - Built-in MagicScan Controller
    - Internal Trigger: Software-trigger, Pacer-trigger
    - External Trigger: Post-trigger, Pre-trigger, Middle-trigger
- High-speed data transfer rate up to 2.1 M words/sec.



### Software

#### Drivers

- 32/64-bit Windows XP/2003/2008/7/8/10
- Linux  DASYLab

#### Sample Programs

- DOS Lib and TC/BC/MSC Demo  LabVIEW Toolkit
- VB/VC/Delphi/BCB/VB.NET/C#.NET/VC.NET/MATLAB Demo

### Hardware Specifications

Model	PCI-1602U	PCI-1602FU
<b>Analog Input</b>		
Channels	32 Single-ended/16 Differential	
AD Conversion	16-bit, 2 μs Conversion Time	
Accuracy	0.01% of FSR ±1 LSB @ 25 °C, ±10 V	
FIFO Size	8192 Samples	
Sampling Rate	100 kS/s	200 kS/s
<b>Analog Output</b>		
Channels	2	
Resolution	12-bit	
Accuracy	0.06% of FSR ±1 LSB @ 25°C, ±10 V	
Output Driving	±5 mA	
Output Range	Bipolar: ±5 V, ±10 V	
<b>Digital I/O</b>		
Channels	DI	16, 5 V/TTL
	DO	16, 5 V/TTL
Input Voltage	Logic 0: 0.8 V Max.; Logic 1: 2.0 V Min.	
Output Voltage	Logic 0: 0.4 V Max.; Logic 1: 2.4 V Min.	
Output Capability	Sink: 2.4 mA @ 0.8 V; Source: 0.8 mA @ 2.0 V	
<b>Timer/Counter</b>		
Channels	3	
Resolution	16-bit	
Input Frequency	10 MHz Max.	
Reference Clock	Internal: 8 MHz	
<b>General</b>		
Bus Type	3.3 V/5 V Universal PCI, 32-bit, 33 MHz	
Card ID	Yes (4-bit)	
Connectors	Female DB37 x 1, 20-pin Box Header x 2	
Power Consumption	300 mA @ +5 V	
Operating Temperature	0°C to +60°C	
Humidity	5 to 85% RH, Non-condensing	

### Ordering Information

<b>PCI-1602U CR</b>	Universal PCI, 100 kS/s, 32-ch, 16-bit Analog Input Multifunction Board (8 K word FIFO) (RoHS) Includes one CA-4002 D-Sub connector
<b>PCI-1602FU CR</b>	Universal PCI, 200 kS/s, 32-ch, 16-bit Analog Input Multifunction Board (8 K word FIFO) (RoHS) Includes one CA-4002 D-Sub connector

## Accessories

	ADP-20/PCI	Extender, Extended dual 20-pin flat-cable connector to PC slot window
	CA-2002	20-pin flat cable, 20 cm x 2
	CA-2010	20-pin flat cable, 1 M
	CA-2020	20-pin flat cable, 2 M.
	CA-3710	DB-37 Male-Male D-sub cable 1 M (Cable for Daughter Board (45°))
	CA-3710D	DB-37 Male-Male D-sub cable 1 M (Cable for Daughter Board (180°))
	CA-3715DM-H	DB-37 Male-Male Cable, 1.5 M, 180°. (RoHS)
	CA-3730DM-H	DB-37 Male-Male Cable, 3.0 M, 180°. (RoHS)
	CA-4002	37-pin Male D-sub connector with plastic cover.
	DB-1825	Analog Input Screw terminal Board
	DB-16P	Isolated Digital Input Daughter Board
	DB-16R	Relay Output Daughter Board
	DN-20/DN-20-381	20-pin DIN-RAIL mounting I/O connector board
	DN-37	DIN Rail Mounting 37-pin Connector
	125Ω, 0.1% DIP Resistors	125 Ω External Resistor for use with Current Input

