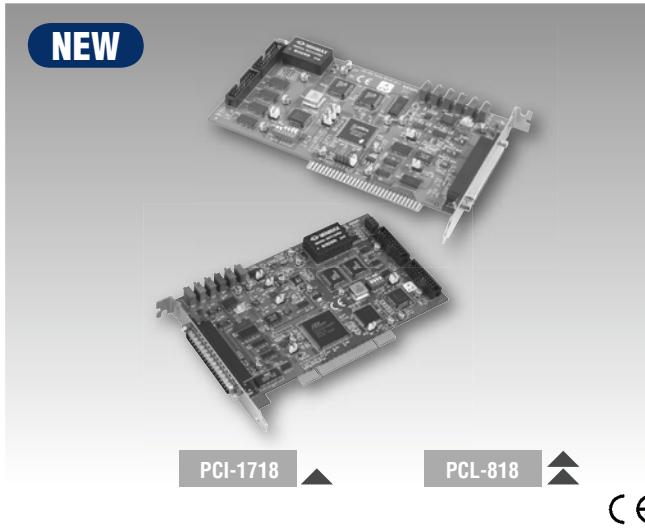


# PCI-1718HDU PCI-1718HGU PCL-818HD/HG

100 kS/s, 12-bit, PCI Multifunction Card  
100 kS/s, 12-bit High-Gain, PCI Multifunction Card

100 kS/s, 12-bit ISA Multifunction Cards



## Features

- 16 single-ended or 8 differential analog inputs
- 12-bit A/D converter
- Programmable gain for each input channel
- Automatic channel/gain/SD scanning
- On-board FIFO for AI
- One 12-bit analog output channel
- 16 digital inputs and 16 digital outputs
- Universal PCI bus (support 3.3 V or 5 V PCI bus signal)
- BoardID™ switch (PCI-1718 series only)

## Introduction

The PCI-1718 series and the PCL-818H series are 100 kS/s multifunction data acquisition cards that offer the five most desired measurement and control functions: 12-bit A/D conversion, 12-bit D/A conversion, digital input, digital output, and counter/timer. With 3-way compatibility, migration is possible from ISA bus to PCI bus. The HG cards have the same specifications as the HD cards, but also offer a special high-gain programmable instrument amplifier for reading very low input signals.

## Specifications

### Analog Input

- Channels** 16 single-ended /8 differential (SW programmable)
- Resolution** 12 bits
- Max. Sampling Rate** 100 kS/s
- Max. Sampling Rate (PCL-818HG)** (depends on input amplifier settling time and slew rate)
- Gain**

0.5, 1	100 kHz	<b>Channels</b> Single (input signal 3 V p-p)
0.5, 1, 5, 10	35 kHz	Multiple
50, 100	7 kHz	Multiple
500, 1000	1 kHz	Multiple
- FIFO Size** 1024 samples
- Overvoltage Protection** 30 Vp-p
- Input Impedance** PCI-1718 series: 100 MΩ  
PCL-818H series: 10 MΩ
- Sampling Modes** Software, on-board or external programmable pacer
- Input Range**

PCI-1718HDU PCL-818HD	Unipolar	N/A	0-10	0-5	0-2.5	0-1.25		
	Bipolar	±10	±5	±2.5	±1.25	±0.625		
Accuracy (% of FSR ±1LSB)	0.01	0.01	0.02	0.02	0.04			
PCI-1718HGU PCL-818HG	Unipolar	N/A	0-10	N/A	0-1	N/A	0-0.01	
	Bipolar	±10	±5	±1	±0.5	±0.1	±0.05	±0.01
Accuracy (% of FSR ±1LSB)	0.01	0.01	0.02	0.02	0.04	0.04	0.08	0.08

### Analog Output

- Channels** 1
- Resolution** 12 bits
- Output Rate** Static Update
- Output Range** (V, software programmable)

Internal Reference	Unipolar	0 ~ 5, 0 ~ 10
External Reference	PCI-1718H	0 ~ x V @ x V (-10 ≤ x ≤ 10)
	PCL-818H	0 ~ 10, 0 ~ -10 V

- Slew Rate** 10 V/μs
- Driving Capability** ±10 mA
- Output Impedance** 0.1 Ω max.
- Operation Mode** Software polling
- Accuracy** INLE: ±1/2 LSB

### Digital Input

- Channels** 16
- Compatibility** 5 V/TTL
- Input Voltage** Logic 0: 0.8 V max., Logic 1: 2 V min.

### Digital Output

- Channels** 16
- Compatibility** 5 V/TTL
- Output Voltage** Logic 0: 0.8 V max.  
Logic 1: 2.0 V min.
- Output Capability** Sink: 8.0 mA @ 0.8 V  
Source: -0.4 mA @ 2.0 V

### Counter/Timer

- **Channels** 1
- **Resolution** 16 bits
- **Compatibility** 5 V/TTL
- **Max. Input Frequency** 10 MHz
- **Reference Clock** Internal: 10 MHz  
External Clock Frequency: 10 MHz

### General

- **Bus Type** PCI-1718H: Universal PCI 2.2  
PCL-818H: ISA
- **I/O Connector** 37-pin DSUB female for analog connector  
20-pin box header for DI  
One 20-pin box header for DO
- **Dimensions** 175 x 100 mm (6.9" x 3.9")
- **Power Consumption** Typical: +5 V @ 850 mA  
Max.: +5 V @ 1 A
- **Operating Temperature** PCI-1718 series: 0 ~ 60 °C (32 ~ 158 °F)  
PCL-818H series: 0 ~ 50° C (32 ~ 122° F)
- **Storing Temperature** PCI-1718 series: -20 ~ 70 °C (-4 ~ 158 °F)  
PCL-818H series: -20 ~ 65° C (-4 ~ 149° F)
- **Operating Humidity** 5-85% RH non-condensing (refer to IEC 68-1,-2,-3)
- **Storing Humidity** 5-95% RH non-condensing (refer to IEC 68-1,-2,-3)
- **Certifications** CE

## Ordering Information

- **PCI-1718HDU** 12-bit multi-function card with PCI bus
- **PCI-1718HGU** 12-bit high-gain multi-function card with PCI bus
- **PCL-818HG** High-performance and High-gain multifunction card
- **PCL-818HD** High-performance half-size multifunction card with DB-37connector, user's manual and driver CD-ROM (cable not included)
- **PCL-10120-1** 20-pin flat cable, 1m
- **PCL-10120-2** 20-pin flat cable, 2m
- **PCL-10137-1** DB37 cable assembly, 1m
- **PCL-10137-2** DB37 cable assembly, 2m
- **PCL-10137-3** DB37 cable assembly, 3m
- **PCLD-8115** Industrial Wiring Terminal with CJC circuit and DB37 connector
- **PCLD-880** Industrial Wiring Terminal with DB37 connector

## Feature Details

### Plug & Play

The PCI-1718HDU/HGU uses a PCI controller to interface the card to the PCI bus. The controller fully implements the PCI bus specification Rev 2.2. All bus relative configurations, such as base address and interrupt assignment, are automatically controlled by software. No jumper or DIP switch is required for user configuration.

### Automatic Channel/Gain Scanning

PCI-1718HDU/HGU features an automatic channel/Gain scanning circuit. This circuit, instead of your software, controls multiplexer switching during sampling. On-board SRAM stores different gain and SD values for each channel. This combination lets user perform multi-channel high-speed sampling (up to 100kHz) with different gains and SD for each channel.

### On-board FIFO

There are 1 K samples FIFO for A/D (AI) on PCI-1718HDU/1718HGU. This is an important feature for faster data transfer and more predictable performance under Windows®.

### On Board Programmable Timer/Counter

PCI-1718HDU/1718HGU provides a programmable timer counter for generating pacer trigger for the A/D conversion. The timer/counter chip is 82C54, which includes three 16-bit counters of 10 MHz clock. One counter is used as an event counter for counting events coming from the input channel. The other two are cascaded together to make a 32-bit timer for pacer trigger time base.

## Pin Assignments

A/D S0	1	20	A/D S8
A/D S1	2	21	A/D S9
A/D S2	3	22	A/D S10
A/D S3	4	23	A/D S11
A/D S4	5	24	A/D S12
A/D S5	6	25	A/D S13
A/D S6	7	26	A/D S14
A/D S7	8	27	A/D S15
A.GND	9	28	A.GND
A.GND	10	29	A.GND
V.REF	11	30	DA0.OUT
S0*	12	31	DA0.VREF
+12 V	13	32	S1*
S2*	14	33	S3*
D.GND	15	34	D.GND
NC	16	35	EXT.TRIG
Counter 0 CLK	17	36	Counter 0 GATE
Counter 0 OUT	18	37	PACER
+5V	19		

CN1				CN2			
D/O 0	1	2	D/O 1	D/I 0	1	2	D/I 1
D/O 2	3	4	D/O 3	D/I 2	3	4	D/I 3
D/O 4	5	6	D/O 5	D/I 4	5	6	D/I 5
D/O 6	7	8	D/O 7	D/I 6	7	8	D/I 7
D/O 8	9	10	D/O 9	D/I 8	9	10	D/I 9
D/O 10	11	12	D/O 11	D/I 10	11	12	D/I 11
D/O 12	13	14	D/O 13	D/I 12	13	14	D/I 13
D/O 14	15	16	D/O 15	D/I 14	15	16	D/I 15
D.GND	17	18	D.GND	D.GND	17	18	D.GND
+5 V	19	20	+12 V	+5 V	19	20	+12 V