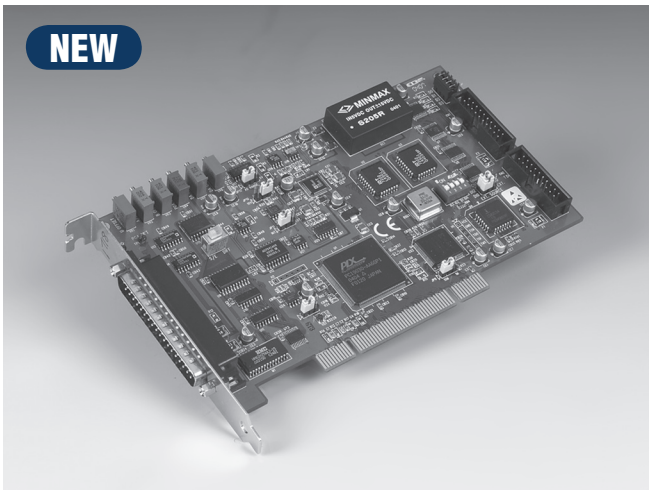
PCI-1718HDU
PCI-1718HGU

12-bit Multi-function Card with PCI BUS
12-bit High-gain Multi-function Card with PCI BUS (ISA Compatible)



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
- PCI-bus mastering for data transfer
- Universal PCI bus (support 3.3 V or 5 V PCI bus signal)
- BoardID™ switch

CE

Introduction

PCI-1718HDU/HGU is a multifunction data acquisition card based on the PCI bus. It offers 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.

PCI-Bus 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/ SD Scanning

PCI-1718HDU/HGU features an automatic channel/Gain/SD 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.

Specifications

Analog Input

- **Channels** 16 single-ended or 8 differential or combination
- **Resolution** 12-bit
- **FIFO Size** 1 K samples
- **Max. Sampling Rate** 100 kS/s

Input range and Gain List for PCI-1718HDU/ HGU	Gain	0.5	1	2		4		8	
	Unipolar	N/A	0~10	0~5		0~2.5		0~1.25	
	Bipolar	±10	±5	±2.5		±1.25		±0.625	
Input range and Gain List for PCI-1718HDU/ HGU	Gain	0.5	1	5	10	50	100	500	1000
	Unipolar	N/A	0~10	N/A	0~1	N/A	0~0.1	N/A	0~0.01
	Bipolar	±10	±5	±1	±0.5	±0.1	±0.05	±0.01	±0.005
PCI-1718HDU/ HGU PGA Bandwidth	Gain	0.5, 1		2		4		8	
	Bandwidth	5.0 MHz		4.0 MHz		1.3 MHz		0.6 MHz	

- **Common Mode Voltage** ±11 V max. (operational)
- **Max. Input voltage** ±15 V
- **Input Protection** 30 Vp-p
- **Input Impedance** 100 MΩ/10pF(Off); 100 MΩ/100pF(On)
- **Trigger Mode** Software, on-board or external programmable pacer

PCI-1718HDU/HGU Accuracy	DC	DNLE: ±1LSB				
		INLE: ±1LSB				
		Offset error: Adjustable to 0				
		Gain	0.5	1	2	4	8
		Gain error(% FSR)	0.01	0.01	0.02	0.02	0.04
	AC	THD: -80 dB				
		ENOB: 11 bits				

PCI-1718HDU/HGU Accuracy	DC	DNLE: ±1LSB					
		INLE: ±1LSB					
		Offset error: Adjustable to 0					
		Gain	0.5,1	5,10	50,100	500	1000
		Gain error(% FSR)	0.01	0.02	0.02	0.04	0.08
	AC	THD: -80 dB					
		ENOB: 11 bits					
External TTL Trigger Input	Low	0.8 V max.					
	High	2.0 V min.					

Analog Output

- **Channels** 1
- **Resolution** 12-bit
- **Max. Transfer Rate** 100 kS/s

Output Range (Internal & External Reference)	Using Internal Reference	0 ~ +5 V, 0 ~ +10 V
	Using External Reference	0 ~ x V @ x V (-10 ≤ x ≤ 10)
Accuracy	INLE	±1 LSB
	DNLE	±1 LSB (monotonic)
	Offset error	Adjustable to ±1 LSB
	Gain error	Adjustable to ±1 LSB
Dynamic Performance	Slew Rate	10 V/µs
	Settling Time	2µs to 0.01% of FSR

- **Driving Capability** ±10mA
- **Output Impedance** 0.1 Ω max.

Digital Input

Input Channels	16	
Input Voltage	Low	0.4 V max.
	High	2.4 V min.
Input Load	Low	0.4 V max.@ -0.2 mA
	High	2.7 V min.@ 20 µA

Digital Output

Output Channels	16	
Output Voltage	Low	0.4 V max.@ +8.0 mA (sink)
	High	2.4 V min.@-0.4 mA(source)

Counter/Timer

- **Counter Chip** 82C54 or equivalent
- **Channels** 3 channels, 2 channels are permanently configured as programmable pacers; 1 channel is free for user application
- **Resolution** 16 bit
- **Compatibility** TTL level
- **Base Clock** Channel 1: 10 MHz
  Channel 2: Takes input from output of channel 1
  Channel 0: Internal 100 kHz or external clock (10 MHz max.) selected by software
- **Max. Input Frequency** 10 MHz

Clock Input	Low	0.8 V max.
	High	2.0 V min.
Gate Input	Low	0.8 V max.
	High	2.0 V min.
Counter Output	Low	0.5 V max.@ +24 mA
	High	2.4 V min.@ -15 mA

General

- **I/O Connector Type** 37-pin DSUB female for Analog One 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

Temperature	Operating	0 ~ 60 °C (32 ~ 158 °F)
	Storage	-20 ~ 70 °C (-4 ~ 158 °F)
Relative Humidity	Operating	5~85%RH non-condensing (refer to IEC 68-1,-2,-3)
	Storage	5~95%RH non-condensing (refer to IEC 68-1,-2,-3)
Certification	CE certified	

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-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** Wiring terminal board CE

Pin Assignments