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Find the *Advantech PCL-818HG* at our website: ***Click HERE***

PCL-818 Series

High-Performance DAS Cards



PCL-818 Series

Introduction

The PCL-818 series is a family of high-performance, multifunction DAS cards that offer the five most desired measurement and control functions: 12-bit A/D conversion, D/A conversion, digital input, digital output and counter/timer.

Automatic Channel/Gain Scanning

All PCL-818 series cards feature an automatic channel/gain scanning circuit. This circuit, instead of your software, controls multiplexer switching during sampling. On-board SRAM stores different gain values for each channel. This combination lets you perform multichannel high-speed sampling (up to 100 kHz) with different gains for each channel and DMA data transfer.

Latest Technology

The PCL-818 series cards share a custom-designed 160-pin ASIC (Application Specific Integrated Circuit) chip. This chip has a gate count of over 7000 and utilizes 1.0 μm CMOS technology. This custom integration gives higher performance and reliability with lower power consumption on a smaller board.

Wide Selection with Migration Path

The PCL-818 series lets you choose the card that exactly matches your application and price range. The PCL-818L is the perfect choice if you are on a tight budget. It offers the best price/performance in the market. If you need more power, you can easily upgrade to any other card in the series. The PCL-818 series is connector compatible. All your programs will work with your new card, protecting your investment.

Common Features

- 16 single-ended or 8 differential analog inputs
- 12-bit A/D converter
- Programmable gain for each input channel
- Automatic channel/gain scanning with DMA
- 16 digital inputs and 16 digital outputs
- One 12-bit analog output channel
- Programmable pacer/counter
- Free DOS driver/Windows DLL driver included
- Software support from GENIE, ActiveDAQ, LabVIEW, and Windows 3.1/95/NT High Speed DLL drivers.

Common Specifications

Analog Input

- **Channels**: 16 single-ended or 8 differential
- **Resolution:** 12 bits
- **Input range selection**: Software controlled
- **Auto channel/gain scanning**
- **Triggering**: Software, pacer or external
- **Data transfer**: Program control, interrupt (IRQ 2 ~ 7) or DMA (Ch. 1 or 3)
- **Input impedance:** 10 MΩ
- **Input overvoltage**: ±30 V_{DC} max.

Analog Output (D/A Converter)

- **Channels**: One 12-bit (double-buffered)
- **Output range**:
  0 ~ +5 V or 0 ~ +10 V with internal reference
  0 ~ +10 V or 0 ~ -10 V with external reference

Digital Input/Output

- **Channels**: 16 inputs, 16 outputs (all TTL compatible)
- **Input voltage**: Low (0 ~ +0.8 V)
  High (min. +2.0 V)
- **Input load**: Low: +0.5 V @ 0.4 mA max.
  High: +2.7 V @ 0.05 mA max.
- **Output voltage**: Low: 0 ~ +0.4 V
  High: min. +2.4 V
- **Driving capacity**: Low: sink 8 mA @ 0.5 V max.
  High: source -0.4 mA @ 2.4 V min.

A/D Pacer and Counter (8254)

- **A/D pacer**: 32-bit with 10 MHz or 1 MHz time base
- **Max. and min. rates**: 2.5 MHz to 0.00023 Hz
- **Counter**: One 16-bit counter with 100 kHz time base

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PCL-818L / H

PCL-818L 40kHz DAS Card
PCL-818H General-purpose DA&C Card





PCL-818L 40-kHz DAS Card

The PCL-818L is the entry-level model in the PCL-818 series. We designed it with the cost-sensitive customer in mind. It offers the same functions as the rest of the series, except that it has a 40 kHz sampling rate and only accepts bipolar inputs. It is fully software and connector compatible with the PCL-818HD and PCL-818HG. This lets you migrate your applications to these higher performance cards without hardware or software changes.

The PCL-818LS Bundle

The PCL-818LS bundle consists of the PCL-818L card, the PCLD-8115 wiring terminal board and a DB-37 cable assembly. The PCLD-8115 accommodates on-board passive signal conditioning components (resistors and capacitors), allowing you to easily implement a low-pass filter, a voltage attenuator or a 4 ~ 20 mA voltage converter.

Specifications

- **Conversion time**: 25 µsec.
- **Input range (V)**: Bipolar: ±10, ±5, ±2.5, ±1.25, ±0.625
- **Maximum data throughput**: 40 kHz for all input ranges
- **Accuracy**:
  Gain = 0.5, 1 0.01% of FSR ±1 LSB
  Gain = 2, 4 0.02% of FSR ±1 LSB
  Gain = 8 0.04% of FSR ±1 LSB
- **Dimensions**: 155 x 100 mm (6.1" x 3.9")
- **A/D, D/A connector**: DB-37
- **I/O ports**: 16 consecutive bytes
- **Power consumption**:
  5 V @ 180 mA max., +12 V @ 100 mA max., -12 V @ 14 mA

PCL-818H General-purpose DA&C Card with 20-pin Connectors

The PCL-818H is a 100 kHz DAS card with standard PCL-818 series features. It attaches directly to signal-conditioning boards with 20-pin flat-cable connectors. The PCL-818H is a half-size card that uses the Advantech ASIC chip.

Specifications

Analog Input

- **Conversion time**: 8 µsec.
- **Input range (V)**:
  Bipolar: PCL-818H: ±10, ±5, ±2.5, ±1.25, ±0.625
  Unipolar PCL-818H: 0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25
- **Maximum data throughput**: 100 kHz
- **Accuracy**:
  Gain = 0.5, 1 0.01% of FSR ±1 LSB
  Gain = 2, 4 0.02% of FSR ±1 LSB
  Gain = 8 0.04% of FSR ±1 LSB
- **A/D, D/A connector**: 20-pin flat cable
- **I/O ports**: 16 consecutive bytes
- **Power Consumption**:
  +5 V @ 500 mA max.,
  +12 V @ 200 mA max.,
  -12 V @ 14 mA
- **Dimensions**: 185 x 100 mm (7.3" x 3.9")

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PCL-818HD / HG High-performance Multifunction DAS Cards





PCL-818HD 100 kHz A/D at All Input Ranges

The PCL-818HD has a guaranteed 100 kHz sampling speed and transfer speed at all gains (x 1, 2, 4 or 8, programmable) and input ranges. It features an on-board 1 Kword FIFO (First In First Out) buffer for faster data transfer and more predictable performance under Windows.

The PCL-818HD can perform 100 kHz A/D conversion with data streaming to disk using Windows application programs like DASYLab.

Specifications

Analog Input

- **Conversion time**: 8 µsec.
- **Input range (V):** Bipolar: ±10, ±5, ±2.5, ±1.25, ±0.625
  Unipolar: 0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25
- **Maximum data throughput**: 100 kHz for all input ranges
- **Accuracy**:
  Gain = 0.5, 1 0.01% of FSR ±1 LSB
  Gain = 2, 4 0.02% of FSR ±1 LSB
  Gain = 8 0.04% of FSR ±1 LSB

General

- **On-board memory**: 1 Kword FIFO for A/D. Can generate an interrupt when full or half full
- **Dimensions**: 185 x 100 mm (7.3" x 3.9")
- **A/D, D/A connector**: DB-37
- **I/O ports**: 32 bytes with FIFO active or 16 bytes with FIFO disabled
- **Power consumption**:
  5 V @ 500 mA max., +12 V @ 200 mA max., -12 V @ 14 mA

PCL-818HG Direct Thermocouple Measurement

The PCL-818HG offers the same functions as the PCL-818HD, but it features a special high-gain programmable instrument amplifier for reading very low level input signals (x 0.5, 1, 5, 10, 50, 100, 500 or 1000).

The PCL-818HG package includes a special wiring board (PCLD-8115) with a DB-37 connector and CJC. This combination lets you measure low-level thermocouple signals without an external signal-conditioning board.

Specifications

Analog Input

- **Conversion time**: 8 µsec.
- **Input range (V):**
  Bipolar: ±10, ±5, ±1, ±0.5, ±0.1, ±0.05, ±0.01, ±0.005
  Unipolar: 0 ~ 10, 0 ~ 1, 0 ~ 0.1, 0 ~ 0.01
- **Maximum data throughput**:
  (depends on input amplifier settling time and slew rate)

Gain	*Speed*	*Channels*
0.5, 1	100 kHz	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

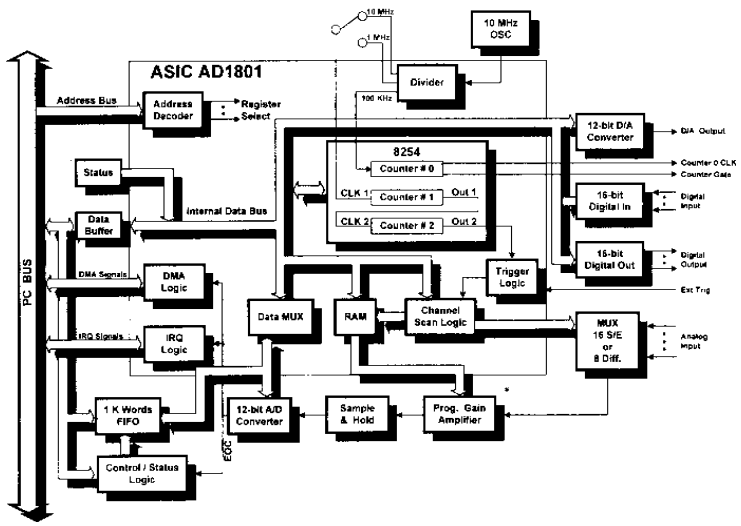
- **Accuracy**:
  Gain = 0.5, 1 0.01% of FSR ±1 LSB
  Gain = 5, 10 0.02% of FSR ±1 LSB
  Gain = 50, 100 0.04% of FSR ±1 LSB
  Gain = 500, 1000 0.08% of FSR ±1 LSB

General

See PCL-818HD

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Block Diagram (PCL-818HG)



Ordering Information

- ❑ **PCL-818L:** Low-cost high-performance half-size DAS card, user's manual and utility diskette with DOS/Windows drivers.
- ❑ **PCL-818LS:** PCL-818L with PCLD-8115 and cable assembly.
- ❑ **PCL-818HG:** High-performance high-gain half-size DAS card, user's manual and utility diskette with DOS/Windows drivers.
- ❑ **PCL-818HD:** High-performance half-size DAS card with DB-37 connector. Includes user's manual and utility diskette with DOS/Windows drivers.
- ❑ **PCL-818H:** High-performance half-size DAS card with 20-pin flat-cable connectors. Manual and utility disk with DOS/Windows drivers included.
- ❑ **PCLS-OCX:** ActiveX Control for data acquisition and control.

PCL-818 Series Quick-reference Table

Model	A/D speed	Unipolar input (V)	Bipolar input (V)	On-board memory	D/A chan.	Connector	Size	On-board DC/DC	Power consumption
PCL-818L	40 kHz	-	±10, ±5, ±2.5, ±1.25, ±0.625	-	1	DB-37	155 x 100 mm	-	< 1.4 W
PCL-818HD	100 kHz	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25	±10, ±5, ±2.5, ±1.25, ±0.625	1 K word FIFO	1	DB-37	185 x 100 mm	Yes	< 3.0 W
PCL-818HG	100 kHz	0 ~ 10, 0 ~ 1, 0 ~ 0.1, 0 ~ 0.01	±10, ±5, ±1, ±0.5, ±0.1, ±0.01, ±0.005	1 K word FIFO	1	DB-37	185 x 100 mm	Yes	< 2.8 W
PCL-818H	100 kHz	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25	±10, ±5, ±2.5, ±1.25, ±0.625	-	1	20-pin flat cable	185 x 100 mm	Yes	< 2.8 W

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