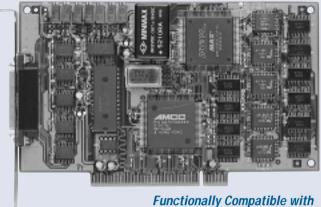# PCI-9118 Series

Features

- 32-bit PCI bus, plug & play
- 12-bit or 16-bit analog input resolution
- Up to 333KHz A/D sampling rate
- 16 single-ended or 8 differential analog input channels
- Bipolar or unipolar input signals
- 256-Sample Channel/Gain Queue
- Burst mode scanning
- Programmable gain selection:
  - X 1,2,4,8 (for 9118 DG/HR)
  - X 1,10,100,1000 (for 9118 HG)
- Two 12-bit high speed analog output channels
- 4 digital input/output channels
- Three A/D trigger sources: software trigger, programmable pacer trigger, and external pulse trigger
- 50-pin SCSI-II connector
- Compact, half size PCB

Functionally Compatible with METRA-BYTE DAS-1800

Introduction

The PCI-9118 Series is a family of high performance data acquisition boards with the PCI bus interface. All members of this family share common architecture and core features. It is an ideal DAQ card for high speed, gap-free data acquisition applications. The following unique features make the PCI-9118 suitable for high performance applications.

Channel/Gain Queue high speed scanning

A 256-Sample channel/gain queue on each PCI-9118 card allows high speed data acquisition with different gains on each channel and in non-sequential order using bus-mastering DMA and FIFO interrupt based on data transfer.

Gap-free/high performance in Windows Applications

The on-board 1024 locations of FIFO ensure that high-speed data acquisition can be maintained reliably under Windows O.S.

The data can be transferred through bus-mastering DMA with gap-free, continuous high throughput, even for a large amount of data.

Specifications

Analog Input (A/D)

- Converter and resolution:
  - 12-bit ADS7800 or equivalent (for PCI-9118DG/HG)
  - 16-bit ADS7805 or equivalent (for PCI-9118HR)
- Input channels: 16 single-ended or 8 differential
- Analog input range: (Software programmable)

  PCI-9118DG/HR
  - Bipolar: ±5V, ±2.5V, ±1.25V, ±0.625V
  - Unipolar: 0~10V, 0~5V, 0~2.5V, 0~1.25V

  PCI-9118HG
  - Bipolar: ±5V, ±0.5V, ±0.05V, ±0.005V
  - Unipolar: 0~10V, 0~1V, 0~0.1V, 0~0.01V

- Conversion time:
  - 3μ sec for PCI-9118DG/HG
  - 8μ sec for PCI-9118HR
- Over-voltage protection: Continuous ±35V maximum
- Input impedance: 10 MΩ
- Trigger mode: Software, Pacer, and External trigger
- Data transfer: Bus-mastering DMA, Program control, interrupt,
- Data throughput:
  - 333 KS/s max. for PCI-9118DG (single channel by DMA data transfer)
  - 333 KS/s max. for PCI-9118HG (single channel by DMA data transfer, 200Ks/s for multiplexing multi channels)
  - 110 KS/s max. for PCI-9118HR

	PCI-9118DG	PCI-9118HG	PCI-9118HR
Analog Inputs	16 single-ended or 8 differential	16 single-ended or 8 differential	16 single-ended or 8 differential
Maximum Throughput	330K Samples /s (single channel)	330K Samples /s (single channel)	100K Samples /s
Resolution	12-bit	12-bit	16-bit
Gain/Channel Queue	256	256	256
Input Range (Bipolar)	±5V, ±2.5V, ±1.25V, ±0.625V	±5V, ±0.5V, ±0.05V, ±0.005V	±5V, ±2.5V, ±1.25V, ±0.625V
Input Range (Unipolar)	0~10V, 0~5V, 0~2.5V, 0~1.25V	0~10V, 0~1V, 0~0.1V, 0~10mV	0~10V, 0~5V, 0~2.5V, 0~1.25V
D/A Channel	2-CH, 12-bit	2-CH, 12-bit	2-CH, 12-bit
Digital Input	4	4	4
Digital Output	4	4	4
Comment	Normal Gain	High Gain	High Resolution

Analog Output (D/A)

■ Number of channels: 2

■ Resolution: 12-bit

■ Output range:
  • Bipolar: -10V~10V
  • Unipolar: 0V~10V

■ Converter: B.B 2813 or equivalent, monolithic multiplying

■ Settling time:
  • 4.5 μ sec typical
  • 6 μ sec maximum

■ Control mode: Double buffered mode or transparency mode

■ Data format: 2's complement or Binary format

■ Linearity: ±1/2 bit LSB max

■ Current output rating: ±5 mA min.

■ Output impedance: 0.2 Ohm

Digital I/O (DIO)

■ Number of input channels: 4

■ Input voltage:
  • Low: Min. 0V; Max. 0.8V
  • High: Min. +2.0V

■ Input load:
  • Low: +0.5V@0.2mA max.
  • High: +2.7V@+20mA max.

■ Number of output channels: 4

■ Output voltage:
  • Low: Min. 0V; Max. 0.4V
  • High: Min. +2.4V

■ Driving capacity:
  • Low: Max. +0.5V at 8.0mA (Sink)
  • High: Min. 2.7V at 0.4mA (Source)

Programmable Timer / Counter

■ Device: 8254 or equivalent

■ A/D pacer: 32-bit timer (two 16-bit counters cascaded together) with a 4 MHz time base

■ Pacer frequency range: 0.00093 Hz ~ 1.0 MHz

■ Counter: One 16-bit counter for trigger counter

General Specifications

■ Connector: 50-pin SCSI-II connector

■ Operating temperature: 0˚ ~ 55˚C

■ Storage temperature: -20˚ ~ 80˚C

■ Humidity: 5 ~95%, non-condensing

■ Power consumption:

  ### PCI-9118DG/HG
  • +5V @ 450 mA typical
  • +12V @ 200 mA typical

PCI-9118HR
  • +5V @ 485 mA typical
  • +12V @ 180 mA typical

■ Dimension: 173mm x 102mm

Termination Boards

• DIN-50S

Ordering Information

PCI-9118HG
333KS/s High-Gain Multi-function DAS Card

PCI-9118DG
333KS/s High-Speed Multi-function DAS Card

PCI-9118HR
100KS/s High-Resolution Multi-function DAS Card

PCI-9118HG/D
PCI-9118HG + DIN-50S (includes 1m cable ACL-10250)

PCI-9118DG/D
PCI-9118DG + DIN-50S (includes 1m cable ACL-10250)

PCI-9118HR/D
PCI-9118HR + DIN-50S (includes 1m cable ACL-10250)

Note: The above products are shipped with software development kit for DOS/Win-95/98/NT/2000, PCIS-LVIEW , PCIS-VEE and DAQ Creator.

Pin Assignments for the 50-pin SCSI-type

U_CMMD (1)	(26) AI0/AIH0
AI8/AIL0 (2)	(27) AI1/AIH1
AI9/AIL1 (3)	(28) AI2/AIH2
AI10/AIL2 (4)	(29) AI3/AIH3
AI11/AIL3 (5)	(30) AI4/AIH4
AI12/AIL4 (6)	(31) AI5/AIH5
AI13/AIL5 (7)	(32) AI6/AIH0
AI14/AIL6 (8)	(33) AI7/AIH1
AI15/AIL7 (9)	(34) AGND
N/C (10)	(35) DAC0
N/C (11)	(36) DACI
N/C (12)	(37) N/C
+15V (13)	(38) -15V
DGND (14)	(39) ADGAIN2
D11 (15)	(40) DI0
D13 (16)	(41) DI2
D01 (17)	(42) DO0
D03 (18)	(43) DO2
DOSTB (19)	(44) EXTTRG
TGOUT (20)	(45) SSHO
ADCHN3 (21)	(46) TGIN
ADCHN5 (22)	(47) ADCHN4
ADCHN7 (23)	(48) ADCHN6
VCC (24)	(49) VCC
DGND (25)	(50) DGND

Data Acquisition Solutions