ADAC/5500™ Series

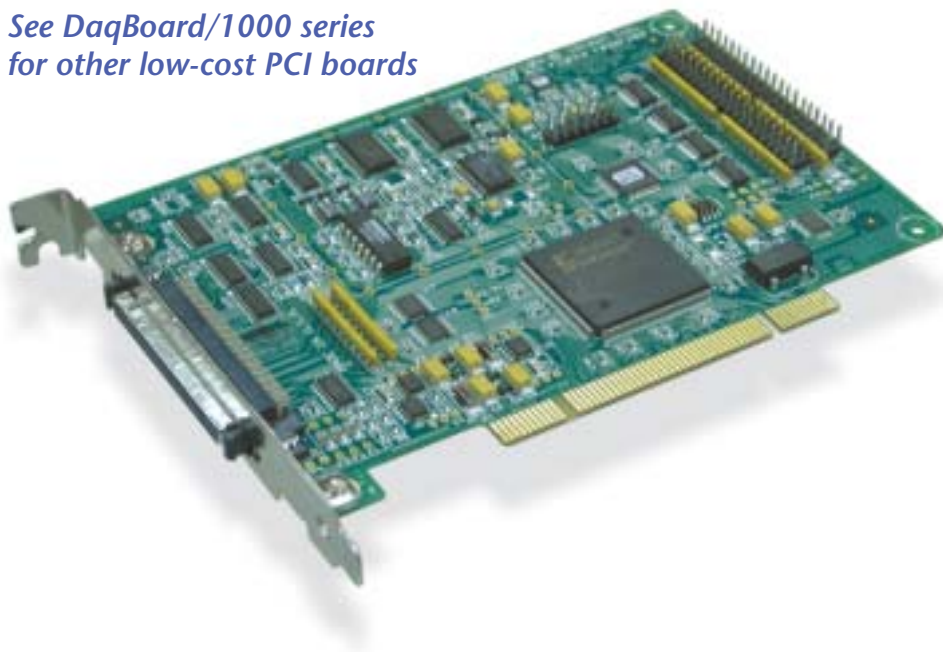## Low-Cost, 12-Bit PCI Data Acquisition Boards

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Features

- Low-cost, high-quality, multifunction PCI boards
- 12-bit, 100-kHz A/D converter
- 8 differential or 16 single-ended analog inputs (software selectable per channel)
- 100% digital calibration
- Two 16-bit analog outputs with wave-form capability
- 48 digital I/O lines
- Two counter input channels

Software

- Includes support for Visual Basic®, C/C++, and LabVIEW®
- PlotterX Plus™ *Out-of-the-Box*™ software included with all boards, providing full analog input capability, real time display, and ability to save directly to Excel™

The ADAC/5500™ series of PCI data acquisition boards provide a high quality and low-cost alternative to PCI boards from other suppliers. The ADAC/5500 series is ideally suited for OEM applications, and applications where external signal conditioning and expansion options are not required. By targeting these applications, we're able to offer the ADAC/5500 series boards at a very low cost, yet maintain high quality and performance that is comparable to our full-featured DaqBoard/2000 Series boards.

All boards feature plug-and-play operation (no jumpers or switches), digital calibration (no potentiometers), and DMA operation so that your PC's processor is free to perform other tasks while the ADAC/5500 series is streaming data directly to your memory or hard drive. Unlike other suppliers that require you to purchase drivers for an additional cost-per-board, the ADAC/5500 series includes Windows drivers for popular languages, as well as LabVIEW drivers.

The ADAC/5500 series of low-cost, multifunction PCI plug-in boards

ADAC/5500 Series Selection Chart			
Feature	ADAC/5500MF	ADAC/5501MF	ADAC/5501MF-V
Analog Inputs	8 single-ended	8 differential or 16 single-ended	8 differential or 16 single-ended
Analog Input Resolution	12 bit	12 bit	12 bit
A/D sample rate	100 kHz	100 kHz	100 kHz
Analog Outputs (16-bit)	0	0	2
Digital I/O	16	16/48*	16/48*
Counters (16-bit)	2	2	2

* 48 Digital I/O lines requires use of (2) CA-G17-ADAC cables

Software Support

ADAC/5500 series PCI boards are supported by 2 levels of software to suit any application or programming skill level.

PlotterX Plus™

Each ADAC board includes PlotterX Plus, an easy-to-use data acquisition and display package that requires no programming. PlotterX Plus allows you to acquire data from up to 16 analog input channels. Data can be displayed in real-time, logged to a file, and saved in Excel format for data manipulation and display.

Multiple PlotterX Plus packages can run simultaneously on a PC, allowing the use of multiple ADAC/5500 data acquisition boards. PlotterX Plus supports Windows®.
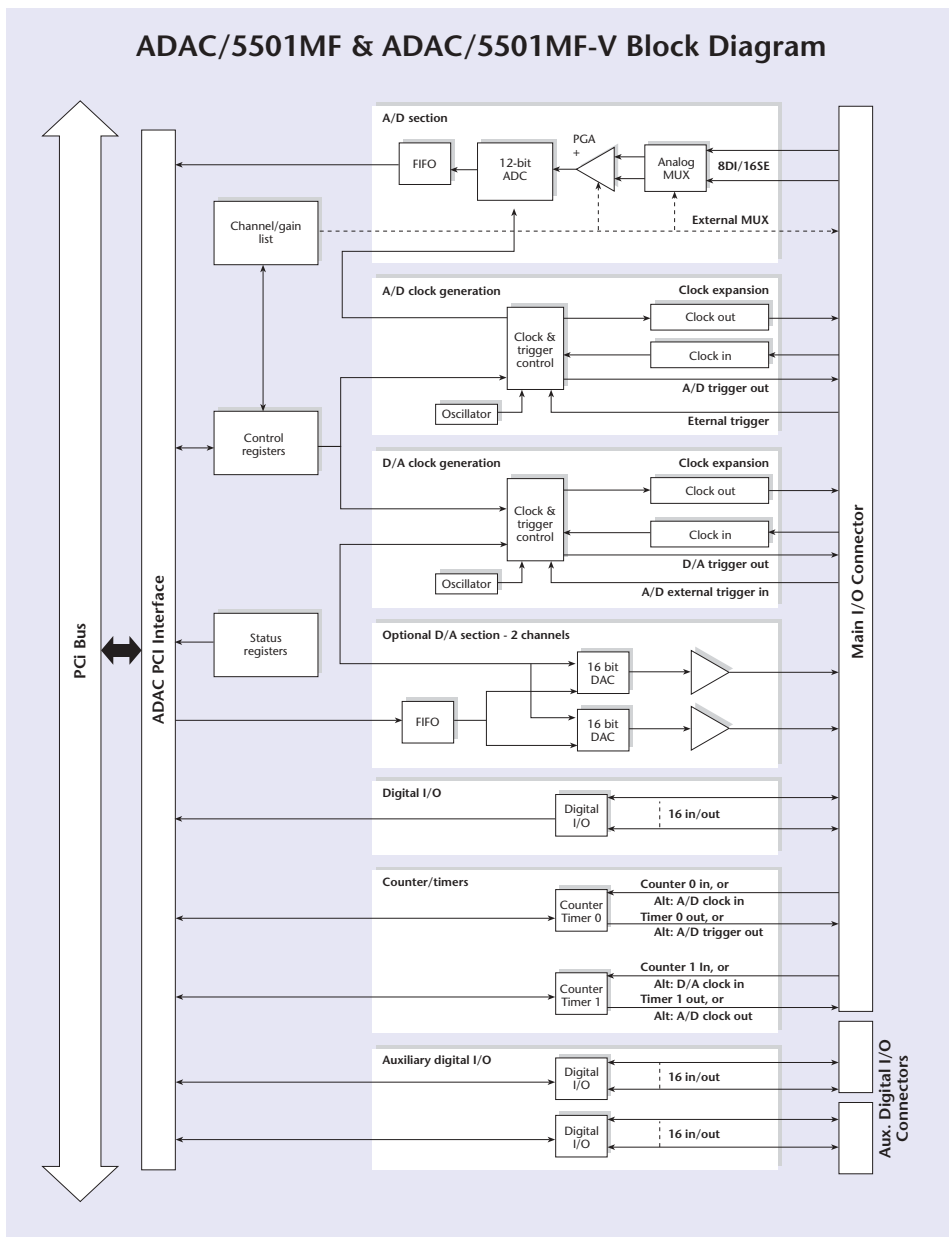
† CE pending

ADAC/5500™ Series
General Information

API Library, & LabVIEW® Drivers

ADLIB-WDM is a complete API library for Windows®, for C/C++ and Visual Basic®, and is included free with each ADAC/5500 series board. ADLIB-WDM includes an extensive user manual and detailed example programs for analog input, analog output, and digital I/O. In addition to the complete API library, drivers for LabVIEW® are also included with each board.
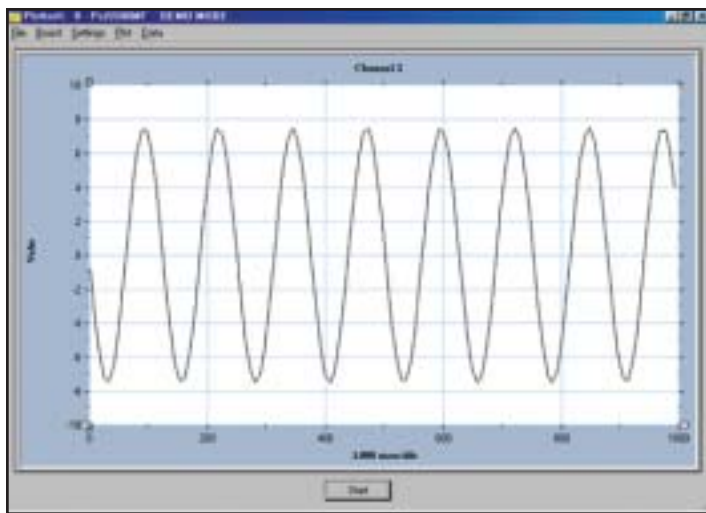
ADAC/5501MF & ADAC/5501MF-V Block Diagram

- PCi Bus
- ADAC PCI Interface
- **A/D section**
  - FIFO
  - 12-bit ADC
  - PGA +
  - Analog MUX
  - 8DI/16SE
  - External MUX
- Channel/gain list
- **A/D clock generation**
  - Clock & trigger control
  - Clock expansion
    - Clock out
    - Clock in
  - A/D trigger out
  - Oscillator
  - Eternal trigger
- Control registers
- **D/A clock generation**
  - Clock & trigger control
  - Clock expansion
    - Clock out
    - Clock in
  - D/A trigger out
  - Oscillator
  - A/D external trigger in
- Status registers
- **Optional D/A section - 2 channels**
  - FIFO
  - 16 bit DAC
  - 16 bit DAC
- **Digital I/O**
  - Digital I/O
  - 16 in/out
- **Counter/timers**
  - Counter Timer 0
    - Counter 0 in, or
    - Alt: A/D clock in
    - Timer 0 out, or
    - Alt: A/D trigger out
  - Counter Timer 1
    - Counter 1 In, or
    - Alt: D/A clock in
    - Timer 1 out, or
    - Alt: A/D clock out
- **Auxiliary digital I/O**
  - Digital I/O — 16 in/out
  - Digital I/O — 16 in/out
- Main I/O Connector
- Aux. Digital I/O Connectors

PC Data Acquisition Hardware

ADAC/5500™ Series
General Information

PlotterX Plus provides real-time display and data collection without programming

ADAC-TB-8 Screw-Terminal Board

The ADAC-TB-8 provides access to all analog and digital I/O signals from the ADAC/5500MF board via screw-terminals. The board measures 13.41 cm x 8.38 cm (5.28" x 3.30"), accepts up to 14 AWG wire, and connects to /5500MF via CA-G55 or CA-G56 cable.

ADAC-TB-16 Screw-Terminal Board

The ADAC-TB-16 provides access to analog and digital I/O signals from the ADAC/5501MF, /5501MF-V, and I/O on the main 68-pin connector (8/16 analog inputs, 16 digital I/O, 2 counters, and 2 optional analog outputs) via screw-terminals. The board measures 13.41 cm x 10.16 cm (5.28" x 4.20"), accepts up to 14 AWG wire, and connects to /5500 series via CA-G55 or CA-G56 cable.

ADAC-DC-37 Screw-Terminal Board for Auxiliary Digital I/O

The ADAC-DC-37 provides access to 16 of the 32 available auxiliary digital I/O channels from ADAC/5501MF, and /5501MF-V boards. Two ADAC-DC-37s are required to access all 32 auxilliary digital I/O channels. The board measures 13.41 cm x 6.35 cm (5.28" x 2.5"), and connects to /5500 series via CA-G17-ADAC (required) and CA-G37-x-ADAC (optional) cable.

ADAC/5500™ Series
Specifications

Specifications

General (all boards)
Operating Temperature: 0°C to 55°C
Signal I/O Connector: 68 pin standard "SCSI Type III" female connector
Dimensions: 141 mm W x 15 mm x 106 mm H (5.57" x 0.6" x 4.2")

A/D Specifications
Type: Successive approximation
Resolution: 12 bit
Maximum Sample Rate: 100 kHz
Nonlinearity (Differential): ±0.9 LSB, no missing codes

Analog Inputs*
Channels
    /5500MF: 8 single-ended
    /5501MF, /5501MF-V: 16 single-ended or 8 differential, software program mable on a per channel basis as single-ended or differential and unipolar or bipolar
Input Impedance: 10M Ohm
Maximum Input Voltage: ±12V relative to analog common
Over-Voltage Protection: ±25 V
Ranges: Software or sequencer selectable on a per channel basis
    /5500MF
        Unipolar: 0-10V
        Bipolar: ±10V
    /5501MF & /5501MF-V
        Unipolar: 0-10V, 0-5V, 0-2.5V, 0-1.25V
        Bipolar: ±10V, ±5V, ±2.5V, ±1.25V

Triggering
Trigger Sources: Software, onboard pacer, or external TTL
Digital Trigger
    Logic Level Range: 0.8V low, 2V high
Software Trigger
    Trigger can be initiated under program control
    Pre and post triggering

Analog Outputs
/5501MF-V only
Channels: 2
Resolution: 16 bit
Output Voltage Ranges: ±10V or 0 to 10V (software selectable)
Output Current: ±5 mA
Gain Error: Adjustable to zero
Settling Time: 10 μs for full-scale step
Clock Sources: 3, programmable; 1. Software pacer, 2. Internal Pacer, 3. External TTL

Digital I/O
/5500MF
Channels: 16
Ports: 2 x 8 bit; each port is software programmable as input or output
I/O Levels: TTL
Maximum Output Current
    Low: 24 mA (sinking)
    High: 24 mA (sourcing)

/5501MF, /5501MF-V
Channels: 16 accessible from main I/O connector, 32 accessible from two auxiliary I/O connectors
Ports: 2 x 8 bit. Each port is software programmable as input or output.
I/O Levels: TTL
Maximum Output Current
    Low: 24 mA (sinking)
    High: 24 mA (sourcing)

Auxiliary Digital I/O
/5501MF, /5501MF-V
Channels: 32 accessible from 2 auxiliary digital I/O connectors
Ports: 2 x 16 bit. Each port is software programmable as input or output.
Maximum Output Current
    Low: 4 mA (sinking)
    High: 8 mA (sourcing)

Counter
Channels: 2 x 16-bit
Frequency Measurement Rate: 900 kHz
Trigger Level: TTL

* Other ranges are available; contact factory

ADAC/5500™ Series
Ordering Information

Ordering Information

Description	Part No.
12-bit, 100-kHz PCI data acquisition board with 8 analog inputs, 16 digital I/O, and two counter-timers; includes CD ROM with all documentation, free PlotterX Plus software, ADLIB-WDM API library for Windows® for C/C++ and Visual Basic®, and drivers for LabVIEW®	ADAC/5500MF
12-bit, 100-kHz PCI data acquisition board with 16 analog inputs, 48 digital I/O, and two counter-timers; includes CD ROM with all documentation, free PlotterX Plus software, ADLIB-WDM API library for Windows for C/C++ and Visual Basic, and drivers for LabVIEW	ADAC/5501MF
Same as ADAC/5501MF but with two 16-bit analog outputs	ADAC/5501MF-V
Termination board with screw-terminals for access to ADAC/5500MF I/O; connects to ADAC/5500MF via a CA-G55 or CA-G56 cable	ADAC-TB-8
Termination board with screw-terminals for access to ADAC/5501MF, and /5501MF-V I/O; connects via a CA-G55 or CA-G56 cable	ADAC-TB-16
Termination board with screw-terminals for access to ADAC/5500 series auxiliary digital I/O; connects via CA-G17-ADAC and CA-G37-x-ADAC (optional) cables	ADAC-DC-37

Cables

Description	Part No.
Expansion cable and connector bracket for accessing auxiliary digital I/O channels on ADAC/5501MF, and /5501MF-V; connects to auxiliary digital I/O header on /5500 series boards and provides D37connector and PC mounting bracket to be installed on host PC. Provides access to 16 auxiliary digital I/O channels; two CA-G17-ADAC cables are required to access all 32 auxiliary digital I/O channels	CA-G17-ADAC
Expansion cable for connecting ADAC-DC-37 auxiliary digital I/O termination board to CA-G17-ADAC connector bracket; two CA-G37-x-ADAC cables are required to access all 32 auxiliary digital I/O channels	
3 ft. expansion cable	CA-G37-3-ADAC
6 ft. expansion cable	CA-G37-6-ADAC
68-conductor ribbon expansion cable, mates with ADAC/5500 series boards and the ADAC-TB-16, or ADAC-TB-8, 3 ft.	CA-G55
68-conductor shielded expansion cable, mates with ADAC/5500 series boards and the ADAC-TB-16, or ADAC-TB-8, 3 ft.	CA-G56
68-conductor shielded expansion cable, mates with ADAC/5500 series boards and the ADAC-TB-16, or ADAC-TB-8, 6 ft.	CA-G56-6

For complete information on accessories and cables, visit
www.iotech.com/acc

CA-G17-ADAC expansion cable and connector bracket

CA-G55, 68-conductor expansion cable

CA-G56, 68-conductor shielded expansion cable

PC Data Acquisition Hardware