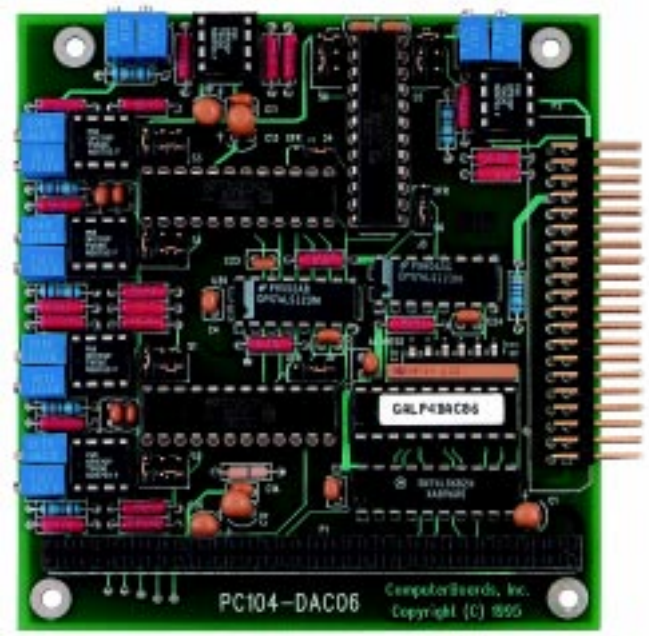
PC104-DAC06

6 Channel Analog Output Board



Features

- Six analog outputs
- 12 Bit, 1 part in 4096 resolution
- Ranges of
  - Unipolar 0-10 and 0-5
  - Bipolar +/-10 and +/-5
- Single DAC update or all simultaneous update
- 125 KHz update rate for D/A converter.
  - Convert & transfer rate processor dependent
- PC104 compliant form factor & bus
- Register compatible with ISA bus CIO-DDA06, DAC08
- Connector compatible with ISA bus CIO-DAC series
- Connector compatible with all standard accessories
- Includes InstaCal installation, calibration and test SW
- Universal Library support for language programming

DESCRIPTION

The PC104-DAC06 analog output board provides 6 independent, 12 bit digital to analog converters with a number of output range choices. The board is PC104 compliant and is ideal for 3 axis position control, proportional valve control or stimulus response testing. The PC104 DAC06 is register compatible with the CIO-DDA06, CIO-DAC08 and CIO-DAC16. Although there are a different number of DACs on these boards, software designed for one will work with the other as long as the DAC being addressed does exist in that I/O location. See the explanation of the control registers for a more detailed explanation.

The connector of the PC104-DAC06 is also easily made compatible with field wiring designed for the CIO-DAC08 and CIO-DAC16. Although the connector is a 40 pin header connector, it is laid out in such a way that by attaching a C40-37F-2 cable the signals are mapped into the same assignments as the 37 pin connectors on the CIO-DAC boards.

By choosing the PC104 boards from ComputerBoards, you preserve your investment in software and field wiring. In addition, the likelihood of new software and accessories being available to you is increased dramatically. The CIO (and original MetraByte) series of ISA data acquisition and control boards on which the PC104 series are based is the most common series of boards available. New software and accessories are developed for these products all the time, and when they are, the PC104 boards from ComputerBoards are automatically included because they are register and connector compatible with the ISA boards, an important point to consider before investing in a nonstandard set of PC104 boards.

The PC104-DAC06i is for current output applications and is set to a 4-20mA range, providing a full 12 bits of resolution over that range. For more information on this board, please call technical support.

The PC104-DAC06 is supplied with a complete user's manual and InstaCal installation, calibration & test software (DOS). For programming language support the UniversalLibrary is a set of DOS and Windows libraries, DLL and VxD. VI Components is a set of graphics, analysis and control routines in a DLL for Windows.

I/O CONNECTOR

The six analog output voltages are brought to a 40 pin header connector, along with PC104 power, ground and analog or low level ground.

A cable, C40-37F-2, adapts the 40 pin header connector to a 37 pin D connector for those wishing to use accessory boards designed with 37 pin connectors. The pin assignments are such that when using the C40-37F-2, the signals align with those of the CIO-DAC## ISA bus boards, and therefore any existing field wiring designed for those boards.

NC	40	● ●	39	NC
NC	38	● ●	37	-12V
GND	36	● ●	35	GND
+5	34	● ●	33	+12V
LLGND	32	● ●	31	NC
LLGND	30	● ●	29	NC
LLGND	28	● ●	27	NC
LLGND	26	● ●	25	NC
LLGND	24	● ●	23	NC
LLGND	22	● ●	21	NC
LLGND	20	● ●	19	NC
LLGND	18	● ●	17	NC
LLGND	16	● ●	15	NC
LLGND	14	● ●	13	NC
LLGND	12	● ●	11	VOUT 6
LLGND	10	● ●	9	VOUT 5
LLGND	8	● ●	7	VOUT 4
LLGND	6	● ●	5	VOUT 3
LLGND	4	● ●	3	VOUT 2
LLGND	2	● ●	1	VOUT 1

RANGE SELECTION - Voltage Outputs

The analog output range is fully switch selectable. The range may vary from as much as bipolar +/-10V to as little as unipolar 0-5V. Resolution may vary from 4.88mV/bit to as little as 1.22mV/bit. The PC104-DAC06 provides gain/range selection on each channel separately to allow you to bracket more closely the signal you wish to simulate, or to match the range exactly to the proportional device you wish to control. The range is selected via jumpers on the board.

Range	Jumpers	Range	Jumpers
+/-10	2-4, 3-5	0-10	1-2, 3-5
+/-5	2-4, 5-6	0-5	1-2, 5-6

RANGE SELECTION - Current Outputs

Range on the PC104-DAC06**i** is factory set to 4-20mA

SIMULTANEOUS UPDATE

The PC104-DAC06 output channels may be updated individually by writing new D/A data to the D/A chips. The D/As are double buffered so the outputs are not changed until all 12 bits of the new output value are written to the D/A.

Groups of D/As, or the entire 6 channels may be set to update simultaneously. When set for simultaneous update, The D/A data written to the D/As has no effect on the output value until the board is commanded to update all simultaneous channels. At that instant, all channels are updated at once.

SOFTWARE SUPPORT

The PC104-DAC06 is supplied with InstaCal software for installation, calibration and test. For programming from any DOS or Windows language, UniversalLibrary provides a complete I/O driver, DLL and VxD with example programs. Our new VI Components library of graphics, analysis and control routines makes it easy to put together a complete application program with minimal programming. Many application programs support the PC104-DAC06 through the drivers already in place for the CIO-DAC## boards. An example is Labtech Notebook, which has built in support for all the PC104 series boards.

ACCESSORIES

A complete line of screw terminal boards and cables support both the analog output and digital I/O signals. Screw terminal boards accept 12-22 AWG wire and are constructed of high quality FR4 with durable jaw-type screw terminals.

I/O & CONTROL REGISTER MAP

The PC104-DAC06 and CIO-DAC## are 100% software compatible because the first 12 I/O registers have identical functions on each board. I/O registers are the locations which the computer writes commands and data to and reads status and data from.

ADDRESS	FUNCTION	ADDRESS	FUNCTION
Base + 0	D/A0 LSB	Base + 8	D/A4 LSB
Base + 1	D/A0 MSB	Base + 9	D/A4 MSB
Base + 2	D/A1 LSB	Base + 10	D/A5 LSB
Base + 3	D/A1 MSB	Base + 11	D/A5 MSB
Base + 4	D/A2 LSB	Base + 12	Not Used
Base + 5	D/A2 MSB	Base + 13	Not Used
Base + 6	D/A3 LSB	Base + 14	Not Used
Base + 7	D/A3 MSB	Base + 15	Not Used

BASE ADDRESS SWITCH

The PC104-DAC06 occupies 16 consecutive I/O addresses. The first, or Base Address, is set by a bank of switches in a DIP switch on the board. It is possible to set the base address of the PC104-DAC06 anywhere within the range 0 to 3F0 Hex. All registers are write only for output data, and the last written data may not be read back. A read from any register updates the outputs when the simultaneous update jumper is set.

D/A SPECIFICATIONS

	12 BIT
Channels	6 Voltage Output
Resolution	12 Bit, 1 part in 4096
D/A Type	Dual DAC, AD7237
Latches	Double buffered/Sim. Update
Linearity	+/- 1/2 Bit
Monotonicity	+/- 1/2 Bit
Temperature drift	1ppM Typ., 3ppM Max @ 0V 15ppm Typ., 30ppM max @ FS
Load Current	+/-5mA Max
Short Circuit Current	40mA Max
Output Resistance	<0.1 ohm
Slew Rate	1.7V / uS
OUTPUT RANGES	
PC104-DAC06	+/-10, +/-5, 0-10, 0-5
PC104-DAC06i	4-20mA Only

ORDERING GUIDE

6 Channel D/A - Voltage Ranges	PC104-DAC06
4" X 4" all signals from one 37 D connector.	CIO-MINI37
16" X 4" all signals from one 37D, Spade Lug Terminals.	CIO-SPADE50
Cables	
2 foot ribbon cable, 40 conductor, female D37 connector.	C40-37F-2
'N' foot ribbon cable, 40 conductor, female D37connector.	C40-37F-N