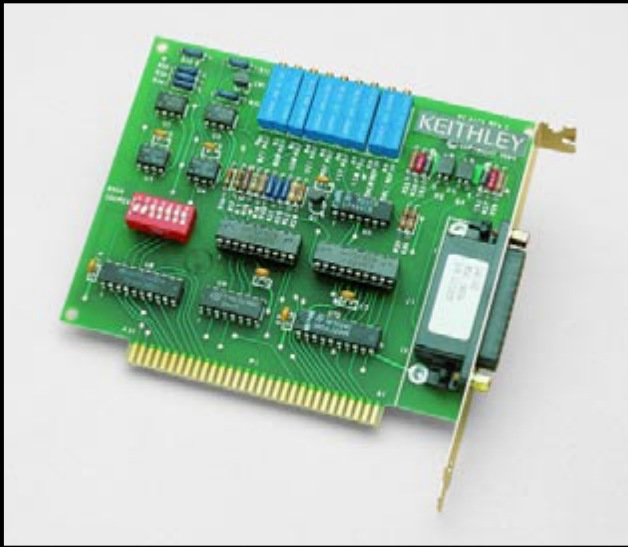


DAC-02

2-Channel Analog Output Board



- 2 analog output channels
- 12-bit resolution
- +5, +10, ± 5 , ± 10 V output ranges
- 4–20mA current loop capability

Ordering Information

DAC-02 2-Channel Analog Output Board with Software on 3.5 inch disks

Functional Description

The DAC-02 is ideal for controlling setpoints. It provides two independent double-buffered, 12-bit multiplying D/A channels plus interface circuitry. The D/A converters can be used with a fixed DC reference as conventional D/A. Onboard references of -5 V and -10 V provide output ranges of $0-5$ V, $0-10$ V, ± 5 V, ± 10 V and $4-20$ mA for process control current loops. Alternatively, the D/A may be operated with a variable or AC reference signal as multiplying D/A; where the output is the product of reference and digital inputs. With an AC reference, the unipolar outputs provide 2-quadrant multiplication and the bipolar outputs provide 4-quadrant operation. Twelve-bit accuracy is maintained up to 1kHz.

Since data is represented in 12 bits, it is written to each D/A in 2 consecutive bytes. The first byte contains the 4 least significant bits of data. The second byte contains the most significant 8 bits of data. The least significant byte is written first and is stored in an intermediate register in the D/A (having no effect on the output). When the most significant byte is written, its data is combined with the stored least significant data and presented to the D/A converter, thus assuring a single-step update. This process is known as double buffering.

The DAC-02 is a 5-inch-long half-slot board suitable for use in IBM PC/XT/AT and all compatibles. The DAC-02 is addressed as an I/O device using eight I/O locations and may have its I/O address set to any 8-bit boundary in the 255–1023 (decimal) I/O address space. The board uses the internal +5V, +12V, and -12 V computer supplies.

4–20mA Current Loop Output

The 4–20mA current loop output consists of a precision current sink formed by a VMOS power FET and reverse protection diode.

A minimum voltage of 8V must be maintained across this output circuit to insure correct operation. The maximum voltage should not exceed 36 volts for power dissipation reasons. A 24V or 36V loop supply is ideal. There are 2 ways of connecting the process loop: grounded load with floating supply, or floating load with grounded supply. The second method allows many loops to be powered by the same supply, but constrains the load to be 2-wire floating. The alternative connections are shown to the left.

ACCESSORIES AVAILABLE

K1802	3.5 ft. Cable with Female DB25
STA-U	Universal Screw Terminal Accessory
TESTPOINT	TestPoint™ Software Package

APPLICATIONS

- Servo control
- Programmable amplifier
- 12-bit resolution voltage source
- Function generator

1.888.KEITHLEY (U.S. only)

www.keithley.com

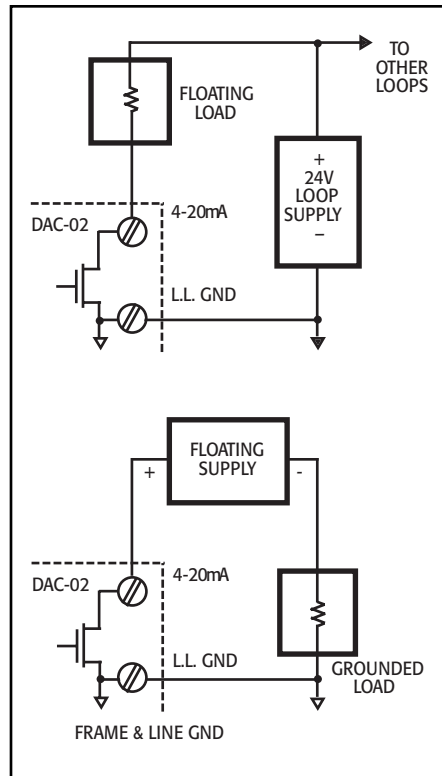
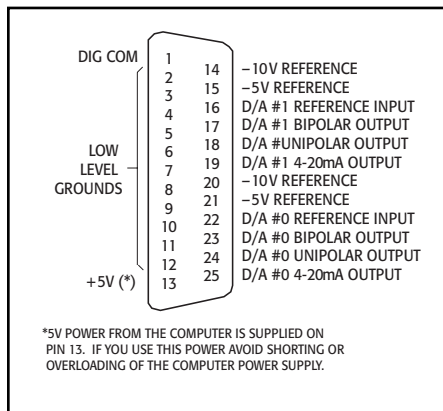
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DAC-02

2-Channel Analog Output Board

Connector Pin Assignments

A rear view of the 25-pin D connector is shown at left. The DAC-02 board has a female DB25 socket, and a DB25P solder cup plug is required to make connections (Keithley part # SMC-25). Usually only 3 or 4 wires (D/A outputs and ground) will be required for connections, so that a multi-wire flat cable is not required. (Note: 25-pin D connectors are identical to RS-232C connectors.) Output range selection is controlled by jumpering pins on the I/O connector or on the STA-U screw terminal board.



SPECIFICATIONS

OUTPUT RANGES

- CHANNELS: 2.
- I/O ADDRESS: DIP switch selected on any 8-bit boundary.
- RESOLUTION: 12 bits (1 part in 4095).
- RELATIVE ACCURACY: 1/2 LSB (0.01%) max.
- DIFFERENTIAL LINEARITY: 1/2 LSB max.
- FIXED REFERENCE RANGES: 0 to +5V (unipolar)
0 to +10V (unipolar)
±5V (bipolar)
±10V (bipolar)
4-20mA current loop.
- VARIABLE REFERENCE RANGES: ±10V (2 or 4 quadrant).
- REFERENCE INPUT RESISTANCE: 7kΩ min, 11kΩ typ, 20kΩ max.
- VOLTAGE OUTPUT IMPEDANCE: <0.1Ω max.
- VOLTAGE OUTPUT: ±5mA min drive current.
- 4-20 mA COMPLIANCE (FOR CURRENT LOOP): 8-36V.
- SETTLING TIME: 150μs to 0.001% typ (for a full-scale step).
- TEMPERATURE COEFFICIENT OF GAIN:
±25ppm/°C (with reference).
±5ppm/°C (external reference).
- ZERO DRIFT: ±3ppm/°C.

ENVIRONMENTAL

- OPERATING TEMPERATURE: 0-70°C.
- STORAGE TEMPERATURE: -55 to +125°C.
- HUMIDITY: 0-95% non-condensing.
- WEIGHT: 4oz (120g).
- DIMENSIONS: 5in L × 4.25in H × 0.75in D (12.7cm × 10.8cm × 1.9cm).