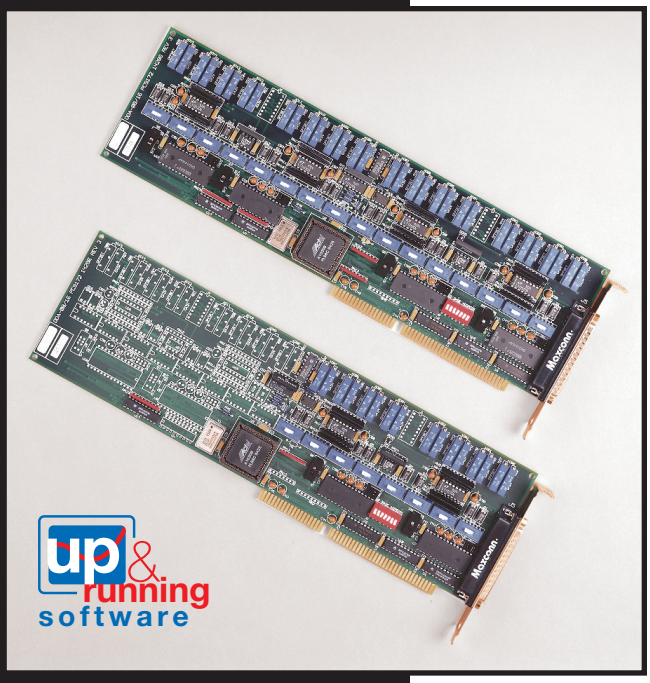
For applications that need a constant output voltage

PCI/ISA/PCMCIA

DDA-08
DDA-16

8/16-Channel Analog Output Boards



- 8 or 16 analog output channels
- 12-bit resolution
- +5, +10 ±2.5, ±5, ±10V output ranges
- 4–20mA current loop capability (sink)
- Onboard pacer clock
- External clock, trigger, and gate inputs
- Simultaneous updating on all channels
- 32-bit DriverLINX drivers plus a suite of bundled software including ExceLINX, VisualSCOPE, TestPoint, and LabVIEW drivers

Ordering Information

DDA-08	8-Channel Analog Output Board
DDA-16	16-Channel Analog Output Board

Functional Description

The DDA-08 and DDA-16 ISA-bus analog output boards are designed for control applications that require a constant programmable output voltage, such as dynamic calibration, driving x-y tables, driving a strip chart recorder, and controlling pressure valves.

Two models let you choose the right solution, with either 8 or 16 analog output channels available. The DDA-08 features two 4-channel digital-to-analog converters (quad DACs), providing 8 analog output channels. The DDA-16 has four 4-channel digital-to-analog converters (quad DACs), providing 16 analog output channels.

The DDA-08/16 boards support both current and voltage output. Each group of 4 channels are set to the same current or voltage range. The available ranges are 0–5V, 0–10V, ±10V, ±5V, ±2.5V, and 4–20mA.

Each output channel contains an input buffer for storing data. This allows the boards to achieve faster update rates since the buffers are loaded with the next value while the present value is sent to the DACs. You can update a single channel or multiple channels simultaneously. The onboard programmable pacer clock can be used to accurately time the updates of the analog outputs. You can set the update rate from 50 kSamples/s to 0.004 Samples/s. The update rate is determined by multiplying a prescaler value by an 8-bit counter. An external clock input allows the DDA-08/16 outputs to be updated at uneven intervals or based upon an external event. An output clock signal is available to synchronize the DDA-08/16 boards to external devices. The polarity and the delay of the output clock signal are programmable. For added flexibility, you can use a hardware trigger or gate input to enable and disable the analog outputs.

All channels power up to 0V or 0mA to prevent inadvertent damage to external equipment. The DDA-08/16 can automatically generate an interrupt each time the analog outputs are updated.

ACCESSORIES AVAILABLE

C1800	STA-U, STP-37 to DDA-08/16 Cable (18 inches)
STA-U	Universal Screw Terminal Accessory
STC-37	Screw Terminal Connector
STP-37	Screw Terminal Panel
TESTPOINT	TestPoint Software Package

APPLICATIONS

- Servo control
- Programmable voltage source
- Programmable current sink
- Function generator
- Product testing

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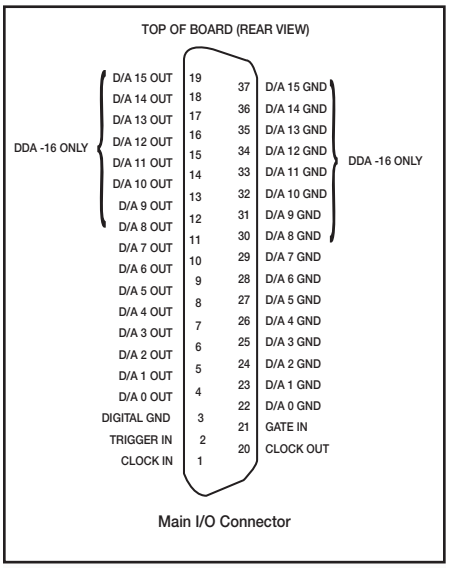
A GREATER MEASURE OF CONFIDENCE

DDA-08
DDA-16

8/16-Channel Analog Output Boards

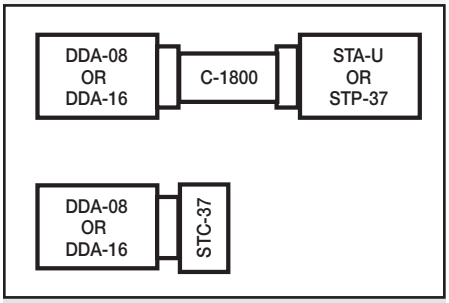
Connector Pin Assignments

All I/O is through a standard 37-pin D-type male connector that projects through the rear panel of the computer. For soldered connections, a standard 37-pin D female (ITT/ Cannon DC-37S or equivalent) is the correct mating part and can be ordered from Keithley as part number SFC-37. An 18-inch ribbon cable assembly (part #C1800) with 37-pin mating connectors at each end is available for easy connection to the STA-U or STP-37 screw terminal accessory.



Main I/O Connector

Configuration Guide



Specifications

ANALOG OUTPUTS

 # OF ANALOG OUTPUT CHANNELS: DDA-08: 8. DDA-16: 16.

 # OF QUAD DACS: DDA-08: 2. DDA-16: 4.

RESOLUTION: 12-bits.

D/A CONVERTER TYPE: Quad DAC4815.

INTEGRAL LINEARITY: ±1 bit.

DIFFERENTIAL LINEARITY: ±1 bit.

MONOTONICITY: Guaranteed.

TEMPERATURE OFFSET DRIFT: 15ppm full scale range/°C, max.

VOLTAGE RANGES[1]**:** 0–10V, 0–5V, ±2.5V, ±5V, ±10V.

CURRENT RANGE[1]**:** 4–20mA.

LOAD CURRENT: ±15mA, min., ±30mA, max.

OUTPUT RESISTANCE: 0.1Ω, typical.

SETTLING TIME (to 0.01% full-scale step): <10µs (100pF), typical.

ACCURACY: Span: Adjustable to 0. **Offset:** Adjustable to 0.

AT POWER-UP: Unipolar output: ±3mV, max. Bipolar output: ±20mV, max.

PACER CLOCK

SOURCES: Hardware internal clock, hardware external clock.

INTERNAL PACER CLOCK RATE: 50kSamples/s to 0.004Samples/s.

CLOCK PRESCALER VALUE: 1µs, 10µs, 100µs, 1ms, 10ms, 100ms, 1s.

CLOCK COUNTER VALUE: 0 to 255.

EXTERNAL PACER CLOCK:
Polarity: Software-selectable.
Pulse Width: 500ns, min.

OUTPUT CLOCK

TIME DELAY: 0µs to 4.25 minutes.

CLOCK PRESCALER VALUE: 1µs, 10µs, 100µs, 1ms, 10ms, 100ms, 1s.

CLOCK COUNTER VALUE: 0 to 255.

POLARITY: Software-selectable.

INTERRUPT

SOURCE: When channels are updated.

LEVELS: 3, 5, 7, 10, 11, 15; software-selectable.

HARDWARE TRIGGER

SIGNAL: Digital TTL.

POLARITY: Software-selectable.

PULSE WIDTH: 500ns, min.

HARDWARE GATE

SIGNAL: Digital TTL.

POLARITY: Software-selectable.

ENVIRONMENTAL

OPERATING TEMPERATURE: 0°C to 50°C.

STORAGE TEMPERATURE: –20°C to 70°C.

HUMIDITY: 0 to 90%, noncondensing.

EMC: Conforms to European Union Directive 89/336/EEC.

DIMENSIONS: 13.3in × 4.25in × 0.75in (33.8cm × 10.8cm × 1.9cm).

[1] All analog output channels on a quad DAC must have the same voltage or current range.