FEATURES

- Eight 12-Bit Digital-to-Analog Converters (DACs) with Throughput of 50kHz per Channel
- 32-Bit Counter/Timer for Precise Conversion Triggers
- Broadly Configurable Arbitrary Waveform Generator (ARB)
- 128K Byte SRAM on the Board
- DACs Independently Programmable with Unique Waveforms
- Counter/Timer with a 16-bit Divisor for Interrupts
- Output Ranges 0-5V, 0-10V, ±5V and ±10V
- 4-20mA Current Sink Capability Per Channel
- +5V only Power Required

DESCRIPTION

Model **104-DA12-8** is a PC/104 Bus board with eight DACs, 128K SRAM for waveform data storage, eight 4-20mA current sinks and three 16-bit counter/timers.

The DACs can be updated individually or simultaneously. An automatic circuit sets the analog outputs to zero at power-on or reset. Each output is buffered by a short-circuit protected op-amp sourcing up to 5mA. Data for updating each DAC may come from either the card’s onboard RAM or from the PC/104 bus. The on-board 64K sample RAM and onboard intelligent circuitry provides flexible allocation of between one and eight FIFO buffers/waveforms.

Counter/Timers

Three 16-bit down-counters, in a type 8254 IC, are included. These are configured as two frequency sources derived from an on-board 2 MHz crystal-controlled oscillator. Counter/Timers 1 and 2 are concatenated by the card to form a single 32-bit counter.

Input/Output Connections

Primary I/O connections (analog reference, voltage and current outputs) are made via a 40 pin header. Fused +5V and +12V are also available on this header. Control and status monitoring of the ARB functions are made at a 10 pin header. Power connections can optionally be made via an 8 pin header behind the PC/104 connector. All I/O connectors are right angle as standard, but are available as vertical as a factory option.
**BLOCK DIAGRAM**

**I/O CONNECTIONS**

**Connector P1**, 40-pin Male IDC Header
Analog Voltage & Current Outputs

**Connector P2**, 10-pin Male IDC Header
Arbitrary Waveform Generator Control & Monitoring

**Connector P4**, 8-pin Male IDC Header
External Power Inputs

**CONNECTOR PIN ARRANGEMENTS**

- **IDC 40-Pin Header Male**
  - 2
  - ...40

- **IDC 10-Pin Header Male**
  - 2
  - ...10

- **IDC 8-Pin Header Male**
  - 2
  - ...8
TECHNICAL SPECIFICATIONS

ANALOG OUTPUTS

- 8 Channels
- 50,000 Conversions per Second throughput, all channels simultaneously
- 12 Bit Resolution
- ARB Onboard memory storage of 128K bytes
- Output Ranges, 0-5V 0-10V ±5V ±10V
- Eight 4-20mA current sink outputs (external 8 to 36VDC excitation required)
- ±2 counts DAC Relative Accuracy (typical)
- 10uS DAC Settling Time (typical, to 3/4 scale)
- ±0.4 % of Full Scale DAC Offset Error (typical)
- ±0.1 % of Full Scale DAC Gain Error (typical)
- Drive Capability of 5mA per channel, Outputs are Short-Circuit Protected
- 30mA cumulative total drive from all DACs
- 4.096V Voltage Reference

Counter/Timer

- Type 82C54
- 3 x 16-Bit Down-Counters
- Counter 0 is an IRQ source (clock-tick interrupt) and frequency source
  (counter 0 output is available at P2 connector pin 4)
- Counters 1 & 2 are chained (32-bit resolution) and dedicated as the ARB clock
  (an interrupt is available based on the DAC update from the ARB)
- 2MHz Input Clock Frequency

General

- +5V @ 210mA Power Consumption (typical, no load on the outputs)
- On-board DC/DC Converter allows operation on +5V Power
- Interrupt requests may be generated on levels 3-7, 10-12 and 14-15
- Environmental Operation: 0-70C, 5% to 95% Humidity (non-condensing)
  (-40 to +85C available with special order)