

DNx-AO-318-020

8-Channel Isolated 0-20 mA D/A Board with BIT

- DNA-/DNR-/DNF-AO-318-020 for use in Cube/RACKtangle/FLATRACK I/O chassis
- 8 independent fully isolated 16-bit DACs
- Built-in-test functionality monitors output voltage and current
- 10 kHz per channel max update rate
- 0–20 mA output range
- Simultaneous update across all channels



DNR-AO-318-020,
RACKtangle version shown



GENERAL DESCRIPTION

The DNA-AO-318-020, DNR-AO-318-020 and DNF-AO-318-020 are fully isolated, high-precision, 8-channel analog current output board compatible with UEI's popular Cube, RACKtangle and FLATRACK I/O chassis respectively. The boards offer full 16-bit resolution and guarantee monotonicity over the entire operating temperature range. Each DNx-AO-318-020 channel provides an output range of 0–20 mA (sourcing) and is capable of up to 400 Ω . For applications requiring sinking outputs please refer to the DNx-AO-308 or DNx-AO-318 series boards.

The DNx-AO-318-020 provides extensive built-in-test diagnostics. An on-board A/D converter on each channel allows the user to monitor both output voltage and current. A solid state relay on each output allows the D/A channel to be disconnected from the field I/O so that a complete board self-test can be completed without driving the circuitry connected to the



BENEFITS OF UEI'S GUARDIAN SERIES

- ✓ CIRCUIT BREAKER
- ✓ VOLTAGE MONITORING
- ✓ CURRENT MONITORING
- ✓ FIELD DISCONNECT
- ✓ TEMPERATURE MONITORING

UEI's Guardian series boards include a sophisticated, reliable on-board monitoring system, allowing quick and easy system testing, sensor diagnostics monitoring and fault detection for rapid resolution in field or lab.

[Learn more about UEI's Guardian series](#)

outputs. This relay in combination with the output current and voltage sensing can also be set to disconnect the D/A output in the event of an external fault condition such as a short to ground or a DC power supply.

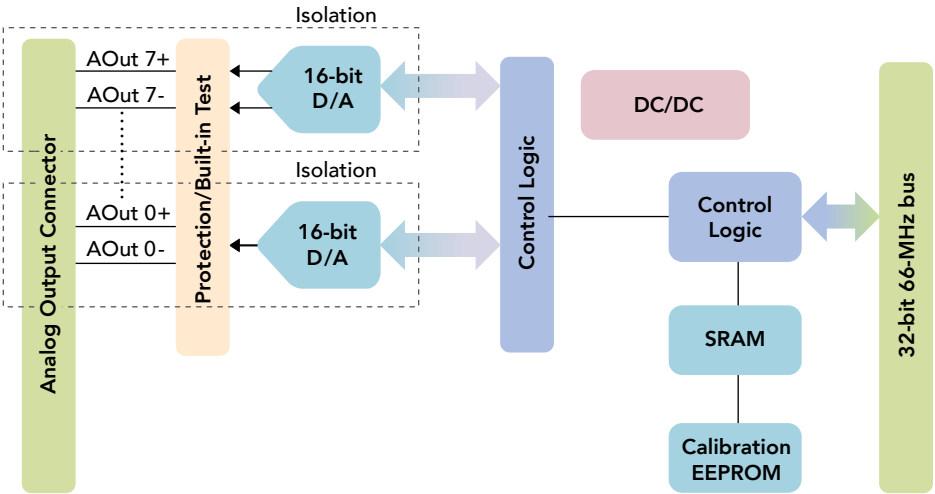
All 8 channels may be configured to update simultaneously, or they may be updated one at a time as data is written. A 1024 sample FIFO allows each D/A to be updated at 10 kHz without data loss. Double buffering the outputs combined with the use of low glitch D/As make the DNx-AO-318-020 an ideal solution for generating low frequency waveforms or providing highly accurate switched stimulus.

Software is included, providing a comprehensive, yet easy-to-use API that supports all popular operating systems, including Windows, Linux, and most real-time operating systems—such as QNX, Intime, VXworks, and more. Additionally, the UEIDAQ Framework—an even higher level Windows driver—supplies complete support for those creating applications in many popular Windows programming languages, as well as data acquisition software packages such as LabVIEW and MATLAB/Simulink.ActiveX or OPC servers.

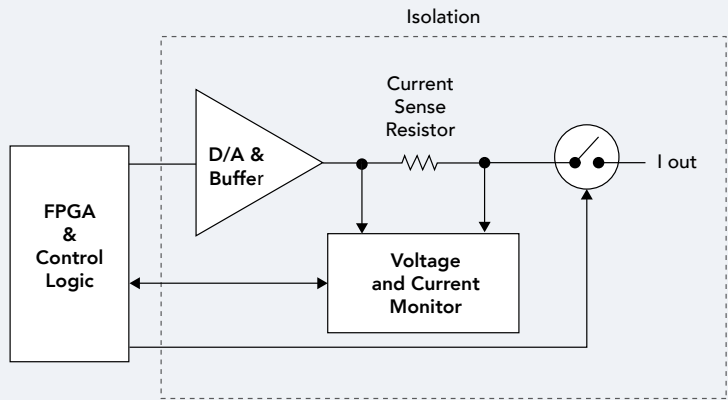
TECHNICAL SPECIFICATIONS

Number of Channels	8
Resolution	16 bits
Maximum Update Rate	10 kHz/channel (80 kHz max aggregate)
Buffer Size	1K samples (each channel)
INL (no load)	± 6 LSB (0.018%), typical
DNL (no load)	± 2 LSB (0.006%), typical
Monotonicity Over Temperature	16 bits guaranteed
Gain Linearity Error	0.002%
Gain Calibration Error	± 2.5 μ A typical
Offset Calibration Error	± 2.5 μ A typical
Offset Drift	10 ppm/ $^{\circ}$ C, typical
Gain Drift	10 ppm/ $^{\circ}$ C, typical
Output Range	0–20 mA
Settling Time	500 μ s to 16 bits
Load range	0 to 470 Ohms for full ± 10 mA swing
Isolation	350 Vrms
Built-in Test	
Voltage accuracy	± 50 mV
Current accuracy	25 μ A
On-board eMMC	32 GByte
Sample rate	Up to 20 Hz per channel total
Power Consumption	4.5 W not including output load
Operating Temperature (tested)	40 $^{\circ}$ C to +85 $^{\circ}$ C
Operating Humidity	0–95%, non-condensing
Vibration	
IEC 60068-2-6	5 g, 10–500 Hz, sinusoidal
IEC 60068-2-64	5 g (rms), 10–500 Hz, broadband random
Shock — IEC 60068-2-27	100 g, 3 ms half sine, 18 shocks @ 6 orientations; 30 g, 11 ms half sine, 18 shocks @ 6 orientations
Altitude	120,000 ft
MTBF	480,000 hours

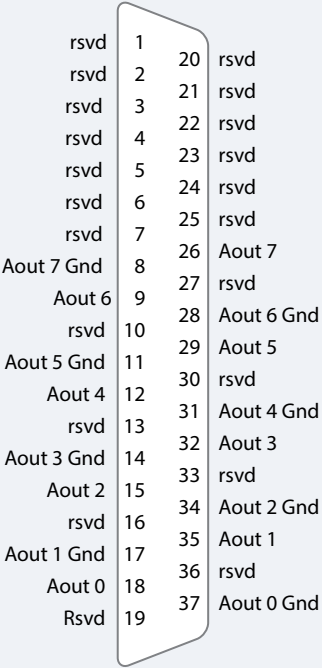
BLOCK DIAGRAM



SIMPLIFIED OUTPUT SCHEMATIC



PINOUT DIAGRAM



CONNECTION OPTIONS

Part Number	Description
DNA-CBL-37S	3 ft., 37-way, male to female, round shielded cable
DNA-STP-37	Universal Screw Terminal Panel for DNx-series I/O
DNA-STP-37-DR	Universal Screw Terminal for DNx-series I/O with DIN rail mounts
Extended Warranty	Option to purchase UEI's extended 5 year warranty is available