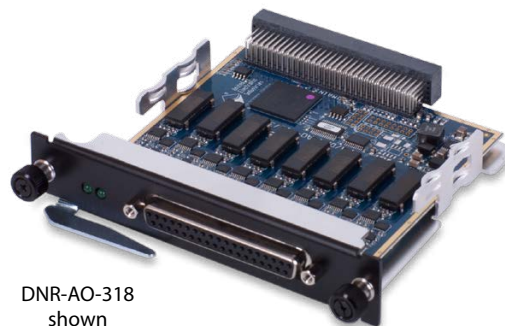# DNx-AO-318-805

8-Channel isolated D/A Board with Built-in-test

- DNA- / DNR- / DNF-AO-318-805 for use in "Cube", RACKtangle and FLATRACK I/O chassis
- 8 independent fully isolated 16-bit DACs
- Built-in-test functionality monitors both output voltage and current
- 10 kHz per channel max update rate
- ±10 V output range, ±10 mA per channel
- Optimized for maximum accuracy at 5.0V

10-Year Availability Guarantee

DNR-AO-318 shown

General Description:

The DNA-AO-318-805, DNR-AO-318-805 and DNF-AO-318-805 are fully isolated, high-precision, 8-channel analog voltage 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 DNA/DNR-AO-318-805 channel provides an output range of ±10 V and is capable of driving ±10 mA. The DNx-AI-318-805 includes the same hardware as the standard DNx-AO-318 board, but takes advantage of a special calibration routine that optimizes the boards accuracy at +5 V.

The DNx-AO-318-805 provides extensive built-in-test diagnostics. An on-board A/D converter on each channel monitors 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 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-318-805 an ideal solution for generating low frequency waveforms or providing highly accurate switched stimulus.

Software included with the DNx-AO-318-805 provides a comprehensive yet easy to use API that supports all popular Windows programming languages as well as supporting programmers using Linux and most real-time operating systems including QNX, RTX, RT Linux, VXworks and more. Finally, the UEIDAQ Framework supplies complete support for those creating applications in data acquisition software packages such as LabVIEW, MATLAB/Simulink, DASYLab or any application which supports ActiveX or OPC servers.
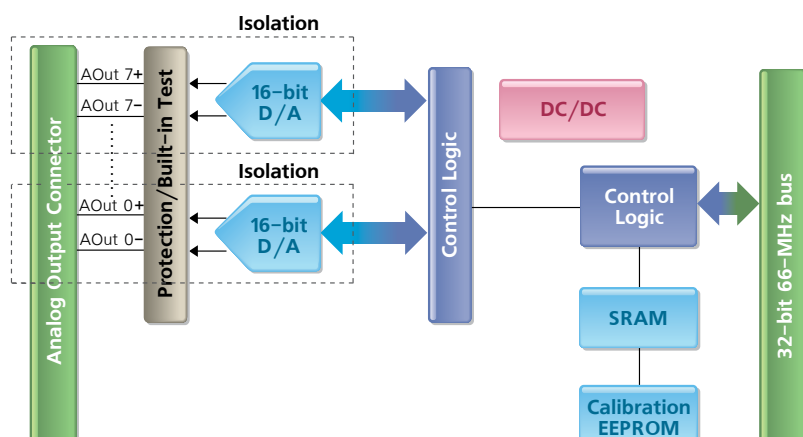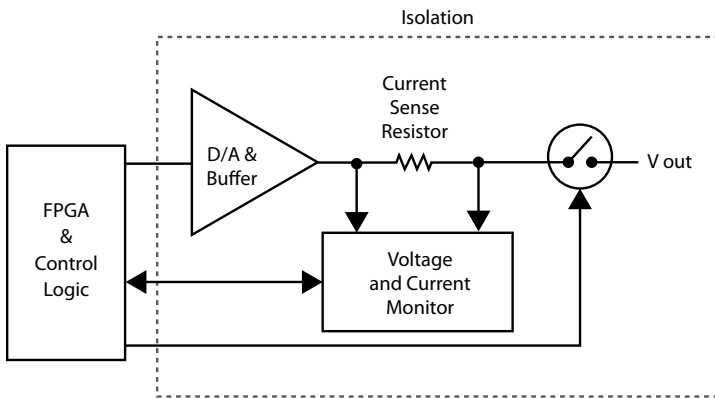
Technical Specifications: (specifications at 25 ± 5°C unless noted)

Analog Outputs	8 channels
Resolution	16-bits
Max Update Rate:	10 kHz/channel (80 kHz max aggregate)
FIFO Buffer Size	1024 samples
INL (no load)	±6 LSB (0.018%)
DNL (no load)	±2 LSB (0.006%)
Monotonicity	16 bits guaranteed over temperature
Calibration, 4.75V to 5.25V	±610 µV, typ. ±915 µV, max.
Gain Calibration Error	±610 µV, typ. (Full voltage range)
Offset Calibration Error	±305 µV, typ.
Output Range	±10 V
Output Impedance	0.5 Ω (typ)
Current Drive	±10 mA/channel
Settling Time	50 µs to 16 bits
Slew Rate	1 V/µs
Power up state	0 V ±10 mV
Output Monitoring	
Accuracy (V / I)	±5 mV / 100 µA
Sample/Update rate	10 Hz
Isolation	350Vrms channel-to-channel and field wiring to chassis.
Power Consumption	4.0 W (not including output loads)
Operating Temp. (tested)	-40 °C to +85 °C
Operating Humidity	95%, non-condensing
Vibration IEC 60068-2-6 IEC 60068-2-64	5 g, 10-500 Hz, sinusoidal 5 g (rms), 10-500 Hz, broad-band random
Shock IEC 60068-2-27	50 g, 3 ms half sine, 18 shocks @ 6 orientations 30 g, 11 ms half sine, 18 shocks @ 6 orientations
MTBF	250,000 hours

Block Diagram:

Simplified output schematic:

Pinout Diagram:

rsvd	1	20	rsvd
rsvd	2	21	rsvd
rsvd	3	22	rsvd
rsvd	4	23	rsvd
rsvd	5	24	rsvd
rsvd	6	25	rsvd
rsvd	7	26	Aout 7
Aout 7 Gnd	8	27	rsvd
Aout 6	9	28	Aout 6 Gnd
rsvd	10	29	Aout 5
Aout 5 Gnd	11	30	rsvd
Aout 4	12	31	Aout 4 Gnd
rsvd	13	32	Aout 3
Aout 3 Gnd	14	33	rsvd
Aout 2	15	34	Aout 2 Gnd
rsvd	16	35	Aout 1
Aout 1 Gnd	17	36	rsvd
Aout 0	18	37	Aout 0 Gnd
Rsvd	19		

Connection options:

Cable	Screw Terminal Panel	Description
DNA-CBL-37 series	DNA-STP-37	37 conductor screw terminal panel connects to board via DNA-CBL-37 or 37S series cables.