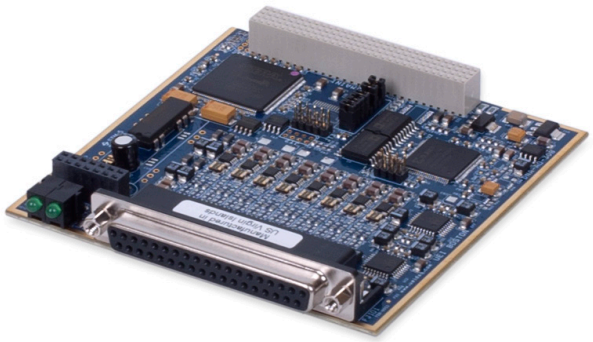
DNA/DNR-AO-308

16-bit, 8-Channel, ±10V Analog Output Layer

- DNA-AO-308 for use in "Cube" chassis
- DNR-AO-308 for use in RACKtangle chassis
- 8 independent DACs with 16-bit resolution
- 100kHz per channel max update rate
- ±10V output range, ±5mA per channel
- Glitch-free output
- Per-channel offset and gain calibration
- Simultaneous update across all channels



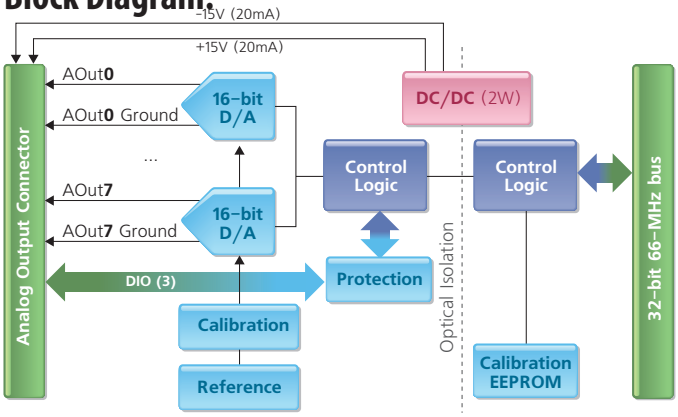
General Description:

The DNA/DNR-AO-308 are high-precision, true 16-bit, 8-channel voltage analog output boards compatible with UEI's "Cube" and RACKtangle chassis respectively. The boards offer per-channel digital offset and gain calibration, buffered output, excellent linearity, and low output noise. DNA/DNR-AO-308 layer is capable of outputting ±10V with maximum current of ±5mA per channel. This board is recommended for output applications that draw less, then ±5mA. For applications that require higher output current, use DNA/DNR-AO-308-350 layer.

The outputs of the DNA/DNR-AO-308 are fully isolated from the I/O chassis as well as from other I/O boards within the I/O chassis.

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.

Block Diagram:



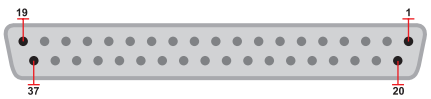
Technical Specifications: (Typical specs at 25 °C ±5 °C)

Number of Channels	8
Resolution	16 bits
Max Update Rate: @ 16-bit resolution	100 kHz/channel (500kHz max aggregate)
Buffer Size	1K samples
Type of D/A	double-buffered
INL (no load)	±1 LSB (0.003%)
DNL (no load)	±1 LSB (0.003%)
Monotonicity Over Temperature	16 bits
Gain Linearity Error	0.002%
Gain Calibration Error	±100 µV
Offset Calibration Error	±100 µV
Offset Drift	±10 µV/°C
Gain Drift	5ppm/°C
Output Range	±10V
Output Coupling	DC
Output Impedance	0.1Ω max
Current Drive	±5mA/channel
Capacitive Loads	500 pF
Settling Time	10 µs to 16 bits
Slew Rate	10 V/µs
Isolation	350Vrms
Power Consumption	1.5W - 3W
Physical Dimensions	3.875" x 3.875" (98 x 98 mm)
Operating Temp. (tested)	-40 to 85 deg C
Operating Humidity	0 - 95%, non-condensing
Vibration *IEC 60068-2-6* *IEC 60068-2-64*	5 g, 10-500 Hz, sinusoidal 5 g (rms), 10-500Hz, 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

Pinout Diagram:

DB-37 (female)
37-pin connector:

AOUT0 GND	37	19	AGND
AGND	36	18	AOUT0
AOUT1	35	17	AOUT1 GND
AOUT2 GND	34	16	AGND
AGND	33	15	AOUT2
AOUT3	32	14	AOUT3 GND
AOUT4 GND	31	13	AGND
AGND	30	12	AOUT4
AOUT5	29	11	AOUT5 GND
AOUT6 GND	28	10	AGND
AGND	27	9	AOUT6
AOUT7	26	8	AOUT7 GND
DN/C	25	7	AGND
AGND	24	6	DN/C
AGND	23	5	AGND
DIO2	22	4	DIO1
AGND	21	3	DIO0
-15V (20mA) OUT	20	2	+15V (20mA) OUT
		1	AGND

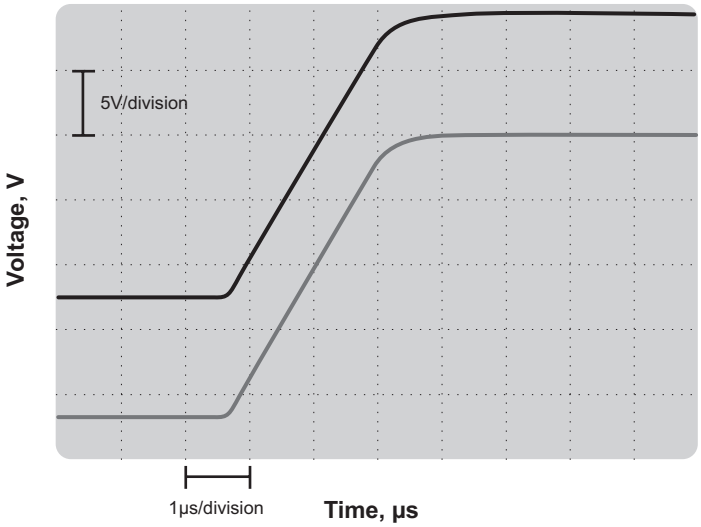


Connection Options:

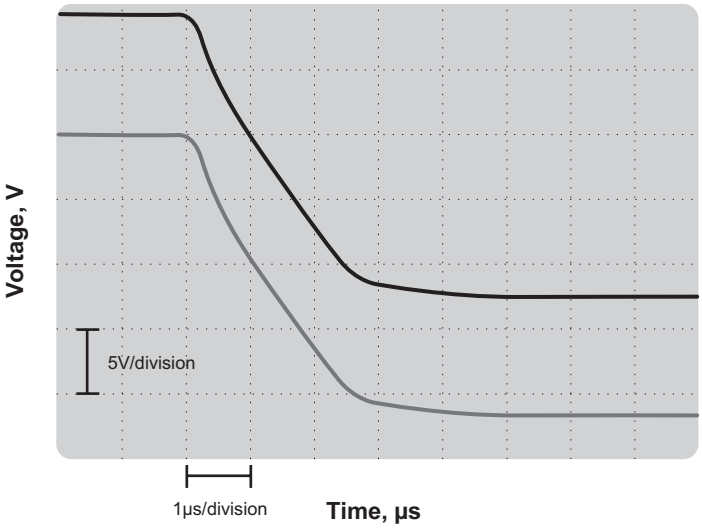
Terminal Panel	Cable	Description
DNA-STP-37	DNA-CBL-37S	DNA-CBL-37S shielded cable connects the DNA/DNR-AO-308 to the 37-way DNA-STP-37 screw terminal panel
DNA-STP-37	DNA-CBL-37	DNA-CBL-37 ribbon cable connects the DNA/DNR-AO-308 to the 37-way DNA-STP-37 screw terminal panel

Typical Performance Characteristics

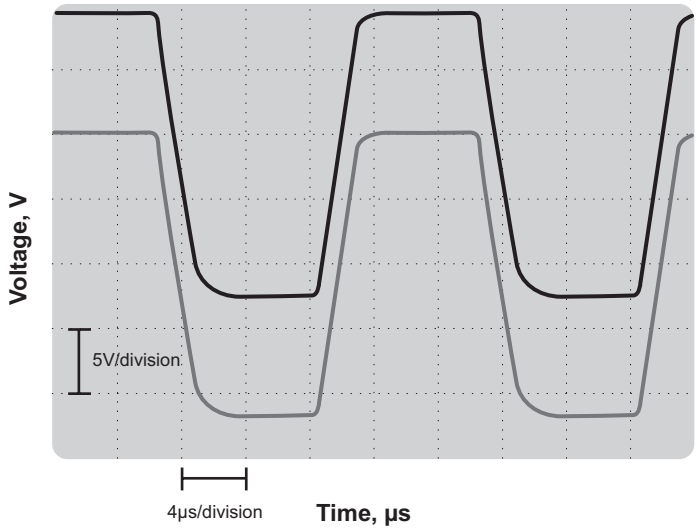
2-Channel Rising Edge Settling Time at Full Scale (±10V)
(5.34µS, expected to be <10µS)



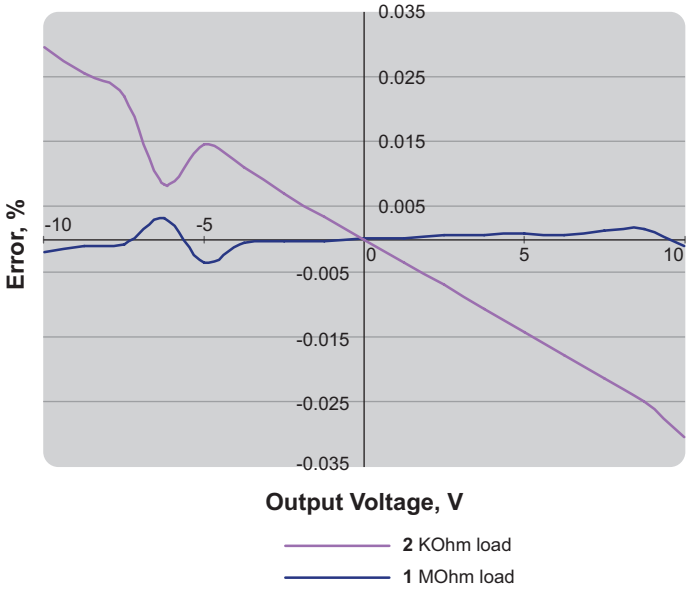
2-Channel Falling Edge Settling Time at Full Scale (±10V)
(6.1µS, expected to be <10µS)



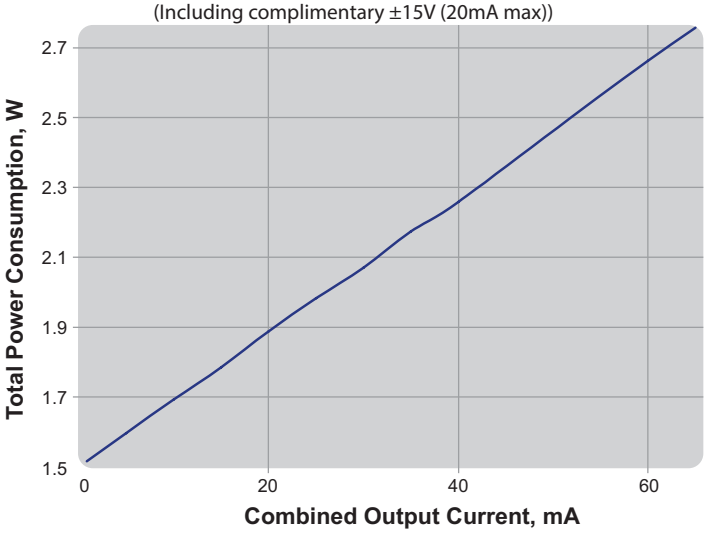
Full Scale (±10V) Output at 100kHz Per Channel
(800kHz aggregate rate)



Output Voltage Error vs. Voltage vs. Load
(±10V output range)



Power Consumption vs. Output Current
(Including complimentary ±15V (20mA max))



Conversion Factors

Resolution		
bits	**%**	**mV**
12	**0.024414**	**4.883**
13	**0.012207**	**2.441**
14	**0.006104**	**1.221**
15	**0.003052**	**0.610**
16	**0.001526**	**0.305**