DNA/DNR/DNF-AO-308-354

16-bit, 4-Channel, ±60V, High-Voltage Analog Output Board

- DNA-/DNR-/DNF-AO-308-354 for use with Cube/ RACKtangle™/FLATRACK™ I/O chassis
- 8 independent DACs, 16-bit resolution
- 50 kHz per channel max update rate
- Four channels with ±60 V output range, ±5 mA per channel
- Four channels with ±10 V output range, ±5 mA per channel
- Simultaneous update across all channels
- **Requires external ±60 V power source. In Cube chassis, it may be powered internally when using the DNA-PC-914 power conversion board**

DNA-AO-308-354 shown. When ordered with DNA-PC-914 power conversion board, the DNA-AO-308-354 is factory-configured for internal power. The DNR/DNF-AO-308-354 requires the power supply to be connected externally.

General Description:

The DNA-AO-308-354, DNR-AO-308-354 and DNF-AO-308-354 are high-precision, high-voltage analog output boards compatible with UEI's Cube, RACKtangle and FLATRACK I/O chassis respectively. The boards offer 16-bit, 4-channel ±60 V analog outputs and 4 channels of ±10 V output with per-channel digital offset and gain calibration, buffered output, excellent linearity, and low output noise. The DNA/DNR/DNF-AO-308-354 is designed for the demanding high-voltage applications with ±55 V analog output span and up to ±5 mA of current per channel. This board requires an external power supply such as the DNA-PC-914 board. In Cube installations, connections to the DNA-PC-914, ±63 power may be made inside the Cube. Otherwise the power supply must be connected externally. Since the maximum power consumption may exceed 4.5 W, this DNA-AO-308-354 may require the rear-mount fan (DNA-FANx) option in Cube applications.

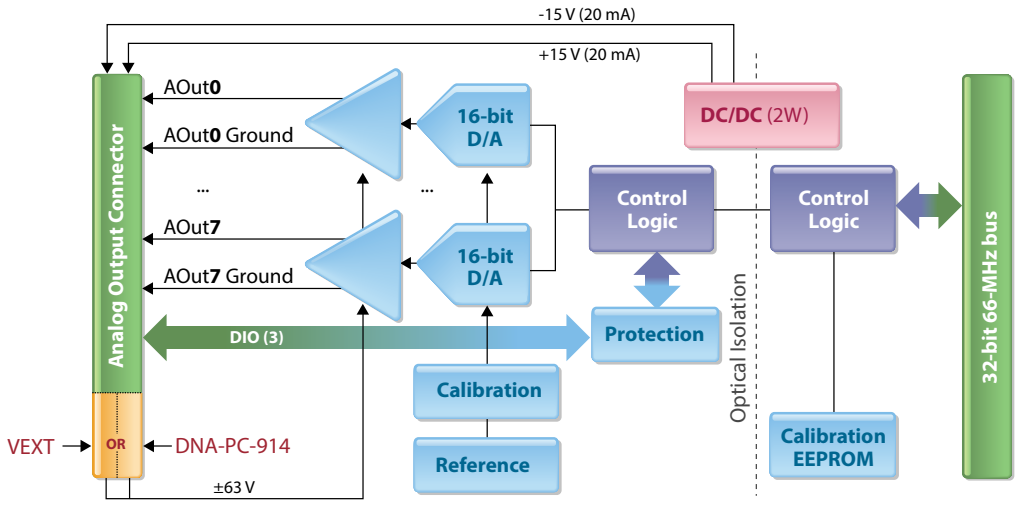
Software is included, providing a comprehensive, yet easy-to-use API that supports all popular operating systems, including Windows, Linux, and most real-time operating systems—such as QNX, Intime, VXworks, and more. Additionally, the UEIDAQ Framework—an even higher level Windows driver—supplies complete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

Technical Specifications:

Number of Channels	8—Channels 0, 2, 4 & 6 are ±60 V; Channels 1, 3, 5 & 7 are ± 10 V
Resolution	16 bits
Max Update Rate: @ 16-bit resolution	50 kHz/channel (200 kHz max aggregate)
Buffer Size	1 K 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	±1.5 mV
Offset Calibration Error	±1.5 mV
Offset Drift	5 ppm/ °C
Gain Drift	5 ppm/ °C
Output Range	±60 V (with external power supply ≥ 63 VDC. Lower voltage power may be applied though the output range is only guaranteed within ±3 V of the supplied power supply.)
Output Coupling	DC
Output Impedance	0.1 Ω max
Current Drive	±5 mA/channel
Capacitive Loads	500 pF
Settling Time	10 µs to 16 bits
Slew Rate	10 V/µs
Isolation	350 Vrms
Power Consumption[1]	3.8 W unloaded, 5 W with max load
Physical Dimensions	3.875" x 3.875" (98 x 98 mm)
Operating Temperature (tested)	-40 °C to +85 °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 – 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

[1] If the total power consumption of the layer is over the 4.5 W, the DNA-FANx rear-mount cooling fan is required. This fan is included by default on all GigE compatible Cube chassis.

Block Diagram:



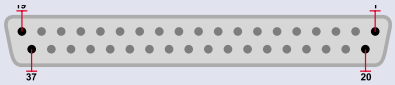
Pinout Diagram:

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
+VEXT (140 mA fused)	25	7	AGND
AGND	24	6	**–VEXT** (140 mA fused)
AGND	23	5	AGND
DIO2	22	4	DIO1
AGND	21	3	DIO0
–15V (20 mA) OUT	20	2	+15V (20 mA) OUT
		1	AGND

Note: If powering externally, connect ±63 V power supply to pins **+VEXT** (25) and **-VEXT** (6).

Due to the higher power dissipation on this board (308-354) relative to other boards in the DNx-AO-308 series, only four channels offer the 60V range. These are designated as channels 0, 2, 4 and 6. Channels 1, 3, 5 and 7 offer +/- 10 V outputs.



Connection Options:

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

Ordering Guide:

Part #	Description
DNx-AO-308-354	16-bit, 4-Channel, ±60V, High-Voltage Analog Output Board
Extended Warranty	Option to purchase UEI's extended warranty (up to 10 years) is available