

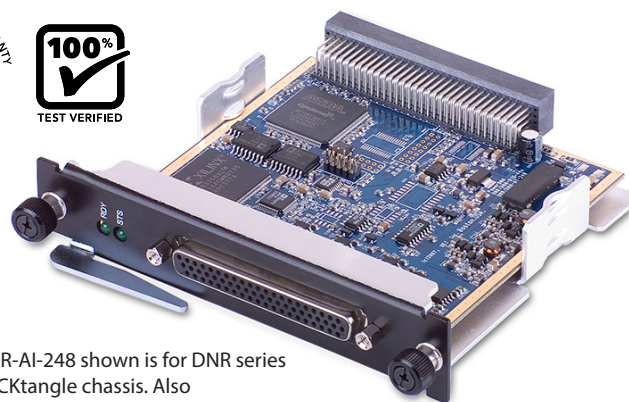
# DNA/DNR-AI-248-230

## 24-Channel Analog Input

- DNA/DNR/DNF-AI-248-230 for use in "Cube", RACKtangle® and FLATRACK™ I/O chassis
- 24 differential analog input channels
- Maximum sampling rate of 250 Hz per channel
- 18-bit resolution
- -2 V to +32 V full scale inputs
- 350 Vrms Isolation
- Dynamic autozero support
- Embedded averaging engine



10-Year  
Availability  
Guarantee



DNR-AI-248 shown is for DNR series RACKtangle chassis. Also available for DNA (Cube) and DNF (FLATRACK) chassis.

## General Description:

The DNA/DNR/DNF-AI-248-230 are 24 channel differential analog input boards for use in UEI's Cube/RACKtangle/FLATRACK I/O chassis respectively. The high channel count allows a single six slot "Cube" to monitor up to 144 analog inputs in a single 4.0" by 4.1" by 5.8" package while the 12-slot RACKtangle chassis monitors up to 288 channels in a 3U rack.

The -2 to +32 Volt input range makes the AI-248-230 an ideal measurement solution in a host of automotive, aerospace and power generation applications where most DAQ product's 10 volts maximum input range cannot be used without external signal conditioning. Programmable gains of between 1 and 1000 combined with the board's 18-bit A/D converter provides resolution as low as 0.25 microvolt.

The DNx-AI-248-230 provides sample rates as high as 250 sample per second on each channel (6 k/s aggregate). Another great feature, the oversampling engine, allows DNx-AI-248-230 to automatically acquire as many samples as possible for the given gain/speed and average them, thus dramatically improving noise immunity.

One of the most powerful features of the DNx-AI-248-230 is automated offset compensation which can remove offset fluctuations over the temperature and/or time. This allows reduction of the temperature drift to a few microvolts over the full specified range.

The DNx-AI-248-230 offers 350 Vrms of isolation between itself and other I/O boards as well as between the I/O connections and the chassis. Like all UEI "Cube" compatible I/O boards, the DNA-AI-248 offers operation in extreme environments and has been tested to 5g vibration, 100g shock, from -40 to +85 °C temperatures and at altitudes up to 70,000 feet.

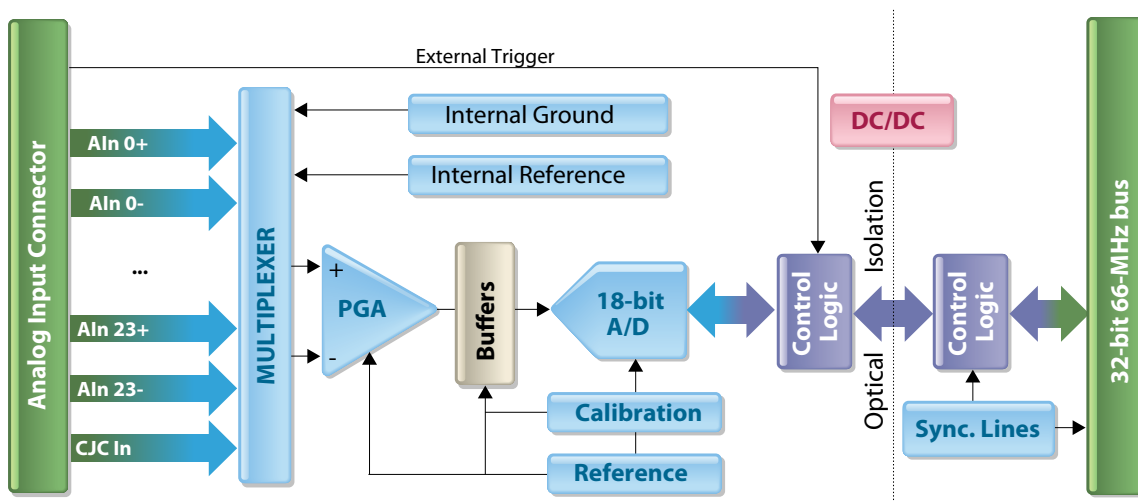
The board is supported by a variety of cable and screw terminal options certain to meet the needs of almost all users. For those wishing to create their own cables, all connections are through a standard 62-pin "D" connector allowing OEM users to build custom cabling systems with standard, readily available components.

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.

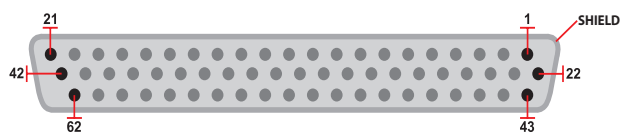
## Technical Specifications:

Analog Inputs	
Number of channels	24 fully differential inputs plus 1 single-ended dedicated CJC channel
Input configuration	Multiplexed
ADC resolution	18 bits
Sampling rate	250 samples/s per channel, maximum (6 kS/s aggregate)
Input Ranges	-2 Volt to +32 Volt (G=1)
Gains	1, 10, 100 or 1000
Minimum resolution	0.25 $\mu$ V (Gain = 1000)
Input bias current	$\pm$ 5 nA max, $\pm$ 0.5 nA typical
Input impedance	10M $\Omega$
Common mode rejection	100 dB typical
Power supply rejection	> 120 dB
<b>Accuracy (25 °C)</b>	
Gain = 1	$\pm$ 1.47 mV
Gain = 10	$\pm$ 0.293 mV
Gain = 100	68 $\mu$ V
Thermocouple (Type/Acc)	K / $\pm$ 1.25 °C, J / $\pm$ 1.9 °C, T / $\pm$ 1.9 °C (using DNA-STP-AI-U for CJC measurement)
Isolation	350 Vrms
Overvoltage protection	-40V to +55V
General Specificationsv	
Operating temperature	tested -40 °C to +85 °C
Vibration IEC 60068-2-6	5 g, 10-500 Hz, sinusoidal
IEC 60068-2-64	5 g (rms), 10-500 Hz, broad-band 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
Humidity	0 to 95%, non-condensing
Power consumption	3.0 W max
Altitude	120,000 ft
MTBF	550,000 hours

## Block Diagram:



## Pinout Diagram:



Pin	Signal	Pin	Signal	Pin	Signal
1	Rsvd	22	Rsvd	43	Gnd
2	DIO 1	23	Gnd	44	DIO 2
3	Rsvd	24	Gnd	45	Gnd
4	CJC In	25	CJC Ret	46	AIN 23-
5	AIN 22-	26	AIN 23+	47	AIN 22+
6	AIN 21+	27	AIN 21-	48	AIN 20-
7	AIN 19-	28	AIN 20+	49	AIN 19+
8	AIN 18+	29	AIN 18-	50	AIN 17-
9	AIN 16-	30	AIN 17+	51	AIN 16+
10	AIN 15+	31	AIN 15-	52	AIN 14-
11	AIN 13-	32	AIN 14+	53	AIN 13+
12	AIN 12+	33	AIN 12-	54	AIN 11-
13	AIN 10-	34	AIN 11+	55	AIN 10+
14	AIN 9+	35	AIN 9-	56	AIN 8-
15	AIN 7-	36	AIN 8+	57	AIN 7+
16	AIN 6+	37	AIN 6-	58	AIN 5-
17	AIN 4-	38	AIN 5+	59	AIN 4+
18	AIN 3+	39	AIN 3-	60	AIN 2-
19	AIN 1-	40	AIN 2+	61	AIN 1+
20	AIN 0+	41	AIN 0-	62	DIO 0
21	Rsvd	42	Rsvd		

## Ordering Information

Product	Description
DNA-AI-248	48 channel single-ended / 24 channel differential 18-bit analog input board
DNA-CBL-62	62 conductor shielded cable
DNA-STP-62	62 terminal screw terminal panel