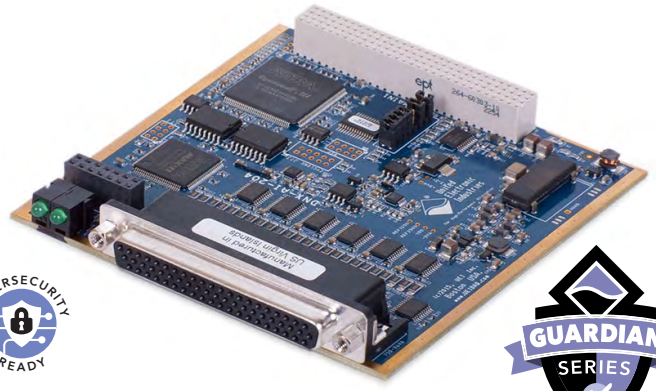
DNA/DNR/DNF-AI-204

24-Channel 0-20/4-20/±24 mA input board

- DNA/DNR/DNF-AI-204 for use in Cube, RACKtangle® and FLATRACK™ I/O chassis
- 24 differential analog input channels
- Maximum sampling rate of 1000 Hz per channel
- 18-bit resolution
- ± 6 µA accuracy
- 350 Vrms isolation
- Dynamic autozero support
- Embedded averaging engine



Also available for DNR series RACKtangle and DNF (FLATRACK) chassis.

General Description:

The DNA/DNR/DNF-AI-204 are 24 channel 0-20/4-20 mA 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.

BENEFITS OF UEI'S GUARDIAN SERIES

✓	CIRCUIT BREAKER

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

The 0–20/4–20/±24 mA input range makes the DNx-AI-204 an ideal measurement solution in a host of oil and gas, automotive, aerospace and power generation applications. Programmable gains of between 1 and 10 combined with the board's 18-bit A/D converter provides resolution as low as 19.1 nA.

The DNx-AI-204 provides sample rates as high as 1000 samples per second on each channel (24 kS/s aggregate). Another great feature, the oversampling engine, allows DNx-AI-204 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-204 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 microamps over the full specified range.

The DNx-AI-204 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 DNx series I/O boards, the DNx-AI-204 offers operation in extreme environments and has been tested to 5g vibration, 100 g shock, from -40 to +85 °C temperatures and at altitudes up to 70,000 feet.

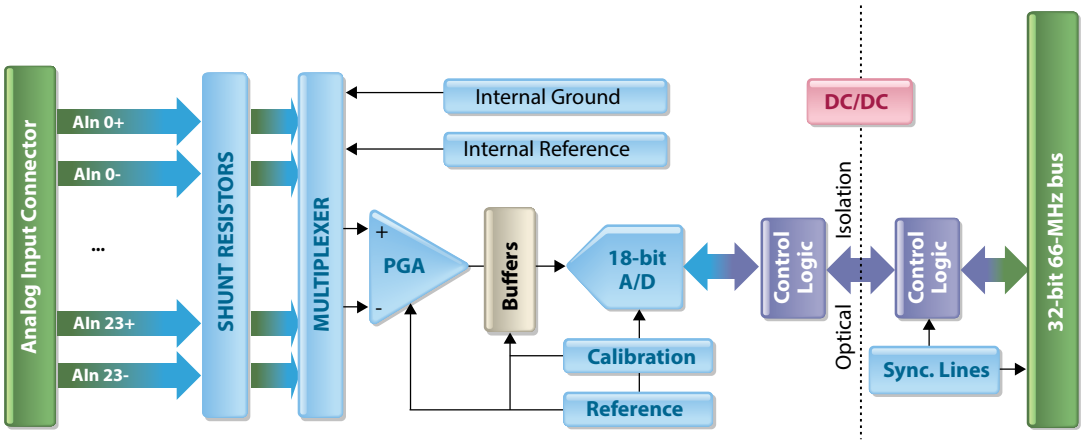
The board is supported by a variety of cable and screw terminal options certain to meet the needs of almost all users. For those wishing to create their own cables, all connections are through a standard 62-pin "D" connector, allowing OEM users to build custom cabling systems with standard, readily available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

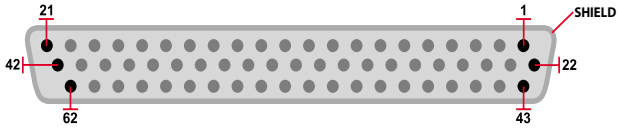
Technical Specifications:

Analog Inputs	
Number of channels	24 fully differential current inputs
Input configuration	Multiplexed
ADC resolution	18 bits
Sampling rate	1000 samples/s per channel, maximum (24 kS/s aggregate)
Input Ranges	0–20/4–20/ ±24 mA
Input resistance	100 Ω ± 15 Ω
Gains	1, 2, 5, 10
Minimum resolution	191 nA (Gain = 1), 95.4 nA (Gain = 2), 38.1 nA (Gain = 5), 19.1 nA (Gain = 10)
Input accuracy (Gain = 1, sample rate 250 samples/sec or less)	±6 µA at 25 °C ±5 °C ±30 µA over full temp range (worst case) ±5 ppm / °C (typical)
Input accuracy (Gain = 1, sample rate >250 samples/sec)	±12 µA at 25 °C ±5 °C ±45 µA over full temp range (worst case) ±10 ppm / °C (typical)
Input bias current	±5 nA max, ±0.5 nA typical
Common mode rejection	96 dB typical
Common mode range	-5 V to + 25 V
Power supply rejection	> 120 dB
Isolation	350 Vrms
Overvoltage protection	-55V to +55V
General Specifications	
Operating temperature	Tested -40 °C to +85 °C
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*	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
Altitude	120,000 ft
Power consumption	2.0 W max
MTBF	> 500,000 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	Rsvd	25	Rsvd	46	DIO0
5	AIN 23+	26	AIN 23-	47	AIN 21-
6	AIN 22+	27	AIN 22-	48	AIN 21+
7	AIN 20+	28	AIN 20-	49	AIN 18-
8	AIN 19+	29	AIN 19-	50	AIN 18+
9	AIN 17+	30	AIN 17-	51	AIN 15-
10	AIN 16+	31	AIN 16-	52	AIN 15+
11	AIN 14+	32	AIN 14-	53	AIN 12-
12	AIN 13+	33	AIN 13-	54	AIN 12+
13	AIN 11+	34	AIN 11-	55	AIN 9-
14	AIN 10+	35	AIN 10-	56	AIN 9+
15	AIN 8+	36	AIN 8-	57	AIN 6-
16	AIN 7+	37	AIN 7-	58	AIN 6+
17	AIN 5+	38	AIN 5-	59	AIN 3-
18	AIN 4+	39	AIN 4-	60	AIN 3+
19	AIN 2+	40	AIN 2-	61	AIN 0-
20	AIN 1+	41	AIN 1-	62	AIN 0+
21	Rsvd	42	Gnd		

Ordering Information

Product	Description
DNx-AI-204	24 channel differential 18-bit 0-20/4-20 mA input board
DNA-CBL-62	62 conductor shielded cable
DNA-STP-62	62 terminal screw terminal panel
Extended Warranty	Option to purchase UEI's extended 5 year warranty is available