

DNA/DNR/DNF-AI-222

12-Channel, fully isolated RTD/resistance input board

- DNA-AI-222 for use in Cubes, DNR-AI-222 for RACKtangle™ chassis and DNF-AI-222 for FLATRACK chassis
- 12 fully differential analog input channels
- 2, 3 and 4 wire connections
- 100 Ohm DIN and US measurements
- Channel-to-channel and channel-to-chassis isolation
- 0.005 °C resolution, 0.2 °C accuracy
- 0 to 40,000 Ω resistance measurement range
- Built-in 50, 60 and 400 Hz rejection (at select sample rates)
- 150 Hz, per channel sample rates



[DNR-AI-222 Shown]

General Description:

The DNA/DNR-AI-222 are 12-channel fully isolated, simultaneously sampling RTD input boards compatible with UEI's popular Cube and RACKtangle chassis respectively. The DNA/DNR versions are electronically identical. The DNX-AI-222 features 24-bit A/D converters with 50 µA excitation current for resistances up to 40 kΩ. The AI-222 provides an input resolution of better than 0.005 °C (100 Ω PT RTDs) or 0.002 Ω when measuring with the 0-312 Ω range.

An A/D per channel configuration allows simultaneous sampling at rates up to 150 S/s each (1800 S/s aggregate). The A/D per channel configuration virtually eliminates input cross talk and channel settling time issues.

The DNX-AI-222 is an ideal, high accuracy RTD measurement device, offering total errors of less than 0.2 °C on all standard 100 Ω RTDs. This accuracy combined with the 350 VDC/Vrms channel-to-channel and channel-to-chassis isolation makes the board a perfect solution for industrial temperature measurement, even when using non-isolated RTDs in high voltage environments.

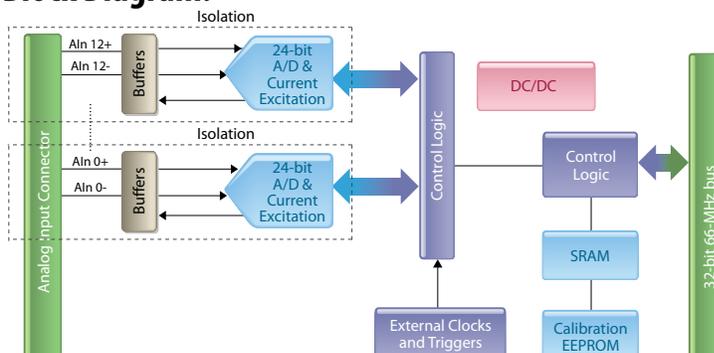
The software included will perform all required RTD linearization and compensation and returns data in °C, °K, °F or °R when desired. The software also allows the temperature conversion to be disabled and the inputs can measure resistance in Ohms up to 40 kΩ.

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: (Sample rate 19.7 SPS or less unless noted)

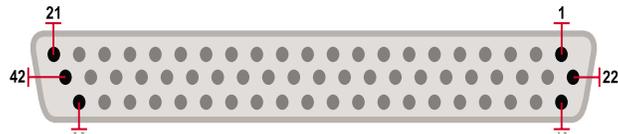
Number of channels:	12 fully differential
ADC resolution	24 bits, < 0.005 °C with 100 Ω PT RTDs < 0.002 Ω in resistance measurement mode
Sampling rate	up to 150 samples/sec per channel 1800 S/S board aggregate
Measurement error	(@ 25 ± 5 °C / over -40 °C to +85 °C)
RTDs (100 Ω PT)	3/4-wire ±0.2 °C / ±0.4 °C 2-wire ±0.8 °C / ±1.6 °C
0 to 156 or 312 Ω range	±0.05 Ω / ±0.1 Ω ±0.2 Ω / ±0.4 Ω
0 to 1250 Ω range	±0.1 Ω / ±0.2 Ω ±0.4 Ω / ±0.8 Ω
0 to 5000 Ω range	±0.2 Ω / ±0.4 Ω ±0.8 Ω / ±1.6 Ω
0 to 40,000 Ω range	±0.2 Ω ±0.02% / ±1% of reading ±0.8 Ω ±0.08% / ±1% of reading
Excitation current	50 µA typical (all ranges)
Resistance range	0–40,000 Ω
General A/D specifications	
Gain error	±0.005 % (typical)
Input INL error	6 ppm typical, 15 ppm max
Input impedance	>5000 MΩ
Anti-Aliasing filtering	@47.6% of sample rate, ~100 dB/decade
50/60/400 Hz notch filtering	>70 dB at sample rate of 19.7 Hz or less
Chan to Chan crosstalk	< 0.03 Ω or 0.08 °C with a 100 Ω PT RTD
Isolation	350 Vrms, channel-to-channel and channel-to-chassis
Overvoltage protection	-15 V to +15 V (power on or off, current must be limited to ±20 mA)
Power consumption	4 W max
Operating temp. (tested)	-40 °C to +85 °C
Operating humidity	95%, non-condensing
Vibration IEC 60068-2-6	5 g, 10–500 Hz, sinusoidal
IEC 60068-2-64	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	230,000 hours

Block Diagram:



Pinout Diagram:

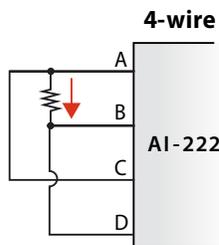
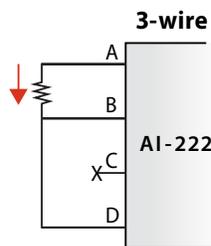
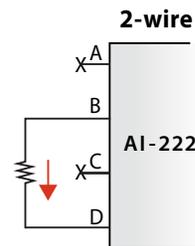
DB-62 (female)



Pin	Signal	Pin	Signal	Pin	Signal
1	Rsvd	22	Rsvd	43	Rsvd
2	Rsvd	23	Rsvd	44	Rsvd
3	5 VDC (100 mA Max)	24	Gnd for 5VDC	45	Gnd for 5VDC
4	Rsvd	25	Rsvd	46	CH 11.A
5	CH 11.C	26	CH 11.B	47	CH 11.D
6	CH 10.B	27	CH 10.A	48	CH 10.C
7	CH 9.A	28	CH 10.D	49	CH 9.B
8	CH 9.D	29	CH 9.C	50	CH 8.A
9	CH 8.C	30	CH 8.B	51	CH 8.D
10	CH 7.B	31	CH 7.A	52	CH 7.C
11	CH 6.A	32	CH 7.D	53	CH 6.B
12	CH 6.D	33	CH 6.C	54	CH 5.A
13	CH 5.C	34	CH 5.B	55	CH 5.D
14	CH 4.B	35	CH 4.A	56	CH 4.C
15	CH 3.A	36	CH 4.D	57	CH 3.B
16	CH 3.D	37	CH 3.C	58	CH 2.A
17	CH 2.C	38	CH 2.B	59	CH 2.D
18	CH 1.B	39	CH 1.A	60	CH 1.C
19	CH 0.A	40	CH 1.D	61	CH 0.B
20	CH 0.D	41	CH 0.C	62	D O 1
21	DI 0	42	DIO Gnd		

Wiring Diagram:

2, 3, 4-wire



Connection Options:

Part #	Description
DNA-CBL-62	Shielded 36 inch 62 conductor cable. (for 1, 10 and 20 foot lengths add a -X suffix where X is the length desired)
DNA-STP-62	Screw terminal panel
Extended Warranty	Option to purchase UEI's extended 5 year warranty is available