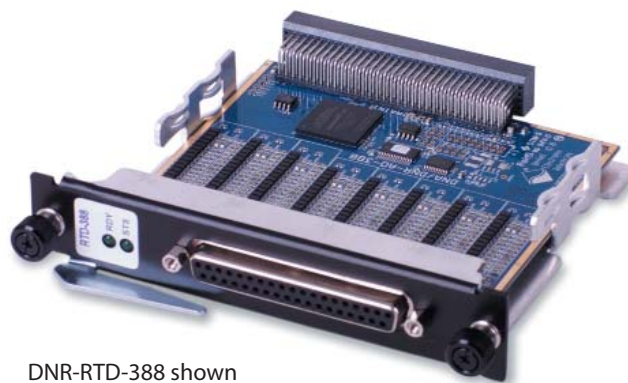# DNx-RTD-388

8-Channel RTD Simulator Board

10-Year Availability Guarantee

• Available for RACKtangle, Cube and FLATRACK Chassis
• 8 fully isolated channels
• Actual switched resistor configuration
• 1000 Ω (100 Ω and custom versions available)
• Guardian series diagnostics
  - channel temperature read-back
  - board temperature read-back
• Simulates both open and short-circuited RTDs
• Wide ±4 mA excitation range

DNR-RTD-388 shown

General Description

The DNA-RTD-388, DNR-RTD-388 and DNF-RTD-388 boards are 8-channel, RTD simulators designed for use in UEI's popular Cube, RACKTangle and FLATRACK chassis respectively. The boards are based on actual switched resistors and will precisely duplicate the behavior of the RTDs simulated.

The boards are an ideal solution for simulator / SIL applications where an on-board system device is expecting an RTD as an input. The boards are also an excellent solution for testing and diagnosing errors in a variety of RTD based systems.

The boards are available in two configurations. The DNx-RTD-388 series simulates a 1000 Ω RTD while the standard DNx-RTD-388-100 simulates the 100 Ω RTD. Other resistance values are available on a special order basis.

The DNx-RTD-388 series is part of UEI's powerful Guardian series and provides powerful diagnostic read-back functionality. A/D converters on each channel allow the application to monitor input current. The board also provides simulation of open and short-circuited RTDs.

All connections are made through a convenient 37-pin D connector ensuring OEMs may easily obtain mating cables or connectors. Users may also connect the DNx-RTD-388 series boards to our popular DNA-STP-37 screw terminal panel via the DNA-CBL-37S series cables. The cables are fully shielded and are available in 3, 10 and 20 foot lengths.

The DNx-RTD-388 series includes software drivers supporting all popular operating systems including: Windows, Linux, QNX, VXWorks, and most other popular Real-Time Operating Systems. Windows users may take advantage of the powerful UEIDAQ Framework which provides a simple and complete software interface to all popular Windows programming language and data acquisition and control applications (e.g. LabVIEW, MATLAB).

Technical Specifications: (alpha = 0.00385 unless noted)

Configuration	
Number of Channels	8
Maximum Excitation Current	± 4 mA
Resistance Specifications	
Nominal resistance	1000 Ω (0 °C)
Minimum resistance	180 Ω (-201.1 °C)
Maximum resistance	3900 Ω (849 °C)
Power-on resistance	Programmable. Default is 1000 Ω
Resolution (resistance)	Better than 0.5 Ω
Resolution (temp)	Better than 0.125°C (alpha = 0.00385)
Accuracy at ambient temp	
25 °C ±5 °C	0.26 °C (1.0 Ω)
-40 °C to +85 °C	1.0 °C (3.85 Ω)
Simulated Open RTD resistance	1 M Ω minimum
Simulated Shorted RTD resistance	1 Ω maximum
Resistance change update rate	0 - 100 Hz (This is how quickly the relays can switch)
Output voltage settling time	Dependent on excitation current and selected resistance
Output configuration	16.7 µF in parallel with selected output resistance
Diagnostic (Guardian) Read-back Specifications	
Input current range	± 5 mA
Current read-back resolution	± 10 µA
Current read-back accuracy	± 4 % of reading
Read-back update rate	up to 5 Hz
Temperature read-back accuracy	± 5 °C
General	
Power consumption	<3.0 W, not including IR dissipation
Operating range	Tested -40 to +85 °C
Humidity range	0-95%, non-condensing
Vibration IEC 60068-2-6 IEC 60068-2-64	5 g, 10-500 Hz, sinusoidal 5 g (rms), 10-500Hz, 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
Altitude	to 70,000 feet
MTBF	Greater than 400,000 hours

Pinout Diagram:

nc	1	20	nc
nc	2	21	nc
nc	3	22	Sense-7A
CH-7A	4	23	Sense-7B
CH-7B	5	24	Sense-6A
CH-6A	6	25	Sense-6B
CH-6B	7	26	Sense-5A
CH-5A	8	27	Sense-5B
CH-5B	9	28	Sense-4A
CH-4A	10	29	Sense-4B
CH-4B	11	30	Sense-3A
CH-3A	12	31	Sense-3B
CH-3B	13	32	Sense-2A
CH-2A	14	33	Sense-2B
CH-2B	15	34	Sense-1A
CH-1A	16	35	Sense-1B
CH-1B	17	36	Sense-0A
CH-0A	18	37	Sense-0B
CH-0B	19		

Notes:

1. The output of the DNx-RTD-388 is resistance. The polarity of the A/B terminals is irrelevant in regards to the output resistance. However, the Guardian read-back circuitry assumes that "A" is the positive terminal and "B" is the negative. Customers are free to reverse this, but please note that the Guardian read-back provided will be the inverse of the actual measurement (i.e. multiplied by -1).

2. The sense outputs are connected directly to the standard outputs. For example Sense-7A is connected to CH-7A on the DNx-RTD-388's printed circuity board, Sense-1B is connected to CH-1B. The sense leads are provided as a convenience to those wiring the board in 3 and 4 wire modes.

Ordering Options:

Product	Description
DNx-RTD-388	8-Channel, 1000 Ohm RTD simulator board (Order DNR-RTD-series for RACKtangle chassis, DNA-RTD-series for Cube chassis)
DNA-CBL-37	3 foot shielded cable connects DNx-RTD-388 series boards to DNA-STP-37 screw terminal panels. (also available in 1, 5, 10 and 20 foot lengths)
DNA-STP-37	37-connection screw terminal panel