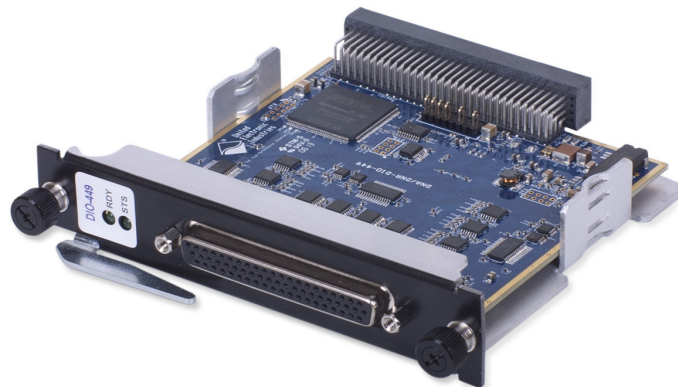


# DNA/DNR-DIO-449

## High Voltage 48-Channel Digital Input Layer

- 0 -150 VDC / 150 VAC input range
- Sample rate of 1 kS/sec
- Programmable input transition levels & hysteresis
- Change of state detection with 200  $\mu$ S accuracy
- 350 VAC isolation
- Monitors contacts without external components
- Programmable debounce intervals
- **Guardian Series Diagnostics**
  - Analog voltage measurement on each channel
  - Internal test signal injection for self-test

10-Year  
Availability  
Guarantee



The DNA-DIO-449 is designed for use in "Cube" I/O chassis while the DNR-DIO-449 is for use in the RACKtangle™ chassis.

### General Description:

The DNA/DNR-DIO-449 are 48 channel, high performance AC and DC digital input boards designed for use in a wide variety of digital monitoring applications. The DNA- and DNR-DIO-449 are compatible with UEI's popular "Cube" and RACKtangle I/O chassis respectively. The board's inputs are divided into two, 24-bit ports, each of which presents its data in a 24-bit read. This simplifies programming and maximizes throughput. The board reads all 48 bits at sustained rates in excess of 1 kS/second. Automatic Change Of State (COS) detection is available with 200  $\mu$ S time stamp accuracy.

The "Guardian advantage" is a highly powerful diagnostic capability. A test signal injection capability is provided that allows the entire input hardware chain to be tested for proper functionality. The board will also monitor switch or contacts without external circuitry. In addition, the inputs are based on A/D converters which allows a diagnostic input mode that monitors the actual analog voltage at each input. This capability combined with the board's ability to switch a fixed reference voltage into each channel allows a complete and reliable self-test of each channel. The analog voltage measurement capability also allows a quick and accurate detection of short and open circuits as well as marginal or failing drive circuitry. The analog input capability is also a powerful installation and diagnostic tool.

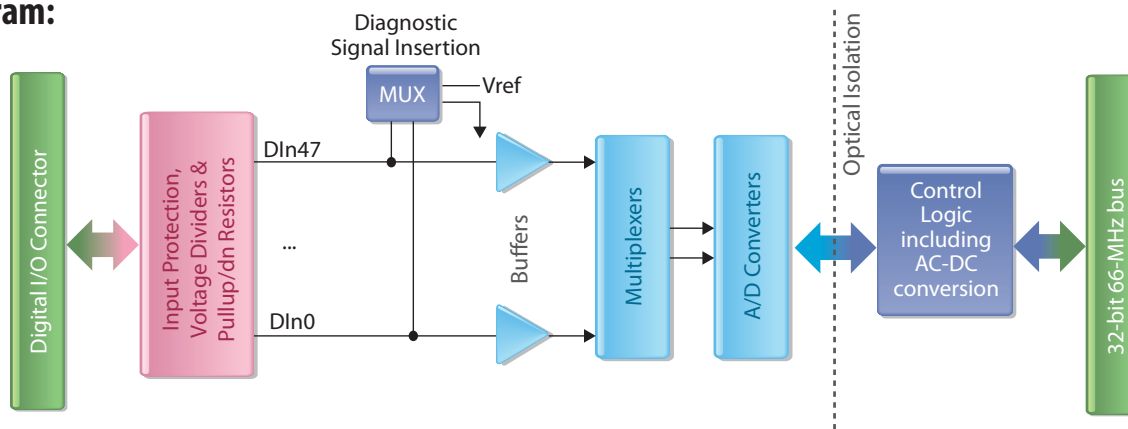
The board offers programmable logic thresholds and hysteresis over the full input range. Thresholds and hysteresis are independently programmable on each channel. The board supports user programmable debouncing intervals for DC inputs which may be set on each channel independently with durations between 5 and 400 ms. Each board provides 350 Vrms isolation between the I/O and the cube and other installed I/O layers. All inputs are over-voltage protected from -350 to +350 VDC, and against ESD.

Software included with the DNX-DIO-449 provides a comprehensive yet easy to use API that supports all popular operating systems including Windows, Linux, real-time operating systems such as QNX, RTX, VXworks and more. The UEIDAQ Framework supplies complete support for those creating applications in Windows based data acquisition software languages as well as Windows application packages such as LabVIEW, MATLAB/Simulink, DASyLab or any application which supports ActiveX or OPC servers.

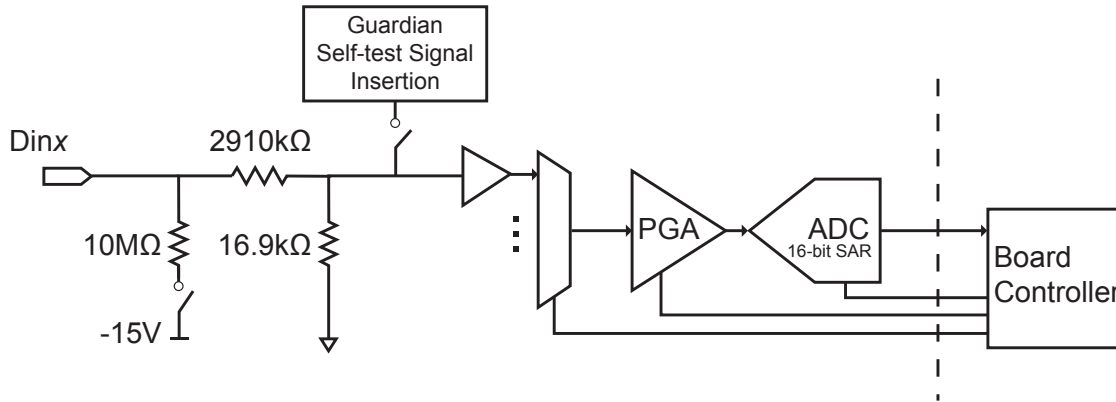
### Technical Specifications:

Number of channels	48 digital inputs
Port configuration	Two 24-bit ports
Input range	-150 to +150VDC, 0 to 150 VAC (42 - 2500 Hz)
Input gains	x1 default. Gains of x2, x5 and x10 are provided if higher resolution is required for lower voltage input ranges
Input high voltage	Programmable from 0 to 150 VDC/VAC (default: 12 VDC, 60 VAC)
Input OFF voltage	Programmable from 0 to 150 VDC/VAC (default: 1.25 VDC, 15 VAC)
Hysteresis (voltage input)	Programmable, 0 to 150 VDC/VAC (default 10.25 VDC/45 VAC)
Input impedance	> 2.25 MegOhm.
Input open circuit state	Programmable high or low via signal injection diagnostic stage. Each channel is independently programmable.
Input FIFO	1000 samples
Input Throughput Rate	1 kHz max
Change of state detection	Based on the change of one or more inputs.
COS timestamp accuracy	Accurate to 200 $\mu$ S
Voltage measurement and threshold voltage accuracy	DC: $\pm$ 50 mV (-150 VDC to 150 VDC), AC: $\pm$ 150 mVAC (0 VAC to 150 VAC)
Input protection	$\pm$ 350 VDC and ESD
Input Isolation	350 Vrms
Power dissipation	2 W, max.
Operating Temp. Range	Tested -40 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), 10-500 Hz, broad-band random
Shock IEC 60068-2-27	50 g, 3 ms half sine, 18 shocks @ 6 orientations 30 g, 11 ms half sine, 18 shocks @ 6 orientations
MTBF	500,000 hours

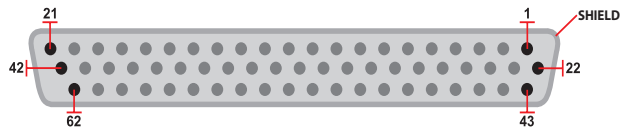
### Block Diagram:



## Single Channel Diagram:



## Pinout Diagram:



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

NC - No Connection  
Rsvd - Reserved

## Connection Options:

Screw Terminal Panel	Matching Cable	Description
DNA-STP-62	DNA-CBL-62	Connects all I/O signals to easy to use screw terminals