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DNx-DIO-432

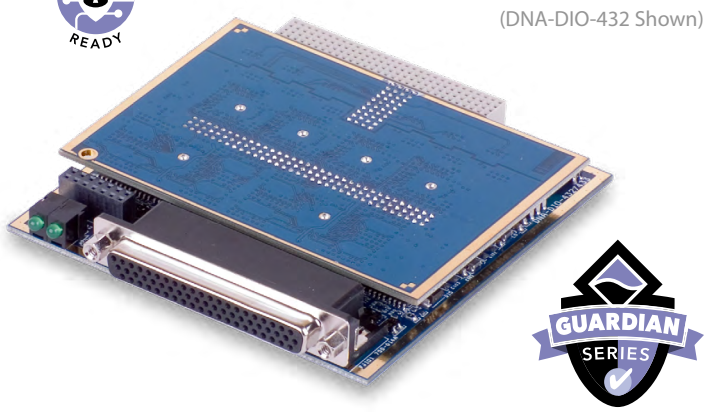
Guardian™ 32-Channel Industrial Digital Output Layer

- DNA/DNR/DNF-DIO-432 for use in Cube, RACKtangle® and FLATRACK™ I/O chassis

The Guardian Advantage

- Programmable overcurrent protection (50 mA to 1 A)
- Programmable overcurrent duration limits
- PWM based soft-start/stop reduces inrush current "shock"
- Monitors each channel's output voltage and current, allowing automatic detection of shorts/open and other system failures

- Unused outputs may be used as analog inputs
- PWM output for control of low speed, high current analog devices
- 600 mA per channel of continuous output (sink) current
- Wide 3.3 V to 36 V operating range
- Output throughput rate of 1 kS/sec



(DNA-DIO-432 Shown)

DNA-DIO-432 boards are for use in "Cube" chassis while the DNR-DIO-432 is designed for use in RACKtangle™ chassis

General Description:

The DNA/DNR-DIO-432 are 32 channel, digital output boards. The DNA-DIO-432 is compatible with UEI's "Cube" series chassis, while the DNR-DIO-432 is designed for use in the RACKtangle I/O chassis. Electronically, they are identical. The boards are designed for use in a wide variety of applications. Each channel is configured as a current sink (see diagram on the following page) and switches voltages between 3.3 and 36 VDC. Each channel is rated for continuous operation at 600 mA with an output voltage drop of less than 550 mV. (The DNA-DIO-433 provides identical capability with current "sourcing" outputs.)

BENEFITS OF UEI'S GUARDIAN SERIES

✓	CIRCUIT BREAKER
✓	VOLTAGE MONITORING
✓	CURRENT MONITORING

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 DIO-432 is part of UEI's Guardian series. It not only controls the digital outputs, it provides a unique output monitoring capability. An on-board 24-bit A/D converter monitors each channel's output voltage and current. This allows the application to detect and flag short and open circuits as well as other "suspicious" behavior. The monitoring capability is also powerful diagnostic tool allowing a repair technician to quickly and accurately identify blown, or mis-wired channels. Channels not used as outputs may serve as analog inputs. With the output "On", each channel will input current (0–600mA). Turn the output off, and it measures 0–36 VDC analog input signals with ±10 mV accuracy.

The Guardian advantage includes programmable overcurrent protection. The user may select the current and duration of overload (as short as 10 mS) required before the channel is shut down. Each board provides 350 Vrms isolation between the I/O and the cube and other installed I/O layers. The DNA-DIO-432 offers update rates up to 1 kHz and simplifies software writes by transferring all data in a single, 32-bit word.

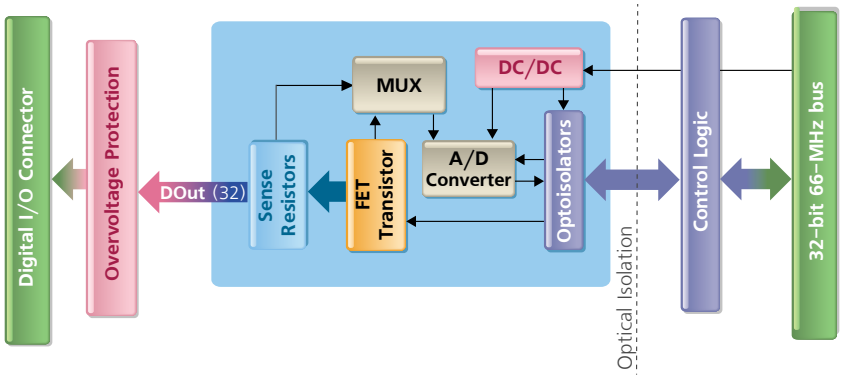
Each channel offers a pulse-width-modulated (PWM) "soft-start/stop" capability. This allows power to be applied/removed gradually, greatly increasing the reliability of devices like incandescent bulbs where thermal shock reduces life expectancy. The PWM may also used as an analog output control for low speed, high voltage/current applications.

Technical Specifications:

Number of channels	32 digital outputs
Output configuration	Current sink
Output port configuration	Single 32-bit word
Output Drive	600 mA per channel continuous; 3.5 A peak (100 mS max)
Output ON voltage	< 550 mV @ 600 mA (incl. std 3' cable)
Output ON impedance	< 0.9 Ω (including std 3' cable)
Output OFF impedance	> 1 Meg Ohm
Output OFF leakage	< 25 µA
Overvoltage protection	±40 VDC (reverse current must be limited to 1 A to prevent damage)
Overcurrent protection Current Limit Overload response time	 50 mA–2 A 10–5000 ms (user programmable)
Output Monitoring Configuration Voltage Accuracy Current Accuracy	 Multiplexed ±10 mV max (sampled at 2 Hz) ±1 mA, max (sampled at 10 Hz)
Soft-Start/Stop duration	256 µs to 5 seconds
Steady State PWM output	0 to 100% in 0.4% increments. (Minimum period is 256 µSec)
Output Throughput Rate	1 kHz max
Power up / reboot state	Off
Power dissipation	<2.5 W, not including power dissipated in the output FETs
Isolation	350 Vrms
Operating Temp. Range	Tested -40 to +85 °C
Operating Humidity	95%, non-condensing
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
Altitude	120,000
MTBF	260,000 hours

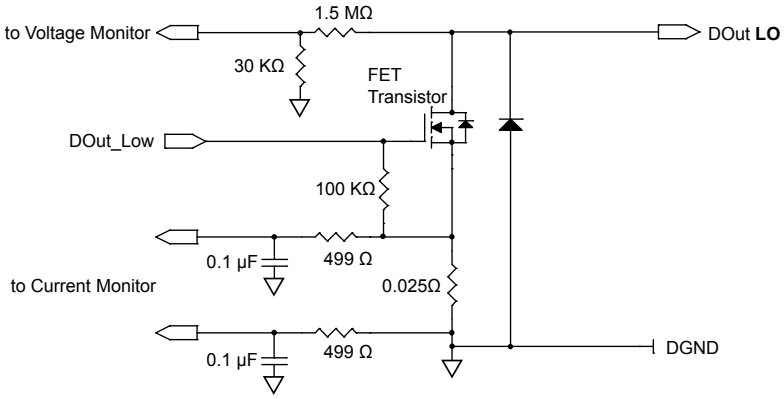
The DNA-DIO-432 is fully supported by the UEIDAQ Framework which provides a simple and complete software interface to all popular programming languages, operating systems and data acquisition and control applications (e.g. LabVIEW, DASYLab, MATLAB).

Block Diagram:

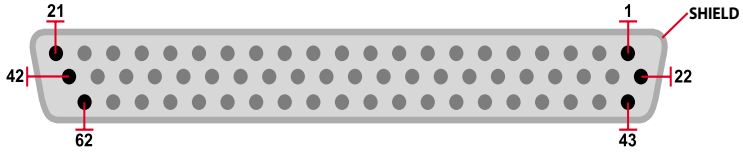


Single Channel Diagram:

Simplified Output Channel Diagram



Pinout Diagram:



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

Note: For rated performance all ground pins should be connected to the external ground.

Ordering Guide:

Part #	Description
DNx-DIO-432	Guardian™ 32-Channel Industrial Digital Output Layer
DNA-STP-62	62-channel screw terminal panel
DNA-CBL-62	2.5ft, 62-way round shielded cable
Extended Warranty	Option to purchase UEI's extended warranty (up to 10 years) is available

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