

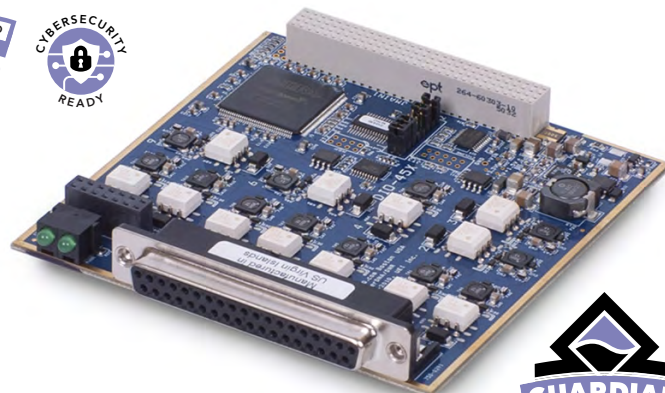
DNA/DNR-DIO-463

Guardian™ 12-Channel Solid State Relay Output Board



• The Guardian Advantage

- Programmable overcurrent protection (50 mA to 2 A)
- Programmable overcurrent duration limits
- Monitors each channel's output voltage and current allowing automatic detection of shorts/open and other system failures
- Supported by over 90 standard DNR-series I/O boards
- 5 g vibration, 100 g shock, sealed to IP66
- DNA-/DNR-/DNF-AO-463 for use with Cube®/RACKtangle™/FLATRACK™ I/O chassis
- DNA-DIO-463 for use with Cube I/O chassis
- 2 A continuous output current at 48 VDC or 35 VAC
- Fully solid state contacts
- 150 mΩ on resistance
- Output throughput rate of 125 updates per second



DNA-DIO-463 board (shown above) is for use in Cube chassis, while the DNR-DIO-463 is designed for use in RACKtangle and FLATRACK chassis.

General Description:

The DNA-DIO-463, DNR-DIO-463, DNF-DIO-463 are 12-channel, solid-state relay boards designed for use with UEI's Cube, RACKtangle and FlatRACK chassis, respectively. Electronically, they are identical. Relays are in a Form A (SPST) configuration and are rated for continuous operation

at 2 A at 51 VDC, solid state contacts ensure many more operations than electromechanical relays and are also silent. The board provides an ON resistance of less than 150 mΩ and update rates up to 125 Hz.

The DIO-463 is part of UEI's Guardian series. It not only controls the relay outputs, it also provides a powerful output monitoring capability. An on-board A/D converter allows you to monitor DC output voltages (relative to the common terminal) and



BENEFITS OF UEI'S GUARDIAN SERIES

✓	CIRCUIT BREAKER
✓	VOLTAGE MONITORING
✓	DC 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](#)

DC output current. This allows the application to detect short and open circuits as well as other "suspicious behavior". The monitoring capability is also a powerful diagnostic tool that allows a repair technician to quickly and accurately identify damaged or miswired channels.

The Guardian advantage also includes programmable overcurrent protection—the user may select the overload current up to one second before the channel is shut down. Each board provides 350 Vrms isolation between channels, as well as between the board, cube, and other installed I/O boards.

All connections are made through 37-pin D connectors that ensure that mating cables or connectors are readily available. Users may also use the DNA-STP-37 screw terminal panel via DNA-CBL-37 or -37S series cables.

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.

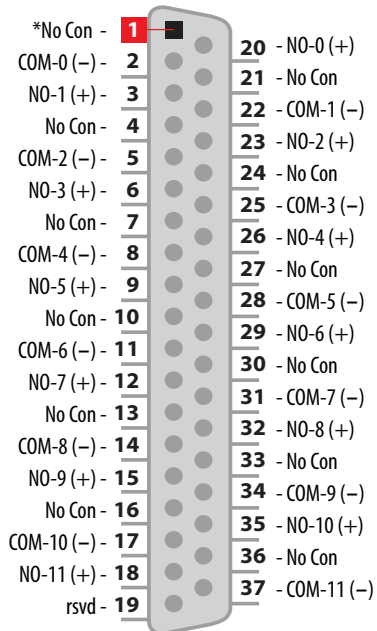
Technical Specifications:

Output specifications	
Rated Load (< 50 °C)	2 A at 48 VDC or 35 VAC continuous
Rated Load (85 °C)	1 A at 48 VDC or 35 VAC continuous
Rated Load (50–85 °C)	Derate linearly between 2A and 1A
Maximum Operating Voltage	51 VDC (DC voltage or peak AC)
Min Permissible Load	N one
Contact ON impedance	150 mΩ maximum (at the I/O connector)
Contact OFF impedance	>2 MΩ
Off Leakage Current	< 50 μA
Turn-On Time	6 mS maximum
Turn-Off Time	2 mS maximum
Max Operating Frequency	125 operations/second (36000/hour limit)
Monitor/circuit breaker specs	(see Note 1 below)
Resolution	16 bits
Range	±55 VDC 0–2 A DC 0.3–2 A AC -55/+100 °C
Accuracy	
DC Voltage	5% of measurement + 0.25% of the full scale
DC Current	0–2 A DC
Relay Temperature	0.3–2 A AC
Protection	(only one type activated per channel)
DC Voltage	±5 V to ±51 V
DC Current	50 mA to 2 A
Relay Temperature	0–85 °C
Disconnection Time	1 sec
Power up / reboot state Off	Off
Power dissipation	< 2.5 W
Isolation 350 Vrms	350 Vrms
Operating Temperature 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	100 g, 3 ms half sine, 18 shocks @ 6 orientations 30 g, 11 ms half sine, 18 shocks @ 6 orientations
Altitude	130,000 ft
MTBF	260,000 hours

Note 1: The Dnx-DIO-463 is targeted at DC applications. Though the solid state relay used allows for AC operation, the automatic, programmable output protection mode is only supported in DC applications when the NO input (see connector pinout on the following page) is used as the + (positive) terminal, while the COM terminal is connected at the – (negative). DC users should pay careful attention to the polarities. AC users are advised to insert external current protection if the application requires it.

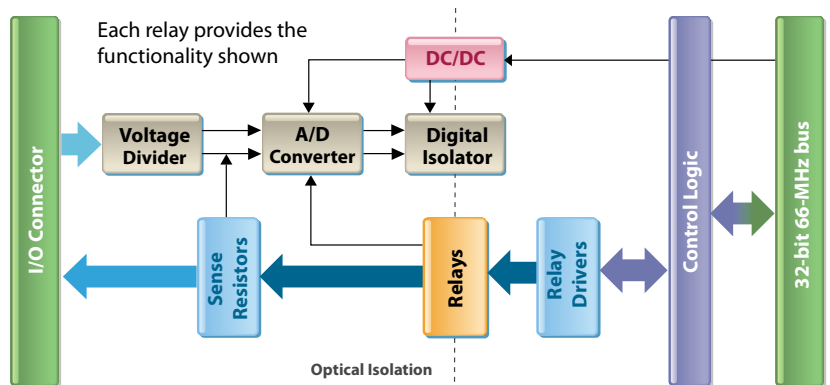
Pinout Diagram:

DB-37 (female)
37-pin connector:



*No Con indicates no on-board connection

Block Diagram:



Connection Options:

Terminal Panels	Matching Cable	Description
DNA-STP-37	DNA-CBL-37 series	Connects all I/O signals to easy to use screw terminals

Ordering Guide

DNx-DIO-463	Guardian™ 12-Channel Solid State Relay Output Board
UEIPAC 1200-MIL-02-32-00-VX	12-slot, military style I/O rack
LINUX-TK	UEIPAC Linux Programmers Toolkit Versions
DNR-IO-FILLER	Blank / Filler for unused slots in DNR series RACKtangles
UEIPAC VXW BSP	UEIPAC VxWorks board support package (BSP)
Extended Warranty	Option to purchase UEI's extended warranty (up to 10 years) is available