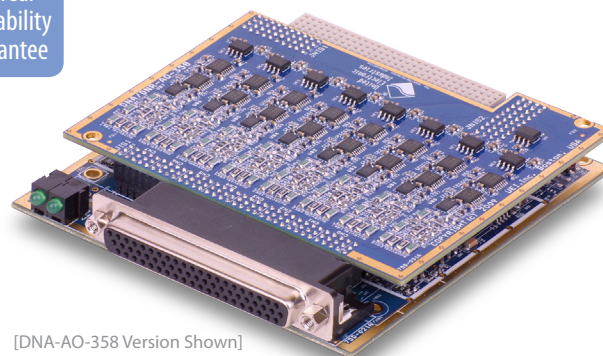


DNA/DNR-AO-358

8-Channel Strain Gauge Simulator Board

- DNR-AO-358 for RACKtangle Chassis
- DNA-AO-358 for Cube Chassis
- 8 Simulated strain gages
- Full or Half/Quarter bridge configurations
- 120, 350 and 1k Ohm standard configurations
- AC or DC excitation
- >250 kHz bandwidth
- Wide ± 15 V excitation range
- On-board A/D converter monitors excitation voltage

10-Year
Availability
Guarantee



[DNA-AO-358 Version Shown]

General Description

The DNA-AO-358 and DNR-AO-358 are 8 channel, strain gauge simulators designed for use in UEI's popular Cube and RACKtangle chassis respectively. The boards are based on actual variable resistors and will precisely duplicate the behavior of the gauges simulated.

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

The boards are available in two configurations. The standard board supports simulation of full bridge strain gauges while the -QH versions support quarter and half bridge configurations. Both are available in standard 120, 350 and 1 kOhm configurations. Other resistance values are available on a special order basis. The DNx-AO-358 series is compatible with both DC and AC excitations and offers AC throughput bandwidth greater than 250 kHz.

All connections are made through a convenient 62-pin D connector ensuring OEMs may easily obtain mating cables or connectors. Users may also connect the DNx-AO-358 boards to our popular DNA-STP-62 screw terminal panel via the DNA-CBL-62 cable. The cables are fully shielded and are available in 2.5, 10 and 20 foot lengths.

The DNx-AO-358 series includes software drivers supporting all popular operating systems including: Windows, Linux, QNX, VXWorks, RTX, 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, DASyLab, MATLAB).

Note 1: Excitation voltage and power dissipation

The total power dissipated by bridge resistors on the DNx-AO-358 board is limited to 3 Watt and no channel may dissipate more than 0.5 Watt. Though the excitation voltage limit is 15 VDC, at this limit there are conditions when using 350 and 120 ohm versions of the board where this 3 W limit will be exceeded. Please refer to the table on the following page for details.

Ordering Options:

| Product | Description |
|--------------------|---|
| DNx-AO-358-120* | 8-Channel, 120 Ohm Full Bridge Strain Gauge simulator board (Order DNR-AO-series for RACKtangle chassis, DNA-AO-series for Cube chassis) |
| DNx-AO-358-120-QH* | 8-Channel, 120 Ohm Quarter/Half Bridge Strain Gauge simulator board (Order DNR-AO-series for RACKtangle chassis, DNA-AO-series for Cube chassis) |
| DNx-AO-358-350 | 8-Channel, 350 Ohm Full Bridge Strain Gauge simulator board (Order DNR-AO-series for RACKtangle chassis, DNA-AO-series for Cube chassis) |
| DNx-AO-358-350-QH* | 8-Channel, 350 Ohm Quarter/Half Bridge Strain Gauge simulator board (Order DNR-AO-series for RACKtangle chassis, DNA-AO-series for Cube chassis) |
| DNx-AO-358-1k* | 8-Channel, 1000 Ohm Full Bridge Strain Gauge simulator board (Order DNR-AO-series for RACKtangle chassis, DNA-AO-series for Cube chassis) |
| DNx-AO-358-1k-QH* | 8-Channel, 1000 Ohm Quarter/Half Bridge Strain Gauge simulator board (Order DNR-AO-series for RACKtangle chassis, DNA-AO-series for Cube chassis) |
| DNA-CBL-62 | 3 foot shielded cable connects DNx-AO-358 series boards to DNA-STP-62 screw terminal panels. (available in 2.5, 10 and 20 foot lengths) |
| DNA-STP-62 | 62-connection screw terminal panel |

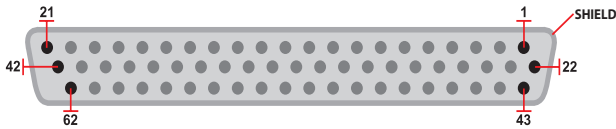
*Special order product, minimum purchase may be required. Please call for quantity, pricing and delivery information.

Technical Specifications:

| Configuration | |
|---|---|
| Number of Channels | 8 |
| Bridge configurations | Full or Half/Quarter bridge |
| Strain Resistances | 120, 350 and 1k Ω standard, other resistances available as special orders |
| Max / Min Excitation Voltage | +15 / -15 VDC (3 W max bridge power Note 1 below/left) |
| Resistance Specifications | |
| Nominal resistance | |
| Variable resistor | ± 1.0 % |
| Bridge completion resistors | ± 0.1 % |
| Full scale resistance range | ± 1.5 % |
| Resolution | |
| 120 Ω gauges | 0.46 m Ω |
| 350 Ω gauges | 1.33 m Ω |
| 1 k Ω gauges | 3.82 m Ω |
| Output resistance non-linearity | 0.005% max |
| Dynamic Specifications | |
| Excitation frequency | DC to 25 kHz |
| System bandwidth | 250 kHz, minimum |
| Resistance change update rate | 0 - 5 kHz |
| Excitation Monitor Specifications | |
| Monitor Accuracy | ± 10 mV |
| General | |
| Power consumption | <3W, not including bridge IR dis |
| Operating range | Tested -40 to +85 $^{\circ}$ 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 | 50 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 250,000 hours |

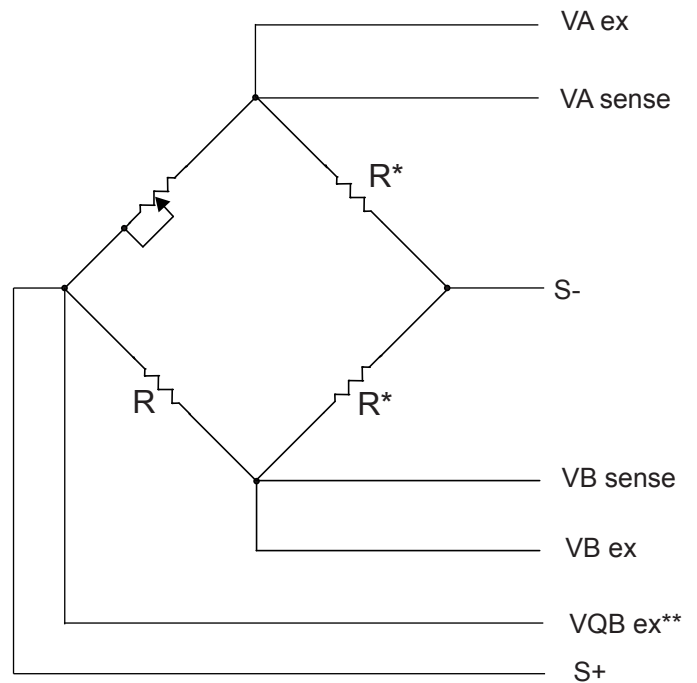
Pinout Diagram:

DB-62 (female) connector



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

Single channel schematic:



* Not installed on -QH version of boards

** Provides excitation for Quarter bridge configurations

Bridge Power Dissipation note:

The total power dissipated by bridge resistors on the DNX-AO-358 board is limited to 3 Watt and no channel may dissipate more than 0.5 Watt. Though the excitation voltage limit is 15VDC, there are conditions where this 3 W limit will be exceeded when using 350 and 120 ohm versions of the board and channels are excited with 15 VDC. In addition

to the board dissipation rate, no single channel may dissipate greater than 0.5 Watt. The table below describes the maximum excitation voltage that may be used on both a full-board and single channel basis for the three (full/half/quarter) configurations.

DNX-AO-358-120

| | Full Bridge | Half Bridge | Quarter Bridge |
|------------------------------------|----------------|----------------|-------------------|
| Max Excitation on all 8 channels | 6.67 Vrms | 9.5 Vrms | 13.3 Vrms |
| Max Channels at 15 Vrms Excitation | n/a | 3 | 6 |
| Max Excitation on a single channel | 7.5 Vrms | 11 Vrms | 15 Vrms |

DNX-AO-358-350

| | Full Bridge | Half Bridge | Quarter Bridge |
|------------------------------------|----------------|----------------|-------------------|
| Max Excitation on all 8 channels | 11.5 Vrms | 15 Vrms | 15 Vrms |
| Max Channels at 15 Vrms Excitation | 4 | 8 | 8 |
| Max Excitation on a single channel | 13 Vrms | 15 Vrms | 15 Vrms |

DNX-AO-358-1K

| | Full Bridge | Half Bridge | Quarter Bridge |
|------------------------------------|----------------|----------------|-------------------|
| Max Excitation on all 8 channels | 15 Vrms | 15 Vrms | 15 Vrms |
| Max Channels at 15 Vrms Excitation | 8 | 8 | 8 |
| Max Excitation on a single channel | 15 Vrms | 15 Vrms | 15 Vrms |