

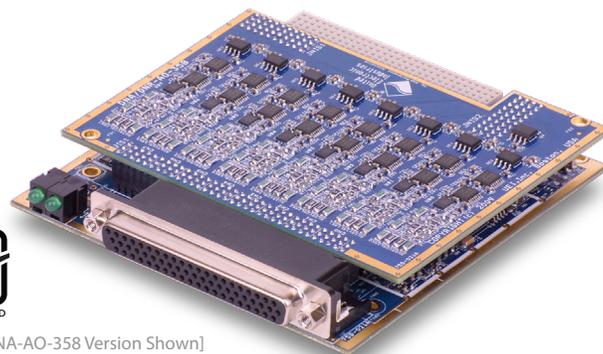
DNA/DNR-AO-358

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



[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.

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.

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

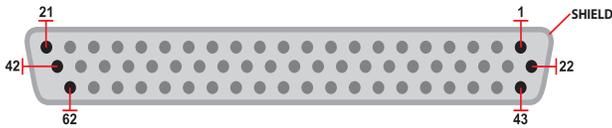
*Special order product, minimum purchase may be required. Please call for quantity, pricing and delivery information.

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	-40 to 85 deg 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	120,000 ft
MTBF	300,000 hours

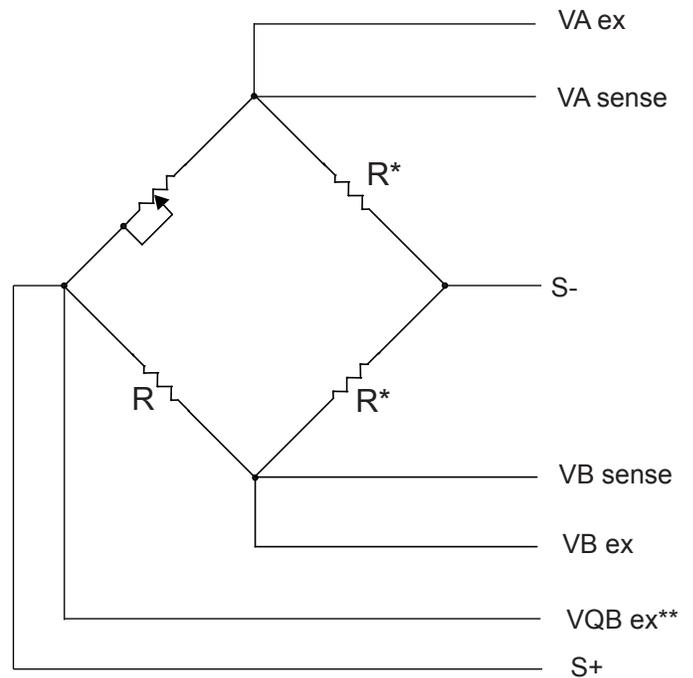
Pinout Diagram:

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