GREYSTONE
ACCURACY BY DESIGN

Non-Isolated PWM Signal Input

24 VAC/VDC Power

Pulsed Dry Contact

Label Space

* Optional Pots

To Actuator

(B) Minimum
(W) Maximum
(R) Wiper

B | W | R OUTPUT

POWER

R Value (Min-Max)

FAILSAFE
B | W | R

24 VAC/VDC Power

PWM/Floating Point Signal Common
Floating Point Down Input
PWM Input or Floating Point Up Input
Analog signal Input
Analog Signal Common

To Failback Control

Minumum (B)   (R) Wiper
(W) Maximum

JUMPER SETTINGS - Versions 1 & 2
PULSE,TRI-STATE & ANALOG
(Fixed 256 steps). Orient board with label space at top right)

Version #1

MODE	S1	S2	S3	S4	S5	S6
0.1-25.5s pulse						
0.02-5s pulse						
0.59-2.93s pulse						
30s Floating Pt.						
60s Floating Pt.						
90s Floating Pt.						

Version #1 and #2

MODE	S1	S2	S3	S4	S5	S6
0-5v						
0-10v						
0-15v						
1-5v						
2-10v						
3-15v						
0-20mA						
4-20mA						

Version #2

MODE	S1	S2	S3	S4	S5	S6
.1-10s pulse						
.023-6s pulse						
45s Floating Pt.						
120s Floating Pt.						
240s Floating Pt.						

JUMPER SETTINGS - Version 3
Analog only with selectable resolution

MODE	S1	S2	S3	S4	S5	S6
0-5v						
0-10v						
0-15v						
1-5v						
2-10v						
3-15v						
0-20mA						
4-20mA						

STEPS OF RESOLUTION	S4	S5
256 Steps		
128 Steps		
64 Steps		
32 Steps		

JUMPER SETTINGS - Version 4
(based upon a 10 second "window")

MODE	S1	S2	S3	S4	S5	S6
0-10 Second Duty Cycle Pulse						

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INSTALLATION

READ THESE INSTRUCTIONS BEFORE YOU BEGIN INSTALLATION.

Ground yourself before touching board. Some components are static sensitive.

MOUNTING:

Circuit board may be mounted in any position. If circuit board slides out of snap track, a non-conductive "stop" may be required.

Use only fingers to remove board from snap track. Slide out of snap track or push against side of snap track and lift that side of the circuit board to remove. Do not flex board or use tools.

POWER CONNECTIONS - THIS PRODUCT ACCEPTS 24 VOLTS AC OR DC POWER

BE SURE TO FOLLOW ALL LOCAL AND ELECTRICAL CODES. REFER TO WIRING DIAGRAM FOR CONNECTION INFORMATION.

1) **The secondary supply voltage to the interface should be isolated from earth ground, chassis ground, and neutral leg of the primary winding. Any field device connected to this transformer must use the same common. If you are not sure of other field device configuration, use separate transformers.**

2) **If the 24 volt AC power is shared with devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV, AC Transorb, or other spike snubbing device across each of the shared coils. Without these snubbers, coils produce very large voltage spikes when de-energizing that can cause malfunction or destruction of electronic circuits.**

3) **If the 24 volt DC power is shared with devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV, DC Transorb, or a diode placed across the coil or inductor. The cathode or banded side of the diode (or DC Transorb) connects to the positive side of the power supply.**

4) **You should measure the actual voltage output of the secondary. If the output is not fully loaded you may read a higher voltage than the circuit board can handle.**

CHECKOUT

Settings for Jumper Shunts S1 through S6 are shown on page 1. All six jumpers must be in proper position for each input type. Hold the DRN3.1 with the label at top to orient its jumper shunts with the chart. Version #1 and Version #2 share the same analog inputs. Ramping time for floating point inputs are selectable. Version #3 is analog only, with selectable resolution. Version #4 accepts a continuous pulse signal command string within a 10 second window. No pulse in this 10 second window produces minimum percent output. A ten second pulse in this 10 second window produces 100% output. Continuous pulse will produce maximum percent output.

When the DRN3.1 is not powered on terminals +24V and (-), the FAILSAFE input terminals are closed to the OUTPUT terminals. Check for continuity. When power is applied to terminals +24v and (-), the "POWER" LED will light and the failsafe terminals will be disconnected from the output terminals. Failback only occurs when the DRN3.1 has lost power. For fail-back to minimum resistance, add a jumper between B (min.) and R (wiper) only. For fail-back to maximum resistance, add a jumper between W (max.) and R (wiper) only. For fail-back to a specific resistance, a manual potentiometer or fixed resistors can be added between B (min.) and R (wiper) only.

The DRN3.1 resistance output simulates a potentiometer. Terminal R is the wiper, B is the low end of the potentiometer and W is the high end. Upon power-up, the wiper will start at the B position and will remain there until the first PULSE or FLOATING POINT signal is received.

The ANALOG version will begin tracking the input signal instantly after "sampling" the input signal to eliminate error.

The output resistance will not change on the PULSE version until the end of the pulse. To check the resistance output, vary the input signal and measure the resistance.

The resistance between terminals B and R will increase as the input signal increases and the resistance between W and R will decrease. If both floating point inputs are on for 3 seconds, the DRN3.1 resets to minimum resistance output.

Power:	24 VAC +/-10% 24 VDC +6/-2V	Power Consumption:	250 mA
Digital Inputs:	10-26.4 VAC or 4.5-30 VDC	Input Impedance:	Voltage/10,000 ohms
Resolution:	256 steps		Current/250 ohms