

## DNR960 Series



- Rugged Design for Industrial Applications
- Up to 93% Typical Efficiency
- Wide Adjustment Range
- Full Power to 60 °C
- Three Phase Operation
- Single Phase Operation
- 70 °C Convection Operation.

## Specification

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### Input

Input Voltage	• 340-575 VAC 3Ø (1Ø operation with 75% output derating), 480-820 VDC
Input Frequency	• 47-63 Hz
Input Current	• 1.6 A at 500 VAC
Inrush Current	• 30 A typical at 500 VAC, cold start
Power Factor	• 0.7 at 500 VAC input and nominal load
Earth Leakage Current	• 0.32 mA

### Output

Output Voltage	• See table
Output Voltage Trim	• See table
Initial Set Accuracy	• ±1%
Minimum Load	• No minimum load required
Start Up Delay	• <150 ms
Start Up Rise Time	• <50 ms
Hold Up Time	• 20 ms min at 400 VAC
Line Regulation	• ±1%
Load Regulation	• ±1% (±5% for units in parallel)
Transient Response	• 4% max deviation recovering to within 1% in 200 µs for 50% load change
Ripple & Noise	• 80 mV pk-pk 20 MHz BW
Overvoltage Protection	• 125-140%, recycle input to reset
Overload Protection	• Continuous current limit
Temperature Coefficient	• ±0.02%/°C
Current Share	• 2 units can be paralleled. Total output derates by 10%

### General

Efficiency	• See table
Isolation	• 3000 VAC Input to Output 1500 VAC Input to Ground 500 VAC Output to Ground
Switching Frequency	• 25 KHz typical
Signals	• DC ON indicator LED Green, DC LOW indicator LED Red DC OK: normally open relay on 24 V models
MTBF	• 370 Khrs to Bellcore, SR-332 issue 6, Model 3

### Environmental

Operating Temperature	• -25 °C to 70 °C, derate linearly from 60 °C at 3.5%/°C (see derating curve)
Cooling	• Convection-cooled
Operating Humidity	• 20-95% RH, non-condensing
Storage Temperature	• -25 °C to +85 °C
Shock	• 4 g peak, 22 ms on X, Y and Z axis
Vibration	• 10 to 500 Hz, 1 g rms on X, Y and Z axis

### EMC & Safety

Emissions	• EN55022, class B conducted & radiated
Harmonic Currents	• EN61000-3-2, class A
Voltage Flicker	• EN61000-3-3
ESD Immunity	• EN61000-4-2, level 4 perf criteria A
Radiated Immunity	• EN61000-4-3, level 3 perf criteria A
EFT/Burst	• EN61000-4-4, level 4 perf criteria A
Surge	• EN61000-4-5, level 3 perf criteria A
Conducted Immunity	• EN61000-4-6, level 3 perf criteria A
Magnetic Field	• EN61000-4-8, level 4 perf criteria A
Dips & Interruptions	• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms Perf Criteria A, B, B
Safety Approvals	• EN60950-1:2001, UL508, UL60950-1

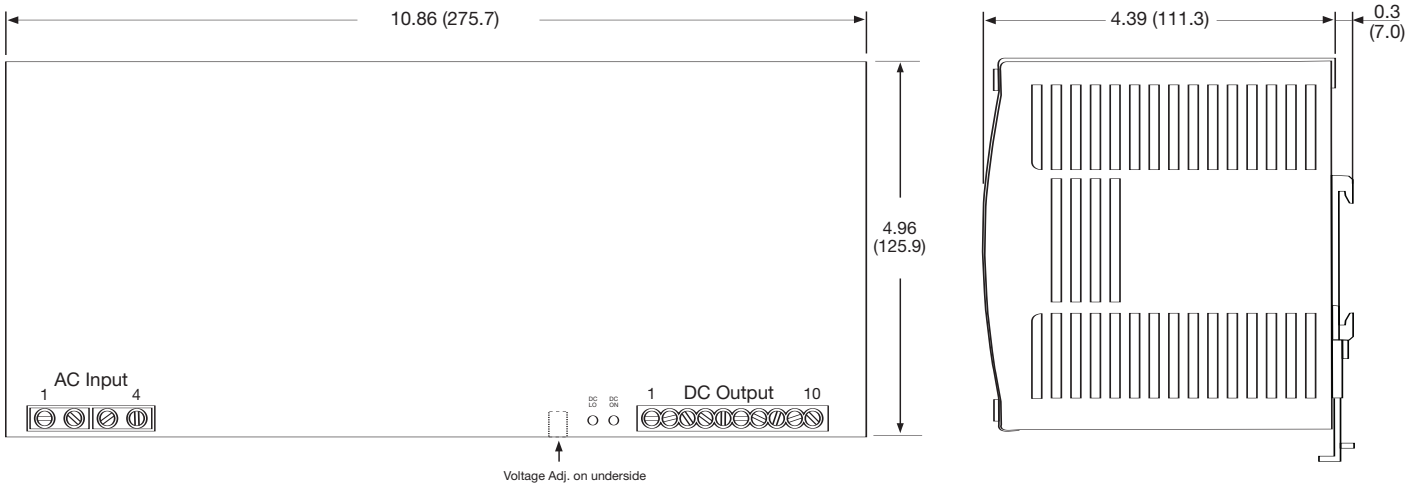
**Models and Ratings**

Output Voltage	Output Voltage Trim	Output Current <sup>(1)</sup>	Typical Efficiency	Model Number
24 V	22.5-28.5 V	40.0 A	92%	DNR960TS24-I
48 V	47.0-56.0 V	20.0 A	91%	DNR960TS48-I

**Notes**

1. Reduce by 25% for single phase input operation.

**Mechanical Details**



Pin Connections - AC Input	
Pin	Designation
1	Ground
2	L1
3	L2
4	L3

Pin Connections - DC Output	
Pin	Designation
1	DC OK*
2	DC OK*
3	+Is
4	-Is
5	+V
6	+V
7	+V
8	-V
9	-V
10	-V

**Notes**

- 1. All dimensions in inches (mm).
- 2. Weight 7.05 lb (3200 g) approx.
- 3. Screw terminal: 10-24AWG cable size.
- 4. DC OK Relay 60 VDC at 300 mA

\* Not available on 48 V versions.

**Derating Curves**

