

# DNR120-480 SERIES

AC/DC Single Output DIN Rail: 120-480Watts



## Features

- Up to 90% Efficiency
- Wide Adjustment Range
- Three-Phase 480 W Versions
- Parallel Function
- DC Standby Versions
- Full Power to +60 °C
- Connector Options

## Specification

### Input

Input Voltage	<ul style="list-style-type: none"><li>• DNR120LS: 93-132/186-264 VAC switch select, 210-370 VDC switch in 230 VAC position</li><li>• DNR120AS: 90-132/186-264 VAC auto select, 210-370 VDC</li><li>• DNR240PS: 93-132/186-264 VAC, auto select, 210-370 VDC</li><li>• DNR480PS: 90-264 VAC, 120-370 VDC</li><li>• <b>DNR480TS: 340-575 VAC 3Ø, 480-820VDC</b></li></ul>
Input Frequency	<ul style="list-style-type: none"><li>• 47-63 Hz</li></ul>
Inrush Current	<ul style="list-style-type: none"><li>• 120 W: 24/48 A at 115/230 VAC</li><li>• 240 W: 30/60 A at 115/230 VAC</li><li>• 480PS: 25/50 A at 115/230 VAC</li><li>• 480TS: 33 A at 575 VAC</li></ul>
Power Factor	<ul style="list-style-type: none"><li>• Meets EN61000-3-2 for class A equipment</li></ul>
Earth Leakage Current	<ul style="list-style-type: none"><li>• 0.8 mA max</li></ul>

### Output

Output Voltage	<ul style="list-style-type: none"><li>• See tables</li></ul>
Output Voltage Trim	<ul style="list-style-type: none"><li>• See tables</li></ul>
Initial Set Accuracy	<ul style="list-style-type: none"><li>• <math>\pm 1\%</math></li></ul>
Minimum Load	<ul style="list-style-type: none"><li>• No minimum load required</li></ul>
Start Up Delay	<ul style="list-style-type: none"><li>• &lt;1000 ms</li></ul>
Start Up Rise Time	<ul style="list-style-type: none"><li>• &lt;150 ms</li></ul>
Hold Up Time	<ul style="list-style-type: none"><li>• 120 &amp; 240 W: 25/30 ms at 115/230 VAC</li><li>• 480PS: 30 ms at 115/230 VAC</li><li>• 480TS: 20 ms at 340 VAC</li></ul>
Line Regulation	<ul style="list-style-type: none"><li>• <math>\pm 0.5\%</math> max (<math>\pm 1\%</math> max for 480TS)</li></ul>
Load Regulation	<ul style="list-style-type: none"><li>• <math>\pm 1\%</math> (<math>\pm 5\%</math> for units in parallel), 120LS models - see note 1</li></ul>
Transient Response	<ul style="list-style-type: none"><li>• 300 <math>\mu</math>s for a 50% load change</li></ul>
Ripple & Noise	<ul style="list-style-type: none"><li>• 120 W models: 50 mV pk-pk</li><li>• 240-480 W models: 100 mV pk-pk, 20 MHz BW</li></ul>
Overvoltage Protection	<ul style="list-style-type: none"><li>• Output clamps at 125-145% Vnom</li></ul>
Overload Protection	<ul style="list-style-type: none"><li>• 105-145% constant current.</li><li>• 480TS model: 115-135% continuous power limit, I<sub>max</sub> = 2 x I<sub>nom</sub> at short circuit condition or switchable trip and restart mode, output is turned on for 3 s every 30 s.</li></ul>
Temperature Coefficient	<ul style="list-style-type: none"><li>• <math>\pm 0.02\%/^{\circ}\text{C}</math></li></ul>

### General

Efficiency	<ul style="list-style-type: none"><li>• See tables</li></ul>
Isolation	<ul style="list-style-type: none"><li>• 3000 VAC Input to Output</li><li>• 1500 VAC Input to Ground</li><li>• 500 VAC Output to Ground</li></ul>
Switching Frequency	<ul style="list-style-type: none"><li>• 100 KHz typical</li></ul>
Signals	<ul style="list-style-type: none"><li>• DC ON indicator LED Green,</li><li>• DC LOW indicator LED Red</li><li>• DC OK: 24 V models</li></ul>
MTBF	<ul style="list-style-type: none"><li>• 200 kHrs typical per MIL-HDBK-217F GF, +40 °C</li></ul>

### Environmental

Operating Temperature	<ul style="list-style-type: none"><li>• DNR120-240: -10 °C to +70 °C, derate linearly from +60 °C at 2.5%/°C</li><li>• DNR480 PS: -25 °C to +70 °C, derate linearly from +55 °C at 2.5%/°C</li><li>• DNR480 TS: -25 °C to +70 °C, derate linearly from +60 °C at 2.5%/°C. (see derating curves)</li></ul>
Cooling	<ul style="list-style-type: none"><li>• Convection-cooled</li></ul>
Operating Humidity	<ul style="list-style-type: none"><li>• 20-95% RH, non-condensing</li></ul>
Storage Temperature	<ul style="list-style-type: none"><li>• -25 °C to +85 °C</li></ul>
Shock	<ul style="list-style-type: none"><li>• 4 g, 22 ms, X, Y &amp; Z axis</li></ul>
Vibration	<ul style="list-style-type: none"><li>• 1 g, 10 Hz to 500 kHz, along X, Y &amp; Z axis</li></ul>

### EMC & Safety

Emissions	<ul style="list-style-type: none"><li>• EN55022, class B conducted &amp; radiated</li></ul>
Harmonic Currents	<ul style="list-style-type: none"><li>• EN61000-3-2, class A</li></ul>
Voltage Flicker	<ul style="list-style-type: none"><li>• EN61000-3-3</li></ul>
ESD Immunity	<ul style="list-style-type: none"><li>• EN61000-4-2, level 3 Perf Criteria A</li></ul>
Radiated Immunity	<ul style="list-style-type: none"><li>• EN61000-4-3, level 3 Perf Criteria A</li></ul>
EFT/Burst	<ul style="list-style-type: none"><li>• EN61000-4-4, level 3 Perf Criteria A</li></ul>
Surge	<ul style="list-style-type: none"><li>• EN61000-4-5, level 3 Perf Criteria A</li></ul>
Conducted Immunity	<ul style="list-style-type: none"><li>• EN61000-4-6, level 3 Perf Criteria A</li></ul>
Dips & Interruptions	<ul style="list-style-type: none"><li>• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms Perf Criteria A, B, B</li></ul>
Safety Approvals	<ul style="list-style-type: none"><li>• EN60950-1:2001, UL508, CE Mark</li></ul>

## Models and Ratings

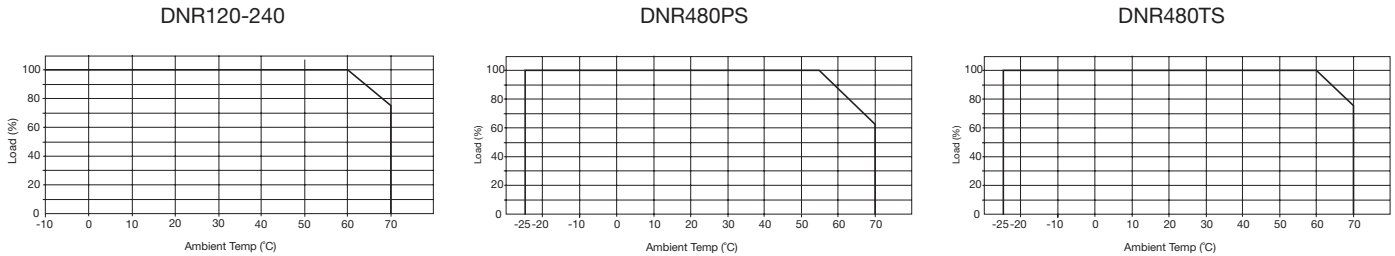
## DNR120-480

Output Voltage	Output Voltage Trim	Output Current	Typical Efficiency	Model Number
12 V	11.4-14.5 V	10.0 A	84%	DNR120LS12 <sup>(1,2,3)</sup>
24 V	22.5-30.0 V	5.0 A	86%	DNR120LS24 <sup>(1,2,3)</sup>
48 V	45.0-55.0 V	2.5 A	87%	DNR120LS48 <sup>(1,2,3)</sup>
12 V	11.4-14.5 V	10.0 A	84%	DNR120AS12- <sup>(3,4)</sup>
24 V	22.5-30.0 V	5.0 A	86%	DNR120AS24- <sup>(3,4)</sup>
48 V	45.0-55.0 V	2.5 A	87%	DNR120AS48- <sup>(3,4)</sup>
24 V	22.5-28.5 V	10.0 A	89%	DNR240PS24- <sup>(3,4)</sup>
48 V	47.0-56.0 V	5.0 A	90%	DNR240PS48- <sup>(3,4)</sup>
24 V	22.5-28.5 V	20.0 A	89%	DNR480PS24- <sup>(3,4)</sup>
48 V	47.0-56.0 V	10.0 A	90%	DNR480PS48- <sup>(3,4)</sup>
24 V	22.5-28.5 V	20.0 A	88%	DNR480TS24-I
48 V	47.0-56.0 V	10.0 A	89%	DNR480TS48-I

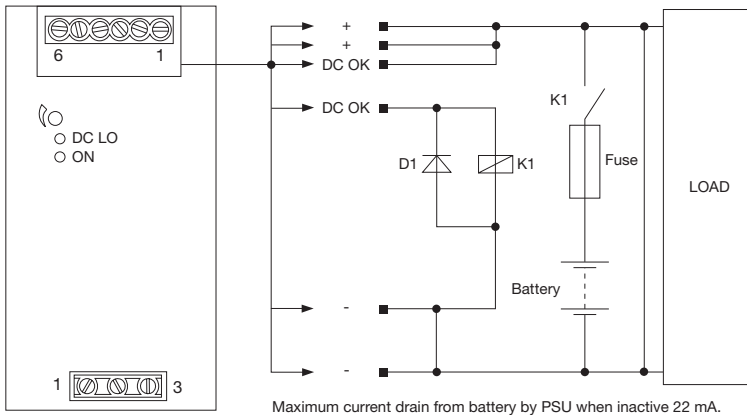
### Notes

1. Add suffix '-I' to DNR120LS model number for parallel function, (120AS, 240 & 480 W models have parallel function as standard). A maximum of 3 units can be paralleled. Total power available is 90% of the rated current of each unit.
2. For PFC version of DNR120LS, replace 'L' in the model number with 'P' e.g. DNR120PS† (Typical power factor 0.7).
3. Add suffix '-D' for detachable connector option.
4. For DC standby, remove '-I' and add # to the end of the model number.

## Derating Curves



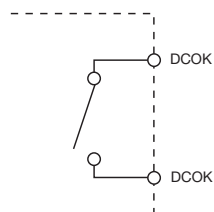
## Standby Versions



Output Set Voltages For Standby Versions			
Model	Voltage	Current	DC OK Shutoff
DNR120AS12#	13.6 V	8.8 A	10.8 V ±5%
DNR120AS24#	27.2 V	4.4 A	21.6 V ±5%
DNR120AS48#	54.5 V	2.2 A	43.2 V ±5%
DNR240PS24#	27.2 V	8.8 A	21.6 V ±5%
DNR240PS48#	54.5 V	4.4 A	43.2 V ±5%
DNR480PS24#	27.2 V	17.6 A	21.6 V ±5%
DNR480PS48#	54.5 V	8.8 A	43.2 V ±5%

## DC OK

Volt free contact normally open  
Available on 24 V models only.

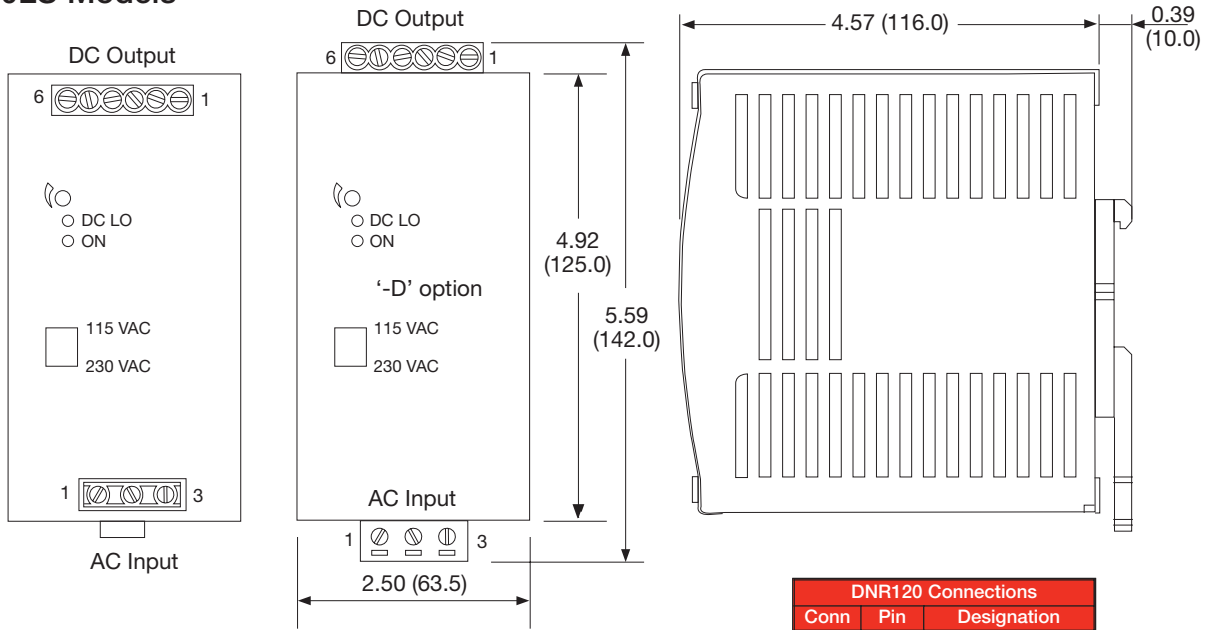


Open = Output fail  
Closed = Output good

Contact Rating: 0.3 A at 60 VDC  
500 VDC isolation

# Mechanical Details

## DNR120LS Models



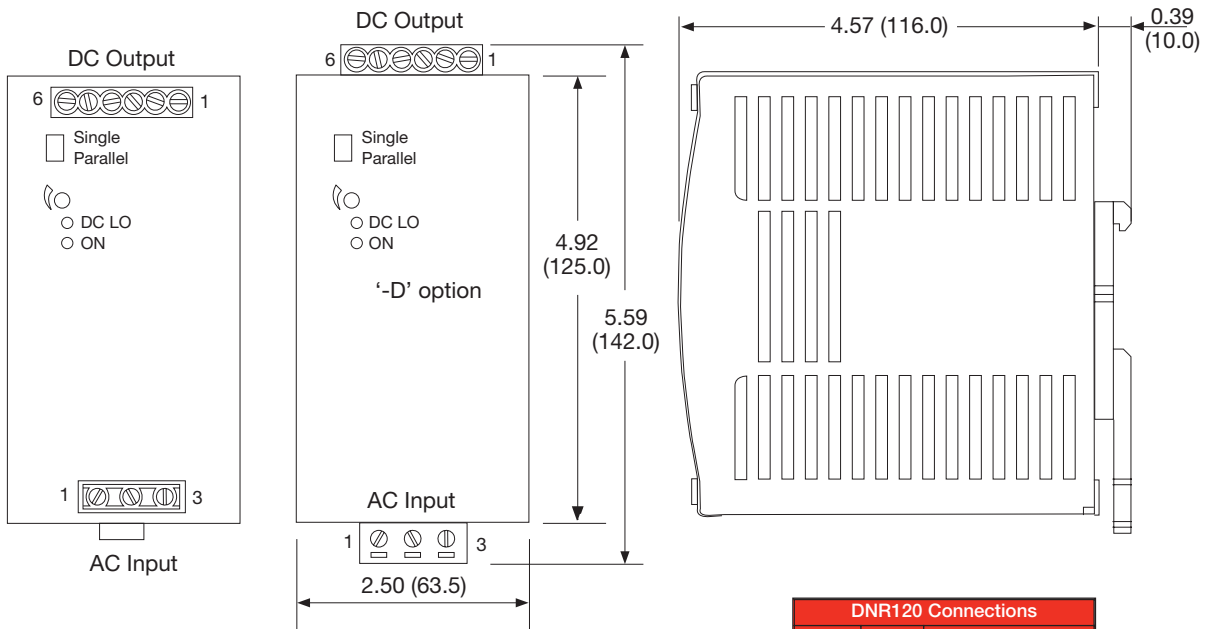
DNR120 Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	Line
	3	Neutral
DC Output	1	DC OK *
	2	DC OK *
	3	Positive
	4	Positive
	5	Negative
	6	Negative

\* 24 V models only.

### Notes

1. All dimensions in inches (mm).
2. Weight 1.4 lb (630 g) approx.
3. Screw terminal: 10-24AWG cable size. Detachable connector version: 14-24AWG cable size.

## DNR120AS Models



DNR120 Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	Line
	3	Neutral
DC Output	1	DC OK *
	2	DC OK *
	3	Positive
	4	Positive
	5	Negative
	6	Negative

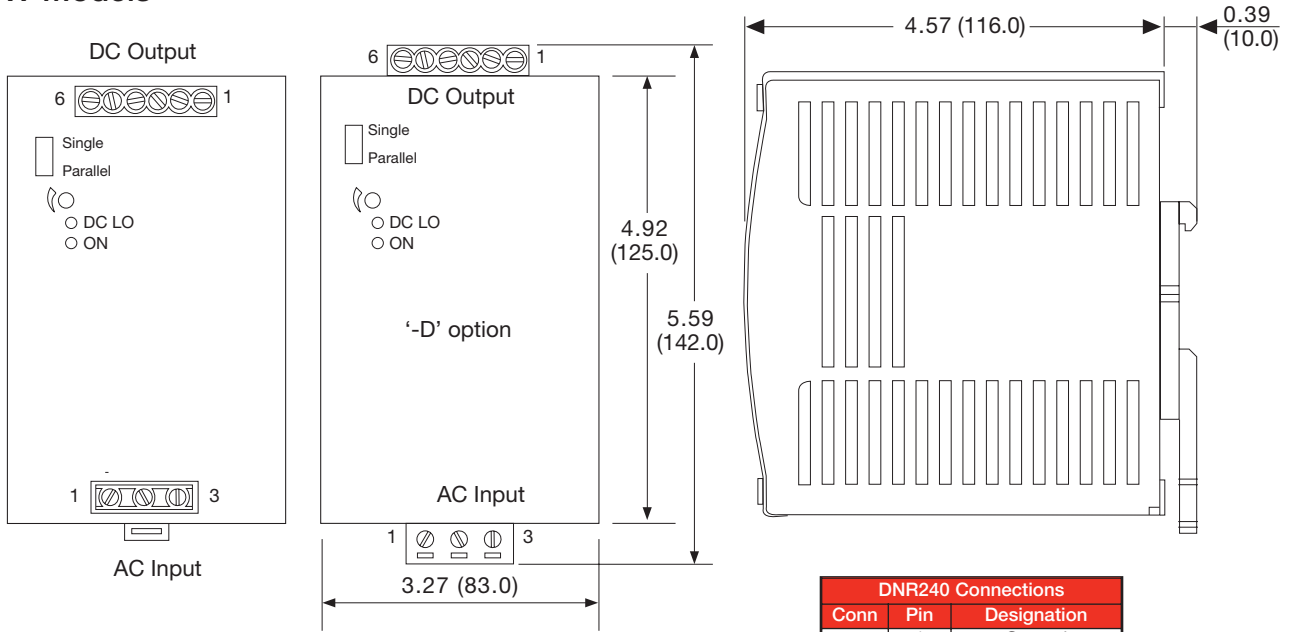
\* 24 V models only.

### Notes

1. All dimensions in inches (mm).
2. Weight 1.4 lb (630 g) approx.
3. Screw terminal: 10-24AWG cable size. Detachable connector version: 14-24AWG cable size.

# Mechanical Details

## 240 W Models



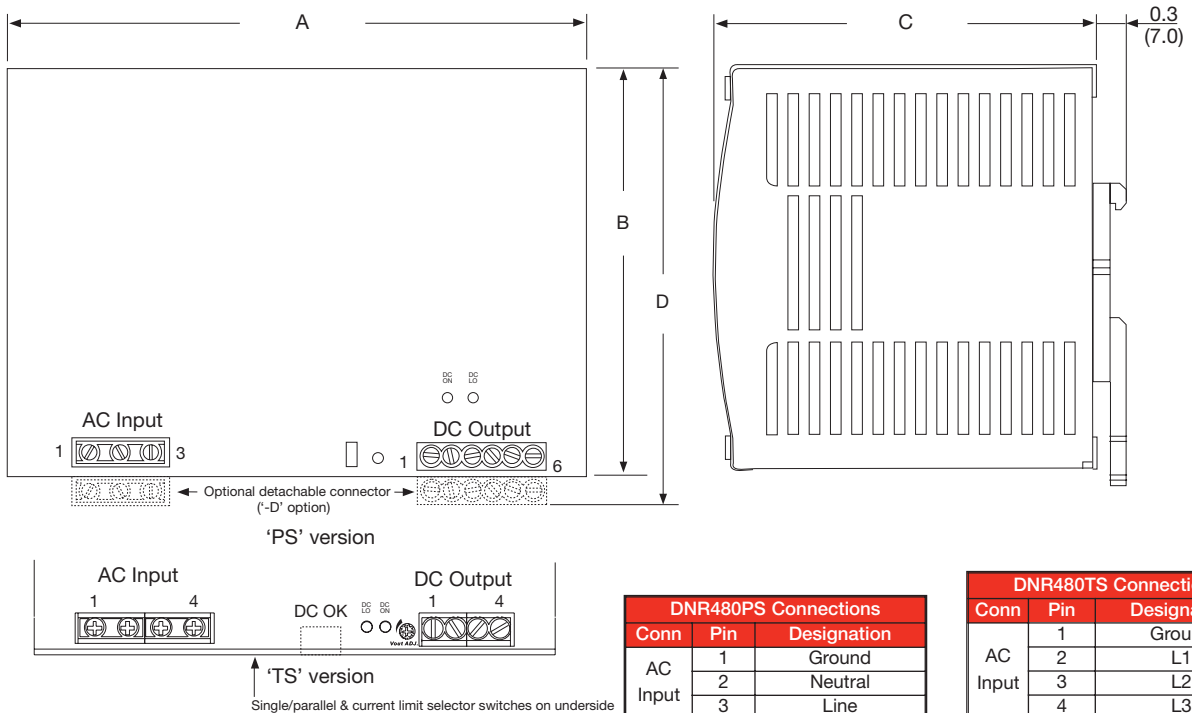
DNR240 Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	Line
	3	Neutral
DC Output	1	DC OK*
	2	DC OK*
	3	Positive
	4	Positive
	5	Negative
	6	Negative

\* 24 V models only.

### Notes

1. All dimensions in inches (mm).
2. Weight 3.0 lb (1360 g) approx.
3. Screw terminal: 10-24AWG cable size. Detachable connector version: 14-24AWG cable size.

## 480 W Models



### Notes

1. All dimensions in inches (mm).
2. Weight 4.2 lb (1920 g) approx.
3. Screw terminal: 10-24AWG cable size. Detachable connector version: 14-24AWG cable size.

	DNR480 Dimensions	
	480PS	480TS
A	6.89 (175.0)	5.91 (150.0)
B	4.92 (125.0)	4.87 (123.6)
C	4.57 (116.0)	4.38 (111.3)
D	5.59 (142.0)	

DNR480PS Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	Neutral
	3	Line
DC Output	1	DC OK*
	2	DC OK*
	3	Positive
	4	Positive
	5	Negative
	6	Negative

DNR480TS Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	L1
	3	L2
	4	L3
DC Output	1	Positive
	2	Positive
	3	Negative
	4	Negative
DC OK	1	DC OK*
	2	DC OK*

\* 24 V models only.