

# DNR120-480 Series

120 – 480 W Power Supplies for DIN Rail

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Solutions



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

## Specification

### Input

<b>Input Voltage</b>	<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>• DNR480TS: 340-575 VAC 3~, 480-820VDC</li></ul>
<b>Input Frequency</b>	<ul style="list-style-type: none"><li>• 47-63 Hz</li></ul>
<b>Inrush Current</b>	<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>
<b>Power Factor</b>	<ul style="list-style-type: none"><li>• Meets EN61000-3-2 for class A equipment</li></ul>
<b>Earth Leakage Current</b>	<ul style="list-style-type: none"><li>• 0.8 mA max</li></ul>

### Output

<b>Output Voltage</b>	<ul style="list-style-type: none"><li>• See tables</li></ul>
<b>Output Voltage Trim</b>	<ul style="list-style-type: none"><li>• See tables</li></ul>
<b>Initial Set Accuracy</b>	<ul style="list-style-type: none"><li>• <math>\pm 1\%</math></li></ul>
<b>Minimum Load</b>	<ul style="list-style-type: none"><li>• No minimum load required</li></ul>
<b>Start Up Delay</b>	<ul style="list-style-type: none"><li>• &lt;1000 ms</li></ul>
<b>Start Up Rise Time</b>	<ul style="list-style-type: none"><li>• &lt;150 ms</li></ul>
<b>Hold Up Time</b>	<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>
<b>Line Regulation</b>	<ul style="list-style-type: none"><li>• <math>\pm 0,5\%</math> max (<math>\pm 1\%</math> max for 480TS)</li></ul>
<b>Load Regulation</b>	<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>
<b>Transient Response</b>	<ul style="list-style-type: none"><li>• 300 <math>\mu</math>s for a 50% load change</li></ul>
<b>Ripple &amp; Noise</b>	<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>
<b>Overvoltage Protection</b>	<ul style="list-style-type: none"><li>• Output clamps at 125-145% Vnom</li></ul>
<b>Overload Protection</b>	<ul style="list-style-type: none"><li>• 105-145% constant current, 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>
<b>Temperature Coefficient</b>	<ul style="list-style-type: none"><li>• <math>\pm 0.02\%</math> / °C</li></ul>

### General

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

### Environmental

<b>Operating Temperature</b>	<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>
<b>Cooling</b>	<ul style="list-style-type: none"><li>• Convection-cooled</li></ul>
<b>Operating Humidity</b>	<ul style="list-style-type: none"><li>• 20-95% RH, non-condensing</li></ul>
<b>Storage Temperature</b>	<ul style="list-style-type: none"><li>• -25 °C to +85 °C</li></ul>
<b>Shock</b>	<ul style="list-style-type: none"><li>• 4 G, 22 ms, X, Y &amp; Z axis</li></ul>
<b>Vibration</b>	<ul style="list-style-type: none"><li>• 1 G, 10 Hz to 500 kHz, along X,Y &amp; Z axis</li></ul>

### EMC & Safety

<b>Emissions</b>	<ul style="list-style-type: none"><li>• EN55022, class B conducted &amp; radiated</li></ul>
<b>Harmonic Currents</b>	<ul style="list-style-type: none"><li>• EN61000-3-2, class A</li></ul>
<b>Voltage Flicker</b>	<ul style="list-style-type: none"><li>• EN61000-3-3</li></ul>
<b>ESD Immunity</b>	<ul style="list-style-type: none"><li>• EN61000-4-2, level 3 Perf Criteria A*</li></ul>
<b>Radiated Immunity</b>	<ul style="list-style-type: none"><li>• EN61000-4-3, level 3 Perf Criteria A*</li></ul>
<b>EFT/Burst</b>	<ul style="list-style-type: none"><li>• EN61000-4-4, level 3 Perf Criteria A*</li></ul>
<b>Surge</b>	<ul style="list-style-type: none"><li>• EN61000-4-5, level 3 Perf Criteria A*</li></ul>
<b>Conducted Immunity</b>	<ul style="list-style-type: none"><li>• EN61000-4-6, level 3 Perf Criteria A*</li></ul>
<b>Dips &amp; Interruptions</b>	<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>
<b>Safety Approvals</b>	<ul style="list-style-type: none"><li>• EN60950-1:2001, UL508, UL1310, CE Mark</li></ul>

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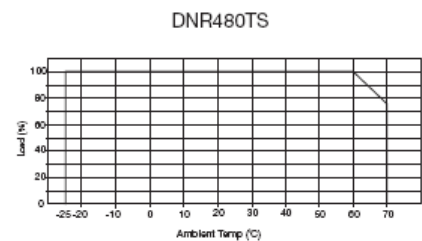
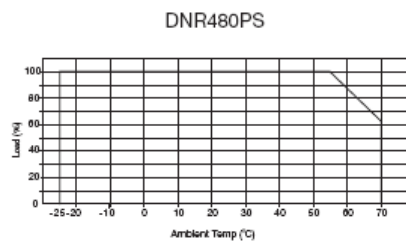
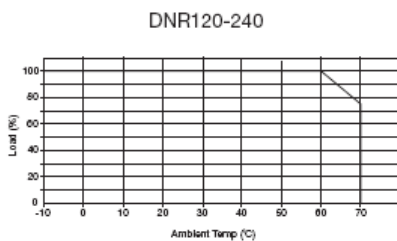
## Models and Ratings

Output Voltage	Output Voltage Trim	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-I <sup>(3,4)</sup>
24 V	22.5-30.0 V	5.0 A	86%	DNR120AS24-I <sup>(3,4)</sup>
48 V	45.0-55.0 V	2.5 A	87%	DNR120AS48-I <sup>(3,4)</sup>
24 V	22.5-28.5 V	10.0 A	89%	DNR240PS24-I <sup>(3,4)</sup>
48 V	47.0-56.0 V	5.0 A	90%	DNR240PS48-I <sup>(3,4)</sup>
24 V	22.5-28.5 V	20.0 A	89%	DNR480PS24-I <sup>(3,4)</sup>
48 V	47.0-56.0 V	10.0 A	90%	DNR480PS48-I <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

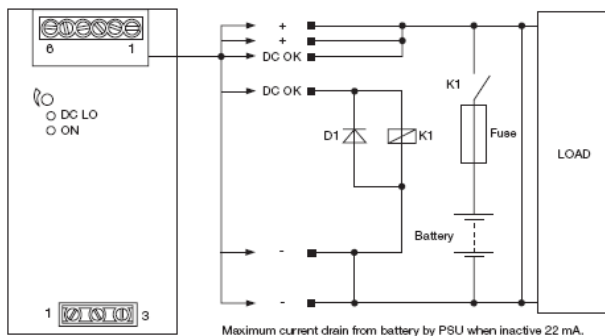
## Notes

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

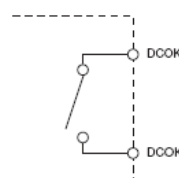


Output Set Voltages For Standby Versions

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

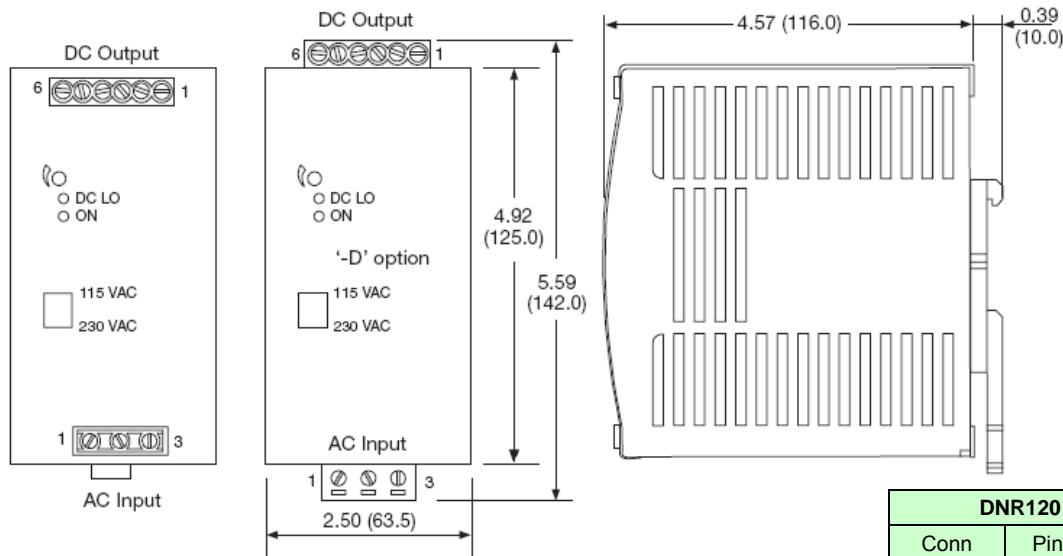
Contact Rating: 0.3 A at 60 VDC  
500 VDC isolation

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## Mechanical Details DNR120LS Models



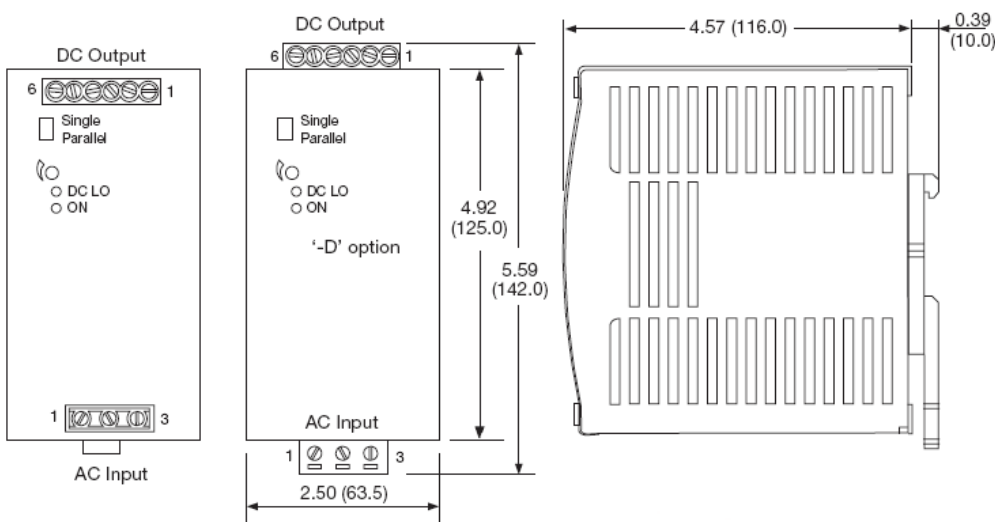
DNR120 Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	Line
	3	Neutral
DC Output	1	DC OK'
	2	DC OK'
	3	Positive
	4	Positive
	5	Negative
	6	Negative

### Notes

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

\* = 24 V models only

## 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

### Notes

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

\* = 24 V models only

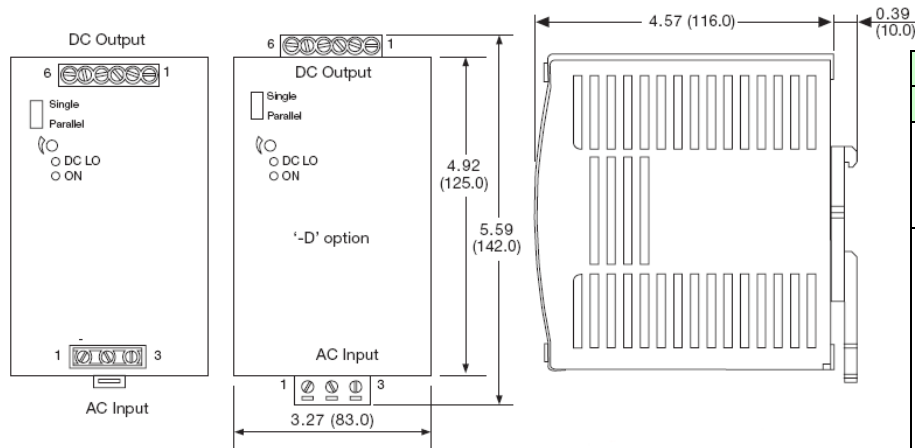
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## Mechanical Details

### 240 W Models



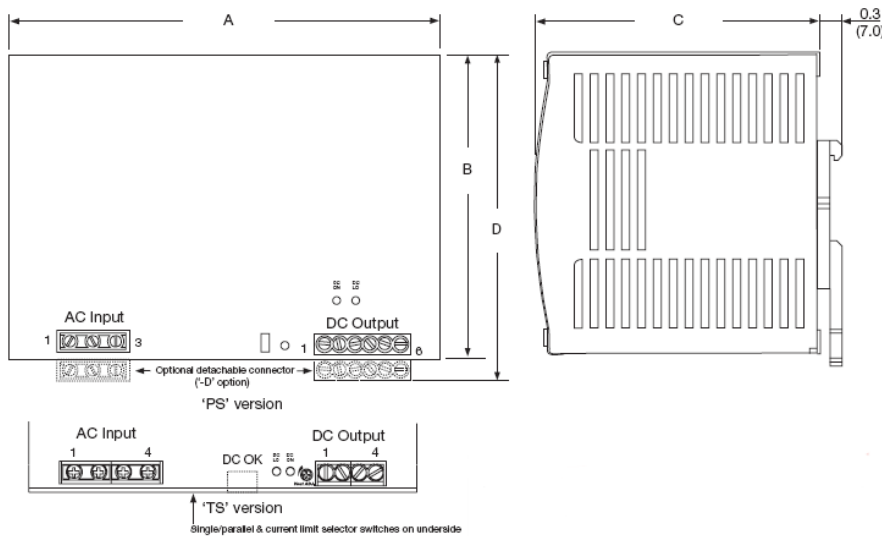
DNR240 Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	Line
	3	Neutral
DC Output	1	DC OK *
	2	DC OK *
	3	Positive
	4	Positive
	5	Negative
	6	Negative

\* = 24 V models only

### Notes

1. All dimensions in inches (mm).
2. Weight 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

\* = 24 V models only

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