120-480 Watts

DNR120-480 Series

- 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	• DNR120LS: 93-132/186-264 VAC switch select, 210-370 VDC switch in 230 VAC position DNR120AS: 90-132/186-264 VAC auto select, 210-370 VDC DNR240PS: 93-132/186-264 VAC, auto select, 210-370 VDC DNR480PS: 90-264 VAC, 120-370 VDC DNR480TS: 340-575 VAC 3Ø, 480-820 VDC
Input Frequency	• 47-63 Hz
Inrush Current	• 120 W: 24/48 A at 115/230 VAC 240 W: 30/60 A at 115/230 VAC 480PS: 25/50 A at 115/230 VAC 480TS: 33 A at 575 VAC
Power Factor	• Meets EN61000-3-2 for class A equipment
Earth Leakage Current	• 0.8 mA max

Output

Output Voltage	• See tables
Output Voltage Trim	• See tables
Initial Set Accuracy	• ±1%
Minimum Load	• No minimum load required
Start Up Delay	• <1000 ms
Start Up Rise Time	• <150 ms
Hold Up Time	• 120 & 240 W: 25/30 ms at 115/230 VAC 480PS: 30 ms at 115/230 VAC 480TS: 20 ms at 340 VAC
Line Regulation	• ±0.5% max (±1% max for 480TS)
Load Regulation	• ±1% (±5% for units in parallel), 120LS models - see note 1
Transient Response	• 300 µs for a 50% load change
Ripple & Noise	• 120 W models: 50 mV pk-pk 240-480 W models: 100 mV pk-pk. 20 MHz BW
Overvoltage Protection	• Output clamps at 125-145% Vnom
Overload Protection	• 105-145% constant current. 480TS model: 115-135% continuous power limit, Imax = 2 x Inom at short circuit condition or switchable trip and restart mode, output is turned on for 3 s every 30 s.
Temperature Coefficient	• ±0.02%/°C

General

Efficiency	• See tables
Isolation	• 3000 VAC Input to Output 1500 VAC Input to Ground 500 VAC Output to Ground
Switching Frequency	• 100 KHz typical
Signals	• DC ON indicator LED Green, DC LOW indicator LED Red DC OK: 24 V models
MTBF	• 200 kHrs typical per MIL-HDBK-217F GF, +40 °C

Environmental

Operating Temperature	• DNR120-240: -10 °C to +70 °C, derate linearly from +60 °C at 2.5%/°C DNR480 PS: -25 °C to +70 °C, derate linearly from +55 °C at 2.5%/°C DNR480 TS: -25 °C to +70 °C, derate linearly from +60 °C at 2.5%/°C. (see derating curves)
Cooling	• Convection-cooled
Operating Humidity	• 20-95% RH, non-condensing
Storage Temperature	• -25 °C to +85 °C
Shock	• 4 g, 22 ms, X, Y & Z axis
Vibration	• 1 g, 10 Hz to 500 kHz, along X, Y & 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 3 Perf Criteria A
Radiated Immunity	• EN61000-4-3, level 3 Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria A
Surge	• EN61000-4-5, level 3 Perf Criteria A
Conducted Immunity	• EN61000-4-6, level 3 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, CE Mark

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[1,2,3]
24 V	22.5-30.0 V	5.0 A	86%	DNR120LS24[1,2,3]
48 V	45.0-55.0 V	2.5 A	87%	DNR120LS48[1,2,3]
12 V	11.4-14.5 V	10.0 A	84%	DNR120AS12-I[3,4]
24 V	22.5-30.0 V	5.0 A	86%	DNR120AS24-I[3,4]
48 V	45.0-55.0 V	2.5 A	87%	DNR120AS48-I[3,4]
24 V	22.5-28.5 V	10.0 A	89%	DNR240PS24-I†[3,4]
48 V	47.0-56.0 V	5.0 A	90%	DNR240PS48-I†[3,4]
24 V	22.5-28.5 V	20.0 A	89%	DNR480PS24-I[3,4]
48 V	47.0-56.0 V	10.0 A	90%	DNR480PS48-I[3,4]
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

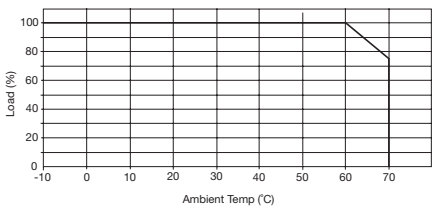
Notes

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.

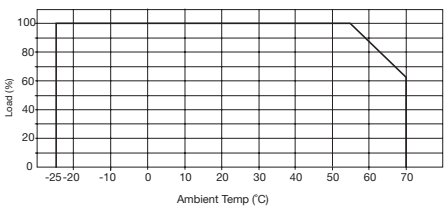
† Available from Farnell. See pages 204-206.

Derating Curves

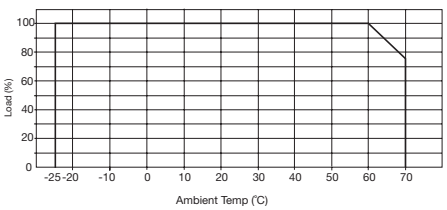
DNR120-240



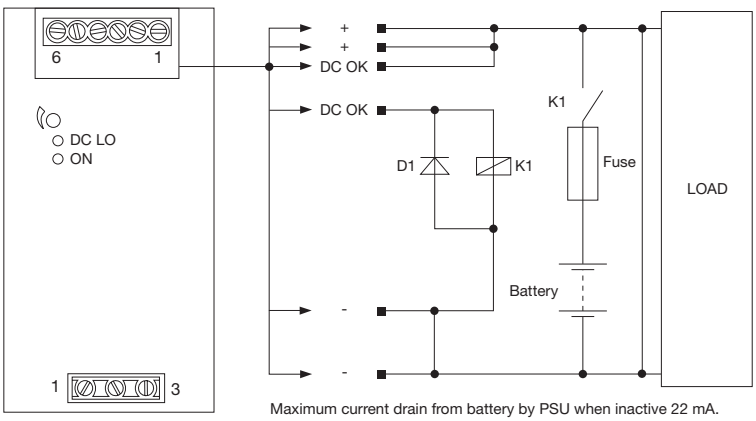
DNR480PS



DNR480TS



Standby Versions

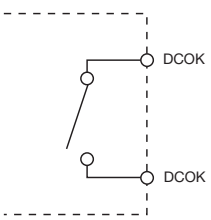


Maximum current drain from battery by PSU when inactive 22 mA.

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.

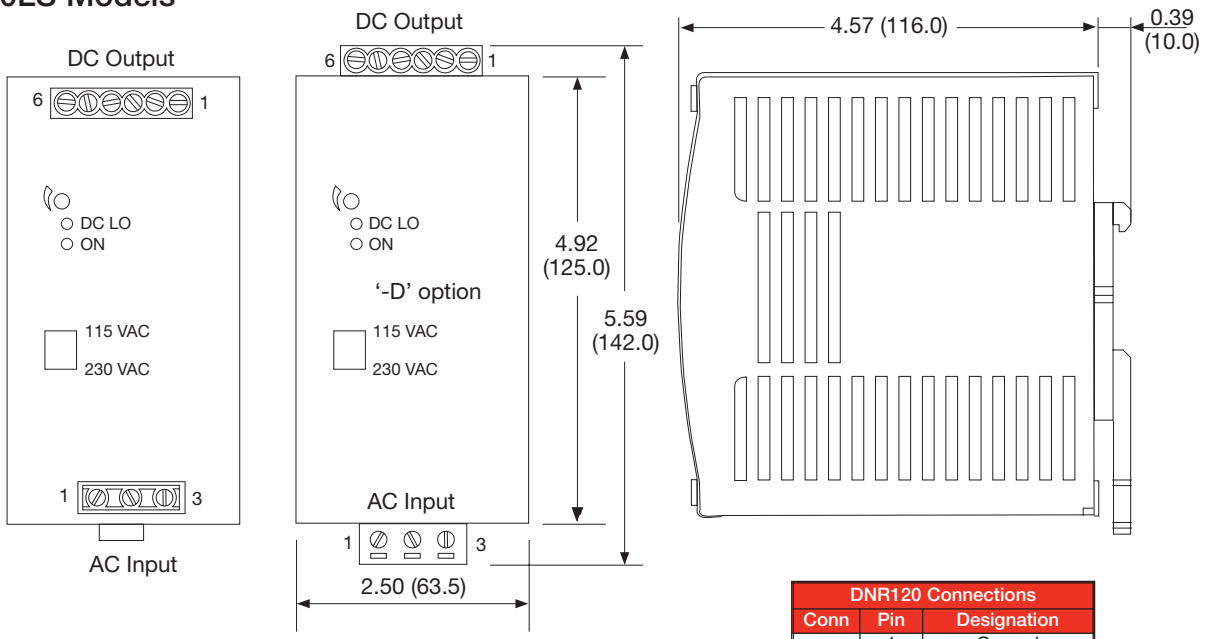


Open = Output fail
Closed = Output good

Contact Rating: 0.3 A at 60 VDC
500 VDC isolation

Mechanical Details

DNR120LS Models



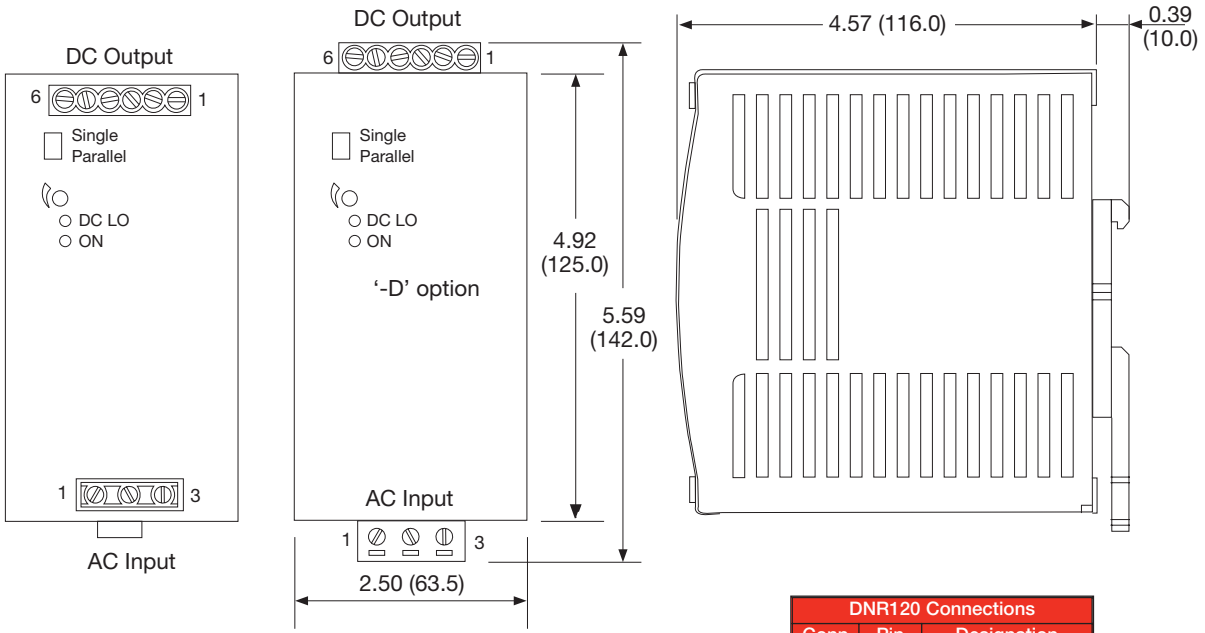
DNR120 Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	Line
	3	Neutral
DC Output	1	DC OK *
	2	DC OK *
	3	Positive
	4	Positive
	5	Negative
	6	Negative

* 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

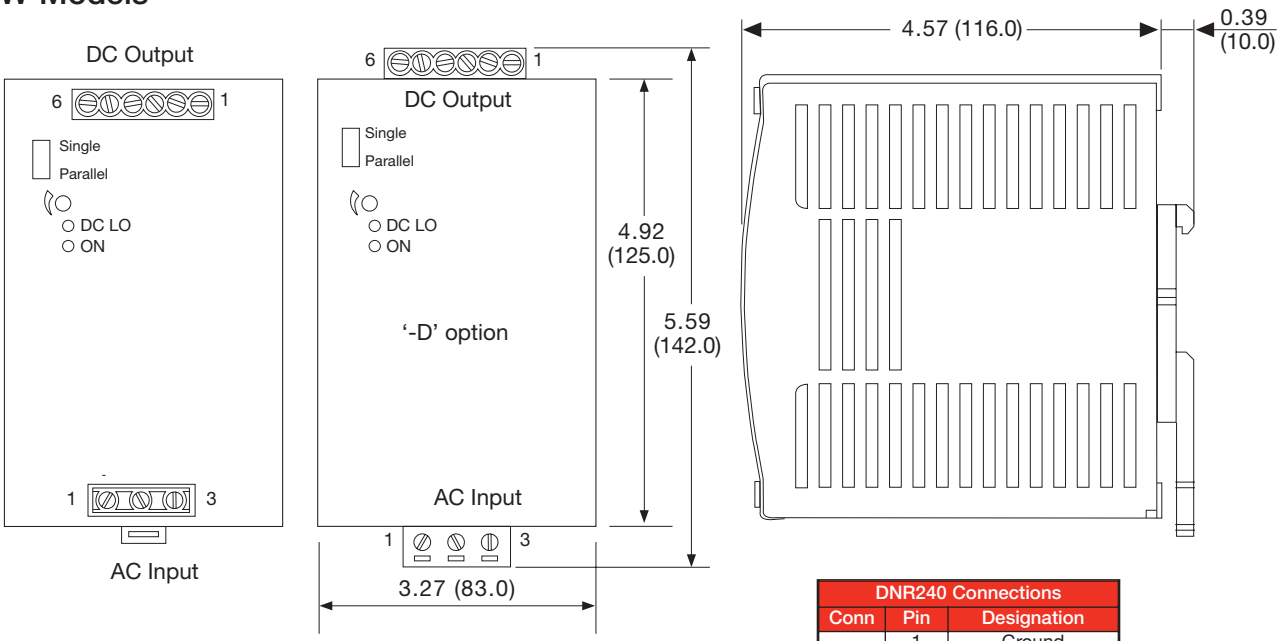
* 24 V models only.

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



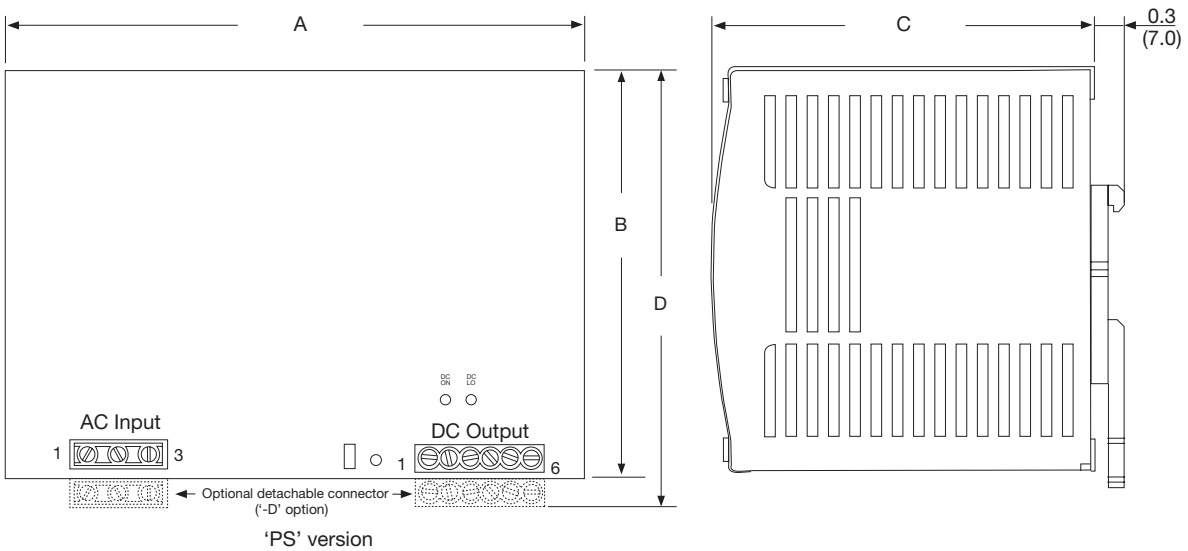
DNR240 Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	Line
	3	Neutral
DC Output	1	DC OK*
	2	DC OK*
	3	Positive
	4	Positive
	5	Negative
	6	Negative

* 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



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
	4	L3
DC Output	1	Positive
	2	Positive
	3	Negative
	4	Negative
DC OK	1	DC OK*
	2	DC OK*

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.