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, UL60950-1, cUL60950-1, 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

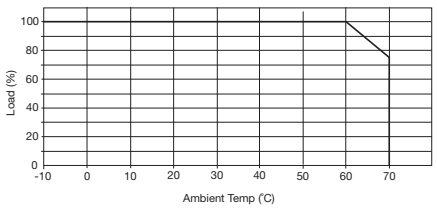
Notes

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. DNR120LS24 becomes DNR120PS24 (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.

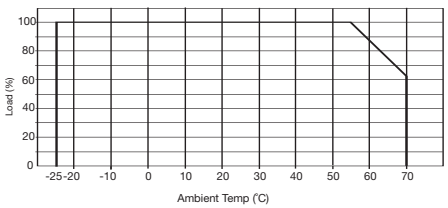
† Available from Farnell. See pages 204-206.

Derating Curves

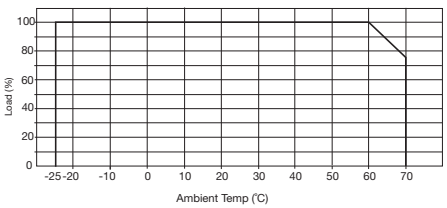
DNR120-240



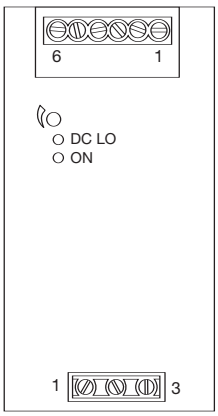
DNR480PS

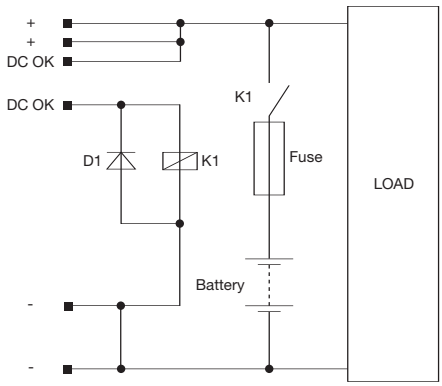


DNR480TS



Standby Versions





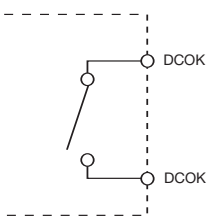
Maximum current drain from battery by PSU when inactive 22 mA.

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 closed when good voltage from PSU or battery available to the load in standby system

Available on 24 V models only.

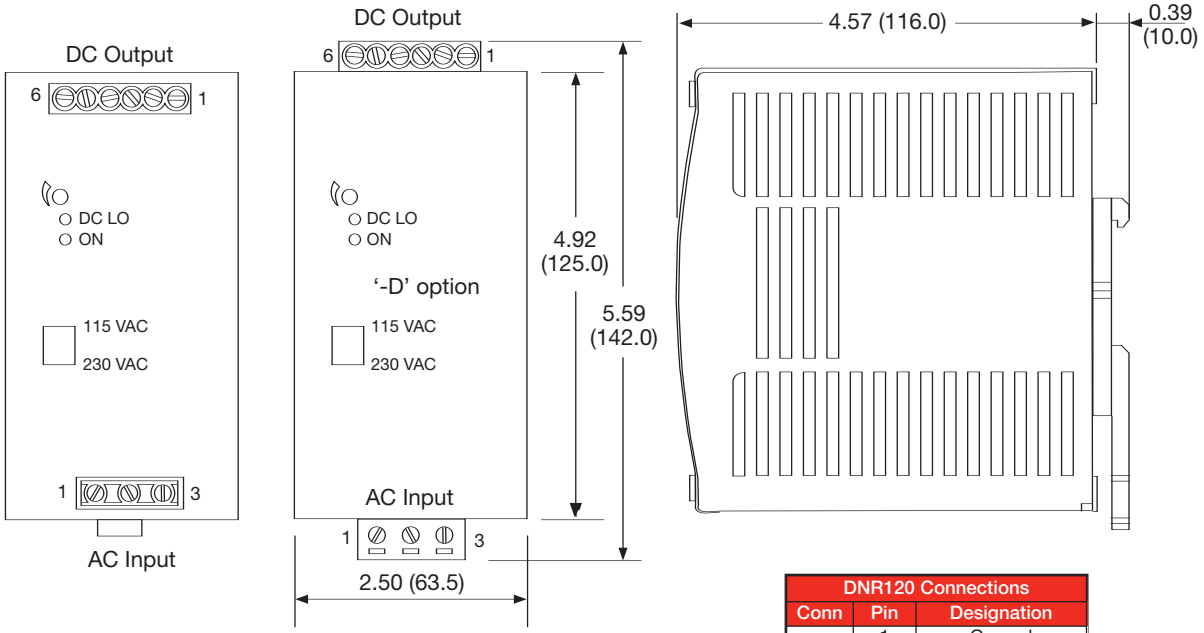


Open = Output fail
Closed = Output good

Contact Rating: 0.3 A at 60 VDC
500 VDC isolation

Mechanical Details

DNR120LS Models



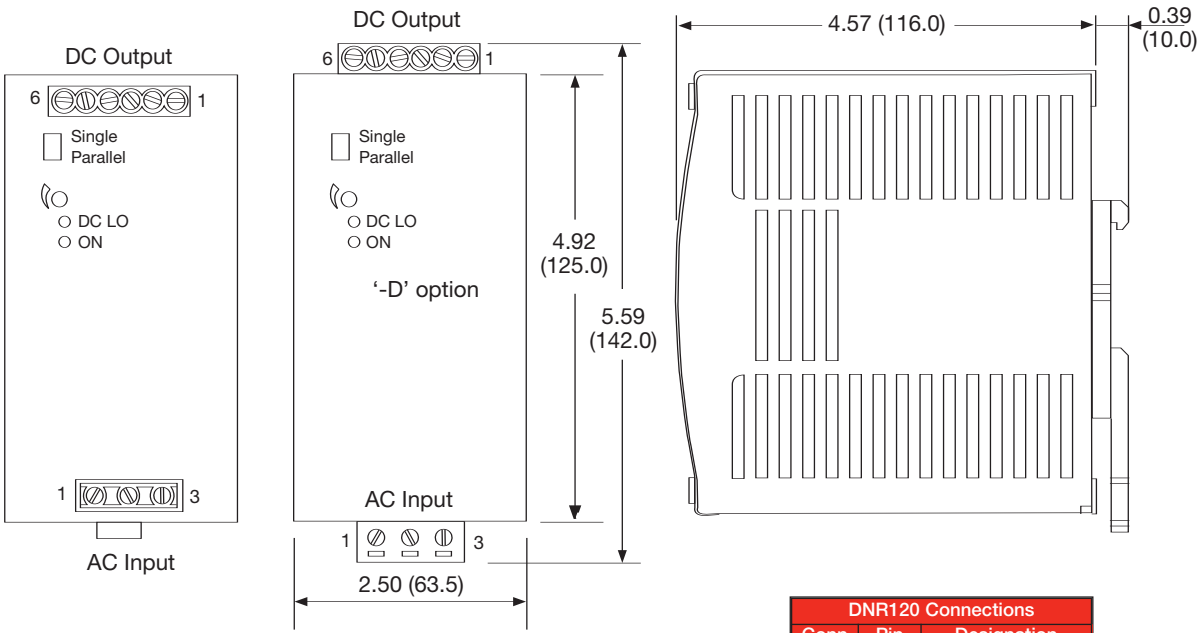
DNR120 Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	Line
	3	Neutral
DC Output	1	DC OK *
	2	DC OK *
	3	Positive
	4	Positive
	5	Negative
	6	Negative

* 24 V & standby 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

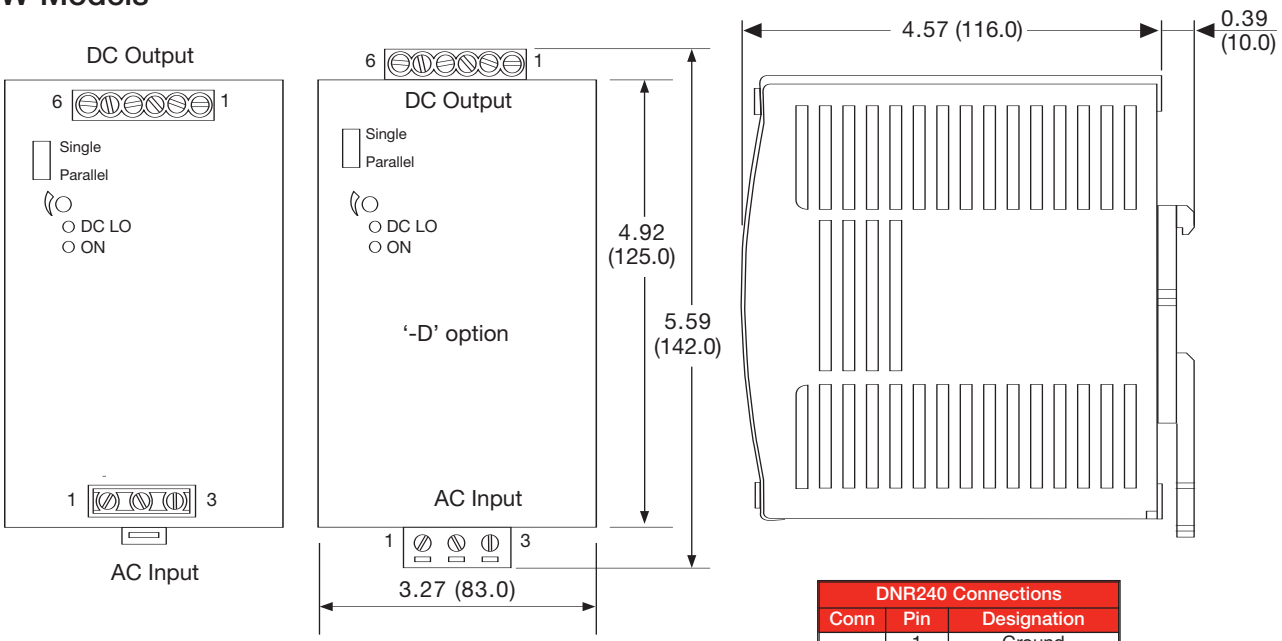
* 24 V & standby models only.

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



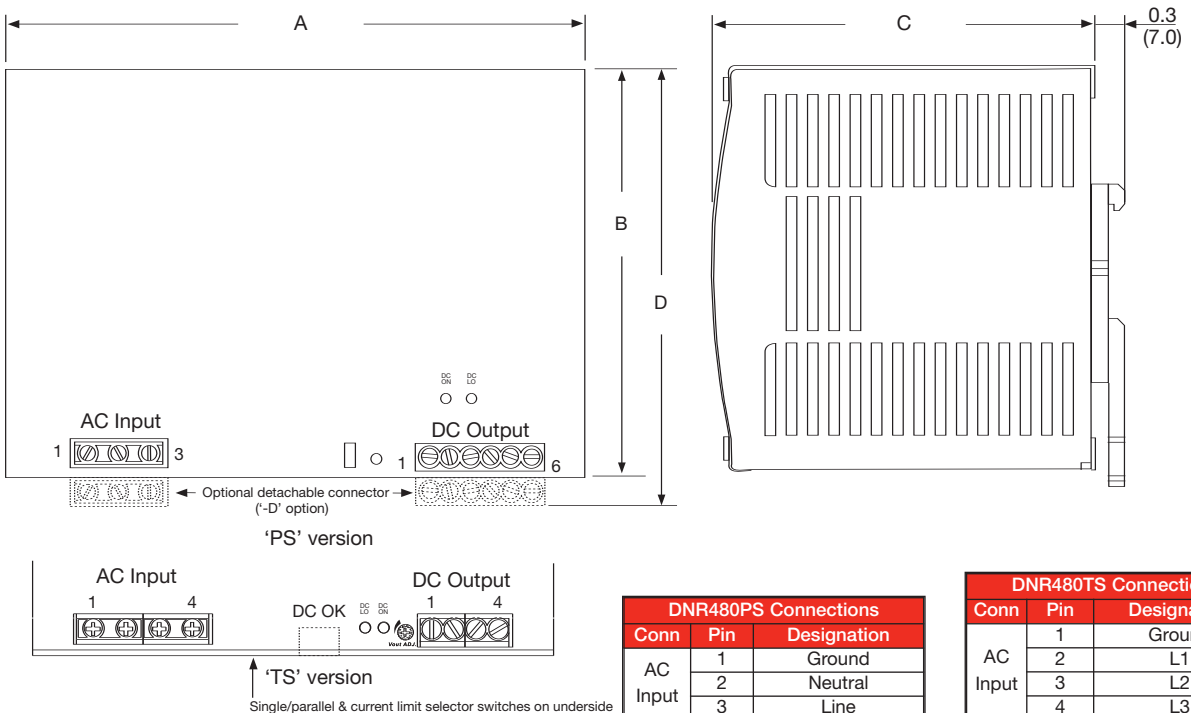
DNR240 Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	Line
	3	Neutral
DC Output	1	DC OK*
	2	DC OK*
	3	Positive
	4	Positive
	5	Negative
	6	Negative

* 24 V & standby 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 and standby 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.

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