

DNR120-480 SERIES

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



Features

- Up to 90% Efficiency
- Wide Adjustment Range
- Parallel Function
- DC Standby Versions
- Full Power from -40°C to $+60^{\circ}\text{C}$
- Connector Options
- 3phase input options (-TS models)
- Suitable for battery charging

Specification

Input

Input Voltage	• 90-132/180-264 VAC, auto select, 210-375 VDC (DNR120AS, DNR240PS) 90-264 VAC, 120-375 VDC (DNR480PS)
Input Frequency	• 47-63 Hz
Input Current	• See tables
Inrush Current	• 24/48 A at 115/230 VAC (DNR120) 30/60 A at 115/230 VAC (DNR240) 25/50 A at 115/230 VAC (DNR480)
Power Factor	• 0.7 typical (DNR120, DNR240) 0.9 typical (DNR480)
Earth Leakage Current	• 0.8 mA max
Input Protection	• T3.15A, 250 VAC (DNR120) T6.3A, 250 VAC (DNR240) T10A, 250 VAC (DNR480)

Output

Output Voltage	• See tables
Output Voltage Trim	• See tables
Initial Set Accuracy	• $\pm 1\%$
Minimum Load	• No minimum load required
Start Up Delay	• < 1 s (may increase at low temperature extremes)
Start Up Rise Time	• < 150 ms
Hold Up Time	• 25/30 ms at 115/230 VAC
Line Regulation	• $\pm 0.5\%$ max
Load Regulation	• $\pm 1\%$ ($\pm 5\%$ for units in parallel)
Parallel Operation	• A maximum of 3 units can be paralleled (not with standby system). Total power available is 90% of the rated current of each unit. Minimum load per unit 10%. Redundancy module DPM10 available for load currents up to 10 A, contact sales.
Transient Response	• 4% max deviation recovering to within 1% in 2 ms for a 50% load change
Ripple & Noise	• 50 mV pk-pk (DNR120) 100 mV pk-pk (DNR240, DNR480) 20 MHz bandwidth (may increase at low temperature extremes)
Overvoltage Protection	• Output clamps at 125-140% Vnom, auto recovery
Overload Protection	• 105-145% constant current, auto recovery
Temp. Coefficient	• $\pm 0.03\%/^{\circ}\text{C}$

General

Efficiency	• See table
Isolation	• 3000 VAC Input to Output 1500 VAC Input to Ground 500 VAC Output to Ground
Switching Frequency	• See table
Signals	• DC ON indicator Green LED, DC LOW indicator Red LED DC OK: 24 V and standby models
MTBF	• 430 kHrs typical Bellcore, Issue 6 at $+40^{\circ}\text{C}$, GB
DIN Rail	• Compatible with TS35/7.5 or TS35/15

Environmental

Operating Temperature	• -35°C to $+70^{\circ}\text{C}$, derate linearly from $+60^{\circ}\text{C}$ at 2.5%/°C, start up at -30°C (DNR120), -40°C to $+70^{\circ}\text{C}$, derate linearly from $+60^{\circ}\text{C}$ at 2.5%/°C, start up at -35°C (DNR240), -40°C to $+70^{\circ}\text{C}$, derate linearly from $+55^{\circ}\text{C}$ at 2.5%/°C, start up at -35°C (DNR480) (see derating curves)
Cooling	• Convection-cooled with 25mm free space all sides
Operating Humidity	• 20-95% RH, non-condensing
Storage Temperature	• -40°C to $+85^{\circ}\text{C}$
Shock	• 15 g, 11 ms, 3 axes, 6 faces, 3 shocks per face
Vibration	• 2 g, 10 Hz to 500 Hz, along X, Y & Z axis, 60 min/axis, mounted on rail

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, installation class 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, A, B
Safety Approvals	• EN60950-1 UL508 UL60950-1, cUL60950-1 Pollution Degree 2, CE Mark, UL60950-1 Overvoltage Category II, UL508 Overvoltage Category III, ANSI/ISA 12.12.01. (Class 1, Division 2, Groups A,B,C and D)

Models and Ratings

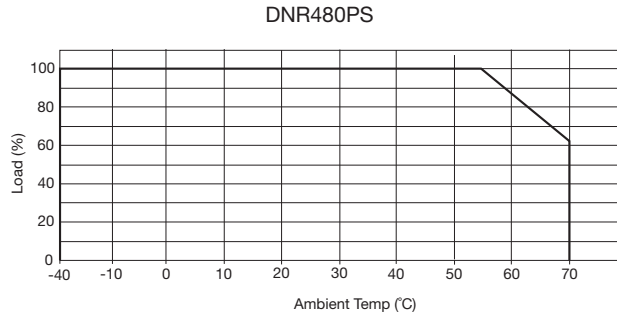
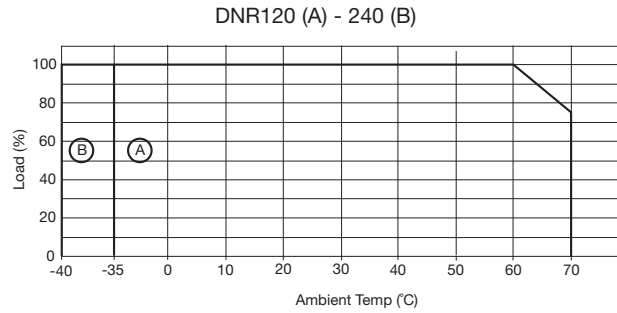
DNR120-480 

Output Voltage	Input Current (typ.)		Output Voltage Trim	Output Current	Efficiency (typ.)	Typical Switching Frequency	Model Number
	115 VAC	230 VAC					
12 V	2.20 A	0.83 A	11.4-14.5 V	10.0 A	84%	80 kHz	DNR120AS12-I† ^(1,2)
24 V	2.20 A	0.83 A	22.5-28.5 V	5.0 A	86%	80 kHz	DNR120AS24-I† ^(1,2)
48 V	2.20 A	0.83 A	45.0-55.0 V	2.5 A	87%	80 kHz	DNR120AS48-I† ^(1,2)
24 V	4.00 A	1.55 A	22.5-28.5 V	10.0 A	89%	40 kHz	DNR240PS24-I† ^(1,2)
48 V	4.00 A	1.55 A	47.0-56.0 V	5.0 A	90%	40 kHz	DNR240PS48-I† ^(1,2)
24 V	4.90 A	2.50 A	22.5-28.5 V	20.0 A	89%	65 kHz	DNR480PS24-I† ^(1,2)
48 V	4.90 A	2.50 A	47.0-56.0 V	10.0 A	90%	65 kHz	DNR480PS48-I† ^(1,2)

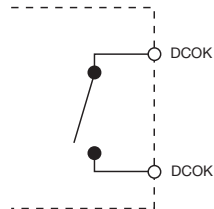
Notes

1. Add suffix 'D' for detachable connector option.

Derating Curves



DC OK



Open = Output fail
Closed = Output good

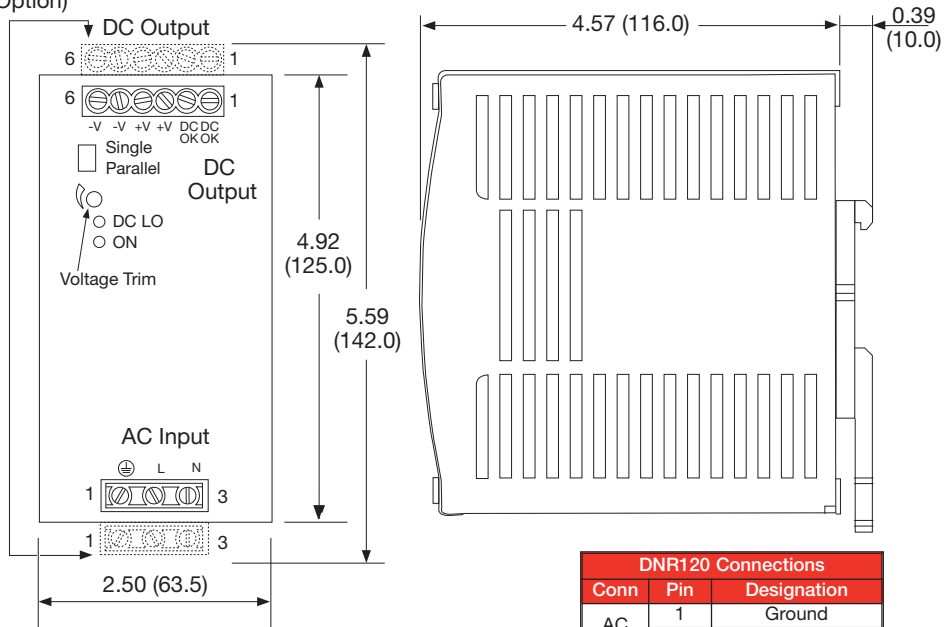
Contact Rating: 0.3 A at 60 VDC
500 VDC isolation

NOTE: Voltage Free contacts, closed when voltage output is within specifications. (only available on 24V Models).

Mechanical Details

120 W Models

Optional detachable connector ('D' Option)



Notes

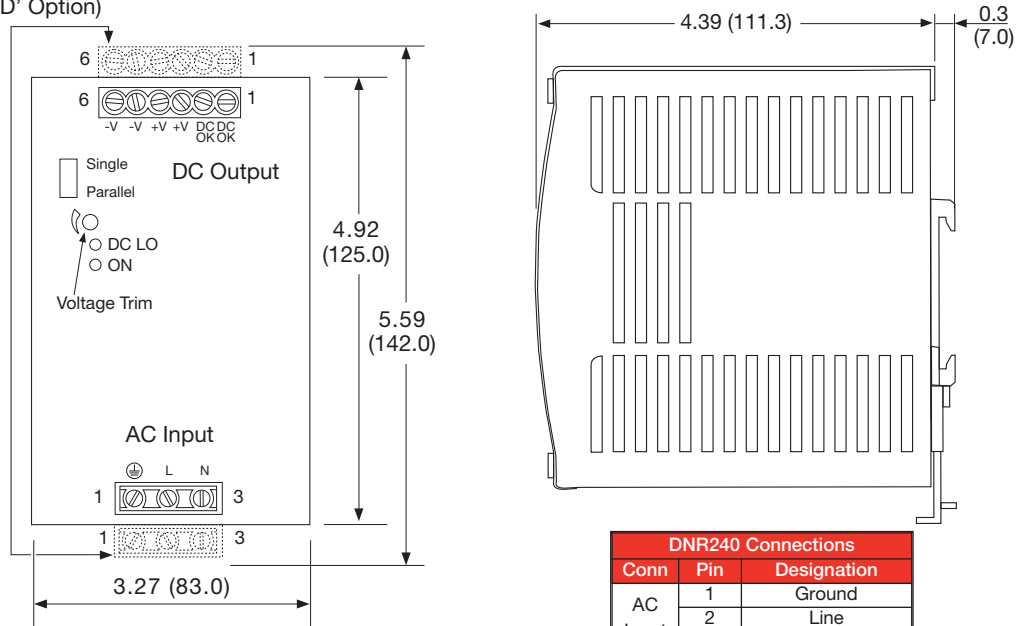
1. All dimensions in inches (mm).
2. Weight 2.0 lb (920 g) approx.
3. Tolerance: ± 0.02 (0.5) maximum.
4. Screw terminal: 10-24 AWG cable size. Detachable connector version: 14-24AWG cable size.
5. Connection screw maximum torque: Input: 9 lbs-in (1.0 Nm), Output: 5.5 lbs-in (0.6 Nm)

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.

240 W Models

Optional detachable connector ('D' Option)



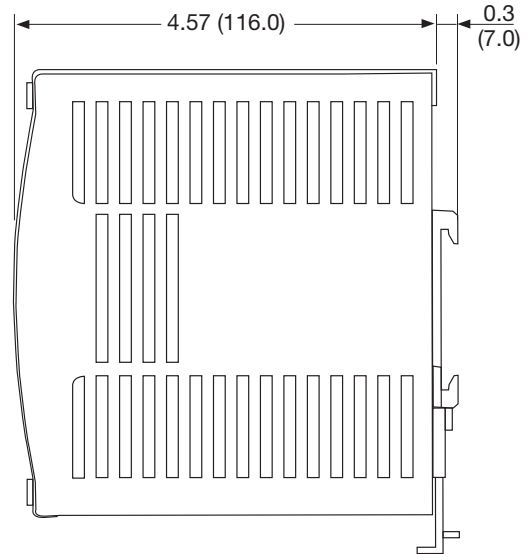
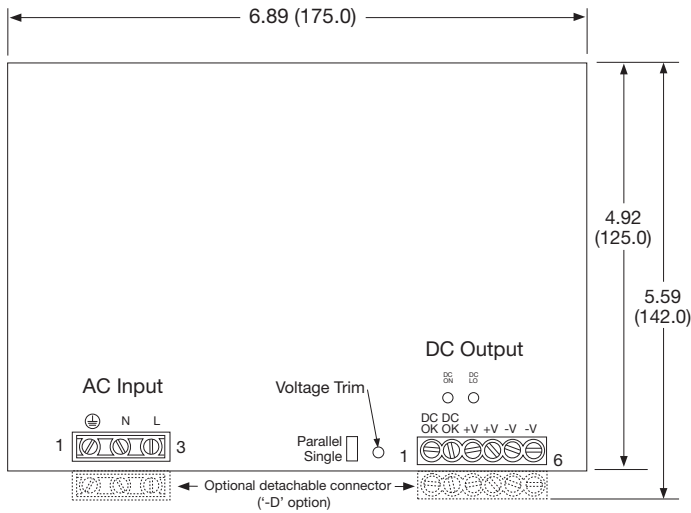
Notes

1. All dimensions in inches (mm).
2. Weight 3.0 lb (1360 g) approx.
3. Tolerance: ± 0.02 (0.5) maximum.
4. Screw terminal: 10-24 AWG cable size. Detachable connector version: 14-24AWG cable size.
5. Connection screw maximum torque: Input: 9 lbs-in (1.0 Nm), Output: 5.5 lbs-in (0.6 Nm)

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.

480 W Models



Notes

1. All dimensions in inches (mm).
2. Weight 4.2 lb (1920 g) approx.
3. Tolerance: ± 0.02 (0.5) maximum.
4. Screw terminal: 10-24 AWG cable size. Detachable connector version: 14-24 AWG cable size.
5. Connection screw maximum torque: Input: 9 lbs-in (1.0 Nm), Output: 5.5 lbs-in (0.6 Nm)

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.