

DNR05-60 Series

5 – 60 W Power Supplies for DIN Rail

CoolPower
Solutions



- Rugged Design for Industrial Applications
- Up to 89 % Efficiency
- Wide Adjustment Range
- DC OK 24 V Models
- DC Standby Versions
- Connector Options
- Full Power to 60 °C

Specification

Input

Input Voltage	<ul style="list-style-type: none">• 90-264 VAC• 93-132/186-264 VAC: switch-selectable 120 W models and auto-ranging 240 W models
Input Frequency	<ul style="list-style-type: none">• 47-63 Hz
Inrush Current	<ul style="list-style-type: none">• 5-18 W: 10/18 A at 115/230 VAC• 30 W: 16/32 A at 115/230 VAC• 60 W: 21/32 A at 115/230 VAC• 120 W: 24/48 A at 115/230 VAC• 240 W: 30/60 A at 115/230 VAC
Power Factor	<ul style="list-style-type: none">• DNRXXXUSXX & DNRXXXPSXX meet EN61000-3-2 for class A equipment
Earth Leakage Current	<ul style="list-style-type: none">• 0.8 mA max

Output

Output Voltage	<ul style="list-style-type: none">• See tables
Output Voltage Trim	<ul style="list-style-type: none">• See tables
Initial Set Accuracy	<ul style="list-style-type: none">• 30 & 60 W models $\pm 2\%$, all others $\pm 1\%$
Minimum Load	<ul style="list-style-type: none">• No minimum load required
Start Up Delay	<ul style="list-style-type: none">• <1000 ms
Start Up Rise Time	<ul style="list-style-type: none">• <150 ms
Hold Up Time	<ul style="list-style-type: none">• 5 W: 30/130 ms at 115/230 VAC• 10 W: 25/100 ms at 115/230 VAC• 18 W: 20/75 ms at 115/230 VAC• 30 W: 20/70 ms at 115/230 VAC• 60 W: 20/75 ms at 115/230 VAC• 120 & 240 W: 25/30 ms at 115/230 VAC
Line Regulation	<ul style="list-style-type: none">• $\pm 1\%$ max
Load Regulation	<ul style="list-style-type: none">• $\pm 2\%$ max ($\pm 5\%$ for units in parallel, 120 & 240 W models)
Transient Response	<ul style="list-style-type: none">• 300 μs for a 50% load change
Ripple & Noise	<ul style="list-style-type: none">• 50 mV pk-pk 5-120 W, 100 mV pk-pk 240 W, 20MHz BW
Overvoltage Protection	<ul style="list-style-type: none">• 120-145% Vnom
Overload Protection	<ul style="list-style-type: none">• 105-145% constant current
Short Circuit Protection	<ul style="list-style-type: none">• Trip and restart (Hiccup mode)
Temperature Coefficient	<ul style="list-style-type: none">• $\pm 0.03\%$ / °C

General

Efficiency	<ul style="list-style-type: none">• See tables
Isolation	<ul style="list-style-type: none">• 3000 VAC Input to Output• 1500 VAC Input to Ground• 500 VAC Output to Ground
Switching Frequency Signals	<ul style="list-style-type: none">• 100 KHz typical• DC On indicator LED green, All models• DC Low indicator LED red: 5-18W models
MTBF	<ul style="list-style-type: none">• 200 kHrs typical per MIL-HDBK-217F GF, +40 °C

Environmental

Operating Temperature	<ul style="list-style-type: none">• -10 °C to +70 °C, derate linearly from +50 °C for 5 & 18 W models +60 °C for all other models (see derating curves)
Cooling	<ul style="list-style-type: none">• Convection-cooled
Operating Humidity	<ul style="list-style-type: none">• 20-95% RH, non-condensing
Storage Temperature	<ul style="list-style-type: none">• -25 °C to +85 °C
Shock	<ul style="list-style-type: none">• 4 G, 22 ms, X, Y & Z axis
Vibration	<ul style="list-style-type: none">• 1 G, 10 Hz to 500 kHz, along X,Y & Z axis

EMC & Safety

Emissions	<ul style="list-style-type: none">• EN55022, level B conducted
Harmonic Currents	<ul style="list-style-type: none">• EN61000-3-2, class A
Voltage Flicker	<ul style="list-style-type: none">• EN61000-3-3 amendments 1 & 2
ESD Immunity	<ul style="list-style-type: none">• EN61000-4-2, level 3 Perf Criteria B*
Radiated Immunity	<ul style="list-style-type: none">• EN61000-4-3, level 3 Perf Criteria A*
EFT/Burst	<ul style="list-style-type: none">• EN61000-4-4, level 3 Perf Criteria B*
Surge	<ul style="list-style-type: none">• EN61000-4-5, level 3 Perf Criteria B*• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms Perf Criteria A, B, B
Safety Approvals	<ul style="list-style-type: none">• EN60950-1:2001, UL508, UL1310 – see note 3 & ratings table, CE Mark

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Models and Ratings

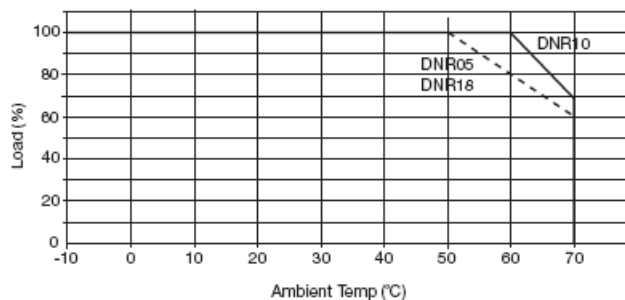
Output Voltage	Output Voltage Trim	Current	Typical Efficiency	Model Number
5 V	4.50-5.75 V	1.000 A	69%	DNR05US05 ^(1,3)
12 V	10.80-13.80 V	0.420 A	72%	DNR05US12 ^(1,3)
15 V	13.50-17.25 V	0.340 A	72%	DNR05US15 ^(1,3)
24 V	21.60-28.80 V	0.210 A	72%	DNR05US24 ^(1,3)
5 V	4.50-5.75 V	2.000 A	73%	DNR10US05 ^(1,3)
12 V	10.80-13.80 V	0.840 A	75%	DNR10US12 ^(1,3)
15 V	13.50-17.25 V	0.670 A	76%	DNR10US15 ^(1,3)
24 V	21.60-28.80 V	0.420 A	76%	DNR10US24 ^(1,3)
5 V	4.50-5.75 V	3.000 A	75%	DNR18US05 ^(1,3)
12 V	10.80-13.80 V	1.500 A	77%	DNR18US12 ^(1,3)
15 V	13.50-17.25 V	1.200 A	77%	DNR18US15 ^(1,3)
24 V	21.60-28.80 V	0.750 A	77%	DNR18US24 ^(1,3)
5 V	5.00-5.50 V	6.000 A	79%	DNR30US05 ⁽¹⁾
12 V	12.00-14.00 V	2.500 A	84%	DNR30US12 ^(1,3)
24 V	24.00-28.00 V	1.250 A	86%	DNR30US24 ^(1,3)
48 V	48.00-55.00 V	0.625 A	86%	DNR30US48 ^(1,3)
5 V	5.00-5.50 V	10.000 A	79%	DNR60US05 ⁽¹⁾
12 V	12.00-14.00 V	5.000 A	86%	DNR60US12 ⁽¹⁾
24 V	24.00-28.00 V	2.500 A	89%	DNR60US24 ^(1,3)
48 V	48.00-55.00 V	1.250 A	89%	DNR60US48 ^(1,3)

Notes

1. Add suffix '-S' for spring clamp option.
2. 30-60 W models are suitable for battery-charging applications.
3. Approved to UL1310.

Derating Curves

DNR5-18 Models



DNR30-60 Models

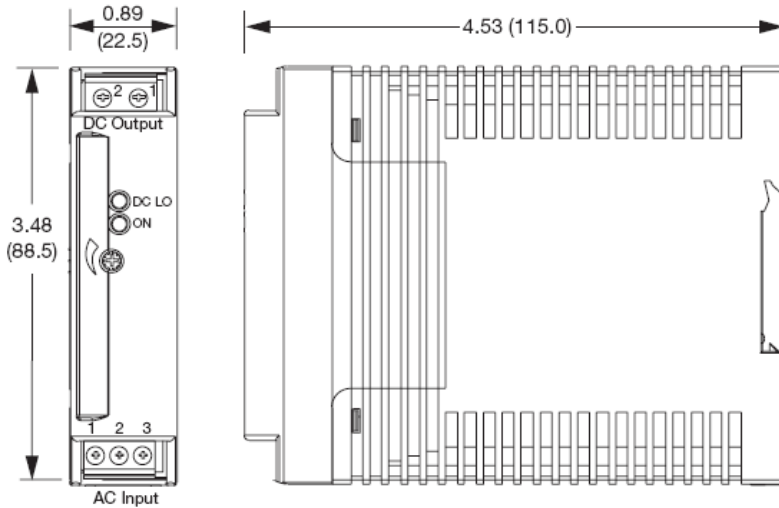


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Mechanical Details 5 / 10 / 18 W Models

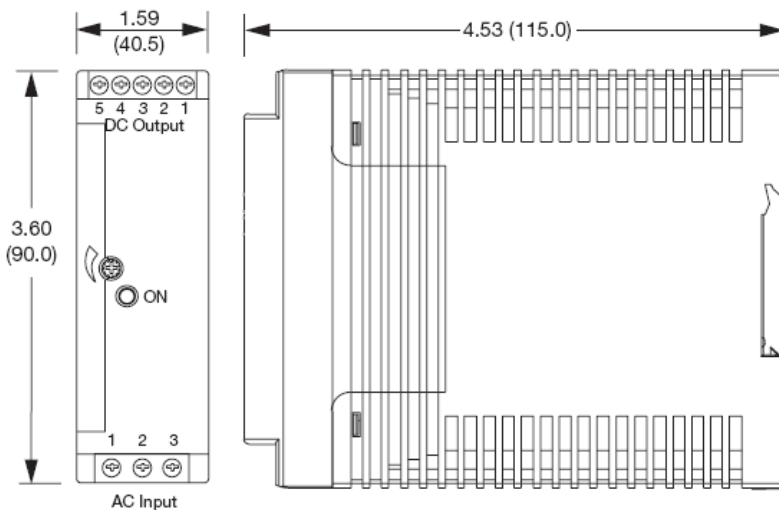


DNR05, 10, 18 Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	Neutral
	3	Line
DC Output	1	Positive
	2	Negative

Notes

1. All dimensions in inches (mm).
2. Weight 150 g approx.

30 / 60 W Models



DNR30, 60 Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	Neutral
	3	Line
DC Output	1	DC OK *
	2	Positive
	3	Positive
	4	Negative
	5	Negative

* = 24 V models only

Notes

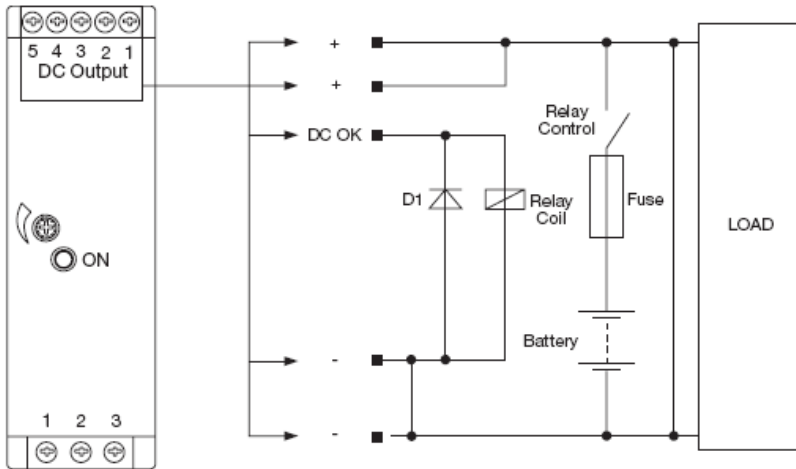
1. All dimensions in inches (mm).
2. Weight 275 g approx.

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Standby Versions



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

DNR30, 60 Connections		
Conn	Pin	Designation
AC Input	1	Ground
	2	Neutral
	3	Line
DC Output	1	DC OK
	2	Positive
	3	Positive
	4	Negative
	5	Negative

DNR30/60 connection for DC standby system applications

Output Set Voltages For Standby Versions			
Model	Voltage	Current	Efficiency
DNR30US12*	13.6 V	2.20 A	84%
DNR30US24*	27.2 V	1.10 A	86%
DNR30US48*	54.5 V	0.55 A	86%
DNR60US12*	13.6 V	4.40 A	86%
DNR60US24*	27.2 V	2.20 A	89%
DNR60US48*	54.5 V	1.10 A	89%

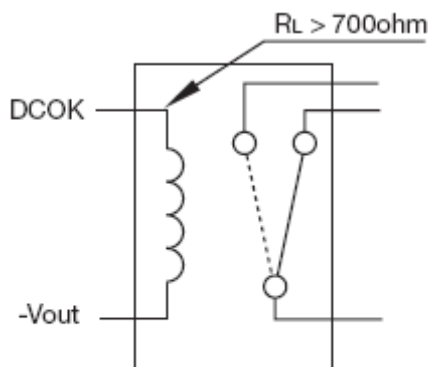
Notes

** at the end of the part number denotes DC standby system.

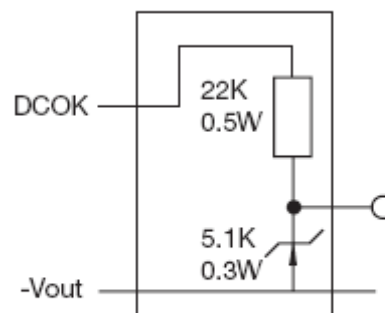
DC OK

30-60 W Models

Output good = 24 V
Output not good = 0 V



Example using external relay to create volt-free contact



Example using external components to create TTL signal

Standard on 24 V models, 30-60 W only.