

## 5-60 Watts

## DNR05-60 Series



- 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"> <li>• 90-264 VAC, 120-370 VDC: DNR05/10/18</li> <li>• 85-264 VAC, 90-375 VDC: DNR30/60</li> </ul>                               |
| Input Frequency       | <ul style="list-style-type: none"> <li>• 47-63 Hz</li> </ul>                                                                                                       |
| Inrush Current        | <ul style="list-style-type: none"> <li>• 5-18 W: 10/18 A at 115/230 VAC</li> <li>• 30 W: 20/40 A at 115/230 VAC</li> <li>• 60 W: 30/60 A at 115/230 VAC</li> </ul> |
| Power Factor          | <ul style="list-style-type: none"> <li>• Meets EN61000-3-2 for class A equipment</li> </ul>                                                                        |
| Earth Leakage Current | <ul style="list-style-type: none"> <li>• 0.8 mA max</li> </ul>                                                                                                     |

## Output

|                          |                                                                                                                                                                                                                                                        |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output Voltage           | <ul style="list-style-type: none"> <li>• See tables</li> </ul>                                                                                                                                                                                         |
| Output Voltage Trim      | <ul style="list-style-type: none"> <li>• See tables</li> </ul>                                                                                                                                                                                         |
| Initial Set Accuracy     | <ul style="list-style-type: none"> <li>• <math>\pm 1\%</math></li> </ul>                                                                                                                                                                               |
| Minimum Load             | <ul style="list-style-type: none"> <li>• No minimum load required</li> </ul>                                                                                                                                                                           |
| Start Up Delay           | <ul style="list-style-type: none"> <li>• &lt;1000 ms</li> </ul>                                                                                                                                                                                        |
| Start Up Rise Time       | <ul style="list-style-type: none"> <li>• &lt;150 ms</li> </ul>                                                                                                                                                                                         |
| Hold Up Time             | <ul style="list-style-type: none"> <li>• 5 W: 30/130 ms at 115/230 VAC</li> <li>• 10 W: 25/100 ms at 115/230 VAC</li> <li>• 18 W: 20/75 ms at 115/230 VAC</li> <li>• 30 W: 20/30 ms at 115/230 VAC</li> <li>• 60 W: 20/30 ms at 115/230 VAC</li> </ul> |
| Line Regulation          | <ul style="list-style-type: none"> <li>• 5-18 W: <math>\pm 1.0\%</math> max</li> <li>• 30-60 W: <math>\pm 0.5\%</math> max</li> </ul>                                                                                                                  |
| Load Regulation          | <ul style="list-style-type: none"> <li>• 5-18 W: <math>\pm 2.0\%</math> max</li> <li>• 30-60 W: <math>\pm 0.5\%</math> max</li> </ul>                                                                                                                  |
| Transient Response       | <ul style="list-style-type: none"> <li>• 300 <math>\mu</math>s for a 50% load change</li> </ul>                                                                                                                                                        |
| Ripple & Noise           | <ul style="list-style-type: none"> <li>• 50 mV pk-pk, 20 MHz BW</li> </ul>                                                                                                                                                                             |
| Overvoltage Protection   | <ul style="list-style-type: none"> <li>• Output clamps at 120-145% Vnom</li> </ul>                                                                                                                                                                     |
| Overload Protection      | <ul style="list-style-type: none"> <li>• 105-145%</li> </ul>                                                                                                                                                                                           |
| Short Circuit Protection | <ul style="list-style-type: none"> <li>• 5-18 W: Trip and restart (Hiccup mode)</li> <li>• 30-60 W: Constant power</li> </ul>                                                                                                                          |
| Temperature Coefficient  | <ul style="list-style-type: none"> <li>• <math>\pm 0.03\%/^{\circ}\text{C}</math></li> </ul>                                                                                                                                                           |

## General

|                     |                                                                                                                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Efficiency          | <ul style="list-style-type: none"> <li>• See tables</li> </ul>                                                                                                                     |
| Isolation           | <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>                               |
| Switching Frequency | <ul style="list-style-type: none"> <li>• 100 KHz typical</li> </ul>                                                                                                                |
| Signals             | <ul style="list-style-type: none"> <li>• DC ON indicator LED Green: All models</li> <li>• DC LOW indicator LED Red: 5-18 W models</li> <li>• DC OK: 24 V 30-60 W models</li> </ul> |
| MTBF                | <ul style="list-style-type: none"> <li>• 200 kHrs typical per MIL-HDBK-217F GF, +40 °C</li> </ul>                                                                                  |

## Environmental

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

## EMC &amp; Safety

|                      |                                                                                                                                                    |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Emissions            | <ul style="list-style-type: none"> <li>• EN55022, level B conducted</li> </ul>                                                                     |
| Harmonic Currents    | <ul style="list-style-type: none"> <li>• EN61000-3-2, class A</li> </ul>                                                                           |
| Voltage Flicker      | <ul style="list-style-type: none"> <li>• EN61000-3-3 amendments 1 &amp; 2</li> </ul>                                                               |
| ESD Immunity         | <ul style="list-style-type: none"> <li>• EN61000-4-2, level 3 Perf Criteria A</li> </ul>                                                           |
| Radiated Immunity    | <ul style="list-style-type: none"> <li>• EN61000-4-3, level 3 Perf Criteria A</li> </ul>                                                           |
| EFT/Burst            | <ul style="list-style-type: none"> <li>• EN61000-4-4, level 3 Perf Criteria A</li> </ul>                                                           |
| Surge                | <ul style="list-style-type: none"> <li>• EN61000-4-5, level 3 Perf Criteria A</li> </ul>                                                           |
| Dips & Interruptions | <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>                        |
| Safety Approvals     | <ul style="list-style-type: none"> <li>• EN60950-1:2001, UL508, UL1310 - see note 3 &amp; ratings table, UL60950-1, cUL60950-1, CE Mark</li> </ul> |

## Models and Ratings

DNR05-60 **XP**

查询DNR18US12"供应商

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

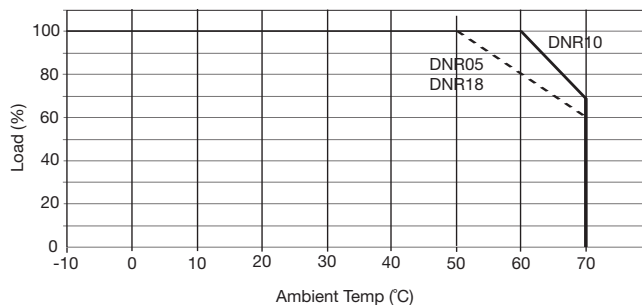
## Notes

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

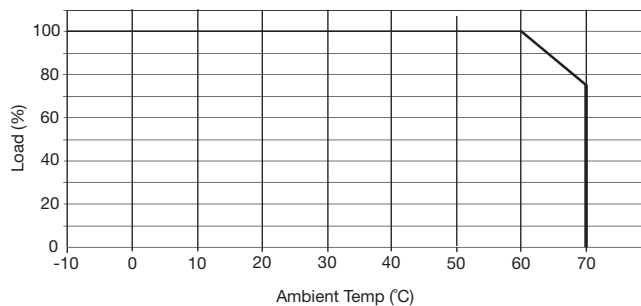
† Available from Farnell. See pages 204-206.

## Derating Curves

DNR5-18 Models

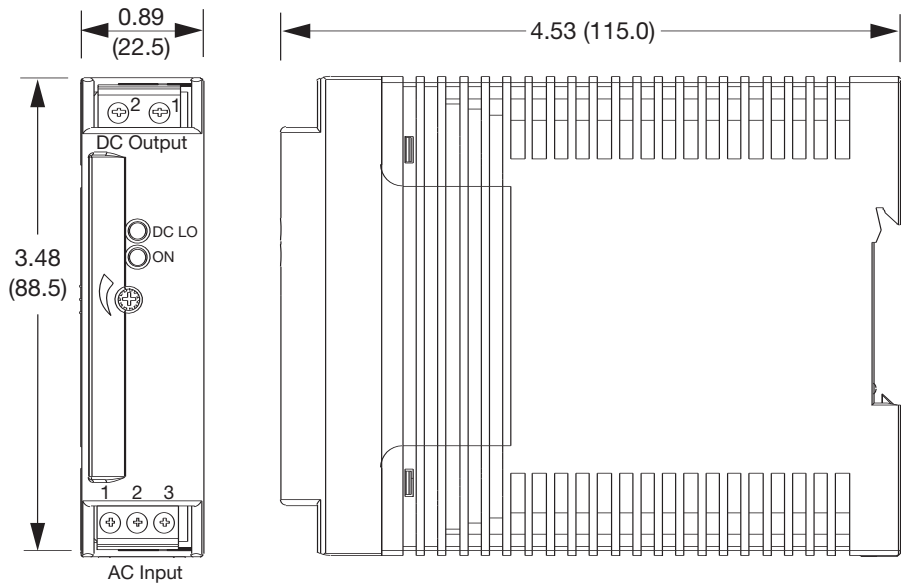


DNR30-60 Models



Mechanical Details

5/10/18 W Models [查询DNR05-60US12"供应商](#)

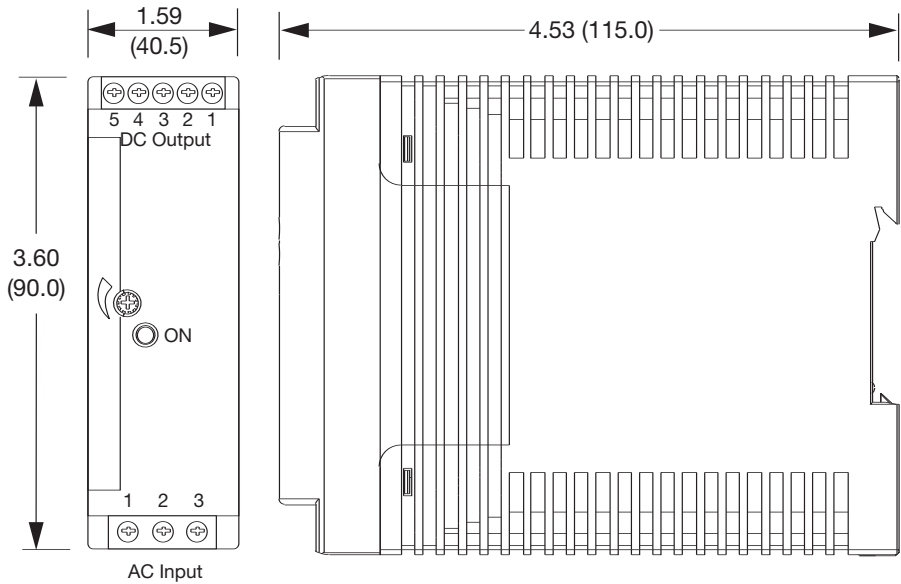


**Notes**

1. All dimensions in inches (mm).  
2. Weight 0.33 lb (150 g) approx.

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

30/60 W Models

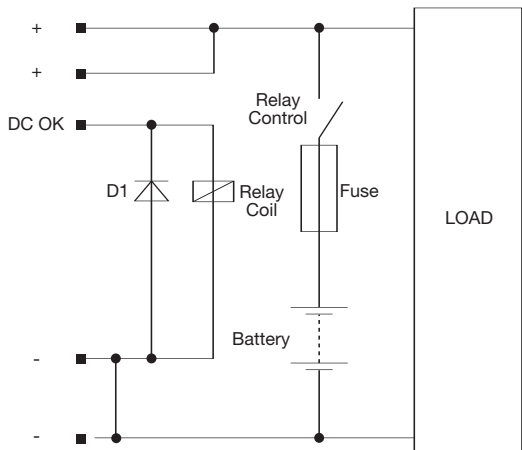


**Notes**

1. All dimensions in inches (mm).  
2. Weight 0.6 lb (275 g) approx.

| 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 & standby models only.



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

\* 24 V & standby models only.

| 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%        |

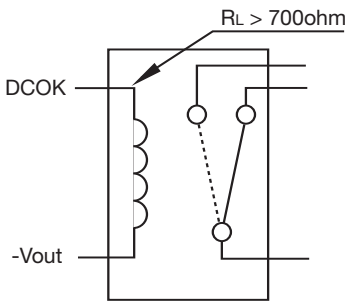
Notes

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

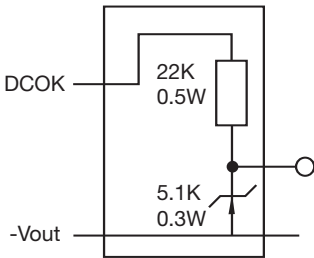
DC OK

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.