

## 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         | • 90-264 VAC, 120-370 VDC: DNR05/10/18<br>85-264 VAC, 90-375 VDC: DNR30/60                       |
| Input Frequency       | • 47-63 Hz                                                                                       |
| Inrush Current        | • 5-18 W: 10/18 A at 115/230 VAC<br>30 W: 20/40 A at 115/230 VAC<br>60 W: 30/60 A at 115/230 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     | • $\pm 1\%$                                                                                                                                                          |
| Minimum Load             | • No minimum load required                                                                                                                                           |
| Start Up Delay           | • <1000 ms                                                                                                                                                           |
| Start Up Rise Time       | • <150 ms                                                                                                                                                            |
| Hold Up Time             | • 5 W: 30/130 ms at 115/230 VAC<br>10 W: 25/100 ms at 115/230 VAC<br>18 W: 20/75 ms at 115/230 VAC<br>30 W: 20/30 ms at 115/230 VAC<br>60 W: 20/30 ms at 115/230 VAC |
| Line Regulation          | • 5-18 W: $\pm 1.0\%$ max<br>30-60 W: $\pm 0.5\%$ max                                                                                                                |
| Load Regulation          | • 5-18 W: $\pm 2.0\%$ max<br>30-60 W: $\pm 0.5\%$ max                                                                                                                |
| Transient Response       | • 300 $\mu$ s for a 50% load change                                                                                                                                  |
| Ripple & Noise           | • 50 mV pk-pk, 20 MHz BW                                                                                                                                             |
| Overvoltage Protection   | • Output clamps at 120-145% Vnom                                                                                                                                     |
| Overload Protection      | • 105-145%                                                                                                                                                           |
| Short Circuit Protection | • 5-18 W: Trip and restart (Hiccup mode)<br>30-60 W: Constant power                                                                                                  |
| Temperature Coefficient  | • $\pm 0.03\%/^{\circ}\text{C}$                                                                                                                                      |

## General

|                     |                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------|
| Efficiency          | • See tables                                                                                                        |
| Isolation           | • 3000 VAC Input to Output<br>1500 VAC Input to Ground<br>500 VAC Output to Ground                                  |
| Switching Frequency | • 100 KHz typical                                                                                                   |
| Signals             | • DC ON indicator LED Green: All models<br>DC LOW indicator LED Red:<br>5-18 W models<br>DC OK: 24 V 30-60 W models |
| MTBF                | • 200 kHrs typical per MIL-HDBK-217F<br>GF, +40 °C                                                                  |

## Environmental

|                       |                                                                                                                              |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature | • -10 °C to +70 °C, derate linearly from<br>+50 °C for 5 & 18 W models, +60 °C for<br>all other models (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 &amp; Safety

|                      |                                                                                                    |
|----------------------|----------------------------------------------------------------------------------------------------|
| Emissions            | • EN55022, level B conducted                                                                       |
| Harmonic Currents    | • EN61000-3-2, class A                                                                             |
| Voltage Flicker      | • EN61000-3-3 amendments 1 & 2                                                                     |
| 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                                                             |
| Dips & Interruptions | • EN61000-4-11, 30% 10 ms,<br>60% 100 ms, 100% 5000 ms<br>Perf Criteria A, B, B                    |
| Safety Approvals     | • EN60950-1:2001, UL508,<br>UL1310 - see note 3 & ratings table,<br>UL60950-1, cUL60950-1, CE Mark |

## Models and Ratings

DNR05-60 **XP**

| Output 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> |

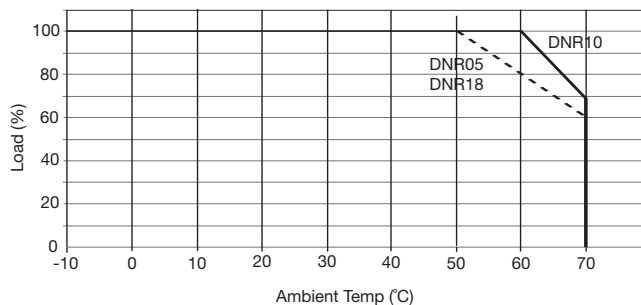
## Notes

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

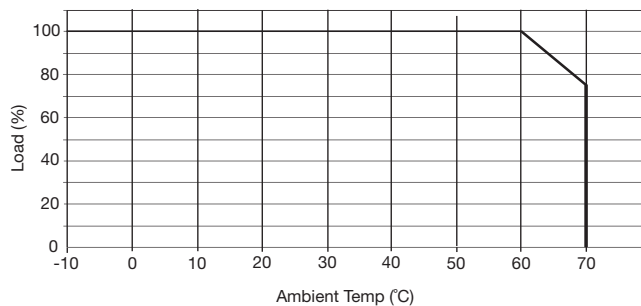
† Available from Farnell. See pages 204-206.

## Derating Curves

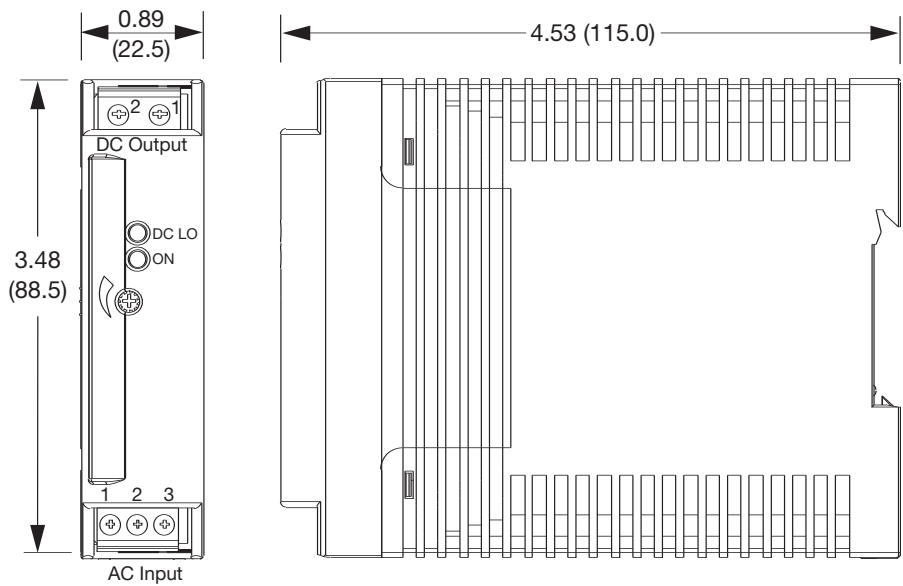
DNR5-18 Models



DNR30-60 Models



Mechanical Details  
5/10/18 W Models

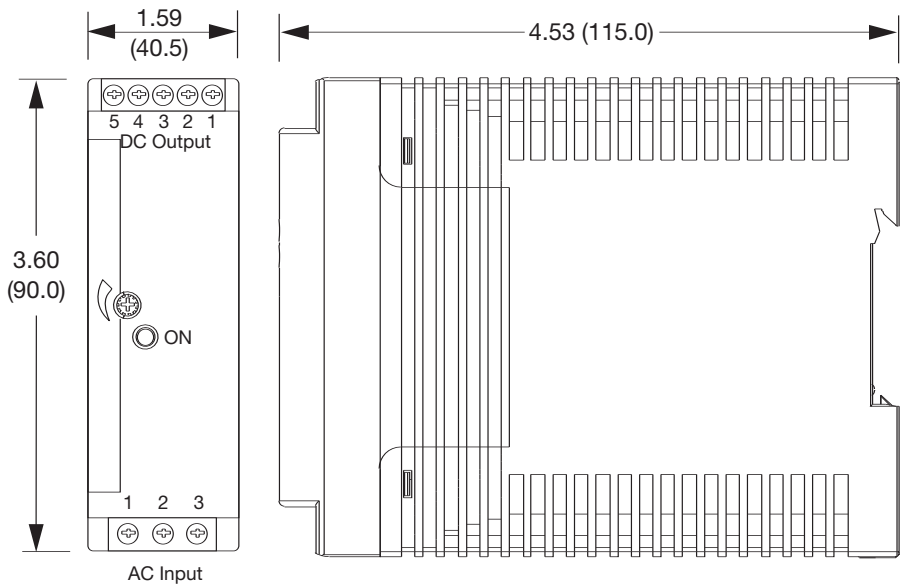


**Notes**

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

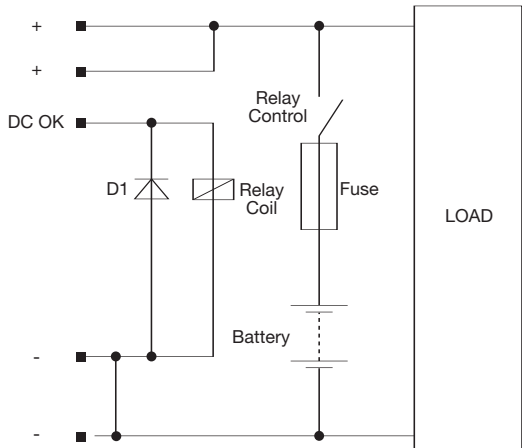


**Notes**

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%        |

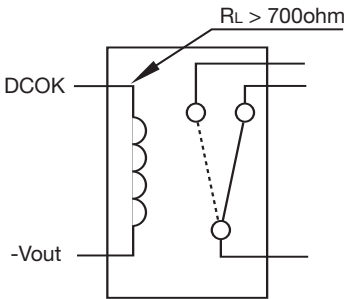
Notes

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

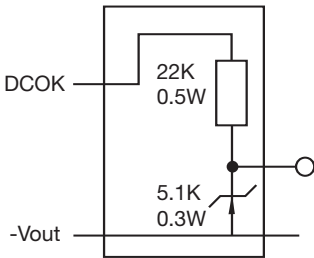
DC OK

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.



**Стандарт  
Электрон  
Связь**

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