



WR-U SERIES

Single and dual output

- 30 Watts output power
- UL approved (48V input models)
- 2:1 input range
- Efficiency to 86%
- Isolated outputs

The WR-U series DC/DC converters accept a wide input voltage range of 9 to 18VDC, 18 to 36VDC, and 36 to 72VDC. A 100kHz switching regulator produces operating efficiencies as high as 86% with output loads as light as 25% of full load. These 30 Watt models provide for remote sensing, input/output isolation of 500VDC minimum, and short circuit protection. The WRU Series incorporates six sided continuous EMI/RFI shielding. The "U" package measures 2.56 x 4.56 x 0.83 inches and is PCB mountable. Other pertinent specifications include: overvoltage protection on all outputs, operating temperature range of -25°C to 71°C with no derating required and all models are free-air convection cooled.

[2 YEAR WARRANTY]

SPECIFICATION

All specifications are typical at nominal input, full load at 25°C unless otherwise stated

| OUTPUT SPECIFICATIONS | | |
|----------------------------|---|---|
| Voltage accuracy | | ±1.0% |
| Voltage adjustability | Singles | ±10%, max. |
| Remote sense | Singles | Yes |
| Line regulation | LL-HL, all outputs | ±0.2%, max. |
| Load regulation | FL-NL FL-0.25%FL | ±5.0%, max. ±1.0%, max. |
| Voltage balance | Duals | ±2.0% |
| Ripple and noise | 5Hz to 20MHz | 75mV pk-pk 10mV rms, max. |
| Transient response | 25% step load change | ±1.0% error band 500µs rec. |
| Temperature coefficient | | ±0.02%/ [°] C, max. |
| Overvoltage protection | Single +5V output Single +12 and +15V Duals | 6.8V ±10% 18.0V ±10% No |
| Short circuit protection | | Continuous automatic recovery |
| INPUT SPECIFICATIONS | | |
| Input voltage range | 12VDC 24VDC 48VDC | 9 to 18VDC 18 to 36VDC 36 to 72VDC |
| No load input current | 12VDC 24VDC 48VDC | 30mA 25mA 20mA |
| Input filter See Note 7 | Single outputs Dual outputs | Pi filter Low ESR cap |
| Reverse voltage protection | | Internal shunt diode (Use external fuse) |

| INPUT SPECIFICATIONS CONTINUED | | |
|--|---|--|
| Remote ON/OFF Logic compatibility E _c -ON E _c -OFF Shutdown idle current Input resistance Control common | CMOS or open collector TTL +5.5VDC min. or open-circuit max. 1.8VDC 5mA 0VDC < E _{in} < 9VDC; 100kΩ Referenced to input minus | |
| GENERAL SPECIFICATIONS | | |
| Efficiency | Typical | 75% to 86% |
| Isolation voltage See Note 5 | Input/Output Input/Case | 500VDC 250VDC |
| Switching frequency | Fixed | 100kHz |
| Approvals and standards | Safety | UL1950 |
| Case material | Black coated copper with non-conductive base | |
| Material flammability | UL94V-0 | |
| Weight | 390g (13.77oz) | |
| MTBF | See Note 6 | 840,000 hours |
| ENVIRONMENTAL SPECIFICATIONS | | |
| Thermal performance | Operating ambient Non-operating amb. Case, temp. rise Derating Cooling | -25°C to +71°C -55°C to +105°C +30°C at FL max. None required Free-air convection cooled |
| Relative humidity | Non-condensing | 5% to 95% RH |
| Altitude | Operating Non operating | 10,000 feet max. 40,000 feet max. |
| Vibration, Pressure | 5Hz to 500Hz | 2.5G rms (approx.) |

30 Watt

Wide input DC/DC converters

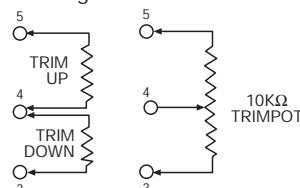
| INPUT VOLTAGE ⁽¹⁾ | OUTPUT VOLTAGE | OUTPUT CURRENT | INPUT CURRENT ⁽²⁾ | TYPICAL EFFICIENCY | REGULATION | | MODEL NUMBER |
|------------------------------|----------------|----------------|------------------------------|--------------------|---------------------|---------------------|---------------|
| | | | | | LINE ⁽³⁾ | LOAD ⁽⁴⁾ | |
| 9-18VDC | 5VDC | 5.0A | 2.8A | 75% | ±0.2% | ±1.0% | WR12S05/5000U |
| 9-18VDC | 12VDC | 2.5A | 3.2A | 78% | ±0.2% | ±1.0% | WR12S12/2500U |
| 9-18VDC | 15VDC | 2.0A | 3.2A | 78% | ±0.2% | ±1.0% | WR12S15/2000U |
| 18-36VDC | 5VDC | 5.0A | 1.35A | 77% | ±0.2% | ±1.0% | WR24S05/5000U |
| 18-36VDC | 12VDC | 2.5A | 1.55A | 80% | ±0.2% | ±1.0% | WR24S12/2500U |
| 18-36VDC | 15VDC | 2.0A | 1.55A | 80% | ±0.2% | ±1.0% | WR24S15/2000U |
| 36-72VDC | 5VDC | 5.0A | 0.68A | 77% | ±0.2% | ±1.0% | WR48S05/5000U |
| 36-72VDC | 12VDC | 2.5A | 0.78A | 80% | ±0.2% | ±1.0% | WR48S12/2500U |
| 36-72VDC | 15VDC | 2.0A | 0.78A | 80% | ±0.2% | ±1.0% | WR48S15/2000U |
| 9-18VDC | ±12VDC | ±1.25A | 3.05A | 82% | ±0.2% | ±1.0% | WR12D12/1250U |
| 9-18VDC | ±15VDC | ±1.0A | 3.05A | 82% | ±0.2% | ±1.0% | WR12D15/1000U |
| 18-36VDC | ±12VDC | ±1.25A | 1.5A | 84% | ±0.2% | ±1.0% | WR24D12/1250U |
| 18-36VDC | ±15VDC | ±1.0A | 1.5A | 84% | ±0.2% | ±1.0% | WR24D15/1000U |
| 36-72VDC | ±12VDC | ±1.25A | 0.73A | 86% | ±0.2% | ±1.0% | WR48D12/1250U |
| 36-72VDC | ±15VDC | ±1.0A | 0.73A | 86% | ±0.2% | ±1.0% | WR48D15/1000U |

Notes

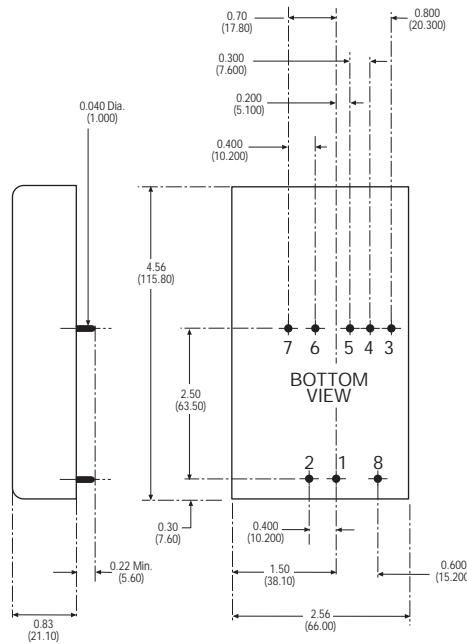
- 1 Nominal input 12, 24 and 48VDC.
- 2 Maximum at full load.
- 3 Measured from high line to low line.
- 4 Measured from full load to 0.25% full load.
- 5 In many cases, the isolation specification may be upgraded. Consult factory for details.
- 6 MTBF figures are based on actual product performance. Consult factory for details.
- 7 Fixed frequency design provides for easier input filtering and better noise performance.
- 8 Standard specifications are conservative and can be optimised for specific applications. In particular, converter start-up at lower than specified temperature, wider input voltage range and output voltage adjustment are all relatively simple modifications to the standard product. Consult factory for details.

EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by ±10% using either method shown below.



| PIN CONNECTIONS | | |
|-----------------|-----------------------|-------------|
| PIN NUMBER | SINGLE OUTPUT | DUAL OUTPUT |
| 1 | + Input | + Input |
| 2 | - Input | - Input |
| 3 | + Sense/Trim Down | + Output |
| 4 | Trim | Common |
| 5 | - Sense/Trim Up | - Output |
| 6 | + Output | No Pin |
| 7 | - Output | No Pin |
| 8 | Remote On/Off Control | |



ALL DIMENSIONS IN INCHES (mm)

International Safety Standard Approvals

UL1950 File Numbers E136005 and E131987

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