

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		CMOS or open collector TTL +5.5VDC min. or open-circuit max. 1.8VDC
E _c -ON		5mA
E _c -OFF		0VDC < E _{in} < 9VDC; 100kΩ Referenced to input minus
Shutdown idle current		5mA
Input resistance		0VDC < E _{in} < 9VDC; 100kΩ Referenced to input minus
Control common		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

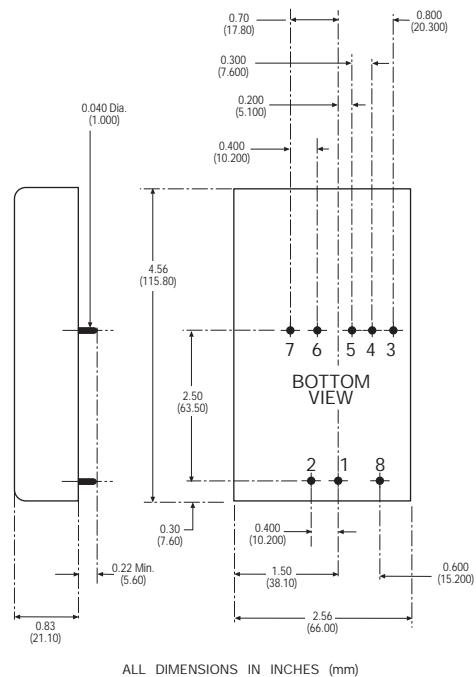
Notes

- Nominal input 12, 24 and 48VDC.
- Maximum at full load.
- Measured from high line to low line.
- Measured from full load to 0.25% full load.
- In many cases, the isolation specification may be upgraded. Consult factory for details.
- MTBF figures are based on actual product performance. Consult factory for details.
- Fixed frequency design provides for easier input filtering and better noise performance.
- 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.

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	

EXTERNAL OUTPUT TRIMMING

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



International Safety Standard Approvals

UL1950 File Numbers E136005 and E131987