

1500WFR series



www.martekpower.com

Single and Dual Output DC/DC Converter



DESCRIPTIONS

The 1500WFR series is a family of low cost single and dual output 15W DC/DC converters specifically designed for space-critical applications. These models operate from wide (2:1) input voltage ranges of 18 to 36 or 36 to 72 VDC; and provide regulated outputs of 5, 12, 15, ± 12 or ± 15 VDC. Standard features include 500 VDC input/output isolation, an internal input filter, line/load regulation of $\pm 1.0\%$ and a minimum switching frequency of 190 kHz. All models are packaged in compact, low profile 1" X 2" X 0.4" inch metal case. This miniature size yields a power density as high as 18.75 watts/in³. Operation is specified over the full operating temperature range of -25 °C to +71 °C. Cooling is by free-air convection.

OUTPUT CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Output Voltage Accuracy			± 1.0	%; Output voltage at nominal line & FL
Output Voltage Balance Dual Outputs			± 1.0	%; Equal Output Loads
Minimum Load				10% of Full Load
Line Regulation			± 0.2	% ¹
Load Regulation			± 1.0	% ²
Ripple/Noise			100	mV p-p, Nom.Line FL, 20Mhz B.W. using 1 μ f bypass capacitor
Transient Response			500	μ S to within 1% error band for 25% step load change
Temperature Coefficient			± 0.02	% per °C
Short Circuit Protection				Current Limit, Continuous

¹ = % Output voltage measured from min. input line to maximum

² = Output voltage measured from FL to 10% Load

FEATURES

- 15W Continuous Output Power
- Compact 1" X 2" X 0.4" Case
- Industry Standard Pin-Out
- Up to 82% Efficiency
- -25°C to +71°C Operating Temperature Range
- 18.75W/In³ Power Density
- Low Cost

INPUT CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Input Voltage Range				
24 VDC Input Models	18	24	36	VDC
48 VDC Input Models	36	48	72	VDC
Input Filter				Pi Networks

GENERAL CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Switching Frequency		190		kHz
Isolation Voltage		500		VDC, 1 minute
Isolation Resistance		1000		Mohm, 500VDC

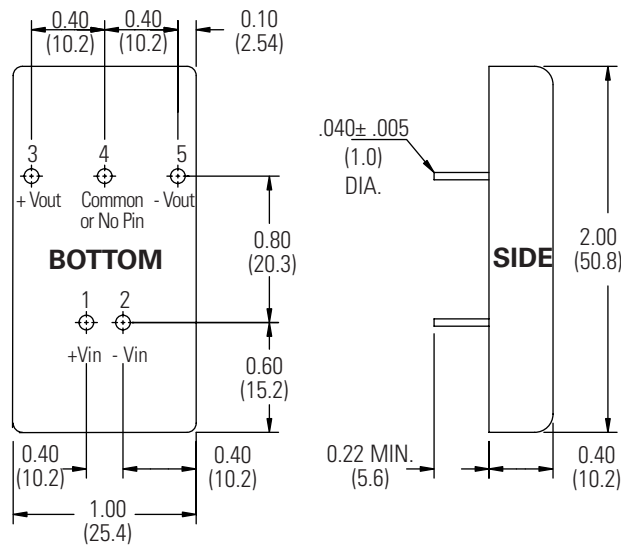
ENVIRONMENTAL SPECIFICATIONS

	Min	Typ	Max	Unit/Comments
Operating Temp. Range	-25		+71	°C; Ambient
Storage Temp. Range	-40		+100	°C
Maximum Case Temp.			+100	°C
Derating				None Required
Relative Humidity			95	% Humidity; non-condensing
Cooling				Free-Air Convection

PHYSICAL CHARACTERISTICS

	Unit/Comments
Case Size	1.0 X 2.0 X 0.4 inches (25.4 X 50.8 X 10.2 mm)
Case Material	Black Coated Metal with Non-Conductive Base
Pin Coating	Tin (-Y models)
Shielding	Six Sided Continuous
Weight	35 Grams

OUTLINE DRAWING



PIN OUT CHART

Pins	Single	Dual
1	+ Vin	+ Vin
2	- Vin	- Vin
3	+ Vout	+ Vout
4	No Pin	Common
5	- Vout	- Vout

Notes:

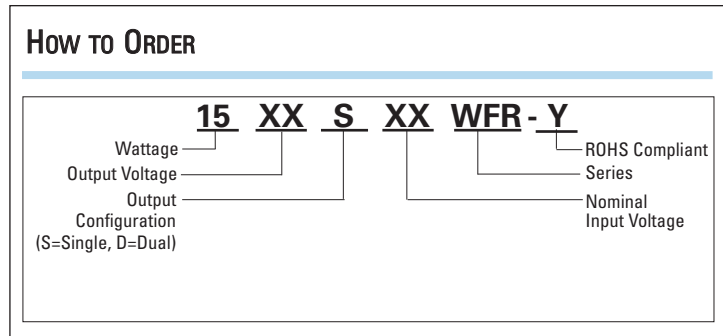
1. Unless otherwise specified dimensions are in inches (mm).

Tolerances	Inches	mm
	X.XX = ± 0.02	X.X = ± 0.5
	X.XXX = ± 0.010	X.XX = ± 0.25

2. Pin Coating: Tin (-Y models)

All specifications are typical at nominal input, nominal load and 25° C unless otherwise specified. External, low ESR, 10 microfarad (minimum) capacitor across input is recommended for operation.

How To ORDER



MODEL SELECTION CHART

Model	Nominal Input Voltage (VDC)	Input Voltage Range (VDC)	Output Voltage (VDC)	Output Current (mA)	No Load Input Current (mA)	Full Load Input Current (mA)	Output Efficiency @ FL (%)
1505S24WFR	24	18 - 36	5	3000	20	800	78
1512S24WFR	24	18 - 36	12	1250	20	780	80
1515S24WFR	24	18 - 36	15	1000	20	780	80
1512D24WFR	24	18 - 36	±12	±625	30	780	80
1515D24WFR	24	18 - 36	±15	±500	30	780	80
1505S48WFR	48	36 - 72	5	3000	10	390	80
1512S48WFR	48	36 - 72	12	1250	10	380	82
1515S48WFR	48	36 - 72	15	1000	10	380	82
1512D48WFR	48	36 - 72	±12	±625	10	380	82
1515D48WFR	48	36 - 72	±15	±500	10	380	82

APPLICATION NOTES:

1. Modules with ±12 VDC or ±15 VDC outputs may be connected to provide 24 VDC or 30 VDC respectively. For example, to connect the 1512D24WFR for -24 VDC operation, ground the -V input (pin 2) and connect it to the +V output (pin 3). With this reference, -24 VDC will be available at the -V output (pin 5) and -12 VDC will be available at the output common (pin 4).
2. These units operate as complete modules with no need for external components. However, in some noise sensitive analog applications it is recommended that a 15 μF, 25V tantalum electrolytic capacitor be placed in parallel with 0.1 μF ceramic capacitor as close to the load as possible. This will reduce ripple significantly.