

1000WFR Series

Distributed By:
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(800) 554-1224
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Key Features:

- 2:1 Input Voltage Range
- 0.4 Inch Low Profile Case
- 6.25W/In³ Power Density
- Output Short Circuit Protection
- Six-Sided Continuous Shielding
- Low Cost



General Description

The 1000WFR series is a family of 10W single and dual output DC/DC converters that utilize a cost effective design to achieve high levels of performance. Operating from wide (2:1) input voltage ranges of 9 to 18, 18 to 36 or 36 to 72 VDC; eighteen models provide outputs of 5, 9, 12, 15, ± 12 or ± 15 VDC.

Standard features include an input π (Pi) filter to reduce reflected ripple current, efficiency as high as 80%, and continuous output short circuit protection. Input/output isolation is 500 VDC minimum, output voltage accuracy is $\pm 1\%$ and transient response is less than 500 μ Sec.

All models are packaged in a compact, low profile 2.0 x 2.0 x 0.4 inch, black coated metal case. This miniature size yields a power density as high as 6.25 W/In³. Operation is specified over the full operating temperature range of -25°C to +71°C with no derating required. Cooling is by free-air convection.

Electrical Specifications

Input Specifications:

Input Voltage Range	See Table 1
Input Filter	π (Pi) Network
Reflected Ripple Current	See Model Selection Guide
Reverse Voltage Protection	Parallel Diode

Output Specifications:

Voltage and Current Ratings ⁽¹⁾	See Model Selection Guide
Output Voltage Accuracy	$\pm 1\%$, Max.
Voltage Balance (Dual Outputs)	$\pm 1\%$, Max.
Ripple & Noise (20 MHz BW)	10 mV RMS, Max. 100 mV Pk-Pk, Max.
Line Regulation	$\pm 0.2\%$, Max.
Load Regulation	$\pm 0.5\%$, Max.
Minimum Load ⁽²⁾	10% of Full Load
Temperature Coefficient @ FL	$\pm 0.02\%/^{\circ}\text{C}$
Short Circuit Protection	Continuous, Current Limit
Short Circuit Restart	Automatic
Transient Response	500 μ Sec.

General Specifications:

Efficiency	See Model Selection Guide
Isolation Voltage (1 min)	500 VDC, Min.

Isolation Resistance	10 ⁹ Ω
Isolation Capacitance	600 pF
Switching Frequency	80 kHz to 120 kHz

Environmental Specifications:

Operating Temperature Range (Ambient)	-25°C to +71°C
Storage Temperature Range	-40°C to +105°C
Derating	None Required
Humidity	Up to 95%, Non-Condensing
Cooling ⁽³⁾	Free-air Convection

Physical Characteristics:

Size	2.0 x 2.0 x 0.4 inches (50.8 x 50.8 x 10.2 mm)
Weight	2.8 Oz (79g)
Case Material ⁽⁴⁾	Black Coated Metal
Shielding	Six-Sided Continuous

Absolute Maximum Ratings: ⁽⁵⁾

Input Voltage	175% of Nominal Input Line
Output Short Circuit Duration	Continuous
Internal Power Dissipation	6.0 Watts

Specifications typical @ +25°C with nominal input voltage and under full output load conditions, unless otherwise noted. Specifications subject to change without notice.

Specification Notes

1. Total output power should not exceed specified output ratings for any particular model.
2. A minimum load of 10% is required on each output for dual output units.
3. Free-air convection cooling requires that the application be properly ventilated. Using a converter in a sealed application, or one in which air movement is severely restricted, could cause thermal runaway.
4. To reduce EMI, the case header is soldered to the "cup" that the unit sits in. This provides a six-sided, continuous shield that effectively blocks radiated emissions.
5. Absolute Maximum Ratings are specification limits that could permanently damage the unit if exceeded. These are not continuous operating ratings.

Note:

For information on the standard conditions and methods used or approved by CDI to test DC/DC converter parameters, see the application note

**WIDE INPUT VOLTAGE RANGE
10W SINGLE and DUAL OUTPUT
LOW PROFILE DC/DC CONVERTERS**

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Model Selection Guide

Model Number	Input					Output		Efficiency @FL (%)
	Nominal (VDC)		Current (mA)		Reflected Ripple (mA P-P)	Voltage (VDC)	Current (mA)	
	Nominal	Range	No-Load	Full-Load				
1005S12WFR	12	9 - 18	25	1160	116	5	2000	72
1009S12WFR	12	9 - 18	25	1115	112	9	1100	74
1012S12WFR	12	9 - 18	25	1055	106	12	800	76
1015S12WFR	12	9 - 18	25	1075	108	15	660	77
1012D12WFR	12	9 - 18	25	1055	106	±12	±440	76
1015D12WFR	12	9 - 18	25	1075	108	±15	±330	77
1005S24WFR	24	18 - 36	25	565	57	5	2000	74
1009S24WFR	24	18 - 36	25	545	55	9	1100	76
1012S24WFR	24	18 - 36	25	515	52	12	800	78
1015S24WFR	24	18 - 36	25	525	53	15	660	79
1012D24WFR	24	18 - 36	25	515	52	±12	±440	78
1015D24WFR	24	18 - 36	25	530	53	±15	±330	78
1005S48WFR	48	36 - 72	25	275	28	5	2000	76
1009S48WFR	48	36 - 72	25	270	27	9	1100	77
1012S48WFR	48	36 - 72	25	255	26	12	800	79
1015S48WFR	48	36 - 72	25	260	26	15	660	80
1012D48WFR	48	36 - 72	25	250	25	±12	±440	80
1015D48WFR	48	36 - 72	25	260	26	±15	±330	80

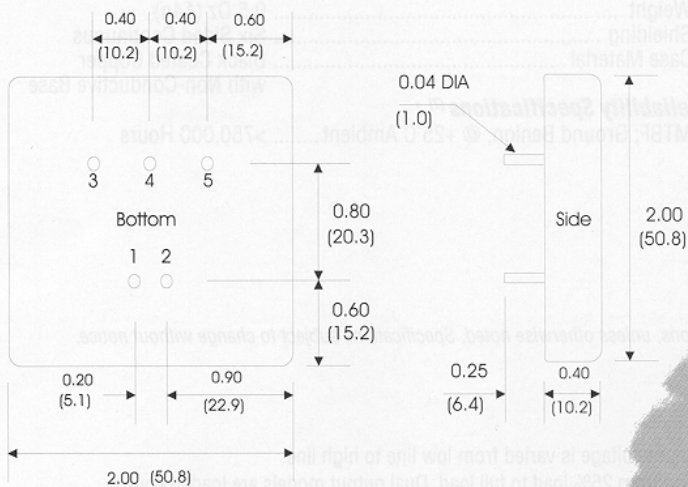
Table 1 - Input Voltage Range vs Output Load

Nominal Input (VDC)	Input Voltage Range (VDC) at:			
	20% Load	40% Load	60% Load	100% Load
12	8.6-20.4	8.75-19.7	8.8-18.5	9.0-18.0
24	17.2-40.9	17.5-39.5	17.6-37.1	18.0-36.0
48	34.4-81.8	35.0-79.1	35.2-74.2	36.0-72.0

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 **1012D12WFR** 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 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 a 0.1 µF ceramic capacitor as close to the load as possible. This will reduce ripple to approximately 5 mV Pk-Pk.

Mechanical Configuration:



Pin-Out

Pin	Single Output	Dual Output
1	+V Input	+V Input
2	-V Input	-V Input
3	+V Output	+V Output
4	N/C	Common
5	-V Output	-V Output

Note: All dimensions are typical in inches (mm).
Tolerance X.XX = ± 0.02, (± 0.5)
X.XXX = ± 0.010, (± 0.25)
N/C = No Connection

For Easy Ordering Use

