



## A100 SERIES 100 WATT HIGH VOLTAGE DC/DC CONVERTERS

### FEATURES

- ▶ **Customer Selects Output Voltage**
- ▶ Outputs to 200 Vdc
- ▶ Efficiency to 90%
- ▶ High Regulation
- ▶ Ultra Wide Input Ranges  
(10-20Vdc, 18-36Vdc, 36-72Vdc)
- ▶ Remote On/Off Control
- ▶ Continuous Short Circuit Protection



The A100 Series high voltage DC/DC converter offers a highly regulated high voltage isolated output in a six-sided metal case. Their high power density, wide input, and excellent regulation make them ideally suited for applications that demand a high degree of performance. All models will tolerate a short circuit indefinitely. Also included is a Pi input filter and remote on/off.

### ELECTRICAL SPECIFICATIONS

Voltage Accuracy ..... +/- 1%  
Line Regulation ..... +/- 0.2%  
Load Regulation ..... +/- 0.3%  
Output Ripple ..... < 0.3% P-P

Input Filter ..... Pi Network  
Efficiency ..... 90% (typ.)  
Short Circuit Protection ..... Continuous  
Switching Frequency ..... 130 kHz  
Output Isolation ..... 1000 Vdc  
Input / Output Capacitance ..... < 100pF

### GENERAL SPECIFICATIONS

Temp. Stability ..... +/- 0.02%/°C  
Temp. (Operating, Case) ..... -25 to +70°C  
Temp. (Storage) ..... -40 to +125°C

EMI/RFI ..... Six Sided Shield (Case is Connected to -IN)  
Derating ..... None  
Cooling ..... Free-Air Convection  
Thermal Shut Down ..... 100°C +/- 5°C  
(Self-Resetting)

### PHYSICAL SPECIFICATIONS

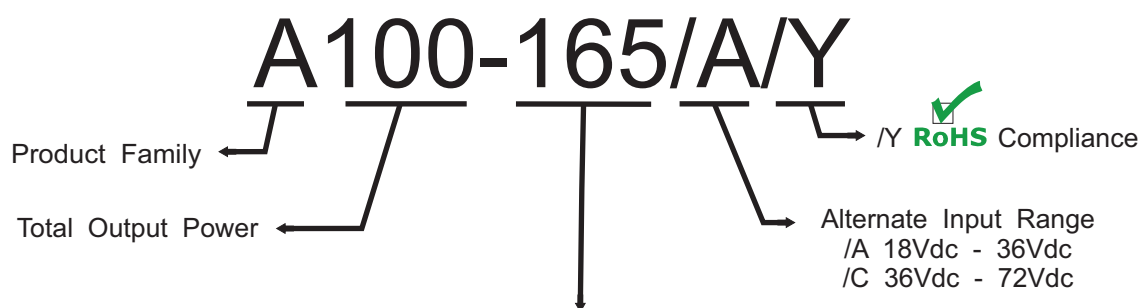
Dimensions ..... 2.75 x 4.8 x 0.92 inches  
Weight ..... 13.5 Oz

Case Material ..... Black Coated Metal  
(With Non-Conductive Base Plate)



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REPRESENTATIVE MODEL LISTING							
OUTPUT SPECIFICATIONS		MODEL NUMBER / INPUT RANGE					
VOLTAGE	CURRENT	10-20VDC		18-36VDC		36-72VDC	
		Non-RoHS	RoHS	Non-RoHS	RoHS	Non-RoHS	RoHS
48 Vdc	2.1 A	A100-48	A100-48/Y	A100-48/A	A100-48/A/Y	A100-48/C	A100-48/C/Y
75 Vdc	1.3 A	A100-75	A100-75/Y	A100-75/A	A100-75/A/Y	A100-75/C	A100-75/C/Y
100Vdc	1.0 A	A100-100	A100-100/Y	A100-100/A	A100-100/A/Y	A100-100/C	A100-100/C/Y
120 Vdc	833 mA	A100-120	A100-120/Y	A100-120/A	A100-120/A/Y	A100-120/C	A100-120/C/Y
140 Vdc	714 mA	A100-140	A100-140/Y	A100-140/A	A100-140/A/Y	A100-140/C	A100-140/C/Y
150 Vdc	666 mA	A100-150	A100-150/Y	A100-150/A	A100-150/A/Y	A100-150/C	A100-150/C/Y
160 Vdc	625 mA	A100-160	A100-160/Y	A100-160/A	A100-160/A/Y	A100-160/C	A100-160/C/Y
180 Vdc	555 mA	A100-180	A100-180/Y	A100-180/A	A100-180/A/Y	A100-180/C	A100-180/C/Y
200 Vdc	500 mA	A100-200	A100-200/Y	A100-200/A	A100-200/A/Y	A100-200/C	A100-200/C/Y



## Customer Selects Output Voltage

The A100 Series are designed such that the customer may order any output voltage from 48Vdc to 200Vdc at no additional charge.







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## APPLICATION NOTES

### INPUT AND OUTPUT IMPEDANCE

The A100 Series of power converters have been designed to be stable with no external capacitors when used in low inductance input and output circuits. However, in some applications, the inductance associated with the distribution from the power source to the input of the converter can affect the stability of the converter. The addition of a 100  $\mu$ F electrolytic capacitor with an ESR <1 Ohm across the input helps ensure stability of the converter. In many applications, the user has to use decoupling capacitance at the load.

### SHORT CIRCUIT PROTECTION

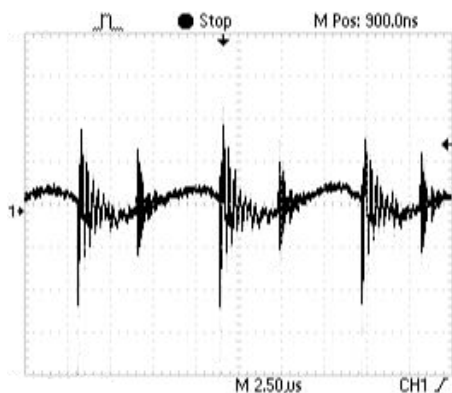
The A100 Series is equipped with short circuit protection. The converter will fold-back the input power whenever a short circuit is applied to its output and automatically recover after the overload condition is removed.

### ISOLATION

The output of the A100 Series is galvanically isolated from both the input and case, capacitance is < 100pF and resistance is > 10G Ohm. The converters case is connected directly to -In to aid in reducing unwanted noise.

### RIPPLE AND NOISE

Figure below shows a typical output voltage ripple waveform, measured at full rated load current with no additional output filtering. External low ESR capacitors may be added across output to further reduce ripple.



### STARTUP TRANSIENT

Figure below shows a typical output voltage during turn-on, measured at no load current with no additional output filtering.

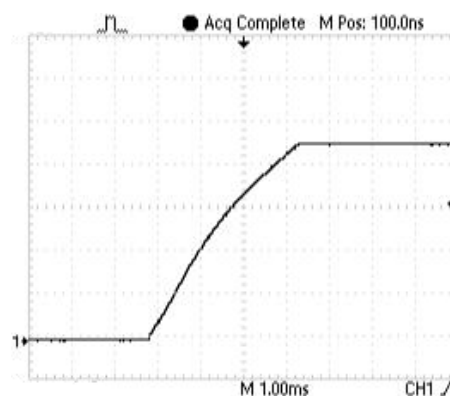
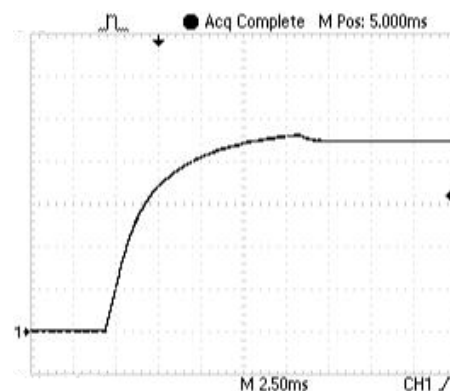


Figure below shows a typical output voltage during turn-on, measured at full rated load current with no additional output filtering.





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## APPLICATION NOTES

### INRUSH CURRENT

The inrush current of the A100 Series has been kept as low as possible. However, a series resistor may be inserted in the input line to limit this current further.

### LOAD TRANSIENT

Figure below shows a typical output voltage response, measured during a transition from full rated load current to no load current with no additional output filtering.

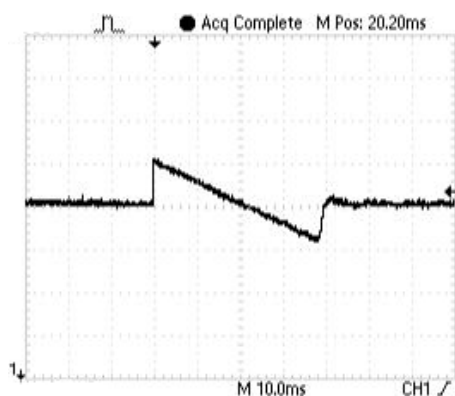
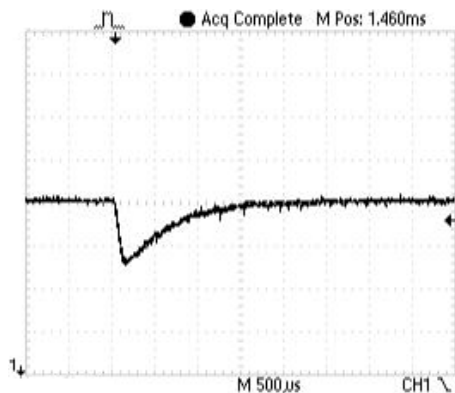
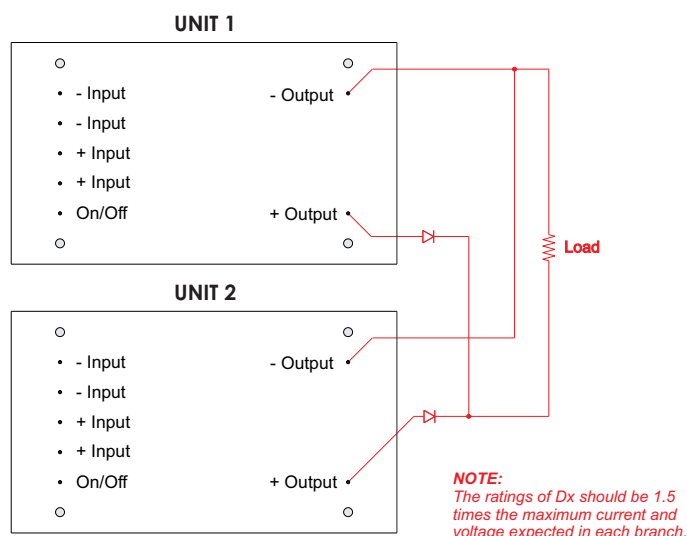


Figure below shows a typical output voltage response, measured during a transition from no load current to full rated load current with no additional output filtering.



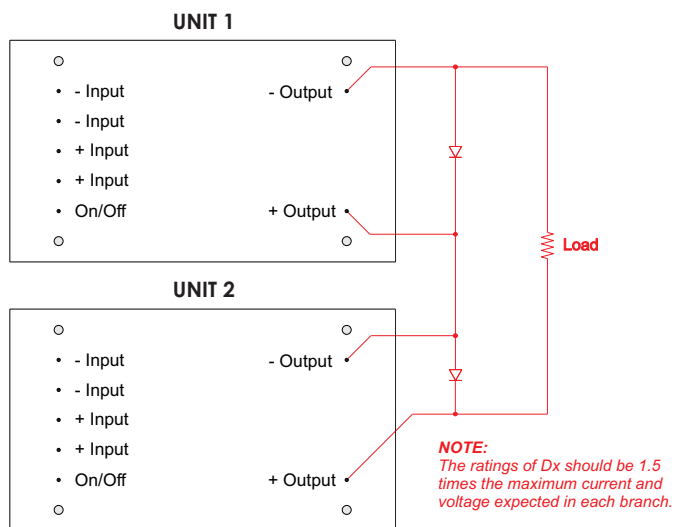
### CONNECTION IN PARALLEL

The figure below shows how to connect outputs of several units with equal nominal output voltage in parallel with the use of oring diodes.



### CONNECTION IN SERIES

Figure below shows how to connect multiple outputs in series with the use of shunt diodes, taking into consideration that the highest achieved output voltage should remain below the rated isolation voltage.



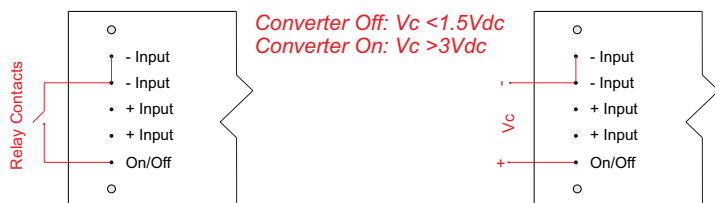


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## APPLICATION NOTES

### REMOTE ON/OFF CONTROL

The On/Off control (Pin 5) allows the user to shut down the converter mechanically or logically using a relay or a TTL or CMOS logic signal.



### CLEANING AGENTS

In order to avoid possible damage, any penetration of cleaning fluids must be prevented, since the power supplies are not hermetically sealed.

### NUCLEAR AND MEDICAL APPLICATIONS

American Power Design products are not designed, intended for use in, or authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of American Power Design, Inc.

### WARRANTY

All products manufactured by American Power Design, Inc. (APD) are warranted to be free of defects due to material or workmanship for a period of one year from date of shipment. At our option, APD will repair or replace any non-conforming product.

APD expressly disclaims any liability for consequential or incidental damages resulting from the use or misuse of its products by the purchaser or others.

This warranty is in lieu of all warranties expressed or implied, including the warranties of merchantability. No other warranties, obligations, or liabilities are expressed or implied.

All products being returned for repair require a return material authorization(RMA) assigned by APD prior to return shipment.

### TECHNICAL REVISIONS

The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

### SAFETY REQUIREMENTS

The converters are designed to meet North American and International safety regulatory requirements per UL 60950-1/CSA 22.2 No. 60950-1-07 Second Edition, IEC 60950-1:2005, and EN 60950-1:2006. Basic Insulation is provided between input and output. To comply with safety agencies requirements, an input line fuse must be used external to the converter. The table below provides the recommended fuse rating for use with this family of products.

Input Voltage Range	Fuse Rating
10-20Vdc	18A
18-36Vdc	10A
36-72Vdc	5A

If one input fuse is used for a group of modules, the maximum fuse rating should not exceed 20A.