Wilmore ELECTRONICS CO., INC.
P. O. Box 1329, Hillsborough, N. C. 27278, U.S.A.

SERIES 1640XR
DC-DC CONVERTERS

BULLETIN NO. 76A0008

EXTENDED INPUT RANGE DC-DC CONVERTERS

FOR 24-V, 48-V AND 130-V STATIONARY OR MOBILE APPLICATIONS

Model 1640XR-24/48-13-15

Model 1640XR-48/130-13-7.5

- **TWO EXTENDED INPUT RANGE VERSIONS: 20V-80V AND 40V-150V**
- **200-WATT AND 100-WATT MODELS**
- **INPUT-TO-OUTPUT ISOLATION**
- **-40°C TO 70°C TEMPERATURE RANGE**
- **CONVECTION COOLED**
- **ELECTRICALLY AND MECHANICALLY RUGGED**

Series 1640XR dc-to-dc converters provide an isolated, regulated and well-filtered dc output voltage from nominal 24V, 48V, and 130V battery systems. This output is galvanically isolated from the source and chassis and, therefore, may be connected either as a positive or a negative output. Two available input-voltage ranges (20V-80V and 40V-150V) allow one version of the converter to cover multiple battery voltages. Designed to perform equally well in mobile and stationary applications, these converters can be used to power radio transceivers, telecommunications equipment and other sensitive electronic loads.

Models with outputs of 13.6 Vdc and 24 Vdc are described in this bulletin. Technical information on other versions with output voltages in the range of 5 to 28 volts is available upon request.

Table 1

Input Voltage Range (Vdc)	Nominal Output Voltage (Vdc)	Maximum† Output Current/Power	Model Number
20 - 80	13.6	7.5A/100W	**1640XR-24/48-13-7.5**
	13.6	15A/200W	**1640XR-24/48-13-15**
	24	4A/100W	**1640XR-24/48-24-4**
	24	8A/200W	**1640XR-24/48-24-8**
40 - 150	13.6	7.5A/100W	**1640XR-48/130-13-7.5**
	13.6	15A/200W	**1640XR-48/130-13-15**
	24	4A/100W	**1640XR-48/130-24-4**
	24	8A/200W	**1640XR-48/130-24-8**

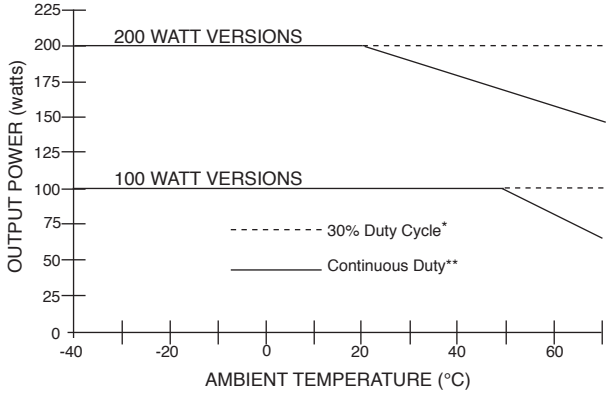
† Depending upon the ambient temperature, a duty-cycle rating may apply.

SPECIFICATIONS

Input Voltage, Output Voltage and Current

The input-voltage operating range, nominal output voltage and maximum output current for each model are shown in Table 1. For further information on output power versus ambient operating temperature, see Figure 1 below. The no-load input-power drain is less than 4 watts.

Figure 1.
Output Power Ratings



*Intermittent duty for powering a voice/data two-way radio with a duty cycle of 30%.
**Mounted in any attitude with free-air convection cooling.

Output Voltage Regulation

Versus line: ± 1%
Versus load: ± 1%

Output Voltage Ripple

Typically less than 10 mV rms and 50 mV peak-to-peak.

Protection

Protection against overloads, short circuits and output overvoltages is provided electronically. Recovery to normal operating conditions is automatic upon removal of the overload or short-circuit fault. Following an overvoltage shutdown, input power to the converter may need to be removed and reapplied to resume converter operation.

Protection against accidental reversal of the dc input-voltage polarity during installation is provided by a shunt diode working in conjunction with an appropriately-rated, user-supplied input fuse or circuit breaker. See section titled “Installation”.

Isolation

Isolation capable of passing a 2,000-Vdc stress test is provided between the input and output and between the input and chassis.

Ambient Temperature Range

-40°C to 70°C (-40°F to 158°F)
(Convection Cooling)

Installation

Good installation practice for electronic equipment operated from a battery source dictates that input fuses or circuit breakers should be located at the power-source end of the cables feeding the converter. For this reason, no protection devices are built inside the Model 1640XR to protect against fault conditions at the input to the converter. Instead, an appropriately-rated fuse or circuit breaker should be installed near the dc-input source in series with the positive (+) input line when this source is negative-grounded, or when the dc source is positive-grounded, installed in series with the negative (-) input line.

Input/Output Connections

The input and output connections are made via heavy-duty barrier-strip terminal blocks accommodating lugs for use with #6 hardware. The chassis/ground connection is made via a #6 sems screw.

Mechanical

Size - Dimensions given in inches (mm):

For 100-watt models: 1.9 (48) high x 7.0 (177) wide x 9.0 (228) deep (excluding flanges and terminal block).

For 200-watt models: 3.0 (76) high x 7.0 (177) wide x 9.0 (228) deep (excluding flanges and terminal block).

Mounting flange on base is 0.5 (13) wide (each side). Terminal block extends approximately 0.5 (13) from front panel.

Weight:
For 100-watt models: 3.5 pounds (1.6 kg)
For 200-watt models: 5 pounds (2.3 kg)

Mounting:
Mounting flange on base accepts four #10 screws. Hole pattern is 6.6 (168) front-to-back and 7.6 (193) wide.

Additional Information

For additional information about these and other Wilmore Electronics Company dc-to-dc converters, dc-to-ac inverters and custom power solutions, please contact our Sales Department at:

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