

## EXTENDED INPUT RANGE DC-DC CONVERTERS FOR 74-V LOCOMOTIVE AND 37-V RAIL / TRANSIT APPLICATIONS



Model 1620XR-13-15-1



Model 1620XR-13-7.5-1

- 20V-130V INPUT RANGE  
 ALLOWS OPERATION  
 THROUGH LOCOMOTIVE  
 CRANKING AND OTHER  
 VEHICLE POWER ANOMALIES
- 200-WATT AND  
 100-WATT MODELS
- FIELD-PROVEN INPUT  
 TRANSIENT PROTECTION
- -40°C TO 70°C  
 TEMPERATURE RANGE
- EXTREMELY RUGGED AND  
 RELIABLE
- AVAILABLE IN  
 PTC/LSI RACK  
 PACKAGES -  
 SEE BULLETIN  
 NO. 76A0006



Series 1620XR dc-to-dc converters provide an isolated, regulated and well-filtered dc output voltage from 74-Vdc and 37-Vdc electrical systems on locomotives and other rail vehicles. An extended input voltage range enables these converters to continuously power onboard electronics in the presence of large variations in the vehicle's battery voltage. A field-proven input-transient protection system, conservative electrical design and extremely rugged mechanical construction make them especially suited for powering voice-data radios and other sensitive electronic loads in the harsh railroad vehicle environment.

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 <sup>1</sup> Output Current/Power	Model Number
20 - 130	13.6	7.5A/100W	1620XR-13-7.5-1
	13.6	15A/200W	1620XR-13-15-1
	24	4A/100W	1620XR-24-4-1
	24	8A/200W	1620XR-24-8-1

<sup>1</sup> Depending upon the ambient temperature, a duty-cycle rating may apply.

## SPECIFICATIONS

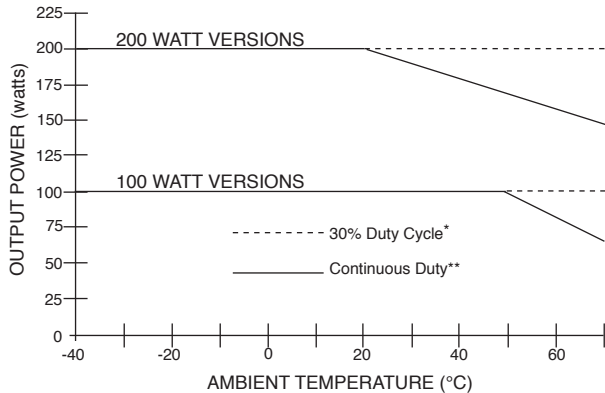
### Input Voltage Range

The input-voltage operating range is 20 Vdc minimum to 130 Vdc maximum.

### Output Voltage and Current

The 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-current drain is less than 160 mA.

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:  $\pm 1\%$

Versus load:  $\pm 1\%$

### 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 a user-supplied input fuse or circuit breaker rated at 20 amperes for 200-watt versions or 10 amperes for 100-watt versions. 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. Isolation capable of passing a 500-Vdc stress test is provided between the output and chassis.

### Transient-Withstand Capability

The converter will not be damaged when its input is subjected to high-energy transients as specified in IEC 1000-4-5, Surge Immunity Test, Level 3, applied line-to-line or line-to-chassis.

### Ambient Temperature Range

-40°C to 70°C (-40°F to 158°F)

(Convection Cooling)

### Installation

Good installation practice for mobile electronic equipment 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 1620XR to protect against fault conditions at the input to the converter. Instead, a 20-A (for 200-watt versions) or a 10-A (for 100-watt versions) 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 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.

Information provided in this technical bulletin is subject to change without notice.

### 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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