

# 74-V AND 36-V INPUT DC-DC CONVERTERS



Model 1620-74-13-15



Model 1620-74-13-7.5

- **FOR LOCOMOTIVE/RAIL-TRANSIT APPLICATIONS**
- **200-WATT AND 100-WATT MODELS**
- **INPUT SURGE/TRANSIENT PROTECTION**
- **INPUT-TO-OUTPUT ISOLATION**
- **-40°C TO 70°C TEMPERATURE RANGE**
- **CONVECTION COOLED**
- **EXTREMELY RUGGED AND RELIABLE**

Series 1620 dc-to-dc converters provide an isolated, regulated and well-filtered dc output voltage from 74-Vdc and 36-Vdc electrical systems on locomotives and other rail vehicles. A field-proven input-transient protection system 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

Nominal Input Voltage (Vdc)	Nominal Output Voltage (Vdc)	Maximum† Output Current/Power	Model Number
36	13.6	7.5A/100W	1620-36-13-7.5
	13.6	15A/200W	1620-36-13-15
	24	4A/100W	1620-36-24-4
	24	8A/200W	1620-36-24-8
74	13.6	7.5A/100W	1620-74-13-7.5
	13.6	15A/200W	1620-74-13-15
	24	4A/100W	1620-74-24-4
	24	8A/200W	1620-74-24-8

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

## SPECIFICATIONS

### Input Voltage Range

For 36-V versions: 25 Vdc to 45 Vdc

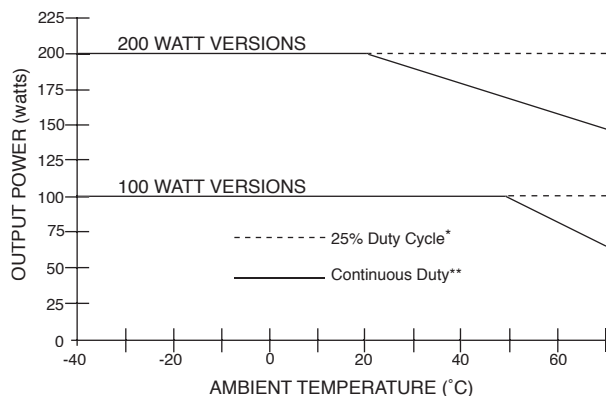
For 74-V versions: 50 Vdc to 90 Vdc

Also available: 24-Vdc and 100-Vdc input versions.

### 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. The no-load input-current drain is less than 160 mA for 36-V versions and less than 80 mA for 74-V versions.

Figure 1.  
Output Power Ratings



\*Per Section 12-10 of the 1991 Communications Manual, Association of American Railroads.

\*\*Mounted in any attitude with free-air convection cooling.

### Output Voltage Regulation

Versus line:  $\pm 1\%$

Versus load:  $\pm 2\%$

### 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 must 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. See section titled "Installation".

### Isolation

Isolation capable of passing a 2,500-Vdc stress test is provided between the input and output and between the input and chassis.

### Transient-Withstand Capability

Transient input-voltage surges up to 7,000 volts peak, per IEC 571, Paragraphs 3.5 and 5.4, will not harm the converter.

The abrupt discharge of a 16- $\mu$ F capacitor charged to 2,500 Vdc will not damage the converter or interfere with its operation when applied from line to line across the input, or from either input line to chassis.

### 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 1620 to protect against fault conditions at the input to the converter. Instead, a 20-A 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 not grounded (floating); or when the dc source is positive-grounded, installed in series with the negative (-) input line.

### Ambient Temperature Range

-40°C to 70°C (-40°F to 158°F)

(Convection Cooling)

### 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.

### Input/Output Connections

The input, output and chassis ground connections are made via heavy-duty barrier-strip terminal blocks.

The terminal-block screws accept lugs for use with #6 hardware.

### Additional Information

For additional information about these and other Wilmore Electronics Company dc-to-dc converters, dc-to-ac inverters and uninterruptible power systems, please contact our Sales Department at (919) 732-9351 or FAX (919) 732-9359. Information provided in this technical bulletin is subject to change without notice.

**WILMORE ELECTRONICS COMPANY, INC.**

P. O. Box 1329, Hillsborough, N. C. 27278 • Telephone (919) 732-9351 • FAX (919) 732-9359

[www.wilmoreelectronics.com](http://www.wilmoreelectronics.com)