

# 24-V INPUT DC-DC CONVERTERS

- FOR LOCOMOTIVE/RAIL-TRANSIT APPLICATIONS
- INPUT SURGE/TRANSIENT PROTECTION
- INPUT-TO-OUTPUT ISOLATION
- -40°C to +70°C OPERATING TEMPERATURE RANGE
- CONVECTION COOLED
- EXTREMELY RUGGED AND RELIABLE



Model 1620-24-13-7.5

The Model 1620-24-13-7.5 dc-to-dc converter provides an isolated, regulated and well-filtered dc output voltage from 24-Vdc electrical systems on locomotives and other rail vehicles. A field-proven input-transient protection system and extremely rugged mechanical construction make it well suited for powering voice/data radios and other sensitive electronic loads in the harsh railroad vehicle environment.

## SPECIFICATIONS

### Input Voltage Range

20 Vdc to 32 Vdc

### Output Voltage

13.6 Vdc

### Output Current

7.5 amperes @25% duty cycle<sup>†</sup>  
5 amperes continuous duty

<sup>†</sup>(Per Section 12-10 of the Communications Manual, Association of American Railroads)

### 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 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. 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 1,500 Vdc and applied from line to line across the input or from either input line to chassis, will not damage the converter or interfere with its operation.

### Input/Output Connections

The input, output and chassis ground connections are provided via heavy-duty barrier-strip terminal blocks. The terminal-block screws accept lugs for use with #6 hardware.

### Ambient Temperature Range

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

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

## 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.

## Mechanical

### Size:

Dimensions given in inches (mm):  
1.9 (48) 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:

3.5 pounds (1.6 Kg)

### Mounting:

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

## For Additional Information

Telephone: (919) 732-9351

Fax: (919) 732-9359

E-mail: [info@wilmoreelectronics.com](mailto:info@wilmoreelectronics.com)

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