DC-TO-DC CONVERTER

MODEL 1620XR-13-15-1

USER'S INFORMATION

Wilmore

ELECTRONICS CO., INC.

MODEL 1620XR-13-15-1

DC-TO-DC CONVERTER

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USER'S INFORMATION

I. GENERAL DESCRIPTION

The Model 1620XR-13-15-1 dc-to-dc power converter provides an isolated, regulated 13.6 Vdc output from nominal 37-Vdc or 74-Vdc vehicle battery systems aboard locomotives and rail vehicles. The operating input voltage range is 20 to 130 Vdc.

The output current rating is 0–15 amperes (depending upon output load and ambient temperature, a duty-cycle restriction may apply). Isolation capable of passing a 2000 Vdc "hipot" test is provided between the input and output and between the input and chassis. The converter output is galvanically isolated from the chassis ground and, therefore, may be connected as either a positive or a negative output.

This converter is electronically protected against overloads and short circuits. Recovery to normal operating conditions is automatic upon removal of an overload or short-circuit fault. Protection against accidental reversal of the 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 II: Installation and Operation).

This converter is a constant-output-power device, i.e., with a constant load, the input current and input voltage are inversely proportional. This means that the maximum input current is drawn at the minimum input voltage. An approximation of input current for a specific input voltage and output load current can be determined as follows:

$$I_{input} = \frac{(V_{output})\ (I_{output})}{(0.85)\ (V_{input})}$$

This approximation applies for output load currents equal to or greater than 20% of maximum rated load current. For loads less than 20% of the maximum rating, linearly decrease I_{input} from its calculated value at 20% load to 90 milliamperes (V_{input} at 37Vdc) or 60 milliamperes (V_{input} at 74Vdc) at no load.

II. INSTALLATION AND OPERATION

CAUTION: SERIES 1620 CONVERTERS ARE NOT INTERNALLY FUSED. EXTERNALLY FUSE INPUT AT 20 AMPERES.

Good installation practice for mobile electronic equipment dictates that input fuses or circuit breakers should be located at the power distribution end of the cables feeding the converter. For this reason, no protection devices are built inside Series 1620 converters to protect against fault conditions at the input to the converter. It is recommended, instead, that a 20-A fuse or circuit breaker be connected near the dc-input source in series with the input lines to the converter.

Connection and operation of Series 1620 converters is almost entirely self-explanatory from the front-panel markings on each unit. The positive and negative terminals are clearly marked beside each input and output terminal block, and deliberate caution should be exercised to avoid polarity mistakes. Both the input and the output of the converter are dc-isolated from the chassis and from each other.

The terminal block screws accept lugs for use with #6 hardware. It is suggested that #12 AWG cables be used to connect the converter to its battery source and that #12 AWG cables be used to connect to its 12-volt load. These cables should be kept as short as possible, and if their length must exceed 10 feet, it may be desirable that larger cable be used.

III. MAINTENANCE INFORMATION

Other than preventing dust accumulation on internal components and external surfaces of the converter, no periodic maintenance should be required.

A damaged or malfunctioning unit should be returned to Wilmore for repair. Multiple-component cascade failures in power conversion circuitry can greatly complicate trouble-shooting procedures, and factory technicians familiar with the circuitry can locate the problem quickly, explore adjacent circuitry for stressed or damaged components, and subject the converter to a thorough retest.

Wilmore maintains a **Return Material Authorization** system in order to efficiently track your inbound shipment and expedite its repair and return to you. Before shipping material for repair to Wilmore, please call (919) 732-9351 or email *info@wilmoreelectronics.com* and request a **RMA Number** for your shipment. If possible, please provide the complete model number of the equipment, its serial number, and a brief description of the problem. Place this **RMA Number** on the outside of the package and ship prepaid to:

WILMORE ELECTRONICS CO., INC.

607 U.S. 70A East

P.O. Box 1329

Hillsborough, NC 27278

LIMITED WARRANTY

Wilmore Electronics Company, Inc. warrants this product to be free from defects in material and workmanship for one (1) year after delivery to the original purchaser. During this period, a defective product for which an authorization to return the product has been given, shall be returned to Wilmore freight prepaid. The products will be repaired, replaced, or credit allowed only if the defect, after examination by Wilmore, is determined to be a defect in material or workmanship. If this returned product is determined by Wilmore to have suffered from user misuse or abuse or to have been opened or modified without written instructions from Wilmore, or if the date of receipt of a request for return authorization exceeds the 1-year warranty period, the warranty is null and void. In such cases, Wilmore will determine the cost of repair, quote this price to the purchaser, and continue as advised by the purchaser.

The sole obligation of Wilmore and the purchaser's exclusive remedy under this or any other warranty, expressed or implied, is the repair or replacement of a defective product as provided above, or the issuance of credit in an amount not to exceed the contract price for the product deemed to be defective. Wilmore makes no warranty of merchantability or fitness for a particular use. Wilmore shall not be responsible for incidental or consequential damage, whether or not foreseeable, caused by defects in this product. There are no other warranties which shall extend the description above.