

500-VA DC-TO-AC INVERTER 120-VAC SINE-WAVE OUTPUT



Model 1603-48-120-60-U

FEATURES

- HEIGHT 5.2 IN.
- WEIGHT 23 LBS.
- 3% (TYP.) TOTAL HARMONIC DISTORTION
- QUARTZ CLOCK (± 0.01 Hz) FREQUENCY STABILITY
- CONVECTION COOLED
- 78%-85% EFFICIENT
- NO PRACTICAL LIMITATION ON LOAD POWER FACTOR
- AVAILABLE WITH INTEGRAL HIGH-SPEED TRANSFER CIRCUITS (INVERTER-TO-LINE OPTION OR LINE-TO-INVERTER OPTION)

The Model 1603 dc-to-ac inverter provides a well-regulated, 500-VA, low-distortion, 120-Vac sine-wave output from station batteries or other widely fluctuating battery systems. The input and output are isolated from the chassis and from each other. Conservatively designed yet small and lightweight, this highly-efficient inverter will operate continuously at any load within its rating over its full operating temperature range with simple convection cooling.

The Model 1603 makes use of many of the same field-proven components and power conversion techniques that have enabled Wilmore rack-mount dc-to-dc converters to earn their reputation for ruggedness and install-and-forget reliability. Not a ferro-resonant design, this inverter is compatible with many loads normally considered difficult for inverters, including, for example, half-wave-rectified loads, high-surge loads and a wide variety of nonlinear loads. Applications, therefore, include powering almost any critical industrial or telecommunications equipment within the volt-ampere rating of this inverter.

Table 1

Nominal Input Voltage (Vdc)	Input Voltage Range (Vdc)	Input Current No Load ¹ (Adc)	Input Current Full Load ² (Adc)	Efficiency ²	Heat Dissipation ² (Btu/hour)	Model Number ³
24	21-29	1.33	30.6	78%	490	1603-24-120-60
48	42-58	0.66	14.9	80%	430	1603-48-120-60
130	105-140	0.25	5.8	82%	380	1603-130-120-60

¹Typical at no load and nominal input voltage

²Typical at full load and minimum input voltage

³See reverse side for complete model numbering information

SPECIFICATIONS

Input Voltage and Current

The nominal input voltage, the input voltage range and input current are shown in Table 1.

Output Voltage

120 Vac nominal, single phase

Output Voltage Regulation

±1.5% versus dc input line
±2.5% versus load

Output Wave Shape

Sine wave with typically 1%-3% total harmonic distortion over all operating conditions.

Volt-Ampere Rating

500 VA

Load Power Factor

No practical limitation within the volt-ampere rating of the inverter.

Frequency

60 ±0.01 Hz in free-running mode
(Frequency and phase synchronization to commercial ac line is available in the L and the U versions).

C-Message-Weighted Noise

Noise fed back to a typical stationary battery source is less than 32 dBBrnC.

Protection

Protection against inverter overloads or short-circuits is provided electronically. Recovery to normal operation is automatic upon removal of the fault. Protection against accidental reversal of the input-voltage polarity during installation is provided by a shunt diode working in conjunction with the front-panel circuit breaker. This circuit breaker is standardly provided in the negative input line.

The inverter will automatically turn off if subjected to an input undervoltage or overvoltage. Return to normal operating conditions is automatic.

Temperature Range

Operating: 0°C to +50°C
Storage: -40°C to +85°C

Front-Panel Controls and Indicators

A combination circuit breaker and ON/OFF switch is provided for input power. A voltmeter and ammeter are provided for the output. L and U versions include an ac-line fuse and three LED status indicators.

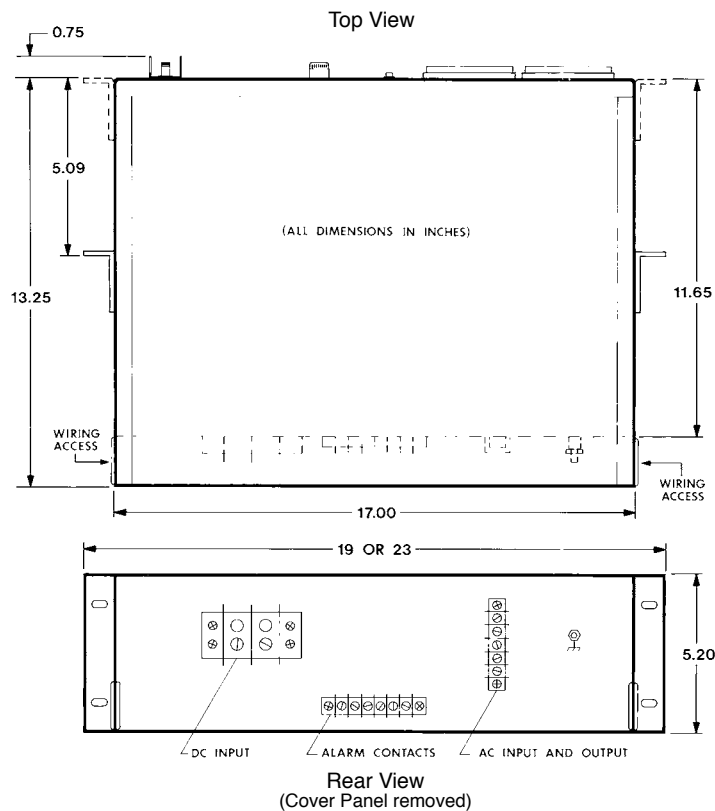


Figure 1. Outline dimensions. Inverter shown is U or L version.

Standard Configurations

P VERSION: Adding the suffix **P** to the basic model designates a plain inverter, i.e. a unit with no internal inverter-to-line or line-to-inverter transfer switching provisions. ("Line" refers to commercial ac power.) This version does not have the three front-panel LED status indicators, ac-line fuse or alarm contacts.

U VERSION: Adding the suffix **U** to the basic model number designates the inverter-preferred UPS configuration. In this configuration, the load power is normally provided by the inverter. However, if the inverter output is interrupted, an internal transfer switch automatically transfers the load from the inverter to commercial ac power. Because the transfer time between inverter and line is short (2 msec. typical) and because the inverter is automatically synchronized in both frequency and phase to the commercial power line, such transfers are normally not detected by even highly sensitive loads. Upon restoration of inverter power, there is a delay of approximately four seconds, during which frequency and phase synchronization are gradually re-established, and then transfer back to inverter power automatically takes place. This version includes auxiliary Form C contacts for remote indication of alarm conditions, three front-panel LED status indicators and an ac-line fuse.

L VERSION: Adding the suffix **L** to the basic model number designates a unit which is identical to the "U" version except that, in the L configuration, the load power is normally provided by the commercial ac line and the inverter operates in the standby mode. Other features such as frequency and phase synchronization, transfer speed, alarms, indicators, etc. are the same as in the U version.

Mechanical Description

Figure 1 provides overall dimensions. Weight is approximately 23 lbs. Brackets are provided for 19-inch or 23-inch rack mounting. A cover plate protects the recessed rear-panel wiring connections. Standard paint color (front and sides) is light gray (ANSI-61).

Model Numbering Information

For ordering purposes the Model 1603 should be identified by an expanded model number consisting of four numbers followed by a letter suffix. In sequence, they designate:

- basic 500 VA inverter type (1603)
- nominal input voltage (24, 48 or 130)
- nominal output voltage (120)
- output frequency (60)
- configuration (P, U or L version)

For example, the correct part number for a 48-volt input, inverter-preferred UPS configuration is Model 1603-48-120-60-U.

Specifications subject to change without notice.

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