

# 1000-VA DC-TO-AC INVERTERS

## 120-VAC, 60-HZ OUTPUT



Model 1654-48-120-60-U

### FEATURES

- HEIGHT 3.5 IN.
- WEIGHT 16 LBS.
- 86%-92% EFFICIENT
- WELL-REGULATED, FREQUENCY-STABLE OUTPUT
- HIGH PEAK-CURRENT CAPABILITY FOR DIFFICULT LOADS
- CONVECTION COOLED
- AVAILABLE WITH INTEGRAL HIGH-SPEED TRANSFER CIRCUITS (INVERTER-TO-LINE OR LINE-TO-INVERTER OPTIONS)

The Model 1654 rack-mount inverter provides 1000 volt-amperes of 120-Vac, 60-Hz output power in only 3.5 inches of vertical rack space. Standard versions allow operation from 24-Vdc, 48-Vdc or 130-Vdc battery sources. The well-regulated, frequency-stable quasi-sine-wave output is well-suited for powering sensitive telecommunications and data processing equipment, and in addition, is compatible with many loads normally considered difficult for inverters, including switch-mode power supplies, small motors and other nonlinear loads. Applications, therefore, include powering almost any critical industrial or telecommunications equipment within the volt-ampere rating of this inverter.

Conservatively designed 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 1654 is available as a plain inverter or with integral automatic load switchover features to permit operation in "standby" or "on-line" UPS modes.

Table 1

Nominal Input Voltage (VDC)	Input Voltage Range (VDC)	Input Current No Load <sup>1</sup> (ADC)	Input Current Full Load <sup>2</sup> (ADC)	Efficiency <sup>2</sup>	Heat Dissipation <sup>2</sup> (Btu/hour)	Model Number <sup>3</sup>
24	21-29	0.33	55.0	87%	529	1654-24-120-60
48	42-58	0.16	26.9	88%	443	1654-48-120-60
130	105-140	0.09	10.5	91%	350	1654-130-120-60

<sup>1</sup>Typical at no load and nominal input voltage

<sup>2</sup>Typical at full load and minimum input voltage

<sup>3</sup>See 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  
(as measured with a true-rms voltmeter)

### Frequency

60 Hz nominal.  $\pm 0.15$  Hz maximum variation over the full range of load and input-voltage changes.

### Volt-Ampere Rating

1000 VA

### Output Voltage Regulation

$\pm 3.0\%$  versus dc input line and output load

### Output Voltage Wave Shape

Three-level stepped approximation to a sine wave with regulated peak and rms voltages.

### C-Message-Weighted Noise

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

### Temperature Range

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

### Protection

Protection against short-term overloads and accidental short-circuit of the output is provided electronically, and recovery is automatic upon removal of the abnormal load.

Output overloads and short circuits lasting more than about 10 seconds will trip the front-panel circuit breaker, which is in series with the dc input. This circuit breaker also provides protection against accidental reversal of the input-voltage polarity during installation. For 48Vdc-input inverters, this circuit breaker is standardly provided in the negative dc-power input line; for 24Vdc-input and 130Vdc-input inverters, this circuit breaker is standardly provided in the positive dc-power input line.

The inverter will automatically shut down if subjected to a dc-input undervoltage. Return to normal operation is automatic upon restoration of input voltage. Excessively high dc-input voltages will trip the front-panel circuit breaker.

### Front-Panel Controls and Indicators

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

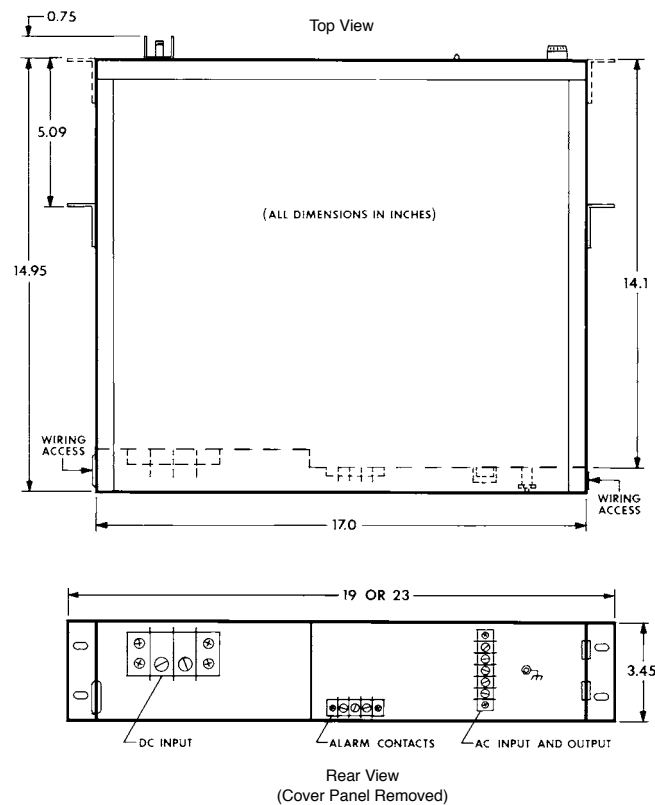


Figure 1. Outline dimensions. Inverter shown is U or L version.

### 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. The transfer time between inverter and line is short (2 msec. typical), and such transfers are normally not detected by even highly sensitive loads. Upon restoration of inverter power, there is a delay of approximately four seconds before transfer back to inverter power. 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 transfer speed, alarms, indicators, etc. are the same as in the U version.

### Mechanical Description

Figure 1 provides overall dimensions. Weight is approximately 16 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 1654 should be identified by an expanded model number consisting of four numbers followed by a letter suffix. In sequence, these designate:

- basic 1000 VA inverter type (1654)
- 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 1654-48-120-60-U.

Specifications subject to change without notice.

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