

## 1.0 INTRODUCTION

The L-220 Frequency/Voltmeter is a rugged, high quality, dual usage electronic meter enclosed in a high strength, impact resistant steel and aluminum housing. The functions of this meter include line frequency and true rms voltage measurement, both which are taken from the AC power line to which it is plugged into. The L-220 is capable of measuring 70-264 VAC, which allows it to be compatible with European and Asian power supplies.

**\*CAUTION: SHOCK POTENTIAL! THIS METER IS NOT ISOLATED FROM THE AC. POWER LINE! AVOID ALLOWING MOISTURE TO PENETRATE THE HOUSING.**

**\*CAUTION! THE L-220 REQUIRES ONE HOT LEG AND ONE NEUTRAL LEG FOR OPERATION. DO NOT CONNECT 2 HOT LEGS TO THIS METER AT THE SAME TIME!**

## 2.0 OPERATION

The L-220 Frequency/Voltmeter uses a crystal controlled microcontroller for its operation. Unlike other frequency meters, the L-220 uses a "non-averaging" method to measure frequency. Instead of counting cycles over a reference time frame, then using that information to calculate the average frequency, (a varying frequency will often average out to the correct frequency over the reference time frame), the L-220 randomly samples one

cycle at a time and bases its reading on that cycle measurement, thereby revealing any frequency variation. The L-220 is very useful in situations that require precision frequency monitoring.

The display can be set to either hertz or true rms line voltage. The display can also be set to alternate between hertz and volts approximately every 10 seconds. When not in use, the power cord stores inside the case for added convenience.

## 2.1 HIGH VOLTAGE

If the input line voltage rises above approximately 264VAC, the fuse located in the rear panel may blow. The L-220 should not be operated at voltages above 264VAC or permanent damage may occur. The manufacturer is not responsible for damage due to operation at voltages above 264VAC.

## 2.2 FUSES

The L-220 incorporates a standard 5x20mm size fuse rated at .8A @ 250V. The fuse holder is located in the rear panel. Replace with the same type of fuse only!

## WARRANTY

### ONE YEAR LIMITED WARRANTY

LIGHTLINE ELECTRONICS WARRANTS TO THE PURCHASER THAT THIS PRODUCT IS FREE FROM DEFECTS IN WORKMANSHIP AND MATERIAL UNDER NORMAL USE AND SERVICE FOR ONE YEAR FROM THE DATE OF PURCHASE. WARRANTY DOES NOT COVER THIS PRODUCT IN CASES OF DAMAGE DUE TO ABUSE, MISHANDLING, TAMPERING OR ALTERING OF THIS PRODUCT.

DURING THE WARRANTY PERIOD, LIGHTLINE ELECTRONICS AGREES TO REPAIR OR REPLACE AT ITS OPTION, WITHOUT CHARGE, ANY DEFECTIVE COMPONENT OF THIS PRODUCT.

IN ANY CASE, LIGHTLINE ELECTRONICS SHALL NOT BE LIABLE FOR ANY CLAIMS OR LOSS OF PROFITS RESULTING FROM THE USE OF THIS PRODUCT.

## 2.4 FREQUENCY

If the frequency to the L-220 falls below 45.00 Hz, the word "SLO" is displayed to indicate an out of range condition.

If the input frequency rises above 65.00Hz, the word "FAST" is displayed to indicate an out of range condition.

**NOTE:** The word "FAST" will be displayed during some conditions when harmonics are being generated on line.

## 3.0 SPECIFICATIONS

Input Voltage:	100 - 240VAC RMS
Input Frequency:	50.00 - 60Hz
Power Source:	100 - 240VAC Single Phase Polarized Plug
Power Consumption:	Approx. 25W
Dimensions:	4"x1.5"x5.5"

## 3.1 ERROR MESSAGES

"OL" - HIGH VOLTAGE! INPUT OVER 275VAC!

"-OL" - LOW VOLTAGE. INPUT UNDER 65VAC

"FAST" - INPUT ABOVE 65.00Hz.

"SLO" - INPUT BELOW 45.00Hz.

# L-220 FREQUENCY/VOLTMETER

## USERS GUIDE