REED

Model ST-9809

AC Digital Clamp Meter

Instruction Manual

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Table of Contents

Safety

- Disconnect all test leads from the meter's terminals before taking a current measurement
- Do not take any voltage measurements above 600AC/DC as you risk electrical shock and damage to the clamp meter
- Before taking any in-circuit resistance measurement, be sure there is no power in the test circuit and discharge all capacitors

Features

- Designed for the measurement of current leakage
- High resolution of 10µA on 40mA range
- Shielded transformer jaws to minimize the effect of external stray magnetic fields
- Large 30mm dia. Clamp Jaw
- Five Ranges (40mA, 400mA, 4A, 40A, 100A) for all applications
- Filter circuit eliminates the effect of high frequency noise and harmonics
- Large 3 ¾ digit LCD
- Bar-graph displays 20 times/sec.
- Continuity and frequency measurements
- Max/Min and Data Hold functions
- Relative Measurement
- 600V overload protection for Ω measurement
- Single rotary switch for easy function selection

Specifications

Conductor size:	Max 30mm
Display:	3 ¾ LCD with 40 segment bar-graph
Range Selection:	Manual
Overload indication:	Left most digit blinks
Power Consumption:	10mA(approx.)
Sampling Time:	Display: 2 times/sec. Bar-Graph: 20 times/sec.
Operating Temperature:	-10 to 50ºC
Operating Humidity:	<85% R.H.
Storage Temperature:	-20 to 60ºC
Storage Humidity:	<75% R.H
Power Supply:	One 9 Volt (NEDA 1604) battery
Dimensions:	210 x 62.0 x 35.6mm (8.3 x 2.4 x 1.4”)
Weight:	200g
Accessories:	Battery and carrying case

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AC current

Range	Resolution	Accuracy	
		50/60 Hz	Wide (400-1KHz)
40mA	10µA	±1.0%±0. 5mA	±4.5%±0.5mA
400mA	100µA	±3.0%±5.0mA	±3.0%±5.0mA
4A	1mA	±4.0%±0.1A	±4.0%±0.1A
40A	10mA	±4.0%±1.0A	±4.0%±1.0A
80A	100mA	±2.5%±1.0A	±3.0%±1.5A
80-100A[1]	100mA	±5.0%±1.0A	±5.0%±1.5A

[1]Meter is not calibrated beyond 100A

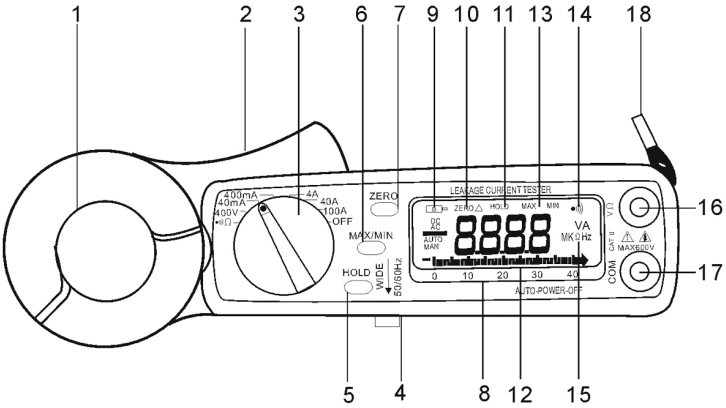
AC Voltage (Input impedance: 10MΩ)

Range	Resolution	Accuracy		Overload Protection
		50/60Hz	40-1KHz	
400V	0.1V	±1.5%±2dgts	±2.0%±4dgts	AC 600V

Resistance (Ω) and continuity (Open voltage: 0.4V)

Range	Resolution	Accuracy	Alarm	OL Protection
40-400Ω	0.1Ω	±1.0%±2dgts	<38.0Ω	AC 600V

Instrument Description

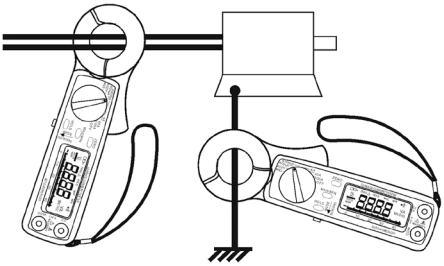


1. Transformer Jaw
2. Trigger
3. Function Selector Switch
4. Frequency Selection Switch
5. Data Hold & Power Button
6. Max/Min Button
7. Zero/Relative Button
8. LCD Screen
9. Low Battery Symbol
10. Zero/Relative Symbol
11. Data Hold Symbol
12. Bar-graph
13. Max/Min Hold symbol
14. Continuity Symbol
15. Unit symbols
16. V, Ω, or Hz input Terminal
17. COM Terminal
18. Hand strap

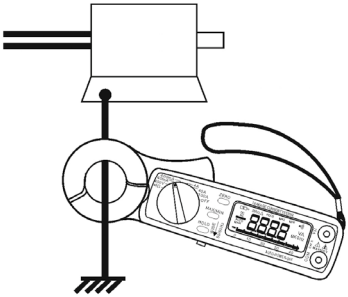
Operating Instructions

Turn the meter on by pressing the Hold Button.

AC Leakage Current Measurements



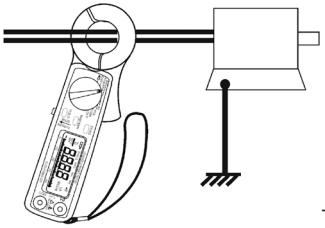
Leakage Current Flowing into Ground Conductor



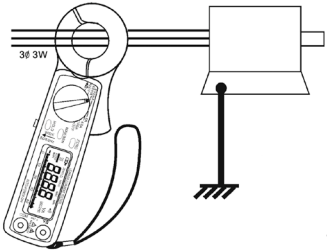
1. Set the rotary switch to the desired range
2. Press the Trigger to open the jaw and fully enclose the grounded wire
3. The measured value will appear on the LCD screen

Out of Balance Leakage Current

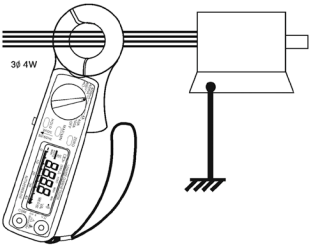
1. Set the rotary switch to the desired range
2. Press the Trigger to open the jaw and fully enclose all wires



Two wires: Single phase



Three wires: Three phases



Four wires: Three phases

3. The measured value will appear on the LCD screen

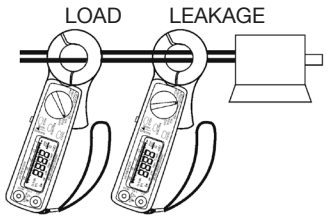
50/60 Position

This clamp meter has very good frequency response due to the electric property of the transformer jaws used. Therefore, the measurement result contains not only the fundamental frequency of 50/60Hz but also the high frequencies and harmonics superimposed on the fundamental frequency. To eliminate the effect of high frequency noise, a low pass filter is designed to filter out high frequency signal. To enable the filter, set the switch at the 50/60 position. The filter's cut-off frequency is set at 100Hz with an attenuation characteristic of approx. 24dB/octave.

Wide Position

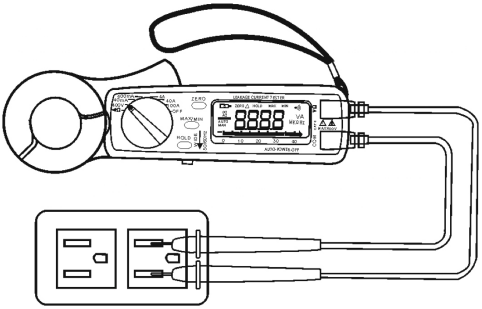
If the circuit under test is originated from a high frequency generating device such as inverter, switching regulators, etc., then the switch should be set at wide position to measure the signal which contains the frequency from 40Hz-1kHz. To confirm the presence of a high frequency signal, switch between the 50/60 and wide position to see if there is a difference. If the reading is very different, then high frequency signals or harmonics are present.

AC Load Current Measurement



1. Set the rotary switch to the desired range and turn the meter on by pressing the Hold Button
2. Press the trigger to open the jaw and fully enclose only one wire
3. The measured value will appear on the LCD screen

AC Voltage Measurement



1. Set the rotary switch to 400V
2. Insert the test leads into the input jack
3. Connect the test prods of the test leads in PARALLEL to the circuit to be measured
4. The measured value will appear on the LCD screen

Resistance and Continuity Measurement

1. Set the rotary switch to Ω
2. Insert the test leads into the input jacks
3. Connect the test prods of the test leads to the two ends of the resistor or circuit to be measured
4. The measured value will appear on the LCD screen
5. A beep will sound the resistance <40Ω

Zero/Relative Reading Measurements

Press the Zero Button to change the current reading to “0” and a zero symbol will appear on the LCD screen. All subsequent measurement will display in respect to the zero value. Press and hold the Zero Button for 2 seconds to return to normal measurements.

Data Hold

Press the Hold Button to freeze the current reading displayed on the LCD Screen.

MAX/MIN Value

Press the MAX/MIN button to enable MAX/MIN function. Push the button once, and the maximum value will appear on the LCD Screen. Press a second time, and the minimum value appear. Press the button a third time to disable the MAX/MIN function.

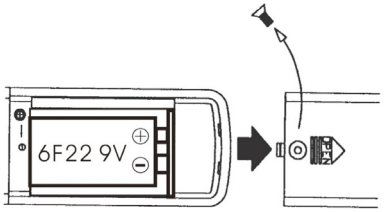
Auto Power Off

This meter will power off after 30 minutes of inactivity. To disable the Auto Power Off function, power the meter on (press the Hold Button) while holding the Zero and MAX/MIN buttons.

Battery Replacement

When B appears on the LCD, you will need to replace the battery.

1. Turn the power off and remove any test leads from the clamp meter
2. Remove the screw of the battery compartment and slide off the battery compartment
3. Remove the old batteries and replace with a new 9 Volt battery
4. Reinstall the battery compartment and secure the screw



Notes