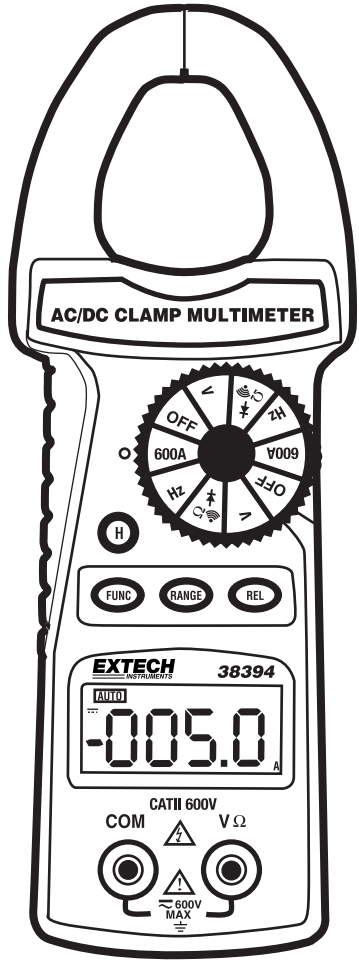
User Guide

EXTECH INSTRUMENTS

Digital AC/DC Clamp Meter

Model 38394



Introduction

Congratulations on your purchase of Extech's 38394 AC/DC Clamp Meter. This clamp meter measures AC/DC Current to 600A, DC/AC Voltage, Resistance, Frequency, Diode, and Continuity. This meter is shipped fully tested and calibrated and, with proper use, will provide years of reliable service.

Safety

Safety Symbols

This symbol, adjacent to another symbol or terminal, indicates the user must refer to the manual for further information.

This symbol, adjacent to a terminal, indicates that, under normal use, hazardous voltages may be present

Double insulation

WARNING: This indicates that a potentially hazardous condition which, if not avoided, could result in death or serious injury.

CAUTION: This indicates that a potentially hazardous condition which, if not avoided, could result in injury or damage to the meter.

Safety Precautions

WARNING: Improper use of this meter can cause damage, shock, injury or death. Read and understand this User Guide before operating the meter.

1. Always remove the test leads before making current measurements
2. Always remove the test leads before replacing the batteries
3. Inspect the condition of the clamp jaw, test leads and the meter for any damage before operating the meter. Repair any damage or replace meter before use
4. Do not exceed the maximum rated input limits
5. Use great care when making measurements, especially when the voltages are greater than 25VAC rms or 35VDC. These voltages are considered a shock hazard
6. Always discharge capacitors and remove power from the DUT (device under test) before performing Resistance or Continuity tests
7. Remove the batteries from the meter if the meter is to be stored for long periods
8. Ensure that the selected meter function matches the measurement to be taken
9. If the measured current is higher than the range selected for long periods, overheating may occur compromising the safety and the operation of the meter's internal circuits
10. To avoid discharge risks and erroneous readings, do not measure current on high voltage conductors (>600V)

Specifications

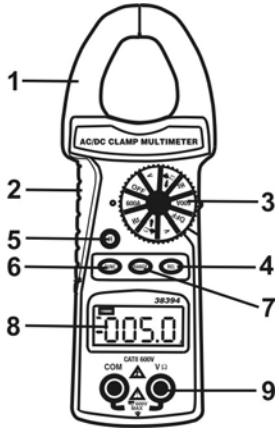
Function	Range	Accuracy
AC/DC Current	400.0A (AC Amps 0.5 to 400.0A)	±(2% rdg + 5d) (AC @ 50/60Hz)
	600A	±(2% rdg + 8d)
AC Voltage	4.000V, 40.00V, 400.0V, 600.0V	±(1.2% rdg + 5d) (AC @ 50/60Hz)
DC Voltage	400.0mV	±(0.5% rdg +2d)
	4.000V, 40.00V, 400.0V, 600V	±(1.0% rdg + 2d)
Resistance	400.0Ω, 4.000kΩ, 40.00kΩ, 400.0kΩ	±(1% rdg + 5d)
	4.00MΩ	±(2% rdg + 2d)
	40.00MΩ	±(3.5% rdg + 5d)
Frequency (≥ 5V)	5.00Hz, 50.0Hz, .500kHz, 5.00kHz, 50.0kHz, 100.0kHz	±(1% rdg + 5d)
Continuity	Audible tone <10Ω approximately	

Input Limits	**Function**	**Maximum Input**	**Function**	**Maximum Input**
	V DC/AC	600V DC or AC Peak	Frequency	250V DC or AC peak
	A DC/AC	600A DC/AC, fused	Resistance	400V DC or AC peak (<10 seconds)

Conductor Size	1.18" (30mm) maximum
Battery type	Two (2) 1.5V AA batteries
Range Selection	Automatic ranging
Display	5000 Count LCD
Overload Indication	"1" or "-1"
Low Battery Indication	Battery icon
Environmental conditions	Installation Category III (clamp); Category II (DMM), Pollution degree 2; Altitude: 2000 meters, Indoor use only
Operating Temperature/Humidity	32º to 122ºF (0°C to 50°C) / <80% RH
Storage Temperature/Humidity	14º to 140ºF (-10°C to 60°C) / <80% RH
Dimensions	7.0 x 4.2 x 1.3" (178 x 64 x 33mm)
Weight	8.3 oz. (230g)
Zero Adjust	REL (Relative) push button
Diode	Short/Open, Good/Defect Test
Sample Time	0.35 sec approx.
Input Impedance	10MΩ for ACV & DCV

Meter Description

Front panel



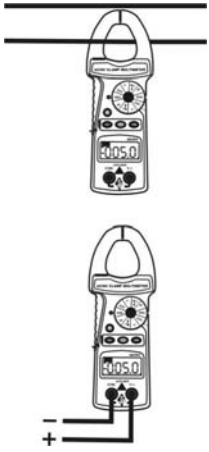
1. Current Jaws
2. Jaw opening trigger
3. Rotary function switch
4. REL key
5. DATA HOLD key
6. Function key
7. Range key
8. LCD display
9. COM & V/Ω input jacks

Symbols and Units of Measure

~	AC Current or Voltage
⎓	DC Voltage
•)))	Audible Continuity
▶|	Diode test
Hold	Display Data Hold
Auto	Auto Range
	Low Battery icon
V	Volt (voltage)
Ω	Ohm (resistance)
A	Ampere (current)
REL	Relative Mode
Hz, KHz	Hertz, kilohertz (frequency)

OPERATING INSTRUCTIONS

AC/DC Current Measurements



WARNING: Ensure that the test leads are disconnected from the meter before making current clamp measurements.

1. Set the Function switch to the **600A** range.
2. Press the **FUNC** key to select AC or DC (the AC/DC icons will toggle on the LCD with each key press).
3. Press the trigger to open jaw. Fully enclose one conductor to be measured.
4. The clamp meter will display the reading and automatically select the proper range

Note: When the meter is set to the DCA mode (clamp jaws empty) and auto range is active, the meter's display digits may show arbitrary readings; this is normal. For best results, use the ZERO procedure (explained later in this guide) before taking DCA measurements.

AC/DC Voltage Measurements

1. Set the Function Switch to the **V** position.
2. Press the **FUNC** key to select AC or DC Voltage. The meter will display the selected unit of measure (AC or DC) on the left side of the LCD.
3. Insert the black test lead to the **COM** input jack and the red test lead to the **V** jack.
4. Connect the test leads in PARALLEL with the circuit to be measured.
5. Read the displayed measurement value on the LCD display.

Manual Range

This meter automatic selects the range. However, the range can be manually held and selected. To manually hold the range, momentarily press the **RANGE** key the appropriate number of times to select the desired range. The units of measure and decimal positioning will change with each press of the **RANGE** key.

Resistance Measurements

CAUTION: Before taking an in-circuit resistance measurement, remove power from the circuit under test and discharge all capacitors.

1. Insert the black test lead to the **COM** input jack and the red test lead to the **Ω** input jack.
2. Set the Function switch to the •))) ▶| Ω position, press the **FUNC** key if necessary to display the **Ω** icon.
3. Connect the test leads to the device under test and read the measured value on the LCD display.

Continuity Test

CAUTION: Before taking measurements, remove power from the circuit under test and discharge all capacitors

1. Insert the black test lead to the **COM** input jack and the red test lead to the **Ω** input jack.
2. Set the Function switch to the **•))) Ω** position.
3. Press the **FUNC** key until the "**•)))"** icon appears in the upper right-hand area of the LCD display.
4. Connect the test lead tips to the device under test.
5. If the resistance is < 10Ω (approx.) a tone will sound.

Frequency Measurements

CAUTION: Before taking an in-circuit measurement, remove power from the circuit under test and discharge all capacitors.

1. Insert the black test lead to the **COM** input jack and the red test lead to the **VΩ** input jack.
2. Set the Function switch to the **Hz** position.
3. Connect the test lead tips to the device under test.
4. Read the measured value on the LCD display.

Diode Test

CAUTION: Before taking measurements, remove power from the circuit under test and discharge all capacitors

1. Insert the black test lead to the **COM** input jack and the red test lead to the **V/Ω** input jack
2. Set the Function switch to the **•))) Ω** position
3. Press the **FUNC** key until the icon appears in the upper right-hand side of the LCD.
4. Connect the test lead tips to the device to be measured
5. Note the displayed reading
6. Reverse the test lead polarity by swapping the red and black lead connection; note this reading also.
    a. If one reading displays a value and the other reading displays "OL", the diode is good
    b. If both readings display "OL", the device is open
    c. If both readings are very small or zero, the device is shorted

Data Hold

Press the **HOLD** key momentarily to freeze the present reading on the LCD. **Hold** will appear in the display. Press the **H** key again to return to normal operation.

Relative Mode

The Relative mode permits the user to store a reference reading and compare all subsequent readings to the stored reference value. Subsequent readings will display a value that is the difference between the actual reading and the stored reference value.

1. Press the **REL** key when the desired valued is displayed on the meter. This becomes the stored reference. The REL symbol will appear on the LCD.
2. Take measurements and note that the meter displays the actual reading minus the reference reading.
3. Press the **REL** key to return to normal operation. The REL symbol will switch off.

Display Zero Mode

1. Press the REL key to zero the meter (the AUTO display symbol will switch off indicating that the meter is now in the Manual Range mode)
2. To toggle between the 400A and 600A ranges, use the RANGE button
3. Ensure that the test leads and clamp jaw are not connected to any circuit while doing so
4. The display will read zero and all subsequent readings will be displayed relative to zero. Zero as often as necessary

Note: When the meter is set to the DCA mode (clamp jaws empty) and auto range is active, the meter's display digits may show arbitrary readings; this is normal. Use the ZERO procedure above before taking DCA measurements for best results.

Maintenance

WARNING: To avoid electrical shock or damage to the meter, keep moisture from entering the meter housing. Also, remove the test leads before opening the meter housing.

Cleaning

Periodically wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents.

Battery Replacement

When the LCD display shows the battery symbol, replace the two ‘AA’ 1.5V batteries. Accurate readings are possible for a short period of time after the battery symbol appears, but it is recommended that the batteries be replaced immediately to ensure accurate results. To replace the batteries, remove the rear battery compartment cover.

WARRANTY

EXTECH INSTRUMENTS CORPORATION *warrants this instrument to be free of defects in parts and workmanship for* ***one year*** *from date of shipment (a six month limited warranty applies to sensors and cables). If it should become necessary to return the instrument for service during or beyond the warranty period, contact the Customer Service Department at (781) 890-7440 ext. 210 for authorization or visit our website www.extech.com for contact information. A Return Authorization (RA) number must be issued before any product is returned to Extech. The sender is responsible for shipping charges, freight, insurance and proper packaging to prevent damage in transit. This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. Extech specifically disclaims any implied warranties or merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, incidental or consequential damages. Extech's total liability is limited to repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.*

Calibration and Repair Services

Extech offers repair and calibration services for the products we sell. Extech also provides NIST certification for most products. Call the Customer Care Department for information on calibration services available for this product. Extech recommends that annual calibrations be performed to verify meter performance and accuracy.

Support line (781) 890-7440

Technical Support: Extension 200; E-mail: support@extech.com

Repair & Returns: Extension 210; E-mail: repair@extech.com

Product specifications subject to change without notice

For the latest version of this User Guide, Software updates, and other up-to-the-minute product information, visit our website: www.extech.com

Extech Instruments Corporation, 285 Bear Hill Road, Waltham, MA 02451