User's Manual



2000A Auto Ranging True RMS Clamp + DMM

MODEL 380926



WARRANTY

EXTECH INSTRUMENTS CORPORATION warrants the basic instrument to be free of defects in parts and workmanship for one year from date of shipment (a six month limited warranty applies on 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 for authorization or visit www.extech.com for more 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.

Repair and Calibration Services

Extech offers complete repair and calibration services for all of the products we sell. For periodic calibration, NIST certification or repair of any Extech product, call customer service for details on services available. Extech recommends that calibration be performed on an annual basis to insure calibration integrity.



Tech Support Hotlines 781-890-7440 ext. 200 extech@extech.com www.extech.com

Copyright © 2000 Extech Instruments Corporation. All rights reserved including the right of reproduction in whole or in part in any form.

380926 V1.1 11/00

INTRODUCTION

Congratulations on your purchase of Extech's 380926 Clamp meter + Digital MultiMeter. This meter can measure to 2000A through the clamp and also measure to 240mA through the test leads. With Capacitance, Diode and Duty Cycle measurements, this meter provides the user with a full featured multimeter combined with the high amperage current clamp. Proper use and care of this meter will yield 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 Reply to request.

Safety Precautions

- WARNING: Improper use of this meter can cause damage, shock, injury or death. Read and understand this users manual before operating the meter.
- 2. Make sure any covers or battery doors are properly closed and secured.
- 3. Always remove the test leads before replacing the battery or fuses.
- Inspect the condition of the test leads and the meter itself for any damage before operating the meter. Repair or replace any damage before use.
- 5. Do not exceed the maximum rated input limits.
- 6. Use great care when making measurements if the voltages are greater than 25VAC rms or 35VDC. These voltages are considered a shock hazard.
- 7. Always discharge capacitors and remove power from the device under test before performing Capacitance, Diode, Resistance or Continuity tests.
- 8. Remove the battery from the meter if the meter is to be stored for long periods.

SPECIFICATIONS

Function	Range	Resolution	Accuracy	Remarks
AC/DC Current	240.0uA	0.1uA	±(1.2% + 5d)	45Hz to 1KHz
(Direct Input)	2400uA	1uA	1 -(
`	24.00mA	0.01mA		
	240.0mA	0.1mA		
AC/DC Current	240.0A	0.1A	$\pm (2.0\% + 5d)$	45Hz to 1KHz
(Clamp on)	2000A	1A	±(2.0% + 8d)	
AC Voltage	2.400V	1mV	±(1.2% + 5d)	45Hz to 1KHz
True RMS	24.00V	10mV	1	Input Impedance:
	240.0V	1mV		10Mohms
	1000V	1V		
DC Voltage	240.0mV	0.1mV	±(0.5% + 2d)	Input Impedance:
	2.400V	1mV	±(1.0% + 2d)	10Mohms
	24.00V	10mV		
	240.0V	0.1V		
	1000V	1V		
Resistance	240.0 Ω	0.1Ω	±(1.0% + 5d)	
	2.400 kΩ	1Ω		
	24.00 kΩ	10Ω		
	240.0 kΩ	100Ω		
	2.400 MΩ	1kΩ	±(2.0% + 2d)	
	24.00 MΩ	10kΩ	±(3.5% + 5d)	
Frequency	50Hz	0.01Hz	±(1% + 5d)	
	500Hz	0.1Hz		
	5kHz	1Hz		
	50kHz	10Hz		
	100kHz	100Hz		
Capacitance	25nF	10pF	±(3% + 5d)	Accuracy stated
	250nF	100pF		after a relative "REL"
	2.5uF	0.001uF		zero performed
	25uF	0.01uF		
Duty Cycle	0.1 to 99.9%	0.1%	±(1% + 5d)	1000VAC/DC
Diode Test	3V	1mV	±(2.5% + 5d)	400VAC/DC
Continuity	Audible tone; <10 ohms approximately			400VAC/DC
	Open circuit voltage; 0.5V approximately			

Conductor Size

Measurement parameters

Current Sensor Zero adjust Battery type

Range Selection

Display

Overload Indication Power Consumption

Low Battery Indication Sampling rate

Standards

Operating Temperature/Humidity

Dimensions Weight 60mm (2.36") maximum

ACA, DCA, ACV, DCV, Resistance, Diode, Frequency, Capacitance, Duty Cycle, Continuity

Hall Effect

Automatic except for DCA (Push-button)

9V NEDA 1604 Auto or manual

0.6" (15mm) 5000 Count Backlit LCD

"OL"

5mA approx.

Battery icon appears on LCD 1 reading every 0.35 seconds approx.

CE, IEC 1010-1 CAT III 1000V 32 to 122°F (0°C to 50°C) / <80% 10x2.9x1.5" (255x73x38mm)

0.85 lbs. (380g)

Maximum Rated Input Limits

Function	Maximum Rated Input Limits		
AC/DC Current	500mA AC/DC (fused)		
AC Voltage	1000 VAC/DC		
DC Voltage	1000 VAC/DC		
Resistance	400 VAC/DC		
Frequency	1000 VAC/DC		
Capacitance	400 VAC/DC		
Duty Cycle	1000 VAC/DC		
Diode Test	400 VAC/DC		

METER DESCRIPTION

Front panel

- 1. Current Sense Jaws
- 2. Function switch
- 3. Keypad
- 4. LCD display
- 5. Input jacks

Note: The tilt stand and battery compartment door are located on the rear of the meter.

Symbols

AC current or Voltage
DC current or Voltage
Continuity

Display hold
REL Relative
Auto range
Diode

Display Backlight

Units

mV, V millivolt, volt (voltage)

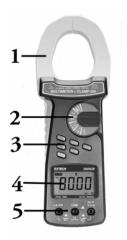
 Ω , $k\Omega$, $M\Omega$ ohm, kilohm, megohm (resistance)

% percent (duty cycle)

μA, mA, A microamps, milliamps, amps (current)

Hz, kHz hertz, kilohertz (frequency)

nF, μF nanofarad, microfarad (capacitance)

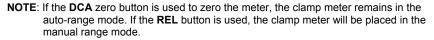


Current Measurements using the Clamp, DC/AC

WARNING: Make sure that the test leads are disconnected from the meter's terminals before making current measurements with the clamp iaw.

WARNING: For safety, use the rubber input terminal cover when measuring current using the Clamp.

- 1. Set the Function switch to 2000A position.
- 2. Press the FUNC key to select AC or DC current
- For DC current measurements, push and hold the DCA ZERO button until the reading indicates zero.
- Press the trigger to open jaw. Fully enclose the conductor to be measured.
- The clamp meter will automatically select the proper range (Auto Range). To select the range manually, press the RANGE button before pressing DCA ZERO button.
- 6. Read the measured value from the LCD display.



Current Measurements using the Test Leads, DC/AC

- 1. Set the Function switch to the **mA** or **uA** position.
- 2. Press the FUNC key to select AC or DC.
- Connect the black test lead to the COM terminal and the red test lead to the mA uA input jack.
- 4. Break the circuit under test (put the meter in series with circuit under test).
- Read the measured value from the LCD display.

NOTE: The maximum reading for direct input current is 240mA AC/DC.

Voltage Measurements, DC/AC

- 1. Set the Function Switch to the **V** position.
- Press the FUNC key to select AC or DC.
- Insert the black test lead to the COM input jack and the red test lead into the V input jack.
- Connect the test leads in PARALLEL with the circuit to be measured.
- 5. Read the measured value from the LCD display.

Resistance Measurements

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

- 1. Set the Function switch to the Ω position.
- 2. Press the **FUNC** key until the ohms symbol appears on the LCD.
- 3. Insert the black test lead to the ${\bf COM}$ input jack and the red test lead to the ${\bf \Omega}$ input jack.
- 4. Connect test leads to the device to be measured.
- 5. Read the measured value from the LCD display.



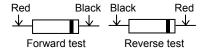
Continuity Test

- 1. Set the Function switch to the •1) position.
- 2. Press the **FUNC** key until the " Ω " and " \emptyset " symbols appear on the display.
- 3. Insert the black test lead to the ${\bf COM}$ input jack and the red test lead to the ${\bf \Omega}$ input jack.
- Connect the test lead tips to the device to be measured.
- 5. Read the measured value from the LCD display.
- 6. If the resistance is $< 10\Omega$ approx. an audible signal will be heard.

Diode Test

- Set the Function switch to the diode

 → position.
- 2. Press the **FUNC** key until the > symbol appears on the LCD.
- Insert the black test lead to the COM input jack and the red test lead to the
 input jack.
- Connect the test lead tips to the diode. A typical diode forward voltage drop will indicate 0.3 to 0.7V. The reverse drop will indicate "OL", indicating high impedance. Proper diode check should include both forward and reverse tests.



Frequency Measurement

- 1. Set the Function switch to the **Hz** position.
- 2. Press the **FUNC** key until the "Hz" symbol appears on the LCD.
- Insert the black test lead to the COM input jack and the red test lead to the Hz input jack.
- Connect the tips of the test leads to the device to be measured.
- Read the frequency value in Hz on the LCD.

Duty Cycle Measurements

Follow the steps as for Frequency measurements with the following exception: Press the "Hz/%" key until the "%" symbol appears on the display.

Capacitance Measurement

- 1. Set the Function switch to the $-\parallel$ position.
- 2. Press the **FUNC** key until the "nF" symbol appears on the LCD.
- Insert the black test lead to the COM input jack and the red test lead to the red input terminal.
- 4. Connect the tips of the test leads to the device to be measured.
- Read the capacitance value on the display.

NOTE: When making very low capacitance measurements, use the REL function to zero any stray capacitance.

Automatic / Manual Range Selections

The meter defaults to the autoranging mode when turned on. "AUTO" will appear in the display. To select manual ranging, press the **RANGE** key. Momentary presses of the **RANGE** key will step through the ranges. To return to the Auto Range mode, press and hold the **RANGE** key for 2 seconds.

Relative Reading Measurements

Press the **REL** key to enter the relative mode. "**REL**" will appear in the display. In the relative mode, the meter stores the reading that was on the display at the time of the **REL** key is pressed and displays the difference between the measured value and the stored value

Press the **REL** key to return to normal mode.

Data Hold / Backlight key

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

Backlight

Press and hold the **Hold** key for 2 seconds to activate the backlighting. The backlight will automatically turn off to conserve energy after approx 12 seconds.

MAINTENANCE

Battery Replacement

When the low battery symbol appears on the LCD, replace the meter's 9V battery.

- 1. Remove power to the meter and remove test leads from meter
- Remove the phillips head screw (back of meter) and open the battery compartment.
- 3. Remove and replace the 9V battery.
- 4. Replace the compartment cover and rear screw.

Fuse Replacement

NOTE: Fuse Rating: 500mA (5mm x 20mm diameter)

- The meter is provided with one overload protect 500mA fuse for current measurements (direct input NOT clamp measurements).
- To replace the fuse, open the meter case by removing the battery cover and battery and then the four screws holding the rear case.
- 3. The Fuse is located on the Main PCB.
- 4. Replace fuse and secure meter case.