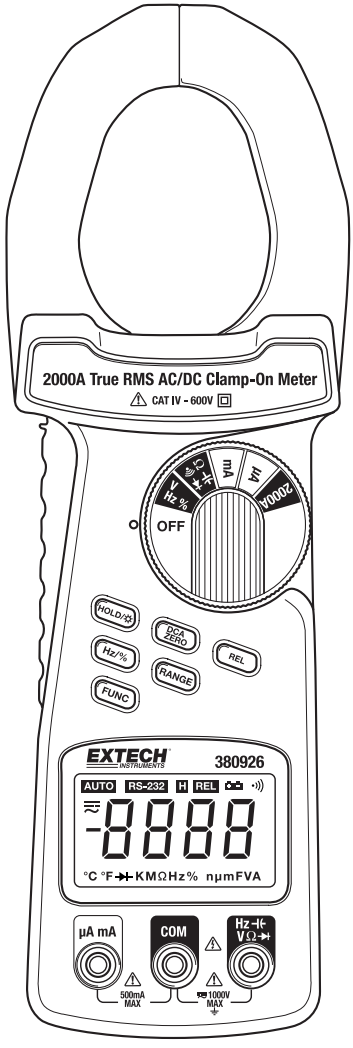
User's Manual

EXTECH® INSTRUMENTS

2000A Auto Ranging
True RMS Clamp + DMM

MODEL 380926



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 400mA 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. 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 Reply to request.

Safety Precautions

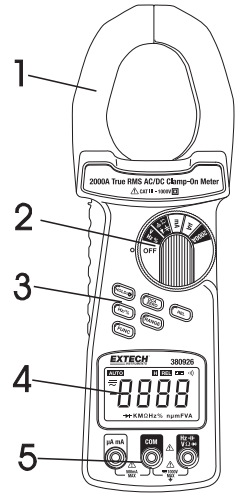
1. WARNING: Improper use of this meter can cause damage, shock, injury or death. Read and understand this user's manual before operating the meter.
2. Make sure any covers or battery doors are properly closed and secured.
3. Always remove the test leads before replacing the battery or fuses.
4. Inspect 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.

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
H	Display hold
REL	Relative
AUTO	Auto range
▶|	Diode
☼	Display Backlight

Units

mV, V	millivolt, volt (voltage)
Ω, kΩ, MΩ	ohm, kilohm, megohm (resistance)
%	percent (duty cycle)
µA, mA, A	microamps, milliamps, amps (current)
Hz, kHz	hertz, kilohertz (frequency)
nF, µF	nanofarad, microfarad (capacitance)

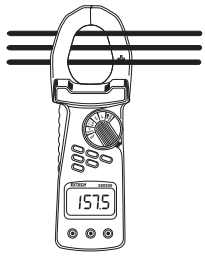
OPERATING INSTRUCTIONS

Current Measurements using the Clamp, DC/AC

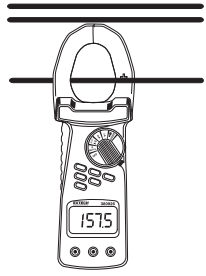
WARNING: Make sure that the test leads are disconnected from the meter's terminals before making current measurements with the clamp jaw.

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
3. For DC current measurements, push & hold the **DCA ZERO** button until the reading indicates zero.
4. Press the trigger to open jaw. Fully enclose the conductor to be measured (see diagram).
5. 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.



INCORRECT
More than one conductor in jaws



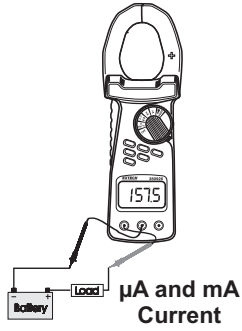
CORRECT
One conductor in jaws

NOTE: If the **DCA** zero button is used to zero the meter, the clamp meter remains in the auto-range mode. If the **REL** button is used, the clamp meter will be placed in the manual range mode.

Current Measurements using the Test Leads, DC/AC

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

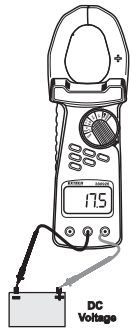
NOTE: The maximum reading for direct input current is 240mA AC/DC.



µA and mA Current

Voltage Measurements, DC/AC

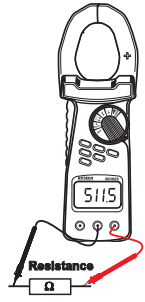
1. Set the Function Switch to the **V** position.
2. Press the **FUNC** key to select AC or DC.
3. Insert the black test lead to the **COM** input jack and the red test lead into the **V** input jack.
4. Connect the test leads in PARALLEL with the circuit to be measured (see diagrams).
5. Read the measured 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 LCD.
3. Insert the black test lead to the **COM** input jack and the red test lead to the **Ω** input jack.
4. Connect test leads to the device under test (see diagram).
5. Read the measured value from the LCD display.

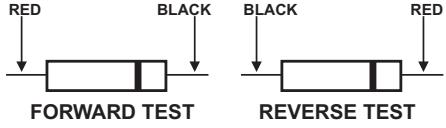


Continuity Test

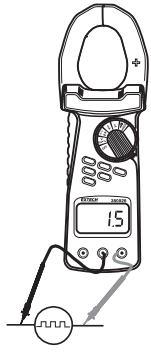
1. Set the Function switch to the position.
2. Press the **FUNC** key until the "**Ω**" and "" symbols appear on the display.
3. Insert the black test lead to the **COM** input jack and the red test lead to the **Ω** input jack.
4. Connect the test lead tips to the device to be measured (refer to diagram for resistance measurements above).
5. Read the measured value from the LCD display.
6. If the resistance is < 10Ω approx. an audible signal will be heard.

Diode Test

1. Set the Function switch to the diode position.
2. Press the **FUNC** key until the symbol appears on the LCD.
3. Insert the black test lead to the **COM** input jack and the red test lead to the input jack.
4. 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

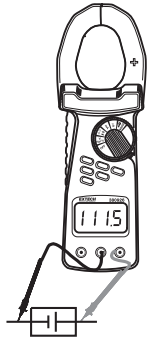


1. Set the Function switch to the **Hz** position.
2. Press the **FUNC** key until the "**Hz**" symbol appears on the LCD.
3. Insert the black test lead to the COM input jack and the red test lead to the **Hz** input jack.
4. Connect the tips of the test leads to the device to be measured (see diagram).
5. 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 position.
2. Press the **FUNC** key until the "**nF**" symbol appears on the LCD.
3. 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 (see diagram).
5. 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."H" 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
2. 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)

1. The meter is provided with one overload protect 500mA fuse for current measurements (direct input NOT clamp measurements).
2. 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.

SPECIFICATIONS

Function	Range	Resolution	Accuracy	Remarks
AC/DC Current (Clamp on)	400.0A	0.1A	±(2.0% + 5d)	45Hz to 1KHz
	2000A	1A	±(2.0% + 8d)	
AC Voltage *True RMS*	4.000V	1mV	±(1.2% + 5d)	45Hz to 1KHz Input Impedance: 10Mohms
	40.00V	10mV		
	400.0V	0.1V		
	1000V	1V		
DC Voltage	400.0mV	0.1mV	±(0.5% + 2d)	Input Impedance: 10Mohms
	4.000V	1mV	±(1.0% + 2d)	
	40.00V	10mV		
	400.0V	0.1V		
	1000V	1V		
Resistance	400.0 Ω	0.1Ω	±(1.0% + 5d)	
	4.000 kΩ	1Ω		
	40.00 kΩ	10Ω		
	400.0 kΩ	100Ω		
	4.000 MΩ	1kΩ	±(2.0% + 2d)	
	40.00 MΩ	10kΩ	±(3.5% + 5d)	
AC/DC Current (Direct Input)	400.0µA	0.1µA	±(1.2% + 5d)	45Hz to 1KHz
	4000µA	1µA		
	40.00mA	0.01mA		
	400.0mA	0.1mA		
Frequency	5Hz	0.001Hz	±(1% + 5d)	
	50Hz	0.01Hz		
	500Hz	0.1Hz		
	5kHz	1Hz		
	50kHz	10Hz		
	100kHz	100Hz		
Capacitance	50nF	10pF	±(3% + 5d)	Accuracy stated after a relative "REL" zero performed
	500nF	100pF		
	5µF	0.001µF		
	50µF	0.01µF		
Duty Cycle	1 to 99%	0.1%	±(1% + 5d)	
Continuity	Audible tone; <10 ohms approximately Open circuit voltage; 0.5V approximately			

Conductor Size	60mm (2.36") maximum
Measurement parameters	ACA, DCA, ACV, DCV, Resistance, Diode, Frequency, Capacitance, Duty Cycle, Continuity
Current Sensor	Hall Effect
Zero adjust	Automatic except for DCA (Push-button)
Diode Test	Test current of 0.6mA typical; Open circuit voltage <1.6V DC typical.
Battery type	9V NEDA 1604
Range Selection	Auto or manual
Display	0.6" (15mm) 5000 Count Backlit LCD
Overload Indication	"OL"
Power Consumption	5mA approx.
Low Battery Indication	Battery icon appears on LCD
Sampling rate	1 reading every 0.35 seconds approx.
Standards	CE, IEC 1010-1 CAT IV 600V
Operating Temperature/Humidity	32 to 122°F (0°C to 50°C) / <80%
Dimensions	10 x 2.9 x 1.5" (255 x 73 x 38mm)
Weight	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

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.

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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's Guide, Software updates, and other up-to-the-minute product information, visit our website: www.extech.com

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