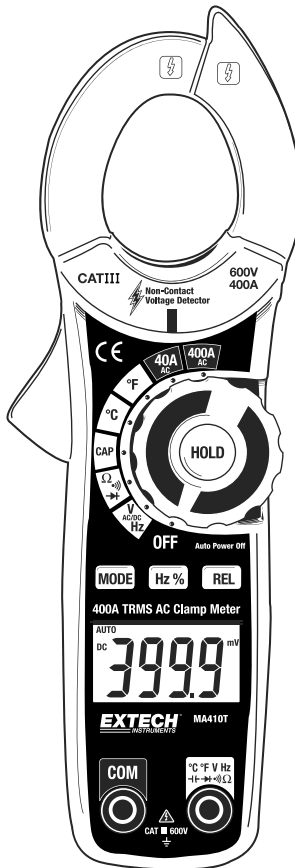


# 400Amp True RMS AC Clamp Meter + NCV

Model MA410T



# Introduction

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Thank you for selecting the Extech MA410 Clamp Meter. This meter measures AC Current, AC/DC Voltage, Resistance, Capacitance, Frequency, Diode Test, Duty Cycle and Continuity. Custom features include Thermocouple Temperature and Non-Contact Voltage detection. The double molded case is designed for heavy duty use. This meter is shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Extech Instruments is an ISO-9001 Certified company.

## Safety

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### International 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



This **WARNING** symbol indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.



This **CAUTION** symbol indicates a potentially hazardous situation, which if not avoided, may result damage to the product.

### PER IEC1010 OVERVOLTAGE INSTALLATION CATEGORY

#### OVERVOLTAGE CATEGORY I

Equipment of OVERVOLTAGE CATEGORY I is equipment for connection to circuits in which measures are taken to limit the transient over voltages to an appropriate low level.

Note – Examples include protected electronic circuits.

#### OVERVOLTAGE CATEGORY II

Equipment of OVERVOLTAGE CATEGORY II is energy-consuming equipment to be supplied from the fixed installation.

Note – Examples include household, office, and laboratory appliances.

#### OVERVOLTAGE CATEGORY III

Equipment of OVERVOLTAGE CATEGORY III is equipment in fixed installations.

Note – Examples include switches in the fixed installation and some equipment for industrial use with permanent connection to the fixed installation.

#### OVERVOLTAGE CATEGORY IV

Equipment of OVERVOLTAGE CATEGORY IV is for use at the origin of the installation.

Note – Examples include electricity meters and primary over-current protection equipment

## SAFETY NOTES

- x Do not exceed the maximum allowable input range of any function.
- x Do not apply voltage to meter when resistance function is selected.
- x Set the function switch OFF when the meter is not in use.
- x Remove the battery if meter is to be stored for longer than 60 days.

## WARNINGS

- x Set function switch to the appropriate position before measuring.
- x When measuring volts do not switch to current/resistance modes.
- x Do not measure current on a circuit whose voltage exceeds 600V.
- x When changing ranges always disconnect the test leads from the circuit under test.

## CAUTIONS

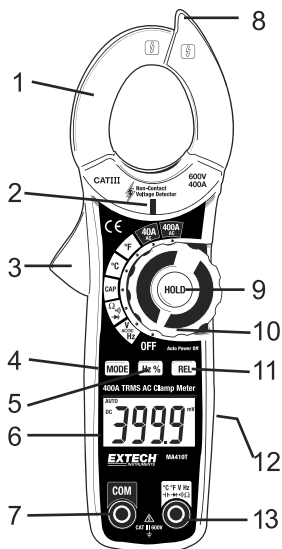
- x Improper use of this meter can cause damage, shock, injury or death. Read and understand this user manual before operating the meter.
- x Always remove the test leads before replacing the battery or fuses.
- x Inspect the condition of the test leads and the meter itself for any damage before operating the meter. Repair or replace any damage before use.
- x Use great care when making measurements if the voltages are greater than 25VAC rms or 35VDC. These voltages are considered a shock hazard.
- x Always discharge capacitors and remove power from the device under test before performing Diode, Resistance or Continuity tests.
- x Voltage checks on electrical outlets can be difficult and misleading because of the uncertainty of connection to the recessed electrical contacts. Other means should be used to ensure that the terminals are not "live".
- x If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Function	Maximum Input
A AC,	400A
V DC, V AC	600V DC/AC
Resistance, Capacitance, Frequency, Diode Test, Continuity, Temperature	250V DC/AC

# Description

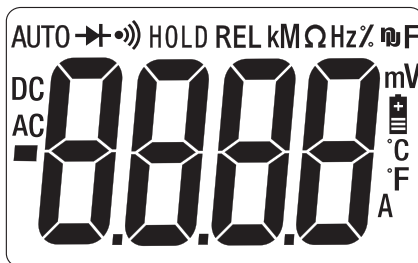
## Meter Description

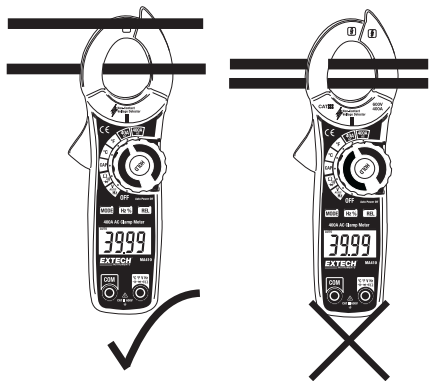
1. Current clamp
2. NCV LED indicator
3. Clamp opening trigger
4. MODE button
5. HZ/% button
6. LCD Display
7. Negative input jack
8. Non-Contact Voltage Detector
9. HOLD button
10. Function switch
11. Relative Button
12. Battery compartment (rear)
13. Positive input jack

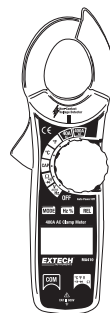


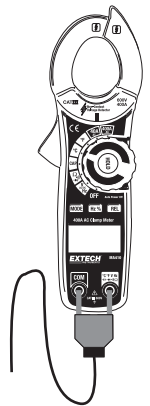
## Display icons Description

HOLD	Data Hold
AUTO	Autoranging
DC	Direct Current
AC	Alternating Current
REL	Relative
V	Volts (Voltage)
:	Ohms (Resistance)
A	Amperes (Current)
F	Farad (Capacitance)
Hz	Hertz (Frequency)
%	Duty Ratio
°F and °C	Fahrenheit and Celsius units (Temperature)
n, m, $\mu$ , M, k	Unit of measure prefixes: nano, milli, micro, mega, and kilo
x)	Continuity test
$\rightarrow$	Diode test









# Maintenance

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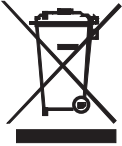
**WARNING:** To avoid electrical shock, disconnect the meter from any circuit, remove the test leads from the input terminals, and turn OFF the meter before opening the case. Do not operate the meter with an open case.

## Cleaning and Storage

Periodically wipe the case with a damp cloth and mild detergent; do not use abrasives or solvents. If the meter is not to be used for 60 days or more, remove the battery and store it separately.

## Battery Replacement

1. Remove the 2 Phillips head screws that secure the rear battery cover
2. Open the battery compartment
3. Replace the 2 AAA 1.5V batteries.
4. Secure the battery compartment door



All EU users are legally bound by the Battery Ordinance to return all used batteries to community collection points or wherever batteries / accumulators are sold! Disposal in household trash or refuse is prohibited!


**Disposal:** Follow the valid legal stipulations in respect of the disposal of the device at the end of its lifecycle.



# Specifications

Function	Range	Resolution	Accuracy (% of reading + digits)
<b>AC Current</b> 50/60Hz	40.00 AAC	0.01A	±(2.5% + 12 digits)
	400.0 AAC	0.1A	±(2.8% + 8 digits)
	AC Current ranges specified from 5% to 100% of range		
<b>AC Voltage</b> 50 to 400Hz	4.000 VAC	0.001V	±(1.8% + 10 digits)
	40.00 VAC	0.01V	
	400.0 VAC	0.1V	
	600 VAC	1V	±(2.5% + 10 digits)
	AC Voltage ranges specified from 5% to 100% of range		
<b>DC Voltage</b>	400.0 mVDC	0.1mV	±(0.8% + 2 digits)
	4.000 VDC	0.001V	±(1.5% + 2 digits)
	40.00 VDC	0.01V	
	400.0 VDC	0.1V	
	600 VDC	1V	±(2.0% + 2 digits)
<b>Resistance</b>	400.0 :	0.1 :	±(1.0% + 4 digits)
	4.000k :	0.001k :	±(1.5% + 2 digits)
	40.00k :	0.01k :	
	400.0k :	0.1k :	
	4.000M :	0.001M :	±(2.5% + 3 digits)
	40.00M :	0.01M :	±(3.5% + 5 digits)
<b>Capacitance</b>	40.00nF	0.01nF	±(4.0% + 20 digits)
	400.0nF	0.1nF	±(3.0% + 5 digits)
	40.00µF	0.01µF	
	100.0µF	0.1µF	
<b>Frequency</b>	10 to 10kHz	0.01Hz	±(1.5% + 2 digits)
	Sensitivity: 15V rms		
<b>Duty Cycle</b>	0.5% to 99.0%	0.1%	±(1.2% + 2 digits)
	Pulse width: 100 ns to 100ms, Frequency: 10Hz to 10kHz		
<b>Temperature Type K</b>	-4.0 to 1400°F -20 to 760°C	0.1° <400° 1° >400°	±(3% + 9°F/5°C)
	Specification does not include probe accuracy. Range of supplied probe is -4 to 482°F (-20 to 250°C).		

## General Specifications

<b>Clamp jaw opening</b>	30mm (1.18") approx.
<b>Display</b>	4,000 count LCD
<b>Continuity check</b>	Threshold <150 Ω; Test current < 0.5mA
<b>Diode test</b>	Test current of 0.3mA typical; Open circuit voltage >1.5VDC typical
<b>Low Battery indication</b>	Battery symbol is displayed
<b>Over-range indication</b>	'OL' display
<b>Measurement rate</b>	2 readings per second, nominal
<b>Thermocouple sensor</b>	Type K thermocouple required
<b>Input Impedance</b>	10M Ω (VDC and VAC)
<b>AC bandwidth</b>	50 to 400Hz (VAC)
<b>AC response</b>	True rms
<b>Operating Temperature</b>	5 °C to 40 °C (41 °F to 104 °F)
<b>Storage Temperature</b>	-20 °C to 60 °C (-4 °F to 140 °F)
<b>Operating Humidity</b>	Max 80% up to 31 °C (87 °F) decreasing linearly to 50% at 40 °C (104 °F)
<b>Storage Humidity</b>	<80%
<b>Operating Altitude</b>	2000meters (7000ft) maximum.
<b>Battery</b>	Two "AAA" 1.5V batteries
<b>Auto power OFF</b>	After approx. 30 minutes
<b>Dimensions &amp; Weight</b>	200x66x37mm (7.9x2.6x1.5"); 205g (7.23oz)
<b>Safety</b>	For indoor use and in accordance with the requirements for double insulation to IEC1010-1 (2001); EN61010-1 (2001) Overvoltage Category III 600V, Pollution Degree 2.
<b>Approvals</b>	CE, 

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