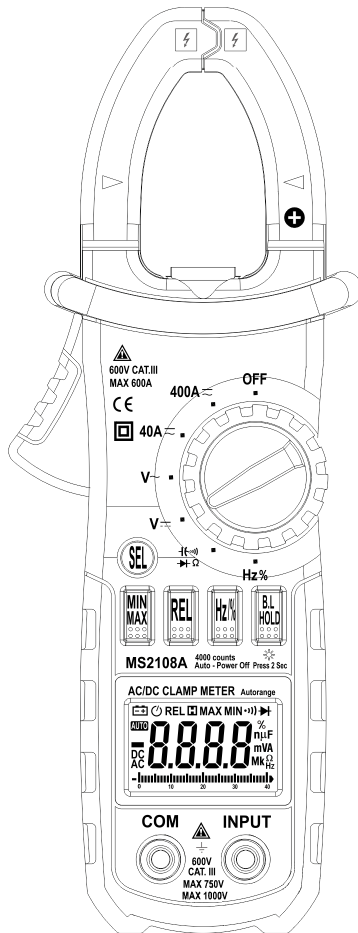


DURATOOL



MODEL: D03128

CLAMP METER

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IMPORTANT SAFETY INFORMATION

Please read these instructions carefully before use and retain for future reference.

- When using electrical appliances basic safety precautions should always be followed.
- Use the meter only as specified in this manual, or the protection provided may be impaired.
- Do not operate the meter or use test leads if they appear damaged, or if the meter is not operating properly.
- There are no user-serviceable parts in this product. Refer servicing to qualified personnel.
- Always use the proper terminal, switch position and range for measurements before connecting the meter to the circuit under test.
- Verify the meter's operation by measuring a known voltage.
- Do not apply more than the rated voltage as marked on the meter, between the terminals or between any terminal and earth ground.
- Use caution with voltages above 30V AC RMS or 60V DC. These voltages pose a shock hazard.
- Do not take voltage measurement if the value between the terminals and earth ground exceed 600V.
- Disconnect the circuit power and discharge all high voltage capacitors before testing resistance, continuity, diodes or capacitance.
- Do not use the meter around explosive gas or vapour.
- When using the test leads, keep your fingers behind the finger guards.
- Remove test leads from the meter before opening the meter case or battery door.
- Never operate the meter with the cover removed or the battery door open.
- Use only the test leads supplied or the protection may be impaired.
- Do not connect the meter to any voltage source while the rotary selector is in the current, resistance, capacitance, diode or continuity range.
- Replace the batteries as soon as the low battery indicator appears on the display.
- Fit a full set of batteries at one time.
- Remove dead batteries from the appliance or if it is not going to be used for a long time.
- Never mix old and new batteries together, or different types of batteries.
- Never dispose of batteries in a fire, or attempt to recharge ordinary batteries.

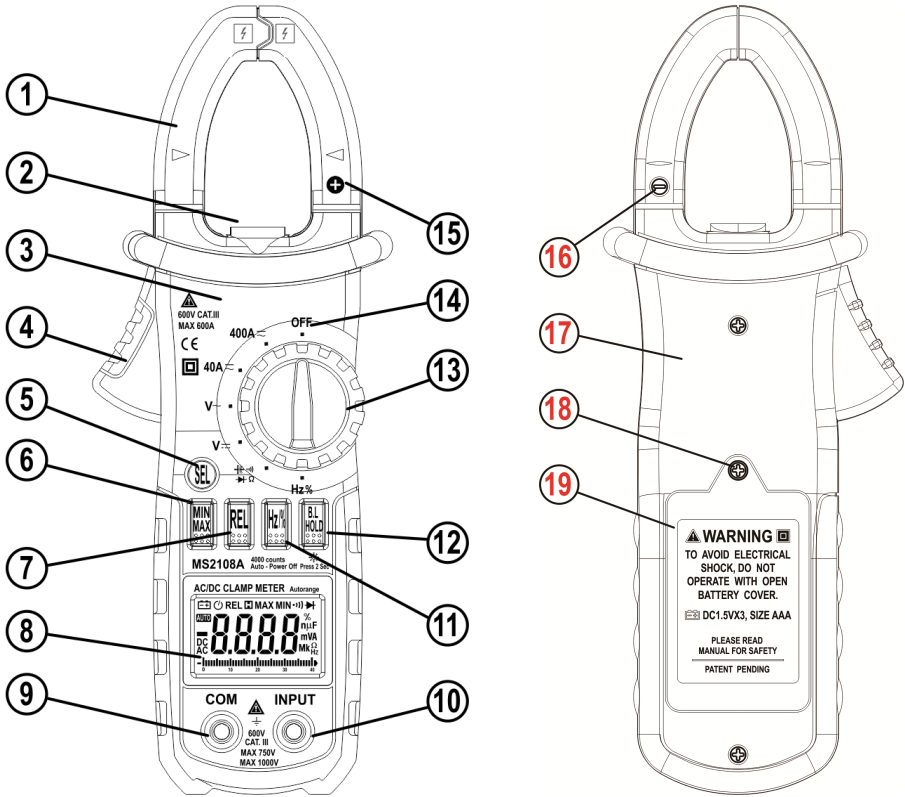
FEATURES

This meter is a portable, professional measuring instrument with LCD and backlight. The meter can perform measurements of AC/DC voltage and current, resistance, frequency, duty cycle, capacitance as well as diode continuity.

The meter is equipped with:

- Auto range.
- Reading hold function.
- Square value measuring function (at AC A and AC V range).
- Maximum value measuring function.
- Minimum value measuring function.
- Ability to measure frequency by clamp.
- Auto power-off function.

PRODUCT OVERVIEW








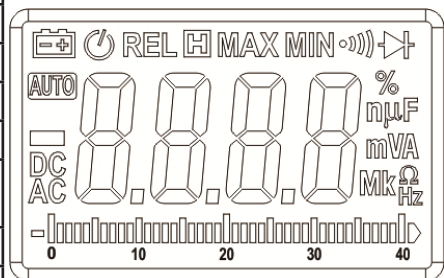
Number	Component	Number	Component
1	Current Clamp	11	Hz/Duty Cycle Switch Button (Hz/%)
2	Clamp Lighting Bulb	12	Reading Hold/Backlight Button (HOLD/B.L.)
3	Panel	13	Rotary Selector
4	Trigger	14	OFF - Power Switch
5	Function Switch Button (SEL)	15	“+” Symbol
6	MAX/MIN Switch Button (MAX/MIN)	16	“-” Symbol
7	Relative Switch Button (REL)	17	Rear Case
8	Liquid Crystal Display (LCD)	18	Fixing Screw of Battery Cover
9	COM Jack	19	Battery Cover
10	Input Jack		

SWITCHES, BUTTONS & INPUT JACKS

Button/Switch/Jack	Function
HOLD/B.L button	Hold the reading or control the backlight.
SEL button	For switching among measuring functions.
REL button	Relative value measurement.
Hz/% button	Switch between 'frequency' and 'duty' measurement functions.
MAX/MIN button	Switch between maximum and minimum value measurement functions.
Rotary selector	Select functions and ranges.
OFF position	Turn off the power.
INPUT jack	For measuring voltage, resistance, frequency, duty cycle, capacitance, diode and continuity.
COM jack	Common input connection for current, voltage, resistance, frequency, duty, capacitance, diode and continuity measurement.
Clamp	For measuring current.


LCD

AC	Alternating current
DC	Direct current
	Diode test
	Continuity buzzer
AUTO	Auto range mode
MAX	Maximum value being measured
MIN	Minimum value being measured
REL	DCA zero and relative measure
	Auto power off
	Battery low
	Indicates that the display data is being held
%	Percent (duty cycle)
mV, V	Milli-volts, Volts (Voltage)
A	Amperes (Current)
nF,	Nanofarad, Microfarad
Ω, kΩ, MΩ	Ohms, Kilo-ohms, Mega-ohms (Resistance)
Hz, kHz, MHz	Hertz, Kilo-hertz (Frequency), Megahertz



SPECIFICATIONS

Calibration is required once a year and is to be carried out at a temperature between 18°C and 28°C (64°F to 82°F) and relative humidity, below 75%.

Auto range	
Overrange protection is provided for all ranges	
Maximum voltage between terminals and earth ground	1000V or 750V rms AC
Operating altitude	Max. 2000 metres (7000ft)
Display	4000 counts with analogue bar LCD display
Maximum value display	4000 digits
Polarity indication	Automatic '-' for negative polarity
Overrange indication	'OL' or '-OL'
Converter rate	3 times/sec. Bar graph: 30 times/sec
Unit indication	Function and unit
Auto power off time	15 minutes
Operating power	1.5V x 3 AAA batteries
Battery low indication	 on LCD
Temperature factor	< 0.1 x Accuracy
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	-10°C to 50°C (10°F to 122°F)
Dimensions	208mm x 78mm x 32mm
Weight	Approximate 340g (including batteries)

ELECTRICAL SPECIFICATIONS

Ambient temperature: 23 ± 5°C

Relative humidity: < 75%

AC Current		
Range	Resolution	Accuracy
40A	0.01A	± (2.0% of rdg + 6 digits)
400A	0.1A	

- Max input current: 400A AC
- Frequency range: 40 to 400Hz
- Response: average value

DC Current		
Range	Resolution	Accuracy
40A	0.01A	± (2.0% of rdg + 6 digits)
400A	0.1A	

- Max input current: 400A DC

DC Voltage		
Range	Resolution	Accuracy
400mV	0.1mV	$\pm (1.0\% \text{ of rdg} + 2 \text{ digits})$
4V	0.001V	
40V	0.01V	
400V	0.1V	
600V	1V	

- Input impedance: 10M Ω .
- Max. input voltage: 1000V DC.
- At small voltage range, unsteady readings will appear before the test leads contact the circuit. This is normal because the meter is highly sensitive. When the test leads contact the circuit, the true reading will be shown.

AC Voltage		
Range	Resolution	Accuracy
4V	0.001V	$\pm (0.8\% \text{ of rdg} + 3 \text{ digits})$
40V	0.01V	
400V	0.1V	
750V	1V	$\pm (1.0\% \text{ of rdg} + 4 \text{ digits})$

- Input impedance: 10M Ω .
- Max. input voltage: 750V rms AC.
- Frequency range: 40 to 400Hz.
- Response: Average value.

Frequency by a range (from current clamp)		
Range	Resolution	Accuracy
10Hz	0.01Hz	$\pm (1.5\% \text{ of rdg} + 5 \text{ digits})$
1kHz	0.001kHz	
>1kHz	0.001kHz	

- Measurement range: 10 ~ 1kHz.
- Input current range: $\geq 4A$ rms AC (higher input current at higher frequency).
- Max. input current: 400A rms AC.

Frequency by ACV range		
Range	Resolution	Accuracy
10Hz	0.01Hz	$\pm (1.5\% \text{ of rdg} + 5 \text{ digits})$
1kHz	0.001kHz	
10kHz	0.01kHz	
>10kHz	0.01kHz	Take it only as reference

- Measurement range: 10 ~ 10kHz.
- Input voltage range: $\geq 0.6V$ rms AC (higher input voltage at higher frequency).
- Input impedance: 10M Ω .
- Max. input voltage: 750V rms AC.

Frequency by Hz/Duty Cycle range		
Range	Resolution	Accuracy
9.999Hz	0.001Hz	$\pm (0.5\% \text{ of rdg} + 3 \text{ digits})$
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	
9.999KHz	0.001kHz	
99.99KHz	0.01kHz	
999.9KHz	0.1kHz	
9.999MHz	0.001MHz	

- Overload protection: 250V DC or 250V AC rms.
- Input voltage range: 200mV-10V AC rms.

Duty Cycle		
Range	Resolution	Accuracy
0.1% - 99%	0.1%	± 3.0%

By A range (from current clamp):

- Frequency response: 10 ~ 1kHz.
- Input current range: ≥ 4A rms AC.
- Max. input current: 400A.

By ACV range:


- Frequency response: 10 ~ 10kHz.
- Input current range: ≥ 1V rms AC.
- Input impedance: 10MΩ.
- Max. input voltage: 750V rms AC.

By Hz/Duty Cycle range:


- Frequency response: 1 ~ 10MHz.
- Input voltage range: ≥ 500mV rms.
- Overload protection: 250V rms AC.

Resistance		
Range	Resolution	Accuracy
400Ω	0.1Ω	± (0.8% of rdg + 3 digits)
4kΩ	0.001kΩ	
40kΩ	0.01kΩ	
400kΩ	0.1kΩ	
4MΩ	0.001MkΩ	± (1.2% of rdg + 3 digits)
40MΩ	0.1MΩ	

- Open circuit voltage: 0.4V.
- Overload protection: 250V DC or rms AC.

Diode		
Range	Resolution	Function
	0.001V	Displaying approximate forward voltage of diode

- Forward DC current ~ 1mA.
- Reversed DC voltage ~ 3.3V.
- Overload protection: 250V DC or rms AC.

Continuity		
Range	Resolution	Function
	0.1Ω	Built-in buzzer will sound if the resistance is lower than 40Ω

- Open circuit voltage ~1.2V.
- Overload protection: 250V DC or rms AC.

Capacitance		
Range	Resolution	Accuracy
400nF	0.1nF	± (4.0% of rdg + 5 digits)
4μF	0.001μF	
40μF	0.01μF	
400μF	0.1μF	
4000μF	1μF	

- Overload protection: 250V DC or rms AC.

OPERATION

Holding Readings

- Press the “**HOLD/B.L**” button to hold the readings while taking measurement and the value on the display will be held.
- Press the “**HOLD/B.L**” button again to release the reading hold function.

SWITCHING REL

- The “**REL**” key is the relative value measurement communication transmission key that acts with trigger. Pressing this key will enter into the relative value measurement mode.
- The system will save the display value in the memory as the reference value. When doing the measurement later, the display value will be the difference value that the entry value deducts from the reference value.
- Pressing the “**REL**” key will enter into the Manual Measurement mode automatically.
- In REL measurement status, press the key again and the REL function will be relocked.
- Press the key in HOLD status and the Hold function will be cancelled.
- The system will save the display value in the memory as the reference value.
- When doing the measurement later, the display value is the difference that the entry value deducts from the reference value.
- Press the “**SELECT**” key or use the “**MODE**” switch to cancel REL measurement mode, and go back to normal mode (“**RELΔ**” will disappear in the LCD).
- OL triggering: Under RELΔ mode, “**OL**” shows when the input value is larger than the allowed value of the measurement mode.
- Press the key again and the relative measurement function will be cancelled.
- Disable to enter RELΔ mode when “**OL**” shows.
- No analogue section bar function under RELΔ mode.

SWITCHING FREQUENCY OR DUTY CYCLE

- When working at the voltage or the current ranges, press the “**Hz/%**” button once and the frequency of the voltage or current will be measured.
- Press the “**Hz/%**” button twice and the meter will be changed in the duty range for measuring the duty cycle of the voltage or current.
- At the same time, the meter changes into manual mode.
- Press the “**Hz/%**” button again and the meter will be back to the condition of the voltage or current measuring.

Note: When working at the maximum or minimum value measuring function, the meter can't be changed into frequency or duty cycle measuring mode.

SWITCHING MAXIMUM OR MINIMUM VALUE

- At all ranges the “**MAX/MIN**” button once and the meter can be set to the maximum value measuring mode.
- Press the button twice and the meter can be set to the minimum value measuring mode.
- Press the button three times and the meter will revert back to normal test mode, while the maximum and minimum value will be recorded by the chip.
- Press and hold the “**MAX/MIN**” button for more than two seconds and the meter will go back to normal testing.
- Note: When measuring maximum or minimum value, the meter will be set to

manual mode automatically.

- When working at frequency or duty measuring function, the meter can't be changed into maximum or minimum value measuring mode.




SWITCHING FUNCTIONS


- The “SEL” key is a function selection key that acts with trigger.
- Pressing the key can choose the required measurement mode:
 - To choose DC or AC in DC/AC status,
 - To choose Diode or Buzzer in Diode/Buzzer status,
 - To choose Ohm, Cap, Diode or Buzzer in Ohm/Cap/Diode/Buzzer status.
- Press the “SEL” key, then turn on the power and the ‘auto power-off’ function will be cancelled.
- The signal “APO” disappears in the LCD and it enters into Sleep status (power-off).
- Press the key, then power-on will have the ‘auto power-off’ function.

BACKLIGHT AND CLAMP LIGHTING BULB

- Press the “HOLD/B.L” button for two or more seconds to switch on the backlight. The light will stay on for 15 seconds.
- When the backlight is on, press and hold the “HOLD/B.L” button for two or more seconds to turn it off.
- At the current range, when the backlight is switched on, the clamp lighting bulb will be turned on at the same time.

Note: The LED, which requires a larger working current is the main source of the backlight. Although the meter is equipped with a timer set at about 15 seconds, (meaning the light will turn off automatically after about 15 seconds), frequent use of the backlight will shorten the life of the batteries.



- When the battery voltage is $\leq 3.7V$, the symbol “” (low battery) will appear on the LCD. When the backlight is on, even if the battery is $\geq 3.7V$, the “” may appear because of its large working current, which will cause the voltage to drop.
- In this case, you need not replace the batteries yet. Normally, the batteries can last until the “” appears when the backlight is not being used.

Note: The accuracy of the measurement cannot be assured when the “” symbol appears.

AUTO POWER-OFF

- If the mode switch or keys of the meter has no action within 15 minutes, the system will power off automatically (sleep mode).
- In auto power-off status, press any key and the meter will “auto power-on” (operation mode).

PREPARING FOR MEASUREMENT

- Switch on the power by turning the rotary selector. If the battery voltage is lower than 3.7V, the “” symbol will appear, meaning the batteries should be replaced.
- The “” symbol shows that the input voltage or current should not exceed the specified value in order to protect the internal circuit from damage.
- Turn the rotary selector to the required function and range to be measured.
- Connect the common test lead first and then the charged test leads when making connection. Take away the charged test lead first when disconnecting.

MEASURING AC CURRENT

WARNING

- Beware of electrocution.
 - Ensure that the test leads are disconnected from the meter before making current clamp measurements.
- Set the rotary selector to the 40A or 400A range position.
 - Push the “REL” key to make sure that the LCD displays zero.
 - Press the trigger to open the jaw and fully enclose only one conductor.
 - Take the reading on the LCD.

Note: Do not put more than one cable into the jaw during the test, otherwise the test value obtained may be incorrect.

- For optimum results, centre the conductor in the jaw.
- At the manual range mode, when only “OL” is shown on the LCD it means that the measurement has exceeded the range and a higher range should be selected.
- If the scale of the value to be measured is unknown beforehand, set the range to the highest.
- “ Δ ” means the maximum input current is 400A rms AC.

MEASURING DC CURRENT

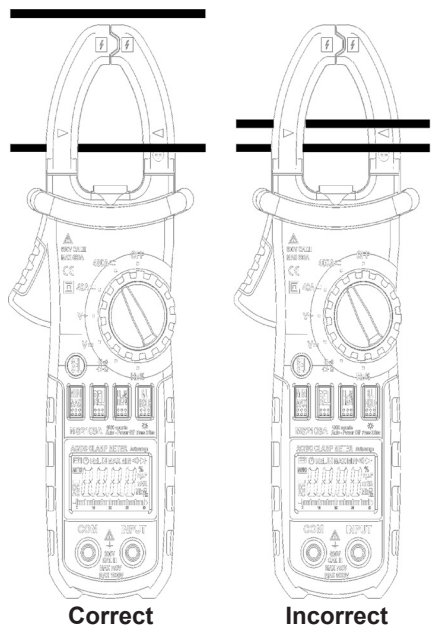
WARNING

- Beware of electrocution.
- Ensure that the test leads are disconnected from the meter before making current clamp measurements.

- Set the rotary selector to the 40A or 400A range position.
- Press the “SEL” key and turn to DC current measurement mode.
- Press the “REL” button and the meter will be set to zero.
- Press the trigger to open the jaw and fully enclose only one conductor.
- Take the reading on the LCD.
- “-” will be displayed on the LCD if the direction of the current is negative.

Note: Do not put more than one cable into the jaw during the test, otherwise the test value obtained may be incorrect.

- For optimum results, centre the conductor in the jaw.
- At the manual range mode, when only “OL” or “-OL” is shown on the LCD, it means that the measurement has exceeded the range and a higher range should be selected.
- Under the manual range mode, when the scale of the value to be measured is unknown beforehand, set the range to the highest.
- “ Δ ” means the maximum input current is 400A DC.



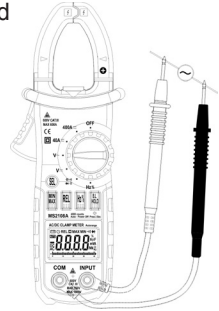
MEASURING AC VOLTAGE

WARNING

- Beware of electrocution.
 - Pay special attention to avoid electric shock when measuring high voltage.
 - Do not input voltage, which is more than 750V rms AC.
- Plug the black test lead into the **COM** jack and the red test lead into the **INPUT** jack.
 - Set the rotary selector to the **V~** position to make the meter enter into AC V range.
 - Connect the test leads to the voltage source or load terminals for measurement.
 - Take the reading on the LCD.

Note: “ Δ ” means the maximum input voltage is 750V rms AC.

- If the test result is more than 750V rms AC, the “OL” symbol will be displayed on the LCD and the build-up buzzer will sound.



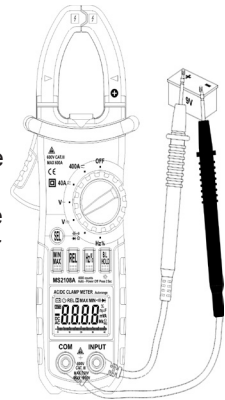
MEASURING DC VOLTAGE

WARNING

- Beware of electrocution.
 - Pay special attention to avoid electric shock when measuring high voltage.
 - Do not input voltage, which is more than 1000V DC.
- Plug the black test lead into the **COM** jack and the red test lead into the **INPUT** jack.
 - Set the rotary selector to the **V===** range position.
 - Connect the test leads to the voltage source or load terminals for measurement.
 - Take the reading on the LCD. The polarity symbol denotes the polarity of the end connected by the red test lead.

Note: At small voltage range, unsteady readings will appear before the test leads contact the circuit. This is normal because the meter is highly sensitive. When the leads contact the circuit the true readings will be shown.

- “ Δ ” means the maximum input voltage is 1000V DC.
- If the test result is more than 1000V DC, the symbol “OL” will be displayed on the LCD and the build-up buzzer will sound.



MEASURING FREQUENCY BY A RANGE (FROM CURRENT CLAMP)

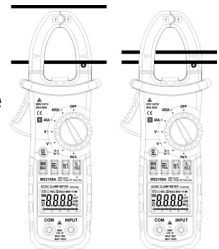
WARNING

- Beware of electrocution.
 - Ensure that the test leads are disconnected from the meter before making current clamp measurements.
- Set the rotary selector to the A range (**A~** or **A===**) position.
 - Press the trigger to open the jaw and fully enclose only one conductor.
 - Press the “Hz/%” button to switch to the frequency measurement.
 - Take the reading on the LCD.

Note: Do not put more than one cable into the jaw during testing, otherwise the

incorrect test value might be obtained.

- Frequency test range is 10Hz - 1kHz. "00.0" will be displayed on the LCD if the test frequency is lower than 10.0Hz. It is possible to test a frequency, which is higher than 1kHz, but the tolerance of the test result can't be ensured.
- "△" means the maximum input current is 400A rms AC.



Correct Incorrect

MEASURING FREQUENCY BY V RANGE

WARNING

- Beware of electrocution.
- Pay special attention to avoid electric shock when measuring high voltage. Do not input voltage, which is more than 750V rms AC.
- Plug the black test lead into the **COM** jack and the red test lead into the **INPUT** jack.
- Set the rotary selector to the **V~** range position.
- Press the "Hz/%" key to switch to frequency measurement.
- Connect the test leads to the two ends of the source or load for measurement.
- Take the reading on the LCD.

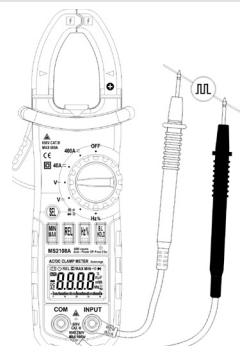
Note: Frequency test range is 10Hz - 10kHz. It is possible to test the frequency, which is higher than 10kHz, but the tolerance of the test result can't be ensured.

- "△" means the maximum input voltage is 750V rms AC.

MEASURING FREQUENCY BY HZ/DUTY RANGE

WARNING

- Beware of electrocution.
- Pay special attention to avoid electric shock when measuring high voltage. Do not input voltage, which is more than 250V rms AC.
- Plug the black test lead into the **COM** jack and the red test lead into the **INPUT** jack.
- Set the rotary selector to the **HZ/DUTY** range position.
- Connect the test leads to the two ends of the source or load for measurement.
- Take the reading on the LCD.



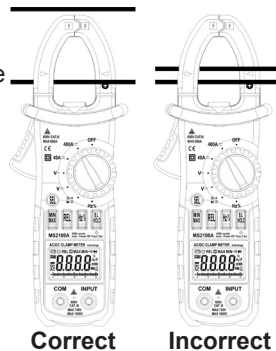
MEASURING DUTY CYCLE BY A RANGE (FROM CURRENT CLAMP)

WARNING

- Beware of electrocution.
- Ensure that the test leads are disconnected from the meter before making current clamp measurements.
- Set the rotary selector to the **A** range position.
- Press the trigger to open the jaw and fully enclose only one conductor.
- Press the "Hz/%" button to switch to Duty Cycle measurement.
- Take the reading on the LCD.

Note: Do not put more than one cable into the jaw during the test, otherwise incorrect values may be obtained.

- If the duty cycle is less than 10%, the symbol “UL” will be displayed on the LCD and if the duty cycle is more than 94.9%, the symbol “OL” will be displayed on the LCD.
- The input signal frequency range is 10 - 1kHz. It is possible to test duty cycle of a frequency signal higher than 1kHz, but the tolerance of the test result can't be ensured.
- “△” means the maximum input current is 400A rms AC.



MEASURING DUTY CYCLE BY V RANGE (FROM CURRENT CLAMP)

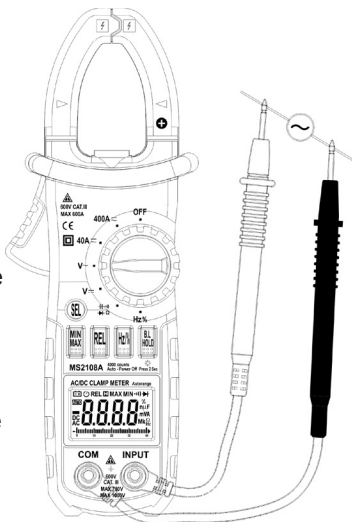
WARNING

- Beware of electrocution.
- Pay special attention to avoid electric shock when measuring high voltage.
- Do not input voltage, which is more than 750V rms AC.

- Plug the black test lead into the **COM** jack and the red test lead into the **INPUT** jack.
- Set the rotary selector to **V~** range position.
- Press the “**HZ/%**” button to switch to DUTY measurement.
- Connect the test leads to the two ends of the source or load for measurement.
- Take the reading on the LCD.

Note: If the duty cycle is less than 10%, the symbol “UL” will be displayed on the LCD and if the duty cycle is more than 94.9%, the symbol “OL” will be displayed on the LCD.

- The input signal frequency range is 10 - 10kHz. It is possible to test the duty cycle of a frequency signal higher than 10kHz, but the tolerance of the test result can't be ensured.
- “△” means the maximum input voltage is 750V rms AC.



MEASURING DUTY CYCLE BY HZ/DUTY RANGE

WARNING

- Beware of electrocution.
- Pay special attention to avoid electric shock when measuring high voltage.
- Do not input voltage, which is more than 250V rms AC.

- Plug the black test lead into the **COM** jack and the red test lead into the **INPUT** jack.
- Set the rotary selector to the **HZ/DUTY** range position.
- Press the “**HZ/%**” button to switch to Duty Cycle measurement.
- Connect the test leads to the two ends of the source or load for measurement.

- Take the reading on the LCD.

Note: If the duty cycle is less than 10%, the symbol “UL” will be displayed on the LCD. If the duty cycle is more than 99.9%, the symbol “OL” will be displayed on the LCD.

- The input signal frequency range is 10 - 10kHz. It is possible to test the duty cycle of a frequency signal higher than 10kHz, but the tolerance of the test result can't be ensured.
- “△” means the maximum input voltage is 750V rms AC.

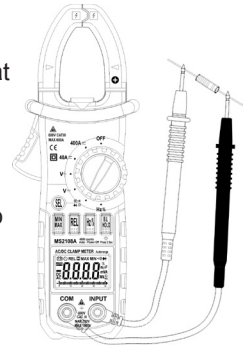
MEASURING RESISTANCE

WARNING

- Beware of electrocution.
- When measuring in-circuit resistance, make sure that the power of the circuit under test has been turned off and that all capacitors have been fully discharged.
- Plug the black test lead into the **COM** jack and the red test lead into the **INPUT** jack.
- Set the rotary selector to the Ω range position to ensure that the meter goes into ‘ Ω ’ range.
- Connect the test leads to the ends of the resistor or circuit for measurement.
- Take the reading on the LCD.

Note: When the input is open, the “OL” will appear on the LCD to indicate that the range has been exceeded.

- For measuring resistance above 1M Ω , it may take a few seconds to get a steady reading. This is normal for high resistance reading.



TESTING DIODE

- Plug the black test lead into the **COM** jack and the red test lead into the **INPUT** jack.
- Set the rotary selector to the \rightarrow range position.
- Press the “**SEL**” button to switch to \rightarrow test.
- Connect the red test lead to the anode and the black test lead to the cathode of the diode for testing.
- Take the reading on the LCD.

Note: The meter will show the approximate forward voltage drop of the diode.

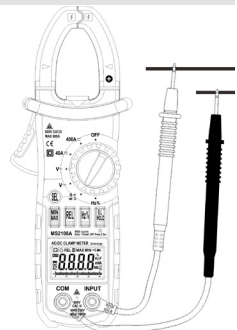
When the test leads have been reversed or opened, “OL” will appear on the LCD.

TESTING CONTINUITY

WARNING

- Beware of electrocution.
- Make sure that the power of the circuit has been turned off and the capacitors have been fully discharged before testing the continuity of a circuit.

- Plug the black test lead into the **COM** jack and the red test lead into the **INPUT** jack.
- Set the rotary selector to the \rightarrow range position.
- Press the “**SEL**” button to switch to \rightarrow continuity test.
- Connect the test leads to the two ends of the circuit for



measurement.

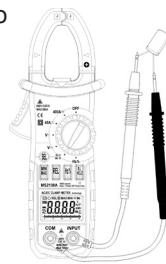
- If the resistance of the circuit being tested is less than 40Ω , the built-in buzzer may sound.
- Take the reading on the LCD.

Note: If the test leads are open or the resistance of the circuit is over 400Ω , “OL” will appear on the LCD.

MEASURING CAPACITANCE

WARNING

- Beware of electrocution.
 - To avoid electric shock, make sure that the capacitors have been fully discharged before measuring the capacitance of a capacitor.
- Plug the black test lead into the **COM** jack and the red test lead into the **INPUT** jack.
 - Set the rotary selector to the C range position.
 - After fully discharging the capacitor, connect the test leads to the two ends of the capacitor for measurement.
 - Take the reading on the LCD.



Note: It may take some time (about 30 seconds for the $400\mu\text{F}$ and $4000\mu\text{F}$ range) for steady reading when measuring high capacity.

- You must push the “REL” button when measuring less than 20nF .

MAINTENANCE

WARNING

- When replacing batteries, make sure that the test leads have been moved away from the circuit under measurement before opening the battery cover of the meter, in order to avoid electric shock.
- When replacing test leads, make sure the replacements are in good working condition with the same or equivalent rating: 1000V 10A.

Replacing Batteries

- If the low battery symbol appears, it means that the batteries should be replaced.
- Loosen the fixing screw of the battery cover and remove it.
- Replace the exhausted batteries with new ones.
- Put the battery cover back on and return the fixing screw.

Replacing Test Leads

- A test lead must be replaced if the insulation layer has been damaged or if the wire inside is exposed.



INFORMATION ON WASTE DISPOSAL FOR CONSUMERS OF ELECTRICAL & ELECTRONIC EQUIPMENT

These symbols indicate that separate collection of Waste Electrical and Electronic Equipment (WEEE) or waste batteries is required. Do not dispose of these items with general household waste. Separate for the treatment, recovery and recycling of the materials used. Waste batteries can be returned to any waste battery recycling point which are provided by most battery retailers. Contact your local authority for details of the battery and WEEE recycling schemes available in your area.

