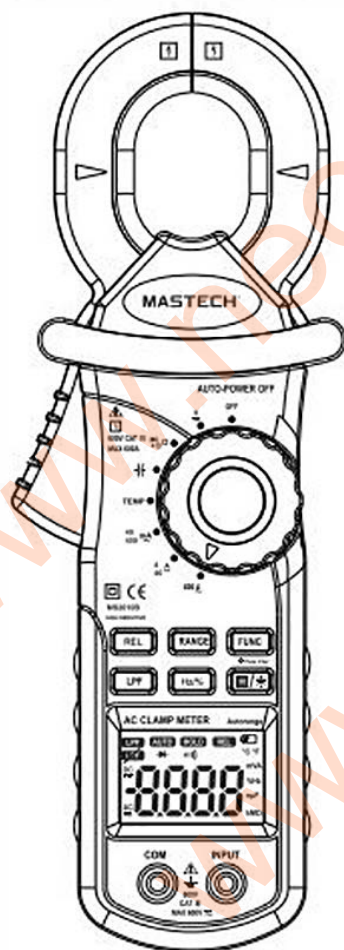


MASTECH®

MS2010B

AC Leakage Current Clamp Meter Instruction Manual



www.tools.in.th

ติดต่อบริษัท เนโอนิกส์ จำกัด

Tel: 02-077-7602 หรือ 061-8268939

E-mail: sale@tools.in.th หรือ sale@neonics.co.th

1. Safety information

The meter is a handheld and battery operated Digital AC Clamp Meter with multi function. This clamp meter has been designed to meet IEC61010-1 and CAT III over Voltage category.

⚠ Warning

To avoid possible electric shock or personal injury and possible damage to the meter or the equipment under test, you are must be adhere to the following rules.

1-1.Safety cautions

- User must be read the operating instructions thoroughly and completely before operating your meter. Pay particular attention to WARNING, which will inform you of potentially dangerous procedures.
- Do not apply more than the rated voltage ,of marked on the meter, between the "INPUT" terminal and "COM" terminal.
- Do not expose the instrument to direct sunlight, extreme temperature and moisture or dew full.
- You always are careful when working with voltage above 60V DC or 30V AC rms.
- Keep fingers behind the clamp barrier while measuring current..
- Always inspect the test lead for damaged insulation or exposed metal.

1-2. Symbols

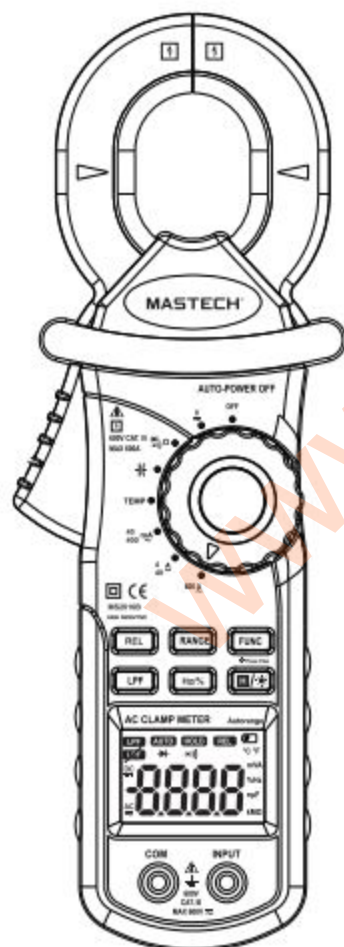
Note international Electrical Symbol.

	Dangerous Voltage		Ground
	AC (Alternating current)		Warning see explain in manual
	DC (Direct Current)		Double insulation

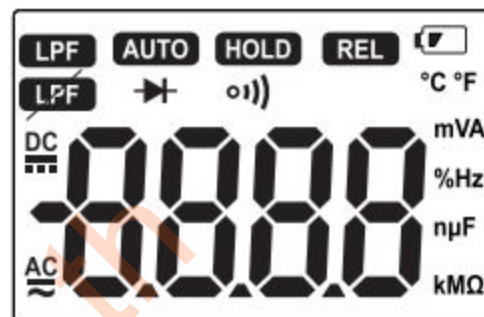
2. Meter illustration

2-1 Panel description

1. Clamp jaw ; it is as current transformer(CT) when measuring current flowing through the conductor.
2. Trigger
3. Clamp Barrier:
4. LCD display
5. "H/*" button : Hold & Back Light
When push this button, the display will keep the last reading. Once push again, the Meter will return the normal mode.
6. Knob: it is rotary switch for select function.
7. "Hz/%" button: Frequency & Duty cycle mode
8. "RANGE" button: Change Auto or Manual mode
9. "FUNC" button : Change function mode
10. "LPF" button: Used as Low Pass Filter ON/OFF switch.
11. "INPUT" terminal
12. "COM" terminal
13. "REL" push button: Relative measurement mode



2-2. LCD display



AC	Alternating current/ voltage	%	Duty cycle
DC	Directive current/voltage	mV, V	Voltage unites
Diode		mA, A	Current unites
Buzzer		C°	Temperature unite
		nF, μF	Capacitance unite
AUTO	Auto ranging mode	Ω, kΩ, MΩ	Resistance unites
REL	Relative measurement	Hz, kHz	Frequency unites
LPF	Use LPF		
LPF	No use LPF		
HOLD	Data hold		
Battery icon	Low battery indicator		

3. Specification

3-1. General feature

- Auto ranging Digital Clamp Meter. But the meter may select manual Function mode by "RANGE" button.
- 3 1/2 digit (200 count) LCD display
- Over load indication: "OL" symbol will displayed on the LCD.
- Jaw opening capability: 32mm

- Low battery indication: battery symbol is appears on the LCD.
- Auto power OFF: If the meter is idle for more than 15 minutes, the meter automatically turns the power off.
- Sampling rate: 2 times/s
- Power supply: 1.5V battery (AAA type) x 3pcs.
- Operating temperature & Humidity: 0°C to 40°C; <80%
- Storage temperature & Humidity: -10°C to 50°C; <70%RH
- Dimension (L x W x H) & Wight : 260 x 92 x 55mm; Approx. 400g

3-2. Electrical Specification

[1] AC Current

Range	Resolution	Accuracy	
40mA	0.01mA	(50 ~ 60Hz)	(30~50Hz,60~10KHz)
400mA	0.1mA	±(1%rdg+8dgt)	No available
4A	1mA		
40A	10mA		
400A	100mA		
600A	1A	±(1.5%rdg+3dgt)	

[2] AC Voltage

Range	Resolution	Accuracy	
400mV	0.1mV	(50 ~ 60Hz)	(30~50Hz,60~10KHz)
4V	1mV	±(0.8%rdg+5dgt)	±(2%rdg+10dgt)
40V	10mV		
400V	0.1V		
600V	1V		

[3] DC Voltage

Range	Resolution	Accuracy	Input impedance
400mV	0.1mV	±(0.7%rdg+3dgt)	10MΩ
4V	1mV		
40V	10mV		
400V	0.1V		
600V	1V	±(0.8%rdg+5dgt)	

[4] Frequency & Duty cycle measurement

The meter is may be measuring the frequency and duty cycle in the AC current range or AC voltage range by press the 'Hz/%' push key. Frequency range is 1Hz to 2KHz in the current range, and then 1Hz to 100KHz in the voltage range.

(4-1) Current measurement range

Range	Resolution	Accuracy	Over load protection
10Hz	0.001Hz	$\pm(2\%rdg+5dgt)$	250V DC or AC rms (by PTC protection circuit)
100Hz	0.01Hz	$\pm(1.5\%rdg+5dgt)$	
1000Hz	0.1Hz		
2kHz	1Hz		
>2kHz		No available	
1 to 99%	0.1%	$\pm 3\%$	

***Sensitivity is >AC 10mA(rms)

(4-2) Voltage measurement range

Range	Resolution	Accuracy	Over load protection
10Hz	0.001Hz	$\pm(2\%\text{rdg}+5\text{dgt})$	250V DC or AC rms (by PTC protection circuit)
100Hz	0.01Hz	$\pm(1.5\%\text{rdg}+5\text{dgt})$	
1000Hz	0.1Hz		
10kHz	1Hz		
100kHz	10Hz	$\pm(2\%\text{rdg}+5\text{dgt})$	
>100kHz		No available	
1 to 99%	0.1%	$\pm 3\%$	

***Sensitivity is >AC 0.1V (rms)

[5] Resistance

Range	Resolution	Accuracy	Over load protection
400Ω	0.1Ω	±(1%rdg+2dgt)	250V DC or AC rms (by PTC protection circuit)
4KΩ	1Ω		
40KΩ	10Ω		
400KΩ	0.1KΩ		
4MΩ	1KΩ		
40MΩ	10KΩ	±(2%rdg+5dgt)	