# HOLDPEAK
870MR
OPERATION MANUAL

This LCD Auto Range & Auto Power off Digital AC clamp multi meter is a portable, 3 3/4-digit multi meter. It is ideally suited for field, laboratory, shop and home applications.

1. SAFETY INFORMATION
The following safety information must be observed to in sure maximum personal safety during the operation at this meter.
1) When measuring voltage ensure that instrument is not switched to the current range, resistance range, diode and continuity range, capacitance range or temperature range.
2) Use extreme care when measuring voltage above 50V. especially from sources where high energy is existed.
3) Avoid making connections to "live" circuits whenever possible Before making resistance measurements, diode or continuity test, capacitance test or temperature test, ensure that the circuit under test is de-energized.
4) Always ensure that the correct function and range is selected.
5) Extreme care should be taken when using the instrument to conjunction with a current transformer connected to the terminals if an open circuit occurs.
6) Ensure that the test leads and probes are in good condition with no damage to the insulation.
7) Take care not to exceed the over-load limits as given in the specifications.
8) Before opening the cover of the battery cabinet to replace batteries. disconnect the test leads from any external circuit, set the selector switch to "OFF" position.
9) Keep the fingers after the protection ring when measuring through the instrument lead.
10) In order to avoid incorrect data, when the battery is low, they have to replace the battery

2. Panel Layout
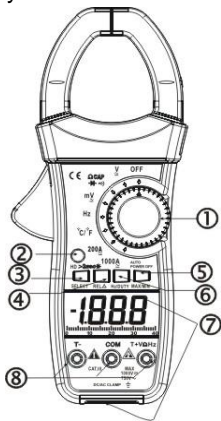
1）Rotary Switch: use this switch to select functions and ranges
2）D.HOLD key：In any range, push the key, the present display value will be locked and the "H " symbol will appear, push it again to exit HOLD and the " H" symbol disappear.
3）SELECT key：This tester turn on the "Ω" range. Push the key to choose resistance, diode ,continuity or capacitance test. This tester turn on the voltage or current range, Push "SELECT" to choose AC or DC test. This tester turn on the "℃/℉" range press this button, select ℃/℉ measurement;
4）REL key: Push the key, the present display value will be stored in memory ,then the new display value is the difference between input value and stored data. In Hz/Duty measurement, it can not work. Press this button the screen will also shows that "▲" symbol
5) Maximum / minimum measurement: Push this key ,the instrument enter into the model, dynamic record in change input signal to capture and record in the maximum signal (MAX) or minimum value (MIN)
6）Hz/DUTY key：In Hz range, push the key, you can measure the duty ,push again, go back to Hz measurement. In AC voltage or AC current range, push it, you can measure Hz and duty, but the measurement range will be smaller, and the auto range mode will be changed to manual range mode.
7）LCD Display：LCD Dual Display, facilitates reads the data.
8）"T+VΩHz" Input Jack 、COM Input Jack、"T-" Input Jack

2.1 GENERAL SPECIFICATIONS
Display: 3 3/4 digit LCD with a max. reading of 3999.
Range control: Auto range
Polarity: Automatic negative polarity indication.
Zero adjustment: Automatic.
Over range indication: Only the "OL" or "-OL"display.
Low battery: The "BATT" is display when the battery voltage is below 2.4V approx.

Auto Power Off: 15 minutes after stopping the switch or no push button, the meter automatically enter to power off mode. Push button or run switch, auto power off disable.
Safety Standards: The meter is up to the standards of IEC1010 Double Insulation, Pollution Degree 2, Overvoltage Category Ⅲ 600V.
Clamp opening size: 45mm.
Operating Environment: Temperature 0～104℉ (0～40℃), humidity＜80%RH.
Storage Environment: Temperature -4～140℉(-20～60℃), humidity＜80%RH.
Power supply: 9V Zinc-carbon battery.
Dimension: 225(H)×77(W)×45(D)mm.
Weight: Approx. 350g (including batteries).

2.2 ELECTRICAL SPECIFICATIONS
Accuracies are ±(% of reading +number in last digit) at 23±5℃,≤75%RH.

2.2.1 DC Voltage

Range	Accuracy	Resolution
40mv	0.8% of rdg+15digits	0.01mv
400mV		0.1mV
4V		1mV
40V		10mV
400V		100mV
1000V	1.2% of rdg+10 digits	1V

Overload protection: 1000V DC/750Vrms AC
Impedance: 10MΩ，More than100MΩ on 400mV scale

2.2.2 AC Voltage

Range	Accuracy	Resolution	Frequency
40mv	2.0% of rdg+15 digits	0.01mv	
400mV		0.1mV	
4V	1.0% of rdg+15 digits	1mV	50～400Hz
40V		10mV	
400V		100mV	
750V	2.5% of rdg+15 digits	1V	50～100Hz

Average sensing, calibrated to rms of sine wave
Overload protection: 1000V DC/750Vrms AC
Impedance: 10MΩ，More than 100MΩ on 400mV scale

2.2.3 DC Current

Range		Accuracy	Resolution
200A		3.0% of rdg+15 digits	0.1A
1000A	0～800	3.5% of rdg+15 digits	1A
	800～1000	6.5% of rdg+10 digits	

Overload protection: 1000Arms within 60 seconds

2.2.4 AC Current

Range		Accuracy	Resolution	Frequency
200A		3.0% of rdg+20 digits	0.1A	
1000A	0～800	3.5% of rdg+20 digits	1A	50～60Hz
	800～1000	6.5% of rdg+15 digits		

Average sensing, calibrated to rms of sine wave
Overload protection: 1000Arms within 60 seconds

AC Voltage(True RMS)

Range	Resolution	Accuracy				
		50-500Hz	500-1KHz	1K-5KHz	5k-10KHz	10K-20KHz
40mV	0.01mV	±(1.2%of rdg+10digits)	±(1.5%of rdg+10digits)	±(2%of rdg+10digits)	±(3.5%of rdg+10digits)	±(4.5%ofr dg+10digits)
400mV	0.1mV					
4V	1mV	50Hz-1KHz:±(3.0% of rdg +15 digits)				
40V	10mV	50Hz-400Hz:±(1.5% of rdg +10 digits)				
400V	100mV					
750V	1V	50Hz-400Hz:±(2.0% of rdg +10digits)				

input impedance : > 10MΩ Ohm ACV True RMS.
Overload protect : 1000V DCV or ACV peak value.

2.2.5 Resistance

Range	Accuracy	Resolution
400Ω	1.5% of rdg+20 digits	0.1Ω
4kΩ	1.2% of rdg+15 digits	1Ω
40kΩ		10Ω
400kΩ		100Ω
4MΩ		1kΩ
40MΩ	2.0% of rdg+20 digits	10kΩ

Overload protection: 250V DC/250Vrms AC

2.2.6 Capacitance

Range	Accuracy	Resolution
40nF	3.5% of rdg+30 digits	10PF
400nF	2.5% of rdg+20 digits	100PF
4uμF		1nF
40μF	5.0% of rdg+10 digits	10nF
400μF	20.0% of rdg+20 digits	100nF
4000μF		1μF

Overload protection: 250V DC/220Vrms AC

2.2.7 Frequency

Range	Accuracy	Resolution	Sensitivity
10Hz		0.01Hz	Range of input voltage:1.5V ~10V, If input voltage over range, need adjust
100Hz		0.1Hz	
1000Hz		1Hz	
10kHz	0.5% of rdg+10 digits	10Hz	
100kHz		100Hz	
1000kHz		1kHz	
10MHz		10kHz	

Overload protection: 250V DC/220Vrms AC
Duty cycle: 0.1%~99.9%
2.2.8 Temperature(NiCr-NiSi sensor)

Range		Accuracy	Resolution
℃/℉	-20~150℃	4℃	1℃/1℉
	-4~302℉	8℉	
	150~300℃ 302~572℉	3.0% of rdg+2 digits	
	300~1000℃ 572~1832℉	3.5% of rdg+5 digits	

Overload protection: 36V DC/36Vrms AC
2.2.9 Diode and Audible continuity test

Range	Description	Test condition
✦	Display read approx. forward voltage of diode	Forward DC current approx. 0.4mA Reversed DC voltage approx. 2.7V
)))	Built-in buzzer sounds if resistance is less than approx. 40Ω	Open circuit voltage approx. 0.5V

Overload protection: 250V DC/250Vrms AC

3. MEASURING INSTRUCTION
3.1 DC/AV Voltage measurement
1) Connect the black test lead to "COM" socket and red test lead to the "T＋VΩHz" socket.
2) Set the selector switch to desired "mV" or "V" position .According to need to press the "SELECT "button for AC/DC conversion
3) Read the result from the LCD panel.
3.2 AC/DC Current measurement
1) Set the selector switch to desired "200 "or "1000A " position, According to need to press the "SELECT " button for AC/DC conversion
2) Press the "REL" the display show "0" when test DC current.
Note:
As the jaw core may remain some magnetic force after using for a while. If the display can not reach "0" When Press the "REL", please take following process **to correct it:**
    A. To change the direction of the measured DC current.
    B. Open the JAWS several times.
ACA test not to need the step
3) Open the clamp by pressing the jaw-opening handle and insert the cable to be measured into the jaw.
4) Close the clamp and get the reading from the LCD   panel.
5) Push the D.HOLD button to lock display value, push it again to exit.
6) Push the LIGHT button to light the back light.
Note:
Before this measurement, disconnect the test lead with the meter for safety.
3.3Resistance measurement
1) Connect the black test lead to "COM" socket and red test lead to the " T＋VΩHz " socket.
2) Set the selector switch to desired "ΩCAP✦)))" position, the present function is resistance measurement, if it is other function, push the SELECT to select resistance measurement.
3) Connect the probes across circuit to be tested.
4) Read the result from the LCD panel.
 Caution:
①Ensure that the circuit to be tested is "dead". Max. input over-load: 250V rms＜10sec;
②Don't allow in electricity loop of the online measurement, measurement shall be first will loop before without electricity
3.5 Capacitance measurement
1) Connect the black test lead to "COM" socket and red test lead to the " T＋VΩHz " socket.
2) Set the selector switch to desired " ΩCAP✦)))" position. According to "the SELECT" button can switch to the functionality needed to yourself
 3) Connect the probes to the capacitance to be tested.
4) Read the result from the LCD panel.
Caution:
a) Capacitors should be discharged before being tested.
b) This device adopts charging mode to measure capacitance, so when testing large capacitance, it will take longer time before the final indication, and the larger capacitor, the longer the time (For 4000uF range, it will take about 30 seconds).
c) When testing small capacitance, to assure the measurement

accuracy, first press "REL", then go on measuring.
 Max. input over-load: 250V rms＜10sec
3.6 Frequency/Duty measurement
1) Connect the black test lead to "COM" socket and red test lead to the " T＋VΩHz " socket.
2) Set the selector switch to desired "Hz" position.
3) Connect the probes to the point of measurement and read the frequency from the display.
4) Push "Hz/DUTY", you can measure the duty. Press again, go back to frequency measurement.
Max.input over-load: 250V rms＜10sec
3.7 Diode test
1) Connect the black test lead to "COM" socket and red test lead to the "T＋VΩ" socket.
2) Set the selector switch to "ΩCAP✦)))" position. Push "SELECT" to select diode test.
3) Connect the black and red test probe to the cathode (-) and anode (+) ends of diode to be tested respectively, read the forward voltage drop (junction) value from the display. If reverse connected the probes to diode, display shows over-load.
 Caution: Ensure that the circuit to be tested is "dead".
Max .input over-load: 250V rms＜10sec
3.8 Audible continuity test
1) Connect the black test lead to "COM" socket and red test lead to the " T＋VΩHz " socket.
2) Set the selector switch to "ΩCAP✦)))" position.
3) Push "SELECT" to select audible continuity test.
4) Connect the probes across circuit to be tested, the beeper sounds continuously if the resistance is less than approx. 40Ω.
Caution: Ensure that the circuit to be tested is "dead". Max .input over-load: 250V rms＜10sec
3.9 Temperature measurement
1) Connect the black test lead of the sensor to "T-" socket and the red test lead to the " T＋VΩHz " socket.
2) Set the selector switch to "℃/℉" position.
3) Put the sensor probe into the temperature field under measurement.
4) Read the result from the LCD panel.
Max .input over-load: 250V rms＜10sec
A.   The temperature function must insert the thermocouple in temperature test hole while examining temperature.
B.   According to "the SELECT" button in the ℃ and ℉ to switch between
C.   This meter inclosure WRNM-010 type contact thermocouple limit temperature is 250 ℃ (300 ℃ shortly) ;
D.   Please don't change the thermocouple at will , otherwise we can't guarantee to measure accuracy ;
E.   Please don't importing the voltage in the temperature function.
4. CARE AND MAINTENANCE
4.1 CARING FOR YOUR MULTIMETER
  Your Digital Multi meter is an example of superior design and craftsmanship. The following suggestions will help you care for the multi meter so you can enjoy it for years.
1) Keep the multi meter dry. If it gets wet, wipe it dry immediately. Liquids can contain minerals that can corrode electronic circuits.
2) Use and store the multi meter only in normal temperature environments. Temperature extremes can shorten the life of electronic devices, damage batteries and distort or melt plastic parts.
 3) Please use this product carefully. Any dropping or damage will lead to the circuit boards break or product unable working normally
 4) When take current measurement, keep the cable at the center of the clamp will get more accurate test result.
 5) Keep the multimeter away from dust and dirt, which can cause premature wear of parts.
 6) Wipe the multimeter with a damp cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the multimeter.
 7) Use only fresh batteries of the required size and type. Always remove old or weak batteries. They can leak chemicals that destroy electronic circuits.
8) Please take out the battery when not using for a long time.
4.2 9Volt battery replacement
1) Ensure the instrument is not connected to any external circuit. Set the selector switch to "OFF" position and remove the test leads from the terminals.
2) Open the cover of the battery cabinet by a screwdriver.
3) Replace the old batteries with the same type batteries.
4) Close the battery cabinet cover and fasten the screw.