

AC/DC Digital Clamp Meter Instruction Manual

Please read this user manual carefully before using this product, and store it properly for future use.

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Safety Information

WARNING Please read this manual carefully before using this product.

“WARNING” mark indicates the condition and operation which may cause danger to users.

“CAUTION” mark refers to the condition and operation which may cause damage to the instrument or equipment.

WARNING In order to avoid possible electric shock or personal injury and other safety accidents, please abide by the following specifications.

- Please read this manual carefully.
- Use the instrument strictly according to this instruction, otherwise the protection function provided by the instrument may be damaged or weakened.
- Please be careful if the measurement exceeds 30V AC true RMS, 42V AC peak or 60V DC. There may be danger of electric shock at this kind of voltage.
- Voltage applied between terminals or between each terminal and grounding point shall not exceed the rated value.
- By measuring the known voltage or current to check whether the meter work is normal, if it is not normal or

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Safety Information

damaged, do not use it again.

- Before using the instrument, please check whether there are cracks in the instrument shell or plastic parts damaged. If so, please do not use again.
- Before using the instrument, please check whether the probe is cracked or damaged. If so, please replace the same type and the same electrical specifications.
- Do not exceed the lowest rated Category of Measurement (CAT) rating in products, probes or accessories.
- Do not measure the current when the probe is inserted into the input jack.
- Don't work alone.
- Do not measure unknown electrical signals after enabling the data retention function to prevent accidental accidents such as electric shock due to misjudgment of measurement data.
- Please comply with local and national safety code. Wear personal protection equipment (such as approved rubber gloves, masks and flame retardant clothes, etc.) to prevent being damaged by electric shock and electric arc due to exposed hazardous live conductor.
- When it shows low battery indicator, please replace the

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Safety Symbols

battery in time in case of any measurement error.

- Do not use the instrument around explosive gas, steam or in wet environment.
- When using the probe, please put your fingers behind the finger protector of the probe.
- When measuring, please connect the neutral wire or the ground wire firstly, then connect the live wire; When disconnecting, please disconnect the live wire firstly, then disconnect the neutral wire and ground wire.
- Before opening the outer cabinet or battery cover, please remove the probe on the instrument. Do not use the instrument in the circumstances that the instrument is taken apart or battery cover is opened.
- It only meets the safety standards when the instrument is used together with the supplied probe. If the probe is damaged and needs to replace, the probe with same model number and same electrical specifications must be used for replacement.

Safety Symbols

	High voltage warning
	AC (Alternating current)

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Overview

	DC (Direct current)
	AC or DC
	Warning, danger
	Ground
	Double insulation/reinforced insulation protection
	Low battery
	Product complies with all relevant European laws
	Frequency converter
	Inrush current measurement
	Low Input Impedance Voltage Measurement
	The additional product label shows that do not discard this electrical/electronic product into household garbage

Overview

This meter is a double impedance high performance true RMS digital clamp meter, which integrates multiple functions, makes your work easier, more efficient and safer.

It can measure AC/DC voltage, AC/DC current, frequency,

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Overview

duty, resistance, capacitance, temperature, diode, continuity, NCV, VFD, inrush current, etc.

High Input Impedance Voltage Measurement:

When measuring in a circuit, it has little effect on circuit performance. This is the desired effect for most voltage measurement applications and is especially important for sensitive electronic or control circuits.

Low Input Impedance Voltage Measurement (V):

It can safely troubleshoot sensitive electronic or control circuits and circuits that may contain false voltages, and can more reliably determine whether there is a voltage on the circuit.

Panel description

- NCV sensor
- Clamp
- Flashlight
- Knob switch
- Function key
- Display
- Measuring input jack
- Trigger

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Function operation

Function selection key: When there are multiple functions in one position, press this key to switch.

Inrush Function selection key: When there is a “INRUSH” function on the alternating current range, press this key to switch directly to the “INRUSH” function.

VFD Function selection key: When there is “VFD” function is available on the AC current and AC voltage ranges, press this key to switch directly to the “VFD” function.

Max/Min View Key: At current, voltage, functions. Press this key to cycle through the maximum and minimum values; Press this key for more than 2 seconds to exit this mode. After entering this mode, the meter will automatically switch to manual range.

When entering the maximum/minimum viewing mode, first press the range key to switch to the most suitable range.

Relative Value On/DC Current Zero Key: In DC current measurement mode, this key is zero. Before measuring DC current, if the display is not ZERO, press this key to turn on ZERO function first, and the display screen will display the “zero” character.

In the voltage, resistance, capacitance and temperature, this

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Operations

key is the relative value key. Press this key to turn on relative value measurement, the display screen will display “REL”, and press it again to exit the relative value measurement function.

Data Hold/Flashlight Key (Instrument side): Press this key to turn on data hold, and the display screen displays “H” character to show data locking. Press again to cancel; Press this key for more than 2 seconds to turn on or off the flashlight.

Operations

Auto power off

No operation in 15 minutes. The meter will power off automatically to save battery energy. After automatic power off, press any key to power on.

If you press the **REL** key and keep, then turn on the meter power, the auto power off function will be cancelled. After shutting down, restarting can restore the automatic shutdown function.

Inrush current measurement

- Turn the knob to **AC**, and select Proper range(60/600A or 1200A), press the **REL** key, the display screen shows the character “INRUSH”.
- Then press the trigger to open the clamp, clamp the

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Operations

conductor to be tested, and then slowly release the trigger until the clamp are completely closed, and determine whether the conductor to be tested is clamped in the center of the pliers, if the conductor is not in the center of the pliers, additional errors will occur.

- Turn on the equipment to be tested (such as motor) and then trigger the meter by inrush current.
- Read the measurement results on the display.

WARNING

- Before use, use the meter to test the known voltage or current, and confirm that the meter is in good condition.
- Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.

NOTE

- Please place the measured conductor in the center of the clamp head, otherwise additional error will occur.
- The measuring time of inrush current is about 100ms.

VFD current measurement

- Turn the knob to **AC**, and select Proper range(60/600A or 1200A), press the **REL** key, the display screen shows the character “VFD”.
- Then press the trigger to open the clamp, clamp the

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Operations

conductor to be tested, and then slowly release the trigger until the clamp are completely closed, and determine whether the conductor to be tested is clamped in the center of the pliers, if the conductor is not in the center of the pliers, additional errors will occur.

- Read the measurement results on the display.

WARNING

- Before use, use the meter to test the known voltage or current, and confirm that the meter is in good condition.
- Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.
- Please do not use VFD function to verify the presence of dangerous voltage or current, which may exceed the indicated value to avoid electric shock or personal injury.

NOTE

- Please place the measured conductor in the center of the clamp head, otherwise additional error will occur.

AC/DC current measurement

- Turn the knob to **AC**, and select proper range(60/600A or 1200A), press **REL** key until the “**AC**” character is displayed.
- When measuring DC current and the display screen shows

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Operations

that it is not ZERO, first press the **REL** key to clear it. The display screen shows the character “Zero”.

- Then press the trigger to open the clamp, clamp the conductor to be tested, and then slowly release the trigger until the clamp are completely closed, and determine whether the conductor to be tested is clamped in the center of the pliers, if the conductor is not in the center of the pliers, additional errors will occur.
- Read the measurement results on the display.

WARNING

- Before use, use the meter to test the known voltage or current, and confirm that the meter is in good condition.
- Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.
- Please do not use VFD function to verify the presence of dangerous voltage or current, which may exceed the indicated value to avoid electric shock or personal injury.

NOTE

- Please place the measured conductor in the center of the clamp head, otherwise additional error will occur.

The correct way to clamp wires for current measurement

The following figure:

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Operations

VFD Voltage measurement

- Turn the knob to the **VFD** position, press the **REL** key, and the display screen will show the “VFD” character.
- Insert red probe to “INPUT” jack, insert black probe to “COM” jack.
- Connect the probe with voltage source or both ends of load in parallel for measurement.
- Read the measurement results on the display.

WARNING

- Before use, use the meter to test the known voltage or current, and confirm that the meter is in good condition.

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Operations

- Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.
- Can not measure voltages higher than 750V AC or 1000V DC.
- Please do not use VFD function to verify the presence of dangerous voltage or current, which may exceed the indicated value to avoid electric shock or personal injury.
- After completing all measurement operations, disconnect the probe from the tested circuit in a timely manner.

AC/DC Voltage measurement

- Turn the knob to **V**, press **REL** key until the “**AC**” or “**DC**” character is displayed.
- Insert red probe to “INPUT” jack, insert black probe to “COM” jack.
- Connect the probe with voltage source or both ends of load in parallel for measurement.
- Read the measurement results on the display.

WARNING

- Before use, use the meter to test the known voltage or current, and confirm that the meter is in good condition.
- Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.
- Can not measure voltages higher than 750V AC or 1000V DC.

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Operations

- After completing all measurement operations, disconnect the probe from the tested circuit in a timely manner.

AC/DC Voltage measurement (LoZ)

- Turn the knob to **V**, press **REL** key to switch between AC or DC voltage measurement functions, and the display screen will show the “LoZ” character.
- When the display screen shows the “**LoZ**” symbol, it is direct current; When the symbol “**AC**” is displayed, it is alternating current.
- Insert red probe to “INPUT” jack, insert black probe to “COM” jack.
- Connect the probe with voltage source or both ends of load in parallel for measurement.
- Read the measurement results on the display.

WARNING

- Before use, use the meter to test the known voltage or current, and confirm that the meter is in good condition.
- Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.
- Can not measure voltages higher than 750V AC or 1000V DC.
- After completing all measurement operations, disconnect the probe from the tested circuit in a timely manner.

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Operations

CAUTION

- When using **V** (low input impedance) measurement, the continuous measurement time cannot exceed 1 minute.
- Do not use LoZ mode to measure voltage in circuits that may be damaged by the low impedance of this mode.

NOTE

- High input impedance: approx. 10MΩ
- Low input impedance: approx. 300kΩ

Resistance measurement

- Turn the knob to **Ω**, press the **REL** key to switch to the resistance measurement function.
- Insert red probe to “INPUT” jack, insert black probe to “COM” jack.
- Connect the probe to the both ends of resistor or circuit to be tested for measurement.
- Read the measurement results on the display.

WARNING

- When measuring circuit impedance, determine that the power supply is disconnected and the capacitor in the circuit is completely discharged.
- After completing all measurement operations, disconnect the probe from the tested circuit in a timely manner.

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Operations

- When measuring resistance on a circuit the reading may be affected by other paths between the probes.

Continuity test

- Turn the knob to **diode**, press **REL** key to switch to the continuity test function.
- Insert red probe to “INPUT” jack, insert black probe to “COM” jack.
- Connect the probe to the both ends of resistor or circuit to be tested for measurement.
- If the resistance value of the tested resistor or circuit is less than about 50Ω, the buzzer emits a “di” prompt sound, and the LED indicator light is on at the same time, the resistance value will be displayed.

WARNING

- When measuring circuit continuity, determine that the power supply is disconnected and the capacitor in the circuit is completely discharged.
- After completing all measurement operations, disconnect the probe from the tested circuit in a timely manner.

NOTE

- When measuring the continuity of a circuit, it may be affected by other pathways between the probes.

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Operations

Diode test

- Turn the knob to **diode**, press the **REL** key to switch to diode measurement function.
- Insert red probe to “INPUT” jack, insert black probe to “COM” jack.
- Connect the red probe to diode anode and connect the black probe to diode cathode.
- Read the measurement results on the display.
- If the polarity of the probe is opposite to that of the diode, the instrument will display “OL”, which can be used to distinguish between the anode and cathode of the diode.

WARNING

- When measuring diode, determine that the power supply is disconnected and the capacitor in the circuit is completely discharged.
- After completing all measurement operations, disconnect the probe from the tested circuit in a timely manner.

NOTE

- When measuring diodes on the line, the reading may be affected by other channels between the pens.

Capacitance measurement

- Turn the knob to **capacitance**, press the **REL** key until capacitance

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Operations

function.

- Insert red probe to “INPUT” jack, insert black probe to “COM” jack.
- Connect the probe to the both ends of capacitance to be tested for measurement.
- Read the measurement results on the display.

WARNING

- When measuring capacitance, determine that the power supply is disconnected and the capacitor in the circuit is completely discharged.
- After completing all measurement operations, disconnect the probe from the tested circuit in a timely manner.

NOTE

- When measuring small capacitors, turn on the relative value (REL) when the test leads are open to subtract the residual capacitance of the meter and leads.
- When measuring a capacitance greater than 100uF, it will take a longer time for accurate measurement.

Temperature measurement

- Turn the knob to **TEMP**.
- Insert the K-type thermocouple, the positive pole (red) of the thermocouple into the “INPUT” jack, and the

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Operations

negative pole (black) into the “COM” input.

- Contact the thermocouple probe with the measured object. Read the measurement results on the display.

WARNING

- When measuring temperature with thermocouple, the probe of thermocouple can't touch the charged object, otherwise it may damage the instrument and may suffer electric shock or personal injury.

NOTE

- It takes a long time for the cold end of thermocouple to be restored in the meter to achieve thermal balance with the environment.

Frequency/duty measurement

- Turn the knob to **Hz%**.
- Insert red probe to “INPUT” jack, insert black probe to “COM” jack.
- Connect the probe with voltage source or both ends of load in parallel for measurement.
- Read the measurement results on the display.

WARNING

- Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.

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Operations

- Before use, use the meter to test the known voltage or current, and confirm that the meter is in good condition.
- After completing all measurement operations, disconnect the probe from the tested circuit in a timely manner.

Inductance measurement (The upgraded version has this feature)

- Turn the knob to **H**.
- Insert red probe to “INPUT” jack, insert black probe to “COM” jack.
- Connect the probe with the object being measured, and the clamp gauge will automatically recognize the measurement.
- Read the measurement results on the display.

WARNING

- When the inductance of the tested object is below 2mH or exceeds 20H, it may not be possible to effectively detect the inductance of the tested object.

Non-contact AC Voltage (NCV) Detection

- Turn the knob to **NCV/LIVE**, the “NCV” symbol is displayed.
- Then NCV sensor gradually approaches the detected point.
- When a weak electromagnetic field signal is sensed, the “-” character is displayed, the buzzer emits a slow beep sound, and the LED indicator light is on.
- When a strong electromagnetic field signal is sensed, the

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Operations

“----” character is displayed, the buzzer emits a quick beep sound, and the LED indicator light is on.

NOTE

- When using NCV function, please remove the probe, otherwise the detection Sensitivity will be affected.

Live Detection

- Turn the knob to **NCV/LIVE**, press **REL** key until the “LIVE” Symbol is displayed.
- Insert red probe to “INPUT” jack.
- Connect the red probe to the conductor to be tested for measurement.
- When a low voltage is detected, the “LIVE” character is displayed, the buzzer does not make any sound, and the LED indicator light does not light up.
- When a high voltage is detected, the “----” character is displayed, the buzzer gives a quick beep sound, and the LED indicator light is on. In general, the fire line detected at this time.

NOTE

- When using Live function, please remove the black probe, otherwise the detection Sensitivity will be affected.

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General Technical Specifications

- Environment condition of using:
 - Safety: IEC 61010-1, Pollution level 2
 - IEC 61010-2-032: CAT III 1000V/CAT IV 600V
 - IEC 61010-2-033: CAT III 1000V/CAT IV 600V
 - Altitude < 2000m
 - Working environment temperature and humidity: 0~40°C (<80% RH, <10°C non condensing)
 - Storage environment temperature and humidity: -10~60°C (<70% RH, remove the battery)
- Temperature coefficient: 0.1×accuracy/°C (<18°C or >28°C)
- MAX. Voltage between terminals and earth ground: AC750V or DC1000V
- Sampling rate: approximately 3 times per second
- Display: 9999 counter readout. Automatically display the unit symbols according to the shift of the measurement function
- Over range indication: displays “OL”
- Low battery indication: when the battery voltage is lower than the normal working voltage, “**LoZ**” will be displayed
- Input polarity indication: automatically display “-”
- Clamp opening size: 40mm
- Auto power off: approx. 15 minutes

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Accuracy Specifications

- Power: 3 x 1.5V AAA batteries

Accuracy Specifications

The accuracy applies within one year after the calibration. Reference condition: the environment temperature 18°C to 28°C, the relative humidity is no more than 80%. Accuracy: (reading + word) .

DC current

Range	Resolution	Accuracy
60A	0.01A	±(2.5% reading+8)
600A	0.1A	
1200A	1A	
MAX current: 1200A		

NOTE: Press ZERO key to clear before measurement.

AC current

Range	Resolution	Accuracy
60A	0.01A	±(2.5% reading+8)
600A	0.1A	
1200A	1A	
MAX current: 1200A ; True RMS		

Frequency range: 0.1~600A: 40Hz~1kHz;
600~1200A: 40Hz~1kHz

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Accuracy Specifications

DC voltage

Range	Resolution	Accuracy
600mV	0.1mV	±(0.5%reading+5)
6V	0.001V	
60V	0.01V	
600V	0.1V	
1000V	1V	

Input impedance: 10MΩ(LoZ:300kΩ)

Overload protection: AC750V/DC1000V

Maximum input voltage: AC750V/DC1000V

NOTE: In the small voltage range, when the probe is not connected to the measuring circuit, the meter display reading may not be zero, which is normal and will not affect the normal measurement.

AC voltage

Range	Resolution	Accuracy
600mV	0.1mV	±(0.8%reading+5)
6V	0.001V	
60V	0.01V	
600V	0.1V	
750V	0.1V	

VFD(V~750V): 0.001V-0.1V ±(2.0%reading+5)

Input impedance: 10MΩ(LoZ: 300kΩ)

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Accuracy Specifications

Overload protection: AC750V/DC1000V

Maximum input voltage: AC750V/DC1000V

Frequency range: 40Hz ~ 1kHz; True RMS

NOTE: In the small voltage range, when the probe is not connected to the measuring circuit, the meter display reading may not be zero, which is normal and will not affect the normal measurement.

Resistance

Range	Resolution	Accuracy
600Ω	0.1Ω	±(1.0%reading+5)
6kΩ	0.001kΩ	
60kΩ	0.01kΩ	
600kΩ	0.1kΩ	
6MΩ	0.001MΩ	

60MΩ 0.01MΩ

Overload protection: 250V; Open circuit voltage: approx.0.5V

Continuity

<approx.50Ω, the buzzer sounds and the LED light on

Test Voltage Approx. 1V

Overload protection: 250V

Diode

It displays the approximate forward DC current is about 1.5mA

Reverse DC voltage is about 3V

Overload protection:250V

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Accuracy Specifications

Capacitance

Range	Resolution	Accuracy
10nF	0.01nF	±(4.0%reading+5)
100nF	0.1nF	
1000nF	1nF	
10μF	0.01μF	
100μF	0.1μF	
1000μF	1μF	
10mF	0.01mF	
100mF	0.1mF	
1000mF	0.1mF	
100mF	0.1mF	

Overload protection: 250V; The above accuracy does not include errors caused by probe capacitance.

Frequency/duty

Range	Resolution	Accuracy
10Hz	0.01Hz	±(1.0%reading+3)
100Hz	0.1Hz	
1000Hz	1Hz	
10kHz	0.01kHz	
100kHz	0.1kHz	
1000kHz	1kHz	
10MHz	0.01MHz	
1~99%	0.1%	

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Accuracy Specifications

Overload protection: 250V; Hz/Duty:

- Range: 0 ~ 10MHz
- Frequency signal range: >1/4 Range of measurement (As the frequency increases, the current should increase accordingly).

Temperature

Range	Resolution	Accuracy
°C	1°C	-20°C~0°C ±3°C
		0°C~400°C ±1.0% or ±2°C
		400°C~1000°C ±2%
°F	1°F	-4°F~32°F ±6°F
		32°F~752°F ±1.0% or ±4°F
		752°F~1832°F ±2.0%

NOTE: The above precision does not include the error of thermocouple probe.

Inductance (The upgraded version has this feature)

Range	Resolution	Accuracy
2mH	0.001mH	± (1.0%reading+3)
20mH	0.01mH	
200mH	0.1mH	
2H	0.001H	
20H	0.01H	

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Maintenance

WARNING: To avoid electric shock, remove the probe before opening the battery cover or back cover.

General maintenance

- Maintenance and service of this instrument must be carried out by professional qualified maintenance personnel or maintenance department.
- Use wet cloth or mild detergent regularly to clean the shell. Do not use abrasives or solvents. Wipe the contacts in the socket with a clean cotton swab soaked in alcohol.

Battery Installation or Replacement

The meter uses three AAA 1.5V batteries. Please install or replace the batteries according to the following steps.

- Turn off the power of the meter and remove the probe.
- Use screwdriver to unscrew the screw that fixes the battery cover and remove the battery cover.
- Remove the old battery and install the new battery according to the polarity of the battery marked in the battery box.
- After installing the new battery, cover the battery cover and lock the screw.

WARNING

To avoid the possibility of electric shock or personal injury caused by incorrect reading, replace the battery immediately when the “**LoZ**” sign is displayed on the display screen.

- Please use the same type of batteries, do not use substandard batteries.
- In order to ensure safe operation and maintenance of the instrument, please take out the battery when not in use for a long time, in order to prevent damage to the product caused by battery leakage.

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Maintenance

- To avoid the possibility of electric shock or personal injury caused by incorrect reading, replace the battery immediately when the “**LoZ**” sign is displayed on the display screen.
- Please use the same type of batteries, do not use substandard batteries.
- In order to ensure safe operation and maintenance of the instrument, please take out the battery when not in use for a long time, in order to prevent damage to the product caused by battery leakage.

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SIZE: 90×125mm