

# OPERATOR'S INSTRUCTION MANUAL AUTO RANGE DIGITAL CLAMP METER

MODEL:

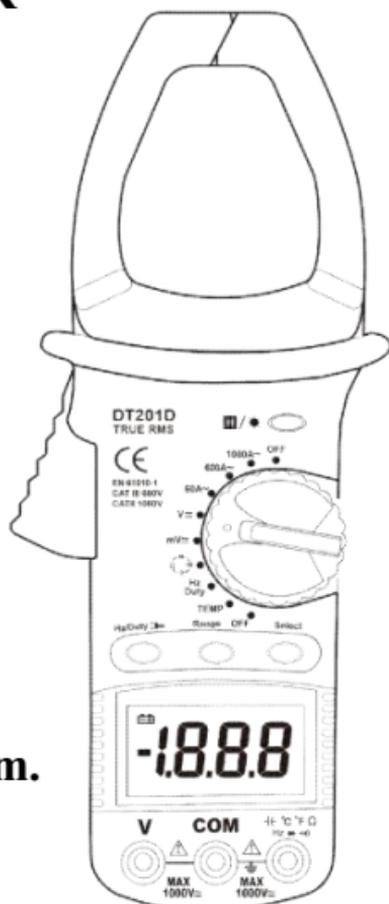
DT201D

You are welcome  
to contact us with  
your question via  
[support@astroai.com](mailto:support@astroai.com).



**WARNING**

**READ AND UNDERSTAND THIS MANUAL  
BEFORE USING THE INSTRUMENT.**



## 1. INTRODUCTION

This manual provides all safety information, operation instruction, specifications and maintenance for the meter, which is compact, handheld, and battery operated.

This instrument performs AC/DC voltage, AC Current, Resistance, Audible Continuity, Diode and Temperature measurements. It is a 3 5/6 digits, 6000 counts auto ranging digital clamp multimeter.

DT201D digital clamp multimeter has been designed according to EN61010-1 oncoming electronic measuring instruments with an over voltage category (CAT III 600V CAT II 1000V) and Pollution degree 2.

### Warning

To avoid possible electric shock or personal injury, and to avoid possible damage to the Meter or to the equipment under test, adhere to the following rules:

- Before using the Meter inspect the case. Do not use the Meter if it is damaged or the case (or part of the case) is removed. Look for cracks or missing plastic. Pay attention to the insulation around the connectors.
- Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity.
- Do not apply more than the rated voltage, as marked on the Meter, between the terminals or between any terminal and grounding.
- The rotary switch should be placed in the right

position and no any changeover of range shall be made during measurement is conducted to prevent damage of the Meter.

- When the Meter working at an effective voltage over 60V in DC or 30V rms in AC, special care should be taken for there is danger of electric shock.
- Use the proper terminals, function, and range for your measurements.
- Do not use or store the Meter in an environment of high temperature, humidity, explosive, inflammable and strong magnetic field. The performance of the Meter may deteriorate after dampened.
- When using the test leads, keep your fingers behind the finger guards.
- Disconnect circuit power and discharge all high-voltage capacitors before testing resistance, continuity or diodes.
- Replace the battery as soon as the battery indicator  appears. With a low battery, the Meter might produce false readings that can lead to electric shock and personal injury.
- Remove the connection between the testing leads and the circuit being tested, and turn the Meter power off before opening the Meter case.
- When servicing the Meter, use only the same model number or identical electrical specifications replacement parts.
- The internal circuit of the Meter shall not be altered at will to avoid damage of the Meter and any accident.

- Soft cloth and mild detergent should be used to clean the surface of the Meter when servicing. No abrasive and solvent should be used to prevent the surface of the Meter from corrosion, damage and accident.
- The Meter is suitable for indoor use.
- Turn the Meter power off when it is not in use and take out the battery when not using for a long time. Constantly check the battery as it may leak when it has been using for some time, replace the battery as soon as leaking appears. A leaking battery will damage the Meter.

## 2. GENERAL CHARACTERISTICS

Display	: LCD, 6000 counts updates 2/sec
LCD size	: 30*49 mm
Polarity Indication	: “-” displayed automatically
Over-range Indication	: “OL” displayed
Low Battery Indication	: “  ” displayed
Range select	: auto range or manual
True-RMS	: ACV ACMeasure
Operation Temperature	: 0°C to 40°C, less than 80%RH
Storage Temperature	: -10°C to 50°C, less than 85%RH
Battery Type	: 9V NEOA 1604, 6F22equivalent

Dimension(H×W×D)	: 245×66×45mm
Clamp open jaw	: Max. 42mm
Weight	: Approx 334g

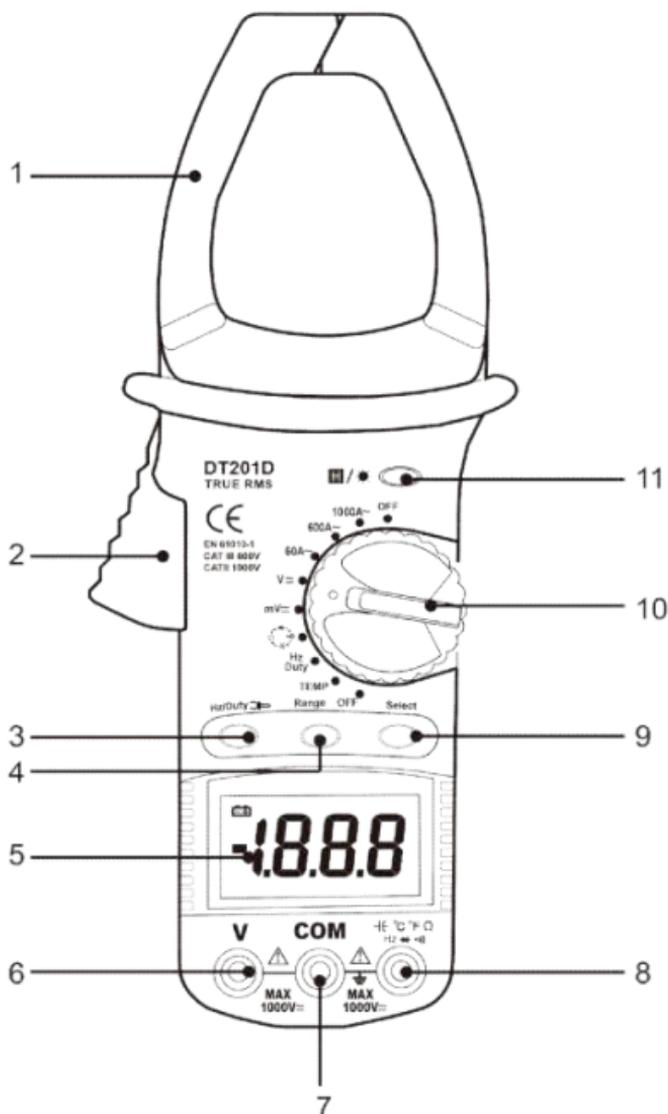
### 3. ELECTRICAL SYMBOLS

	DC (Direct Current)
	AC (Alternating Current)
	DC or AC
	Important safety information. Refer to the manual
	Dangerous voltage maybe present
	Earth ground
	Low battery
	Diode
	Continuity test
°C	Centigrade
AUTO	Auto range
CE	Conforms to European Union directive



Double insulated

## 4. PANEL DESCRIPTION



## 1、 Transformer Jaws

Pick up the AC Current flowing through the conductor.

## 2、 Trigger

Press the level to open the transformer jaws when the finger press on the level is released the jaws will close again.

## 3、 Hz/DUTY BUTTON

Push this button to select Hz or DUTY CYCLE measurement, at Hz positing. at AC curent position,can Measure frequency .

## 4、 RANGE BUTTON

AC/DC voltage, AC current and Resistance measuring ranges can be selected manually or automatically by pushing the range control button. Push this button as follows to choose range control mode and needed ranges.

## 5、 Display

3 5/6 digit LCD, with a max. reading of 5999

## 6、 “ $\left( \begin{array}{c} \text{°C} \text{ °F} \Omega \\ \text{Hz} \rightarrow \bullet \bullet \bullet \end{array} \right) \right)$ ” Input Connect

High input for all except voltage , measurement will accept banana plugs.

## 7、 COM Input Jack

Low input for all voltage, resistance, and continuity etc measurement will accept banana plugs.

## 8、 “ $\left( \begin{array}{c} \Omega \\ \left( \begin{array}{c} \rightarrow \bullet \bullet \bullet \\ \leftarrow \end{array} \right) \end{array} \right) \right)$ ” RANGE

resistance,continuity,capacitance,diode , Push selcet button

to choose needed ranges.

## **9、 SELECTING BUTTON**

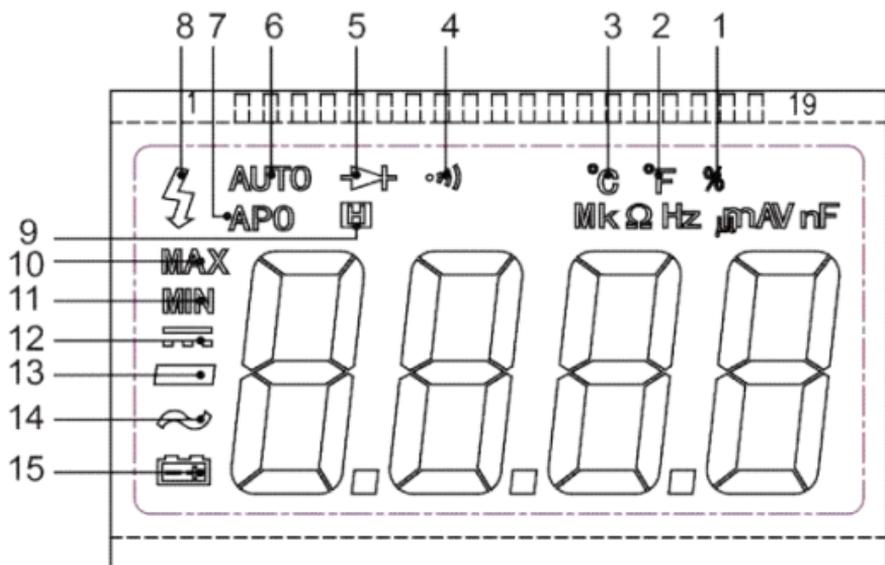
Push this button to select  $\Omega$ ,  $\rightarrow+$ ,  $\bullet$ ) or  $\rightarrow$  measuring function when the function switch is set at  $\Omega \rightarrow \bullet$ )  $\rightarrow$  range.

## **10、 Function Switch / Range Switch**

This switch can be used to select desired function and range.

## **11、 D.HOLD BUTTON**

When this button is pushed, LCD will show the last reading, and "H" symbol will appear till pushed again. Back light function, push this button for more than 3 seconds, back light will light, after 15 seconds, back light will turn off automatically.



- 1、 Duty Cycle is selected
- 2、 Fahrenheit temperature test is selected
- 3、 Celsius degree test is selected
- 4、 Continuity test is selected
- 5、 Diode test is selected
- 6、 Aurange mode is selected
- 7、 Automatic power-off mode is selected
- 8、 high voltage warning symbol
- 9、 Data Hold is enabled
- 10、 MAX - Maximum reading is being displayed
- 11、 MIN - Minimum reading is being displayed
- 12、 DC
- 13、 Negative sign
- 14、 AC
- 15、 Low Battery and replaced immediately

## 5. SPECIFICATIONS

Accuracy is guaranteed for 1 year 23°C±5°C less than 80%RH

### 5-1. DC VOLTAGE (Auto ranging)

Input Impedance: 10MΩ

Range	Resolution	Accuracy
600mV	0.1mV	±(0.8% of rdg + 5dpts)
6V	1mV	±(0.8% of rdg + 3dpts)
60V	10mV	
600V	100mV	
1000V	1V	±(1.0% of rdg + 5dpts)

Overload Protection:

600V AC RMS CAT III, 1000V AC RMS CAT II

Max. Input voltage:

600V AC RMS CAT III, 1000V AC RMS CAT II

### 5-2. AC CURRENT (Auto ranging)

Measuring voltage drop: 200mV

Range	Resolution	Accuracy
60A	10mA	±(2.5% of rdg + 10dpts)
600A	100mA	
1000A	1A	

show True-RMS value

### 5-3. AC VOLTAGE (Auto ranging)

Range	Resolution	Accuracy
600mV	0.1mV	±(1.2% of rdg + 8dpts)
6V	1mV	±(1.2% of rdg + 6dpts)
60V	10mV	
600V	100mV	
750V	1V	±(1.2% of rdg + 8dpts)

Input Impedance: 10M $\Omega$

Input Impedance: 10M $\Omega$

Overload Protection: 600V AC RMS CAT III, 1000V AC RMS CAT II

Max. Input voltage: 600V AC RMS CAT III, 1000V AC RMS CAT II

show True-RMS value

#### 5-4. TEMPERATURE

Range	Resolution	Accuracy
-40 ~ 1370°C	1°C	-40°C~150°C:±(1% + 4)
		150°C~1370°C:±(2% + 3)
-40 ~ 2000°F	1°F	-40°F~302°F:±(5% + 4)
		302°F~2000°F:±(2.5% + 4)

Overload Protection: 250V DC/AC rms

#### 5-5. RESISTANCE (Auto Ranging)

Range	Resolution	Accuracy
600 $\Omega$	0.1 $\Omega$	±(1.5% of rdg + 5dgts)
6K $\Omega$	1 $\Omega$	
60K $\Omega$	10 $\Omega$	
600K $\Omega$	100 $\Omega$	
6M $\Omega$	1K $\Omega$	
60M $\Omega$	10K $\Omega$	

Open Voltage: about 0.25V

Overload Protection: 250V DC/AC RMS

#### 5-6. Diode and Continuity

Range	Introduction	Remark
	The approximate forward voltage drop will be displayed	Open circuit voltage: about 1.5V

	The built-in buzzer will sound if the resistance is less than about 30Ω.	Open circuit voltage: about 0.5V
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Overload Protection: 250V DC/AC RMS

For continuity test: When the resistance is between 30Ω and 100Ω, the buzzer may sound or may not sound. When the resistance is more than 100Ω, the buzzer won't sound.

### 5-7.1 FREQUENCY (Auto Ranging)

Range	Accuracy
0 ~ 60MHz	±(1.0% of rdg + 5dgts)

### 5-7. 2 FREQUENCY ( through clamp )

Range	Accuracy
50 ~ 1KHz	±(1.5% of rdg + 5dgts)

### 5-8. CAPACITANCE (Auto Ranging)

Range	Accuracy
60nF/600nF/6uF 60uF/400uF/20mF ( 10sec )	±(8.0% of rdg + 5dgts)

### 5-9. DUTY CYCLE

Range	Resolution	Accuracy
0.01%~99.9%	0.01%	±1%

For value between 10% and 90% duty cycle at 50Hz.

## 6. OPERATION INSTRUCTION

### 6-1. Measuring Voltage

- 1) Connect the BLACK test lead to the "COM" jack and the RED to the "V" jack.
- 2) Set the function switch to  $V_{\sim}$  or  $V_{\overline{\sim}}$  range.
- 3) Connect the test leads across the source or load to be

measured.

- 4) Read LCD display. The polarity of the RED lead connection will be indicated when making a DC measurement.

**Note:**

- a. In small range example mV range , the meter may display an unstable reading when the test leads have not been connected to the load to be measured. It is normal and will not affect the measurements.
- b. To avoid damage to the meter, don't measure a voltage which exceeds 600V (for DC voltage measurement) or 600V(for AC voltage measurement) , under CAT III conditions.and 1000V(for DC voltage) 750V(for AC voltage) under CAT II conditions.

### 6-2. Measuring Current

- 1) Set Function/Range Switch to the 60A 600A 1000A range.
- 2) Press the trigger to open the transformer jaws and clamp one conductor only it is impossible to make measurements when two or three conductors are clamped at the same time.
- 3) Display reading is flowing the conductor AC current.

### 6-3. Measure Resistance

- 1) Connect the BLACK test lead to the "COM" jack and the RED to the "  $\Omega$  °C °F  $\Omega$  " jack (Note: The polarity of the red test lead is positive "+").



- 2) Set the function switch to  $\Omega$  range.

- 3) Press "RANGE" button can be select manually measurement
- 4) Press "SELECT" button to select resistance measurement mode, the symbol " $\Omega$ " will appear as an indicator.
- 5) Connect the test leads across the load to be measured.
- 6) Read the reading on the display.

**Note:**

- a. For resistance measurements  $>1\text{M}\Omega$ , the meter may take a few seconds to stabilize reading. This is normal for high-resistance measurement.
- b. When the input is not connected, i.e. at open circuit, the symbol "OL" will be displayed as an over range indicator.
- c. Before measuring in-circuit resistance, be sure that the circuit under test has all power removed and all capacitors are fully discharged.

#### 6-4. Continuity Test

- 1) Connect the BLACK test lead to the "COM" jack and the RED to the " $\Omega$  Hz  $\rightarrow$   $\Omega$   $\rightarrow$   $\Omega$ " jack (Note: The polarity of the red test lead is positive "+").



- 2) Set the function switch to " $\Omega$  Hz  $\rightarrow$   $\Omega$   $\rightarrow$   $\Omega$ " range
- 3) Press the "SELECT" Button to select continuity measurement mode, and the symbol " $\rightarrow$   $\Omega$   $\rightarrow$   $\Omega$ " will appear as an indicator.
- 4) Connect the test leads across the load to be measured.
- 5) If the circuit resistance is lower than about  $30\Omega$ , the built-in buzzer will sound.

## 6-5. Diode Test

- 1) Connect the BLACK test lead to the "COM" jack and the RED to the "  $\Omega$   $^{\circ}\text{C}$   $^{\circ}\text{F}$   $\Omega$  Hz  $\rightarrow$   $\bullet$   $\parallel$  ) " jack (Note: The polarity of the red test lead is positive "+").



- 2) Set the function switch to "  $\Omega$   $^{\circ}\text{C}$   $^{\circ}\text{F}$   $\Omega$  Hz  $\rightarrow$   $\bullet$   $\parallel$  ) " range
- 3) Press the "SELECT" Button to select continuity measurement mode, and the symbol "  $\bullet$   $\parallel$  ) " will appear as an indicator.
- 4) Connect the red test lead to the anode of the diode to be tested and the black test lead to the cathode.
- 5) The meter will show the approximate forward voltage of the diode. If the connections are reversed, "OL" will be shown on the display.

## 6-6. Measuring Temperature

- 1) Set the function range switch at the TEMP position.
- 2) Make sure the polarity of the thermocouple is correct; put the cold end (free end) of the thermocouple sensor into the terminal (black to COM jack and red to "  $\Omega$   $^{\circ}\text{C}$   $^{\circ}\text{F}$   $\Omega$  Hz  $\rightarrow$   $\bullet$   $\parallel$  ) " jack).
- 3) Set the working end (testing end) on or inside the object under test.
- 4) The value of the temperature is shown on the display in degree centigrade ( $^{\circ}\text{C}$ ).
- 5) Press the "SELECT" Button, fahrenheit and celsius can be converted to each other.

## 6-7. Capacitance Measuring

- 1) Connect the BLACK test lead to the "COM" jack and the

⌚ °C °F Ω  
RED to the “ Hz ⚡ )) ” jack.



- 2) Set the function switch at “ ⌚ ” position. (NOTE: The polarity of the RED lead is positive “+”)
- 3) Connect test leads across the capacitor under measure and be sure the polarity of connection is observed.

**Note:** When the capacitance under measure is above 100uF, it needs at least 5 second to make readings stable.

### 6-8. Frequency Measuring(auto range)

- 1) Set the function range switch to the required “Hz/DUTY” position.
- 2) Connect the BLACK test lead to the “COM” jack and the RED to the “ ⌚ °C °F Ω ” jack (Note: The polarity of the red test lead is positive “+”).
- 3) Connect the test leads across the load to be measured.

Note: Do not apply more than 250V rms to the input. Indication is possible a voltage higher than 100V rms, but reading maybe out of specification.

At the same time using the clamp hand to test AC current, press  key, the meter shows the frequency of the measured current.

### NOTE:

- a) The testing temperature is displayed automatically when

the thermocouple is put into the testing holes.

b) The surrounding temperature is shown when the circuit of the sensor is cut off.

c) The limit temperature measured by the thermocouple given together with the instrument is 250°C; 300°C is acceptable within short period, if need to measure higher temperature, you must to buy the higher thermocouple.

## **7. Auto Power Off**

If you don't operate the meter for about 15 minutes, it will turn off automatically. To turn on it again, just rotate the range switch or press a button.

## **8. BATTERY REPLACEMENT**

If the sign “” appear on the display, it indicates battery should be replaced. Remove screws and open the back case, replace the exhausted battery with new batteries (9V NEDA 1604, 6F22 equivalent).

## **9. ACCESSORIES**

Owners manual:	1 piece
Test leads:	1 pair
K type thermocouple:	1 piece
Battery(9V 6F22):	1 piece



## WARRANTY

This Instrument is warranted to be free from defects in material and workmanship for a period of one year. Any instrument found defective within one year from the delivery date and returned to the factory with transportation charges prepaid, will be repaired, adjusted, or replaced at no charge to the original purchaser. This warranty does not cover expandable items such as batteries & fuses. If the defect has been caused by a misuse or abnormal operating conditions, the repair will be billed at a nominal cost.

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