



Model ATD-5599
DC/AC CLAMP METER
OPERATING INSTRUCTIONS



I.Safety Information

The following safety information must be observed to insure maximum personal safety during the operation of this meter:

- Do not use the meter if the meter or test leads look damaged, or if you suspect that the meter is not operating properly.
- Never ground yourself when taking electrical measurements. Do not touch exposed metal pipes, outlets, fixtures, etc., which might be at ground potential. Keep your body isolated from ground by using dry clothing, rubber shoes, rubber mats, or any approved insulating material.
- Turn off power to the circuit under test before cutting, unsoldering, or breaking the circuit. Small amounts of current can be dangerous.
- Use caution when working above 60V dc or 30V ac rms. Such voltages pose a shock hazard.
- When using the probes, keep your fingers behind the finger guards on the probes.
- Measuring a voltage exceeding the limits of the multimeter may damage the meter and expose the operator to a shock hazard. Always recognize the meter voltage limits as stated on the front of the meter.

SAFETY SYMBOLS



Indicates operators must refer to the explanation in this manual.



Indicates terminals at which dangerous voltage maybe present.

WARNING

To avoid electrical shock hazard or damage to the meter, do not apply input which exceeds the limits shown below:

<u>Function</u>	<u>Terminal</u>	<u>Input limits</u>
DCV/ACV	“V/ Ω /Hz”	600V dc or ac rms.
Ω /Continuity/Diode/Cap.	“V/ Ω /Hz”	250V dc or ac rms.
Freq / Duty	“V/ Ω /Hz”	250V dc or ac rms.

II. Features

1. Accurate DC/AC digital clamp meter for current measurement.
2. 10mA high resolution on 40A DC/AC range.
3. One touch zero adjustment for DC Current measurement.
4. Clamp opening 7/8 inch.
5. 4000 count LCD display with function indication
6. 40A, 200A DCA/ACA clamp meter with additional functions of DCV, ACV, OHM, Frequency, Duty cycle, Diode test, Capacitance and Continuity measurements.
7. Auto-ranging for DC/AC voltage, Resistance, Frequency, Duty cycle and Capacitance measurement.
8. Auto power off
9. Data Hold function

III. Panel Description

1. Transformer Jaw

This is used to pick up current signal. To measure DC/AC current, clamp must be closed and over conductor wire.

2. Transformer Trigger

This is used to open the jaw

3. Function Selector Switch

This is used to select the function user desired, such as DCA, ACA, DCV, ACV, Hz/Duty, Ohm / Diode / Continuity / Capacitance measurement.

4. ON/OFF Switch

This is used to turn the power on or off

5. Data Hold Button

Once this button is pushed, reading shall be held on the LCD, Press again to release it.

6. Zero Button

Once this button is pressed, the Amps reading shall be set to zero.

This function is used to remove offset value caused by the residual magnetism remaining in the core for the DC current measurement.

7. LCD

This is a 3 3/4 digit Liquid Crystal Display with maximum 3999 counts and function indication.

8. Low Battery Symbol

When this symbol appears, it means the battery voltage drops below the minimum required voltage. Refer to Section V for battery replacement

9. “V Ω Hz” Input Terminal

This terminal is used as input for voltage, Ohm/ Frequency, Duty cycle, Diode, Capacitance and Continuity measurements.

10. “COM” Terminal

This terminal is used as common reference input

11. Wrist Strap

Hand is placed through the wrist strap to keep unit from dropping.

IV. Specification (22°C ~28°C)(71°F ~82°F)

Maximum Voltage: 600V rms. (Between any terminal and earth ground)

Safety: Designed to Protection Class II requirement of EN61010-1 over-voltage Category II (CAT II).

Display: 4000 counts LCD display with function indication

Polarity: Automatic, (-) negative polarity indication.

Overrange: “OL” mark indication.

Low battery indication: The “BAT” is displayed when the battery voltage drops below the operating level.

Measurement rate: 2 times per second, nominal.

Auto power off : Meter automatically shuts down after approx. 30 minutes of inactivity.

Operating environment: 0°C to 50°C at <70% relative humidity.

Storage temperature: -20°C to 60°C at <80% relative humidity.

Power: One 9V, NEDA1604, IEC6F22 Battery.

Dimensions: 181.0x43.0x30.3mm

Weight: Approx.: 225g.

Accuracy is given at 23°C ± 5°C, less than 70% RH

DC Current:

Range		Resolution	Accuracy
40A	0-20A	10mA	± 3.0% ± 6dpts
	20A-40A	10mA	± 5.0% ± 6dpts
200A		100mA	± 3.5% ± 3dpts

One touch Zero for offsets adjustment

Maximum Input: 200A DC Max.

AC Current:

Range	Resolution	Accuracy			
		50~60Hz	60~100Hz	100~400Hz	400~1000Hz
0-20A	10mA	± 3% ± 4dpts	± 3% ± 7dpts	± 3% ± 10dpts	± 3% ± 30dpts
20-40A	10mA	± 5% ± 4dpts	± 5% ± 7dpts	± 5% ± 10dpts	± 5% ± 30dpts
200A	100mA	± 3.5% ± 4dpts	± 3.5% ± 7dpts	± 3.5% ± 10dpts	± 3.5% ± 30dpts

Frequency Range: 40 to 1000 Hz

Maximum Input: 200A AC rms. Max.

DC Voltage (Auto-ranging)

Range	Resolution	Accuracy
400.0mV	0.1mV	$\pm 0.8\%$ of rdg ± 2 dgts
4.000V	1mV	$\pm 1.0\%$ of rdg ± 2 dgts
40.00V	10mV	
400.0V	100mV	
600V	1V	$\pm 1.5\%$ of rdg ± 2 dgts

Input Impedance: $10M\Omega$.

Maximum Input: 600V dc or 600V ac rms.

AC Voltage (Auto-ranging)

Range	Resolution	Accuracy
4.000V	1mV	$\pm 1.5\%$ of rdg ± 3 dgts
40.00V	10mV	
400.0V	100mV	
600V	1V	$\pm 2.0\%$ of rdg ± 4 dgts

Input Impedance: $10M\Omega$.

Frequency Range: 40 to 400Hz

Maximum Input: 600V dc or 600V ac rms.

Resistance (Auto-ranging)

Range	Resolution	Accuracy
400.0 Ω	0.1 Ω	$\pm 1.2\%$ of rdg ± 4 dgts
4.000k Ω	1 Ω	$\pm 1.2\%$ of rdg ± 2 dgts
40.00k Ω	10 Ω	
400.0k Ω	100 Ω	
4.000M Ω	1k Ω	$\pm 2.0\%$ of rdg ± 3 dgts
40.00M Ω	10k Ω	

Input Protection: 250V dc or 250V ac rms.

Capacitance (Auto-ranging)

Range	Resolution	Accuracy
4.000nF	1pF	$\pm 6.0\%$ of rdg ± 15 dgts

40.00nF	10pF	$\pm 6.0\%$ of rdg ± 10 dgts
400.0nF	0.1nF	$\pm 3.5\%$ of rdg ± 5 dgts
4.000uF	1nF	
40.00uF	10nF	$\pm 6.0\%$ of rdg ± 10 dgts
200.0uF	0.1uf	

Input Protection: 250V dc or 250V ac rms.

Frequency (Auto-ranging)

Range	Resolution	Accuracy
9.999Hz	0.001Hz	$\pm 1.2\%$ of rdg ± 8 dgts
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	$\pm 0.8\%$ of rdg ± 3 dgts
9.999kHz	1Hz	
99.99kHz	10Hz	
999.9kHz	100Hz	
9.999MHz	1kHz	$\pm 2.0\%$ of rdg ± 8 dgts

Sensitivity: 0.8V RMS min. at $>20\%$, $<80\%$ duty cycle and $<100\text{kHz}$;

5.0V RMS min. at $>20\%$, $<80\%$ duty cycle and $> 100\text{kHz}$;

Effect Reading: More than 100 digits at pulse width $> 2\mu\text{Sec}$.

Overload protection: 250V dc or ac rms.

Duty Cycle

Range	Resolution	Accuracy
0.1%~99.9%	0.1%	$\pm 1.2\%$ of rdg ± 2 dgts

Pulse width: $>100\mu\text{s}$, $<100\text{ms}$.

Overload protection: 250V dc or ac rms.

Diode Test

Test current	Resolution	Accuracy
0.3 mA typical	1 mV	$\pm 10\%$ of rdg ± 5 dgts

Open circuit voltage: 1.5V dc typical

Overload protection: 250V dc or ac rms.

Audible continuity

Audible threshold: Less than 30 Ω

Test current: <0.3mA

Overload protection: 250V dc or ac rms.

V. Operation Instructions

Before taking any measurements, read the Safety Information Section.

Always examine the instrument for damage, contamination (excessive dirt, grease, etc.) and defects. Examine the test leads for cracked or frayed insulation. If any abnormal conditions exist do not attempt to make any measurements.

ZERO BUTTON:

For DCA, ACA and Capacitance Zero & offset adjustment.

It also can be used on DCV 400.0mV and ACV 4.000V range for offset adjustment.

Hz / % / OHM / DIODE / CONTINUITY / CAPACITANCE

SELECTING BUTTON:

Push this button to select ohm/diode/continuity/capacitance measuring function when the function switch is set at ohm/diode/buzzer/capacitance position.

Push this button to select Hz/%(duty cycle) measuring function when the switch is set at Hz/% duty cycle position.

DATA HOLD BUTTON:

When this button is pushed, the display will show the last reading and “HOLD” symbol will appear until pushing it again.

Data hold will be canceled automatically when the function switch is pushed again.

DC/AC Current Measurements

WARNING: Make sure that all the test leads are disconnected from the meter's terminals for current measurement

1. DC Current

- a. Set the rotary switch at 40A DC or 200A DC.
- b. Push the Zero Button to set the reading at zero. If the reading does not set completely at zero, release the button and press it again.
- c. Press the trigger to open the jaw. Fully enclose the jaw around the conductor wire to be measured.
- d. Read the measured value from the LCD display.
- e. For following measurements, remove any residual magnetism by pressing the zero button.

2. AC Current

- a. Set the rotary switch at 40A AC or 200A AC.
- b. Press the trigger to open the jaw and fully enclose the conductor to be measured. No air gap is allowed between the two half jaws.
- c. Read the measured value from the LCD display.

DC/AC Voltage Measurements (Auto-ranging)

1. DC Voltage

- a. Set the rotary switch at DCV.
- b. Insert the test leads into the input jacks.
- c. Connect the test probe in parallel with the circuit to be measured.
- d. Read the measured value from the LCD display.

2. AC Voltage

- a. Set the rotary switch at VAC.
- b. Insert the test leads into the input jacks.
- c. Connect the test probe in parallel with the circuit to be measured.
- d. Read the measured value from the LCD display.

WARNING: Before taking any in-circuit resistance measurement, turn off all power to the circuit being tested and discharge all the capacitors.

Resistance, Diode, Continuity and Capacitance Measurement

1. Set the rotary switch at “ Ω /diode/continuity/capacitance” position
2. Insert the test leads into the input jacks.
3. Connect the test probes to the two ends of the resistor/diode/capacitor or circuit to be measured.

4. Make sure all the power of the circuit to be measured is off.
5. To select the diode/continuity/capacitance test, press the mode selection switch (ohm/diode/continuity/capacitance) and the “diode/continuity/nF” mark will be indicated on the display. Pressing the mode selection switch again will change to next test mode.
6. Read the measured value from the LCD display.
7. When on the continuity range, a beeping sound shall be heard if the resistance is lower than $30\ \Omega$.
8. When measuring the forward voltage across a diode, a normal diode will indicate 0.4V to 0.7V and the reverse voltage will indicate “OL” (same as on open condition). For a short-circuited diode, a value near 0 mV will be displayed.
10. When checking in-circuit capacitance, be sure that all circuit power is turned off and all capacitors are fully discharged. The capacitance test ranges are set to auto-ranging mode.

Frequency Measurement

1. Connect the black test lead to the COM jack and the red test lead to the “V/ Ω /Hz” jack.
2. Set the function switch to “Hz/% duty” range.
3. Connect the test leads to the circuit to be measured. The frequency test ranges are set to auto-ranging mode.
4. When you push the “HZ/%” button, mode changes to the duty cycle mode.

NOTE: The input voltage should be between 800mV and 10V rms.. If the voltage is more than 10V rms., reading may be out of the accuracy range.

Duty Cycle measurement

1. Connect the black test lead to the COM jack and the red test lead to the “V/Ω/Hz” jack.
2. Set the function switch to “Hz/% duty”.
3. Push the “Hz/%” button changing the function to % duty cycle.
4. Connect the test leads to the circuit to be measured.

NOTE:

The input voltage should be between 900mV and 10V rms. If the voltage is more than 10V rms, reading may be out of the accuracy range.

VI. Battery Replacement

When the low battery symbol is displayed on the LCD, replace the old battery with one new battery.

- A. Turn the power off and remove the test leads from the clamp meter
- B. Remove the screw of the battery compartment.
- C. Slide off the battery compartment.
- D. Remove the old battery.
- E. Insert one 9V NEDA1604, IEC6F22 battery.
- F. Replace the battery compartment and secure the screw

WARRANTY INFORMATION

This product is warranted to be free from defects for one year. If this product fails during the first 12 months due to faulty materials or workmanship, it will be replaced or repaired free of charge, at the discretion of the manufacturer.

NOTE: This one year warranty does not cover dead batteries and blown fuses

For warranty and service coverage, please return this product to your dealer for processing and evaluation. OR, return it directly to:

Electronic Specialties, Inc.

139 Elizabeth Ln.

Genoa City, WI 53128

262-279-1400

WWW.ESITEST.COM

Defective units being returned to your dealer or to the factory should include proof of purchase date.

Any testers that do not function due to misuse or abuse will be subject to "out of warranty service charges."