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If the instrument fails to operate, check battery, test leads, etc and replace as necessary. If the instrument still malfunctions, please call the phone number listed below:

Service Division
AMPROBE INSTRUMENT
Miami, Florida 33150
Tel: 800-327-5060

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Manual P/N: 978760
8/97

USER MANUAL

**AUNIQUE AC / DC TRUE RMS
CLAMP-ON MULTIMETER**

MODEL: ACDC-620T



LISTED

 **AMPROBE®**
Miramar, Florida 33025
Tel: 800-327-5060

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SAFETY INFORMATION

SAFETY INFORMATION:

- To ensure that you use meter safely, follow the safety guidelines listed below.
- This meter is for indoor use, altitude up to 2000m.
- Avoid working alone. Take precautions when working around moving parts.
- Use the meter only as specified in this manual. Otherwise, the protection provided by the meter may be impaired.
- Never measure current while the test leads are inserted into the input terminals.
- Do not use the meter if it looks damaged.
- Inspect the leads for damage insulation or exposed metal. Check test lead continuity. Replace damaged leads
- Disconnect the power and discharge all high-voltage capacitors before testing.
- Use caution when working above 60V DC or 30V AC RMS. Such voltages pose a shock hazard
- When making measurements, keep your fingers behind the finger guards on the probe.

- Set the proper function and range before attaching the meter to circuit. To avoid damaging the meter disconnect the test leads from test points before changing functions.
- Read this operation manual completely before using the meter and follow all safety instructions.
- The meter is safety-certified in compliance with UL3111-1, C22.2 NO.1010.1-92 and EN61010(IEC 1010-1, 1010-2031, IEC 1010-2-32) Installation Category II 1000V or installation Category III 600V. In order to maintain its insulation properties, please be sure to use UL Listed Category II 1000V or Category III 600V probes.
- Installation category (CAT) II is an environment with smaller transient overvoltage than Installation Category III.
- CE requirement: Under the influence of R.F field according to standard, the supplied test leads will pick up induced noise. To have better shielding tests are required in order to conform to CE:
 1. IEC 801-2: ESD (electro-static discharge) test.
 2. IEC-801-3: RFI (Radio frequency Interference) test.
Condition : 27 ~ 500MHz, signal intensity is 3 volts per meter.
 3. IEC 801-4: EFT (electro-fast transient) test.
 4. EN 55011: EMI (electromagnetic interference) test.
- Do not allow the temperature sensor to contact a surface which is energized above 30 V RMS or 60V DC, such voltages pose a shock hazard.

AUNIQUE CLAMP-ON MULTIMETER

□ INTRODUCTION

Measuring current accurately is difficult job in today's industrial plants and commercial buildings. An increasing number of personal computers, adjustable speed motor drivers, and other types of electronic equipment in short pulses and are referred to as non-linear loads.

non-linear loads draw high peak current, causing harmonics in the load current. this may result in unexplained circuit breaker tripping, or dangerous overheating of neutral conductors and transformers. Currents containing harmonics can only be accurately measured with a true rms or clamp meter. this CLAMP-ON MULTIMETER is shown in **Figure1**.

This meter has many functions which are shown below:

- **TRUE RMS measurement for non-linear and traditional loads.**
- **1ms Peak. Hold feature to capture glitch or in-rush current.**
- **Differentiation reading for Dual temperature measurement.**
- **Start capacitor measurement.**
- **Dynamic Recording helps to record the variation of test.**
- **Hand Guard for prevention of accidental contact with conductors.**
- **Carrying case with shoulder strap**
- **Data Hold to freeze displayed digital value.**
- **Relative(zero) function**
- **Auto and Manual Ranging**

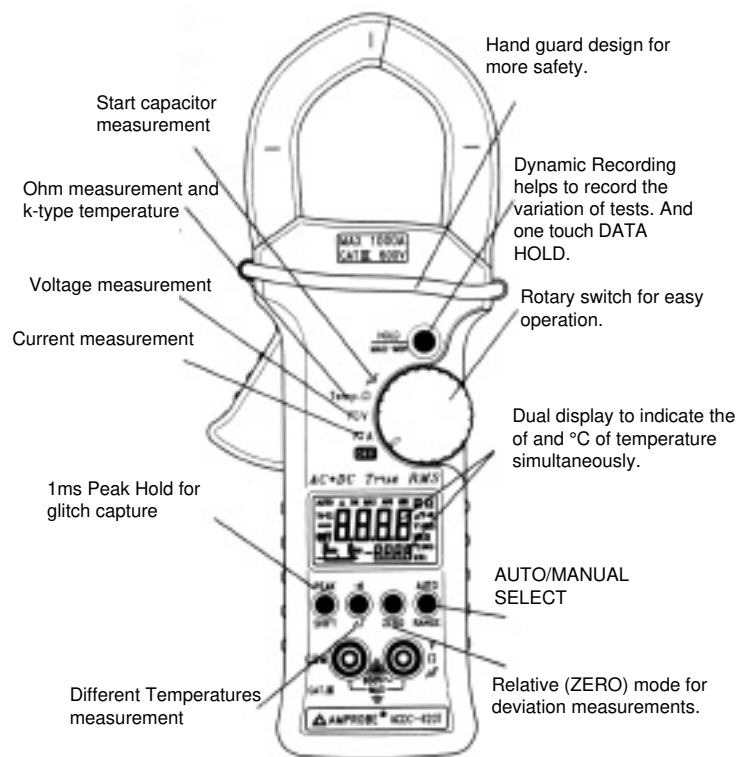


Figure 1. A Unique Clamp-On Multimeter

USING THE METER SAFELY

□ WARNING

Read " SAFETYINFORMATION" before using the meter..

□ NOTE

Some typical tests are provided in this manual. These tests are designed to help you understand how to use the Meter. Consult original manufacturer service manual for the test procedures that apply to your particular piece of equipment.

Your Clamp-on multimeter is a hand-held, battery operated instrument for testing and troubleshooting electrical and electronic systems. If the meter is damaged or something is missing, contact the place of purchase immediately.

A **WARNING** identifies conditions and actions that pose hazard(s) to the user; a **CAUTION** identifies and actions that may damage the Meter. International electrical symbols used are explained in **Table 1**.

~	AC- Alternating Current
—	DC- Direct Current
⎓	AC and DC-Alternating and Direct Current
⏏	Ground
□	Double Insulation
⚠	See Explanation In The Manual

Tabla 1. Símbolos Eléctricos Internacionales

LCD DISPLAY ILLUSTRATION



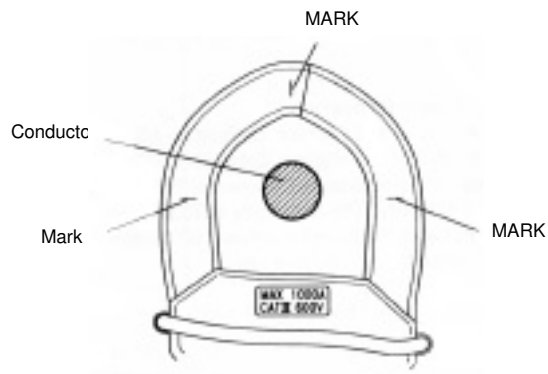
- | | | |
|-----|---|--|
| 1) | - | Negative polarity Annunciator |
| 2) | @OFF | Auto Power Off Enabled Annunciator |
| 3) |  | Low Battery Annunciator |
| 4) | DC | Direct Current or Voltage Annunciator |
| 5) | AC | Alternating Current or Voltage Annunciator |
| 6) | AUTO | AUTOrange Mode Annunciator |
| 7) | DH | Data hold Annunciator |
| 8) | DH MAX | Peak hold Annunciator |
| 9) | MAX AVG MIN | Dynamic recording mode, present reading |
| 10) | MAX | Maximum reading |
| 11) | MIN | Minimum reading |
| 12) | AVG | Average reading |
| 13) | ·))) | Continuity function annunciator |
| 14) | T1-T2 | Delta Temperature (withDKTA-620 adapter) |
| 15) | T1 T2 | T1 or T2 temperature measurement |
| 16) | °C, °F | Unit of temperature |
| 17) | V | Unit of Voltage measurement |
| 18) | A | Unit of Current measurement |
| 19) | kW | Unit of Resistance (ohm) measurement |
| 20) | — | Zero (Delta) mode annunciator |
| 21) | 8.8.8.8 | Digital display for degree °F, A, V and Ω |
| 22) | 8000 8000 | Analog bar-graph annunciator with scale indicator. |
| |  | |
| 23) | μF | Unit of Capacitor measurement |
| 24) | - 8.8.8.8 | Digital display for degree C |



Figure 2. LCD Display

Getting Acquainted With Your Meter

□ ALIGNMENT MARKS



Figur3 3. Alignment Marks

In order to meet the meeter accuracy spacifications when making a current measurement, the conductor must be inside the jaws and centered within the indicated marks as much as possible (see Figure 3).

Rotary Switch

To turn the meter on and select a function, turn the rotary switch (Figure 4) to a switch setting. The whole display lights for one second.

Then the meter is ready for use. (if you press and hold down any push button while turning the meter from OFF to ON, the display remains [it until the push button is released.]

1. **OFF:** Power off position.
2. **⎓A:** AC or DC Current. Default is AC current.
**El valor predetermina.
do es corriente alterna (CA).**
3. **⎓V:** **AC or DC voltage. Default is AC voltage.**
4. **Temp.Ω:** Temperature/Differential Temperature, Ohms, and Continuity. The continuity buzzer sounds when test value that is displayed is below 100 counts.
5. **μF:** Capacitance measurement.

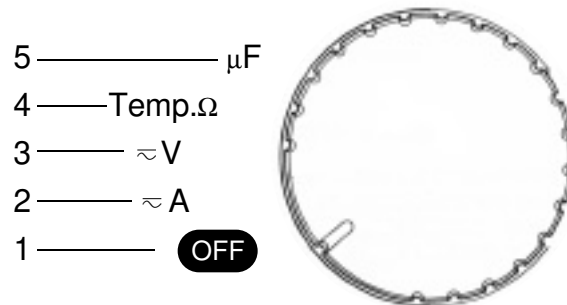


Figure 4. Rotary Switch

INPUT TERMINAL

WARNING

To avoid damaging the meter, do not exceed input limit shown below
Table 1:

ROTATORY SWITCH FUNCTION	INPUT TERMINAL	INPUT LIMIT
AC 400 ~ 1000V (CAT II) AC 400 ~ 600V (CAT III)	V - Ω - μ F & COM	CAT II 1000V de CA/1000V DC CAT III 600V
DC 400 ~ 1000V (CAT II) DC 400 ~ 600V (CAT III)		
DC 400 ~ 1000 A AC 400 ~ 1000 A OHM (Ω)	Clamp jaw	1000 ARMS
Capacitance (μ F) Temperature	V - Ω - μ F & COM	600V RMS

Table 1. Input limit specification Table 1.

The meter has two input terminals (Figure 5) that are protected against overloads to the limits shown in the specifications.

1. Terminal común para todas las mediciones excepto la de corriente.
2. Voltios, Ohmios, Prueba de Capacidad y mediciones de Temperatura.

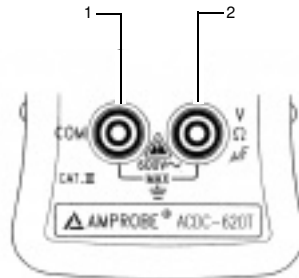


Figure 5. Input Terminal

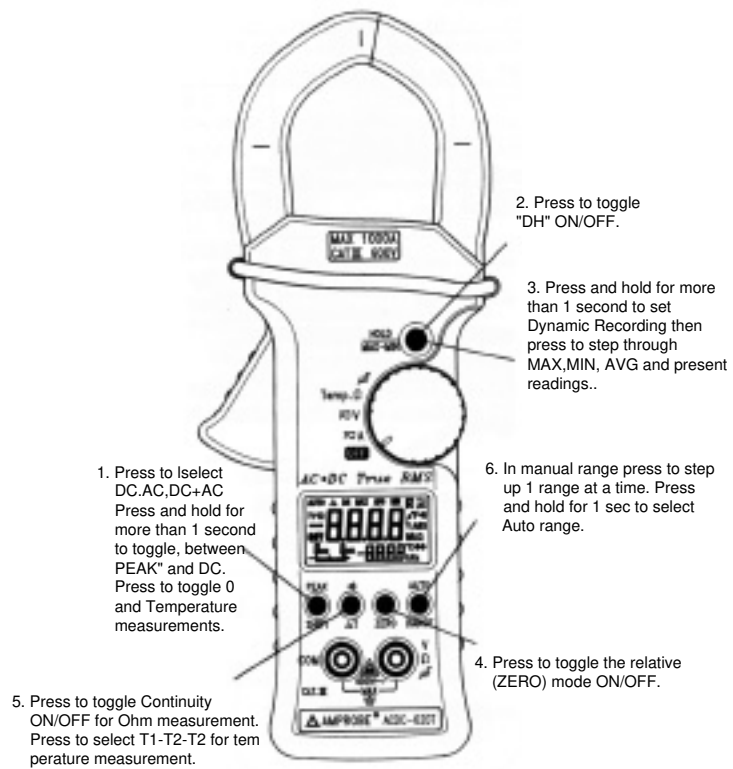


Figure 6. Push buttons

Push-button Operations

The operation of the push-buttons are outlined below. When a button is pushed, an annunciator lights, and the unit beeps. turning the rotary switch to another switch setting resets all push buttons to their default states. The pushbuttons are shown in (page15).

1. Shift / Peak \odot :

- This push-button is used for selecting the measurement of either an Alternating or Direct source, Ohms or Temperature, or for selecting the PEAK hold function.
- Press this button momentarily to toggle DC and AC test. or between Ω and Temperature.
- To select PEAK hold, press and hold this button until the display shows " DH MAX" and indicates the PEAK hold mode.

2. Hold \odot : Hold Q: DATAHOLD or Refresh Data Hold

The data HOLD function allows operator to freeze the displayed digital value while the analog bargraph continues to display the present reading.

Press this button momentarily to toggle DH on or off.

The display shows "DH" to indicate the hold function.

If you select " Refresh Data Hold " by Power-ON

Options, the reading is updated to the display automatically when the reading changes. The beeper sounds a tone to remind user, that an update has occurred. Press this button momentarily to toggle DH on or off.

. MAX * MIN 0: Dynamic Recording

3. MAX • MIN \odot : Dynamic recording

- To enter or exit dynamic recording mode, press and hold this button to toggle recording mode, press and hold this button to toggle recording mode on or off.
- Records maximum, minimum, and calculates true average.
- Press this button momentarily to cycle through maximum, minimum, average and present (**MAX AVGMIN**) readings.

4. **Zero** ○:

- Push this button momentarily to zero the residual current. Note: Allow the meter to stabilize before zeroing the display.
The " Δ " will also be displayed.

5. ●) / $\Delta T m$: continuity, Delta Temperature

- In the Ω position, press this button momentarily to toggle "●)" continuity ON/OFF. The continuity buzzer sound when test value is below 100 counts (10,0 Ω on auto range). pushing this button for more than 1 second will exit the continuity function and return to the auto-ranging ohm measurement.
- Press to restart 1ms PEAKhold test after entering PEAK mode.
- in the temperature test, push this button momentarily to toggle between **T1 T2** temperature and **T1 - T2** differential temperatures test. Note: **T1, T2** or **T1 - T2** selected on the **DKTA-620** accessory adapter (optional)..

6. **AUTO / RANGE** ○:

- In auto-range press this button momentarily to select manual range and turn off the "AUTO" annunciator.
- In manual range, press this button momentarily to step up 1 range at one time, press. this button for more than 1 second to enter auto-range.
- in auto-range, the "AUTO" annunciator is lit and the meter will select an appropriate range for measurement being made. If a reading is greater than maximum available range, "OL" (overload) is displayed on the screen. The meter selects a lower range when reading is less than about 9% of full scale.

POWER-ON OPTIONS

□ SELECTING POWER-ON OPTIONS

Some options can only be selected when you turn the meter on. These power-on options are listed in **Table 2**.

To select power-on press and hold the appropriate pushbutton while turning the rotary switch to any ON position. Power-on options remain selected until the meter is turned off.

PUSH BUTTON	OPTIONDESCRIPTION
DH ○ MAX ● MIN	<p>Demonstrate Annunciators</p> <p>To demonstrate the annunciators. to demonstrate all annunciators. momentarily press any button to exit the demonstration mod.</p> <p>Disable auto-power off</p> <p>In general, the auto-power off function turns the meter off if neither rotary switch nor push button is activated for 15 minutes. You can disable auto-power off function by this option. When auto-power off is disabled the meter will stay in on continuously. Auto-power off is auto disabled in Dynamic Recording.</p> <p>Enable "Refresh data Hold".</p>
●)) ○ ΔT	<p>Turns off all beeper functions.</p>

Table 2. Power-ON Options

SPECIALFUNCTIONS INSTRUCTIONS

This clamp-on multimeter provides the operator with various functions including:

- Dynamic Recording**
- Data Hold**
- Zero (Relative)**
- Analog bargraph**
- Auto Power Off and Sleep Mode**
- Disable Auto Power Off**
- Demonstrate Annunciator of Display**
- Continuity Function For Ohms Measurement**
- 1ms Peak hold**

DYNAMIC RECORDING

The dynamic recording mode can be used to catch intermittent and turn on or off surges, verify performance while you are away, or take readings while you are operating the equipment under test and can not watch the meter.

the average reading is useful for smoothing out unstable or changing inputs, estimating the the percent of time a circuit is operational, or verifying circuit performance

The operational procedures are described below::

1. Press and hold the "**MAX•MIN**" push button to toggle recording mode on or off. the dynamic recording ode is indicated when the **MAX AVG MIN** annunci ator turns on. The present valve is stored to memories of maximum, minimum and average.
2. Press this button momentarily to cycle through maximum, average and present readings. The **MAX, MIN, AVG** annunciator turns on respectively to indicate what value is being displayed. See **Figure 7**.

3. The beeper sounds when a new maximum or minimum value is recorded.
4. If an overload is recorded the averaging function is stopped. An average value becomes "OL" (overloaded).
5. **In dynamic recording the auto power off feature is disabled and the "@OFF" turns off.**
6. By selecting dynamic recording in the auto range, the meter will record the value of MAX, MIN or AVG for different ranges.
7. The record speed of dynamic recording is about 100 milli-seconds (0.1 second).
8. The average value is the true average of all measured values taken since the recording mode was entered.

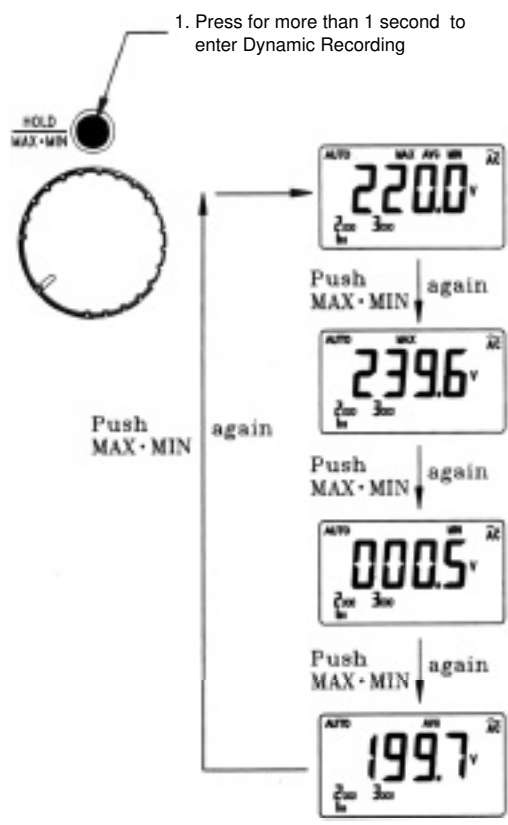


Figure 7. Display of Dynamic Recording

DATAHOLD

The data HOLD function allows operator to freeze the displayed digital value while the analog bargraph displays present readings. Press "DH" Hold button to enter the data Hold mode, and the "DH" annunciator is displayed. Press the button again to exit. The present reading is now shown.

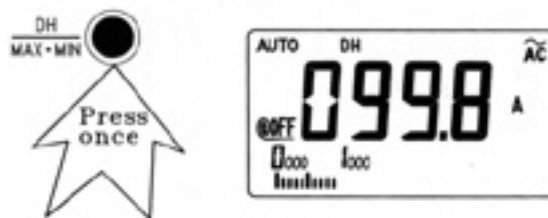


Figura 8. Operación de Retención de Datos (Data Hold)

ZERO (RELATIVE)

The ZERO (relative) function subtracts a stored value from the present measurement and displays the result..

- 1) Press the ZERO button momentarily to set the relative mode. This sets the display to zero and stores the present reading as a reference value. The "Δ" annunciator will also be displayed. Press this button again to exit the relative mode.
- 2) The ZERO (relative) mode can be set in both the autorange or manual range mode. The relative mode can't be set when an overload has occurred.
3. When the Dc Current measurement mode is entered, the display will indicate a non-zero DC Current (positive or negative) value due to residual magnetism of the jaw and of the internal sensor. You can use the Zero (relative) function to Zero-Adjust the display.

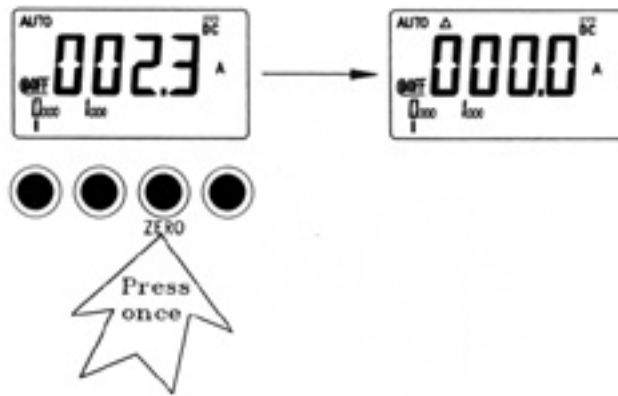


Figure 9. relative(Zero) Operation.

□ ANALOGBATRGRAPH

The analog bargraph display provides a 12-segment analog reading representation. The unit of the bargraph is 100 counts/bar.



Figura 10. Analog Bar graph

AUTO POWER OFF AND SLEEP MODE

There are two modes for power saving.

- 1) The instrument will enter the "sleep" mode within 15 minutes, unless:
 - 1-1. Any push buttons have been pressed
 - 1-2. The rotary switch has been changed to another function
 - 1-3. The unit has been set to Dynamic recording mode
 - 1-4. The unit has been set to 1 ms PEAK hold mode.
 - 1-5. The auto power off has been disabled with powerup option
- 2) In the sleep mode, the LCD will display a blinking "@OFF . . ." annunciator.
 - 2-1. To wake-up sleep mode, press any push button for 0.5 sec or rotate rotary switch.
 - 2-2. Without wake-up, after 15 minutes, the meter will automatically shut off completely.
- 3) You must turn the rotary switch to the OFF position, then turn it back to a function to activate the meter after an auto power off.