Meterman®

AC71

Clamp-on Multimeter

Users Manual

Limited Warranty and Limitation of Liability

Your Meterman product will be free from defects in material and workmanship for
1 year from the date of purchase. This warranty does not cover fuses, disposable batteries or damage from accident, neglect, misuse, alteration, contamination, or abnormal conditions of operation or handling. Resellers are not authorized to extend any other warranty on Meterman's behalf. To obtain service during the warranty period, return the product with proof of purchase to an authorized Meterman Test Tools Service Center or to a Meterman dealer or distributor. See Repair Section for details. THIS WARRANTY IS YOUR ONLY REMEDY. ALL OTHER WARRANTIES - WHETHER EXPRESS, IMPLIED OR STAUTORY - INCLUDING IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, ARE HEREBY DISCLAIMED. MANUFACTURER SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, ARISING FROM ANY CAUSE OR THEORY. Since some states or countries do not allow the exclusion or limitation of an implied warranty or of incidental or consequential damages, this limitation of liability may not apply to you.

AC71 Clamp-on Multimeter

Contents

Safety Information

The AC71 is EN61010-1 certified for Installation Category II (1000 V). It is recommended for use with local level power distribution, appliances, portable equipment, etc, where only smaller transient overvoltages may occur, and not for primary supply lines, overhead lines and cable systems.

The AC71 is EN61010-1 certified for Installation Category III (600 V). It is recommended for use in distribution level and fixed installations, as well as lesser installations, and not for primary supply lines, overhead lines and cable systems.

To ensure safe operation and usage of the meter, follow these instructions. Failure to observe warnings can result in severe injury or death.

- Do not use the meter if it is damaged. Before you use the meter, inspect the case. Look for cracks or missing plastic. Pay particular attention to the insulation surrounding the connectors.
- Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity.
- Replace damaged test leads before you use the meter.
- If this product is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Do not use the meter if it operates abnormally. Protection may be impaired. When in doubt, have the meter serviced.
- Do not operate the meter around explosive gas, vapor, or dust.
- Before use, verify the meter's operation by measuring a known voltage.
- Use caution when working above 30 V ac rms, 42 V peak, or 60 V dc. Such voltages pose a shock hazard.
- When using the probes, keep your fingers behind the finger guards on the probes.
- Connect the common test lead before you connect the live test lead. When you disconnect test leads, disconnect the live test lead first.
- Remove test leads from the meter before you open the battery door.
- Do not operate the meter with the battery door removed or loosened.
- To avoid false readings, which could lead to possible electric shock or personal injury, replace the batteries as soon as the low battery indicator () appears.
- Do not apply more than 600 V rms between the meter terminal and earth ground.

Symbols Used in this Manual

⊟+	Battery	⚠	Refer to the manual
⧈	Double insulated	⚠	Dangerous Voltage
⎓	Direct Current	⏚	Earth Ground
~	Alternating Current	CE	Complies with EU directives
c SP us	Canadian Standards Association		

Introduction

The AC71 is a digital clamp multimeter with two additional unique features: AutoTect™ and automatic backlight. The AutoTect™ feature automatically senses what type of measurement is being made when the test leads are placed across a measurement point. There is no knob to turn. The meter knows what is being measured and the digital display shows the measured value along with the associated unit icon.

The automatic backlight has a sensor that recognizes when the ambient light becomes dim and turns itself on. A bright blue backlight is then available to easily read the measurement value on the digital display.

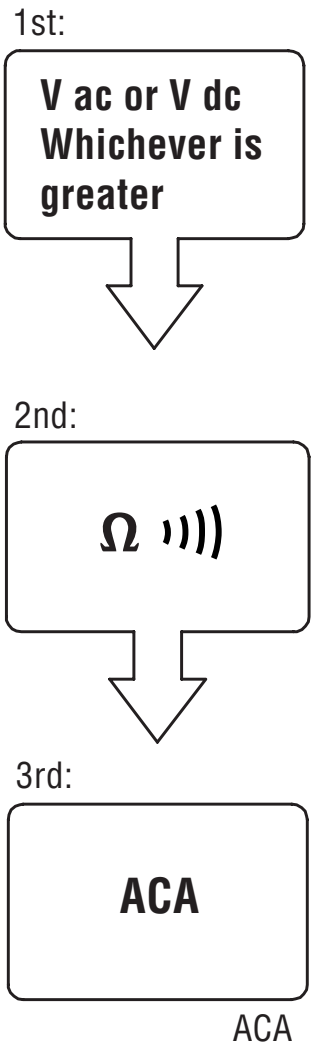
The AC71 is a complete multimeter measuring AC and DC volts, resistance, continuity in addition to the AC current. A useful tool for the electrician, plant maintenance, HVAC or field service technician.

Autotect™

The AC71 offers the AutoTect™ feature. AutoTect™ checks the signal received across the two test lead points and automatically determines the type of measurement to be made. It senses whether AC Volts, DC Volts, Resistance or Continuity is across the test nodes.

AutoTect™ also utilizes a lower input impedance. This helps determine if voltage is from leakage (called ghost voltages) or a hard connection. Any ghost voltages will be zeroed out by the lower input impedance.

The following diagram indicates the priority of meter functions.



ACA

The LCD shows voltage mode when the input terminal satisfies the following conditions.

V ac	1.3 V to 750.0 V
V dc	1.8 V to 1000.0 V
	-0.6 V to -1000.0 V

The LCD shows Ω mode when the input terminal satisfies the following conditions.

0 to ∞ Ω

V ac	0 V to 0.9 V
V dc	-0.2 to -0.02 V
	0.2 V to 1.4 V

The LCD shows AC A mode when the current input jaw satisfies the following conditions.

AC A	0.6 A to 600 A

Making Measurements

Measurement Functions

- AC and DC Volts — See Figure -5-
- Resistance — See Figure -6-
- Continuity — See Figure –7-
- AC Current — See Figure –8-

Additional Features

Auto Power Off — See Figures -2- and –3-

The meter will automatically shut itself off after approximately 30 minutes after power is turned on, or no activity has occurred with the meter. The meter will beep when it turns off. Press the **ON/OFF** button to reactivate the meter.

Auto Backlight See Figure -4-

The backlight illuminates the entire display for easy measurement viewing in dark work environments. The backlight activates automatically in low ambient light conditions.

HOLD Measurements See Figure -9-

The **HOLD** button allows the meter to capture and continuously display a measurement reading. When the reading has stabilized, press the **HOLD** button. The measurement value will be captured on the display. Press the **HOLD** button again to release the value.

⚠⚠WARNING

Hazardous voltages present at test leads may not be displayed when in HOLD mode.

Product Maintenance

Maintenance

Do not attempt to repair this meter. It contains no user serviceable parts. Repair or servicing should only be performed by qualified personnel.

Cleaning

To clean the meter, periodically wipe the case with a soft moistened cloth. To avoid damage to the plastic components do not use benzene, alcohol, acetone, ether, paint thinner, lacquer thinner, ketone, or other solvents to clean the meter.

Troubleshooting

If the meter appears to operate improperly, check the following items first.

1. Review the operating instructions to ensure the meter is being used properly.
2. Make sure the battery is in good condition. The low battery symbol appears when the battery falls below the level where accuracy is guaranteed. Replace a low battery immediately.

Battery Replacement

To replace the battery See Figure -10-

1. Turn the meter off and remove attached test leads.
2. Loosen the screw and remove the battery door.
3. Replace the battery using an alkaline 9 V battery. See General Specifications for detailed battery specifications.
4. Replace the battery cover and tighten the screw. Recycle the battery using approved methods.

⚠⚠WARNING

To avoid electrical, shock remove the test leads from both the meter and the test circuit before accessing the battery.

Specifications

General Specifications

Display: 6000 digit large scale liquid crystal display (LCD)

Measuring Rate: 5 times per second

Overrange Display: OL is displayed

Automatic Power Off Time: Approximately 30 minutes after power on

Low battery indication: The ⊟+ symbol is displayed when the battery voltage drops below the operating level for accurate results.

Power: Single standard 9 V battery, NEDA160A

Battery Life: 250 hours with an alkaline 9 V battery

Environmental: Indoor Use

Operating Temperature

0 °C to 30 °C at ≤80 % R.H.
30 °C to 40 °C at ≤75 % R.H.
40 °C to 50 °C at ≤45 % R.H.

Storage Temperature: -20 °C to 60 °C at 0 to 80 % R.H. (battery removed)

Altitude: 2000 M (6562 Feet)

Conductor Size: 32 mm diameter (1.3 in)

Max. Operation Time: Delay Time = 30s for input ≤30 V

Shock Vibration: Sinusoidal vibration per MIL-PRF-28800F (5 to 55 Hz, 3 g maximum)

Agency Approvals

CE SP C US

Safety: Conforms to EN61010-1:2001; CAT II 1000 V, CAT III 600 V, Pollution degree 2, Class 2

EMC: Conforms to EN61326-1. This product complies with requirements of the following European Community Directives: 89/ 336/ EEC (Electromagnetic Compatibility) and 73/ 23/ EEC (Low Voltage) as amended by 93/ 68/ EEC (CE Marking). However, electrical noise or intense electromagnetic fields in the vicinity of the equipment may disturb the measurement circuit. Measuring instruments will also respond to unwanted signals that may be present within the measurement circuit. Users should exercise care and take appropriate precautions to avoid misleading results when making measurements in the presence of electronic interference.

Electrical Specifications

Accuracy

±(% reading + number of digits) at 23 °C ±5 °C at <80 % R.H.

Temperature Coefficient

Add 0.2 x (Specified Accuracy)/°C, <.18 °C, >28 °C

Voltage

Function	Range	Accuracy
V ~ (50 to 500 Hz)	1.3 V to 750.0 V	±(1.5% + 3 dgt)
V ⎓	1.8 V to 1000.0 V	±(1% + 2 dgt)
	-0.6 V to -1000.0 V	±(1% + 4 dgt)

Overvoltage Protection: 1000 V dc/750 V ac

Input Impedance: ≥ 4 kΩ for input voltage up to 30 V. Impedance increases with input voltage to approximate 277 kΩ at 1000 V/210 kΩ at 750 V ac.

Resistance and Continuity

Function	Range	Accuracy
Ω •)))	0.0 Ω - 99.9 Ω	±(2% + 1 Ω)
	100 Ω - 2000 Ω	±(2% + 2 dgt)

Overload Protection: 1000 V dc/750 V RMS

Maximum Open Circuit Voltage: 1.5 V

Continuity Check

Internal sounds activate if the resistance of the circuit under test is less than 25 Ω. It will then turn off if the resistance is increased beyond 150 Ω.

Temperature coefficient multiply by 1.5 when operating temperature is 40 °C - 50 °C.

AC Current

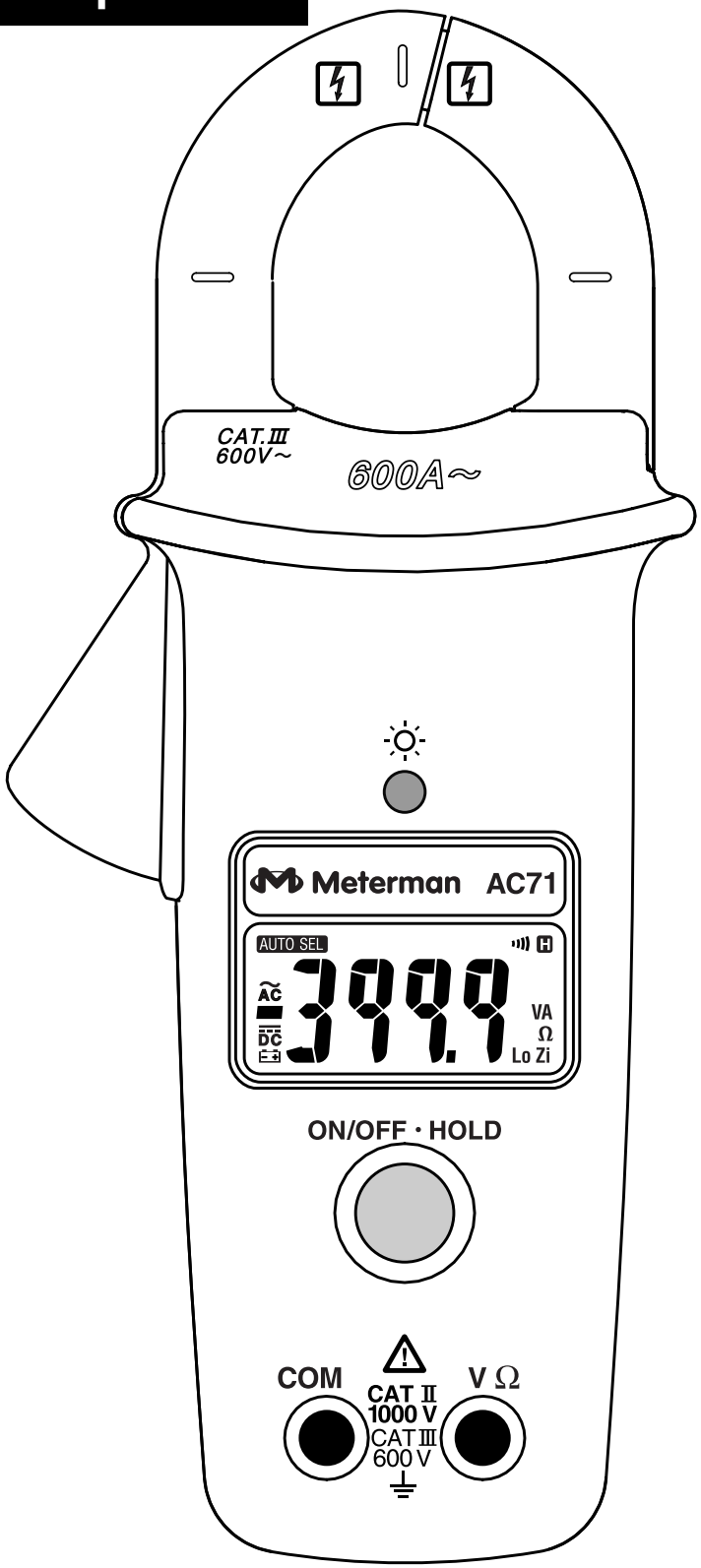
Function	Range	Accuracy
A~ (50 to 60 Hz)	0.0 to 60.0 A	±(1.9% + 2 A)
	60.0 to 400.0 A	±(1.9% + 5 A)
	401 to 500 A	±(2.5% + 7 A)
	501 to 600 A*	±(3.0% + 10 A)

Overload Protection:

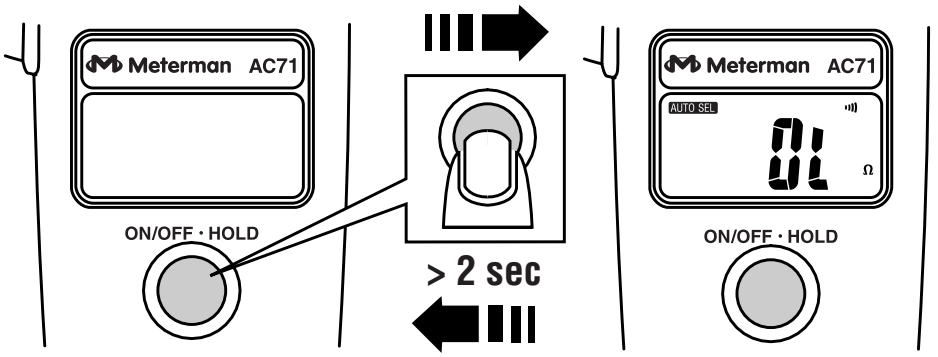
0 - 500 A: Continuous Operation

*501 A - 600 A: 10 minutes maximum followed by 10 minute cooling period.

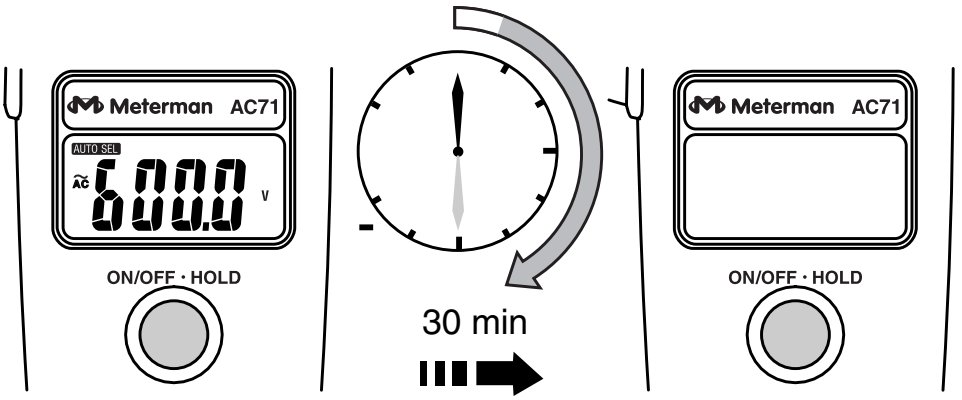
1 Clamp Meter



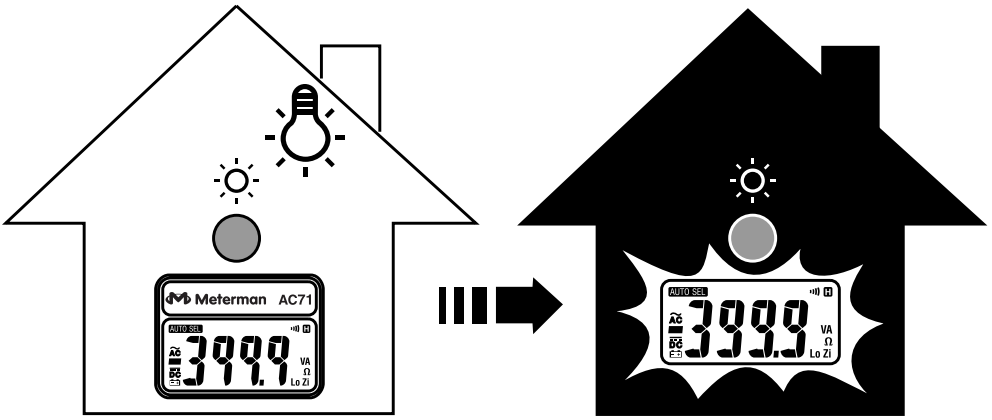
2 Off/On



3 Auto Power Off

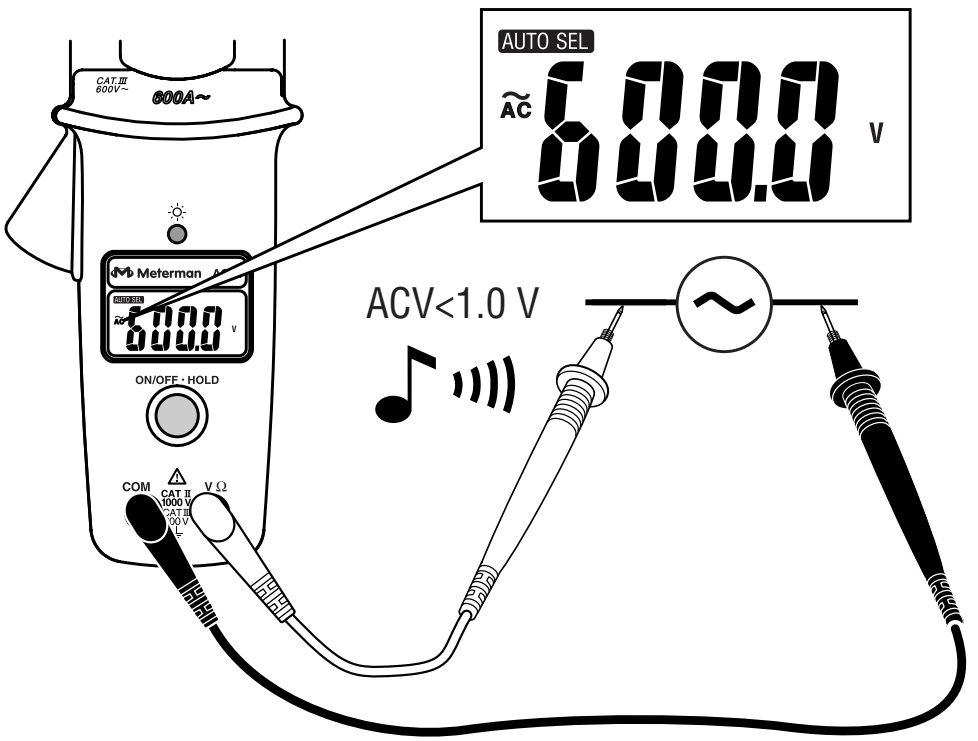


4 Auto Backlight

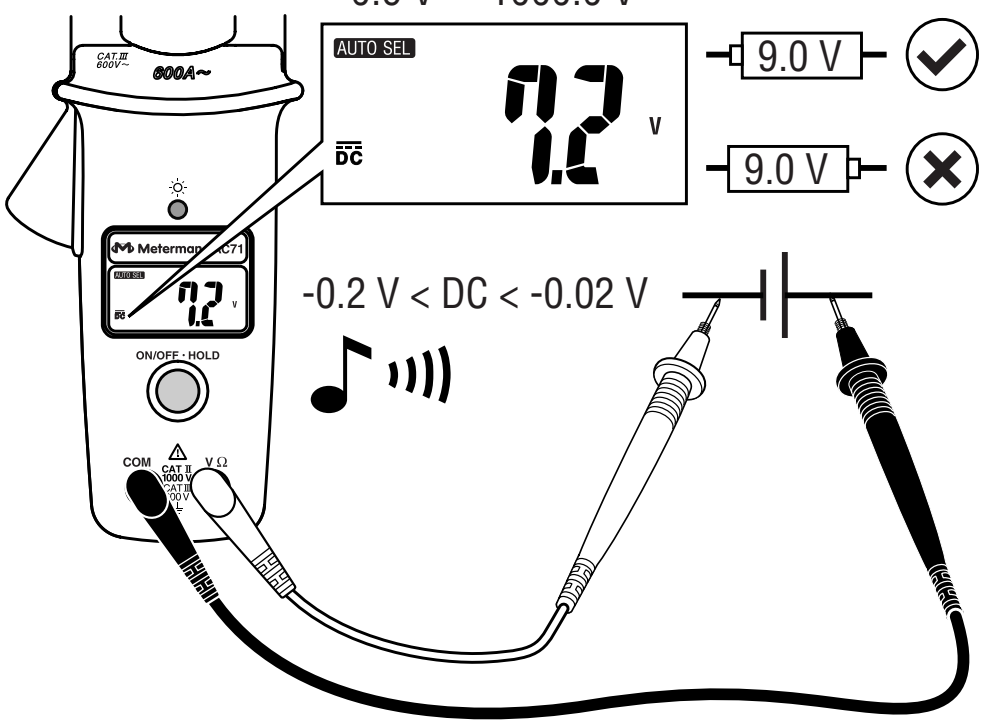


5 V̿ Ṽ

1.3 V ~ 750.0 V

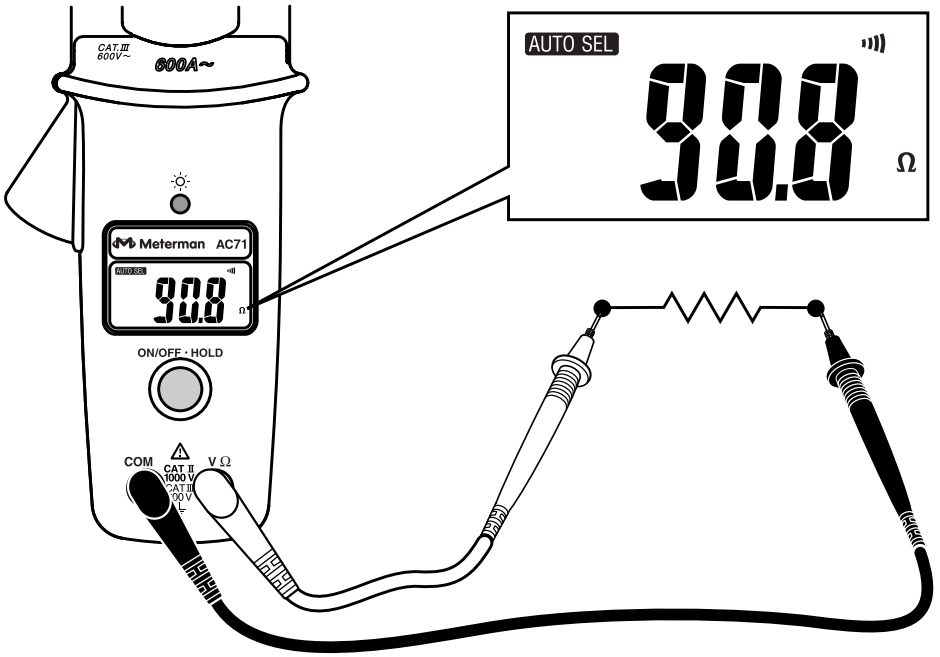


+1.8 V ~ +1000.0 V
- 0.6 V ~ -1000.0 V



6 Resistance

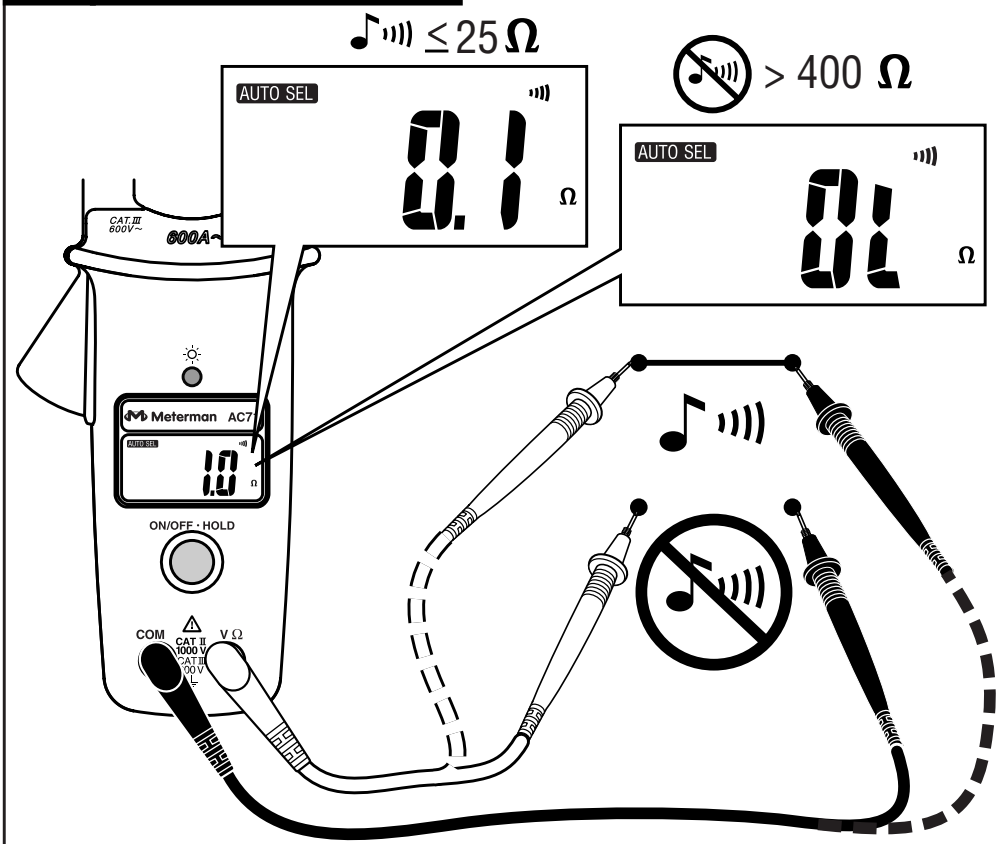
0 Ω ~ 2000 Ω



7 Continuity

≤ 25 Ω

> 400 Ω



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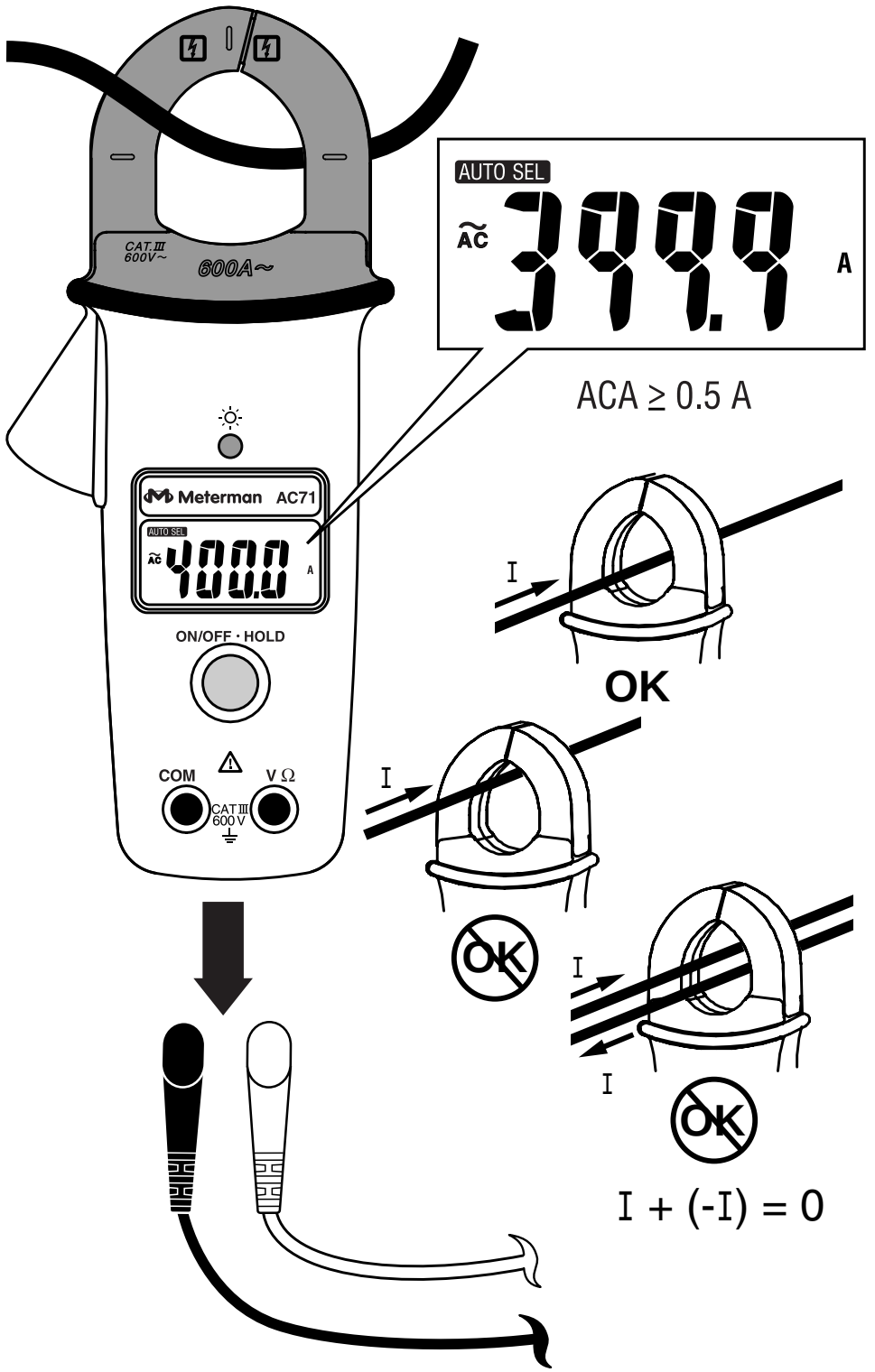
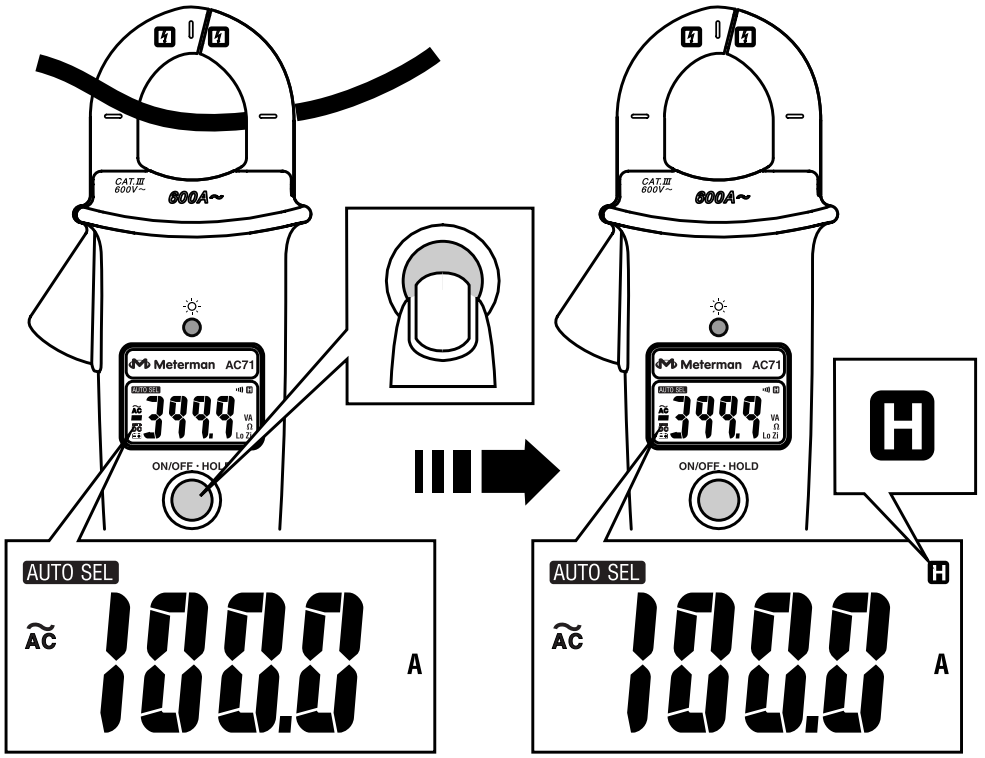

AUTO SEL
AC
399.9
A
ACA ≥ 0.5 A
CAT.III 600V~
600A~
Meterman AC71
AUTO SEL
AC
400.0
A
ON/OFF · HOLD
COM
V Ω
CAT III 600 V
I
OK
I
OK
I
I
OK
I + (-I) = 0

9 Data Hold



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