

6000 Count Compact Digital Multimeter, IP67, True rms, CATIV 600V

Multímetro Digital Compacto de 6000 Cuentas, con Temperatura, IP67, True RMS, CAT IV, 600 V

Multimètre Numérique Compact, Indice IP67 de Température, à Valeur Efficace Vraie, CAT IV 600 V, Écran (6 000 Comptes)

B07W1BL3RH

English	3
Español	44
Français	90

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IMPORTANT SAFEGUARDS



Read these instructions carefully and retain them for future use. If this product is passed to a third party, then these instructions must be included.


When using electrical appliances, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and/or injury to persons including the following:

⚠ WARNING Risk of electric shock! Improper use of this product can cause damage, shock, injury or death.

⚠ WARNING Risk of electric shock! The safety features of this product may not protect the user if not used in accordance with this user manual.

⚠ WARNING Risk of electric shock! Take special care while working under wet conditions. Humid objects and air have an increased conductivity.

⚠ CAUTION Risk of short circuit! Use the test probe shrouds to avoid accidental short circuiting if the components or test points are too near each other. Operation is limited to CAT II applications when the insulated tips are removed from one or both test probes. Refer to Specification in this manual for maximum voltage ratings.

⚠ WARNING Risk of electric shock! Use special care when making measurements, if the voltages are greater than 25 V~ rms or 35 V . These voltages are considered a shock hazard.

⚠ WARNING Risk of electric shock! Keep fingers away from the metal probe tips when taking measurements.

⚠ WARNING Risk of explosion! Do not use the product near explosive vapors, dust or gases.

⚠ CAUTION Risk of injury! The probe tips are sharp for accuracy. Be careful when handling and reattach the probe tip shrouds after use.

- This product is intended for origin of installation use and protected, against and the users, by double insulation per EN61010-1 and IEC61010-1 2nd edition (2001) to CAT IV 600 V and CAT III 1000 V; Pollution Degree 2. The product also meets UL 61010-1, 2nd edition (2004), CAN/CSA C22.2 No. 61010-1 2nd edition (2004), and UL 61010B-2-031, 1st edition (2003).
- This product must be used by trained users only.
- Do not exceed the maximum allowable input range of any measurement mode.

Mode	Maximum Input
A \sim , A \equiv	10 A, 1000V fast acting fuse (max. 30 seconds every 15 minutes)
mA \sim , mA \equiv	800 mA, 1000V fast acting fuse
V \sim , V \equiv	1000 V \sim rms/ \equiv
Frequency, Resistance, Capacitance, Diode Test, Continuity	250 V \sim rms / \equiv

Surge Protection: 8 kV peak per IEC 61010

- Do not measure current on a CAT III circuitry whose voltage exceeds 1000 V.
- Do not measure current on a CAT IV circuitry whose voltage exceeds 600 V.
- When measuring volts, do not switch to current/resistance modes.
- Set the function switch to the appropriate position before measuring.
- Set the function switch to the **OFF** position when not in use.
- When changing ranges always disconnect the connector leads from the circuit under test.
- Inspect the condition of the connector leads and the product itself for any damage before operation. Repair or replace any damage before use.

- Verify the product's proper operation before use by measuring a known live voltage.
- Always discharge capacitors and remove power from the device under test before performing diode, resistance or continuity tests.
- Voltage checks on electrical outlets can be difficult and misleading because of the uncertainty of connection to the recessed electrical contacts. Do not use this product for checking socket outlets. Use special equipment for checking socket outlets.
- Do not use, if the product seems to be damaged or if it is not working properly. If in doubt, replace the product.
- Comply with all applicable safety codes. Use approved personal protective equipment when working near live circuits – especially with regard to the possibility of arc flash hazards.
- Do not attempt repairs. There are no user serviceable parts.
- When working in wet conditions, always attach the rain caps onto the open input jacks.
- Always remove the connector leads before replacing the battery or fuses.

Battery Warnings

- Always insert batteries correctly with regards to polarity (+ and –) marked on the battery and the product.
- Exhausted batteries should be immediately removed from product and properly disposed.
- Keep batteries out of the reach of children.
- Do not dispose of batteries in fire.
- Remove batteries from product if it is not to be used for an extended period of time.
- If the battery leaks, avoid contact with skin and eyes. Rinse affected areas immediately with plenty of clean water, then consult a doctor.

Explanation of Symbols

WARNING

The signal word that indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

CAUTION

The signal word that indicates a hazard that if not prevented could result in minor or moderate injury.

NOTICE

Indicates a practical tip, advice or practice not related to personal injury.





This symbol, adjacent to another symbol or terminal, indicates the user must refer to the manual for further information.



This symbol, adjacent to a terminal, indicates that, under normal use, hazardous voltages may be present.



Product is protected by double insulation or reinforced insulation.



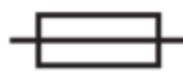
Alternating current (AC).



Direct current (DC).



Earth (ground) terminal/potential.



Fuse

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IP67

Product is protected against the effects of temporary immersion in water.

CAT II

1000V

Product is designed to protect the user during measurements performed on circuits directly connected to the low voltage installation.

CAT III

1000V

Product is designed to protect the user during measurements performed in the building installation (up to 1000 V).

CAT IV

600V

Product is designed to protect the user during measurements performed at the source of low-voltage installation (up to 600 V).



Intended Use

- This product is intended to perform electrical measurements on CAT III locations (3-phase and single phase distribution) and CAT IV locations (3-phase and single phase primary over-current protection devices).
- This product covers CAT II and CAT I locations.
- This product may be used only under the conditions and for the purposes for which it was designed.
- No liability will be accepted for damages resulting from improper use or non-compliance with these instructions.

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Before First Use

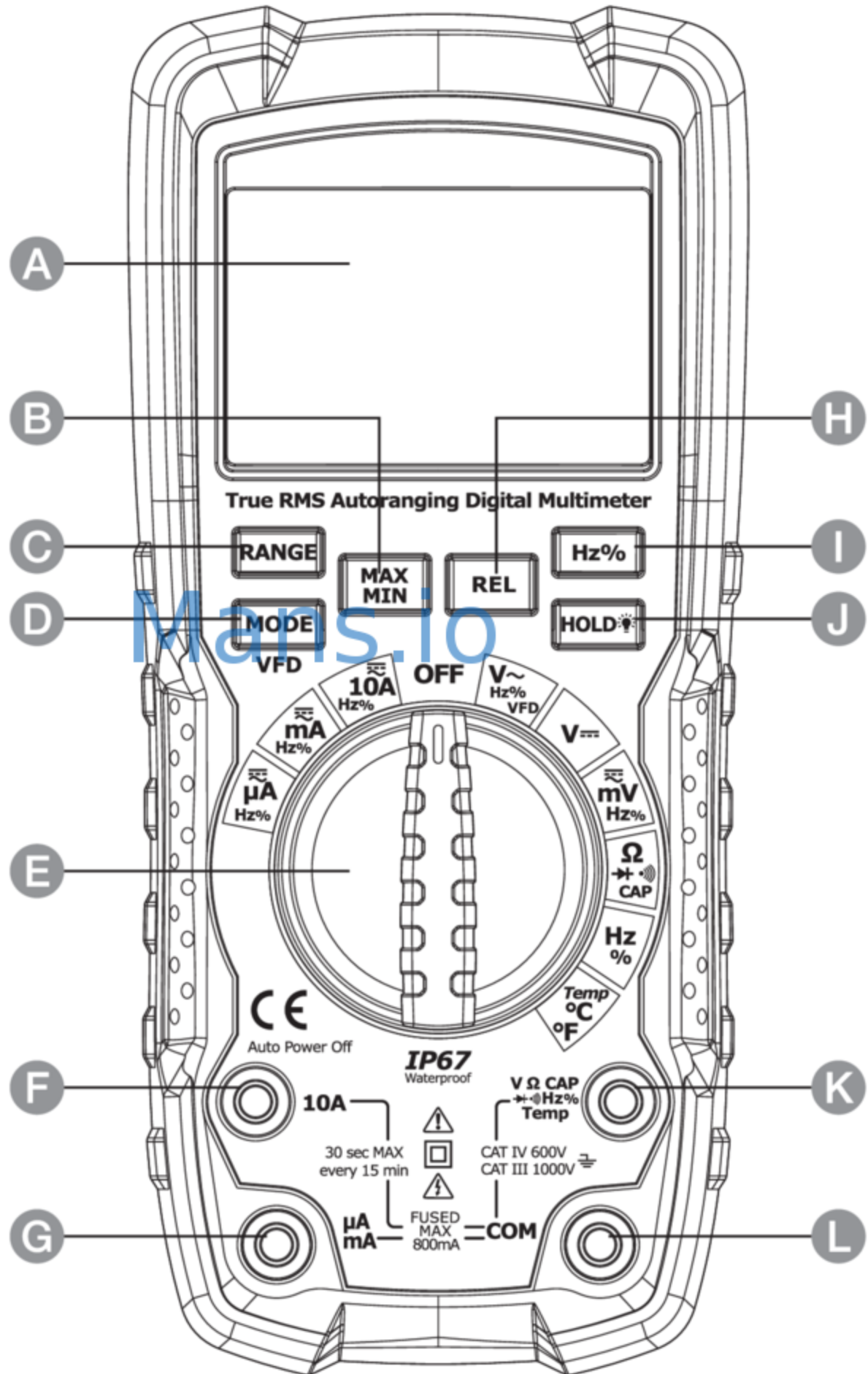
- Check the product for transport damages.
- Remove all the packing materials.

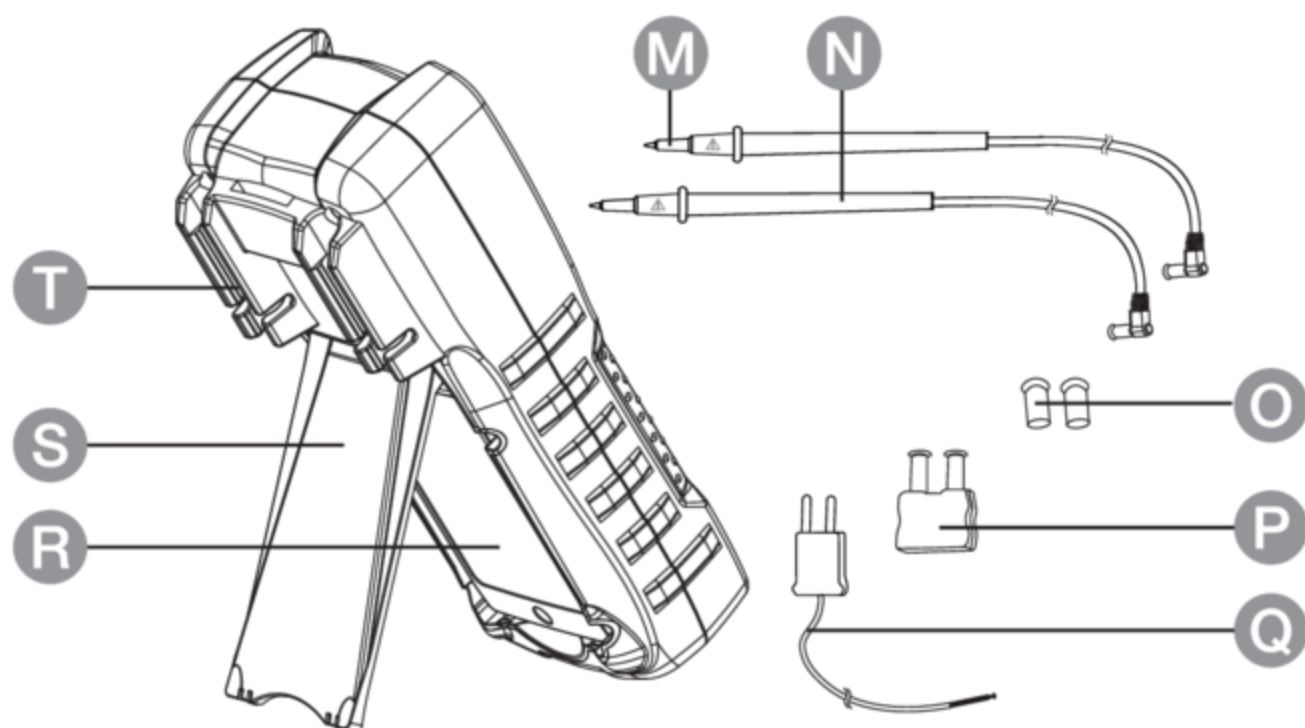
⚠ DANGER Risk of suffocation! Keep any packaging materials away from children – these materials are a potential source of danger, e.g. suffocation.




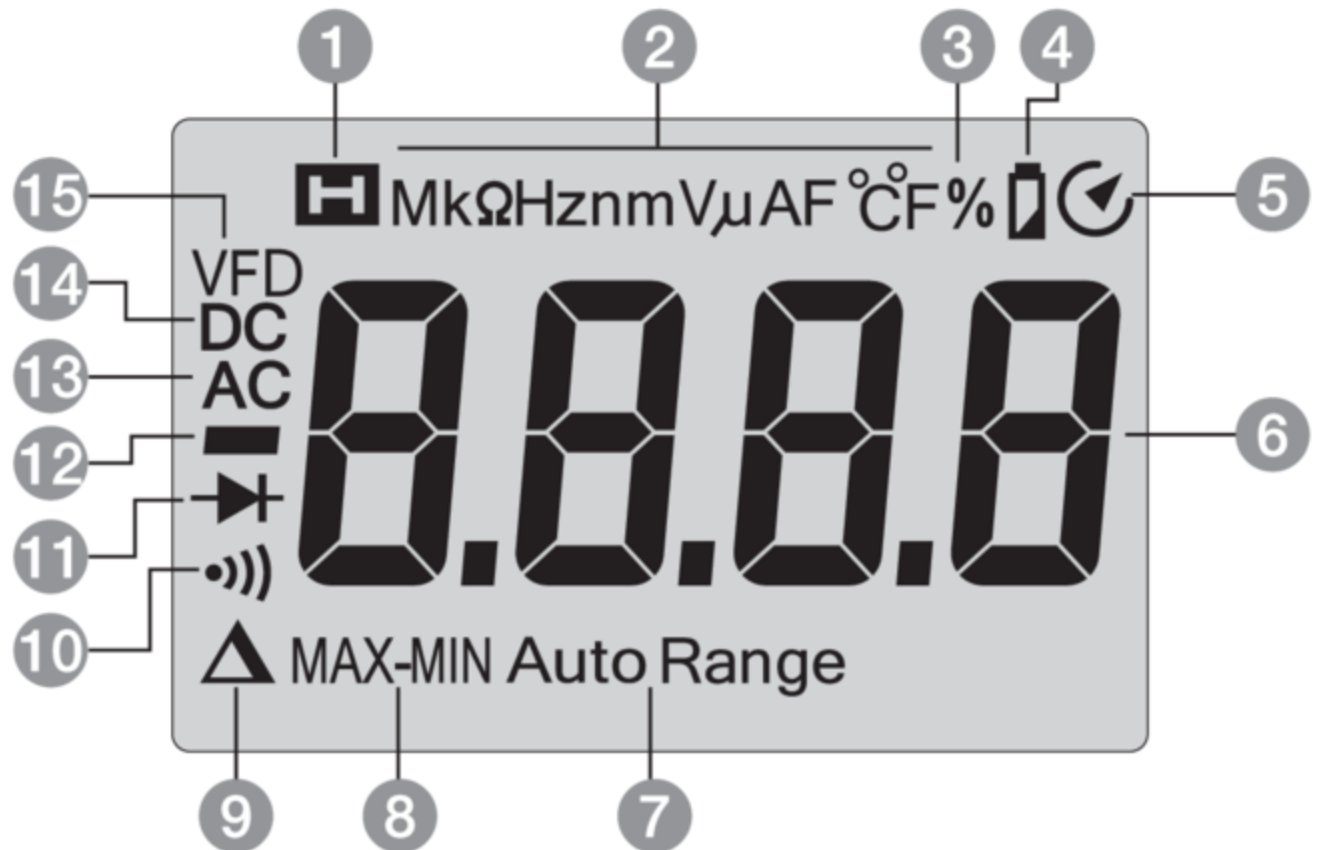


Product Description



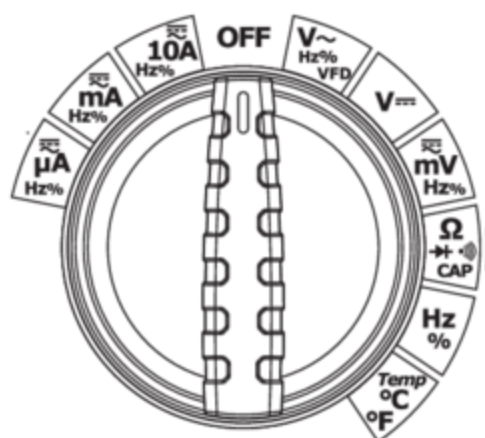











- A** Display
- B** **MAX/MIN** button
- C** **RANGE** button
- D** **MODE** button
- E** Function switch
- F** **10A** input jack
- G** **uA/mA** input jack
- H** **REL** button
- I** **Hz/%** button
- J** **HOLD** /  button
- K** **V Ω CAP Hz%** Positive input jack
- L** **COM** input jack
- M** Probe tip shrouds
- N** Test probes with connector leads
- O** Rain caps
- P** Thermocouple probe adapter with caps
- Q** Thermocouple probe
- R** Battery compartment
- S** Tilt stand
- T** Test probe holders



- | | | | |
|---|--------------------------------|---|--|
| ① | H Display hold | ⑨ | Δ Relative |
| ② | Units of measurement | ⑩ | •))) Continuity |
| ③ | % Percent (duty cycle) | ⑪ | → + Diode test |
| ④ | 🔋 Low battery indicator | ⑫ | — Minus sign |
| ⑤ | 🔄 Auto power-off | ⑬ | AC Alternating current/voltage |
| ⑥ | Display reading | ⑭ | DC Direct current/voltage |
| ⑦ | Auto Range indicator | ⑮ | VFD Variable frequency drive mode |
| ⑧ | MAX-MIN indicator | | |

Function switch



Position	Function / Measurement
	AC/DC current (μA) / frequency / duty cycle
	AC/DC current (mA) / frequency / duty cycle
	AC/DC current up to 10 A / frequency / duty cycle
OFF	OFF
	AC voltage / frequency / duty cycle / variable frequency drive mode
	DC voltage
	AC/DC voltage (mV) / frequency / duty cycle
	Resistance / diode test / continuity / capacitance
	Frequency / duty cycle
	Temperature



Changing Batteries

⚠ WARNING Risk of electric shock!

Disconnect the product from any circuit, remove the connector leads (N) from the input jacks (F)/(G)/(K)/(L), and turn OFF the product before opening the battery compartment (R). Do not operate the product with an open battery compartment.

NOTICE Replace the battery when the low battery indicator (4) is shown on the display (A).

- Open the tilt stand (S).
- Loosen the screw of the battery compartment cover (R) and remove it.
- Insert a 9 V battery and attach it to the snap connector.
- Place the battery in the battery compartment (R).
- Close the battery compartment (R) and tighten the screw.

Operation

NOTICE Keep the protection plugs of the connector leads and reattach after use.



Switching the product on/off

- To switch the product on, set the function switch (E) to the desired measurement mode.




- To switch the product off, set the function switch (E) to the **OFF** position.



Automatic power OFF

- In order to conserve battery life, the product automatically emits a beeping signal that the product has been idle for 15 minutes. Right after 1 minute, the product turns off.
- To turn the product on again, press any button.
- When “automatic power off” is enabled, the  indicator (5) is shown on the display (A).
- To deactivate “automatic power off”, press and hold the **MODE** button (D) while switching the product on. The  indicator (5) does not light up.

Switching the display backlight on/off

- Press and hold the **HOLD** /  button (J) to switch the display backlight on/off.

Display hold

- To freeze the display reading, press the **HOLD** /  button (J). The **H** indicator (1) lights up.
- Press the **HOLD** /  button (J) again to return to normal operation.


Changing the measurement range

By default, the measurement range is set automatically and the **Auto Range** indicator (7) lights up. It is possible to set the measurement range manually.

- Press the **RANGE** button (C) to activate the manual mode and to disable the automatic range setting. The **Auto Range** indicator (7) goes off.
- By every press on the **RANGE** button (C) the relevant decimal place changes its position.
- If a reading is higher than the measurement range, **OL** lights up on the display (A).
- Press and hold the **RANGE** button (C) for more than 1 second to exit manual mode and restore automatic range setting. The **Auto Range** indicator (7) lights up.




Relative measurement

The relative measurement feature allows you to make measurements relative to a stored reference value.

- Initially, keep the test probes attached to the circuit or the component to be measured.
- Press the **REL** button (H) to save this measurement as the stored reference value and to zero the display. The  indicator (9) lights up.

- Press the **REL** button (H) again to return to normal operation mode. The Δ indicator (9) goes off.

NOTICE This feature is not applicable for functions:

Position	Function / Measurement
	Resistance / diode test / continuity / capacitance
	Frequency / duty cycle
	Temperature

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Maximum/minimum measurement



- Press the **MAX/MIN** button (B) to switch between the maximum (**MAX**), minimum (**MIN**) and maximum to minimum (**MAX-MIN**) range value. The appropriate **MAX-MIN** indicator (8) lights up.
- Press the **MAX/MIN** button (B) for 2 seconds to return to normal operation. The **MAX-MIN** indicator (8) goes off.

DC voltage measurement

NOTICE Doing voltage measurements while the + connector lead (N) is left on the ampere input jacks (F,G) will blow the product's internal fuse if it draws a current greater than the internal fuses current rating. Check that the (+) red connector lead (N) is on the correct terminal.

NOTICE **Risk of damage!** Do not measure motors with unstable power. Large voltage surges may occur that can damage the product.



- Set the function switch (E) to the **V**  position.
- Insert the black connector lead (N) into the negative **COM** input jack (L).
- Insert the red connector lead (N) into the positive **V Ω CAP** input jack (K).
 **Hz%**
- Connect the test probes (N) in parallel to the circuit under test.

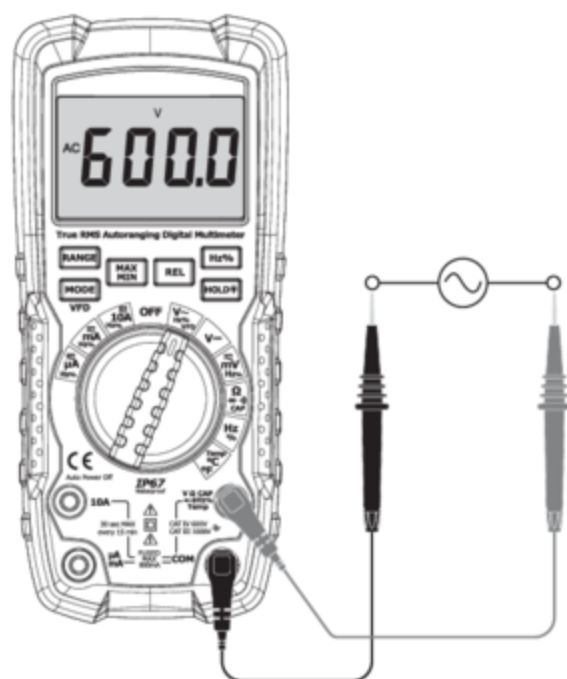
- The stabilized value on the display (A) is read as the actual reading.


AC voltage measurement

⚠ CAUTION Risk of electric shock! The contact plates of powered AC outlets may be recessed too deep for the test probes (N) to reach. This may give false measurements. Contact point of measurement must be visible for a true reading.

NOTICE Doing voltage measurements while the + connector lead (N) is left on the ampere input jacks (F, G) will blow the product's internal fuse if it draws a current greater than the internal fuses current rating. Check that the (+) red connector lead (N) is on the correct terminal.

NOTICE Risk of damage! Do not measure motors with unstable power. Large voltage surges may occur that can damage the product.



- Set the function switch (E) to the **V~ Hz % VFD** position. “**AC**” will be indicated on the display.
- Insert the black connector lead (N) into the negative **COM** input jack (L).
- Insert the red connector lead (N) into the positive **V Ω CAP** input jack (K).

- Connect the test probes (N) in parallel to the circuit under test.
- The stabilized value on the display (A) is read as the actual reading.

VFD mode (Variable-Frequency Drive)

- In AC voltage measurement mode, press and hold the **MODE** button (D) for 2 seconds. The **VFD** indicator (15) lights up.
- Connect the test probes (N) in parallel to the circuit or component being measured.
- The stabilized value on the display (A) is read as the actual reading.

NOTICE Press the **MODE** button (D) for 2 seconds to return to normal operation. The **VFD** indicator (15) goes off.

Frequency Mode (V~)



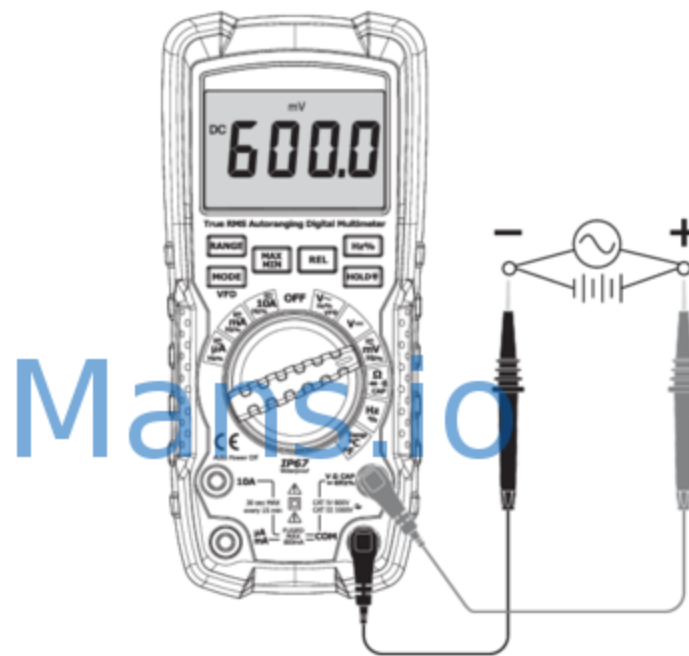
- In AC voltage measurement mode, press the **Hz/%** button (I). **Hz** (Hertz) lights up.
- Connect the test probes (N) in parallel to the circuit or component being measured.
- The stabilized value on the display (A) is read as the actual reading.

Duty Cycle Mode (V~)



- In AC voltage measurement mode, press the **Hz/%** button (I) twice. **%** (percent) lights up.
- Connect the test probes (N) in parallel to the circuit or component being measured.
- The stabilized value on the display (A) is read as the actual reading.

Voltage measurements (mV)



- Set the function switch (E) to the **mV Hz %** position.
- Press the **MODE** button (D) to switch between AC and DC mode. **AC** (13) or **DC** (14) lights up.
- Insert the black connector lead (N) into the negative **COM** input jack (L)
- Insert the red connector lead (N) into the positive **V Ω CAP Hz %** input jack (K).

- Connect the test probes (N) in parallel to the circuit under test.
- The stabilized value on the display (A) is read as the actual reading.

Frequency mode (mV~)

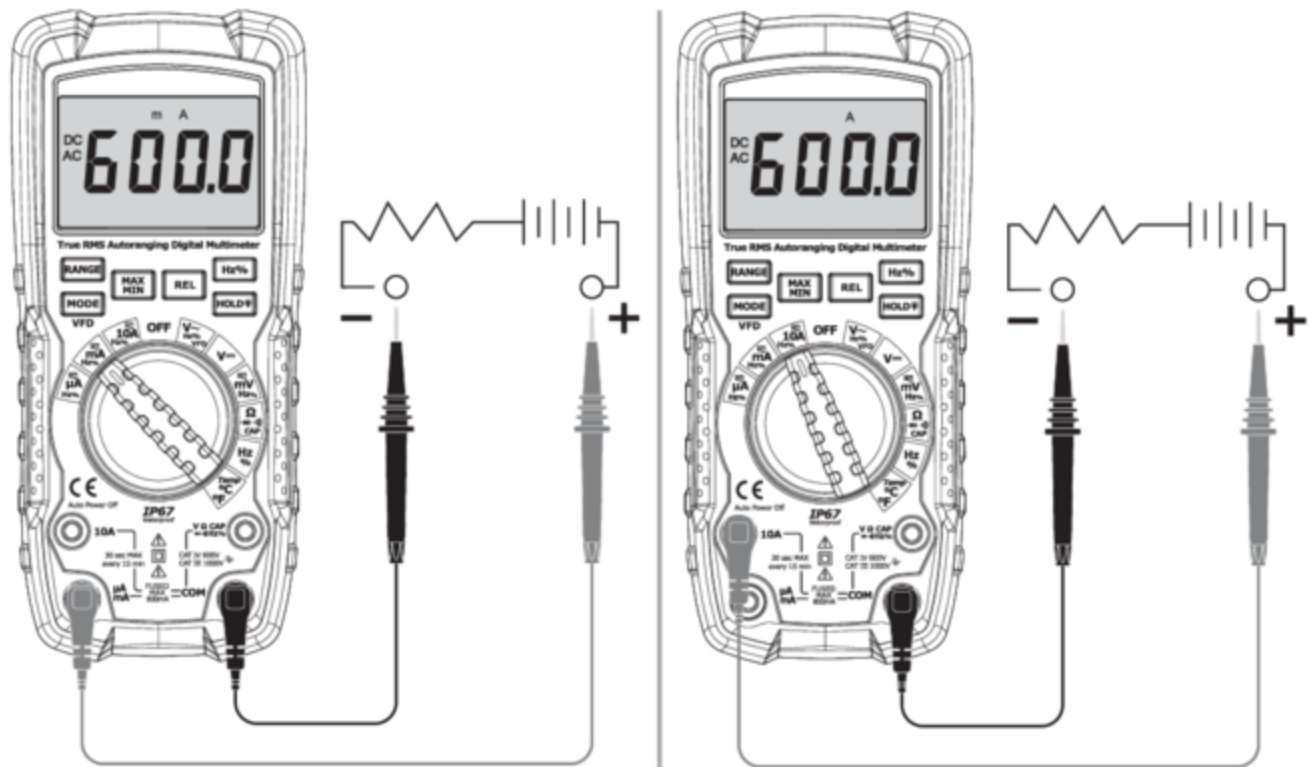
- In AC voltage measurement mode, press the **Hz/%** button (I). **Hz** (Hertz) lights up.
- Connect the test probes (N) in parallel to the circuit or component being measured.
- The stabilized value on the display (A) is read as the actual reading.

Duty Cycle mode (mV~)

- In AC voltage measurement mode, press the **Hz/%** button (I) twice. **%** (percent) lights up.
- Connect the test probes (N) in parallel to the circuit or component being measured.
- The stabilized value on the display (A) is read as the actual reading.

AC/DC current measurement

NOTICE Do not make 10 A current measurements for longer than 30 seconds. Exceeding 30 seconds may cause damage to the product and/or the connector leads (N).



- Insert the black connector lead (N) into the negative **COM** input jack (L).
- For current measurements of up to **6000 μ A**, set the function switch (E) to the $\overline{\sim}$ **μ A Hz %** position and insert the red plug connector lead (N) into the **μ A/mA** input jack (G).
- For current measurements of up to **600 mA**, set the function switch (E) to the $\overline{\sim}$ **mA Hz %** position and insert the red plug connector lead (N) into the **μ A/mA** input jack (G).
- For current measurements up to **10 A**, set the function switch (E) to the $\overline{\sim}$ **10A Hz %** position and insert the red connector lead (N) into the **10 A** input jack (F).
- Press the **MODE** button (D) to switch between AC and DC mode. **AC** (13) or **DC** (14) lights up.

- Turn off the power to the circuit under test. Break the connection line/track and separate securely the 2 points where the flow of current must be measured.
- Connect in series by securely attaching the test probes (N) each at the 2 open points of the track/line.
- Apply power to the circuit.
- The stabilized value on the display (A) is read as the actual reading.

Frequency mode (AC)

- In AC measurement mode, press the **Hz/%** button (I). **Hz** (Hertz) lights up.
- With the existing series connection in the AC circuit, the frequency's measured reading will light up.
- The stabilized value on the display (A) is read as the actual reading.

Duty Cycle mode (AC)

- In AC measurement mode, press the **Hz/%** button (I) twice. **%** (percent) lights up.
- With the existing series connection in the AC circuit, the frequency's measured reading will light up.

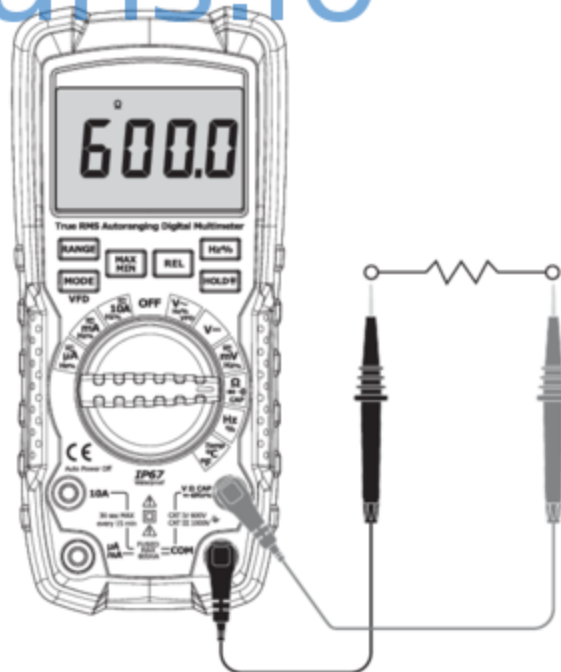
- The stabilized value on the display (A) is read as the actual reading.

Resistance measurement

⚠ WARNING Risk of electric shock! To avoid electric shock, disconnect power from the unit under test and discharge all capacitors before taking any resistance measurements. Remove the batteries or unplug. Resistance measurements are taken with no electricity running in the circuit.

NOTICE For best results, disconnect one side of the component under test. This is to avoid the other components in the circuit inhibiting the measurement.

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- Set the function switch (E) to the Ω \rightarrow \bullet \bullet \bullet **CAP** position.
- Insert the black connector lead (N) into the negative **COM** input jack (L).

- Insert the red connector lead (N) into the positive **V Ω CAP** input jack (K).
→•••**Hz%**
- Ω should light up on the display (A).
- Place the test probes (N) across the circuit or part under test.
- The stabilized value on the display (A) is read as the actual reading.

Diode test



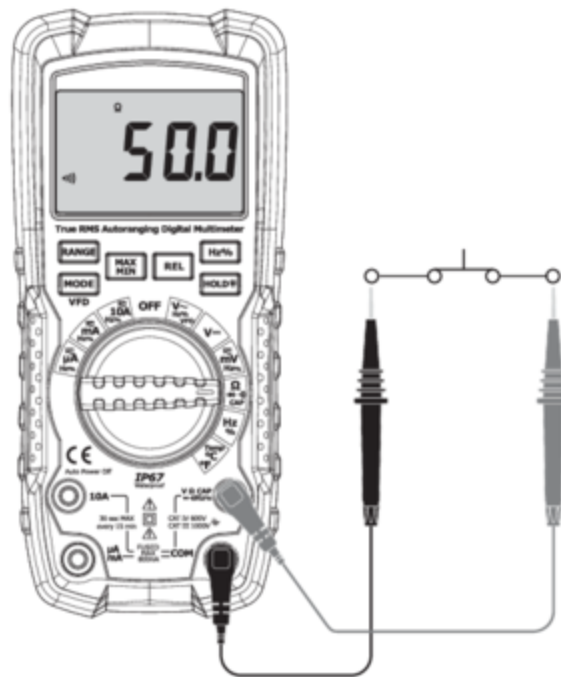
- Set the function switch (E) to the **Ω →••• CAP** position.
- Insert the black connector lead (N) into the negative **COM** input jack (L)
- Insert the red connector lead (N) into the positive **V Ω CAP** input jack (K).
→•••**Hz%**

- Press the **MODE** button (D) to switch to diode test mode. \rightarrow (11) should light up on the display (A).
- Place the test probes (N) across the diode being measured.
- If the diode was measured in reverse, the display (A) shows **OL**. Reverse the probes (N) position to get the correct polarity.

NOTICE Forward voltage typically indicates 0.4 to 0.7 V. A shorted diode indicates near 0 V and an open diode indicates **OL** in both polarities.

Continuity check

⚠ WARNING Risk of electric shock. To avoid electric shock, never measure continuity on circuits or wires that have voltage on them.



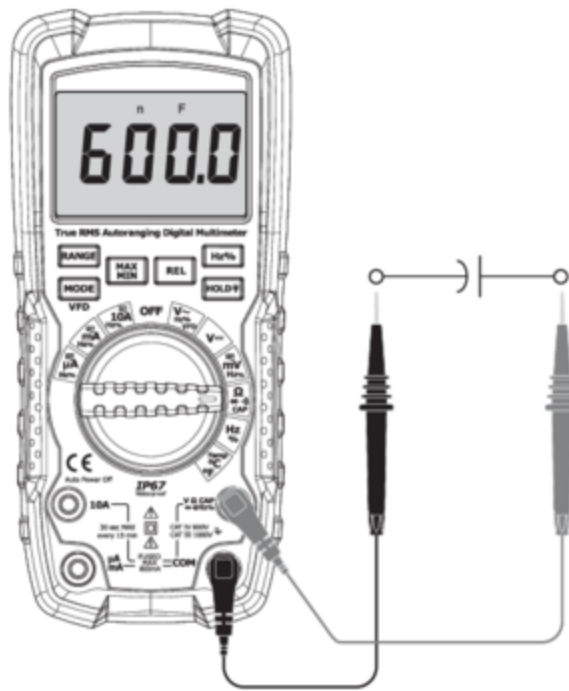
- Set the function switch (E) to the Ω \rightarrow \bullet **CAP** position.

- Insert the black connector lead (N) into the negative **COM** input jack (L).
- Insert the red connector lead (N) into the positive **V Ω CAP** input jack (K).
→• Hz%
- Press the **MODE** button (D) twice to switch to continuity check mode. • (10) should light up on the display (A).
- Place the test probes (N) across the circuit or part under test.
- The stabilized value on the display (A) is read as the actual reading.
- If the resistance is less than approximately 50 Ω , an audible signal is emitted.
- If the circuit is open, **OL** lights up on the display (A).

Capacitance measurement

NOTICE To avoid electric shock or measurement errors, discharge the capacitor under test before measuring.

NOTICE For best results, disconnect one side of the capacitor under test. This is to avoid the other components in the circuit to inhibiting the measurement.



- Set the function switch (E) to the $\Omega \rightarrow \text{Hz} \rightarrow \text{CAP}$ position.
- Insert the black connector lead (N) into the negative **COM** input jack (L).
- Insert the red connector lead (N) into the positive **V Ω CAP** input jack (K).
- Press the **MODE** button (D) 3 times to switch to capacitance measurement mode. **nF** should light up as the unit (2).
- Place the test probes (N) across the capacitor under test.
- The stabilized value on the display (A) is read as the actual reading.

NOTICE The test may take up to 3 minutes or more for large capacitors to charge.

NOTICE When measuring electrolytic capacitors, follow the polarity (+, -) of its leads to have a precise measurement.

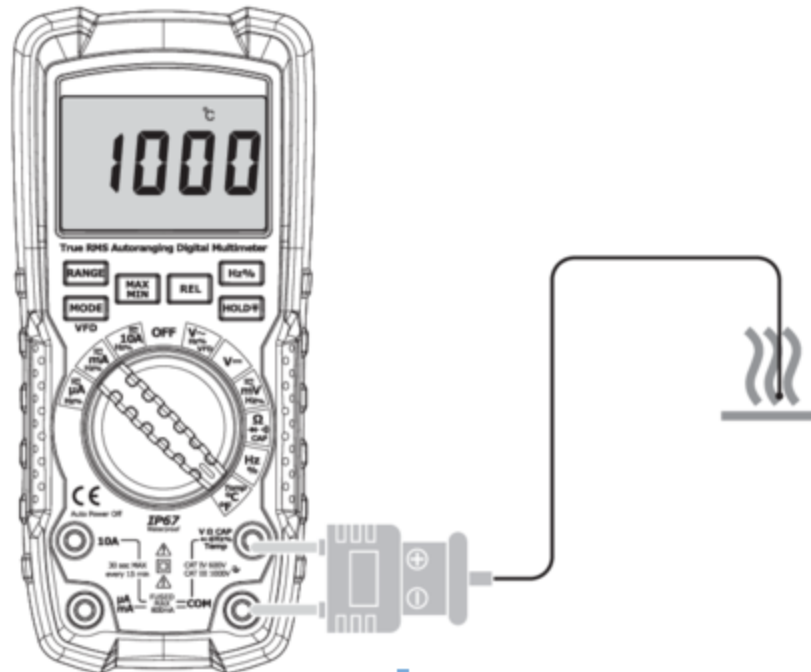
Frequency/duty cycle measurement (electronic)




- Set the function switch (E) to the **Hz %** position.
- Insert the black connector lead (N) into the negative **COM** input jack (L).
- Insert the red connector lead (N) into the positive **V Ω CAP Hz %** input jack (K).
- Place the test probes (N) across the circuit or part under test.
- Press the **Hz/%** button (I) to switch between frequency measurement (Hz) and duty cycle (%) measurement. The appropriate indicator **Hz** (2) or **%** (3) lights up.

- The stabilized value on the display (A) is read as the actual reading.

Temperature measurement



- Insert the thermocouple probe adapter (P) with the black connector into the negative **COM** input jack (L) and with the red connector into the positive **V Ω CAP** input jack (K).

- Connect the thermocouple probe (Q) to the thermocouple probe adapter (P). The polarity marking of the probe (Q) must correspond to the marking of the adapter (P). The probe pins are made in varying sizes to avoid a wrong connection.
- Set the function switch (E) to the **TEMP °C °F** position.
- Press the **MODE** button (D) to change the temperature unit.

- Place the thermocouple probe tip to the component under test.
- The stabilized value on the display (A) is read as the actual reading.

NOTICE For longer period of measurements, use a thermal tape to attach the thermocouple probe to the surface being measured.

NOTICE **Risk of product damage!**
Disconnect the thermocouple probe (Q) before changing to other electrical measurement mode.

Cleaning and Maintenance

NOTICE Switch the product off and all the connector leads before cleaning.

NOTICE During cleaning do not immerse the product in water or other liquids. Never hold the product under running water.

Cleaning

- To clean the product, wipe with a soft, slightly moist cloth.
- If necessary, clean the input jacks (F)/(G)/(K)/(L), and all connectors with a soft brush.
- Never use corrosive detergents, wire brushes, abrasive scourers, metal or sharp utensils to clean the product.



Replacing the fuses

⚠ WARNING Risk of electric shock!

Disconnect the product from any circuit, remove the connector leads (N) from the input jacks (F)/(G)/(K)/(L), and turn OFF the product before opening the battery compartment (R). Do not operate the product with an open battery compartment.

NOTICE If the product does not work properly, check the fuses and batteries to make sure that they are still good and that they are properly inserted.

NOTICE Always use a fuse of the proper size and value:

- 800 mA/1000 V fast blow for the 600 mA range,
- 10 A/1000 V fast blow for the 10 A range).
- Open the tilt stand (S).
- Loosen the screw of the battery compartment cover (R) and remove it.
- Remove the old fuse and install the new fuse into the holder.
- Close battery compartment (R) and tighten the screw.

Storage

- Store the product in its original packaging in a dry area. Keep away from children and pets.

Specifications

NOTICE

Accuracy specifications consist of two elements:

- (% f.m.*) – This is the accuracy of the measurement circuit.
- (+ digits) – This is the accuracy of the analog to digital converter.
- Accuracy is stated at 65 to 83 °F (18 to 28 °C) and less than 75 % RH.

NOTICE

*f.m. = from measurement

DC voltage		
Range	Resolution	Accuracy
60 mV	0.01 mV	±0.9 % f.m.* ±9 digits
600 mV	0.1 mV	
6 V	0.001 V	±0.5 % f.m.* ±5 digits
60 V	0.01 V	
600 V	0.1 V	±0.6 % f.m.* ±6 digits
1000V	1 V	



AC voltage (45 Hz to 1 kHz)

Range	Resolution	Accuracy
60 mV	0.01 mV	±0.9 % f.m.* ±9 digits
600 mV	0.1 mV	
6 V	0.001 V	±0.8 % f.m.* ±3 digits
60 V	0.01 V	
600 V	0.1 V	±0.8 % f.m.* ±8 digits
1000V	1 V	

- All AC voltage ranges are specified from 5 % of range to 100 % of range.
- AC voltage bandwidth:
45 Hz to 1 kHz (sinusoidal);
50/60 Hz (all waves).

VFD

Range	Resolution	Accuracy
50–700 V	0.1 V / 1 V	±4 % f.m.* ±3 digits

DC current

Range	Resolution	Accuracy
600 μA	0.1 μA	±1 % f.m.* ±3 digits
6000 μA	1 μA	
60 mA	0.01 mA	
600 mA	0.1 mA	

DC current

Range	Resolution	Accuracy
6.000 A	0.001 A	±1.5 % f.m.* ±3 digits
10 A	0.01 A	

10 A: Max. 30 seconds with reduced accuracy.

AC current (45 Hz to 1 kHz)

Range	Resolution	Accuracy
600 µA	0.1 µA	±1.5 % f.m.* ±3 digits
6000 µA	1 µA	
60 mA	0.01 mA	
600 mA	0.1 mA	±2.0 % f.m.* ±3 digits
6.000 A	0.001 A	
10 A	0.01 A	

- 10 A: Max. 30 seconds with reduced accuracy.
- All AC **current** ranges are specified from 5 % of range to 100 % of range.
- AC **current** bandwidth:
45 Hz to 1 kHz (sinusoidal);
50/60 Hz (all waves).

Resistance		
Range	Resolution	Accuracy
600Ω	0.1Ω	±1.0 % f.m.* ±2 digits
6 kΩ	0.001 kΩ	
60 kΩ	0.01 kΩ	±0.8 % f.m.* ±2 digits
600 kΩ	0.1 kΩ	
6 MΩ	0.001 MΩ	±1.2 % f.m.* ±2 digits
60 MΩ	0.01 MΩ	±1.0 % f.m.* ±5 digits

Test current: <0.35 mA.

Capacitance		
Range	Resolution	Accuracy
99.99 nF**	0.01 nF	±5.0 % f.m.* ±20 digits
999.9 nF	0.1 nF	
9.999 μF	0.001 μF	±4.0 % f.m.* ±5 digits
99.99 μF	0.01 μF	
999.9 μF	0.1 μF	
9.999 mF	0.001 mF	±10 % f.m.*
99.99 mF	0.01 mF	

**<99.99 nF not specified

Frequency (electronic)		
Range	Resolution	Accuracy
9.999 Hz	0.001 Hz	±0.1 % f.m.* ±4 digits
99.99 Hz	0.01 Hz	
999.9 Hz	0.1 Hz	
9.999 kHz	0.001 kHz	
99.99 kHz	0.01 kHz	
999.9 kHz	0.1 kHz	
9.999 MHz	0.001 MHz	

Sensitivity:

0.8 V rms minimum at 20 % to 80 % duty cycle and <100 kHz;

5 V rms minimum at 20 % to 80 % duty cycle and >100 kHz.

Frequency (electrical)		
Range	Resolution	Accuracy
10 Hz to 10 kHz	0.01 Hz	±0.5 % f.m.*

Sensitivity:

mV~ range (≥100 mV),

V~ range (≥6 % range),

6000 μA / 600 mA / 10 A range (≥6 % range),


600 μA / 60 mA / 6 A (≥60 % range)

Duty cycle		
Range	Resolution	Accuracy
0.1 to 99.9 %	0.1 %	± 1.2 % f.m.* ± 2 digits

Pulse width: 100 μ s to 100 ms

Frequency: 5 Hz to 150 kHz

Continuity	
Measurement	Output
Test current max. 0.35 mA	Beeping tone when resistance is less than (50 Ω)



Diode	
Measurement	Output
Test A  is max. 0.9 mA, open circuit voltage max. 3.2 V	Forward voltage drop of diode

Temperature		
Range	Resolution	Accuracy***
-40 °C to +1000 °C	1 °C	± 3 % f.m.* ± 3 °C
-40 °F to 1832 °F	1 °F	± 3 % f.m.* ± 5 °F

***Probe accuracy not included.

Sensor: Type-K Thermocouple;

General

Power supply:	1 x 9 V  battery
Max. measurement voltage:	CAT III: 1000 V Cat IV: 600 V
Pollution degree:	2
IP rating:	IP67
Shock proof (drop test):	6.5' (2 m)
Crest factor:	<3 at full scale up to 500 V, decreasing linearly to <1.5 at 1000 V.
Fuses:	Fuse 1: 0.8 A/1000 V ceramic fast blow Fuse 2: 10 A/1000 V ceramic fast blow.
Display:	6000 counts backlit LCD
Measurement rate:	2 readings per second, nominal
Input impedance:	>10 M Ω (V  and V \sim)
AC response:	True rms (A \sim and V \sim)
ACV bandwidth:	45 Hz to 1 kHz

Operating temperature:	41 °F to 104 °F (+5 °C to +40 °C)
Storage temperature:	-4 °F to 140 °F (-20 °C to +60 °C)
Operating humidity:	max. 80 % up to 87 °F (31 °C) decreasing linearly to 50 % at 104 °F (+40 °C).
Storage humidity:	<80 %
Operating altitude:	max. 7000' (2000 m)
Auto power off:	After approx. 15 minutes
Dimensions:	3.2 x 2.2 x 7 in (82 x 56 x 179 mm)
Net weight:	1 lbs (450 g)



Battery Disposal



Do not dispose of used batteries with your household waste. Take them to an appropriate disposal/collection site.



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V06-01/20