#47037

# Instructions
## Digital multimeter


Designed and Conforms to IEC61010-1 CAT. III 600V

## 1. INTRODUCTION

The multimeter adopts a 15 mm high LCD with backlight, which can clearly read out the display even in dark places. It is a portable 3 1/2-bit automatic range digital multimeter with high performance and high reliability.
This integrated circuit-based system features overload protection and supports measurement of AC/DC voltage and current, resistance, capacitance, frequency, diodes, continuity, and NCV.
It can be widely used in schools, research institutes, factories, enterprises and other social fields.

## 2. INTENDED USE

A multimeter is a measuring instrument that can measure multiple electrical properties.

**International Electrical Symbols**

| | |
|---|---|
| ⚠ | Risk of Danger. Important information. See Manual. |
| ~ | AC (Alternating Current) |
| ⎓ | DC (Direct Current) |
| ≂ | AC or DC |
| ⧈ | Double insulation |
| ⎓ | Fuse |
| ⏚ | Earth Ground |
| | L 148 x B 74 x H 43 mm |
| KG | 159 gram |

## 3. PRODUCT OVERVIEW

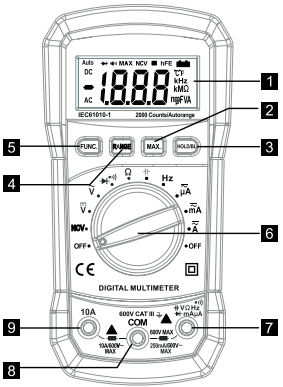



*Figure. 1 panel layout*

1. Liquid crystal display (LCD)
2. **"Max"** maximum key
3. **"Hold / BL"** hold reading and control backlight key
4. **"Range"** manual / automatic range switch key
5. **"Func."** select function key
6. Functional rotary switch
7. **•))/⊣/⇥/V/Ω/Hz/uA/mA** terminal
8. **"COM"** terminal
9. **"10A"** terminal

## 3.2 Function keys

| KEYS | FUNCTION |
|---|---|
| **FUNC.** | Push "FUNC." key, can rotary switch between functions. |
| **RANGE** | Short push: enter manual range and switch range; long push: Return to AUTO RANGE state. |
| **MAX.** | Push "MAX." key to display the maximum, but the meter continues to sample the input signal and constantly refresh the maximum and keep it. Push "MAX." key again to remove the maximum status. NOTE: the maximum is not the Peak value. |
| **HOLD/BL** | Short push: hold reading, push again to release hold reading. Long push: long push for more than 2 seconds, turn backlight on or off. |

## 3.3 Display indicators

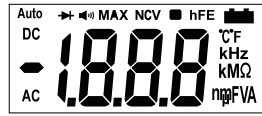



*Figure. 2 LCD*

| INDICATOR | MEANING |
|---|---|
| AC | AC voltage or current |
| − | Negative |
| DC | DC voltage or current |
| Auto | Auto range |
| → | Diode test |
| ))) | Continuity test |
| MAX | Maximum |
| NCV | NCV test |
| H | Hold data |
| | Low battery indicator |
| kHz | Frequency unit: kHz |
| kMΩ | Resistance unit: Ω, kΩ, MΩ |
| nμFVA | Capacitance unit: nF, μF, mF<br>Voltage unit: mV, V<br>Current unit: μA, mA, A |

## 4. SPECIFICATIONS

### 4.1 General Specifications

- Auto range.
- Display: 3 1/2 LCD.
- Overload protection: PTC protection circuit is used in resistance and frequency measurement.
- Data hold.
- Maximum measurement.
- Over-range display: OL.
- Battery low voltage display: .
- Auto Power Off: 15 minutes. Push "HOLD/BL" to wake up.
- Operating environment: 0~ 40°C (32 ~104 °F); <80% RH.
- Storage environments: -10~ 50°C (14~ 122 °F); <70% RH. .
- Power supply: 1.5V battery x2 pcs.
- Safety: IEC61010-1 600V CAT III.
- Size (LxWx H) and weight: 147.5x74x42.5mm, about 159g.

#### 4.1.1 Contents of the Package:

1. Multimeter
2. User manual
3. Test lead
4. 1.5V battery (2x AAA)

### 4.2 Accuracy index

Accuracy: ±% reading + word.

Temperature: 18°C to 28°C.Humidity: <80%.

| RANGE | RESOLUTION | ACCURACY |
|---|---|---|
| 200mV | 0.1mV | ±(0.5% + 2) |
| 2V | 0.001V | |
| 20V | 0.01V | |
| 200V | 0.1V | |
| 600V | 1V | ±(0.8% + 2) |

#### 4.2.2 AC voltage

| RANGE | RESOLUTION | ACCURACY |
|---|---|---|
| 200mV (40Hz-200Hz) | 0.1mV | ±(1.0% + 3) |
| 2V (40Hz-200Hz) | 0.001V | |
| 20V (40Hz-200Hz) | 0.01V | |
| 200V (40Hz-200Hz) | 0.1V | |
| 600V (40Hz-200Hz) | 1V | ±(1.2% + 3) |

**Input resistance: 10MΩ*
**Display: RMS value (effective value).*
**Maximum input voltage: 600VDC or 600VAC RMS.*

### 4.2.3 Resistance

| RANGE | RESOLUTION | ACCURACY |
|---|---|---|
| 200Ω | 0.1Ω | ±(0.8% + 2) |
| 2kΩ | 0.001kΩ | |
| 20kΩ | 0.01kΩ | |
| 200kΩ | 0.1kΩ | |
| 2MΩ | 0.001MΩ | |
| 20MΩ | 0.01MΩ | ±(1.0% + 2) |

### 4.2.4 Diode

| FUNCTION | RESOLUTION | REMARK |
|---|---|---|
|  | 0.001V | Display the approximate value of diode forward voltage |

**Forward direct current: about 1mA.*
**Reverse DC voltage: about 2V.*

### 4.2.5 Continuity

| FUNCTION | REMARK |
|---|---|
|  | If the resistance of the tested circuit is less than 30Ω, the buzzer inside the meter will sound. |

**Open circuit voltage is about 0.5V.*

### 4.2.6 Capacitance

| RANGE | RESOLUTION | ACCURACY |
|---|---|---|
| 20nF | 0.01nF | ±(4.0% + 5) |
| 200nF | 0.1nF | |
| 2uF | 0.001uF | |
| 20uF | 0.01uF | |
| 200uF | 0.1uF | |
| 2mF | 0.001mF | |

### 4.2.7 Direct Current

| RANGE | RESOLUTION | ACCURACY |
|---|---|---|
| 200uA | 0.1uA | ±(1.5% + 3) |
| 2000uA | 1uA | |
| 20mA | 0.01mA | |
| 200mA | 0.1mA | |
| 10A | 0.01A | |

### 4.2.8 Alternating Current

| RANGE | RESOLUTION | ACCURACY |
|---|---|---|
| 200uA | 0.1uA | ±(1.5% + 4) |
| 2000uA | 1uA | |
| 20mA | 0.01mA | |
| 200mA | 0.1mA | |
| 10A | 0.01A | |

**Overload protection: μA /mA range: F250mA/600V fuse (Fast fuse) 10A range: F10A/600V fuse( Fast fuse).*
**Maximum input current: mA terminal: 250mA, 10A terminal: 10A.*

### 4.2.9 NCV

| FUNCTION | ACCURACY |
|---|---|
| NCV | 0-3 level |

### 4.2.10 Frequency

| RANGE | RESOLUTION | ACCURACY |
|---|---|---|
| 20kHz | 0.01kHz | ±(1.5% + 5) |

## 5. MEASURE OPERATION

### 5.1 Measure AC and DC voltages

**Do not measure any voltage higher than the effective value of 600V DC or 600V AC to prevent electric shock or damage to the meter.**

1. Turn the rotary switch to  or  .
2. Connect the black test lead to the **"COM"** terminal and red test lead to the**"V"** terminal.
3. Measure the voltage of the circuit under test with the test lead. (parallel connection).
4. Read the measured voltage value and voltage polarity on the display.

**NOTE**:
Sometimes the meter will display several words, in DC 200mV and AC 200mV range, even if there is no input or test lead connected. In this case, short-circuit the **"V"** and **"COM"** terminals to make the display return to zero.

### 5.2 Measure Resistance

**In order to avoid damage to the meter or the equipment under test, before measuring the resistance, the power supply of the circuit under test should be cut off and all high-voltage capacitors should be fully discharged.**

1. Turn the rotary switch to "Ω". LCD display " OL.".
2. Connect the black test lead to the **"COM"** terminal and red test lead to the "Ω" terminal.
3. Measure the resistance of the circuit under test with the test leads
4. Read the measured resistance on the display.

**NOTE**:
When measuring low resistance, in order to measure accurately, the measured resistance needs to subtract the short-circuit resistance of the two test leads. It is normal for high resistance measurement when it takes a few seconds for the reading to stabilize.

## 5.3 Measure Capacitance

**In order to avoid damage to the meter or the equipment under test, before measuring capacitance, the power supply of the circuit under test should be cut off and all high-voltage capacitors should be fully discharged.**

1. Turn the rotary switch to "⏚". LCD display "0.00 nF".
2. Connect the black test lead to the **"COM"** terminal and red test lead to the "⏚" terminal.
3. Measure the capacitance of the circuit under test with the test leads.
4. Read the measured capacitance on the display.

NOTE:
It is normal for high capacitance measurement when it takes a few seconds for the reading to stabilize.

## 5.4 Measure AC or DC Current

**Do not try to measure current on the circuit, when the voltage between the open circuit voltage and the ground exceeds 250V. If the fuse is blown during measurement, you may damage the meter or hurt yourself. In order to avoid damage to the meter or the equipment under test, please check the fuse of the meter before measuring current. When measuring, use the correct input terminal, rotary switch and range. Do not connect the other end of the test lead to any circuit in parallel. When the test lead is plugged into the current input terminal.**

Use the **"FUNC."** to switch between DC and AC measurement modes.

1. Turn off power to the circuit. Turn the rotary switch to a suitable current gear.
2.. Connect the black test lead to the **"COM"** terminal and the red test lead to the corresponding current input terminal.
3. Connect the test leads in series to the circuit.
4. Turn on power to the circuit. Read the measured current on the display. If the LCD display "OL", please select a higher range.

NOTE:
(1) The connection time should not exceed 10 seconds when measuring 5-10A high current, the test data will not be stable due to heating.
(2) The measurement interval takes 3-5 minutes when multiple measurements are made

## 5.5 Test Diodes

**In order to avoid damage to the meter or the equipment under test, before the diode measurement, the power supply of the circuit under test should be cut off and all high-voltage capacitors should be fully discharged.**

1. Turn the rotary switch to the "⏚ •))", and push **"FUNC".** to switch to the "⏚".
2. Connect the black test lead to the **"COM"** terminal and red test lead to the "⏚" terminal.
3. Connect the black test lead to the cathode and the red test lead anode of the tested diode.
4. The meter will display the forward bias value of the diode under test. If the polarity of the test lead is reversed, the meter will display "OL".

## 5.6 Test for Continuity

**To avoid damage to the meter or the device under test, before the test for Continuity, the power supply of the circuit under test should be cut off and all high-voltage capacitors should be fully discharged.**

1. Turn the rotary switch to "⊣•))".
2. Connect the black test lead to the **"COM"** terminal and the red test lead to the " " terminal.
3. Measure the resistance of the circuit under test with the test leads.
4. The buzzer will sound continuously if the resistance of the circuit under test is less than 30Ω.

## 5.7 Measure Frequency

**Do not measure the frequency of any voltage higher than 250V DC or AC RMS to prevent electric shock or damage to the meter.**

1. Turn the rotary switch to the **"Hz".**
2. Connect the black test lead to the **"COM"** terminal and red test lead to the **"Hz"** terminal.
3. Measure the frequency of the circuit under test with the test leads.

## 5.8 NCV Test

1. Turn the rotary switch to **"NCV".**
2. Place the top of the meter close to the object to be measured. If the meter detects AC voltage, the LCD will display the corresponding horizontal lines (high, medium, low) according to the detected signal strength, and the buzzer will sound different frequencies.

### NOTE:

1: Even if there is no indication, voltage may still exist. Do not rely on NCV detectors to determine whether there is voltage on the wire. The detection operation may be affected by factors such as socket design, insulation thickness and type.

2: When the instrument input terminal input voltage, due to the existence of induced voltage, NCV test may also detect AC voltage.

3: Interference sources in the external environment (such as flashlights, motors, etc.) may falsely trigger NCV detection.

## 6. MAINTENANCE

### 6.1 Replace Battery

It needs to replace battery when the "🔋" symbol appears on LCD.

1: Turn off the power. Unplug the test wire.
2: Open the battery cover with a screwdriver and remove the battery
3: Put in the battery of the same specification and fix the battery cover.

### 6.2 Replace Fuses

1: Unplug the test line first, and shut down.
2: Open the back cover with a screwdriver and take out the broken fuse.
3: Insert a fuse of the same specification, replace the back cover, and fix the screws.

### 6.3 Maintenance

Please use a soft cloth to clean the surface of the instrument when necessary. Do not use organic solvents or abrasives that corrode or dissolve the case.

## SAFETY INSTRUCTIONS

**ENGLISH**

This digital multimeter is designed according to IEC61010-1 600V (CAT III) and Pollution Degree 2.
To ensure correct and safe use of the meter, please read the instruction manual carefully.
In order to avoid personal injury and meter damage caused by electric shock, users should pay attention to the following safety tips.

- Do not measure any voltage beyond the measurement range specified by this meter.
- Do not apply a voltage above 100V to the terminal of the resistance measurement, although there is an internal protection circuit in the resistance measurement.
- To prevent malfunction, avoid using the meter in direct sunlight or environments with excessively high temperatures.
- Always be careful when measuring voltage over 30V AC or 60V DC.
- Before measuring the current, turn off the power first, disconnect the circuit point under test and then power on for measurement.
- Pay attention to the polarity when replacing the battery.

**(BULGARIAN - БЪЛГАРСКИ)**

Бележка за безопасност
Този цифров мултицет е проектиран съгласно IEC61010-1 600V (CAT III) и степен на замърсяване 2. За да осигурите правилна и безопасна употреба, моля, прочетете ръководството внимателно.
За да избегнете наранявания и повреди от електрически удар, следвайте тези инструкции:

- Не измервайте напрежение извън зададения обхват на уреда.
- Не прилагайте напрежение над 100V към входа за измерване на съпротивление, въпреки че има вградена защитна схема.
- Проверете за повредени измервателни проводници.
- Избягвайте пряка слънчева светлина и високи температури при използване на уреда.
- Избягвайте риска от токов удар при измерване на напрежения над 30V AC или 60V DC.
- Изключете захранването преди измерване на ток, прекъснете тестовата верига и след това включете за измерване.
- Спазвайте поляритета при смяна на батерията.

**IRISH (GAEILGE)**

Nóta Sábháilteachta

Tá an iliméadar digiteach seo deartha de réir IEC61010-1 600V (CAT III) agus Céim Truaillithe 2. Chun úsáid cheart agus shábháilte a chinntiú, léigh an lámhleabhar treoracha go cúramach.

Chun gortú pearsanta agus damáiste don mhéadar mar gheall ar chroitheadh leictreach a sheachaint, tabhair aird ar na treoirlínte sábháilteachta seo a leanas:

- Ná tomhais aon voltas a sháraíonn an raon tomhais sonraithe.
- Ná cuir voltas os cionn 100V ar an teirminéal tomhais friotaíochta, fiú má tá ciorcad cosanta inmheánach ann.
- Seiceáil an bhfuil na tástáil-threoracha damáistithe.
- Seachain solas díreach na gréine agus teocht an-ard agus an méadar á úsáid.
- Seachain an baol turraing leictreach agus tú ag tomhas voltas os cionn 30V AC nó 60V DC.
- Múch an chumhacht sula ndéanann tú tomhas reatha, dícheangail an pointe tástála, agus ansin cuir ar siúl é le haghaidh tomhais.
- Tabhair aird ar an bpolaraíocht agus an ceallraí á hathsholáthar.

**CZECH (ČEŠTINA)**

Bezpečnostní pokyny

Tento digitální multimetr je navržen podle normy IEC61010-1 600V (CAT III) a stupně znečištění 2. Pro zajištění správného a bezpečného používání si pečlivě přečtěte návod k obsluze.

Aby se předešlo úrazu elektrickým proudem a poškození přístroje, dodržujte následující bezpečnostní opatření:

- Neměřte napětí mimo stanovený rozsah měření.
- Nepoužívejte napětí vyšší než 100V na svorku pro měření odporu, i když je v obvodu ochranný prvek.
- Zkontrolujte, zda nejsou měřicí vodiče poškozené.
- Nepoužívejte přístroj na přímém slunci nebo v extrémně vysokých teplotách.
- Dávejte pozor na riziko úrazu elektrickým proudem při měření napětí nad 30V AC nebo 60V DC.
- Před měřením proudu vypněte napájení, odpojte měřený obvod a teprve poté proveďte měření.
- Při výměně baterie dbejte na správnou polaritu.

**DANISH (DANSK)**

Sikkerhedsinstruktioner

Dette digitale multimeter er designet i overensstemmelse med IEC61010-1 600V (CAT III) og forureningsgrad 2. For at sikre korrekt og sikker brug, læs venligst brugsanvisningen omhyggeligt. For at undgå personskader og skader på måleren som følge af elektrisk stød, skal du følge disse sikkerhedsanvisninger:

- Mål ikke spændinger, der overstiger målerens specificerede område.
- Anvend ikke spænding over 100V på modstandsmålingsterminalen, selvom der er en intern beskyttelseskreds.
- Kontroller, om testledningerne er beskadigede.
- Undgå direkte sollys og ekstremt høje temperaturer ved brug af måleren.
- Undgå risikoen for elektrisk stød ved måling af spændinger over 30V AC eller 60V DC.
- Sluk for strømmen, før du måler strøm, afbryd kredsløbet, og tænd derefter for måling.
- Vær opmærksom på polariteten, når du udskifter batteriet.

**DUTCH (NEDERLANDS)**

Veiligheidsinstructies

Deze digitale multimeter is ontworpen volgens IEC61010-1 600V (CAT III) en verontreinigingsgraad 2. Om correct en veilig gebruik van de meter te garanderen, dient u de handleiding zorgvuldig te lezen.

Om persoonlijk letsel en schade aan de meter door elektrische schokken te voorkomen, dient u op de volgende veiligheidsmaatregelen te letten:

- Meet geen spanning die de gespecificeerde meetbereiken van deze meter overschrijdt.
- Breng geen spanning hoger dan 100V aan op de weerstandmeetklem, ook al is er een interne beveiligingsschakeling aanwezig.
- Controleer of de meetsnoeren beschadigd zijn.
- Vermijd direct zonlicht en extreem hoge temperaturen bij gebruik van de meter.
- Vermijd het risico op elektrische schokken bij het meten van spanningen boven 30V AC of 60V DC.
- Schakel de stroom uit voordat u stroom meet, verbreek de te testen schakeling en schakel dan in voor de meting.
- Let op de polariteit bij het vervangen van de batterij.

**ESTONIAN (EESTI)**

Ohutusjuhised

See digitaalmultimeeter on projekteeritud vastavalt IEC61010-1 600V (CAT III) ja saasteastmele 2. Õige ja ohutu kasutamise tagamiseks lugege juhend hoolikalt läbi.

Elektrilöögi põhjustatud vigastuste ja mõõteseadme kahjustuste vältimiseks järgige järgmisi ohutusnõudeid:

- Ärge mõõtke pinget, mis ületab määratud mõõtmisvahemiku.
- Ärge rakendage takistusmõõteterminalile pinget üle 100V, isegi kui sisemine kaitselülitus on olemas.
- Kontrollige, kas katsesondid on kahjustatud.
- Vältige otsest päikesevalgust ja äärmuslikke temperatuure seadme kasutamisel.
- Vältige elektrilöögi ohtu, kui mõõdate pinget üle 30V AC või 60V DC.
- Lülitage enne voolutugevuse mõõtmist toide välja, katkestage katsetatav vooluahel ja seejärel lülitage see sisse.
- Jälgige polaarsust patarei vahetamisel.

**FINNISH (SUOMI)**

Turvallisuusohjeet

Tämä digitaalinen yleismittari on suunniteltu IEC61010-1 600V (CAT III) ja saastetaso 2 -standardin mukaisesti. Varmistaaksesi oikean ja turvallisen käytön, lue käyttöohje huolellisesti. Sähköiskujen aiheuttamien vammojen ja laitteen vaurioiden välttämiseksi noudata seuraavia turvallisuusohjeita:

- Älä mittaa jännitettä, joka ylittää mittarin määritellyn mittausalueen.
- Älä käytä yli 100V jännitettä vastusmittausliittimeen, vaikka siinä on sisäinen suojapiiri.
- Tarkista, ovatko mittajohtimet vaurioituneet.
- Vältä suoraa auringonvaloa ja erittäin korkeita lämpötiloja mittaria käytettäessä.
- Vältä sähköiskun vaaraa mitattaessa yli 30V AC tai 60V DC jännitettä.
- Katkaise virta ennen virran mittaamista, irrota testattava piiri ja kytke se sitten uudelleen päälle mittausta varten.
- Huomioi napaisuus vaihtaessasi paristoa.

**FRENCH (FRANÇAIS)**

Consignes de sécurité

Ce multimètre numérique est conçu selon la norme IEC61010-1 600V (CAT III) et le degré de pollution 2. Pour garantir une utilisation correcte et en toute sécurité, veuillez lire attentivement le manuel d'instructions.

Pour éviter toute blessure ou dommage causé par un choc électrique, suivez ces consignes de sécurité:

- Ne mesurez pas une tension dépassant la plage spécifiée de l'appareil.
- Ne connectez pas une tension supérieure à 100V sur la borne de mesure de résistance, même s'il y a un circuit de protection interne.
- Vérifiez que les fils de test ne sont pas endommagés.
- Évitez la lumière directe du soleil et les températures extrêmes lors de l'utilisation du multimètre.
- Évitez tout risque d'électrocution lors de la mesure de tensions supérieures à 30V AC ou 60V DC.
- Avant de mesurer le courant, éteignez l'alimentation, déconnectez le circuit de test, puis rallumez pour mesurer.
- Respectez la polarité lors du remplacement de la batterie.

**GERMAN (DEUTSCH)**

Sicherheitsanweisungen

Dieses digitale Multimeter wurde gemäß IEC61010-1 600V (CAT III) und Verschmutzungsgrad 2 entwickelt. Um eine sichere und korrekte Nutzung zu gewährleisten, lesen Sie bitte die Bedienungsanleitung sorgfältig durch.

Um Verletzungen oder Schäden durch Stromschläge zu vermeiden, beachten Sie die folgenden Sicherheitshinweise:

- Messen Sie keine Spannung, die den angegebenen Messbereich des Geräts überschreitet.
- Wenden Sie keine Spannung über 100V an den Widerstandsmessanschluss an, auch wenn eine interne Schutzschaltung vorhanden ist.
- Überprüfen Sie, ob die Messleitungen beschädigt sind.
- Vermeiden Sie direkte Sonneneinstrahlung und extreme Temperaturen bei der Verwendung des Messgeräts.
- Vermeiden Sie das Risiko eines elektrischen Schlags bei Spannungsmessungen über 30V AC oder 60V DC.
- Schalten Sie die Stromversorgung aus, bevor Sie Strom messen, trennen Sie den Prüfschaltkreis und schalten Sie dann wieder ein.
- Achten Sie beim Batteriewechsel auf die richtige Polarität.

## GREEK (ΕΛΛΗΝΙΚΑ)

Οδηγίες ασφαλείας

Αυτό το ψηφιακό πολύμετρο έχει σχεδιαστεί σύμφωνα με το πρότυπο IEC61010-1 600V (CAT III) και Βαθμό Ρύπανσης 2. Για σωστή και ασφαλή χρήση, διαβάστε προσεκτικά το εγχειρίδιο οδηγιών.

Για να αποφύγετε τραυματισμούς και ζημιές από ηλεκτροπληξία, ακολουθήστε τις παρακάτω οδηγίες ασφαλείας:

- Μην μετράτε τάση που υπερβαίνει το καθορισμένο εύρος μέτρησης της συσκευής.
- Μην εφαρμόζετε τάση άνω των 100V στον ακροδέκτη μέτρησης αντίστασης, ακόμα και αν υπάρχει εσωτερικό κύκλωμα προστασίας.
- Ελέγξτε αν τα καλώδια δοκιμής είναι κατεστραμμένα.
- Αποφύγετε την άμεση έκθεση στον ήλιο και τις υψηλές θερμοκρασίες κατά τη χρήση του πολύμετρου.
- Αποφύγετε τον κίνδυνο ηλεκτροπληξίας κατά τη μέτρηση τάσεων άνω των 30V AC ή 60V DC.
- Πριν μετρήσετε ρεύμα, απενεργοποιήστε την τροφοδοσία, αποσυνδέστε το υπό δοκιμή κύκλωμα και ενεργοποιήστε το ξανά για τη μέτρηση.
- Δώστε προσοχή στην πολικότητα κατά την αντικατάσταση της μπαταρίας.

## HUNGARIAN (MAGYAR)

Biztonsági utasítások

Ez a digitális multiméter az IEC61010-1 600V (CAT III) és a 2-es szennyezettségi fok szerint lett tervezve. A megfelelő és biztonságos használat érdekében olvassa el figyelmesen a használati útmutatót.

Az áramütés okozta személyi sérülések és a műszer károsodásának elkerülése érdekében tartsa be az alábbi biztonsági előírásokat:

- Ne mérjen olyan feszültséget, amely meghaladja a műszer által megadott mérési tartományt.
- Ne alkalmazzon 100V-nál nagyobb feszültséget az ellenállásmérés csatlakozóján, még akkor sem, ha van belső védelmi áramkör.
- Ellenőrizze, hogy a mérővezetékek nem sérültek-e.
- Kerülje a közvetlen napsütést és a szélsőségesen magas hőmérsékletet a műszer használata során.
- Kerülje az áramütés kockázatát 30V AC vagy 60V DC feletti feszültség mérésekor.
- Árammérés előtt kapcsolja ki az áramellátást, válassza le a mérendő áramkört, majd kapcsolja vissza a mérésekhez.
- Az elemcsere során figyeljen a polaritásra.

**ITALIAN (ITALIANO)**

Istruzioni di sicurezza

Questo multimetro digitale è progettato secondo lo standard IEC61010-1 600V (CAT III) e il grado di inquinamento 2. Per garantire un uso corretto e sicuro, leggere attentamente il manuale di istruzioni. Per evitare lesioni personali e danni allo strumento causati da scosse elettriche, attenersi alle seguenti precauzioni di sicurezza:

- Non misurare tensioni superiori al campo di misura specificato dallo strumento.
- Non applicare una tensione superiore a 100V sul terminale di misura della resistenza, anche se è presente un circuito di protezione interno.
- Controllare che i cavi di prova non siano danneggiati.
- Evitare l'uso dello strumento alla luce diretta del sole o in ambienti con temperature estremamente alte.
- Evitare il rischio di scosse elettriche quando si misurano tensioni superiori a 30V AC o 60V DC.
- Prima di misurare la corrente, spegnere l'alimentazione, scollegare il circuito in prova e quindi riaccenderlo per la misurazione.
- Prestare attenzione alla polarità durante la sostituzione della batteria.

**LATVIAN (LATVIEŠU)**

Drošības norādījumi

Šis digitālais multimetrs ir izstrādāts saskaņā ar IEC61010-1 600V (CAT III) un 2. piesārņojuma līmeni. Lai nodrošinātu pareizu un drošu lietošanu, uzmanīgi izlasiet lietošanas instrukciju.

Lai izvairītos no elektrošoka izraisītiem savainojumiem un ierīces bojājumiem, ievērojiet šos drošības pasākumus:

- Nemēriet spriegumu, kas pārsniedz ierīces norādīto diapazonu.
- Neuzklājiet spriegumu virs 100V uz pretestības mērīšanas termināļa, pat ja ir iekšējais aizsardzības ķēde.
- Pārbaudiet, vai testēšanas vadi nav bojāti.
- Izvairieties no tiešiem saules stariem un ekstremāli augstas temperatūras, lietojot ierīci.
- Izvairieties no elektrošoka riska, mērot spriegumus virs 30V AC vai 60V DC.
- Pirms strāvas mērīšanas izslēdziet barošanu, atvienojiet testējamo ķēdi un pēc tam ieslēdziet to mērījumu veikšanai.
- Esiet uzmanīgs ar polaritāti, mainot bateriju.

**LITHUANIAN (LIETUVIŲ)**

Saugos instrukcijos

Šis skaitmeninis multimetras sukurtas pagal IEC61010-1 600V (CAT III) ir 2 taršos laipsnį. Kad užtikrintumėte tinkamą ir saugų naudojimą, atidžiai perskaitykite instrukcijų vadovą.

Kad išvengtumėte elektros smūgio sukeltų traumų ar prietaiso pažeidimų, laikykitės šių saugumo priemonių:

- Nematuokite įtampos, viršijančios nurodytą matavimo diapazoną.
- Nenaudokite įtampos, didesnės nei 100V, varžos matavimo terminale, net jei yra vidinė apsaugos grandinė.
- Patikrinkite, ar matavimo laidai nėra pažeisti.
- Venkite tiesioginių saulės spindulių ir itin aukštos temperatūros naudojant prietaisą.
- Venkite elektros smūgio pavojaus matuojant įtampas virš 30V AC arba 60V DC.
- Prieš matuodami srovę, išjunkite maitinimą, atjunkite testuojamą grandinę ir tada įjunkite matavimui.
- Keisdami bateriją atkreipkite dėmesį į poliariškumą.

**MALTESE (MALTI)**

Noti tas-Sigurtà

Dan il-multimetru diġitali huwa ddisinjat skont l-istandard IEC61010-1 600V (CAT III) u l-Livell ta' Tniġġis 2. Biex tiżgura użu korrett u sikur, aqra l-manwal ta' struzzjonijiet b'attenzjoni.

Biex tevita ġrieħi jew ħsarat fil-meter minħabba xokk elettriku, segwi dawn il-linji gwida tas-sigurtà:

- Tkejjel l-ebda vultaġġ li jaqbeż il-firxa speċifikata mill-meter.
- Taqbadx vultaġġ ogħla minn 100V mat-terminal tal-kejl tar-reżistenza, anke jekk hemm ċirkwit ta' protezzjoni interna.
- Iċċekkja jekk il-kejbils tat-test humiex bil-ħsara.
- Evita d-dawl tax-xemx dirett u temperaturi estremi waqt l-użu tal-meter.
- Evita riskju ta' xokk elettriku meta tkejjel vultaġġi aktar minn 30V AC jew 60V DC.
- Qabel tkejjel il-kurrent, itfi l-provvista tal-elettriku, aqta' ċ-ċirkwit tat-test, u mbagħad ixgħel għal kejl.
- Oqgħod attent għall-polarità meta tibdel il-batterija.

**POLISH (POLSKI)**

Instrukcje bezpieczeństwa

Ten cyfrowy miernik został zaprojektowany zgodnie z normą IEC61010-1 600V (CAT III) i poziomem zanieczyszczenia 2. Aby zapewnić prawidłowe i bezpieczne użytkowanie, należy uważnie przeczytać instrukcję obsługi.

Aby uniknąć obrażeń lub uszkodzenia miernika na skutek porażenia prądem, należy przestrzegać następujących zasad bezpieczeństwa:

- Nie mierz napięcia przekraczającego zakres pomiarowy miernika.
- Nie przykładaj napięcia wyższego niż 100V do wejścia pomiaru rezystancji, nawet jeśli istnieje wewnętrzny układ zabezpieczający.
- Sprawdź, czy przewody pomiarowe nie są uszkodzone.
- Unikaj bezpośredniego światła słonecznego i ekstremalnie wysokich temperatur podczas użytkowania miernika.
- Unikaj ryzyka porażenia prądem podczas pomiaru napięcia powyżej 30V AC lub 60V DC.
- Przed pomiarem prądu wyłącz zasilanie, odłącz testowany obwód i dopiero wtedy włącz miernik.
- Zachowaj ostrożność przy wymianie baterii i zwróć uwagę na biegunowość.

**PORTUGUESE (PORTUGUÊS)**

Instruções de segurança

Este multímetro digital foi projetado de acordo com IEC61010-1 600V (CAT III) e Grau de Poluição 2. Para garantir o uso correto e seguro, leia atentamente o manual de instruções.

Para evitar ferimentos pessoais e danos ao equipamento devido a choques elétricos, siga estas diretrizes de segurança:

- Não meça tensões além do intervalo especificado pelo equipamento.
- Não aplique uma tensão superior a 100V no terminal de medição de resistência, mesmo que haja um circuito de proteção interno.
- Verifique se os cabos de teste estão danificados.
- Evite a exposição direta ao sol e temperaturas extremas ao usar o multímetro.
- Evite o risco de choque elétrico ao medir tensões acima de 30V AC ou 60V DC.
- Antes de medir corrente, desligue a alimentação, desconecte o circuito em teste e só depois ligue para medir.
- Preste atenção à polaridade ao trocar a bateria.

**ROMANIAN (ROMÂNĂ)**

Instrucțiuni de siguranță

Acest multimetru digital este proiectat conform standardului IEC61010-1 600V (CAT III) și Gradului de Poluare 2. Pentru a asigura o utilizare corectă și sigură, citiți cu atenție manualul de instrucțiuni. Pentru a evita rănirile sau deteriorarea aparatului cauzată de șocuri electrice, urmați aceste măsuri de siguranță:

- Nu măsurați tensiuni care depășesc intervalul specificat al aparatului.
- Nu aplicați o tensiune mai mare de 100V pe terminalul de măsurare a rezistenței, chiar dacă există un circuit de protecție intern.
- Verificați dacă firele de testare sunt deteriorate.
- Evitați expunerea directă la soare și temperaturile extreme în timpul utilizării.
- Evitați riscul de electrocutare atunci când măsurați tensiuni peste 30V AC sau 60V DC.
- Înainte de a măsura curentul, opriți alimentarea, deconectați circuitul testat și apoi reporniți aparatul pentru măsurare.
- Fiți atenți la polaritate atunci când schimbați bateria.

**SLOVAK (SLOVENČINA)**

Bezpečnostné pokyny

Tento digitálny multimeter je navrhnutý podľa normy IEC61010-1 600V (CAT III) a stupňa znečistenia 2. Na zabezpečenie správneho a bezpečného používania si pozorne prečítajte návod na obsluhu.

Aby ste predišli zraneniu elektrickým prúdom alebo poškodeniu prístroja, dodržujte tieto bezpečnostné pokyny:

- Nemerajte napätie, ktoré presahuje špecifikovaný rozsah merania.
- Na svorku merania odporu neprikladajte napätie vyššie ako 100V, aj keď má vnútorný ochranný obvod.
- Skontrolujte, či nie sú poškodené testovacie vodiče.
- Vyhnite sa priamemu slnečnému žiareniu a extrémnym teplotám počas používania prístroja.
- Zabráňte riziku zásahu elektrickým prúdom pri meraní napätia nad 30V AC alebo 60V DC.
- Pred meraním prúdu vypnite napájanie, odpojte meraný obvod a až potom zapnite prístroj na meranie.
- Pri výmene batérie dbajte na správnu polaritu.

**SLOVENIAN (SLOVENŠČINA)**

Varnostna navodila

Ta digitalni multimeter je zasnovan v skladu s standardom IEC61010-1 600V (CAT III) in stopnjo onesnaženosti 2. Za zagotovitev pravilne in varne uporabe natančno preberite navodila za uporabo.

Da bi se izognili poškodbam zaradi električnega udara ali poškodbam naprave, upoštevajte naslednje varnostne ukrepe:

- Ne merite napetosti, ki presega določen merilni obseg naprave.
- Na priključek za merjenje upornosti ne priključite napetosti, večje od 100V, čeprav ima notranje zaščitno vezje.
- Preverite, ali so merilni kabli poškodovani.
- Izogibajte se neposredni sončni svetlobi in ekstremnim temperaturam pri uporabi naprave.
- Izogibajte se nevarnosti električnega udara pri merjenju napetosti nad 30V AC ali 60V DC.
- Pred merjenjem toka izklopite napajanje, odklopite testirano vezje in nato ponovno vklopite napravo za merjenje.
- Pri menjavi baterije bodite pozorni na polariteto.

**SPANISH (ESPAÑOL)**

Instrucciones de seguridad

Este multímetro digital ha sido diseñado conforme a IEC61010-1 600V (CAT III) y Grado de Contaminación 2. Para garantizar un uso correcto y seguro, lea atentamente el manual de instrucciones.

Para evitar lesiones personales y daños al equipo por descargas eléctricas, siga estas precauciones de seguridad:

- No mida voltajes que excedan el rango de medición especificado por el dispositivo.
- No aplique un voltaje superior a 100V en la terminal de medición de resistencia, aunque haya un circuito de protección interno.
- Revise que los cables de prueba no estén dañados.
- Evite la luz solar directa y temperaturas extremadamente altas al usar el dispositivo.
- Evite el riesgo de descarga eléctrica al medir voltajes superiores a 30V AC o 60V DC.
- Antes de medir la corriente, apague la alimentación, desconecte el circuito de prueba y luego vuelva a encenderlo para la medición.
- Preste atención a la polaridad al reemplazar la batería.

**SWEDISH (SVENSKA)**

Säkerhetsinstruktioner

Denna digitala multimeter är designad enligt IEC61010-1 600V (CAT III) och Föroreningsgrad 2. För att säkerställa korrekt och säker användning, läs bruksanvisningen noggrant.

För att undvika personskador och skador på enheten på grund av elektriska stötar, följ dessa säkerhetsföreskrifter:

- Mät inte en spänning som överskrider mätområdena för denna enhet.
- Applicera inte en spänning över 100V på resistansmätningens terminal, även om det finns en intern skyddskrets.
- Kontrollera att testkablarna inte är skadade.
- Undvik direkt solljus och extrema temperaturer vid användning av enheten.
- Undvik risk för elektriska stötar vid mätning av spänningar över 30V AC eller 60V DC.
- Stäng av strömmen innan du mäter ström, koppla ur den testade kretsen och slå sedan på för mätning.
- Var noga med polariteten vid batteribyte.

# EU DECLARATION OF CONFORMITY (No. 2025-007)

*This Declaration of Conformity is issued under the sole responsibility of the manufacturer*

| | |
|---|---|
| **Company name** | Sonic Equipment B.V. |
| **Full address** | Component 114 - 116<br>1446 WP Purmerend |
| **Country** | The Netherlands |

**IDENTIFICATION OF ELECTRICAL EQUIPMENT**

| | |
|---|---|
| **Name:** | Digital multimeter |
| **Function/intended use:** | A multimeter is a measuring instrument that can measure multiple electrical properties. |
| **Type/model:**<br>**Batch/ serial:**<br>  | 47037 / PM8233D+<br>Taking the form of: Www - YYYY - xxxx<br>Where:<br>W - fixed value<br>ww - refers to the week produced<br>YYYY- refers to the year<br>xxxx- refers to a sequential unique identifier for each unit. Applicable range; 0001 to 9999. |

*The object of the declaration described above is in conformity with all relevant provisions of: In conjunction with the following relevant harmonised standards or technical specifications:*
**RoHS Directive 2011/65/EU** NEN-EN-IEC 63000:2018 - Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
**EMC Directive 2014/30/EU** NEN-EN-IEC 61326-2-2:2021 - Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-2: Particular requirements - Test configurations, operational conditions and performance criteria for portable testing, measuring and monitoring equipment used in low-voltage distribution systems
**LOW VOLTAGE DIRECTIVE 2014/35/EU** NEN-EN-IEC 61010-1:2010/A1:2019 - Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements NEN-EN-IEC 61010-2-030:2021 - Safety requirements for electrical equipment for measurement, control.

*Signed on behalf the manufacturer by:*

**Place of issue:** Purmerend

**Country:** The Netherlands
**Date of issue:** 7 February 2025

**Identity:** Mr. Remko Papenburg
**Function:** CEO

Signature:

# Supplier's Declaration of Conformity (2025-007S)

*This Declaration of Conformity is issued under the sole responsibility of the manufacturer*

| | |
|---|---|
| **Manufacturer** | Sonic Tools USA Inc. |
| **Address** | 480 N. Dean Rd. Suite H7<br>Auburn, AL 36830 |
| **Country** | United States of America |
| **Report Number** | LCSA03105003E |

**This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions.**
(1) This device may not cause harmful interference and;
(2) This device must accept any interference received;
Including interference that may cause undesired operation
It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4 :2014&FCC Part 15 regulation for the evaluation of electromagnetic compatibility. This is the result of test, that carried out from the submitted type -samples of the product in conformity with the specifications of the following standards:
Rule Part(s): FCC Part 15 Subpart B (2.906, 2,908, 2,909)

**Responsible party in the US**
Sonic Tools USA Inc.
480N Dean Road
Suite H7
36830 AUBURN ALABAMA
United States
Phone: 1-844-407-6642
E-mail : info@sonictoolsusa.com

The certificate holder has the right to fix the FCC mark for EMI on the product complying with the inspection sample

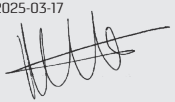
**SHENZHEN LCS COMPLIANCE TESTING LABORATORY LTD.**

Gavin Liang
Manager

Date of Issue:
2025-03-17

**US Responsible Party**

Remko Papenburg
Date: 2025-03-17



This SDoC is only valid for the equipment and configuration described, in conjunction with the test data detailed on previous page.

**WORK EFFICIENT WORK WITH SONIC**

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