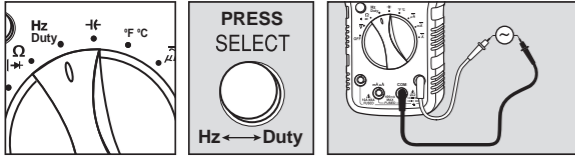


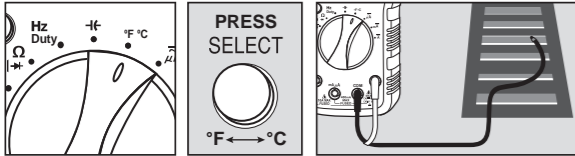
6. Frequency (Hz) /Duty Cycle < 1MHz

Features: **HOLD**



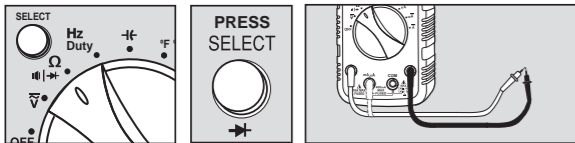
7. Temperature

Features: **HOLD** **MAX/MIN** **REL**



- **Do not** apply voltage to thermocouple.
- Fahrenheit range: -58° to 1832°F
- Celsius range: -50° to 1000°C

Testing Fuses



- "O.L." indicates blown fuse.

SYMBOLS USED ON LCD

- | | | | |
|------|--------------------------|-------------|------------------------|
| ~ | AC Measurement | — | DC Measurement |
| - | Negative DC Value | AT | Auto Range Active |
| O.L. | Overload: Range Exceeded | Apo | Auto Power-Off Active |
| + | Low Battery | HOLD | Hold Active |
| MIN | Minimum Reading | MAX | Maximum Reading |
| % | Duty Cycle Mode | Hz | Frequency Mode |
| V | Voltage Measurement | A | Current in Amps |
| Ω | Resistance in Ohms | ▲ | Relative Reading |
| F | Capacitance in Farads | → | Diode Test |
| °F | Degrees Fahrenheit | | Continuity Test |
| n | Nano 10 ⁻⁹ | °C | Degrees Celsius |
| m | Milli 10 ⁻³ | μ | Micro 10 ⁻⁶ |
| M | Mega 10 ⁶ | k | Kilo 10 ³ |

ELECTRICAL SPECIFICATIONS

DC Voltage Measurement

| Range | Resolution | Accuracy |
|--------------|--------------|----------------------|
| 400mV - 400V | 0.1mV - 0.1V | ± (0.5% + 4 digits) |
| 1000V | 1V | ± (0.8% + 10 digits) |

Overload Protection: 1000 V Input Impedance (Nominal): > 10 MΩ, < 100 pF

AC Voltage Measurement

| Range | Resolution | Accuracy |
|--------------|--------------|-----------------------------------|
| 400mV - 400V | 0.1mV - 0.1V | ± (0.75% + 5 digits) 40Hz - 400Hz |
| 1000V | 1V | ± (1.0% + 8 digits) 40Hz - 400Hz |

Overload Protection: 1000V RMS Input Impedance (Nominal): > 10MΩ, < 100pF
Response: Averaging

DC Current Measurement

| Range | Resolution | Accuracy |
|---------------|---------------|---------------------|
| 400μA - 400mA | 0.1μA - 0.1mA | ± (1.0% + 5 digits) |
| 4A - 10A | 1mA - 10mA | ± (1.5% + 5 digits) |

Overload Protection:
• μAmA Input: 400mA (F 440mA/1000V fuse)
• A Input: 10A (F 11A/1000V fuse)

AC Current Measurement

| Range | Resolution | Accuracy |
|---------------|---------------|---------------------|
| 400μA - 400mA | 0.1μA - 0.1mA | ± (1.5% + 5 digits) |
| 4A - 10A | 1mA - 10mA | ± (2.0% + 5 digits) |

Overload Protection:
• μAmA Input: 400mA (F 440mA/1000V fuse)
• A Input: 10A (F 11A/1000V fuse)

Frequency: 40Hz to 400Hz
Response: Averaging

Resistance Measurement

| Range | Resolution | Accuracy |
|------------|----------------|----------------------|
| 400Ω - 4MΩ | 0.1Ω - 0.001MΩ | ± (1.0% + 5 digits) |
| 40MΩ | 0.01MΩ | ± (1.5% + 10 digits) |

Overload Protection: 600V RMS

Capacitance Measurement

| Range | Resolution | Accuracy |
|----------------|-------------|---------------------|
| 40nF | 0.01nF | ± (3.5% + 6 digits) |
| 400nF - 4000μF | 0.1nF - 1μF | |

Overload Protection (Voltage): 600V RMS

Frequency Measurement

| Range | Resolution | Accuracy |
|--------------------|------------------|---------------------|
| 9.999Hz - 999.9kHz | 0.001Hz - 0.1kHz | ± (0.1% + 3 digits) |

Overload Protection: 600V RMS Sensitivity: 0.7V RMS

Duty Cycle Measurement

| Range | Resolution | Accuracy |
|-------------|------------|------------------------------------|
| 0.1 - 99.9% | 0.1% | ± (0.2% per kHz + 0.1% + 5 digits) |

Overload Protection: 600V RMS
Frequency Range: 0.5Hz to 100kHz, pulsewidth > 2μsec

Temperature Measurement

| Range | Resolution | Accuracy |
|--------------|------------|------------------|
| -58 - 1832°F | 0.1 - 1°F | ± (3.0% + 5.4°F) |
| -50 - 1000°C | 0.1 - 1°C | ± (3.0% + 3.0°C) |

Overload Protection: 600V RMS
Thermocouple Accuracy: Not specified

Diode Test

| Overload Protection | Test Current (Typical) | Open Circuit Voltage | Range |
|---------------------|------------------------|----------------------|---------|
| 600V RMS | 0.25mA | < 1.6V DC | 2.0V DC |

Continuity Test

| Overload Protection | Open Circuit Voltage |
|---------------------|----------------------|
| 600V RMS | Appx. 0.44V |

WARRANTY

www.kleintools.com/warranty

CLEANING

Turn instrument off and disconnect test leads. Clean the instrument by using a damp cloth. Do not use abrasive cleaners or solvents.

STORAGE

Remove the batteries when instrument is not in use for a prolonged period of time. Do not expose to high temperatures or humidity. After a period of storage in extreme conditions exceeding the limits mentioned in the Specifications section, allow the instrument to return to normal operating conditions before using it.

DISPOSAL / RECYCLE



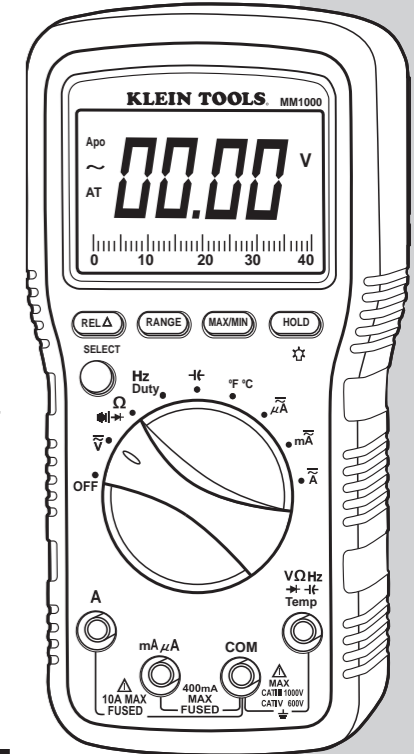
Caution: This symbol indicates that equipment and its accessories shall be subject to a separate collection and correct disposal.



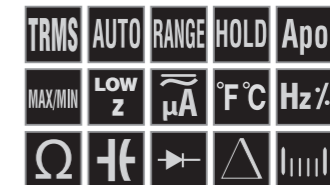
Instruction Manual

ENGLISH

- AUTO / MANUAL RANGE
- MAX / MIN
- BAR GRAPH
- DATA HOLD
- 3-3/4 DIGIT 3999 COUNT LCD
- BACKLIGHT
- LEAD HOLDER



1000V ~
10A ~



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MM1000 Instruction Manual

GENERAL SPECIFICATIONS

The Klein Tools MM1000 is an auto-ranging multimeter. It measures AC/DC voltage, AC/DC current, resistance, capacitance, frequency, duty cycle, and temperature. It can also test diodes and continuity.

- **Operating Altitude:** 2000 m
- **Relative Humidity:** < 75%
- **Operating Temperature:** 0°C / 32°F to 40°C / 104°F
- **Storage Temperature:** -20°C / -4°F to 60°C / 140°F < 80% R.H.
- **Accuracy Temperature:** 18°C / 64°F to 28°C / 82°F
- **Temperature Coefficient:** 0.1* (specified accuracy) / °C
- **Sampling Frequency:** 3 samples per second
- **Dimensions:** 7" x 3.5" x 1.875" (178 mm x 89 mm x 48 mm)
- **Weight:** 14 oz. (397 g)
- **Calibration:** Accurate for one year
- **Accuracy:** ± (% of reading + # of least significant digits)
- **Drop Protection:** 2 m (6 ft.)
- **Safety Rating:** CATIII 1000V, CAT IV 600V

⚠ WARNINGS

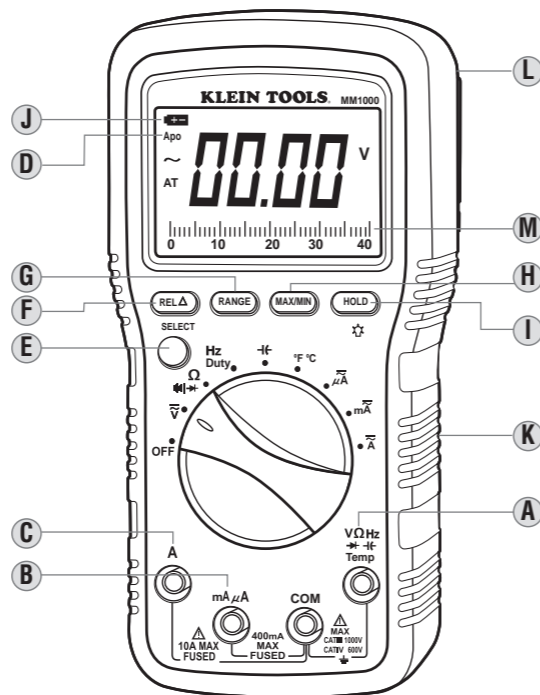
To ensure safe operation and service of the tester, follow these instructions. Failure to observe these warnings can result in severe injury or death.

- Before each use, verify meter operation by measuring a known voltage or current.
- Never use the meter on a circuit with voltages that exceed the category based rating of this meter.
- Do not use the meter during electrical storms or in wet weather.
- Do not use the meter or test leads if they appear to be damaged.
- Ensure meter leads are fully seated, and keep fingers away from the metal probe contacts when making measurements.
- Do not open the meter to replace batteries while the probes are connected.
- Use caution when working with voltages above 60V DC, or 25V AC RMS. Such voltages pose a shock hazard.
- To avoid false readings that can lead to electrical shock, replace batteries if a low battery indicator appears.
- Unless measuring voltage or current, shut off and lock out power before measuring resistance or capacitance.
- Always adhere to local and national safety codes. Use individual protective equipment to prevent shock and arc blast injury where hazardous live conductors are exposed.

SYMBOLS

- | | | | |
|--|--------------------------|--|---------------------------|
| | AC Alternating Current | | Warning or Caution |
| | DC Direct Current | | Double Insulated Class II |
| | DC/AC Voltage or Current | | AC Source |
| | Ground | | |

FEATURE DETAILS



FEATURE DETAILS

A, B, C. Use CAT III / CAT IV rated leads.

- A. Do not attempt to measure more than 1000V.**
- B. Do not attempt to measure more than 400mA.**
- C. Do not attempt to measure more than 10A.**
- D. Auto Power-Off (Apo)**
 - Device will power off after 30 minutes non-use.
 - Turn the dial or press a button to wake.
 - Disabled during Max / Min function.
 - Holding Select button while turning on disables Auto Power-Off.
- E. Select Functionality Button**
 - Switch between AC and DC.
 - Switch between Ω , \rightarrow , and \parallel .
 - Switch between Hz and %.
 - Switch between °F and °C.
- F. Relative Reading Mode**
 - Press to store current value.
 - Display will now show the difference between the stored and live readings.
 - Press again to return to live reading.
- G. Auto / Manual Range**
 - Press repeatedly to cycle through manual ranges.
 - Press for 2 seconds to return to auto ranging mode.
 - **AT** is displayed on LCD only during auto ranging mode.

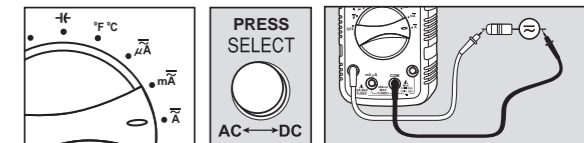
- H. Max / Min Hold**
 - Press to enter Max / Min mode; the largest and smallest values will be saved while in this mode.
 - Press repeatedly to alternate between the maximum and minimum readings.
 - Press for 2 seconds to return to live reading and clear the stored maximum and minimum values.
- I. Hold / Backlight**
 - Press to hold the current input on the display.
 - Press again to return to live reading.
 - Press for 2 seconds to enable/disable lights.
 - Using lights drains the battery significantly.
- J. K. Battery / Fuse Replacement**
 - When \pm indicator is displayed on the LCD, batteries must be replaced.
 - Remove rubber boot, back screw, and replace 2 x AAA batteries.
 - This meter uses 440mA / 1000V and 11A / 1000V fast blow fuses.
- L. Magnetic Hanger Accessory** (optional, sold separately)
 - Slide magnetic adapter into protective rubber boot.
 - Attach instrument to metal for hands-free use.
- M. Bar Graph**
 - The bar graph shows an approximate analog representation of a measurement.
 - The bar graph responds much faster than the digital display.
 - The scale of the bar graph is zero to the maximum reading of the selected range.

FUNCTION INSTRUCTIONS

- AC / DC Voltage: < 1000V**
Features: **REL** **HOLD** **RANGE** **MAX/MIN**
• Select AC or DC voltage source.

2. AC / DC Current (large): < 10A

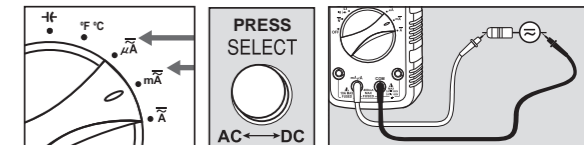
Features: **REL** **HOLD** **RANGE** **MAX/MIN**



- Start with this setting if current level is unknown.
- Attach red lead to "A" input.
- Select AC or DC current source.

3. AC / DC Current (small): < 400mA

Features: **REL** **HOLD** **RANGE** **MAX/MIN**



- Attach red lead to "mA μ A" input.
- Select μ A or mA, and AC or DC current source.

4. Resistance / Diode / Continuity



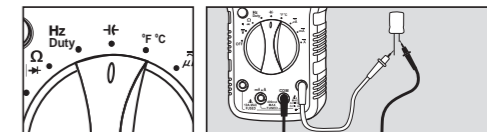
- Resistance Features:** **HOLD** **RANGE** **MAX/MIN** **REL**
- **⚠ Do not measure resistance on a live circuit.**
 - Ω < 40M Ω

- Diode Features:** **HOLD** **MAX/MIN**
- Display shows:
- Forward voltage drop if forward biased.
 - "O.L." if reverse biased.

- Continuity Features:** **HOLD** **MAX/MIN**
- Display shows: Resistance
- Buzzer sounds if less than 30 Ω

5. Capacitance: < 4000 μ F

Features: **HOLD**



- **⚠ Safely discharge capacitor before measurement.**
- Reading may take up to 60 seconds for large capacitors.