

TENMA®



Voltage & Continuity Tester

**Models: 72-3570,
72-3575 & 72-3580**

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Please read these instructions carefully before use and retain for future reference.

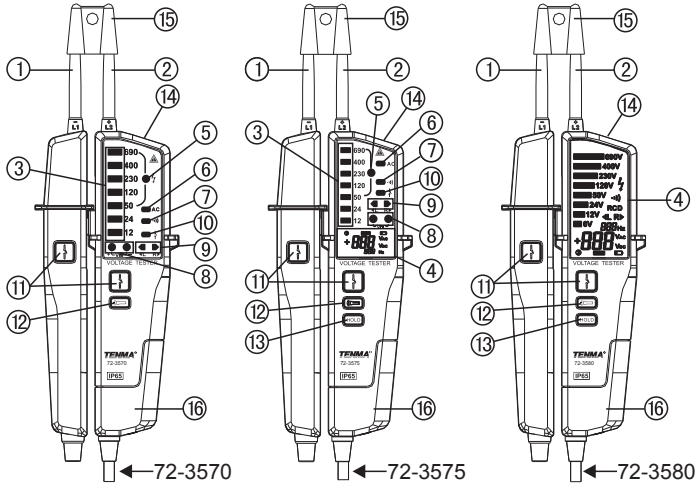
IMPORTANT SAFETY INFORMATION

- When using electrical appliances basic safety precautions should always be followed.
- Do not use the meter in environments exposed to explosive gas, vapour or dust, in direct sunlight or high radiation.
- There are no user serviceable parts in this product. Refer all servicing to qualified personnel.
- The voltage detector is designed to be used by skilled persons and in accordance with safe methods of work.
- The different indicating signals of the voltage detector (including the ELV limit indication) are not to be used for measuring purposes.
- Never use the equipment while the voltage is beyond the range (referring to technical specification parameters) and above 800V.
- To ensure normal operation of the tester, measure a known voltage value first.
- When using the tester always keep your fingers behind the finger safety guards.
- Do not use the tester if there is a functional failure or no functional indication.
- Never test in wet conditions.
- Display functions will only work when the temperature is between -15°C and +45°C and relative humidity is <85%.
- Ensure the batteries (not included) are inserted correctly, observing the plus and minus marks on both the batteries and the compartment.
- Fit a full set of batteries at one time.
- Remove dead batteries from the meter, or if it is not going to be used for a long time.
- Never mix old and new batteries together, or different types of batteries.
- Never dispose of batteries in a fire, or attempt to recharge ordinary batteries.

FEATURES

- LED indication (72-3570 & 72-3575).
- LCD voltage and frequency display (72-3575 & 72-3580).
- AC/DC measured up to 690V.
- Detects a live wire by single test pen measurement.
- Continuity measurement.
- Indicates the phase relationships among three-phase AC.
- Silent mode.
- Detection without batteries (72-3570 & 72-2375).
- Torch and backlight.
- Self-inspection function.
- Low battery indication and measured voltage over-range indication.
- RCD test.
- Automatic standby.

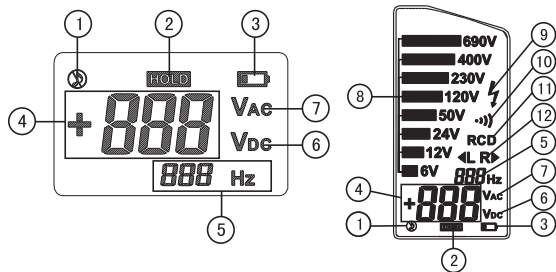
PRODUCT OVERVIEW



| | | |
|-----------------------------|----------------------------------|-------------------------|
| 1. Test pen L1 | 7. Continuity indication | 13. Hold mode/backlight |
| 2. Test pen L2 | 8. Polar indication | 14. Torch |
| 3. Voltage indication (LED) | 9. Rotary phase indication | 15. Test pen cap |
| 4. LCD | 10. RCD indication (LED) | 16. Battery cover |
| 5. High voltage indication | 11. RCD test button | |
| 6. AC indication | 12. Torch/self-inspection button | |

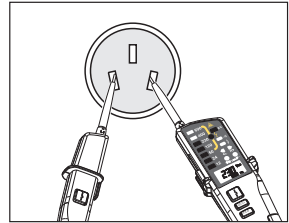
LCD

| |
|---------------------------|
| 1. Silent mode |
| 2. HOLD mode |
| 3. Low battery |
| 4. Voltage measurement |
| 5. Frequency measurement |
| 6. DC Voltage measurement |
| 7. AC voltage measurement |
| 8. Voltage |
| 9. High voltage |
| 10. Continuity |
| 11. RCD |
| 12. Rotary phase |





VOLTAGE MEASUREMENT

- The voltage range of the tester is composed of a line of LEDs, including 6V (72-3580), 12V, 24V, 50V, 120V, 230V, 400V and 690V.
- LEDs will light sequentially with increased voltage as will the LED polarity indication, the on/off LED, the RCD LED, the rotary phase LED and the high voltage LED.
- Complete a self-check of the tester before use.
- After pressing the “torch” button, the tester performs AC/DC full range detection, indicated by a flashing LED or a blinking LCD, depending on your model.
- To exit self-check, press the “torch” button.
- Connect the two test pens to the conductor to be measured, select a known voltage to check accuracy (see right).
- The tester cannot measure AC and DC voltage less than 5V and provides no accurate indications when the measured voltage is 5V AC/DC.
- The illuminating continuity light, AC light or high voltage symbol (72-3580) and buzzer are normal.
- The tester will provide LED indication (72-3570), LED & LCD indication (72-3575) or LCD indication (72-3580) while measuring AC or DC voltage.
- The high voltage LED illuminates and the buzzer beeps when the measured voltage is below the extra low voltage (ELV) threshold.
- If the measured voltage continues to increase and exceeds the input protection voltage (750VAC/DC) of the tester, the 12V~690V LED will keep flashing (72-3570 & 72-3575) or the LCD will display “OL” (72-3575 & 72-3580), while the buzzer will sound.
- When measuring DC voltage the meter will indicate the polarity of the voltage on either the screen or by the LED lighting up, depending on the model.
- L2 is the positive probe and L1 is the negative probe.
- If L2 is connected to the positive terminal the meter will display a positive voltage.
- This information will allow you to determine the polarity of the poles if they are unknown.
- For measuring AC voltage, the probes may be connected to either terminal.
- The AC LED will be illuminated or the LCD will display “VAC”, while the LED indicates the corresponding voltage value or the LCD displays the corresponding voltage value.



SINGLE TEST PEN TESTING

- For single test pen testing, hold L2 and connect L2 to an unknown conductor.
- If the voltage of the conductor under test is higher than 100V AC, the LED (72-3570/72-3575) or high-voltage symbol will illuminate and the meter will buzz.
- To determine if a conductor is live, with a single pen, contact the L2 probe tip with the conductor under test.
- If the AC light (72-3570/72-3575) illuminates, or the “” symbol (72-3580) is displayed on the LCD, it means that the wire measured is a live wire.
- To determine if the socket is electrified, insert L2 into the terminal. If the AC light or “” symbol is displayed along with continuous beeping, it means the socket is live.

Notes:

- Single test pen testing can only determine whether or not a conductor is live. It cannot indicate the voltage level.
- In the presence of adverse environmental factors such as temperature, humidity, magnetic field, static electricity and others, the single test pen will show an unstable reading.
- When the measured conductor is >200VAC, the buzzer will remain silent, while the AC LED will illuminate and a low voltage reading will be displayed.
- The LCD may display a reading (72-3575/72-3580), but the voltage value should not be considered as the actual measured value as it is simply indicating the conductor is electrified.

DETECTION WITHOUT BATTERIES (72-3570/72-3575 only)

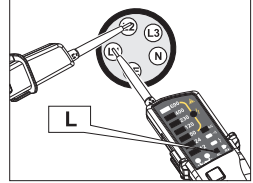
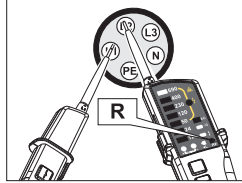
- The tester may perform basic measurements with no battery power.
- Connect the two test pens to the circuit under test. If the circuit has a voltage $\geq 50\text{VAC}/120\text{VDC}$ the high voltage LED will illuminate, indicating a dangerous voltage.
- The LED brightness will be proportional to the voltage measured.

CONTINUITY TEST

- To confirm if the conductor to be measured has continuity, the meter can test for this.
- Connect the two test pens to both ends of the object to be measured; if the resistance is 0~100k Ω , the continuity LED (72-3570/72-3575) will illuminate or the continuity symbol (72-3580) will display on the LCD and the buzzer will sound continuously.
- If the resistance is >150k Ω , the continuity LED (72-3570/72-3575) will not illuminate or the continuity symbol (72-3580) will not display and the buzzer will not sound.
- Prior to any test, be sure the object to be measured is not live.

ROTATION TEST

- Three-phase voltage test range: 57V~400V (50Hz~60Hz).
- Connect the L2 test pen to any phase and the L1 test pen to any of the remaining phases. The L or R LED will illuminate.
- Once the second test pen is connected to a second phase, L or R will illuminate based on the phase relationship.
- The L or R LED will illuminate conversely when the position of the two test pens are exchanged.
- An LED will indicate the corresponding voltage or the LCD will display the corresponding voltage value.
- The indicated or displayed voltage should be the phase voltage against earth.



Notes:

- For measuring the three-phase AC system, as the tester only has two test pens, it is required to form the reference terminal by holding the tester handle with your fingers, therefore it would not accurately indicate the phase sequence of the three-phase system if you were wearing insulating gloves.
- It is necessary to ensure the earth terminal of the three-phase system is in contact with the human body while measuring a three-phase power system lower than 100V.

RCD TEST

- For an RCD trip test, connect the two test pens to the L and PE terminals of the 230V AC system under normal voltage measurement mode and press the yellow RCD key on the two test pens.
- The RCD system should trip and the LED indicating RCD (72-3570/72-3575) or the RCD symbol (72-3580) will illuminate if the circuit then generates AC current higher than 30mA.
- At 230V, testing time should be <10s.
- The meter cannot conduct continuous measurement. After one test wait 60 seconds before the next measurement.

Notes:

- In the case of no measurements or tests, it is normal to have continuously illuminated LEDs and a continuously sounding buzzer after simultaneously pressing RCD keys on two test pens.
- To avoid a malfunction, do not press the two RCD buttons under non-RCD testing mode.

SILENT MODE SELECTION

- You can enable silent mode while the tester is in standby mode.
- After holding the torch button the tester will beep and the LCD will display the “mute” symbol (72-3575/72-3580) when it is in silent mode.
- In silent mode all functions are the same as those in normal mode with the exception of the silent buzzer.
- To disable silent mode, hold the torch button and after it beeps, the “mute” symbol will disappear from the LCD indicating that silent mode has been deactivated.

TORCH FUNCTION

- Press the torch button to switch on the lamp on the top of the tester.
- To turn the lamp off, simply press the torch button again.

BACKLIGHT FUNCTION (72-3580)

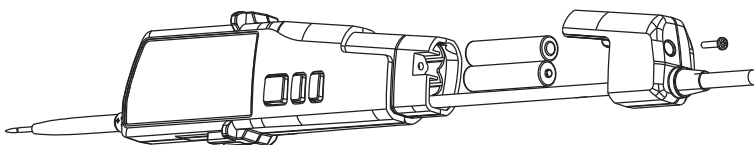
- The backlight can be turned on by pressing and holding the **HOLD** button for one second.
- Similarly, to turn off the backlight press and hold the **HOLD** button again for around one second.
- If the tester enters standby mode while the backlight is on, the light will remain illuminated when the tester is turned back on.
- The backlight cannot be turned off unless holding **HOLD** for about one second.

REPLACING THE BATTERIES

A continuously flashing negative LED (72-3570) or a low-voltage symbol on the LCD (72-3575/72-3580) during use of the tester, indicates low battery.

Once it is indicated that the batteries are low, replace them immediately, following the below instructions:

- Stop measurement and disconnect the two test pens from the object being measured.
- Using a screwdriver, remove the screws securing the battery cover.
- Remove the battery cover.
- Remove the batteries to be replaced.
- Install the new batteries according to the battery symbol and direction indicated on the panel.
- Put the battery cover back in position and return the screws using a screwdriver.



TECHNICAL SPECIFICATION

| Function | Range | 72-3570 | 72-3575 | 72-3580 |
|---|--|------------|------------|------------|
| LED segment (AC/DC) | 6V | | 5V ± 1V | 5V ± 1V |
| | 12V | 8V ± 2V | 8V ± 1V | 8V ± 1V |
| | 24V | 18V ± 2V | 18V ± 2V | 18V ± 2V |
| LED (AC/DC) | 50V | 38V ± 4V | 38V ± 4V | 38V ± 4V |
| | 120V | 94V ± 8V | 94V ± 8V | 94V ± 8V |
| Voltage indication (V) | 230V | 180V ± 14V | 180V ± 14V | 180V ± 14V |
| | 400V | 325V ± 15V | 325V ± 15V | 325V ± 15V |
| | 690V | 562V ± 24V | 562V ± 24V | 562V ± 24V |
| Phase rotation test (three-phase voltage) | Voltage range: 57V~400V Frequency: 50Hz~60Hz | ✓ | ✓ | ✓ |
| Single test pen (L2) measurement | Voltage range: 100V~690V Frequency: 50Hz~400Hz | ✓ | ✓ | ✓ |
| On-off test | Resistance range: 0~100kΩ Buzzing & LED illumination | ✓ | ✓ | ✓ |
| RCD test | Voltage range: 230V Frequency: 50Hz~400Hz | ✓ | ✓ | ✓ |
| Polarity measurement | Positive & negative pole | ✓ | ✓ | ✓ |
| Self-check | All LEDs illuminated or LCD full display | ✓ | ✓ | ✓ |
| Detection without battery | Range: 50VAC~690VAC 120VDC~690VDC | ✓ | ✓ | ✓ |

SPECIAL FUNCTIONS

| | 72-3570 | 72-3575 | 72-3580 |
|---|---------|-----------------|-----------------|
| Waterproof (IP65) | ✓ | ✓ | ✓ |
| Auto range (Full range) | ✓ | ✓ | ✓ |
| Illumination (Full range) | ✓ | ✓ | ✓ |
| Low battery indication (About 2.4V) | ✓ | ✓ | ✓ |
| Over range indicaton (About 755V) | ✓ | ✓ | |
| Auto standby (Standby current <10 μ A) | ✓ | ✓ | ✓ |
| Silent mode (Full range) | ✓ | ✓ | ✓ |
| Backlight (Full range) | | | ✓ |
| LCD display (voltage) 6V~690V | | ✓ | ✓ |
| LCD display (frequency) 40Hz~400Hz | | $\pm (3\% + 5)$ | $\pm (3\% + 5)$ |

LCD DISPLAY & PARAMETER DESCRIPTION

| Range | 6V | 12V/24V | 50V | 120V | 230V/400V/690V |
|---------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 72-3575 | $\pm (1.5\% + 1)$ | $\pm (1.5\% + 2)$ | $\pm (1.5\% + 3)$ | $\pm (1.5\% + 4)$ | $\pm (1.5\% + 5)$ |
| 72-3580 | $\pm (1.5\% + 1)$ | $\pm (1.5\% + 2)$ | $\pm (1.5\% + 3)$ | $\pm (1.5\% + 4)$ | $\pm (1.5\% + 5)$ |

FUNCTION & PARAMETER DESCRIPTION

| | |
|-------------------------------------|--|
| LED voltage range | 12V~690VAC/DC |
| LED voltage indication point | 12V, 24V, 50V, 120V, 230V, 400V, 690V |
| LCD voltage range | 6V~690V AC/DC (72-3575/72-3580), resolution:1V, voltage error: $\pm (1.5\% + 1\sim 5 \text{ digits})$ |
| Frequency measurement range | 40Hz~400Hz, resolution: 1Hz, error: $\pm (3\% + 5 \text{ digits})$ |
| Voltage measurement | Auto |
| Buzzing & Silent mode | Optional |
| Polarity indication | Auto |
| Range selection | Auto |
| Response time | LED <0.1s / LCD <1s |
| Peak current of test circuit | 1s < 3.5mA (AC/DC) |
| Test time | 30 seconds |

| | |
|--|---|
| Recovery time | 240 seconds |
| RCD test range | 230V (50Hz~400Hz), Current: AC30mA~40mA, Test time: <10s, Recover time: 60s |
| Single-test pen test | Voltage range: 100V~690V, Frequency range: 50Hz~400Hz (for reference only) |
| Over voltage protection | 750VAC/DC |
| On-off test | 0k Ω ~100k Ω , Accuracy: Rn + 50% |
| Rotation test (three-phase AC) | Voltage range: 57V~400V, Frequency range: 50Hz~60Hz |
| Simple test (without batteries) | Voltage range: 50VAC~690VAC, 120VDC~690VDC (72-3570-72-3575) |
| Working temperature range | -15°C~+45°C |
| Storage temperature range | -20°C~+60°C |
| Working humidity range | ≤85% RH |
| Over voltage protection class | CAT III 690V, CAT IV 600V |
| Pollution class | 2 |
| Safety rules | IP65 EN61010-1, EN61243-3:2010 |
| Weight (inclusive of batteries) | 272g (72-3570/72-3575), 295g (72-3580) |
| Dimensions | 272 x 85 x 31mm |
| Batteries | IEC LR03 (AAA) x 2 (not included) |



INFORMATION ON WASTE DISPOSAL FOR CONSUMERS OF ELECTRICAL & ELECTRONIC EQUIPMENT.

When this product has reached the end of its life it must be treated as Waste Electrical & Electronic Equipment (WEEE). Any WEEE marked products must not be mixed with general household waste, but kept separate for the treatment, recovery and recycling of the materials used. Contact your local authority for details of recycling schemes in your area.

