4. Measuring of Resistance/Capacitance

4.1 Measuring of Resistance (See Figure 7)

① Insert the red probe into “V” jack (red jack), and black one into “EARTH” jack (black jack).
② Rotate dial switch to “KΩ/⊣⊢” tap position and connect the probe to two ends of tested resistance in parallel.
③ Read current measuring value of resistance from the display.
④ In measuring, if intending to save measured resistance, press the key of “SAVE/CLEAR” for saving.

⚠ Caution:
When measuring on-line resistance, it is necessary to cut off the power supply before measuring.

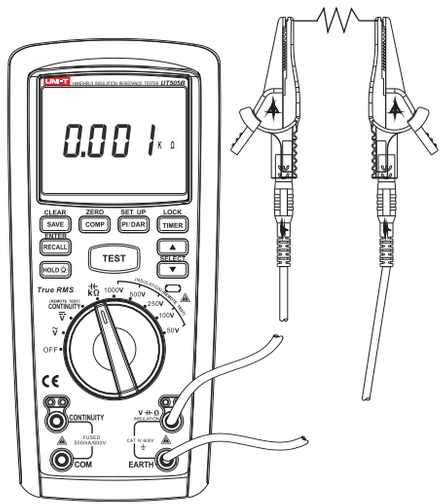

Figure 7

4.2 Measuring of Capacitance (See Figure 8)

① Insert the red probe into “V⎓” jack (red jack), and black one into “EARTH” jack (black jack).
② Rotate dial switch to “KΩ/⊣⊢” tap position and connect the probe to two ends of tested capacitance in parallel.
③ Press “▼/SELECT” to select capacitance tap position.
④ Read current measuring value of capacitance from the display.
⑤ In measuring, if intending to save measured capacitance, press the key of “SAVE/CLEAR” for saving.

⚠ Caution:
Before measuring capacitance, it is necessary to discharge the capacitor.

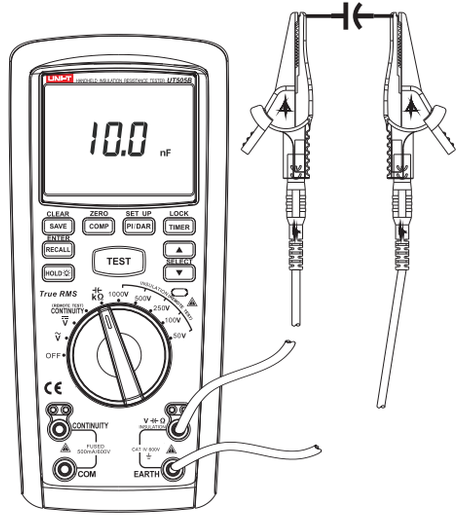

Figure 8

5. Measuring of Insulation Resistance (See Figure 9)

① Insert the red probe into “V” jack (red jack), and black one into “EARTH” jack (black jack).
② Rotate dial switch to INSUATION (area of insulation resistance) and select the tested voltage required. Connect the probe to the tested circuit in parallel.
③ Press “TEST” on instrument or “TEST” on remote-control probe and read current resistance on main display area on display. In auxiliary display area, tested voltage or current (press “▼” to select) can be seen, while display will flicker and show the warning symbol of high voltage “⚡”.
④ Press the key of “TEST” and LCD will flicker and show the warning symbol of high voltage “⚡” in case of high-voltage output. In addition, red warning indicator beside warning symbol of shell will be on.
⑤ In measuring, if intending to save measuring value, press the key of “SAVE” for saving.

⚠ Caution:
- Before measuring, ensure that the object to be tested is not electrified. Otherwise, measuring is likely to be inaccurate.
- Before measuring, the instrument will make judgment on whether the tested object is electrified with voltage of higher than about 50V. If tested object is electrified with voltage of higher than 50V, display will show the symbol of high voltage and measuring will be inhibited.
- When resistance is beyond maximum display range, instrument display will show the symbol of “>” and maximum resistance in current range.

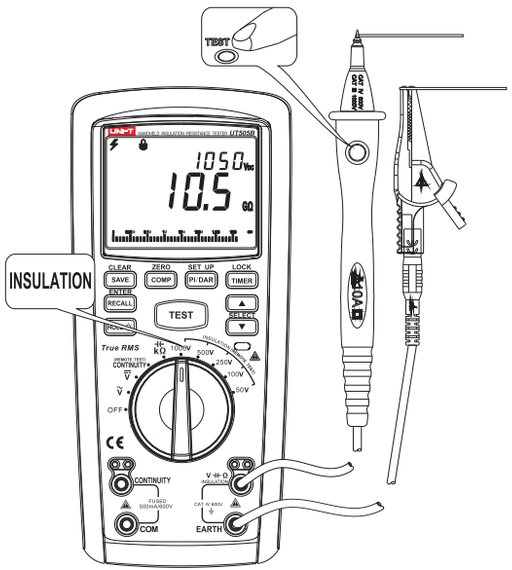

Figure 9

6. Polarization Index or Insulation Absorption Ratio (See Figure 9)

Similar to measuring insulation resistance, it is accessible only by setting polarization index or dielectric absorption ratio; set testing instrument by the key of “PI/DAR/SET UP” to test insulation polarization index or dielectric absorption ratio. When there is no test on insulation resistance tap position, click once and the screen will show PI (polarization index) while setting display time ratio to be 10min: 1min; click for the second time and the screen will show DAR (dielectric absorption ratio) while setting time ratio to be 60s: 15s; click for the third time and the screen will show DAR (dielectric absorption ratio) while setting time ratio to be 60s: 30s; click for the fourth time and testing function of PI/DAR (insulation polarization index/dielectric absorption ratio) will be cancelled. Test can be made by selecting one time ratio required and pressing the key.

7. Use of Comparing Function

In modes of CONTINUITY and insulation resistance, click the key of “COMP/ZERO” and the function of comparison will be activated. Then click the key and the function will be disabled. In SET UP mode, it is allowed to select different comparing values. For function tap positions for insulation resistance measuring, comparing values of 500 KΩ, 1 MΩ, 2MΩ, 5MΩ, 10MΩ, 20MΩ, 50MΩ, 100MΩ, 200MΩ and 500MΩ are optional. For CONTINUITY function tap positions, comparing values of 1Ω, 2Ω, 5Ω, 10Ω and 20Ω are optional. Press the key of ENTER/RCALL to confirm the set parameters and hold the key of SETUP to exit. After comparing mode is activated, comparing values and comparing results will be shown on the display. Comparing results are displayed as PASS or FAIL. If it is FAIL, there will be alarm sound.

8. Use of Data Storage Function

① Save measuring values: in measuring, press the key of “SAVE/CLEAR” to save current measuring values with 1 group added to saved articles on the display. A total of 99 groups are allowed to be added at most;
② Recall measuring values: press the key of “RECALL/ENTER” to enter mode of data recall and press “UP/DOWN” to check data saved.
③ Clear measured data in memory: press the key of “RECALL” to enter mode of data recall, hold the key of “SAVE/CLEAR” for 3s and wait for “-” to be displayed on the display, indicating that all the data saved have been cleared.

9. Power Supply Tap Position

When knob switch is placed at the position of “OFF”, power supply will be switched off.

10. Auto OFF Function

Where there is no operation to knob switch or keys within 10min, the LCD will be faded and the instrument will enter micro-power consumption sleep state. If intending to wake up the instrument for operation, it shall be necessary to re-place the knob switch to the position of “OFF” and at a certain measuring tap positions. Then, the instrument will be wakened up.

IX. Technical Indexes

1. General Specification

- Display: liquid crystal display with maximum display reading of up to 9999;
- Low-battery warning: see Table 1;
- Over-range indicator: mark of "＞" appears on tap positions of insulation resistance and CONTINUITY;
- Function of automatic range;
- Unit display: display of symbols for functions and power unit;
- Operating conditions: 0℃-40℃/relative humidity of 85% or lower;
- Storing conditions: -20℃-60℃/relative humidity of 90% or lower;
- Dimensions: mm (225L)×mm (103W)×mm (59D);
- Current consumption: about 500mA (1000V at maximum in output) (about 17mA in normal state);
- The instrument is designed and produced in strict accordance with IEC61010 safety standard, and complies with the safety standards for over-voltage (CAT IV 600V) and pollution level II;
- Function of automatic voltage release;
- Backlight function is convenient for operation in dark light;
- Red warning indicator;
- Altitude: ≤2,000m;
- Accessories: private wire, alligator clip, 6 1.5V (No.5) alkaline batteries, instructions and a carrying bag;
- Weight: 0.7kg (with batteries).

2. Electrical Specification

Error limit: ± (a% reading + b word count), calibration period is a year;
Ambient temperature: 23℃±5℃;
Ambient humidity: 45-75%RH;
Temperature coefficient: 0.1×(accuracy)/℃;

3. Technical Indexes (See Table 2)

1. Measuring of AC voltage:

Measurement Range	Minimum Resolution	Range of Valid Frequency in Accuracy: 45Hz-450Hz
0~600V	0.01V	±(1.5%+5)

When measured voltage frequency＞450Hz, measuring values shall serve as reference only.

2. Measuring of Frequency (Auxiliary Display of AC Voltage Tap position):

Measurement Range	Minimum Resolution	Range of Valid Frequency in Accuracy: 45Hz-450Hz
45~1KHz	0.1Hz	±(0.1%+3)

3. Measuring of DC Voltage:

Measurement Range	Minimum Resolution	Accuracy
-600~600V	0.01V	±(2%+3)

4. Measuring of CONTINUITY:

Measured Current	Measurement Range	Minimum Resolution	Accuracy
20mA	0.01 Ω~100Ω	0.01Ω	±(1.5%+5)
200mA	0.01 Ω~10Ω	0.01Ω	±(1.5%+4)

In open circuit, measured voltage is about 5V.

5. Measuring of Resistance:

Measurement Range	Minimum Resolution	Accuracy
0. 001KΩ~10MΩ	0.001KΩ	±(3%+3)

6. Measuring of Capacitance:

Measurement Range	Minimum Resolution	Accuracy
0.1nF~500μF	0.1nF	±(5%+5)

7. Measuring Insulation Resistance:

Output Voltage	Measurement Range	Minimum Resolution	Accuracy
50V (0~+20%)	0.00MΩ~0.99GΩ	0.01MΩ	±(3%+3)
	1.00GΩ~10.0GΩ	0.01GΩ	±(3%+3) Reading ± 4%/GΩ
100V (0~+20%)	0.00MΩ~0.99GΩ	0.01MΩ	±(3%+3)
	1.00GΩ~20.0GΩ	0.01GΩ	±(3%+3) Reading ± 2%/GΩ
250V (0~+20%)	0.00MΩ~0.99GΩ	0.01MΩ	±(3%+3)
	1.00GΩ~50GΩ	0.01GΩ	±(3%+3) Reading ± 0.8%/GΩ
500V (0~+20%)	0.00MΩ~0.99GΩ	0.01MΩ	±(3%+3)
	1.00GΩ~100GΩ	0.01GΩ	±(3%+3) Reading ± 0.4%/GΩ
1000V (0~+20%)	0.00MΩ~0.99GΩ	0.01MΩ	±(3%+3)
	1.00GΩ~200GΩ	0.01GΩ	±(3%+3) Reading ± 0.2%/GΩ

Operation range for EN61557: 0.10MΩ-1.00GΩ (insulation output voltage≥50V).
Short-circuit current: <3mA
Testing range for leaked current:10μA to 2mA。
Testing accuracy for leaked current: 10%±3.
Step voltage for insulation output voltage is set to be 50%-120% at the step of 10%.
In measuring insulation resistance, when step voltage selected is lower than nominal voltage in the function tap position (50V/100V/250V/500V/1000V), maximum testing range for insulation resistance will be 1/2 of maximum testing range for the function tap position and accuracy will be added with ±2 word counts.

X. Maintenance and Repair

⚠Caution:

Before opening the face cover of the instrument, please be sure that power supply has been switched off, and the probe has been away from input terminal and tested circuit.

1. General Maintenance

- Use clean-water wet cloth or sponge to scrub the surface.
- In order to prevent damage on the testing instrument, please do not immerse the instrument in water.
- When instrument is moist, please dry it before storage.
- When it is necessary to check or repair the instrument, please hand over the instrument to qualified professional maintenance staff members or specified maintenance departments for repair.

2. Battery/Fuse Installation or Replacement (See Figure 10)

The power supply for this product is 6 1.5V (No.5) batteries. Please install or replace batteries according to the sequence listed in Figure 10.

① Turn knob switch to the position of OFF (off) and remove private wire.

② Use standard cross screwdriver to remove three screws on the battery cover, remove the battery cover, take out batteries and install new batteries according to the polar indication.

③ Please use batteries in the same model. Do not install any inappropriate battery.

④ Please take out damaged fuse in the way shown in Figure 10 and replace it with fuse in the same specifications. Fuse specifications: 0.5A/1000V.

⑤ After installing new batteries, install battery cover and screw three screws.

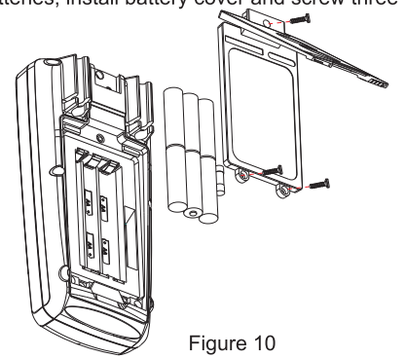

Figure 10

XI. Name of Key Spare Parts

Name	Specifications and Parameters
PCB	Shengyi panel, Level V-0, four-layer panel, panel thickness: 1.6mm
IC	MCU MSP430F4793
IC	IC EEPROM AT24C32
FUSE	Ceramic fuse tube 0.5A/1000V φ6.35×31.8
Relay	Relay G5V-2-H1 “OMRON”

Manufacturer:
Uni-Trend Technology(China) Limited
No 6, Gong Ye Bei 1st Road
Songshan Lake National High-Tech Industrial
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Guangdong Province
China
Postal Code:523 808

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