INSTRUCTION MANUAL

MT570

5kV HIGH VOLTAGE INSULATION TESTER



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1. Safety Precautions

Electricity can cause severe injuries even with low voltages or currents. Therefore, it is extremely important that you read the following information before using your high voltage insulation tester.

1.1. This Instrument must only be used and operated by a competent trained person and in strict accordance with the instructions. we will not accept liability for any damage or injury caused by misuse or non-compliance with instructions and safety procedures.

1.2. This instrument must not be used on live circuits. Ensure all circuits are de-energized before testing. see paragraph for details of built-in warning features should your high voltage insulation tester be connected to a live system.

1.3. Always inspect your high voltage insulation tester and test leads before use for any sign of abnormality or damage. If any abnormal conditions exist (broken test leads, cracked case, display faulty etc...) do not attempt to take any measurement or use the tester. Return your high voltage insulation tester to your nearest distributor for service.

1.4. Your high voltage insulation tester has been designed with your safety in mind. However, no design can completely protect against incorrect use. Electrical circuits can be dangerous and / or lethal when a lack of caution or poor safety practice is used.

1.5. Pay attention to cautions and warnings which will inform you of potentially dangerous procedures.

1.6. Your high voltage insulation tester has a live circuit warning beeper. If it is connected to a live circuit, a rapid pulsating bleep will be heard. DO NOT proceed to test and immediately disconnect the instrument from the circuit. In addition your tester will display the warning message.

1.7. Rated environmental conditions :

1. Indoor use.
2. Installation Category IV.
3. Pollution Degree 2.
4. Altitude up to 2000 meters.
5. Relative humidity 80% max.
6. Ambient temperature 0ºC~40ºC.

1.8. Observe the international Electrical Symbols listed below :

 Meter is protected throughout by double insulation or reinforced insulation.

 Warning ! Risk of electric shock.

 Caution ! Refer to this manual before using the meter.

 Earth

2. Overview

This is a 5kV high voltage insulation tester which has output voltages of 500V, 1000V, 2500V, 5000V.
The top line of the display shows the elapsed time at the start of the test. Digital readout of the total time will remain displayed even after testing has ceased.
This instrument displays a voltage warning and sounds when AC or DC is present before injecting the test voltage.

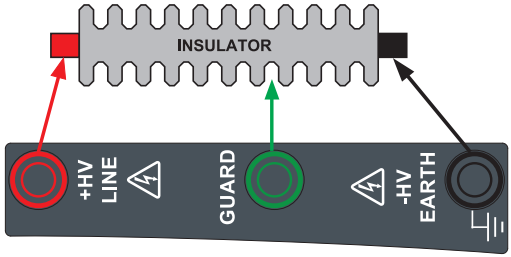
3. Features

- 2 Lines × 16 Characters LCD
- Microprocessor-controlled
- Tests insulation resistance up to 1TΩ
- 4 Insulation test voltages: 500V, 1000V, 2500V, 5000V
- AC/DC Voltmeter (30-600V)
- Short-circuit current up to 5mA
- PI (Polarization Index) indication
- DAR (Dielectric Absorption Ratio) indication
- Auto-ranging on all insulation ranges
- Auto-hold function to freeze reading
- Overload protection
- Adjustable testing duration: 1-30 minutes
- Internal memory for data storage
- Displays testing duration for insulation measurement
- Auto-off function
- 200 measurement results can be saved in memory and recalled on display

4. Specifications

Function	Range
Test Voltage	500V, 1000V, 2500V, 5000V
Insulation resistance	100GΩ / 500V 500GΩ / 2500V 200GΩ / 1000V 1TΩ / 5000V
	Accuracy ±(5.0%rdg + 5dgt)
Resolution	1000MΩ: 1MΩ 100GΩ: 0.1GΩ 10GΩ: 0.01GΩ 1TΩ: 1GΩ
Short circuit current	up to 5mA
PI (Polarization Index)	√
DAR (Dielectric Absorption Ratio)	√
Voltmeter	ACV: 30~600V (50/60Hz) DCV: 30~600V Accuracy: ±(2.0%rdg + 3dgt) Resolution: 1V
Current measurement	0.5nA ~ 0.55mA (Depending on the insulation resistance)
Power source	1.5V "C" × 8 Alkaline batteries DC3V (CR2032) × 1
Dimensions	250(L) × 190(W) × 127(D) mm
Weight	Approx. 2070g (battery included)
Safety standard	IEC/EN 61010-1 CAT IV 600V IEC/EN 61010-2-030 EN 61326-1
Accessories	Instruction manual Carry case Test leads Batteries Alligator clips Shoulder belt

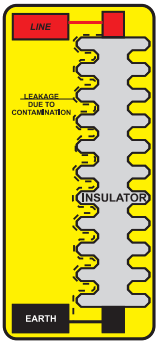
5. Connections



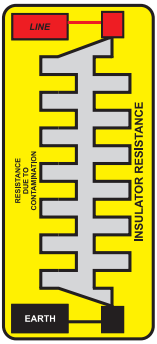
FIRST MEASUREMENT

Measure without the guard to take everything into account and find out if need cleaning.

DIRTY INSULATOR



ELECTRICAL EQUIVALENT CIRCUIT DIRTY INSULATOR

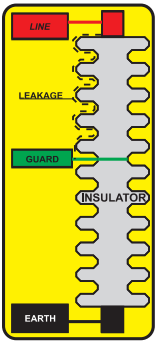


Resistance due to contamination can be very low and lower the total resistance. Cleaning periodically can also reduce system power consumption.

SECOND MEASUREMENT

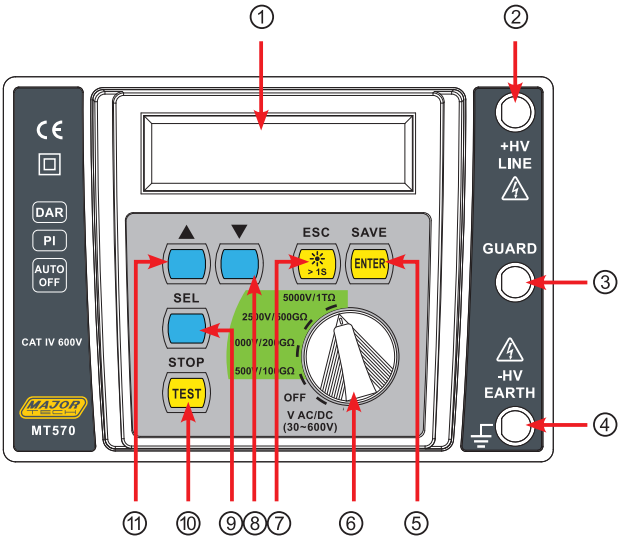
Measure with the guard to ensure insulator is correct.

TYPICAL TEST



6. Instrument Layout

1 - LCD display
2 - +HV terminal
3 - GUARD terminal
4 - -HV terminal
5 - ENTER / SAVE button
6 - Function rotary switch
7 - ESC/✳ button
8 - "▼" button
9 - SEL button
10 - TEST / STOP button
11 - "▲" button



7. Measuring procedure

This insulation tester provides five main functions and four minor functions:

Main Functions:

1. 500V voltage insulation resistance test.
2. 1000V voltage insulation resistance test.
3. 2500V voltage insulation resistance test.
4. 5000V voltage insulation resistance test.
5. AC/DC voltage measurement.

Minor functions:

Function 1 — Date/time adjustment
Function 2 — Measurement time setting.
Function 3 — Display data stored
Function 4 — Delete data stored

7.1. Insulation resistance measurement test (main function)

⚠ Note:

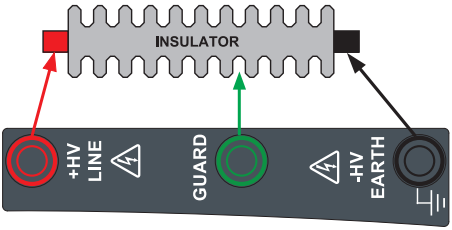
1. Before test performed, be sure that no voltage is present. If voltage is present, disconnect the power supplied.
2. To secure operator's safety, check if there is any damage on the insulation tester or test cable.
3. During the test, do not touch any exposed metal parts or test lead tip.
4. Wear insulation gloves and rubber shoes while operating this high-voltage measuring instrument.

7.1.1. Checks before test is performed:

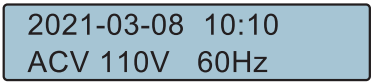
Turn the function rotary switch to any functions to check if the Battery power is enough or not.
If the Battery power is approximate DC 10V, "Batt. Low" will be displayed on the LCD display.
If the Battery power is approximate DC 8.5V, "Batt. Fail" will be displayed on the LCD display. Then, please replace with new Alkaline batteries.

7.1.2. Insulation measuring procedure:

1. Connect to test cable to test object.



2. Turn the function rotary switch to the test voltage from 500V, 1000V, 2500V or 5000V respectively.
3. When pressing and holding the backlight button then the display will shows the backlight function.
4. Be sure that the cable connecting the test object does not have a voltage (above AC30V or DC30V). The LCD will display the voltage picture as show in the AC/ DC voltage.



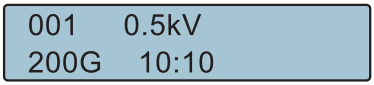
If pressing the TEST/ STOP button, the LCD displays the warning picture show in below



Note: The test cannot be performed. To test remove the exterior voltage.

5. Press the TEST / STOP button for testing continuously. While test is running, beeper activates to remind -9- operator that test is underway. After the set test time is completed (see Function 2: the test time setting), the test stops and system will automatically hold the test value. To read the test value on the LCD display.
6. Press the TEST / STOP button for discharging.
7. Read the test value from LCD display.

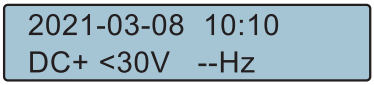
8. To store the data, press the ENTER/ SAVE button; LCD displays the picture show in below;



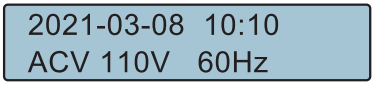
Note: When doing an insulation test, always connect the test leads to the object we want to measure before pressing the TEST button. Do not press the TEST button in advance.

7.1.3. ACV/DCV Measuring procedure:

1. Turn the function rotary switch to V AC/DC(30~600V) function. LCD displays the picture shown in below.



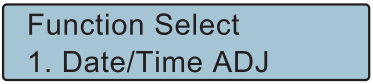
2. Input AC/DC Voltage; LCD displays the picture shown in below.



7.1.4. Minor Functions:

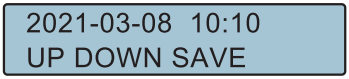
7.1.4.1.Function 1- Date/ time adjustment (RTC Adjustment)

1. Turn on the insulation tester by rotating the function rotary switch to any position(except OFF).
2. Press the SEL function to enter the minor function selection, LCD displays the following picture respectively;



3. Press the ENTER/SAVE button to enter the Date/Time Adjustment.

4. Press the SEL button to select year, month, day, hour, minute for adjustment, LCD displays the following picture respectively;



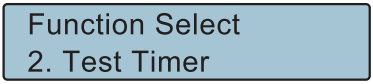
5. Press the ▲ "up button" or the ▼ "down button" till the correct value is reached.
6. After all adjustments are complete, press the ENTER/SAVE button to confirm and save the data measured.

Note: if Date/Time unit (year, month, day, hour or minute) needs not to be adjusted, press the ESC/ ☼ to skip it and return back to the minor function selection.

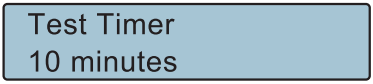
7. Press the ESC/ ☼ button again to return back to the main page.

7.1.4.2. Function 2 – Measurement time setting (Test Timer)

1. Turn on the insulation tester by rotating the function rotary switch to any position(except OFF).
2. Press the SEL function to enter the minor function selection.
3. Press the ▲ "up button" or the ▼ "down button to find the measurement time setting; LCD displays the following picture respectively;



4. Press the ENTER/SAVE button, LCD displays the picture shown in below:



5. Press the ▲ "up button" or the ▼ "down button" to set the test time (from 1-30 minutes)
6. After setting is complete, press the ENTER/ SAVE button to confirm & save the data measured.

Note: if Test Timer unit needs not to be adjusted, press the ESC/backlight button and return back to the minor function selection.

7. Press the ESC/backlight button again to return back to the main page

7.1.4.3.Function 3 – Display the data stored (Log Display)

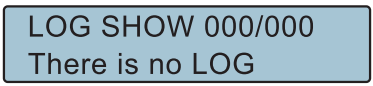
1. Turn on the insulation tester by rotating the function rotary switch to any position(except OFF).
2. Press the SEL function to enter the minor function selection
3. Press the ▲ "up button" or the ▼ "down button to find the measurement time setting; LCD displays the following picture respectively;



4. Press the ENTER/SAVE button, LCD displays the picture shown in below:



5. Press the ENTER/SAVE button to query the subpage of data (include Resistance value, testing voltage, PI, DAR, Saving Date & Time).
6. Press the ▲ "up button" or the ▼ "down button to select the required data value. If no data available, LCD displays the picture shown in below



7. After the query is over, press the ESC/☼ button to return back the minor function selection.
8. Press the ESC/☼ button again to return back to the main page.

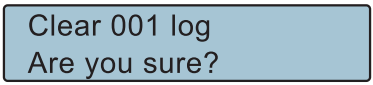
7.1.4.4. Function 4 – Clear/Erase the data stored (LOG Clear)

1. Turn on the insulation tester by rotating the function rotary switch to any position(except OFF).
2. Press the SEL function to enter the minor function selection.

3. Press the ▲ "up button" or the ▼ "down button to find the measurement time setting; LCD displays the following picture respectively;

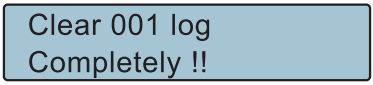


4. Press the ENTER/SAVE button to inquire whether to clear up the data or not; LCD displays the picture shown in below:



Note: if the erasing unit needs not to be done, press ESC/ button to skip it and return back to the minor function selection.

5. Press the ENTER/SAVE button again to clear up the data; LCD displays the picture shown in below:



then return back to the minor function selection.

6. Press the ESC/ button again to return back to the main page.

7.1.5. Introduction of other Functions:

1. Dielectric absorption ratio (DAR):
   Ratio of insulation resistance between 1-min and 30-sec

$$\textbf{DAR}: \frac{\text{1-min insulation resistance}}{\text{30-sec insulation resistance}}$$

2. Polarization index (PI):
   Ratio of insulation resistance between 10-min and 1-min

$$\textbf{PI}: \frac{\text{10-min insulation resistance}}{\text{1-min insulation resistance}}$$

Lower insulation resistance tested takes a longer test time, which would deteriorate the object under test. Thus, higher DAR or PI (as close to 1) would create better insulation grade of the object under test.

⚠ Operation:
During the test run, wait for one minute, DAR will be displayed automatically; wait for 10 minutes, PI will be displayed automatically.

3. AUTO OFF:
System will shut down automatically after 3 minutes without operation.

8. Battery replacement

When the LCD displays "Batt. Low", disconnect the test leads from the high voltage insulation tester and turn off the power. Replace with new Alkaline batteries. (1.5V "C" type x 8)

9. Maintenance & repair

9.1. To avoid and electric-shock or device damage, do not wet inner part of the tester.

9.2. Avoid the tester from being dropped that would damage or disconnect devices.

9.3. Wipe the tester surface with soft, dry cloth and mild detergent. Prohibit from using sandpaper or solvent.

Note:

1. This tester is HV operated; user should not open the outer casing. If any damage occurs, take the tester back to manufacturer for repair.
2. If the tester is not used for over 60 days, remove the batteries for storage.



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