User Manual

Clamp-On Ground Resistance Tester

Marmonix MEG725

www.Marmonix.co

CONTENT

Precaution For Use

Thank you for purchasing marmonix 725 **Clamp Earth Resistance Tester**. In order to better for use of the product, please be certain:

-- Read this user manual carefully.

-- Comply with the operating cautions in this manual.

- Under any circumstance, shall pay special attention on safety in using this tester.
- Pay attention to measuring range and usage environment stipulated for the tester. Do not clamp and test power line.
- Pay attention to the text labeled on the panel and backplane of the Meter.
- Before boot up, Withhold the trigger one or two times to make sure the jaws are closed well.
- In booting up, do not withhold the trigger, nor clamp any wires.
- Must wait the auto inspection finished and display "OL Ω" symbol, and then clamp and test measurement object.
- The jaw planes contact surfaces must keep clean, cannot rubbed with caustics and coarse material.
- Avoid any impact onto this meter, especially the jaw contact planes.
- In dangerous site, it is strongly recommended to use our explosion-proof type clamp grounding resistance meter.
- It is strictly forbidden to disassembled and replaced battery in hazardous locations for the explosion-proof type product.
- It is normal that the meter clamp will have some buzzing sound in measuring resistance.
- Measuring wire current should not exceed the meter range upper limit.
- Please take out the batteries if the meter will not use in a long time.
- Disassembly, calibration, and repair of this tester must be performed by authorized personnel.
- Due to the reason of this instrument, if it is dangerous to continue using, should stopped and sealed immediately ,and handled by an authorized institution.
- The contents marked with "*" in this user manual are limited to the C type.

1. Introduction

Meg725of Clamp Earth Resistance Tester is a major breakthrough in traditional grounding resistance measurement. It is widely used in the grounding resistance measurement of the power, telecommunications, meteorology, oilfield, construction and the industrial and electrical equipment.

Meg725of Clamp Grounding Resistance Tester, in the measurement of a grounding system with loop, does not require breaking down the grounding down lead, and no need the auxiliary grounding electrode. It is safe, fast and simple in use.

MEG725series clamp grounding resistance meter can measure ground faults which cannot be measured by traditional methods. It can be used in applications where traditional methods cannot be measured, because the **MEG725** clamp grounding resistance meter measures the combined value of grounding body resistance and grounding lead resistance. .

In addition, the C type Clamp Grounding Resistance Tester is also able to measure the leakage current and the neutral current in the grounding system.

2. Specification

2.1. Series Model

Model	Jaw Size (mm)	Resistance Range (Ω)	Current Range (A)	Data Storage	Alarm Function
MEG725	55×32	1000Ω	--	99 groups	Yes

2.2. Ranges & Accuracy

Mode	Range	Resolution	Accuracy
Resistance Range	0.010Ω-0.099Ω	0.001Ω	±（1%rdg＋0.01Ω）
	0.10Ω-0.99Ω	0.01Ω	±（1%rdg＋0.01Ω）
	1.0Ω-49.9Ω	0.1Ω	±（1%rdg＋0.1Ω）
	50.0Ω-99.5Ω	0.5Ω	±（1.5%rdg＋0.5Ω）
	100Ω-199Ω	1Ω	±（2%rdg＋1Ω）
	200Ω-395Ω	5Ω	±（5%rdg＋5Ω）
	400-590Ω	10Ω	±（10%rdg＋10Ω）
	600Ω-1000Ω	20Ω	±（20%rdg＋20Ω）
Current Range	0.00mA-9.95mA	0.05mA	±（2.5%rdg＋1mA）
	10.0mA-99.0mA	0.1mA	±（2.5%rdg＋5mA）
	100mA -299mA	1mA	±(2.5%rdg+10mA）

	0.30A-2.99A	0.01A	±（2.5%rdg+0.1A）
	3.0A-9.9A	0.1 A	±（2.5%rdg+0.3A）
	10.0A-19.9A	0.1 A	±（2.5%rdg+0.5A）
	20.0A-30.0A	0.1 A	±（3%rdg+1A）

2.3. Technical Specifications

Power Source: 6VDC (4pcs 5# alkaline battery)

Working Temperature: -10 ° -55 ° C

Relative Humidity: 10%-90%

LCD: 4-digital LCD, 47mm (L) × 28.5mm (W)

Meter Size: 275mm (L); 85mm (W); 56mm (H)

Meter Weight (including batteries): 995 g

Protection Level: Double insulation

Structural Feature: Clamp and jaw type

Range Shift: Automatic

External Magnetic Field: ＜40A/m

External Electric Field: ＜1V/m

Single Measuring Time: 0.5 second

Measurement Resistance Frequency: ＞1KHz

Maximum Resistance Measurement Resolution: 0.001 Ω

Resistance Measurement Range: 0.01-1000 Ω

Current Measuring Range: 0-30A(C type)*

Measured Current Frequency: 50/60Hz

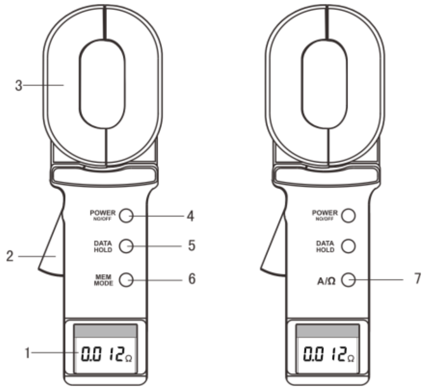
Storable Measurement Data: 99 groups

Setting Range of Resistance Alarm Critical Value: 1-199 Ω

Setting Range of Current Alarm Critical Value： 1-499mA(C type)*

Note: with "*" item is limited to C type

3. Meter Structure



3.1. Liquid Crystal Display (LCD)

3.2. Trigger: Control the clamp open and close

3.3. Clamp: 55X32mm

3.4. POWER Key: Boot Up / Shutdown /Quit

3.5. HOLD Key: Lock / Release display

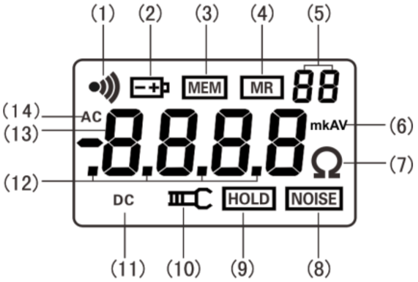
3.6. MODE Key: Switch key of function mode (resistance measurement /data reading)

***3.7. A/Ω Key:** Switch key of function mode (resistance measurement /current measurement/data reading)

Note: with"*" item is limited to C type

4. Crystal Display

4.1. LCD Screen



4.1.1. Alarm symbol

4.1.2. Low battery voltage symbol

4.1.3. Full data storage symbol

4.1.4. Data reading symbol

4.1.5. 2-digital No. of Data storage unit

4.1.6. Current / Voltage unit

4.1.7. Resistance unit

4.1.8. Noise signal

4.1.9. Data lock symbol

4.1.10. Clamp opening symbol
4.1.11. DC symbol
4.1.12. Metrication decimal point
4.1.13. 4-digital LCD figures display

4.2. Special Symbols Description

4.2.1. Clamp opening symbol: the clamp is in the open state, the symbol shows. At this point, trigger may be artificially pressed, or the clamps have been seriously polluted, and can no longer continue to measure.

4.2.2. "**Er** "The boot-up error symbol, the trigger may be artificially pressed when booting or the clamp opening

4.2.3. Low battery voltage symbol: when the battery voltage is lower than 5.3V, the symbol shows. At this time, it cannot guarantee accuracy of the measurements. Batteries should be replaced.

4.2.4." OL Ω" symbol indicates that the measured resistance has exceeded the upper limit range of the meter.

4.2.5. "**L0.01Ω"** symbol indicates that the measured resistance has exceeded the lower limit range of the meter.

4.2.6. "OL A" symbol indicates that the measured current has exceeded the upper limit range of the meter.*

4.2.7. Alarm symbol: when the measured value is greater than the critical value of alarm setting, the symbol flashes indicator.

4.2.8. MEM Full data storage symbol: data memory is full of 99, and can no longer continue to store data. **MEM** symbol flashes indicator.

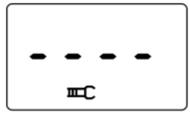
4.2.9. MR Data reading symbol: display in data reading, and display the storage number of data.

***4.2.10. NOISE** symbol: In measuring of grounding circuit with larger interference current will flashes indicator

Note: with " *" item is limited to C type

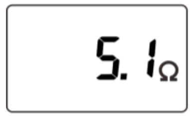
4.3. Display Examples

4.3.1. ---Clamp is in open state, and cannot measure



4.3.2. ---Measured loop resistance is less than 0.01 Ω

4.3.3. **---**Measured loop resistance is 5.1Ω



4.3.4. ---The tester circuit resistance is: 2.1 Ω

--- Lock present measurement value:2.1Ω

---Automatic stored as the 8th group of data

4.3.5. ---Reading stored data of group No. 26

---Measured loop resistance is 0.028 Ω

***4.3.6.**---Alarm function activated, the measured current exceeded the critical value of alarm setting

---Low battery voltage is displayed. At this time, it cannot guarantee the accuracy of the measurement

---Measured current is 8.40A

---Lock the current display value

---Store the current value as the data of group No. 37

4.3.7. ---Alarm function activated, the measured resistance exceeded the critical value of alarm setting.

--- Reading stored data unit No. 8

---Measured resistance is 820 Ω

5. Quick Function Searching

Function	Key
Boot Up / Shutdown / Shutdown Delay/Exit	**POWER**
Lock store / Release Display / Reading Data / Setting of Alarm Critical Value	**HOLD**
Resistance measurement / Data Reading Model /Digital choice	**MODE**
Resistance measurement /Current measurement/ Data Reading Model /Digital choice*	**A/Ω**
Clear all stored data	**HOLD+MODE**
Clear all stored data *	**HOLD+ A/Ω**

Note: with "*" item is limited to C type

6. Operating Method

6.1. Start Up

Before boot up, withhold the trigger one or two times to make sure the clamps are well closed.

Press **POWER** key, and the meter switched into boot-up state, automatically test LCD at first and display all symbols as figure 1. The meter automatic calibration at the same time, after boot-up will display "**OLΩ**" and automatically enter the resistance measurement model as figure 2. If not automatic calibration in normal boot up, the meter will display “**Er”** symbol and means error in boot up as figure3:

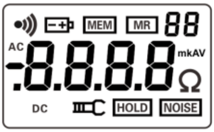


Figure1

Figure2

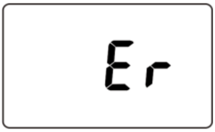


Figure3

In the process of automatic inspection, do not withhold the trigger, nor open the clamp, nor clamp any wire.

Boot up error need to inspect the problem and then reboot it up.

In auto-inspection process, be sure to keep the natural static state of the Meter; do not overturn the Meter, nor impose any external force on the clamp. Otherwise, the accuracy of measurement cannot be guaranteed.

In auto-inspection process, if the jaws clamped around a conductor loop, the measurement is not accurate. Please remove conductor loop and reboot it up.

If there was not an **OLΩ** appearing after auto-inspection, but a larger resistance value displayed, as shown in figure 4; But the test loop detection can still get correct result. This shows that the meter has a larger error only in measuring the large resistance (e.g. more than 100Ω), whereas in measuring the small resistance, and can still keep the original accuracy, users can be rest assured in use.

Figure4

After auto-inspection, display "**OL Ω**", and also flashes the symbol •))), as shown in Figure 5.

Due to that no-load resistance "OL" has exceeded the alarm critical value of resistance.

Figure 5

6.2. Shutdown

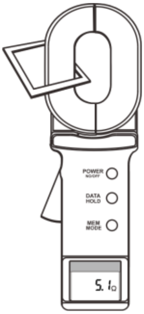
After the meter is switched on, press **POWER** key to shut it down.

After the meter started up 5 minutes, the LCD screen entered flashing state, and would automatically shut down after the flashing state is sustained for 30 seconds to reduce battery consumption. Press **POWER** key in flashing state may delay the shutdown and keep it working.

In **HOLD** state, it is required to first press **HOLD** key or Power key to quit from the **HOLD** state, then press **POWER** key to shut it down.

In state of setting alarm critical value, should first to press **POWER** key or **A/Ω** key for 3s to quit from the state, then press **POWER** key to shut it down.

6.3. Resistance Measurement



After the booting and auto-inspection, display "OL Ω" and will be able to proceed with resistance measurement. At this point, press the trigger and open the jaws, clamp the measured loop, reading and getting the resistance value.

If user thinks it necessary, the test can be done with the test ring as shown in the following figure. It shows value should be consistent with the normal value on the test ring (5.1 Ω).

(User uncertainty the meter could normal work or not, could refer and judge with this method).

The normal value on the test rings is the value at a temperature of 20 ° C.

It is normal to find the difference of 1 unit between the show value and the nominal value. E.g.: If the nominal value of test ring is 5.1 Ω, it would be normal with showing 5.0 Ω or 5.2 Ω.

Display "OL Ω", indicate that the measured resistance value exceeded the upper limit range of Meter, refer figure 3.

Display "L0.01Ω", indicate that the measured resistance value exceeded the lower limit range of Meter, refer figure 6.

Figure 6

In **HOLD** state, it is required to press **HOLD** key or **POWER** key to quit the **HOLD** state before continue to measuring.

In a state of alarm setting value, should first to press **POWER** key or **A/Ω** key for 3 sec to quit from the state before continue to measuring.

In reading mode**,** press **MODE** key to switch to the resistance measurement mode.

The C type meter in reading mode or current measurement mode, press **A/Ω** key to switch to the resistance measurement mode.

*6.4. Current Measurement

After the booting and auto-inspection, the meters automatically enter into the resistance measurement mode. After display "OL Ω", press **A/Ω** key, and the meter enter into the current measurement mode and display "0.00mA" , refer figure 7. At this point, withhold the trigger and open the jaws, clamp the measured wire, reading and getting the current value.

Figure 7

Figure 8

The meter display "OL A", indicate that the measured current value exceeded the upper limit range of meter, refer Figure 8.

Flashes •))) symbol indicates that the measured current value exceeded the alarm critical value.

In reading mode or resistance measurement mode**,** press **A/Ω** key to switch to the current measurement mode.

In **HOLD** state, should press **HOLD** key or **POWER** key to quit from **HOLD** state, and return to current measurement mode.

In a state of alarm setting value, should press **POWER** key or **HOLD** key for 3 sec to quit from the state, then return to current measurement mode.

6.5. Data Lock/Release/Storage

In measurement, press **HOLD** key to lock the present display value and display **HOLD** symbol. This lock value is automatically numbered and stored as a set of data .Then press **HOLD** key or **POWER** key to release locking, **HOLD** symbol would disappear and return to measurement state. By repeat the above operations, it can store 99 sets of data. If the memory is full, the **MEM** symbol will flash display.

As indicate in figure 9, lock the measured resistance 0.016Ω, and save it as data unit No.1.

As indicated in figure 10, lock the measured current 278mA, and save it as data unit No.99, the storage is full.*

Figure 9

Figure 10

In the data reading mode, should press **MODE** key to switch to the measurement mode, and then lock and save data.

The C type meter in reading mode, should press **A/Ω** key to switch to the measurement mode, and then lock and save data.*

In the setting state of alarm critical value, should press **POWER** key or **HOLD** key for 3 sec to quit from the setting state of alarm critical value, and then can lock and save data.

Switching on after shutdown will not lose the saved data.

6.6. Data Access

Press **MODE** key to enter into the reading storage data Mode, and the default to display is the data unit No.01 stored, as shown figure 11. Then press **HOLD** key to turn down to browse the saved data. Browsing the last data unit, it returns to the data unit No.01.If no stored data, as shown in figure 12.

The C type meter in resistance measurement mode, should press A/Ω key enter into the current measurement mode, and then press A/Ω key enter into the data reading mode.

In the setting state of alarm critical value, it is required to press down **POWER** key or **HOLD** key for 3 sec to quit from the setting state of alarm critical value, and press **MODE** key to switch to the reading data mode.

The C type meter in the setting state of alarm critical value, should press **POWER** key or **HOLD** key for 3 sec to quit from the setting state of alarm critical value, press **A/Ω** key switching to the reading data mode.

Figure 11

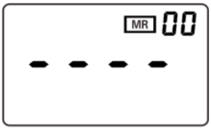


Figure 12

6.7. Alarm Critical Value Setting

In resistance measurement or current measurement mode, press **HOLD** key for 3 sec and enter into the setting function of alarm critical value. At this point, the highest-digit begins to flash. First set the highest digit as indicate in figure 13 and figure 14. Press **MODE** key to switch from high to low digits. As the current figure flashes, press **HOLD** key to change the figures of "0, 1…9 "; After setting all the digits, press **HOLD** key for 3 seconds or **POWER** key to confirm the alarm critical value currently setting. Successful setting would show the flashed alarm critical value, and then automatically return to the measurement mode.

The C type meter set alarm critical value, should press **A/Ω** key to switching from high to low digits

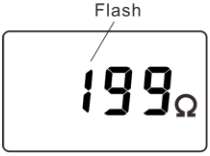


Figure13 The threshold setting of resistance alarm

Figure14 The threshold setting of current alarm

In setting or after setting success, press **POWER** key can also quit from setting functions of alarm critical value, return to the measuring state.

In the data reading mode, it is required to press **MODE** key switching to the measurement mode, then can set the alarm critical value.

The C type meter in data reading mode, should press **A/Ω** key switching to measurement mode, then can set the alarm critical value.

6.8. Alarm Critical Value Check

In resistance measurement or current measurement mode, Press **HOLD** key 3 seconds and enter into the alarm critical value

Figure 15

checking, which will flashes highest digit number, the value check each time is that setting in the last time. Press **HOLD** key 3 seconds or **POWER** key to quit from the check state and return to the measurement state.

As figure 15, the alarm critical value of resistance set in the last time was 20Ω.

6.9. Clear Data

Press **MODE** key and enter into the store data reading mode, Pressing **HOLD + MODE** combination key automatically clear all the stored data.

The C type meter press **A/Ω** key and enter into the store data reading mode, pressing **HOLD + A/Ω** combination key automatically clear all the stored data.

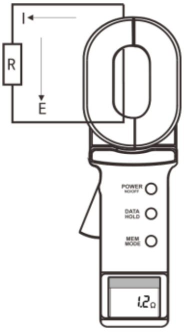
After data clear operation as shown figure 12.

In **HOLD** state, should press **POWER** key or **HOLD** key to quit from **HOLD** state, reenter the reading data mode, and clear all the stored data.

In the alarm critical value setting mode, should press **POWER** key or **HOLD** key for 3 seconds to quit from the alarm critical value setting state, reenter the reading data mode, and clear all the stored data.

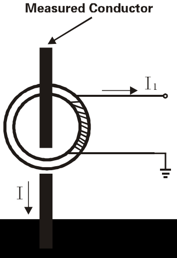
7. Measurement Principle

7.1. Resistance Measurement Principle



The basic principle of **MEG725series Clamp Earth Resistance tester** measuring grounding resistance is measuring the loop resistance, as shown below figure. The jaw part of the meter is comprised of voltage coil and current coil. The voltage coil provides drive signal, and will induce a electric potential E in the measured loop. With the effects of the potential **E**, the current **I** can generate in the measured loop. The meter can measure **E** & **I**, and the measured resistance R can be obtained by the formula R=E/I.

7.2. Current Measurement Principle



The basic principle of **the C style grounding resistance tester** measure current is the same with the principle of current sensor measurement, as shown below figure.

The AC current **I** of the measured wire, through the current magnetic loop and coil of jaw, can generate an induction current $\mathbf{I_1}$; The meter will measure I_1, and the measured current **I** can

be obtained by the following formula.

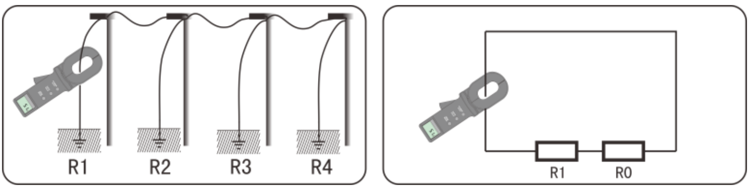
$$I = n \cdot I_1$$

Note: **n** is the turn ratio of the secondary side and primary side coil.

8. Grounding Resistance Measurement Method

8.1. Multi-Point Grounding System

For the multi-point grounding system (such as electricity transmission tower grounding system, communications cable grounding systems, certain buildings, etc.), it usually connect overhead ground wire (communications cable shielding layer) to form a grounding system. As follow figure:



As the meter is in the above measurement, its equivalent electric circuit is shown as follow figure:

Where: R_1 is the target measurement grounding resistance.

R_0 is the equivalent resistance of the other entire tower grounding resistances were paralleled.

Although strictly on the theoretical grounding, because of the existence of so-called "mutual resistance", R_0 is not the usual parallel value of electrotechnology (slightly larger than parallel value of electrotechnology). But because each grounding radius of tower was much less than the distance between the towers, and with a great number of grounding point, R_0 is much smaller than R_1. Therefore, it can be justified to assume $R_0=0$ from an engineering perspective. In this way, the resistance should be R1 which measured.

Many times of comparing tests in different environments and different occasions with the traditional method proved that the above assumption is entirely reasonable.

8.2. Limited Point Grounding System

This situation also quite common. For example, some of towers which are five towers connected with each other through overhead ground wire; Besides, some of the buildings is not an independent grounding grid, but several grounding bodies connected with each other through the wire.

Under such circumstances, the R_0 of above figure regarded as 0, will get more error results of the measurement.

Due to the same reasons mentioned above, we ignore the impact of the mutual resistance; and the parallel equivalent resistance of the grounding resistance is calculated by the usual theory. Thus, for the grounding system of N sets (N is less, but more than 2) grounding bodies, it can offer N equations:

$$R_1 + \frac{1}{\frac{1}{R_2} + \frac{1}{R_3} + \cdots + \frac{1}{R_N}} = R_{1T}$$

$$R_2 + \frac{1}{\frac{1}{R_1} + \frac{1}{R_3} + \ldots\ldots + \frac{1}{R_N}} = R_{2T} \qquad R_N + \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \ldots\ldots + \frac{1}{R_{(N-1)}}} = R_{NT}$$

Where: **R1、R2、……R_N** are grounding resistances of the N sets grounding bodies. **R_{1T}、R_{2T}、……R_{NT}** are the resistances which measured in the different grounding branches by the meter.

It is nonlinear equations with **N** unknown numbers and **N** equations.

In principle, in addition to ignoring the mutual resistance, this method cannot ignore the measurement error caused by **R_0**.

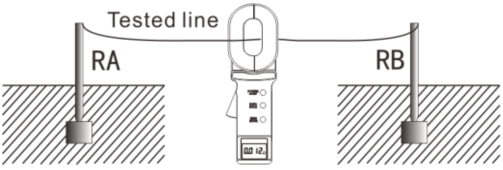
However, users need to pay attention: In your grounding system, there are several grounding bodies connected to each other, and you must measure the same number of test values, not more or less.

8.3. Single-Point Grounding System

From the measuring principle, **MEG725**series meter can only measure the loop resistance, and the single-point grounding cannot measured. However, users will be able to use a test wire and nearly earth electrode of the grounding system to artificially create a loop for testing. The following presented two kinds of methods for the single-point grounding measurement by use of the Meter. These two methods can be applied to the occasions beyond the reach of the traditional voltage-current testing methods.

8.3.1. Two-Point Method

As shown below figure, in the vicinity of the measured grounding body R_A, look for an independent better grounding body R_B (for example, nearby water pipe, fire hydrant or a building). R_A and R_B connect with a single test wire.



As the resistance value measured by the meter is the value of the series resistance from the test wire and two grounding resistances.

$$R_T=R_A + R_B + R_L$$

And: R_T is the resistance value measured by the Meter.

R_L is the resistance value of the test wire.

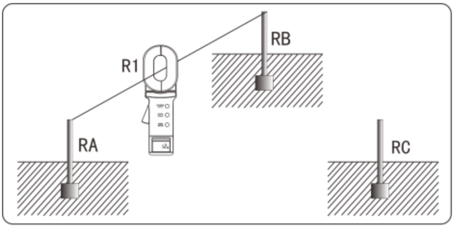
Meter can measure out the resistance value R_L by connecting the test wires with both ends.

So, if the measurement value of the meter is smaller than the grounding resistance allowable value, then the two grounding bodies are qualified for grounding resistance.

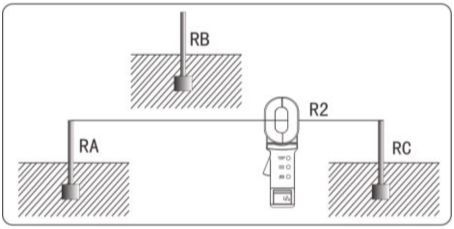
8.3.2. Three-Point Method

As shown below figure, in the vicinity of the measured grounding body R_A, look for two independent grounding bodies R_B and R_C.

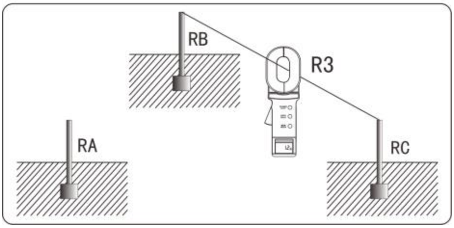
First step, connect R_A and R_B with a test wire, use the meter to get the first data R_1.



Second step, connect $\mathbf{R_C}$ and $\mathbf{R_A}$, as shown below figure, clamp and test with the meter to get the second data $\mathbf{R_2}$.



Third step, connect $\mathbf{R_B}$ and $\mathbf{R_C}$, as shown below figure, clamp and test with the meter to get the third data $\mathbf{R_3}$.



In the above three steps, the measured data in each step is the series value of the two grounding resistance. In this way, we can easily calculate each grounding resistance value:

From:$R1=R_A+R_B$; $R2=R_C+R_A$;$R3=R_B+R_C$

We get:$R_A=(r1+R2-R3)/2$

This is the grounding resistance value of the grounding body $\mathbf{R_A}$. To facilitate the memory of the above formula, these three grounding bodies can be viewed as a triangle; then the measured resistance is equivalent to the value of the resistance values of the adjacent edges plus or minus resistance value of the opposite sides, and divided by 2.

As the reference points, the grounding resistance values of the other two grounding bodies are:

$$\mathbf{R_B=R1-R_A} \qquad \mathbf{R_C=R2-R_A}$$

9. Field Application

9.1. Application In Power System

9.1.1. The measurement of the tower grounding resistance of transmission line.

Usually, the grounding of the transmission line tower constitutes a multi-point grounding system. The grounding resistance of the branch can be measured by simply clamping the grounding down lead by the **MEG725** Clamp Meter.

9.1.2. The neutral point grounding resistance of transformer measurement

There are two situations for transformer to connect the grounding: in case with repeat neutral points form multi point grounding system; in case, non-repeat grounding point measurement according to single point grounding.

In measuring, if the meter display “L 0.01Ω”, the same tower or transformer may have more than two grounding down leads and connect in underground. At this time, the other grounding down lead should be untied, keep only one grounding down lead.

9.1.3. The application in power station and power substation

MEG725 clamp meter can test the contact and connection of the circuit. With the help of a test wire, the connection between the device in the station and the ground network can be measured. Grounding resistance can be measured by single point grounding.

9.2. Application In Telecommunications System

9.2.1. The measurement of the building machine room grounding resistance

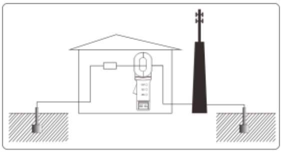
The machine room of telecommunication system normally in the upper floor of the building, and it difficult to measurement with the megger meter. However, it is very convenient by **MEG725**series clamp tester. Connect the fire hydrant and the measured ground electrode with test wire, then measure the test wire by meter.

Meter value= machine room resistance value + test wire resistance value + fire hydrant ground resistance value.

If the fire hydrant ground resistance value is very small, then: the machine room ground resistance value≈ meter resistance value-test wire resistance value.

9.2.2. The measurement of machine room and the launch tower grounding resistance.

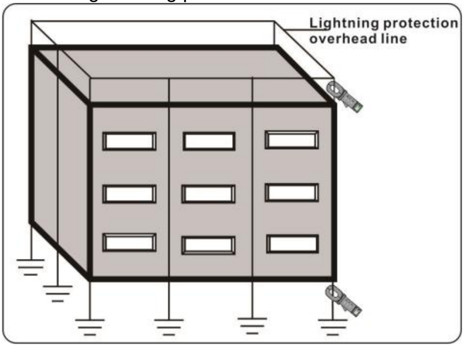
It normally form a two-point grounding system when machine room and launch tower connect to earth, as show below:



If the measure value of meter is smaller than the allowable value of grounding resistance, then the grounding resistance of machine room and the launch tower is valid. If the measure value is larger than allowable value, please measure by single point grounding method.

9.3. Application In Lightning Protection System Of Building

If the grounding pole of the buildings is independent with each other, the measurement of grounding resistance of each grounding pole as follow:



10. Measure Grounding Resistance Notes

10.1. Users sometimes may measurement compare **MEG725**meter with traditional voltage-current method , and with a big difference; to solve this situation, users should pay attention to the problems mention below:

10.1.1. Whether trip coil or not when tested by the traditional voltage-current method. (Whether the tested grounding body separated from the grounding system or not).if not, then the measured grounding resistance is the parallel value of all grounding resistances

It is useless to measure the parallel value of all grounding body resistances, because the purpose of measuring ground resistance is to compare it with an allowable value specified in the relevant standards to determine whether the ground resistance is qualified or not.

For example: The allowable value of grounding resistance stipulated in GB50061-97 "design code for overhead power lines 66KV and below" is for the so-called "each tower". It is clearly stated in the standard interpretation: "the grounding resistance of each tower refers to the resistance value measured by interrupt electrical continuity between the grounding body and ground wire.

This standard is very specific.

As mentioned above, the result measured by **MEG725** clamp meter is the grounding resistance of each branch, which is the grounding resistance of a single grounding body when the grounding wire is in good contact.

Obviously, in this case, test with the traditional voltage-current method and **MEG725**clamp meter. Their measurement results are not comparable at all, since the subjects are not the same, it is quite normal for the results to be significantly different.

10.1.2. The grounding resistance measured by the **MEG725** clamp meter is the composite resistance of the grounding branch. It includes the contact resistance, the lead resistance and the grounding body resistance of the branch to the common ground wire. However, the measured value is only the grounding body resistance under the condition of trip coil by traditional voltage and current method.

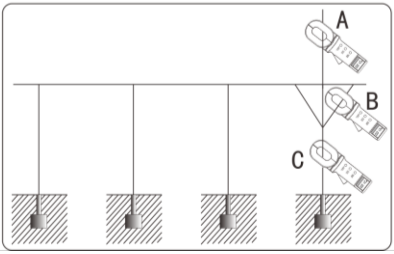
Obviously, the measurement value of the former is larger than that of the latter. The value size of the difference reflects the value size of the contact resistance between the branch and the common ground wire.

It should be noted that the grounding resistance specified in the national standard includes grounding lead resistance. The terms in DL/ t621-1997 "grounding of AC electrical device" include the following stipulation: "the sum of the ground resistance and the ground wire resistance of the ground electrode or natural ground electrode is called the grounding resistance of the grounding device."

This kind of stipulations same clear. This is because the lead resistance and the grounding resistance of ground body are equivalent with lightning protection safety.

10.2. Selection of measurement point

In some grounding system, as show below figure, should choose a correct point for measurement, or will get different result.



In measuring at A point, the measured branch does not form a circuit, the meter display "**OL Ω**", should change the measuring point.

In measuring at B point, the measured branch form the circuit of metallic conductor, the meter display "**L 0.01Ω**" or a very small resistance value of metallic circuit, should change the measuring point.

In measuring at C point, the measurement value is the grounding resistance value under the branch.

11. Accessories

Clamp Grounding Tester	1 PCS
Test Ring	1 PCS
Meter Case	1 PCS
User's Manual	1 SET