



## INTRODUCTION

This instrument is a digital insulation tester which adopts DC voltage converter of low consumption, high converter ratio, and inductance type energy storage to convert the voltage of 9V DC into 250V/500V/1000V DC. With digital bridge, the instrument can test insulation and its main features include Easy to operate, Wide test range, Highly stable performance, Backlit LCD display, Data hold and Auto power off. Using a shoulder strap, it can be used by both hands. It is an ideal instrument that can be used in testing insulation of electric machines, cables, electronic equipments, electric facilities, etc.



## GENERAL SPECIFICATIONS

- 1) **LCD size:** 84.8×59.8mm, Max. display 1999
- 2) **Over range indication:** displays "1" when exceeding upper limit
- 3) **Sampling rate:** approx.3 times/Sec.
- 4) **Low Battery Indication:** the LCD display "⚡" symbol.
- 5) **Additional temperature coefficient:** 0.15 x specified accuracy/°C (<18° or >28°)
- 6) **Altitude:** <2000m
- 7) **Operation environment:** in-door use, pollution degree II temperature -15°C-55°C, relative humidity <75%RH
- 8) **Storage environment:** temperature -40°C~60°C, relative humidity <90%RH
- 9) **Power source:** AA battery (1.5V) x6 (or external 9V DC adapter).
- 10) **Power consumption:** before any measurement, the power consumption <300mW
- 11) **Fuse:** 100mA/60V resettable fuse
- 12) **Dimension:** 175 (L) x 110 (W) x 62.5 (D) mm
- 13) **Weight:** 580g (including battery)

## TECHNICAL SPECIFICATIONS

Accuracy:±(a% rdg+ least effective digits).

**Optimum environment for accuracy:** temperature (23±5)°C, relative humidity<75%

Calibration warranty: 1 year from off-factory date

<b>Testing voltage</b>	250V±10%	500V±10%	1000V±10%
<b>Range</b>	200MΩ	200MΩ	2000MΩ
<b>Accuracy</b>	±(4.0%rdg+2)		
<b>Short circuit current</b>	1.7mA	1.7mA	1.4mA
<b>Median resistance</b>	2MΩ	2MΩ	5MΩ
<b>Terminal position</b>	E(MΩ), L(MΩ), G		

Range	Accuracy	Resolution	Input impedance
DC1000V	±(0.5%rdg+6)	1V	1MΩ
AC750V	±(1.0%rdg+6)	1V	
2kΩ	±(0.8%rdg+6)	1Ω	Testing current:1mA
Continuity Test	<50Ω beeper alarm, testing current 1mA		
Terminal	V/Ω(IN+), G(IN-)		

Voltage input impedance: 1MΩ

ACV frequency response: (50 ~ 200) Hz

### Standard Accessories

1. 10A test lead x1 pair
2. AA battery (1.5V) x6pcs
3. Operation manual x1pcs
4. Shoulder strap x1pcs
5. Crocodile clip x1 pair

## GENERAL SPECIFICATIONS

Display	Large LCD with dual display
Measurement Range	200Ω, 200kΩ, 200MΩ/250V, 200MΩ/500V, 200MΩ/1000V, 750V/ACV, 1000V/DCV
Sampling Rate	2.5 times per second
Zero Adjustment	Automatic adjustment
Over Range Indicator	Number 1 of highest digit is displayed
Low abattery Indication	The $\frac{1}{2}$ is displayed when the battery Voltage drop below the operating voltage drop below the operating voltage
Operating Temperature and Humidity	0°C to 40°C (32°F to 104°F) below 70% RH
Power source	DC9V (6 x 1.5V Size "AA" battery or Equivalent)
Dimensions	200 (L) x 92 (W) x 50 (H) mm
Weight	Approx 700g include battery
Accessories	Test leads, 6 pcs battery, Carrying case, manual.

## ELECTRICAL SPECIFICATIONS

Accuracy are specified in the way:  
± (...% of reading + ...digits) at 23°C ± 5°C, below 80% RH

### OHMS

Range	Resolution	Accuracy	Max. open Circuit Voltage	Overload Protection
200Ω	0.1Ω	± (1% + 2)	4.5V	250Vrms
200kΩ	0.1kΩ		3.0V	

### DC Voltage

Range	Resolution	Accuracy	Input Impedance	Overload Protection
1000V	1V	± (0.8% + 3)	10MΩ	1000Vrms

### Continuity Beeper

Range	Resolution	Operation Resistance	Max. open Circuit Voltage	Overload Protection
$\rightarrow$	0.1Ω	Resistance ≤ 40Ω	4.5V	250Vrms
Short circuit current		≤ 200mA		

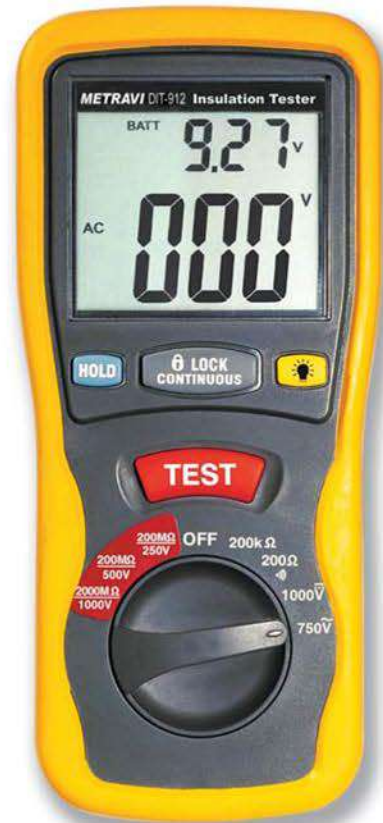
### AC Voltage (40Hz~400Hz)

Range	Resolution	Accuracy	Input Impedance	Overload Protection
750V	1V	± (1.2% + 10)	10MΩ	750 Vrms

### Meg OHMS

Range	Resolution	Accuracy	Terminal Voltage
200MΩ/250V	0.1MΩ	± (3% + 5)	250V ± 10%
200MΩ/500V	0.1MΩ		500V ± 20%
0 ~ 1000MΩ/1000V	1MΩ	± (5% + 5)	1000V ± 10%
1000 ~ 2000MΩ/1000V			

Range	Test Current	Short circuit current	
200MΩ/250V	1mA	≤1mA	
200MΩ/500V			250kΩ (load)
0 ~ 1000MΩ/1000V			500kΩ (load)
1000 ~ 2000MΩ/1000V	1MΩ		



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## INTRODUCTION

The new style of Digital Insulation Resistance Tester is DIT913. It has fashionable design and improved electronic circuit, so that has more fully function, higher precision, easier operation.

The output testing voltage can be selected in 250V/500V/ 1000V/ 2500V for deferent measurement. Resistance range can touch 20GΩ. Alternating voltage also can be tested.

This tester apply for all kinds of electric equipment and insulation materials such as transformer, electromotor, cable, switch appliance, etc.It is a perfect electrical testing meter.

This meter is designed in accordance with ICE publication 1010, pollution degree II and installation category (over voltage category) II

## FEATURE

- (1) Low power consumed CMOS double integral A/D convertor IC, auto zero.
- (2) 3-½ Digits LCD display, the max reading is 1999.
- (3) Data Hold with symbol.
- (4) LED indicating shows high voltage is generated.
- (5) Low battery indicated.
- (6) Output short current is over 1.5mA.
- (7) Range: 0-20GΩ, Auto Range.
- (8) Perfect circuit protect.
- (9) Size of LCD: 67 x 28mm (Height of character is 20mm).
- (10) Power: R6P(AA)(1.5V) 6.
- (11) Size : 150 x 100 x 70mm.
- (12) Weight: 680g (Including batteries).
- (13) Environment:

Working temperature: 0-40°C, relative humidity<80%

Storage temperature: -10-50°C, relative humidity<85%

Temperature to ensure precision: 23°C ± 5°C, relative humidity<75%



## TECHNICAL SPECIFICATION

Accuracy: ( % of reading + counts)

Environment temperature: 23°C ± 5°C, Relative Humidity<75%

<b>Testing Rating Voltage</b>	250V/500V/1000V/2500V
<b>Output Voltage</b>	90-110% Testing Rating Voltage
<b>Range</b>	0-20GΩ
<b>Resolution</b>	0.001MΩ
<b>Accuracy</b>	0-200MΩ (3% of reading ± 5 significant digits)
	200MΩ-10GΩ (5% of reading ± 5 significant digits)
	10GΩ-20GΩ (10% of reading ± 10 significant digits)

### Accessories

- a. Test lead 1 set
- b. User's manual 1 piece
- c. Battery:R6P(AA)(1.5V) 6 piece

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## GENERAL SPECIFICATION

Display	: 75 X 35 mm Backlit LCD with Annunciator
Max. Reading	: 1999 Counts
Over the limited range indicator	: LCD show "1"
Power supply	: Six AA batteries to supply the power; "OR" 230 V, 50Hz AC
Low voltage indicator	: The symbol $\text{⚡}$ appears
Power consumption	: Static <10mA Max. <300 mA (Median)
Short circuit current	: >2mA (250V~1000V), >1mA (2500V)
Work condition	: Temperature 0°C ~ 40°C, relative humidity: 30%~85% RH
Storage condition	: -10°C ~ 40°C, relative humidity <85%RH
Dimension	: 95 x 148 x 85 mm
Weight	: Approx. 850g (including batteries)
Accessories	: Manual, one pair of test lines, one pair of Crocodile clips, six batteries, Mains Adaptor

### Low Power Consumption

**Data Hold** : To Freeze the displayed Data

All accuracies have been defined for environment temperature:18~28°C, relative Humidity <80%RH

## TECHNICAL SPECIFICATION

Function	Range	Displaying reading	Accuracy	Remark/Media resistance
ACV	750V	00	$\pm(1.2\%+3d)$	Frequency response:40~400Hz
$\Omega$	200 $\Omega$	00.0	$\pm(0.8\%+3d)$	Voltage limit 250V <300beeper alarm
M $\Omega$ 500V	20M $\Omega$ 200M $\Omega$ 2000M $\Omega$	0.00 00.0 000	$\pm(2\%+5d)$ $\pm(2\%+5d)$ $\pm(3\%+5d)$	2M $\Omega$
M $\Omega$ 1000V	20M $\Omega$ 200M $\Omega$ 2000M $\Omega$	0.00 00.0 000	$\pm(2\%+5d)$ $\pm(2\%+5d)$ $\pm(3\%+5d)$	10M $\Omega$
M $\Omega$ 2500V	200M $\Omega$ 2G $\Omega$ 20G $\Omega$	00.0 .000 0.00	$\pm(2\%+5d)$ $\pm(3\%+5d)$ $\pm(5\%+5d)$	20M $\Omega$
M $\Omega$ 5000V	2G $\Omega$ 20G $\Omega$ 200G $\Omega$	.000 0.00 00.0	$\pm(3\%+5d)$ $\pm(5\%+5d)$ $\pm(8\%+5d)$	200M $\Omega$
Continuity	Audible Continuity when resistance is less than 30 $\Omega$			

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## FEATURES

- Test insulation of wires, cables, transformers, motors, surge arrestors and generators
- Selectable testing voltages - one testing instrument for low and high voltage systems from 500/1000/2500 and 5000V
- Insulation resistance measurement up to 1T  $\Omega$
- User selectable programmable timer (10s to 30 min)
- Automatic discharge of test object after completion of measurement
- Diagnostic tools
- Polarization index (PI)
- Dielectric absorption ratio (DAR)
- USB PC Interface
- Comparison feature to set pass/fail thresholds for quick measurement and verification
- Dual power source – receptacle or batteries
- Built in internal memory storing 18 measurements
- Comes as a complete kit: power adapter, software, USB interface cable, hard carrying case, batteries, complete set of test leads, and instruction manual
- CAT III 600V



## SAFETY AND COMPLIANCES

Certification	CE
Compliances	IEC 61010 CAT.III 600V overvoltage and double insulation standard

## GENERAL SPECIFICATION

**Display (LCD) :** Digital : 9999 counts Analog bar graph

**Display Backlight :** Bright Backlight for clear readings in poorly lighted areas

**Computer Connection :** Via USB interface

**Data Logging and Recall :** 18 sets

**Auto Range :** The meter automatically selects best range

**Warning :** Displayed on the instrument

**Test Voltage :** Automatically source the voltage

**COMP Measurement :** Used for Compare function to set a pass/fail compare level for the insulation measurement

**PI Measurement :** Polarization Index is the ratio of insulation resistance. Preset the time for two points and the Meter will carry out the measurement automatically

**Time :** To carry out measurement by setting a specified time within 15 minutes

**Over Loading :** Display OL on insulation resistance range

**Battery Indicator :** Display 

**Icon Display :** Equips with function and battery indicator icons

**Current Consumption :** Maximum : Around 1.0A, Average Around 20mA

**Operating Temperature :** -10°C ~ 40°C (14°F ~ 104°F)

**Storage Temperature :** -20°C ~ 60°C (-4°F ~ 152°F)

**Relative Humidity :** ≤ 85% @ 0°C ~ 40°C below  
≤ 90% @ -20°C ~ 60°C

**Battery type :** 8pcs of 1.5V (LR14) batteries or power adaptor (input voltage 230V, 50/60Hz, 150mA, input DC15V, 1.0A) Power adaptor is optionally at extra cost

**Dimensions (HxWxL) :** 202 x 155 x 94 mm

**Weight :** Approx. 2kg (including battery)

## ACCURACY SPECIFICATION

Accuracy : ± (% of reading) + (number of least significant digits), guarantee for 1 year

Operating temperature : 18°C ~ 28°C

Relative humidity : 45 ~ 75%RH

## VOLTAGE MEASUREMENT

	DC Voltage	AC Voltage
Measurement	±30 ~ ±600V	30V ~ 600V (50/60Hz)
Resolution		1V
Accuracy	±(2% + 3)	

## INSULATION RESISTANCE MEASUREMENT

Output V	500 V	1000 V	2500 V	5000 V
Display Range	0.0MΩ ~ 20GΩ	0.0MΩ ~ 40GΩ	0.0MΩ ~ 100GΩ	0.0MΩ ~ 1000GΩ
Open Circuit Voltage	DC 500V 0% ~ +20%	DC 1000V 0% ~ +20%	DC 2500V 0% ~ +20%	DC 5000V 0% ~ +20%
Test Current	1mA ~ 1.2mA @ 500kΩ	1mA ~ 1.2mA @ 1MΩ	1mA ~ 1.2mA @ 2.5MΩ	1mA ~ 1.2mA @ 5MΩ
Accuracy	0.0MΩ ~ 99.9MΩ: +(3%+5) 100MΩ ~ 99.9MΩ: +(5%+5) 10.0GΩ ~ 20.0GΩ: +(10%+5)	0.0MΩ ~ 99.9MΩ: +(3%+5) 100MΩ ~ 99.9Mv: +(5%+5) 10.0GΩ ~ 40.0GΩ: +(10%+5)	0.0MΩ ~ 99.9MΩ: +(3%+5) 100MΩ ~ 99.9Mv: +(5%+5) 10.0GΩ ~ 100GΩ: +(10%+5)	0.0MΩ ~ 99.9MΩ: +(3%+5) 100MΩ ~ 99.9Mv: +(5%+5) 10.0GΩ ~ 99.9MΩ: +(10%+5) Above 100GΩ: [±(20%+5) Humidity : Below 50%]
Short Circuit	Maximum than 2.0mA			

**INTRODUCTION**

DIT-321/DIT-322 Auto Range Digital Insulation Resistance Tester is a combination of Insulation Resistance Tester and Digital Multimeter. It has complete functions and features high accuracy, reliability in operation, and convenience in use. Output test voltage can be switched between 250V/500V/1000V/2500V, depending on different models. An ordinary insulating resistance meter can not measure the output high voltage of its own. When the output high voltage of the insulating resistance meter doesn't conform to the rated value, it is not easy for the user to find the unconformity so that deviation of the measured result is over large sometimes and causing hidden troubles in safety.

**While model DIT-321 has test voltage of 250V / 500V / 1000V the model DIT-322 has the test voltage of 500V / 1000V / 2500V.**

DIT-321/DIT-322 can monitor the output high voltage in real-time. At any time, the user can observe actual measurement voltage that is delivered by the meter, effectively avoiding misjudgment caused due to output voltage not conforming to the rated value. The measurement range of the meter can reach up to 40GΩ. The measurement time can be set up according to requirements. After a measurement is completed, the measured result can be saved automatically. Functions of the digital multimeter include AC/DC Voltage, AC/DC Current, Resistance, Capacitance, Frequency, Diode, and Continuity Measurement. The functions of the digital multimeter are completely separated from those of the Insulation Resistance Tester. While using functions of the multimeter, you need not be worried that you would suffer electric shock due to high voltage generated by the insulation resistance tester. The product is used to measure the insulation resistance of various insulating materials and electric equipments such as Transformers, Motors, Cables, Switches, and Electric Apparatus. It is also applicable for maintenance, test, and inspection of various electric equipments. It is compact in structure, convenient to carry, and an ideal electrical and electronic testing meter.



**GENERAL SPECIFICATIONS**

- Auto Range : "OL" will be displayed for overload.
- Display Mode : 3-3/4 Digits Backlit Liquid crystal display; maximum display: 4000.
- Sampling Rate : 2 times per second.
- Data Hold to Freeze the Displayed Data
- The meter can display actual insulation test voltage. LED light is used to indicate high voltage output status.
- Operating Environment : 0°C-40°C, less than 75%RH.
- Storage Environment : -10°C-60°C, less than 80%RH.
- Maximum Power Consumption : 4.5W; minimum power consumption 18mW.
- Indication for insufficient battery capacity: " " is displayed.
- Power Supply : 6 pieces of AA 1.5V battery (LR6×6)
- Auto Power Off : The multimeter is turned off automatically in approx. 15 minutes after it is turned on if no key is pressed or the knob is not turned.
- External Dimension : 170 (length)× 156 (width)× 64 (height) mm
- Weight : Approx. 650 grams (including the battery)

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## TECHNICAL SPECIFICATIONS:

Accuracy: ±% reading ± number, one-year warranty  
 Environment to guarantee the accuracy: 23°C±5°C, less than 75%RH.

### Insulating Resistance Tester

Rated voltage	Measurement range	Accuracy
250V (only DIT-321)	0.25M-400MΩ	0.2M-200MΩ : ±3%rdg±5, 200M-4GΩ : ±5%rdg±5, 4G-40GΩ : ±10%rdg±5
500V	0.5MΩ-4GΩ	
1000V	1.5M-40G	
2500V (only DIT-322)	5M-40GΩ	

### Display Range

Rated voltage	Display range (auto range)	Resolution
250V (only DIT-321)	4M/40M/400MΩ	1k/10K/100KΩ
500V	4M/40M/400M/4GΩ	1k/10K/100K /1MΩ
1000V	40M/400M/4G/40G	10k/100K/1M /10MΩ
2500V (only DIT-322)	40M/400M/4G/40GΩ	10k/100K/1M /10MΩ

### Characteristics of the Measurement Terminal

Rated voltage	Allowed range of open circuit voltage	The measurement resistance value that can maintain lower limit of the rated voltage	Short circuit current
250V	90%-110% of the rated voltage	250KΩ (ERR is displayed when it is less than 200KΩ)	Not less than 1.5mA
500V		500KΩ (ERR is displayed when it is less than 400KΩ)	
1000V		1.5MΩ (ERR is displayed when it is less than 1MΩ)	
2500V		5MΩ (ERR is displayed when it is less than 2MΩ)	

### DC Voltage (DCV)

Range	Accuracy	Resolution
400mV	±(0.5%+5d)	1mV
4V		10mV
40V		100mV
400V		1V
1000V	±(0.8%+5d)	1V

Input impedance : 400mV>1000MΩ; 10MΩ for other ranges.

Maximum input voltage : DC or AC peak value 1000V.

### AC Voltage (ACV)

Range	Accuracy	Resolution
4V	±(0.8%+5d)	0.1mV
40V		10mV
400V		100mV
700V	±(1%+5d)	1V

Frequency range : 40Hz~400Hz (400V and 700V range is 40Hz~100Hz).

Maximum input voltage: DC or AC peak value 1000V.

Display : Average (Sine wave virtual value calibration)

### DC Voltage (DCV)

Range	Accuracy	Resolution
40mA	±(0.8%+5d)	10mA
400mA		100mA

Overload protection : 0.5A/250V fuse.

### AC Current (ACA)

Range	Accuracy	Resolution
40mA	±(1%+5d)	10mA
400mA		100mA

Overload protection : 0.5A/250V fuse.

### Resistance

Range	Accuracy	Resolution
400Ω	±(0.8%+5d)	0.1Ω
4kΩ		1Ω
40kΩ		10Ω
400kΩ		100Ω
4MΩ	±(1%+3d)	1kΩ
40MΩ	±(2%+3d)	10kΩ

Overload protection : 250V RMS

### Capacitance

Range	Accuracy	Resolution
40nF	±(3%+5d)	10pF
400nF		100pF
4μF		1nF
40μF		10nF

Overload protection: 250V RMS

### Frequency (FREQ)

Range	Accuracy	Resolution
40Hz	±(0.5%+3d)	0.01Hz
400Hz		0.1 Hz
4KHz		1 Hz
40KHz		10 Hz
400KHz		100 Hz
4MHz		1K Hz

Overload protection: 250V RMS

### Forward Voltage of the Diode

Display approximate forward voltage value of the diode. Test condition: Forward DC current of approx. 0.5mA, reverse DC voltage of approx. 1.5V.

### Continuity Test

When the ON resistance measured is less than approx. 380Ω, the buzzer in the meter buzzes. Test condition: open circuit voltage of approx. 0.5V.

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