

# WFA SCT 3KB SURGE PROTECTION COMPONENT TESTER



- 1. Test interface (positive)
- 2. Common interface (Cathode)
- 3. Charge interface
- 4. USB interface
- 5. Touch screen
- 6. Test indicator
- 7. Charge indicator
- 8. Function selection rotary knob
- 9. Probe
- 10. Alligator clip
- 11. Test wires

**WFA SCT 3KB series Intelligent Lightning Protection Component Tester** is used to measure the performance parameter of various metal oxide varistor (MOV) and gas discharge tubes (GDT). The instrument has unique functions of high voltage short circuit protection, over current protection, professional parameter setting function, high voltage limit setting, boost speed setting, qualified range setting, qualified judgment and screening, automatic range adjustment and so on. Also with single test mode and continuous test mode function, especially suitable for batch component testing. Among them, WFA SCT 3KB has the functions of insulation resistance, absorption ratio and polarisation index.

The instrument output voltage up to 3000V, starting action voltage 1mA measuring range: 50 ~ 3000V, the leakage current measuring range: 0 ~ 1000uA, DC breakdown voltage measuring range 50 ~ 3000V, repeat testing with good stability, accurate and reliable, with excellent test stability and anti-interference ability. The instrument is widely used to test the performance parameters of over voltage protection elements such as lightning arrester, lightning arrester, surge protector, varistor, cermet discharge tube, vacuum lightning arrester, etc.

**WFA SCT 3KB Intelligent Lightning Protection Component Tester** adopt with touch colour screen interface, control and operation with one key. Users do not have to memorise the operation method, click "HELP" key on the screen to pop up the operation method, effectively guiding the user to operate the instrument. The meter adopts with large capacity rechargeable lithium battery, and has the function of automatic test data storage, which can store 3000 groups of test data, has the data upload function with USB interface, convenient for users to check the historical test records. The instrument has shockproof, dust proof, moisture-proof structure, the whole machine is durable, adapt to the harsh working environment, is weather lightning protection, electric power, communications, mechanical and electrical installation and maintenance, lightning protection components manufacturers, as well as industrial enterprise departments commonly necessary instruments.

### Measurement Range & Accuracy

Function	Output	Measure Range	Accuracy	Resolution
MOV	Voltage 0~3000V	50~3000V	±2%rdg±3V	0.1V
	Current 0~1.5mA	0~1000μA	±2% rdg±10dgt	0.01uA
GDT	Voltage 0~300V/1.5mA	50~3000V	±2%rdg±3V	0.1V
*Insulation Resistance	500V	0.5MΩ~2GΩ	±5%rdg±10dgt	0.1M
	2500V	2.5MΩ~10GΩ	±5%rdg±10dgt	0.1M

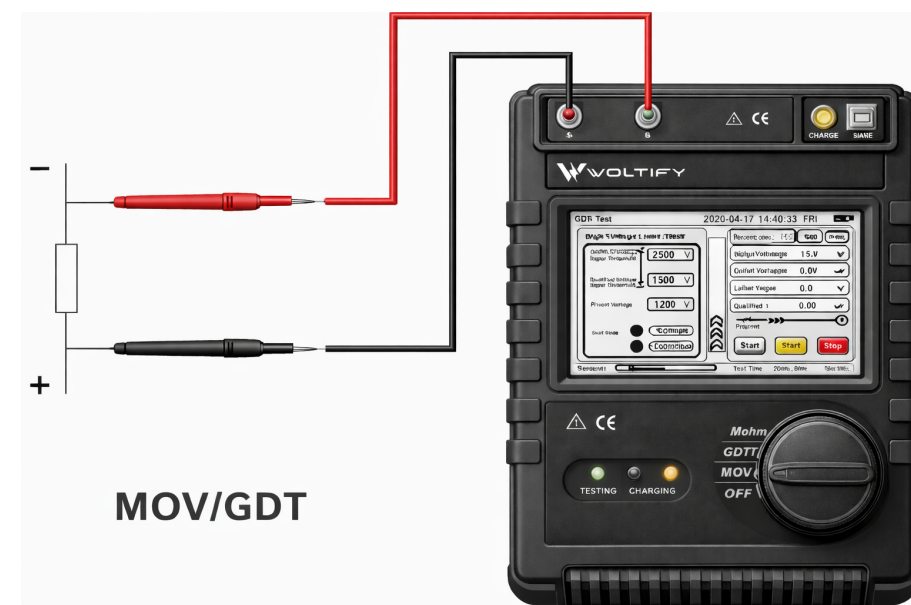
Test Condition: MOV: 1mA±5μA; 0.75UImA±1% d; GDT: 100V/S±10%

\*The test function of insulation resistance is limited to WFA SCT 3KB only. Base model WFA SCT 3KA. If the range is exceeded will display the upper limit of the measurement range. The test range is 1.2 times from the lower limit to the upper limit of the measurement range.

### Technical Specification

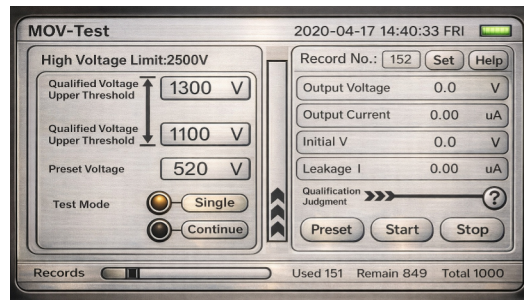
WOLTIFY MODEL	WFA SCT 3KB (SKU: 600002)
Power Supply	DC 7.4V 2600mAh rechargeable lithium battery (continues working above 3 hours)
Test mode	DC power drop method
Shift	Automatically
Display Mode	5-inch TFT colour touch screen
Host Dimension	212mmX175mmX85mm
Weight	Total 2.09kg
Test Wire	Red wire 1.5M, black wire 1.5M; alligator clip 2pcs, pen probe 2pcs
Boosting Rate Setting	Total with five boosting level
High Voltage Limit Setting	Step in "250V" to adjust, up to 3000V max.
Qualified Range Setting	Yes
Qualified Judgement Condition Setting	The voltage or leakage current can be set as a condition of qualification
Qualified Judgement Reminder	Buzzer indication, qualified ring once, unqualified three rings
Insulation Resistance Test Function	Insulation resistance (MΩ), polarisation index (PI), and dielectric absorption ratio (DAR) test (only WFA SCT 3KB)
Data Storage	Automatically store testing data, MOV 1000 groups; GDT 1000 groups; Insulation resistance: 1000 groups, storage space used and remaining capacity indication
Data Access	Yes
Overflow Indication	Exceed measure range overflow "9999.99" symbol display
Test Mode	Single time: measurement with one key, no need to preset Continues: can setting the preset voltage, continues testing quickly and fast.
Data Upload	USB interface, storage test record can be uploaded to computer
Battery Voltage	Battery charge indication, Low battery voltage warning prompt for timely recharging.
Auto Shut down	25 minutes after boot up, the meter shuts down automatically without any operation
Power Consumption	Standby: about 140mA; Measurement: about 830mA

### Application Method

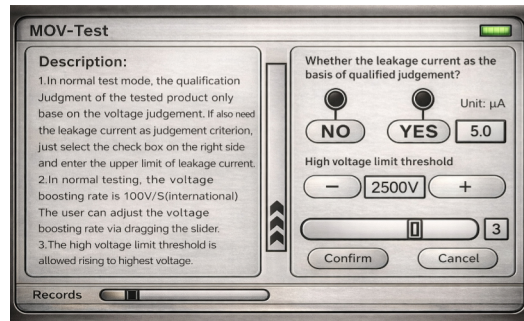


### Metal Oxide Varistor Test

Test interface and parameter introduce as follow:



**High voltage limit (default is 2500V):** The voltage value is the highest voltage allowed to rise in the process of voltage boosting, which can be set by clicking the "Set" button on the interface. The specific setting interface is shown in the figure below:



- This interface can set the leakage current whether as the basis of qualified judgment, and select by clicking "No" and "Yes" buttons;
- The interface can set the magnitude of the reference leakage current, only available when the leakage current whether as a qualified judgment basis.
- The high voltage limit threshold can be set on this interface, which is the highest voltage that can be raised in the process of voltage boosting. The max voltage can be set to 3000V by clicking the "add or subtract" button to adjust by stepping to "250V";
- The voltage boosting speed can be set on this interface, and the speed can be controlled by sliding the control block. There are five boost levels in total.

**Preset voltage:** When continuous testing, raise to preset voltage value in advance. Click the display value to set the value via the small pops up keyboard. The preset range is 50V-3000V. When the preset voltage is below 50V, the number will be displayed in red and the buzzer will make out the sound of "beep".

**Upper and lower limit threshold of qualified range:** the tested product which initial action voltage is located in this range will be judged as qualified. Click the display value to enter the value through the small pops up keyboard. When the input upper and lower limit threshold are larger than the high voltage limit threshold, the upper and lower limit threshold will be equal to the high voltage limit threshold. In addition, the lower limit threshold must smaller than the upper limit threshold, otherwise the lower limit threshold will be equal to the upper limit threshold.

**Qualified judgement:** If qualified, "V" will be displayed on the interface, and the meter will ring once; if unqualified, "x" will be displayed, and the meter will ring three times. At the same time, it will be automatically recorded in the table (MOV 1000 groups).

### Test Process

**Single test mode- use for a small batch testing.**

Click the "Start" button and the test will begin. The test voltage will rise from 0V up to high voltage limit threshold and the test will stop when current reaches 1mA.

**Continues test mode- for batch testing, quickly and fast.**

Click the "Preset" button after setting preset voltage, output voltage up to the preset voltage, and then click "Start" button, in the process of the test voltage from preset voltage up to high voltage limit threshold, will stop testing when the current reach 1mA, output value automatically keep in the preset voltage, after replacing the tested products, can press the "Start" button directly to test the next MOV. After finish all the testing, press "Stop" button and the output voltage will be released and testing is finished.

All above values set by users will be automatically memorised in order to convenience for the next quickly testing.

During the testing, click the "Stop" button to terminate the testing.

Slide to left or right side to enter into query test record interface.

Slide the screen to the left side return to the MOV test interface.

Note: click the Help button to enter the test process description!

Item	Test Time	Qualified Voltage Lower Threshold	Qualified Voltage Upper Threshold	Initial Voltage	Leakage Current	Qualified
1	2018-9-10 15:36:57	950V	1050V	994.2V	3.24uA	✓
2	2018-9-10 15:37:20	950V	1050V	973.1V	2.48uA	✓
3	2018-9-10 15:37:42	950V	1050V	1042.1V	2.68uA	✓
4	2018-9-10 16:36:09	950V	1050V	963.8V	3.12uA	✓
5	2018-9-10 16:36:45	950V	1050V	994.3V	2.66uA	✓
6		0V	0V	0V	0.00uA	
7		0V	0V	0V	0.00uA	
8		0V	0V	0V	0.00uA	
9		0V	0V	0V	0.00uA	
		0V	0V	0V	0.00uA	

### Reference for setting the upper and lower limits of the qualified range

If it is a conventional varistor, user can set the upper and lower limits of qualification with an accuracy error of 10% according to the marking specifications on the varistor components. For example, 070D241K indicates a varistor of 240V. The upper limit is  $240+240*10\%=264V$ , and the lower limit is  $240-240*10\%=216V$

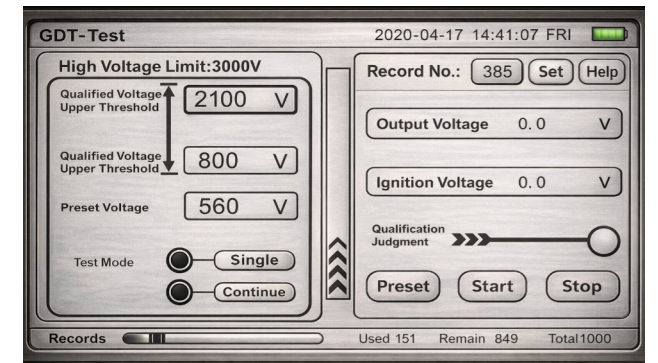
When the low-voltage power supply SPD with metal oxide varistor (MOV) as the limiting element and no other series-parallel elements is tested, according to the "GB/T-21431 2023 Technical Specification for Testing Lightning Protection Devices in Buildings" 5.5.6.9 varistor voltage (Vv) test provisions, the conformity criteria are: When measuring Vv for the first time : ① The measured value should not be less than the U of SPD in the following table. Corresponding Vv limit. ② There is no corresponding U in Table 13. Value when AC SPD Vv limit and U. The ratio should not be less than 1.4, the Vv limit of DC SPD and U. The ratio is not less than 1.06. In the subsequent measurement of Vv, in addition to meeting the requirements of ①, the measured value should not be less than 90% of the first measured value. For example, when the maximum continuous working voltage Uc of SPD is ~ 385V, the qualified lower limit of the control is 558V. The upper limit is not required in the technical specification, and can be set to the equipment range.

### Table of the relationship between the pressure-sensitive voltage V and the maximum continuous operating voltage (Uc)

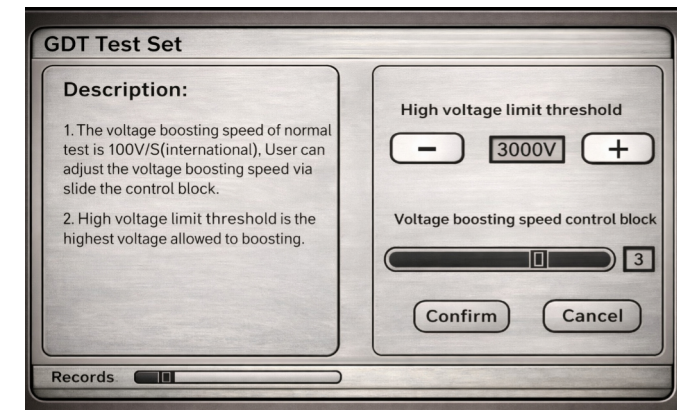
AC (r.m.s)	Maximum continuous operating voltage (U) V		Pressure sensitive voltage Vv limit V
	DC		
50	65		74
60	85		90
75	100		108
95	125		135
115	150		162
130	170		180
140	180		198
150	200		216
175	225		247
180	230		255
195	250		270
210	270		297
230	300		324
250	320		351
275	350		387
300	385		421
320	410		459
340	420		480
350	450		504
360	475		522
385	505		558
420	560		612
440	585		643
460	615		675
480	640		702
510	670		738
550	745		819
580	785		864
600	790		868
625	825		900
680	895		990
750	970		1080
1000	1280		1440
1100	1465		1620
1250	1500		1800

### Gas Discharge Tubes (GDT) Test

Test interface and parameter introduce as follow:



**High voltage limit (default is 2500V):** The voltage value is the highest voltage allowed to rise in the process of voltage boosting, which can be set by clicking the "Set" button on the interface. The specific setting interface is shown in the figure below:



- The high voltage limit threshold can be set on this interface, which is the highest voltage that can be raised in the process of voltage boosting. The max voltage can be set to 3000V by clicking the "add or subtract" button to adjust by stepping to "250V";
- The voltage boosting speed can be set on this interface, and the speed can be controlled by sliding the control block. There are five boost levels in total.

**Preset voltage:** When continuous testing, raise to preset voltage value in advance. Click the display value to set the value via the small pops up keyboard. The preset range is 50V-3000V. When the preset voltage is below 50V, the number will be displayed in red and the buzzer will make out the sound of "beep".

**Upper and lower limit threshold of qualified range:** the tested product which initial action voltage is located in this range will be judged as qualified. Click the display value to enter the value through the small pops up keyboard. When the input upper and lower limit threshold are larger than the high voltage limit threshold, the upper and lower limit threshold will be equal to the high voltage limit threshold. In addition, the lower limit threshold must smaller than the upper limit threshold, otherwise the lower limit threshold will be equal to the upper limit threshold.

**Qualified judgement:** If qualified, "V" will be displayed on the interface, and the meter will ring once; if unqualified, "x" will be displayed, and the meter will ring three times. At the same time, it will be automatically recorded in the table (GDT 1000 groups).

### Test Process

#### Single test mode

Click the "Start" button and the test will begin. The test voltage will rise from 0V up to high voltage limit threshold and the test will stop when current reaches 1mA.

#### Continues test mode

When testing for the batch product, can set the preset voltage. Input the preset voltage and click the "Preset" button, the test voltage up to the preset voltage, and then up to ignition voltage from preset voltage. After the test is completed, the voltage is automatically boosted to the preset voltage. After replacing the tested products, click "Start" button directly to test the next tested product quickly. The preset voltage should lower than the qualified voltage limit threshold. After finish all the testing, click "Stop" button and the meter stop to output test voltage after discharge. During the testing process can click "Stop" button to stop the testing.

All above values set by users will be automatically memorised in order to convenience for the next quickly testing.

Slide to left or right side to enter into query test record interface.

Slide the screen to the left side return to the GDT test interface.

Note: click the Help button to enter the test process description!

Item	Test Time	Qualified Voltage Lower Threshold	Qualified Voltage Upper Threshold	Ignition Voltage	Qualified
1	2018-9-10 15:36:57	800V	1200V	890.1V	✓
2	2018-9-10 15:37:20	800V	1200V	912.5V	✓
3	2018-9-10 15:37:42	800V	1200V	1142.1V	✓
4	2018-9-10 16:36:09	800V	1200V	894.2V	✓
5	2018-9-10 16:36:45	800V	1200V	994.3V	✓
6		0V	0V	0V	
7		0V	0V	0V	
8		0V	0V	0V	
		0V	0V	0V	
		0V	0V	0V	

### Insulation Resistance Test (Only for WFA SCT 3KB model)

Test interface and parameter introduce as follow:

Test Voltage: 500V   2500V	Record No.: 49
Range: 0.5MΩ - 2GΩ	Output Voltage 0.0 V
Test Time: 00:00:00	Output Current 0.00 μA
Test Mode: R15S, DAR, PI	R15S 0.000 MΩ
	DAR 0.00
	PI 0.00

Test voltage: The test voltage of this meter is 500V or 2500V, click the button to select the responding gear.

Test range: the range of 500V gear is 0.5MΩ-2GΩ; the range of 2500V gear is 2.5MΩ-10GΩ.

Test time: will display the test time of different gear.

Test mode:

R15s- insulation resistance, test time 15 seconds.

DAR- dielectric absorption ratio, test time 60 seconds, which is the ratio of insulation resistance at 60 seconds to insulation resistance at 15 seconds.

PI- polarisation index, test time 600 seconds, which is the ratio of insulation resistance at 600 seconds to insulation resistance at 60 seconds

### Test Process

During the test, click the "stop" button to terminate the test.

Slide to left or right side to enter the check test record interface.

Slide the screen to the left and return to the insulation resistance test interface. Note: click the Help button to enter the test process description!

Item	Test Time	Model	Test Voltage	R15S	DAR	PI
1	2018-9-10 15:38:36	R15S	500	40.8	-1.0000	-1.0000
2	2018-9-10 15:45:26	R15S	500	100.3	-1.0000	-1.0000
3	2018-9-10 15:47:02	R15S	2500	500.9	-1.0000	-1.0000
0			0	0.0	0.0000	0.0000
0			0	0.0	0.0000	0.0000
0			0	0.0	0.0000	0.0000
0			0	0.0	0.0000	0.0000
0			0	0.0	0.0000	0.0000
0			0	0.0	0.0000	0.0000
0			0	0.0	0.0000	0.0000
0			0	0.0	0.0000	0.0000

### Time Setting

Click the time location of top interface. When entering the time setting interface to modify the date and time, slide up and down to adjust the time. Click OK to save and exit, as shown in the figure below.

2021	10	29	21	57	57
2022	11	30	22	58	58
2023	12	31	23	59	59
2024	Y	0	M	0	D
2025	1	1	1	1	1
2026	2	2	0	0	0
2027	3	3	0	0	0

### Software Download

The USB driver and the instrument upload software must be installed before use.

You can log in to the official website to download the data upload software of the corresponding model.

### Attention

- Click the "Help" button on the screen can enter the test process description.
- The instrument sets the range (test range) adjustment function. In usage, the test voltage shall be reduced as much as possible to reduce energy consumption, prolong the life of the instrument, and reduce safety hazards, also can reduce testing time and improve work efficiency. And can be used for grouping and screening, testing and discrimination. Users can make full use of this function.
- The test voltage of this instrument can be as high as 3000V. The panel, test line and work surface should be kept clean and dry, so as to avoid test error or precision reduction caused by leakage current, arc and corona.
- The charger must use two phase three wires power socket, ground wire should be well grounded.
- Operators should take necessary high voltage protection measures to avoid high voltage shock injury.

### Accessories

Tester	1 PCS
Test Wires (IPCS red; IPCS black)	2 PCS
Alligator Clip (IPCS red; IPCS black)	2 PCS
Probe (IPCS red; IPCS black)	2 PCS
Charger adaptor (DC 12V)	1 PCS
USB Communication Cable	1 PCS
Instrument Bag	1 PCS
User manual, Warranty card, Quality certificate	1 SET

### Model Designation Summary:

Model	Description	SKU	Insulation Resistance
WFA SCT 3KA	Base model	600001	No
WFA SCT 3KB	Advanced model	600002	Yes

### Precautions For Use

Thank you for purchasing **Woltify WFA SCT 3KB** Intelligent Lightning Protection Component Tester. In order to better for use of the product, please be certain:

- Read this user manual in detail.
  - Comply with the operating cautions in this manual.
- Under any circumstance, shall pay special attention on safety in using this meter.
  - This instrument is designed, produced and tested according to IEC61010 safety specification.
  - Click "HELP" key on the screen to pop up the operation method, effectively guiding the user to operate the instrument.
  - Before usage, please make sure that the instrument and accessories are in good condition, the insulation layer of the instrument and test wires are not damage, bare or broken wire.
  - Connect and disconnect properly. When the test wire is connected with the live terminal, do not connect or disconnect the test wire at will.
  - During the measurement, the high frequency signal generator such as mobile phone do not used beside the instrument to avoid causing errors.
  - During the measurement, prohibit touch the bare conductor or the measuring circuit. Make sure the connecting plug of the conductor is tightly inserted into the instrument interface.
  - Instrument output high voltage, please be sure to connect the test line, press the test button for testing after the hand away from the test line, otherwise there is the danger of electric shock.
  - Do not place and store the tester for a long time under high temperature and humidity, condensation and direct sunlight.
  - The instrument should be maintained regularly and kept the instrument and test line clean.
  - Please do not throw and press the instrument.
  - Use, disassembly and maintenance of this leakage current meter shall hand by authorised personnel.
  - Due to the reason of this instrument, if it is dangerous to continue using, should stopped and sealed immediately ,and handled by an authorised institution.
  - The meter manual with the danger mark "Δ", users must follow instructions to operate safely.