

MODEL 875Z  
WITHSTANDING VOLTAGE  
TESTER  
INSTRUCTION MANUAL

KIKUSUI ELECTRONICS CORP.

1c. Menu

770980

# Power Requirements of this Product

Power requirements of this product have been changed and the relevant sections of the Operation Manual should be revised accordingly.

(Revision should be applied to items indicated by a check mark ☒)

## ☐ Input voltage

The input voltage of this product is \_\_\_\_\_ VAC,  
and the voltage range is \_\_\_\_\_ to \_\_\_\_\_ VAC. Use the product within this range only.

## ☐ Input fuse

The rating of this product's input fuse is \_\_\_\_\_ A, \_\_\_\_\_ VAC, and \_\_\_\_\_.

### WARNING

- To avoid electrical shock, always disconnect the AC power cable or turn off the switch on the switchboard before attempting to check or replace the fuse.
- Use a fuse element having a shape, rating, and characteristics suitable for this product. The use of a fuse with a different rating or one that short circuits the fuse holder may result in fire, electric shock, or irreparable damage.

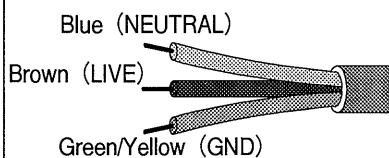
## ☐ AC power cable

The product is provided with AC power cables described below. If the cable has no power plug, attach a power plug or crimp-style terminals to the cable in accordance with the wire colors specified in the drawing.

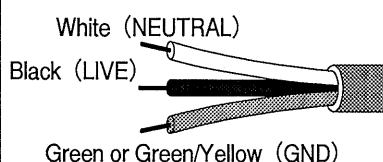
### WARNING

- The attachment of a power plug or crimp-style terminals must be carried out by qualified personnel.

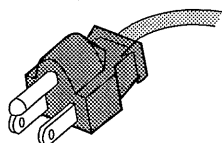
#### ☐ Without a power plug



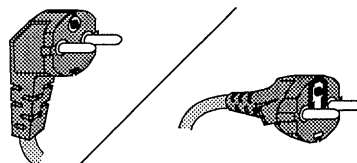
#### ☐ Without a power plug



#### ☐ Plugs for USA



#### ☐ Plugs for Europe



#### ☐ Provided by Kikusui agents

Kikusui agents can provide you with suitable AC power cable.  
For further information, contact your Kikusui agent.

#### ☐ Another Cable \_\_\_\_\_

## CONTENTS

1.	GENERAL	.....	1
2.	SPECIFICATIONS	.....	2
3.	Explanation of front panel and rear of cabinet	....	4
4.	OPERATION	.....	8
5.	Caution on Operation	.....	10
6.	ZERO CROSS SWITCH	.....	11

## 1. GENERAL

The MODEL 875Z is a withstanding voltage tester with voltage ratings up to 5 kV AC or DC and output capacity up to 500VA. Employing various safe guard provisions, GOOD and NG indicator, timer and overcurrent cut off circuit presents accurate test results. Moreover, since zero cross switch circuit restraining surge voltage caused by on-off operation of test voltage is built-in, highly reliable operation is performed.

### NOTE

This device is a "Withstanding Voltage Tester" with an output rating of 500VA, designed complying with JIS (Japanese Industrial Standard) and the Ordinances of Electrical Equipment issued by Ministry of International Trade and Industry.

Never use this device as a power supply. Note that, if this device is operated with its maximum load for more than 5 minutes continuously, its internal components may be overheated and badly degraded.

## 2. SPECIFICATIONS

Power requirement	100V, 50/60 Hz
Power consumption	max. approx. 650 VA
Dimensions ( maximum )	520W x 280H x 335D mm (550W x 300H x 380D mm )
Weight	Approx. 34.5 kg
Accessories	Test leads 1 pair Instruction manual 1
Test voltage supply	
Voltage	0 ~ 1.5 kV/5kV ( 2 ranges ) at AC ( rms ) or DC ( positive ) ( Switches are provided inside the cabinet. Set position is indicated by lamps on front panel. )
Zero cross switch	On or off at 0 V level.
Output capacity	Max. 5 kV 100 mA ( 500VA )
AC test supply	Power line frequency
DC test supply	Ripple: less than 0.5% at no load 5kV.
Voltmeter	The range is switched with test voltage switching 1.5 / 5 kV AC ( rms ) or DC, class 1.5 (JIS) Accuracy: within 5% ( compared with static voltmeter )
Test method ( Time )	Manual or Auto ( 10 sec.~6 minutes ) with reset button.
Leakage current limit	0.1 ~100mA continuously variable Ranges: 0.1~1mA /1~10mA/ 10~100mA Accuracy: approx. $\pm 5\%$ with fine control. ( except DC 10~100mA range )

Leakage current  
monitor terminals

Leakage current is monitored by connecting  
AC/DC meter.

Test result

Indicated by GOOD/NG lamps on front panel  
and signal from connector ( AC 100V output )  
on the rear of cabinet  
GOOD indication: Automatic only

Safety system

- \* Detecting circuit operates when current  
exceeds a predetermined level, the model 875C  
and tested matter is prevented from damage,  
by cut off primary of high voltage transformer.
- \* The primary of high voltage transformer  
is automatically cut off when AC/DC or  
1.5/5kV alternated, or case removed.
- \* Reset button is not reset by switching rear  
switch to OFF.

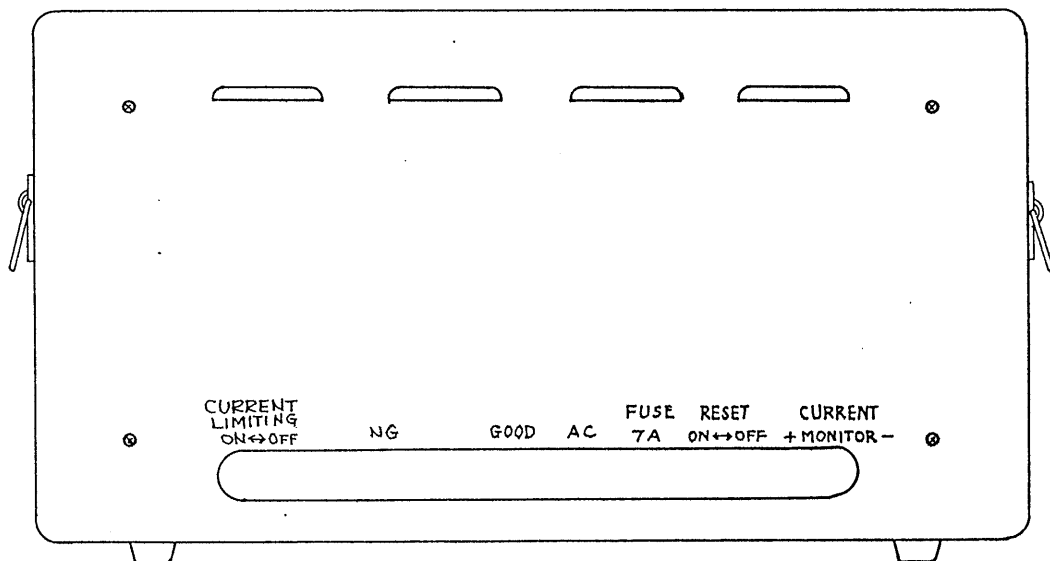
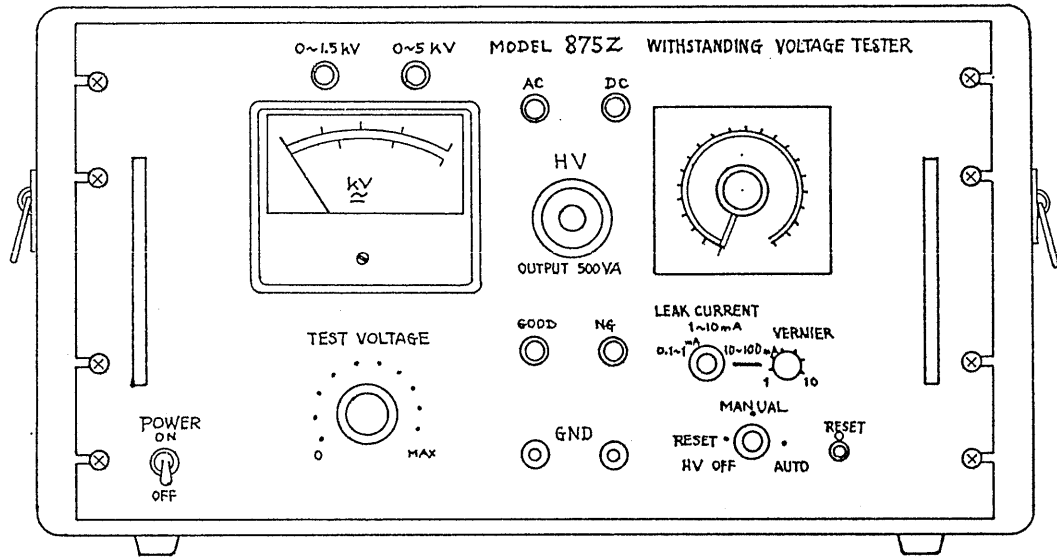
Insulation

Withstanding voltage	( Between line and panel) AC 500V 1 minute
Insulation resistance	( Between line and panel) more than 50M $\Omega$ DC 1000V

Ambient temperature

Usuable ambient temperature	5 ~ 35 °C
Operating ambient temperature	0 ~ 40 °C

### 3. Explanation of front panel and rear of cabinet



( 1 ) Front panel

- POWER Switch to turn the power on or off, before this switch is turned on, the precautions described on page 10 should be followed.
- TEST VOLTAGE A control for test voltage adjustment.  
Test voltage is increased up to 1.5kV or 5kV when it is turned clockwise. It should always be turned to 0 volts position except when the equipment is performing the test.
- 0~1.5kV, 0~5kV Neon lamps indicating variable ranges of test voltage. Range switches to set voltage are provided inside the cabinet. ( Refer to page 8 )
- AC, DC There are neon lamps to indicate AC or DC operation.
- HV Test voltage output terminal.  
Cover is removed by turning counterclockwise .  
GND terminal is connected to the panel and chassis.  
On DC operation, HV terminal is positive and GND terminal is negative.
- GOOD , NG In AUTOMATIC mode, if current dose not exceed predetermined level for test period, lamp marked GOOD lights on.  
  
In MANUAL mode, lamp marked GOOD dose not light on.  
If current exceeds predetermined level, high voltage is immediately cut off and lamp marked NG lights on in both modes.

770986



6-min. Timer                      When function switch is placed in AUTOMATIC position , this timer is used to set the testing period. It is set by the knob of the center of the timer.  
 Donot rotate time setting knob when timer is operating. Otherwise , it may be damaged.  
 Though time setting knob is hard to rotate, it is normal. The timer has two scales for two power line frequencies, 50Hz and 60Hz.       Always, set time setting knob more than 1 of scale. When setting to zero, output is not delivered. Because, it is same condition as finished state of test. Test period is 10 sec. ~ 6 min ( 60Hz ) / 7 min. ( 50Hz )

Red lamp                              Lamp indicating to be dangerous. It indicates test voltage is supplied or possible to be supplied.  
 Be careful for operating when it lights on.

LEAK CURRENT                      This is the knob to set threshold level ranges of leakage current detecting circuit. Sensitivity is changed to 0.1~1mA, 1~10mA, 10~100mA.

VERNIER                              This is fine control knob to adjust setting current in a range set by LEAK CURRENT.

RESET (HV OFF), MANUAL , AUTO

This is a function knob to control supply of test voltage.

RESET HV OFF ..... In this condition, test voltage is not supplied.

MANUAL ..... Test voltage is supplied unless leakage current detecting circuit is operated.

AUTO ..... Test voltage is supplied for a period set by timer unless leakage current detecting circuit is operated.

The red lamp lights on for indicating dangerous condition when it is possible to supply test voltage.

## RESET

In MANUAL or AUTO mode, test voltage is cut off, when leakage current detecting circuit operates or GOOD lamp lights on by operation of timer.

If this button is pushed, test voltage is supplied again. When neon lamp above the button does not lights on, it is not reset. ( Refer to RESET ON↔OFF)

## ( 2 ) Rear

### NG, GOOD

This is a connector to connect for indicating NG buzzer or other component and AC 100V is supplied on it.

### AC

Power cord

### FUSE

A 7A fuse is used.

### RESET ON↔OFF

RESET button on front panel can be operated in ON position, and it dose not operate in OFF position. When RESET button is not used , set to OFF position for safety.

## CURRENT MONITOR

Terminal for leakage current monitor. Remove a short-bar and connect an ammeter.

+ side of terminal is connected to the case.

## CURRENT LIMITING

### ON↔OFF

This switch normaly should be set in the ON position.

In the ON position, however, the maximum available power (the product of voltage multiplied by leak current) at the 100mA leak current limiting range is approximately 300VA.

When a power of more than 300VA is required, throw this switch to the OFF position. Note that, if the equipment to be tested is shorted or presents no withstanding voltage due to insulation breakdown, the fuse of this device may blow out.

7709883

#### 4. OPERATION

##### Setting Test Voltage

Range switches to set test voltage are provided inside the cabinet.

While the lid on the upperside of the cabinet is opened, the power line is cut off. However, capacitors in high voltage circuit may store a charge ( it is indicated by voltmeter on front panel ). Therefore, high voltage circuit should be discharged before working.

The one switch is to be turned to AC or DC, and the other is to select the range 1.5kV or 5kV. Remove a plate and turn a switch to markings direct on the chassis.

Place a plate so as to its markings direct same as markings on the chassis. Work after POWER is turned to OFF position.

An idle nut located at the center of switch is used to keep the power line on, when lid is opened for check and adjustment of the equipment.

##### Setting LEAK CURRENT

The LEAK CURRENT knob is used with the VERNIER knob for setting threshold level of leakage current detecting circuit.

The LEAK CURRENT knob is set to a desired range, and the VERNIER knob is continuously adjusted to desired value.

When current exceeds a predetermined level on test, test supply is cut off and NG lamp lights on.

After setting TEST VOLTAGE to "0" position and the function knob to RESET. HV OFF, proceed to the next procedure.

##### POWER on

After following the precautions described in page 10, turn the power switch to ON.

##### Operation

###### ( 1 ) In case of MANUAL

Set the function knob to MANUAL. A red lamp lights on, it indicates to be possible to supply test voltage.

Test voltage is supplied to component under test, when the TEST VOLTAGE knob is turned clockwise.

( 2 ) In case of AUTOMATIC

Turn a function knob to RESET HV OFF position.

Set a period by rotating timer knob. Turn a function knob to MANUAL position. Turn the TEST VOLTAGE knob clockwise until desired voltage is indicated by voltmeter.

Turn the function knob to AUTOMATIC position.

Timer begins to operate, and test voltage is provided to component during a period set by timer. Test result is indicated by lamps.

Reset of Test Voltage

If leakage current more than predetermined level flows in test period, or GOOD indication is obtained in AUTOMATIC mode, test voltage is cut off. When providing again test voltage turn the function knob to RESET HV OFF and test again. It is also possible to use the RESET button. Push the RESET button. Test voltage is supplied again.

The RESET button can be operated, when the RESET ON $\longleftrightarrow$ OFF switch on rear is placed in ON position, and neon lamp above the button lights on.

- \* Be careful when RESET ON $\longleftrightarrow$ OFF switch is placed in ON position and the RESET button is pushed.

Because voltage set by the TEST VOLTAGE knob is delivered when RESET button is taken off.

- \* Do not push the RESET button during test period.

If the RESET button is pushed during test period, test voltage is cut off for a pushed period.

## 5. Caution on Operation

When the equipment is operating, a high voltage of up to 5kV may be exposed output terminal. Careless operation might injure the operator vitally.

The operators are required to read over this manual, exercise every care to avoid the accident.

- 1) Function switch should be always turned to RESET HV OFF position except when the equipment is performing the test.
- 2) Test VOLTAGE knob should be always turned to 0 volts position except when the equipment is performing the test.

### 3) Ground

Test leads ( Especially, grounded lead is broken or falsely connected to the terminal. ) should be checked before using.

A lead of GND side should always be connected to tested component at first. When equipment is poorly grounded, the equipment may be charged at a high potential, and causes shock as touching the cabinet.

Therefore, the equipment should always be securely grounded.

### 4) HV terminal

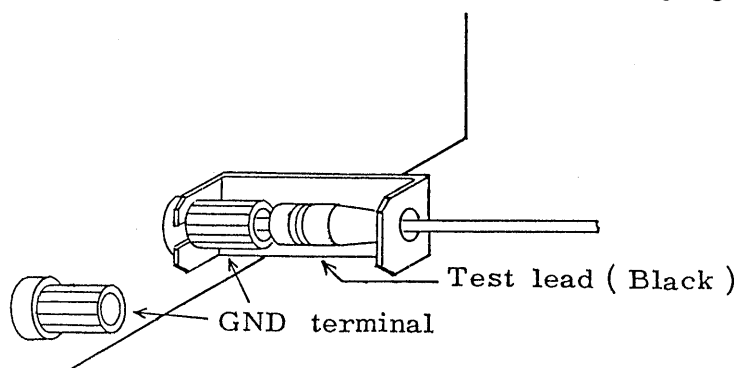
Prior to touching HV terminal, following three points should be confirmed.

Operate the equipment by right hand.

- \* Confirm if illumination is turned off.
- \* Confirm if meter indication is zero.
- \* Confirm if high voltage retained at terminal has completely been discharged.

This can be done by contacting ground lead to HV terminal.

- 5) Test cord of GND side should firmly be connected as following figure.

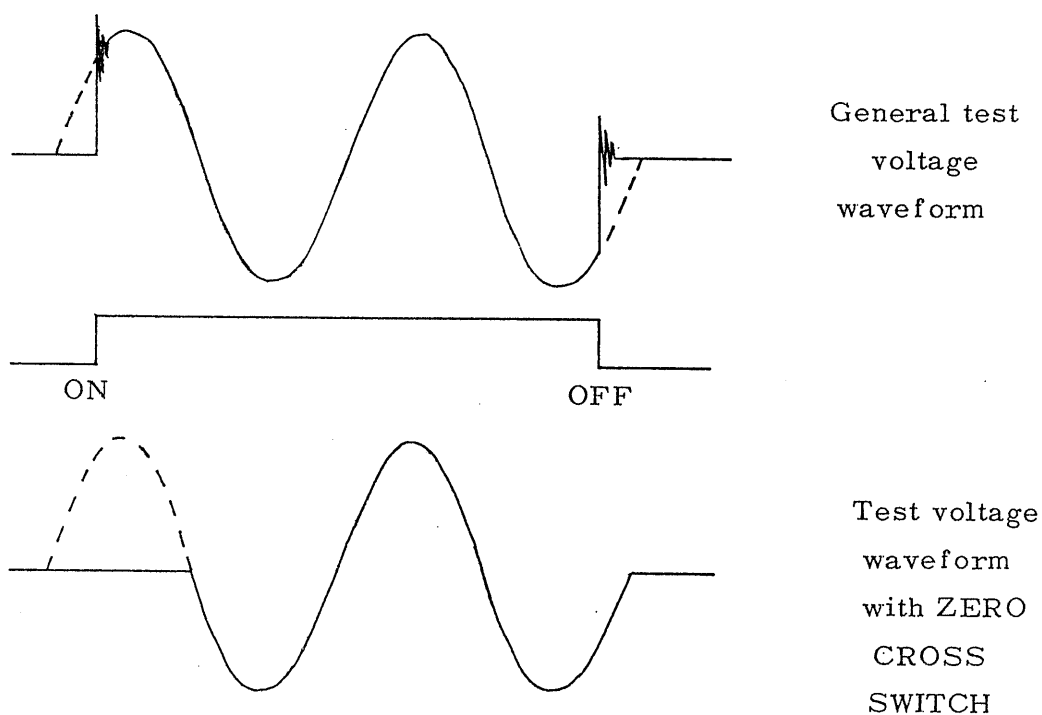


## 6. ZERO CROSS SWITCH

When using the general withstanding voltage tester, surge voltage is caused by on-off operation of test voltage.

Test voltage more than predetermined level is supplied to tested component, and tested component may be damaged or the NG indication may be made.

Those troubles are not caused by using the ZERO CROSS SWITCH (Optional accessory), and highly reliable operation is performed.



If the output touches a tested component when test voltage is supplied, surge voltage is caused at the moment.

The test voltage should always be turned on or off by the TEST or RESET button, when a tested component is connected to the OUTPUT terminal.