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MODEL **3567A**

Digital MΩ Tester

Instruction Manual

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I-01875

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## 1. Preface

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We thank you for your purchase of our MODEL 3567A. For safety and proper use of this product, please carefully read this instruction manual before the initial operation.

 <b>CAUTION</b>
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| <ul style="list-style-type: none"><li>● <b>To avoid break-down, malfunction or deterioration of life of the product, do not use it in such places where:</b><ul style="list-style-type: none"><li>◆ <b>exposed to rain, water drops or direct sunlight.</b></li><li>◆ <b>high temperature or humidity, heavy dust or corrosive gas.</b></li><li>◆ <b>affected by external noise, radio waves or static electricity.</b></li><li>◆ <b>where there is constant vibration or shock.</b></li></ul></li><li>● <b>Do not use the product dismantling or modifying it.</b></li></ul> |
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### 1.1 ●Preparations prior to use

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#### 1.1.1 Unpacking

When the tester is delivered, please check whether it conforms to the required specifications and has not been damaged in transit. If there is any damage on the tester or it does not work in conformity with the specifications, please inform us of the model and product name.

#### 1.1.2 Storage

In case of storing the tester for a long time, store it at the place of low humidity and where it is not exposed to the direct sunlight.

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### 1.2 ●Confirmation prior to use

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#### 1.2.1 Power supply

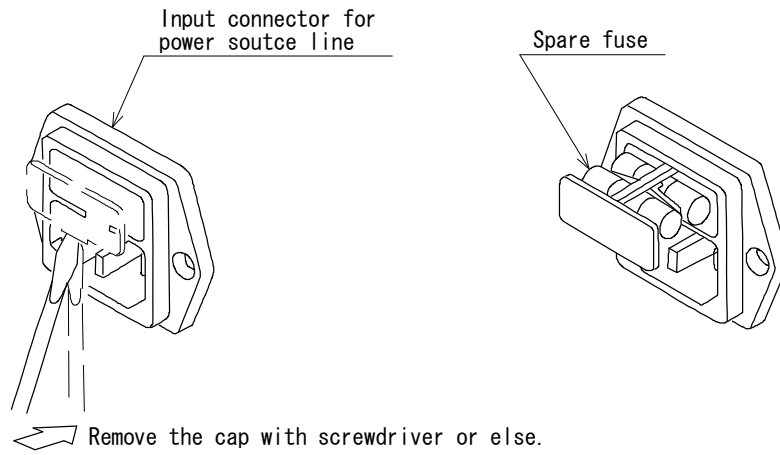
Use the tester with the power source voltage within 90~250VAC and the frequency 50/60Hz. When connecting the power supply cable, confirm that the power supply switch is turned OFF.

#### 1.2.2 Power supply cable

The plug of power supply cable connected to the tester is for 100VAC use. When the tester is used with 200VAC, replace the plug with appropriate one for 200VAC use. Please connect the power supply cable to the power supply connector on the rear panel of the tester. The plug of power supply cable has 3 pins and the round shape pin in the center is for grounding. When connecting the tester to the receptacle with an adapter attached to the plug, be sure to connect the earth wire of the adapter to the external earth line for grounding.

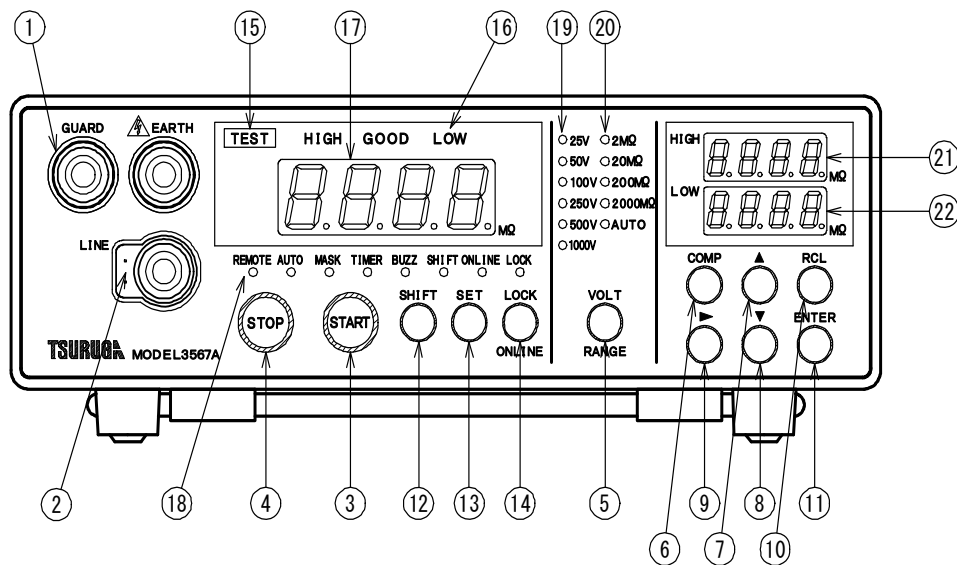
### 1.2.3 Replacement of fuse

A fuse of 250V/2A for the power source is mounted at the delivery from factory. A socket of the fuse is incorporated in the input connector of the power supply line. In advance to connecting the power supply cable, confirm the rate of the fuse, removing the cap of fuse holder and taking the fuse out. In total two fuses, including a spare one, are put inside the fuse cap. The fuse on this side (spare fuse) can be removed by pushing it toward right or left, and the fuse another side downward.



## 2. Name of parts

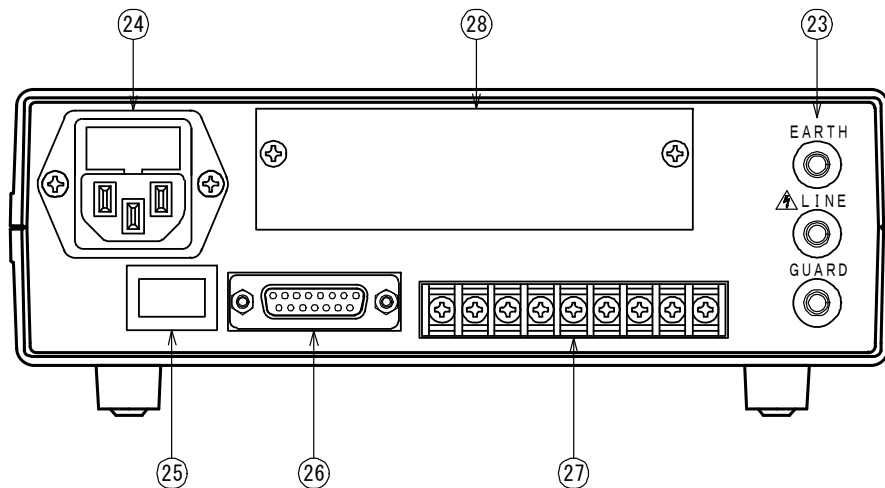
### 2.1 ●Front panel



- ① Measuring terminals
- EARTH : + measuring terminal.  
When the sample to be measured is ground, it is to be connected to the grounded side of the sample.
- LINE : - measuring terminal.  
To be connected to the non-grounded side of the sample.
- GUARD : The terminal to guard the leak current of LINE.
- ② REMOTE 2 input
- The input to control ON/OFF of the measuring voltage. It is operable with use of the switch-provided probe (option).
- ③ **START** key
- Key to start a test.
- ④ **STOP** key
- Key to finish the test.
- ⑤ **VOLT** key  
**(RANGE)** key
- Key to select the test voltage 25V~1000V.  
(Key to select the insulation resistance range 2MΩ~2000MΩ, AUTO.)
- ⑥ **COMP** key
- Key to set a high and low limit of the comparator.
- ⑦ **▲** key
- Key used for various setting.
- ⑧ **▼** key
- Key used for various setting.
- ⑨ **▶** key
- Key used for various setting.
- ⑩ **RCL** key
- Key used to call up a memory.
- ⑪ **ENTER** key
- Key used to decide the content of the setting.
- ⑫ **SHIFT** key
- Key to change (ONLINE, RANGE, REMOTE).
- ⑬ **SET** key
- Key used for various setting.
- ⑭ **LOCK** key  
**(ONLINE)** key
- Key to prohibit the operation on the front panel. Prohibition or reset can be done by pressing the key for 3 seconds or more.  
(On-line key for RS-485, RS-232C.)
- ⑮ TEST lamp
- Lit up during the test. Blinks during the discharging.

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- ⑩ Judgement lamp      HIGH      : Red lamp is lit up when the measured value exceeds the high limit value.  
GOOD      : Green lamp is lit up with a good judgement.  
LOW        : Red lamp is lit up when the measured value exceeds the low limit value.
- ⑪ Display section      Measured value, characters etc. are displayed.
- ⑫ REMOTE lamp      Blinks at setting, and the green lamp is lit up with the remote action.  
AUTO lamp            Blinks at setting, and the green lamp is lit up with the auto action.  
MASK lamp            Blinks at setting, and the green lamp is lit up when the mask timer is in operation.  
TIMER lamp           Blinks at setting, and the green lamp is lit up when the timer is working.  
BUZZ lamp            Blinks at setting, and the green lamp is lit up.  
SHIFT lamp            Green lamp is lit up when the SHIFT is effective.  
ONLINE lamp          Green lamp is lit up during the remote operation.  
LOCK lamp            Green lamp is lit up when key-locked.
- ⑬ Test voltage lamp    Green lamp of the test voltage range is lit up.
- ⑭ Resistance range lamp    Green lamp of the resistance range is lit up.  
AUTO lamp            Green lamp is lit up when the auto range is selected.
- ⑮ HIGH display section    Displays the high limit value of the comparator.  
Data to set or characters are displayed during the setting.
- ⑯ LOW display section     Displays the low limit value of the comparator.  
Data to set or characters are displayed during the setting.

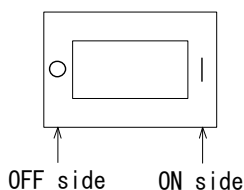
## 2.2 ●Rear panel



- ⑳ Rear measuring terminals EARTH : Common with the measuring terminals (EARTH) on the front panel.  
LINE : Common with the measuring terminal (LINE) on the front panel.  
GUARD : Common with the measuring terminal (GUARD) on the front panel.  
For connection to the rear terminals, use the banana plug or Y-shape crimping terminal.
- ㉑ Power supply connector Connector to connect the attached power supply cable. Be sure to use the tester with the specified power source voltage and frequency. A fuse of 250V 2A must be used.
- ㉒ Power source switch ON/OFF switch of the power supply.
- ㉓ REMOTE connector Connector for the remote control.
- ㉔ Input and output terminal blocks Terminals for input of start and reset, and for comparator output.
- ㉕ Insert of interface board Part to fit an optional interface board.

## 3. Operation

### 3.1 ●Power supply

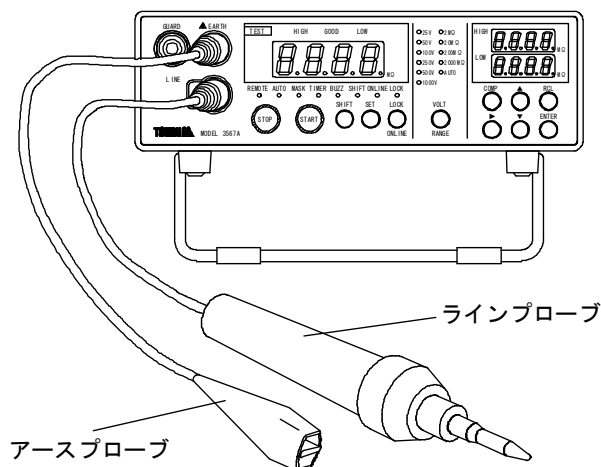


After confirming that the power source switch on the rear panel is turned OFF, connect the power supply plug into the receptacle and turn ON the power supply switch. The tester promptly enters into operable condition but it is recommended to have a pre-heating time for 30 minutes or more. The tester is provided with the function to retain the parameters, so it stores the status of the following parameters even if the power supply is turned OFF.

- (1) 10 sets of program memory
  - Setting of comparator and test conditions etc.  
Refer to the article 3.4 for detail.
- (2) Key-lock.
- (3) REMOTE/MANUAL

### 3.2 ●Connection of measuring leads

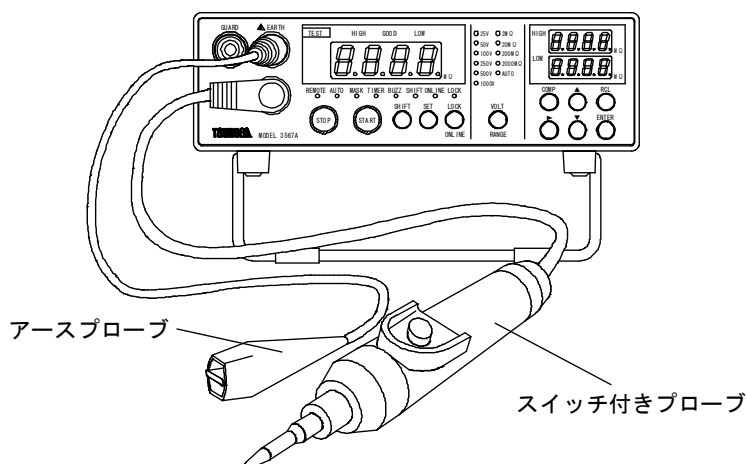
#### 3.2.1 Line probe (option)



- (1) Insert the plug of the earth probe to the EARTH terminal (red color) and the plug of line probe to the LINE terminal (black color). By having the probe to touch the sample to be measured, the insulation resistance is displayed.
- (2) In case that the insulation resistance of the sample which is grounded is measured, measure it by connecting the grounded side to the EARTH terminal.
- (3) GUARD terminal (gray) is used when the variation of display value is big due to the leak current or inductive current.
- (4) The measuring terminals on the front and rear panel are connected inside the tester. Consequently, use either one of the measuring terminals. It is not allowed to use the measuring terminals on both sides.



### 3.2.2 Switch-provided probe (option)



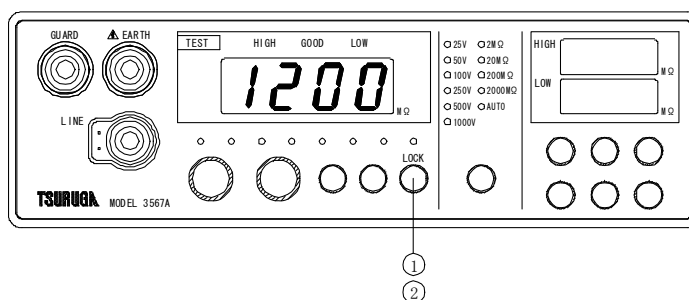
Remote operation of the test can be done with the switch provided on the probe. Insert the earth probe to the EARTH terminal (red color), and the plug of the switch-provided probe to the LINE terminal (black color).

### 3.3 ●Key-lock

The key-lock is the switch to prohibit the key operation on the front panel so that the measuring condition is not carelessly changed by the front panel keys.

The **START** and **STOP** keys and the switch of the switch-provided probe are excluded from this prohibition.

During the key-lock, the LOCK lamp is lit up. When operating the other switch during the key-lock, do it after releasing the key-lock.



#### How to key-lock

- ① While the LOCK lamp is turned off, press **LOCK** key for 3 seconds or more. The LOCK lamp blinks and is then lit up.

#### Reset of key-lock

- ① While the LOCK lamp is lit up, press **LOCK** key for 3 seconds or more. The LOCK lamp blinks and is then turned off.

### 3.4 ●Program memory

This tester is provided with a 10 sets of program memory which memorizes the comparator and test conditions etc.

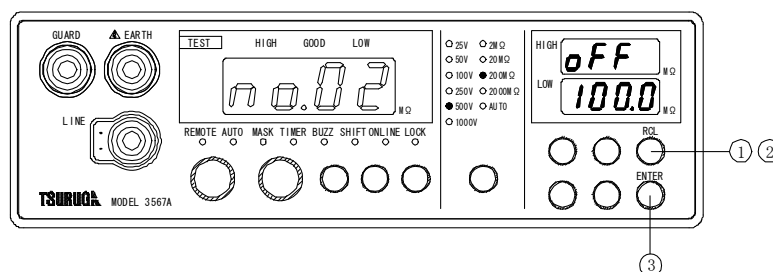
What can be memorized in the memory are the following 3 items and 8 kinds.

- AUTO/CONTINUE mode
- Comparator setting (high and low limit value, timer, mask timer and buzzer)
- Measuring range (test voltage and resistance range)

- Note:**
- No setting is possible in ONLINE status.
  - No setting is possible in the memory mode with the MEM signal by the REMOTE connector.
  - Comparator output is held during the setting.
  - When no key operation is made for about 5 minutes during the setting, the tester returns to the measuring mode.
  - No setting is possible during the test operation.

#### 3.4.1 Selection of program memory

- On the front panel



##### Call up

- ① In ready status, press **RCL** key.  
The current memory number is displayed in blinking on the display section.
- ② Press continuously the **RCL** key to select and call up the memory number.

##### Finish of call up

- ③ Press **ENTER** key.  
Return to the measurement.

- Method by remote operation

Refer to the article 5.1 Remote Connector for the detail.

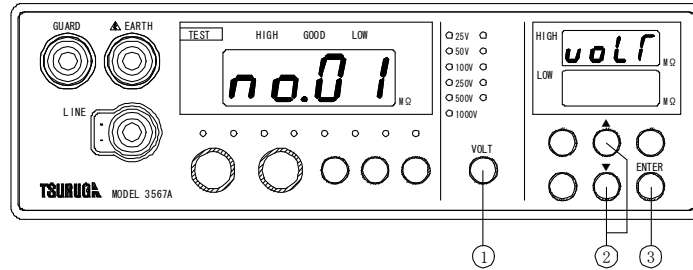
#### 3.4.2 Register and change of program memory

- How to register

After selecting the memory number to memorize (refer to the article 3.4.1), make a setting of various conditions.

### 3.5 ●Change of measuring range

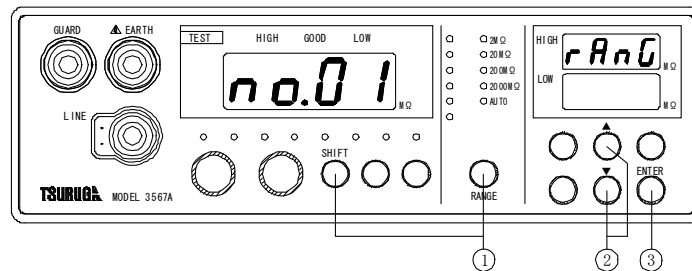
#### 3.5.1 Selection of test voltage



- ① In ready status, press **VOLT** key.  
The current memory number is displayed on the display section, and on the HIGH display section **VOLT** is displayed.  
The voltage lamp being set blinks.
- ② Select a test voltage with **▲** and **▼** key.
- ③ Press **ENTER** key to memorize and finish.

**Note:** In case that the resistance range is out of the measuring range, the range is automatically set to the tolerable one at the end of the setting.

#### 3.5.2 Selection of resistance range



- ① In ready status, press **SHIFT** key, and in the condition that the SHIFT lamp is lit up, press **(RANGE)** key.  
The current memory number is displayed on the display section, and on the HIGH display section **RANG** is displayed.  
The lamp of resistance range being set blinks.
- ② Select a resistance range with **▲** and **▼** key.
- ③ Press **ENTER** key to memorize and finish.

#### ○Measuring range of resistance range

Test voltage	Resistance range	Range of measurement display
DC25V DC50V	2.00MΩ	0.000~4.990 Note1
	20.00MΩ	1.79~49.90 Note2
	200.0MΩ	17.9~999.0 Note3
DC100V DC250V	2.00MΩ	0.000~4.990 Note1
	20.00MΩ	1.79~49.90 Note2
	200.0MΩ	17.9~499.0 Note2
DC500V DC1000V	2000MΩ	179~9990 Note3
	20.00MΩ	0.00~49.90 Note1
	200.0MΩ	17.9~499.0 Note2
	2000MΩ	179~9990 Note3

Note1, 2: When exceeded the 4990 count, **UUUU** is displayed.  
 Note2, 3: When the count is less than 179, **UUUU** is displayed.  
 Note3: When exceeded the 9990 count, **UUUU** is displayed.

### 3.5.3 Change-over range in auto-range

1000V/500V			250V/100V			50V/25V		
Range	DOWN	UP	Range	DOWN	UP	Range	DOWN	UP
2000MΩ	9990 ↓ 180 ↓	9990 ↑ 200 ↑	2000MΩ	9990 ↓ 180 ↓	9990 ↑ 200 ↑	2000MΩ	999.0 ↓ 18.0 ↓	999.0 ↑ 20.0 ↑
200MΩ	179.9 ↓ 18.0 ↓	199.9 ↑ 20.0 ↑	200MΩ	179.9 ↓ 18.0 ↓	199.9 ↑ 20.0 ↑	200MΩ	17.99 ↓ 1.80 ↓	19.99 ↑ 2.00 ↑
20MΩ	17.99 ↓ 1.80 ↓ 0.00	19.99 ↑ 2.00 ↑ 0.00	20MΩ	17.99 ↓ 1.80 ↓	19.99 ↑ 2.00 ↑	2MΩ	1.799 ↓ 0.180 ↓ 0.000	1.999 ↑ 0.200 ↑ 0.000
			2MΩ	1.799 ↓ 0.180 ↓ 0.000	1.999 ↑ 0.200 ↑ 0.000			

### 3.6 ●Comparator action

It is the digital comparator to compare the displayed value and high or low limit value. The 10 sets of the memory (No.1~No.10), each set of which contains a high and a low limit value, can be memorized.

- Memory can be selected by the REMOTE connector.
- It can also be selected by the RS-232C or RS-485 interface.

#### 3.6.1 Conditions of comparison

Displayed value $\geq$ High limit value (HIGH)	HIGH (HI) output
High limit value $>$ Displayed value $>$ Low limit value (LOW)	GOOD (GO) output
Displayed value $\leq$ Low limit value (LOW)	LOW (LO) output
At over-range display (LLLLL)	HIGH (HI) output
At under-range display (HHHHH)	LOW (LO) output

#### 3.6.2 Comparator output

An open collector output or relay contact output is output at the input/output terminal blocks on the rear panel of the tester (refer to the article 5.1).

Display ···· HIGH, LOW: Red color, GOOD: Green color

#### 3.6.3 Adjustable range

The comparator can be set in the range of 0000~9999 but the displayable range for the measured value is restricted depending upon the measurement range. Even if the comparator is set out of the displayable range, the comparator action is made to the measured value.

But, In case of over display (LLLLL), it makes HIGH judgement.

In case of under display (HHHHH), it makes LOW judgement.

Test voltage	Resistance range	Range of measurement display	Comparator setting range
DC25V DC50V	2.00M $\Omega$	0.000~4.990	0.000~9.999
	20.00M $\Omega$	1.79~49.90	1.79~99.99
	200.0M $\Omega$	17.9~999.0	17.9~999.9
	Auto range	0.000~999.0	0.000~999.9
DC100V DC250V	2.00M $\Omega$	0.000~4.990	0.000~9.999
	20.00M $\Omega$	1.79~49.90	1.79~99.99
	200.0M $\Omega$	17.9~499.0	17.9~999.9
	2000M $\Omega$	179~9990	179~9999
	Auto range	0.000~9990	0.000~9999
DC500V DC1000V	20.00M $\Omega$	0.00~49.90	0.00~99.99
	200.0M $\Omega$	17.9~499.0	17.9~999.9
	2000M $\Omega$	179~9990	179~9999
	Auto range	0.00~9990	0.00~9999

### 3.6.4 Setting method

During the ONLINE, no setting is possible by the interface such as BCD date output etc.

High limit value : 0000~9999 and the high limit action are prohibited (OFF).

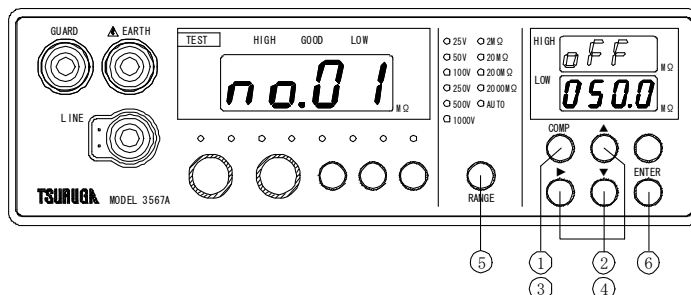
Low limit value : 0000~9999 and the low limit action are prohibited (OFF).

Decimal point is set by the selection of resistance range.

In case of auto range, the selection is made by **[RANGE]** key.

- If there is no key operation for about 5 minutes during the setting, the tester returns to the measuring mode.

**Note:** The content of the setting having been changed becomes effective from the next test result.



#### Enter the comparator setting

- ① In ready status, press **[COMP]** key.  
The current memory number is displayed on the display section.

#### Setting of high limit value

- ② The highest digit of HIGH display blinks.  
Set a numeral with the **[▶]**, **[▲]** and **[▼]** key.  
The digit selected by **[▶]** key blinks.
- To prohibit the high limit action, select the OFF display with the **[▲]** and **[▼]** key, while the highest digit is in blinking.

#### Setting of low limit value

- ③ Press **[COMP]** key.  
The highest digit of LOW display blinks.
- ④ Set a numeral with the **[▶]**, **[▲]** and **[▼]** key.  
The digit selected by **[▶]** key blinks.
- To prohibit the low limit action, select the OFF display with the **[▲]** and **[▼]** key, while the highest digit is in blinking.

#### Selection of decimal point in case of auto range

- ⑤ Every time the **[RANGE]** key is pressed, the decimal point changes.  
(The decimal point is common for HIGH and LOW.)

#### Finish of the setting

- ⑥ Press **[ENTER]** key, then the settings are memorized and the setting finishes.

### 3.7 ●Buzzer

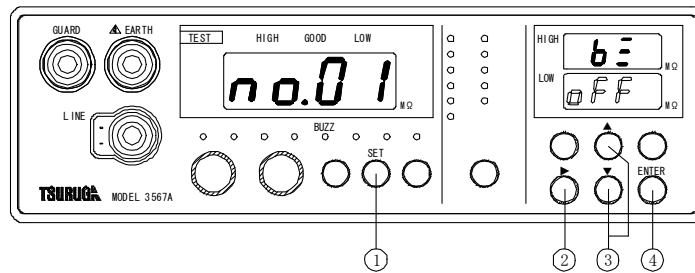
The buzzer is sounded according to the judgement result of comparator. The buzzer sounding can be selected from among the following 3 types, and the sound volume is adjustable in 9 steps.

- GOOD buzzer (   ) : Buzzer sounds at GOOD output.
- NG buzzer (   ) : Buzzer sounds at HIGH and LOW output.
- OFF (   ) : Buzzer does not sound.

- The comparator output is held during the setting of buzzer.
- No setting is possible in ONLINE status.
- If there is no key operation for about 5 minutes during the setting, the tester returns to the measuring mode.

**Note:** The content of the setting having been changed becomes effective from the next test result.

#### 3.7.1 Setting method



##### Setting of buzzer

- ① In ready status, press **SET** key and select the blinking of BUZZ lamp.  
The current memory number is displayed on the display section, **b** is displayed on the HIGH display section, and on the LOW display section the selected status is displayed.

##### Selection of buzzer action

- ② Select a buzzer action with the **▶** key.

Display	Name	Action
<input type="checkbox"/> <input type="checkbox"/>	GOOD buzzer	Buzzer sounds at GOOD output.
<input type="checkbox"/> <input type="checkbox"/>	NG buzzer	Buzzer sounds at HIGH and LOW output.
<input type="checkbox"/> <input type="checkbox"/>	OFF	Buzzer does not sound.

※ : Buzzer sound level 1~9.

##### Adjustment of buzzer sound level

- ③ Adjust the sound level properly with the **▲** and **▼** key.  
It is adjustable when the   or   is displayed.

##### Finish

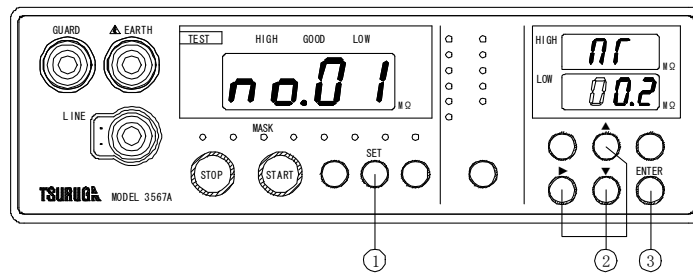
- ④ Press **ENTER** key, then the setting is memorized and the setting finishes.

### 3.8 ●Mask timer

Mask timer is the timer to temporarily prohibit the action of comparator, and it functions in AUTO operation mode. When the mask timer is in operation, MASK lamp is lit up. This timer is used when the waiting time is necessary for the measurement of such a test sample having a delay as capacitor.

- The comparator output is held during the setting.
- No setting is possible in ONLINE status.
- If there is no key operation for about 5 minutes during the setting, the tester returns to the measuring mode.

#### 3.8.1 Setting method



#### Enter the setting of mask timer

- ① In ready status, press **SET** key and select the blinking of MASK lamp. The current memory number is displayed on the display section, **n r** is displayed on the HIGH display section, and on the LOW display section the mask timer time is displayed.

#### Change of mask timer time

- ② Select a digit to change with the **▶** key.  
Change a numeral with the **▲** and **▼** key.
  - To OFF (prohibit the low limit action), select the OFF display with the **▲** and **▼** key, while the highest digit is in blinking.

Adjustable range: 00.1~99.9 seconds and OFF

#### Finish

- ③ Press **ENTER** key, then the setting is memorized and the setting finishes.

**Note:** **E r r** indication at LOW display section:  
The mask timer time can not be set longer than the timer time. Make a setting of mask timer time after confirming the timer time.



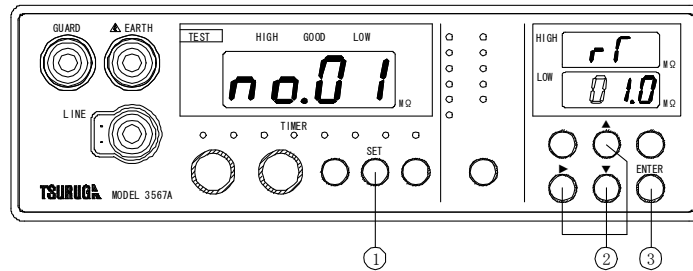
## 3.9 ●Timer

Timer is the timer to set the test time and it functions in AUTO operation mode. During the test time, the test voltage is output to the measuring terminal and the measurement of insulation resistance is made.

When the NG occurs during the test time, the measurement value and the judgement result are retained, and the test finishes.

- The comparator output is held during the setting.
- No setting is possible in ONLINE status.
- If there is no key operation for about 5 minutes during the setting, the tester returns to the measuring mode.

### 3.9.1 Setting method



#### Enter the setting of timer

- ① In ready status, press **SET** key and select the blinking of TIMER lamp. The current memory number is displayed on the display section, **r r** is displayed on the HIGH display section, and on the LOW display section the timer time is displayed.

#### Change of timer time

- ② Select a digit to change with the **▶** key. Change a numeral with the **▲** and **▼** key.

Adjustable range: 00.2~99.9 seconds

#### Finish

- ③ Press **ENTER** key, then the setting is memorized and the setting finishes.

**Note-1:** **r r r** indication at LOW display section:

The timer time can not be set shorter than the mask timer time. Make a setting of timer time after confirming the mask timer time.

**Note-2:** Timer setting of AUTO range: The minimum time to set should be 0.4 second. When the timer is set to 0.3 second or less, it may be under-range display (□□□□) in relation with the response time.

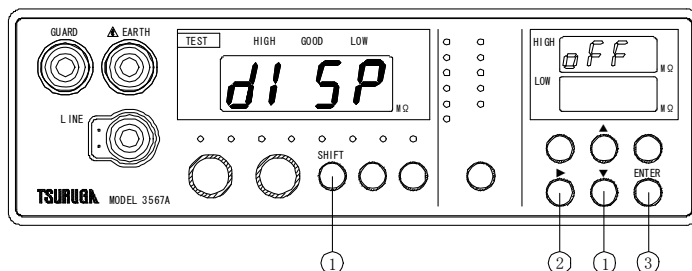
### 3.10 ●Setting of over-range

It is to set the steady or blinking light for the indication of over-range measurement.

- **ON** : Over-range is indicated by blinking light.
- **OFF** : Over-range is indicated by steady light.
- The comparator output is held during the setting of over-range.
- No setting is possible in ONLINE status.
- If there is no key operation for about 5 minutes during the setting, the tester returns to the measuring mode.

**Note:** The content of the setting having been changed becomes effective from the next test result.

#### 3.10.1 Setting method



##### Setting of over-range

- ① In ready status, press **SHIFT** key, and in the condition that the SHIFT lamp is lit up, press **▼** key. **d1 SP** is displayed on the display section and the setting condition is displayed on the HIGH display section.

##### Selection of action

- ② Select the indication type of over-range measurement with **▶** key.

Display	Name	Action	
ON	ON	Over-range is indicated by blinking light.	⏏⏏⏏⏏
OFF	OFF	Over-range is indicated by steady light.	⏏⏏⏏⏏

##### Finish

- ③ Press **ENTER** key, then the setting is memorized and the setting finishes.

**Note:** When the over-range is under the range, the indication is by steady light regardless of the setting for the indication of over-range measurement.

## 4. Test procedures

### 4.1 ●AUTO/CONTINUE mode

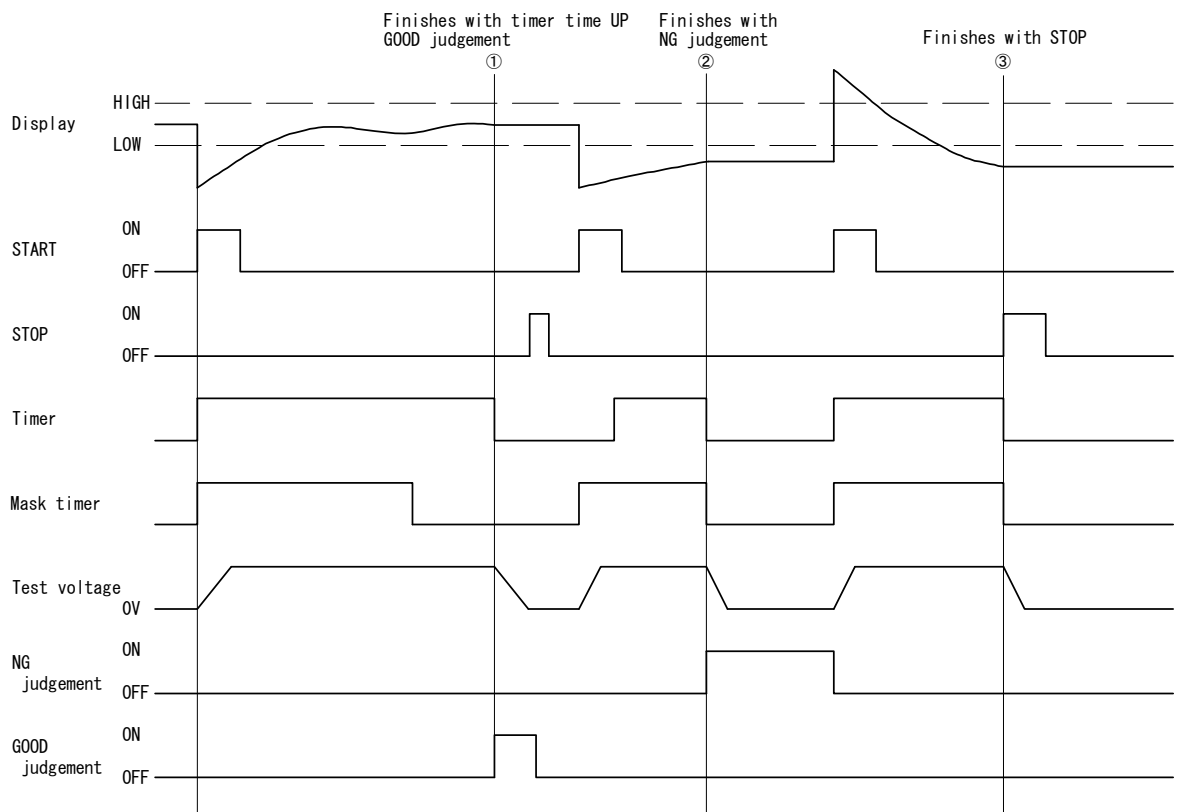
#### 4.1.1 AUTO operation

This is the mode in which the judgement result and the display value are held, the test voltage is shut off and the test finishes when the NG judgement is given during the test. It functions in MANUAL operation, REMOTE1 operation and REMOTE2 operation (refer to the article 4.2).

- ① To start the test in MANUAL operation, press **START** key.
- ② The measuring voltage is applied and, the measurement and comparator action are started.
- ③ When the mask timer is set, the comparator does not make any judgement during the mask time.
- ④ After passing the timer time, the measured value, judgement display and the judgement result are output, and the measuring voltage is shut off  
But in case that the judgement result becomes NG during the timer time, the measuring voltage is shut off at the moment when the NG is given, retaining the measured value, judgement display and the judgement result.
- ⑤ To reset the judgement output and the judgement display, press **STOP** key. The measured value is continuously displayed until the next start signal.
- ⑥ To re-start the test, proceed with the item ① above. There is no need to rest.

- Note:**
1. In MANUAL and REMOTE1 operation, when the **STOP** key is pressed during the timer is in operation, the timer stops its action, the measuring voltage is shut off and no comparator action is made.
  2. In REMOTE2 operation, when the switch is turned OFF during the time is in operation, the timer stops its action, the measuring voltage is shut off and no comparator action is made.

#### MANUAL operation



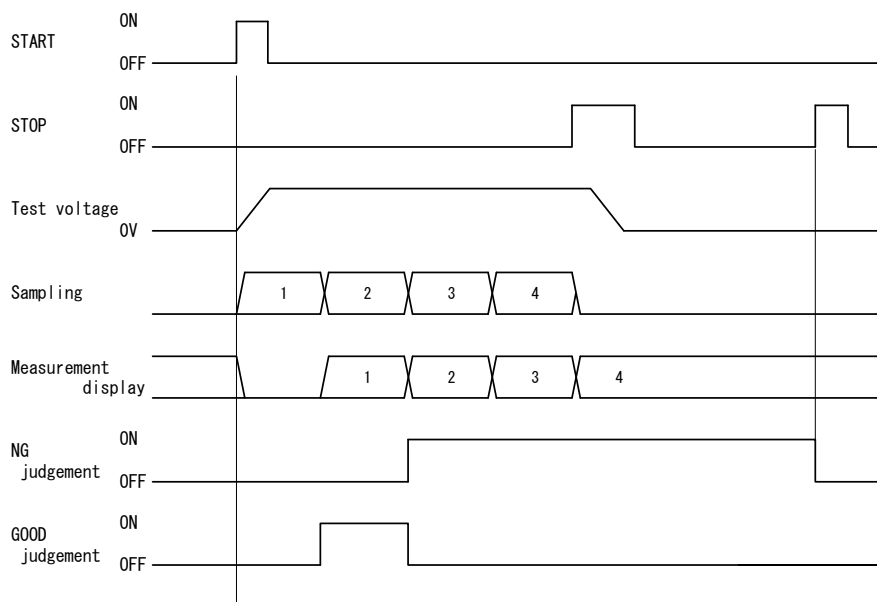
### 4.1.2 CONTINUE operation

This is the mode in which the measurement is continued without shutting of the measuring voltage even if the NG judgement is given during the measurement.

- ① To start the test in MANUAL operation, press **START** key.
- ② The measuring voltage is applied and, the measurement and comparator action are started.
- ③ The comparator outputs the judgement result from immediately after the start of measurement.
- ④ To finish the test, press **STOP** key. The test voltage is then shut off. The measured value is continuously displayed until the next start signal.
- ⑤ When the **STOP** key is pressed again, the judgement result is reset.

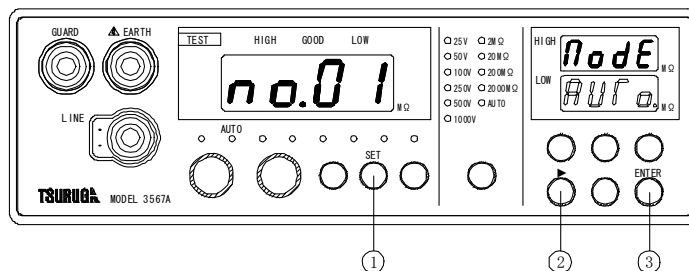
- Note:**
1. In REMOTE2 operation, when the switch is turned OFF, the test action is shut off and the judgement result is retained.
  2. In CONTINUE operation, the timer or the mask timer does not work.
  3. In case that the test is finished by the RST terminal, the judgement result is also simultaneously reset.

#### MANUAL operation



### 4.1.3 Setting method

- The comparator output is held during the setting.
- No setting is possible in ONLINE status.
- If there is no key operation for about 5 minutes during the setting, the tester returns to the measuring mode.



#### Enter the change-over of AUTO/CONTINUE

- ① In ready status, press **SET** key and select the blinking of AUTO lamp.  
The current memory number is displayed on the display section, **no.01** is displayed on the HIGH display section, and on the LOW display the selected status of operation is displayed.

#### Change-over of AUTO/CONTINUE

- ② Select an operation with the **▶** key.

Display	Operation
<b>AUTO</b>	AUTO operation
<b>CONT</b>	CONTINUE operation

#### Finish

- ③ Press **ENTER** key, then the setting is memorized and the setting finishes.

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## 4.2 ●REMOTE/MANUAL mode

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### 4.2.1 Manual operation

In manual operation, the start and finish of the test is done by the **START** and **STOP** key on the front panel.

- ① Press **START** key to start the test.
- ② Start the measurement. Apply the measuring voltage to the measuring terminal, and the TEST lamp is lit up.
- ③ To finish the test, press **STOP** key. Or, make the RST terminal (reset signal) ON. In case that the test mode is AUTO operation, the test automatically finishes with the time up of the timer or NG judgement.

### 4.2.2 Remote1 operation (REMOTE1)

In REMOTE1 operation, the start and finish of the test is done by the ST and RST terminals of the terminal blocks on the rear panel of the tester.

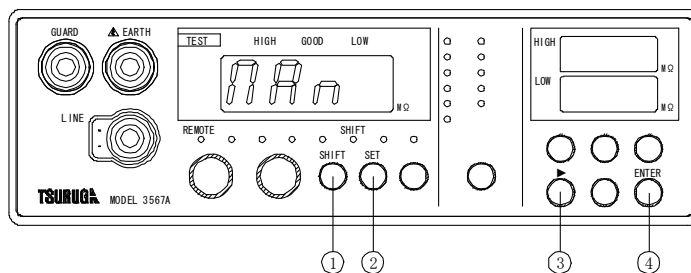
- ① To start the test, make the ST (start signal) ON (minimum width 10ms).
- ② Start the measurement. Apply the measuring voltage to the measuring terminal, and the TEST lamp is lit up.
- ③ To finish the test, make the RST (reset signal) ON (minimum width 10ms), or press **STOP** key. In case that the test mode is AUTO operation, the test automatically finishes with the time up of the timer or NG judgement.

### 4.2.3 Remote2 operation (REMOTE2)

In REMOTE2 operation, the start and finish of the test is done by ON or OFF of the switch of the switch-provided probe (option).

- ① To start the test, press the switch continuously.
- ② Start the measurement. Apply the measuring voltage to the measuring terminal, and the TEST lamp is lit up.
- ③ To finish the test, release the switch of the switch-provided probe. In case that the test mode is AUTO operation, the test automatically finishes with the time up of the timer or NG judgement. The test also finishes with **STOP** key or RST terminal.

#### 4.2.4 Selection of remote operation



##### Enter the change-over of REMOTE/MANUAL

- ① In ready status, press **SHIFT** key.  
SHIFT lamp is lit up.
- ② Press **SET** key.  
REMOTE lamp blinks.  
The selected status of operation is displayed in blinking.

##### Change-over of REMOTE/MANUAL

- ③ Change with the **▶** key.

Display	Operation
r E 1	REMOTE1
r E 2	REMOTE2
∩ R ∩	MANUAL

##### Finish

- ④ Press **ENTER** key, then the setting is memorized and the setting finishes.

#### 4.3 ● Automatic discharge function

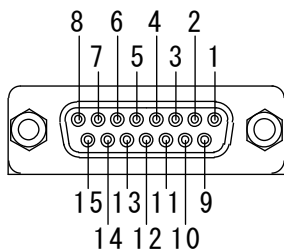
In case that the sample to be tested has capacitive element, it may be charged with the test voltage and remains as residual voltage, causing an accident of electric shock. This tester incorporates the discharging circuit (discharging resistance about 2MΩ) to discharge the residual voltage.

- 1) Finish the test without removing the connection with the sample tested.  
With the sample being connected, discharge the residual voltage of the sample with the discharging circuit in the tester.
- 2) During the discharging, TEST lamp blinks, and it turns off at about 10V or less.  
The discharging time becomes longer depending upon the volume of capacitive element.

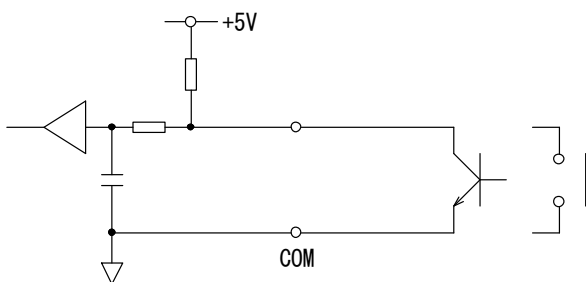
## 5. Remote control

### 5.1 Remote connector

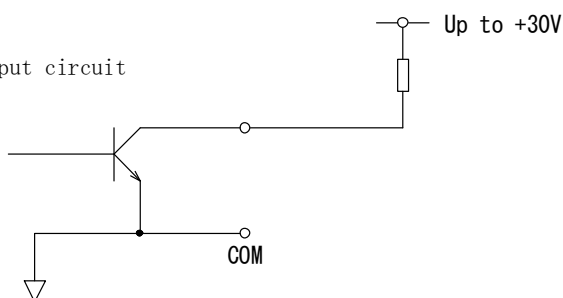
#### 5.1.1 Pin operation



Input circuit ("L"=1.5V or less "H" =3.5~5V  $I_{in} \leq -1mA$ )



Output circuit



(Dsub15pin)

Pin No.	Signal	Function
1	NC	Vacant pin
2	NC	
3	MEM input	When made ON, a memory is selected.
4	NC	Vacant pin
5	NC	
6	TEST output	During the test, it makes the transistor output ON.
7	CHARGE output	When the output voltage of the EARTH terminal is about 10V or more, it makes the transistor output ON.
9	M-SEL0 input	A memory number is input and the memory is called up.
10	M-SEL1 input	
11	M-SEL2 input	
12	M-SEL3 input	
13	NC	Vacant pin
14	NC	
8, 15	COM	Common for input and output.



### 5.1.2 Remote operation of memory

- ① Make the MEM signal ON.
  - Display changes to the memory No. being input to the M-SEL0~3 and of ONLINE lamp is lit up.
 

**Note:** The ONLINE lamp is lit up by the MEM signal ON when the memory No. is of 1~10 code. It is not lit up with the code other than 1~10. Make an input of the code 1~10.
- ② Input the code of memory No. and call the memory up.
  - Input the code of the memory No. called up to M-SEL0~3.
  - Display changes to the memory No. being called.
 

**Note:** When the memory number out of the code is selected, the memory can not be called up. Make an input of the code 1~10.

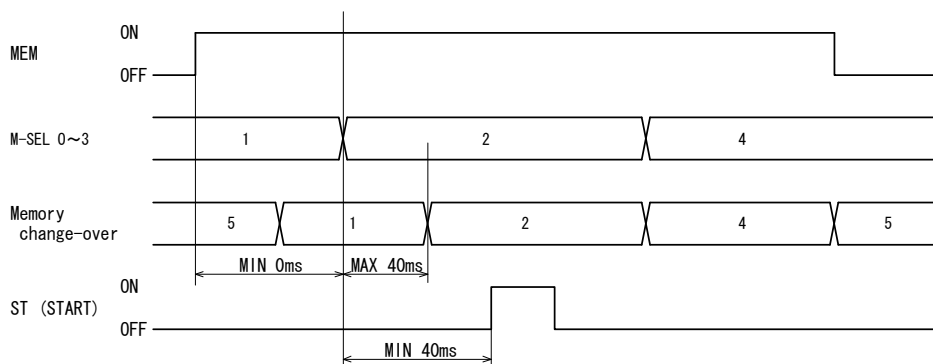
Memory code table

Signal	Weight	Memory number									
		1	2	3	4	5	6	7	8	9	10
M-SEL0	1	○		○		○		○		○	
M-SEL1	2		○	○			○	○			○
M-SEL2	4				○	○	○	○			
M-SEL3	8								○	○	○

○ : Make ON.  
Blank : Make OFF

- ③ Make the MEM signal OFF.
  - The tester finishes the remote operation and the ONLINE lamp turns off.
  - The memory becomes the No. before entering the remote operation mode of the memory.

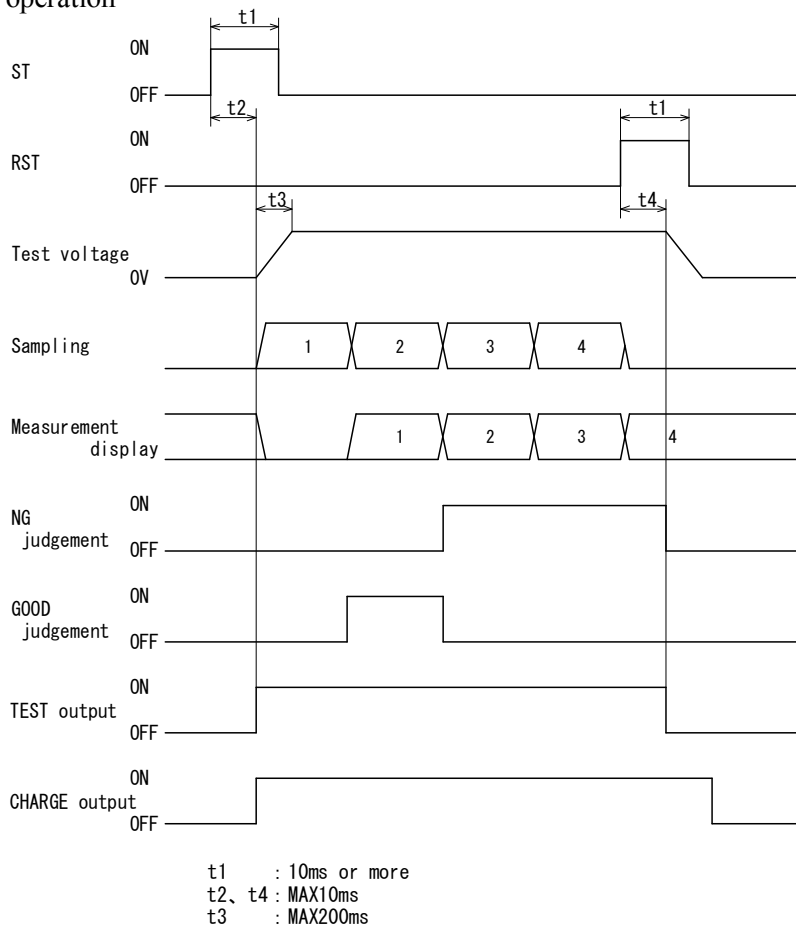
#### ◆ Timing chart of change-over of the memory



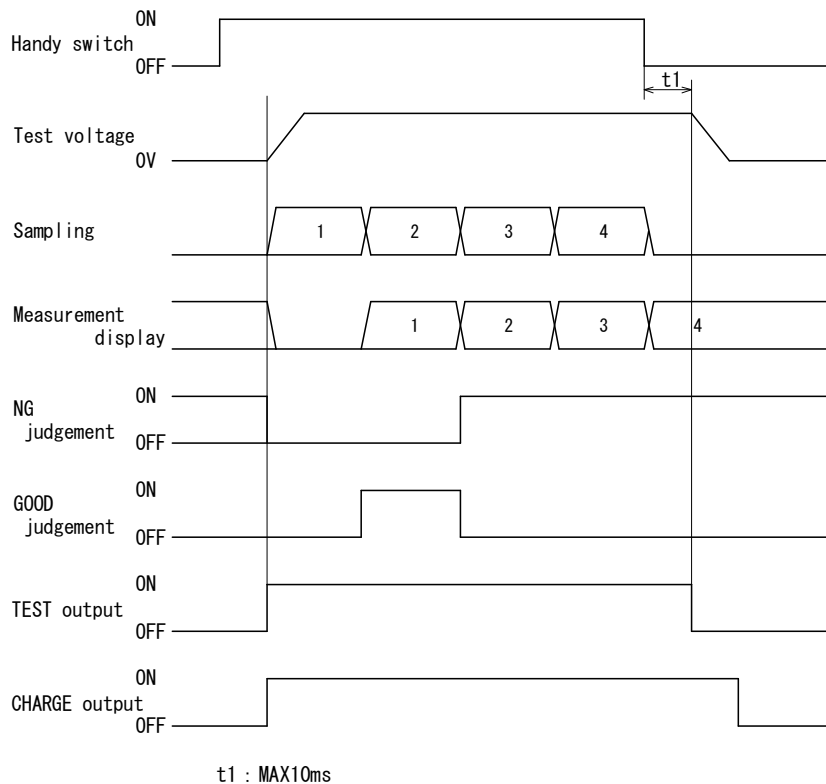
### 5.1.3 Timing chart of remote control

#### ◆ In CONTINUE mode

##### REMOTE1 operation

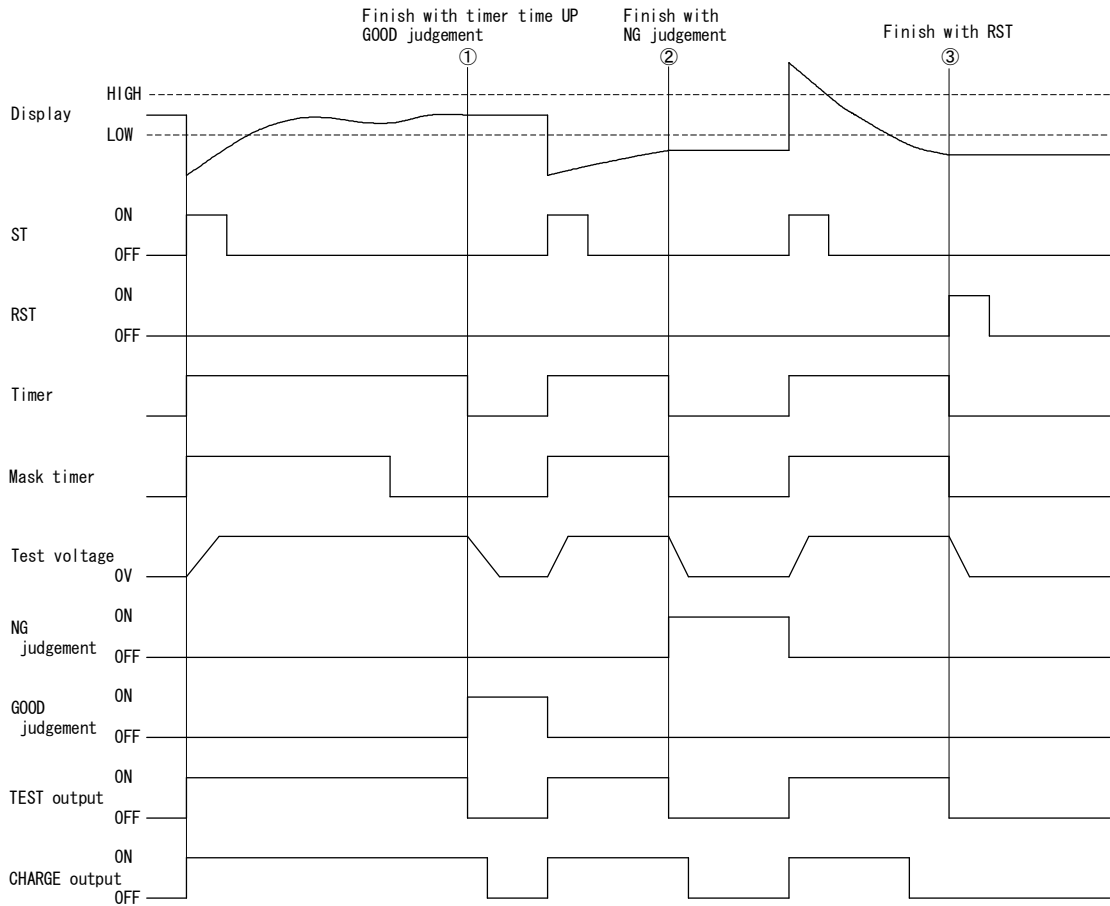


##### REMOTE2 operation

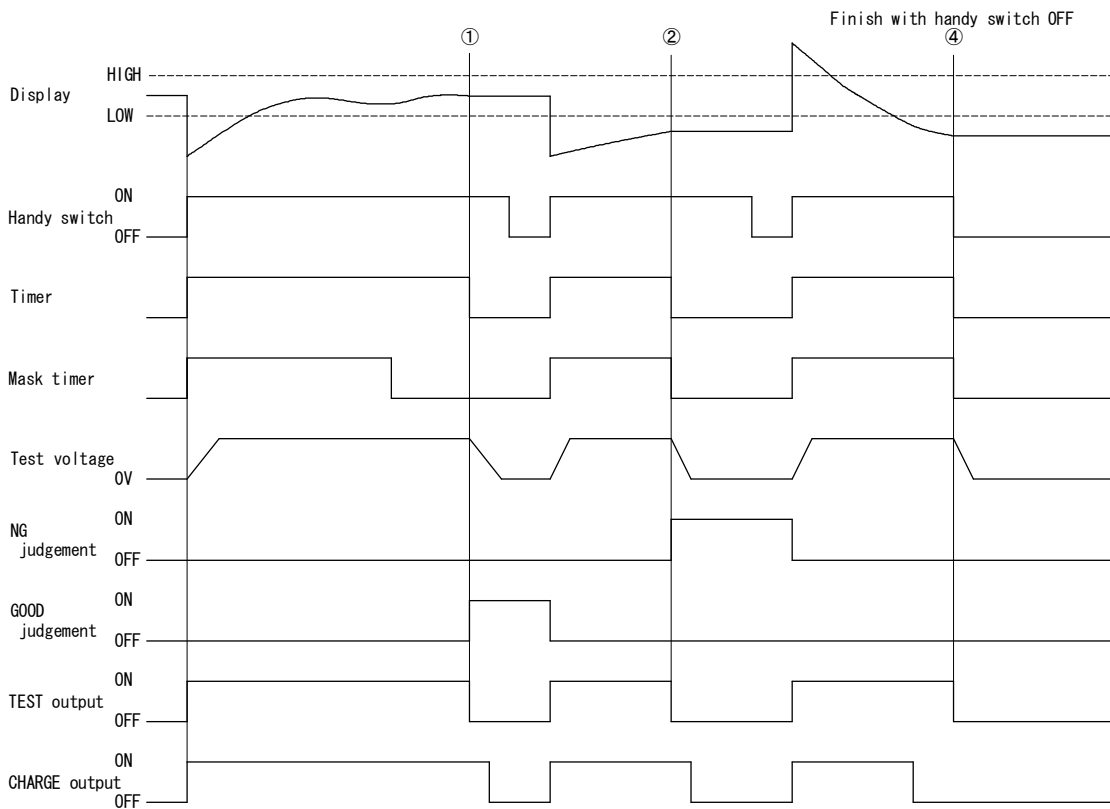


◆ In AUTO mode

REMOTE1 operation



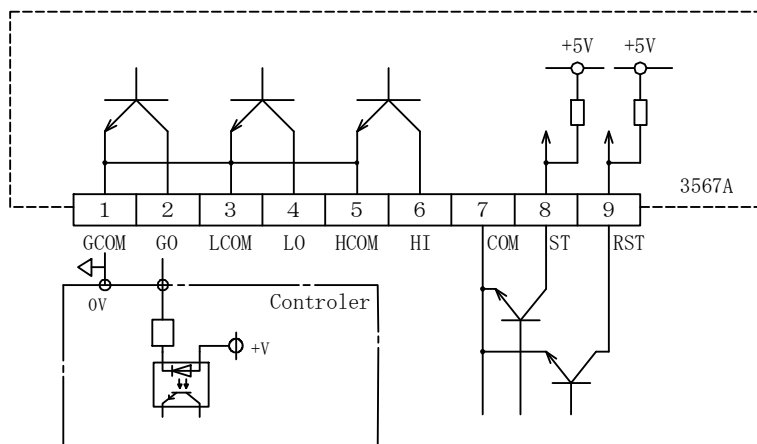
REMOTE2 operation



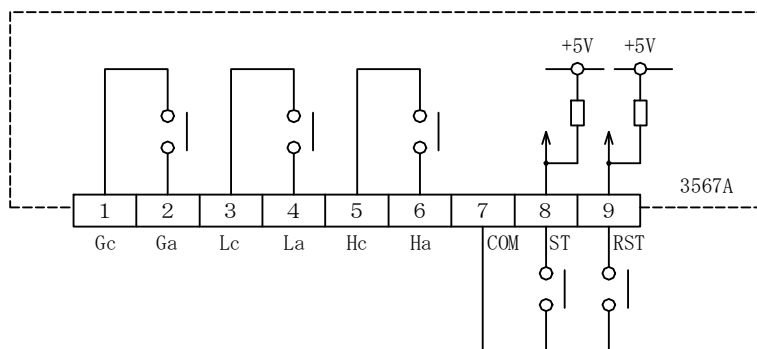
## 5.2 Remote control (input and output terminal blocks)

### Terminal arrangement

Open collector output



Relay contact output



- (1) ST terminal (start)
  - In REMOTE1, when it is connected to COM terminal, the test starts.
  - No voltage contact or TTL level  $I_{IL} \leq -1\text{mA}$
  - “L”=1.5V or less, “H”=3.5~5V
  - Pulse width: 10ms or more
- (2) RST terminal (reset)
  - During the test, when it is short-circuited to common (COM) terminal, the test stops and the judgement is reset (made off).
  - In ready status, when it is short-circuited to common (COM) terminal, the judgement is reset (made off).
  - No voltage contact or TTL level  $I_{IL} \leq -1\text{mA}$
  - “L”=1.5V or less, “H”=3.5~5V
  - Pulse width: 10ms or more
- (3) Comparator output
  - Open collector output : HI, GO, LO, sink type  
30V 30mA Max.
  - Relay contact output : Hi, Go, LO, 1a contact each  
250VAC 1A resistive load

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## 6. Error display

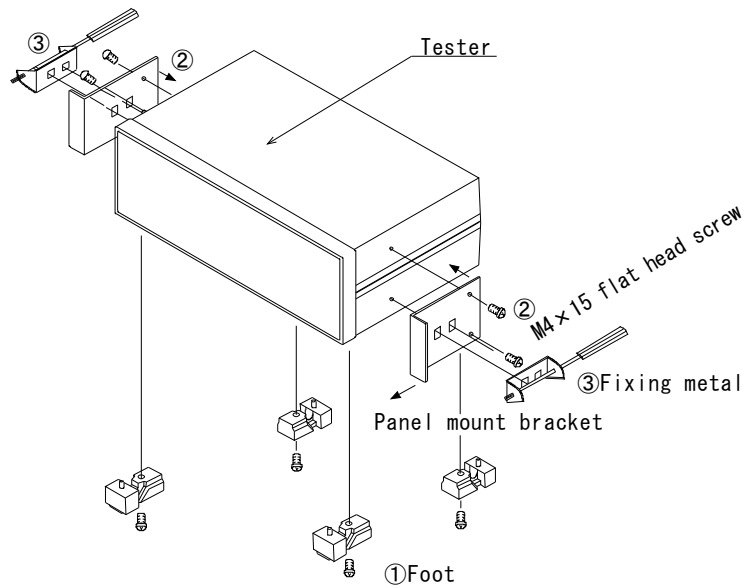
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Display	Name	Explanation
UUUU UUUU	Over-range	Over-range of measurement (blinking or steady light )
nnnn	Under-range	Under-range of measurement
Err	Setting error	When the setting parameter is out of the range, it is displayed for about one second.

## 7. Use in panel-mount

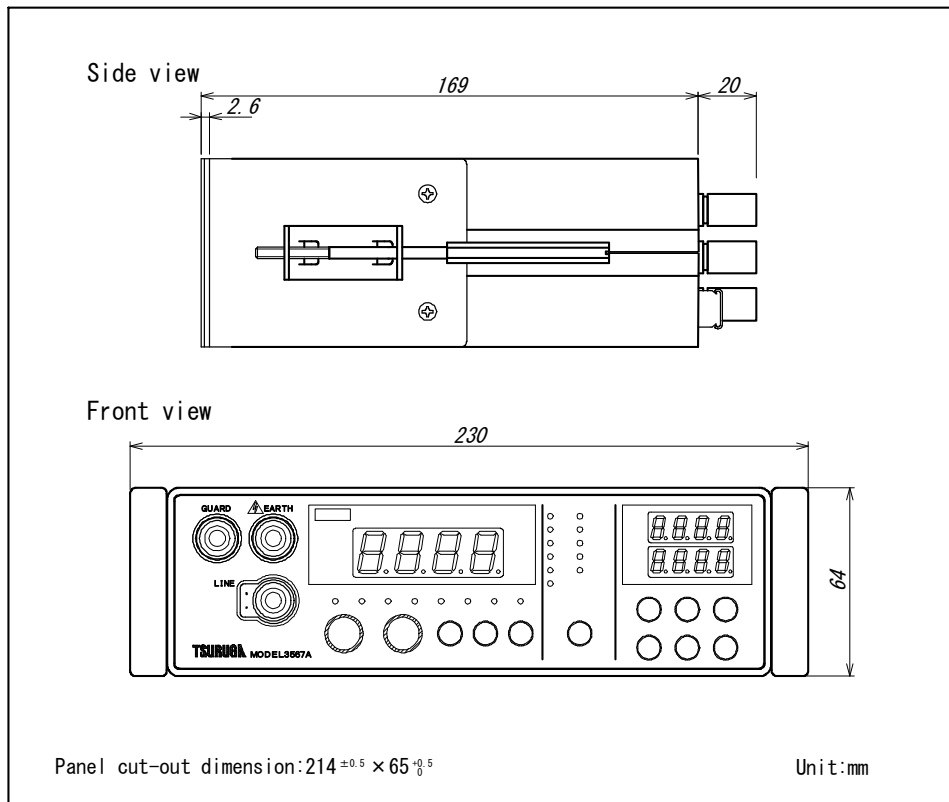
### 7.1 ●Assembly drawing

When the tester is used by panel-mounting, use the optional panel-mount bracket.



- ① Remove the feet (4 parts) at the bottom of the tester.
  - ② Fix the panel-mount bracket to both side of the tester (M4 × 15 flat screw)
  - ③ Insert the tester from the front of the panel and fix it to the panel with the fixing metal.
- Note:** In case that the tester is installed to the chassis, utilizing the bottom screw taps of the testers, keep the length of screw at 6mm + thickness of chassis (mm).

### 7.2 ●External dimensions when fitted with panel-mount bracket



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## 8. Maintenance

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### 8.1 ●Cleaning

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When the front panel or the case becomes dirty, wipe it with soft cloth.  
For heavy dirt, wipe it lightly with the soft cloth wetted with the water thinned by neutral cleaner. Do not use organic solvent like benzene or paint thinner as they may deform or discolor the case.

### 8.2 ●Failure symptom

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When the tester is supposed to be faulty, please check the following points before requesting the repair of it.

Symptom	Check points
Although the power is turned ON, display does not light up.	<ul style="list-style-type: none"><li>• Isn't the power supply plug of socket?</li><li>• Isn't the fuse burnt out? Replace the fuse referring to the article 1, 2 or 3.</li></ul>
Key is not operable.	<ul style="list-style-type: none"><li>• Isn't the <input type="checkbox"/> LOCK lamp lit up? Cancel the key lock referring to the article 3.3.</li></ul>
Test can not be started, though <input type="checkbox"/> START switch is pressed.	<ul style="list-style-type: none"><li>• Isn't the REMOTE lamp lit up? <input type="checkbox"/> START switch is disabled during the remote control. For remote control, refer to the article 4.2.</li><li>• Isn't the ON LINE lit up?</li></ul>

## 9. Specifications

### 9.1 Model name

Model name	Description
3567A-X-□	No data output
3567A-03-□	With BCD output (TTL level)
3567A-04-□	With BCD output (open collector)
3567A-05-□	With RS-232C
3567A-06-□	With RS-485

□ : Judgement output  
 TN : Open collector NPN  
 RY : Relay output

### 9.2 Measuring range and accuracy

#### ◆ Measuring range, accuracy

Test voltage	Resistance range	Resistance measuring range	Mean value	Resolution	Accuracy
DC25V DC50V	Auto-range 2.000MΩ	0.000~2.000MΩ	500kΩ	1kΩ	±(2%rdg.+3digit)
		2.010~4.990MΩ		10kΩ	±30%rdg.
	20.00MΩ	1.80~20.00MΩ	5MΩ	10kΩ	±(2%rdg.+3digit)
		20.10~49.90MΩ	*	100kΩ	±30%rdg.
	200.0MΩ	18.0~100.0MΩ	50MΩ	100kΩ	±(2%rdg.+3digit)
		100.1~200.0MΩ		100kΩ	± 5%rdg.
201.0~999.0MΩ		1MΩ		±30%rdg.	
DC100V DC250V	Auto-range 2.000MΩ	0.000~2.000MΩ	500kΩ	1kΩ	±(2%rdg.+3digit)
		2.010~4.990MΩ		10kΩ	±30%rdg.
	20.00MΩ	1.80~20.00MΩ	5MΩ	10kΩ	±(2%rdg.+3digit)
		20.10~49.90MΩ	*	100kΩ	±30%rdg.
	200.0MΩ	18.0~100.0MΩ	50MΩ	100kΩ	±(2%rdg.+3digit)
		100.1~200.0MΩ		100kΩ	± 5%rdg.
201.0~499.0MΩ		1MΩ		±30%rdg.	
2000MΩ	180 ~2000 MΩ	500MΩ	1MΩ	± 5%rdg.	
	2010 ~9990 MΩ		10MΩ	±30%rdg.	
DC500V DC1000V	Auto-range 20.00MΩ	0.00~20.00MΩ	5MΩ	10kΩ	±(2%rdg.+3digit)
		20.10~49.90MΩ		100kΩ	±30%rdg.
	200.0MΩ	18.0~200.0MΩ	50MΩ	100kΩ	±(2%rdg.+3digit)
		201.0~499.0MΩ	*	1MΩ	±30%rdg.
	2000MΩ	180 ~1000 MΩ	500MΩ	1MΩ	±(2%rdg.+3digit)
		1001 ~2000 MΩ		1MΩ	± 5%rdg.
2010 ~9990 MΩ		10MΩ		±30%rdg.	

Accuracy: Defined at 23°C±5°C, 45~75%RH.

Note: During the auto-range measurement, the value marked with \* is the mean value.

During the auto-range measurement, the range goes up by 2000 counts and goes down by 179 counts.



### 9.3 ●General specifications

#### ◆ Standard specifications

Applicable standard	: Conforms to JIS C1302. <sup>1994</sup>	
Open voltage	: Within 130% or the rated voltage.	
Rated measuring current	: 1mA	
Short circuit current	: 15mA or less	
Display	: 0~9990 Green LED (character height 14.2mm)	
	Zero suppress function	
	When the input is over-range or open, it is indicated by the blinking or steady light of <b>■■■■</b> .	
	Auto-range:	Resolution within the measuring range is automatically switched. Switching of resolution at 2000 when rising and at 179 when falling.
Sampling rate	: 20 times/sec.	
Parameter retention	: Memorized in EEPROM	
	Re-writable for 100,000 times, retainable for about 10 years.	
Erroneous input protection	: Less than 1.2 times of the test voltage, max. 600V (50Hz/60Hz sine wave) for 10 seconds or less.	
Insulation resistance	Terminal blocks / Case	500V DC 100MΩ or more
Withstanding voltage	Terminal blocks / Case	2000V DC for 1 minute
	Power source / Measuring terminals, Control input & output terminals.	1500V AC for 1 minute
	Measuring terminals / Control input & output terminals, Data input & output terminals.	1500V AC for 1 minute
Supply power voltage	: 100V AC~240V AC 50/60Hz	
Range of power source voltage	: 90V AC~250V AC	
Power consumption	: Approx. 20VA (100V AC)	
Working ambient temperature	: 0~50°C	
Working ambient humidity	: 90%RH or less.(no condensation)	
Storage temperature	: -20~70°C	
External magnetic field	: 400mA/m or less.	
Dimension	: 206(W) × 65(H) × 200(D)mm	
Weight	: Approx. 1 kg.	
Accessories	Power supply cord	1 piece
	Fuse 250V/2A	1 piece
	Instruction manual	1 copy
Options	Line probe	Model 5813-12
	Earth probe	Model 5813-11
	Switch-provide probe	Model 5813-13
	Calibration resistor	

#### ◆ Response

Fixed range		
Display response	: Approx. 0.2 second	*1
Judgement time	: Approx. 0.2 second	*2
Auto-range		
Display response	: Approx. 0.4 second	*1
Judgement time	: Approx. 0.4 second	*2

**Note-1:** \*1 : The time required for the value to reach the specified accuracy when the resistance of mean value is suddenly connected to the open measuring terminal.

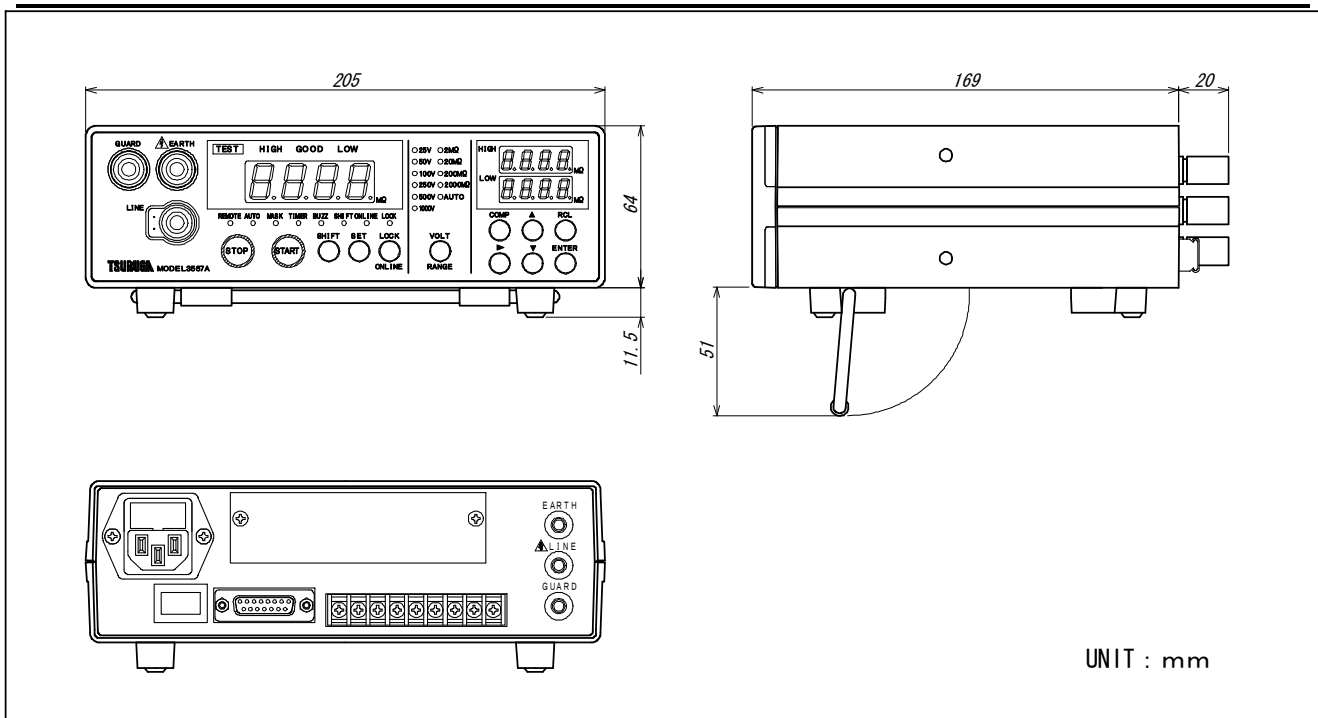
\*2 : The time required to make a judgement when the judgement value is set to mean value and the open measuring terminal is suddenly short-circuited.

**Note-2:** The response time refers to the genuine resistor and is variable depending upon the wiring condition of the measuring leads, capacitive load of the sample to be measured and so on.

## 9.4 ●Table of initial setting (at delivery from factory)

Item	Description	
REMOTE/MANUAL	MANUAL	
Program memory number	01	
Key-lock	OFF	
ONLINE	OFF	
Over-range	Blinking	
AUTO/CONTINUE	AUTO	Program memory No.1~10
Test voltage	25V	
Resistance range	200.0MΩ	
HIGH (setting of high limit value)	900.0MΩ	
LOW (setting of low limit value)	100.0MΩ	
Time	1.0 second	
Mask timer	0.2 second	
Buzzer	OFF, volume 5	

## 9.5 ●External dimensions



## 9.6 ●Option

- For the model 3567A, the following interfaces are prepared.  
For the handling of each interface, please refer to the instruction manual of respective interface.
  - (1) BCD data output board (TTL) : Model 5811-03E
  - (2) BCD data output board (open collector) : Model 5811-04E
  - (3) RS-232C interface board : Model 5811-05E
  - (4) RS-485 interface board : Model 5811-06E
- Others
  - (1) Panel-mount bracket : Model 5811-31

### Contact Information

Name : Tsuruga Electric Corporation  
 Address : 1-3-23 Minami-Sumiyoshi, Sumiyoshi-ku, Osaka-shi  
 558-0041 Japan