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**User's  
Manual**

**MY600  
Digital Insulation Tester  
User's Manual**

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## Product Registration

Thank you for purchasing YOKOGAWA products. YOKOGAWA provides registered users with a variety of information and services.

Please allow us to serve you best by completing the product registration form accessible from our website.

<http://tmi.yokogawa.com/>



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Thank you for purchasing the MY600 Digital Insulation Tester. This user's manual explains the features, operating procedures, and handling precautions of the MY600. To ensure correct use, please read this manual thoroughly before operation. Keep this manual in a safe place for quick reference in the event that a question arises. The following manuals, including this one, are provided as manuals for the MY600. Please read all manuals.

<b>Manual Title</b>	<b>Manual No.</b>	<b>Description</b>
MY 600 Digital Insulation Tester User's Manual	IM MY600-01EN	This manual. The manual explains the handling precautions, features, specifications, and how to operate this instrument, and so on.
MY600 Digital Insulation Tester	IM MY600-92Z1	Document for China.

The "EN", "E", and "Z1" in the manual numbers are the language codes.

Contact information of Yokogawa offices worldwide is provided on the following sheet.

<b>Manual No.</b>	<b>Description</b>
PIM113-01Z2	List of worldwide contacts

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## Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functions. The figures given in this manual may differ from those that actually appear on your screen.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer.
- Copying or reproducing all or any part of the contents of this manual without the permission of YOKOGAWA is strictly prohibited.

## Trademarks

- In this manual, the TM and ® symbols do not accompany their respective registered trademark or trademark names.
- Other company and product names are trademarks or registered trademarks of their respective holders.

## Revisions

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## Checking the Contents of the Package

Unpack the box, and check the following before operating the instrument. If the wrong items have been delivered, if items are missing, or if there is a problem with the appearance of the items, contact your nearest YOKOGAWA dealer.

### MY600

Check that the product that you received is what you ordered by referring to the model name and suffix code on the delivery note.

Model	Suffix Code*	Specifications
MY600	-	Digital Insulation Tester

\* For products whose suffix code contains “Z,” an exclusive manual may be included. Please read it along with the standard manual.

### No. (Instrument number)

When contacting the dealer from which you purchased the instrument, please give them the instrument number.

### Standard Accessories

The following accessories are included. Check that all contents are present and undamaged.

Item	Model or Part No.	Quantity
Carrying case	93045	1
Line probe with remote switch	98008	1
Earth probe set	98009	1
Shoulder strap	99018	1
Alkaline dry cell	-	4
Manual No.	IM MY600-01JA	1
	IM MY600-92Z1	1
	PIM113-01Z2	1

Standard accessories are not covered by warranty.

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## Optional Accessories (Sold separately)

Item	Model or Part No.	Quantity	Manual No.
USB communication adapter	91030	1	IM 91030-01EN
Line probe with remote switch	98008	1	—
Earth probe set	98009	1	—
Probe tip (hook type)	99012	1	—
Probe tip (long type)	99013	1	—

Accessories (sold separately) are not covered by warranty.

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### **WARNING**

- Use the accessories specified in this manual. Moreover, use the accessories of this product only with Yokogawa products that specify them as accessories.
  - Use the accessories of this product within the rated range of each accessory. When using several accessories together, use them within the specification range of the accessory with the lowest rating.
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# Conventions Used in This Manual

## Notes

The notes and cautions in this manual are categorized using the following symbols.



*Improper handling or use can lead to injury to the user or damage to the instrument.* This symbol appears on the instrument to indicate that the user must refer to the user's manual for special instructions. The same symbol appears in the corresponding place in the user's manual to identify those instructions. In the manual, the symbol is used in conjunction with the word "WARNING" or "CAUTION."

### **WARNING**

Calls attention to actions or conditions that could cause serious or fatal injury to the user, and precautions that can be taken to prevent such occurrences.

### **CAUTION**

Calls attention to actions or conditions that could cause light injury to the user or damage to the instrument or user's data, and precautions that can be taken to prevent such occurrences.



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French

**AVERTISSEMENT**

Attire l'attention sur des gestes ou des conditions susceptibles de provoquer des blessures graves (voire mortelles), et sur les précautions de sécurité pouvant prévenir de tels accidents.

**ATTENTION**

Attire l'attention sur des gestes ou des conditions susceptibles de provoquer des blessures légères ou d'endommager l'instrument ou les données de l'utilisateur, et sur les précautions de sécurité susceptibles de prévenir de tels accidents.

**Note**

Calls attention to information that is important for the proper operation of the instrument.

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## Safety Precautions

This product is designed to be used by a person with specialized knowledge.

The general safety precautions described herein must be observed during all phases of operation. If the instrument is used in a manner not specified in this manual, the protection provided by the instrument may be impaired. YOKOGAWA assumes no liability for the customer's failure to comply with these requirements.

This manual is part of the product and contains important information. Store this manual in a safe place close to the instrument so that you can refer to it immediately. Keep this manual until you dispose of the instrument.

The following symbols are used on this instrument.



Handle with care. Refer to the user's manual or service manual. This symbol appears on dangerous locations on the instrument which require special instructions for proper handling or use. The same symbol appears in the corresponding place in the manual to identify those instructions.



Equipment protected throughout by double insulation or reinforced insulation.



Ground or the functional ground terminal (do not use as the protective earth ground terminal)



Electric shock, danger

French



À manipuler délicatement. Toujours se reporter aux manuels d'utilisation et d'entretien. Ce symbole a été apposé aux endroits dangereux de l'instrument pour lesquels des consignes spéciales d'utilisation ou de manipulation ont été émises. Le même symbole apparaît à l'endroit correspondant du manuel pour identifier les consignes qui s'y rapportent.



Équipement entièrement protégé par une double isolation ou une isolation renforcée.



Mise à la terre (masse) ou borne de mise à la terre fonctionnelle (ne pas utiliser cette borne comme borne de mise à la terre de protection)



Choc électrique, danger

**Follow the precautions below. Failure to comply with the precautions below could lead to injury or death or damage to the instrument.**

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## WARNING

### Use the Instrument Only for Its Intended Purpose

This instrument is for measuring insulation resistance.  
Use this instrument only for this purpose.

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## **Check the Physical Appearance**

Do not use the instrument if there is a problem with its physical appearance.

## **During Insulation Resistance Measurement**

A high voltage is present at the probes during insulation resistance measurement. Do not touch the DUT or the earth or line terminal.

## **Immediately After Insulation Resistance Measurement**

The probes or the DUT may remain highly charged.

Do not touch them immediately after the completion of measurement.

## **Measure Properly**

- Do not apply a voltage that exceeds 600 V (voltage to ground) to the instrument.
- Do not apply a voltage exceeding the upper limit.

## **Measurement Category**

This instrument is rated to CAT III 600 V. Do not use the instrument in locations that exceeds this category.

## **Probes**

- Use the dedicated probes supplied by Yokogawa for this instrument.
- Do not use probes that have deteriorated or are defective.
- Remove the probes from the DUT before attaching/detaching the probes to/from the instrument.

## **Case Insulation**

Do not use the instrument if it has been subject to strong shock as a result of dropping it or hitting it against another object. The shock can destroy the protective insulation. Contact your nearest YOKOGAWA dealer for repairs.

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## **DUT**

- Turn off the DUT when measuring the insulation resistance.
- When using the instrument near live parts, be careful not to touch parts that have voltage applied to them.
- Use insulated protective gears, such as insulated gloves, for your safety.

## **Operating Environment**

- Do not operate the instrument in the presence of flammable gases or vapors.
- Do not use the instrument if there is condensation on it.
- Do not install or use the instrument outdoors or in locations subject to rain or water.

## **Do Not Remove the Case or Disassemble**

Do not open the case except when replacing batteries. Only qualified YOKOGAWA personnel may remove the covers and disassemble or alter the instrument. Do not repair the instrument yourself, as doing so is extremely dangerous.

For internal inspection and adjustment, contact your nearest YOKOGAWA dealer.

## **Batteries**

- Never open the battery compartment while a measurement is in progress.
- When opening the battery compartment, turn off the range switch.
- Do not replace the batteries if the product is wet.

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## Handling

- Use the instrument according to the measurement method and conditions specified in this manual. Otherwise, the protection function of this instrument will not work properly, and this can lead to electric shock and other serious accidents or damage the instrument.
- Before using the instrument, check that the DUT operates correctly with a known power source.
- When connecting the probe, do not touch the measurement switch.
- When using the probes, insert the connectors all the way to the root of the connectors into the LINE and EARTH terminals.
- Do not switch the range switch when probes are connected to the DUT.
- Do not connect probes when the product or your hands are wet. Doing so may cause electric shock.
- When making a measurement, do not short the power supply line with the probe. Doing so may cause electric shock.

## Damaged Cable

If the probe is torn and the inner metal is exposed or if a color different from the outer sheath appears, stop using the cord immediately.

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## CAUTION

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- This instrument is for household use (Class B) and meets the electromagnetic compatibility requirements.
  - To verify the instrument's functionality, turn on the power, and check that the measured value is updated.  
If the measured value is not updated, the instrument may be malfunctioning. The indicated value may be incorrect, and this may lead to possible electric shock or personal injury.
  - Before starting a measurement, check that the range switch is set to the appropriate position.
  - Be sure to turn off the power after use. If you do not intend to use the instrument for a long time, remove the batteries from the instrument.
  - Do not expose the instrument to direct sunlight, high temperatures, humidity or dew.
  - Do not use abrasives or solvents for cleaning. Wipe gently with a soft, dry, clean cloth.
  - This instrument is not waterproof. Do not use in a location where the instrument may get wet. If the instrument gets wet, it may malfunction.
  - If the instrument is wet, dry it before storing it.
  - Keep your hand and fingers behind the barrier during a measurement.
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## **AVERTISSEMENT**

### **Utiliser l'appareil uniquement pour son usage prévu**

Cet appareil est un testeur de résistance d'isolation capable de mesurer la résistance d'isolement.

Ne pas utiliser cet appareil à d'autres fins.

### **Inspecter l'apparence physique**

Ne pas utiliser l'appareil si son intégrité physique semble être compromise.

### **Pendant la mesure de la résistance d'isolement.**

Une haute tension est présente aux sondes. Ne pas toucher l'objet mesuré ou la borne de terre ou la ligne.

### **Immédiatement après la mesure de la résistance d'isolement.**

Les sondes ou l'objet mesuré peuvent rester fortement chargés. Ne pas toucher immédiatement après la fin de la mesure.

### **Mesure**

- Ne jamais effectuer des mesures dans des circuits où le voltage par rapport à la masse est supérieur à 600 V.
- Une tension dépassant la limite spécifiée ne doit pas être appliquée aux sondes.

### **Catégorie de mesure**

MY600 est évalué à CAT III 600 V. Ne pas effectuer de mesures dans les circonstances dépassant les catégories de mesure prévues.



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## Sondes

- Assurer d'utiliser les sondes fournies par Yokogawa avec cet instrument.
- Ne pas utiliser de sondes détériorées ou défectueuses.
- Retirer les sondes de l'objet mesuré avant de fixer/détacher les sondes de/vers l'instrument.

## Isolation du boîtier

Une crevaison dans l'isolation de protection peut se produire s'il y a des fissures ou d'autres dommages dans le boîtier suite à la chute de l'appareil ou à un choc contre un autre objet.

Ne pas utiliser l'appareil avant de prendre les mesures réparatrices nécessaires; demander au fabricant de le réparer.

## L'objet mesuré

- Couper l'alimentation de l'objet mesuré avant de commencer à mesurer la résistance d'isolation.
- Éviter les parties sous tension lorsque vous utilisez l'instrument dans un endroit où de l'électricité est présente.
- Des protecteurs de sécurité tels que des gants isolés en caoutchouc doivent être portés pour éviter les chocs électriques lors de l'utilisation de l'appareil.

## Environnement opérationnel

- Ne pas faire fonctionner l'appareil dans une atmosphère ayant un gaz inflammable ou explosif présent.
- Ne pas utiliser l'appareil en présence de condensation.
- Ne pas installer l'appareil à l'extérieur ou dans des endroits exposés à la pluie ou à l'eau.

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## **Ne pas retirer ou démonter le boîtier**

N'ouvrir le boîtier que pour remplacer les batteries.

Seul du personnel qualifié YOKOGAWA peut retirer les couvercles et démonter ou modifier l'appareil.

Ne pas essayer de réparer/modifier l'appareil par vous-même, car cela est extrêmement dangereux.

## **Batterie**

- Ne jamais ouvrir le couvercle du compartiment de la batterie pendant une mesure.
- S'assurer que le commutateur de fonction est en position ARRÊT avant d'ouvrir le couvercle du compartiment de la batterie pour le remplacement de la batterie.
- Ne pas remplacer les batteries si la surface de l'appareil est mouillée..

## **Fonctionnement**

- Cet appareil doit uniquement être utilisé pour ses applications ou conditions prévues; dans le cas contraire, les fonctions de sécurité équipées de l'appareil ne seront actives, ce qui peut entraîner des dommages à l'appareil ou des blessures graves.
- Vérifier le bon fonctionnement sur une source connue avant utilisation ou prendre des mesures à la suite de l'indication de l'appareil.
- Tout d'abord, connecter fermement les fils d'essais à l'appareil, puis appuyez sur le bouton de test.
- Connecter chaque fil de test fermement aux bornes correspondantes.
- Ne jamais tourner l'interrupteur de fonction lorsque les fils d'essais sont connectés à l'équipement testé.
- Ne jamais utiliser l'appareil si la surface ou votre main est mouillée.

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- Veillez à ne pas court-circuiter une ligne d'alimentation avec la partie métallique du fil d'essai pendant une mesure. Cela pourrait causer des blessures personnelles.

### **Câble de signal endommagé**

Si le câble de signal est déchiré et que le métal intérieur est exposé ou si une couleur différente de la gaine externe est visible, arrêter immédiatement d'utiliser ce câble.

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## **ATTENTION**

- Cet instrument est destiné à un usage domestique (classe B) et répond aux exigences de compatibilité électromagnétique.
- Pour vérifier la fonctionnalité de l'appareil, vérifiez que la valeur mesurée est mise à jour après la mise sous tension. Si la valeur mesurée n'est pas mise à jour, la lecture sera incorrecte et pourrait entraîner un choc électrique ou des blessures.
- Veillez toujours à placer le commutateur de fonction sur la position appropriée avant d'effectuer une mesure.
- Éteindre l'appareil après utilisation. Retirer les batteries si l'appareil doit être stocké et ne sera pas utilisé pendant une longue période.
- Ne pas exposer l'instrument aux rayons directs du soleil, à des températures élevées, à l'humidité ou à la rosée.
- Utiliser un tissu légèrement humide avec un détergent neutre ou de l'eau pour le nettoyage. Ne pas utiliser d'abrasifs ou de solvants.
- Cet appareil n'est pas résistant à l'eau. Ne pas laisser l'appareil se mouiller. Sinon, cela pourrait provoquer un dysfonctionnement.

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- Si l'appareil est humide, assurez-vous de le laisser sécher avant de le ranger.
  - Conserver votre main et vos doigts derrière la barrière pendant une mesure.
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## Measurement Category

Measurement category O (Other):

Applies to measurement of circuits that are not directly connected to a main power source. This category applies to measurement of secondary electric circuits in equipment across a transformer.

Measurement category II:

Applies to measurement of circuits, such as household electric appliances and portable electric tools, that are connected to low-voltage installations.

Measurement category III:

Applies to measurement of facility circuits, such as distribution boards and circuit breakers.

Measurement category IV:

Applies to measurement of power source circuits, such as entrance cables to buildings and cable systems, for low-voltage installations.

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# Sales and Standards in Each Country or Region

## Waste Electrical and Electronic Equipment

### Waste Electrical and Electronic Equipment (WEEE), Directive



(This directive is valid only in the EU.)

This product complies with the WEEE directive marking requirement. This marking indicates that you must not discard this electrical/electronic product in domestic household waste.

#### Product Category

With reference to the equipment types in the WEEE directive, this product is classified as a “Monitoring and control instruments” product.

When disposing products in the EU, contact your local Yokogawa Europe B.V. office. Do not dispose in domestic household waste.

## EU Battery Directive



(This directive is valid only in the EU.)

Batteries are included in this product. This marking indicates they shall be sorted out and collected as ordained in the EU battery directive.

Battery type: Alkaline dry cell

When disposing of alkaline batteries, follow the domestic law concerning disposal. Take the proper action to dispose batteries in accordance with the established collection system in the European Economic Area. For the battery removal procedure, see section 13, “Battery Replacement.”

## Authorized Representative in the EEA

Yokogawa Europe B.V. is the authorized representative of Yokogawa Meters & Instruments Corporation for this product in the EEA. To contact Yokogawa Europe B. V., see the separate list of worldwide contacts, PIM 113-01Z2.

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## 1. Features

- This instrument is compact and lightweight and easy to carry.
- It is equipped with an LCD backlight and LED spot light to facilitate working at dimly illuminated location or at night. The built-in illuminance sensor automatically turns on/ off the lights. An auto light-off function is also available to turn off these lights automatically if there is no user interaction for two minutes. These lights can also be set to off at all times.
- The instrument has an auto power-off function that automatically turns itself off if there is no user interaction for 10 minutes. This function is not activated when a continuous measurement is in progress.
- A test probe with a remote switch is supplied as a standard accessory.
- A shoulder strap can be used for two-hand operation.
- Live circuit warning is indicated with a blinking “” symbol and buzzer sound.
- In voltage measurement, live circuit warning is indicated at a voltage input of 30 V or higher. In addition, whether the input voltage is AC or DC is automatically detected and indicated.
- An auto discharge function is provided. When measuring an insulation resistance, like a capacitive load, electric charges stored in capacitive circuits are automatically discharged after measurement. The discharge status is indicated with a blinking “” symbol and buzzer sound.
- In insulation resistance measurement, blinking LCD backlight indicates whether a measured value is less than or higher than the reference value. This pass/fail judgment function can be turned off.



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- To prevent mistakes in operation, an empty range is provided between the 500 V and 1000 V ranges of the range switch.
  - Intermittent warning buzzer sounds when the range switch is set to 1000 V range.
  - Hold function  
A measured insulation or low-resistance value is held and displayed until the range is changed or another measurement is started.
  - 0 $\Omega$  adjustment function  
In low-resistance measurements, the resistance of the cord and fuse can be cancelled up to about 3  $\Omega$ .
  - Elapsed time display  
The measurement time is displayed upon starting an insulation resistance measurement.
  - One-minute value display  
The measurement 1 minute after starting an insulation resistance measurement can be displayed.
  - Dielectric Absorption Ratio (DAR)/Polarization Index (PI) measurement  
DAR and PI values are calculated automatically during an insulation resistance measurement.
  - Memory function  
Measured data can be saved, loaded, and deleted from the internal memory.
  - Communication function  
Data saved in the internal memory can be transferred to a PC using communication.
  - Clock  
Measured data is saved with the measurement time information.

## 2. Specifications

### Measuring range and accuracy

23°C±5°C, RH 80% or less

Accuracy: Within 1 year of shipment

### Voltage Measurement

Range	300.0/600 V (auto range)
Display range	300.0 V: 0.0 to 314.9 V
	600 V: 270 to 629 V
Measuring range (accuracy guaranteed)	AC: 2.0 to 600 V rms (45 to 65 Hz) DC: ±2.0 to ±600 V
Over-range display	AC: >629 V DC positive: >629 V DC negative: < -629 V
Accuracy	±1%rdg±4dgt

- \* RMS detection in AC mode. For sine waves other than with CF<2.5, add ±1%rdg for the above listed accuracy.  
AC/ DC auto-detection (2 V or higher)

### Low-resistance measurement (Continuity check)

Resistance range	40.00/400.0/4000 Ω (auto range)	
Open-circuit voltage (DC)	5 V (4 to 6.9 V)	
Measurement current	200 mA or more (2 Ω or less)	
Display range	40.00 Ω: 0.00 to 41.99 Ω	
	400.0 Ω: 36.0 to 419.9 Ω	
	4000 Ω: 360 to 4199 Ω	
Over-range display	>4199 Ω	
Measuring range and accuracy	0.20 to 4000 Ω (to keep operating uncertainty within limits)	0 to 0.19 Ω
	±2.5%rdg ±8dgt	±8dgt

## During Insulation Resistance Measurement

Rated voltage	50 V	100 V	125 V	250 V	500 V	1000 V
Range (auto range)	4/40/ 100 MΩ	4/40/ 200 MΩ	4/40/ 250 MΩ	4/40/ 400/500 MΩ	4/40/400/ 2000 MΩ	4/40/400/ 4000 MΩ/
Display range	4 MΩ: 0.000 to 4.199 MΩ					
	40 MΩ: 3.60 to 41.99 MΩ					
	100 MΩ:	200 MΩ:	250 MΩ:	400 MΩ: 36.0 to 419.9 MΩ		
	36.0 to 104.9 MΩ	36.0 to 209.9 MΩ	36.0 to 262.4 MΩ	500 MΩ: 360 to 524 MΩ	2000 MΩ: 360 to 2099 MΩ	4000 MΩ: 360 to 4199 MΩ
Center value	2 MΩ	5 MΩ	5 MΩ	10 MΩ	100 MΩ	200 MΩ
Over-range display	>104.9 MΩ	>209.9 MΩ	>262.4 MΩ	>524 MΩ	>2099 MΩ	>4199 MΩ
Open-circuit voltage	100 to 110 % of rated measurement voltage					
Short-circuit current	Within 1.5 mA					
Rated measurement current	1.0 to 1.1 mA					
	0.05 MΩ	0.1 MΩ	0.125 MΩ	0.25 MΩ	0.5 MΩ	1 MΩ
First effective measurement range and accuracy (tolerance)	0.100 to 10.00 MΩ	0.100 to 20.00 MΩ	0.100 to 25.00 MΩ	0.100 to 50.0 MΩ	0.100 to 500 MΩ	0.100 to 1000 MΩ
	±2%rdg±2dgt					
Second effective measurement range and accuracy (tolerance)	10.01 to 100.0 MΩ	20.01 to 200.0 MΩ	25.01 to 250.0 MΩ	50.1 to 500 MΩ	501 to 2000 MΩ	1001 to 4000 MΩ
	±5%rdg					
	0.050 to 0.099 MΩ: ±2% ±4dgt					
Other measuring ranges and accuracy (tolerance)	0.000 to 0.049 MΩ: ±2%rdg ±6dgt					

### Maximum capacitive load: 1 μF

The maximum capacitive load that can be discharged within a specified period (10 s) after measurement (IEC61010-2-034).

### Measurement capacitive load: 2 μF

Capacitive load that is kept within ±10% fluctuation in the JISC1302 output voltage test.

## General Specifications

Item	Specifications
Applicable standards Safety standards	EN 61010-1, -2-030 CAT III 600 V IEC 61010-2-034 Pollution degree 2 EN 61557-1, -2, -4, -10 EN 61010-031, JJG1005 98008 CAT III 600 V (with cap) CAT II 1000 V (without cap) CAT II 1000 V (without 99013) 98009 CAT III 600 V (with alligator clip) CAT II 600 V (with flat test bar)  * When probes, sometimes with metal tips, are used with the instrument, the measurement category and voltage rating of the lowest rated item is applied.
EMC	EN 61326-1 Class B EN 61326-2-2 EMC Regulatory Arrangement in Australia and New Zealand EN 55011 Class B, Group 1 Korea Electromagnetic Conformity Standard ( 한국 전자파적합성기준 )
Location of use	Altitude 2000 m or less, in-door use
Nominal system voltage	600 V Nominal voltage of the distribution system that can be measured with this instrument (IEC61557)
Operating temperature and humidity	-10°C to +50°C, 80% or less (no condensation)
Storage temperature and humidity	-20°C to +60°C, 75% or less (no condensation)
Withstand voltage	Between electrical circuit and case 5160 V AC (50/ 60 Hz)/ 5 s
Insulation resistance	Between electrical circuit and case: 50 MΩ or more/ 1000 V DC
Recommended calibration period	1 year

Item	Specifications
Auto power-off	The instrument turns off automatically, after a beep sound, if there is no user interaction for about 10 minutes (except when a measurement is in progress).
LCD backlight, LED light	Turns off automatically if there is no user interaction for about 2 minutes (except when a measurement is in progress).
Dimensions	97 (L) x 156 (W) x 46 (H) mm
Weight	Approx. 490 g (including batteries)
Power source	Four AA batteries (AA alkaline batteries recommended)

### Operating Environment and Conditions

This instrument complies with the EMC standard under specific operating environment and operating conditions. If the installation, wiring, and so on are not appropriate, the compliance conditions of the EMC standard may not be met. In such cases, the user will be required to take appropriate measures.


### Operating Uncertainty

Operating uncertainty (B) is an error obtained under the nominal operating conditions and calculated with the intrinsic error (A), which is an error of the instrument used, and the error (En) due to variations. According to the IEC61557 and JIS C 1302, the maximum operating error should be within  $\pm 30\%$ . Intrinsic error (A) is uncertainty of the performance characteristics under the reference condition.

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Insulation resistance measurement operating uncertainty  
(IEC61557-2 and JIS C 1302)

$$\text{Formula: } B = \pm(|A| + 1.15 \times \sqrt{E1^2 + E2^2 + E3^2})$$

A	Intrinsic error
E1	Influence of position
E2	Influence of supply voltage (until the battery indicator reaches  )
E3	Influence of temperature (IEC61557-2: 0°C to 35°C, JIS C1302: 0°C to 40°C)

The specifications of this instrument are as follows:

Intrinsic error (A) within  $\pm 5\%$  of indicated value  
(coverage factor:  $k=2$ )

Influence of supply voltage (E2) within  $\pm 5\%$  of indicated  
value


Influence of temperature (E3) within  $\pm 5\%$  of indicated  
value

Max. operating uncertainty (B) 14%

\* The measuring range to keep the maximum operating  
uncertainty is the same as the 1st effective measuring  
range.

Low-resistance measurement operating uncertainty  
(IEC61557-4)

$$\text{Formula: } B = \pm(|A| + 1.15 \times \sqrt{E1^2 + E2^2 + E3^2})$$

A	Intrinsic error
E1	Influence of position
E2	Influence of supply voltage (until the battery indicator reaches  )
E3	Influence of temperature (0°C to 35°C)

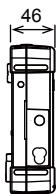
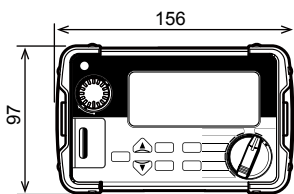
\* The measuring range to keep the maximum operating  
uncertainty (within  $\pm 30\%$ ) is 0.2 to 4000  $\Omega$ .

## Number of measurements when a new battery is used (measurement of 5 s, pause of 25 s)

Measurement condition		Test resistor	Number of measurements
Insulation resistance	50 V	0.050 M $\Omega$	Approx. 2000 times or more
	100 V	0.100 M $\Omega$	Approx. 1600 times or more
	125 V	0.125 M $\Omega$	Approx. 1600 times or more
	250 V	0.25 M $\Omega$	Approx. 1300 times or more
	500 V	0.5 M $\Omega$	Approx. 1300 times or more
	1000 V	1 M $\Omega$	Approx. 700 times or more
Low-resistance measurement		1 $\Omega$	Approx. 1400 times or more

- \* When using alkaline batteries with the backlight turned off. With continuity buzzer set to off for low-resistance measurement  
The number of measurements varies depending on the operating conditions. Use the figures above as a guideline.

## External Dimensions

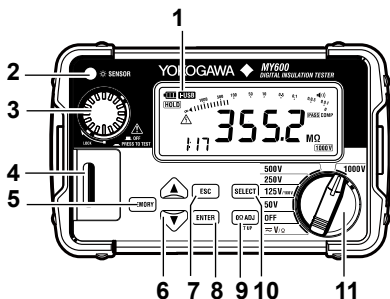


Unit: mm

Unless otherwise specified, tolerances are  $\pm 3\%$  (however, tolerances are  $\pm 0.3$  mm when below 10 mm).

## 3. Component Names and Functions

### Front Panel

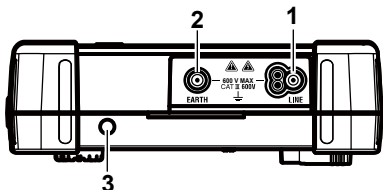


No.	Name	Function
1	LCD	LCD with backlight
2	Illuminance sensor	Detects ambient brightness and automatically turns on or off the lights.
3	Measurement switch	Press this switch to place the instrument in a measurement ready state. Then, press the probe's remote switch to start a measurement. If you release the measurement switch, measurement is not possible even when you press the probe's remote switch. Turning the measurement switch clockwise while holding it down locks the switch. In this state, you can measure simply by pressing the probe's remote switch.
4	Comm. port	You can connect a 91030 USB communication adapter, and transfer saved data to the PC.
5	Memory key	Press shortly (less than 1 s) while measurement is held to save the measured values. Hold down (1 s or more) while the instrument is in standby mode to read or delete saved data.
6	Arrow keys	Increase or decrease settings.



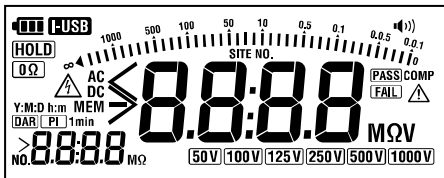
No.	Name	Function
7	ESC key	Returns to the previous operation or returns to the measurement screen from the setup screen.
8	ENTER key	Confirms an operation or setting.
9	0ΩADJ key (SET UP key)	Turns on and off the 0Ω ADJ function for low-resistance measurement. (This key is also used to set various functions.)
10	SELECT key	When the range switch is set to 125 V/100 V, holding this key down for 1 second switches the range between 100 V and 125 V. When the range switch is set to V/Ω, pressing this key switches the mode between voltage measurement and low-resistance measurement.
11	Range switch	Selects the voltage for insulation resistance measurement and switches between voltage and low-resistance measurement.

## Side Panel



No.	Name	Function
1	LINE terminal	Connect a 98008 line probe with remote switch here.
2	EARTH terminal	Connect a 98009 earth probe set here.
3	LED light	This is a light for illuminating the point of measurement. The illuminance sensor senses the ambient brightness and automatically turns the light on and off.







## LCD















Display	Description
	Battery level indicator
	Insulation resistance measurement bar graph
	Measurement and unit display
	Displays memory number, elapsed insulation resistance measurement time, reference value for pass/fail judgment, 1-minute values, and DAR/PI values
	Appears while measurement results are being held after a measurement
	Blinks to indicate live circuit warning during insulation resistance measurement
	Displays > when the measurement result is over-range. Displays < when the DC voltage measurement result is negative.
	Appears when the 0Ω adjustment function is on
	Appears when the buzzer is on
	Appears when IR communication is in progress
	Blinks when the clock is being adjusted
	Appears when a DAR value is displayed
	Appears when a PI value is displayed
	Appears when a 1-minute value is displayed
	Appears when the comparator function is on
	The selected range appears in insulation resistance measurement.







Display	Description
<b>PASS</b>	Appears when the insulation resistance measurement greater than or equal to the reference value
<b>FAIL</b>	Appears when the insulation resistance measurement less than the reference value
<b>MEM</b>	Appears when the memory is being accessed
<b>AC, DC, —</b>	Appears during a voltage measurement. AC is displayed for AC voltage and DC for DC voltage. A minus sign appears for negative DC voltage.







This instrument displays alphanumeric characters using seven segments as follows:






A:  G:  L:  S:  Y:  5: 






B:  H:  M:  T:  Z:  6: 

C:  h:  N:  U:  0:  7: 

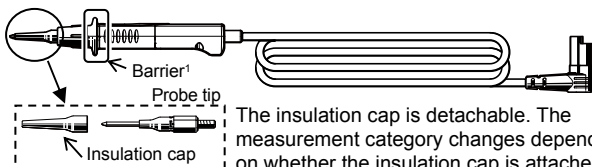
c:  l:  O:  u:  1:  8: 

D:  i:  P:  V:  2:  9: 

E:  J:  Q:  W:  3: 

F:  K:  R:  X:  4: 

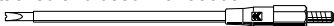
## 98008 Line Probe with Remote Switch



The insulation cap is detachable. The measurement category changes depending on whether the insulation cap is attached.  
For CAT III 600 V (with insulation cap)  
For CAT II 1000 V (without insulation cap)

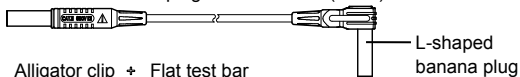
Probe tip (99013 long type)

Attached and used with 98008.

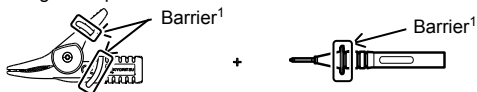


## 98009 Earth Probe Set

Cable with banana plugs on both ends (black)



Alligator clip + Flat test bar



CAT III 600 V (with alligator clip)

CAT II 600 V (with flat test bar)

- 1 A mark for securing the minimum required creep and spatial distance to prevent electric shock during operation.

---

## 4. Measurement Preparation

### Preparing the Probe

You can change the probe tip according to your application.

---

#### **WARNING**

To prevent electric shock, disconnect the probes from the instrument before replacing the probe tip for the line probe with remote switch or the adapter for the cable with banana plugs on both ends.

Before use, be sure to check that the tip cover is not loose.

---

French

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#### **AVERTISSEMENT**

Pour éviter les chocs électriques, déconnecter les fils d'essais de l'appareil avant de remplacer la pointe métallique ou l'adaptateur.

Avant utilisation, assurez-vous de vérifier que le couvercle de la buse n'est pas desserré.

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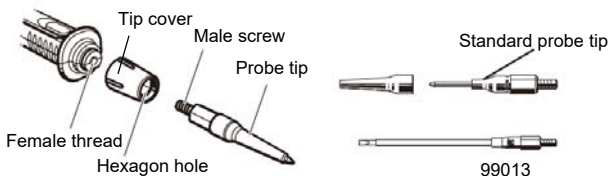
## Line Probe with Remote Switch (98008)

The following probe tips are available.

Standard probe tip Comes attached to the probe with a detachable insulation cap.

Probe tip 99013 (long type)

Used in situations where the standard probe tip is not long enough.



### How to Replace

Turn the probe tip counterclockwise, and remove it.

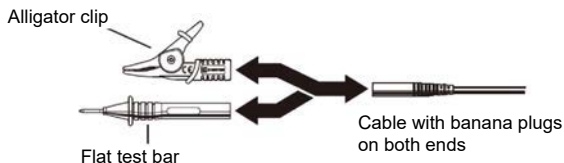
Insert the probe tip you want to use into the hexagonal hole in the tip cover, and turn it clockwise to tighten firmly.

## Earth Probe Set (98009)

Attach an alligator clip or flat test bar to the earth probe.

### How to Attach

Insert the alligator clip or flat test bar firmly into the tip of the cable with banana plugs on both ends.



---

## Checking the Battery Level

1. Load batteries into the instrument according to chapter 13, “Battery Replacement.”
2. Set the range switch to any position other than OFF, and turn the power on.
3. Check the battery level indicator displayed at the upper left corner of the LCD.



Normal.





The battery level is low.

To continue measuring, replace the batteries according to chapter 13, “Battery Replacement.”



The battery level is below the minimum operating voltage. Even if the instrument operates in this condition, the accuracy is not guaranteed. Replace the batteries quickly.

Even when the battery level indicator is  before a measurement, it may change to  during the measurement depending on the DUT, such as with a low-resistance device.

We recommend AA alkaline batteries for the instrument. The battery level indicator may not be accurate when other types of batteries are used.

## 5. Voltage Measurement



### WARNING

- Do not apply a voltage exceeding the overload protection voltage (600 V) of this instrument.
- Keep your hand and fingers behind the probe barrier during a measurement.
- Verify that this instrument operates properly on a known power source before using the instrument or taking actions based on the indicated result.

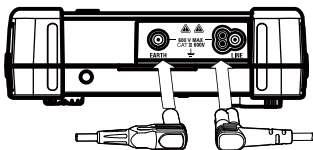
French

### AVERTISSEMENT

- Ne pas appliquer de tension supérieure à l'entrée maximale autorisée, 600 V, sur l'appareil.
- Ayez vos doigts derrière la barrière pendant une mesure.
- Vérifier le bon fonctionnement d'une source connue avant de prendre des mesures à la suite de l'indication de l'appareil.

### Measurement Procedure

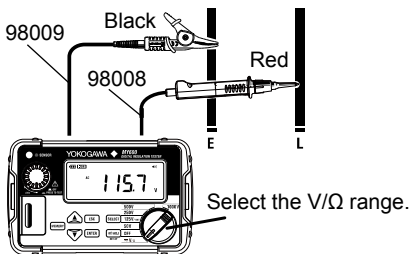
1. Connect the probes as shown in the following figure.  
Insert 98008 into the LINE terminal.  
Insert 98009 into the EARTH terminal.



Black (98009) Red (98008)



- Set the range switch to the V/ $\Omega$  position.
- Connect the other end of the probe (black) connected to the EARTH terminal to the earth side of the circuit under test. Connect the other end of the probe (red) connected to the LINE terminal to the line side.



- Check the reading without pressing the measurement switch or remote switch. The instrument detects and indicates DC or AC automatically.
  - When a negative DC voltage is detected at the line probe side, a minus sign appears to the left of the displayed voltage.
  - The instrument cannot detect DC or AC if the measured value is less than 2 V.

### Note

Measured results exceeding the display range (over-range) are shown as follows:

AC voltage: >629 V

Positive DC voltage: >629 V

Negative DC voltage: <-629 V

---

## 6. Insulation Resistance Measurement

This instrument is used to measure insulation resistance in electric appliances or circuits to inspect the insulation performance. Check the voltage rating of the DUT before making measurement.

---

### WARNING

- High voltage is present at the tip of the probe during an insulation resistance measurement. To prevent electric shock, do not touch the tip of the probe or the circuit under test during a measurement.  
If the probe is wet, wipe it thoroughly before making a measurement.
- Never make a measurement with the battery compartment cover removed.

---

### CAUTION

Check that the power is not running through the DUT. Measuring a live circuit may damage this instrument.

---

French

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### AVERTISSEMENT

- Ne pas toucher la pointe de la sonde de test ou le circuit testé afin d'éviter tout choc électrique pendant la mesure de l'isolation, car une haute tension est présente en permanence à l'extrémité de la sonde de test. Essuyer la sonde de test avec un tissu doux, si celle-ci est humide, et l'utiliser lorsqu'elle est sèche.
  - Le couvercle du compartiment de la batterie doit être fermé avant de faire fonctionner l'appareil.
-

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## ATTENTION

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Toujours débrancher l'alimentation de l'équipement testé avant de commencer la mesure de l'isolation. Ne pas faire des mesures sur un circuit sous tension. Sinon, cela pourrait endommager l'appareil.

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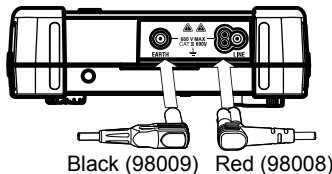
### Note


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- Depending on the DUT, the indicated insulation resistance may not be stable.
  - The instrument may produce sounds during a insulation resistance measurement, but this is not a malfunction.
  - Measurements may take longer when the DUT is a capacitive load.
  - The instrument outputs positive voltage from the EARTH terminal and negative voltage from the LINE terminal.
  - When making a measurement, connect the EARTH terminal to the ground terminal. Generally, connecting the positive terminal to ground when measuring the insulation resistance to ground or measuring the insulation resistance when one end of the DUT is grounded is more suitable for detecting insulation failures.
- 

## Measurement Procedure

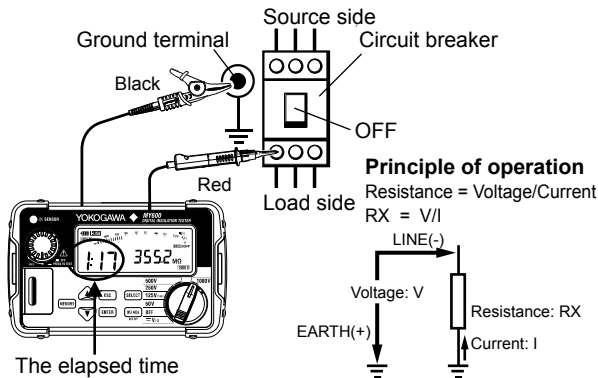
1. Connect the probes as shown in the following figure.
  - Insert 98008 into the LINE terminal.
  - Insert 98009 into the EARTH terminal.



- 
2. Check that voltage is not applied to the circuit under test. Measure the voltage according to chapter 5, “Voltage Measurement.”
  3. Confirm the voltage that can be applied to the DUT, and set the range switch to the appropriate range (rated measurement voltage).
    - You can only change the range when you turn off both the measurement switch and the probe’s remote switch.
    - There is an empty range between the 500 V and 1000 V positions. Note that if the range switch is set to the empty range, insulation resistance will not be measured even when you press the measurement switch.
    - When the range switch is set to the 1000 V, an intermittent buzzer sounds to warn you of the high voltage output range.
    - To switch between the 125 V and 100 V ranges, set the range switch to the 125 V/100 V position, and hold down SELECT for at least 1 second. The set voltage appears on the screen.
  4. Connect the probe (black) connected to the EARTH terminal to the ground terminal of the circuit under test. If the voltage is 30 V or higher, a live circuit warning is indicated with a blinking , buzzer, and red backlight. When the live circuit warning is in effect, the measurement button is disabled.
  5. Apply the tip of the probe (red) connected to the LINE terminal to the circuit under test, and press both the measurement switch or the probe’s remote switch. Measurement will not start if you press only one of the switches.

## Note

During an insulation resistance measurement, the LCD shows the elapsed measurement time. The elapsed time is displayed up to 99 minutes 59 seconds at 1 second resolution. Time exceeding 99 minutes 59 seconds cannot be displayed (it remains at 99 minutes 59 seconds).



## 6. Auto discharge

This instrument has a discharge function. After a measurement is finished, leave the probe connected, and turn off the measurement switch or remote switch. The charge stored in the DUT will be discharged. The discharge status is indicated with a blinking “⚠” symbol and buzzer sound.

## WARNING

Touching the circuit under test immediately after a measurement may cause electric shock. Do not touch the circuit under test until it is fully discharged.

**AVERTISSEMENT**

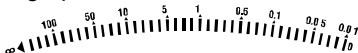
Ne jamais toucher le circuit testé immédiatement après la mesure. Les capacités stockées dans le circuit peuvent provoquer un choc électrique. Laisser les fils d'essais connectés au circuit et ne pas toucher le circuit de mesure tant que la décharge n'est pas terminée.

7. After all measurements are finished, turn off the power. Wait for the discharging to complete, and then remove the probe from the instrument.
- When a measurement is complete, the measured value is held. While the value is held, it can be saved to the internal memory. For details on the memory function, see chapter 11, "Memory Function." The held display is released when you operate the range switch or start another measurement.
  - Bar graph  
The bar graph scale varies depending on the selected measurement range. The measurement range is shown at the bottom of the LCD.

Bar graph for the 500 V and 1000 V ranges



Bar graph for the 50 V, 100 V, 125 V, and 250 V ranges



---

## Continuous Measurement

To perform insulation resistance measurement continuously, hold down the measurement switch and turn it clockwise. The measurement switch will be locked. Then, press the probe's remote switch to measure continuously. If you change the range, save data to memory, or perform any non-measurement operation during a continuous measurement, you will need to turn off the measurement switch and the probe's remote switch once in order to make another measurement.

When the measurement is complete, turn the measurement switch counterclockwise to return it to its original position.

---

### WARNING

High voltage is generated continuously at the tip of the probe. Be careful of electric shock.

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French

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### AVERTISSEMENT

Ne pas toucher les pointes des fils d'essais pour éviter les chocs électriques, car une haute tension est présente en permanence.

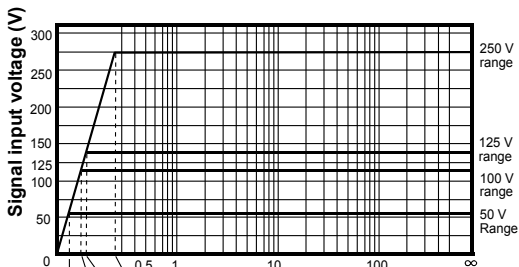
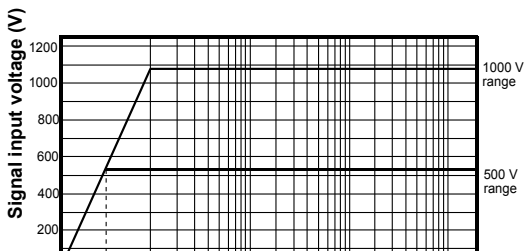
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## Voltage Characteristics of the Signal Terminals

The instrument complies with JISC1302. This standard defines that the rated measurement current must be at least 1 mA. It also specifies the lower limit of the insulation resistance for maintaining the rated measurement voltage at measurement terminals. (See the table below.)

This value is calculated by dividing the rated voltage by rated current. If the rating is 500 V, for example, the lower limit is calculated as  $500 \text{ V} \div 1 \text{ mA} = 0.5 \text{ M}\Omega$ . That is, an insulation resistance of 0.5 M $\Omega$  or more is required to provide the rated voltage to the instrument.

Rated voltage	50 V	100 V	125 V	250 V	500 V	1000V
Lower limit of the insulation resistance to provide the rated current of 1 mA	0.05 M $\Omega$	0.1 M $\Omega$	0.125 M $\Omega$	0.25 M $\Omega$	0.5 M $\Omega$	1 M $\Omega$



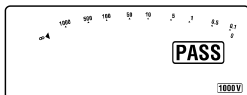


## Pass/Fail Judgment

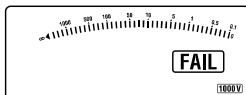
### Reference Value for Pass/Fail Judgment

For insulation resistance measurements, this instrument has a judgment function that compares measurements to the reference value and indicates the results using the backlight and buzzer. This function can be turned off. You can set the reference value to any value of your choice. The result of a pass/fail judgment is indicated using the backlight as follows:

Result of judgment	Backlight color	Display
Greater than the reference value	Green	PASS
Less than or equal to the reference value	Red	FAIL



When the measured value is greater than the reference value, "PASS" is displayed, and the backlight blinks green.

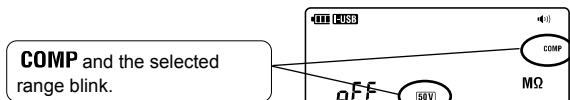


When the measured value is less than or equal to the reference value, "FAIL" is displayed, and the backlight blinks red.

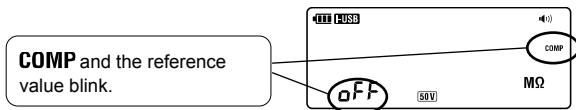
## How to Set the Reference Value

1. In standby mode with the measurement function set to anything other than low-resistance, hold down SETUP for at least 2 seconds. The instrument changes to configuration mode.

Press the arrow keys to select the range you want to set the reference value of.



Press ENTER.

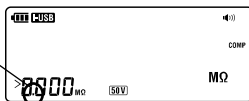


2. Each time you press the arrow keys, the reference value changes. Show the reference value you want to set, and press ENTER. The following values are selectable.

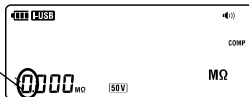
Selectable values: OFF, 0.100 MΩ, 0.125 MΩ, 0.200 MΩ, 0.250 MΩ, 0.400 MΩ, 0.500 MΩ, 1.000 MΩ, 10.00 MΩ, 100.0 MΩ, Any (Selectable range: 0.001 MΩ to 4199 MΩ)

If you set the reference value to Any, you can manually set the value.

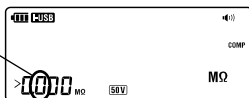
1. Use the arrow keys to set the decimal position, and confirm with the ENTER button.



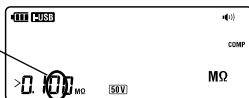
2. Use the arrow keys to adjust the 4th digit number, and confirm with the ENTER button.



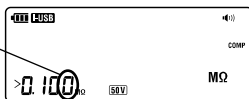
3. Use the arrow keys to adjust the 3rd digit number, and confirm with the ENTER button.



4. Use the arrow keys to adjust the 2nd digit number, and confirm with the ENTER button.



5. Use the arrow keys to adjust the 1st digit number, and confirm with the ENTER button.



Setting is complete when **COMP** and range on the LCD start blinking.

To go one step back, press the ESC button.

3. When setting is complete, press ESC. The reference value is saved, and the instrument returns to standby mode (The value is retained even if you turn off the power.)

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## DAR/PI Measurement and 1-Minute Value Display

The instrument can compute and show the dielectric absorption ratio (DAR) and polarization index (PI) automatically during a insulation resistance measurement.

It can show the measured value and DAR value at 1 minute after starting a measurement. After 10 minutes, it can show the PI value.

The formula and display range are as follows:

Formula:

DAR = Resistance 1 minute after starting / Resistance 15 seconds after starting

PI = Resistance 10 minutes after starting / Resistance 1 minute after starting

Display range 0.00 to 9.99

When the denominator of the above formulas is 0 MΩ, the values are shown as “no.” If the values exceed the display range, they are shown as “>9.99.”

## Display Procedure

The 1-minute, DAR, and PI values can be shown by following the procedure below.

Press the arrow keys 1 minute after starting a measurement. (The PI value can be shown 10 minutes after starting a measurement.)

The following indications show what value is currently displayed.

- 1-minute value:  
**1min** and the measured value are shown.
- DAR value:  
**DAR** and the DAR value are shown.
- PI value:  
**PI** and the PI value are shown.



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## 7. Low-Resistance Measurement (Continuity Check)

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### WARNING

Do not apply voltage in the low-resistance measurement range. Check that the power is not running through the circuit under test before making a measurement.

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### AVERTISSEMENT

Ne pas appliquer de tension à la plage de faible résistance. Toujours vérifier le circuit ou l'équipement sous test est désactivé de manière sûre avant de commencer une mesure.

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## 0 $\Omega$ Adjustment Function

The 0 $\Omega$  adjustment function cancels the resistances of the probe and fuse to display only the resistance of the DUT. Up to about 3  $\Omega$  of resistance can be cancelled.

### Setup Procedure

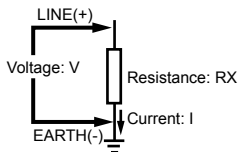
1. Set the range switch to the V/ $\Omega$  position.
2. If the instrument is set to voltage measurement mode, press SELECT to change to low-resistance measurement mode.
3. Short the red probe connected to the LINE terminal and the black probe connected to the EARTH terminal.

4. With the measurement switch locked or the remote switch held down, press 0Ω ADJ.  
0Ω lights, and 0.00 Ω is displayed. The value will be stored in memory and will not be cleared even when the power is turned off.
5. To clear the value, press 0Ω ADJ with the probe opened. When the value is cleared, 0Ω disappears. When the resistance cannot be cancelled, “no” will be displayed, and 0Ω adjustment will not be executed even if you press 0Ω ADJ. If you want to cancel the resistance, contact your nearest YOKOGAWA dealer to have the instrument adjusted.

## Measurement Procedure

1. Set the range switch to the V/Ω position.
2. If the instrument is set to voltage measurement mode, press SELECT to change to low-resistance measurement mode.
3. Connect the probe to the DUT, and press the measurement switch or remote switch.

Measurement principle:  
Resistance = Voltage/Current  
 $RX = V / I$



- If a current of 200 mA or more runs during the measurement, a buzzer sounds to indicate that power is running. You can turn off this buzzer (see chapter 8, “Backlight, LED Light, and Buzzer”).
- The measurement results of low-resistance measurement may be affected by the impedance of the operating circuit connected in parallel.

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## **Live Circuit Protection**

This instrument is equipped with a protection function that prevents the instrument from being damaged even when it is connected to a live circuit during low-resistance measurement.<sup>1</sup> This function protects the instrument when the signal terminal is connected to a live circuit from an open state.



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## 8. Backlight, LED light, and Buzzer

### Backlight

This instrument automatically turns the backlight and LED light on and off depending on the ambient brightness.

Once these lights turn on, they stay on for about 15 s. The ambient brightness is detected by the illuminance sensor.

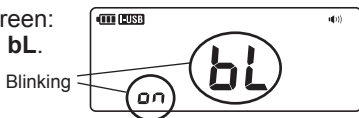
These lights can also be turned off permanently.

- If the surface of the illuminance sensor is dirty, the instrument may not be able to turn the backlight and LED light on and off normally. Keep the surface of the illuminance sensor clean.
- You cannot adjust the sensitivity of the illuminance sensor. If you want to force the lights to turn on, cover the sensor so that it is dark.
- Even when the environment is not dark, these lights turn off automatically if the instrument is not operated for about 2 minutes (except when a measurement is in progress or the live circuit warning is activated).

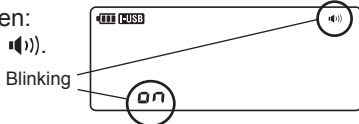
## How to Turn the Functions On and Off

1. In standby mode with the measurement function set to anything other than low-resistance, hold down SETUP for at least 2 seconds. The instrument changes to configuration mode.
2. Press the arrow keys to show the backlight and buzzer setup screen. The following figures show the different setup screens.

Backlight setup screen:  
The screen shows **bL**.



Buzzer setup screen:  
The screen shows **»»»**.



3. Each time you press ENTER, the setting changes between on and off. The current setting is shown as “on” or “oFF” on the screen.



4. Press ESC. The setting is saved, and the instrument returns to standby mode. (The setting is retained even if you turn off the power.)

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## 9. Auto Power-off

This instrument has an auto power-off function.

If there is no user activity for about 10 minutes, the auto power-off function generates a warning buzzer and automatically turns the power off. When turning the power on again, change the range switch to the OFF position first, and then turn the power on.

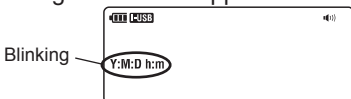
The auto power-off function is deactivated while a measurement is in progress or while the measurement switch is being held down.

## 10. Setting the Clock

This instrument has an internal clock and saves measured data with time information.

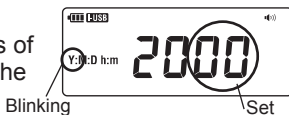
### Setup Procedure

1. In standby mode with the measurement function set to anything other than low-resistance, hold down SETUP for at least 2 seconds. The instrument changes to configuration mode.
2. Press the arrow keys to show the clock setup screen. A blinking **Y:M:D h:m** appears in the setup screen .

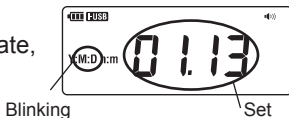


Press ENTER. The setup screen appears. Follow the procedure below.

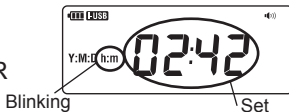
Use the arrow keys to adjust the last two digits of year, and confirm with the ENTER button.



Use the arrow keys to adjust the month and date, and confirm with the ENTER button.



Use the arrow keys to adjust the time, and confirm with the ENTER button.



To go one step back, press the ESC button.

The setting is complete when **Y:M:D h:m** blinks after taking the above steps.

3. Press ESC. The setting is saved, and the instrument returns to standby mode. (The setting is retained even if you turn off the power.)

## 11. Memory function

Up to 1000 results of voltage, insulation resistance, and low-resistance measurements can be stored in the internal memory. Two site numbers can be assigned to each result.

- For each result, you can save the measured value (voltage, insulation resistance, low-resistance), DAR/PI value, 1-minute value, time and date, measurement range, and the data and site number that you assign when saving the result.
- The instrument can load the measured value (voltage, insulation resistance, low-resistance), measurement range, and the assigned data and site number. DAR/PI values, 1-minute values, and dates can be transferred to the PC through USB communication. For details on USB communication, see 12, “USB Communication.”

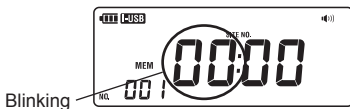
Parameters that can be saved with the measured results	Description	Selectable range
Data number	Select a number to assign to the data to be saved. The number is automatically incremented by 1.	0 to 999
SITE No.1 (site number 1)	Assign any number to the measurement data. (For example, you can assign numbers that represent the buildings where measurements took place and the circuits under measurement.)	0 to 99
SITE No.2 (site number 2)		0 to 99

## Save Procedure

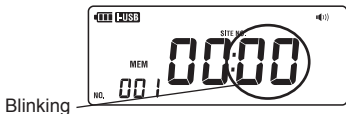
1. Operate the instrument so that a measured value is being held after a measurement (for a voltage measurement, operate it so that the voltage is being measured).



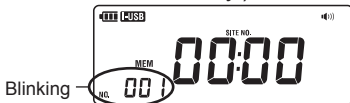
2. Press MEMORY.
3. Use the arrow keys to select SITE No. 1, and press ENTER to confirm.



4. Use the arrow keys to select SITE No. 2, and press ENTER to confirm.



5. Use the arrow keys to select the data number, and press ENTER to confirm. (The data number is increment automatically.)



The instrument returns to the standby screen. This completes the saving operation.

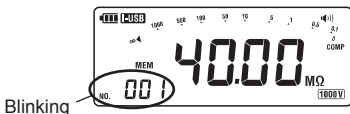
Press the ESC button to modify and redo the settings.

## Shortcut Operation

If you press MEMORY anywhere in steps 3 to 5, you can save the data by skipping the SITE No. 1, 2, and data number settings. If you do, the same numbers as the previous save operation are used for SITE No. 1 and 2, and the data number is incremented by 1.

## Recalling Measured Results

1. Hold down MEMORY for at least 1 second in standby mode.
2. The saved data appears.  
Press the arrow keys to select the data number you want to view.

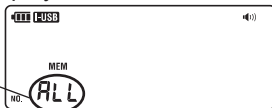


3. Press SELECT. The site number appears. Press SELECT again to return to the measured value screen.
4. Press ESC. The instrument returns to the standby screen.

## Deleting Measured Results

1. Hold down MEMORY for at least 1 second in standby mode. The saved data is recalled.
2. Press the arrow keys to select the data number you want to delete. If you want to delete all saved data, select ALL. ALL is displayed before 0 and after 999.

When deleting all data



3. Press ENTER. The screen shows "clr." Press ENTER again. The saved data is deleted. Press ESC. The screen returns to the selection screen.

Data no. to be deleted blinks.



4. Press ESC. The instrument returns to the standby screen.



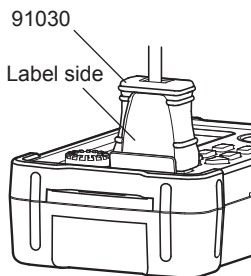
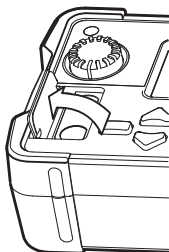
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## 12. USB Communication

The internal memory data can be transferred to the PC by using the 91030 USB communication adapter.



### How to Transfer Data

1. Install the USB driver in the PC in advance.
2. Connect the 91030 USB communication adapter to the USB port of the PC.
3. Remove the probes from the instrument's terminals. Open the communication port cover, and insert the 91030 USB communication adapter.
4. Turn the instrument on. The range can be set to any position.
5. Using communication commands, load the data into the PC. For details, see the 91030 USB communication adapter user's manual.



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## 13. Battery Replacement

If the battery level indicator changes from  to , quickly replace the batteries.

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### WARNING

- If the instrument is wet, do not open the battery compartment.
  - Never replace the batteries while measurement is in progress. To prevent electric shock accidents, turn off the power and remove the probes from the instrument before replacing the batteries.
  - Do not make measurements with the battery compartment open. This can cause electric shock.
- 
- 

### CAUTION

- Do not mix different types of batteries or mix new ones with old ones.
  - Insert the batteries with correct polarities by following the markings inside the case.
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### AVERTISSEMENT

- Ne pas ouvrir le couvercle du compartiment des batteries si l'appareil est mouillé.
- Ne jamais remplacer les batteries pendant une mesure. Lorsque vous ouvrez le couvercle du compartiment de la batterie, assurez-vous que l'appareil est hors tension et qu'aucun fil d'essais n'est connecté afin d'éviter tout choc électrique.

- Le couvercle du compartiment des batteries doit être fermé et vissé avant d'effectuer la mesure.

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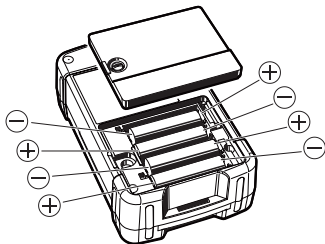
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## ATTENTION

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- Ne pas mélanger les batteries neuves et usagées ni des types de batteries différentes.
- Installer les batteries en respectant la polarité indiquée à l'intérieur.



1. Turn off the power, and remove the probes from the terminals.
2. Loosen the screw attached to the bottom of the instrument, and remove the battery compartment cover.
3. Replace all four batteries with new ones. Make sure that you have the polarities correct when loading the batteries.  
Battery: Four AA alkaline batteries (LR6)  
recommended
4. Install the battery compartment cover, and tighten the screw securely.

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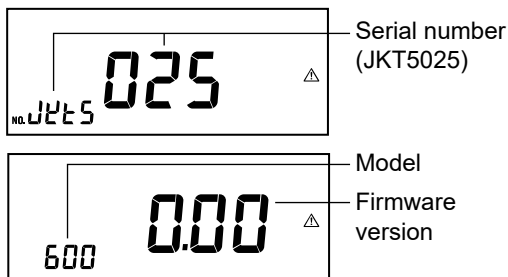
## 14. Attaching the Shoulder Strap

You can attach the supplied shoulder strap and suspend the instrument from your neck to make measurements.



## 15. Displaying Equipment Properties

Turn off the range switch. Then, while holding down SELECT, operate the range switch. The serial number, model, and firmware version will be displayed.



## 16. Maintenance

### Repairs and Calibration

Contact your nearest YOKOGAWA dealer.

### Inquiries about How to Use This Instrument

Contact your nearest YOKOGAWA dealer.

### Calibration Period

To use this instrument correctly, we recommend calibrating it periodically (1 year recommended).

### Disposing of the Instrument

When disposing of this instrument, follow the laws and ordinances of the country or region where the product will be disposed of.

