

User’s Manual

Model 30031A

Leakage Clamp-on Tester

Thank you for purchasing our Leakage Clamp-on Tester. Before using this product, thoroughly read this manual to understand how to use it properly. The following manuals, including this one, are provided as manuals for the 30031A. Please read all manuals.

- MODEL: 30031A**
- | | |
|-------------------|--------------------------------------|
| IM 30031A-E: | User's manual (this manual) |
| IM 00C01C01-01Z1: | Safety manual (European languages) |
| IM 30031A-02EN: | AVERTISSEMENT and ATTENTION (French) |
| IM 30031A-93Z2: | Document for Korea |
| IM CROHS-30032A: | Document for China |

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

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

- | | | |
|---------------|-----------|----------------------------|
| PIM 113-01Z2: | Inquiries | List of worldwide contacts |
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The contents of this manual are subject to change without prior notice as a result of improvements to the product's performance and functionality. Refer to our website to view our latest manuals.

Store this manual in an easily accessible place for quick reference.

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YOKOGAWA
Yokogawa Test & Measurement Corporation

IM 30031A-E
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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. 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. YOKOGAWA assumes no liability for the customer's failure to comply with these requirements.

The following safety symbols are used on the instrument and in this manual:

⚠ Danger! Handle with Care
This symbol indicates that the operator must refer to an explanation in the instruction manual in order to avoid the risk of injury or death of personnel or damage to the instrument.

⚠ WARNING
Indicates a hazard that may result in the loss of life or serious injury of the user unless the described instruction is abided by.

⚠ CAUTION
Indicates a hazard that may result in an injury to the user and/or physical damage to the product or other equipment unless the described instruction is abided by.

- ⚡** This symbol indicates that this instrument designed to be applied around or removed from HAZARDOUS LIVE conductors provided if the RATED circuit-to-earth voltage does not exceed the value indicated in the measurement category
- **Double Insulation**
This symbol indicates double insulation.
- ~** **Alternating Current**
This symbol indicates alternating current (AC).
- **Direct Current**
This symbol indicates direct current (DC).
- ⏏** **Earth TERMINAL**
This symbol indicates ground.

■ **Strictly observe the following cautionary notes in order to avoid the risk of injury or death of personnel or damage to the instrument due to hazards such as electrical shock.**

⚠ WARNING

- This instrument is a current measuring device (sensor). Do not use for any other purpose.
- Do not use the instrument if there is a problem with its physical appearance. (Do not use the instrument if there is any damage to the casing, battery cover, display and labels or when the casing is removed.)
- The barrier is there to protect you from touching the conductor. Be careful not to reach cross the barrier when using the instrument.
- Disconnect the instrument from the measurable conductors under test before opening the casing to replace the battery.
- Do not use the product when there are raindrops or droplets of condensed water on its surface, or if your hands are wet.
- Safety protectors such as rubber-insulated gloves should be worn to prevent electrical shock when using the instrument.
- Do not use this product in a place where an explosive gas or vapor is present.
- 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 attempt to repair the instrument yourself, as doing so is extremely dangerous. When the instrument needs an internal inspection or calibration, contact Yokogawa or the dealer from whom you purchased the instrument.

⚠ WARNING

The maximum allowed current is 62 Arms and the RATED circuit-to-earth voltage is 300 Vrms or less. Do not apply input exceeding this value. Otherwise, it will not only damage the tester, but also pose a risk of damage to the human body. For safety standards, refer to the specifications.

⚠ CAUTION

The use of this instrument is limited to residential, commercial, and light-industrial environments. This instrument may not be able to measure accurately if it is near other equipment generating strong electromagnetic interference or a strong magnetic field caused by large current.

⚠ CAUTION

- The jaw section is a delicate, precision sensor. Do not subject the jaw to unreasonably strong shock, vibration, or force when using it.
- If dust gets into the tops of the jaws, remove it immediately. Do not close the jaws when dust is trapped in its joints as the sensor may break.

⚠ CAUTION

- Do not use the instrument near noise-emitting equipment or where there may be sudden changes in temperature. Otherwise, the instrument may produce an unstable readings or errors.
- Do not wipe the instrument using an organic solvent such as benzine or paint thinner. Otherwise, the front panel may be damaged or discolored. When cleaning the instrument, use a dry cloth.
- Do not leave the tester exposed to direct sunlight or in a hot and humid location such as the inside of a car, for any prolonged length of time.
- If the instrument will not be used for long periods, remove the battery.

■ Measurement Category

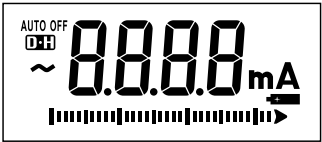
⚠ WARNING

The 30031A is designed for measurement category III. Do not use the 30031A for measurements in location that fall under measurement category IV.

Measurement category	Description	Remarks
O (None, Other)	For measurements performed on circuits not directly connected to MAINS.	Circuits not connected to a mains power source.
CAT II	For measurements performed on circuits directly connected to the low-voltage installation.	Appliances, portable equipment, etc.
CAT III	For measurements performed in the building installation.	Distribution board, circuit breaker, etc.
CAT IV	For measurements performed at the source of the low-voltage installation.	Overhead wire, cable systems, etc.

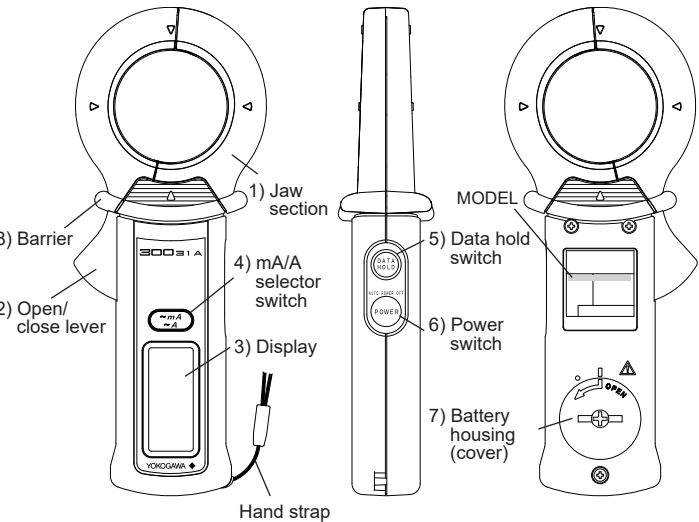
1. Components

1.1 Display (LCD)



1.2 Main unit (30031A)

- 1) Jaw Section**
Is a precision sensor for detecting currents.
- 2) Open/Close Lever**
Opens and closes the jaws.
- 3) Display**
Shows the measured value (digital reading or bar graph), unit, function and low-battery symbol ().
- 4) mA/A Selector Switch**
Selects the unit of AC current (either “mA” or “A”) to be measured.
- 5) Data Hold Switch**
Retains the measured data. If you press this switch, the symbol appears and the data is retained. If you press this switch once again, data holding is canceled (the symbol disappears).
- 6) Power Switch**
Turns on the power to the instrument.
- 7) Battery Housing (Battery cover)**
Contains the battery.
- 8) Barrier**
Prevents contact with the wires.



2. AUTO POWER OFF Function

2.1 When the AUTO POWER OFF Function is Used

- AUTO OFF** appears.
- The instrument automatically turns off 10 minutes after the last switch operation. A buzzer starts to beep 15 seconds before the automatic power-off.
- Pressing any switch after the beep restarts the auto power-off function.

2.2 When the AUTO POWER OFF Function is not Used
(Cancellation of the AUTO POWER OFF Function)

- Turn off the power.
- With the **DATA HOLD** switch held down, press the **POWER** switch for more than 2 seconds to turn on the power. This causes the buzzer to sound, canceling the AUTO POWER OFF function (the AUTO OFF display goes off). If the instrument is used with the AUTO POWER OFF function cancelled, take care not to let the battery run down.

2.3 Recovering the AUTO POWER OFF Function

- Turn off the power.
- Turn on the power. This enables the AUTO POWER OFF function to recover. (**AUTO OFF** appears.)

3. Measuring Instructions

3.1 Before measurement

- Examine the casing, battery cover, display, and labels of the instrument for abnormalities.
- Make sure that the battery cover is firmly closed.

3.2 AC Current Measurement (unit: mA/A)

- Press the **POWER** switch to turn on the power.
- Squeeze the open/close lever to open the jaws. Insert a wire from the measurable conductors under test through the jaws, making sure the tops of the jaws are tightly shut.
- When the reading stabilizes, read the value. If you have difficulties in reading the value, use the **DATA HOLD** function.
- When measuring Load Current, press the **mA/A** switch to change to A range.
- When you have finished measurement, press the **POWER** switch to turn off the tester.

⚠ CAUTION

The correct measured values are not displayed if the jaws do not fit precisely. Make sure that they are shut tightly.

3.3 Using the DATA HOLD switch

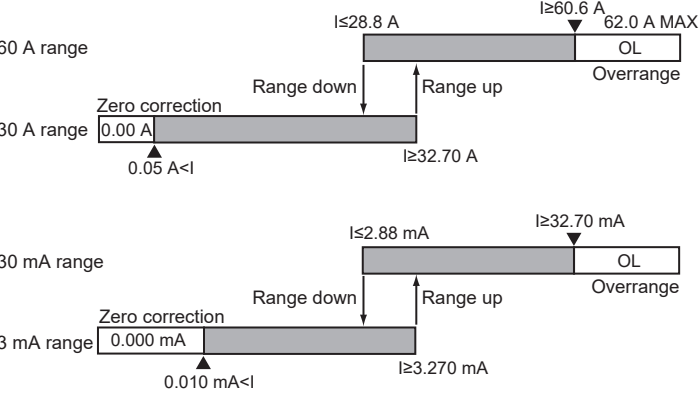
Pressing the **DATA HOLD** switch retains the measured data and displays . The mA/A selector switch cannot be used in this situation. The only switches that can be used are the DATA HOLD switch (to cancel data holding) and the POWER switch.

4. Range Selection

4.1 Range Selection

Switching between the 3 mA and 30 mA ranges and between the 30 A and 60 A ranges is performed by auto-ranging (automatic).
For switching between the 3/30 mA and 30/60 A ranges, the range must be switched using the mA/A selector switch.

4.2 Measurement Ranges



5. Battery Replacement

5.1 Battery Voltage

If the battery runs down and its voltage falls below the operating voltage (effective range), the symbol appears in the LCD display; promptly replace the battery with a new one.
(Battery: CR2032, 1 piece)

CAUTION

- The specified accuracy is assured when the battery voltage is in the effective range.
If the symbol is displayed, promptly replace the battery.
- If the power does not come on even after pressing the POWER switch, the battery voltage may have fallen too low.
Replace the battery with a new one.

5.2 Replacing the Battery

CAUTION

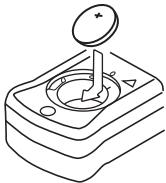
- Before replacing the battery, always disconnect the tester from the measurable conductor under test because there is a risk of electrical shock. After replacement, close the battery cover securely and conduct measurements.
- Use the specified lithium battery (CR2032).

To replace the battery:

- Press the **POWER** switch to turn off the power.
- urn the battery cover on the backside of the instrument in the direction of the arrow using a coin, etc.
- Remove the cover and the battery.
- Insert a new battery, making sure that the polarities are correct.
- Close the cover back in place by turning it in the reverse direction of the arrow.

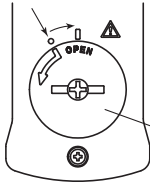
Inserting a Battery

Insert the battery being careful that the polarities are correct.



Closing the Battery Cover

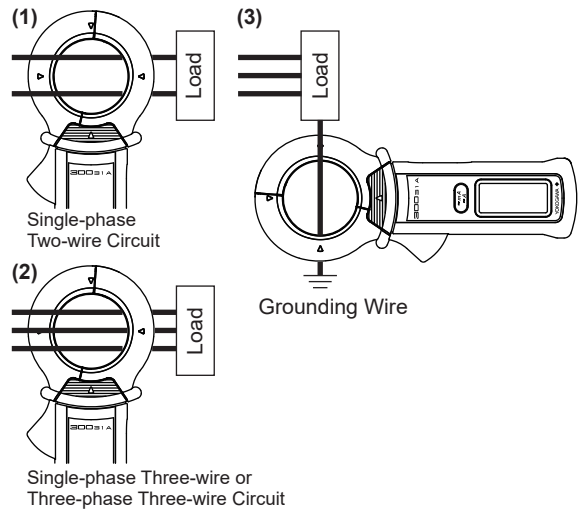
Close the battery cover, aligning the arrow's tail with the dot and then turn clockwise.



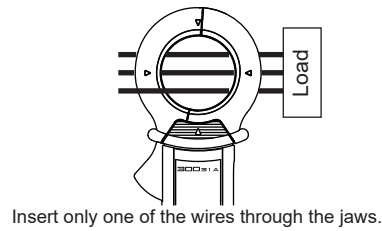
Battery cover

6. Examples of Measurement

6.1 Examples of Leakage Current Measurement



6.2 Example of Load Current Measurement



Insert only one of the wires through the jaws.

7. Specifications (30031A)

7.1 Specifications (Accuracy)

Condition:
Temperature and humidity: 23 °C ±5 °C, 80% RH or less
Frequency: 50 Hz ±1.0 Hz, 60 Hz ±1.0 Hz
Battery voltage: Within the effective range

AC current measurement

Accuracy: ± (% of reading + digits)

Range	Resolution	Accuracy	Maximum Allowable Current
3 mA	0.001 mA	0.010 < I ≤ 32.70 mA: 1.0%+5	3.270 mA
30 mA	0.01 mA		32.70 mA
30 A	0.01 A	0.05 < I ≤ 50.0 A: 1.0% +5	32.70 A
60 A	0.1 A		60.6 A

Zero correction

3 mA range: Displays 0.000 mA (zero) when 0.010 mA < I
30 A range: Displays 0.00 A (zero) when 0.05 A < I

7.2 General Specifications

- Method: Mean-value detection and rms-value calibration
- Display (LCD): Digital reading 3200 counts
Bar graph 32 segments
“OL” over-range indication
 low-battery symbol
 data hold symbol
“AUTO OFF” auto power off indication
- Sampling: Digital reading 2 times/sec
Bar graph 12 times/sec
- Range: 3 mA, 30 mA, 30 A, 60 A
- Range selection:
 - Automatic (between 3 mA and 30 mA ranges and between 30 A and 60 A ranges)
 - Manual (between 3 mA and 30 mA ranges and between 30 A and 60 A ranges)
- Additional functions: Data hold and Auto power-off
- Operating temperature and humidity range: 0 to 50°C, with a maximum humidity of 80% RH or less (no condensation)
- Storage temperature and humidity range: -20 to 60°C, with humidity range is 20 to 70%RH (no condensation)
- Temperature coefficient:
 - The following values must be added in the temperature range of either 0 to 18°C or 28 to 50°C.
0 ≤ I ≤ 50.0A: ± (0.08% of reading/°C + 0.5 digits/°C)
50.0 < I ≤ 60.6A: ± (0.3% of reading/°C + 0.5 digits/°C)
- Effect of external magnetic fields: 0.0005% typical value (in terms of the magnitude of current in adjacent wires)
- Diameter of measurable conductors: ϕ 40 mm (Maximum)
- The RATED circuit-to-earth voltage: 300 Vrms or less
- Maximum allowed current: 62 Arms
- Withstanding voltage: 3.7 kV AC for one minute (Tested between the cores of the jaw section and the case)
- Power consumption: 6 mW maximum
- Automatic power-off:
 - Automatically turns of the power about 10 minutes after the last switch operation.
 - (The alarm buzzer begins beeping 15 seconds before power-off.)
- Power supply: CR2032 lithium battery (cell) 1
- Battery life: Approx. 90 hours (of continuous operation)
- Dimensions: Approx. 70 (W) x 178 (H) x 25 (D) mm (excluding protrusions)
- Weight: Approx. 200 g (including the battery)
- Accessories: Battery (housed in the instrument)..... 1
RB057 soft carrying case..... 1
User's manual

Safety standards:

EN 61010-1, EN IEC 61010-2-032
Measurement category III (CAT III)
(The RATED circuit-to-earth voltage: 300 Vrms AC)
Indoor use, 2000 m max. above sea level, pollution degree 2

EMC standards:

EN 61326-1 Class B Table 1, EN 61326-2-2
EN 55011 Class B Group 1
Group 1: Equipment that does not intentionally generate or use radio-frequency (RF) energy
EMC Regulatory Arrangement in Australia and New Zealand
Korea Electromagnetic Conformity Standard
(한국 전자파적합성기준)

Environmental standards: EU RoHS Directive compliant

For conformity to environmental regulations and/or standards other than EU, contact your nearest YOKOGAWA office (PIM113-01Z2).

8. Regulations and Sales in Various Countries and Regions

8.1 Waste Electrical and Electronic Equipment (WEEE)

(EU WEEE Directive valid only in the EEA* and UK WEEE Regulation in the UK)



This product complies with the WEEE marking requirement. This marking indicates that you must not discard this electrical/electronic product in domestic household waste. When disposing of products in the EEA or UK, contact your local Yokogawa office in the EEA or UK respectively.

(*EEA: European Economic Area)

8.2 Batteries and Waste Batteries

(EU Battery Directive/Regulation valid only in the EEA and UK Battery Regulation in the UK)

Batteries are included in this product.



When you remove batteries from this product and dispose them, discard them in accordance with domestic law concerning disposal. Take a right action on waste batteries, because the collection systems in the EEA and UK on waste batteries are regulated.

Battery type: Lithium battery (cell)

This marking indicates they shall be sorted out and collected as ordained in the EU battery Directive/Regulation and UK battery Regulation.

How to remove batteries safely:

For further details, see section 5.2, “Replacing the Battery.”

8.3 Authorized Representative in the EEA

Yokogawa Europe B.V. is the authorized representative of Yokogawa Test & Measurement Corporation for this product in the EEA.

To contact Yokogawa Europe B.V., see the separate list of worldwide contacts, PIM 113-01Z2.

8.4 Disposal

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

If you are disposing of the product in the EEA or UK, see also section 8.1, “Waste Electrical and Electronic Equipment (WEEE).”

Notice Regarding This Manual

- The contents of this manual are subject to change without prior notice as a result of improvements to the product's performance and functionality. Refer to our website to view our latest manuals.
- 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.
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