

**User's Manual**      **Model 30032A**  
**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.

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

PIM 113-01Z2:    Inquiries    List of worldwide contacts

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

4th Edition: October 2017  
All Rights Reserved. Copyright ©  
2008, Yokogawa Meters & Instruments Corporation,  
2017, Yokogawa Test & Measurement Corporation  
Printed in Japan


**YOKOGAWA** ◆  
Yokogawa Test & Measurement Corporation


IM 30032A-E  
4th Edition:  
Oct. 2017 (YMI)


**Safety Precautions**


This product is designed to be used by a person with specialized knowledge. When operating the instrument, be sure to observe the cautionary notes given below to ensure correct and safe use of the instrument. If you use the instrument in any way other than as instructed in this manual, the instrument's protective measures may be impaired. This manual is an essential part of the product; keep it a safe place for future reference. YOKOGAWA is by no means liable for any damage resulting from use of the instrument in contradiction to these cautionary notes.


**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 dose 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 Yokogawa service personnel are authorized to remove the casing or disassemble or modify 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 product is for domestic use (Class B) and meets the electromagnetic compatibility requirements.

 **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**

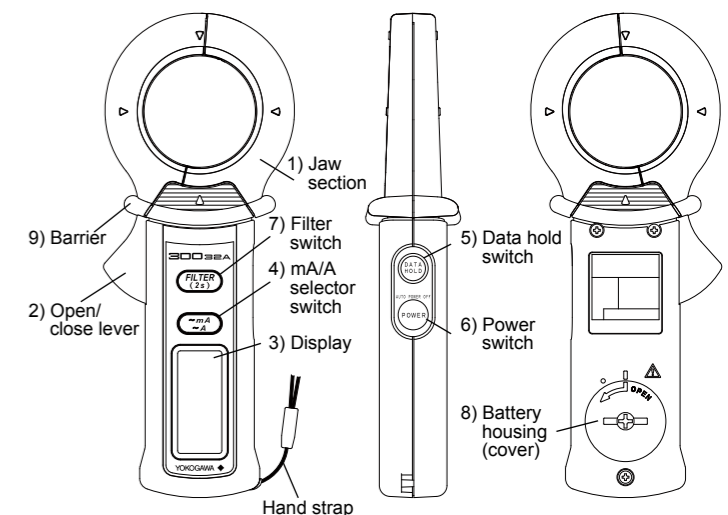
 **WARNING**

The 30032A is designed for measurement category III. Do not use the 30032A 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 (30032A)**
- 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 (  ), etc.
  - 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) Filter Switch**  
Turns on/off the filter. Press the FILTER switch for more than 2 seconds. When the filter is on (used),  appears.
  - 8) Battery Housing (Battery cover)**  
Contains the battery.
  - 9) 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 and the FILTER 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.

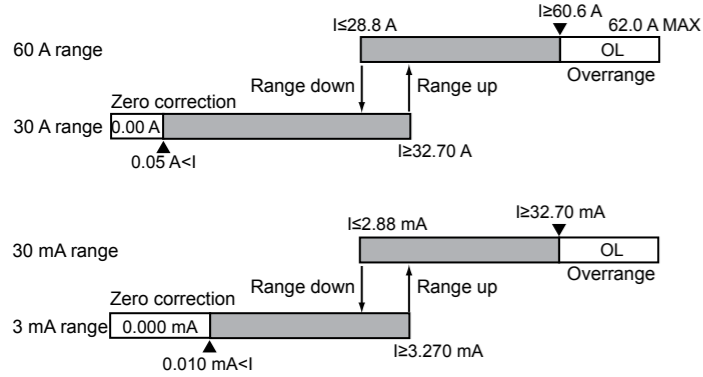
## 4. Range Selection

### 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

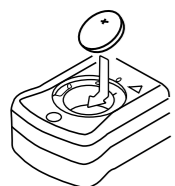
- Before replacing the battery, always disconnect the tester from the measurable conductor under test because there is a risk of electrical shock. After replacement, close the battery cover securely and conduct measurements.
- Use the specified lithium battery (CR2032).

#### To replace the battery:

- Press the POWER switch to turn off the power.
- Turn 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.

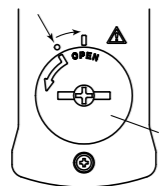
#### Inserting a Battery

Insert the battery being careful that the polarities are correct.



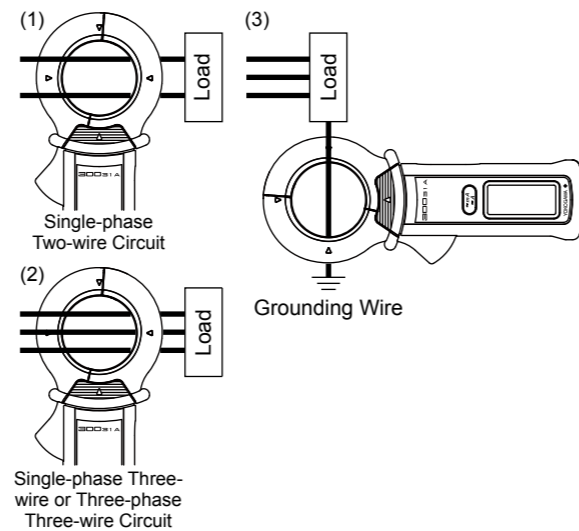
#### Closing the Battery Cover

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

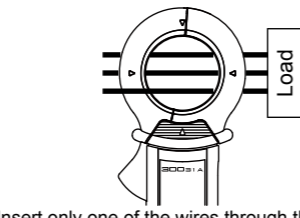


## 6. Examples of Measurement

### 6.1 Examples of Leakage Current Measurement



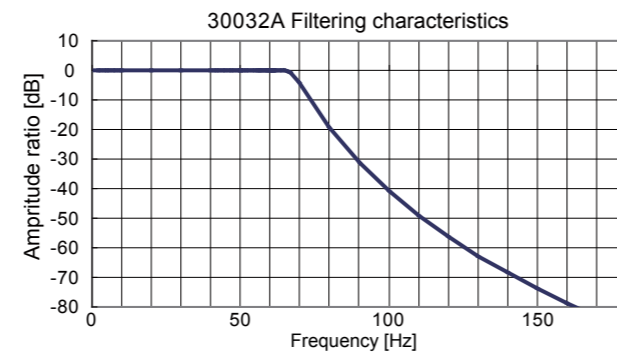
### 6.2 Example of Load Current Measurement



Insert only one of the wires through the jaws.

## 7. Filtering Function

The instrument has a function for turning the filter on (use)/off. Press the FILTER switch for more than 2 seconds to turn it on/off (default: ON). When the filter is on, the symbol appears. When the FILTER switch is turned on, the sharp filter is enabled. This filter attenuates 2nd-order and higher harmonic currents and measures only the fundamental harmonics. See the Filtering Characteristics below.



#### To Ensure Accurate Measurement

The maximum input current of the harmonic components in the 3 mA and 30 mA ranges is 150 mA. If the input exceeds 150 mA, the correct value is not displayed. In some cases, "OL" does not appear and an error becomes larger or readings do not change. Therefore, follow the procedure below to check if the current under measurement including 2nd-order and higher harmonic components exceeds 150 mA.

#### Checking procedure:

- Press the mA/A selector switch to choose the 30 A range.
- Press the FILTER switch to select FILTER OFF and conduct measurement.
- Check that the measured value (reading) in the 30 A range is 0.15 A\* or less.
- When the measured value is 0.15 A or less, switch the range to 3 mA/30 mA and conduct measurement.

\*: The accuracy of the 30 A range is 1.0% of reading +5 digits (0.05A < I ≤ 50 A).

Five digits are equivalent to 0.05 A; when checking the current, also consider the accuracy.

## 8. Specifications (30032A)

### 8.1 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)

Filter function OFF

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		50.0 < I ≤ 60.6 A: 5.0% +5

Filter function ON

Range	Resolution	Accuracy	Maximum Allowable Current
3 mA	0.001 mA	0.010 < I ≤ 32.70 mA: 1.5%+5	3.270 mA
30 mA	0.01 mA		32.70 mA
30 A	0.01 A	0.05 < I ≤ 50.0 A: 1.5% +5	32.70 A
60 A	0.1 A		50.0 < I ≤ 60.6 A: 5.5% +5

Note: Input current of 2nd-order and higher harmonics  
: 150 mA rms maximum in the 3 mA/30 mA range  
: 62 A rms maximum in the 30 A/60 A range

#### Filter specification

(3 mA and 30 mA ranges and 30 A and 60 A ranges)  
Amplitude ratio at 100 Hz: -38 dB (1.26%) or less (typical: -41 dB)  
Amplitude ratio at 120 Hz: -53 dB (0.22%) or less (typical: -56 dB)

#### 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

### 8.2 General Specification

- 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  
 filter O
- 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 off 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 61010-2-032  
Measurement category 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, EN 61326-2-2  
EMC Regulatory Arrangement in Australia and New Zealand  
EN 55011 Class B Group 1  
Korea Electromagnetic Conformity Standard  
(한국 전자파적합성기준)

Environmental standard:

EN 50581  
Monitoring and control instruments including industrial monitoring and control instruments

## 9. Sales in Each Country or Region

### 9.1 Disposing the Product

**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.

### 9.2 How to Replace and Dispose the Batteries

#### EU Battery Directive

(This directive is valid only in the EU.)  
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 system in the EU on waste batteries are regulated.



Battery type: Lithium battery (cell)

Notice:  
This marking indicates they shall be sorted out and collected as ordained in the EU battery directive.

#### How to remove batteries safely:

For further details, see "5.2 Replacing the Battery."

### 9.3 Authorized Representative in the EEA

Yokogawa Europe B.V. is the authorized representative of Yokogawa Test & Measurement Corporation for this product in the EEA. (EEA: European Economic Area)

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