

Thank you for purchasing the CLAMP-ON PROBE (Model 751552). In order to take advantage of all the functions of the probe and to ensure proper use, please read this user's manual thoroughly before beginning operation. Please familiarize yourself with the functions and characteristics of the probe prior to operation. After reading this manual, keep it in a safe place.

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IM 751552-01E
7th Edition

The Clamp-on Probe (751552) is a product of Yokogawa Test & Measurement Corporation. Contact information of Yokogawa offices worldwide is provided on the following sheet.

Document No.	Description
PIM 113-01Z2	List of worldwide contacts

Safety Precautions

This product is designed to be used by a person with specialized knowledge. Make sure to observe the following safety precautions when handling the probe. YOKOGAWA assumes no liability for the customer's failure to comply with these safety precautions. Before you use the probe, read the measuring instrument's manual to thoroughly familiarize yourself with the specifications and operations of the measuring instrument. This manual is an essential part of the product; keep it in a safe place for future reference.

The following safety markings are used in this manual.

This instrument is protected by double-layer insulation or reinforced insulation that has the same level of protection as double-layer insulation. It is not necessary to connect the instrument to protective ground for safe use.

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 Describes precautions that should be observed to prevent serious injury or death to the user.

CAUTION Describes precautions that should be observed to prevent minor or moderate injury, or damage to the instrument.

Note Provides important information for the proper operation of the instrument.



WARNING

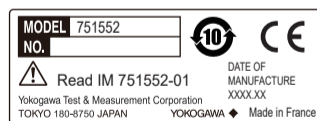
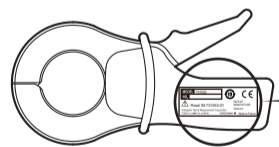
- Do not exceed the maximum current. Doing so can result in erroneous measurement or damage to the instrument.
 - Beware of electric shock.
 - Do not exceed 600 V, and do not use with a non-isolated conductor with a surge exceeding measurement category III. Be sure to check the electric potential and voltage surge before measurement.
 - Do not perform measurement if the instrument is damaged.
 - Always use the instrument indoors. Do not use the instrument in a rainy or humid environment, or if water droplets form on its surface. Also, do not operate with wet hands. Condensation may appear if sudden changes in temperature occur. If this happens, let the device acclimatize to the new temperatures for at least one hour, then refrain from using the device until confirming that there is no condensation.
 - Always operate the instrument in the environmental conditions described in this manual.
 - Always keep the clamp lever clean.
 - Do not disassemble the device.
- The device should be disassembled by qualified personnel only.

1. Description

This device is a current output type clamp-on probe with a 1000:1 current transformation ratio that performs transformation on the primary current.

2. Contents of the Package

Check that the model name given on the name plate on the grip match those on your order.



Standard Accessories

Manuals

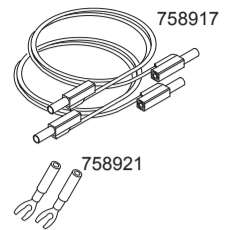
Manual Title	Manual No.	Description
751552 CLAMP-ON PROBE User's Manual	IM 751552-01E	This manual. This manual explains the handling precautions, basic usage, and specifications of the probe.
751552 クランプオンプローブ	IM 751552-01	The Japanese version of the above manual
751552 CLAMP-ON PROBE	IM 751552-92	Document for China
751552 CLAMP-ON PROBE	IM 751552-93Z2	Document for Republic of Korea
Inquiries	PIM 113-01Z2	List of worldwide contacts

The "E" in the manual number is the language code.

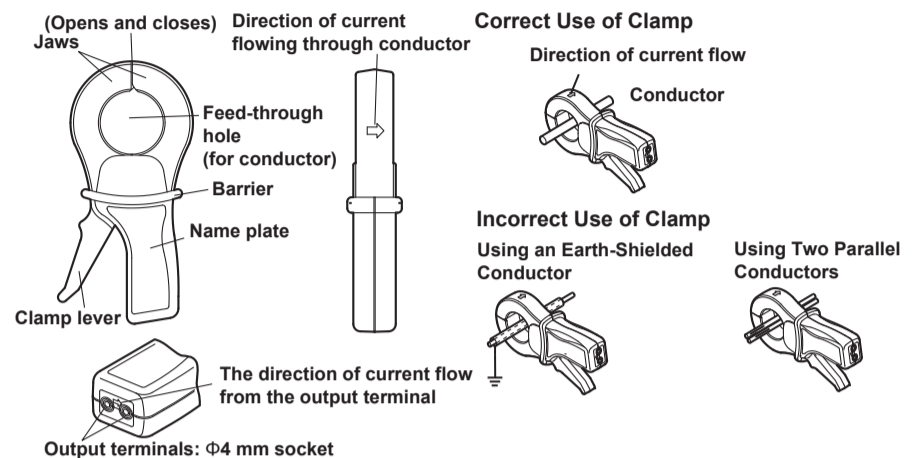
Accessories (Sold Separately)

The optional accessories below are available for purchase separately. Use the accessories specified in this manual. Moreover, use the accessories of this product only with Yokogawa products that specify them as accessories.

Name	Model	Lot Qty.	Notes
Measuring Lead	758917	1	2 pcs. per unit Used in conjunction with the adapter, model 758921, sold separately Length: 0.75 m, Rated Current: 32 A
Fork Terminal Adapter Set	758921	1	2 pcs. per unit For measuring leads, model 758917, sold separately Rated Current: 25 A



3. Names of Parts



4. Performing Measurement



WARNING

Keep your fingers and hands behind the barrier.



CAUTION

Ensure that the current flowing through the conductor being measured is within the current range. If the current range is exceeded, the device may overheat and become damaged.

Operating Procedure

- Enter the appropriate settings on the measuring instrument being used to accommodate the output from the probe.
- Connect measuring leads (758917, sold separately) to the probe's output terminals and the measuring instrument. The connection method differs depending on the measuring instrument being used. See your instrument's user's manual for the procedure. If the connector on the measuring leads cannot be connected to the input terminals on the measuring instrument, use a fork terminal (758921: sold separately) or other adapter.

Example

 - For a digital power meter, connect a lead from the red output terminal (+) to the current input I terminal, and from the black output terminal (-) to the current \pm terminal.
 - For a digital multimeter, connect a lead from the red output terminal (+) to the A terminal, and from the black output terminal (-) to the Lo terminal.
- Squeeze the jaws to open the clamps, then position the conductor inside the feed-through hole. Hold the probe so that the conductor is as closely in the center of the feed through hole as possible.
- Release the clamp lever to close the clamps. Steps 3 and 4 is called clamping.
- Read the measured values on the measuring instrument. Calculate the current flowing through the conductor using an input/output ratio of 1000:1.

Example: Given that 150.0 mA is flowing from the probe's output terminal, current = 150.0 mA \times 1000 = 150.0 A.

Note

- Close the clamp completely before taking measurements. Errors can occur if any foreign objects or particles become trapped between the jaws.
- Only perform measurements on conductors in which the current is flowing in only one direction. The device cannot correctly measure earth-shielded conductors or parallel conductors with current flowing in both directions.
- To reduce errors, use a measuring instrument with an internal impedance less than or equal to 1 Ω .
- If DC current is superimposed on an AC current being measured, the output signal from the clamp will become distorted and measurements will be inaccurate.
- When measuring phase difference in voltage and current using an instrument such as a digital power meter, make sure that the current flows in the same direction as the arrows on the probe. The phase difference can be correctly measured by positioning the clamp so that current flows from the front side (name plate) to the reverse side (in the direction shown by the arrows on the jaws).
- Avoid locations with extremely strong external magnetic fields (other than the conductor under test) as they may cause measurement errors.

5. Specifications

Safety Standards	Complying standard: EN61010-1 & EN61010-2-032 Instrument with double insulation or reinforced insulation between primary, secondary and outer case parts. Operating voltage: 600 V Measurement category III ¹ , Pollution degree 2 ¹ . Operating voltage: 300 V Measurement category IV ¹ , Pollution degree 2 ¹ .				
Electromagnetic compatibility	Complying standard: EN61326-1				
Environmental standard	Complying standard: EN50581 Monitoring and control instruments including those for industrial use				
Current Range	AC 0.001 to 1200 Arms. However, for 1000 to 1200 Arms, refer to the Maximum Current				
Current Transformation Ratio	1000:1				
Output Signal	AC 1 mA/A (or 1 A/1000 A)				
Accuracy and Phase shift (at Reference Conditions ²)					
Primary Current I	1 \leq I < 100 mA	0.1 \leq I < 1 A	1 \leq I < 10 A	10 \leq I < 100 A	100 \leq I \leq 1200 A
% accuracy of output signal (rdg: reading of output signal)	\leq 3% of rdg + 5 μ A	\leq 2% of rdg + 3 μ A	\leq 1% of rdg	\leq 0.5% of rdg	\leq 0.3% of rdg
Phase shift	Not specified	Not specified	\leq 2 deg	\leq 1 deg	\leq 0.7 deg
Bandwidth	30 Hz to 5 kHz (error in frequency influence is added to Accuracy at Reference Conditions).				
Crest Factor	6 or less for a 2000 A peak (333 Arms) current or less				
Maximum Current	For a continuous frequency f of 1 kHz or less, I \leq 1000 A For frequencies exceeding 1 kHz, the current that can be allowed to flow continuously (I _{permanent}) is calculated as follows: I_{permanent} = 1000A/f(kHz) For an input signal of 1000 A < I \leq 1200 A at 1 kHz, the probe can be used continuously for a maximum of 40 minutes. Do not perform measurements 20 minutes thereafter				

Load Impedance	1 Ω or less
Max. Output Voltage	30 V peak or less (restricted by the output protection circuit).
Working Voltage	Max. 600 Vrms
Influence of Adjacent Conductor	When the frequency of the current in an adjacent conductor is 50 Hz, the influence on the primary current is 0.5 mA/A or less.
Influence of Conductor Position in the Jaws	0.1% or less in the output signal for a frequency of 400 Hz or less.
Influence of Load Impedance r	When $1\ \Omega < r \leq 5\ \Omega$, under 0.1% of output signal, and phase shift under 0.2 degrees
Influence of Frequency f [§]	30 Hz ≤ f < 48 Hz: under 0.5% of output signal 65 Hz < f ≤ 1 kHz: under 1% of output signal 1 kHz < f ≤ 5 kHz: under 2% of output signal
Influence of Crest Factor	Under 1% of output signal, given a crest factor of 6 or less for a 2000 A peak (333 Arms) current or less
Influence of DC Current Superimposed on Nominal Current	Under 1% of the output signal, assuming a current of DC 15 A or less.
Operating Temperature	-10°C to +50°C
Storage Temperature	-40°C to +70°C
Temperature Influence	0.02%/°C or less of the output signal
Operating Humidity	0 to 90% RH (no condensation) However, if 35°C is exceeded, humidity will impair the primary functionality (by a factor of 0.5% RH/°C)
Influence of Humidity	Under 0.1% of the output signal given 10% RH ≤ Humidity < 20% RH or 75% RH < Humidity ≤ 90% RH
Operating Altitude	2000 m or less above sea level
Max. Jaws Opening	53 mm (open jaws height: 139 mm (W))
External Dimensions	Approx. 111(W) x 216(H) x 45(D) mm
Weight	Approx. 620g.
Output	Safety jacks (Φ4 mm)

* *Measurement category* describes a number which defines a transient overvoltage condition. It implies the regulation for impulse withstand voltage.

Measurement category III applies to measurement of the distribution level, that is, building wiring, fixed installations. Measurement category IV applies to measurement of the primary supply level, that is, overhead lines, cable systems, and so on.

† *Pollution degree* describes the degree to which a solid, liquid, or gas which deteriorates dielectric strength or surface resistivity is adhering.

Pollution Degree 2 applies to the normal indoor atmosphere. Normally, only non-conductive pollution occurs. Occasionally, however, temporary conductivity caused by condensation must be expected.

‡ Reference Conditions

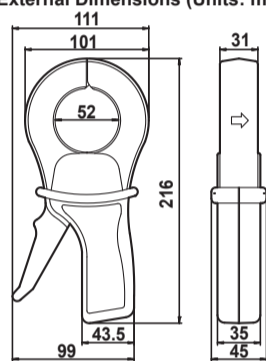
Temperature: 23 °C±3°C	Humidity: 20 to 75% RH	External magnetic field < 40 A/m
No AC magnetic field	Conductor centered in jaws	Load impedance ≤ 1 Ω (≤ 1 VA)

No influence of current flowing in adjacent conductors

When the primary current is sinusoidal, the sinusoidal conditions are: frequency; 48 to 65 Hz, distortion factor < 1%, no DC component

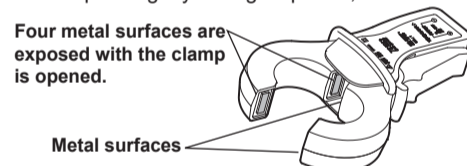
§ There is no frequency influence in the range $48\ \text{Hz} \leq f \leq 65\ \text{Hz}$.

External Dimensions (Units: mm)



6. Maintenance

- Note the following when cleaning the probe.
 - Do not clean the probe while clamped to a conductor. Likewise, do not clean while connected to a measuring instrument.
 - Do not allow water to contact the jaws.
- When opening the jaws, keep the exposed metal areas clean. If dust accumulates, wipe with a clean dry cloth. To prevent rust, wipe metal surfaces with oil from time to time. Avoid getting oil on non-metallic surfaces. Use only high quality, low-viscosity machine oil such as sewing machine oil.
- This product undergoes a 100% inspection at the time of shipment. If any layers of the core come apart slightly during shipment, this will not affect the functioning of the product.



7. Servicing

If you encounter any problems during use, or if the device does not appear to be operating normally, contact your dealer or nearest YOKOGAWA representative.

8. Appendix

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.

Authorized Representative in the EEA

Yokogawa Europe B. V. is Authorized Representative of Yokogawa Test & Measurement Corporation in the EEA for this Product. To contact Yokogawa Europe B. V., see the separate list of worldwide contacts, PIM 113-01Z2.