

Instruction Sheet

i400E

AC Current Clamp

Introduction

The i400E AC Current Clamp (the Product) is compatible with any instrument capable of ac millivolt measurements.

How to Contact Fluke

To contact Fluke, call one of the following telephone numbers:

- Technical Support USA: 1-800-44-FLUKE (1-800-443-5853)
- Calibration/Repair USA: 1-888-99-FLUKE (1-888-993-5853)
- Canada: 1-800-36-FLUKE (1-800-363-5853)
- Europe: +31 402-675-200
- Japan: +81-3-6714-3114
- Singapore: +65-6799-5566
- Anywhere in the world: +1-425-446-5500

Or, visit Fluke's website at www.fluke.com.

To register your product, visit <http://register.fluke.com>.

To view, print, or download the latest manual supplement, visit <http://us.fluke.com/usen/support/manuals>.

Safety Information

⚠️ Read First: Safety Information

To prevent possible electrical shock, fire, or personally injury:

- Carefully read all instructions.
- Read all safety information before you use the Product.
- Use the Product only as specified, or the protection supplied by the Product can be compromised.
- Do not use the Product around explosive gas, vapor, or in damp or wet environments.
- Do not use the Product if it operates incorrectly.
- Before each use, examine the Product. Look for cracks or missing pieces of the clamp housing or output cable insulation. Also look for loose or weakened components. Carefully examine the insulation around the jaws.
- Do not use the Product if it is damaged.
- Hold the Product behind the tactile barrier.
- Use extreme caution when working around bare conductors or bus bars. Contact with the conductor could result in electric shock.
- Use only correct measurement category (CAT), voltage, and amperage rated probes, test leads, and adapters for the measurement.
- Limit operation to the specified measurement category, voltage, or amperage ratings.
- Do not touch voltages >30 V ac rms, 42 V ac peak, or 60 V dc.
- Do not exceed the Measurement Category (CAT) rating of the lowest rated individual component of a Product, probe, or accessory.
- Comply with local and national safety codes. Use personal protective equipment (approved rubber gloves, face protection, and flame-resistant clothes) to prevent shock and arc blast injury where hazardous live conductors are exposed.

Symbols

⚠️	Application around and removal from hazardous live conductors is permitted.
⚠️	Risk of Danger. Important information. See Instruction Sheet.
CS	Conforms to relevant North American Safety Standards.
CE	Conforms to European Union directives.
KC	Conforms to relevant South Korean EMC Standards.
♻️	This product complies with the WEEE Directive (2002/96/EC) marking requirements. The affixed label 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 Annex I, this product is classed as category 9 "Monitoring and Control Instrumentation" product. Do not dispose of this product as unsorted municipal waste. Go to Fluke's website for recycling information.

Electrical Specifications

Reference Conditions: 23 ±5 °C, 20 % to 75 % RH; conductor centered in jaw opening; no dc component; no adjacent conductor

Measurement Range: 1 A to 400 A ac rms

Output: 1 mV/A

Accuracy: 2.0 % of reading + 0.5 A (45 Hz to 65 Hz)
2.5 % of reading + 0.5 A (65 Hz to 400 Hz)

Typical Bandwidth: 5 Hz to 20 kHz

Working Voltage: 600 V ac rms, in compliance with IEC 61010-1 and IEC 61010-2-030

Common Mode Voltage: 600 V ac rms from earth ground, in compliance with IEC 610140-1 and IEC 61010-2-030

Load Impedance: >1 MΩ

Maximum Nondestructive Current: 600 A

Duty Cycle: 1 A to 400 A continuous

Influence of Adjacent Conductor: <7.5 mA/A

Influence of Conductor Position in Jaw Opening: ±1.0 % of reading + 0.05 A

Crest Factor (50 Hz or 60 Hz): 3 @ 180 A, 2.5 @ 220 A,
1.4 @ 400 A; add 2 % for C.F. >2

Jaw Inner Diameter: 30 mm

Maximum MCM Wire Size: 600 MCM

Standard Plugs:

The product is assembled with standard 3/4-inch Banana dual-plug, cable length is 1 m.

Safety Specifications

Category Rating: IEC 61010-1 and IEC 61010-2-030 and IEC 61010-2-032: 600V CAT III, Pollution Degree 2

Electromagnetic Environment: IEC 61326-1: Portable

Electromagnetic Compatibility:

Applies to use the Korea only. Class A equipment; (Industrial Broadcasting & Communication Equipment)^[1]

[1] This product meets the requirement for industrial (Class A) electromagnetic wave equipment and seller or user should take notice of it. This equipment is intended to use in business environment and is not to be used in homes.

General Specifications

Output Cable Length: 1 m
Maximum Conductor Size: 30 mm
Operating Temperature: -10 °C to 50 °C
Storage Temperature: -30 °C to 60 °C
Relative Humidity: ≤90 % at 10 °C to 30 °C; ≤75 % at 30 °C to 40 °C; ≤45 % at 40 °C to 50 °C

IP Rating: IEC 60529: IP 30 when jaw closed

Temperature Coefficients: Add 0.1 x specified accuracy for each °C above 28°C or below 18 °C.

Altitude:

Operating: 2,000 m

Storage: 12,000 m

Dimensions: 146 mm x 62 mm x 34 mm

Weight: 150 g

Instrument Compatibility

The Product is compatible with any Fluke Multimeter or any other millivolt ac measurement device that has these features:

- 400 mV ac range or greater
- Banana inputs
- Input accuracy of 2 % or better to take full advantage of the accuracy of the Product.
- Input impedance of >1 MΩ

Measurement Considerations

Observe the following guidelines for positioning the Product jaws:

- Center the conductor inside the Product jaw.
- Make sure the clamp is perpendicular to the conductor.
- For optimal reading, make sure the conductor is positioned between the alignment marks on the jaw of the Product.

Observe the following guidelines when making measurements:

- Avoid taking measurements close to other current-carrying conductors.
- The Product displays millivolt readings at 1:1 of the actual current on the conductor. For example, a 5 A input current will be transformed into a 5 mV output voltage.

Low-Level Current Measurements

The Product is specified to measure currents of 1 A or greater. Measurement accuracy of currents less than 1 A is unspecified.

Operation

To use the Product (see Figure 1):

1. Insert the banana plug into the common and voltage/resistance/diode/capacitance inputs of a multimeter and switch the multimeter on.
2. Select the millivolt ac mode.
3. Fix the Product around the current-carrying conductor to be measured. Make sure the jaws are tightly closed around the conductor. The Product is designed for highest accuracy when the conductor is centered on the jaw's alignment marks, see Figure 1.

⚠️ Warning

To avoid shock or personal injury, keep fingers behind the tactile barrier, see Figure 1.

Multimeter readings displayed in millivolts (mV_{ac}) can be read directly as 1 mV/A of input current.

Maintenance

⚠️ Warning

To avoid possible electrical shock, fire, or personal injury:

- **Remove the input signals before you clean the Product.**
- **Use only specified replacement parts.**
- **Have an approved technician repair the Product.**

If the Product works incorrectly, use these steps to help identify the problem:

1. Inspect the jaw mating surface for cleanliness. If any foreign material is present, the jaw will not close properly and measurement errors will result.
2. Verify that the function selection and range on the multimeter are correct and adjusted to the sensitivity of the Product.

Clean the Product

Periodically wipe the case with a damp cloth and mild detergent.

⚠️ Caution

To avoid damage to the Product, do not use abrasives or solvents to clean the Product.

Open the jaws and wipe the magnetic pole pieces with a lightly oiled cloth. Do not allow rust or corrosion to form on the magnetic core ends.

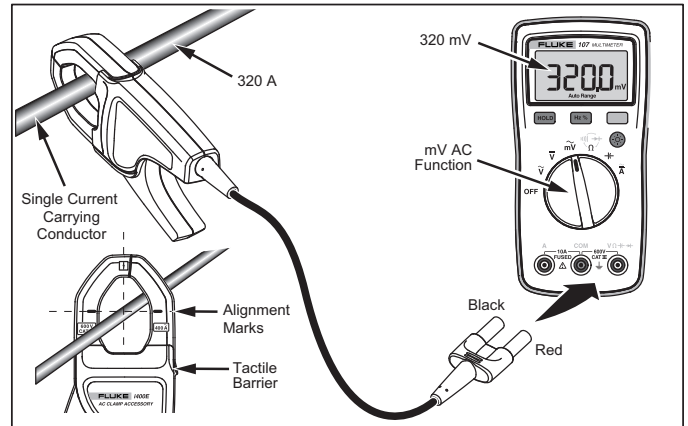


Figure 1. i400E Setup

LIMITED WARRANTY AND LIMITATION OF LIABILITY

This Fluke product will be free from defects in material and workmanship for one year from the date of purchase. This warranty does not cover fuses, disposable batteries, or damage from accident, neglect, misuse, alteration, contamination, or abnormal conditions of operation or handling. Resellers are not authorized to extend any other warranty on Fluke's behalf. To obtain service during the warranty period, contact your nearest Fluke authorized service center to obtain return authorization information, then send the product to that Service Center with a description of the problem.

THIS WARRANTY IS YOUR ONLY REMEDY. NO OTHER WARRANTIES, SUCH AS FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSED OR IMPLIED. FLUKE IS NOT LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, ARISING FROM ANY CAUSE OR THEORY. Since some states or countries do not allow the exclusion or limitation of an implied warranty or of incidental or consequential damages, this limitation of liability may not apply to you.

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