

i5s AC Current Clamp Instruction Sheet

Introduction

The i5s (hereafter called the "Current Clamp") is compatible with any instrument that can accept a standard BNC connector and is capable of ac millivolt measurements; the Current Clamp can also be used with digital multimeters using a BNC-to-dual banana plug adapter. The Current Clamp produces an output of 400 mV ac per 1 A ac input level.

Contacting Fluke

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

USA: 1-888-44-FLUKE (1-888-443-5853)
Canada: 1-800-36-FLUKE (1-800-363-5853)
Europe: +31 402-675-200
Japan: +81-3-3434-0181
Singapore: +65-738-5655
Anywhere in the world: +1-425-446-5500
USA Service: 1-888-99-FLUKE (1-888-993-5853)

Safety Information

⚠️ Read First: Safety Information

To ensure safe operation and service of the Current Clamp, follow these instructions:

- Read the operating instructions before use and follow all safety instructions.
- Use the Current Clamp only as specified in the operating instructions, otherwise the clamp's safety features may not protect you.
- Adhere to local and national safety codes. Individual protective equipment must be used to prevent shock and arc blast injury where hazardous live conductors are exposed.
- Do not hold the Current Clamp anywhere beyond the tactile barrier, see Figure 1.
- Before each use, inspect the Current Clamp. Look for cracks or missing portions of the clamp housing or output cable insulation. Also look for loose or weakened components. Pay particular attention to the insulation surrounding the jaws.
- Never use the Current Clamp on a circuit with voltages higher than 600 V CAT III.
- CAT III equipment is designed to protect against transients in equipment in fixed equipment installations, such as distribution panels, feeders and short branch circuits, and lighting systems in large buildings.
- The Clamp is designed for use on insulated conductors only. Use extreme caution when working around bare conductors or bus bars. Contact with the conductor could result in electric shock.
- Use caution when working with voltages above 60 V dc or 30 V ac rms. Such voltages pose a shock hazard.

Symbols

- Do not apply around or remove from HAZARDOUS LIVE conductors.
- Product is protected by double insulation.
- Risk of Danger. Important information. See Instruction Sheet.
- Risk of Electric Shock.
- Canadian Standards Association has certified that the product meets applicable U.S. and Canadian Standards.
- Conforms to relevant European Union directives.

Safety Specifications

Category Rating: CAT III 600 V per IEC/EN61010-1, Pollution Degree 2
EMC: EN 61326-1, FCC for emission and immunity

Complies with U.S. and Canadian Standards CAN/CSA C22.2 No. 61010-1-04 and No. 61010-2-032-04; UL61010-1

IEC 61010-1 2nd Edition IEC 61010-02-032

Electrical Specifications

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

Measurement Range: 10 mA to 6 A

Output: 400 mV/A

Accuracy (48 Hz to 65 Hz):

10 mA to 1 A 1% + 5 mA

1 A to 5 A 1%

Phase Shift (48 Hz to 65 Hz):

10 mA to 100 mA Unspecified

100 mA to 5 A 4°

Crest Factor: ≤ 3, add 0.7 % to accuracy

Typical Bandwidth: 40 Hz to 5 kHz

Working Voltage: 600 V ac rms, in compliance with EN61010

Common Mode Voltage: 600 V ac rms from earth ground, in compliance with EN61010

Input Load Impedance (of host instrument): >1 M Ω in parallel with up to 47 pF

Maximum Non-destructive Current: 70 A

Duty Cycle: 0.01 A to 6 A continuous

Influence of Adjacent Conductor: ≤ 15 mA/A (@ 50/60 Hz)

Influence of Conductor Position in Jaw Opening: ±0.5 % of reading (@ 50/60 Hz)

General Specifications

Output Cable Length: 2.5 m

Maximum Conductor Size: 15 mm

Storage Temperature: -20 °C to 60 °C

Operating Temperature: 0 °C to 50 °C

Relative Humidity: 10 °C to 30 °C: 85 %

30 °C to 40 °C: 75 %

40 °C to 50 °C: 45 %

Temperature Coefficient: 0.01 % X (specified accuracy)/ °C

(< 18 °C or > 28 °C)

Altitude: Operating: 2000 m; Non-operating: 12000 m

Dimensions: 116 x 43 x 23 mm

Weight: 200 g

Instrument Compatibility

The Current Clamp is compatible with any Fluke Multimeter or any other current measurement device that has the following features:

- BNC or Banana inputs
- Input accuracy of 1 % or better to take full advantage of the accuracy of the Current Clamp.
- Input impedance of > 1 M Ω in parallel with up to 47 pF

Note

Current input impedance on the Fluke 430 Series Three-Phase Power Quality Analyzer is < 1 MΩ, but it has a special calibration setting for the i5s to achieve full accuracy.

Measurement Considerations

- Center the conductor inside the Current Clamp jaw.
- Make sure the Current Clamp is perpendicular to the conductor.
- For optimal reading, make sure the conductor is centered in the jaws of the Current Clamp.

Observe the following guidelines when making measurements:

- Avoid taking measurements close to other current-carrying conductors.

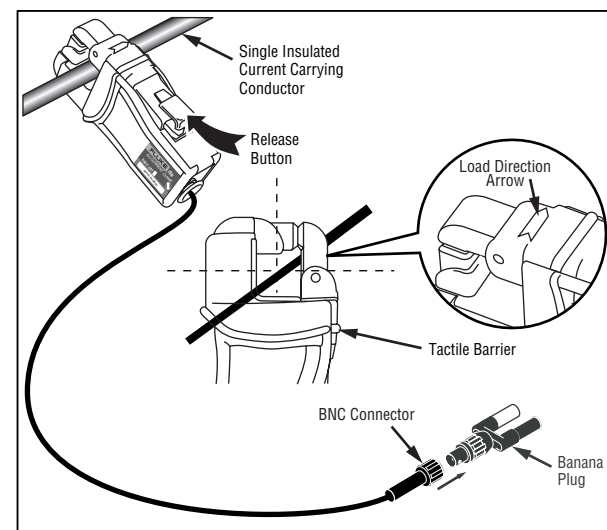
Operation

To use the Current Clamp, refer to "Measurement Considerations" and Figure 1:

- If necessary, add a dual banana plug to BNC adapter to the i5s BNC connector.
- Connect the clamp cable to the instrument. If using an adapter, use the common and volts inputs of the meter and switch it on.
- Make sure the measurement instrument is set to the proper range.
- Make sure the arrows on each side of the Current Clamp face towards the load of the circuit.
- Open the Current Clamp jaw by pushing the release button toward the jaw until the latch has cleared the barrier, then press down to open the jaw.
- Connect the Current Clamp jaws around the insulated conductor to be measured and release the button. Ensure that the release button has returned to the original position to resume the circuit testing.

⚠️ Warning

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



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Figure 1. i5s Setup

Maintenance

⚠️ Warning

To avoid possible electric shock or personal injury:

- Before each use, inspect the Current Clamp. Look for cracks or missing portions of the clamp housing and output cable insulating cover and for loose or weakened components. Pay particular attention to the insulation surrounding the clamp jaws.
- Do not use a damaged Current Clamp. If a clamp is damaged, tape it shut to prevent unintended operation. A damaged clamp under warranty will be promptly repaired or replaced (at Fluke's discretion) and returned at no extra charge.

If the Current Clamp does not work or perform properly, use the following steps to help isolate the problem:

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

Cleaning

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

⚠️ Caution

To avoid damaging the Current Clamp, do not use abrasives or solvents to clean the clamp.

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.

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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