FLUKE®

i30s/i30

AC/DC Current Clamps

Instruction Sheet

Introduction

The i30s AC/DC Current Clamp has been designed for use with oscilloscopes and DMMs for accurate, non-intrusive measurement of both AC, DC, and complex waveform currents. The i30 AC/DC Current Clamp has been designed for use with DMMs only. Using advanced Hall Effect technology the i30s can accurately measure currents with a resolution of 1 mA from 5 mA to 30 A over the frequency range of DC to 100 kHz. These features make it a powerful tool for use in inverters, switch mode power supplies, industrial controllers and other applications requiring current measurements and/or waveform analysis.

Symbols

The table below lists the symbols used on the product and/or in this manual.

Symbol	Description
	Do not dispose of this product as unsorted municipal waste. Contact Fluke or a qualified recycler for disposal.
	Important Information. See manual.
	Double insulation.
	Do not apply around or remove from the HAZARDOUS LIVE conductors.
	Conforms to Canadian Standards Association.
	Complies with the relevant European standards.

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Safety Instructions

Please read this section carefully. It will make you familiar with the most important safety instructions for handling your product. In this instruction sheet, a **Warning** identifies conditions and actions that pose hazard(s) to the user. A **Caution** identifies conditions and actions that may damage the calibrator or the test instruments.

⚠ ⚠ Warning

The i30s and i30 may only be used and handled by qualified personnel. To avoid personal injury, follow these precautions:

- **To avoid electric shock, use caution during installation and use of this product; high voltages and currents may be present in circuit under test.**
- **Do not use the product if damaged. Always connect probe to display device before it is installed around the conductor.**
- **Always ensure the probe is removed from any live electric circuit, and leads are disconnected before removing the battery cover.**
- **Use the Current Probe only as specified in the operating instructions; otherwise the current probe's safety features may not protect you.**
- **Adhere to local and national safety codes. Individual protective equipment must be used to prevent the shock and arc blast injury where hazardous live conductors are exposed.**
- **Do not hold the Current Probe anywhere beyond the tactile indicator.**
- **Before each use, inspect the Current Probe. Look for cracks or missing portions of the Current Probe housing or output cable insulation. Also look for loose or weakened components. Pay particular attention to the insulation surrounding the jaws.**
- **Use caution when working with voltages above 60 V dc, 30 V ac rms or 42 V ac peak. Such voltages pose a shock hazard.**
- **Use of this 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.**

- **Use of this equipment in a manner not specified herein may impair the protection provided by the equipment.**
- **CAT III equipment is designed to protect against the transients in the equipment in fixed equipment installations, such as distribution panels, feeders and short branch circuits, and the lighting systems in large buildings.**

Specifications

Electrical Characteristics

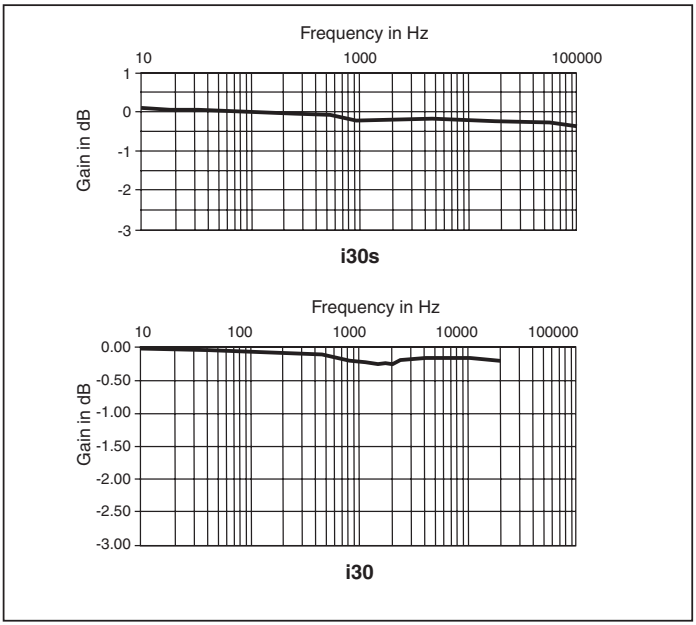
All accuracies stated at 23°C ± 1°C

Current range	20 A AC_{RMS} or DC
Measuring range	± 30 A
Overload capacity	500 A
Output sensitivity	100 mV/A
Accuracy (at 25 °C)	± 1 % of reading ± 2 mA
Resolution	± 1 mA
Typical output noise level	200 μV_{RMS}
Load impedance	> 100 k Ohms ≤ 100 pF
Conductor position sensitivity	± 1 % relative to center reading
Frequency range	
i30s	DC to 100 kHz (0.5 dB)
i30	DC to 20 kHz (0.5 dB)
di / dt following	20 A / µs
Response time	Better than 1 µs
Temperature coefficient	± 0.01 % of reading / °C
Operating humidity:	15 to 85 % (non condensing)C
Altitude:	2000 m
Power supply	9 V Alkaline, NEDA 1604/PP3 IEC 6LR61
Working voltage (see *Safety Standards*)	300 V AC_{RMS} or DC
Battery life	30 hours, low battery indicator

General Characteristics

Maximum conductor size	19 mm diameter
Output cable and connections:	
i30s	2 m cable terminated with a BNC connector (50 Ohms) supplied with a 4 mm safety adaptor
i30	1.5 m cable terminated with a dual 4 mm banana safety plug
Output zero	Manual adjust via thumbwheel
Operating temperature range	0 to +50 °C
Storage temperature range (with battery removed)	-20 to +85 °C
Weight	290 g

Typical Performance Plots



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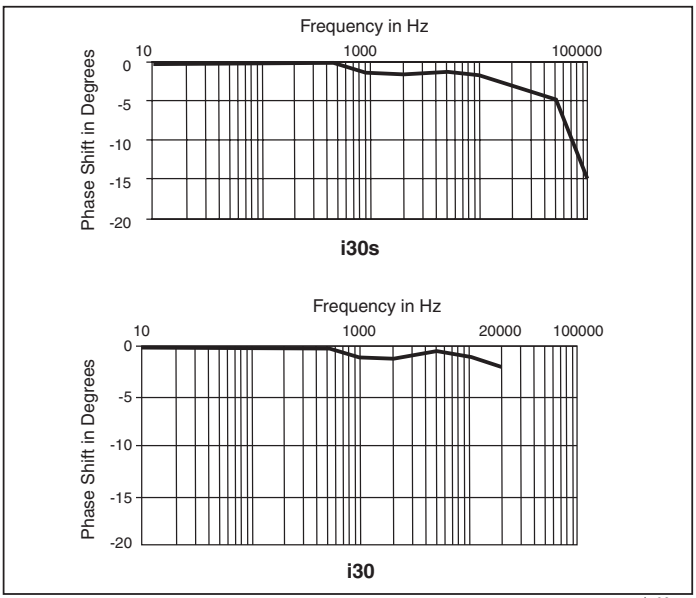
Typical Frequency Response



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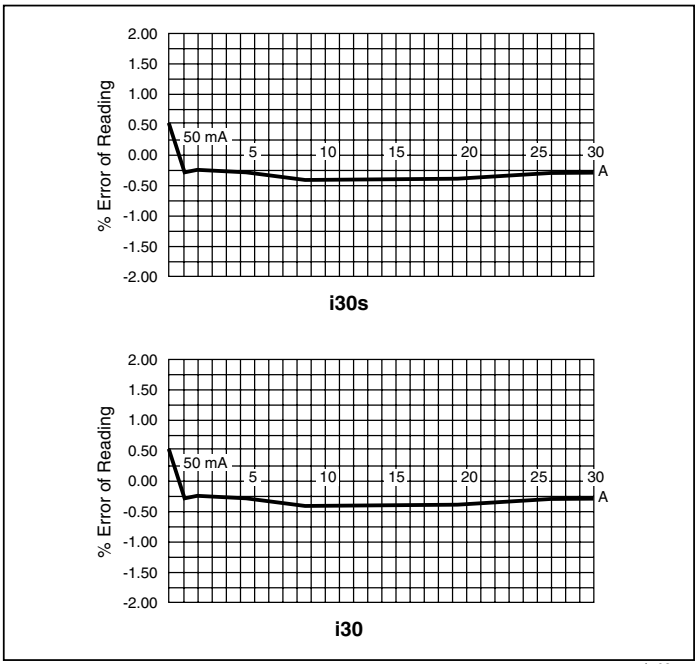
Typical Frequency Response



Typical Accuracy Curve

Safety Standards

BS EN 61010-1: 2001

BS EN 61010-2-032: 2002

BS EN 61010-031: 2002

CSA C22.2 No. 1010.1

300 V_{RMS}, Category III, Pollution degree 2

Use of the probe on uninsulated conductors is limited to 300 V ACRMS or DC and frequencies below 1 kHz.

EMC Standards

BS EN 61326: 1998 +A1, A2, and A3.

Operating Instructions

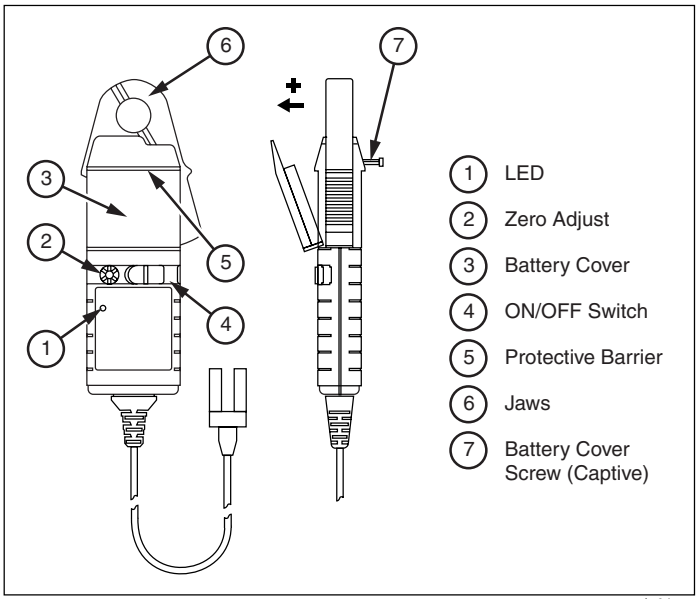


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Figure 1. i30s & i30 AC/DC Current Clamps

⚠ Warning

To avoid injury, when using the probe ensure that your fingers are behind the protective barrier as shown in Figure 1. Do not use the probe if any part of the probe, including the lead and connector(s), appear to be damaged or if a malfunction of the instrument is suspected.

Clean the case periodically by wiping it with a damp cloth and detergent. Do not use abrasive cleaners or solvents. Do not immerse the probe in liquids.

Switch On

When the probe is switched on, the red LED will illuminate. The LED starts flashing when the battery voltage is too low for normal operation and warns the user that it requires changing. This procedure is described below.

Zero Adjustment

The output zero offset voltage of the probe may change due to thermal shifts and other environmental conditions. To adjust the output voltage to zero, depress the thumbwheel and rotate. Ensure that the probe is away from the current carrying conductor whilst the adjustment is made.

Current Measurement

1. Switch on the probe using the On – Off switch and check that the LED is lit.
2. Connect the output lead to an oscilloscope, multimeter, or other measuring equipment.
3. If necessary adjust the probe output voltage to zero as described in section *Zero Adjustment*.
4. Clamp the jaw of the probe around the conductor ensuring a good contact between the closing faces of the jaws.
5. Observe and take measurements as required. Positive output indicates that the current flow is in the direction shown by the arrow on the probe.

Battery Replacement

⚠ Warning

To avoid personal injury, always ensure the probe is removed from any live electric circuit, and leads are disconnected before removing the battery cover.

Never operate the probe without the battery cover fitted.

The red LED will flash when the minimum operating voltage is approached. Refer to Fig.1. Use the following procedure:

1. Unclamp the probe from the conductor, turn it off using the On – Off switch and disconnect the output leads, from external equipment.
2. Loosen the captive screw that secures the battery cover. Lift the cover through 30° and pull it clear of the probe body as shown in Fig 1. The battery is then accessible. Replace the battery and re-fit the battery cover and fasten the screw.

Note

Replacement with other than the specified type of battery will invalidate the warranty.

Fit only the type 9 V PP3 Alkaline (MN 1604).

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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