55XXA/COIL 50, 55XXA/COIL 10

50, 1, 2, and 10-Turn Current Coil

Instructions

Introduction

Use the 55XXA/COIL 50, 55XXA/COIL 10 (the Product or Coil) to calibrate clamp-type current meters (clamp meters) that operate by two different principles - as current transformers (ac only), and by the Hall Effect (both ac and dc). For example, it is impractical to calibrate 1000 A-rated current clamp meters with a 1000 A source. However, you can effectively multiply the current of the current source calibrator by a factor of 50 to support the calibration and verification of these clamp meters with the 50 turns of the 55XXA/COIL 50.

Contact Fluke

Fluke Corporation operates worldwide. For local contact information, go to our website: www.flukecal.com.

To register your product, or to view, print, or download the latest manual or manual supplement, go to our website.

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Safety Information

A **Warning** identifies hazardous conditions and procedures that are dangerous to the user.

⚠⚠ Warning

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

- **This product is unfused. Do not exceed current and voltage ratings.**
- **Carefully read all instructions.**
- **Do not alter the Product and use only as specified, or the protection supplied by the Product can be compromised.**
- **Do not use the Product if it operates incorrectly.**
- **Do not use the Product if it is altered or damaged.**

Symbols

Table 1 lists the symbols used on the Product or in this document.

Table 1. Symbols

Symbol	Description
	Consult user documentation.
	WARNING. RISK OF DANGER.
	WARNING. HAZARDOUS VOLTAGE. Risk of electric shock.
	Conforms to European directives.
	This product complies with the WEEE Directive 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.

Specifications

	55XXA/COIL 50	55XXA/COIL 10
Number of turns	50	1, 2, or 10
Maximum Current	20 A rms, continuous 30.2 A rms, 5 minutes	30.2 A rms, continuous
Maximum Duty Cycle Derating	<20 A, continuous >20 A, 50 % Duty Cycle	-
Maximum Voltage, All Inputs	30 V to Earth	
Minimum Inner Diameter of Clamp Jaws	23 mm	1-Turn: 3 mm 2-Turn: 6 mm 10-Turn: 10 mm
Coil Ratio	±0.65 %[1], DC to 440 Hz.	
[1] Includes coil/clamp interaction but does not include current source errors.		

Calculate Total Specification

The total specification of the effective current that the clamp meter measures is a function of the clamp/coil interaction and of the current calibrator. To determine the total specification use this formula:

$$S_{total} = \sqrt{S^2_{coil} + U^2_{source}}$$

Example:

A Fluke Calibration 5560A Calibrator supplies 13 A at 60 Hz to the 55XXA/COIL 50 generating an effective current of 650 A (50 x 13 A), 60 Hz). The 1-year specification of the Calibrator at 13 A is ±(0.07 % + 8 mA), which is equivalent to 0.13 % of the 13 A calibrator output. The total specification of the calibrator and the coil together as a percentage of the output:

Specification of calibrator current = ±0.13 %

Specification due to the Coil = 0.65 %

The RSS of these two specifications determines the total specification of the source/coil combination:

$$S_{total} = \sqrt{0.112 + 0.562 + 0.66\%}$$

For higher frequencies or higher current levels, the compliance voltage may exceed 1 V. If the compliance voltage exceeds 1 V, then compliance adders must be added to the Calibrator specification.

Use the Coil

Clamp meters and other current transducers often operate as current transformers, with differing degrees of magnetic coupling between primary and secondary that vary from meter to meter. The position of the clamp meter, with respect to the cable, affects the magnetic coupling between primary and secondary of the current transformer, which causes variation in the reading of the clamp meter.

To make the most accurate and repeatable measurements, carefully position the clamp meter on the Coil base in relation to the markings on the Coil, see Figure 1 and Figure 2.

55XXA/COIL 10 (see Figure 1)

- For 10 turns, center the clamp meter on the Coil base.
- For 1-turn and 2-turns, align the clamp meter with the markings on the Coil base.

55XXA/COIL 50 (see Figure 2)

- Center the clamp meter on the base.

Calibration accuracy to specifications is guaranteed only with proper clamp alignment. Align the clamp meter as much as possible on the base during calibration and verification. If the clamp meter has alignment marks, align those marks with the center-bundled wire of the Coil.

Figure 1. 55XXA/COIL 10

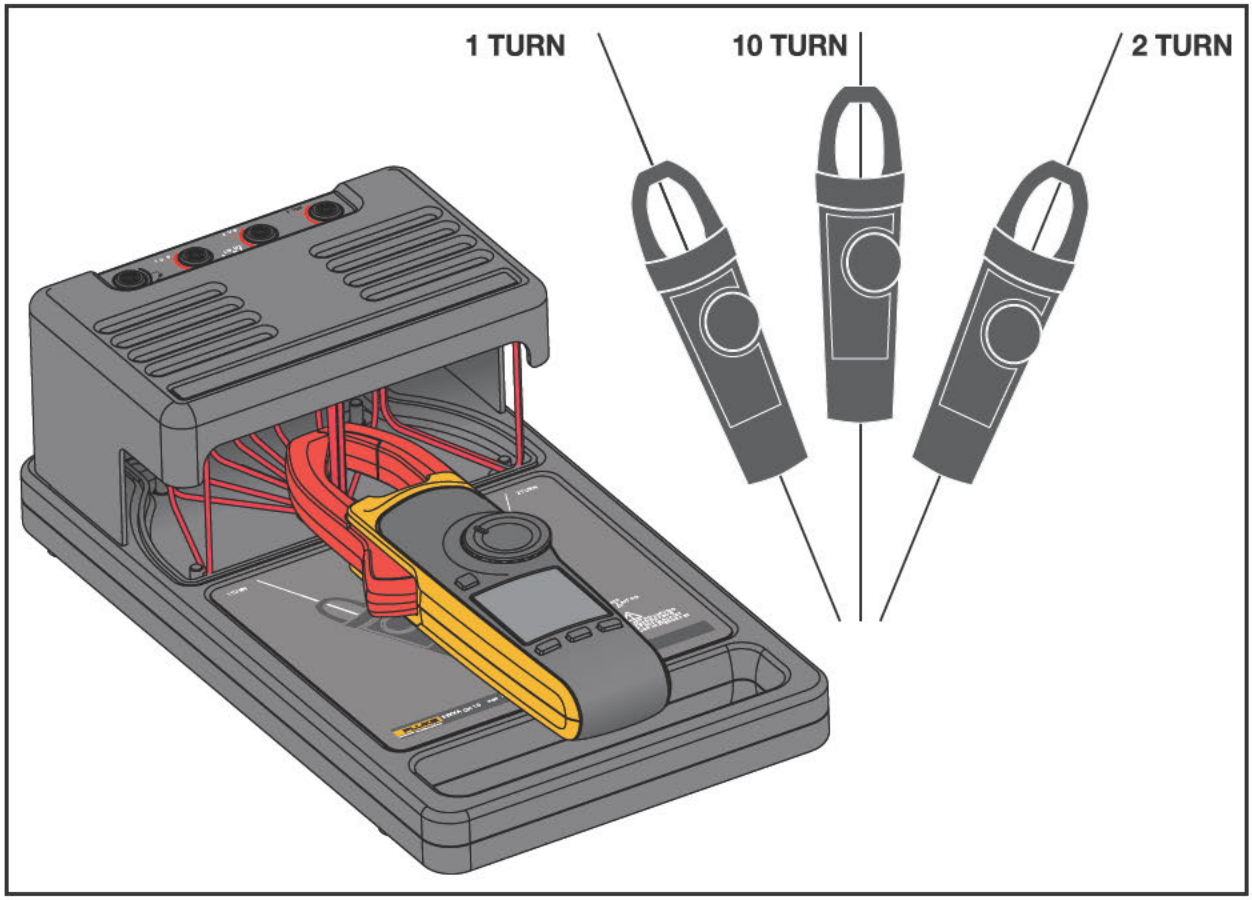
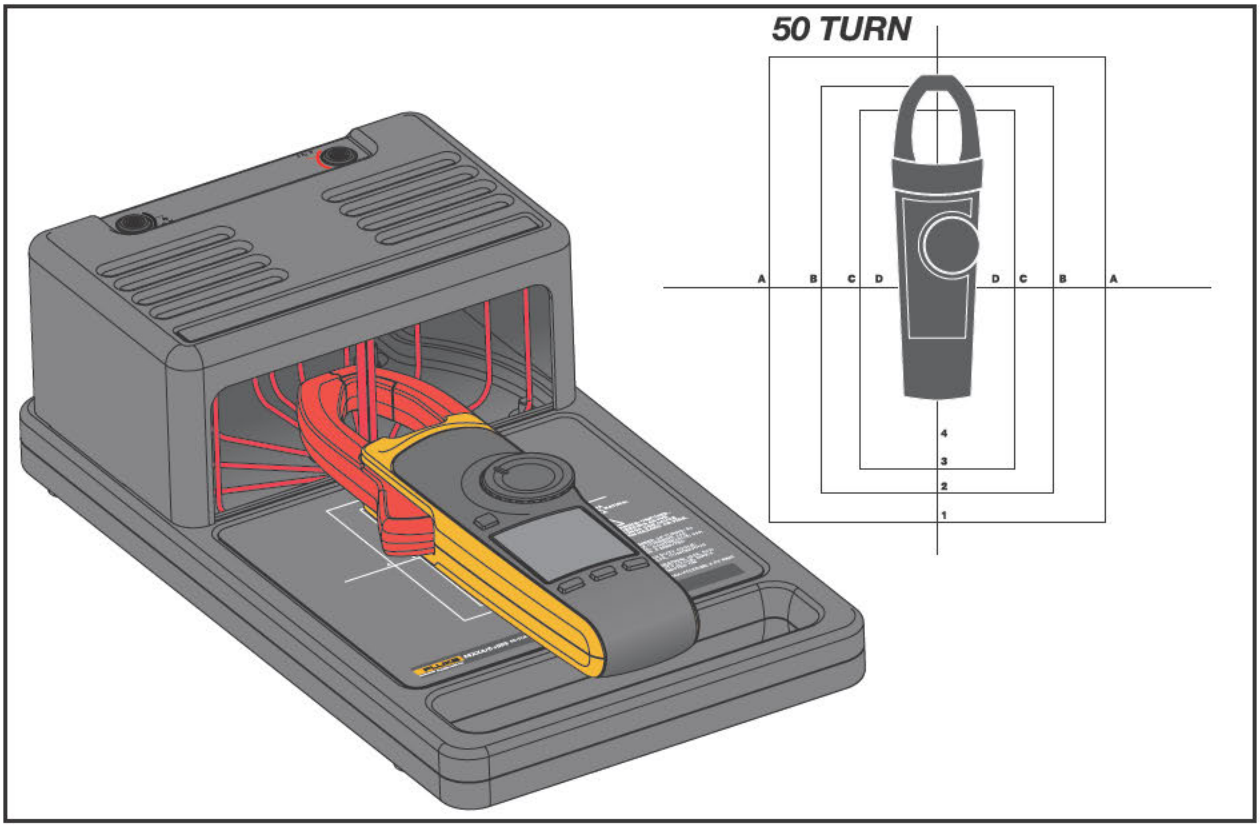


Figure 2. 55XXA/COIL 50



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