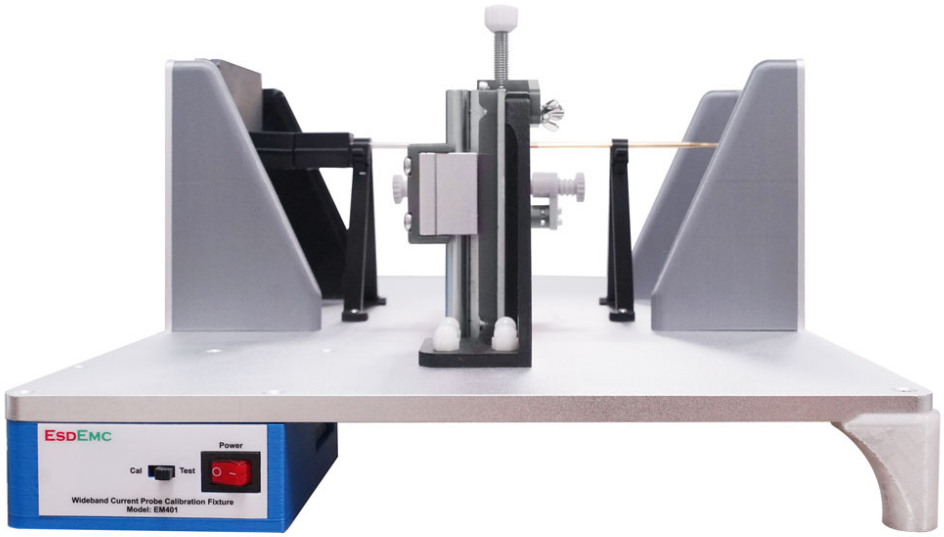
EM401 Current Transformer Calibration Setup



1. Description

EM401 is a highly useful setup for calibration and development of current transformers. This setup allows for the accurate characterization of a current transformer's transfer impedance vs. frequency. The setup uses two feed ports, two transmission lines, and a sense resistor to measure a current transformer's operating frequency range.

The procedure [1] is to take just two measurements: a current measurement and a voltage measurement using a spectrum analyzer. The current measurement is taken by terminating the current transformer with 50 Ω and placing it around the sense resistor. Connect port 1 of the spectrum analyzer to the feed port of the setup and connect port 2 to the current port of the setup. Save the S21 data. The voltage

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measurement is taken by simply connecting port 2 of the spectrum analyzer to the current transformer and connecting the 50Ω termination to the current port of the setup. Again, save the S21 data. The current transformer's transfer impedance can then be calculated using the equation below:

$$Z_{\text{trans}} = S_V - S_C + 20 \cdot \log_{10}\left(\frac{R_{\text{sense}} \cdot 50}{R_{\text{sense}} + 50}\right)$$

2. Features

- Accurate and wide-band measurement of current transformer performance
- Design allows for easy characterization of different sized current transformers

3. Applications

- Current transformer development
- Current transformer performance verification and characterization

4. Specifications

EM401

Specification	Parameters
Dimension	50×50×21 cm (19.69 ×19.69×8.27 inch)
Weight	6.80 kg (15 lbs.)

5. Ordering Information

Part # or Option #	Description
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[1] A new test setup and method for the calibration of current clamps, D. Pommerenke; R. Chundru; S. Chandra

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