

Hall Effect Sensor Calibration System

Brief Description:

Emerging Technologies, LLC. was called upon to develop a calibration system based on an existing customer prototype. The system was to calibrate Hall Effect sensors with ranges from 37A to 420A.

Emerging Technologies implemented a single fixture which is capable of calibrating the entire range of product. By using a custom-wound step-down transformer, the system is capable of exceeding the 200A limit of the system current source. Configuration data identifying the device to be calibrated is recalled from a configuration table based on selection by the operator. After the operator starts the calibration, the sequence is fully automatic. The system verifies the correct device has been placed on the fixture and then automatically clamps the device. The unit is then calibrated. At the end of calibration, a serial number is generated and a label is printed. All results, including gain settings, offsets, current values, and error messages are stored to disk in a CSV format.

The system features a replaceable DUT interface for easy maintenance, multi-threaded software for better performance, and optical finger switches and a protective light curtain for operator safety. The use of a precision current transformer downstream from the step-down transformer greatly increases calibration accuracy.

Customer Benefit:

The customer is able to calibrate an entire range of product using the Emerging Technologies custom designed calibration system. The automatic sequence reduces operator input requirements, increasing both the speed and the accuracy of the calibration. The customer was able to provide a rough design and receive an industrialized calibration system in a matter of weeks.

Special Features:

- Light curtain and finger switches for operator safety
- Pneumatic device clamping
- Replaceable DUT interface
- Ability to calibrate sensors at up to 420 amps
- Automatic calibration sequence
- Multi-threaded software for better performance



Components Used:

- California Instruments 4500FX power supply
- Keithley 2000 DVM
- Opto22 I/O
- Precision GE current transformer
- Custom-wound Trenco transformer
- Custom Visual C++ based sequence software

Emerging Technologies, LLC.

Responsibilities:

- Functional Specification Generation
- ✓ Design / Engineering
- ✓ Fabrication
- ✓ Programming – Software
- Programming – Firmware
- Field Installation
- On-Site Commissioning
- Post Commissioning Support
- Other

Technologies:

- Embedded Computers
- Microcontrollers
- ✓ Visual Software
- ✓ Control Software
- ✓ Data Acquisition
- ✓ Computer Based Control
- ✓ Communications – RS232, GPIB
- ✓ System Integration

Customer Category:

- ✓ OEM
- Custom Equipment
- Utility
- R&D

SPECIALISTS IN TEST, MEASUREMENT, AND DATA ACQUISITION

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