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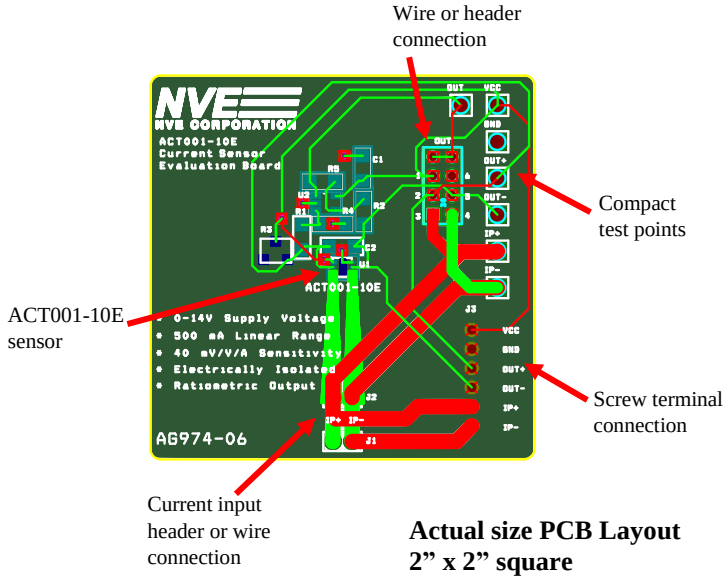
Manual No.: SB-00-150 revision A

NVE CORPORATION

# AG974-07E

## ACT001-10E Isolated Current Sensor Evaluation Board

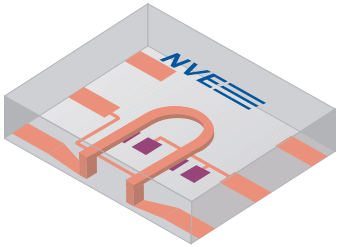


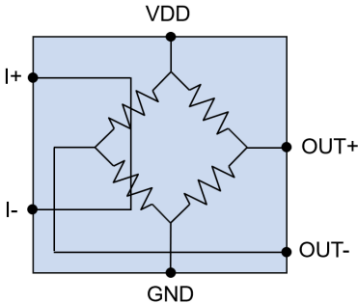

**Actual size PCB Layout**
**2" x 2" square**

SB-00-150

## Overview

This evaluation board allows you to test the remarkable ACT001-10E current sensor and a common application circuit. The ACT001-10E is a fully-isolated, inline current sensor with an on-chip current strap. A Wheatstone bridge manufactured with NVE's state-of-the-art tunneling magnetoresistance (TMR) sensor elements detects the magnetic field from the input current across NVE's unique polymer isolation barrier.






**Key ACT001-10E features include**:

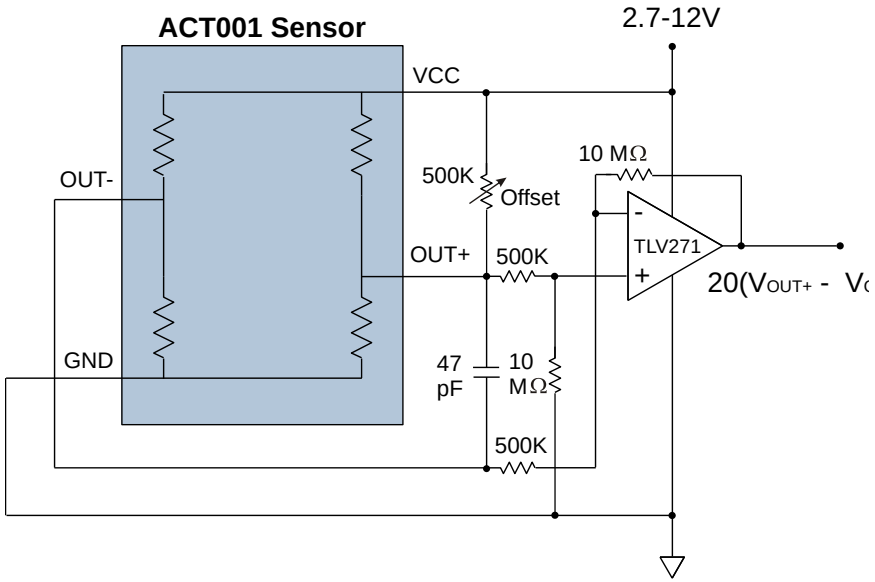
- Bipolar Wheatstone bridge analog output
- High Sensitivity: 0.04 mV/V/mA typical
- Excellent linearity over wide range: 1% full-scale over ±500 mA
- 15 kΩ bridge resistance/7.5 kΩ output impedance for easy interface
- Low hysteresis: 1% worst case
- Wide bandwidth: 300 kHz
- −40 °C to 125 °C
- Ultraminiature 2.5 mm x 2.5 mm TDFN6 package

More information can be found in the datasheet, available for download at www.nve.com/Downloads/ACT001.pdf

## Quick Start

⇨ Connect $V_{cc}$ and GND to a power supply (2.7 to 14V) or a battery.
⇨ Connect the sensor "Out+" and "Out-" to a meter.
⇨ Connect an AC or DC current via the IP+ and IP- terminals.
⇨ Compare the sensor output to the current.

## Schematic




This op-amp circuit has a gain of 20 for full-scale at approximately the sensor's maximum output. The potentiometer provides a positive offset so negative currents still produce a positive output, and corrects the sensor's offset. The 500 kΩ input resistors are significantly higher than the sensor output impedance to avoid loading. The capacitor limits high-frequency noise. The low-cost, low bias current op amp allows large resistors to avoid loading the sensor bridge.

## Customer Support

**Applications support**: sensor-apps@nve.com

**Ordering and purchasing information**: orders@nve.com

**Web-app design support**: www.nve.com/spec/calculators

**Application notes**: www.nve.com/SensorApps

**YouTube video support**: youtube.com/c/NveCorporation