



# EVB222 User Guide

## Referenced Devices

CT220  
EVB222

## Introduction

The EVB222 demo board is designed to demonstrate the current sensing capabilities of the CT220 linear magnetic sensor from Crocus Technology.

The CT220 is a contactless current sensor based on Crocus Technology's patented XtremeSense™ TMR technology. It features a full-bridge configuration comprised of four (4) TMR elements monolithically integrated with active CMOS circuitry allowing it to have a high resolution and low noise in small package footprint.

This user guide describes how to connect and use the EVB222 demo board. It also provides a description of the circuit implemented and expected test results.

## Features

- Total Output Error:  $\pm 0.5\%$  FS (Typical)
- Field (and Gain) Ranges:
  - $\pm 1.5$  mT (300 mV/V/mT)
  - $\pm 5.0$  mT (90 mV/V/mT)
  - $\pm 10$  mT (45 mV/V/mT)
  - $\pm 15$  mT (30 mV/V/mT)
- 3.0 V to 5.0 V Power Supply

## General Description

The EVB222 demo board is shown below, and it features:

- 4x, male header connectors
- 2x, male header connectors
- 1x, CT220 device
- 1x, 1.0  $\mu$ F 0603 SMD capacitor
- 1x, 150 pF 0603 SMD capacitor
- 1x, 105 k $\Omega$  0606 SMD resistor

The 2-pin male header connector is used to apply the bias voltage to the CT220 sensor.

The 4-pin male header on the PCB is used to measure the output from it. The voltage at the ANA (output) pin is proportional to the magnetic field present at the sensor. The EVB also has an RC filter based Low Pass Filter with 3dB frequency of 10 kHz implemented. The filtered response to the magnetic field can be measured from the Filter pin. The output on the FLAG# pin changes state when the magnetic field exceeds  $\pm 1.35$  mT (90% of the full-scale magnetic field range).

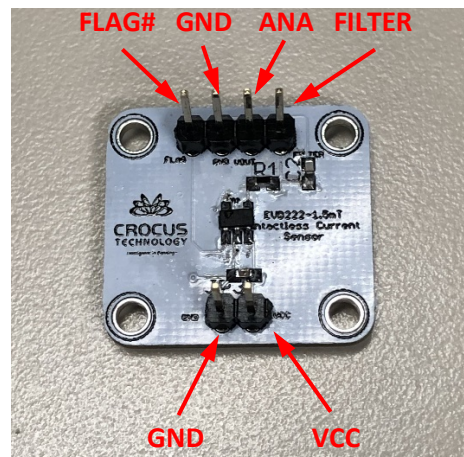


FIGURE 1: EVB222 EVALUATION BOARD



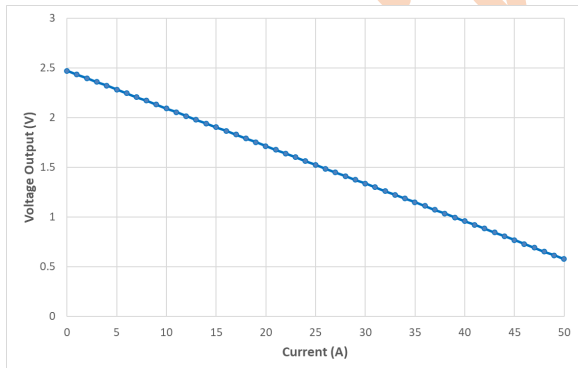
## Board Measurements

The output behavior of the EVB222 is dependent on the geometry and distance from the busbar. The data presented in this document will be for a 1/2" wide, 1/16" thick busbar that is placed 4 mm away from the CT220 surface. This arrangement is shown in Figure 2.



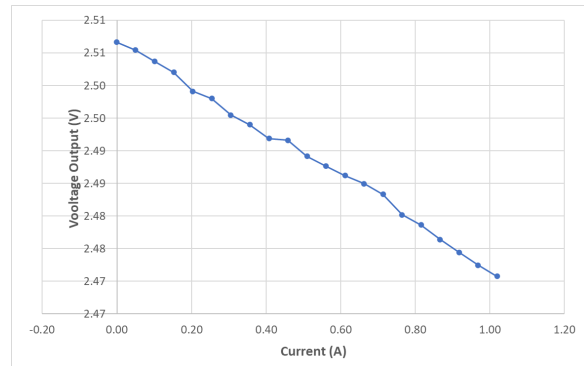
**FIGURE 2: CONTACTLESS CURRENT SENSING USING EVB222**

In this arrangement, the CT220 can be used to measure currents in the range of  $\pm 50$  A. Figure 3 illustrates the linear behavior of the current sensor.



**FIGURE 3: EVB222 OUTPUT FOR BUSBAR CURRENT**

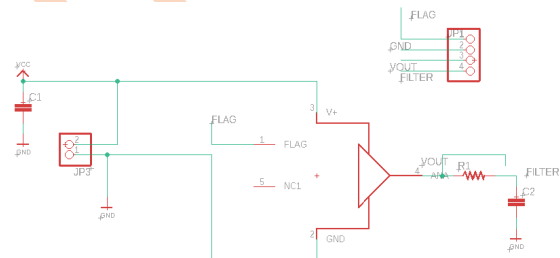
In addition to the excellent linearity, the high Signal to Noise Ratio (SNR) of CT220 enables it to measure extremely low currents. Figure 4 illustrates the ability of EVB222 to detect currents significantly lower than 50 mA.



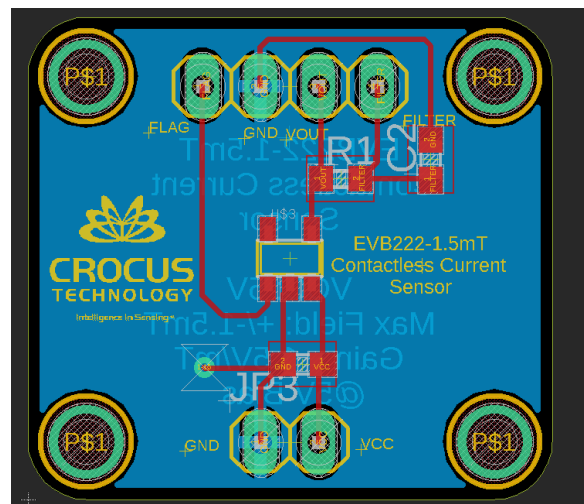
**FIGURE 4: EXCELLENT RESOLUTION OF EVB222**

## Board Schematic & Layout

The CT220 is a standalone device and it does not need any additional circuitry or components as exhibited in Figure 5 and Figure 6.



**FIGURE 5: EVB222 PCB SCHEMATIC**



**FIGURE 6: EVB222 PCB LAYOUT**



## Conclusion

The EVB222 demonstrates the capabilities of the CT220 Crocus Technology TMR linear field sensor. This document provides a description of the demo board circuit and gives representative measurements of gain and linearity error.

## EVB222 Ordering Table

Ordering Part Number	B-Field (mT)	Gain (mV/V/mT)
EVB222-1.5	±1.5	300
EVB222-5.0	±5.0	90
EVB222-10	±10	45
EVB222-15	±15	30

## Contacts

For samples or questions:  
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