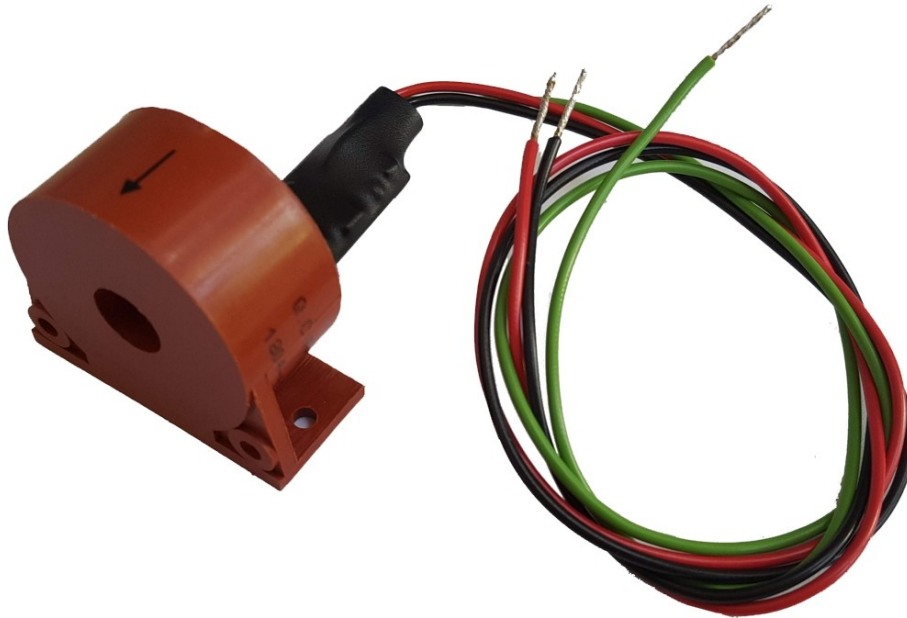


# 50A Magnetic Closed Loop Current Sensor

Operating Manual – English 1.01



## Introduction

The magnetic closed loop current sensor provides a 0.5V to 4.5Vdc output voltage which is proportional to a 50A bi-directional input current.

Advantages of closed loop current sensors over conventional current measurements techniques is that they provide the highest accuracy, are ideal for noisy electrical environments and they provide complete electrical isolation from the current carrying conductor.

## 1 Features

- Measures a bi-directional 50A current (for example Charge/Discharge currents)
- Electrically isolated from the current carrying conductor
- Provides a 0.5V to 4.5Vdc output voltage (0A=2.5Vdc) which is proportional to the measured current.
- Closed loop current sensor technology provides increased accuracy and noise immunity.
- No current shunt is required.
- Compact size, overall dimensions are 41 x 37x 36mm
- Wide input supply voltage range of 8 to 30V DC with built in voltage reversal for harsh electrical environments
- 1 year limited warranty

## 2 Specifications

<b>Supply Voltage</b>	8 to 30Vdc with built in reverse voltage protection
<b>Current Consumption</b>	Approx. 20mA @ 13.8Vdc
<b>Cable connection</b>	Red – 8-30Vdc Black – Ground Green – Signal (voltage output (0.5~4.5V))
<b>Current Measurement Range</b>	50A bi-directional
<b>Current Conductor Hole</b>	9.5mm diameter
<b>Voltage Output (Green wire)</b>	Approx. 2.5V at 0A Approx. 0.5V at -50A Approx. 4.5V at 50A
<b>Linearity</b>	<0.1%
<b>Output Sensitivity</b>	39mV/A
<b>Working Temperature</b>	-25°C to 70°C (-13°F to 158°F)
<b>Storage Temperature</b>	-40°C to 85°C (-40°F to 185°F)
<b>Dimensions</b>	See dimensional drawings below
<b>Weight</b>	Approx. 50 grams

## 3 Installation

Three wires need to be connected:

**Red wire** – This is connected to the positive power supply (avionics bus or EFIS secured supply output). The closed loop current sensor can be used on both 12V and 24V systems without the use of any pre-regulators. Ensure that the supply voltage will not drop below 8V during operation as this may result in incorrect readings. The use of an external 100mA fuse is recommended.

**Black wire** – This wire must be connected to the measuring device's reference ground. In case a RDAC is used, connect this to the reference ground terminal of the RDAC. Do not connect this wire to any other ground path as this will introduce measurement errors.

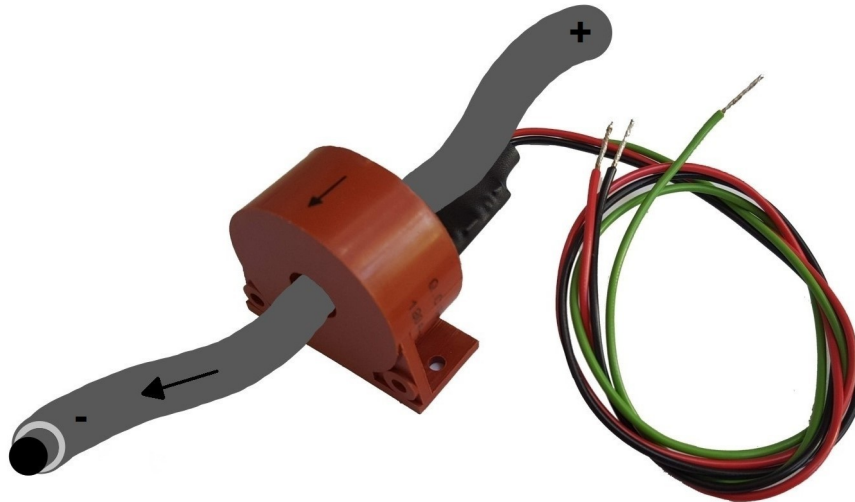
**Green wire** – This is the voltage signal that reflects the strength and direction of the current been measured. It is 2.5V with zero current and moves towards a maximum of about 4.5V or a minimum of about 0.5V depending on the strength and direction of the current.

**Warning: Do not connect the green wire (Voltage output) to the positive supply. This will destroy the output stage of the built in amplifier.**

**Warning: High strength magnetic fields could change the output voltage. Avoid installation close to permanent magnets, electromagnets or iron that can cause distortion in the magnetic field.**

### 3.1 Current Direction

There is an arrow on the top of the current sensor to indicate the direction of the measured current that will result in an increasing voltage for an increase in measured current.

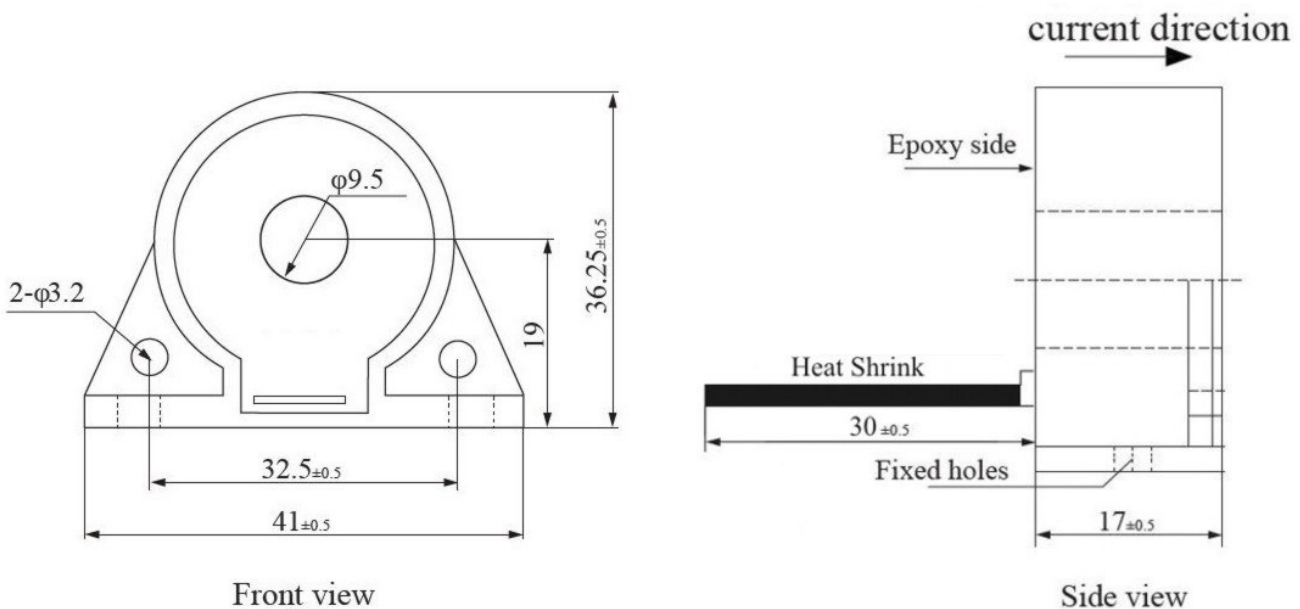


### 3.2 Multi-turn winding to increase sensitivity

The sensitivity of the closed loop current sensor can be increased by passing the primary winding multiple times through the core. For example, passing the wire 5 times through the core will increase the sensitivity by a factor of 5 (The measurement range will decrease from 50A to 10A).

## 4 Dimensional Drawing

All dimensions in mm.



## 5 Warranty

This product carries a warranty for a period of one year from date of purchase against faulty workmanship or defective materials, provided there is no evidence that the unit has been mishandled or misused. Warranty is limited to the replacement of faulty components and includes the cost of labor. Shipping costs are for the account of the purchaser.

**Note:** Product warranty excludes damages caused by unprotected, unsuitable or incorrectly wired electrical supplies and or sensors, and damage caused by inductive loads.

## 6 Disclaimer

Operation of this instrument is the sole responsibility of the purchaser of the unit. The user must make themselves familiar with the operation of this instrument and the effect of any possible failure or malfunction.

This instrument is not certified by the FAA. Fitting of this instrument to certified aircraft is subject to the rules and conditions pertaining to such in your country. Please check with your local aviation authorities if in doubt. This instrument is intended for ultralight, microlight, homebuilt and experimental aircraft. Operation of this instrument is the sole responsibility of the pilot in command (PIC) of the aircraft. This person must be proficient and carry a valid and relevant pilot's license. This person has to make themselves familiar with the operation of this instrument and the effect of any possible failure or malfunction. Under no circumstances does the manufacturer condone usage of this instrument for IFR flights.

### **IMPORTANT NOTICE:**

You must make your own determination if the products sold by MGL Avionics are safe and effective for your intended applications. MGL Avionics makes no representations or warranties as to either the suitability of any of the products we sell as to your particular application or the compatibility of any of the products we sell with other products you may buy from us or anywhere else, and we disclaim any warranties or representations that may otherwise arise by law. Also, we offer no specific advice on how to install any of the products we sell other than passing along anything that may have been provided to us by the manufacturer or other issues. If you are in need of further information or guidance, please turn to the manufacturer, FAA Advisory Circulars and guidance materials, the Experimental Aircraft Association, or other reputable sources.

The manufacturer reserves the right to alter any specification without notice.