

Illustration 2: IS-19 1/4" opening

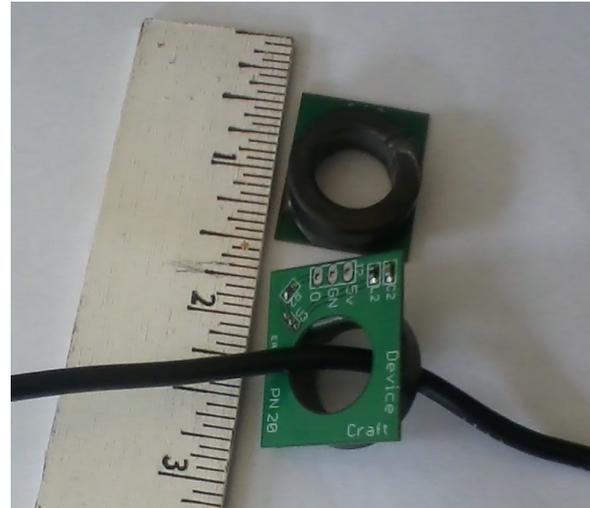


Illustration 1: IS-20 1/2" opening

Hall Effect Isolated Current Sensor P/N IS-19 100amps

Features:

- Linear Sensing Bipolar DC and AC current
- Isolated (sensing wire passes thru 1/4" opening)
- Bandwidth 20khz response time 10usec
- IS-19 small size .71" x .54" opening .25"
- IS-20 small size 1.05" x .9" opening .50"
- Low cost
- +5volt operation (4.5v to 5.5v operating range)
- Low power consumption ~8mA

Applications:

- Measuring high currents without loss
- Over Current protection
- Motor current control

Specifications

Parameter	typical	
Operating Voltage	4.5V to 5.5v	
Power Supply Current	8 mA typical	
Measurement Range	+/-100 Amps Max	
Over Current Response Time	~10us	
Bandwidth	20khz	
DC Offset (with no applied field current)	75mv(MAX) 25mV(typical)	
Sensitivity	18 mV/Amp typical	
Output Center Voltage	½ Supply - ~25mV	
Inductance	~30nh	
Linearity	<3% *2	
Output Swing	Supply - 50mV	
Noise	30mv PkPk	

Input/Output Pins:

Pin	Name	Function
1(top)	Vc	DC power supply input voltage (5v)
2	Gnd	Unit ground input
3	Out	Analog output (~2.5v nominal)

Description

The devicecraft hall effect sensor is a low cost current sensor useful for many applications. A wire is pass through the opening to measure the current level. The non contact measurement method elimates losses for sensing current. The unit also does not require high power connectors.

The standard device is set to have a center voltage of one half the supply voltage. Depending on the direction of current the output voltage will rise or fall with increasing current. To reverse the polarity simply pass the wire through the in opposite direction.

The device can also be made more sensitive by passing the sense wire though the loop multiple times. The output voltage will be linear multiple with the number of turns.

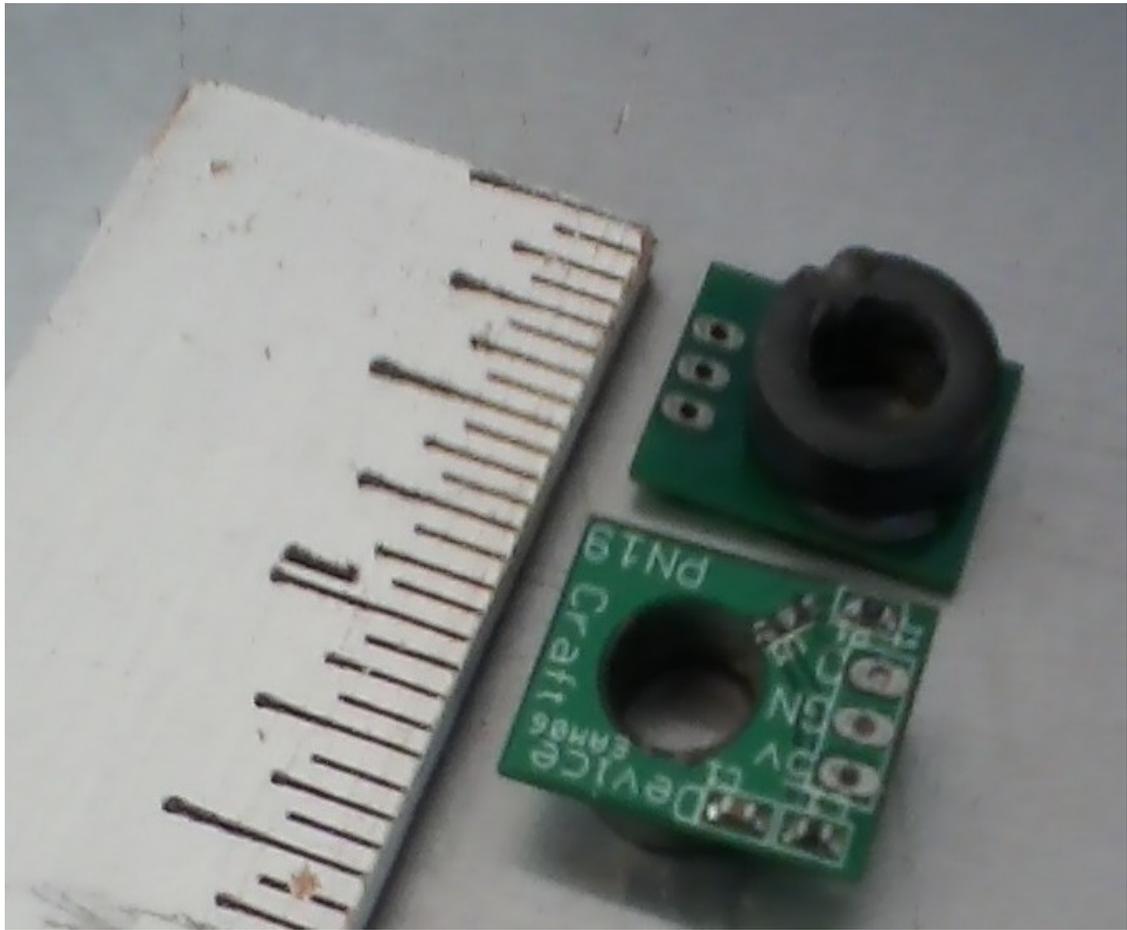
Sensing AC Current

The devicecraft hall effect sensor is capable of sensing both AC and DC currents. When sensing AC currents the output voltage will also be AC floating on $\frac{1}{2}$ the power supply rail. The RMS AC current can be calculated by sampling the signal and converting to a DC value proportional to the AC RMS reading. The sensed AC voltage may also be AC coupled with a series capacitor/resistor to ground and connected to a RMS to DC converter or peak detector.

When sensing AC current the output may be phase shifted or non sinusoidal. Inductive loads, such as motors, and power supplies using peak rectification will produce a phase shifted or distorted sine wave. The sensed current waveform along with the AC voltage can be used to accurately calculated the power factor.

Connection

Three wires are needed. Five volts DC for power, ground, and the output signal. The five volt line has a filter and decoupling capacitor on the circuit board. The output has a 100 ohm resistor for protection. Breakawy strips can also be soldered into the print circuit board. Wires can be soldered into the board to make connection.



Current Sensor Curve

