Henry's Bench

ACS712 Current Sensor User Manual

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Basic Overview

The ACS712 Current Sensors offered on the internet are designed to be easily ᵘ
with micro controllers like the Arduino.

These sensors are based on the Allegro ACS712ELC chip.

These current sensors are offered with full scale values of 5A, 20A and 30A.

The basic functional operation of each of these devices is identical. The only
difference is with the scale factor at the output as detailed below.

> **Other ACS712 Henry's Bench Articles**
>
> ACS712 Arduino Tutorial Shows how to use the device with an Arduino
>
> ACS712 AC Voltage Measurement shows how to measure a Sine Wave Voltage with an Arduino
>
> 18650 Battery Charger shows another implementation of the ACS712
>
> ACS758 Tutorial Shows a similar device for monster currents.

How to Get One

If you don't have one of these modules and think that you may want one, you can try these links. It will on
you back a few dollars.

eBay

Amazon

Bang Good

Deal Extreme

Sensor Specifications

	5A Module	20A Module	30A Module
Supply Voltage (VCC)	5Vdc Nominal	5Vdc Nominal	5Vdc Nominal
Measurement Range	-5 to +5 Amps	-20 to +20 Amps	-30 to +30 Amps
Voltage at 0A	VCC/2 (nominally 2.5Vdc)	VCC/2 (nominally 2.5Vdc)	VCC/2 (nominally 2.5VDC)
Scale Factor	185 mV per Amp	100 mV per Amp	66 mV per Amp
Chip	ACS712ELC-05A	ACS712ELC-10A	ACS712ELC-30A

## ACS712 Module Pin Outs and Connections

The picture below identifies the pin outs for the ACS172 Modules.

Pay attention to the polarity at the load end of the device. If you are connected as illustrated below, the o
will raise. If you connect it opposite of this picture, the output will decrease from the 2.5 volt offset.
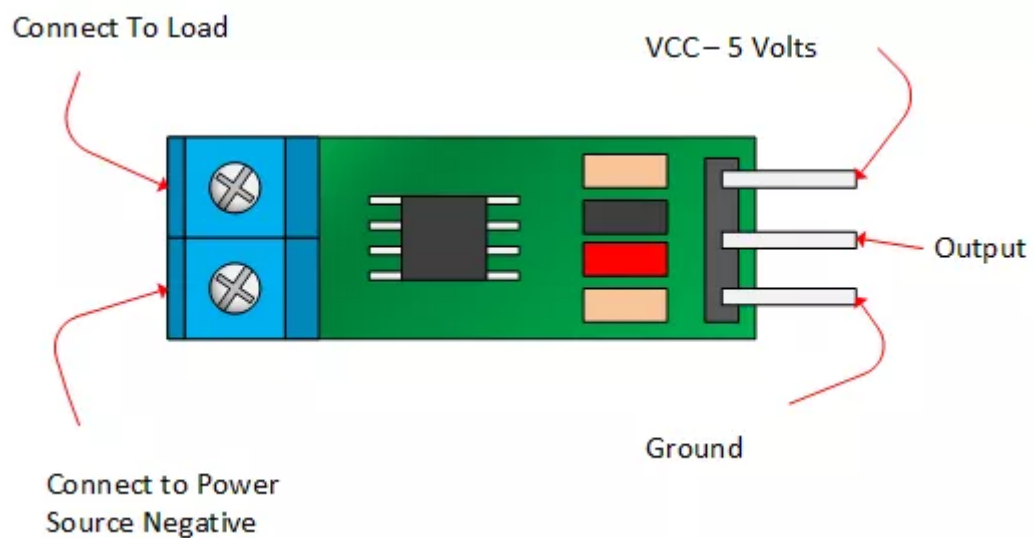
Basic Hook Up and Functional Description

As mentioned before, these modules are primarily designed for use with micro-controllers like the Arduin
those applications, the connections would be as picture below:
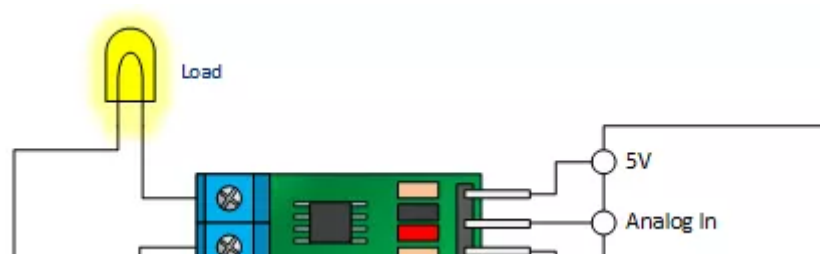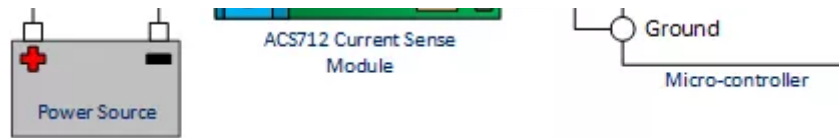
If the light bulb shown in the picture above were disconnected, the output of the ACS712 module would b

module and the light bulb pulled 1 Amp, the output of the module would be 2.685 volts.

Now imagine the battery polarity reversed.   Using the same 5A module, the output would be 2.315 volts.

IMPORTANT NOTE – This device is a Hall Effect transducer. It should not be used near significant magn
fields.

ACS712ELC Datasheet

The datasheet below will give you greater insight into the specifications and operation of this manual.

acs712 datasheet

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11 COMMENTS

December 5, 2016 *capnfatz@gmail.com* Author

December 3, 2016 Leo

Sir, can i use for measuring 12v battery power?

August 21, 2016 steven

Does anyone know the values for C1 and C2?

C1 is Cbyp in the ACS712 datasheet and should be 0.1uF
C2 is Cf in the ACS712 datasheet and sets the bandwidth…
I'd like to know the value of C2

July 27, 2016 *capnfatz@gmail.com* Author

I see a whole lot of challenges.. including the affects of a varying load.

July 21, 2016 Philippe

Hi,
I would like to use this sensor in the following case:
Arduino Uno + L293D motor shied + DC motor
The motor has to turn in a range of 90° to 800°.
I can't put any sensor to detect the motor position
So, I would like to use the ACS712 to monitor the current in the motor and stop it when.
Do you think it is possible?

February 21, 2016 *capnfatz@gmail.com* Author

The motor should pull about 17A. I'd probably be looking at the 30A module. About the only h
you would have is that the motor will draw a ton of current at start up and your current may be
what it is in a steady state unless your driver is limiting it.

February 21, 2016 *novan*

Dear Sir,

I want to measure current supply from battery LiFePO4 20Ah/48Volt, which one correct senso
ACS712-5A or 20A or 30A?
Use for load the driver motor BLDC 800watt/48V, and how about wiring diagram?

Novan

January 13, 2016 *capnfatz@gmail.com* `Author`

I have not used this sensor in that type of application. While the data sheet does not discuss
shift, it does discuss rise time. Depending on the degree of precision you require, it could affe
measurements.

January 13, 2016 *Sameer*

Sir, I am using this sensor in my power factor calculation project. Is there any phase error betv
input current and output voltage ? Please help.

July 9, 2015 *capnfatz@gmail.com* `Author`

Thank you!

July 8, 2015 *Jyk*

Typing error: "output of the module would be 2.865 volts." Instead it should be 2.685 volts

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