XL4016 Step-Down Buck Converter DC-DC Datenblatt
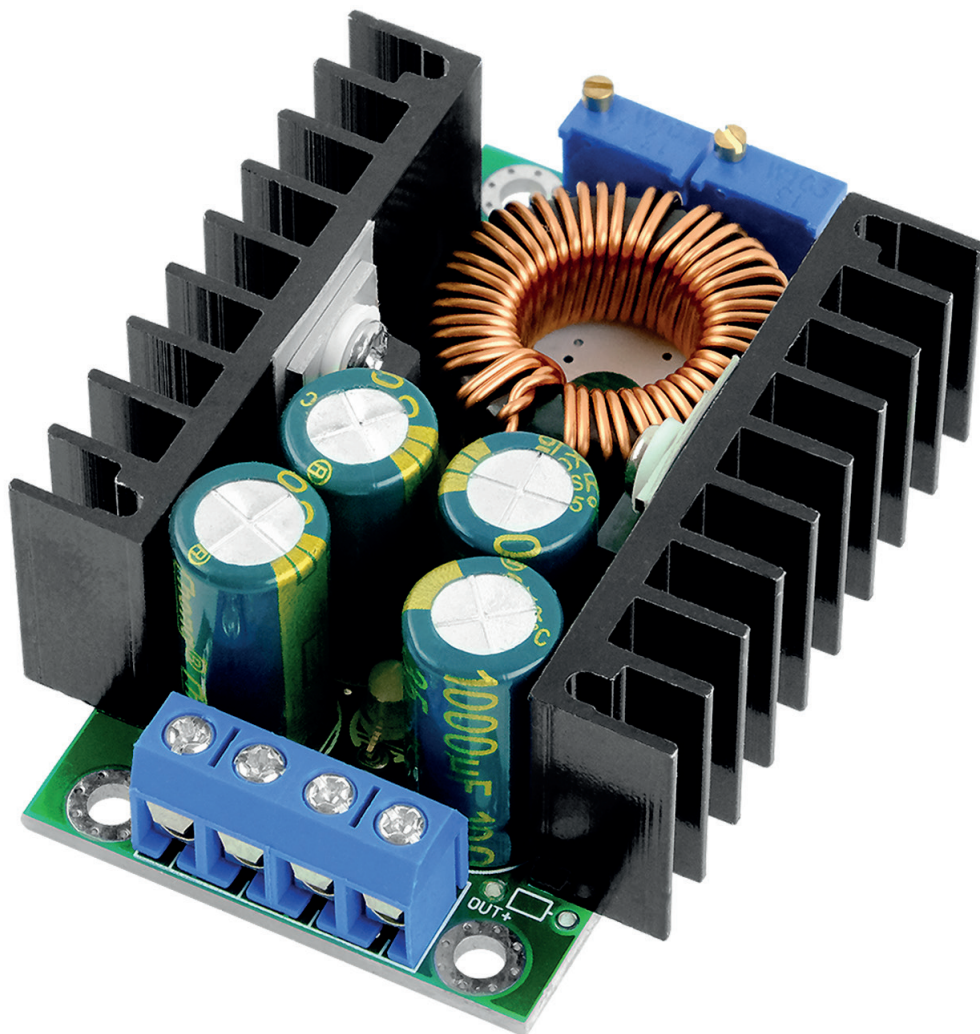
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1. Specifications

Input Voltage Range	5V to 40V DC
Output Voltage Range	1.25V to 35V DC (adjustable)
Operating Current Range	0.2A to 8A (adjustable)
Load regulation	+/- 1%
Voltage Regulation	+/- 1%
Maximum Output Power	250W (load)
Operating Temperature	-40°C to +85°C
Dimensions	6.5cm x 4.8cm x 2.4cm (2.5in x 1.9in x 0.9in)

For optimum and safe operation, protection such as fuses at the input of the converter should be used. This helps to avoid overloading the converter and risk of potential fire hazard.

In case when operating temperature should exceed the 65°C, cooling fan is necessary. The overall temperature of the converter should not exceed 80°C. When under the load, the maximum rated values should not be exceeded, otherwise the module can be damaged.

POWER SUPPLY INPUT - IN+
POWER SUPPLY INPUT - IN-
POWER SUPPLY OUTPUT - OUT+
POWER SUPPLY OUTPUT - OUT-

P1

P2
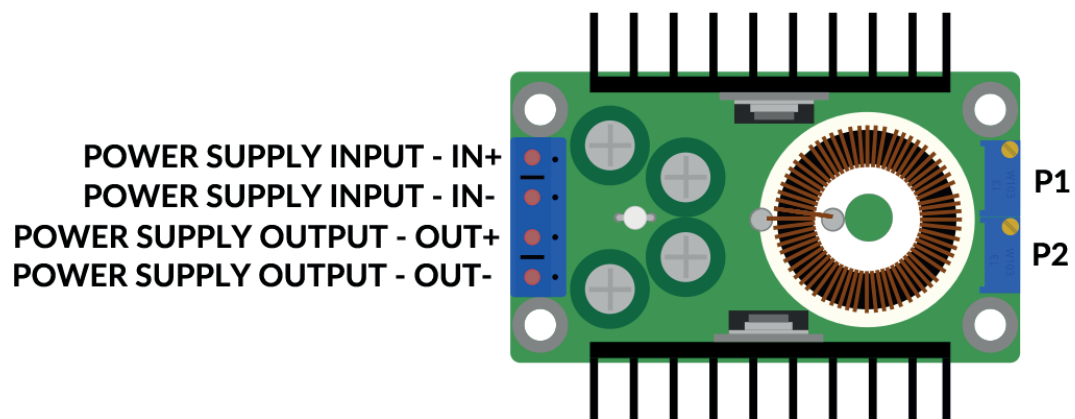
There are two on-board precission potentiometers. The potentiometer P1 is for setting the desired output voltage and the potentiometer P2 is for setting the amount of current at the output of the converter module.

3. Schematic
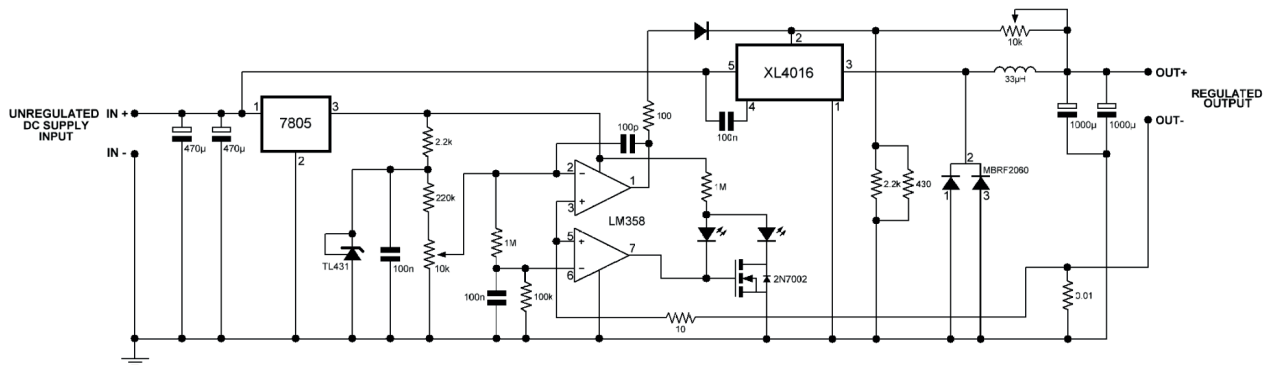
The XL4016 regulator is designed to minimize the number of external components. The module consists of a XL4016 voltage regulator and a few other active (semiconductors) and passive components. It has 7805 5V regulator which is regulating input voltage for the LM358 chip that operates as a feedback voltage comparator. TL431 operates as a shunt regulator, it is used as a positive voltage reference for the comparator circuit. The XL4016 is a switching voltage regulator which means that it is working as a high frequency switch. Dual (Schottky) diode acts as a voltage rectifier and it has a high-speed caracteristic that is esential for efficiency of the converter. The inductor coil operates as energy conversion component. The converter circuit has input and output electrolytic capacitors that operate as filters to clean ripples from the previous unregulated and switching part of the circuit and to store electrical energy.

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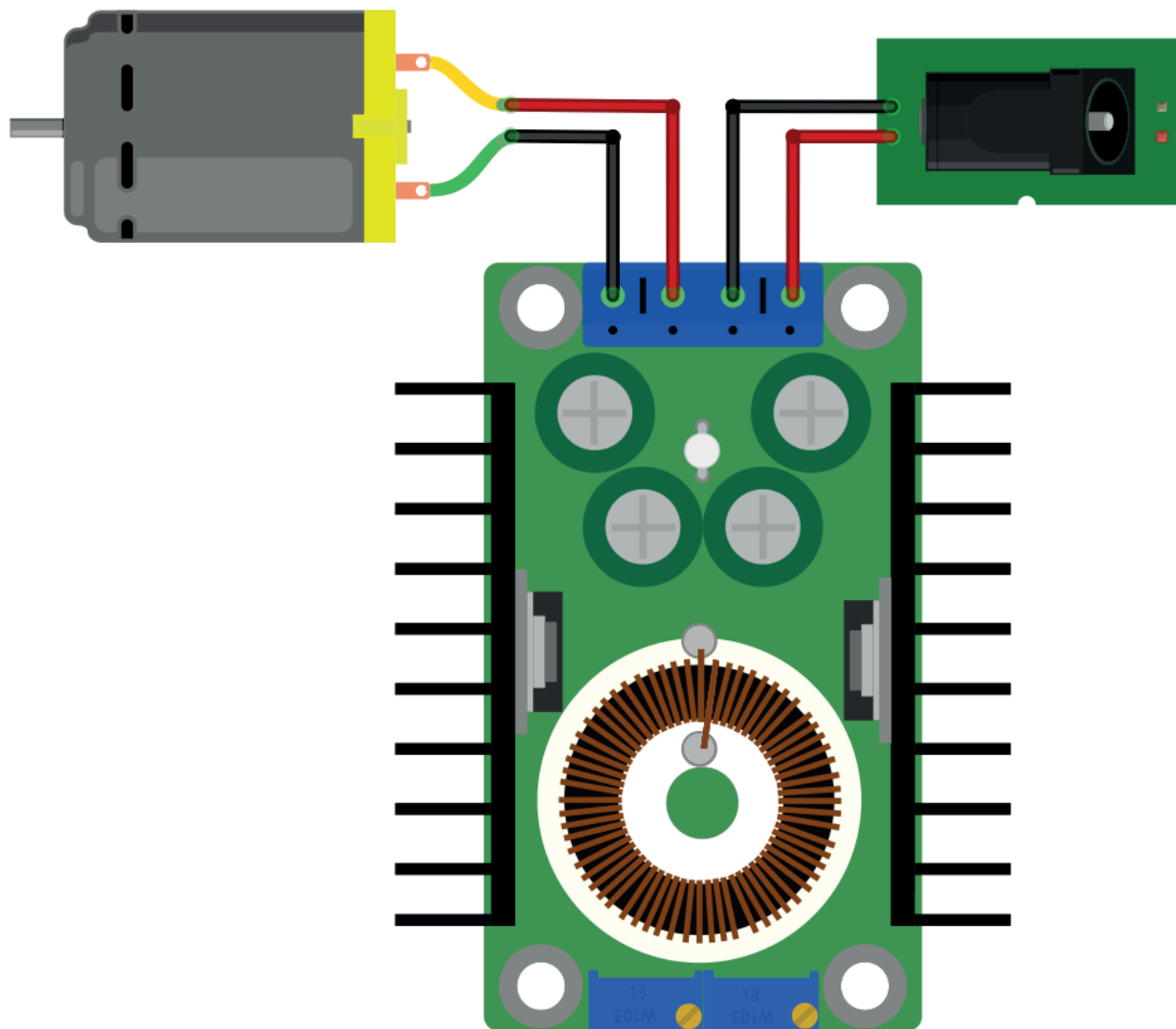
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