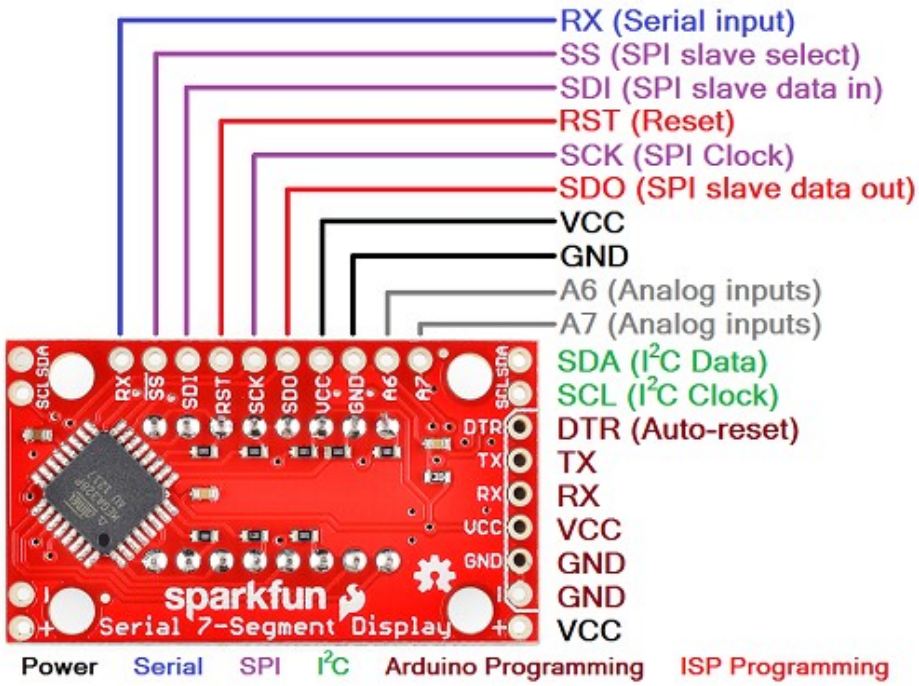
Hardware specifications

jimblom edited this page on 5 Nov 2012 · 9 revisions

All pins on the Serial 7-Segment display are through-hole and labeled on the silkscreen:



- The power pins - *VCC* (also labeled in space-limited spots as +) and *GND* (also -) are the power inputs to the Serial 7-Segment Display. These inputs are **unregulated**; see the section below for a discussion of voltage limits on these pins.
- The serial input pins for both serial and SPI communication modes are located on the top header. Serial uses only the *RX* pin. SPI requires connections to *SS*, *SDI*, and *SCK*.
- SDA, SCL, VCC (+) and GND (-) are all broken out twice - on each of the sides of the display - to allow for multiple displays to be linked together.
- A set of six pins from *DTR* to - on one side of the display form the **serial programming header**, also known as an FTDI header. These pins can be interfaced with an FTDI Basic (3.3V or 5V) or an FTDI Cable to both

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supply power to the display and work for serial programming from the Arduino IDE.

- *A6* and *A7* - Arduino-ized labels for the ATmega328's ADC6 and ADC7 pins - are broken out, but have no functionality with the current firmware release. Eventually we hope to add features like counter and 10-bit ADC display modes. These pins can be used in Arduino code as analog inputs only.

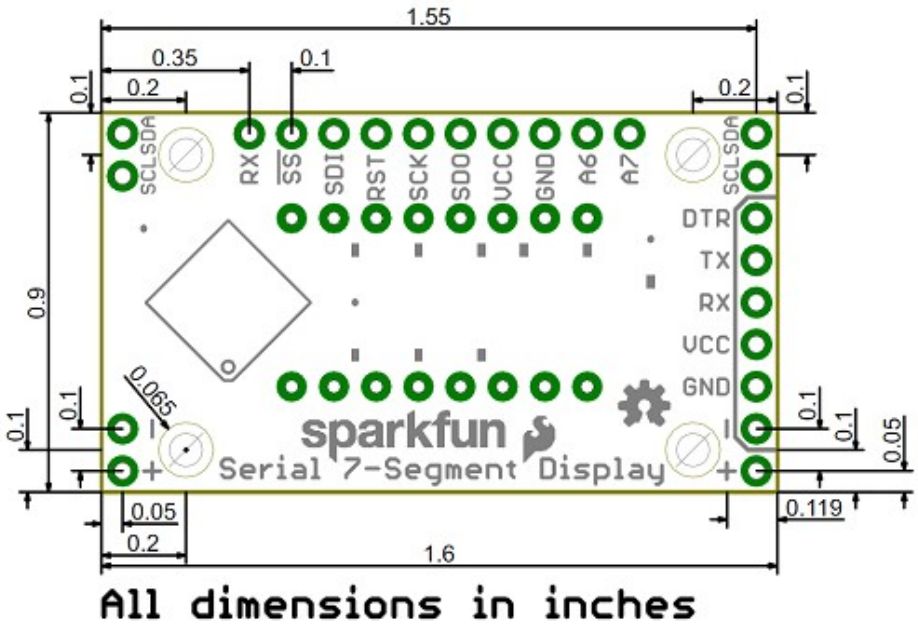
Board Design Files

The Serial 7-Segment Display's **schematic** is available in pdf and in its Eagle format right here in this repository.

The PCB design is available in the hardware folder of this repository.

Physical Dimensions

The overall dimensions of the Serial 7-Segment Display are **1.6 x 0.9 inches**.



All through-hole pins on the display are spaced by a breadboard standard 0.1 inches.

The LED display itself is centered on the back side of the Serial 7-Segment Display. The digit height is 0.39", and overall the display is 1.58 x 0.5". The display is 0.276" tall.

Absolute maximum ratings

Parameter	Min	Typ.	Max
Operating temperature	-25°C		+85°C
Storage temperature	-30°C		+85°C
Operating voltage	2.4V		6.0V

Note: The Serial 7-Segment Display's electrical characteristics can mostly be derived from the ATmega328's datasheet or the datasheet for the LED.

Operating characteristics

Parameter	Min	Typ.	Max
Supply voltage	2.4V	3.3-5V	5.5V
Supply current (Vcc=3.3V)	3.8mA		7.9mA
Supply current (Vcc=5V)	6.9mA		14.1mA

##LED Characteristics (TODO)

Datasheet Links:

- Datasheet Homepage
- [Interface-Specifications](Interface Specifications) - UART, SPI, and I2C explanations
- Basic Usage - Displaying Numbers and Characters, Clearing, Cursor Control
- Special Commands - Reset, Decimal, Cursor, Brightness, Baud, TWI address, and Individual segment control
- [Arduino-Examples](Arduino Examples) - Example Code for SPI and I2C
- [Customizing-the-Display](Customizing the Display) - Uploading a custom Arduino Sketch