




**Caveatron SV Bill of Materials**  
**Hardware Revision: A**  
**Date: 2021-04-18**




All the parts in this list have been tested with the Caveatron and have either been integrated into the code or are planned to be.  
For some parts, alternate options are available.

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Item	Qty	Manufacturer	Mfr. P/N	Description	Suggested Vendor Link	Photo
Graphics Module (SPI Flash Memory)	1	Multiple (Winbond IC)	W25Q64 or similar	W25Q64 64Mbit 8MByte Flash Memory Module Data Flash SPI Interface	<a href="#">Amazon</a>	
<b>Notes:</b> Storage for fonts and graphics used in the GUI. SPI Flash memory must be Winbond W25Q32, W25Q64, or W25Q128 (memory size should be 32Mbit or higher.) Winbond W25Q16 (16 Mbit) could be used, but will only hold the fonts and not support the graphics.						
Laser Rangefinder  OPTION 3	1	JRT Meter Tech., Co, Ltd.	Unknown	40m – 60m Laser Distance Sensor Module	<a href="#">Ebay</a>  Availability changes frequently. Site linked above has availability as of the date of this BOM	
<b>Notes:</b> Used for station distance measurements. There are several variants of this module. Be sure to get the small one that is about 50 mm(2”) in length.						
IMU/ Compass Module  OPTION 1	1	Pololu	MinIMU-9 v5 (#2738)  Or  AltIMU-10 v5 (#2739)	AltIMU-10 v3 Gyro, Accelerometer, Compass, and Altimeter (L3GD20H, LSM303D, and LPS331AP Carrier)	<a href="#">Pololu</a>	
<b>Notes:</b> Used to determine orientation of the Caveatron and measure azimuth and inclination. This is the best currently available IMU module option although the discontinued models below have half the noise floor if you can find them. The AltIMU-10 v5 is an equivalent part and can also be used (the altitude sensor is not used).						






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Item	Qty	Manufacturer	Mfr. P/N	Description	Suggested Vendor Link	Photo
Voltage Regulator – 5V	1	Pololu	2119	5V Step-Up/Step-Down Voltage Regulator S7V7F5	<a href="#">Pololu</a>	
<b>Notes:</b> <i>Power supply for Teensy.</i>						
Voltage Regulator – Adjustable	1	Pololu	2118	Pololu Adjustable Step-Up/Step-Down Voltage Regulator S7V8A	<a href="#">Pololu</a>	
<b>Notes:</b> <i>Power supply for Laser Rangefinder. Output needs to be set to 3.0V.</i>						
Power Switch Module	1	Pololu	2808	Mini Pushbutton Power Switch with Reverse Voltage Protection, LV	<a href="#">Pololu</a>	
<b>Notes:</b> <i>Turns on and off system power when pushbutton power switch is presses and also controls timed auto power-off.</i>						









Item	Qty	Manufacturer	Mfr. P/N	Description	Suggested Vendor Link	Photo
USB Cap	1	GT Contact	GT1C522 122	Seal Cap	<a href="http://USBFireWire.com">USBFireWire. com</a>	
<b>Notes:</b> Waterproof cap for USB jack.						
RTC Battery Holder	1	MPD and others	BC501S M	Coin Cell Battery Holder - 12mm (for CR1220 batteries)	<a href="#">Digikey</a>  <a href="#">Amazon</a>	
<b>Notes:</b> Holds a CR1220 battery to provide power to maintain the Real-time clock on the Teensy 3.6. Identical holders are available from many sources with differing part numbers but those I have checked that are surface mount all have nearly identical dimensions so should work.						
MicroSD Card	1	Various	Various	SanDisk 16GB Ultra microSDHC UHS-I Memory Card	<a href="#">Amazon</a>	
<b>Notes:</b> Storage for Caveatron data. Numerous brands and sources available. MicroSD card must be SDHC type not larger than 32 GB. SanDisk brand is preferred as they are generally the most reliable.						





Item	Qty	Manufacturer	Mfr. P/N	Description	Suggested Vendor Link	Photo
Threaded Inserts for Enclosure	10	Initeq		#6-32 Threaded Heat Set Inserts for 3D Printing (Long)	<a href="#">Amazon</a>	
<b>Notes:</b> Heat set threaded inserts used in 3D printed enclosure.						
Threaded Inserts for external mounting (Optional)	1	Initeq		#1/4-20 1/4" Threaded Heat Set Inserts for 3D Printing (Short)	<a href="#">Amazon</a>	
<b>Notes:</b> Heat set threaded inserts used in 3D printed enclosure for external mounting. This is an optional part if you plan to attach something external to the Caveatron (like a handle) or mount it to a tripod.						
2-28 Thread Rolling Screws	14	Small Parts		410 Stainless Steel Thread Rolling Screw for Plastic, Passivated Finish, Pan Head, Phillips Drive, #2-28 Thread Size, 1/4" Length	<a href="#">Amazon</a>	
<b>Notes:</b> Screws for threading directly into 3D printed holes						
4-20 Thread Rolling Screws	10	Small Parts		410 Stainless Steel Thread Rolling Screw for Plastic, Passivated Finish, Pan Head, Phillips Drive, #4-20 Thread Size, 1/4" Length	<a href="#">Amazon</a>	
<b>Notes:</b> Screws for threading directly into 3D printed holes						





**Other Required Items:**

PETG Filament for 3D Printing

Caveatron SV Printed Circuit Board

CR1220 Battery

Single row male headers

Single row female headers

Double row female headers 2x20 (for 40 pin LCD Connector)

6-32 x 1/2" Flat Head Screws (8x)

6-32 x 3/8" Pan Head Screws (4x)

6-32 x 9/16" Pan Head Screw (1x)

6-32 Nut (3x)

Adhesive-backed foam

Epoxy, sealant, and grease

Tape (Kapton or electrical)

Soldering supplies

**Notes:** *For assembly and electrical interconnections between boards.* Several sizes of standard hardware required. More information in assembly instructions.