Caveatron Bill of Materials – 12m RP LIDAR Module

Date: 2019-11-05

The LIDAR module mounts onto the top front of the main enclosure and is easily detachable. The module is designed to use a custom 3D printed enclosure consisting of a base part, a lid bottom part, and lid top part. An STL file of these parts is provided. PETG is the recommended printing material.

Item	Qty	Manufacturer	Mfr. P/N	Description	Suggested Vendor Link	Photo
LIDAR	1	Slamtec	RPLIDAR A1M8	LIDAR 360 Degree Laser Range Scanner	RobotShop	
Notes: Scanni	ing LIDA	A <i>R sensor.</i> Other n	nodels that m	ay also work but have not beer	n tested include	RPLIDAR A2M6, A2M8, and A3M1.
Voltage Regulator – Adjustable (OPTIONAL)	1	Pololu	2118	Pololu Adjustable Step- Up/Step-Down Voltage Regulator S7V8A	<u>Pololu</u>	

Notes: Power supply for Laser Rangefinder. Output is set so that the LIDAR is rotating at about 5 Hz (300 RPM). The voltage is typically set to about 3.68 V. It is not necessary to use this component since the LIDAR motor can be directly operated off of 5V, which gives a rotation speed of 7.5 Hz (450 RPM) but reduces the number of points per rotation from 400 to 267.

Item	Qty	Manufacture	Mfr. P/N	Description	Suggested	Photo
		r			Vendor Link	
LIDAR Rail	1	Weaver	49819	0.22 Caliber 1-inch Tip-Off	<u>Amazon</u>	
Mounts				Rings		

Notes: Parts for making the rail mounts. The top ring portion is cut off making a flat top and two threaded holes are machined into each ring base for attachment to bottom of LIDAR module enclosure.

LIDAR	1	Conxall/	16982-	Micro-Con-X 6 Position	<u>Digikey</u>	
Interface Plug		Switchcraft	6PG-522	Circular Connector Plug,		
				Male Pins Solder Cup Gold		
						0
Notes: lack for	LIDAR	interface cable	Available from	multinle vendors		

Notes: *Jack for LIDAR interface cable.* Available from multiple vendors.

Cable Gland		Many sources	PG7	Waterproof Cable Gland Wire Feedthrough	Amazon or many other sources	
-------------	--	-----------------	-----	--	------------------------------------	--

Notes: Feeds LIDAR interface cable out of LIDAR enclosure. Numerous small variations of style and color are available, so long as it is PG7 size.

Item	Qty	Manufacturer	Mfr. P/N	Description	Suggested Vendor Link	Photo
Window Material	1	Small Parts	5302441212	Acrylic Sheet, Transparent Clear, Standard Tolerance, ASTM D788, 0.118" Thickness	Amazon	
and defects of	the vari	ious clear plastics	tested, which is in	nportant for not interfering with t	ne LIDAR and rangefind	eems to be the most transparent with the least distorting readings. This is a thicker window than is used on the sused, the thinner material could be used instead.

Threaded	1	Small Parts	STPVC-0093-F	Qty 20 M4-0.7 Threaded Heat	<u>Amazon</u>	O Man
Inserts for				Set Inserts for 3D Printing		
Enclosure Lid				(Long)		

Notes: Heat set threaded inserts used in 3D printed LIDAR enclosure for lid screws.

Item	Qty	Manufacturer	Mfr. P/N	Description	Suggested	Photo

					Vendor Link	
O-Ring Gasket Material	1	Small Parts	S70.093	.093" (3/32" Actual) Silicone O- Ring Cord Stock, 70A Durometer, 0.093" Thickness	Amazon	
Notes: Seal gas	ket for	LIDAR lid.				
JST Connector for LIDAR Motor	1	Various	N/A	JST 1.25mm pitch, 3 pin, male connector	<u>Amazon</u>	<u>(n'n'n)</u>
Notes: Connect	or for L	LIDAR Motor.				
JST Connector for LIDAR Sensor	1	Various	INM2504	JST 1.25mm pitch, 4 pin, male connector	<u>Amazon</u>	

Notes: Connector for LIDAR Sensor

Other Required Items:

M4 x 12 Screws for Lid

4 conductor cable to connect LIDAR module to main enclosure through Cable Gland to LIDAR Interface Plug

Slightly flexible sealing epoxy to attach LIDAR windows (marine grade epoxy, silicone epoxy or similar). Rigid epoxies may warp the windows.

Tape and/or cable ties to manage wiring and voltage regulator.

Notes: For assembly and electrical interconnections