

Solar Concentrator Parts and Tools List

Parts

Part	Quantity	Unit Price	Price
PLA or PETG filament for 3D printed parts (1kg)	1	25.00	25.00
0.125" Acrylic Mirror, Cut to Size (2.5" x 2.5")	100	0.40	40.00
Adafruit Feather M4 Express	1	22.95	22.95
Stacking Headers for Feather - 12-pin and 16-pin female headers	1	1.25	1.25
DC Motor + Stepper FeatherWing Add-on	1	19.95	19.95
Stepper motor - NEMA-17 size - 200 steps/rev	1	14.00	14.00
Stepper motor - NEMA-17 size - geared 27:1	1	37.50	37.50
Stepper Motor Mount with Hardware - NEMA-17 Sized	1	8.95	8.95
DS3231 Precision RTC FeatherWing Add-on	1	13.95	13.95
Adafruit 9-DOF Orientation IMU Fusion Breakout - BNO085	1	19.95	19.95
FeatherWing Tripler Mini Kit - Prototyping Add-on	1	8.50	8.50
USB cable - USB A to Micro-B	1	2.95	2.95
12V 5A Power Supply w/ Barrel Jack	1	11.99	11.99
Wire, stranded-core, general	1	2.95	2.95
Lazy Susan Turntable Bearing - 16 inches	1	33.20	33.20
608 Skateboard Ball Bearing	6	0.60	3.60
3/16" Wooden Pegboard (at least 30" x 30")	1	20.00	20.00
1/4" Plywood (at least 3' x 2')	1	5.00	5.00
3/4" Electric Metallic Tube Conduit (at least 2')	1	5.00	5.00
1.25LB 1" Hole Black Cast Iron Weight	1	9.00	9.00

Machine screws, Phillips pan head, 1/4" - 20 x 3/8"	200	0.0552	11.04
Metric machine screws, Phillips pan head, 2mm x 0.4mm x 8mm	200	0.0241	4.82
Wood screws, Phillips flat head, #8 x 3/4"	12	0.26	3.12
Wood screws, Phillips flat head, #8 x 1/2"	8	0.22	1.76
Wood screws, Phillips flat head, #8 x 1"	3	0.26	0.78
Wood screws, Phillips flat head, #8 x 2"	1	0.30	0.30
Machine screws, Phillips pan head, 1/4" - 20 x 1"	6	0.27	1.62
Metric hex bolts, 8mm x 1.25mm x 40mm	2	0.60	1.20
Metric hex nylon insert lock nuts, 8mm x 1.25mm	2	0.15	0.3
Metric flat washers, 8mm	4	0.09	0.36
Metric machine screws, Phillips pan head, 5mm x 0.8mm x 30mm	6	0.21	1.26
Metric hex nylon insert lock nuts, 5mm x 0.8mm	6	0.08	0.48
Metric socket cap, 3mm x 0.5mm x 30mm	2	0.12	0.24
Metric socket cap, 3mm x 0.5mm x 12mm	1	0.07	0.07
Metric socket cap, 3mm x 0.5mm x 6mm	1	0.06	0.06
Metric hex nuts, 3mm x 0.5mm	2	0.06	0.12
Metric hex nylon insert lock nuts, 3mm x 0.5mm	2	0.06	0.12
M2.5 Standoffs and Nuts	8	0.37	2.96
1/2" x 2" Wood/Board (at least 6')	1	20.00	20.00

Total	\$356.30
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* Recommended retailers for parts are Adafruit (electronics), Amazon (general), HomeDepot (wood/metal), and BoltDepot (bolts/screws)

Tools

Tool	Recommendation/Comments
Computer	Must have USB and capability to run 3D modeling programs, CAD/CAM software, and coding software such as VS Code or Mu
3D printer	Prusa i3 MK3S+ or Creality Ender-3 (must have good dimensional accuracy and large bed size)
Laser Cutter	Glowforge (for cutting acrylic mirror)
CNC Milling Machine	Mostly Printed CNC or Inventables X-Carve (must be able to mill wood)
1/4" Screw Tap	Any
Screwdrivers, various	iFixit Mako Driver Kit
Drill	Any
Pliers	Any
Saw	Any (circular saw recommended in order to cut large pieces of wood/plywood to size)
Pipe Cutters	Any (must be able to cut 3/4" metal tubing)
Eye Protection	Welding goggles (at least shade-5)
Extension Cord	Any
Glue	Gorilla Super Glue and Hot Glue
Tape	Any