

University of Cape Town
Engineers Without Borders Society
Electronics Team
Components List for Prototype v01
20 August 2022

This document shows the components that are required to build a prototype for the iSondlo Garden Project. The electronics team was divided into the Power and Solar sub-team and the Control and Monitoring sub-team. As such, two tables are included, one for each team. These tables also show the vendors from which the components will be purchased and the price of each component on the date that the document was compiled. Components that can be obtained from the university show a dash for the cost. The total cost includes the shipping cost for components that need to be purchased online.

Table I: Components required by the Control and Monitoring Team for the construction of the prototype

Component	Specifications	Quantity	Vendor	Cost [in Rands]
Arduino Uno	Geekcreit UNOR3 ATmega328P, with USB	1	Banggood	280.40
Arduino GSM GPRS Shield	SIM900 Quad Band GSM GPRS Shield, Embedded TCP/UDP	1	Robofactory	499.00
Bucket	5l bucket	1	-	20.00
Clear Set Epoxy Glue	Alcolin Epoxy Liquid Rapid Set Clear 2 x 20 ml	2	Takealot	90.00
Diode	1N4001 1A 50V	2	AliXpress	64.64
Garden Stake/Skewer	Standard irrigation stake 200 mm	1	-	20.00
Heat Gun/Hairdryer	Black & Decker Heat Gun (1750W)	1	Takealot	404.00
Heat-shrink Tubing	¼-inch, ½-inch, ¾-inch adhesive lined Polyolefin	1	Builders	130.00

Humidity Sensor	DHT11 Temperature and Humidity Sensor	1	Robofactory	35.00
LDRs	Light dependent resistors	1	Robofactory	19.00
Micro SD Card Module	Arduino Micro SD Card Reader Compatible with Arduino	1	Robofactory	65.00
Nail Polish	For exposed circuits	1	-	20.00
Relay Switch (min rating 10V, 2A, 20W)	5V One 1 Channel Relay Module Board Shield with optocoupler Support High and Low Level Trigger.	1	Robofactory	20.00
Resistors		1	-	-
Sim Card + Data (500 MB)	MTN SIM Card, 500MB x 3 months	1	-	133.00
Soil Moisture Sensor	Capacitive type moisture sensor	2	Takealot	109.00
Solenoid Valve	Orbis - Solenoid valve jar top	1	Takealot	339.00
Tubing	2 m, ½-inch Libra marketing PT011 Tubing	1	Builders	30.00
Transistor	2N222A NPN	1	-	-
Waterproof Temperature Sensor	Temperature Sensor - DS18B20 - 1M	1	Robofactory	169.00
			Total	2294.04

Table II: Components required by the Power and Solar sub-team for the construction of the prototype

Component	Specifications	Quantity	Vendor	Cost [in Rands]
PV Module	CNBM 6M-55 55W Mono Solar Panel, max V_{mp} =18.6V, max I_{mp} =2.96 A.	1	Sustainable.co.za	679.00
Battery	Solar Gel 12V Battery 33AH Deep Cycle	1	Takealot	1289.00
Cables*	-	-	-	-
Charge Controller	10A, 133x70x35mm	1	Takealot	289.00
Mounting System*	Ballast mount	-	-	-
			Total*	2257