ESP32 Shutter Tester Parts V1.5   28 02 2024

Below are links to the parts required to make the ESP32 Shutter Tester.

Links are valid now, but of course could become dead in the future.

Links are (mainly) for UK suppliers and are a guide only. Use a supplier from your country.
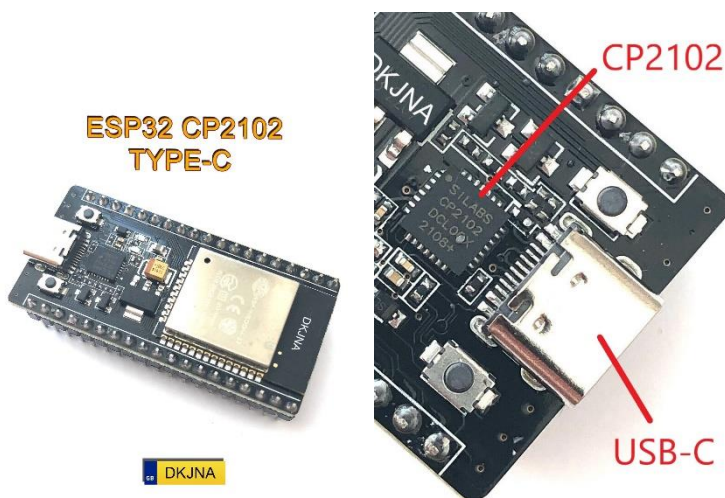
Ordering from China either from eBay sellers or AliExpress, the parts will be much cheaper.

Note, often if buying from AliExpress, there is a free express shipping option, if buying parts over a set value.

ESP32 NodeMcu board. 38 pin version. USB-C   CP2102

NodeMcu ESP32 WROOM-32 Type C Development Board Dual Core WLAN WiFi Bluetooth | eBay

ESP-WROOM-32 ESP32-S Nodemcu ESP32 Development Board ESP32 Bluetooth Wifi 32Mbit SPI Flash Bluetooth Module ESP32 30 Pin/38Pin - AliExpress

IMPORTANT. There are multiple variants of this board. Get 38 pin USB-C and CP2102 chip.
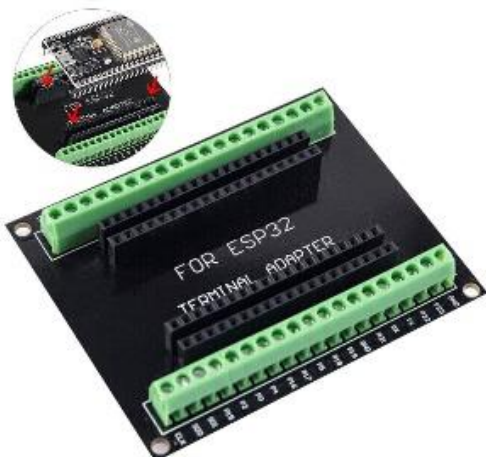Note:- The guides have been written for this specific board type. Boards which differ with their USB chip and/or connector will still work, but the guides will not detail different driver installs or pin layout differences.

ESP32 prototype/breakout board (38 pin screw-terminal version)

38 Pin ESP32 Breakout Board For ESP32 Development Board 2.4 GHz Wifi Dual | eBay

ESP32 Expansion Board Compatible with ESP32 WiFi Bluetooth Development Board NodeMCU-32S Lua 38Pin GPIO Expansion Board - AliExpress
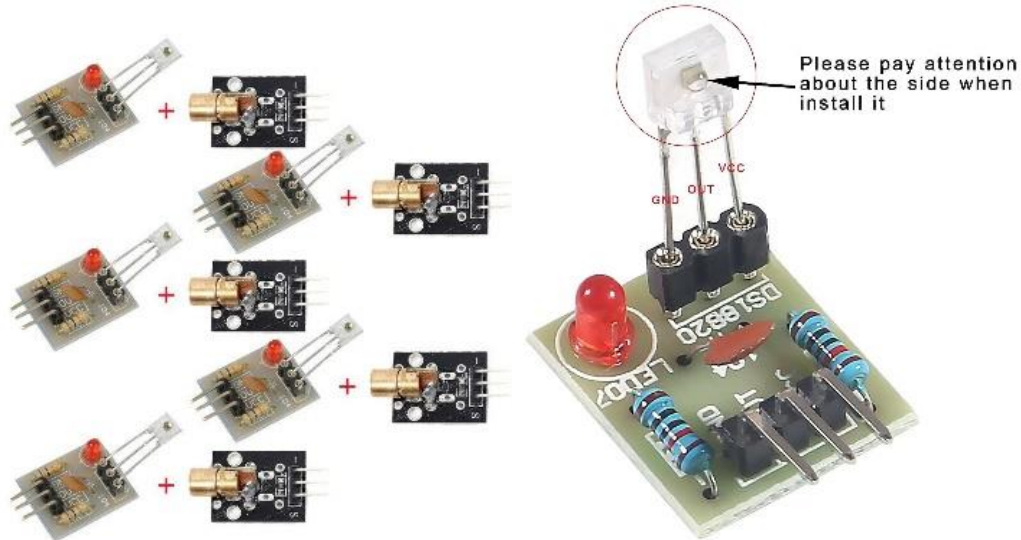
Laser tx & rx module.

Three Laser tx and rx module pairs are required.

The sensor is supplied loose. ENSURE YOU INSERT IT THE CORRECT WAY ROUND!!!. Little bubble lens points towards the header pins.
Note:- link is for a China supplied pack of 5 pairs. UK prices are far too high, I could not find a reasonably priced tx & rx pair in the UK when compiling this list.
Arduino Laser Sensor Receiver | Laser Transmitter Module Arduino - 10pcs/set Sensor - Aliexpress
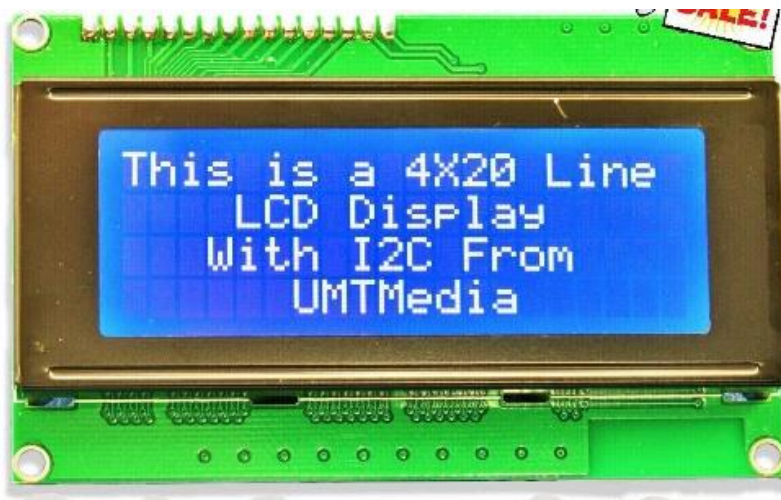

LCD Module 2004 with IIC (optional)

Ensure you get a module that includes the IIC or i2C module. The LCD screen is not required if using the tft screen, or no screen is wanted, as all output is also sent to the computer monitor. However, future firmware upgrades may incorporate touch-screen functionality, which will require use of the tft screen.
IIC/I2C/TWI 2004 20X4 Character LCD Module Display For Arduino Blue Serial 5056517066560 | eBay

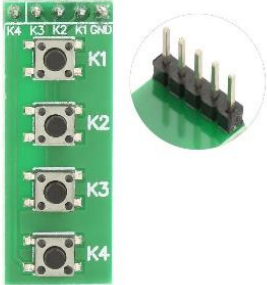LCD2004+I2C 2004 20x4 2004A Blue/Green screen HD44780 Character LCD /w IIC/I2C Serial Interface Adapter Module for arduino - AliExpress

Button Module.

There are all sorts of buttons available, feel free to choose different ones depending on your final design. This module has the advantage of header pins for use with Dupont jumper wires. It is good for prototyping, but for the final build, the buttons listed below are far better.

[DIY Kit 1x4 4 Independent Key Button Keypad Keyboard Module Mcu for Arduino Student Class Design Graduation Project Experiment - AliExpress](#)

Note:- This set does not have a White button, so only order this set if you cannot solder & require pre-wired buttons. The Blue or Red button can be used in lieu of White, but the on-screen prompts will still refer to 'White'

[DaierTek 5PCS 12mm Momentary Push Button Switch On Off Mini Round Switch Waterproof PBS-33B 3A 125V AC with Pre-soldered Wire - AliExpress](#)

Below is a link to buttons which may be purchased as a 6-pack, including a white button, or individually. They have the advantage of including a white button, but do require soldering
[6piece Mini 12mm Waterproof Momentary On/off Push Button Round Switch Pbs-33b Kit White Black Red Yellow Blue Green - AliExpress](#)

Dupont wires.

Get male to female ones if using the screw terminal prototype board.

It is suggested that one pack of 30cm wires are purchased (for the sensors, light-meter & flash).

Two packs of 10cm for connection to buttons, tft, LCD etc.

One pack each, 30cm Brown & Black wires

[Dupont Line 10cm 20cm Dupont Cables Male To Male Female To Female Male To FeMale Jumper Wire, for Arduino DIY Electronics KIT - AliExpress](#)

Note. If following the wiring diagram colour code (recommended) there are far more Brown and Black colour wires used, than come in a standard mixed-colour pack, so an additional pack of 30cm Brown & Black wires will be required.

[10pcs Breadboard Dupont Cable For Arduino Line 2.54mm Male Female Dupont Jumper Wire 26AWG Cable DIY Electronic 1P Connector - AliExpress](#)

Choc-block (Optional)

There are many 3V & 0V wires to be connected. The best way to accomplish this is to use a choc-bloc to group all of the wires together & then just one wire from here which then connects to the breakout board. Alternates are to solder them together, or use a joining block similar to the below,

[10-75pcs Orange Universal Type Quick Plug-in Terminals,Electrical Equipment Connectors,Wire Connector Terminals,250V/32A - AliExpress](#)
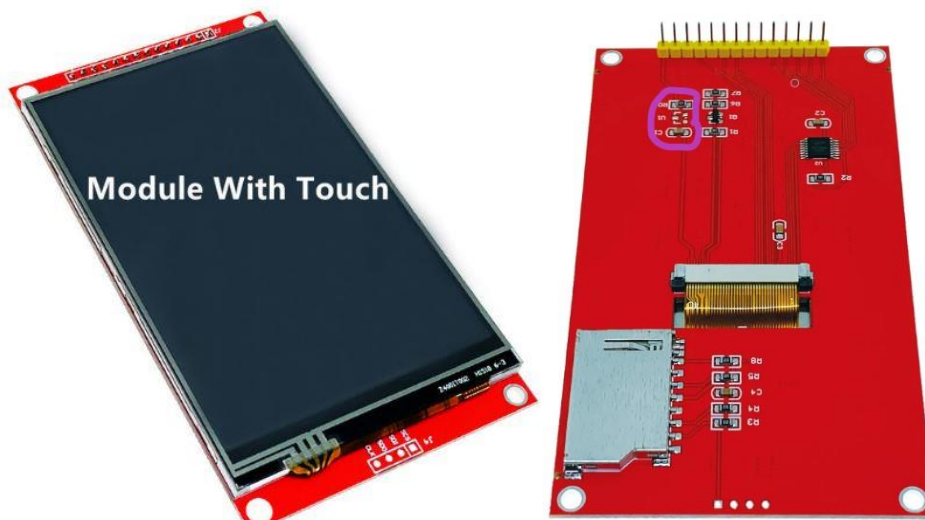

TFT display. (optional)

4.0 inch SPI module 3.95 inch ILI9488 14 pin TFT LCD display scree Resistance touch panel PCB adapter base board 2.54 mm spacing (sic)

Board size is 108.04 X 61.74

Note:- there are many similar panels but they have different driver chips (ILI9488) , the Shutter Tester only works with this specific screen. Please ensure you correctly order the screen. The Aliexpress web sites often list similar but different boards & sometimes just the screen.

Note, whilst all output is also sent to the computer screen, making the tft screen optional, future firmware upgrades may incorporate touch-screen functionality, which will require use of the tft screen
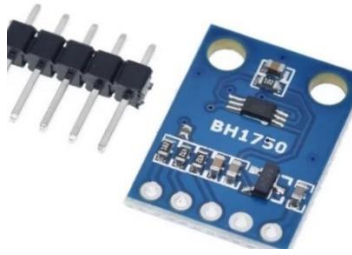
[4.0 inch SPI module 3.95 inch ILI9488 14 pin TFT LCD display scree Resistance touch panel PCB adapter base board 2.54 mm spacing - AliExpress](#)

Light sensor (Optional)
GY-301 LIGHT SENSOR MODULE
TZT GY-302 BH1750 BH1750FVI light intensity illumination module for arduino 3V-5V (aliexpress.com)

Rotary Encoder (optional)
This part is not currently used, but maybe added in the future. Ensure you purchase the one with blue pcb.
Rotating Potentiometer Knob Cap Digital Control Module Rotary Encoder Controller Switch 5V Diy Kit EC11 For Arduino PCB Board - AliExpress
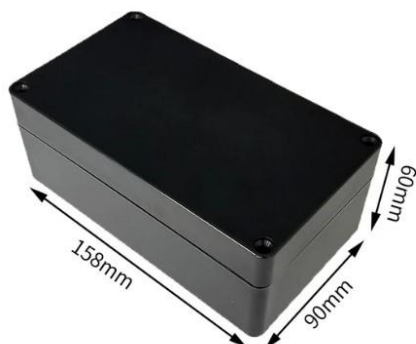
Project Box.

There are all sorts of shapes & sizes of project boxes. The 158 x 90 x 60 is a good size.
The screen must be positioned as high as possible, to leave enough space below, for two rows of buttons.

Black Box Outdoor Waterproof Case Plastic Box Electronic Project Case Instrument Waterproof Junction Box Housing - AliExpress

Additional useful parts

Drill bits for making encoder and button holes. 6mm for encoder, 12mm for the buttons.

[3-12mm Three-point Woodworking Drill Hole Opener Twist Drill Bit Practical Wood Milling Cutter Multifunctional Drilling Tools - AliExpress](#)

M3 Bolts, Nuts, Washers.
Depending on the final design, M3 bolts can be used to hold the tft screen & breakout-board.

https://www.aliexpress.com/item/1005005544927756.html?spm=a2g0o.order_list.order_list_main.96.18381802at3zUL

Glue Gun.
Cheap glue gun, but surprisingly it works ok.
[20W Hot Melt Glue Gun DIY Mini Household Industrial Guns Heat Temperature Thermo EU Electric Repair Tool Use 7mm Glue Sticks - AliExpress](#)

Soldering Iron Kit.
Cheap soldering iron kit that has everything to get started. Works fine.
[Adjustable Temperature 80W Soldering Iron Internal Heating Type Household Electronic Welding Repair Tool and Tin Wire Bracket - AliExpress](#)