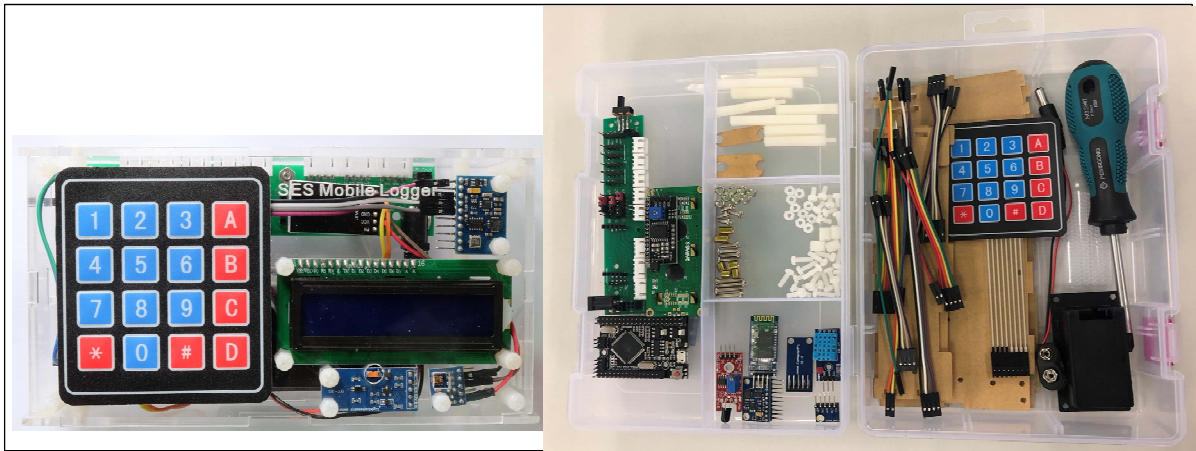


Assembling Mobile Logger by Yourself - Short Manual

(Version 3 - Full manual available at <http://has.eduhk.hk/seslogger/>)



Stage I - Preparation

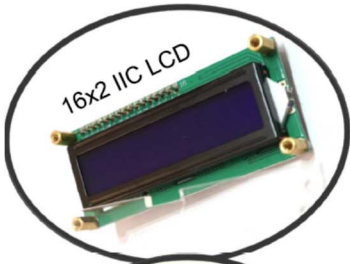





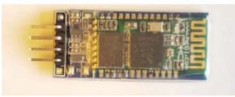




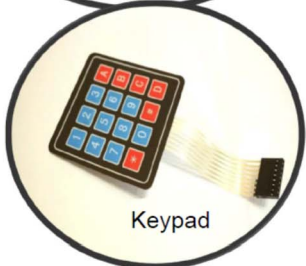

Task: Recognise and check the quantities of the following categories of items to be used to assemble the logger:

- Boards

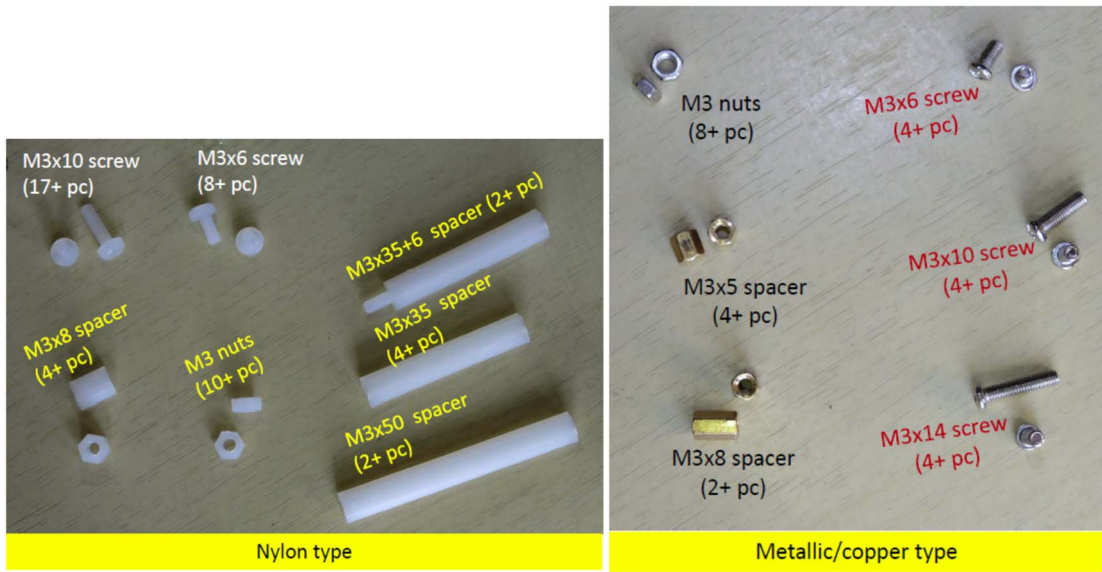


- Modules

Modules

 16x2 IIC LCD	 DHT11 Temp & Humidity sensor	 Flame IR sensor
	 Bluetooth module	 Bluetooth module
	 GY-30 Light Intensity sensor	 GY-30 Light Intensity sensor
	 GY801 Magnetic, acceleration, pressure, sensor	 GY801 Magnetic, acceleration, pressure, sensor
	 GYML851 UV intensity sensor	 GYML851 UV intensity sensor
	 Keypad	 GYML851 UV intensity sensor

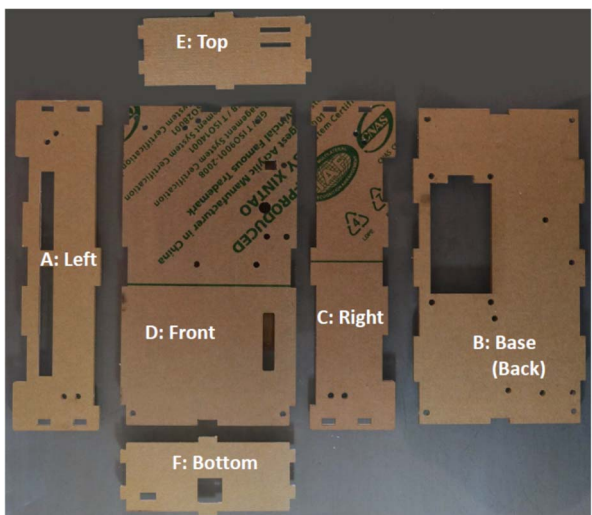
- Accessories



- Wires, cables and tools



- Case plates



Stage 2 – Assemble the mobile logger

Task: Follow the subsequent steps one-by-one to assemble your own mobile logger:

1. Peel off backing paper of all the six case plates
2. Fix the parts (Arduino M.B., PCB, battery holder) on the Base case plate
3. Connect wires to pins in PCB and Arduino MB according to the following specification table. Need to mark down the color of the connecting wires.

Ports/Pins on PCB	PCB	Color of wire@	Arduino MB	Usage
Connecting IIC port	GND		GND	Provide electrical power to PCB
	VCC		5V	
	SDA		D20 (SDA)	Data transmission from IIC sensors
	SCL		D21 (SCL)	
Bluetooth	Rx		D14(Tx3)	Data communication for Bluetooth
	Tx		D15(Rx3)	
Connecting 3-pin inputs/outputs sockets	A1		A1	Data transmission from analog sensors (including DHT11 sensor, IR flame sensor, various types of gas sensor, pH sensor, turbidity sensor, O2 sensor, CO2 sensor)
	A2		A2	
	A3		A3	
	A4		A4	
	A5		A5	
Connecting 4-pin sockets	6A	#use two jumpers and no wires	SDA (PCB)	Data transmission from IIC sensors, e.g. IR thermometer
	6B		SDA (PCB)	
	7A		D18(Tx1)	Data transmission from UART or serial sensors, e.g. IR CO2 sensor, sound level sensor and PM2.5 sensor
	7B		D19(Rx1)	
	8A		D16 (Tx2)	
	8B		D17(Rx2)	
9V input power	Vin		Vin	Input 9V electrical power to Arduino MB
	GND		GND	

@Use abbreviation like: **R=Red, G=Green, B=Blue, Br=Brown, O=Orange, Y=Yellow, W=White, Gy=Grey and Bk=Black**

SDA and SCL respectively of PCB (not Arduino MB and use two jumpers)

4. Fix the parts (LCD module, keypad, and three sensor modules) on the Front plate

- Connect various modules or components to the PCB/Arduino MB according to the following specification table. Need to mark down the color of each wire used.

Module/Component	Pins on Module/Component	Color of wire@	Pins on PCB	Pins on Arduino MB
GY801 Magnetic, acceleration, pressure, gyroscope Sensor	GND		GND (2nd row)	
	VCC		+5V (2nd row)	
	SDA		SDA (2nd row)	
	SCL		SCL(2nd row)	
GY30 Lux Sensor	GND		GND (3rd row)	
	VCC		+5V (3rd row)	
	SDA		SDA (3rd row)	
	SCL		SCL (3rd row)	
Keypad 1602 IIC LCD module	GND		GND (4th row)	
	VCC		+5V (4th row)	
	SDA		SDA (4th row)	
	SCL		SCL (4th row)	
GYML851 UV intensity module	Vin			5V
	GND			GND
	OUT			A13
Keypad	1			D33
	2			D35
	3			D37
	4			D39
	5			D41
	6			D43
	7			D45
	8			D47

@Use abbreviation like: *R=Red, G=Green, B=Blue, Br=Brown, O=Orange, Y=Yellow, W=White, Gy=Grey and Bk=Black*

- Interlock and fix the Base and side case plates (i.e. all except the Front plate) to form a regular tray
- Tighten the cover plate with screws to complete the assembling (withheld and postponed after Stage 3)

Stage 3 - Simple testing and usage of the mobile logger

Test 1:

1. Insert a 9V battery into the battery holder inside the bottom side of the mobile logger. Put the Front plate onto its position and fix it temporarily with two rubber bands.
2. Power on the mobile logger (switch located at the bottom side).
3. You will see the message “Welcome to EdUHK” and then other message like BT:MML13 etc.

Likely bugs and solution:

- a) If there is no light from the LCD and Arduino MB, check (i) battery, (ii) 9V battery connector at the end of the PCB, (iii) wires for Vin and GND pins in the POWER part of the Arduino MB and the corresponding pins of the PCB.
- b) If the Arduino MB has light but the LCD shows no light, check (i) 5V and GND pins in the POWER part of the Arduino MB and the corresponding pins of the PCB; (ii) wires to the LCD.
- c) If the LCD shows light but no visible characters shown, (i) press # in the keypad, (ii) switch off and on the power, (iii) use a screw driver to adjust its brightness and contrast by turning the cross in the blue cube by 45-90 degrees clockwise.



Test 2:

1. Insert an external Temperature & Humidity (DHT11) sensor into a 3-pin cable (VCC→Red wire, GND→Black wire, DATA→Green wire) and then plug the cable into the slot #1 (lower left side) of the mobile logger.
2. Press 1 in the keypad and you will get the temperature in °C and humidity in %. The number in the LHS of the LCD is the time (in seconds) that your mobile logger has been powered on.
3. Press button 2 of the keypad and you will get the local air pressure in hPa and temperature from the internal GY801 sensor.
4. Press button 3 of the keypad and you will get the light intensity in lux from the internal GY-30 sensor (at the central position with a hole). Cover the sensor with your finger and press 3 again. What will you get?
5. Insert a flame IR sensor into another 3-pin cable (A0→Green wire, G→Black wire and +→Red wire) and then plug the cable into the slot#2 of the mobile logger.
6. Press 4 in the keypad and you will get the flame IR level.

