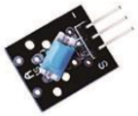
Elegoo 37 Sensor Kit v2.0

Elegoo provides tutorials for each of the sensors in the kit provided by Maryland MESA. Each tutorial focuses on a single sensor and includes basic information about the sensor, hook-up diagrams, and pictures. Sample code is also provided for each sensor. The tutorials and sample code are on the CD that comes with the sensor kit or can be downloaded from the Elegoo website under the Download section.
(Be sure to download the resources for Elegoo Upgraded 37-in-1 Sensor Kit v2.0.)

Note: Each description in the following table is based on the output that is generated by the code supplied by Elegoo.
Other output can be generated by modifying the code.

Lesson	Sensor		Description	Known or Potential Issues with Tutorial or Code
0			Installing Arduino Software	
1			Installing Libraries needed for sensor code	
2	Temp and Humidity Module		This module senses temperature and humidity. **Output:** Temperature and humidity display on serial monitor.	
3	18B20 Digital Temp Module		This module senses temperature. **Output:** Temperature displays on serial monitor.	
4	Button Switch Module		This module contains a momentary push button switch. **Output:** Built-in LED (and port #13) is on when button is pressed. Built-in LED (and port #13) is off when button is not pressed.	
5	Shock Module		This module detects a sudden movement. **Output:** Built-in LED (and port #13) is on for the duration of the sudden movement. Built-in LED (and port #13) is off when no sudden movement is detected.	There are bugs in the code for Lesson 5. Try using the code for the Button Switch Module (Lesson 4) instead.
5	Tilt Switch Module		This module detects when the sensor is tilted. **Output:** Built-in LED (and port #13) is on for the duration of the tilt. Built-in LED (and port #13) is off when sensor module is flat.	There are bugs in the code for Lesson 5. Try using the code for the Button Switch Module (Lesson 4) instead.

Lesson	Sensor		Description	Known or Potential Issues with Tutorial or Code
5	Tap Module		This module detects a sudden movement. **Output:** Built-in LED (and port #13) is on for the duration of the sudden movement. Built-in LED (and port #13) is off when no sudden movement is detected.	There are bugs in the code for Lesson 5. Try using the code for the Button Switch Module (Lesson 4) instead.
6	IR Receiver Module and IR Emission Module	 	These two modules work in conjunction to send and receive Infrared signals. Remote controls for TVs and other electronics use this technology.	There are bugs in the code and mistakes in the diagrams. This pair of sensors does not function properly as the tutorial and the code are written.
7	Active Buzzer Module		This module produces a buzzing or alarm sound. **Output:** Audible alarm. (**Note:** The Active Buzzer module is slightly taller than the Passive Buzzer module.)	
7	Passive Buzzer Module		This buzzer module can be used to produce multiple pitches. **Output:** Eight note musical scale. (**Note:** The Passive Buzzer module is slightly shorter than the Active Buzzer module.)	There is a mistake in the diagram. The diagram shows the sensor wire hooked to port 11. However, the Elegoo code is written for the sensor wire to be hooked to port 8.
8	Laser Emit Module		This module emits a red laser beam. **Output:** Laser beam gradually cycles between high intensity beam and low intensity beam.	There is a mistake in the diagram. The diagram shows both the red and black wires hooked to a GND port. The middle pin on the laser module should be hooked to the 5V port.
9	RGB LED Module		The color of the light emitted can be adjusted by changing the voltage supplied to each of the colors (Red, Green, Blue) contained in the LED unit. **Output:** LED cycles through multiple colors.	

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9	SMD RGB Module		The color of the light emitted can be adjusted by changing the voltage supplied to each of the colors (Red, Green, Blue) contained in the LED unit. **Output:** LED cycles through multiple colors.	
10	Photo-interrupter Module		This switch module detects when an object breaks or blocks the path of light from one side of the sensor to the other. **Output:** The built-in LED (and port #13) is on. When light path is broken, built-in LED (and port #13) is off.	
11	Two Color Module **Note:** This module is labeled as Dual-Color Common Cathode LED in the Elegoo tutorial document.		This module is similar to the RGB LED module (Lesson 9). However, this LED module includes red and green light. **Output:** LED gradually cycles between red and green (and the combinations of red and green light).	
12	Photo-resistor Module		This module senses light levels. **Output:** Displays values on serial monitor.	
13	Big Sound Module		This module senses sound intensity. **Output:** The analog_signal_output code displays values on serial monitor. The digital_signal_output code results in the built-in LED (and port #13) turning on when sound is detected.	There is a mistake in the diagram. The diagram shows the sensor wire hooked to port A0. However, in the Elegoo code is written for the sensor wire to be hooked to port A5. **Note:** The sensor functions. However, it is not very responsive (i.e., the accuracy and reliability of the output produced may not be optimal).

Lesson	Sensor		Description	Known or Potential Issues with Tutorial or Code
13	Small Sound Module		This module senses sound intensity. **Output:** The analog_signal_output code displays values on serial monitor. The digital_signal_output code results in the built-in LED (and port #13) turning on when sound is detected.	There is a mistake in the diagram. The diagram shows the sensor wire hooked to port A0. However, in the Elegoo code is written for the sensor wire to be hooked to port A5. **Note:** The sensor functions. However, it is not very responsive (i.e., the accuracy and reliability of the output produced may not be optimal).
14	Magnetic Spring Module **Note:** This module is labeled as Reed Switch Module in the Elegoo tutorial document.		This module detects a magnetic field. **Output:** The reed_switch code (analog output) displays values on serial monitor. The mini_reed code (digital output) results in the built-in LED (and port #13) turning on a magnetic field is detected. The built-in LED (and port #13) is off when no magnetic field is detected.	The tutorial refers to two modules: Reed Switch Module and Mini-reed Switch Module. The kit contains the Reed Switch. Two code files are provided by Elegoo. The REED_SWITCH code produces analog output. The MINI_REED code file produces digital output. **Note:** The REED_SWITCH code provided by Elegoo should produce a range of values representing the strength of the magnetic field. However, there appears to be a bug in the code. Only two values are displayed on the serial monitor (32 or 1023).
15	Digital Temperature Module		This module senses temperature. **Output:** Values display on serial monitor.	The values displayed on the serial monitor are not the actual temperature values. Furthermore, there is an inverse relationship between temperature and the value displayed (i.e., as temperature increases, the value displayed decreases).

Lesson	Sensor		Description	Known or Potential Issues with Tutorial or Code
16	Linear Hall Module		This module detects the strength of a magnetic field. **Output:** The analog_hall_module code (analog output) displays values on serial monitor. The linear_hall_module code (digital output) results in the built-in LED (and port #13) turning on when a magnetic field is detected. The built-in LED (and port #13) is off when no magnetic field is detected.	
17	Flame Sensor Module		This module detects a light source with a wavelength in the range of 760-1100nm. **Output:** The analog_signal_output code (analog output) displays values on serial monitor. The digital_signal_output code (digital output) results in the built-in LED (and port #13) turning on when a flame is detected. The built-in LED (and port #13) is off when no flame is detected.	**Note:** This sensor has not been tested by MESA staff.
18	Metal Touch Module		The sensor detects when it is in contact with a metal object. **Output:** The analog_signal_output code (analog output) displays a value of 1023 on serial monitor when the sensor is in contact with a metal object. The digital_signal_output code (digital output) results in the built-in LED (and port #13) turning on when a metal object is detected. The built-in LED (and port #13) is off when the sensor is not in contact with metal.	

Lesson	Sensor		Description	Known or Potential Issues with Tutorial or Code
19	7-Color Flash Module		This module contains a LED. **Output:** The LED cycles through flashes of different colors of light.	There is a mistake in the diagram. The picture in the tutorial is accurate. The diagram shows wires hooked to the bottom and middle pins on the module (as it is oriented in the diagram). In order for the module to work, the ground wire should be attached to the middle pin and the wire to port 13 should be attached to the top pin (as oriented in the diagram).
20	Joystick Module		This module contains two potentiometers (one for x direction and one for y direction) and a push button. **Output:** Displays values on serial monitor.	
21	Tracking Module		This is a line tracking sensor. **Output:** Built-in LED (and port #13) is on when the sensor is directly above a line. Built-in LED (and port #13) is off when the sensor is not directly above a line.	**Note:** This sensor needs to be very close to the line (i.e., nearly touching) to work.
22	Avoidance Module		This module uses infrared to determine if an object is close to the sensor. **Output:** Built-in LED (and port #13) is on when the sensor detects and object. Built-in LED (and port #13) is off when no object is detected.	**Note:** It may be necessary to adjust the potentiometers on the module before reliable output can be produced.
23	Rotary Encoder Module		This module contains a dial. **Output:** Displays values on serial monitor.	

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24	Relay Module **Note:** This module is labeled as 1 Channel Relay Module in the Elegoo tutorial document.		This module is used as a switch to control other, independently powered circuits. **Output:** Opens and closes an external circuit that is connected to the relay module. LED on the module indicates when the circuit is closed.	
25	LCD 1602 Module		This is an LCD screen with two lines of 16 characters. **Output:** The code provided by Elegoo results in “Hello, world!” being displayed on the LCD.	
26	Ultrasonic Sensor Module		This module uses ultrasonic waves to determine if an object is close to the sensor. **Output:** Values (distance to object) are displayed on the serial monitor.	
27	MPU6050 Module **Note:** sensor labeled as GY-521 Module in lesson.		This module contains an accelerometer and a gyroscope. **Output:** Values are displayed on the serial monitor.	
28	HC-SR501 PIR Motion Sensor Module		This module detects a moving object near the sensor. **Output:** Display “Motion detected!” and “Motion ended!” on the serial monitor.	This sensor takes some time to stabilize. After connecting the sensor and uploading code, you may need to wait for 30-60 seconds until reliable output is generated.
29	Water Level Sensor		This module senses how deep the sensor is in water. **Output:** Displays values on serial monitor.	

Lesson	Sensor		Description	Known or Potential Issues with Tutorial or Code

30	DS-3231 RTC Module		This is a real time clock module.
			Output:
			The DS3231_simple code displays the date and time on the serial monitor.
			The DS3231_alarm code displays the date, time, and day of the week on the serial monitor. It also displays “Alarm triggered” at two different times.
				There is a mistake in the diagram. The order of the pins on the sensor module in the diagram do not match the order of the pins on the actual sensor module. Use the markings to the actual sensor module to hook the wires from the sensor to the appropriate port on Arduino (e.g. SDA pin on the module should be hooked to port A4).
				The year, month, day, hour, and seconds must be updated in the DS3231_alarm code in order for the current date and time to be displayed. The following line of code must be updated:
				// Manual (Year, Month, Day, Hour, Minute, Second)
				clock.setDateTime(2014, 4, 25, 0, 0, 0);

31	Membrane Switch Module		This module is a thin keypad. **Output:** Displays values on serial monitor.	
	Power Supply Module		The module can be used to power additional components. The module can be inserted directly into a breadboard.	