2. Assembly
1. What's in the box

- 1 x ATmega2560 Mega Development board
- 1 x 2.8 inch touch screen for Arduino® Uno/Mega with a stylus
- 1 x sensor shield for Arduino® ATmega
- 1 x air quality sensor combo board
- 1 x lightning sensor
- 1 x 40 pins, 30 cm male to female jumper wire (flat cable)
- 1 x USB 2.0 A plug to USB 2.0 B plug
- 1 x enclosure set (Birch triplex 3mm)
- bolt and nuts set:
    - 4 x metal distance bolt 35mm M3 (female / female)
    - 4 x metal distance bolt 15mm M3 (female / female)
    - 4 x EVZ nut KVP M3 - 2,3mm
    - 16 x bolt EVZ CK-SCHR BZK M3 x 6mm
    - 4 x bolt EVZ CK-SCHR BZK M3 x 10mm
    - 4 x plastic rings for TO

 Options, coming soon!

- Arduino compatible 3 colour RGB SMD LED module (2pcs)
- UV light sensor Guva-S12SD module
- DS1302 real-time clock module / with battery CR2032 (2 pcs)

2. Backplate with sensors

Step 1: start off with the back plate of the case and place it in front of you. Notice the orientation!
Then place the 4 x M3x10 bolts in the four holes as shown in the picture.

Step 2: then place the a plastic ring over each bolt (4 in total). Make sure that the inner ring is faced upward.

Step 3: Next, place the lightning sensor (VMA343) on the left and the air quality sensor combo board (VMA42) on the right, over the bolts. Fix the sensor boards with 4 nuts but do not overtighten the nuts!

You can move the shunts sideways so the bolts can fit.

Note: it is possible to place the sensors at the other side of the back plate, hence positioning

them outside the case. Do this if you want a faster measurement of the environmental data.

You can move the shunts sideways so the bolts can fit.

Step 4: Take the male to female jumper wire (flat cable) and remove 2 sets of 5 wires from it but keep the 5 wires connected to each other.

Step 5: Now connect the 3.3V, GND, SDA, SCL, IRQ (only on the lightning sensor lightning sensor) and the INT (only on the air quality sensor) of each sensor to the two sets of wires. Remember the connections for later. We suggest taking a picture of your setup.

3. The ATmega2560 Mega Development board

Step 1: Take the ATmega2560 Mega Development Board and slide 4 bolts through the 4 holes in the board.

Note: if you are having too much difficulty with the top two bolts, you can just leave them out as they are not necesarry for a good build.

Step 2: Place a metal distance bolt (15mm M3) on the other side of each bolt.

Step 3: Mount the development board onto the back plate by using 4 M3x6 bolts as shown in the picture. As mentioned before, only the lower bolts are necessary (the ones you see in the picture).

Warning: if you do want to assemble the top two bolts, you will have to squeeze and shift the bolts and the development board to mount it. The development board can take some pressure, but do not place pressure on the wooden enclosure!

4. Adding the shields

Step 1: Connect the sensor shield (VMA212) onto the ATmega development board. Make sure all the pins (A10->A11, 2x GND, 2x 5V and pin 18->21) are connected into the headers correctly! It is normal that the right pins on the top and bottom cannot reach all the way into the headers.

Step 2: Connect the cables of the lightning sensor (VMA343) on the top of the mega sensor shield: 3V3 to 3V3, GND to GND, SDA to SDA and I18 to IRQ.

Connect the cables of the air quality sensor combo board (VMA42) in the middle or at the bottom of the mega sensor shield: 3V3 to 3V3, GND to GND, SDA to SDA and I19 to INT (however, connecting I19 is not necessary for the Earth Listener to function properly.)

Guide all cables underneath the ATmega 2560 board and tuck them away neatly so the case will fit later on.

Step 3: Now connect the LCD shield onto the development board as shown in the picture. Make sure all the pins are connected correctly!

Additionally, if you have purchased an ARDUINO® COMPATIBLE 3 COLOUR RGB SMD LED MODULE (VMA318), you will need to connect this now. GND to A11, Green to A12, Red to A13, Blue to A14. Note: Some modification of the original VMA318 module might be required to connect it to the sensor shield. You can bend the headers or resolder them.

5. Assembling the case

Step 1: Lay out all the parts of the case like this and watch the orientation! Note that the side panels have an upside and downside; the middle groove on the downside is wider than the one on the upside.

Step 2: Place 4 M3 x 6 bolts through the remaining holes of the back plate and add the metal distance bolts (35mm M3).

Step 3: Slide the side panels in the back plate. Tip: use a rubber band to keep them in place.

Step 3: Put the top plate in place and add the 4 remaining M3 x 6 bolts. Make sure they connect into the metal distance bolts. Do not overtighten the bolts.

Head over to the operations instructions!

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