

ARDUINO 1SHEELD



Introduction:

This tutorial explains how to get started with your 1Sheeld, if you don't have a general working knowledge of Arduino and Arduino programming we recommend you check out the instructions and tutorials on the Arduino website.

<u>1- Gather your materials:</u>

- 1Sheeld
- Arduino board (UNO-DUE-MEGA or any board with a similar form factor for Arduino shields)
- USB cable
- Android Smartphone
- Breadboard
- Jumper wires (Male to Male)
- LEDs
- Resistors (1kohm)

P.S: you don't need to buy any sensors because you already have them in your smartphone.



2- Adjust 1Sheeld:

Warning! If you have the Arduino Due or any board that works on 3.3V, you must switch your 1Sheeld to operate on 3.3V since it may damage your board. To switch 1Sheeld to 3.3V locate the toggle switch on the top of the board and switch it to the 3.3V position.



Place your 1Sheeld on your Arduino board then plug the Arduino to your laptop or PC. i.e: 1Sheeld works on Arduino (Uno/MegaADK/Mega2560/Leonardo/Due).



Please refer to (using 1Sheeld with different Arduino boards tutorial) for more information on adjusting 1Sheeld on your Arduino board.





<u>3- Download the 1Sheeld Application onto your smart phone.</u>



4- Download 1Sheeld library or use Codebender (Online IDE)

Library



Extract the folder, copy it, and paste it in your Arduino libraries directory.

Download OneSheeld Library

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Or use Codebender.cc through this link, then you don't have to install the Arduino IDE or our library, you just write the code online!

5- Write your Sketch:

Open the Arduino IDE on your computer, write your sketch according to your project and the shields you will use in that project, or you can choose an example from our library's examples.

Let's try a simple example of the mic shield, we will use the mic to turn an LED on if the noise in the room exceeds a certain level.

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You can open the mic shield example from the examples tab as shown above, or copy and paste the code below in your Arduino IDE:

/*

Mic Shield Example

This example shows an application on 1Sheeld's mic shield.

By using this example, you can turn on the LED on pin 13 if the

smartphone's mic reports a certain noise level.

```
*/
```

```
/* Include 1Sheeld library. */
```

#include <OneSheeld.h>

```
/* A name for the LED on pin 13. */
```

```
int ledPin = 13;
```

void setup()

{

```
/* Start communication. */
```

OneSheeld.begin();

```
/* Set the LED pin as output. */
```

```
pinMode(ledPin,OUTPUT);
```

```
}
```

void loop ()

{

```
/* Always check the noise level. */
if(Mic.getValue() > 80)
{
```

```
/* Turn on the LED. */
```

```
digitalWrite(ledPin,HIGH);
```

}

```
else
```

{

```
.
```

```
/* Turn off the LED. */
```

```
digitalWrite(ledPin,LOW);
```

```
.
```

}

```
}
```



Or use Codebender.cc

<u> 1Sheeld Example:</u>

/*

Mic Shield Example

This example shows an application on 1Sheeld's mic shield.

By using this example, you can turn on the LED on pin 13 if the smartphone's mic reports a certain noise level.

*/

/* Include 1Sheeld library. */ #include <OneSheeld.h>

/* A name for the LED on pin 13. */
int ledPin = 13;

```
void setup()
{
       /* Start communication. */
       OneSheeld.begin();
       /* Set the LED pin as output. */
       pinMode(ledPin, OUTPUT);
}
void loop ()
{
       /* Always check the noise level. */
       if(Mic.getValue() > 80)
       {
               /* Turn on the LED. */
               digitalWrite(ledPin, HIGH);
       }
       else
       {
               /* Turn off the LED. */
               digitalWrite(ledPin, LOW);
       }
}
```

6- Upload your sketch:

Here comes the most important part of the whole tutorial, switch 1Sheeld to the Uploadingmode (this is the switch labeled UART Switch on the board) before you upload your sketch to the Arduino board to avoid serial conflicts between 1Sheeld and Arduino, then press the Upload button in the IDE.

Upload mode is turned on when the UART switch is pushed away from the 1Sheeld logo.



<u>7- Once you have completed your upload you need to switch 1Sheeld back to the operating mode:</u>

Don't forget! If you don't switch the UART Switch back to the operating mode your project will not work properly as you will have no communication between 1Sheeld and the Arduino board. Operating mode is turned on when the UART switch is pushed closest to the 1Sheeld logo.



8- Use 1Sheeld Application:

Open 1Sheeld application on your Android smart phone. The application will first scan over bluetooth for your 1Sheeld, it will take a few seconds and the phone will find it. Once it appears on your screen as 1Sheeld #xxxx, you will be required to enter the pairing code (the default pairing code is 1234) and connect to 1Sheeld via bluetooth.

NOTE: If you are having trouble please make sure the bluetooth is turned on for your Android phone and that the Android phone is close to your 1Sheeld.



If you get an error message as shown below that your phone cannot find 1Sheeld, press the reset button on 1Sheeld and try again.

Note: Make sure you the UART switch is on the operating mode.



9- Access Shields:

Select the shields you would like to use in your Arduino sketch (project) and press on the multiple shields icon at the top right of the app.

In this case, use the Mic shield and have fun prototyping!

