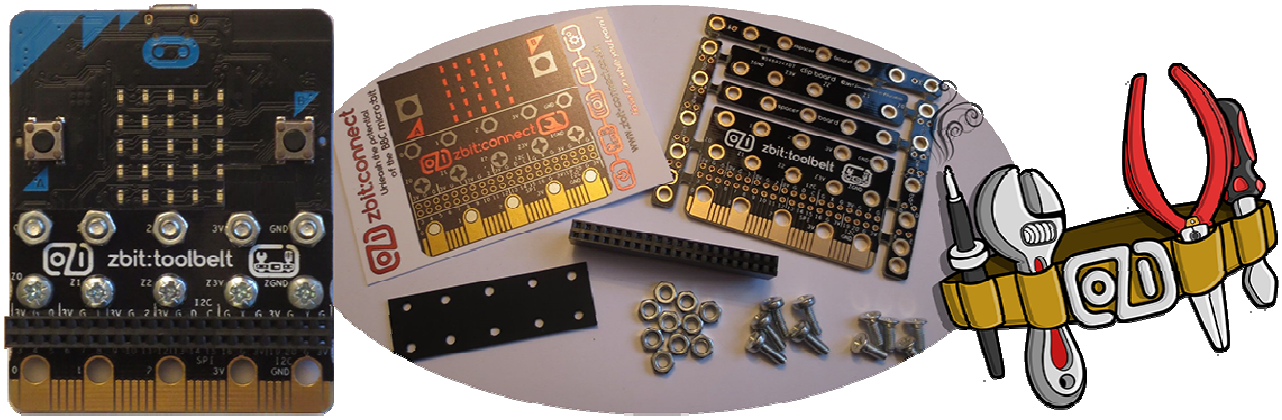
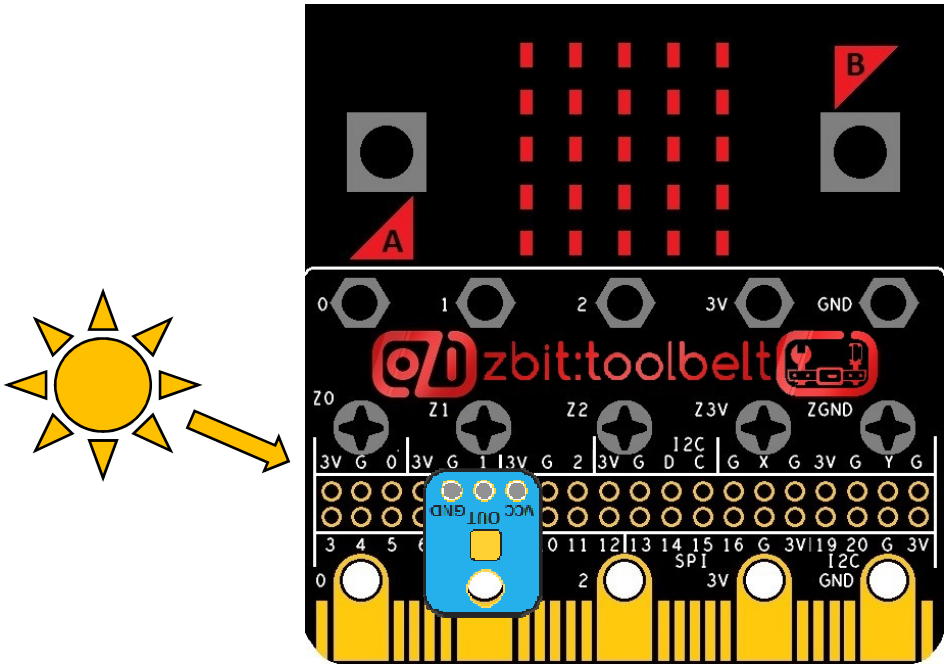
zbit:toolbelt

for the BBC micro:bit



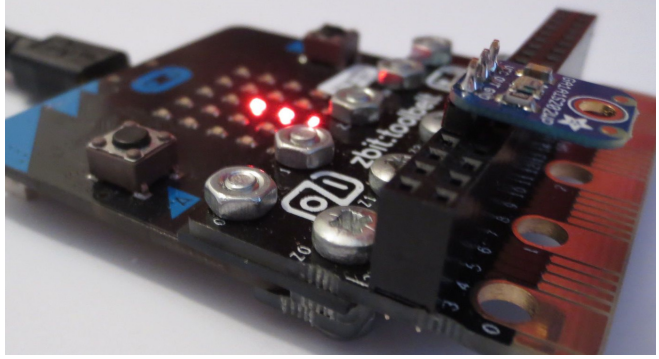
Example T2 – Adafruit Light sensor on zbit:toolbelt



This zbit:toolbelt example shows you how to plug the Adafruit Log-Scale Analog Light Sensor onto zbit:toolbelt and use it to display the ambient light level as a bar graph on your micro:bit

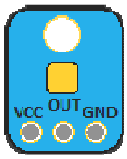
Parts required

1 x zbit:toolbelt
1 x zbit:connector (*Optional* - see page 2 for details)
1 x Adafruit Analog Light Sensor Product Code 1384
1 x BBC micro:bit !!!



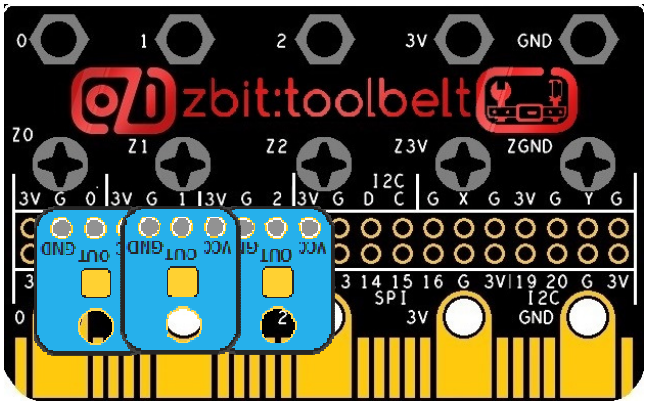
Adafruit Log-Scale Analog Light Sensor Features

The Adafruit Light Sensor Breakout Board uses the GA1A12S202 Log Scale Light Sensor IC which means that it can sense a whole range of ambient light levels from dark rooms to bright sunlight (See Adafruit Design Guide on **www.Adafriut.com** for more details including **assembly instructions**). It requires connections to **3Volts** on its **VCC** pin, **Ground** on its **GND** pin then provides an **Analog Output Voltage** on its **OUT** pin. This analog output voltage is compatible with **micro:bit** GPIO **P0**, **P1** or **P2**. The Adafruit board has a 3 pin 0.1" header with signals in the order **VCC, OUT, GND** as shown.



Plugging the Adafruit Light Sensor onto zbit:toolbelt

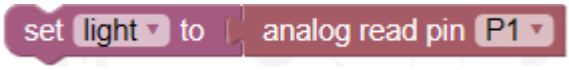
zbit:tool*kit* sensors from **innovations in education** use the pinout **3V, GND, OUT** (where **OUT** can be connected to **P0**, **P1** or **P2**) so **zbit:toolbelt** can accommodate **up to 3 sensors** at a time. The **zbit:toolbelt** connector pinout has also been designed to accommodate electrically compatible **3 pin sensors from other manufacturers *whatever order the 3V, GND and OUT pins are in!*** It may however be necessary to move the sensor along the toolbelt and/or rotate the sensor to find a slot where the signals are in the right order. In the case of this **Adafruit Light Sensor** it needs to be **rotated 180 degrees** then **shifted one pin to the right**. It can therefore be fitted in **any of the 3 positions shown,** connecting to **P0**, **P1** or **P2**.



Writing the Code

In your code use the 'analog read' command to read the output from the Light Sensor.

In **Block** use



In **PXT Java Script** use

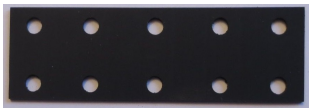
```
light = pins.analogReadPin(AnalogPin.P1)
```

In **Python** use

```
light = pin1.read_analog()
```

Python example code displaying light level as a **'bar graph'** on the **micro:bit's display** is available to download from the web site **www.zbit-connect.co.uk**. The above code assumes the sensor is plugged into **P1** (in the position as shown on page 1) but the code can easily be modified to use **P0** or **P2**. Comments in the Python code give more information about what output values to expect from the sensor in a dark room, with typical indoor lighting and in bright sunlight. It may be worth reading these comments even if you are coding in **Block** or **Java Script.**

For this project the use of the zbit:connector...



...is *optional* as it only connect to ***'large pad'*** GPIO **P0**, **P1** or **P2**
See **'zbit:connect family guide'** for more details

For updates follow Twitter @ZbitConnect

Have Fun while you Learn!

www.zbit-connect.co.uk