



# Smart Robot V2 - Altronics Z6454

## 23 Example Codes

### Features

- 1 hour build time
- Code using Microsoft's MakeCode either with Block Code or JavaScript
- micro:bit can also be coded in Scratch & Python Script
- Wirelessly flash pre-made code over Bluetooth direct from a Tablet or Phone
- Use the BBC micro:bit board as a standalone for 100's of other STEM projects.
- micro:bit v2 features accelerometer, temperature, light sensor, touch sensor, matrix display, 2 buttons, magnetometer (compass) on board speaker and microphone, Bluetooth, micro:bit 2.4ghz radio.
- Program from MakeCode URL and save or upload direct to your micro:bit powered robot.
- Run micro:bit simulations direct in the MakeCode Space before uploading.



## Z6454 Smart Robot v2 - powered by micro:bit

Code can be downloaded direct to the micro:bit from the MakeCode URL on PC or Tablet

Z6454 - Lesson 1.0 - Passive Buzzer Control  
Z6454 - Lesson 2.1 - RGB LED Experiment  
Z6454 - Lesson 2.2 - RGB LED Variable Brightness Control  
Z6454 - Lesson 3.1 - LED Neopixel Module Control Experiment 1  
Z6454 - Lesson 3.2 - LED Neopixel Module Control Experiment 2  
Z6454 - Lesson 3.3 - LED Neopixel Module Control Experiment 3  
Z6454 - Lesson 3.4 - LED Neopixel Module Control Experiment 4  
Z6454 - Lesson 4.1 - Photosensor Datalogging  
Z6454 - Lesson 4.2 - Photosensor Demo  
Z6454 - Lesson 5.1 - Robot Motor Driving Experiment 1  
Z6454 - Lesson 5.2 - Robot Motor Driving Experiment 2  
Z6454 - Lesson 6.1 - Line Tracking Sensor Datalogging  
Z6454 - Lesson 6.2 - Line Tracking Sensor Display  
Z6454 - Lesson 6.3 - Line Tracking Datalogging & Display  
Z6454 - Lesson 6.4 - Line Tracking Smart Robot Demo  
Z6454 - Lesson 7.1 - Ultrasonic Ranging Datalogging  
Z6454 - Lesson 7.2 - Ultrasonic Follow Smart Robot  
Z6454 - Lesson 8.1 - Infrared Obstacle Sensor Datalogging  
Z6454 - Lesson 8.2 - Infrared Obstacle Avoidance Display  
Z6454 - Lesson 8.3 - Infrared & Ultrasonic Avoidance Demo  
Z6454 - Lesson 8.4 - Infrared & Ultrasonic Follow Smart Robot  
Z6454 - Lesson 9.1 - IR Remote Datalogging  
Z6454 - Lesson 9.2 - IR Remote Control Smart Robot Demo

<https://makecode.microbit.org/18429-56003-51155-13829>  
<https://makecode.microbit.org/57029-12429-02514-70866>  
<https://makecode.microbit.org/49566-93471-52442-44627>  
<https://makecode.microbit.org/90016-58359-45100-17529>  
<https://makecode.microbit.org/91949-51471-45725-10543>  
<https://makecode.microbit.org/52843-69175-24338-64710>  
<https://makecode.microbit.org/12086-93822-28126-97044>  
<https://makecode.microbit.org/27401-49539-36169-24475>  
<https://makecode.microbit.org/70425-35912-57266-50967>  
<https://makecode.microbit.org/17351-85940-06459-72277>  
<https://makecode.microbit.org/99786-91653-37981-54370>  
<https://makecode.microbit.org/57670-47999-45900-55680>  
<https://makecode.microbit.org/35533-78420-76198-58366>  
<https://makecode.microbit.org/84393-81242-16382-85365>  
<https://makecode.microbit.org/55144-14870-92905-74154>  
<https://makecode.microbit.org/94576-41892-90128-19604>  
<https://makecode.microbit.org/30208-23040-06686-72445>  
<https://makecode.microbit.org/01781-67332-84593-61859>  
<https://makecode.microbit.org/86944-10749-06987-90752>  
<https://makecode.microbit.org/34159-52615-23509-28623>  
<https://makecode.microbit.org/12700-42347-40670-91799>  
<https://makecode.microbit.org/80969-99869-48260-41091>  
<https://makecode.microbit.org/84520-83000-36608-14213>

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# Z6454 Smart Robot Connection Instructions



## USB connection of micro:bit to PC first time

01. Turn off Robot & unplug micro:bit from robot -  
*micro:bit must be removed from robot to ensure the robot doesn't operate during flashing*
02. Goto <https://makecode.microbit.org/#editor>
03. Press "+ New Project" & "Give it a name"
04. Press "... " button - beside download button
05. Press "Connect Device"
06. Press "Next" then "Next"
07. Connect micro:bit in the PC via USB
08. Press device e.g. "BBC micro:bit CMSIS-DAP"
09. Press "Connect"

Connection is complete – Future connections of this micro:bit board and to this PC will be automatic



## Bluetooth Pairing micro:bit to Tablet first time

*This step only has to be completed the first time. ROBOT must be turned on, micro:bit App is required.*

01. Power on Robot
02. Turn your tablets **Bluetooth** on
03. Open **micro:bit** App on tablet
04. Press **Pair** Button
05. Press **Pair a new mirco:bit & Press OK & Press Next**
06. On the micro:bit "**Hold down button A + B**" then "**Tap & release rear Reset button**"
07. Once **Bluetooth** logo shape appears on display, Release front "**A + B button**"
08. Type the **Shape** into the tablet to match the **Shape on the Matrix display**
09. Press **PAIR** – Press "**OK**"

## Turn ON Smart Robot Bluetooth Mode for flashing code

01. Power on the Smart Robot
02. Place Robot on its back "**Hold down A + B button on micro:bit**" then "**Tap & release rear Reset button**"
03. Once **Bluetooth** logo, then a **shape** appear on display, Release "**A + B button on micro:bit**"

**Note: If the mirco:bit experiences an unsuccessful write via Bluetooth, the micro:bit will need to be clear on a PC by writing a very simple code back on.**

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## Beginner via USB – Example Express Lesson on PC

01. Turn off robot & unplug **micro:bit** from robot  
*micro:bit must be removed from robot to ensure the robot doesn't operate during flashing*
02. Go to <https://makecode.microbit.org/18429-56003-51155-13829>  
*Example Lesson "Z6454 - Lesson 1.0 - Passive Buzzer Control"*
03. Press **Edit Code** button Top Right -This imports the code into each users MakeCode Space
04. Press **"Download"** button  
*This allows writing directly from the MakeCode website straight to the micro:bit*
05. Press **"Pair device"** -This Step Only needs to be completed if first time connecting
06. Connect **micro:bit** to **PC** via **USB** -This Step Only needs to be completed if first time connecting
07. Press device e.g. **"BBC micro:bit CMSIS-DAP"** -This Step Only needs to be completed if first time connecting
08. Press **"Connect"** -This Step Only needs to be completed if first time connecting
09. Message will display Download is complete!
10. Unplug **micro:bit** from PC
11. Plug **micro:bit** into Robot
12. Power on Robot and the Robot will start running code and operating.

From here students can change basic variables and download the code to see the different effects the code will have.

## Intermediate via USB – Example Coding Lesson on PC

01. **Complete USB Connection Process First**
02. Turn off robot & unplug **micro:bit** from Robot  
*micro:bit must be removed from robot to ensure the robot doesn't operate during flashing*
03. Go to <https://makecode.microbit.org/#editor>
04. Press  **"Import"** button on the right hand side
05. Press **"Import URL..."**
06. Go to <https://makecode.microbit.org/18429-56003-51155-13829>  
*Example Lesson "Z6454 - Lesson 1.0 - Passive Buzzer Control"*
07. Modifications to your code by dragging additional blocks  
*Switch over to Java and try your hand at duplicating Javascript.*  
*This allows you to see the Javascript or Python Script that is generated by the Blocks*
08. Press **"..."**
09. Press **"Connect Device"**
10. Press **"Next"** then **"Next"**
11. Plug the **micro:bit** to **PC** via **USB**
12. Press **Connect Device**
13. Press device e.g. **"BBC micro:bit CMSIS-DAP"**
14. Press **"Download"** button  
*This allows writing directly from the MakeCode website straight to the micro:bit*
15. Message will display Download is complete!
16. Unplug the **micro:bit**
17. Plug **micro:bit** into Robot
18. Power on the Robot and the Robot will start running code and operating.

From here students can start to modify the code and write it to the micro:bit to see how it operates

## Advanced via USB - DIY CODING on PC

01. **Complete USB Connection Process First**
02. Turn off Robot & Unplug **micro:bit** from Robot  
*micro:bit must be removed from robot to ensure the robot doesn't operate during flashing*
03. Go to <https://makecode.microbit.org/#editor>
04. Press **"New Project"**
05. Within the make space click the **"gear logo"** (top right)
06. Press **Extension**
07. Obtain the repository for the **K6454 Robot** from [https://github.com/AltronicsAUKits/Z6454-Robot-Kit-v2\\_KS0426](https://github.com/AltronicsAUKits/Z6454-Robot-Kit-v2_KS0426)  
This includes all required extensions for **Altronics K6454 – Keyestudio KS0426**
08. Start Building code in **Blocks**
09. Press the **JavaScript** or **Python** button to transcode and start your coding adventure.
10. Press **"Download"** button

Transcoding in the MakeCode platform is a powerful tool, this allow students to see how Blocks can generate code

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

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



## Beginner via Bluetooth – Express Lesson on Tablet

01. **Complete Pairing Process First**
02. Open **micro:bit** App on Tablet
03. Press **“Create Code”** 
04. Press  **“Import”** button on the right hand side
05. Press **“Import URL...”**
06. Go to <https://makecode.microbit.org/18429-56003-51155-13829>  
*Example Lesson “Z6454 - Lesson 1.0 - Passive Buzzer Control”*
07. Press **“Go ahead!”**
08. Put Robot into **Bluetooth** mode, place Robot on its back  
**“Hold down A + B button on Micro:bit”** then **“Tap & release rear Reset button”**
09. Once **Bluetooth** logo then a **shape** appear on display, Release **“A + B button on micro:bit”**
10. On the Tablet Press **“...”** then press **“Download”**
11. Confirm flashing to the correct micro:bit e.g. **“VIT0Z ?”**
12. Press **“OK”**
13. Flashing successful, Press **“OK”**
14. Turn Robot Off - **important to clear previous code from memory**
15. Power on Robot, Robot will instantly start running code and operating.

From here students can change basic variables and download the code to see the different effects the code will have.

## Intermediate via Bluetooth – Example Coding Lesson on Tablet

01. **Complete Pairing Process First**
02. Open **micro:bit** App on Tablet
03. Press **“Create Code”** 
04. Press  **“Import”** button on the right hand side
05. Press **“Import URL...”**
06. Go to <https://makecode.microbit.org/18429-56003-51155-13829>  
*Example Lesson “Z6454 - Lesson 1.0 - Passive Buzzer Control”*
07. Press **“Go ahead!”**
08. Modifications to your code by dragging additional blocks  
*Switch over to Java and try your hand at duplicating Java script.*
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15. Turn Robot off - **important to clear previous code from memory**
16. Power on Robot, Robot will instantly start running code and operating.

From here students can start to modify the code and write it to the micro:bit to see how it works

## Advanced via Bluetooth - DIY CODING on Tablet

01. **Complete Pairing Process First**
02. Open **micro:bit** App on Tablet
03. Press **“+ New Project”** & **“Give it a name”**
04. Press **“Create”**
05. Click on the **“gear logo”** (top right)
06. Press **Extension**
07. Obtain repository for **K6454 Robot** from [https://github.com/AltronicsAUKits/Z6454-Robot-Kit-v2\\_KS0426](https://github.com/AltronicsAUKits/Z6454-Robot-Kit-v2_KS0426)  
This includes all required extensions for **Altronics K6454 – Keyestudio KS0426**
08. Start Building code in **Blocks**
09. Press the **JavaScript** or **Python** button to transcode and start your coding adventure.
10. Placing **“micro:bit”** into **Bluetooth** mode
11. Complete your code Press **“...”** then Press **“Download”**
12. Turn Robot off & back on – Code will start running - **important to clear previous code from memory**

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