

Formula Flowcode micromouse – Guide to getting started

Product code HP794

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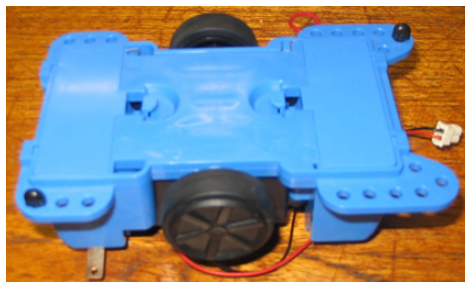
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1. Contents of the Formula Flowcode Micromouse

- 1 x HP629 Formula Flowcode circuit board
- 1 x HP295 Formula Flowcode chassis complete with wheels.
- 2 x 6mm M3 screws
- 2 x M3 Nuts
- 4 x 6.5mm Self Tapping Screws
- 1 x Flowcode
- 1 x User guide and example line

2. Assembling the Micromouse

1. Fit the tyres onto the wheels and then fit the wheels onto the chassis.

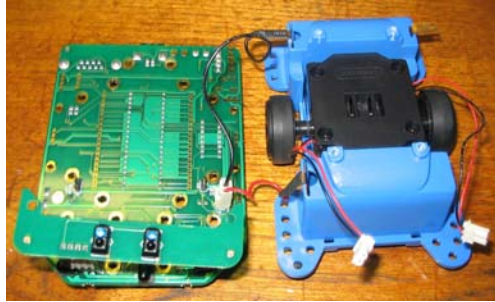


2. Insert 4 x AA rechargeable batteries into the chassis.

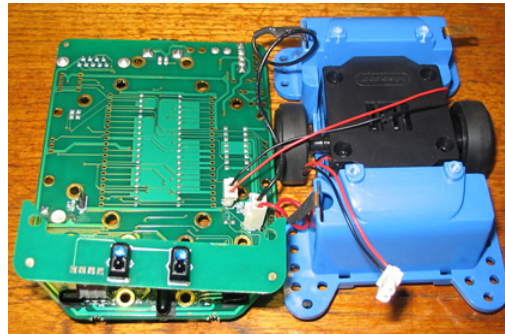


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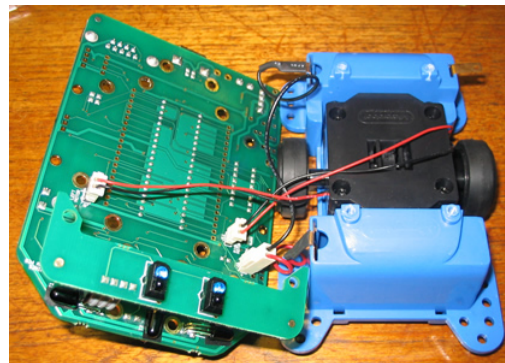
3. Plug the power connector onto the underside of the circuit board.



4. Plug the right hand motor cable into the right hand side of the upside down circuit board.



5. Plug the left hand motor cable into the left hand side of the upside down circuit board.

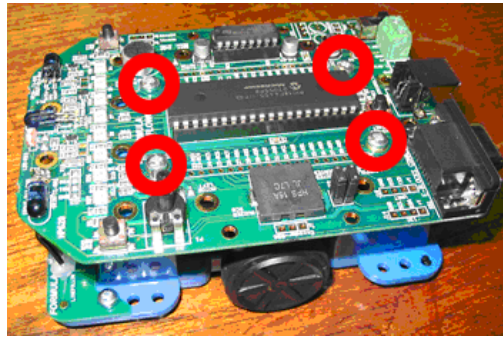


6. Attach the line sensor module to the chassis by using the two M3 screws and the two M3 nuts.



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7. Attach the main circuit board to the chassis using the four self-tapping screws.



3. Installing the USB Drivers

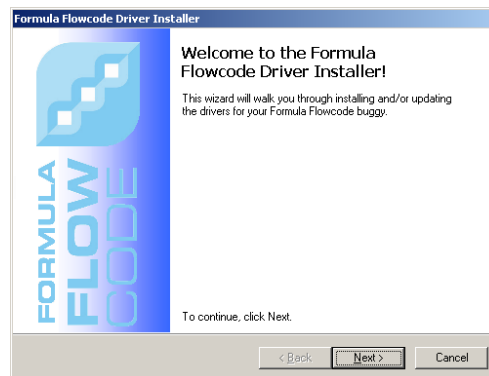
The USB drivers allow the Formula Flowcode micromouse to be connected to a computer, allowing the device to be programmed. The following process will have to be done the first time the Formula Flowcode micromouse is connected to a computer and again if plugged into a different USB port.

a. Windows XP / 2000

Insert the Flowcode CD into your CD-ROM drive and then click on the Start menu and click Run. Type the following command into the run dialogue and then click OK.

```
D:\etc\drivers\HP-629\ Formula_Flowcode_Driver_Install.exe
```

Where D is the letter of your CD-ROM drive.



Click Next and then when asked click to agree with the license agreement. Then click next again and then click continue anyway and finish.

This will pre install the drivers so that they are ready for when you plug your Formula Flowcode micromouse into the USB.

b. Windows Vista

The Vista install is very similar to the XP / 2000 install with the difference of an extra UAC screen which you must agree to before proceeding.

Once the driver has been installed on Windows Vista you must insert a USB cable between the computer and the micromouse and switch the micromouse on. Then you have to right click on my computer and select properties. Then select device manager and scroll down to Universal serial bus devices. Inside the Universal serial bus devices option there should now be a device called Formula Flowcode Buggy. Double click the Buggy and then click on the Power Management tab. Un-tick the box that says allow this device to be powered down to save power.

c. Windows ME / 98

1. The Formula Flowcode device drivers are located on the Flowcode CD. If you have not got the latest CD then the driver can be downloaded from the Formula Flowcode section of our website.

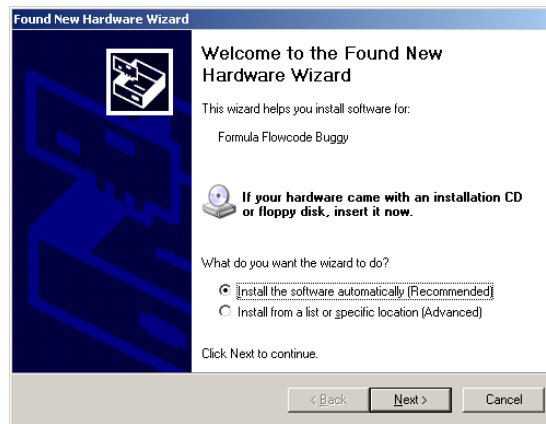
2. Insert the Flowcode CD into your CD drive.

3. Insert a USB cable into a spare USB port on your computer,

4. Insert the other end of the cable into the USB port onboard the Formula Flowcode Micromouse. The green power LED on the Formula Flowcode Micromouse should be dimly lit.

5. Switch on the Formula Flowcode Micromouse using the switch SW1 located towards the rear. The green power LED should now be lit brightly. If the LED does not become bright then see the power section of our troubleshooting guide.

6. The following screen should pop up on your computer, choose the (Recommended) option and click next.



7. At the next screen click “Continue Anyway”.



8. Click Finish

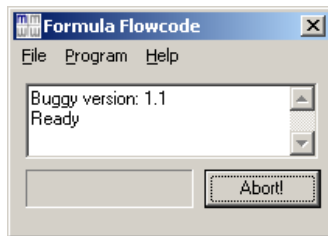
4. Installing Flowcode

For help installing Flowcode please refer to the Flowcode manual available from the Flowcode section of our website.

<http://www.matrixmultimedia.com/software/FLOWCODE%203%20MANUALpq.pdf>

4. The micromouse Programming Software

The Formula Flowcode micromouse programming software is used to transfer users programs into the memory of the microcontroller onboard the micromouse. The programming tool is included with versions of Flowcode V3.2 onwards. It is recommended to update your version of Flowcode to the latest version by downloading the latest patch from our website. The tool is located within the Flowcode V3 directory named “BuggyProg.exe”. If you intend to use the Formula Flowcode micromouse without Flowcode then you will need to download the programming tool from the Formula Flowcode section of our website.



The software can be used to transfer a program to the micromouse, read the program back from the micromouse, erase the micromouse or restart the micromouse. There is a help that accompanies the programming tool, which shows users exactly how to use the tool with command line parameters etc.

5. Testing your micromouse

There is a test file available which will help to test the functions of the Formula Flowcode micromouse. The test file is available from the Formula Flowcode section of our website. The programming tool should be used to open the hex file and to transfer the program onto the micromouse. Once the micromouse has been programmed it should light up a single LED at the front of the micromouse. Pressing the left hand switch SW5 transfers the lit LED one place to the left. Pressing the right hand switch SW4 selects the chosen test program. There are eight test programs to correspond with the eight LEDs. Here is a list of the test programs and their functions.

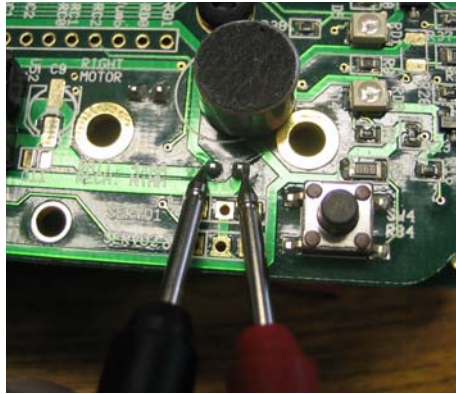
1. Tests the front LEDs by performing a knight rider style flasher.
2. Reads the light sensor and outputs the reading onto the LEDs.
3. Reads the microphone and outputs the reading onto the LEDs, Pot P1 can be used to adjust the sensitivity.
4. Plays a tune using the speaker.
5. Reads the line sensors and outputs the reading onto the LEDs.
6. Reads the IR proximity sensors and outputs the reading onto the LEDs.
7. Drives the motors forwards and then backwards.
8. Spins the micromouse anti-clockwise and then clockwise.

Each of these test programs is also available as a stand-alone program.

6. Troubleshooting the Formula Flowcode Micromouse

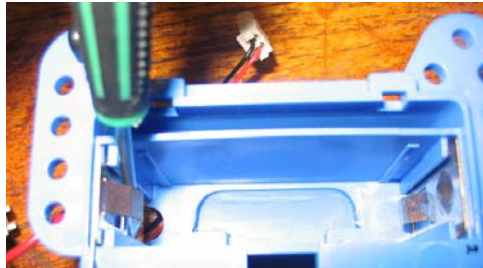
1. Power Problems

To troubleshoot any power problems firstly check that your batteries are fully charged up and inserted into the chassis with the correct orientation. Using a Multimeter test the voltage present on the battery input pins. The voltage present should be between 4V and 6V. If you do not have a Multimeter then a way of detecting a power problem is to connect a USB cable between the Formula Flowcode micromouse and a computer and then switching on the micromouse. If the power is connected correctly then two of the LEDs at the front of the micromouse should start flashing.



If you are not receiving a voltage then check the following items.

- A) Is the voltage under 4V? This means that either one or all of the batteries are running with low power. Try recharging or replacing the batteries.
- B) Are the batteries getting a good contact with the terminals? This can be tested by gently moving the Micromouse from side to side. If you can hear the batteries moving or rattling then the contacts are not bent out enough. This problem can be improved by bending the metal contacts outwards slightly with a flat head screwdriver.



- C) Have any of the power terminals lifted out of the chassis? If so you can lever them back into the chassis using a screwdriver as shown. Please make sure that the device is powered off just in case a short circuit is made when levering the terminal back into the chassis.



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Terminal lifted out

Terminal back in place

- D) Has the wire joining the battery compartments come loose? If so you can bend the metal back into position and if you wish you can increase the strength of this connection by soldering the wire to the battery terminal taking care not to melt the plastic.



2. Line Following Problems

The line following sensors, give an incorrect reading if the spacers are both at the rear of the chassis or missing. Move at least one of the spacers to the front of the chassis to allow a space between the sensors and the floor to be maintained.

