

## What Are The AURduino Tools?

The main AURduino toolchain is the Eclipse-based “FreeEntryToolchain” from Hightec/Infineon. This is a full C/C++ development environment with source-level debugger. The familiar Arduino IDE is also available for the AURduino. Both IDEs are based on the Infineon iLLD libraries and allow the usual Arduino C++-like Processing language to be used with the familiar Arduino IO functions e.g. `digitalWrite()`, `analogRead()`, `Serial.print()` etc.. These functions are implemented for all three TC275 cores and can be used without restriction.

Given the awesome power of the TC275 we expect most users to program it in C in Eclipse, using the iLLD API directly or working with the underlying SFRs. The neat thing about the Aurduino is that it lets you access the massive power of the TC275 without knowing anything about the bits and bytes of the peripherals!

## Getting Started With The AURduino Toolchain

If you have never used an Arduino-style board before then is a good idea to have a look at [www.arduino.cc](http://www.arduino.cc) to find out what it is all about! Although the AURduino contains three powerful 32-bit, 200MHz processors, it can be used in exactly the same way as an ordinary Arduino Uno. The same Arduino IDE can be used but with an add-on to allow triple core operation. To use the AURduino you will need:

- (i) a PC with Windows XP or later
- (ii) The Aurix free toolchain with Eclipse, C/C++ compiler and PLS UDE debugger:

<http://free-entry-toolchain.hightec-rt.com/>

Follow the instructions given as you will need a free licence file which will be automatically emailed to you. You will need to copy it to : `C:\HIGHTEC\licenses`.

- (iii) The standard Arduino IDE installed from:

<http://www.arduino.cc/en/Main/Software>

Make sure you install this in the default directory!

- (iv) The Arduino development environment add-in for Eclipse and the standard Arduino IDE:

<ftp://internal.hitex.co.uk/pub/hitex/arduino/AURduinoMulticoreIDE.zip>

Unzip this to a temporary directory using the zip password “aurduino”. Run the installer and use the password “aurduino” to copy the IDE onto your PC.

Install these in the order Aurix freetoolchain, Arduino IDE, AURduino IDE. We hope to combine these into a single installer in the near future to make the installation quicker.

```
sketch_may20a | Arduino 1.6.4
File Edit Sketch Tools Help

sketch_may20a

/** Core 0 **/
void setup() {
  // put your setup code for core 0 here, to run once:
}

void loop() {
  // put your main code for core 0 here, to run repeatedly:
}

/** Core 1 **/
void setup1() {
  // put your setup code for core 1 here, to run once:
}

void loop1() {
  // put your main code core 1 here, to run repeatedly:
}

/** Core 2 **/
void setup2() {
  // put your setup code for core 2 here, to run once:
}

void loop2() {
  // put your main code core 2 here, to run repeatedly:
}


Arduino on COM42
```

## Using The AURduino

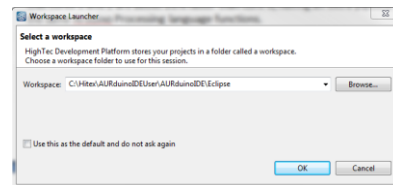
Once all of the above packages have been installed, use the AURduino just like any other Arduino except that you have three processors to play with rather than just one. Processor core 0 will run `setup()` and `loop()` with processor cores 1 and 2 running `setup1()/setup2()` and `loop1()/loop2()`. There are no special measures required to write triple-core programs but make sure that that you do not try to use the same peripheral with two different cores at the same time. Whilst nothing nasty will happen, your programs will probably just not work properly! Each core is basically identical except that cores 1 and 2 are about 20% faster than core 0, having an extra pipeline stage. They all can use the same Arduino Processing language functions.

**Remember to press the reset button on the AURduino to make it run the new program.**

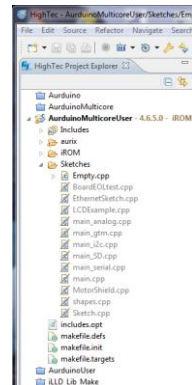
## Using The Eclipse IDE

If you want to use the Eclipse environment, start the toolchain with the  icon. When prompted, open the workspace at:

C:\Hitex\AURduinoIDEUser\AURduinoIDE\Eclipse



The default project is AurduinoMulticoreUser:






Arduino-style sketches are stored in the Sketches directory. The default sketch “Empty.cpp” is a simple program that uses all three cores. You can overwrite the statements we used with your own.

To get your programs into the AURduino, use the PLS UDE debugger 

Open the workspace

“C:\Hitex\AURduinoIDE\Eclipse\AurduinoMulticoreUser\.ude\UDEDefEclipseWorkspace.wsx.”

The program will automatically load. You can run it by clicking the  icon and stop it with the  icon. To reset the program, use the  icon. You can find more information on using the Eclipse tools and the PLS UDE debugger in the guide supplied with the FreeToolChain.

## Getting Help

If you need help, there is a new on-line forum at <http://arduino.boards.net/>.

The hardware user manual with the pinouts is at <http://www.hitex.co.uk/index.php?id=3650>.