

## What Are The ShieldBuddy TC275 Tools?

The main ShieldBuddy toolchain is the Eclipse-based “FreeEntryToolchain” from Hightec/PLS/ Infineon. This is a full C/C++ development environment with source-level debugger. The familiar Arduino IDE is also available for the ShieldBuddy. 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 ShieldBuddy 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 TC275 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 ShieldBuddy 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 ShieldBuddy you will need:

- (i) a PC with Windows 7 or later
- (ii) The Aurix free toolchain with Eclipse, C/C++ compiler and UDE debugger from PLS:  
<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:  
<https://www.arduino.cc/en/Main/Software>

You may already have this but make sure it is installed in the default directory!

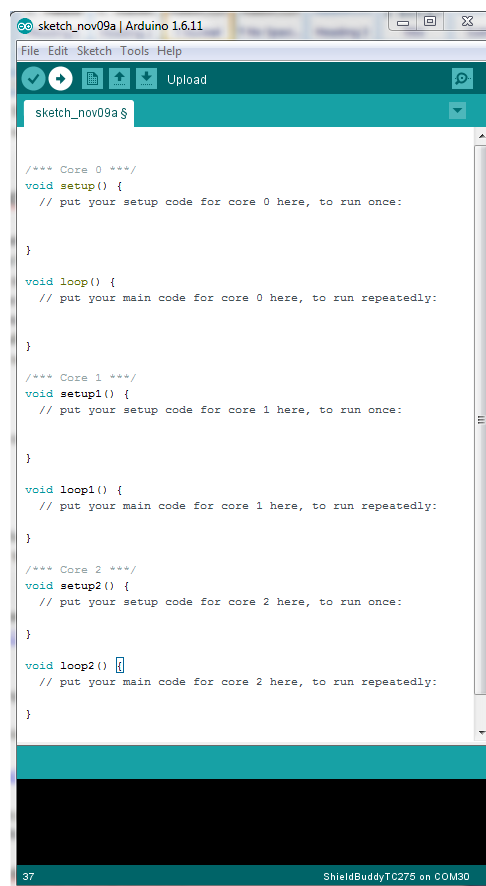
- (iv) The Arduino development environment add-in for Eclipse and the standard Arduino IDE:

<http://www.hitex.co.uk/fileadmin/uk-files/downloads/ShieldBuddy/ShieldBuddyMulticoreIDE.zip>

Unzip this to a temporary directory using the zip password “ShieldBuddy”. You can also download the installer directly from:

<http://www.hitex.co.uk/fileadmin/uk-files/downloads/ShieldBuddy/ShieldBuddyMulticoreIDE.exe>

Run the installer and use the password “ShieldBuddy” to copy the IDE onto your PC. Install these in the order Arduino IDE (you may already have this), Aurix freetoolchain, ShieldBuddy IDE. **ShieldBuddy COMports:** You may find that the Arduino IDE thinks that the ShieldBuddy has two comports. If this happens, please choose the one with the higher number!




## Using The ShieldBuddy TC275

Once all of the above packages have been installed, use the ShieldBuddy 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. When choosing which ShieldBuddy to use in the Arduino IDE, if you have a board with a CA-step processor choose "ShieldBuddy TC275". If you have a DC-step board, choose "ShieldBuddy TC275\_Dx". You can find the step marking as shown in the red circle. This is a CA step device.

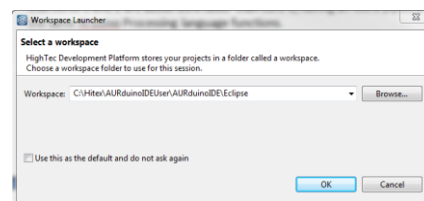


**NOTE: If you have worked with regular Arduinos, you may be used to your programs automatically running as soon as they have downloaded. In the case of the ShieldBuddy, following download, you have to press the Reset button to launch the new program. (The program will run automatically in the future when power is applied to the system.)**


## Using The Eclipse IDE

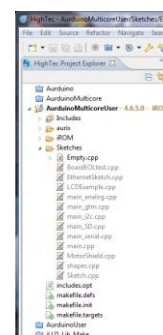
If you want to use the Eclipse environment, start the toolchain with the  icon. When prompted, open the workspace at:

C:\Hitex\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 ShieldBuddy, use the  PLS UDE debugger.






Open the workspace (ShieldBuddy with TC275 DC step processor):

"C:\Hitex\AURduinoIDE\Eclipse\AurduinoMulticoreUser\.ude\ShieldBuddyWorkspace\_27xD.wsx"

Or (ShieldBuddy with TC275 CA step processor) :

"C:\Hitex\AURduinoIDE\Eclipse\AurduinoMulticoreUser\.ude\ShieldBuddyWorkspace\_27xC.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://ShieldBuddy.boards.net/>.

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