

XC-5 Quick Start Guide

Version 1.1



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1 Introduction

The XC-5 Development Kit is an ideal starting point for exploring XMOS technology. It comprises a single XS1-L1 device, 16 user-configurable LEDs, four push-buttons, a speaker, JTAG and serial interfaces, and a through-hole prototyping area for connecting external components. The XC-5 is powered directly from a host PC using a mini-USB cable.

Once the XC-5 card is connected, you need to download a set of free development tools from the XMOS website that let you write, load and debug programs on your XC-5 card using the USB cable.

A set of demonstrations is pre-installed on the XC-5 board which you can use to test the hardware. Additional demonstrations can be downloaded from the XMOS web site, including an XC-5 tutorial which introduces the key concepts you need to understand when programming the XC-5.

The XC-5 Development Kit includes:



XC-5 Development Card



USB Cable

2 Microsoft Windows Users

The following steps explain how to get started with the XC-5 Development Kit.

1. Connect the XC-5 card to your system

- Connect the XC-5 card to your development system using the USB cable provided.
- Click **No** when the *New Hardware* prompt is displayed on screen asking you to connect to Windows Update.
- Click **Next** .
- Select *Install from list* and then click **Advanced** .
- Browse to the drivers installation directory (default *Program Files/XMOS/Desktop Tools/version/drivers/ftdi*) and select the FTDI file.
- Click **Next** and follow the instructions on screen.
- Click **Finish** to complete the driver installation.

The XC-5 card starts up flashes the bi-colour *clock* LEDs around the XS1 chip. The XC-5 card has preloaded demonstrations which you can launch using the push-buttons—see section 6 for further details.

2. Download and install the tools

- Go to: <http://www.xmos.com/downloads> and download the Tools.
- Run the Windows Installer to install the tools. Follow the instructions on screen.

3. Start the tools and follow the XC-5 tutorial

- Select **Start ► Programs ► XMOS ► Desktop Tools ► version ► XMOS Development Environment** to start the Tools.
- Click **OK** when prompted to select a workspace.
- Download the XC-5 Tutorial from:

<http://www.xmos.com/xc5>

The tutorial explains how to write programs that run on the XC-5.

3 Mac OSX Users

The following steps explain how to get started with the XC-5 Development Kit.

1. Connect the XC-5 card to your system

- Connect the XC-5 card to your development system using the USB cable provided.

The XC-5 card starts up flashes the bi-colour *clock* LEDs around the XS1 chip. The XC-5 card has preloaded demonstrations which you can launch using the push-buttons—see section 6 for further details.

2. Download and install the tools

- Go to: <http://www.xmos.com/downloads> and download the Tools.
- Double-click the downloaded DMG file to open it, and then drag the XMOS icon into your Applications folder.
- When the tools have been installed, eject the DMG file (CMD+E) and drag it to the Trash to delete it.

3. Start the tools and follow the XC-5 tutorial

- Run the XDE.app file from Finder (in the installation directory) to start the Tools.
- Click OK when prompted to select a workspace.
- Download the XC-5 Tutorial from: <http://www.xmos.com/xc5>

The tutorial explains how to write programs that run on the XC-5.

4 Linux Users

The following steps explain how to get started with the XC-5 Development Kit.

1. Connect the XK-1 card to your system

- Connect the XC-5 card to your development system using the USB cable provided.
- Log into a shell with root permissions, open the file `/etc/fstab` and add the line:
`none /proc/bus/usb usbfs defaults,devmode=0666 0 0`
- Unmount the USB file system, for example:
`umount /proc/bus/usb`
- Remount the USB file system, for example:
`mount /proc/bus/usb`
- Log out from root access.

The XC-5 card starts up flashes the bi-colour *clock* LEDs around the XS1 chip. The XC-5 card has preloaded demonstrations which you can launch using the push-buttons—see section 6 for further details.

2. Download and install the tools

- Go to: <http://www.xmos.com/downloads> and download the Tools.
- Uncompress the *DesktopTools_<version>.tgz* package to your install directory using the following command:
`tar -xzf DesktopTools_<version>.tgz -C /home/user`

3. Start the tools and follow the XC-5 tutorial

- Run the following command from the installation directory to set up the environmental variables for the Tools:
`source SetEnv`
- Run the following command to start the Tools:
`xde`
- Click **OK** when prompted to select a workspace.
- Download the XC-5 Tutorial from: <http://www.xmos.com/xc5>
The tutorial explains how to write programs that run on the XC-5.

5 User Programming and Demo Mode

When you connect the XC-5 to the USB port on your computer, it boots from internal flash memory and runs the demonstration code.

When you load a program onto the XC-5 using the JTAG interface, the card automatically switches to program mode..

6 XC-5 Pre-loaded Demonstrations

The XC-5 runs pre-loaded demonstration code on power up. The default behaviour is to flash the bi-colour *clock* LEDs around the XS1 chip and to pulse the LEDs next to the buttons. Press any of the four buttons to launch a simple demo application.

6.1 Button A: Clock

Displays a clock on the clock LEDs with the hands as follows:

Red	Minutes
Green	Hours
Orange	Seconds

The 12 clock LEDs on the XC-5 provide 5-minute resolution and the four LEDs next to the buttons provide minutes (1-4) past this point. When the clock is running use the buttons as follows:

A	Return to default LED demo
B	Speed up clock to set time
C	Tick-tock sound on
D	Tick-tock sound off

6.2 Button B: Simple Audio Synthesizer

Press buttons B-D to generate different tones. Press A to return to the default LED demo.

6.3 Button C: Reaction Game

A simple reaction game. The red LED cycles around the clock face. After a varied delay a LED will illuminate green. The aim of the game is to press button D when the red LED is over the green LED. The game speeds up as you progress. There are five levels to the game and the current level is shown on the four button LEDs. Press A to return to the default LED demo.

6.4 Button D: Simple UART Demo

A simple UART demonstration using the virtual COM port of the XC-5. Once you have started the program, connect to it using a standard terminal (such as *realTerm* for Windows or *GTKTerm* for Linux). When you press a key, a list of three commands is displayed that you can use to illuminate the clock LEDs via the terminal. The UART settings are as follows:

Bits per sec	115200
Parity	None
Data bits	8
Stop bits	1
Flow control	None

Press A to return to the default LED demo.

7 Next Steps

Information on using the XC-5 and development tools is available from www.xmos.com/xc5 including:

[XC-5 Tutorial](#)—how to write XC programs for the XC-5 board

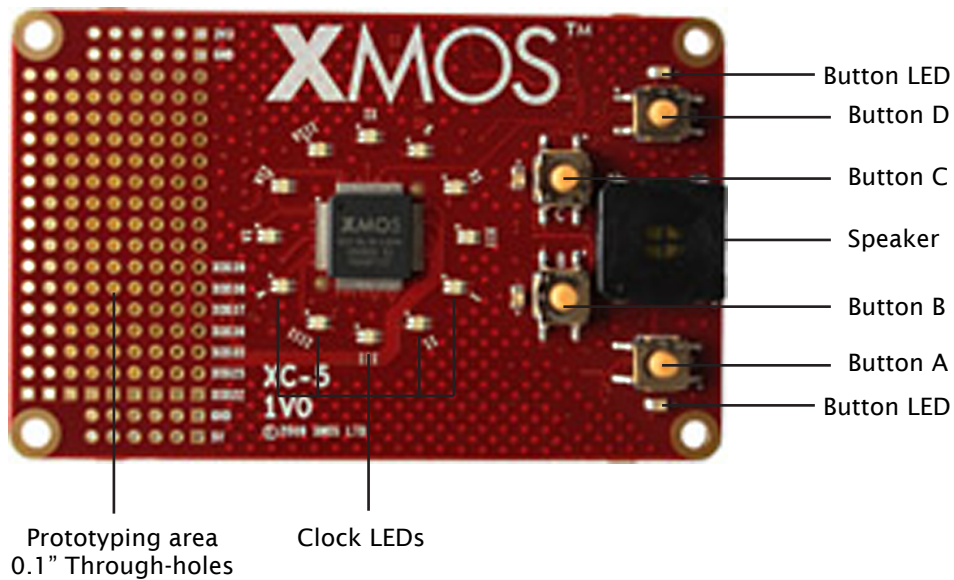
[XC-5 Hardware Manual](#)—hardware features on the XC-5 board

[XMOS Tools User Guide](#)—how to use the development tools

[XS1-L System Specification](#)—information on switching, routing and power modes of XS1-L devices

Further information on configuring the USB drivers and additional documentation is available from: www.xmos.com/support

8 XC-5 Features



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