

XC-1A Quick Start Guide

Version 1.0



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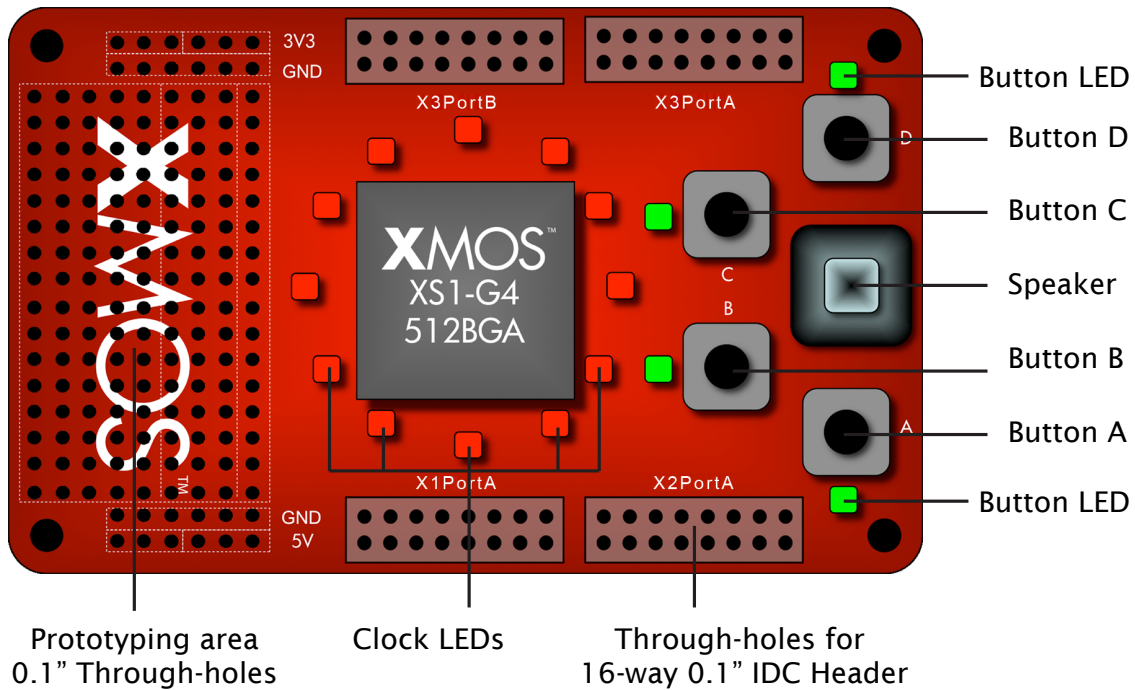
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1 Introduction

The XC-1A Development Kit contains everything you need to start exploring the XMOS event-driven processor technology. It comprises a single XS1-G4 device, 4Mbits SPI FLASH memory, 16 user-configurable LEDs, four pushbuttons, a speaker, JTAG and serial interfaces, four expansion areas suitable for IDC headers and a through-hole prototyping area for connecting external components.

The XC-1A card can be powered by an external 5V power supply, or the USB cable provided which also provides a JTAG interface between the card and XMOS Tools.

1.1 XC-1A Features



Further information on the XC-1A is available from the XMOS web site. Download the XC-1A tutorial, hardware manual, schematics and design files from: www.xmos.com/xc1a

2 Microsoft Windows Users

1. Download and configure the tools

- Download the tools installer from the following URL:
<http://www.xmos.com/downloads>
- Double-click the installer to run it. Follow the on-screen prompts to install the tools on your PC.

2. Install the USB-to-JTAG drivers

- Connect the XC-1A card to your development system using the USB cable provided.
The *New Hardware Wizard* is displayed. If you are prompted to connect to Windows Update, click **No**.
- Click **Next** to proceed.
- Select *Install from list* and click **Advanced**.
- Browse to your tools installation folder, open the *drivers* subdirectory and select the FTDI folder.
- Click **Next** and follow the instructions on screen.
- Click **Finish** to complete the driver installation.
The XC-1A card starts up and flashes the LEDs around the XMOS chip on the card. The XC-1A card has four demonstrations which you can launch using the push buttons—see Section 5.

3. Start the tools

- To start the integrated development environment, **Start ▶ Programs ▶ XMOS ▶ XMOS Desktop Tools 9.9 ▶ XMOS Development Environment**.
- To use the command-line tools, **Start ▶ Programs ▶ XMOS ▶ XMOS Desktop Tools 9.9 ▶ Desktop Tools Prompt**.



You are now ready to follow the XC-1A tutorial which explains how to write XC programs for your XC-1A board. Download the tutorial from **<http://www.xmos.com/published/xc1atut>**.

3 Mac OSX Users

1. Connect the XC-1A card to your system

- Connect the XC-1A card to your development system using the USB cable provided.

The XC-1A card starts up and flashes the LEDs around the XMOS chip on the card. The XC-1A card has four demonstrations which you can launch using the push buttons—see Section 5.

2. Download and configure the XMOS Tools

- Download the Macintosh installer from the following URL:
<http://www.xmos.com/downloads>
- Double-click the downloaded installer to open it, and then drag the XMOS icon into your Applications folder.
The installer copies the files to your hard disk.
- Unmount the installer.

3. Start the tools

- To start the integrated development environment, open a new Finder window, navigate to the *Applications* folder, open the XMOS folder and double-click on the *XDE.app* icon.
- To use the command-line tools, open a Terminal window, change to the installation directory and type:

```
SetEnv.command
```



You are now ready to follow the XC-1A tutorial which explains how to write XC programs for your XC-1A board. Download the tutorial from **<http://www.xmos.com/published/xc1atut>**.

4 Linux Users

1. Connect the XC-1A to your system

- Connect the board to your development system using the USB cable provided.
- Log into a shell with root permissions.
- Open the file `/etc/fstab` in an editor and add the following lines to access the USB file system:

```
none /proc/bus/usb usbfs defaults,devmode=0666 0 0
```

- Unmount the USB file system with the following command:

```
umount /proc/bus/usb
```

- Remount the USB file system with the following command:

```
mount /proc/bus/usb
```

The XC-1A card starts up and flashes the LEDs around the XMOS chip on the card. The XC-1A card has four demonstrations which you can launch using the push buttons—see Section 5.

2. Download and configure the tools

- Download the tools archive from the following URL:
<http://www.xmos.com/downloads>
- Uncompress the archive to an installation directory using the command:

```
tar -xzf archive.tgz -C /home/user
```



The 64-bit tools require the 32-bit compatibility-layer libraries to work correctly. For further information on installing these libraries on RedHat distributions, browse to the following URL:

<http://www.redhat.com/support>

3. Start the tools

- Configure the XMOS Tools environment. Change to the installation directory and type:

```
source SetEnv
```

- To start the integrated development environment, type the command:

```
xde
```

- To use the command-line tools, call the required tool directly.



You are now ready to follow the XC-1A tutorial which explains how to write XC programs for your XC-1A board. Download the tutorial from **<http://www.xmos.com/published/xc1atut>**.

5 XC-1A Pre-loaded Demonstrations

The XC-1A runs pre-loaded demonstration code on power up. The default behaviour is to twinkle 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.

5.1 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-1A provide 5-second resolution. 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

5.2 Button B: Simple Audio Synthesizer

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

5.3 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.

5.4 Button D: Simple UART Demo

A simple UART demonstration using the virtual COM port of the XC-1A. 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.

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