

XK-XMP-64 Quick Start Guide

(VERSION 9.9)



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Authors:

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1 Introduction

The XK-XMP-64 is a multi-core board that lets you program 64 cores with 512 threads. It comprises 16 XS1-G4 devices and two ethernet PHYs. Two banks of 0.1" IDC connectors are provided for connecting additional components to the XK-XMP-64. A USB cable be used to connect the XK-XMP-64 to a USB 2.0 port on a PC, providing a JTAG interface that can be used to load and debug programs on the board. The XK-XMP-64 is powered from an external 12V supply.

The power supply needs a mains cable with a standard IEC C13 connector; each country has their own mains connectors, and you may need to acquire a cable for your country.

To program the XK-XMP-64 you need to download a set of free Software Development Tools from the XMOS website. The tools let you write, compile, load and debug programs on the XK-XMP-64.

Important: You must use version 9.2.2 or later of the tools. If you use the 9.9.2 tools you must download a zip file (containing xgdb and XK-XMP-64.xn) from the XMOS website: <http://www.xmos.com/xmp64>. Please follow the instructions in Section 5 if you have installed the 9.9.2 tools.

Demonstrations can be downloaded from the XMOS web site, including an XK-XMP-64 tutorial which introduces the key concepts you need to understand when programming the XK-XMP-64 board.

2 Windows Users

Follow the steps below to get started with the XK-XMP-64 Development Kit.

1. Download and install the tools

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

2. Connect the XK-XMP-64 to your system.

- Connect the XK-XMP-64 to a USB 2.0 connector on your development system, and power up the XK-XMP-64.
- 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/X-MOS/DESKTOP TOOLS/9.9/DRIVERS/XTAG2) and select the XTAG2 file.
- Click *Next* and follow the instructions on screen.
- Click *Finish* to complete the driver installation.

3. Patch the tools (see Section 5).

4. Start the tools and follow the XK-XMP-64 tutorial

- Select Start → Programs → XMOS → Desktop Tools → 9.9 → XMOS Development Environment to start the Tools.
- Click *OK* when prompted to select a workspace.
- Download the XK-XMP-64 Tutorial from:
<http://www.xmos.com/xmp64>
The tutorial explains how to write programs that run on the XK-XMP-64.

3 Mac OSX Users

Follow the steps below to get started with the XK-XMP-64 Development Kit.

1. Connect the XK-XMP-64 to a USB 2.0 connector on your development system, and power up the XK-XMP-64.
2. Download and install the tools
 - Go to: <http://www.xmos.com/downloads> and download the Development 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. Patch the tools (see Section 5).
4. Start the tools and follow the XK-XMP-64 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 XK-XMP-64 Tutorial from: <http://www.xmos.com/xmp64>

The tutorial explains how to write programs that run on the XK-XMP-64.

4 Linux Users

Follow the steps below to get started with the XK-XMP-64 Development Kit.

1. Connect the XK-XMP-64 to your system.

- Connect the XK-XMP-64 to a USB 2.0 connector on your development system, and power up the XK-XMP-64.
- Log into a shell with root permissions, open the file `/etc/fstab` and add the following lines to access the USB and high-speed USB file systems:

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

- Unmount the USB file systems, for example:

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

- Remount the USB file systems, for example:

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

- Log out from root access.

2. Download and install the tools

- Go to: <http://www.xmos.com/downloads> and download the Development Tools.
- Uncompress the DESKTOPTOOLS_9.9.TGZ package to your install directory using the following command:

```
tar -xzf DesktopTools\_9.9.tgz -C /home/user
```

3. Patch the tools (see Section 5).

4. Start the tools and follow the XK-XMP-64 tutorial

- Run the following command from the installation directory to set up the environmental variables for the Development Tools:

```
source SetEnv
```

- Run the following command to start the Tools:
`xde`
- Click OK when prompted to select a workspace.
- Download the XK-XMP-64 Tutorial from: <http://www.xmos.com/xmp64>
The tutorial explains how to write programs that run on the XK-XMP-64.

5 Install a patch for the 9.9.2 tools

The XMOS website hosts a ZIP archive containing two files for your O/S. Please download the ZIP archive for your O/S from <http://www.xmos.com/xmp64/>. Open the ZIP archive and move the files to their respective destinations:

1. Move the `xgdb` file to the folder that contains all the command line tools (overwrite the 9.2.2 release of `xgdb`):
 - `/Applications/XMOS_9.9.2/bin` on MacOSX
 - `/home/user/XMOS_9.9.2/bin` on Linux
 - `Program Files/XMOS/Desktop Tools/9.9.2/bin` on Windows
2. Move the `XK-XMP-46.xn` file to the folder that contains all XN files (this is a new file that is not present in 9.2.2):
 - `/Applications/XMOS_9.9.2/configs` on MacOSX
 - `/home/user/XMOS_9.9.2/configs` on Linux
 - `Program Files/XMOS/Desktop Tools/9.9.2/configs` on Windows

6 Compile and Run a Program

You should now be able to compile and run a program. Type in the following program into a file `main.xc`:

```
#include <print.h>
#include <xs1.h>

out port led = XS1_PORT_1E;
main() {
    printstr("Hello world\n");
    led <: 1;
    while(1) { }
}
```

Compile this program using:

```
xcc -target=XK-XMP-64 main.xc
```

Run this program using:

```
xrun --io a.xe
```

This should print `Hello World` to your screen and light up one the green LEDs.

7 Next Steps

Information on using the XK-XMP-64 and development tools is available from www.xmos.com/xmp64/ including:

[XK-XMP-64 Tutorial](#)—how to write XC programs for the XK-XMP-64 board

[XK-XMP-64 Hardware Manual](#)—hardware features on the XK-XMP-64 board

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

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

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

8 Document History

Date	Release	Comment
2010/02/22	9.9	First release.

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