Cyclone LC & Cyclone FX Programmers
Getting Started Guide v.1.01

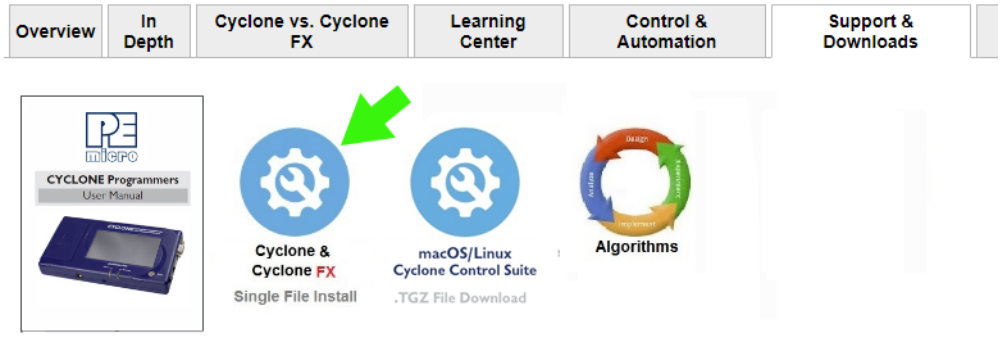
This guide will allow the user to program their device with a Cyclone programmer, using a simple programming image, by completing the following steps.

- Installing the Cyclone software
- Setting up the Cyclone hardware
- Creating a stand-alone programming image
- Launching Cyclone programming

This guide is intended as a supplement to the Cyclone's User Manual, which contains in-depth information about the topics covered here and much more.

1 Installing The Cyclone Software

First, the Cyclone software should be installed on the user's PC. It can be downloaded from the Support & Downloads tab on the pemicro.com product page for Cyclone LC or Cyclone FX, or directly from https://www.pemicro.com/downloads/download_file.cfm?download_id=481.



Once the software is downloaded, the user should install it on their PC. If Cyclone software is already installed on the PC, it is recommended that the old installation be removed before the user installs the latest software.

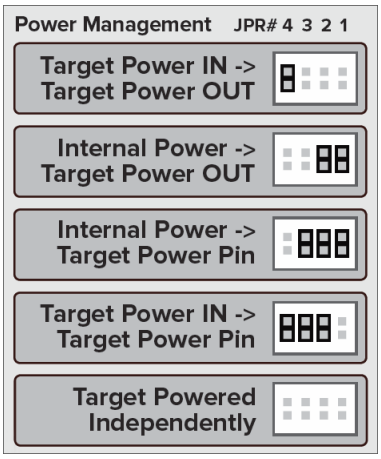
Note: The User Manuals for Cyclone LC or Cyclone FX programmers, which contain more detailed information about the topics covered here, are installed along with the Cyclone software. They can also be downloaded from the Support & Downloads tab.

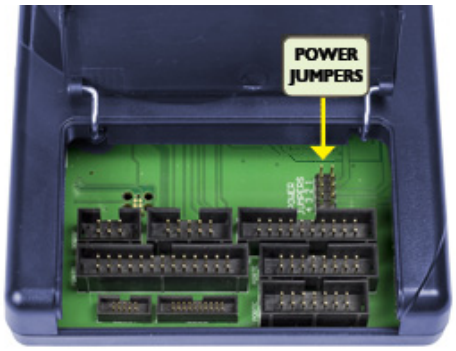
2 Setting Up The Cyclone Hardware

Step 1. Configure Cyclone power settings

The Cyclone has several different power configurations. The label on the bottom of the Cyclone indicates the appropriate Jumper settings for each. The user should install the Jumpers as indicated for their desired power configuration.

The Jumpers are located underneath the Cyclone's access panel. They are labeled "Power Jumpers." and numbered from 1-4. The part# Cyclone-ARM-Univ is shown in the example below; the jumper location will be similar for all Cyclone models.





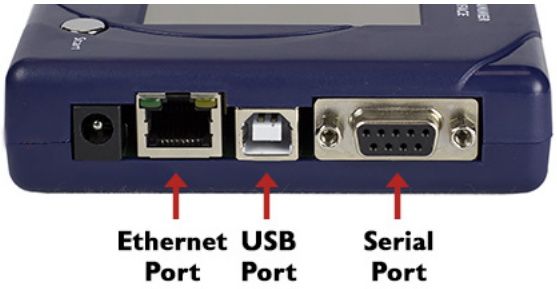
If power is provided via the Cyclone, the user may need to configure the programming image accordingly. Image creation and configuration is discussed in **Section 3 - Creating A Stand-Alone Programming Image**.

For more information on the various power configurations, the user should refer to their Cyclone's User Manual. There is a also a blog post that covers this topic at: http://www.pemicro.com/blog/index.cfm?post_id=121

Step 2. Connect Cyclone to a PC (for programming image setup)

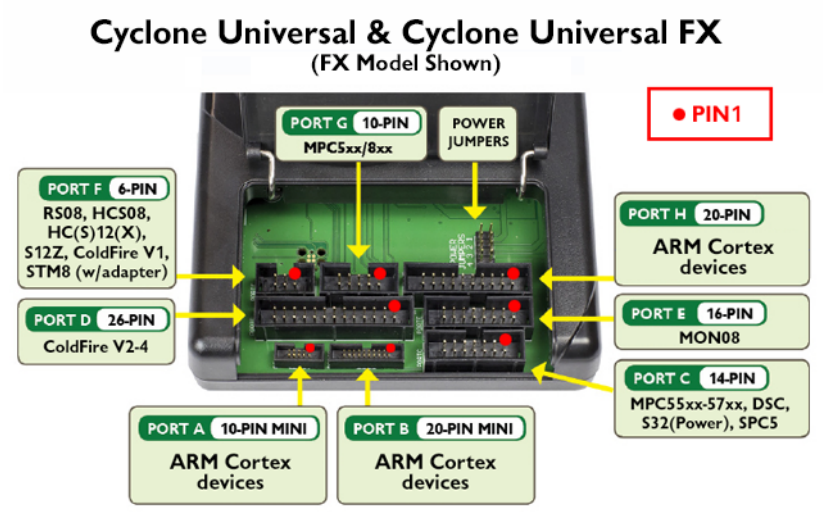
The Cyclone programmer should be connected to the PC via USB, Serial, or Ethernet. Cables for each of these options are included with the Cyclone.

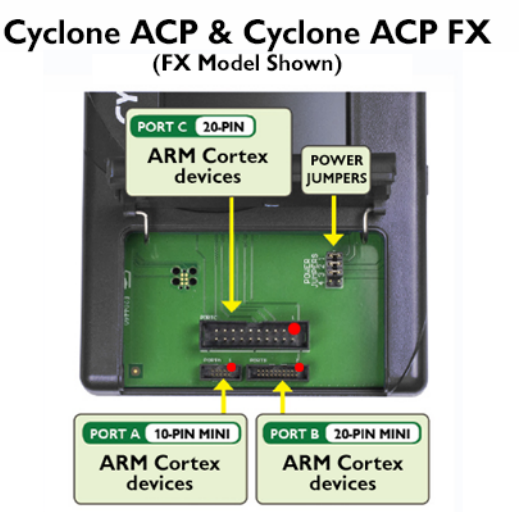
Note: An Ethernet connection requires IP setup on the Cyclone unit; please refer to the Cyclone's User Manual for more information.



Step 3. Connect Cyclone to target

A ribbon cable should be connected from the appropriate Cyclone header (located under the Cyclone's access panel) to the header for your target device. Ribbon cables are provided with the Cyclone.





Step 4. Plug in power to the Cyclone

The provided power supply should be plugged into the System Power jack of the Cyclone programmer. Other power connections should be made according to the power configuration selected in Step 1.

On power-up the user may need to agree to a firmware update on the Cyclone unit.

3 Creating A Stand-Alone Programming Image

A stand-alone programming (SAP) image is the result of pre-processing the programming algorithms, data to be programmed, programming options, and scripted programming commands. These are combined into a single encrypted file. This SAP image can then be loaded onto the Cyclone and used to program, without need for the Cyclone to be connected to a PC.

The Cyclone Image Creation Utility, shown below, allows the user to configure and save SAP images. A simple programming image can be created in 6 steps:

Step 1. Run Cyclone Image Creation Utility

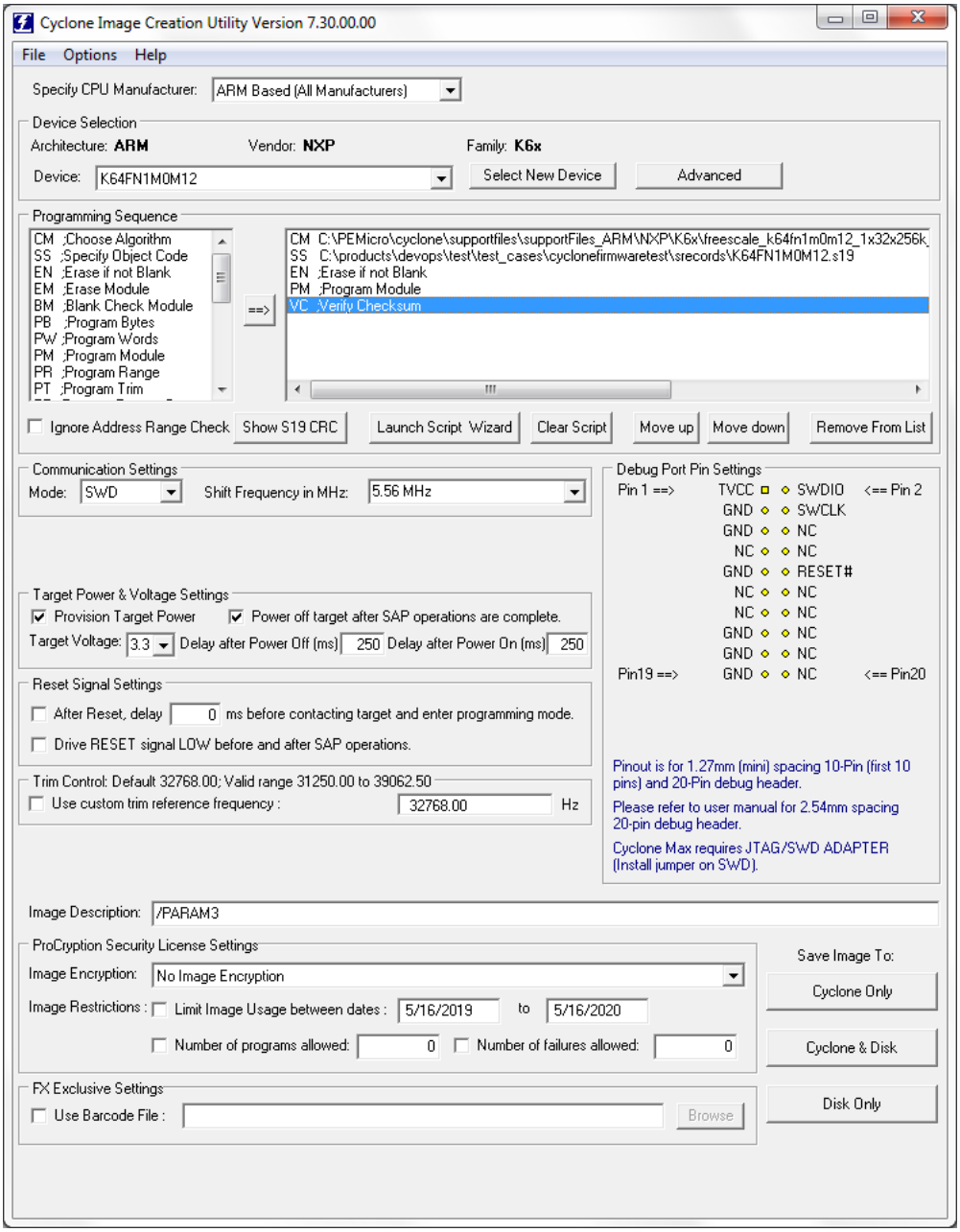
Step 2. Select Device Manufacturer & Device

Step 3. Set Up Programming Sequence

Step 4. Add Basic Programming Commands

Step 5. Configure Additional Settings

Step 6. Save SAP Image To Cyclone



The following instructions walk the user through each of these steps:

Step 1. Run Cyclone Image Creation Utility

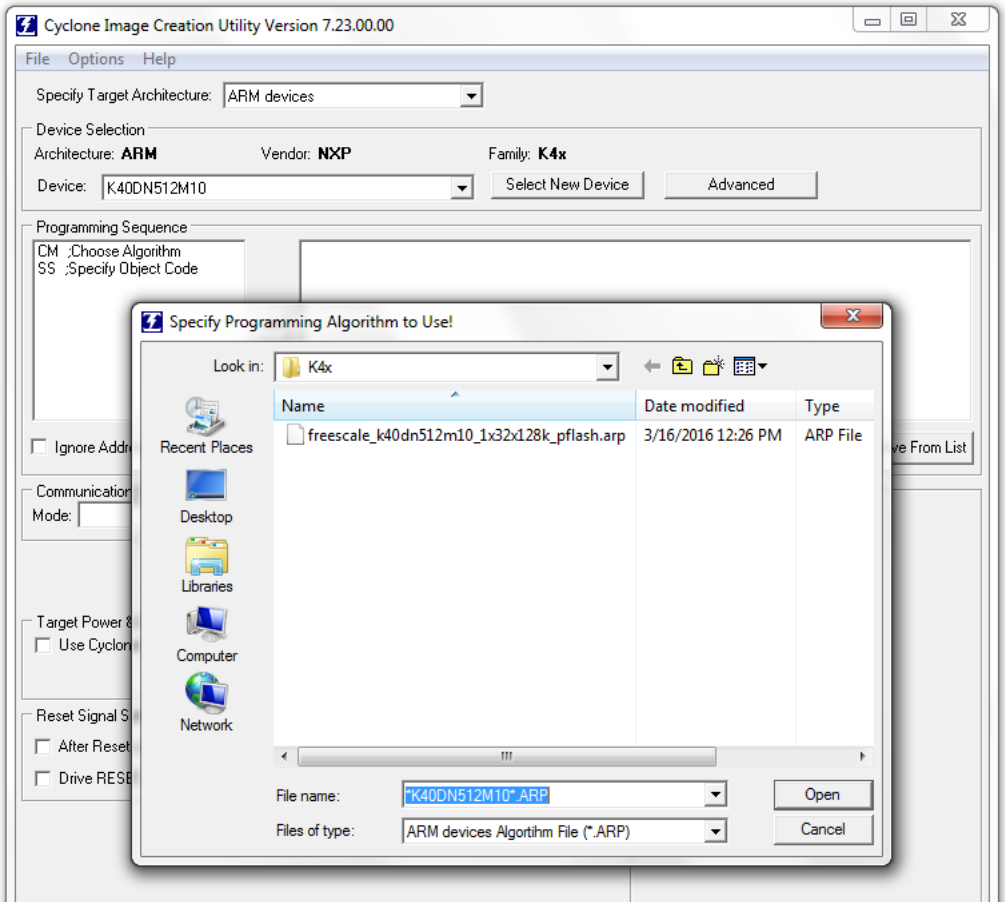
CreateImage.exe is in the “ImageCreation” folder, in the location where the Cyclone software was installed. For an in-depth description of the Cyclone Image Creation Utility please refer to the User Manual for your Cyclone programmer.

Step 2. Select Device Manufacturer and Device

Specify CPU Manufacturer and Select New Device are used to choose the manufacturer of the target device, and then the specific device or architecture.

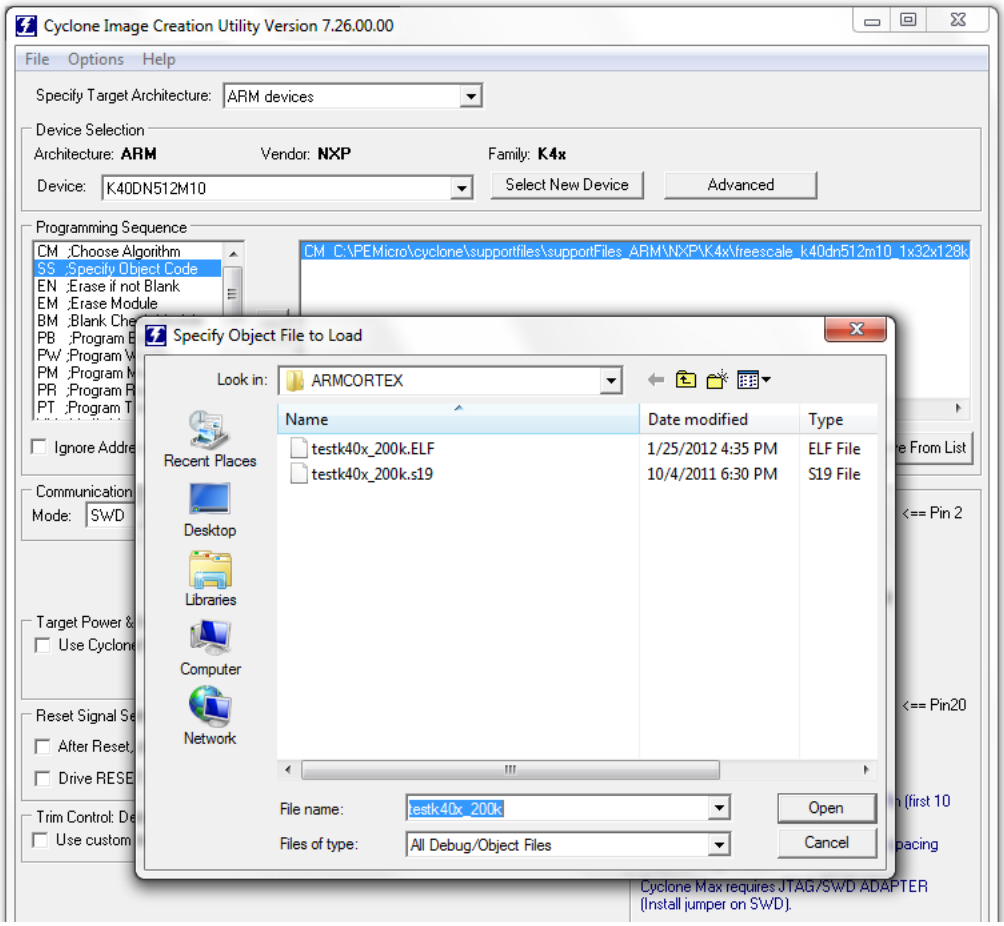
Step 3. Programming Sequence Setup

The user should double-click on CM in the Programming Sequence window to choose the appropriate Algorithm for the target device. They can navigate to the algorithm using the dialog provided.



Based on the algorithm that was selected, additional commands will be made available in the box of programming commands on the left.

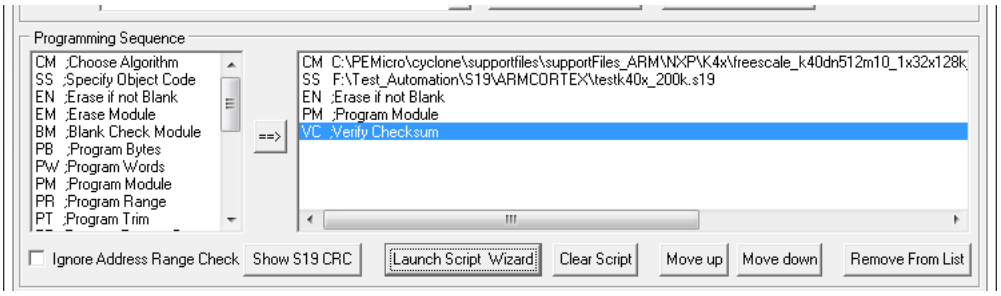
The user should then double-click on the SS command to specify the Object Code.



Step 4. Adding Basic Programming Commands

The user should then add other basic programming commands, using the list of commands on the left side of the Programming Sequence area. The arrow and buttons allow the user to add, remove, and re-sequence the commands, in the box on the right. As an example, some basic commands might be

- Erase
- Program
- Verify



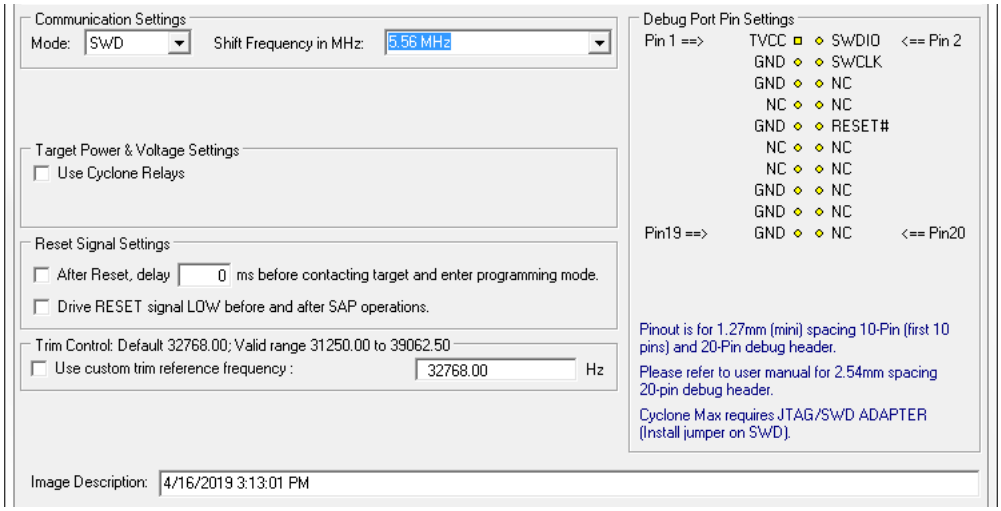
Note: Launch Script Wizard can also be used to quickly complete Steps 3 and 4.

Step 5. Other Settings

The user should then specify any other settings that the SAP image should contain in order to program correctly, such as

- Communication SWD vs JTAG
- Shift frequency
- Target Power and Voltage Settings

These settings can be made using the corresponding areas of the Cyclone Image Creation Utility.



Step 6. Save SAP image to Cyclone

The user should then save the SAP image onto the Cyclone by clicking the button to save to “Cyclone Only” or “Cyclone & Disk.” The image will be automatically selected as the current SAP image on the Cyclone.

3.1 Advanced Features

Cyclone programmers can take advantage of several advanced features that are beyond the scope of this Getting Started guide, such as RSA/AES encrypted programming images, programming count/date restrictions on images, external storage on SD cards, and use of a barcode scanner to launch programming. For information on these topics, please refer to the User Manual for your model of Cyclone programmer. Cyclone FX programmers include all of these features as standard, and Cyclone LC programmer users can purchase ProCryption Security features separately.

4 Launching Cyclone Programming

There are three ways to launch programming.

1. Cyclone Start Button Press - The user simply presses the Start button located on top of the

Cyclone programmer.

2. Cyclone Control Console (command-line utility) - The user writes a script that specifies parameters and initiates programming using the command line. More information is available in the Cyclone's User manual or at: http://www.pemicro.com/blog/index.cfm?post_id=142
3. SDK - The SDK is a software library that is used in conjunction with the user's own code. The user writes a customer application that uses this library of functions to launch programming. More information is available in the Cyclone's User Manual, or at: http://www.pemicro.com/blog/index.cfm?post_id=139

The "Success" or "Error" LED will illuminate to let the user know the result of programming.

Note: If programming is unsuccessful when using this quick start procedure, the user may instead wish to use the included PROG software for their target device. The PROG software allows the user to manually walk through the programming procedure step by step, which may help determine which part of setup or programming function is causing difficulty.