

Cyclone MAX

Debugging and Programming

Overview

P&E Microcomputer Systems' Cyclone MAX is an extremely flexible tool designed for in-circuit flash programming, debugging, and testing of Freescale ColdFire V2/V3/V4, Power Architecture 5xx/8xx, Power Architecture 55xx/56xx (Nexus), and ARM (MAC7xxx) microcontrollers.



By connecting to a simple BDM header on the target, the Cyclone MAX can program, test, or debug internal memory on a Freescale processor or external flash connected to the processor's address/data bus. The processor or memory device can be mounted on the final printed circuit board before programming. The Cyclone MAX may be operated interactively via Windows based programming applications as well as under batch or dll commands from a PC. Once loaded with data by a PC it can be disconnected and operated manually in a completely stand-alone mode via the LCD menu and control buttons. The Cyclone MAX has over 7Mbytes of non-volatile memory, which allows the onboard storage of multiple programming images. When connected to a PC for programming or loading it can communicate via the ethernet, USB, or serial interfaces. The Cyclone MAX comes with intuitive configuration software, as well as easy to use automated control software. The Cyclone MAX also functions as a full-featured debug interface, and is supported by development software from P&E, Freescale, and many other third parties.

FEATURES

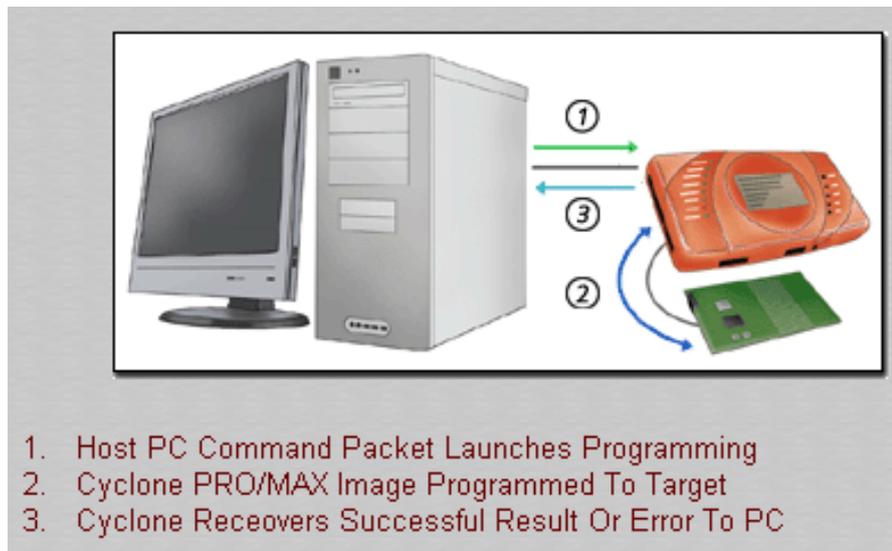
- Several Supported Architectures**
 Freescale **ColdFire V2/V3/V4**, **Power Architecture (MPC5xx/8xx)**, **Power Architecture (Nexus) (MPC55xx/56xx)**, and **ARM (MAC7xxx)** microcontrollers.
- Multiple Communications Interfaces**
 USB, Serial, and Ethernet interfaces.
- On-Board Storage**
 The Cyclone MAX may be pre-programmed with a non-volatile programming image and controlled via the LCD/Buttons or remotely from a PC. Stand-alone programming operation does not require a PC.
- Multiple Image Support**
 Multiple programming images may be stored in Cyclone MAX memory. Learn more about managing multiple images in our Expert's Corner.
- LCD Display**
 An LCD menu display, in conjunction with the status LEDs and buttons, allows stand-alone control and configuration of the Cyclone MAX.

Interactive Debugging

The Cyclone MAX can be used in an interactive fashion via the Serial, USB, or Ethernet ports in order to connect to and debug a microprocessor-based target. The Serial and USB ports can be used to access the target hardware directly from the Host PC, while the Ethernet port allows the target hardware to be placed anywhere on the corporate LAN or even the Internet.

Interactive Programming via a Host PC

Like the Interactive Debug mode, the Interactive Programming mode allows for programming the flash of a target hardware via the Serial, USB, or Ethernet interfaces. The user can accomplish this either manually through the PROG software, or in an automated fashion through running the command line version of the programmer (CPROG). When used with the command line version of the Programmer, the Cyclone MAX can return error codes, which provide for a seamless and automated means of programming target hardware and getting pass/fail status.



Stand-alone Operation

Although the Cyclone MAX can be used in an interactive mode to program or debug target hardware, one of its best features is its ability to work in a pre-configured, stand-alone mode. This ability is very useful for tasks like upgrading firmware in the field, or programming target boards on production lines. In this mode, the user pre-configures the Cyclone MAX with an image that is to be programmed into the target hardware. Once the Cyclone MAX is configured, the programming process may be initiated from the Host PC or by an operator in the field. The Cyclone unit may be powered with the optional Cyclone_PowerPack, which is a lightweight and compact lithium ion battery (available separately). The combination of the Cyclone programmer and the battery pack creates a fully operational field programming setup that is lightweight, compact, and extremely portable.

PC Controlled Stand-alone Programming

In this mode, an image has already been programmed into the Cyclone MAX. The PC launches the programming process with a simple command packet. Flash programming occurs directly from the Cyclone PRO/MAX image to the target. The result is sent back to the host computer. As part of the command packet, **dynamic data such as a serial number** may be added to the fixed image being programmed into the target.

The Cyclone MAX includes the Basic Edition of P&E's **Cyclone Automated Control Package**. This allows the user to automate programming with one programming image on one Cyclone. P&E also offers enhanced editions of the control package which include features like:

- Multiple Cyclone Control
- Error Detection
- Dynamic Data Programming
- Image Maintenance



User Controlled Stand-alone Programming

When detached from a PC, the Cyclone PRO can still operate as a stand-alone programmer. The buttons are used to launch the programming process, and the LEDs display the status of the programming operation. This is ideal for short programming runs or for field updates, where having a PC may not be desirable. In the field, the Cyclone unit may be powered with the optional Cyclone_PowerPack, which is a lightweight and compact lithium ion battery (available separately).

Third-party API

Interactive debug, programming, and stand-alone operations can be performed using third-party tools. P&E publishes an API in the form of Interface library routines that allow third-party developers to access the Cyclone MAX's features via Serial, USB, or Ethernet ports. For more information, please see the INTERFACE LIBRARY ROUTINES.

Accompanying Software and Utilities

The Cyclone MAX is accompanied by the following software and utilities:

- **Cyclone Max IP Setup Utility:** Network IP Setup Utility which enables users to set network parameters, associate a name with each particular Cyclone MAX, and upgrade the Cyclone MAX Firmware.
- **Interactive Programming Software:** Allows manually-controlled programming for ColdFire V2/V3/V4, Power Architecture 5xx/8xx, and Power Architecture 55xx/56xx (Nexus) devices.
- **Cyclone Max Image Creation Utility:** Configures the Cyclone Max with a programming image.
- **Cyclone MAX Launch Utility:** May be invoked in a batch file to carry out preconfigured operations.

Power Supply and Cables

Ships with Power Supply, DB9 Serial Cable, Ethernet Cable, USB 2.0 A/B Cable, as well as target connection cables for: Synchronous Coldfire V2/3/4 (Cable-CF-Adapter), Asynchronous ColdFire V2/3/4, Power Architecture 5xx/8xx, Power Architecture 55xx/56xx (Nexus), and ARM microcontrollers.