CY3675

CYClockMaker Programming Kit Guide

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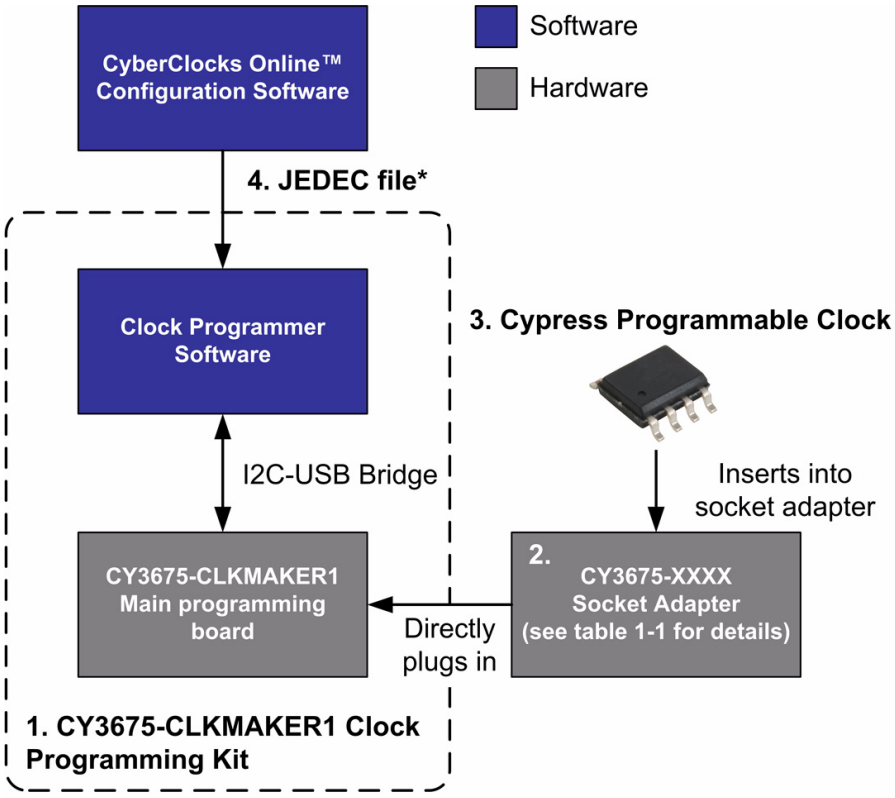
Contents

1. Introduction

This guide explains how to program a Cypress programmable clock device using the CY3675-CLKMAKER1 kit. Step-by-step instructions and relevant images are included to help you use the appropriate hardware and software to program your clock device.

The following diagram shows the necessary components to program a Cypress clock.

Figure 1-1. Components to Program a Cypress Clock



* JEDEC file may be generated from any of Cypress's clock configuration software

1. CY3675-CLKMAKER1 Clock Programming Kit
2. Socket Adapter for your specific clock device (available from Cypress Online Store). Refer Table 1-1 for the list of supported devices. For current updates on kits, visit http://www.cypress.com/go/cy3675
3. Cypress programmable clock device
4. JEDEC file to be programmed into your clock device (a JEDEC file is created using the CyberClocks™ Online software tool)

Note: Clock Programmer software runs on Windows-based PC.

Table 1-1. Clock Programming Kits

(Latest kits are available at http://www.cypress.com/go/cy3675)

Kit Name	Description	Supported Devices
CY3675-CLKMAKER1	Main Programming Board	NA
Socket Adapters (Not included with CY3675-CLKMAKER1 kit. These are sold seperately)		
CY3675-LCC4A	Adapter Board for LCC4A Devices	CY25701, CY25702
CY3675-QFN8A	Adapter Board for QFN8A Devices	CY22M1, CY22U1
CY3675-SOIC8A	Adapter Board for SOIC8A Devices	CY25402, CY25403, CY25422, CY25423, CY25482, CY25483
CY3675-QFN24A	Adapter Board for QFN24A Devices	CY2544, CY2545, CY2548
CY3675-LCC6A	Adapter Board for LCC6A Devices	CY2X013, CY2X014, CY2XF23, CY2XF24, CY2XF32, CY2XF33, CY2XF34
CY3675-TSSOP20B	Adapter Board for TSSOP20B Devices	CY25404

Your CY3675-CLKMAKER1 Clock Programmer Kit contains:

- CD with:
  1. CY3675-CLKMAKER1 Clock Programming Kit Guide (you are reading this now)
  2. Software installation file: PSoCProgrammer3.05.exe
- Main programming board (CY3675-CLKMAKER1)
- I2C-USB Bridge (CY3240-I2USB)
- PSoC® MiniProg (CY3217)
- Four power plug adapters

The MiniProg is used only for updating the firmware on the PSoC Programmable System-on-Chip™ on the main programming board. Refer to Section 4.11 for details.

- USB cable
- 15V 400 mA power supply

The latest kit information and software are available at http://www.cypress.com/go/cy3675

1.1 Getting Started

1. Install the clock programmer software (Section 2)
2. Set-up the kit hardware (Section 3)
3. Run the clock programmer software (Section 4)

1.2 Document Revision History

Table 1-2. Revision History

Revision	PDF Creation Date	Origin of Change	Description of Change
**	6/16/09	PRMV	New Guide

1.3 Documentation Conventions

Table 1-3. Document Conventions for Guides

Convention	Usage
`Courier New`	Displays file locations, user entered text, and source code: `C:\ ...cd\icc\`
Italics	Displays file names and reference documentation: Read about the *sourcefile.hex* file in the *PSoC Designer User Guide*.
[**Bracketed, Bold**]	Displays keyboard commands in procedures: [**Enter**] or [**Ctrl**] [**C**]
File > Open	Represents menu paths: File > Open > New Project
Bold	Displays commands, menu paths, and icon names in procedures: Click the **File** icon and then click **Open**.
Times New Roman	Displays an equation: 2 + 2 = 4
Text in gray boxes	Describes Cautions or unique functionality of the product.

2. Software Installation

The PSoC Programmer™ installation file installs both the PSoC Programmer application and the Clock Programmer application. PSoC Programmer is Cypress's flexible integrated programming application for programming PSoC devices. Clock Programmer is bundled with this application.

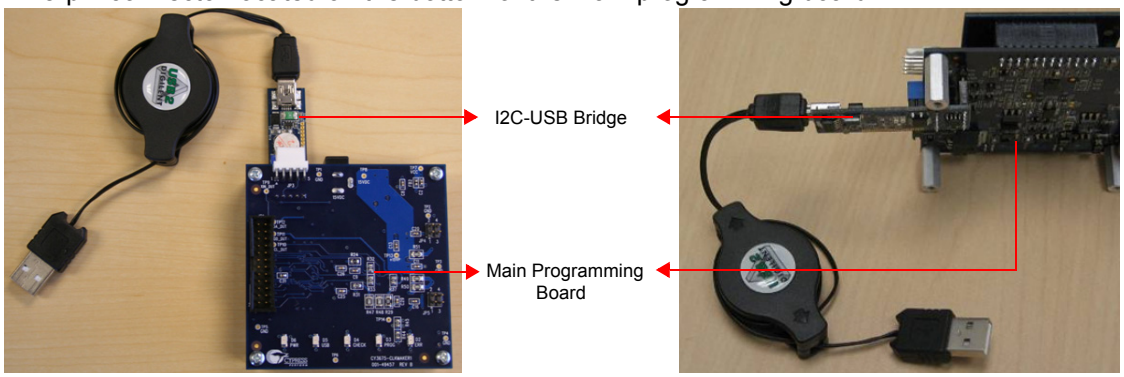
The PSoC Programmer installation file is available in the kit CD (PSoCProgrammer3.05.exe) or it can be downloaded directly from http://www.cypress.com/psocprogrammer.

1. Go to http://www.cypress.com/psocprogrammer
2. Locate PSoCProgrammer3.05.exe and download the file
3. Use any ZIP compatible program to open the PSoC Programmer installation package
4. Click PSoCProgrammer.exe to start the setup wizard
5. Follow the on screen prompts to install PSoC Programmer

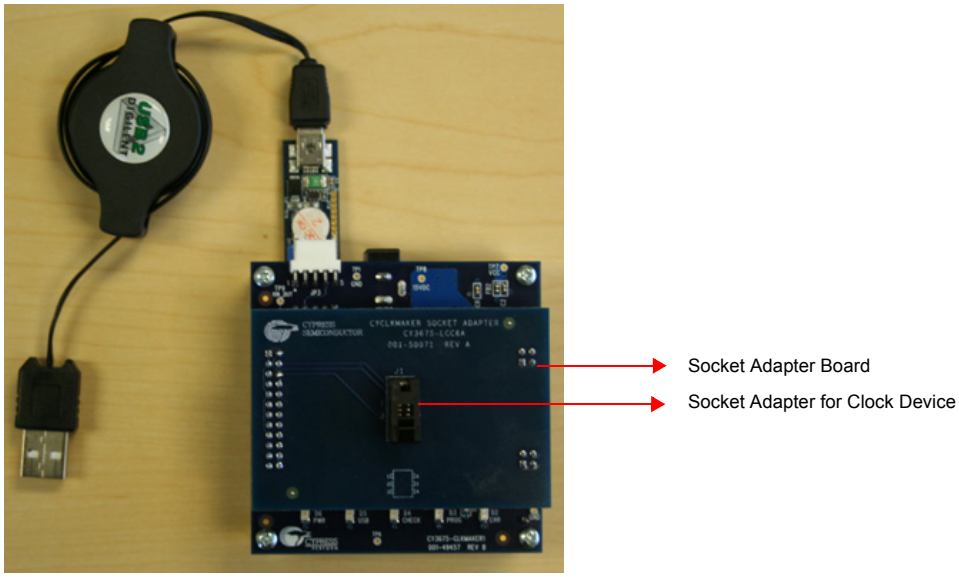
If an earlier version of PSoC Programmer is already installed, the Setup Wizard prompts you to delete the older version. After you uninstall the previous version repeat steps 4 and 5 to install the latest version.

3. Hardware Setup

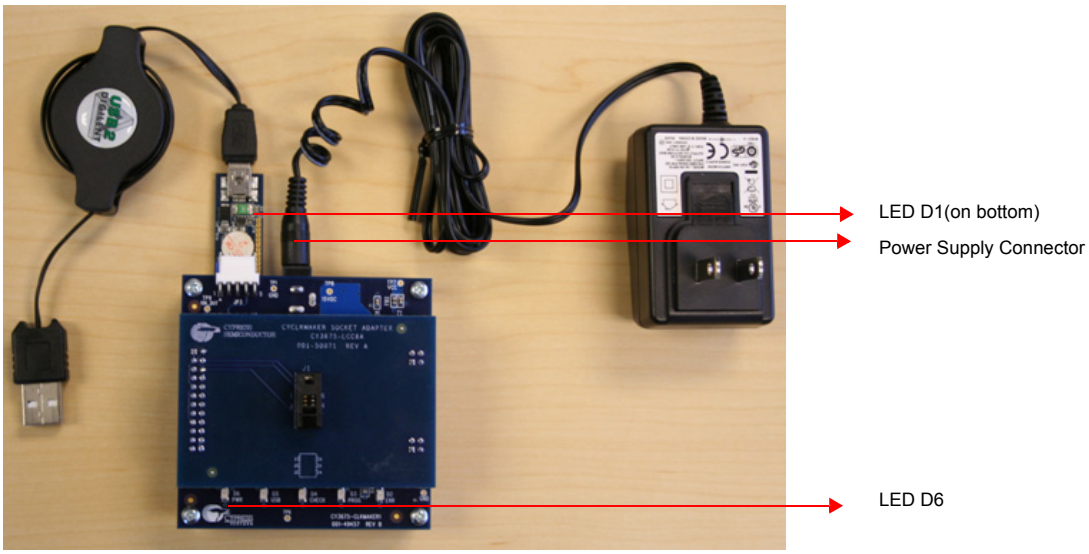
1. Connect the USB cable to the I2C-USB Bridge, and then connect the I2C-USB Bridge to the 5-pin connector located on the bottom of the main programming board.



2. Attach a socket adapter to the top of the main programming board (socket adapter orientation is dictated by three connectors) and then carefully insert the clock device into the socket adapter.



3. Connect the external power supply to connector P1. LED D6 is the power indicator.



4. Attach the USB cable to your computer and the red LED D1 on the I2C-USB Bridge starts to blink when the main board has established communications on the USB link.

4. Using the Clock Programmer Software

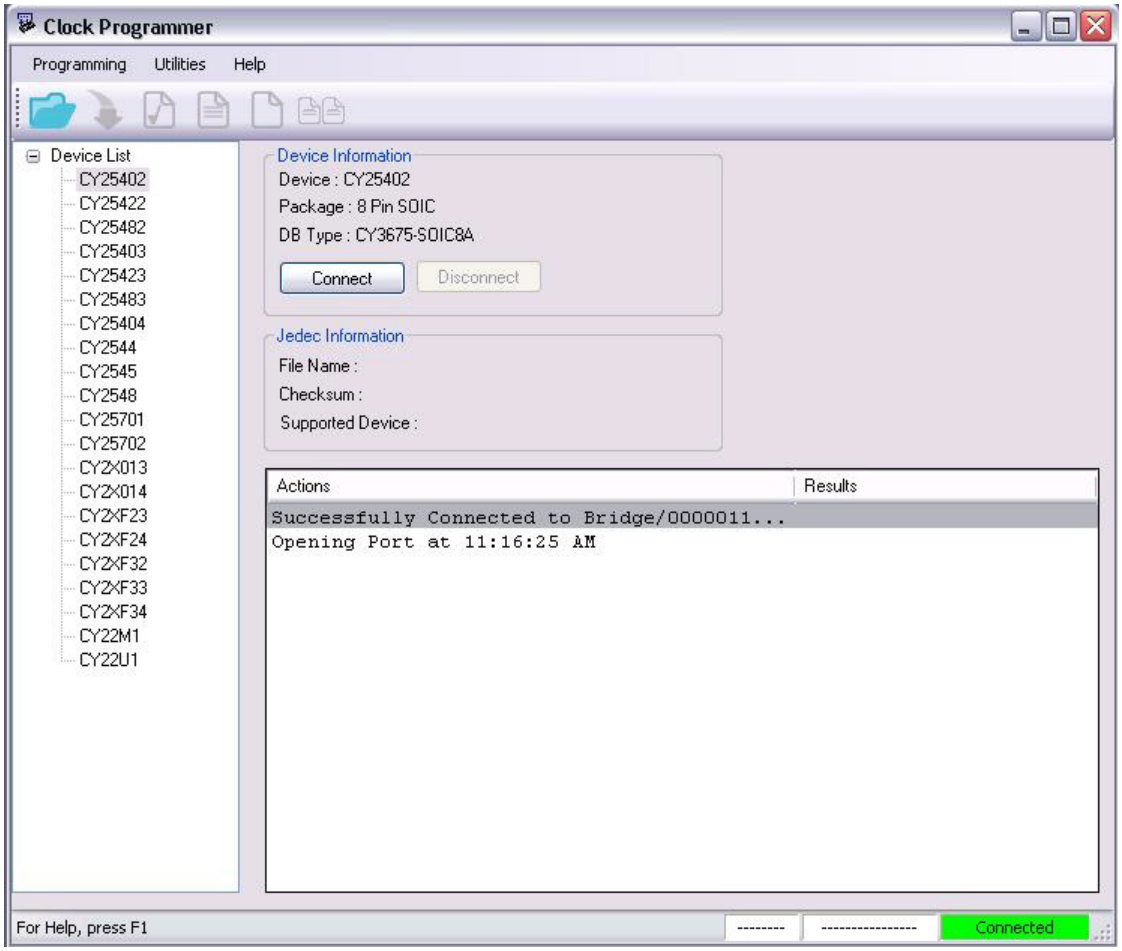
Use the Clock Programmer to open a JEDEC file (created using CyberClocks Online, Cypress's clock configuration software), connect to the I2C-USB Bridge, select target devices, program, read, save, verify, and run a checksum.

4.1 Starting the Clock Programmer

You can start the Clock Programmer from the Microsoft® Windows Start menu. Set up all hardware, including the device to program, before you start the Clock Programmer.

- To open the Clock Programmer from the desktop, click Windows Start > Programs > Cypress > Clock Programmer 1.2 > Clock Programmer

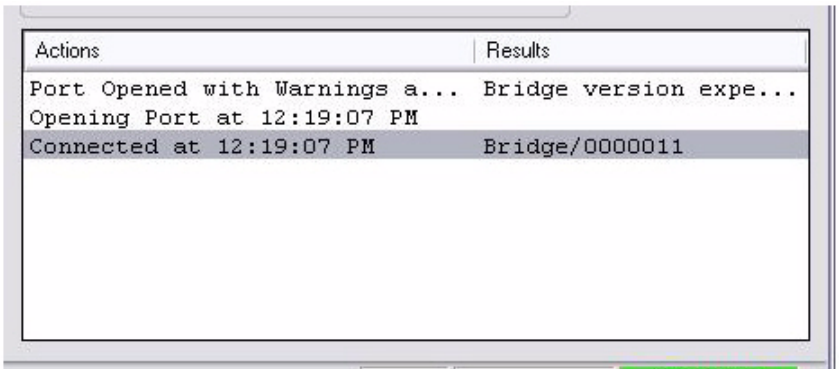
Figure 4-1. Clock Programmer Main Window



4.2 Connecting to the I2C-USB Bridge

The Clock Programmer automatically detects the I2C-USB Bridge if connected correctly (see Section 3: Hardware Setup). The status bar, at the bottom right of the window changes from Not Connected (RED) to Connected (GREEN). Additionally, the status text window displays messaging as the Clock Programmer detects and opens the programming port.

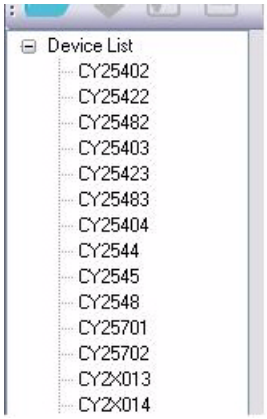
Figure 4-2. Connection Status



4.3 Selecting a Device

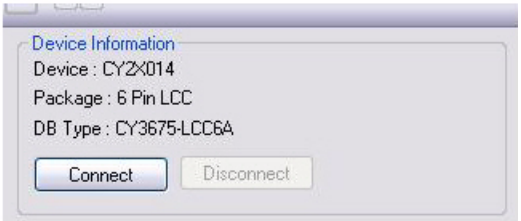
The Clock Programmer allows you to select a target clock device from a Device List tree menu. To expand a collapsed tree click the '+' icon next to the device family name and click the '-' icon to collapse a device family selection. From the expanded tree you can select a device by clicking to highlight the desired device.

Figure 4-3. Device List



Additionally, under the Device Information display area, the selected clock device's information is displayed. This updates as you select new target clock devices.

Figure 4-4. Device Information



4.4 Selecting a JEDEC File

You must load a JEDEC file into the Clock Programmer before programming a device. The Clock Programmer programs devices using the JEDEC file format.

To select a file for programming:

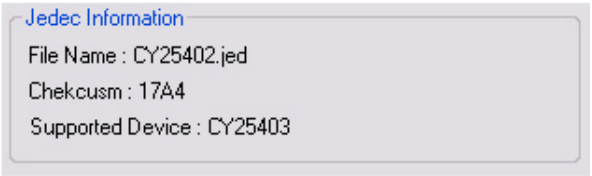
1. Click File Load or press **[F4]**
2. In the Open dialog box, browse to the folder containing the file and select a file
3. Click Open

The status window will return with a successful message:

```
Active JEDEC file set at 1:47:18 PM| C:\Documents and Settings\wbz\Desk-
top\Jedec_CY25402.jed
Frequency Information
(…additional data pertaining to the Jedec file.)
Load Jedec at 1:47:18 PM
```

After loading the JEDEC file, the display field "JEDEC Information" displays critical information regarding the JEDEC file. This include the file name, checksum, and supported devices. These fields are updated as new JEDEC files are loaded.

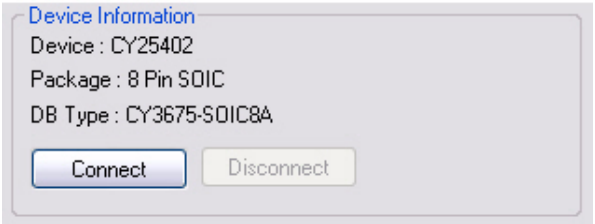
Figure 4-5. JEDEC Information



4.5 Connect/Disconnect

The Clock Programmer allows you to connect to the target device in order to program it (load the JEDEC file into it). Use the buttons, Connect and Disconnect, to initiate this action. Prior to connecting to the target device, connect the programmer to the PC and connect the programmer to the target device. Use the disconnect button to disconnect if required, after connecting the target clock device.

Figure 4-6. Device Information



4.6 Programming

You must load a JEDEC file into the Clock Programmer in order to program a clock device.

To program a device:

1. Open the Clock Programmer
2. Connect the programmer to the PC
3. Load the JEDEC file
4. Click connect
5. Click Program  or press **[F5]**

4.7 Checksum

When you select the checksum button the Clock Programmer retrieves the checksum data from the target board.

To read the checksum from the device:

1. Open the Clock Programmer
2. Connect the programmer to the PC
3. Load the JEDEC File
4. Click Connect
5. Click Checksum  or press **[F6]**

4.8 Read

When the read button is pressed the Clock Programmer reads the contents of the target Clock device.

To read the data from the clock device:

1. Open the Clock Programmer
2. Connect the programmer to the PC
3. Load the JEDEC File
4. Click Connect
5. Click Read  or press **[F7]**

4.9 Save

After reading the contents of the clock device you have the option to save that information into a text file.

To save the data read from the clock device:

1. Open the Clock Programmer
2. Connect the programmer to the PC
3. Load the JEDEC File
4. Click Connect
5. Click Save  or press **[F8]**

4.10 Verify

You have the option to verify the contents on a target clock device against a selected JEDEC file. The verify function reads/verifies the contents of the target clock devices and compares the check-sums against the loaded JEDEC file.

To verify the data read from the clock device:

1. Open the Clock Programmer
2. Connect the programmer to the PC
3. Load the JEDEC File
4. Click Connect
5. Click Verify  or press **[F9]**

4.11 Firmware Updates

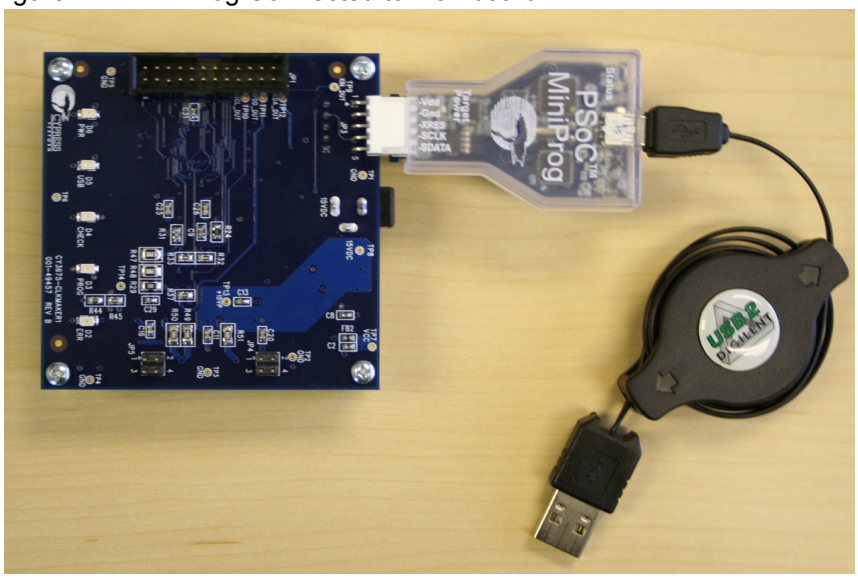
If the target clock device that you want to program is not listed in Table 1-1, you need to update the firmware on your main programming board.

The latest firmware hex file can be downloaded at http://www.cypress.com/go/cy3675.

Note Do not connect external power supply to the board.

1. Open PSoC Programmer from desktop **Start > Programs > Cypress > PSoC Programmer > PSoC Programmer**.
2. Connect the MiniProg device to the main board.

Figure 4-7. MiniProg Connected to Mainboard



3. Select the MiniProg from 'Port'.
4. Click Connect.
5. From the Device Family dropdown menu, select 21x34.
6. Select CY8C21434-24LFXI from the Device dropdown menu.
7. Click File Load to load the firmware .hex file that you downloaded from http://www.cypress.com/go/cy3675.
8. After the hex file is loaded, click Program.

The firmware programming progress is displayed

9. After you successfully upload the firmware, disconnect the MiniProg device
10. Close PSoC Programmer

4.12 Advanced Information

The Clock Programmer uses the shared architecture with PSoC Programmer. PSoC Programmer provides you a COM interface to generate user specific applications by calling low level API functions. In the PSoC Programmer root installation directory the folders, Examples and Documentation contain all the information to create unique applications with the PSoC Programmer COM.

4.13 Error Codes

The Clock Programmer displays error messages on the status text window when there is any failure during runtime. Error codes are appended to the error messages.

Table 4-1. Error Codes & Description

Error Code	Description
001	-Communication error occurred while reset. -External power supply might not be connected. -USBIIC might not be connected to the CyClockMaker.
002	-Communication error occurred while operating USB LED (D5). -External power supply might not be connected. -USBIIC might not be connected to the CyClockMaker.
003	-Communication error occurred while operating ERR LED (D2). -External power supply might not be connected. -USBIIC might not be connected to the CyClockMaker.
004	-Communication error occurred while operating Prog LED (D3). -External power supply might not be connected. -USBIIC might not be connected to the CyClockMaker.
005	-Communication error occurred while operating Chk LED (D4). -External power supply might not be connected. -USBIIC might not be connected to the CyClockMaker.
006	-Communication error occurred while checking daughter board. -External power supply might not be connected. -USBIIC might not be connected to the CyClockMaker.
007	-Communication error occurred while validating device. -External power supply might not be connected. -USBIIC might not be connected to the CyClockMaker.
008	-Communication error occurred while reading data. - External power supply might not be connected. -USBIIC might not be connected to the CyClockMaker.
009	-Read operation has failed. -The device might be broken. -The device in the socket might be placed in wrong direction. -There might be no device in the socket.

Table 4-1. Error Codes & Description

Error Code	Description
010	-Communication error occurred while shifting data. -External power supply might not be connected. -USBIIC might not be connected to the CyClockMaker.
011	-Write operation has failed. -The device in the socket might be placed in wrong direction. -There might be no device in the socket. -In Flexo devices the commercial/industrial status in the selected Jedec file may not match the selected device.
012	-Communication error occurred while programming data. -External power supply might not be connected. -USBIIC might not be connected to the CyClockMaker.
013	-Communication error occurred while verifying programmed data. -External power supply might not be connected. -USBIIC might not be connected to the CyClockMaker.
014	-Device Validation has failed. -The device could have been programmed already. -There could be no device in the socket. -The device in the socket might be placed in wrong direction.