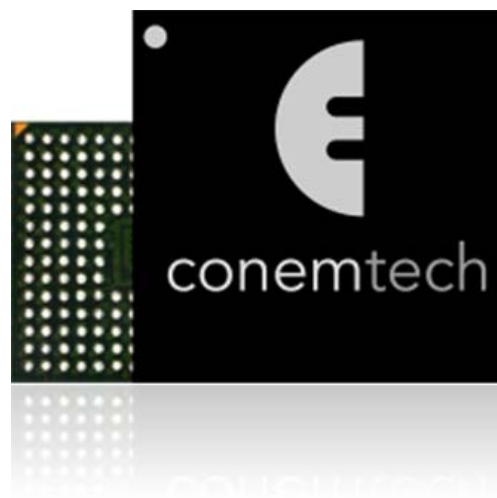


Quick Start Guide

C3 Family Development Kits

Revision 1.1

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Table of Contents

1. Kit types	4
2. Package content	4
3. Documentation set	4
4. Before you begin.....	5
5. Installing Developer IDE	5
6. Installing C34 Firmware profile	5
7. Connecting the socket-board	6
8. Configuring Developer	7
9. Building a sample project.....	8
10. Using the PTP V2 engine	9
11. Updating firmware on C34 module	10

1. Kit types

2. Package content

Depending on the kit you have chosen, DK4 or DK5, you will find the following items in the kit's package:

For DK4

- M20-34 Microcontroller Module attached to
- S40 Socket Board
- USB Trace Adapter
- CD disk with Developer 7.3
- USB cable
- 4 AMC-SMA cables

For DK5

- M50-34 Microcontroller Module mounted on
- S50 Socket Board
- USB Trace Adapter
- CD disk with Developer 7.3
- USB cable

3. Documentation set

The following documents come with your kit in printed form:

- C3 Family Development Kits Quick Start Guide (this document)

Additional documentation in electronic form (PDF) is available on the website:

- C3 Family IEEE1588/PTP2 User's and Programmer's Guide
- C3 Family System Software Overview
- C3 Family Microcontrollers Data Book
- M20 Microcontroller Module Hardware Reference
- S40 Socket Board Hardware Reference
- M50 Microcontroller Module Hardware Reference
- S50 Socket Board Hardware Reference

You can download them from: <http://www.conemtech.com>

A complete documentation for Developer IDE and for C34 Firmware profile, including C API Reference and Assembler Instructions, can be found inside the Developer Help system.

4. Before you begin

Prepare a PC for use together with Development Kit. In order to be used with this product, the PC should be equipped with Windows 2000 or higher operating system and have at least one free USB port.

5. Installing Developer IDE

Developer is a powerful integrated development environment (IDE) for the C3 Microcontroller family platform. A unique serial number is required for installing Developer. You will find this number on a sticker attached to the Developer CD pocket.

- Insert the Developer CD supplied with the kit into the PC and run the enclosed file "setup_imdev73.exe".
- Follow the on-screen instructions during the installation procedure.
- After the installation has completed, you will be asked to reboot your computer.

6. Installing C34 Firmware profile

Developer can be used with any microcontroller of C3 family. The differences between them are handled via "firmware profiles" – software packages, which contain the firmware files and settings specific to each family member.

In order to develop software for the C34-based system, you first need to install its profile. The latest profile can be downloaded from our webpages: http://www.conemtech.com/Support/Online_Resources/Profile_Download.html

- Download the latest profile for your DK. For DK4 the latest M20-34 profile and for DK5, the latest M50-34 profile.
- Unzip and run the downloaded file.
- Follow the on-screen instructions during the installation.
- If Developer was running during the installation, it must be restarted before you can use the new profile.

7. Connecting the socket-board

Before you can develop, run and debug any program on the C34 system, you have to connect it to the PC. To do that, follow the steps below:

- Attach the Trace Adapter's flat cable to the socket-board's red "Debug" connector. This connection is used by Developer to communicate with the C34 microcontroller and to provide the power for the board.
- Optionally connect the socket-board to the network via a hub or a switch. You can also connect it directly to the PC, using a crossover Ethernet cable.
- Finally, connect the Trace Adapter to the PC through the USB cable supplied with the kit. After connecting the "Found New Hardware Wizard" will appear on the PC.
- Locate the drivers for the USB Trace Adapter on the Developer CD.
- Proceed with the "Found New Hardware Wizard", specifying the path to the driver files. After the drivers are installed, a USB Trace Adapter Serial Port device should appear on your PC.
- Open the Device Manager from the hardware tab of the System Properties applet (Control Panel / System) and find this device under Ports (COM & LPT) node. Remember its name (e.g. COM3). You will have to use this port to interact with the on-board software, such as the command shell, either through Developer's terminal window or through any other terminal emulation software.

You may connect several USB Trace Adapters to your PC and debug several C34 systems simultaneously. Each USB Trace Adapter is labeled with its own serial number that uniquely identifies this particular Trace Adapter within Developer.

8. Configuring Developer

Now, you are ready to start using the Developer together with the C34 Development Kit.

- Start Developer.
- Select Edit/Options from the Developer's menu. Go to the Debug tab and specify "USB" as the Target Interface.
- The list of available USB Trace Adapters identified by their serial numbers will appear in the drop-down box. Select the Trace Adapter you are going to use with this instance of Developer and press OK.
- Open the Terminal window by selecting View/Debug Windows/Terminal from the Developer's menu. Press the "Select Serial Port" button in the Terminal Window toolbar and specify the serial port you want to use (e.g. COM3). Serial ports that belong to USB Trace Adapters will be marked with the corresponding Trace Adapter's serial number. Then press the "Connect" button.
- Press the "Reset" button on the USB Trace Adapter.
- Your C34 module is delivered with the firmware flashed, so you should be able to see an output from the socket-board in the Terminal window:

```
IM3240-M50 restarting @ Mon Feb 12:00:00 2010
Reading a: /system/i sh. ini : [OK]
Reading a: /system/system. ini : [OK]
Serial server: [OK]
Setting host name: [OK]
TCP/IP startup: [OK]
Registering hostname in DNS: [FAILED]
FTP server: [OK]
Telnet server: [OK]
Setting timezone to: GMT (DST)
Reading a: /system/startup. ini : [OK]
```

```
Local host. Local domain (IM3240-M50, v2.4)
Log in:
```

- To logon to the system the username is "root", with password "root".

The C34 system is configured to use a DHCP server for obtaining an IP configuration for its network interface. If the board is not connected to the network, or if you do not have access to a DHCP server, it may take a longer time to start-up.

You can also configure the network interface manually, by using the "ipconfig" command. Type the "help ipconfig" from the command shell to see the detailed command description. Type "help" from the command shell to see the complete list of commands supported.

9. Building a sample project

If you have configured your Developer and your C34 system boots successfully, you can now start the application development. Below is a short description of how to build and run a sample project within a profile:

- Start Developer.
- Select File/Open Profile Sample Project/<profile name> from the Developer's menu. The Open Project dialog containing available sample folders. Double-click on a folder to and select the ".prj" file to open the sample project.
- In the Project View window you will see a list of the files included in the project. If there is a readme.txt file, open it and read the details about the project.
- Press "Build" button in the Developer toolbox (or press SHIFT+F6 key). You will then see the build process output in the Build Output window (Menu/View/Other Windows/Build Output). If the project was build without errors, you can boot the C34 system with the output file.
- Press the "Boot" button in Developer toolbox (or press F6 key). You will then see the boot process output in the Debug Output window (Menu/View/Other Windows/Build Output):

```
--- Configuration: Standard, Profile: IM3240-M50 v2.4 ---  
Booting target  
Trace Adapter: TA9B6D55  
Reset done  
Detected processor model: IM3000 (A)  
Loading testmicroprogram: Tmpgm.mp (v0.0.268.0)  
Detected memory type 97, size 32MB, mode 102  
Loading microprogram: im3240m50.mp (v0.1.33.1)  
Loading application: HelloWorld.gpx (address 00000000-000C65BB)  
Program arguments: "HelloWorld.gpx -l"  
Creating EFFS RAM disk...  
RAM disk created, 512KB  
c0start version: 2.0.1.0  
Target successfully booted!
```

If you encounter any Timeout errors during the booting process of the C34 target, please:

- Make sure that the C34 is powered (two green LEDs on S40/S50 board are ON).
- Make sure that the USB Trace Adapter is operational (green LED is ON).
- Press the Reset button on the USB Trace Adapter and try to boot the target again.
- Re-connect the USB Trace Adapter and try to boot the target again.

10. Using the PTP V2 engine

The C34 is designed to be a PTP V2 Grandmaster clock with the time and frequency source taken either from a GPS receiver or from any other equipment, which provides an accurate Pulse-Per-Second (PPS) signal and Time-Of-Day (TOD) information. It can also act as an ordinary master-slave clock when no PPS signal available.

Before using the C34 as a Grandmaster clock the time source equipment should be connected to the socket-board's PPSIN and (optionally) TODIN connectors.

When the C34 is up and running you can start the PTP engine from the ISH command shell. Open the Terminal window, connect to the board and logon to the system. From the command line enter the "ptp2 start" command to start the PTP engine.

You can interact with the running PTP engine through the "ptp2" command interface:

Command	Description
ptp2 start [mode]	Starts the PTP V2 engine in one of four possible modes: 0-4 0 – non-GPS mode. Only PTP is the time source 1 – GPS-only mode (default) 2 – GPS is the primary time source, PTP is the secondary 3 – PTP is the primary time source, GPS is the secondary 4 – Debug mode with GPS reference
ptp2 stop	Stops the PTP V2 engine
ptp2 hmi	Enters the HMI command processing mode of the PTP V2 engine. To print a list of available HMI commands type "help" or "h". To leave the command processing mode and return to the shell type "quit" or "q".
ptp2 [hmi_command]	Sends an HMI command to the PTP V2 engine without entering the command processing mode. To print a list of available HMI commands type "ptp2 help" or "ptp2 h".
ptp2 config [options]	Configures the PTP V2 engine static parameters. Any combination of following options is possible: -v [value] – VCO control range, in ns/s (default 6000) -d [value] – VCO static drift, in ns/s (default 0) -t [value] – main time constant, in sec (default 300) -s [value] – startup time constant, in sec, 0 – off (default 0) -p [value] – path delay time constant, in samples (default 300) -q [value] – quality filter sample size, in samples, 0 – off (default 10) -e [value] – square threshold, in ns (default 400) (none) – print currently configured values. If static parameters need to be changed it should be done before starting the engine.

11. Updating firmware on C34 module

When a new version of the C34 firmware is released you can flash it onto your C34 system using Developer and the “FlashIt” project.

- Open the FlashIt project. It is located under <IM3240_Profile_Path>\Tools\FlashIt.
- Boot the C34 module with the FlashIt project and the flashing process will start automatically.

The FlashIt project, its functionality and parameters are described in details in the “C3 Based Systems Firmware Installation and Upgrade” document that can be found under <IM3240_Profile_Path>\doc\manuals directory. Study it carefully before starting to flash anything onto the C34 target.