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FOR WINNING DESIGNS

**eCOG1X USB eICE Adaptor
Version 1.0**

Cyan Technology

**eCOG1X USB eICE Adaptor
User Manual**

V1.0

23 January 2008

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Revision History

Version	Date	Notes
V1.0	23/01/2008	First release.

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1 Introduction

1.1 Additional Documents

1. eCOG1X User Manual
2. CyanIDE User Manual

1.2 Part Identification

In this document, any reference to eCOG1 means the generic chip and is applicable to all versions. All eCOG1 devices are suffixed according to their version; any reference to a particular version such as eCOG1X5A5 is specific to that version.

1.3 Contacting Cyan Technology

Visit the Cyan Technology web site at www.cyantechnology.com.

For sales information, contact your local Cyan distributor or sales representative, or email info@cyantechnology.com.

For technical support, email support@cyantechnology.com.

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2 Overview

The eCOG1X USB eICE Programming Adaptor provides a simple connection between a host PC system and an eCOG1 target system. It uses a Cyan eCOG1X5A5 device to implement the eICE debug connection to the target eCOG1 via a USB connection from the PC. It is fully supported by the CyanIDE development tools, providing a mechanism for downloading application code and debugging applications on the target system.

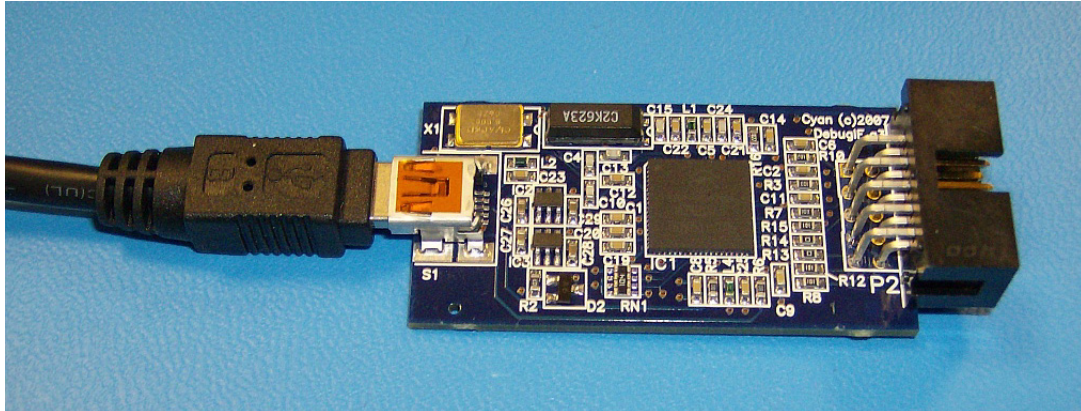


Figure 1: eCOG1X USB eICE adaptor

The Cyan eCOG1X USB eICE adaptor has the following major features.

- Cyan eCOG1X5A5 device providing USB interface to host PC.
- Local control of eICE debug interface transactions giving higher performance.
- USB mini-B socket.
- USB cable (A to mini-B) for host PC connection.
- 10-way boxed header for eICE debug port.
- Powered from USB +5V supply.
- 5V supply connection available for low-power target systems.

2.1 Hardware

The eCOG1X USB eICE adaptor uses the Cyan eCOG1X5A5 device to implement the USB interface to the host PC system. A standard USB cable connects to the host side of the unit via a mini-B USB socket. The PC end of the cable has a type A USB connector fitted. The eICE connection to the eCOG1X target device is via a 10-way boxed header that connects to the target hardware, either via a ribbon cable to a boxed header, or directly into a 10-way socket. The eCOG1X5A5 device provides the USB interface to the host PC and digital inputs and outputs for the eICE signals.

Configuration data including serial numbers, USB PID and VID numbers, and identifier strings is stored in the eCOG1X internal flash memory. This configuration data is required to allow the unit to identify itself to the host PC during the USB device enumeration process, and for the PC then to select the correct device driver files. The Cyan USB eICE adaptors are loaded with the required configuration data during functional test.

The adaptor is powered from the +5V supply available on the host USB connection. Local on-board regulators provide 3.3V and 1.8V for the eCOG1X device, and for the I/O connections to the eCOG1X target device.

All signals to the target device eICE connection include 100 Ω series resistors. The LOADB signal also includes a 1k Ω pull-up resistor. The USB +5V supply is also connected to the 10 way header; this may be used to power small target systems provided the total current drawn is within the 500mA limit available from a standard USB host. If this is used to power the target system, then a suitable low dropout 3.3V regulator must be fitted. Decoupling capacitors must be connected to both the input and output of this regulator according to the manufacturer's recommendations.

2.2 Software

The software drivers for the USB eICE adaptor are included in the CyanIDE development package. CyanIDE V1.4.3 or later includes the required version of the driver files as standard.

To ensure that the driver files are present, install the CyanIDE software and any necessary updates before connecting the eICE adaptor to the host PC. Further details about the software installation are shown later in this document.

Note that any previous version of CyanIDE should be uninstalled before the latest version is installed. This includes any USB device drivers for Cyan products such as the evaluation board, which should be removed via the Device Manager. Installing the new version of CyanIDE also reinstalls the USB eICE device driver.

3 Connections

3.1 eICE Header

The pin connections for the eICE signals on the 10-way header are shown below.

J2		
eICE_MOSI	1	2
eICE_CS	3	4
eICE_LOADB	5	6
eICE_CLOCK	7	8
eICE_MISO	9	10
		VCC5.0
		GND
		GND
		GND
		nReset

Table 1: eICE header connections

3.2 Target System

It is recommended that provision for a 10-way header is made on the target system circuit board, to allow software development and debugging via the eICE link. A boxed header is preferred to provide mechanical polarisation. Suggested connections for the 10-way eICE header on the target system are shown in the diagrams below.

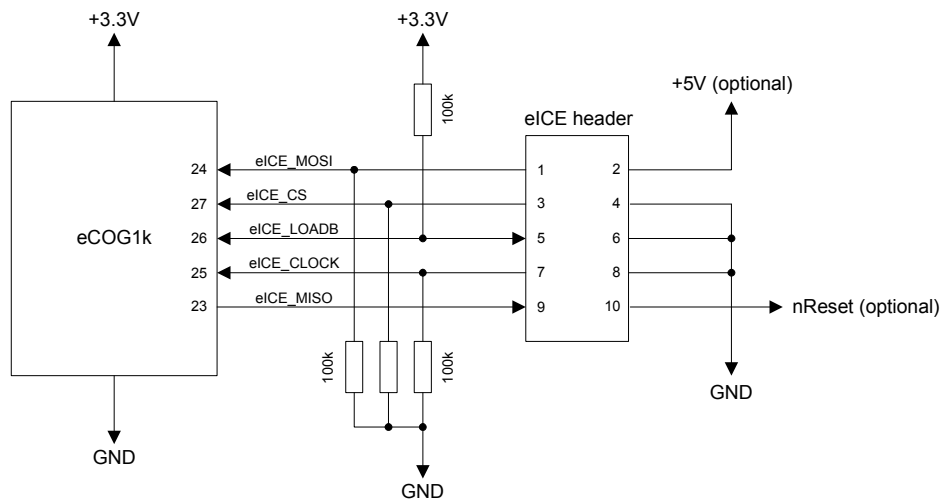


Figure 2: eICE connections for eCOG1k target system

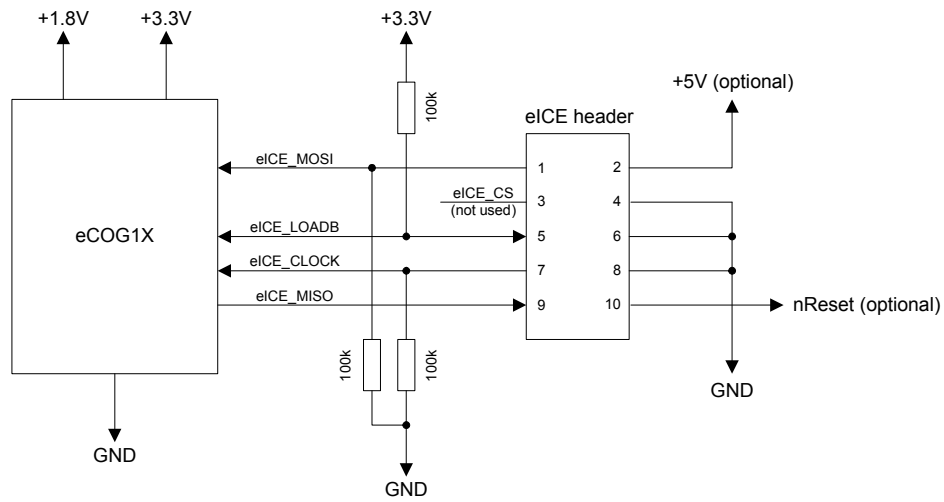


Figure 3: eICE connections for eCOG1X target system

4 Installing CyanIDE

4.1 From the Cyan Tools CD-ROM

Insert the CD into the CD-ROM drive. The html start page should load automatically in the default browser.

If the start page does not load automatically, or Autorun is disabled for the CD-ROM drive, then Browse the Cyan CD in a file manager or explorer window, and open the file `<index.htm>`.

When the start page is displayed, click on the **Menu** button, then select the **Install CyanIDE** item to begin installation of the development software. Follow the instructions presented by the installation program.

4.2 From the Cyan Website

- Navigate to the software downloads page on the website, located at <http://www.cyantechnology.com/support/updates.php>.
- Download the CyanIDE full version installation file to a temporary directory. Please note that users must log in to the website with their registered account name and password for the support forum to download this file.
- Execute the downloaded file to install the development software. Follow the instructions presented by the installation program.

4.3 Installing the USB eICE Driver

CyanIDE V1.4.3 includes the driver for the Cyan eCOG1X USB eICE adaptor as standard, and it is not necessary to install it separately.

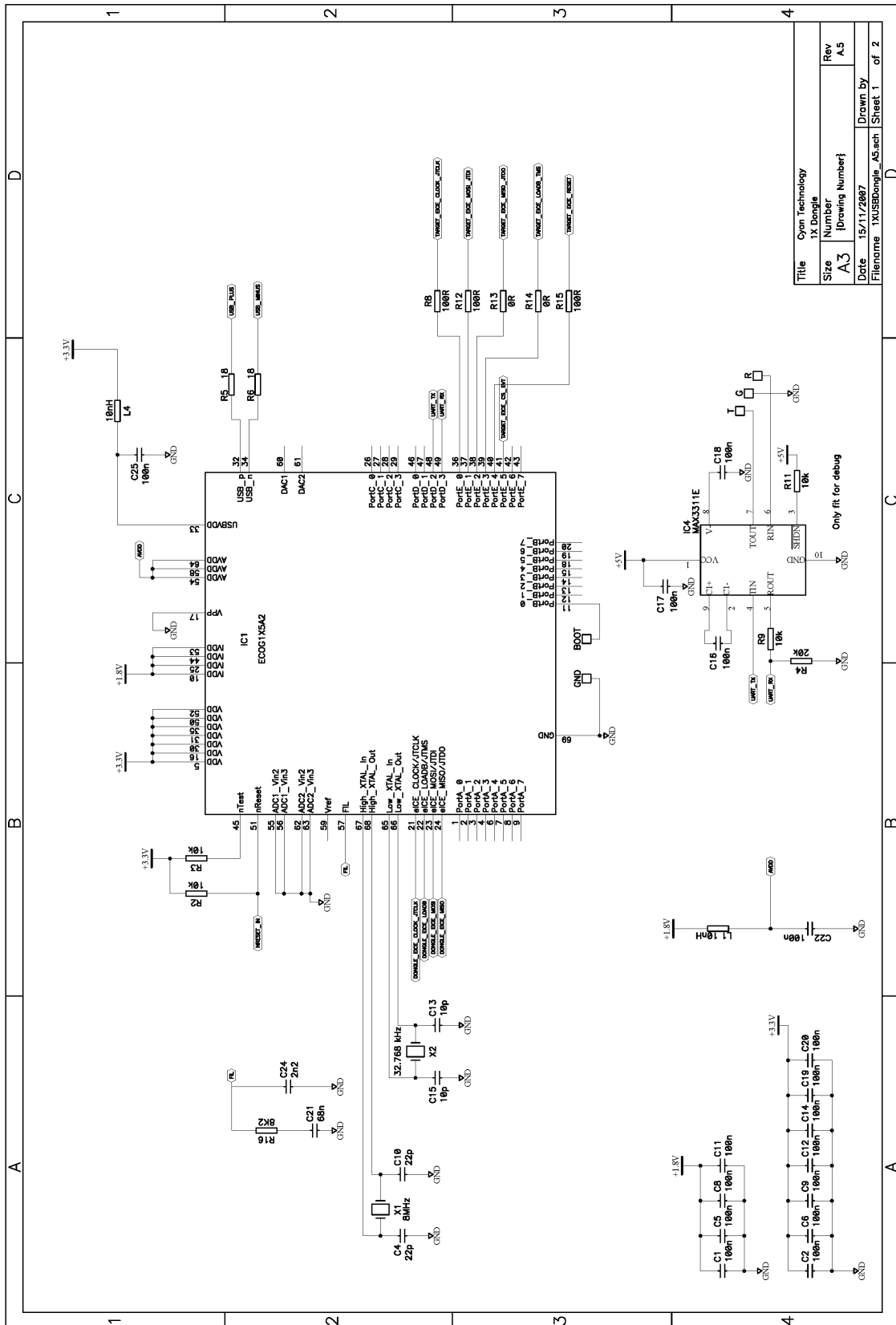
When an eICE adaptor is connected to a PC for the first time, the USB enumeration process identifies it as new hardware, and Windows starts the *Found New Hardware* process. Driver installation under Windows 2000 and Windows XP is fully automatic and does not require any user interaction.

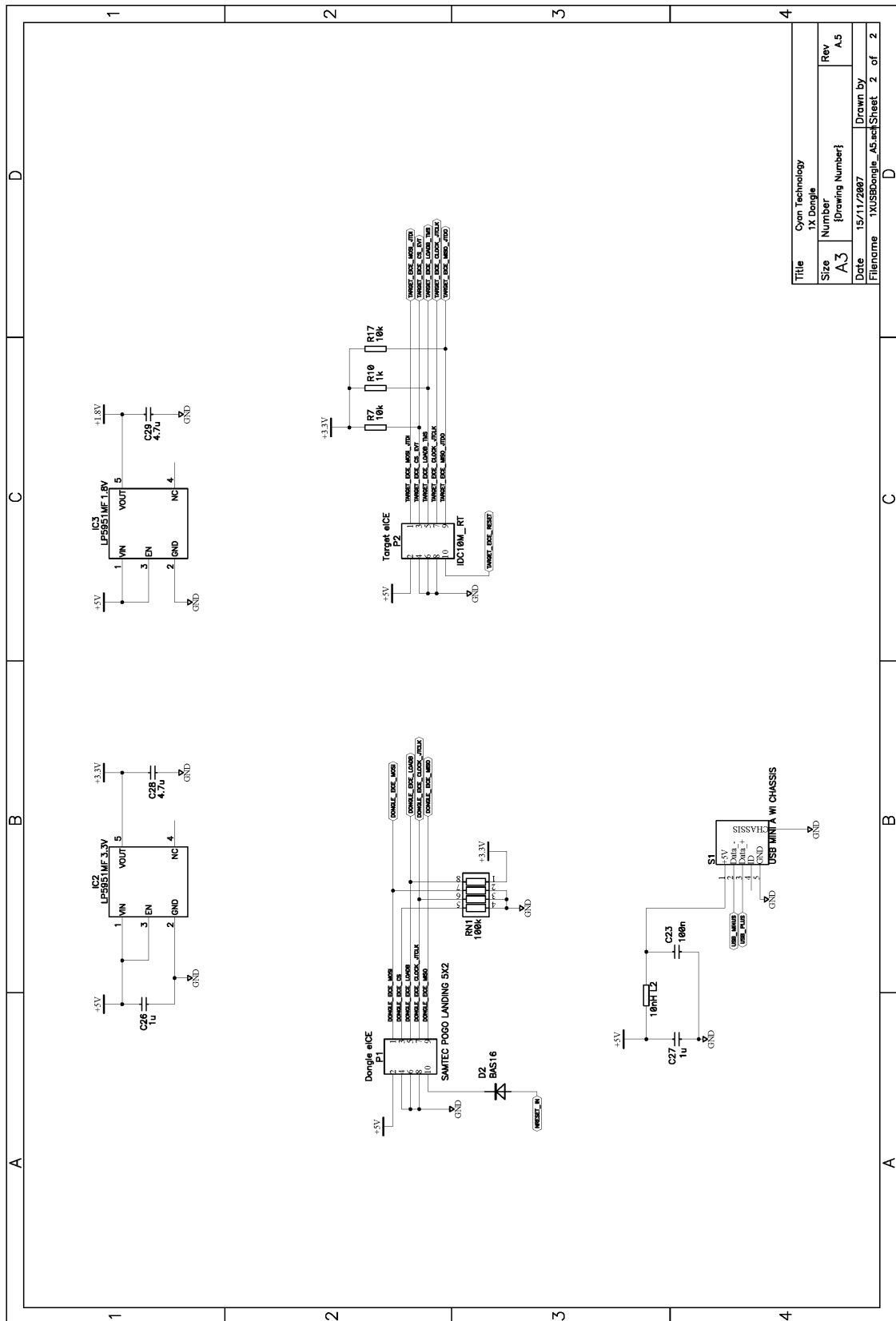
5 Important Notes

The following recommendations should be observed when using the USB eICE adaptor.

- Connect the USB cable from the eICE adaptor directly to the host PC, not via an external hub. CyanIDE can fail to restart the eICE debug connection after any errors if the USB device is connected via an external hub.
- The memory window in CyanIDE can be quite slow to refresh across the USB eICE link. Close the memory window when it is not required to improve the speed of response to commands.
- Do not disconnect the USB eICE cable or power down the target system while CyanIDE is running. This can cause CyanIDE to hang up on the next attempt to connect to the target system via eICE.
Ensure that CyanIDE is closed down before disconnecting the USB cable or powering down the target system.
- CyanIDE may report an error message on its first attempt to connect to the target system via eICE. This occurs when it tries to find a connection to a target system on the parallel port instead of the USB port. Repeat the command and CyanIDE should connect to the USB eICE target system successfully.
If the debugger still does not start, check that power is present on the target system, that all required jumper links are fitted, and that the USB cable is connected correctly to the host PC.

Appendix A Circuit Diagram





Title		Cyan Technology	
Size		1X Dongle	
Number		{Drawing Number}	
Rev		A.5	
Date		15/11/2007	
Filename		1XUSBongle_A5.sch	
Sheet		2 of 2	

Appendix B Board Layout

