



# eZ80L92 Development Kit Quick Start Guide

QS001507-0203

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## Introduction

Follow this guide to install and begin using your new eZ80L92 Development Kit from ZiLOG. The setup procedure guides the user through:

- Software installation and online registration
- Hardware installation and configuration
- Running sample projects on the eZ80<sup>®</sup> Development Platform
- An introduction to using the resident Flash Loader firmware on the eZ80<sup>®</sup> Development Platform
- Optional:
  - Installing TCP/IP software for embedded networking applications
  - Additional eZ80<sup>®</sup> hardware connections and configuration for embedded networking applications
  - Running the sample webserver project on the eZ80<sup>®</sup> Development Platform
- Obtaining software updates via [zilog.com](http://zilog.com)

With this eZ80L92 Development Kit, you can build and run two kinds of demonstration projects: a standard I/O application, and an application that serves a web page. The web page application requires TCP/IP software, developed specifically to operate with ZiLOG's eZ80L92 Module. This powerful software is available only on [zilog.com](http://zilog.com). Downloading TCP/IP software requires ZiLOG's fast and easy online registration. There are many benefits to registering online with ZiLOG, including the latest upgrades and free technical support, news, and tips.

## Kit Contents

The eZ80L92 Development Kit contains an eZ80<sup>®</sup> Development Platform, an eZ80L92 Module, a power supply, the ZPAKII Debug Interface Tool, and documentation on CD-ROM. For a product-specific listing of items in this kit, please see the Kit Contents sheet found inside this kit.

## System Requirements

The following list represents the minimum equipment required to install and use the eZ80L92 Development Kit:

- PC running MS Windows 98SE/WinNT4.0–SP6/Win2000–SP2/WinXP
- Pentium II/233MHz processor



- 96MB RAM
- 25MB hard disk space
- Super VGA video adapter
- CD-ROM drive
- Ethernet port
- One or more RS-232 communications ports
- Internet browser (Internet Explorer or Netscape)

The following list suggests the equipment necessary to install and use the eZ80L92 Development Kit for optimal performance:

- PC running MS Windows 98SE/WinNT4.0–SP6/Win2000–SP2/WinXP
- Pentium III/500MHz processor
- 128MB RAM
- 40MB hard disk space
- Super VGA video adapter
- CD-ROM drive
- Ethernet port
- One or more RS-232 communications ports
- Internet browser (Internet Explorer or Netscape)

## Install the Software

Follow these steps to install ZDSII with the eZ80<sup>®</sup> ANSI C-Compiler.

1. Insert the ZDSII CD into your computer's CD-ROM drive. The CD launches the *DemoShield* application automatically.
  - ▶ **Note:** The *DemoShield* application automatically launches each time the CD-ROM is inserted into the drive. However, the *DemoShield* installer may not launch automatically on some Windows 2000 systems. If this issue should occur, please navigate your browser to the following Microsoft support page for assistance:  
<http://support.microsoft.com/default.aspx?scid=KB;en-us;q155217>
2. ZiLOG recommends registering your new ZDSII software. Registering ZDSII is quick and easy! Please see the [online registration page](#) on the [ZiLOG website](#) and enter the requested information.
  - ▶ **Note:** Certain software components from ZiLOG can only be obtained upon online registration. ZiLOG will notify registered customers when software updates become available. ZiLOG also offers free technical support to our registered

customers. In general, please visit the [ZiLOG website](#) for the latest information regarding software and other product updates.

- The user can install a number of files when running the *DemoShield* application by clicking the **Install Products** button in the main menu and installing ZDSII and/or the entire documentation set. However, the user can also choose to manually copy the **Documentation** directory from the CD-ROM by clicking the **Browse CD** button presented in the main menu and copying this directory to the user's hard drive.

► **Note:** The ZDSII Integrated Flash Loader utility is updated regularly. Please see the [Software Tools](#) page on the [ZiLOG website](#) for the latest version.

## Install the Hardware

The ZPAKII Debug Interface Module features an Ethernet interface and an RS-232 console port. Slight modifications to the network configuration may be required for first time use. Follow the steps in this section to install the eZ80<sup>®</sup> Development Platform and the ZPAKII debugger. Refer to Figures 1 and 2 for guidance.

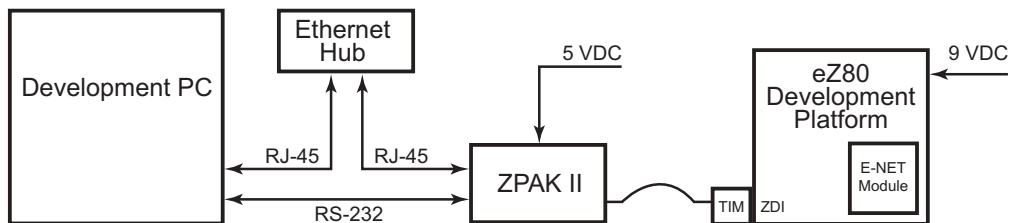


Figure 1. Hardware Setup using an Ethernet Hub

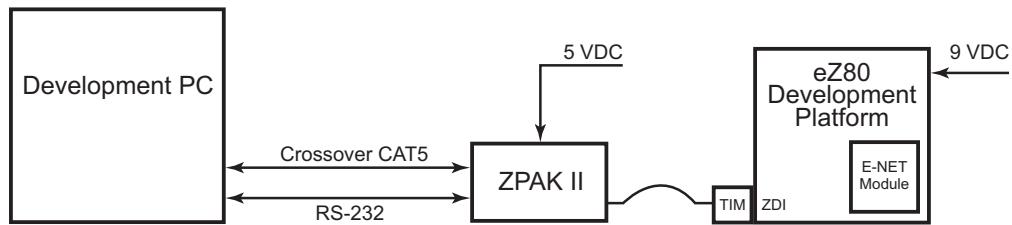


Figure 2. Hardware Setup using a Crossover Ethernet Cable (not supplied in the kit)



1. Verify that the eZ80L92 Module is properly seated on connectors JP1 and JP2 of the eZ80<sup>®</sup> Development Platform. To mount the eZ80L92 Module onto the eZ80<sup>®</sup> Development Platform, ensure that the pin numbering and alignment are correct by matching pin 1 of JP1/JP2 on the eZ80L92 Module to pin 1 of JP1/JP2 on the eZ80<sup>®</sup> Development Platform.
2. Connect the 9VDC power supply to the eZ80<sup>®</sup> Development Platform.<sup>1</sup>
3. Connect the ZDI Target Interface Module (TIM—the small PCB) to ZPAKII by using the keyed 40-conductor ribbon cable.
4. Connect the TIM to the ZDI port on the eZ80<sup>®</sup> Development Platform. Because the 6-pin TIM connector is not keyed, take care to align the TIM with the 6-pin ZDI port as follows:
  - a. The Altera chip must face upward and the yellow Z logo must face downward.
  - b. Align pin 1 of the TIM module to pin 1 of the blue ZDI socket (J4).
5. Connect a straight Ethernet cable from a free port on the Ethernet hub to the Ethernet port on the ZPAKII unit. Repeat this procedure to connect the development PC's Ethernet port to the same hub. In any case, do not connect the PC or ZPAKII to the Uplink port (Port 4) of the Ethernet hub. Connect a 7.5VDC power supply to the hub. For other issues pertaining to the hub, please refer to the documentation for the hub, supplied with this kit.

► **Note:** If a hub is not used, connect a crossover Ethernet cable (not supplied in the kit) from the PC to the ZPAKII unit. See [Figure 2](#) for reference.

6. To anticipate possible modifications to ZPAKII's Ethernet IP address, connect the serial port on the PC to the console port on the ZPAKII via the supplied serial cable and the 10-pin adapter cable.
7. Connect the 5VDC power supply to the ZPAKII unit.

## Configure the Hardware

The default IP address and subnet mask of the ZPAKII debugger are 192.168.1.50 and 255.255.255.0, respectively. For the development PC running ZDSII to communicate with the ZPAKII unit, the PC's Ethernet adapter should be configured for the same subnet as ZPAKII. For example, an IP address/subnet mask of 192.168.1.21/255.255.255.0 should work for your PC. The subnet portion of the IP address, 192.168.1, should be the same on

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<sup>1</sup> The Universal Power Supplies included in this kit contain three plug adapters each to accommodate differing international power requirements. To configure the proper adapter, please refer to the [eZ80L92 Development Kit User Manual](#) (UM0129).

the ZPAKII unit and the PC. The host portion of the IP address (the fourth octet), should be different (50 and 21).

Alternatively, the IP address/subnet mask of the ZPAKII can be modified to match the PC's existing network setup.

### Changing the PC's Settings to Match ZPAKII

After completing the following steps to change the PC's Ethernet settings, proceed to the section entitled [Running Sample Projects](#) on page 11.

► **Note:** The instructions that follow were developed for the MS Windows XP platform. If your Windows operating system is different, please refer to your MS Windows OS manual for details.

1. Open the Windows Control Panel and double-click the **Network and Internet Connections** icon. The **Network Connections** dialog box appears, as shown in Figure 3.

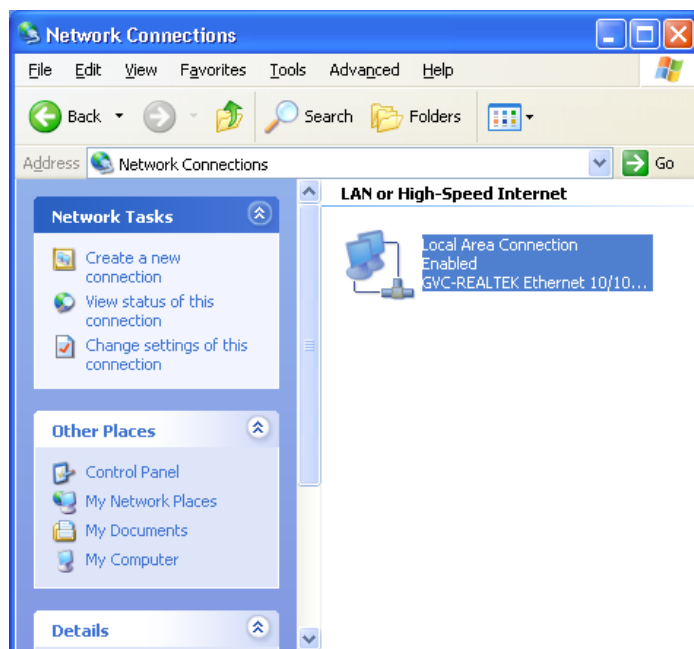


Figure 3. The Network Dialog

2. In the panel labeled **LAN or High-Speed Internet**, double-click the **Local Area Connection** icon. The **Local Area Connection Status** dialog box appears, as shown in Figure 4.

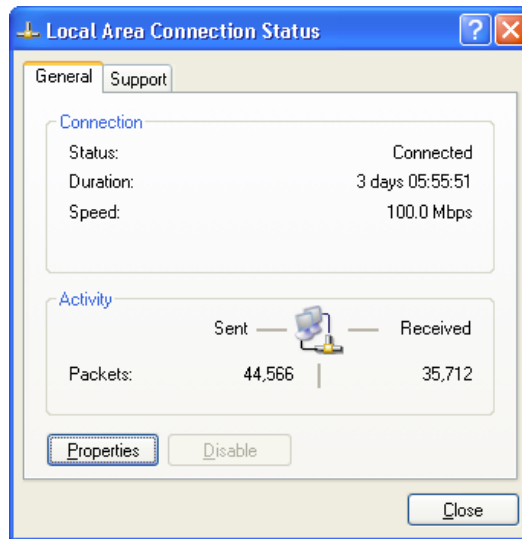


Figure 4. The Local Area Connection Status Dialog

3. In the **Local Area Connection Status** dialog box, click the **Properties** button. The **Local Area Connection Properties** dialog box appears, as shown in Figure 5.

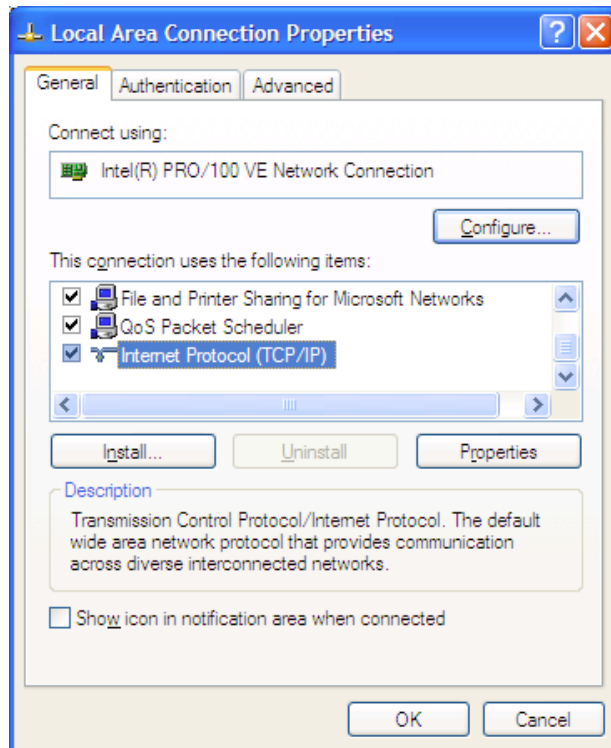
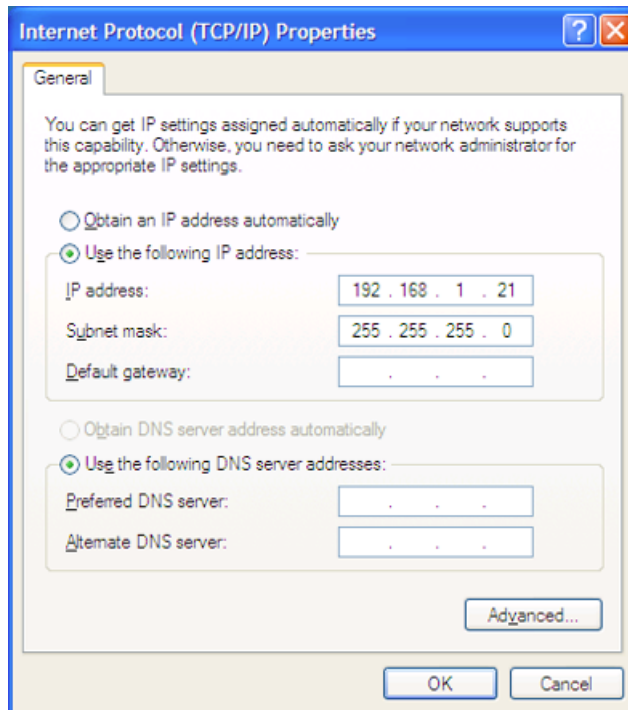


Figure 5. The Local Area Connection Properties Dialog

4. In the panel labeled **This connection uses the following items:**, select the **Internet Protocol (TCP/IP)** item to highlight it, and click the **Properties** button (see Figure 5

for an example). The **Internet Protocol (TCP/IP) Properties** dialog box appears, as shown in Figure 6.



**Figure 6. The Internet Protocol Properties Dialog**

5. Enter values for the IP address and subnet mask to match those shown in Figure 4. Leave any remaining fields blank. In this example, an IP address of 192.168.1.21 and a subnet mask of 255.255.255.0 are being assigned to the PC. These values place the PC on the same network as the ZPAK II unit, and do not conflict with the IP address of ZPAK II.
6. Click **OK** and restart the PC.
7. The PC is now ready to communicate with ZPAK II via the ZDS II software.
8. The default IP address of the ZPAK II unit is 192.168.1.50. If this address conflicts with another address on the LAN, or if another address is more compatible, proceed to



the next section; otherwise, proceed to the section entitled [Running Sample Projects](#) on page 11.

## Changing ZPAKII Settings to Match the PC

There are two ways to change the ZPAKII's default settings. One method is via the ZPAKII embedded web page via a browser over an Ethernet connection. The other way is via the ZPAKII console port. The following steps describe the console port method.<sup>2</sup>

1. The serial port of the PC should already be connected to the console serial port of the ZPAKII unit.
2. Launch **HyperTerminal** on the PC by navigating from the **Start** menu to **Programs** → **Accessories** → **HyperTerminal** or **Accessories** → **Communications** → **HyperTerminal**, depending upon your Windows OS.
3. Create a new connection in **HyperTerminal** by selecting the appropriate COM port in the **Connect using:** field of the **Connect To** dialog. Click **OK**.

► **Note:** This connection is a direct connection via a COM port, not a modem.

4. If you select COM1, the **COM1 Properties** dialog appears. Enter the following port settings and click **OK**.

Bits per second:	57600
Data bits:	8
Parity:	None
Stop bits:	2
Flow control:	None

5. Ensure that the connection is in the *Connected* state by observing the **HyperTerminal** status bar. If not connected, select **Connect** from the **Call** menu.
6. While holding down the *z* key (lowercase) on the PC's keyboard, press the RESET button on the side of the ZPAKII. Releasing the *z* key displays a ZPAKII console boot-up message in **HyperTerminal**, followed by the ZPAK prompt, as shown below.

► **Note:** To locate the Reset button, view the ZPAKII debug interface tool with the XTools® logo reading top-side up. The Reset button is recessed within the

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<sup>2</sup>To change the ZPAKII settings from their defaults via a web browser, please consult the [ZPAKII Debug Interface Tool Product User Guide](#) (PUG0015).



side of the unit facing you. Use a toothpick, paper clip, or similar narrow object to press the Reset button.

```
IPWorks y.y.y
Copyright (C) 1995-2002 Metro Link Incorporated
All Rights Reserved
```

```
clock enabled
created buffer Pool 1524 32
created buffer Pool 4096 8
IP Address: 192.168.1.50
IP Subnet: 192.168.1.0/255.255.255.0
IP Gateway: 192.168.1.254
netstart exiting, stack extent 379/2048
```

```
ZPAKII version x.x
Copyright © 2001-2002 ZiLOG, Inc.
All Rights Reserved.
ZPAKII Console version 1.5
```

```
Type 'H' for help
ZPAKII:>
```

- **Note:** In the example output above, *y.y.y* denotes the current version of the TCP/IP stack software, and *x.x* denotes the current version of ZPAKII. The console prompt is not case-sensitive.

7. At the ZPAKII prompt, enter H and press ENTER. The following message should appear:

```
ZPAKII:> H

H    display this Help
I    change ipAddress
S    change ipSubnet mask
G    change ipGateway
P    change Portnumber
V    change dtli Variable count
B    change dtli Buffer size
F    load deFault settings
C    display Current settings
A    toggle pAssword
D    toggle Dhcp option
W    change passWord
R    Reset zpakii
```

ZPAKII:>

8. Use the **I** command to change the ZPAKII's IP address to one that is compatible with the PC. Use caution to avoid creating a conflicting IP address.
9. Use the **S** command to change the ZPAKII's subnet mask to one that is compatible with the PC. Typically, the subnet mask is the same as that of the PC.

► **Note:** All changes are saved to Flash memory inside the ZPAKII.

10. Cycle the power on the ZPAKII for the new settings to take effect.

The hardware is now configured and ready for application development with the eZ80L92 device.

## Running Sample Projects

After installing the ZDSII software and setting up the hardware, the user can download sample software projects for the eZ80190 Development Kit and review them on the eZ80<sup>®</sup> Development Platform. These sample projects are included in the ZDSII sample directories, which are located in their respective filepaths as shown:

```
c:\Program Files\ZiLOG\ZDSII_eZ80_<version>\Samples\<processor family>\<processor type>_LedDemo\src
```

where `<processor family>` represents the eZ80<sup>®</sup> product line, and `<processor type>` represents the eZ80190 device that powers the development module contained in your kit,

► **Note:** Please refer to the [ZiLOG Developer Studio—eZ80 User Manual](#) (UM0123) for details regarding the development of eZ80<sup>®</sup> software within the ZDSII environment. Also see the user manual and product specifications pertinent to the device and module contained in this kit to review hardware operation in detail.

## Running the SRAM LED Demo Project

Using ZDSII, the user downloads the `leddemoram` file to internal SRAM. Follow the steps below to build and run the demo.

1. Launch ZDSII by navigating from the **Start** menu to **Programs** → **ZiLOG ZDSII-eZ80\_<Version>** → **ZDSII-eZ80\_<version>**.

From the **File** menu in ZDSII, choose **Open Project**, and navigate to the following filepath:

```
c:\Program Files\ZiLOG\ZDSII_eZ80_<version>\Samples\<processor family>\<processor type>_LedDemo\src
```



where <Processor Type> represents the eZ80L92 device that powers the development module contained in your kit.

2. Select the `LedDemoram.pro` project within the above filepath and click **Open**. A list of source files appears in the Workspace panel.
3. From the **Project** menu in ZDS, select **Settings**.
4. The **Settings** dialog box appears. In the **Settings** window, select the **Debugger** tab. In the **Debugger** tab, click on the **Configure ZPAKII** button.
5. The **Configure ZPAKII** dialog box appears. In the **IP Address** field, a default IP address, `192.168.1.50`, is displayed and highlighted. This IP address tells ZDSII where to find ZPAKII on a network. Enter an IP address of `192.168.1.50`. If this address already appears in the **IP Address** field, it must be reentered. If another IP address for **ZPAKII** is more compatible with your network settings, enter that IP address. Do not change the other parameters. Click **OK** to return to the **Settings** dialog box. Click **Rebuild All**. Click **OK** to close the **Settings** dialog box<sup>3</sup>.
6. Push the button labeled RESET on the eZ80<sup>®</sup> Development Platform.
7. When the build is complete, download the LED I/O demo into the eZ80<sup>®</sup> Development Platform by selecting **Build** → **Debug** → **Reset**.
8. When the demo is downloaded, explore the debug toolbar for the various debugger features. To run the application, select **Build** → **Debug** → **Go**.
9. When the demo software is running, the dot-matrix LED display on the eZ80<sup>®</sup> Development Platform should be illuminated and stepping through a number of display patterns.

Please refer to the [ZiLOG Developer Studio—eZ80 User Manual](#) (UM0123) for details regarding the development of eZ80<sup>®</sup> software within the ZDSII environment. Also see the user manual contained in this kit to review hardware operation in detail.

## Additional Topics

If you are not developing embedded TCP/IP networking applications, then you have completed this Quick Start Guide! Table 1 lists documentation relevant to additional embedded projects. Some ZAP Notes reference source code that can be downloaded from the [ZiLOG website](#).

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<sup>3</sup> If you are experiencing problems with the **Rebuild All** or **Build** commands, ensure that there is sufficient memory on the host. See the [System Requirements](#) on page 1.

**Table 1. Additional Development Support Documentation**

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Interfacing an I <sup>2</sup> C Module to a TCP/IP Stack: IPWorks v1.6.2 for the eZ80L92 and eZ80F92	<a href="#">ZAP0010</a>
Using the ZDSII Integrated Flash Loader Utility	<a href="#">ZAP0012</a>

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- **Note:** For programming guidance, please consult the eZ80<sup>®</sup> Programmer's Reference Manual (RM0002), available on the eZ80 Webserver Software and Documentation and on the [ZiLOG website](#).

## Online Software Updates

It is important to register your new eZ80190 Development Kit in order to receive timely notification of available software updates. ZiLOG will post future software updates on [zilog.com](#) for registered customers.

As a nonregistered customer, you can still browse the software on [zilog.com](#), but you will not be able to download certain software components.

## Related Documents

The documents listed in Table 2 apply to the eZ80L92 microprocessor.

**Table 2. eZ80L92 Documentation**

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eZ80L92 Development Kit Quick Start Guide	QS0015
<a href="#">eZ80L92 Development Kit User Manual</a>	UM0129
<a href="#">eZ80L92 Product Specification</a>	PS0130
<a href="#">eZ80L92 Product Brief</a>	PB0086
<a href="#">eZ80L92 Module Product Specification</a>	PS0170
<a href="#">eZ80L92 Module Product Brief</a>	PB0096
<a href="#">External Flash Loader Product User Guide</a>	PUG0013
<a href="#">Errata to eZ80L92 Device</a>	UP0027

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In addition to the documents listed in Table 2, the documents listed in Table 3 apply to the entire family of eZ80<sup>®</sup> devices.

**Table 3. eZ80<sup>®</sup> Family Documentation**

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<a href="#">eZ80 CPU User Manual</a>	UM0077
<a href="#">eZ80 Programmer's Guide Reference Manual</a>	RM0001
<a href="#">ZiLOG Developer Studio II—eZ80 User Manual</a>	UM0123

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Table 3. eZ80<sup>®</sup> Family Documentation (Continued)

<a href="#">eZ80 Connectivity: PPP Operation Application Note</a>	AN0109
<a href="#">Thermostat Demonstration Product User Guide</a>	PUG0014
<a href="#">ZPAKII Product User Guide</a>	PUG0015
<a href="#">Configuring an Optimal TCP/IP Stack Technical Article</a>	TA0002
<a href="#">Write your own EMAC Driver for IPWorks™ Technical Article</a>	TA0003

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### ZiLOG Worldwide Headquarters

532 Race Street  
San Jose, CA 95126  
Telephone: 408.558.8500  
Fax: 408.558.8300  
[www.ZiLOG.com](http://www.ZiLOG.com)

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