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# eZ80190 Development Kit Quick Start Guide

QS000413-0606

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## Introduction

Follow this guide to install and begin using your new eZ80190 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
- Obtaining software updates via [zilog.com](http://zilog.com)

With this eZ80190 Development Kit, you can build and run the `LedDemo.pro` demonstration project described in this document. Also available is the target-based external Flash Loader utility, installed on the eZ80190 Module, which allows the user to erase and reprogram Flash memory inside an eZ80<sup>®</sup> processor. This utility is primarily designed for field upgrades on stand-alone target systems. For more information about the Flash Loader utility, please see the *External Flash Loader Product User Guide* for the eZ80190 device (PUG0012).

## Kit Contents

The eZ80190 Development Kit contains an eZ80<sup>®</sup> Development Platform, an eZ80190 Module, a power supply, the ZPAKII Debug Interface Tool, and documentation on CD-ROM. For a product-specific listing of items in the kit, please see the Kit Contents sheet found inside this kit.

## System Requirements

Table 1 lists the PC requirements for running ZDSII.

**Table 1. ZDSII System Requirements**

<b>Recommended Configuration</b>	<b>Minimum Configuration</b>
PC running MS Windows XP, SP1	PC running MS Windows 98SE/WinNT 4.0–SP6/Win2000–SP3/WinXP–SP1
Pentium III/500 MHz processor	Pentium II/233MHz processor
128MB RAM	96MB RAM

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Table 1. ZDSII System Requirements (Continued)

Recommended Configuration	Minimum Configuration
65MB hard disk space	25MB hard disk space*
Super VGA video adapter	Super VGA video adapter
CD-ROM drive	CD-ROM drive
Ethernet port	Ethernet port
One or more RS-232 communications ports	One or more RS-232 communications ports
Internet browser (Internet Explorer or Netscape)	Internet browser (Internet Explorer or Netscape)

Note: \*Excluding documentation.

## Install the Software

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

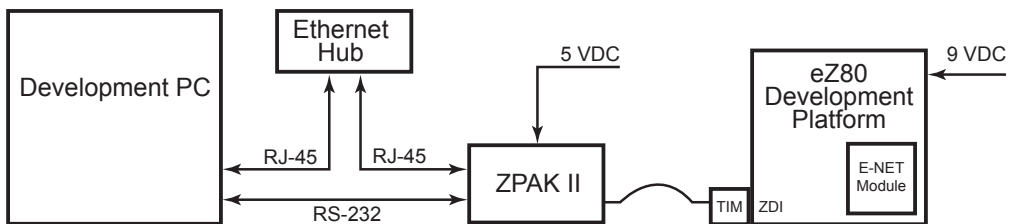
1. Insert the ZDSII CD into your computer's CD-ROM drive. The CD launches the *DemoShield* application automatically.
  - ▶ **Note:** The *DemoShield* application automatically launches each time the CD-ROM is inserted into the drive. However, the *DemoShield* installer may not launch automatically on 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.
3. 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.

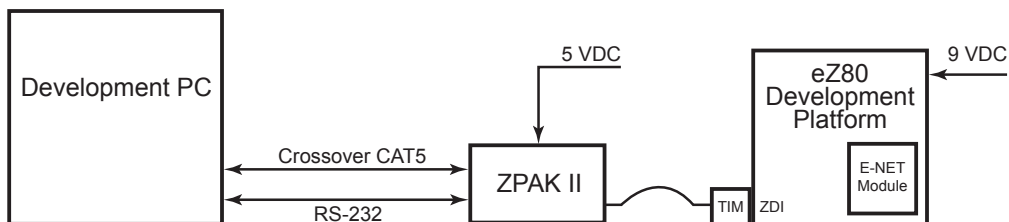
- ▶ **Note:** The target-resident Flash Loader utility is updated regularly. Please see the [Software Tools](#) page on the [ZiLOG website](#) for the latest version.

## Install the Hardware

The ZPAK II 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 ZPAK II 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 eZ80190 Module is properly seated on connectors JP1 and JP2 of the eZ80<sup>®</sup> Development Platform. To mount the eZ80190 Module onto the eZ80<sup>®</sup> Development Platform, ensure that the pin numbering and alignment are correct by matching pin 11 of JP1/JP2 on the eZ80190 Module to pin 1 of JP1/JP2 on the eZ80<sup>®</sup> Development Platform.

- ▶ **Note:** The eZ80190 Module features two 60-pin connectors. Ensure that the RJ45 connector on the module is hanging over the edge of the eZ80<sup>®</sup> Development



Platform, and that module jumpers JP1 and JP2 are aligned with their receptacles on the platform. JP1/JP2 pin 60 on the module fits into pin 50 of the receptacle on the eZ80<sup>®</sup> Development Platform. Pins 1–10 on the module are not connected to 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 ZPAK II 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).
  3. Connect a straight Ethernet cable from a free port on the Ethernet hub to the Ethernet port on the ZPAK II 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 ZPAK II 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 ZPAK II unit. See Figure 2 for reference.
4. To anticipate possible modifications to ZPAK II's Ethernet IP address, connect the serial port on the PC to the console port on the ZPAK II via the supplied serial cable and the 10-pin adapter cable.
  5. Connect the 5VDC power supply to the ZPAK II unit.

## Configure the Hardware

The default IP address and subnet mask of the ZPAK II debugger are 192.168.1.50 and 255.255.255.0, respectively. For the development PC running ZDS II to communicate with the ZPAK II unit, the PC's Ethernet adapter should be configured for the same subnet as ZPAK II. For example, an IP address/subnet mask of 192.168.1.21/255.255.255.0 should

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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 *eZ80190 Development Kit User Manual (UM0141)*.

work for your PC. The subnet portion of the IP address, 192.168.1, should be the same on the ZPAK II 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 ZPAK II can be modified to match the PC's existing network setup.

### Changing the PC's Settings to Match ZPAK II

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

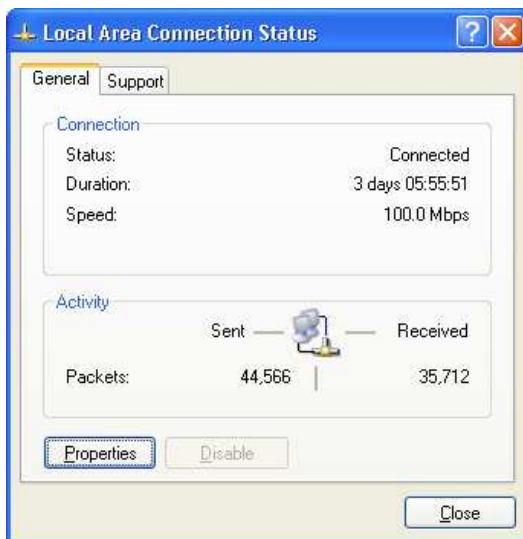
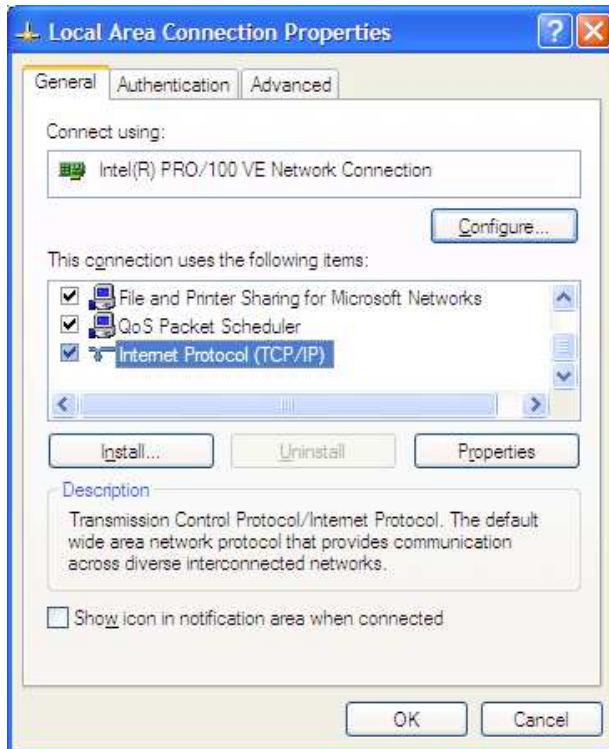


Figure 4. The Local Area Connection Status Dialog

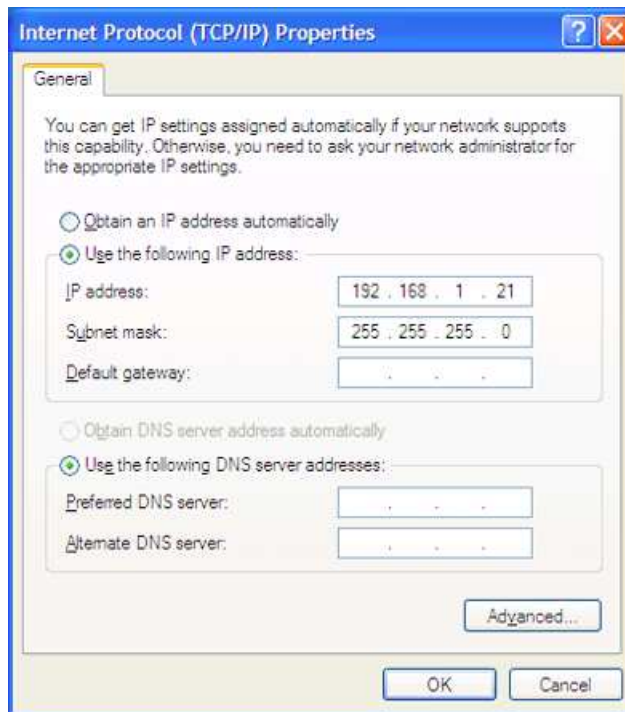
3. In the **Local Area Connection Status** dialog box, click the **Properties** button. The **Local Area Connection Properties** dialog box appears, as shown in Figure 5.



**Figure 5. The Local Area Connection Properties Dialog**



- 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**

- 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.
- Click **OK** and restart the PC.
- The PC is now ready to communicate with ZPAK II via the ZDSII software.

8. The default IP address of the ZPAKII 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 [Running Sample Projects](#) section 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.

```
ZiLOG TCP/IP Software Suite v1.1  
Copyright (C) 2003 ZiLOG Inc.  
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 eZ80190 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 `LedDemo.pro` 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 eZ80190 device that powers the development module contained in your kit.

2. Select the `LedDemo.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

Table 2 lists documentation relevant to additional embedded projects. Some Technical 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.

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**Table 2. Additional Development Support Documentation**

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Using the ZDSII Integrated Flash Loader Utility (TN0012)

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- **Note:** For programming guidance, please consult the ZiLOG TCP/IP Software Suite Reference Manual (RM0008), available on the eZ80<sup>®</sup> Software and Documentation CD-ROM and upon registration from the software page 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 3 apply to the eZ80190 microprocessor.

**Table 3. eZ80190 Documentation**

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eZ80190 Development Kit Quick Start Guide (QS0004)

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eZ80190 Development Kit User Manual (UM0141)

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eZ80190 Product Specification (PS0066)

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eZ80190 Product Brief (PB0052)

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eZ80190 Module Product Specification (PS0191)

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eZ80190 Module Product Brief (PB0106)

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External Flash Loader Product User Guide (PUG0012)

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Errata to eZ80190 Device (UP0019)

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In addition to the documents listed in Table 3, the documents listed in Table 4 apply to the entire family of eZ80<sup>®</sup> devices.

**Table 4. eZ80<sup>®</sup> Family Documentation**

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eZ80 CPU User Manual (UM0077)
ZiLOG TCP/IP Software Suite Reference Manual (RM0008)
ZiLOG Developer Studio II—eZ80 User Manual (UM0123)
eZ80 Connectivity: PPP Operation Application Note (AN0109)
Thermostat Demonstration Product User Guide (PUG0014)
ZPAKII Product User Guide (PUG0015)

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