ZCRMZNICE01ZEMG Crimzon® In-Circuit Emulator

Quick Start Guide

Introduction

Zilog's ZCRMZNICE01ZEMG Crimzon® In-Circuit Emulator (ICE), shown in Figure 1, provides Crimzon chip family emulation with a Trace and Event system for program debugging using Zilog Developer Studio II (ZDS II) development tools. Use the included OTP programming module to burn your design code to OTP devices.

This Quick Start Guide tells you how to install the ZDS II integrated development environment, how to install the ICE hardware peripherals, and how to create a hex file using the sample program supplied with ZDS II.

Figure 1. Zilog Crimzon In-Circuit Emulator

Kit Contents

Refer to the *Crimzon In-Circuit Emulator Development Kit Packing List*, PAK0017, for a list of kit contents.

Supported Host Environments

- Win98 Second Edition, Win2000 Service Pack 3, WinXP Service Pack 1
- Pentium II/233 MHz processor or higher up to Pentium IV, 2.8 GHz
- 96 MB RAM or more
- 35 MB hard disk space or more
- Super VGA video adapter
- CD-ROM drive for software installation
- One or more RS-232 communication ports

Software Installation

Follow the steps below to install the software tools:

1. Load the ZDS II CD into your CD-ROM drive.

2. The CD automatically launches the DemoShield application and provides a menu to install the product and documentation. Selecting **INSTALL PRODUCTS** followed by **INSTALL ZDS II** displays the Installation Wizard.

▶ **Note:** *Software versions illustrated in the following figures are for reference only. You may have an updated version.*

3. The following directory is installed on the host PC, assuming all installation settings remain at their defaults:
    `C:\Program Files\Zilog\ZDSII_<product>_<version number>.`

Hardware Installation

The Crimzon ICE and Programming System features an Ethernet interface, a USB interface, and an RS-232 serial port. Hardware installation consists of the following:

- Connecting the Crimzon ICE to the ZLF645 Development Board
- Connecting the Crimzon ICE to the Target Pod
- Connecting the Crimzon ICE to the OTP Programming Module (Optional)
- Connecting the Crimzon ICE to a PC

You must reconfigure network settings on the PC or on the Crimzon ICE before using the emulator.

Connecting the Crimzon ICE to the ZLF645 Development Board

The Crimzon ICE (Figure 2) connects to the ZLF645 development board (Figure 3) using the 28-pin PDIP target pod (Figure 4) and 34-circuit ribbon cable supplied with the ICE.

Install the 28-pin PDIP target pod (Figure 4) onto connector U4 of the ZLF645 development board. Set jumper J1 as described in Table 1. Connect one end of the 34-circuit cable to the target pod, and the other end to connector P10 on the Crimzon ICE. See Figure 5 for reference.
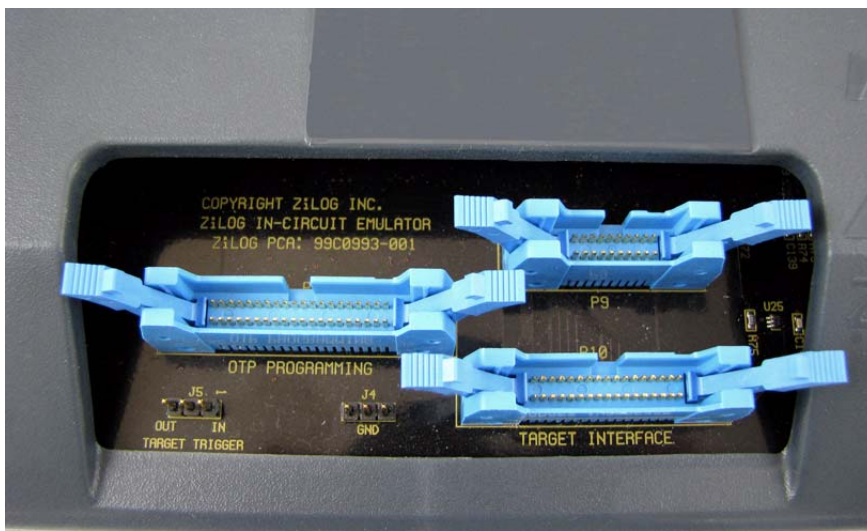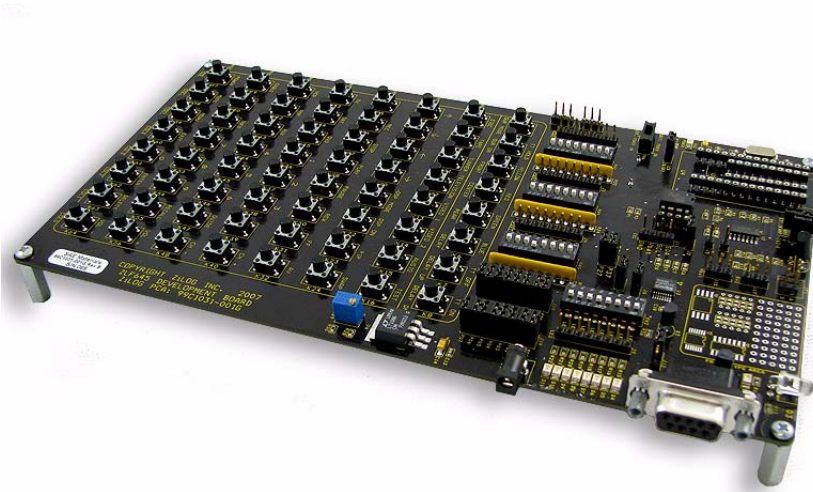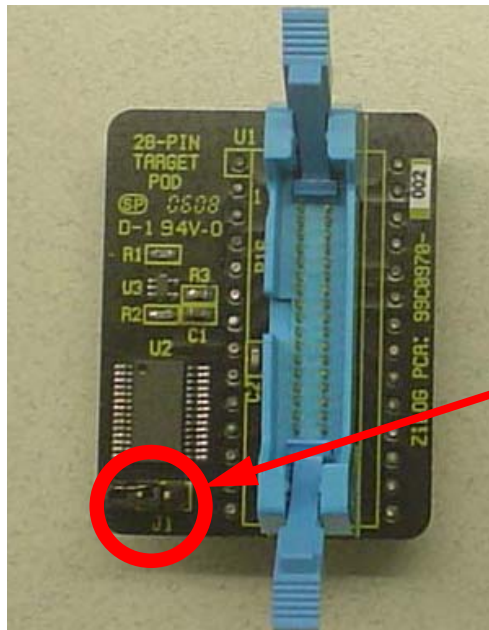

Figure 2. Crimzon ICE Top View

Figure 3. Crimzon Development Board

Jumper J1

Figure 4. Location of J1 Jumper

Table 1. Jumper Settings

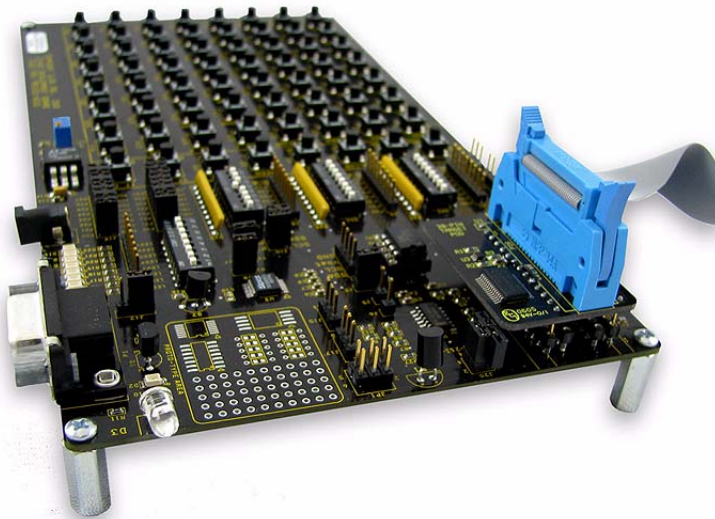| Jumper	Port P31 Function
J1 ON	Infrared (IR) Amplifier
J1 OFF	Digital/Analog

**Figure 5. 28-Pin PDIP Target Pod Connected to Development Board
with Crimzon ICE 34-Circuit Ribbon Cable in Place**

Using the Programming Adapters

The following adapters are included with the Crimzon ICE:

• 28-pin PDIP programming adapter

• 28-pin SOIC programming adapter

• 28-pin SSOP programming adapter

• 28-pin PDIP to 40-pin PDIP converter

The adapters can be used with either the OTP programming module supplied with the Crimzon ICE, or with the ZLF645 development board.

Use the adapters with the ZLF645 development board by plugging them into board connector U4.

For example, if you are using a 28-SOIC device:

1. Install the device into the 28-pin SOIC programming adapter (shown in Figure 6).

2. Install the 28-pin SOIC programming adapter onto the 28-PDIP to 40-PDIP converter (shown in Figure 7).

3. Insert the 28-PDIP to 40-PDIP converter into the 28-pin receptacle of connector U4 on the ZLF645 development board.

If you need to emulate or program other packages, order the 20-pin accessory kit (ZCRMZNICE01ZACG) or the 40/48-pin accessory kit (ZCRMZNICE02ZACG).
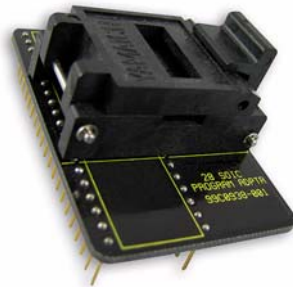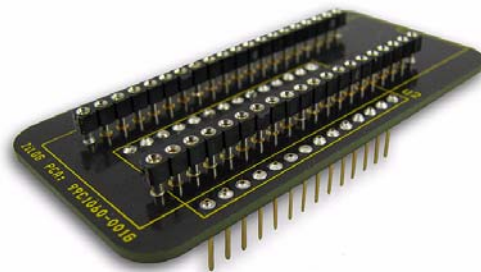
Figure 6. 28-Pin SOIC Programming Adapter

Figure 7. 28-PDIP to 40-PDIP Converter

Connecting the Crimzon ICE to the Target Pod

After installing the appropriate target pod (and converter, if required) onto the target development board, connect the Crimzon ICE to the target pod as follows:

- For 40-PDIP and 48-SSOP target pods:
  - Connect the 20-circuit cable from P9 on the emulator to P2 on the 40-PDIP target pod. (The 20-circuit cable is included in the 40/48-pin accessory kit, ZCRMZNICE02ZACG, ordered separately).
  - Connect the 34-circuit cable from P10 on the emulator to P1 on the 40-PDIP target pod.
- For 20-PDIP and 28-PDIP target pods:
  - Connect the 34-circuit cable from P10 on the emulator to P16 on the target pod. (Emulator connector P9 is not used).

Connecting the Crimzon ICE to the OTP Programming Module (Optional)

After developing and debugging your software, follow the steps below to connect the Crimzon ICE to the OTP programming module so that you can burn your code onto the OTP chip:

1. Connect the 40-circuit ribbon cable from the Crimzon ICE OTP Programming connector (P8) to connector P8 on the ICE OTP programmer module.

2. The 40-PDIP ZIF socket on the OTP programming module is designed to accept 40-PDIP OTP chips. The OTP programming adapters supplied with the Crimzon ICE allow you to adapt the ZIF socket to accept 20/28-SOIC, 20/28-SSOP, 20/28-PDIP chip packages.

   After installing the OTP chip into the ZIF socket (or programming adapter), you can program the chip using the instructions provided in the "OTP Programming" section of the *Crimzon In-Circuit Emulator User Manual*, UM0217. You will also find instructions in the user manual for ZLF645 flash programming.

Connecting the Crimzon ICE to a PC

You can connect the Crimzon ICE to a host PC using either an Ethernet or USB port. To connect the Crimzon ICE to a host PC using Ethernet, see Ethernet Port Connection on page 8. To connect the Crimzon ICE to a host PC using USB port, see USB Port Connection on page 15.

Ethernet Port Connection

Follow the steps below to connect the Crimzon ICE to a host PC using Ethernet:

1. Connect a CAT-5 crossover cable from the PC to the Ethernet port on the Crimzon ICE, see Figure 8.

▶ **Note:** *You can connect the ICE to an Ethernet hub using a CAT-5 patch cable.*

2. Connect the serial COM port on the PC to the SETUP serial port on the Crimzon ICE using the DB9-to-DB9 serial cable, see Figure 9.
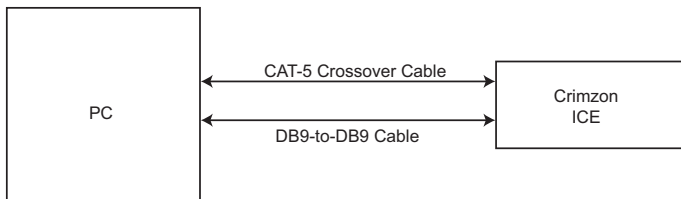

Figure 8. Connecting a PC to the Crimzon ICE

Figure 9. Crimzon ICE Rear Panel

⚠ **Caution:** Ensure the target board is not powered ON.

3. Connect a 5 V DC power supply to the Crimzon ICE. The 3.3 V DC and 1.8 V DC power LEDs must illuminate. See Figure 9. Contact Zilog® support at www.zilog.com if there is any problem.

ICE Fail LED

ICE Run LED

Figure 10. Crimzon ICE Front-Panel

Setting Up Ethernet Communications

The default IP address and subnet mask of the Crimzon ICE are 192.168.1.50 and 255.255.255.0, respectively. To enable communication between the PC running ZDS II and the Crimzon ICE, you must either change the PC's Ethernet settings to match those of the Crimzon ICE or vice versa.

If using the PC in a stand-alone configuration, set the PC's IP address to 192.168.1.21 and its subnet mask to 255.255.255.0. For more details, see Changing the PC's Settings to Match the Crimzon ICE on page 9.

In a networked environment, set the Crimzon ICE IP address and subnet mask to match the network setup. For more details, see Changing Crimzon ICE Settings on page 13.

Changing the PC's Settings to Match the Crimzon ICE

Follow the steps below to change the PC's Ethernet settings:

> **Note:** *The following instructions are for MS Windows XP. If your Windows OS is different, refer to your MS Windows OS online help for details.*

1. Open the Windows Control Panel and double-click the **Network Connections** icon, see Figure 11.
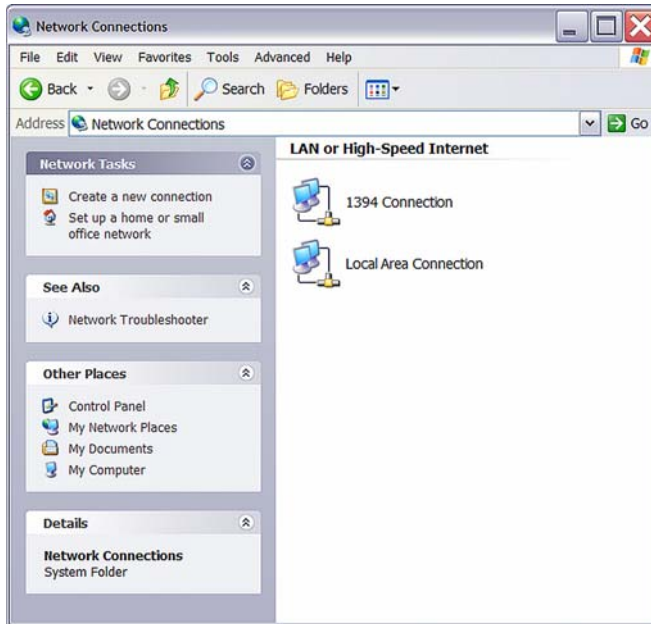
Figure 11. Network Connections

2. In the panel labeled **LAN or High-Speed Internet**, double-click the **Local Area Connection** icon. The **Local Area Connection Status** window appears, see Figure 12.
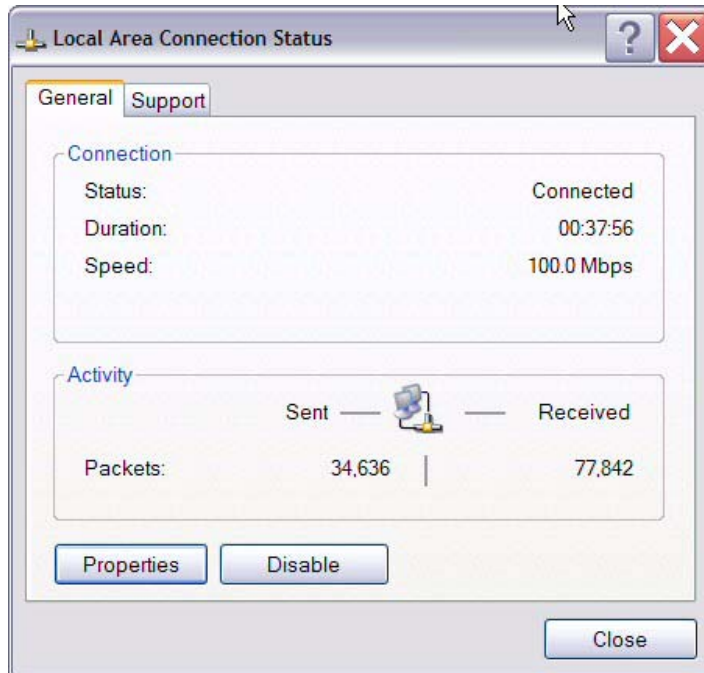
Figure 12. Local Area Connection Status Window

3. In the **Local Area Connection Status** window, click **Properties** button. The **Local Area Connection Properties** dialog box appears, see Figure 13.
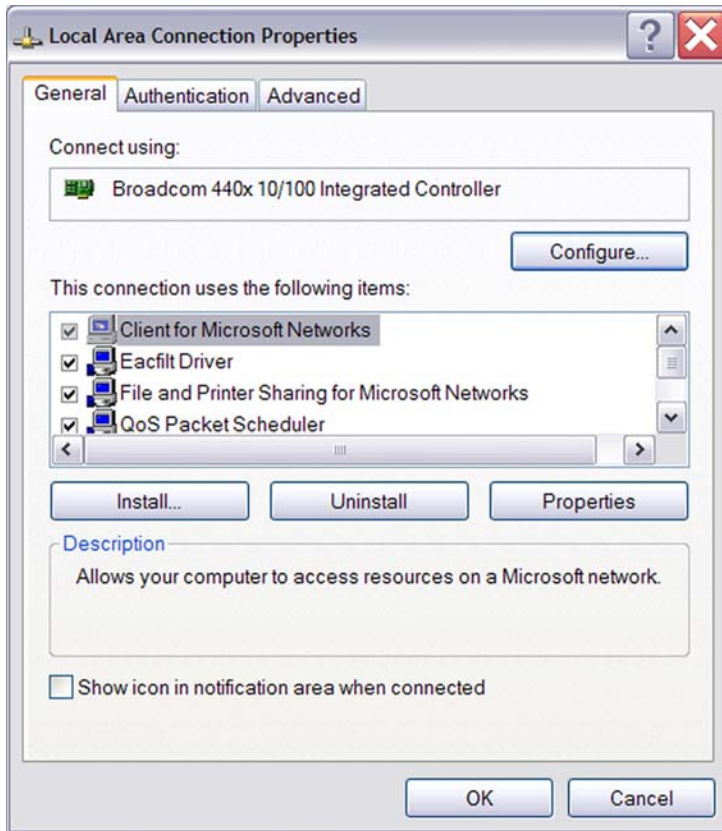
Figure 13. Local Area Connection Properties Dialog Box

4. Select **Internet Protocol (TCP/IP)** from the scroll down list, and click **Properties**
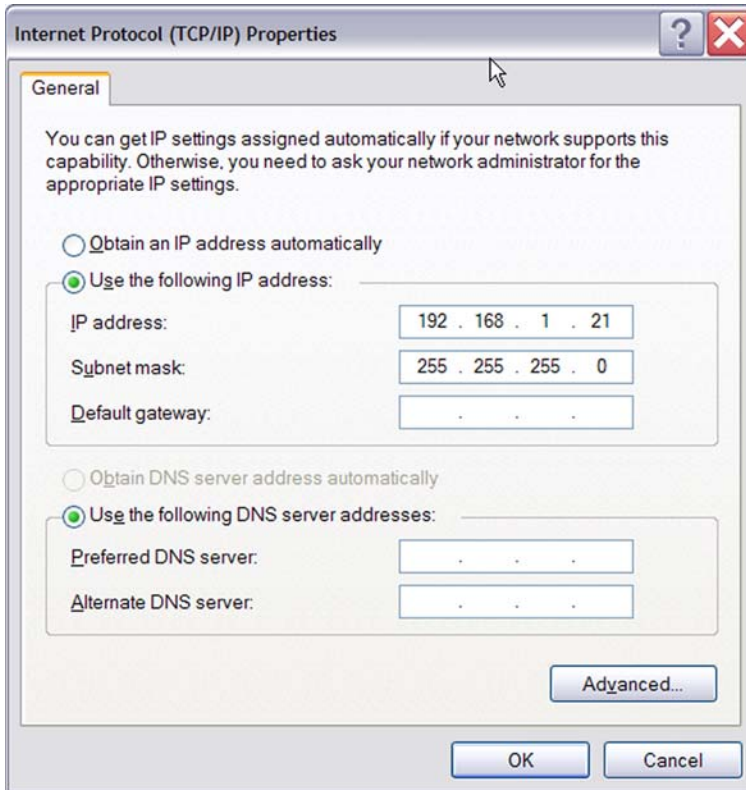   button. The **Internet Protocol (TCP/IP) Properties** dialog box appears, see
   Figure 14.

Figure 14. Internet Protocol Properties Dialog

5. Enter the IP address and subnet mask to match those shown in Figure 14. Leave the 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 connect the PC to the same network as the Crimzon ICE unit.

6. Click **OK** and restart the PC.

Changing Crimzon ICE Settings

Follow the steps below to change the Crimzon ICE Settings:

1. Connect the serial port of the PC to the Crimzon ICE serial port using the DB9-to-DB9 serial cable.

2. Launch HyperTerminal on the PC by selecting **Start** —> **Programs** —> **Accessories** —> **Communications** —> **HyperTerminal**. The **Connection Description** dialog box appears.

3. Enter the name for a new connection in the **Connection Description** dialog box, and click **OK** to open the **Connect To** dialog box.

4. In the **Connect To** dialog, set the **Connect Using** drop-down menu to match the COM port to which the Crimzon ICE is connected. Click **OK**.

5. A **COM Properties** dialog appears. Enter the following port settings and click **OK**. HyperTerminal should automatically attempt a connection. Otherwise, select **Call** —> **Connect**.

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

6. When the emulator is turned on or reset, a Crimzon ICE console boot-up message appears in the HyperTerminal. A typical boot-up message is shown below:

```
ZiLOG Z8 LXM ICE
Firmware Version 2.20, Build (Nov 12 2007 16:52:29)
Copyright (C) 2005 ZiLOG, Inc.  All Rights Reserved.
Adding emac driver...
Attempting to establish Ethernet connection.
10 Mbps Half-Duplex Link established
IP Address: 10.1.7.95
IP Subnet: 10.1.0.0/255.255.0.0
IP Gateway: 10.1.1.254

Press 'Ctrl-Z' to enter configuration mode
```

7. Press Ctrl-z. The emulator command prompt appears:
```
Z8 LXM ICE %
```

▶ **Note:** *The emulator console prompt is not case-sensitive.*

Type `help` or `?` at the emulator command prompt to see a list of available commands.

8. When you have finished configuring the emulator, type `exit` to exit the command shell.

9. Press **Alt+F4** to exit HyperTerminal.

10. Type `reboot` and press **Return** or cycle the power on the Crimzon ICE for the new settings to take effect.

11. The hardware is now configured and ready for application development.

> **Note:** *To execute a sample project, refer to the Sample Project section in the Crimzon In-Circuit Emulator User Manual, UM0217.*

USB Port Connection

To connect the Crimzon ICE to your PC using a USB port, load the appropriate driver from the ZDS II installation directory or CD-ROM provided with your emulator. ZDS II software is available for download from www.zilog.com. The procedure of loading the appropriate driver, depends on your Windows OS version and is explained below:

Windows XP

Follow the steps below to connect the Crimzon ICE to a host PC using USB Connection for Windows XP OS version:

1. Connect the Crimzon ICE to the host PC using the supplied USB cable. See Figure 15 for Crimzon ICE rear panel connection.

Figure 15. Crimzon ICE Rear Panel

⚠ **Caution:** *Ensure the target board is not powered ON.*

2. Connect a 5 V DC power supply to the Crimzon ICE. The 3.3 V DC and 1.8 V DC power LEDs should illuminate. See Figure 15. Contact Zilog® support at www.zilog.com if there is any problem.

In Windows, the **Found New Hardware** wizard should activate automatically.

ICE Fail LED

ICE Run LED

Figure 16. Crimzon ICE Front Panel

3. In the wizard, select **Install from a list or specific location (Advanced)**; click **Next**.

▶ **Note:** *If the Windows Logo testing dialog appears, select **Continue Anyway**.*

4. Select **Search for the best driver in these locations** and include those locations in the search.

5. Browse to one of the following driver directories:
   ```
   <ZDS II Installation Directory>\device drivers\USB
   <ZDS II Installation CD>\Device Drivers\USB
   ```

6. Click **Next**.

7. Select the appropriate driver, and click **Next**.

8. Click **Finish** to complete the installation.

Windows 2000/Windows 98SE

Follow the steps below to connect the Crimzon ICE to a host PC using USB Connection for Windows 2000/Windows 98SE OS version:

1. Connect the Crimzon ICE to the host PC using the supplied USB cable. See Figure 15 for Crimzon ICE rear panel connection.

   ⚠️ **Caution:** Ensure the target board is not powered ON.

2. Connect a 5 V DC power supply to the Crimzon ICE. The 3.3 V DC and 1.8 V DC power LEDs should illuminate, see Figure 9. Contact Zilog® support at www.zilog.com if there is any problem.

   In Windows, the **Found New Hardware** wizard must activate automatically.

3. In the wizard, click **Next**.

4. Select **Search for a suitable driver for my device (Recommended)**; click **Next**.

5. Select **Specify a location**, click **Next**.

6. Browse to one of the following driver directories:
   ```
   <ZDS II Installation Directory>\device drivers\USB
   <ZDS II Installation CD>\Device Drivers\USB
   ```

7. Click **Next**.

8. Select the appropriate driver, and click **Next**.

9. Click **Finish** to complete the installation.

Getting Started with ZDS II

The ZDS II installation includes sample code for the ZLF645 Development Board. Sample code is located in the `c:\Program Files\ZiLOG\ZDSII_<product>_<version number>\Samples\` directory. Use the following procedure to open the sample project named `ZLF645 irremote.zdsproj` and build a hex file suitable for loading into an OTP programmer.

1. Start ZDS II.

2. Open the **File** menu and select **Open Project**.

3. In the resulting dialog box, browse to the `c:\Program Files\Zilog\ZDSII_CrimzonGP_Emulator_<version number>\samples`

\ZLF645_IRRemote\src directory and select the ZLF645 irremote.zdsproj project. Click the Open button.

The ZLF645 irremote.zdsproj project opens, and the project files display in the Project Workspace window on the left side of the ZDS II interface. Double-click any file to open it in the ZDS II editor window.

4. Configure ZDS II to run the sample project. Open the **Project** menu and select **Settings.**

5. In the **General** tab, make sure the **CPU Family:** field is set to ZLF645. Set the Output Files Directory: to the directory in which you want your output files stored. By default, ZDS II stores your files in the same directory as the project files.

6. In the **Debugger** tab, make sure the **Driver:** field is set to Simulator and click OK.

7. You must rebuild your project when you change the project settings. Open the **Build** menu and select **Rebuild All**.

    The Build Output Window at the bottom of ZDS II provides status messages about the rebuild's progress.

8. Now we're going to create a hex file you can download into a ZLF645 chip using the ZDS II Flash Loader Utility, located in **Tools –> Flash Loader**.

    In ZDS II, open the **Build** menu and select **Set Active Configuration**.

9. In the Select Configuration dialog, select **Release** and click OK.

10. Rebuild the project. Open the **Build** menu and select **Rebuild All**.

11. Browse to the c:\Program Files\Zilog\ZDSII_CrimzonGP_Emulator_<version number>\samples\ZLF645_IRRemote\src directory. There you will find the file ZLF645 irremote.hex, the hex file just created when you released and rebuilt the project.

For instructions on how to run the sample program, how to use the Trace and Event System, and on jumper settings, refer to the *Crimzon In-Circuit Emulator User Manual, UM0217.*

Warning: DO NOT USE IN LIFE SUPPORT

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