Opto-Isolated USB SmartCable

User Manual   UM019506-0814

Introduction

Zilog's Opto-Isolated USB SmartCable, part number ZUSBOPTSC01ZACG (shown in Figure 1), allows you to connect a target Z8 Encore!®, Z8 Encore! XP®, Z8 Encore! MC™, ZNEO® or Z16FMC development board to a high-speed or full-speed USB port on your Zilog Developer Studio II (ZDS II) host system. This particular USB SmartCable's internal optoisolator electrically isolates it from the circuitry of your Zilog development board, thereby preventing high input voltages from affecting the system receiving the output signal.

This user manual describes how to install the Opto-Isolated USB SmartCable for the first time and load the necessary driver software. After connecting this Opto-Isolated USB SmartCable and installing the driver, you can proceed with debugging as described in the development kit documentation.

Figure 1. Opto-Isolated USB SmartCable

Kit Contents

The Opto-Isolated USB SmartCable, available from the Zilog Store, ships with the following items:

- Opto-Isolated USB SmartCable

- USB cable, Type A to Type B
- Six-conductor ribbon cable
- This Opto-Isolated USB SmartCable User Manual

Supported Host Environments

The supported host environments for the Opto-Isolated USB SmartCable include:

- A host running Zilog Developer Studio II (ZDS II) software version 4.9.4 or later. See your development kit Quick Start guide for ZDS II host system requirements. You can download the latest version of ZDS II for free from the Zilog Store.

▶ **Note:** Windows NT hosts are not supported by the USB SmartCable.

- One USB high-speed or full-speed port on the host chassis or a powered hub. The USB SmartCable cannot operate properly on an unpowered hub; i.e., a hub without a separate AC adapter.

Supported Target Environments

Table 1 lists the supported target environments for the USB SmartCable.

Table 1. Supported Target Environments

Development Board	System Clock		Power Supply		
	Min	Max	Min	Max	Current
Z8 Encore!®	32 kHz	20 MHz	2.7 V	3.6 V	2 mA
Z8 Encore! XP®	32 kHz	20 MHz	2.7 V	3.6 V	2 mA
Z8 Encore! MC™	32 kHz	20 MHz	2.7 V	3.6 V	2 mA
ZNEO®	10 kHz	20 MHz	2.7 V	3.6 V	2 mA
Z16FMC	10 kHz	20 MHz	2.7 V	3.6 V	2 mA

Installing the USB SmartCable and Driver

Before connecting the USB SmartCable to your system, Windows loads the appropriate driver from the ZDS II installation directory or CD-ROM. You can download ZDS II software for a specific device family for free from the Zilog Store. Alternatively, if you have an applicable Zilog development tool, use the CD-ROM provided. The installation procedure depends on your Windows operating system version.

> **Note:** Zilog no longer includes CD-ROMs with USB SmartCable kits built after August 2006.

Windows 7 32-Bit and 64-Bit Systems

1. Connect the USB SmartCable to the host PC. A Windows message appears, stating Driver Software Installation.

2. Windows automatically searches for the driver. This process can take a while to complete. However, because there is no option to terminate this process immediately, Zilog advises waiting for the search to complete. If the driver was previously installed on your system, Windows automatically installs the USB SmartCable driver. If this is the case, skip ahead to Step 8. If the driver was not found, close the Search dialog and proceed to Step 3.

3. Go to the Windows Start menu and, in the **Search programs and files** field, enter `Device Manager`. The Windows Device Manager should appear in the list of returned items in your search; click this item to launch the Device Manager.

4. A selection labeled **Other devices** should appear in the list of hardware devices currently running in the Device Manager. Click the arrow to the left of **Other devices** to display these additional devices.

5. Right-click **USB SmartCable** to select **Update Driver Software**, which will display the Update Driver Software - USB SmartCable dialog.

6. Select the **Browse my computer for driver software** option in this dialog, then browse to one of the following driver directories:

   32-bit systems:

   ```
   <ZDS II Installation Directory>\device drivers\USB\x32
   <ZDS II Installation CD>\device drivers\USB\x32
   ```

64-bit systems:

```
<ZDS II Installation Directory>\device drivers\USB\x64
<ZDS II Installation CD>\device drivers\USB\x64
```

7. Click **Next** to install the driver. In 32-bit systems, the Windows Security dialog will appear; click **Install this driver software anyway**.

8. Click **Close** after the Wizard finishes the installation.

Windows Vista 32-Bit and 64-Bit Systems

1. Connect the USB SmartCable to the host PC. The Found New Hardware dialog box should appear.

2. In this dialog, select **Locate and install driver software (recommended)**. When the User Account Control window appears, click **Continue**. The Driver Software Installation window is displayed, followed by the Found New Hardware-USB SmartCable dialog box.

3. Select **I don't have the disc. Show me other options**.

4. Select **Browse my computer for driver software (advanced)**.

5. Browse to one of the following driver directories:

   32-bit Vista systems:

```
<ZDS II Installation Directory>\device drivers\USB\x32
<ZDS II Installation CD>\device drivers\USB\x32
```

   64-bit Vista systems:

```
<ZDS II Installation Directory>\device drivers\USB\x64
<ZDS II Installation CD>\device drivers\USB\x64
```

6. Click **Next** to display the Windows Security dialog box.

7. Click **Install this driver software anyway**.

8. When the software has been installed successfully, click **Close**.

Windows XP 32-Bit Systems

1. Connect the USB SmartCable to the host PC. The Found New Hardware Wizard should activate automatically upon connecting the USB Programmer for the first time. If you are prompted to connect to Windows Update, click **No, not at this time**.

2. Select **Install from a list or specific location (Advanced)**, then click **Next**. If the Windows Logo testing dialog appears, select **Continue Anyway**.

3. Select **Search for the best driver in these locations** and **Include this location in search:**, then locate and click the following directory:

    ```
    <ZDS installation>\device drivers\USB\x32
    ```

4. Click **Next**. After the appropriate driver information has been found, click **Next** a second time.

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

Connecting to the Target Board

Attach one end of the six-conductor ribbon cable to the SmartCable six-pin DBG connector; see Figure 2. Attach the free end of the ribbon cable to the connector on the target board. Ensure that pin 1 on the ribbon cable (indicated by the dark stripe) is aligned with pin 1 on the target connector. For more information on connecting the USB SmartCable to your target board, refer to the Z8 Encore! Design for Debug Technical Note (TN0036).
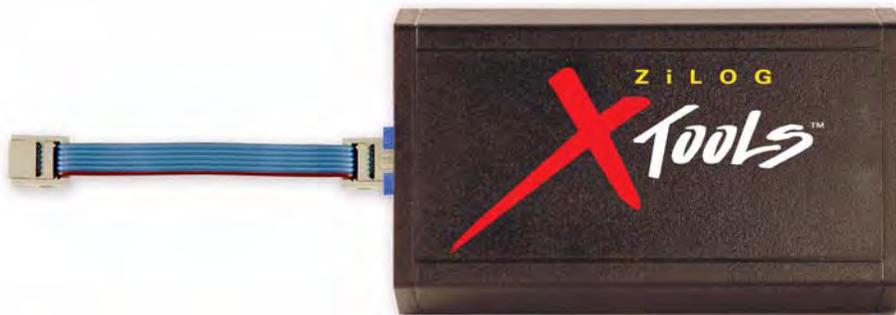

**Figure 2. Connecting the Six-Conductor Ribbon
Cable to the Opto-Isolated USB SmartCable**

> **Note:** A half-twist in the ribbon cable between the Zilog-manufactured target board and the Opto-Isolated USB SmartCable is normal.

ZDSII Debug Tool Selection: USBSmartCable

When connecting to your target using the Opto-Isolated USB SmartCable, navigate in ZDSII via the **Project** menu to → **Settings** → **Debugger** to open the Debugger window. From the **Current:** drop-down menu in the **Debug Tool** panel, select **USBSmartCable**, as indicated in Figure 3.
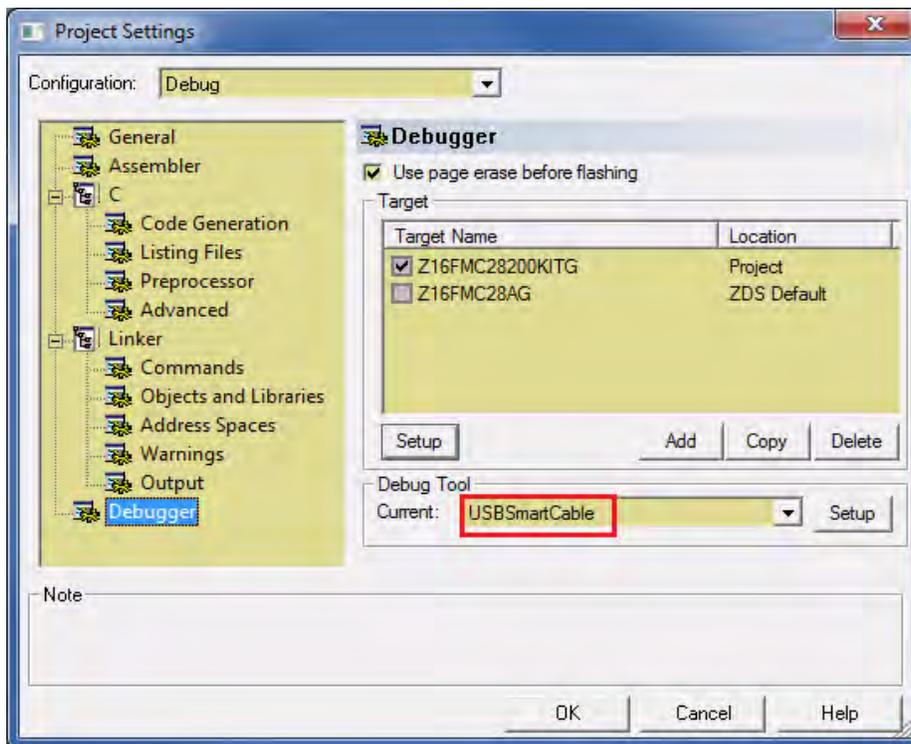

Figure 3. Select the USB SmartCable as a Debug Tool

Troubleshooting

Before contacting Zilog Customer Support to submit a problem report, follow the guidelines provided below. If a hardware failure is suspected, contact a local Zilog representative for assistance.

USB SmartCable Not Recognized

Disconnect all other USB devices (including keyboard and mouse if you can use PS2 ports instead). Ensure that USB SmartCable is plugged in directly with no intervening hub. If this corrects the issue, reconnect devices one at a time to isolate the conflicting device.

Host Does Not Boot

Some systems with one or more other USB devices connected may not boot properly after you connect the USB SmartCable. This issue is being investigated. In the meantime, the workaround is to connect the USB SmartCable after the system starts.

Purchase Online

The Opto-Isolated USB SmartCable is available for purchase online from the Zilog Store (Product ID #RD10039). To download the latest version of ZDS II, and to obtain the latest software updates from Zilog, visit the Zilog Store.

Contacting Zilog Customer Support

To share comments, get your technical questions answered, or report issues you may be experiencing with our products, please visit Zilog's Technical Support page at support.zilog.com. For additional troubleshooting solutions, refer to ZDS II Online Help.

⚠ **Warning:** DO NOT USE THIS PRODUCT IN LIFE SUPPORT SYSTEMS.

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