



Z8F64200100KITG

**Z8 Encore! XP[®] F64XX Series
Development Kit**

User Manual

UM028301-0317



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Revision History

Each instance in the Revision History table below reflects a change to this document from its previous version. For more details, click the appropriate links in the table.

Date	Revision Level	Description	Page
Mar 2017	01	Original issue and applies to Development Kit Rev F or later and Zilog PCA 99C0918-001G Rev D or later.	n/a

Safeguards

The following precautions must be observed when working with the devices described in this document.



Caution: Always use a grounding strap to prevent damage resulting from electrostatic discharge (ESD).

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The Z8 Encore! XP® F64XX Series Development Kit

Zilog's Z8 Encore! XP® F64XX Series MCUs are a part of the line of Zilog® microcontroller products.

The Z8 Encore! XP F64XX Series Development Kit (Z8F64200100KITG) allows you to get familiar with the hardware and software tools available with this product. This kit consists of the 64 KB version of the Z8 Encore! XP Development Board that supports and presents the features of the Z8 Encore! XP F64XX Series. The software development tool kit allows you to write application software and contains all supporting documents.

Z8F6423FT020 is the silicon used in the board. For more details, refer to [Z8 Encore! XP® F64XX Series Product Specification \(PS0199\)](#) available for download at www.zilog.com.

This user manual acquaints you with the Z8 Encore! XP F64XX Series Development Kit, and provides instructions on setting up and using the tools to start building designs and applications.

This document provides instructions for setting up and configuring Z8F64XX Development Board and includes schematic diagrams and a discussion of Board features and ZDSII.

The first sections of this document guide you through the following tasks:

- [Download and Install the ZDSII Software and Documentation](#) – see page 4
 - Installing the USB SmartCable Driver – see [Appendix B. Installing the USB SmartCable Driver](#) on page 15
- [Connect the F64XX Series Development Board to your PC](#) – see page 5
- [Start the Z8F64XX Demonstration Program](#) – see page 6

Further details, including memory configurations, jumper settings, and a listing of sample projects can be found in the [Z8F64XX Sample Projects](#) section on page 10.

Figure 1 shows an image of the F64XX Series Development Kit.



Figure 1. The F64XX Series Development Kit

Kit Contents

Table 1 lists the contents of the F64XX Series Development Kit.

Table 1. Z8F64200100KITG Contents

Item	Description	Quantity
1	F64XX Series Development Board	1
2	USB SmartCable	1
3	6-circuit ribbon cable	1
4	A (male) to Mini-B USB cable	1
5	F64XX Series Development Kit Flyer (FL0174)	1

Kit Features

The key features of the F64XX Series Development Kit are:

- F64XX Series Development Board, which includes:
 - Z8F6423FT020SG MCU in an 80-pin QFP package operating at 20MHz
 - UART0 port J4
 - ADC Header J9
 - Test points and headers
 - Four LEDs (Power and Port Display)
 - Two pushbuttons (Reset and Test)
 - 20MHz Ceramic Resonator
 - SmartCable Debug Interface J3
- USB SmartCable
- ZDSII software, samples, and documentation available free for download

Supported Operating Systems

The F64XX Series Development Board supports the following operating systems:

- Microsoft Windows 7, 8, and 10 (32-bit/64-bit)
- Microsoft Windows XP Pro (SP3)

Download and Install the ZDSII Software and Documentation

Observe the following steps to install your ZDSII software and documentation.

► **Note:** If you have already installed ZDSII – Z8 Encore! <version> and have downloaded the software and documentation by following the procedure on the paper insert in your kit (FL0174), you're ready for [Appendix B. Installing the USB SmartCable Driver](#) on page 15.

1. Prior to connecting the Z8 Encore! XP F64XX Series Development Board to your development PC, download ZDSII for Z8 Encore! v5.2.2 (or later) from the [Zilog Free Software](#) category in the Zilog Store.
2. When your download is complete, unzip the file to your local drive, then double-click the installation file named ZDS2_Z8Encore!_<version>.exe, and follow the on-screen instructions.
3. When the ZDS II installation is complete, double-click the installation file named DOCS_Z8Encore!_<version>.exe and follow the on-screen instructions.

Download and Install the Sample Project and Documentation

1. Download the Z8F64200100KITG Sample Project and Documentation <Version> from the [Zilog Free Software](#) category in the Zilog Store.
2. When the download is complete, unzip the file to your hard drive, then double-click the installation file named Z8F64200100KITG<version>.exe and follow the onscreen instructions.
3. When the installation is complete, view the Z8Encore! XP F64XX Series Dev Kit User Manual (UM0283, a PDF file); this document will be located in the following path, by default:

```
C:\Program files (x86)\Zilog\ZDSII-Z8Encore!_5.2.2\Documentation\Tools_Documentation
```

Connect the F64XX Series Development Board to your PC

Observe the following procedure to connect the F64XX Series Development Board to your PC.



Caution: Disconnect or turn off the power to the F64XX Series Development Board before connecting or disconnecting the USB SmartCable.

1. Connect one end of the 6-circuit ribbon cable provided in your Kit to the USB SmartCable unit, ensuring that the ribbon's male connector is aligned correctly with the female connector on the unit, as indicated by the red stripe in Figure 2.



Figure 2. Connecting the 6-Circuit Ribbon Cable to the USB SmartCable

2. Connect the other end of the ribbon cable to Debug Connector J3 on the Development Board. Ensure that Pin 1 on the ribbon cable is aligned with Pin 1 on the target connector, as highlighted in Figure 3.

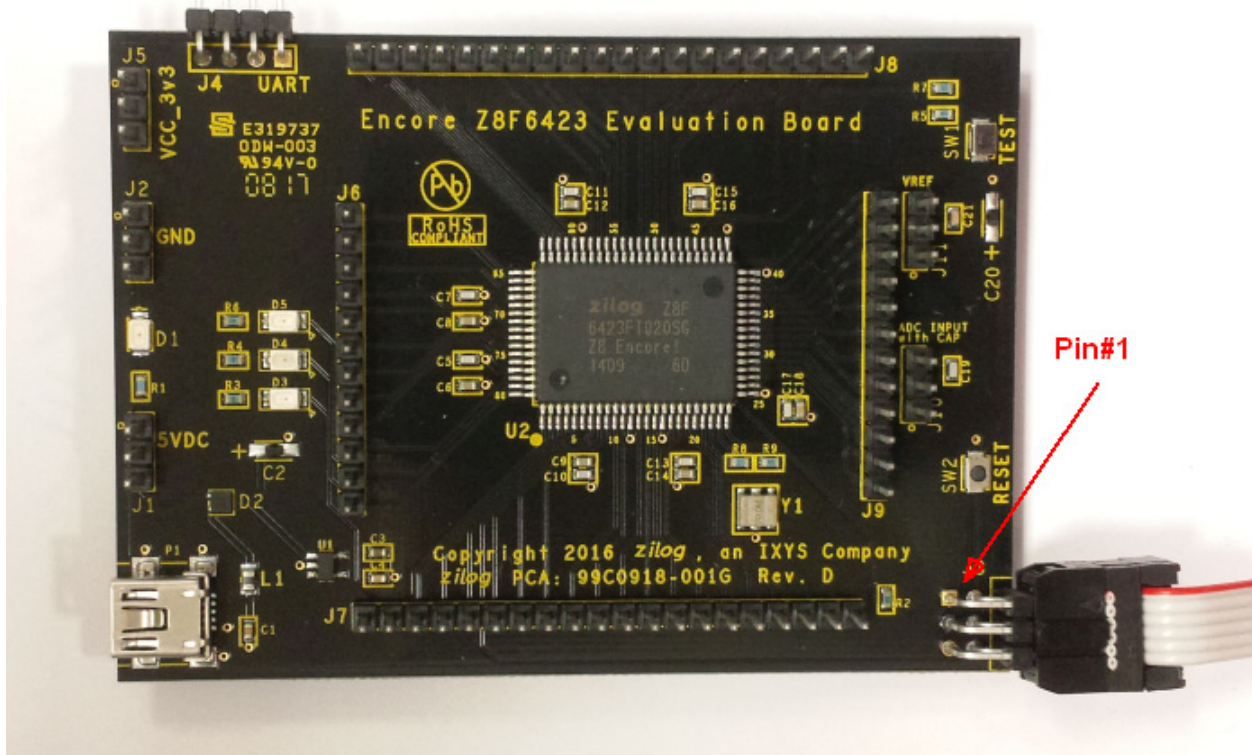


Figure 3. Debug Connector J3

3. With the USB A (male) to Mini-B cable, connect Port P1 on the F64XX Series Development Board to a USB port on the development PC to apply power to the Development Board.

Start the Z8F64XX Demonstration Program

The F64XX Series Development Kit includes a sample program that demonstrates a blinking LED application. An optional terminal emulation program and a 3rd Party USB to TTL Serial converter (not supplied) maybe used and must be configured for 57600-8-N-1 with no flow control, as described in the [HyperTerminal Configuration](#) section on page 8. To get started with the Z8F64XX demonstration, observe the following procedure.

1. Launch ZDSII by navigating from the Windows Start menu to **Programs** → **Zilog ZDSII – Z8 Encore! <version>** → **ZDSII – Z8 Encore! <version>**.

- From the File menu in ZDSII, select **Open Project** and navigate via the following filepath.

```
<ZDS Install>\samples\XP_F64XX\XP_F64XX_LedBlink\src
```

- Select the `ledblink.zdsproj` project from within the `src` folder and click **Open**.
- From the **Build** menu, select **Set Active Configuration** to open the Select Configuration dialog box.
- Select **Debug**, then click **OK** to close the Select Configuration dialog box.
- From the Project menu in ZDSII, select **Settings** to open the Project Settings dialog box. In the Project Settings dialog box, click the **Debugger** tab.
- On the Debugger page, select **Z8F64200100KITG** from the Target list, then select **USB SmartCable** from the Debug Tool drop-down menu, as shown in Figure 4.

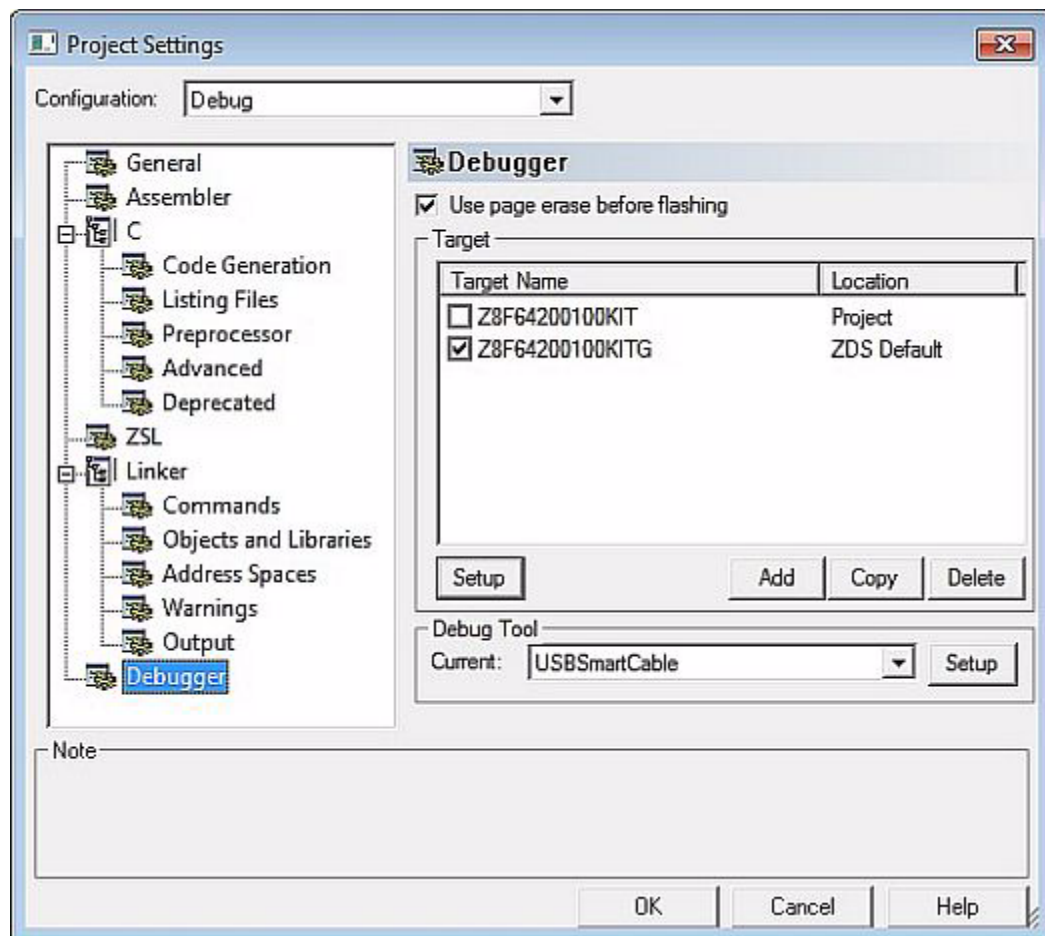


Figure 4. Select Z8F6420100ZCOG and USB SmartCable

8. Click **OK** to close the Project Settings dialog box.
9. If you are prompted to rebuild any affected files, click **Yes**. Otherwise, choose **Build** from the menu bar, then click **Rebuild All**.
10. To run the application, select **Go** from the Debug menu. As a result, LEDs D3, D4, and D5 will blink in sequence.
11. After the application has started, UART0 output should be visible in the terminal application program, as shown in Figure 5.

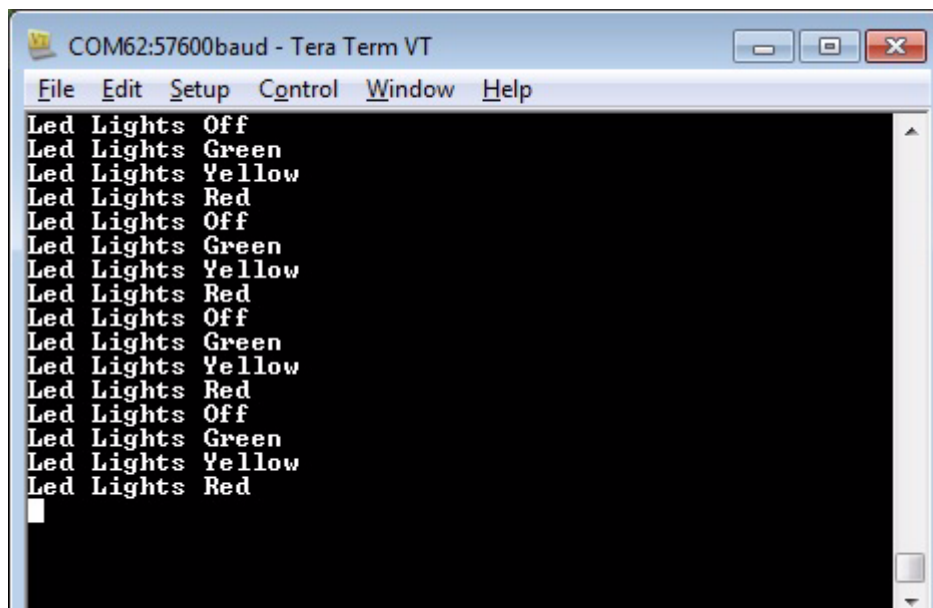


Figure 5. UART Output Using Terminal Application program

HyperTerminal Configuration

A communications program such as HyperTerminal or TeraTerm can be used on Windows systems to view messages from the F64XX Series Development Board. The following procedure examines how to configure HyperTerminal for the Z8F64XX demonstration project.

-
- **Note:** The HyperTerminal application is not available in Windows 7 systems. If you are using either of these operating systems, consider using/installing different communication software such as Tera Term; see [Appendix C. Tera Term Configuration](#) on page 17.
-

1. Connect a 3rd Party USB to TTL Serial converter to J20 on the Development Board using the following connections.

Table 2. USB to TTL Serial converter connection

Z8F64XX Board	USB to TTL Serial Converter
J4-1 VCC	3.3V
J4-2 RXD	TXD
J4-3 TXD	RXD
J4-4 GND	GND

2. Connect the other end to your PC.
3. In HyperTerminal, choose **File Properties** then, if your PC has a serial interface, select the COM port assigned to your serial port. If you do not have a serial port on your PC, use a USB-to-serial adapter (not included in the kit).
4. From the Windows Control Panel, navigate via the **Device Manager** to **Ports (COM & LPT)** to determine the correct COM port assigned to your adapter. Configure this port to reflect the following settings:
 - 57600 bps
 - 8 data bits
 - No parity
 - 1 stop bit
 - No flow control
5. In HyperTerminal, click the **Call** button to connect to the F64XX Series Development Board. When connected, you should be able to see the demonstration program menu shown in Figure 5.

ZDSII Flash Loader Utility

A Flash Loader utility can be accessed from the Tools menu in Zilog Developer Studio. With the Flash Loader, you can program the Z8F64XX MCU directly using the hex code generated from the ZDSII IDE; Figure 6 presents an example.

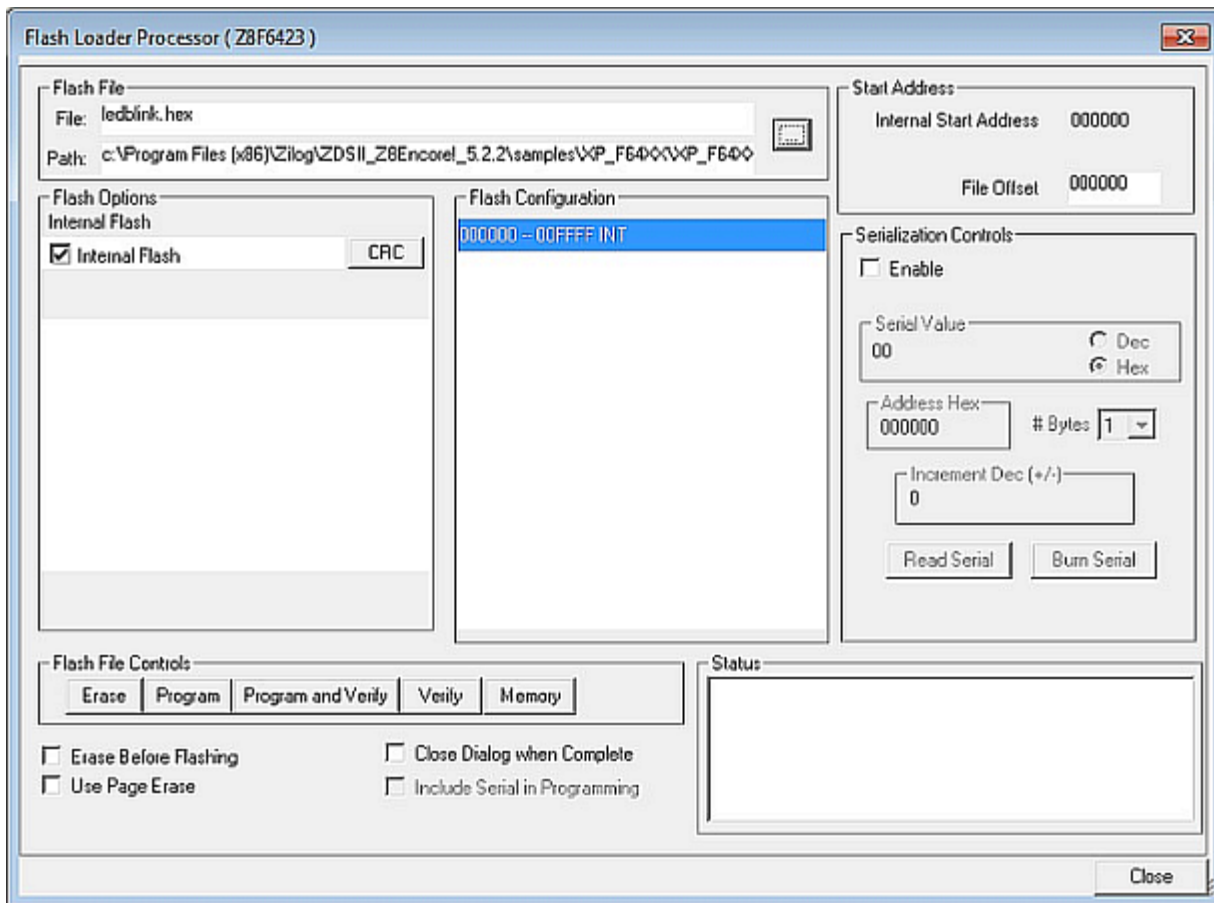


Figure 6. An Example Flash Loader Screen

Z8F64XX Sample Projects

A number of sample projects are included with the ZDSII – Z8 Encore! v5.2.2 software, which can be downloaded for free from the [Zilog Store](#). These sample projects will be accessible upon installation of ZDSII – Z8 Encore! v5.2.2; their locations are listed in Table 3.

Table 3. Z8F64XX MCU Sample Projects

Description	Installed Location
ledblink	\samples\XP_F64XX\XP_F64XX_LedBlink
	\samples\XP_F64XX\XP_F64XX_LedBlink_asm

F64XX Series Development Kit Documentation

The following documents are each associated to the F64XX Series of MCUs, and are available free for download from the Zilog website.

Table 4. F64XX Series Development Kit Documentation

Description	Document ID	Installed Location
F64XX Series Product Specification	PS0199	Documentation\Chip_Documentation
F64XX Series Product Brief	PB0124	Documentation\Chip_Documentation
eZ8 CPU User Manual	UM0128	Documentation\Chip_Documentation
Z8 Encore! XP F64XX Series API Programmer's Reference Manual	RM0064	Documentation\Technical_Articles
Z8 Encore! Design for Debug	TN0036	Documentation\Technical_Articles
F64XX Series Development Kit User Manual	UM0283	Documentation\Tools_Documentation
Ethernet SmartCable User Manual	UM0207	Documentation\Tools_Documentation
Opto-Isolated USB SmartCable User Manual	UM0195	Documentation\Tools_Documentation
USB SmartCable User Manual	UM0181	Documentation\Tools_Documentation

Appendix A. Schematic Diagrams

Figures 7 through 8 present schematic diagrams of the F64XX Series Development Board.

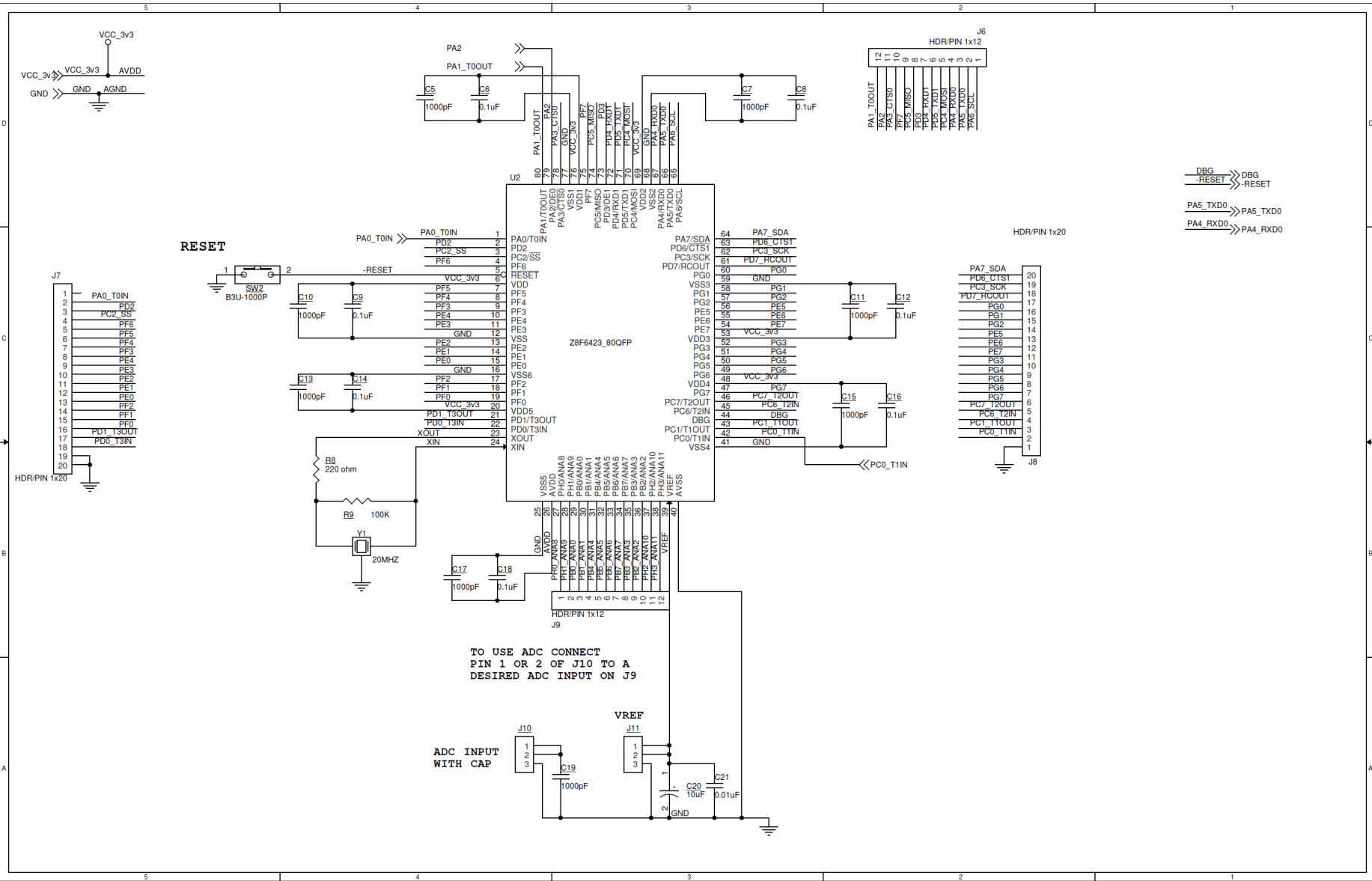


Figure 7. F64XX Series Development Board Schematic Diagram, #1 of 2

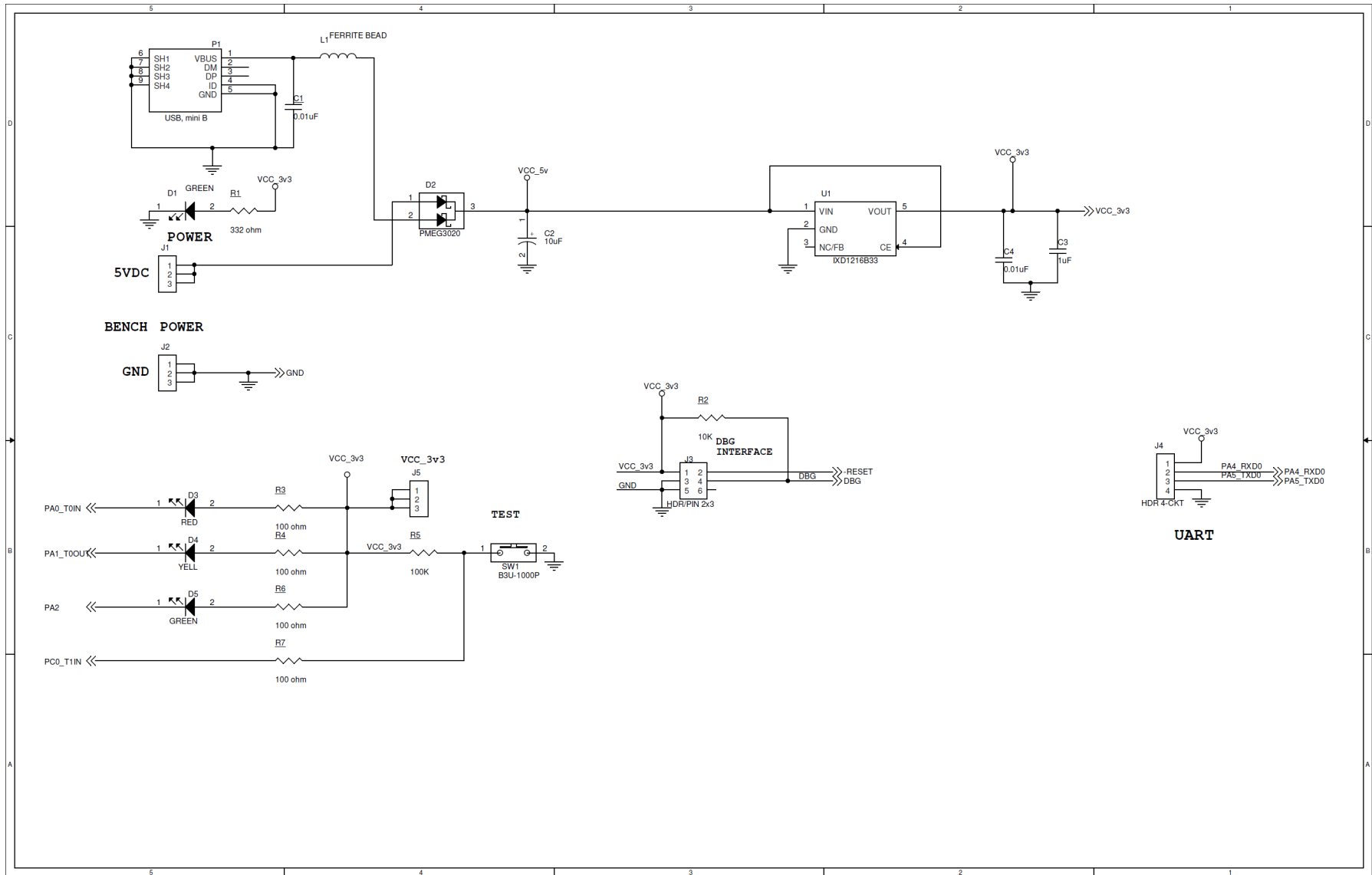


Figure 8. F64XX Series Development Board Schematic Diagram, #2 of 2

Appendix B. Installing the USB SmartCable Driver

The USB SmartCable can be installed on PCs that run on Windows 7, 8, 10 (32- and 64-bit), and Windows XP Pro operating systems. The procedures in this section will guide you through the USB SmartCable installation process.

Windows 7 32/64 Systems

Observe the following steps to install the USB SmartCable on a Windows 7 system.

1. Connect the USB SmartCable to a USB port on your development PC. When the PC detects the new hardware, it will display the Installing device driver software dialog.
2. Windows automatically searches for the driver; this process can take a few moments. Because there is no option to terminate this search process, wait for the search to complete. If the driver was previously installed, Windows will automatically install the USB SmartCable driver. If this is the case, skip ahead to [Step 9](#). If Windows cannot find the driver, close the search dialog and proceed to the next step.
3. In the **Search programs and files** field in the Windows Start menu, enter **Device Manager**. The Device Manager will appear in a list of search results.
4. From this list of results, click **Device Manager** to open the Device Manager dialog, which presents a list of devices that operate on your PC. Find and toggle **Other devices** to view a sublist of additional devices, and right-click your mouse on **USB SmartCable**.
5. In the submenu that appears, click **Update Driver Software...**
6. In the Update Driver Software – USB SmartCable dialog that appears, click the **Browse my computer for driver software** option.
7. Click the **Browse...** button to browse to one of the following driver directories, depending on the configuration of your PC.

On 32-bit Windows 7 systems, navigate to:

```
<ZDSII Installation Directory>\device drivers\USB\x32
```

On 64-bit Windows 7 systems, navigate to:

```
<ZDSII Installation Directory>\device drivers\USB\x64
```

8. Click **Next** to install the driver. On 32-bit Windows systems, a security dialog will appear; select **Install this driver software anyway**.
9. After the Wizard finishes the installation, click **Close**.

Windows XP Pro (SP3) Systems

Observe the following steps to install the USB SmartCable on a Windows XP system.

1. Connect the USB SmartCable to a USB port on the development PC. When the PC detects the new hardware, it will display the Found New Hardware Wizard dialog.
2. In the Wizard, select **Install from a list or specific location (Advanced)**, then click **Next**.

► **Note:** If the Windows Hardware Installation dialog appears, click **Continue Anyway**.

3. In the **Please choose your search and installations** dialog, select **Search for the best driver in these locations and include this location in search**.
4. Use the **Browse...** button to navigate to one of the following paths:
`<ZDSII Installation>\device drivers\USB\x32`
5. Click **Next** to locate the appropriate driver.
6. Click **Next** a second time, then click **Finish** to complete the installation.

Appendix C. Tera Term Configuration

If you are using Tera Term as your console program, observe the following procedure to properly configure it.

1. Please refer to section [HyperTerminal Configuration](#) on page 8 on how to connect a USB to TTL serial converter between the development board and your host PC.
2. In Tera Term, and if your PC has a serial interface, navigate via the **Setup** menu to **Serial port...** to select the COM port assigned to your serial port. If you do not have a serial port on your PC, use a USB-to-serial adapter (not included in the kit).
3. Use the Ports (COM & LPT) listing in the Device Manager to determine the correct COM port assigned to your adapter. Configure this port to reflect the following settings:
 - 57600 bps
 - 8 data bits
 - No parity
 - 1 stop bit
 - No flow control
4. Click the **OK** button to connect to the F64XX Development Board. Upon connection, you should be able to see the demonstration program menu shown in [Figure 5](#) on page 8.

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 <http://support.zilog.com>.

To learn more about this product, find additional documentation, or to discover other facts about Zilog product offerings, please visit the [Zilog Knowledge Base](#) or consider participating in the [Zilog Forum](#).

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