

Objective

This example demonstrates the serial communication block (SCB) based UART transmit and receive operation in PSoC® 6 MCU using high level APIs found in peripheral driver library (PDL).

Overview

This example uses UART high level APIs found in PDL and echoes what is received on the UART serial terminal.

Requirements

Tool: PSoC Creator™ 4.2

Programming Language: C (ARM® GCC 5.4-2016-q2-update, ARM MDK 5.22)

Associated Parts: All PSoC 6 MCU parts

Related Hardware: CY8CKIT-062-BLE PSoC 6 BLE Pioneer Kit

Design

The design shown in [Figure 1](#) consists of a UART (SCB_UART_PDL) Component configured for TX+RX mode at 115200 bps baud rate, 8N1. This example waits for 10 characters from the serial terminal and then echoes back all of them to the serial terminal. The "number of characters to be received from the terminal before echoing" is programmable using the CHARACTER_BUNCH_SIZE parameter in *main_cm4.c*.

The UART APIs are divided into two categories: **High-Level** and **Low-Level**. Refer PDL documentation to know more about **High-Level** and **Low-Level** functions. To open PDL documentation, right click on the UART Component in PSoC Creator schematics window and click **Open PDL Documentation**.

Figure 1. The UART using High Level APIs Example Schematic

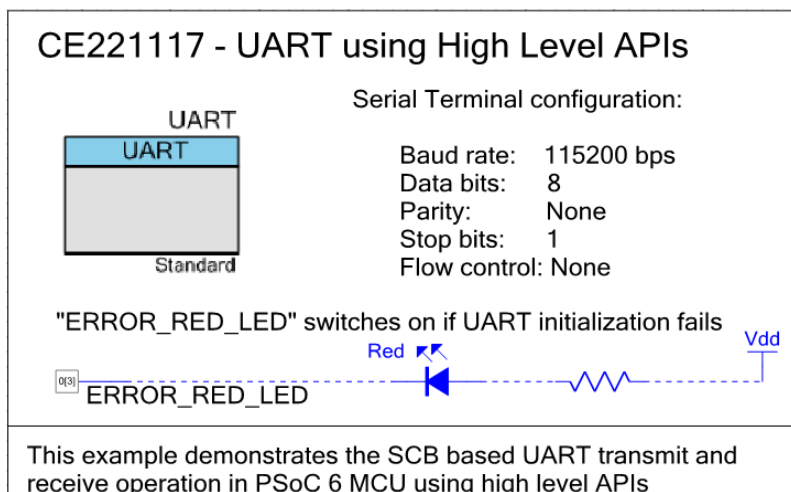
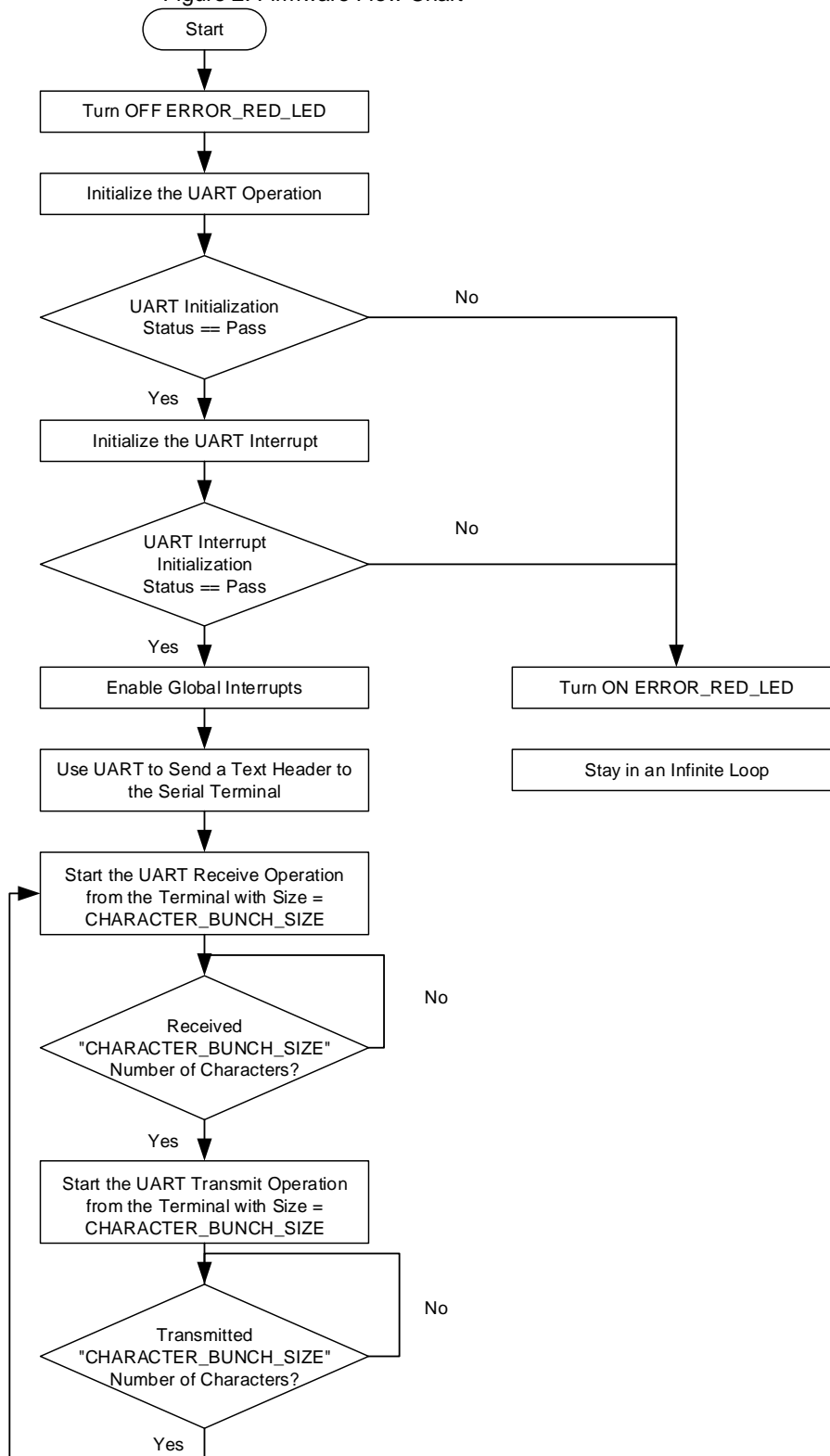


Figure 2 shows the firmware flow chart.

Figure 2. Firmware Flow Chart



Design Considerations

This code example is designed to run on CY8CKIT-062-BLE with PSoC 6 MCU. To port the design to other PSoC 6 MCU family devices and kits, you must change the target device in Device Selector, and change the pin assignments in the *cydwr* settings. For single-core PSoC 6 MCUs, port the code from *main_cm4.c* to *main.c* file as CM0+ CPU is not used in this code example.

Hardware Setup

The code example works with the default settings on the CY8CKIT-062-BLE PSoC 6 BLE Pioneer Kit. If the settings are different from the default values, see the “Selection Switches” table in the [kit guide](#) to reset to the default settings.

Operation

1. Connect the CY8CKIT-062-BLE kit to a USB port on your PC.
2. Open a serial port communication program such as Tera Term and select the corresponding COM port. Configure the terminal to match the UART: 115200 baud rate, 8N1 and Flow control – None. These settings must match the configuration of the PSoC Creator UART Component in the project.
3. Build and program the application into the CY8CKIT-062-BLE kit. For more information on building a project or programming a device, see *PSoC Creator Help*.
4. Observe the UART example header message printed in the terminal window.
5. Type any 10 characters in the terminal window, and make sure that the same characters are displayed in the terminal.
6. Repeat step 5 multiple times.

Components

[Table 1](#) lists the PSoC Creator Components used and the hardware resources used by each Component.

Table 1. PSoC Creator Components

Component	Instance Name	Hardware Resources
UART (SCB_UART_PDL)	UART	Single SCB peripheral block
General Purpose Input / Output (GPIO)	ERROR_RED_LED	One physical pin

Design-Wide Resources

[Table 2](#) shows the pin assignment for the code example.

Table 2. Pin Names and Location

Pin Name	Location
UART:rx	P5[0]
UART:tx	P5[1]
ERROR_RED_LED	P0[3]

Related Documents

Table 3. Related Documents

Application Notes	
AN210781 Getting Started with PSoC 6 MCU with Bluetooth Low Energy (BLE) Connectivity	Describes PSoC 63 with Bluetooth Low Energy (BLE) Connectivity and how to build your first PSoC Creator project
PSoC Creator Component Datasheets	
UART	Supports UART communication
General-Purpose Input / Output	Supports Analog, Digital I/O and Bidirectional signal types
Device Documentation	
PSoC 6 MCU: PSoC 63 with BLE Datasheet	PSoC 6 MCU: PSoC 63 with BLE Architecture Technical Reference Manual
Development Kit (DVK) Documentation	
CY8CKIT-062-BLE PSoC 6 BLE Pioneer Kit	

Document History

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**	5894782	VJYA	11/03/2017	New code example

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