Gowin_EMPU_M1

Serial Debugging Reference Guide

IPUG535-1.2E,08/18/2019

Disclaimer

Revision History

Date	Version	Description
02/19/2019	1.0E	Initial version published.
07/18/2019	1.1E	MCU hardware design and software programming design support extended peripherals: CAN, Ethernet, SPI-Flash, RTC, DualTimer, TRNG, I2C, SPI, SD-Card.
08/18/2019	1.2E	● MCU hardware design and software programming design support extended peripheral: DDR3 Memory; ● Known issues of ITCM, DTCM Size and IDE fixed.

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1 Overview

Gowin_EMPU_M1 supports serial port debugging. The master computer communicates with the slave computer by serial ports. Serial debugging assistant software is used to trace the debugging information on the PC side.

2 Hardware Resource

- Development board: DK-START-GW2A18 V2.0
  - GW2A-LV18PG256C8/I7
- USB to serial port interface board
- PC Computer

3 Software Resource

- GOWIN FPGA Designer version 1.9.x Beta
- ARM Keil MDK or GOWIN MCU Designer
- Serial Debugging Assistant Software

4 Reference Design

- Gowin_EMPU_M1\ref_design\MCU_RefDesign\Keil_RefDesign\uart
- Gowin_EMPU_M1\ref_design\MCU_RefDesign\GNU_RefDesign\cm1_uart

5 Debugging Flow

5.1 Gowin_EMPU_M1 Hardware Design

5.1.1 Hardware Design

1. Select Gowin_EMPU_M1 in Gowin IP Core Generator.
2. Configure Cortex-M1 and APB Bus Peripherals, select UART0 or UART1, and generate Gowin_EMPU_M1 hardware design with UART function.
3. Instantiate Gowin_EMPU_M1, import user designs, and connect ports between user design and Gowin_EMPU_M1,
4. Or use Gowin_EMPU_M1 reference design: Gowin_EMPU_M1\ref_design\FPGA_RefDesign\Debug_RefDesign or NoDebug_RefDesign

5.1.2 Physical Constraints

Constrain the UART0 and UART1 port in Gowin_EMPU_M1 to FPGA IO.

5.2 Gowin_EMPU_M1 Software Programming

Please refer to Gowin_EMPU_M1\ref_design\MCU_RefDesign\Keil_RefDesign\uart or GNU_RefDesign\cm1_uart

5.3 Board Level Connection

Connect DK-START-GW2A18 V2.0 to USB to serial port board using jumper. The UART0 and UART1 port connection in the reference design is as shown in Table 5-1.

Table 5-1 UART0/1 Port Constraint

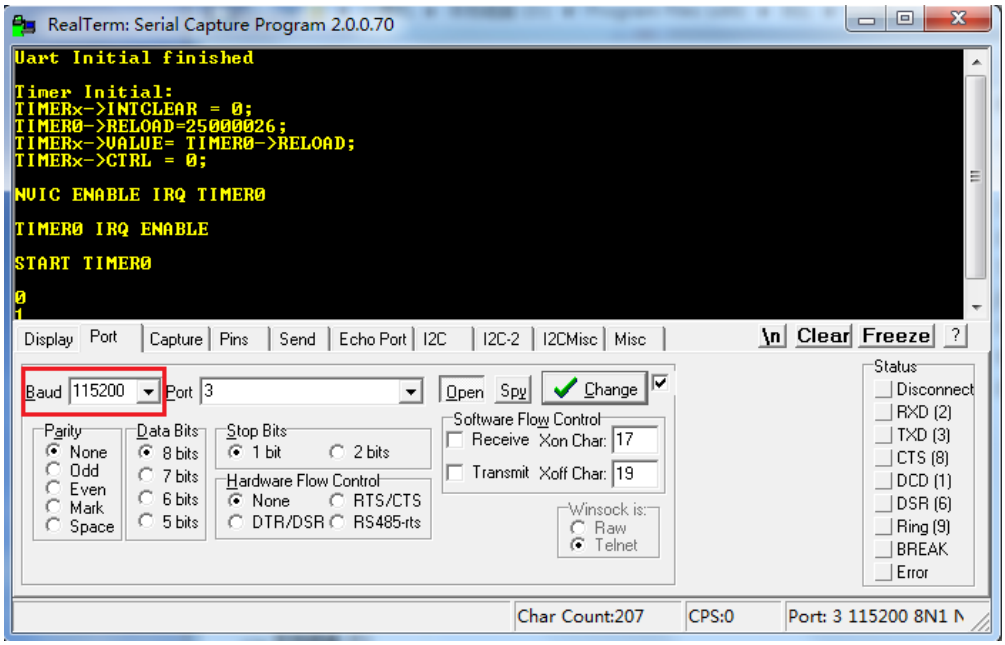
UART	Ports	IO
UART0	RXD	M14
	TXD	K12
UART1	RXD	J13
	TXD	H13

5.4 Serial Debugging Assistant

Open the serial debugging assistant software, as shown in Figure 5-1.

1. Refer to the PC device manager to select a proper communication port.
2. Refer to the baud rate set in the software programming design to configure the serial port communication baud rate.
3. Open the serial port.
4. Send and receive the debugging information.

Figure 5-1 Serial Debugging Assistant Software

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