Combine Color Data by PDMA Stride Mode

Example Code Introduction for 32-bit NuMicro® Family

Information

Application	Combine red, green and blue data into a RGB color array by PDMA stride mode
BSP Version	M480 Series BSP CMSIS V3.04.000
Hardware	NuMaker-ETM-M487 v1.2

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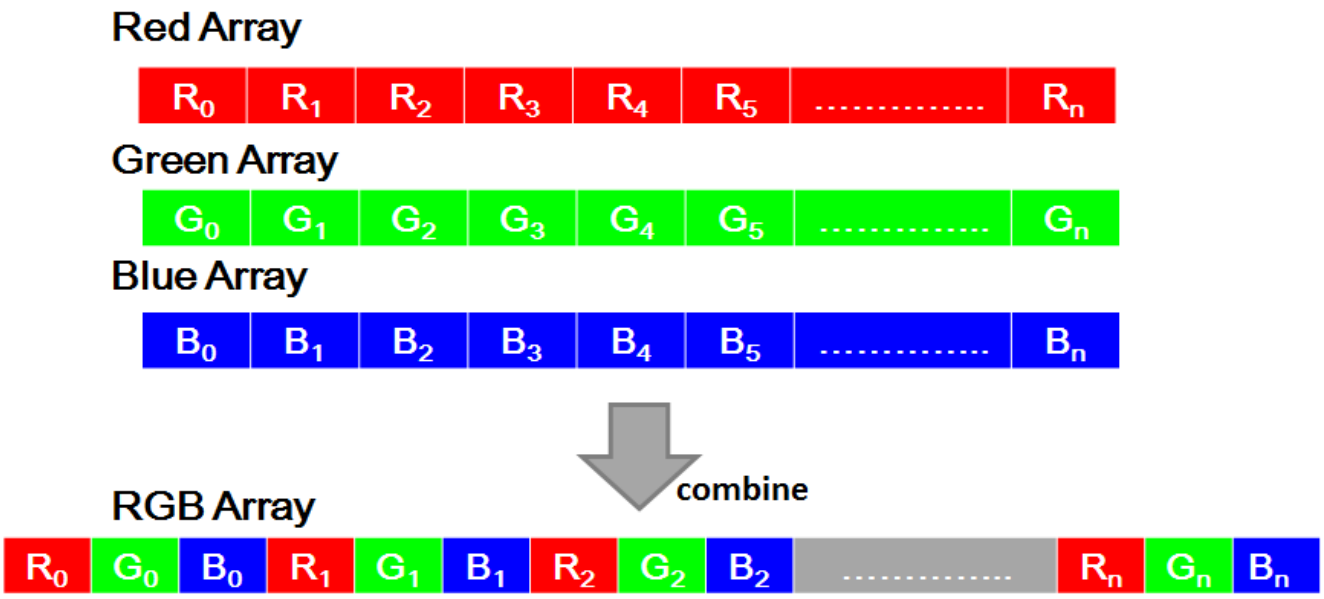
1 Function Description

1.1 Introduction

This example code shows how to combine red, green and blue data into a RGB color array by PDMA stride mode of M480 series.



1.2 Demo Result

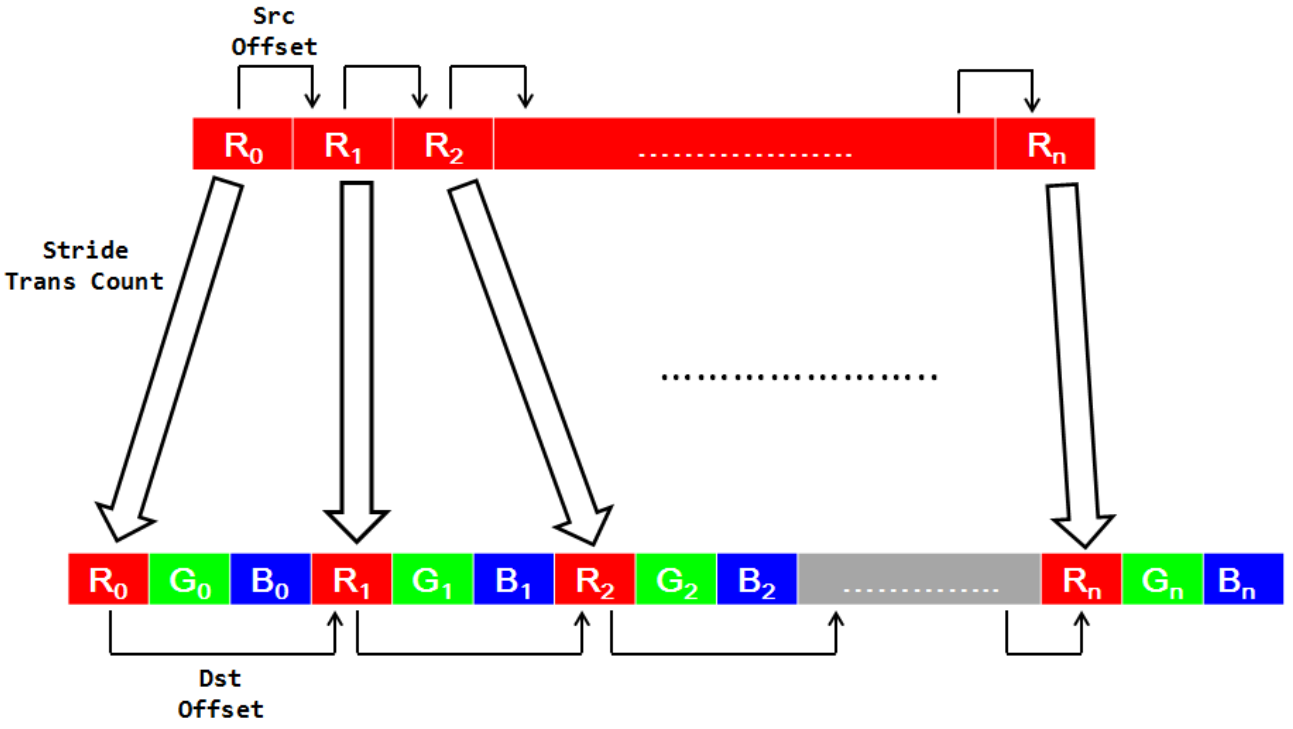
```
Red Data -
0x01 0x02 0x03 0x04
Green Data -
0x11 0x12 0x13 0x14
Blue Data -
0x21 0x22 0x23 0x24
RGB Array -
0x01 0x11 0x21 0x02 0x12 0x22 0x03 0x13 0x23 0x04 0x14 0x24
```

2 Code Description

1. Set the data size and transfer count
2. Set the source address and destination address.
3. Set the transfer mode
4. Set the burst type
5. Set the source offset, destination offset and stride transfer count for PDMA stride mode.
6. Trigger the PDMA channel.

```
    /* Combine red color into RGB array */
    PDMA_SetTransferCnt(PDMA, USE_PDMA_CHANNEL, PDMA_WIDTH_8, COLOR_ARRAY_SIZE);
    PDMA_SetTransferAddr(PDMA, USE_PDMA_CHANNEL, (uint32_t)red, \
        PDMA_SAR_INC, (uint32_t)&rgb[0], PDMA_DAR_INC);
    PDMA_SetTransferMode(PDMA, USE_PDMA_CHANNEL, PDMA_MEM, FALSE, 0);
    PDMA_SetBurstType(PDMA, USE_PDMA_CHANNEL, PDMA_REQ_BURST, PDMA_BURST_1);
    PDMA_SetStride(PDMA, USE_PDMA_CHANNEL, 1, 3, 1);
    PDMA_Trigger(PDMA, USE_PDMA_CHANNEL);
```

The PDMA will get the data which size is equal stride transfer count from the source address then put them into the destination address at the first transfer. After that the source address and destination address will increase by the source offset and destination offset at the following transfer every times before data transfer.



3 Hardware and Software environment

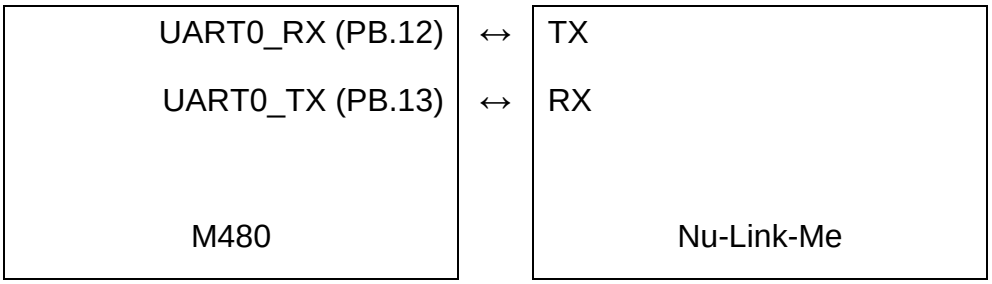
Software Environment

- BSP version
  - M480 Series BSP CMSIS V3.04.000
- IDE version
  - Keil uVersion 5.26

Hardware Environment

- Circuit components
  - M480 Development Board
- Diagram

M480's UART0_RX (PB.12) and UART0_TX (PB.13) are connected to Nu-Link Me to print the message. Set COM port and Baud. The number of the COM Port can be found in the device manager "NuBridge Virtual Com Port (COMX)" and Baud is set to 115200.



4 Directory Information

- EC_M480_PDMA_Stride_RGB_Combine_V1.00
  - Library — Sample code header and source files
    - CMSIS — Cortex® Microcontroller Software Interface Standard (CMSIS) by Arm® Corp.
    - Device — CMSIS compliant device header file
    - StdDriver — All peripheral driver header and source files
  - SamlpeCode
    - ExampleCode — Source file of example code

5 How to execute a sample code

1. Browsing into sample code folder by Directory Information (section 4) and double click PDMA_Stride_RGB_Combine.uvproj.
2. Enter Keil compile mode
   a. Build
   b. Download
   c. Start/Stop debug session
3. Enter debug mode
   a. Run

6 Revision History

Date	Revision	Description
May. 07, 2019	1.00	1. Initially issued.

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