Application Note

UART_HalfClockReceive

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1. Preface

This application note describes sample software for the UART half clock mode reception control function.
This document helps the user check operation of a product under development and develop its program.

2. Technical Term

Term/Abbreviation	Definition
UART	Universal Asynchronous Receiver Transmitter
BSP	Board Support Package
Timer	T32A：32-bit Timer Event Counter
CG	Clock control and Operation Mode

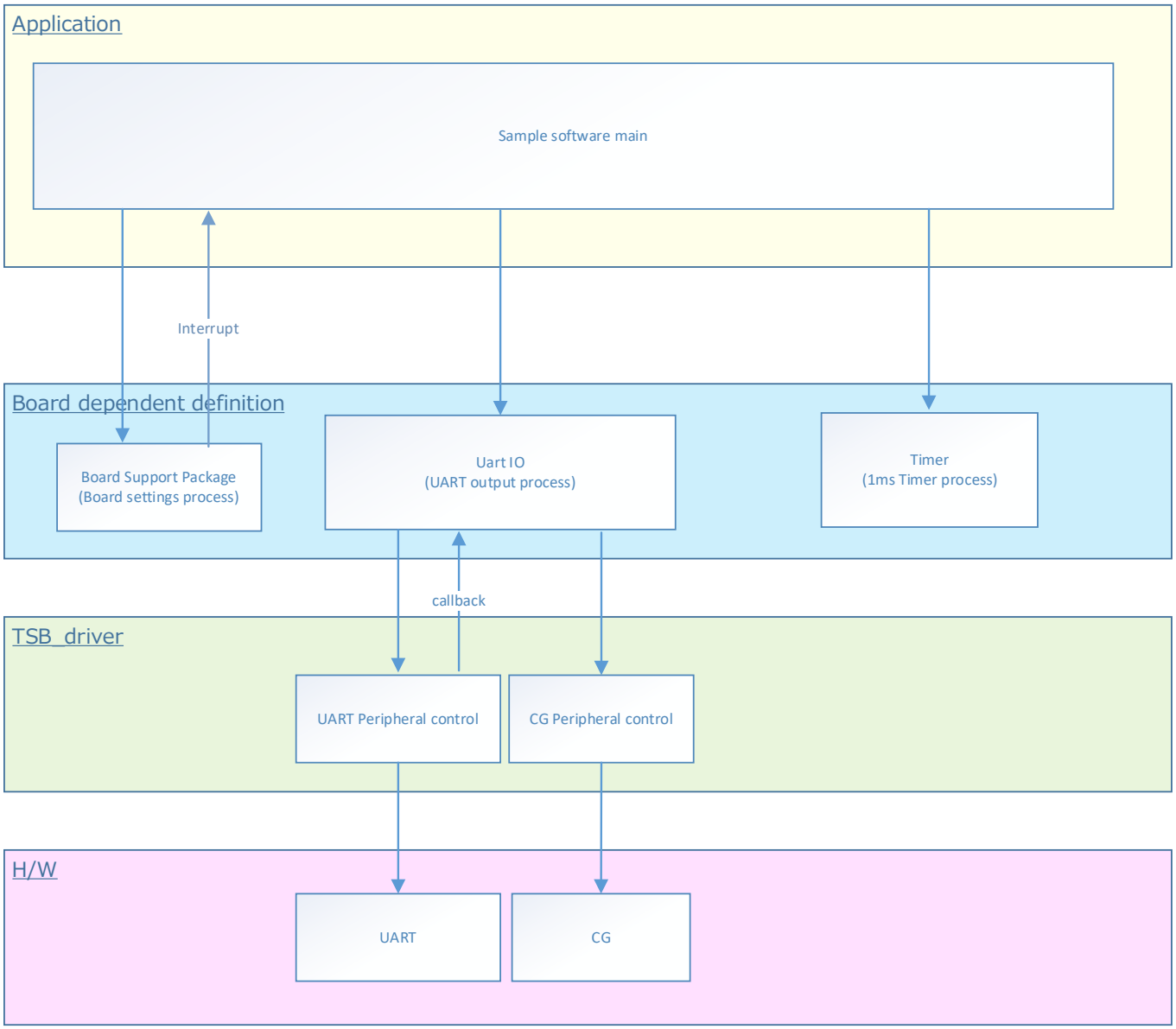
3. Reference Document

Document	Notes
Data sheet	Refer to the data sheet of MCU to be used.
Reference manual	Refer to the reference manual of each IP to be used.
Application note MCU User Guide	Refer to the MCU user guide to be used.

4. Target Sample Program

Sample Program	Outline
UART_HalfClockReceive	Sample program of UART_HalfClockReceive function

5. Configuration Diagram



6. Sample Program：UART_HalfClockReceive

This is sample software that sends the data received in half clock mode to the terminal emulator.

6.1. Outlines of Operation

Receives the data input to the terminal emulator in UART half clock mode.

6.2. Function to Use

The functions to use are as follows.
For the Port assignment of each channel, refer to the MCU user guide.

IP	Channel	Objective
UART	BSP_UART _1	For terminal emulator communication. Used for operation log output and command input
	BSP_UART _2	For applications. Half Clock control

6.3. Interrupt to Use

Interrupt	Outlines
INTT32A00A	T32A ch0 Timer_A Timer counter increment every 1ms
INTUART0TX	UART ch0 Receive interrupt for terminal emulator
INTUART0RX	UART ch0 Transmission interrupt for terminal emulator
INTUART0ERR	UART ch0 Error interrupt for terminal emulator
INTUART3RX	UART ch3 Receive interrupt. For board A / B communication
INTUART3TX	UART ch3 Transmission interrupt. For board A / B communication
INTUART3ERR	UART ch3 Error interrupt. For board A / B communication

6.4. Configuration

“main.c” configuration setting.

Configuration	Current Value	Description
MAX_DATA	32	32 characters

6.5. Example of Terminal Emulator Output

6.5.1. Normal Operation

```
Input = 12345
  Echo = 12345
```

6.5.2. Case of Error Occurrence

```
Input = 12345678901234567890123456789012345
  Input Error !!
```

7. UART Driver

The UART is controlled by using the following interface.
For an example of use, refer to the source code.

Driver	Control Outlines
uart_init	UART Object initialization
uart_deinit	UART Release the object
uart_discard_transmit	Discard transmission
uart_discard_receive	Discard reception
uart_transmitIt	Send data. Non-blocking communication
uart_receiveIt	Receive data. Non-blocking communication
uart_transmit_irq_handler	IRQ handler for transfer
uart_receive_irq_handler	IRQ handler for receiving
uart_error_irq_handler	IRQ handler for errors
uart_get_status	Get status
uart_get_error	Get error
uart_get_boudrate_setting	Get boudrate settings
uart_dma_init	UART DMA Object initialization
uart_dma_deinit	UART DMA Release the object
uart_dma_discard_transmit	Discard transmission
uart_dma_discard_receive	Discard reception
uart_dma_transmitIt	Send data. Non-blocking communication
uart_dma_receiveIt	Receive data. Non-blocking communication
uart_send_break	Send a break
uart_stop_break	Stop break
uart_enable_half_clock	Half clock mode enabled
uart_disable_half_clock	Half clock mode disabled
uart_enable_loopback	Enable loopback
uart_disable_loopback	Disable loopback
uart_enable_wakeup	Enable wake-up
uart_disable_wakeup	Disable wake-up

8. Revision History

Revision	Date	Description
1.0	2023-06-28	First release

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