Application Note

EI2C_CONTROLLER_RECEIVE

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1. Preface

This application note describes sample software EI2C_CONTROLLER_RECEIVE using I2C interface(EI2C).
This document helps the user check operation of a product under development and develop its program.

2. Technical Term

Term/Abbreviation	Definition
BSP	Board Support Package
CG	Clock Control and Operation Mode
I2C	Inter-Integrated Circuit
Timer	T32A:32-bit Timer Event Counter

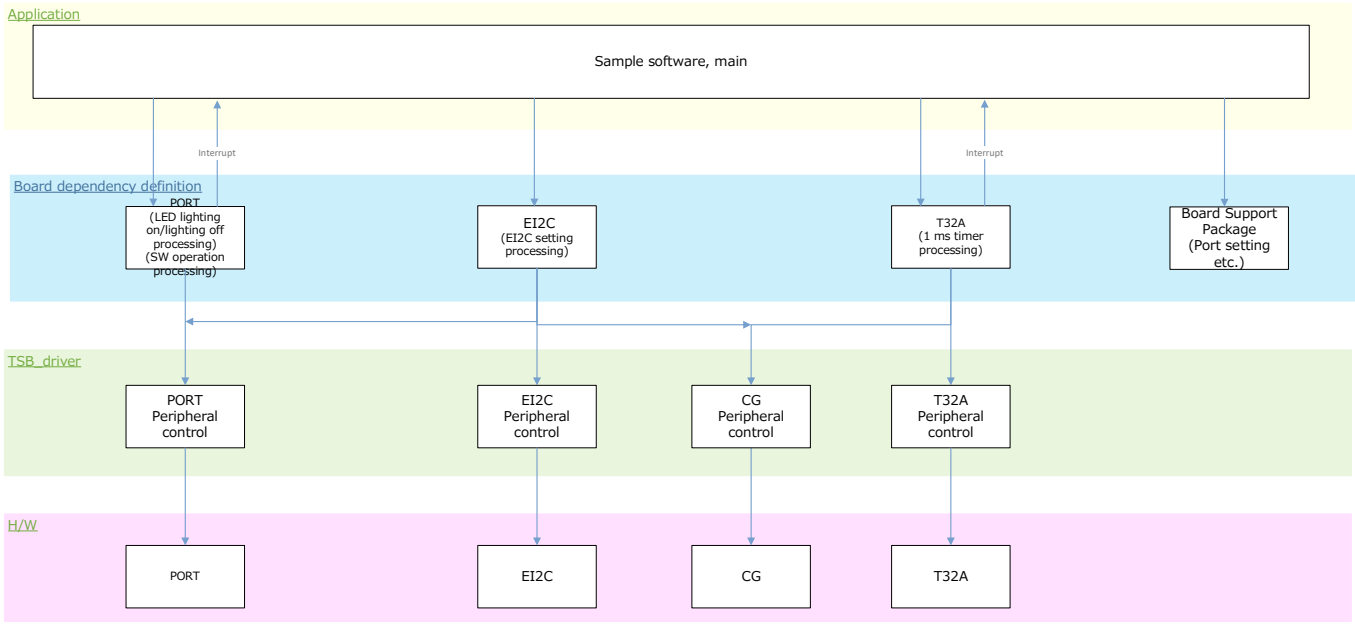
3. Reference Document

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
EI2C_CONTROLLER_RECEIVE	Sample program of EI2C function (Controller Receive)

5. Configuration Diagram



6. Sample Program: EI2C_CONTROLLER_RECEIVE

This sample software that switches the LED on and off each time data reception is completed using the Controller reception processing function of the EI2C communication function.

6.1. Outlines of Operation

When BSP_PSW_1 is pressed, BSP_LED_3 is turned off and data for the data reception size is received.
After receiving, the lighting state (turn on / turn off) of BSP_LED_1 is switched.
When an error occurs, BSP_LED_3 is turn on.

6.2. Function to Use

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

IP	Channel	Objective
EI2C	BSP_EI2C_1	EI2C communication
T32A	BSP_T32A_TIMER_1	Interval timer
PORT (Push-Switch)	BSP_PSW_1	Event trigger
PORT (LED)	BSP_LED_1	For operation check
	BSP_LED_3	For operation check

6.3. Interrupt to Use

Interrupt	Outlines
(Note1)	T32A Timer A Timer counter increment every 1ms

Note1: For SBK-M471 and AdBun-M3HQA, "INTT32A00AC".

6.4. Configuration

Configuration setting.

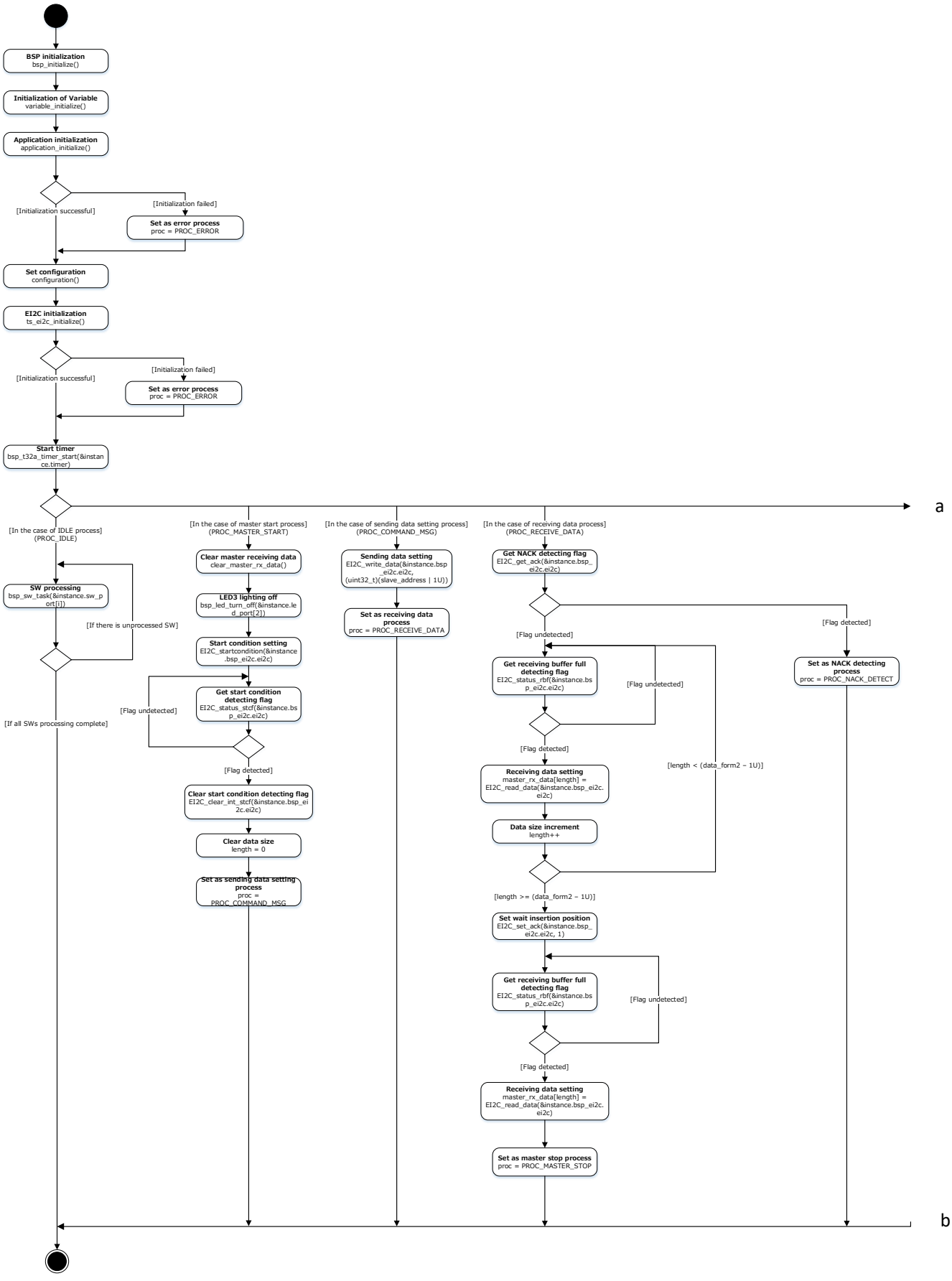
Configuration	Soft Definition Name	Current Value (Defaults)	Description
EI2C clock	CFG_EI2C_FREQUENCY	800000	Master operating frequency (Unit: Hz)
Data reception size	BSP_MASTER_DATA_LENGTH	16	Data received size (Unit: byte)

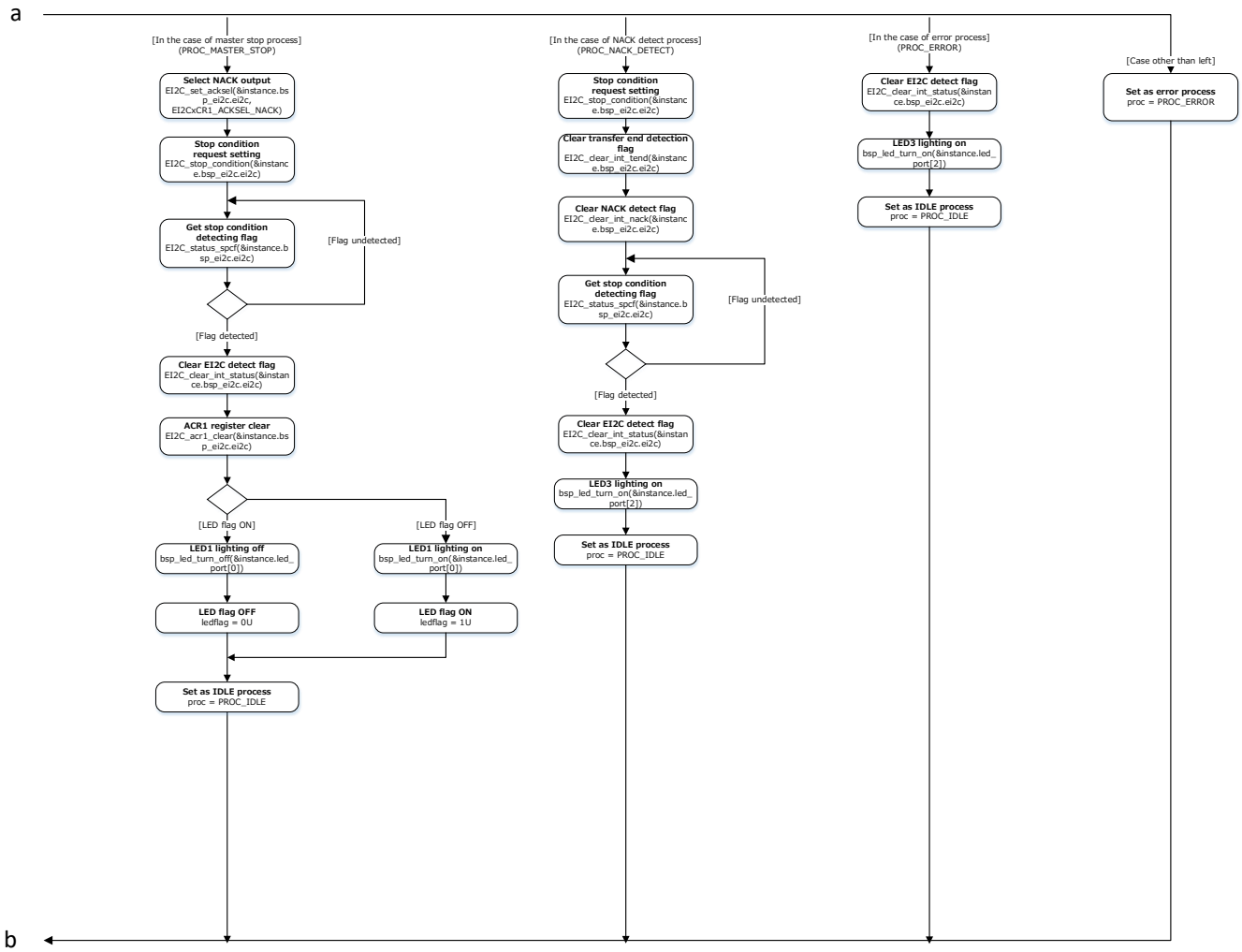
6.5. Example of Terminal Emulator Output

Nothing.

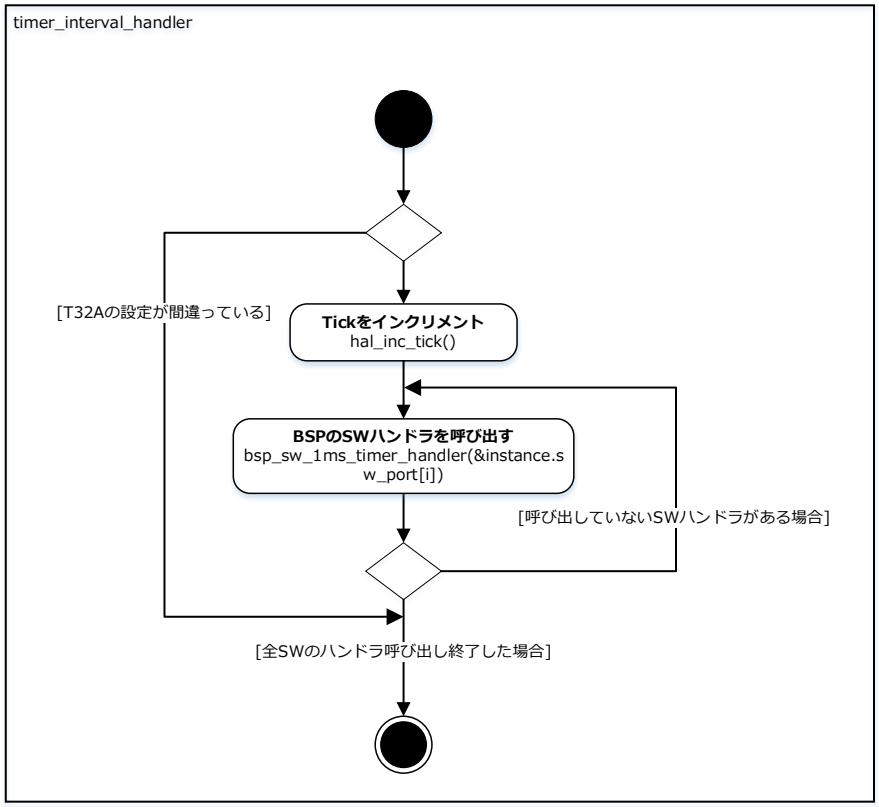
7. Activity diagram

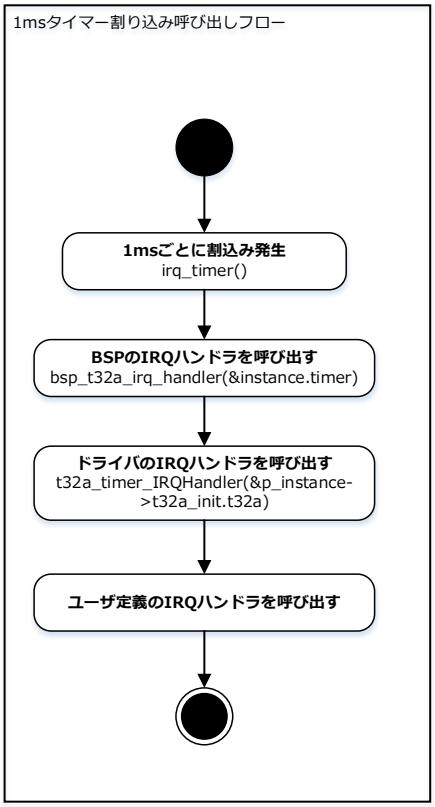
7.1. main




a
[In the case of master stop process]
(PROC_MASTER_STOP)
Select NACK output
EI2C_set_acksel(&instance.bsp_ei2c.ei2c, EI2CxCR1_ACKSEL_NACK)
Stop condition request setting
EI2C_stop_condition(&instance.bsp_ei2c.ei2c)
Get stop condition detecting flag
EI2C_status_spcf(&instance.bsp_ei2c.ei2c)
[Flag undetected]
[Flag detected]
Clear EI2C detect flag
EI2C_clear_int_status(&instance.bsp_ei2c.ei2c)
ACR1 register clear
EI2C_acr1_clear(&instance.bsp_ei2c.ei2c)
[LED flag ON]
[LED flag OFF]
LED1 lighting off
bsp_led_turn_off(&instance.led_port[0])
LED1 lighting on
bsp_led_turn_on(&instance.led_port[0])
LED flag OFF
ledflag = 0U
LED flag ON
ledflag = 1U
Set as IDLE process
proc = PROC_IDLE
[In the case of NACK detect process]
(PROC_NACK_DETECT)
Stop condition request setting
EI2C_stop_condition(&instance.bsp_ei2c.ei2c)
Clear transfer end detection flag
EI2C_clear_int_tend(&instance.bsp_ei2c.ei2c)
Clear NACK detect flag
EI2C_clear_int_nack(&instance.bsp_ei2c.ei2c)
Get stop condition detecting flag
EI2C_status_spcf(&instance.bsp_ei2c.ei2c)
[Flag undetected]
[Flag detected]
Clear EI2C detect flag
EI2C_clear_int_status(&instance.bsp_ei2c.ei2c)
LED3 lighting on
bsp_led_turn_on(&instance.led_port[2])
Set as IDLE process
proc = PROC_IDLE
[In the case of error process]
(PROC_ERROR)
Clear EI2C detect flag
EI2C_clear_int_status(&instance.bsp_ei2c.ei2c)
LED3 lighting on
bsp_led_turn_on(&instance.led_port[2])
Set as IDLE process
proc = PROC_IDLE
[Case other than left]
Set as error process
proc = PROC_ERROR
b

7.2. Interrupt





8. Revision History

Revision	Date	Description
1.0	2025-01-20	First release
1.1	2025-10-30	6.3Interrupt to Use Added M3H Interrupt Name.

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