

Application Note

CG_EXINT

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1. Preface

This application note describes sample software CG_EXINT that uses the Clock Control and Operation Mode (CG).

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
EXCEPT	Except
FLASH	Flash Memory
SIWDT	Clock Selective Watchdog Timer
Timer	T32A:32-bit Timer Event Counter

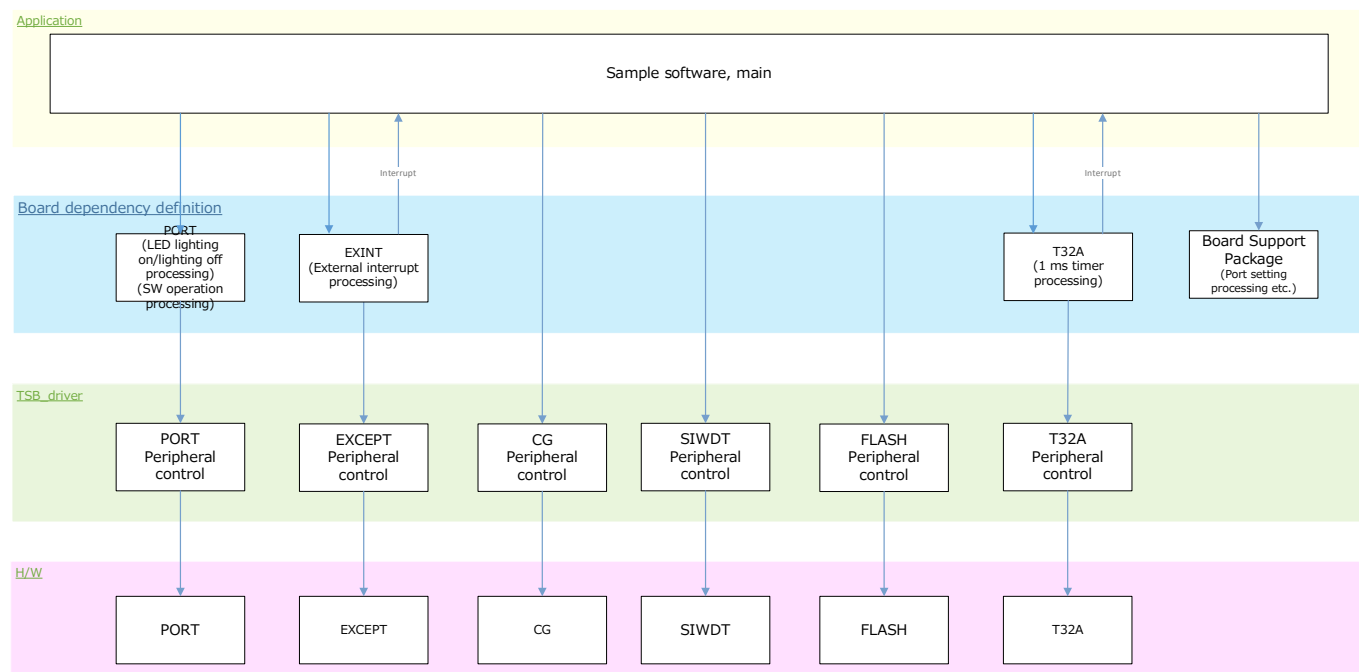
3. Reference Document

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
CG_EXINT	Sample program of clock control and operation mode switching

5. Configuration Diagram



6. Sample Program:CG_EXINT

This is the sample software that uses CG operation mode transition function to shift to the low-power consumption mode and return to NORMAL mode according to the pressed switches.
Visualizes the operation mode by LED.

6.1. Outlines of Operation

Switches (NORMAL/IDLE/STOP1/STOP2) when pressed.

When BSP_PSW_1 is pressed, IDLE mode is entered.

However, it is invalid when pressed during low power consumption mode.

When BSP_PSW_2 is pressed, STOP1 mode is entered.

However, it is invalid when pressed during low power consumption mode.

When BSP_PSW_3 is pressed, STOP2 mode is entered.

However, it is invalid when pressed during low power consumption mode.

When BSP_PSW_5 is pressed, NORMAL mode is entered.

However, if it is pressed during NORMAL, it is disabled.

LED is turned on and off according to the selected mode.

NORMAL mode : BSP_LED_1 blink at a constant Duty for a fixed period. All other LED are turned off.

IDLE mode : BSP_LED_2 is turned on. All other LED are turned off.

STOP1 mode : BSP_LED_3 is turned on. All other LED are turned off.

STOP2 mode : BSP_LED_4 is turned on. All other LED are turned off.

MCUs that do not support STOP2 mode do not enter STOP2 mode.

For information on whether STOP2 mode is supported, please refer to the datasheet or reference manual for your MCU.

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
PORT (Push Switch)	BSP_PSW_1	Event trigger
	BSP_PSW_2	Event trigger
	(Note1): BSP_PSW_3	(Note1): Event trigger
	(Note2): BSP_PSW_5	(Note2): Event trigger
PORT (LED)	BSP_LED_1	For operation check
	BSP_LED_2	For operation check
	BSP_LED_3	For operation check
	BSP_LED_4	For operation check
T32A	BSP_T32A_TIMER_1	Interval timer

Note 1: No channel is assigned to MCUs that do not support STOP2 mode.

Note 2: Some boards use a switch as a substitute. For details, please refer to the MCU User's Manual.

6.3. Interrupt to Use

For details, please refer to the "Interrupt List by Sample" in the MCU User's Manual.

6.4. Configuration

Configuration setting.

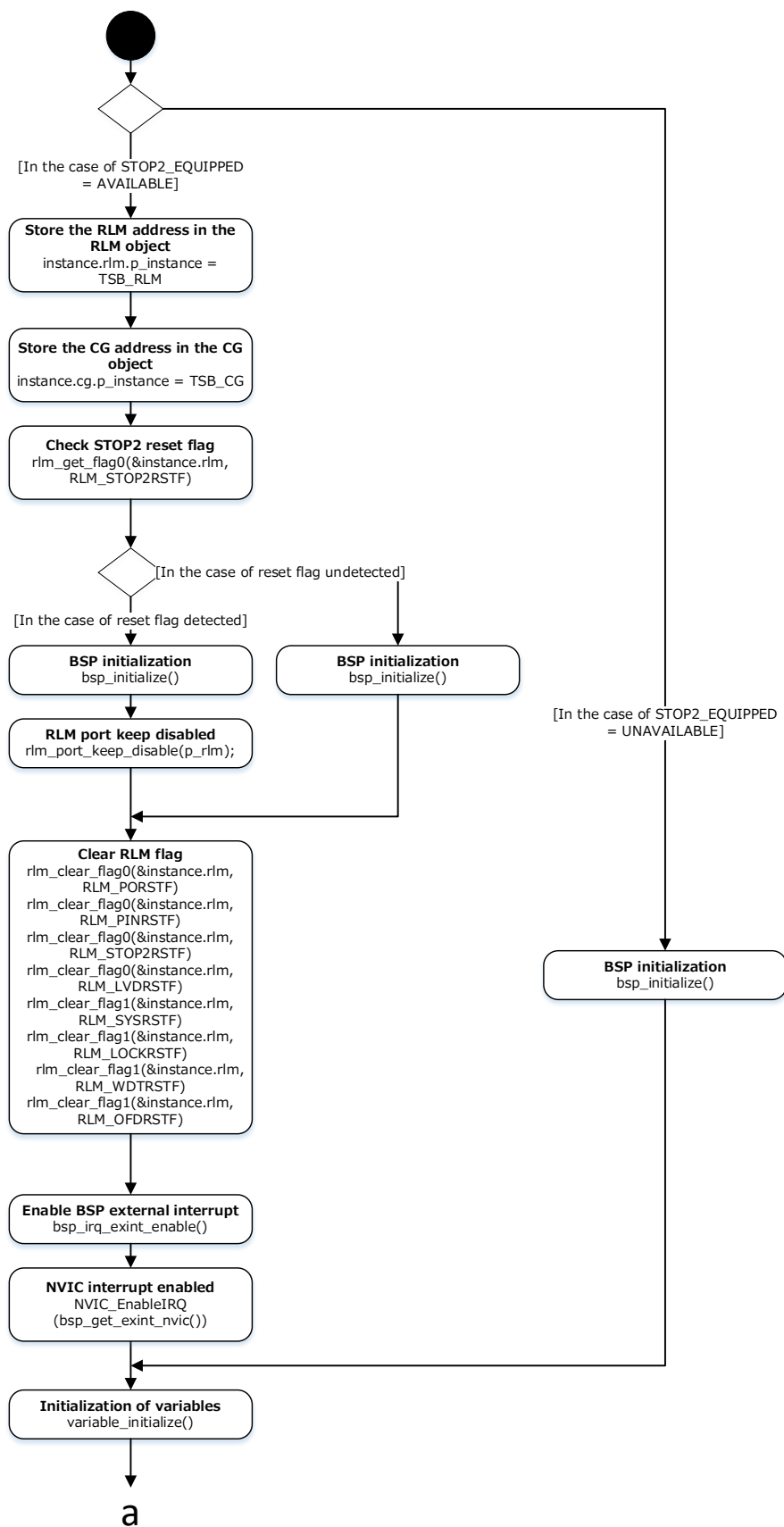
Configuration	Soft Definition Name	Current Value (Defaults)	Description
Cycle A	CFG_LED_BLINK_FRQ	2	LED blink Cycle (Unit:Hz)
DutyA	CFG_LED_BLINK_DUTY	0.5	LED blink Duty (50%)

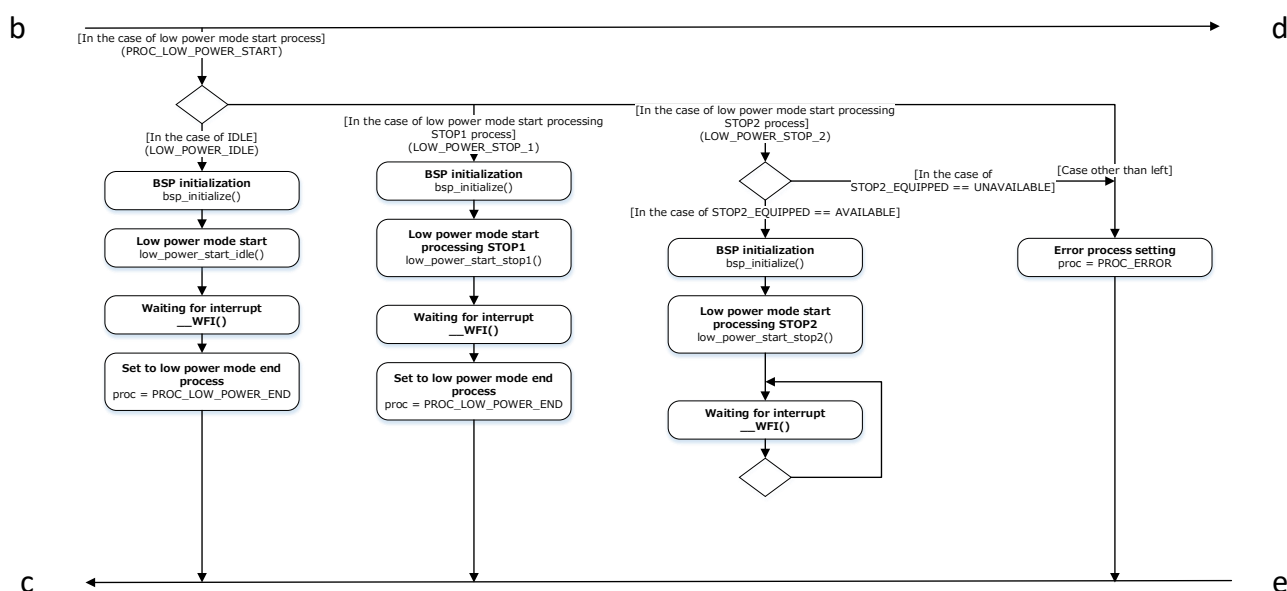
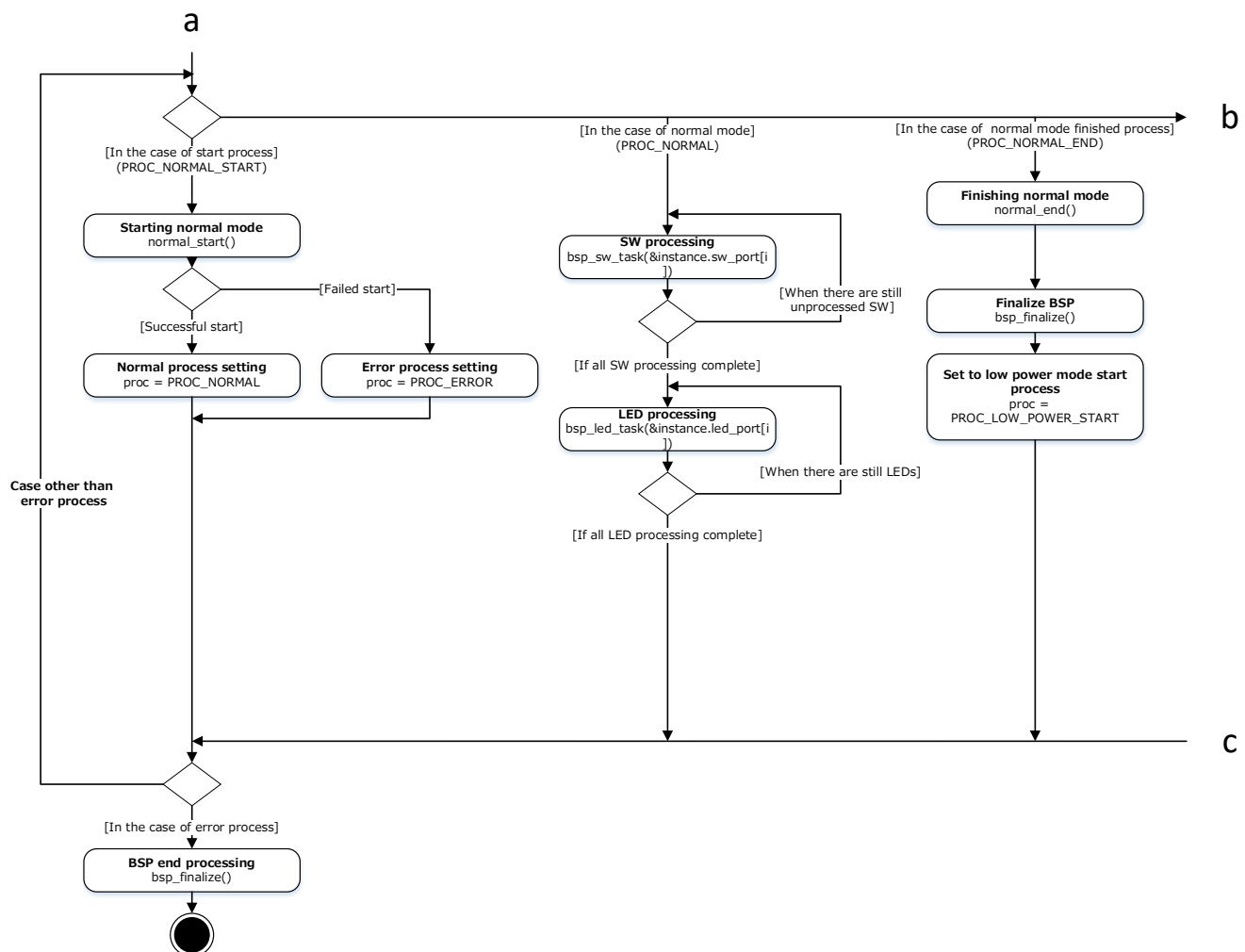
6.5. Example of Terminal Emulator Output

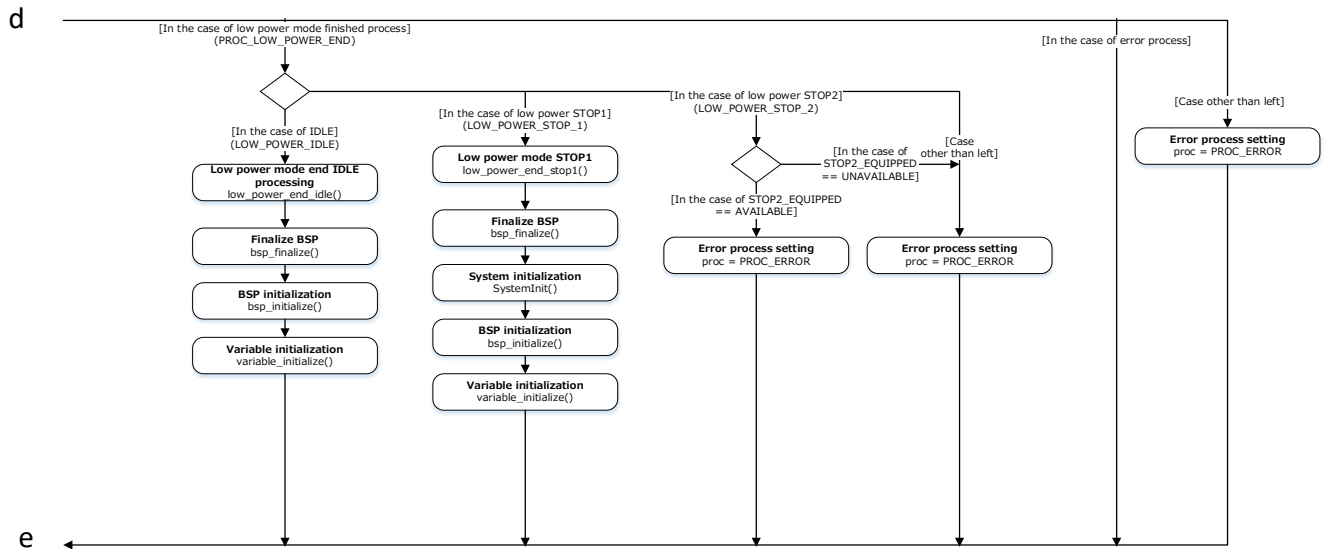
Nothing.

7. Activity diagram

7.1. main

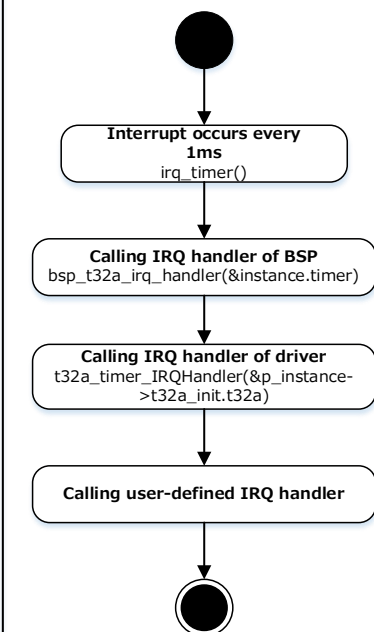




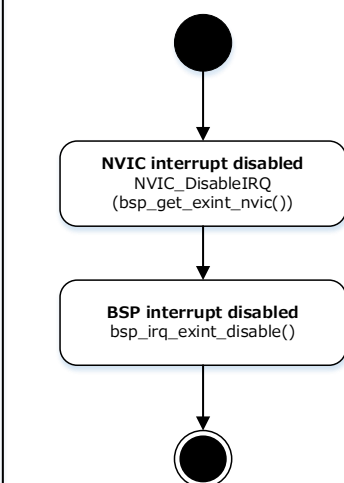


7.2. Interrupt

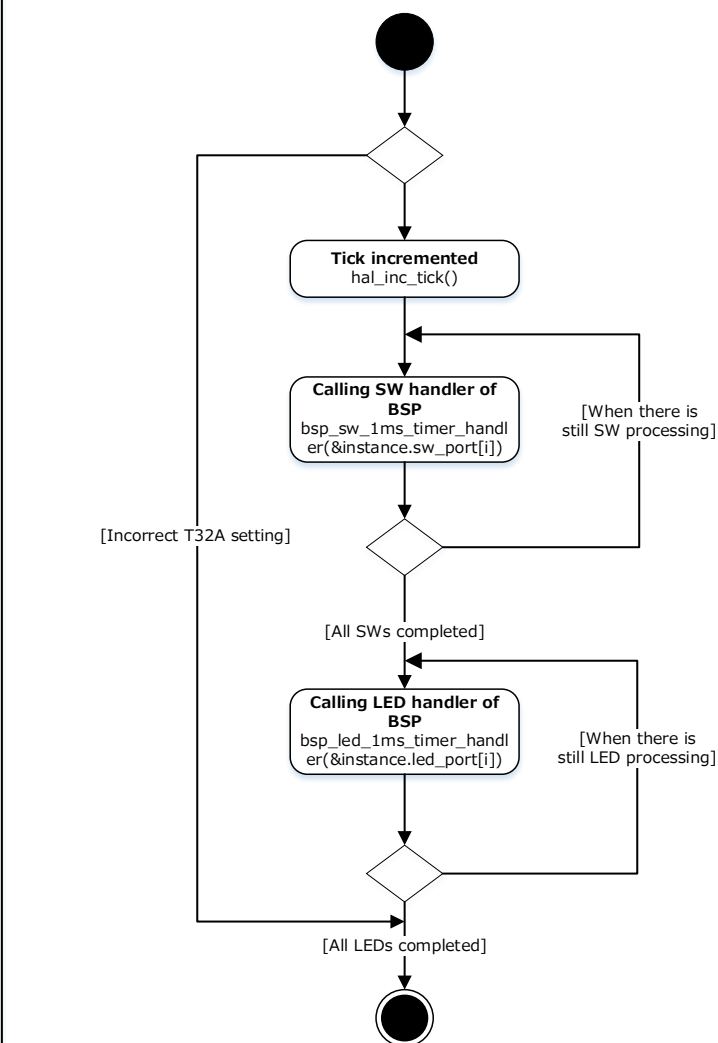
1ms Timer Interrupt calling flow chart



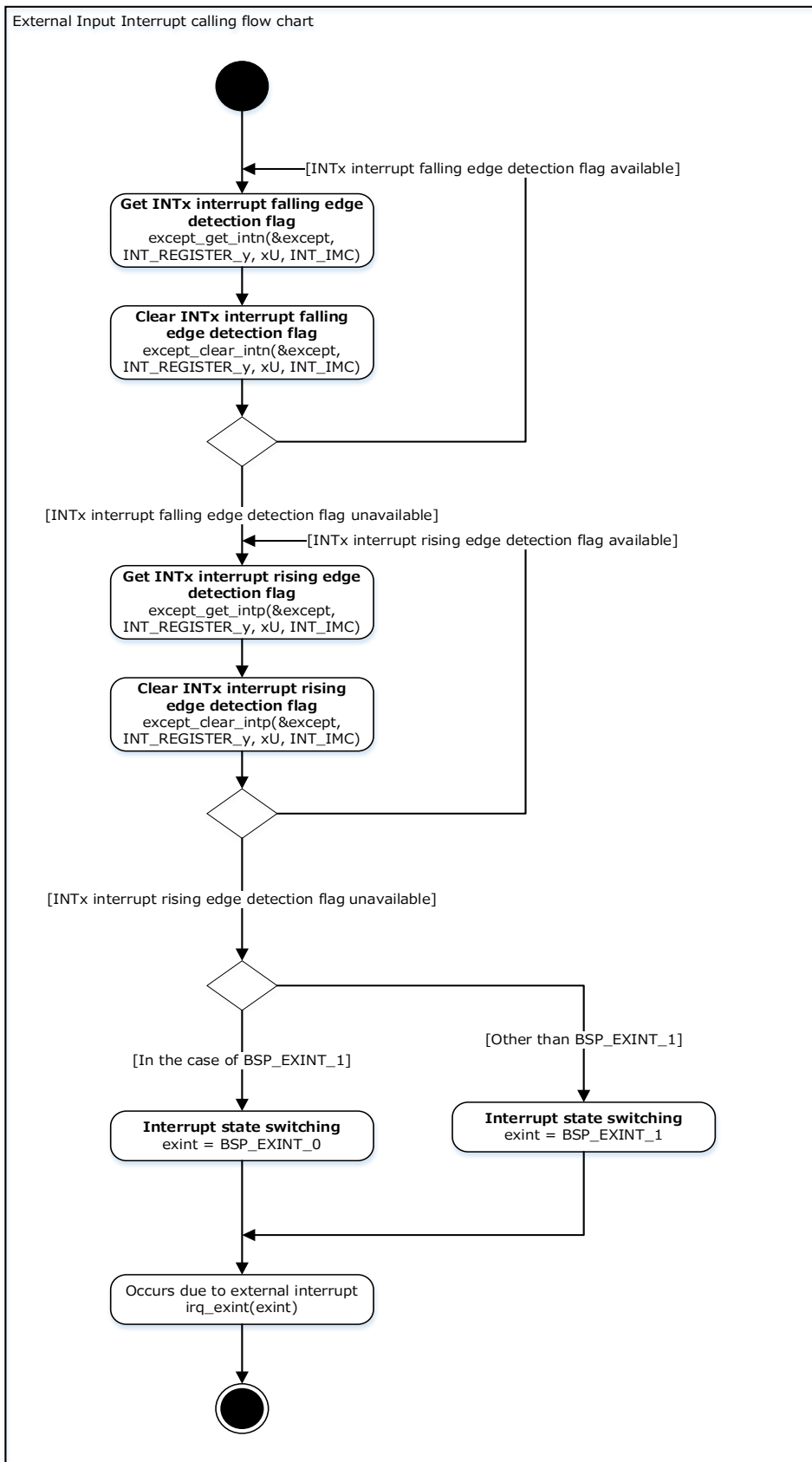
irq_exint



timer_interval_handler



External Input Interrupt calling flow chart



For x and y details, please refer to the “Activity Diagram Symbol” in the MCU User’s Manual

8. Revision History

Revision	Date	Description
1.0	2025-01-20	First release
1.1	2025-10-30	6.3 Interrupt to Use Added M3H Interrupt Name.
1.2	2026-07-30	6.3 Interrupt to Use Detailed information is transcribed into the User's Manual

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