

Application Note

OFD

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1. Preface

This application note describes sample software OFD using the Oscillation Frequency Detector (OFD).
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
OFD	Oscillation Frequency Detector
Timer	T32A:32-bit Timer Event Counter

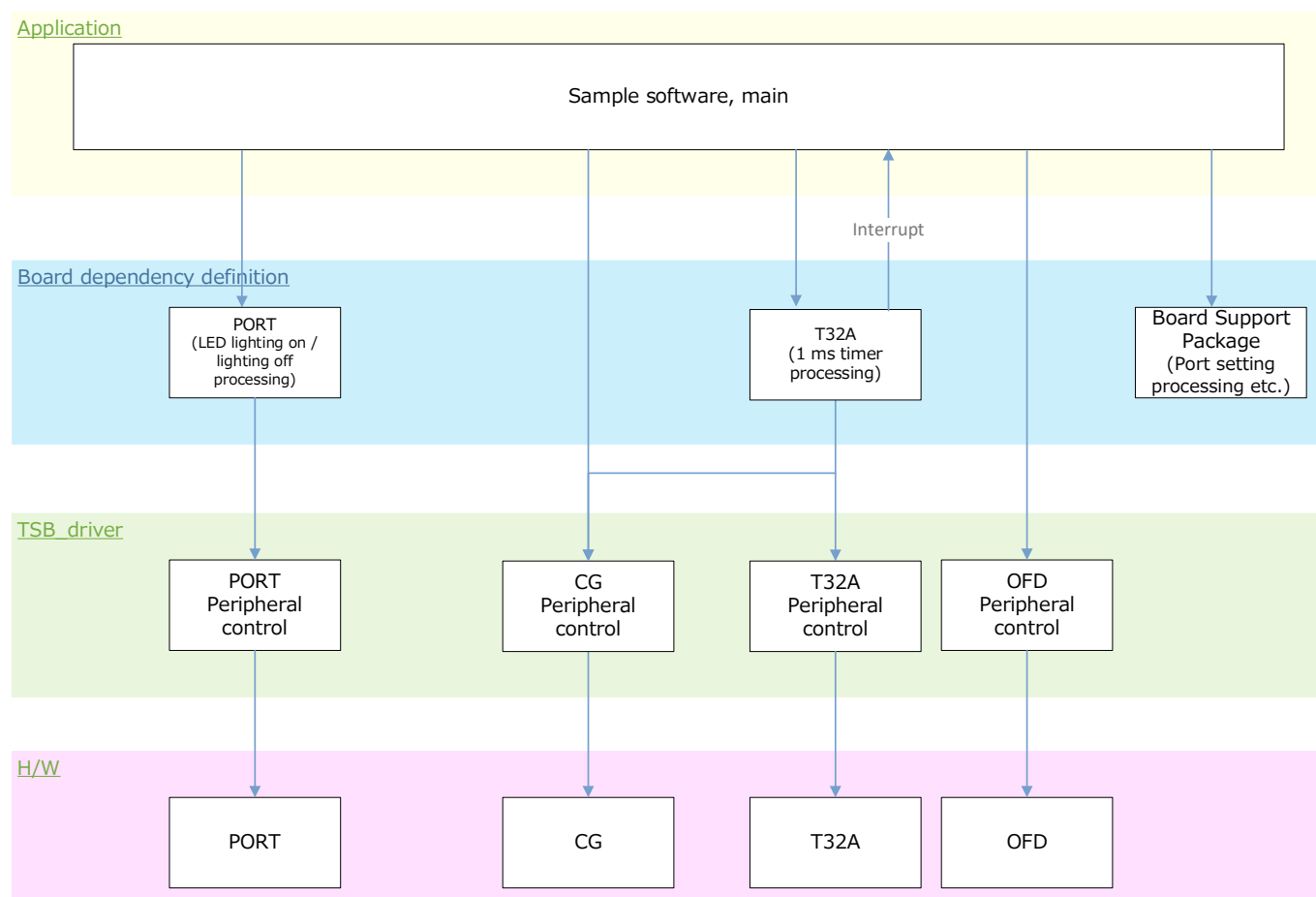
3. Reference Document

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
OFD	Sample program of OFD function

5. Configuration Diagram



6. Sample Program: OFD

This is sample software that resets when an abnormality is detected in the clock to be measured.

6.1. Outlines of Operation

Detects clock abnormality, and normally turn on BSP_LED_1 and turn off BSP_LED_2.
In the event of an abnormality, BSP_LED_1 is turn off and BSP_LED_2 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
PORT (LED)	BSP_LED_1	For operation check
	BSP_LED_2	For operation check

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.

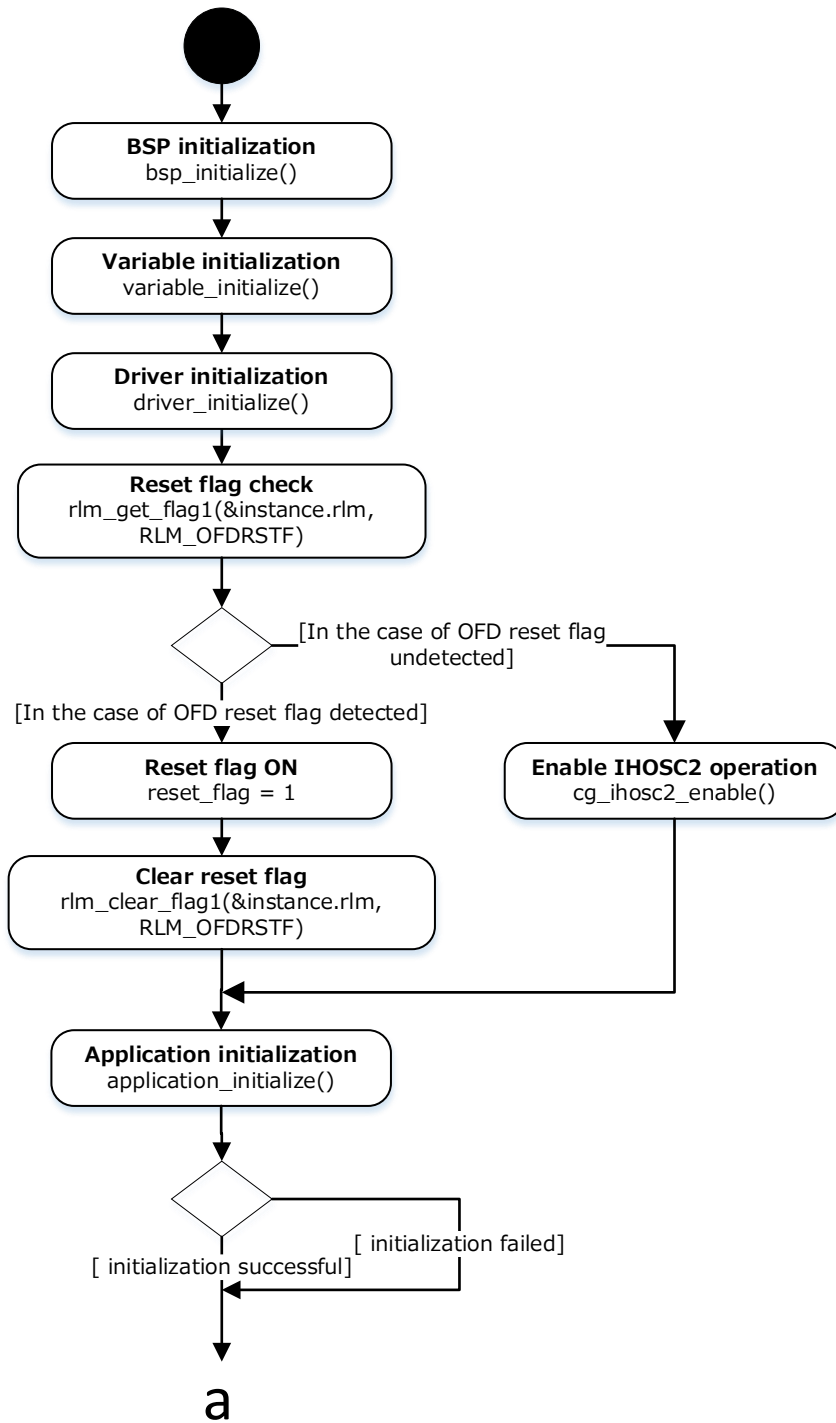
Configuration	Soft Definition Name	Current Value (Defaults)	Description
OFD_CLOCK_OPTION	OFD_CLOCK_EHOSC OFD_CLOCK_FC	OFD_CLOCK_EHOSC	OFD_CLOCK_EHOSC and OFD_CLOCK_FC can be specified. (When OFD_CLOCK_EHOSC, REG_OFDMON_OFDMON_EHOSC is specified to CFG_OFD_CLOCK. When OFD_CLOCK_FC, REG_OFD_OFDMON_OFDMON_FC is specified to CFG_OFD_CLOCK)
Measurement target clock	CFG_OFD_CLOCK	REG_OFD_OFDMON_OFDMON_EHOSC	Automatically switches based on the value of External high-speed oscillator OFD_CLOCK_OPTION
Upper limit of detection frequency	BSP_OFD_HIGHER_COUNT BSP_OFD_HIGHER_COUNT_EXTERNAL	fEHOSC x 1.01	+1%
Lower limit of detection frequency	BSP_OFD_LOWER_COUNT BSP_OFD_LOWER_COUNT_EXTERNAL	fEHOSC x 0.99	-1%

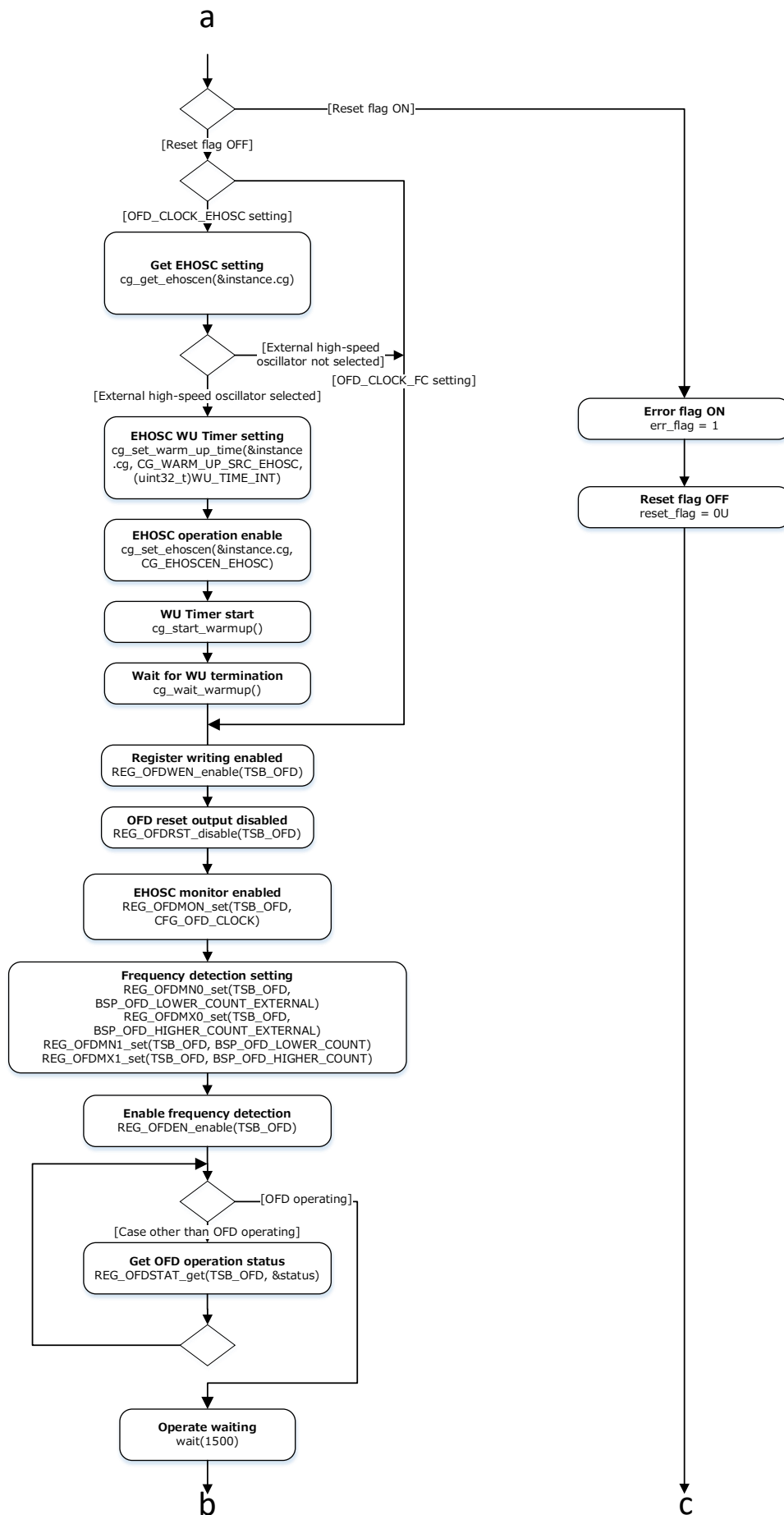
6.5. Example of Terminal Emulator Output

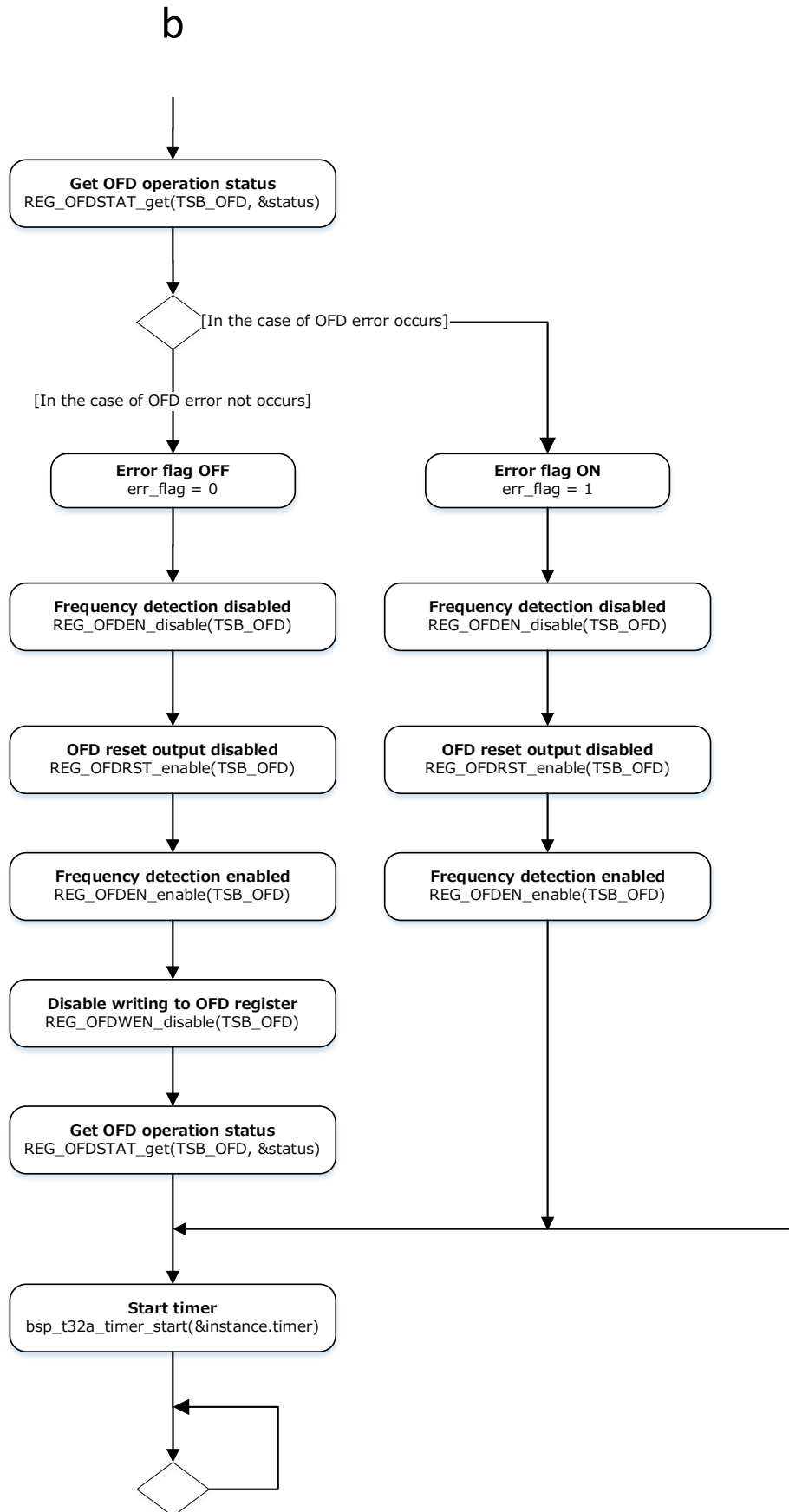
Nothing.

7. Activity diagram

7.1. main

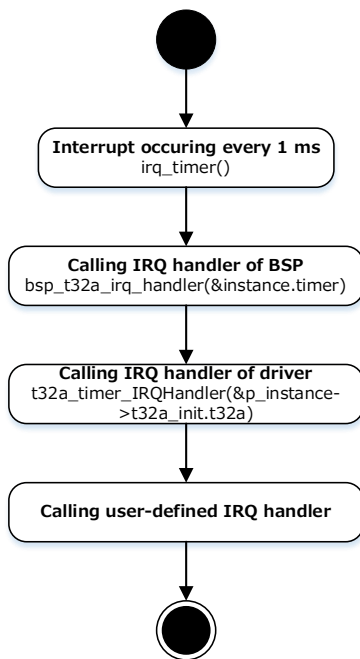




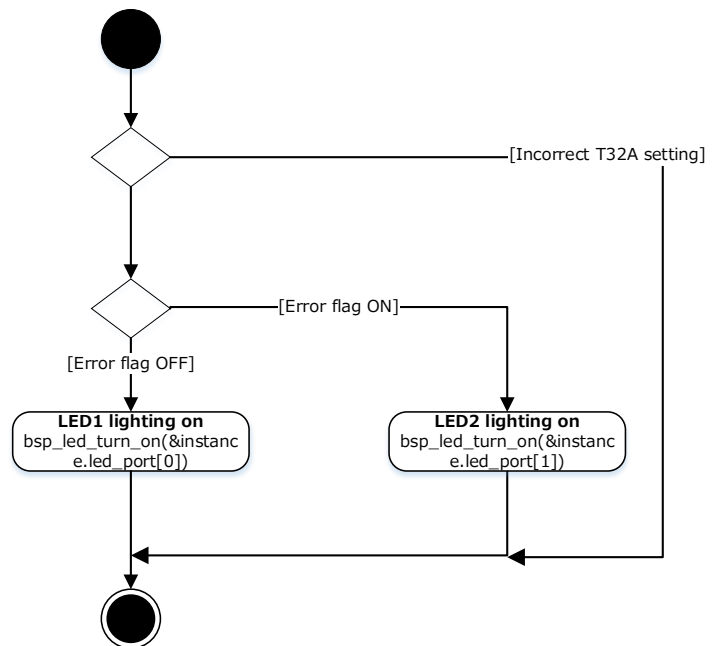


7.2. Interrupt

1ms Timer Interrupt calling flow chart



timer_interval_handler



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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