

# Application Note

## DLCD\_ADC

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### 1. Preface

This application note describes sample software for the DLCD function using the DLCD driver.  
This document helps the user check operation of a product under development and develop its program.

### 2. Technical Term

Term/Abbreviation	Definition
DLCD	Digital liquid crystal display
ADC	Analog-to-Digital Converter
BSP	Board Support Package
Timer	T32A : 32-bit Timer Event Counter

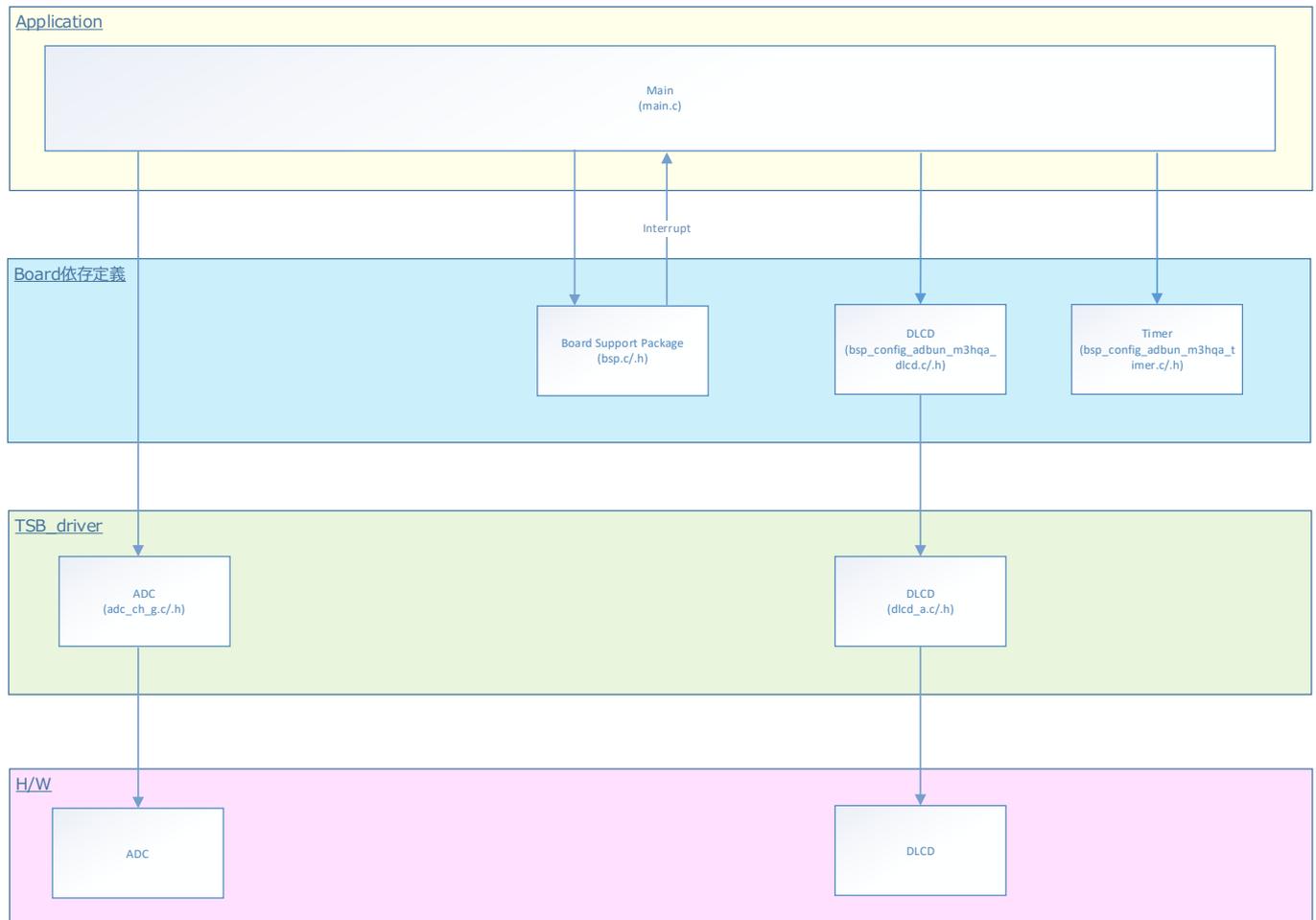
### 3. Reference Document

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 manual to be used.
Driver API list	Refer to the MCU Doc folder to be used.

## 4. Target Sample Program

Sample Program	Outline
DLCD_ADC	Sample program of DLCD_ADC function

## 5. Configuration Diagram



## 6. Sample Program : DLCD\_ADC

This is sample software that AD-converts the measured voltage every 100ms, adds the conversion value, and displays 8 digits on the LCD.

### 6.1. Outlines of Operation

After timer A has elapsed, measure the voltage of BSP\_VR\_1 and display the string on the segment.

### 6.2. Function to Use

The functions to use are as follows.

For the Port assignment of each channel, refer to the MCU user manual.

IP	Channel	Objective
ADC	BSP_VR_1	Measure the voltage obtained with variable resistor 1
DLCD	BSP_DLCD_1	For displaying measured values. Displays the measured voltage value on the LCD
T32A Control	BSP_T32A_TIMER_1	For applications. Used as a 1ms interval timer

### 6.3. Interrupt to Use

Interrupt	Outlines
INTADACNT	ADC unit A continuous conversion interrupt
INTT32A00A	T32A Timer A Timer counter increment every 1ms for display update

### 6.4. Configuration

"main.c" configuration setting.

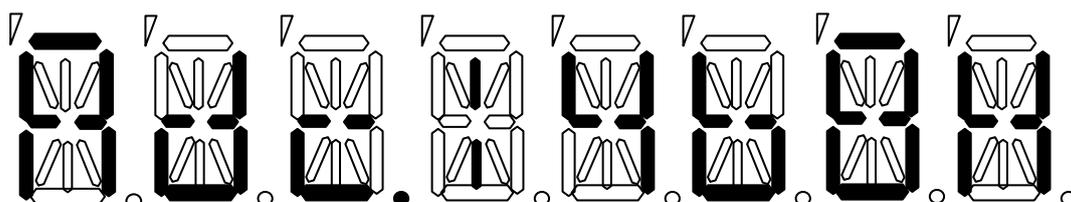
Configuration	Current Value	Description
Timer A	100ms	-
LCD operating clock	fs	-
Non-bias drive system	4COM,1/6Duty	-
Control method	Frame length	-

### 6.5. Example of Terminal Emulator Output

Nothing.

### 6.6. LCD display example

When the AD conversion value "0x4B8" is displayed, the figure below is displayed  
("Adc : "4b8H" is displayed)



## 7. DLCD Driver

### 7.1. List of driver

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

Driver	Control Outlines
DLCD_reg_set	DLCD register settings
DLCD_reg_get	Get DLCD register
DLCD_Buffer_ALL_Clear	DLCD Buffer All Clear
DLCD_Display_Start	DLCD Display Start
DLCD_Hidden	DLCD Hidden
DLCD_Stop	DLCD Stop
DLCD_Display_Change	DLCD_Display_Change
DLCD_Output_Change	DLCD_Output_Change
DLCD_Terminal_Change	DLCD_Terminal_Change

### 7.2. Details

See “3. Reference Documents” for more information.

## 8. Revision History

Revision	Date	Description
1.0	2022-04-08	First release

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