

TN00015

LPC54608 LCD Dual Frame Buffer with MMA8652FC Accelerometer

Rev. 1 —1 May 2017

Technical note

Document information

Info	Content
Keywords	LPC54608, LCD, Dual frame Buffer, MMA8652FC accelerometer, 2bpp, 16bpp, SDRAM
Abstract	This technical note gives an overview of examples that uses LCD with MMA8652 accelerometer.



Revision history

Rev	Date	Description
1	20170501	Initial version.

Contact information

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1. Introduction

The LPC5460x is a family of ARM Cortex-M4 based microcontrollers for embedded applications. The LPCXpresso Development Board for LPC5460x MCUs is used in this technical note. Details of the board can be found in:

<http://www.nxp.com/products/microcontrollers-and-processors/arm-processors/lpc-cortex-m-mcus/lpc54000-series-cortex-m4-mcus/lpcxpresso-development-board-for-lpc5460x-mcus:OM13092>



Fig 1. LPC54608 LPCXpresso Development Board

This technical note gives an overview of the examples developed using the on-board LCD and MMA8652FC accelerometer. Details of the MMA8652 accelerometer can be found in:

<http://www.nxp.com/products/sensors/accelerometers/3-axis-accelerometers/2g-4g-8g-low-g-12-bit-digital-accelerometer:MMA8652FC>

2. Description

There are two examples showcasing LCD with accelerometer.

2.1 LCD in 2BPP with MMA8652FC Accelerometer

The example uses the on board MMA8652FC accelerometer and 480 * 272 LCD screen. The LCD controller is configured for 2 bits per pixel (BPP) TFT mode and implements dual frame buffers residing in on-chip SRAM. When the example is run, a rectangular object moves on the LCD screen based on the x/y axis tilt angles of the board. The color of the rectangle changes when it touches the boundaries of the LCD screen.

The example is available in three tool chains:

- MCUXpresso IDE v10.0
- Keil MDK v5.23
- IAR Workbench v8.0

The Keil and IAR examples are found in:

lpc54608_lcd_accelerometer_keil_iar\boards\lpcxpresso54608\demo_apps\lcd_accel_tft2bpp

The MCUXpresso example can be found in the zip file:

lpc54608_lcd_accelerometer_2bpp_mcux.zip

2.2 LCD in 16BPP RGB565 with MMA8652FC Accelerometer

The example uses the on board MMA8652FC accelerometer and 480 * 272 LCD screen. The LCD controller is configured for 16 bits per pixel (BPP) RGB565 TFT mode and implements dual frame buffers residing in on-board SDRAM. When the example is run, a rectangular object moves on the LCD screen based on the x/y axis tilt angles of the board. The color of the rectangle changes when it touches the boundaries of the LCD screen.

The example is available in three tool chains:

- MCUXpresso IDE v10.0
- Keil MDK v5.23
- IAR Workbench v8.0

The Keil and IAR examples are found in:

lpc54608_lcd_accelerometer_keil_iar\boards\lpcxpresso54608\demo_apps\lcd_accel_tft16bpp

The MCUXpresso example can be found in the zip file:

lpc54608_lcd_accelerometer_16bpp_mcux.zip

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