LCD module

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Contents

Introduction

This documentation for LCD module in HAL layer for atmega32 microcontroller using structural methodology by creating struct of LCD_T type and doing necessary operation on that struct.

First section for defining new data types to use them in function. Then define macros for sit a specific bit or clear it finally the function details.

data types

Name	lcd_t
Variable name	pin_t rs;
Variable name	pin_t en;
Variable name	pin_t lcd_pins_0;
Variable name	pin_t lcd_pins_1;
Variable name	pin_t lcd_pins_2;
Variable name	pin_t lcd_pins_3;
Description	New data type for LCD is struct contain pin for enable ,pin for register select and 4 data PINS

Name	ErrorStateType
VAR	E_NOT_OK
VAR	E_OK
VAR	E_NULL_pointer
Description	Enum contain pin indexes

Functions

Name	**ECU_Lcd_4Bit_init**
INPUT	lcd_t * lcd
RETURN	ErrorStateType ret
Description	Function to initialize the LCD.

Name	**ECU_Lcd_4Bit_Send_Command**
INPUT	lcd_t * lcd
INPUT	u8 command
RETURN	ErrorStateType ret
Description	Function to send command to lcd

Name	**ECU_Lcd_Send_Enable**
INPUT	Pin_t *pin_obj

RETURN	ErrorStateType ret
Description	Function to send enable

Name	**ECU_Lcd_4Bit_Send_char**
INPUT	lcd_t * lcd
INPUT	u8 charr
RETURN	ErrorStateType ret
Description	Function to send character to LCD

Name	**ECU_Lcd_4Bit_Set_cursor**
INPUT	lcd_t * lcd
INPUT	u8 row
INPUT	u8 col
RETURN	ErrorStateType ret
Description	function to change the cursor position

Name	**ECU_Lcd_4Bit_Send_Char_Pos**
INPUT	lcd_t * lcd
INPUT	U8 char
INPUT	u8 row
INPUT	u8 col
RETURN	ErrorStateType ret
Description	Function to print character in specific position

Name	**ECU_Lcd_4Bit_Send_str**
INPUT	lcd_t * lcd
OUTPUT	U8 * str
RETURN	ErrorStateType ret
Description	Function to print string

Private functions

Name	`ECU_Lcd_4Bit_convert_int`
INPUT	U8 charr
INPUT	U8 * val
RETURN	ErrorStateType ret
Description	Function to convert character to integer

Name	`pow_m`
INPUT	U8 base
INPUT	U8 multipler
RETURN	ErrorStateType ret
Description	Function to calculate the power of number

Name	`reverse`
INPUT	u8* str
INPUT	u8 length
RETURN	ErrorStateType ret
Description	Function to reverse the index of array of integers to make it available to print them in lcd

Name	`convert_arr_to_int`
INPUT	U8 arr[]
INPUT	U16 *res
RETURN	ErrorStateType ret
Description	Function to convert array of character to integer

Name	`ECU_Lcd_convert_int_to_string`
INPUT	u32 value
INPUT	U8 * str
RETURN	ErrorStateType ret
Description	Function to convert integer to array of characters

Name	**floatToString**
INPUT	f32 number
INPUT	u8* buffer
INPUT	u8 bufferSize
INPUT	u8 precision
RETURN	ErrorStateType ret
Description	Function to convert Float number to string