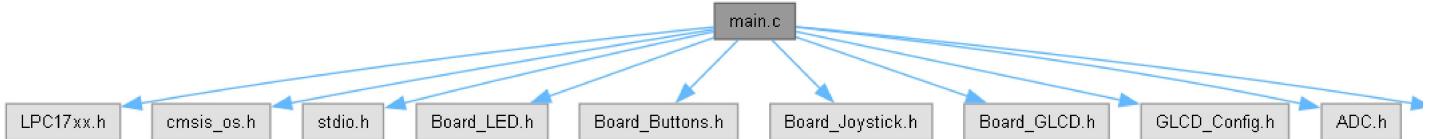


main.c File Reference

```
#include "LPC17xx.h"
#include "cmsis_os.h"
#include <stdio.h>
#include "Board_LED.h"
#include "Board.Buttons.h"
#include "Board_Joystick.h"
#include "Board_GLCD.h"
#include "GLCD_Config.h"
#include "ADC.h"
#include "Driver_SPI.h"
```

Include dependency graph for main.c:



Data Structures

```
struct Time
struct AutomaticPump
struct Light
struct Temp
struct Moisture
struct MenuItem
```

Macros

```
#define NOT_SELECTED 0
#define SELECTED 1
#define TITLE 2
#define STATIC 3
#define NOT_SELECTED_BACK_COLOR GLCD_COLOR_WHITE
#define NOT_SELECTED_FORE_COLOR 0x0600
#define SELECTED_BACK_COLOR 0xEF5D
#define SELECTED_FORE_COLOR GLCD_COLOR_BLUE
#define TITLE_BACK_COLOR GLCD_COLOR_LIGHT_GREY
#define TITLE_FORE_COLOR GLCD_COLOR_WHITE
#define STATIC_BACK_COLOR GLCD_COLOR_WHITE
#define STATIC_FORE_COLOR 0x11E2
#define PRESCALE (25000-1)
#define VREF 3.3
#define ADC_CLK_EN (1<<12)
#define SEL_ADO_2 (1<<2)
#define CLKDIV 1
#define PWRUP (1<<21)
#define START_CNV (1<<24)
#define ADC_DONE (1U<<31)
#define ADCR_SETUP_SCM ((CLKDIV<<8) | PWRUP)
#define MASK_JOYSTICK_UP (1<<23)
#define MASK_JOYSTICK_DOWN (1<<25)
#define MASK_JOYSTICK_CENTER (1<<20)
#define MASK_JOYSTICK_LEFT (1<<26)
#define MASK_JOYSTICK_RIGHT (1<<24)
#define LCD_WIDTH 320
#define LCD_HEIGHT 240
#define MENU_ITEMS 5
#define MENU_ITEMS_SENSOR 3
#define ITEM_HEIGHT 40
```

Functions

```
void GLCD_intro_text(void)
void GLCD_UpdateMenu(void)
```

```

void Increase (unsigned char *value, unsigned char maxValue)
void Decrease (unsigned char *value, unsigned char maxValue)
void SelectColor (int textType)
void Joy_stick_scan (void)
void Main_menu_Joy_stick_scan (int joystickStatus)
void TimeSettingScreenJoystickControl (int joystickStatus)
void Time_update (void)
void TimeToString (char *string, Time *time)
void Time_and_data_init (void)
void TimeSettingScreen (void)
void checkRemainTime (unsigned char)
void DisplayStaticText (void)
void DisplayTime (void)
void Time_display (void)
void PumpSettingScreen (void)
void Pump_DisplayStaticText (void)
void P_DisplayTime (void)
void P_Setting_JoystickControl (int joystickStatus)
void Pump_Duration_Set (void)
void Duration_DisplayStaticText (void)
void Display_Pump_Duration ()
void Pump_Duration_JoystickControl (int joystickStatus)
void ADC_Threshold_Set (void)
void ADC_DisplayStaticText (void)
void DisplayADC_Threshold ()
void ADC_Threshold_JoystickControl (int joystickStatus)
void Working_Screen (void)
void Display_Static_Text_data (void)
void Display_current_Time (void)
void Display_Pump_time (void)
void DisplayADCValue (void)
void DisplayPumpStatus (void)
void Light_Sensor_Screen (void)
void DisplayLightStatus (void)
void Display_Light_Text_data (void)
void light_on (int gpio, int pin)
void light_off (int gpio, int pin)
void light_off_all (void)
void Temp_Sensor_Screen (void)
void DisplayTempStatus (void)
void Display_Temp_Text_data (void)
void Moist_Sensor_Screen (void)
void DisplayMoistStatus (void)
void Display_Moist_Text_data (void)
void menu_action_1 (void)
void menu_action_2 (void)
void menu_action_3 (void)
void menu_action_4 (void)
void menu_action_5 (void)
void menu_action_6 (void)
void menu_action_7 (void)
void menu_action_8 (void)
void Timer_Callback (void const *arg)
    osTimerDef (PeriodicTimer, Timer_Callback)
void Init_LED ()
int main (void)
void GLCD_outro_text (void)

```

Variables

```

GLCD_FONT GLCD_Font_6x8
GLCD_FONT GLCD_Font_16x24
volatile int current_item = 0

```

```

volatile bool menu_updated = false
volatile bool menu_status = false
    char timeString [9]
    char adcString [5]
    char lightString [5]
    char tempString [5]
    char moistString [5]
    int i
    int j
    int programIndex =1
    int Time_Index =0
    int result = 0
    int decimal
float volts = 0
    int Current_joystickStatus =0
    int Old_joystickStatus =0
    int Working_Index
    int Light_prog_Index
    int Temp_prog_Index
    int Moist_prog_Index
Time Now
Time Pump_time
AutomaticPump Data_pump
    Light light
    Temp temperature
    Moisture moist
    char ADC_String [20] =" "
    int P_setting_Index =1
    int P_Time_Index
    int Pump_duration_prog_Index
    int ADC_prog_Index
MenuItem menuPump [MENU_ITEMS]
MenuItem menuSensor [MENU_ITEMS_SENSOR]
osTimerId TimerId

```

Macro Definition Documentation

◆ ADC_CLK_EN

```
#define ADC_CLK_EN (1<<12)
```

◆ ADC_DONE

```
#define ADC_DONE (1U<<31)
```

◆ ADCR_SETUP_SCM

```
#define ADCR_SETUP_SCM ((CLKDIV<<8) | PWRUP)
```

◆ CLKDIV

```
#define CLKDIV 1
```

◆ ITEM_HEIGHT

```
#define ITEM_HEIGHT 40
```

◆ LCD_HEIGHT

```
#define LCD_HEIGHT 240
```

◆ LCD_WIDTH

```
#define LCD_WIDTH 320
```

◆ MASK_JOYSTICK_CENTER

```
#define MASK_JOYSTICK_CENTER (1<<20)
```

◆ MASK_JOYSTICK_DOWN

```
#define MASK_JOYSTICK_DOWN (1<<25)
```

◆ MASK_JOYSTICK_LEFT

```
#define MASK_JOYSTICK_LEFT (1<<26)
```

◆ MASK_JOYSTICK_RIGHT

```
#define MASK_JOYSTICK_RIGHT (1<<24)
```

◆ MASK_JOYSTICK_UP

```
#define MASK_JOYSTICK_UP (1<<23)
```

◆ MENU_ITEMS

```
#define MENU_ITEMS 5
```

◆ MENU_ITEMS_SENSOR

```
#define MENU_ITEMS_SENSOR 3
```

◆ NOT_SELECTED

```
#define NOT_SELECTED 0
```

◆ NOT_SELECTED_BACK_COLOR

```
#define NOT_SELECTED_BACK_COLOR GLCD_COLOR_WHITE
```

◆ NOT_SELECTED_FORE_COLOR

```
#define NOT_SELECTED_FORE_COLOR 0x0600
```

◆ PRESCALE

```
#define PRESCALE (25000-1)
```

◆ PWRUP

```
#define PWRUP (1<<21)
```

◆ SEL_ADO_2

```
#define SEL_ADO_2 (1<<2)
```

◆ SELECTED

```
#define SELECTED 1
```

◆ SELECTED_BACK_COLOR

```
#define SELECTED_BACK_COLOR 0xEF5D
```

◆ SELECTED_FORE_COLOR

```
#define SELECTED_FORE_COLOR GLCD_COLOR_BLUE
```

◆ START_CNV

```
#define START_CNV (1<<24)
```

◆ STATIC

```
#define STATIC 3
```

◆ STATIC_BACK_COLOR

```
#define STATIC_BACK_COLOR GLCD_COLOR_WHITE
```

◆ STATIC_FORE_COLOR

```
#define STATIC_FORE_COLOR 0x11E2
```

◆ TITLE

```
#define TITLE 2
```

◆ TITLE_BACK_COLOR

```
#define TITLE_BACK_COLOR GLCD_COLOR_LIGHT_GREY
```

◆ TITLE_FORE_COLOR

```
#define TITLE_FORE_COLOR GLCD_COLOR_WHITE
```

◆ VREF

```
#define VREF 3.3
```

Function Documentation

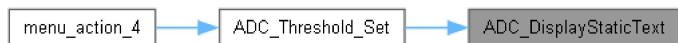
◆ ADC_DisplayStaticText()

```
void ADC_DisplayStaticText ( void )
```

Here is the call graph for this function:



Here is the caller graph for this function:



◆ ADC_Threshold_JoystickControl()

```
void ADC_Threshold_JoystickControl ( int joystickStatus )
```

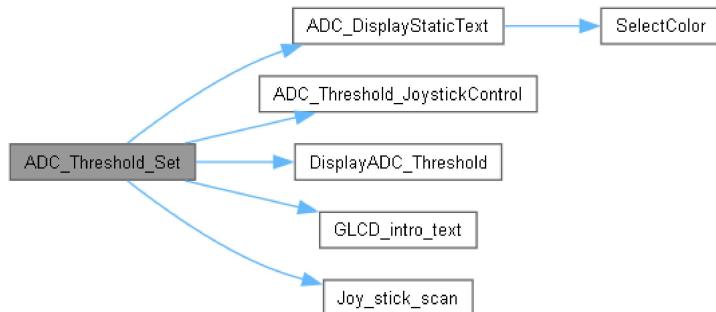
Here is the caller graph for this function:



◆ ADC_Threshold_Set()

```
void ADC_Threshold_Set ( void )
```

Here is the call graph for this function:



Here is the caller graph for this function:



◆ checkRemainTime()

```
void checkRemainTime ( unsigned char t )
```

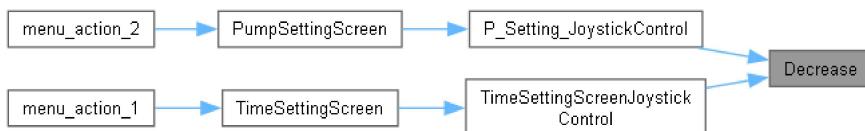
Here is the caller graph for this function:



◆ Decrease()

```
void Decrease ( unsigned char * value,  
                unsigned char maxValue )
```

Here is the caller graph for this function:



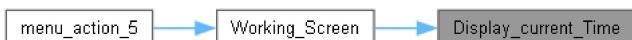
◆ Display_current_Time()

```
void Display_current_Time ( void )
```

Here is the call graph for this function:



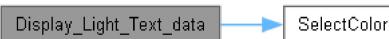
Here is the caller graph for this function:



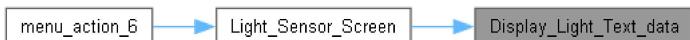
◆ Display_Light_Text_data()

```
void Display_Light_Text_data ( void )
```

Here is the call graph for this function:



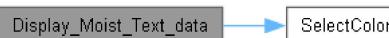
Here is the caller graph for this function:



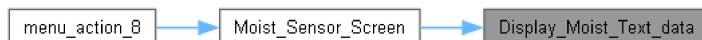
◆ Display_Moist_Text_data()

```
void Display_Moist_Text_data ( void )
```

Here is the call graph for this function:



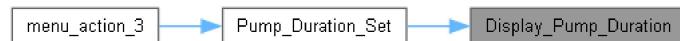
Here is the caller graph for this function:



◆ Display_Pump_Duration()

```
void Display_Pump_Duration ( )
```

Here is the call graph for this function:



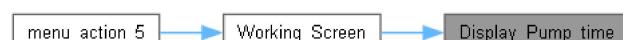
◆ Display_Pump_time()

```
void Display_Pump_time ( void )
```

Here is the call graph for this function:



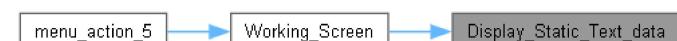
Here is the caller graph for this function:



◆ Display_Static_Text_data()

```
void Display_Static_Text_data ( void )
```

Here is the call graph for this function:



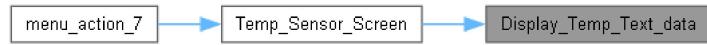
◆ Display_Temp_Text_data()

```
void Display_Temp_Text_data ( void )
```

Here is the call graph for this function:



Here is the caller graph for this function:



◆ DisplayADC_Threshold()

```
void DisplayADC_Threshold ( )
```

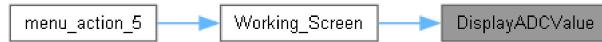
Here is the caller graph for this function:



◆ DisplayADCValue()

```
void DisplayADCValue ( void )
```

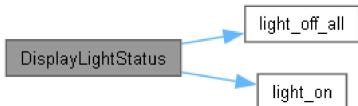
Here is the caller graph for this function:



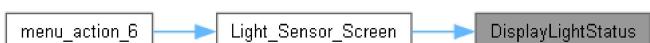
◆ DisplayLightStatus()

```
void DisplayLightStatus ( void )
```

Here is the call graph for this function:



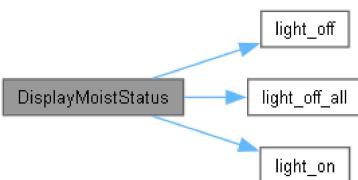
Here is the caller graph for this function:



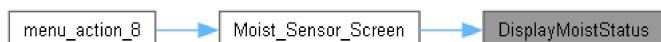
◆ DisplayMoistStatus()

```
void DisplayMoistStatus ( void )
```

Here is the call graph for this function:



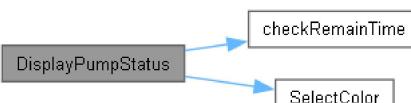
Here is the caller graph for this function:



◆ DisplayPumpStatus()

```
void DisplayPumpStatus ( void )
```

Here is the call graph for this function:



Here is the caller graph for this function:



◆ DisplayStaticText()

```
void DisplayStaticText ( void )
```

Here is the call graph for this function:



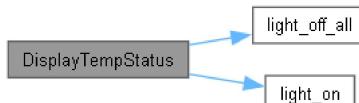
Here is the caller graph for this function:



◆ DisplayTempStatus()

```
void DisplayTempStatus ( void )
```

Here is the call graph for this function:



Here is the caller graph for this function:



◆ DisplayTime()

```
void DisplayTime ( void )
```

Here is the call graph for this function:



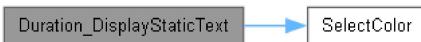
Here is the caller graph for this function:



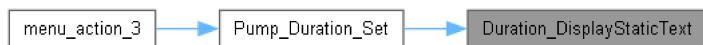
◆ Duration_DisplayStaticText()

```
void Duration_DisplayStaticText ( void )
```

Here is the call graph for this function:



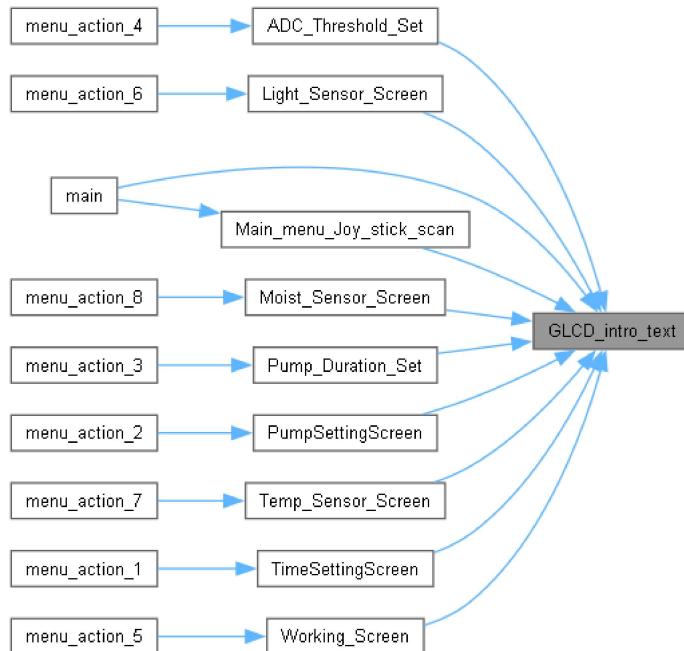
Here is the caller graph for this function:



◆ GLCD_intro_text()

```
void GLCD_intro_text ( void )
```

Here is the caller graph for this function:



◆ GLCD_outro_text()

```
void GLCD_outro_text ( void )
```

Here is the caller graph for this function:



◆ GLCD_UpdateMenu()

```
void GLCD_UpdateMenu ( void )
```

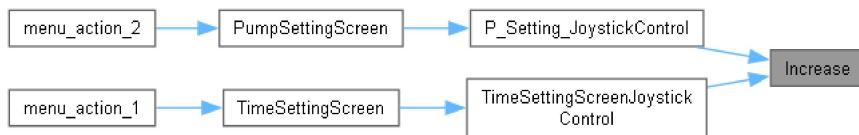
Here is the caller graph for this function:



◆ Increase()

```
void Increase ( unsigned char * value,  
                unsigned char  maxValue )
```

Here is the caller graph for this function:



◆ Init_LED()

```
void Init_LED ( )
```

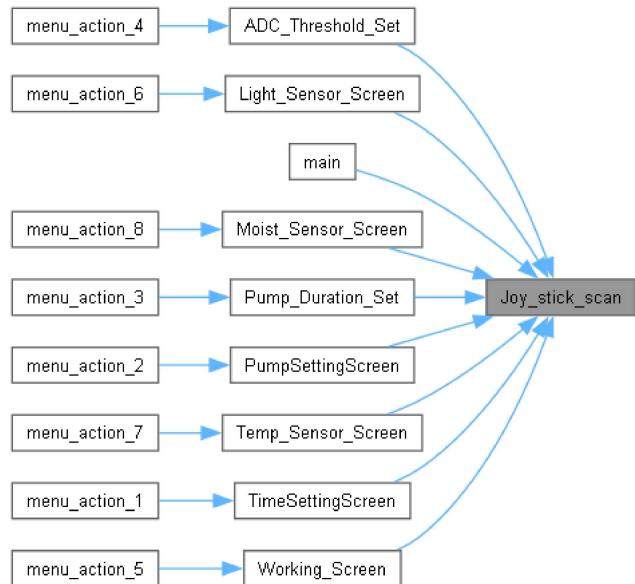
Here is the caller graph for this function:



◆ Joy_stick_scan()

```
void Joy_stick_scan ( void )
```

Here is the caller graph for this function:



◆ light_off()

```
void light_off ( int gpio,  
                int pin )
```

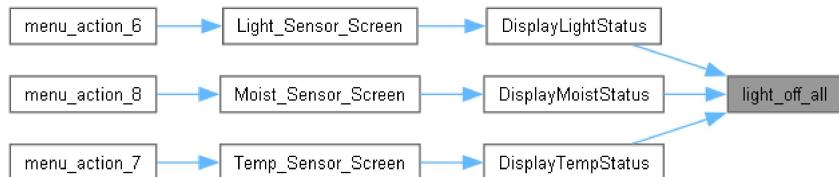
Here is the caller graph for this function:



◆ light_off_all()

```
void light_off_all ( void )
```

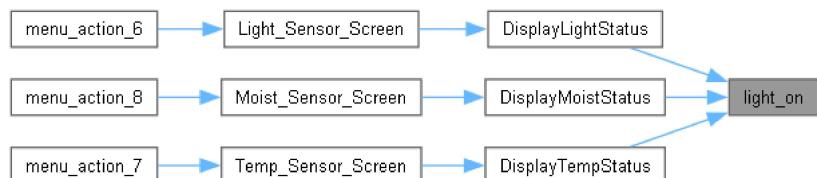
Here is the caller graph for this function:



◆ light_on()

```
void light_on ( int gpio,  
                int pin )
```

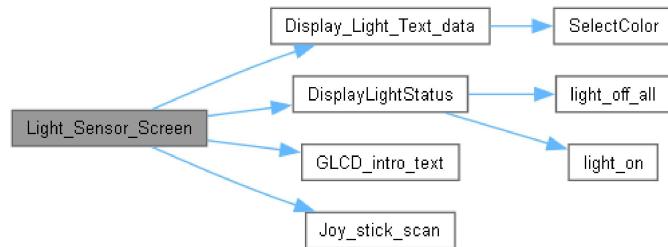
Here is the caller graph for this function:



◆ Light_Sensor_Screen()

```
void Light_Sensor_Screen ( void )
```

Here is the call graph for this function:



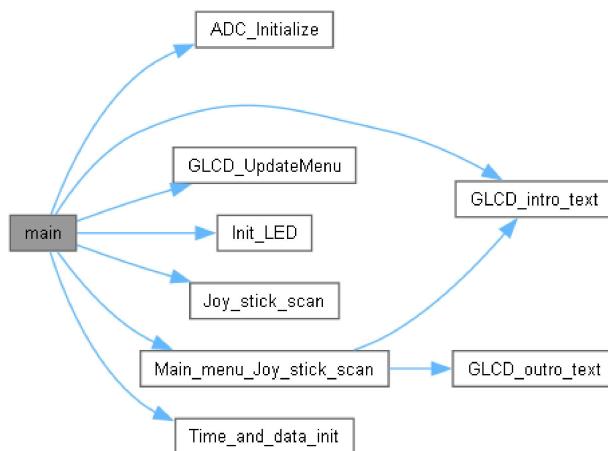
Here is the caller graph for this function:



◆ main()

```
int main ( void )
```

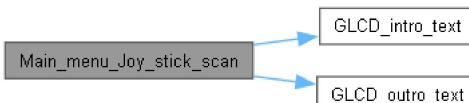
Here is the call graph for this function:



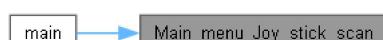
◆ Main_menu_Joy_stick_scan()

```
void Main_menu_Joy_stick_scan ( int joystickStatus )
```

Here is the call graph for this function:



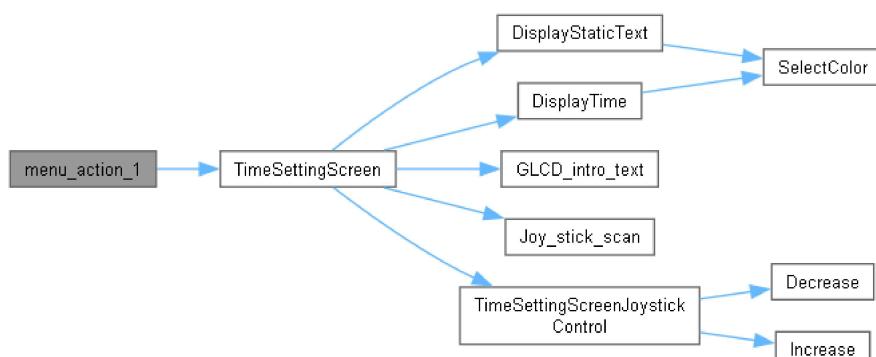
Here is the caller graph for this function:



◆ menu_action_1()

```
void menu_action_1 ( void )
```

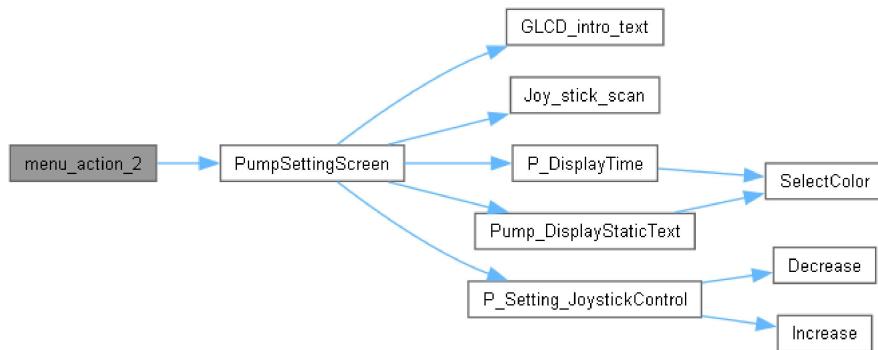
Here is the call graph for this function:



◆ menu_action_2()

```
void menu_action_2 ( void )
```

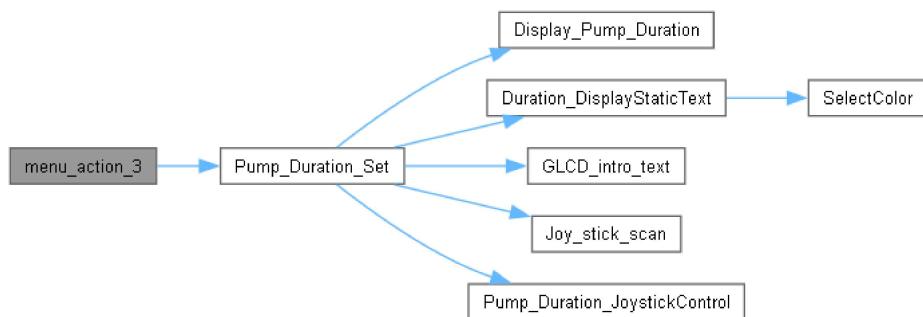
Here is the call graph for this function:



◆ menu_action_3()

```
void menu_action_3 ( void )
```

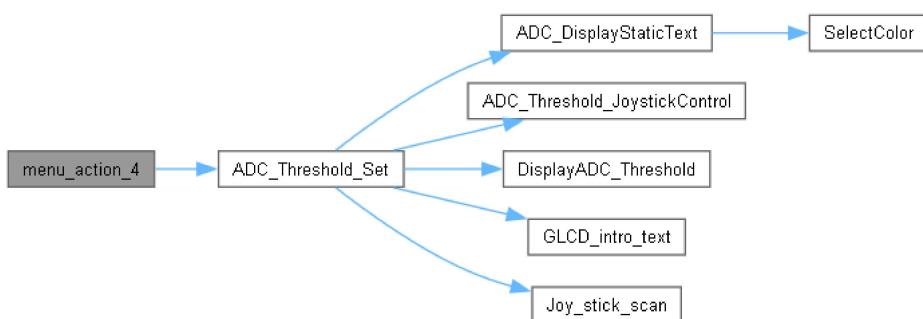
Here is the call graph for this function:



◆ menu_action_4()

```
void menu_action_4 ( void )
```

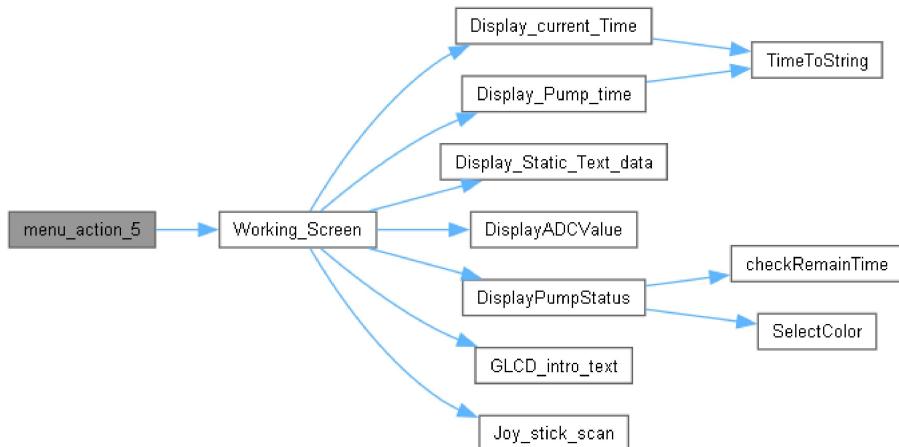
Here is the call graph for this function:



◆ menu_action_5()

```
void menu_action_5 ( void )
```

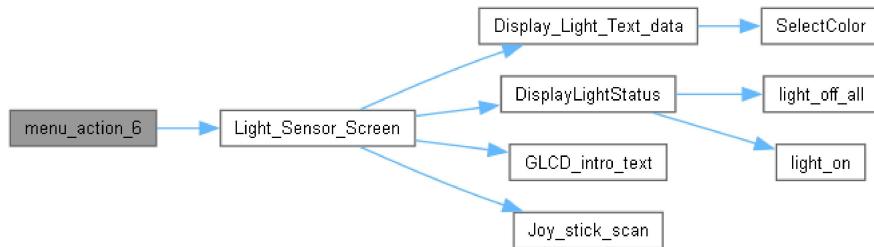
Here is the call graph for this function:



◆ menu_action_6()

```
void menu_action_6 ( void )
```

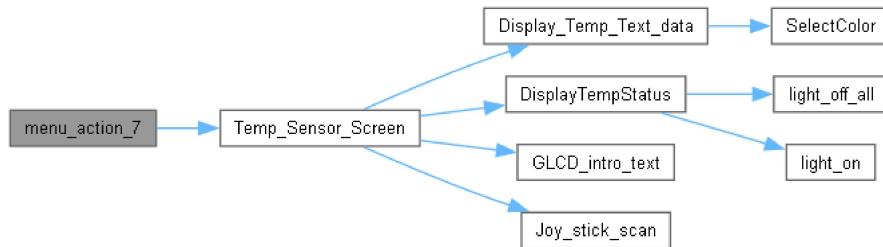
Here is the call graph for this function:



◆ menu_action_7()

```
void menu_action_7 ( void )
```

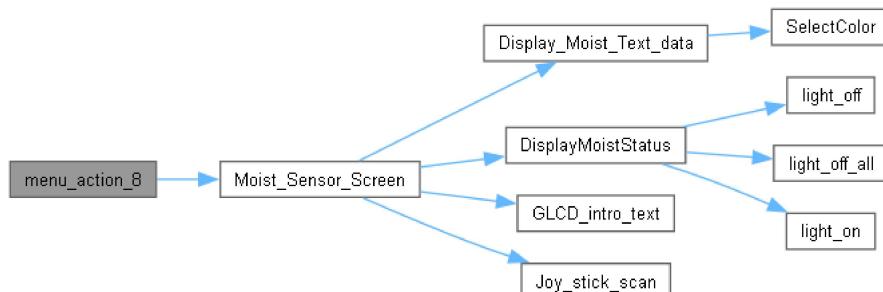
Here is the call graph for this function:



◆ menu_action_8()

```
void menu_action_8 ( void )
```

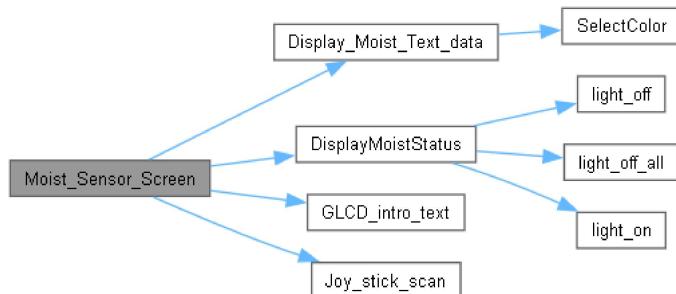
Here is the call graph for this function:



◆ Moist_Sensor_Screen()

```
void Moist_Sensor_Screen ( void )
```

Here is the call graph for this function:



Here is the caller graph for this function:



◆ osTimerDef()

```
osTimerDef ( PeriodicTimer ,  
             Timer_Callback )
```

◆ P_DisplayTime()

```
void P_DisplayTime ( void )
```

Here is the call graph for this function:



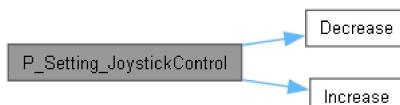
Here is the caller graph for this function:



◆ P_Setting_JoystickControl()

```
void P_Setting_JoystickControl ( int joystickStatus )
```

Here is the call graph for this function:



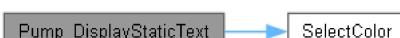
Here is the caller graph for this function:



◆ Pump_DisplayStaticText()

```
void Pump_DisplayStaticText ( void )
```

Here is the call graph for this function:



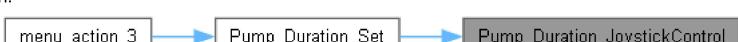
Here is the caller graph for this function:



◆ Pump_Duration_JoystickControl()

```
void Pump_Duration_JoystickControl ( int joystickStatus )
```

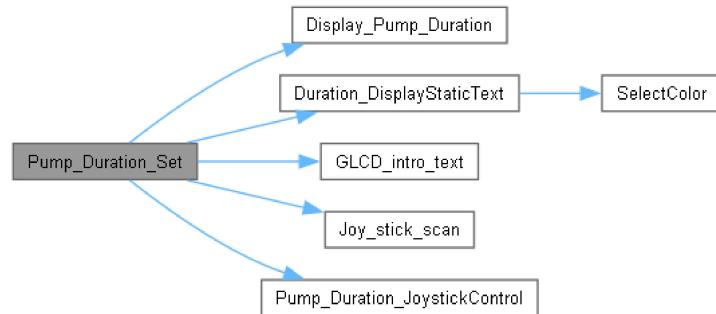
Here is the caller graph for this function:



◆ Pump_Duration_Set()

```
void Pump_Duration_Set ( void )
```

Here is the call graph for this function:



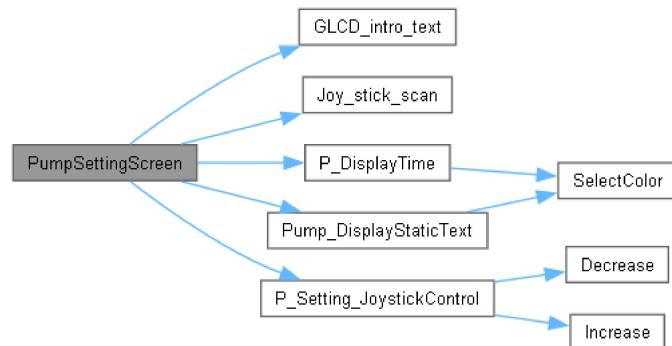
Here is the caller graph for this function:



◆ PumpSettingScreen()

```
void PumpSettingScreen ( void )
```

Here is the call graph for this function:



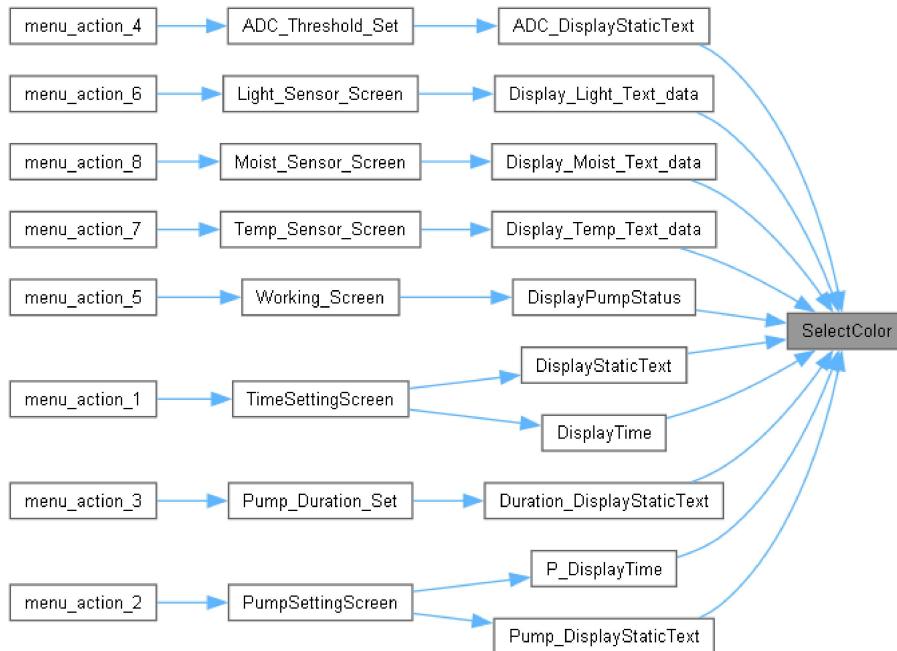
Here is the caller graph for this function:



◆ SelectColor()

```
void SelectColor ( int textType )
```

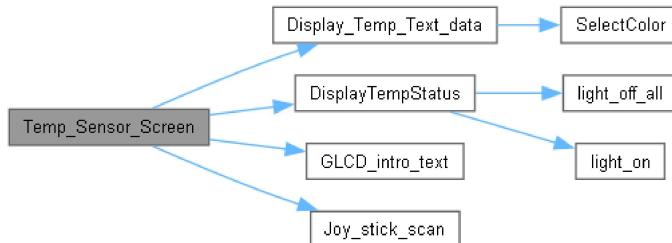
Here is the caller graph for this function:



♦ Temp_Sensor_Screen()

```
void Temp_Sensor_Screen ( void )
```

Here is the call graph for this function:



Here is the caller graph for this function:



♦ Time_and_data_init()

```
void Time_and_data_init ( void )
```

Here is the caller graph for this function:



♦ Time_display()

```
void Time_display ( void )
```

♦ Time_update()

```
void Time_update ( void )
```

Here is the caller graph for this function:



♦ Timer_Callback()

```
void Timer_Callback ( void const * arg )
```

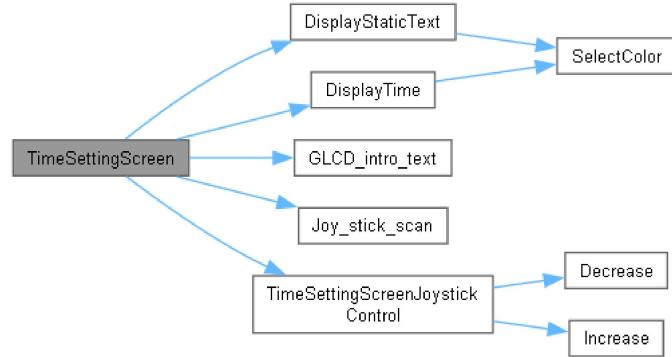
Here is the call graph for this function:



◆ TimeSettingScreen()

```
void TimeSettingScreen ( void )
```

Here is the call graph for this function:



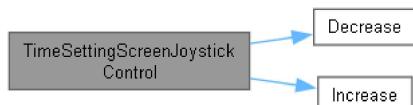
Here is the caller graph for this function:



◆ TimeSettingScreenJoystickControl()

```
void TimeSettingScreenJoystickControl ( int joystickStatus )
```

Here is the call graph for this function:



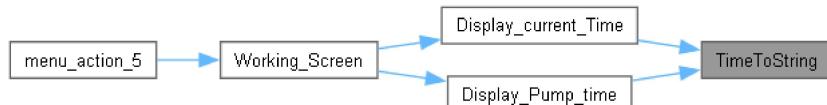
Here is the caller graph for this function:



◆ TimeToString()

```
void TimeToString ( char * string,  
Time * time )
```

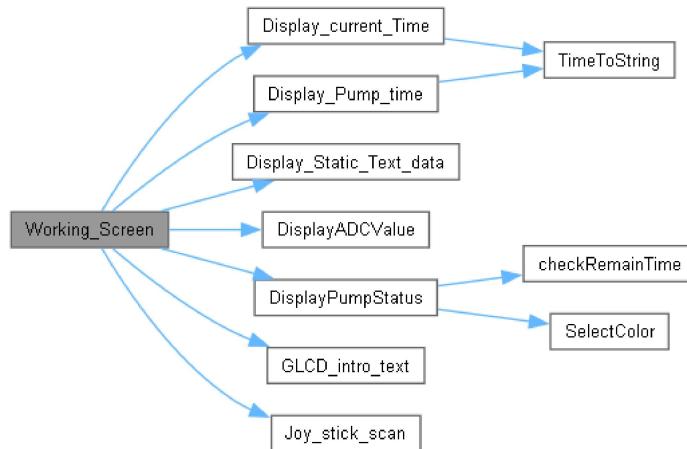
Here is the caller graph for this function:



◆ Working_Screen()

```
void Working_Screen ( void )
```

Here is the call graph for this function:



Here is the caller graph for this function:



Variable Documentation

◆ ADC_prog_Index

```
int ADC_prog_Index
```

◆ ADC_String

```
char ADC_String[20] = " "
```

◆ adcString

```
char adcString[5]
```

◆ current_item

```
volatile int current_item = 0
```

◆ Current_joystickStatus

```
int Current_joystickStatus = 0
```

◆ Data_pump

```
AutomaticPump Data_pump
```

◆ decimal

```
int decimal
```

◆ GLCD_Font_16x24

```
GLCD_FONT GLCD_Font_16x24
```

extern

◆ GLCD_Font_6x8

GLCD_FONT GLCD_Font_6x8

extern

◆ i

int i

◆ j

int j

◆ light

Light light

◆ Light_prog_Index

int Light_prog_Index

◆ lightString

char lightString[5]

◆ menu_status

volatile bool menu_status = false

◆ menu_updated

volatile bool menu_updated = false

◆ menuPump

MenuItem menuPump[MENU_ITEMS]

Initial value:

```
= {  
    {"Clock Setting",      &menu_action_1},  
    {"Pump Time Setting", &menu_action_2},  
    {"Duration Setting",  &menu_action_3},  
    {"ADC Threshold Set", &menu_action_4},  
    {"Working Status",     &menu_action_5}  
}
```

◆ menuSensor

MenuItem menuSensor[MENU_ITEMS_SENSOR]

Initial value:

```
= {  
    {"Light Sensor",        &menu_action_6},  
    {"Temp Sensor",         &menu_action_7},  
    {"Moisture Sensor",     &menu_action_8}  
}
```

Moisture moist

◆ moist

◆ Moist_prog_Index

```
int Moist_prog_Index
```

◆ moistString

```
char moistString[5]
```

◆ Now

Time Now

◆ Old_joystickStatus

```
int Old_joystickStatus =0
```

◆ P_setting_Index

```
int P_setting_Index =1
```

◆ P_Time_Index

```
int P_Time_Index
```

◆ programIndex

```
int programIndex =1
```

◆ Pump_duration_prog_Index

```
int Pump_duration_prog_Index
```

◆ Pump_time

Time Pump_time

◆ result

```
int result = 0
```

◆ Temp_prog_Index

```
int Temp_prog_Index
```

◆ temperature

Temp temperature

◆ tempString

```
char tempString[5]
```

◆ Time_Index

```
int Time_Index =0
```

◆ TimerId

```
osTimerId TimerId
```

◆ timeString

```
char timeString[9]
```

◆ volts

```
float volts = 0
```

◆ Working_Index

```
int Working_Index
```