Demo Board Manual

megawin

MG32F02V

ARGB LED Demo Set

Using Manual

Version 0.1

Date 2022/3/02

## List of Contents

1. Introduction

PCB Version

MG04-06A(MG32F02V_ARGB)

Features

1. ARGB LED Display: Display serial pattern on ARGB LED through ASB interface.
2. SPI LCD Display: Display picture on 240x320 LCD through SPI interface.
3. Touch Key: Detect multi-key input by SARADC and GPIO pins.
4. Button Key: Detect multi-key input by SARADC and show message on LCD.
5. SPI Module: SPI Module and SPI Flash for storing ARGB data.
6. BLE Module: BLE Module through SPI/UART communication.
   (As code size issue, the BLE function is not implemented in Demo board default project code.)
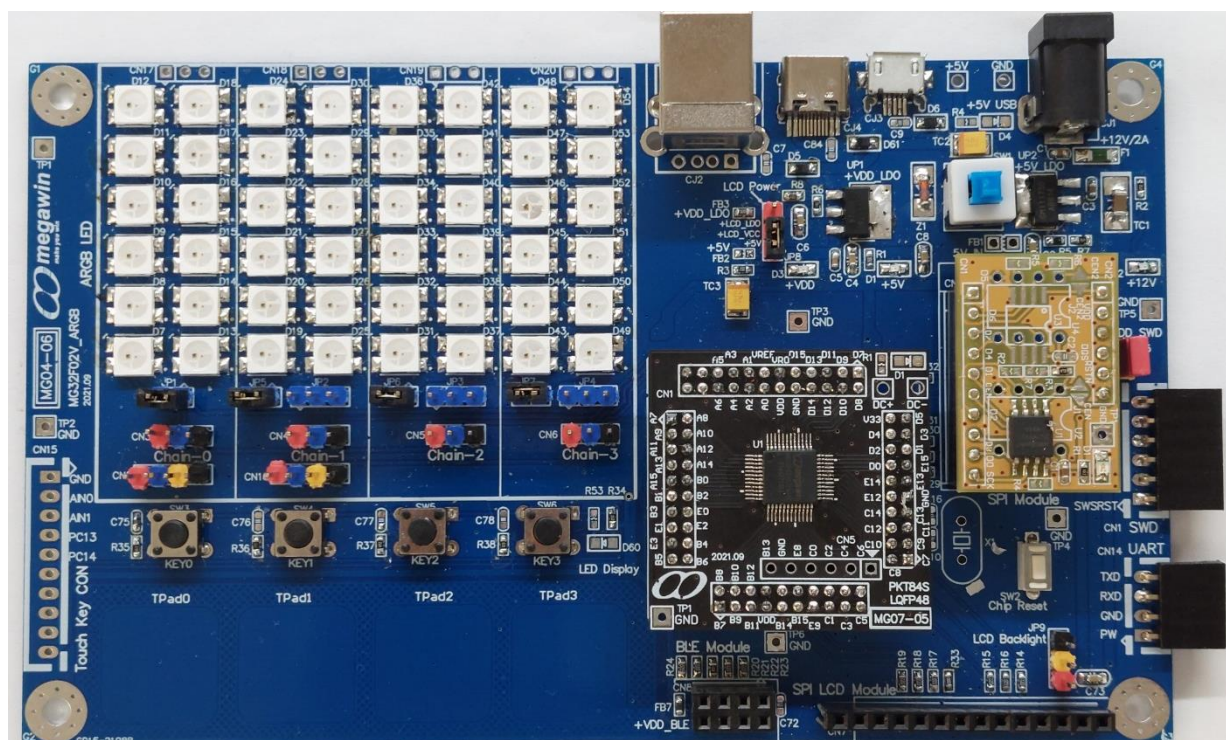
System Block
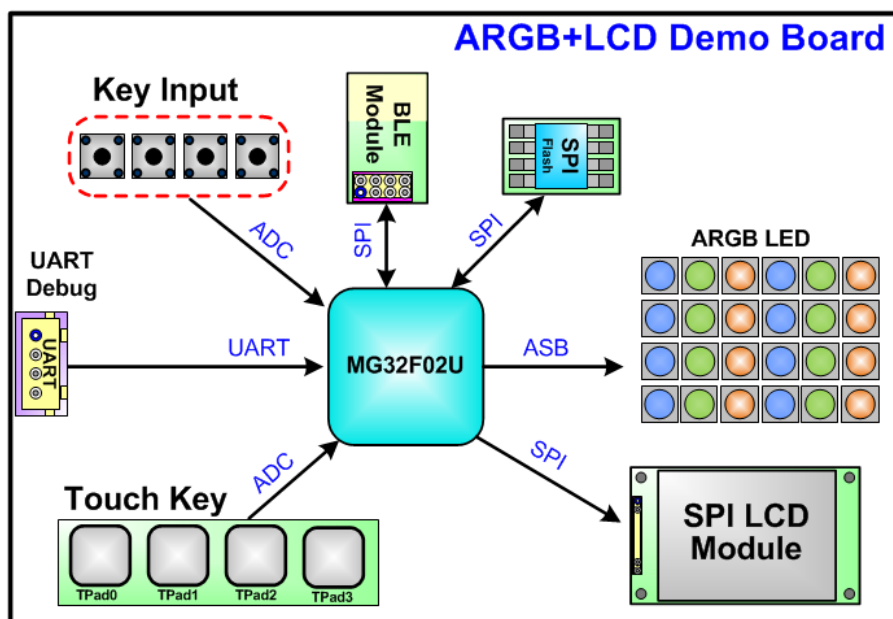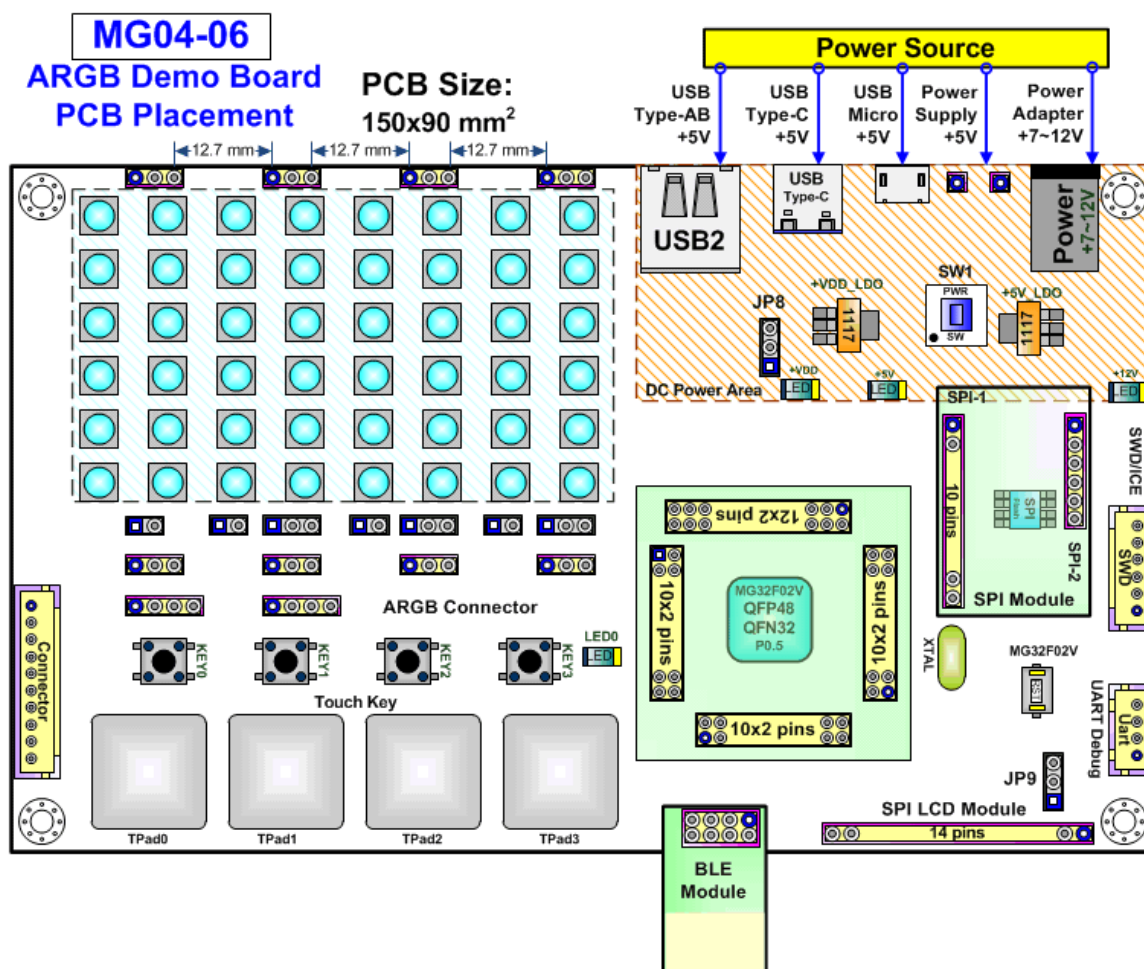
2. PCB Information

PCB Placement and Function Block Diagram
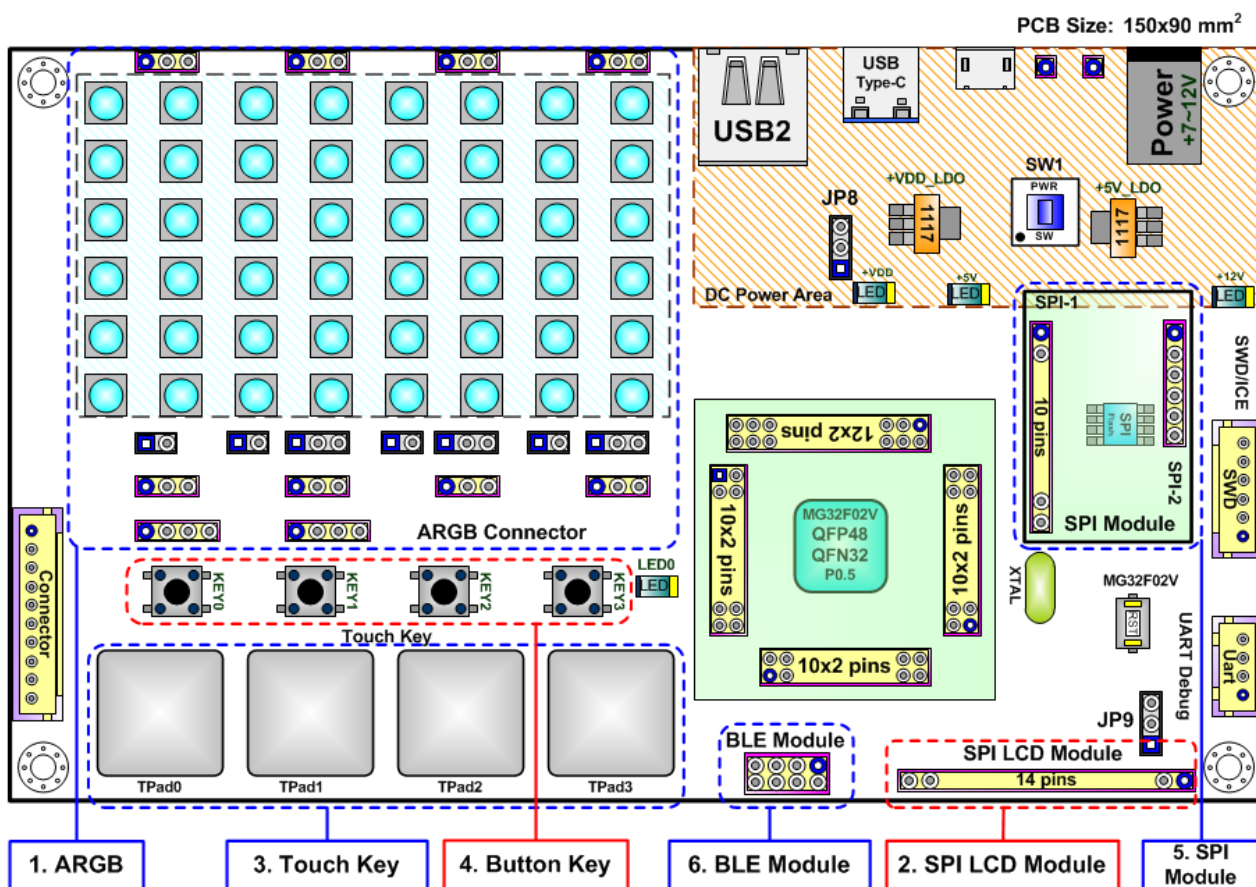
Main Board Pictures

PCB Outline and Options

◆ **DC Input Power Source**

    User can input +5 volt DC power to the Micro USB connector (CJ3), the optional A/B/C-type USB connectors (CJ2/CJ4) from external USB power source or on board +5V/GND connection holes from external power supply. The push button SW1 is used to turn on/off the input DC +5V power.

    These is one optional +7~12 volt DC input to the DC power jack (CJ1) from external power adapter. The input +7~12 volt DC power can also generate the +5 volt DC power by through the optional +5V_LDO power regulator.

◆ **SWD Connector**

    User can connect the MG32F02V032 MCU to the external SWD controller or debug ICE by through the SWD connector (CN1).

◆ **UART Connector**

    User can connect the MG32F02V032 MCU to the external UART controller or PC COM port by through the UART Debug connector (CN14).

◆ **ARGB Connector**

    User can connect the MG32F02V032 MCU to the external ARGB LED strip line through the ARGB connectors (CN3/4/5/6).

◆ **LCD Module Power Option (JP8)**

Pin-1,2 short : +5V

Pin-2,3 short : +LCD_LDO (1117 LDO power regulator)

◆ **RGB LED**

There are two RGB LED parts which include one on-board RGB0 and one optional RGB1.
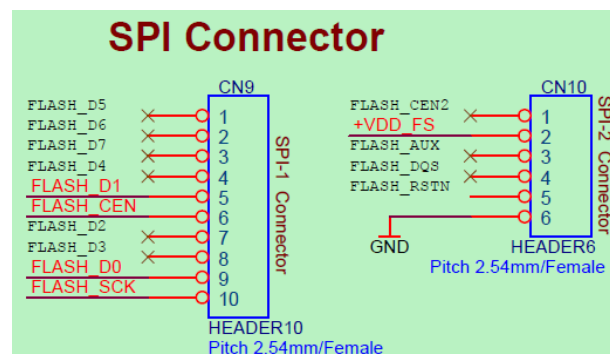
◆ **Mono LED**

There are one on- board mono LED part LED0.

Module Board and Components
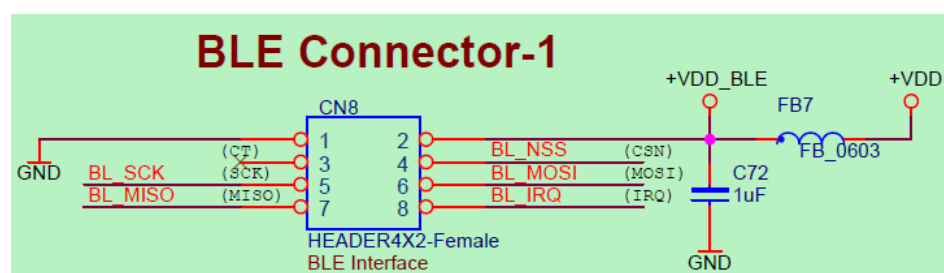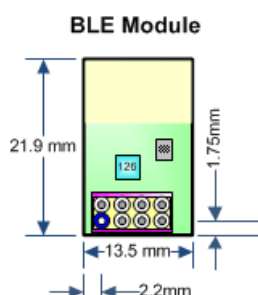
1. MG32F02V032 : 32-Bit ARM Cortex M0 MCU by directly chip on board or PKT84S MCU daughter board (MG07-05) option

2. SPI TFT LCD Module : Display LCD with SPI interface
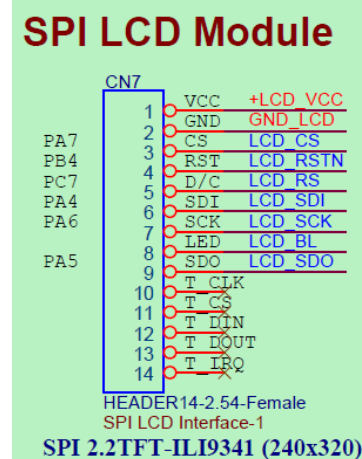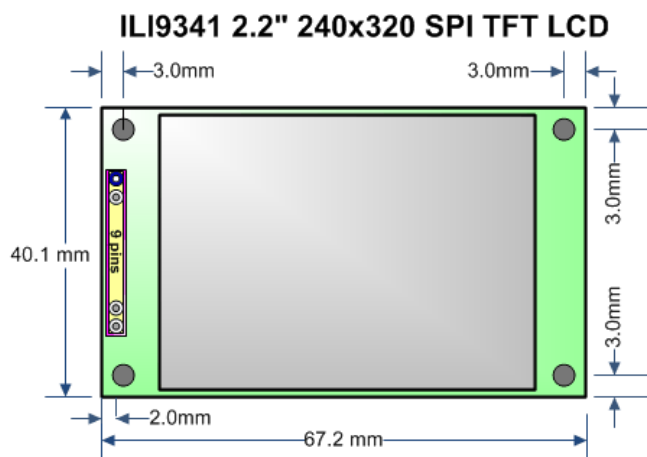
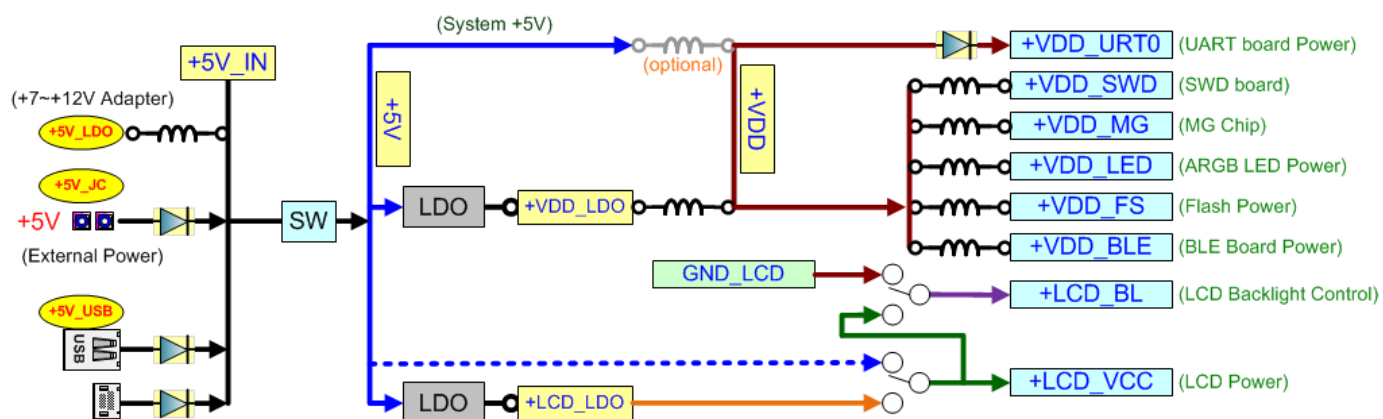3. SPI Module : SPI flash memory to store LCD display and others raw data
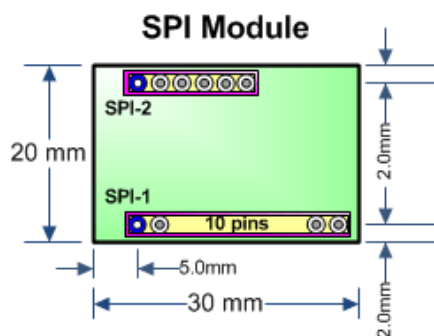
4. BLE Module : BLE module board by SPI communication interface

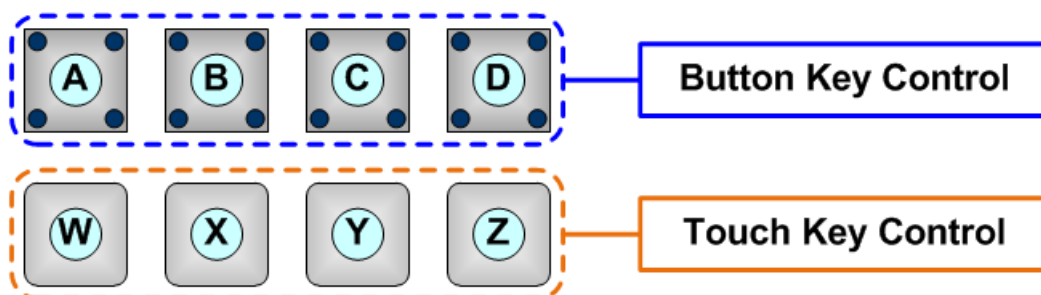## PCB Power Connection

Power Connection Diagram

PCB Assembly

3. ARGB LED and Key Control

Key Matrix

- The keys of A, B, C and D are used for LCD OSD menu control by push-pop button-key.
- The keys of W, X, Y and Z key are used for ARGB LCD directly control by touch-key.

Button Key Control

These keys are used to control the OSD function menu on the SPI LCD. User can refer LCD Menu Control chapter for more detail information.

Button Key		\<ESC\> ESC or Change Up Level		\< - \> Minus or Change Front		\<Enter\> Function Select		\< + \> Plus or Change Next	

Touch Key Control

These keys are used to directly control the ARGB LED matrix display functions.

Touch Key		\<Mode\> ARGB Mode Select		\<Fun1\> ARGB Function1 Set		\<Fun2\> ARGB Function2 Set		\<Demo\> ARGB Auto Demo

- ◆ **\<Mode\> Key**

  User can directly touch \<Mode\> key to enable the ARGB LED matrix display and change the display pattern as following list.

  1. Single color
  2. Cross
  3. Net
  4. String

- ◆ **\<Fun1\> \<Fun2\> Key**

  User can touch \<Fun1\> key to change the ARGB LED 1st display color and touch \<Fun2\> key to change the ARGB LED 2nd display color. The ARGB LED 2nd display color is only used for "Net" mode.
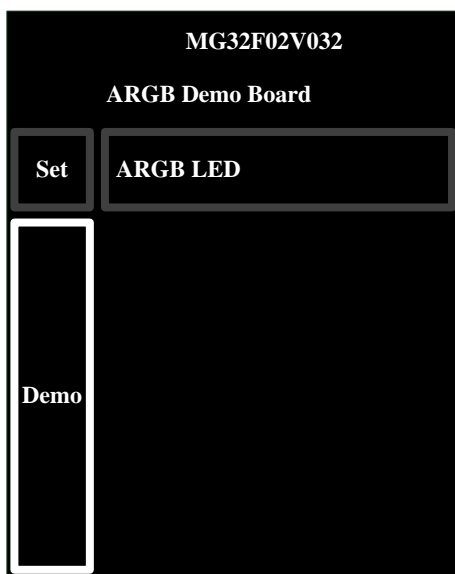
- ◆ **\<Demo\> Key**

  User can directly touch \<Demo\> key to enable the auto demo mode of ARGB LED matrix display.

4. LCD Menu Control

The SPI TFT LCD is used to show the OSD function menu for the ARGB LED matrix display and others.

Root Main Menu

User can press the keys of < - >, < + > to select the function item. Press the key of <Enter> to enter the sub menu of selected function item.
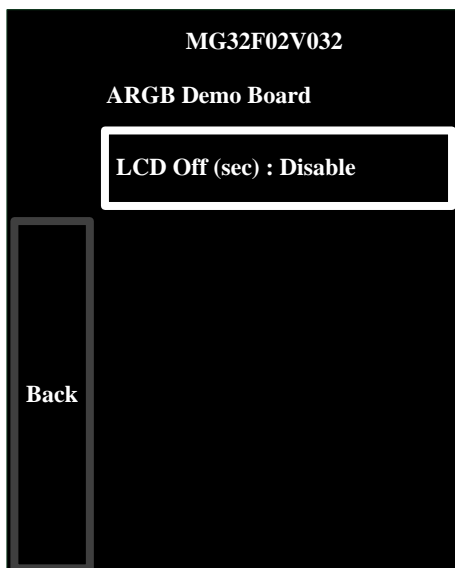

Set Menu

This menu is used to set:

(1) 'LCD Off': the LCD off time. When the LCD off time is time-out, the LCD will be automatically entering off mode and the LCD backlight is also turned off.

It is the same operation as Main Menu that user can select the sub function item and press the key of <Enter> to execute selected function item. Also user can select 'Back' to return Main Menu.

Demo Mode

User can select the "Demo" to run the ARGB auto display pattern showing on the ARGB 6x8 LED matrix. That is automatically sequential showing the patterns of the display mode list as following list.

1. Single color
2. Cross
3. Net
4. String
5. Repeat 1. ~ 5.

When the "Demo" mode is running, user can select the "Demo" again to stop the ARGB LED auto demo mode.
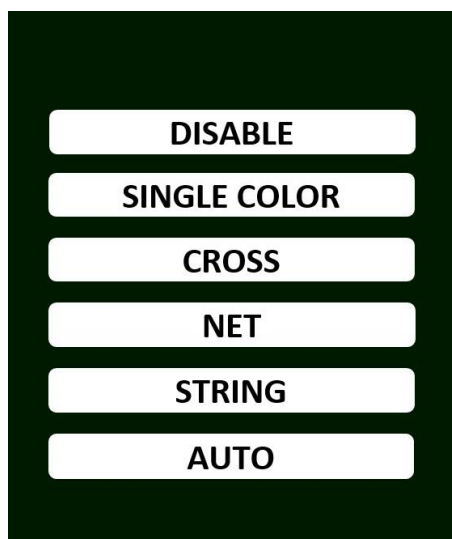
ARGB LED Menu

This menu is used to select ARGB demo mode and showing on board ARGB LED matrix.

User can select the "MODE" or "COLOR" by pressing the keys of < - >, < + >. Then user can press the key of <Enter> to enter the sub menu of "MODE" or "COLOR". Also user can press the key of <Esc> to return Main Menu.
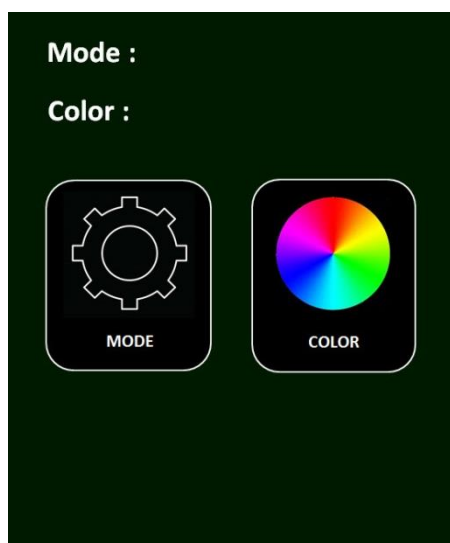
◆ **ARGB LED "MODE" Sub Menu**

　　User can select the ARGB display mode by pressing the keys of < - >, < + >. Then user can press the key of <Enter> to execute selected display mode. Also user can press the key of <Esc> to return ARGB LED Menu.

DISABLE

SINGLE COLOR

CROSS

NET

STRING

AUTO

◆ **ARGB LED "COLOR" Sub Menu**

　　When user selects the ARGB display mode of "Net" on ARGB LED "MODE" sub Menu, the OSD menu will be entering [1ST / 2ND COLOR Menu] sub menu. User can select the color pallet of ARGB LED 1st display color or 2nd display color by pressing the keys of < - >, < + >. Then user can press the key of <Enter> to enter [Color Select Pallet] sub menu. Also user can press the key of <Esc> to return ARGB LED Menu. When the OSD menu is entering [Color Select Pallet] sub menu, user can set the ARGB LED 1st display color or the ARGB LED 2nd display color.

　　When user selects the others' ARGB display mode except "Net" mode, the OSD menu will be directly entering [Color Select Pallet] sub menu to set the ARGB LED display color.

[1ST / 2ND COLOR Menu]　　　　**[Color Select Pallet]**

1ST COLOR

2ND COLOR
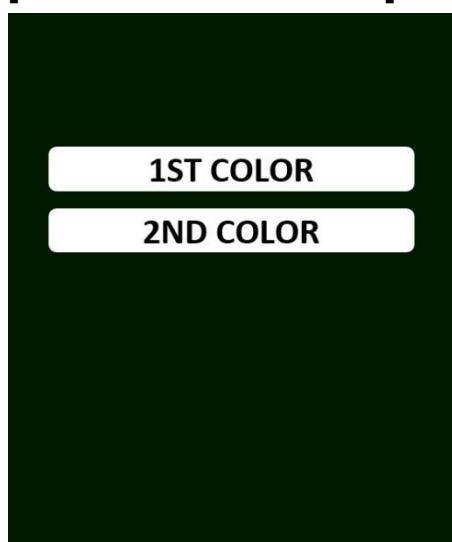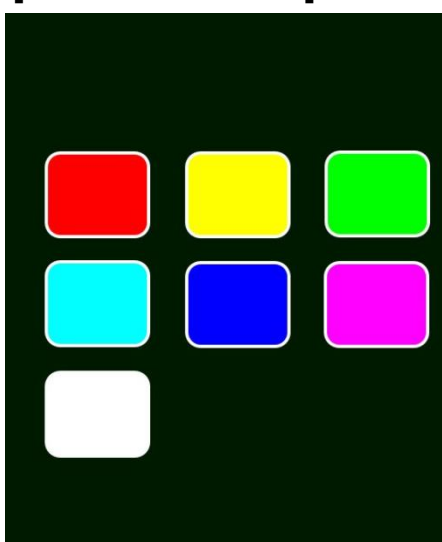
5. Test List

SPI TFT LCD Module List

    1. ILI9341 : 240x320 TFT LCD

SPI Module List

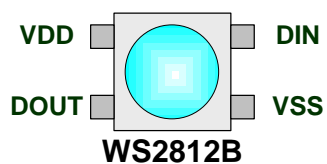   **1.** DB01-02(SPI4_Flash) : SPI 4-Line Flash Board

BLE Module List

    1. MacroGiga : MG126 BLE module

SPI Flash Part List

    1. MXIC MX25L3206E 32M-bit

    1. MXIC MX25L12835F 128M-bit

    2. MXIC MX25R512F 512K-bit

    3. Winbond W25Q16BV 16M-bit

ARGB Part List

    1. Worldsemi : WS2812B

WS2812B

6. Revision History

Revision V1.0 (2022_0302)	Chapter
1	Initial version	