OLED Button Control Board

Product Specification

Part Name: OLED Push Button Control Board
Part ID: CY-7051
Doc No.:   SCY-7051-V02

Customer:	
Approved By:	
Date:	

Chung Yuan Technology CO., Ltd

Table of Contents

Record of Reversion

| Rev	Issued Date	Description
V1.0	12/19/2008	New Create

1. Features

◆ MCU Silicon Labs C8051F340
  - 64K Program Flash Memory
  - 4352RAM
◆ Build-in 4M-Bit Image Flash Memory
  - OLED 96x64 RGB: 40 images.
  - OLED 96x96 RGB: 24 images.
  - OLED 128x128 RGB: 16 images.
◆ RS485 Communication Interface
  - Baud Rate: 115200 bits/sec
  - Data Bit = 8/Parity = None
  - Stop Bit = 1/ Hand Shaking = None
  - Driver are Short-Circuit Current Limited & Protected Against
◆ ID Address 1~16
  - DIP Switch Define Address from 1 to 16
  - Allows up to a total of 16 Transceivers on a Bus
◆ Voltage Supply Input: 5V
◆ PC Application Software

2.   Schematic

3. PCB Layout
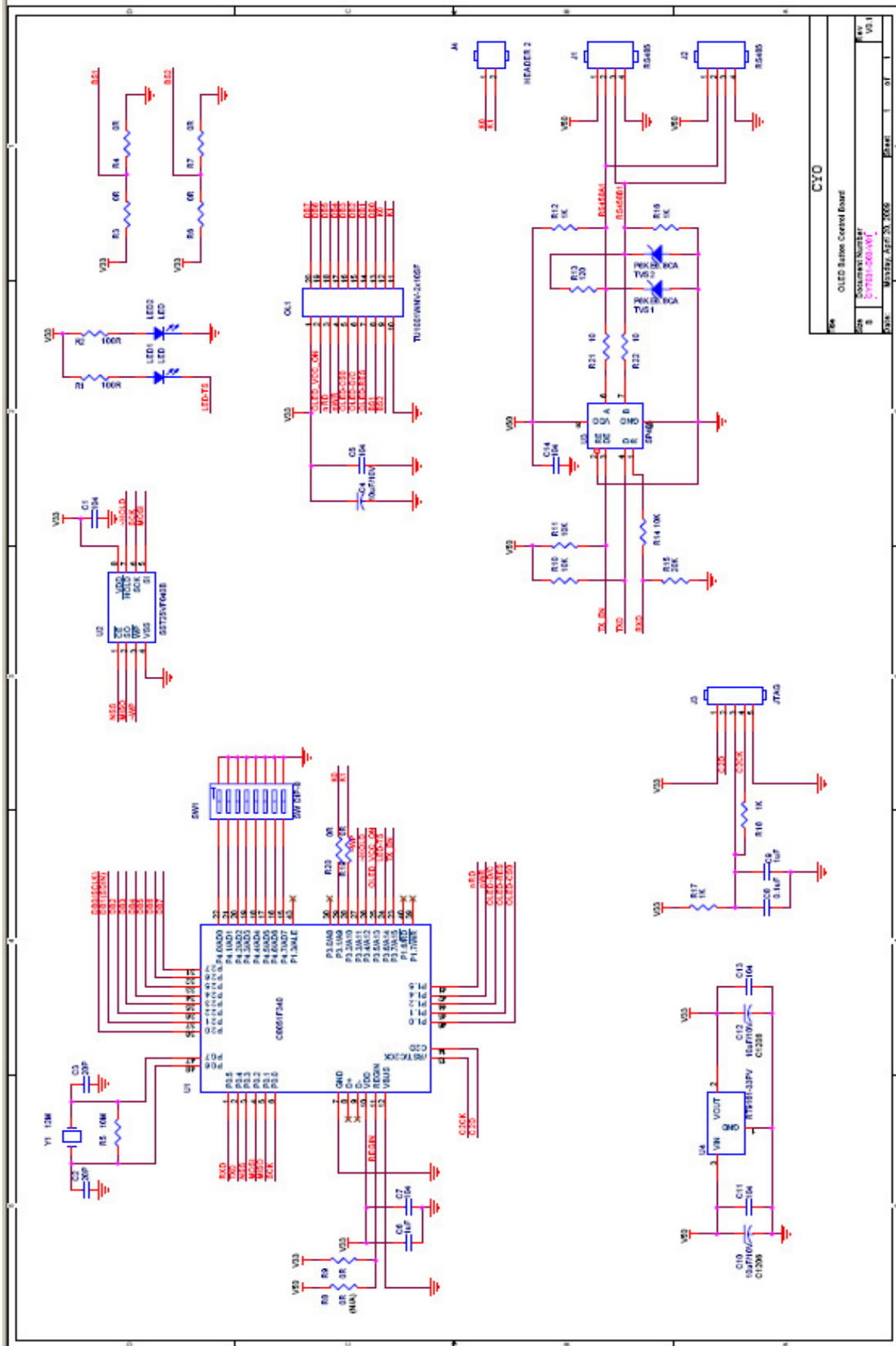
4. Connector Assignment

4.1. Dip Switch Setup

● **ON=O /OFF=X**

ID Address	SW1_1	SW1_2	SW1_3	SW1_4
1	X	X	X	X
2	O	X	X	X
3	X	O	X	X
4	O	O	X	X
5	X	X	O	X
6	O	X	O	X
7	X	O	O	X
8	O	O	O	X
9	X	X	X	O
10	O	X	X	O
11	X	O	X	O
12	O	O	X	O
13	X	X	O	O
14	O	X	O	O
15	X	O	O	O
16	O	O	O	O

4.2. J1 & J2 (RS485 & Power Supply)

J1	PIN 1	PIN 2	PIN 3	PIN 4
FUNCTION	+5V	TA	TB	GND

J2	PIN 1	PIN 2	PIN 3	PIN 4
FUNCTION	+5V	TA	TB	GND

● +5V : Positive Supply

● TA : RS485 Non-inverting Receiver Input and Non-inverting Driver Output

● TB : RS485 Inverting Receiver Input and Inverting Driver Output

● GND : Ground

5. Protocol Description

5.1. Package structure

◆ **Structure**

Byte 1	Byte 2	Byte 3	Byte 4 ~
0x1b	Destination Device ID	0xff – Device ID	Payload

◆ **Description**

● Byte 1: Always 0x1b

● Byte 2: The device ID of receiver

ID number	Device	Remark
0x00	Host	
0x01 ~ 0xFE	Specific OLED button	
0xFF	All of OLED button	Don't need to respond any message to Host

● Byte 3 : the number of 0xff minus byte 2

● Byte 4~ : Payload

5.2. Command (The contents of payload)

◆ **Display Internal Image**

● Function: Display the image which is stored in internal memory of OLED button.

Sender	Payload Syntax	Description
Host	"D" + xxx (Notice : image 000 is for power on.)	xxx is the image number 96x64 OLED : xxx is from 000 to 40 96x96 OLED : xxx is from 000 to 24 128 x 128 OLED : xxx is from 000 to 15
OLED button	"OK"	Done

◆ **Set Display on/off**

● Function: Turn-on or turn-off the OLED.

Sender	Payload Syntax	Description
Host	"d0"	Turn-off OLED
Host	"d1"	Turn-on OLED
OLED button	"OK"	Done

◆ **Set Display Brightness**

● Function: To adjust the brightness of OLED.

Sender	Payload Syntax	Description
Host	"B" + xx	xxx is the base of OLED brightness, from 00 to 15.
OLED button	"OK"	Done

◆ **Transfer image**

● Function: Transmitting an image and show it on OLED immediately.

Sender	Payload Syntax	Description
Host	"G" + hhhh + "S" + d0 + d1 + d2 + … + d(hhhh-1)	hhhh is the quantity of byte of image in hexadecimal (0x0000~0xffff), d0 d1 d2 … are the image data
OLED button	"OK"	Done

◆ **Save image to internal memory**

● Function: Store the current image of OLED in memory.

Sender	Payload Syntax	Description
Host	"S" + xxx (Notice : image 000 is for power on.)	xxx is the image number 96x64 OLED : xxx is from 000 to 40 96x96 OLED : xxx is from 000 to 24 128 x 128 OLED : xxx is from 000 to 15
OLED button	"OK"	Done

1. **Request product information**

● Function: Asking the product information of OLED button.

Sender	Payload Syntax	Description
Host	"I"	
OLED button	ppppppp+ fffff	ppppppp is the product ID, the firmware version is the fffff

● The Product ID list:

Item	Product ID	Description	Brand
1	CY-1021	96 x 64 (RGB) OLED Push Button	CYO
	CY-3021	96 x 64 (RGB) OLED Display Module	
2	CY-1031	96 x 96 (RGB) OLED Push Button	CYO
	CY-3031	96 x 96 (RGB) OLED Display Module	

| 3 | CY-1051(*) | 128x 128 (RGB) OLED Push Button | CYO |
| | CY-3051 | 128x128 (RGB) OLED Display Module | |

(*) CY-1051: On the stage of development.

2. Request switch status

● Function: Asking the switch status.

Sender	Payload Syntax	Description
Host	"T"	
OLED button	"0"	The switch of OLED button is OPEN.
OLED button	"1"	The switch of OLED button is CLOSE.

6. Application Software

6.1. Setup

1. Run OLED converter program
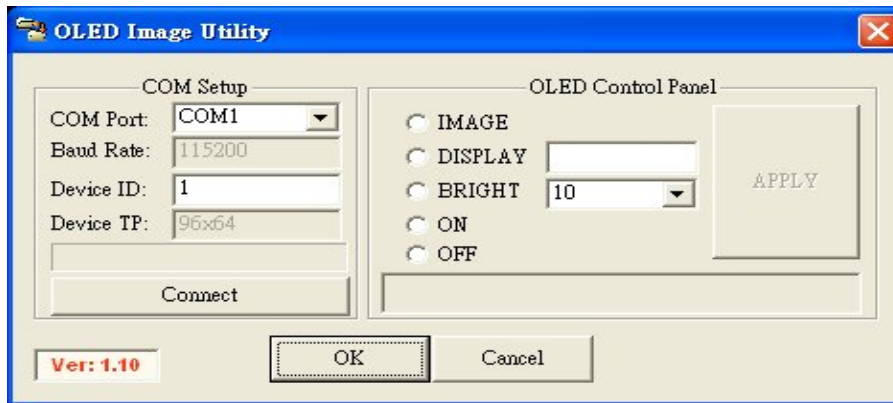
3. Select COM Port
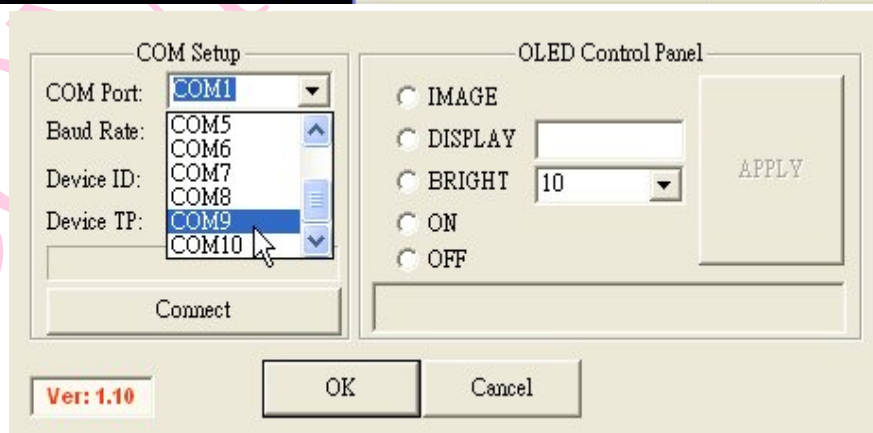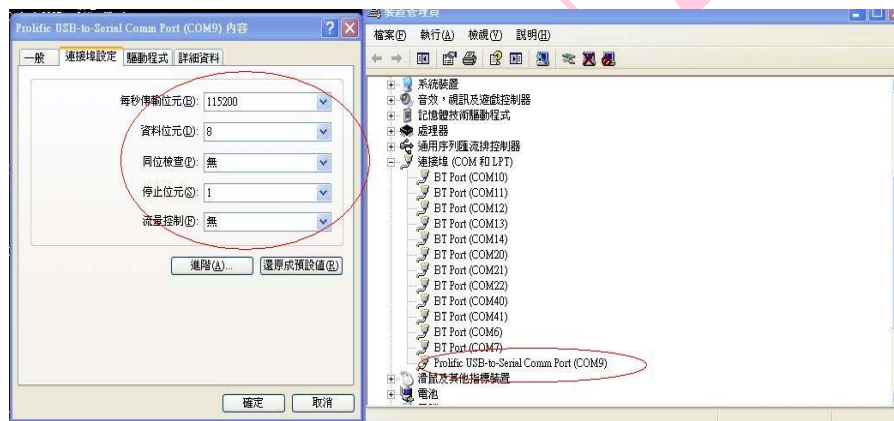
- Check PC COM port
- Setup Baud Rate 11520
  Data Bit=8 / Parity=None
  Stop Bit=1/ Hand Shaking=None
- Setup OLED converter COM Port

4. Input ID Address
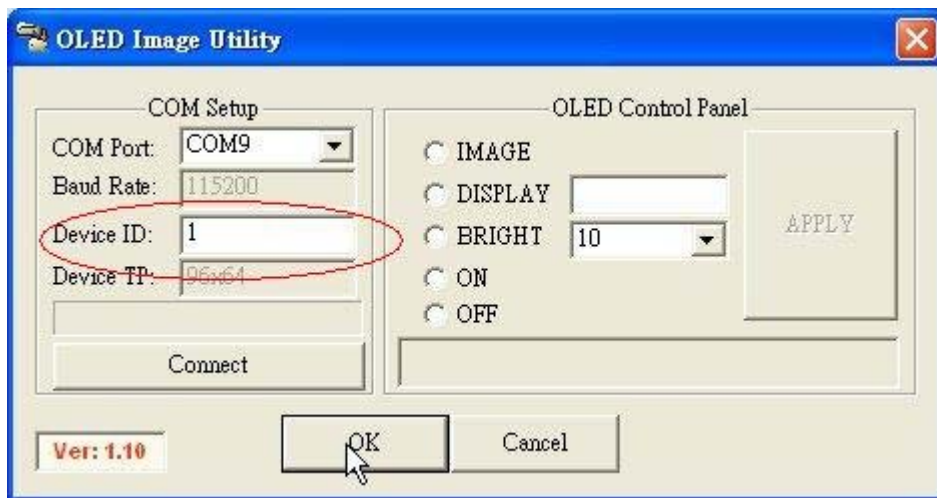
- To make sure your dip switch and the device ID are the same.
- Regarding to Dip Switch setup, please refer to Section 4.1..

5. Click Connect
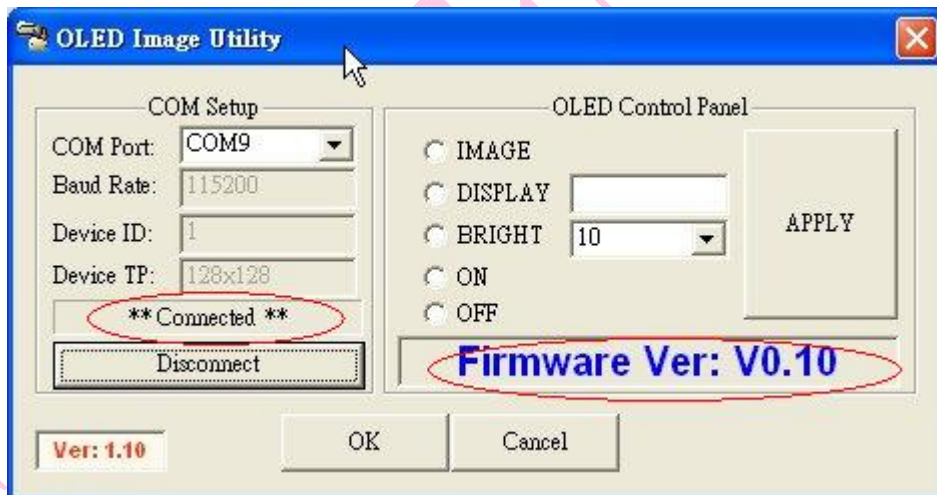
- Click on connect icon
- Feedback "**Connected**" and "Firmware Ver:" mean your PC and the control board are linked.
- Feedback "**FAILED**": please check Section 6.1. Setup Point 1 to 3.

6.2. OLED Control

◆ **IMAGE**
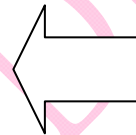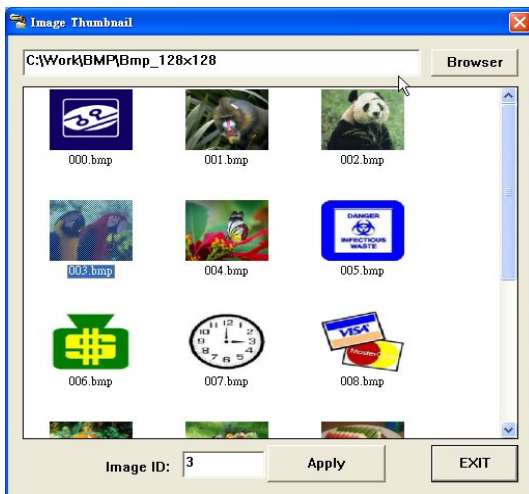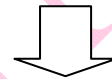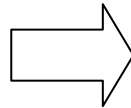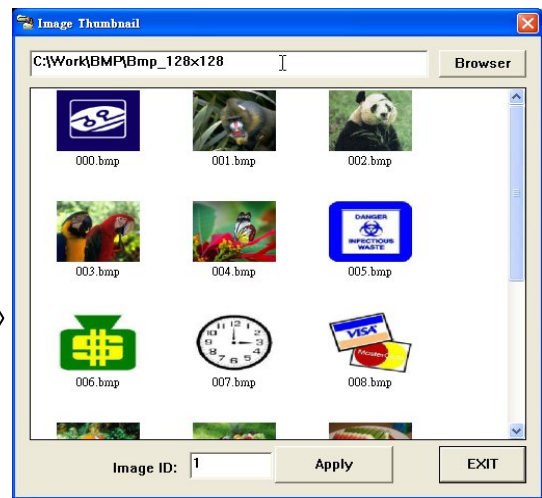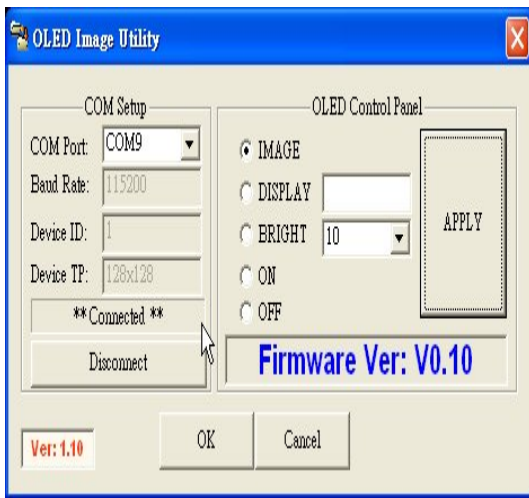

- How to storage your images into the control board?
  1. Select IMAGE icon and Click "APPLY".
  2. Select one image file and input Image ID.
     - ■ Image File supports BMP format only.
     - ■ BMP pixel cannot be smaller than OLED Resolution.
     - ■ Image ID input must follow table below:
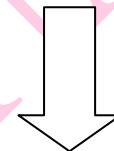
OLED PIXEL	96x64	96x96	128x128
Image ID	1~40	1~24	1~15

  3. Click "Apply" after setup your image ID & file, the image will show up on OLED Display. This image is stored in the control board memory.
  4. Store your images into the control board by the steps above.
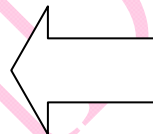
◆ **DISPLAY**
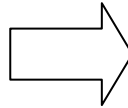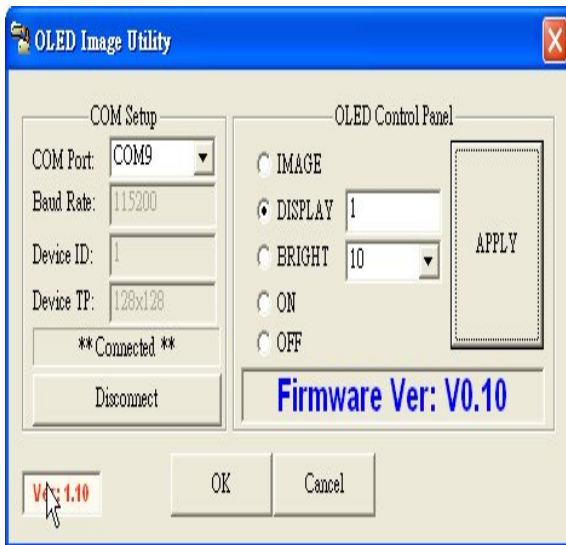
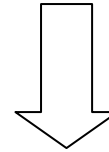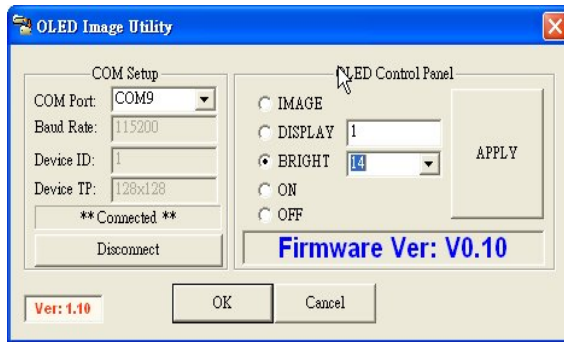Display 1

Display 3

Display 2

- How to show up your image on OLED Display?
    1. Make sure all your images are already stored in your control board memory.
    2. Select DISPLAY icon and input the image number, then Click "APPLY".
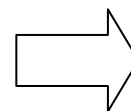   3. The image will show up on OLED as your command.

◆ **BRIGHTNESS**
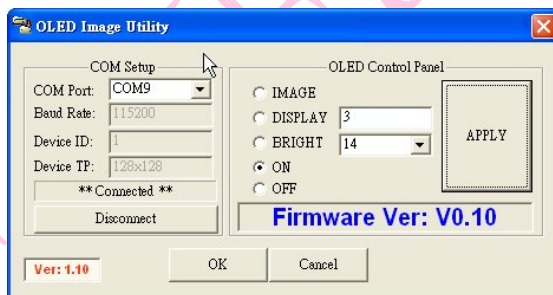

Bright 10:   Bright 15:

- How to adjust the brightness of your OLED image?
- Select BRIGHT icon and input the brightness level, then Click "APPLY".
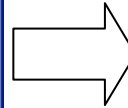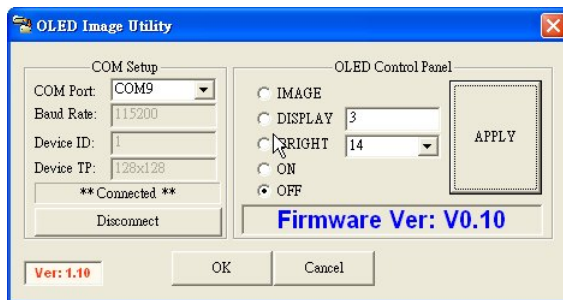 1. The higher (bigger) the brightness level, the brighter.

◆ **ON**

- How to turn on your OLED Display?
  1. Select ON icon and Click "APPLY". Your OLED will light up.

◆ **OFF**

● How to turn off your OLED Display?

     1. Select OFF icon and Click "APPLY". Your OLED will power off.