SPECIFICATION Version: 0

CUSTOMER :	
MODULE NO. :	**WEO12864W#ZP3N00D00-FC**

APPROVED BY: **(FOR CUSTOMER USE ONLY)**	

SALES BY	APPROVED BY	CHECKED BY	PREPARED BY
RELEASE DATE:			

■APPROVAL FOR SPECIFICATIONS ONLY

□APPROVAL FOR SPECIFICATIONS AND SAMPLE

Represented by:

first FC components

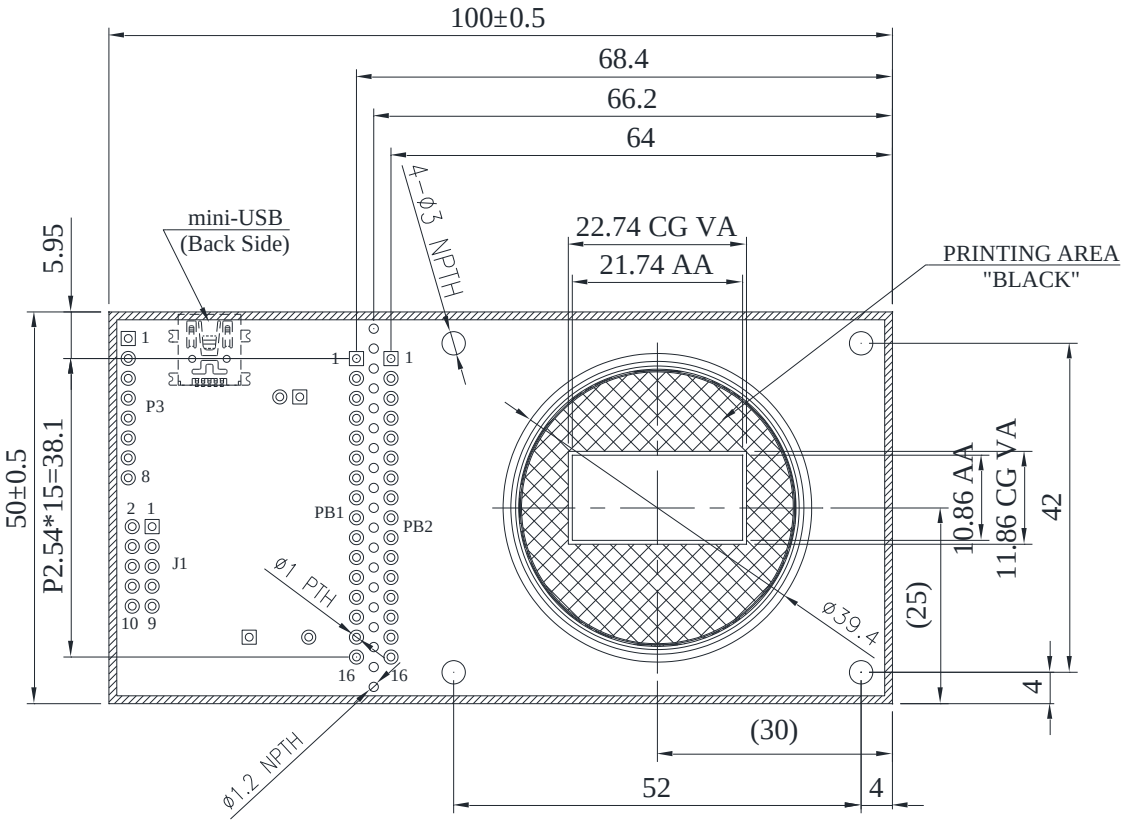
FIRST Components srl Via Cavour 69, 21020 Buguggiate (VA)

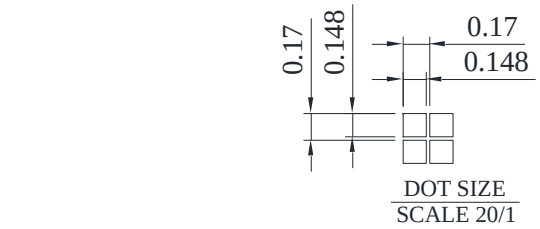
T. +39 0332 1888005 web: www.first-components.com

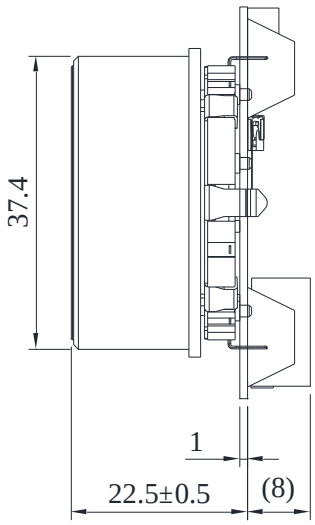
2.General Specification

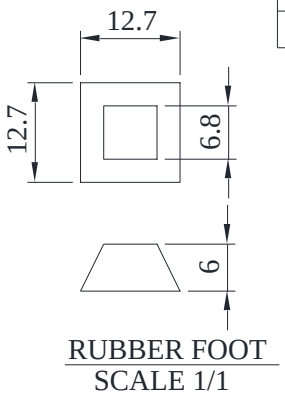
Item	Dimension	Unit
Dot Matrix	128 x 64 Dots	–
Module dimension	100 x 50 x 22.5	mm
Active Area	Ø 21.74	mm
Pixel Size	0.148 x 0.148	mm
Pixel Pitch	0.17 x 0.17	mm
Display Mode	Passive Matrix	
Panel type	OLED , White	
Duty	1/64	
Controller IC	SSD1306	
Interface	4-SPI	
Size	0.96 inch	

3. Contour Drawing









PB1 & PB2	
PIN	SYMBOL
1	VSS
2	VDD5
3	VCI
4	CS#
5	RES#
6	DC#
7	SCL
8	SDA
9	NC
10	NC
11	NC
12	FSW_A
13	FSW_B
14	FSW_C
15	VDD5
16	VSS

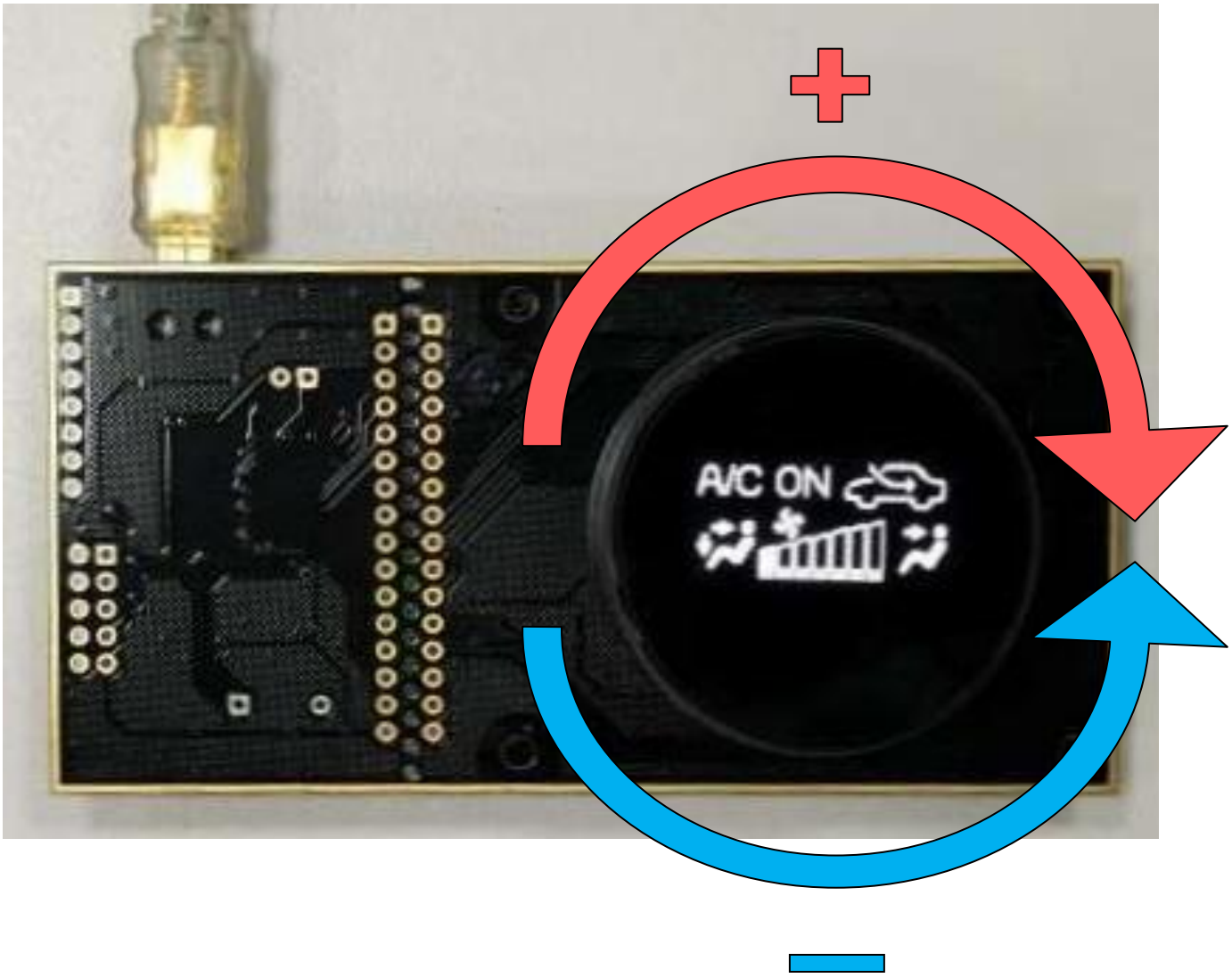
The non-specified tolerance of dimension is ±0.3 mm .

Please refer to the 3D diagram of the following website for the installation and fixing method of Encoder:
https://tech.alpsalpine.com/prod/c/html/encoder/ring/ec35ah/ec35ah240403.html

4. Demo mode

Power Supply: mini USB DC5V 1A

How to use Demo Kit



5. Developing mode



5.1 Interface Pin Function

Pin No.	Symbol	Description
1	VSS	Ground pin.
2	VDD5	Voltage Regulator Input
3	VCI	Low voltage power supply and power supply for interface logic level.
4	CS#	The chip is enabled for MCU communication only when CS# is pulled LOW (active LOW).
5	RES#	This pin is reset signal input. When the pin is pulled LOW, initialization of the chip is executed. Keep this pin HIGH during normal operation.
6	DC#	This pin is Data/Command control pin connecting to the MCU.
7	SCL	The serial clock input
8	SDA	The serial data input
9	NC	No connection
10	NC	No connection
11	NC	No connection
12	FSW_A	Encoder terminal signal-A
13	FSW_B	Encoder terminal signal-B
14	FSW_C	Encoder terminal signal-C
15	VDD5	Voltage Regulator Input
16	VSS	Ground pin.

6.Absolute Maximum Ratings

Item	Symbol	Min	Max	Unit	Notes
Voltage Regulator Input	VDD5	-0.3	5.5	V	—
Supply Voltage	VCI	-0.3	4.0	V	1, 2
Operating Temperature	TOP	-20	+70	°C	—
Storage Temperature	TST	-30	+80	°C	—

Note 1: All the above voltages are on the basis of “VSS = 0V”.

Note 2: When this module is used beyond the above absolute maximum ratings, permanent breakage of the module may occur. Also, for normal operations, it is desirable to use this module under the conditions according to Section 6 ‘’Electrical Characteristics’’. If this module is used beyond these conditions, malfunctioning of the module can occur and the reliability of the module may deteriorate

7.Electrical Characteristics

7.1 DC Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Voltage Regulator Input	VDD5	—	1.8	5.0	5.25	V
Supply Voltage	VCI		1.65	3.3	3.5	V
Input High Volt.	VIH	—	0.8xVCI	—	VCI	V
Input Low Volt.	VIL	—	0	—	0.2xVCI	V
Output High Volt.	VOH	Iout = 100uA	0.9xVCI	—	VCI	V
Output Low Volt.	VOL	Iout = 100uA	0	—	0.1xVCI	V

7.2 Timing Characteristics

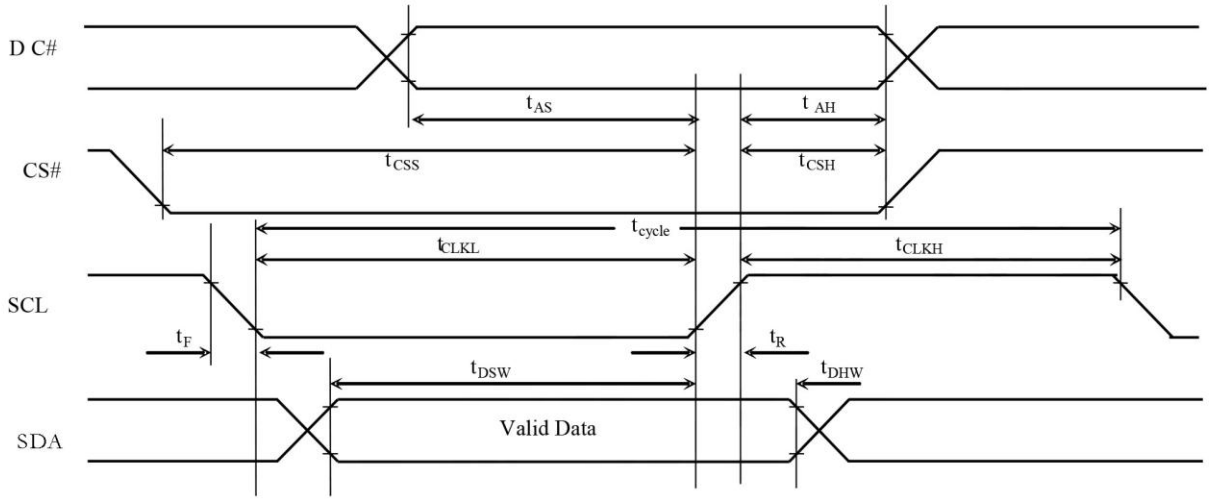
7.2.1 OLED IC SSD1306 for SPI Interface

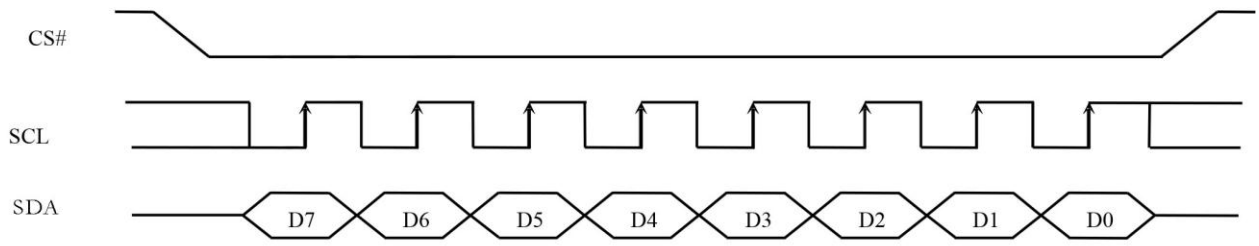
4-wire Serial Interface Timing Characteristics

(V_{CI} - V_{SS} = 1.65V to 3.3V, T_A = 25°C)

Symbol	Parameter	Min	Typ	Max	Unit
t_{cycle}	Clock Cycle Time	100	-	-	ns
t_{AS}	Address Setup Time	15	-	-	ns
t_{AH}	Address Hold Time	15	-	-	ns
t_{CSS}	Chip Select Setup Time	20	-	-	ns
t_{CSH}	Chip Select Hold Time	10	-	-	ns
t_{DSW}	Write Data Setup Time	15	-	-	ns
t_{DHW}	Write Data Hold Time	15	-	-	ns
t_{CLKL}	Clock Low Time	20	-	-	ns
t_{CLKH}	Clock High Time	20	-	-	ns
t_R	Rise Time	-	-	40	ns
t_F	Fall Time	-	-	40	ns

4-wire Serial interface characteristics





7.3 Initial code

```
void Initial_SSD1306(){

      Write_command(0xAE);    //Display Off

      Write_command(0xD5);    //SET DISPLAY CLOCK
      Write_command(0x70);    //105HZ

      Write_command(0xA8);    //Select Multiplex Ratio
      Write_command(0x3F);    // Default => 0x3F (1/64 Duty)     0x1F(1/32 Duty)

      Write_command(0xD3);    //Setting Display Offset
      Write_command(0x00);    //00H Reset

      Write_command(0x40);    //Set Display Start Line

      Write_command(0x8D);    //Set Charge Pump
      Write_command(0x10);    //Disable Charge Pump
      //Write_command(0x14);    //Enable Charge Pump

      Write_command(0xAD);    //Internal IREF Setting
      Write_command(0x20);      //Disable internal IREF

      Write_command(0xA1);      //0xA1 => Column Address is 127 Mapped to SEG0
                                //0xA0 => Column Address is 0 Mapped to SEG127

      Write_command(0xC8);      //0xC8 => Scan from COM[N-1] to 0
                                //0xC0 => Scan from 0 to COM[N-1]

      Write_command(0xDA);    //Set COM Hardware Configuration
      Write_command(0x12);    //Alternative COM Pin

      Write_command(0x81);    //Set Contrast Control
      Write_command(0x3F);

      Write_command(0xD9);    //Set Pre-Charge period
      Write_command(0x22);

      Write_command(0xDB);    //Set Deselect Vcomh level
      Write_command(0x30);

      Write_command(0xA4);    //Entire Display ON

      Write_command(0xA6);    //Set Normal Display

      Write_command(0xAF);    //Display ON
}
```

Note 1: Initial code is for reference only. Please make the best adjustment with the OLED module.
Note 2: Command: Set Contrast Control (0x81) , This command sets the Contrast Setting of the display. The chip has 255 contrast steps from 01h to FFh. The segment output current increases as the contrast step value increases. The segment current increases, the OLED brightness increases.