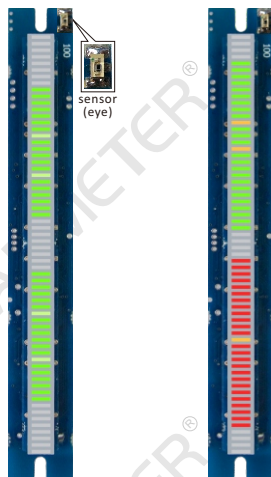


# DS Series of LEDs Bargraph Indicator Modules

DS164P1-1005M 64 Segments 100mm Bargraph Indicator Module with Serial Data Interface

DS

M



## FEATURES

- Scattering film technics with soft tinct.
- Connect with the I/O port of user's MCU by Synchronous Serial Port with three lines(SCK, SDI,  $\overline{CS}$ ), the port is compatible with SPI.
- The highest frequency of serial clock reach 0.3MHz.
- User can programme and display two graphic images in the same bargraph display window.
- Bar brightness can be controlled and automatic dimming can be chosen by attributes control word.
- Display status can be recovered after power down.
- Wide range power supply and low power consumption.
- Single module struct, easy to install.

[Http://www.barmeter.com](http://www.barmeter.com)

## ■ DESCRIPTIONS

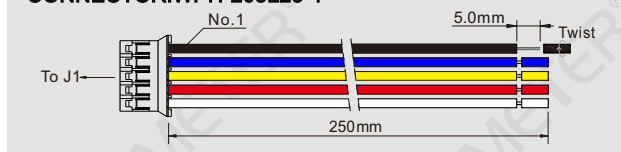
- Input Type: Synchronous serial data with three lines
- Signal Level: HCOMS(5V)
- Effective Beam Number: 64Segments
- Bargraph Length: 100 mm
- Segment Pitch: 1.59 mm
- Bargraph Width: 4.5 mm
- Power Supply and Range: Normal : DC5V  $\pm$  10%  
Optional: DC12V (10~15V)  
DC24V (20~28V)
- Power Consumption:  $\leq$  400mW(Single Color)  
 $\leq$  700mW( Double Color)
- Environment: -30~70 $^{\circ}$ C & < 85% RH

## ■ CONNECTION DIAGRAM (J1)

| No. | Symbol          | Wire color | Definition            |
|-----|-----------------|------------|-----------------------|
| 1   | PS-             | Black      | Power Supply Negative |
| 2   | SDI             | Blue       | Serial Data Input     |
| 3   | SCK             | Yellow     | Serial Clock Input    |
| 4   | PS+             | Red        | Power Supply Positive |
| 5   | $\overline{CS}$ | White      | Enable Input          |

## ■ ACCESSORY

CONNECTOR:WPH-205L25-1



## ■ ORDER CODE

| Bar Color | Red  | Yellow | Green(G60) | Green(N200) | Red & Green(G60) & | Red & Green(N200) & |
|-----------|------|--------|------------|-------------|--------------------|---------------------|
| Code      | 7011 | 7012   | 7013       | 7014        | 7015               | 7016                |

\* G60 : Grass Green ( $\lambda=570\text{nm}$ )

※ N200 : Emerald Green ( $\lambda=510\text{nm}$ )

## ■ MODEL AND ORDERING CODE

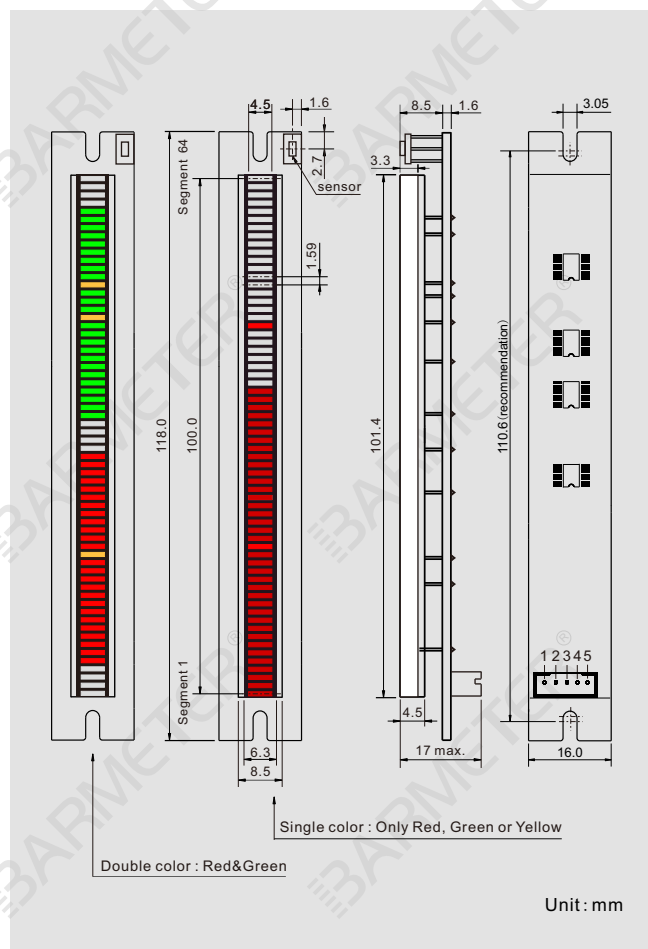
DS164P1-1005M 05 7011

Order Code (View ' ORDER CODE ')

Power Supply { 05:DC 5V  
12:DC 12V  
24:DC 24V

Model

## ■ DIMENSION



Unit : mm

**BARMETER**

Barmeter Electronics Co.,Ltd.

TEL: 86-21-68065675 FAX: 68065673 [Http://www.barmeter.com](http://www.barmeter.com)  
No.5998 Yanggao Rd(S).Shanghai Email: sales@barmeter.com

### DATA FORMAT

Each group of datum the user send can show one frame included graphic images which consist of 17 bytes.

The time sequence format is as follows.

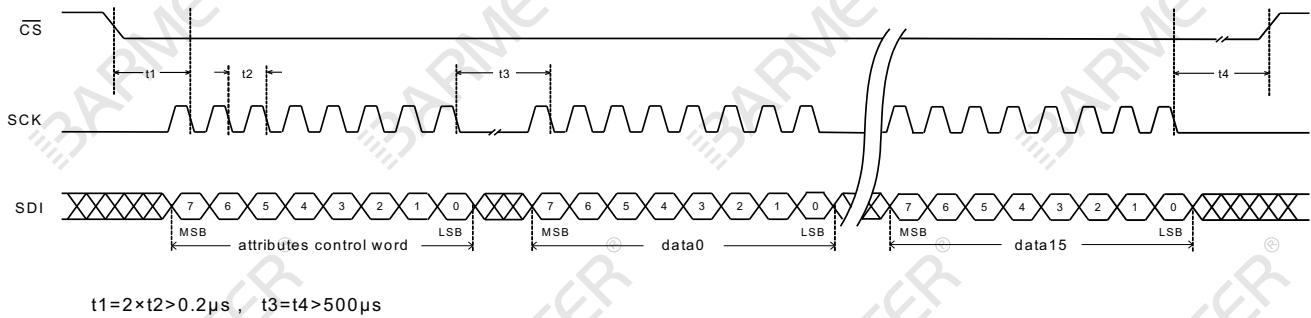


Fig. 1

#### 1. The attributes control word format is as follows.

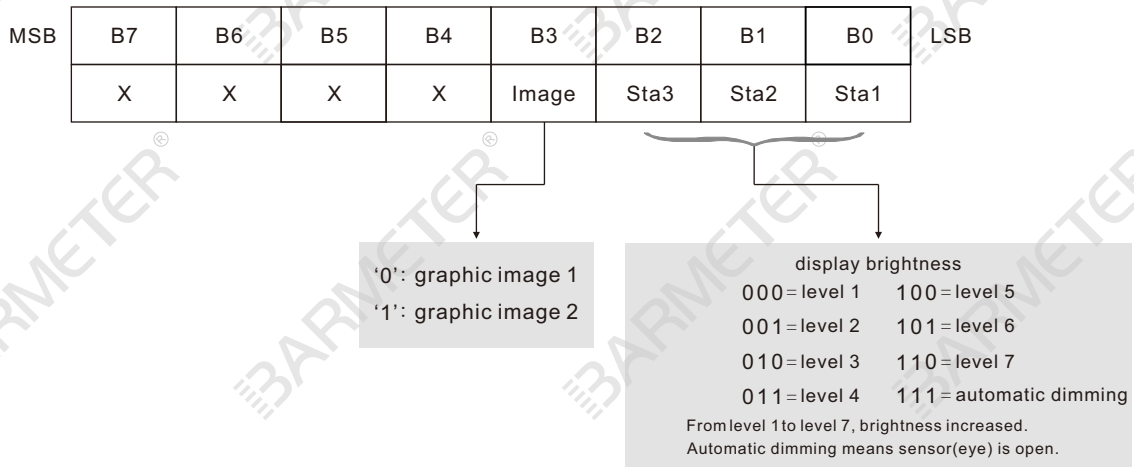


Fig. 2

#### 2. Graphic image data consist of 16 bytes(DATA0-DATA15). The format is as follows.

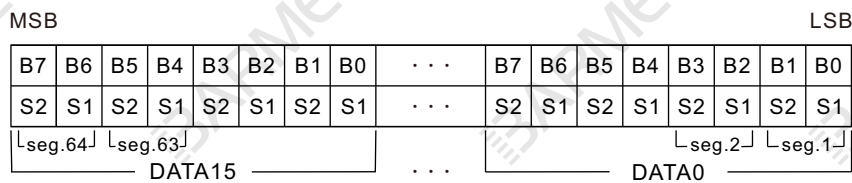


Fig. 3

#### Notes:

1. S1 means graphic image 1, S2 means graphic image 2. Graphic image 1 and graphic image 2 can be programmed and displayed in the same bargraph display window.
2. One bit is set '1' means the relevant LED is light, '0' means the LED goes out.
3. If choose single color, the overlapping area between graphic image 1 and graphic 2 is more brighter which can be used as cursor.
4. If choose double color(Red & Green), S1 is red and S2 is green.

## APPLICATION AND SAMPLE CODE

The sample code can achieve to display one cursor of single color bargraph, the working sketch see Fig.4. Control schematic about bargraph indicator modules of the number from 1 to n, see Fig. 5. And the sample code is as follows .

```
void Send_OneFrame(void)
{
    CS = 0;
    Delay(t1);
    SPI(Attributes_Word);

    for(i = 0; i < 16; i++)
    {
        Delay(t3);
        SPI(DataBuffer[NUM][i]);
    }
    Delay(t4);
    CS = 1;

    NUM++;
    if(NUM >= Data_NUM) NUM = 0;
}
```

```
void SPI( unsigned char Data)
{
    LOP= 8;
    while(LOP)
    {
        NOP();
        SCK = 1;
        SDO = ((Data & 0x80) == 0x80);
        Data <<= 1;
        LOP--;
        Delay(t2);
        SCK=0;
    }
}
```

```
const unsigned char DataBuffer[Data_NUM][17]=
{
    0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0X2a, 0X00, 0X00, 0X00,
    0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xae, 0X2a, 0X00, 0X00, 0X00,
    0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xba, 0X2a, 0X00, 0X00, 0X00,
    0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xea, 0X2a, 0X00, 0X00, 0X00,
    0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0X2b, 0X00, 0X00, 0X00,
    0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0X2e, 0X00, 0X00, 0X00,
    0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0X3a, 0X00, 0X00, 0X00,
    0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0X6a, 0X00, 0X00, 0X00,
    0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0X2a, 0X01, 0X00, 0X00,
    0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0X2a, 0X04, 0X00, 0X00,
    0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0X2a, 0X10, 0X00, 0X00,
    0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0Xaa, 0X2a, 0X40, 0X00, 0X00,
};
```

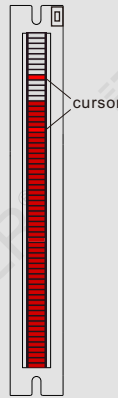


Fig. 4

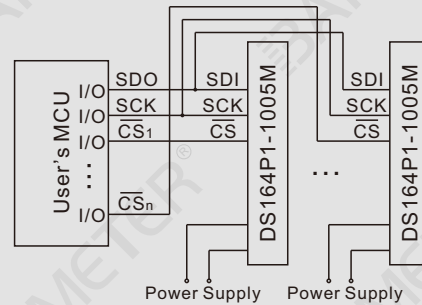


Fig. 5