

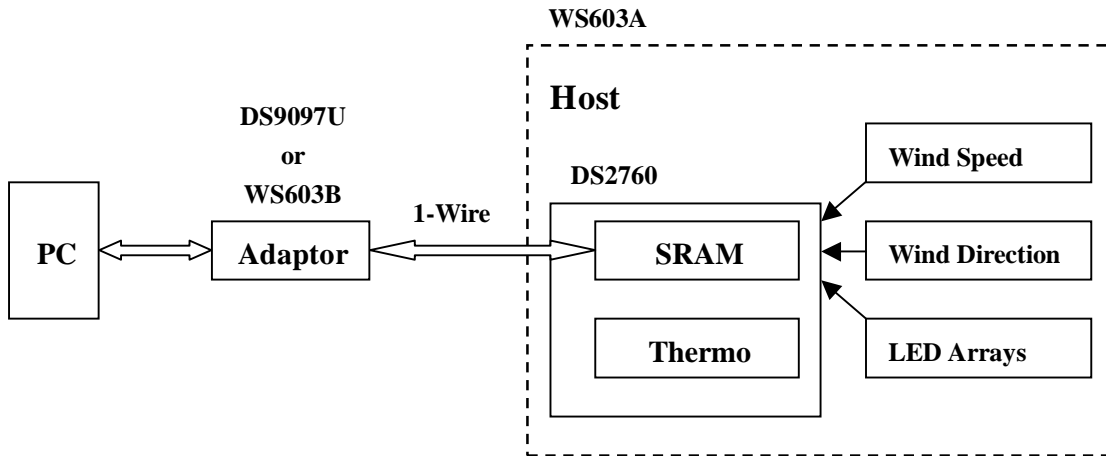
# Description of WSV3 Interface

## (1-Wire)

**Features:**

- | Dallas 1-Wire® interface with unique 64-bit device address(DS2760)
- | 16 bytes of general purpose SRAM
- | Temperature measurement using integrated sensor with 0.125\_°C resolution
- | Wind speed, wind direction, status and control are stored in 16 bytes built-in SRAM
- | LED Arrays lighting control

**System diagram:**



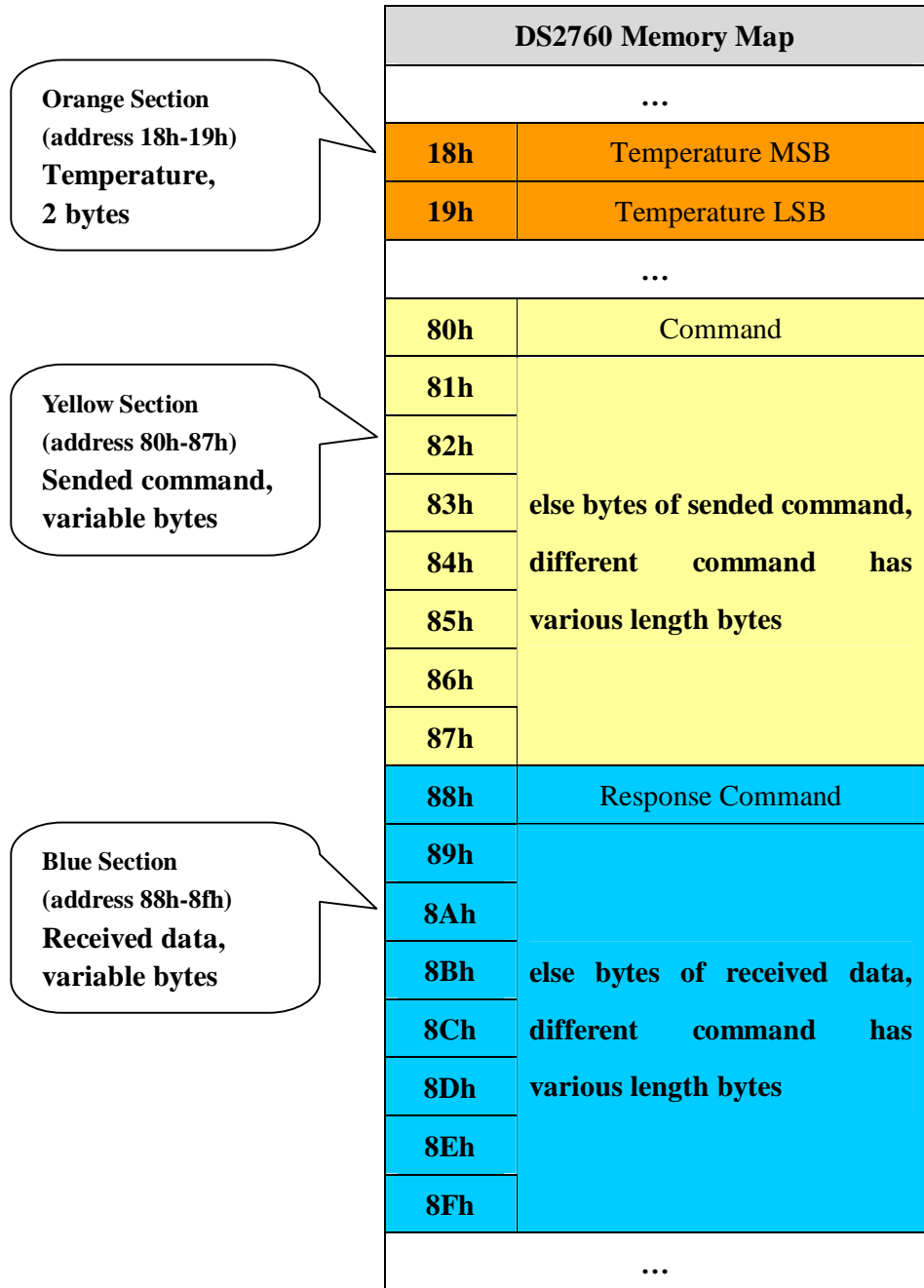
**DS2760 Memory (Detail in DS2760.pdf)**

The DS2760 has a 256-byte linear address space with registers in the lower 32 bytes, with lockable EEPROM and SRAM memory occupying portions of the remaining address space.

SRAM memory is general-purpose in addresses 80h-8Fh, in which should be written control command and returned weather data.

Address(Hex)	Description	Read/Write
...		
18	Temperature Register MSB	R
19	Temperature Register LSB	R
...		
80-8F	SRAM	R/W
...		

## Memory Map



**Command:**

1. **Read data** command for getting real time data of wind speed, wind direction, LED status, light sensor and voltage data.

Command	Verify Byte	End Byte
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Address: 0x80                      0x81                      0x82

Command: 0xA1

Verify Byte: Check sum 8 with all bytes in front of the Verify Byte.

End Byte: 0x1E

2. **Read parameter** command for getting system setting data, include that light mode, wind speed calibration, wind direction calibration, light threshold.

Command	Verify Byte	End Byte
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Address: 0x80                      0x81                      0x82

Command: 0xA0

Verify Byte: Check sum 8 with all bytes in front of the Verify Byte.

End Byte: 0x0E

3. Command of LED control.

Command	Light mode	Light status	Light level	Light threshold	Verify Byte	End Byte
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Address: 0x80      0x81              0x82              0x83              0x84              0x85              0x86

Command: 0xA2

Light model: When Light mode=0, system LED run with PC control.

When Light mode=1...6, system LED run with auto mode.

Light status: This byte is available, when “Light mode” is 0.

Bit7=1, Bit0| Bit1| Bit2| Bit3| Bit4| Bit5≠0;LED turn on;

Bit7=0, LED turn off;

Bit0|Bit1| Bit2| Bit3| Bit4| Bit5=0, LED turn off;

Bit0, Bit1, Bit2, used to control Blue LED, it has three levels.

Bit3, Bit4, Bit5, used to control Red LED, it has three levels.

LED status	Bit7	Bit5 Bit4 Bit3	Bit2 Bit1 Bit0
Blue LED level 1	1	000	001

Blue LED level 2	1	000	011
Blue LED level 3	1	000	111
Red LED level 1	1	001	000
Red LED level 2	1	011	000
Red LED level 3	1	111	000
Both LED level 1	1	001	001
Both LED level 2	1	011	011
Both LED level 3	1	111	111
Both LED turn off	0	----	----

Light level: When system LED running with auto mode, the LED's light level.

When Light level=1, the LED's light is low.

When Light level=3, the LED's light is middle.

When Light level=7, the LED's light is high.

Light threshold: When system running mode is 1...6, this parameter is available. If intensity higher than light threshold, it means that this time is day time. Then system will running with day light saving mode, The LED will be turn off. If in night time, the intensity is lower than light threshold. Then system will running with normal mode. The LED will be turn on or flash. If you don't need to turn off the LED, you can set the light threshold 255 or 0.

Verify Byte: Check sum 8 with all bytes in front of the Verify Byte.

End Byte: 0x2E

#### 4. Wind speed calibration.

Command	Speed cal	Verify Byte	End Byte
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Address: 0x80

0x81

0x82

0x83

Command: 0xA3

Speed cal: Used this data to set into WSV3 for speed correction.

Verify Byte: Check sum 8 with all bytes in front of the Verify Byte.

End Byte: 0x3E

5. Wind direction calibration.

Command	Direction cal	Verify Byte	End Byte
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Address: 0x80                      0x81                      0x82                      0x83

Command: 0xA4

Direction cal: It means that the current wind direction is this value. When this value send to system successfully, System direction will be changed to this value as a initial direction.

Direction cal ( 1...16 ).

Verify Byte: Check sum 8 with all bytes in front of the Verify Byte.

End Byte: 0x4E

**Received data:**

1. When Host receive command byte is 0xA1, then Host will send back these data.

Response command	Wind speed	Wind direction	Light status	Intensity	Voltage	Verify Byte
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Address: 0x88      0x89      0x8a      0x8b      0x8c      0x8d      0x8e

Command: 0xA1

Wind speed: System current wind speed.

If (0<Speed cal<200)

Wind speed=count \*2.453\*1.069\*1000/3600\* Speed cal/100 (m/s);

Else

Wind speed = count \*2.453\*1.069\*1000/3600 (m/s);

Wind direction: 16 directions,

1=N 2=NNE, 3=NE, 4=NEE, 5=E, 6=EES, 7=ES,8=ESS,

9=S, 10=SSW,11=SW, 12=SWW, 13=W, 14=WWN,

15=WN, 16=WNN

Light status: This byte is available, when “Light mode” is 0.

Bit7=1, Bit0| Bit1| Bit2| Bit3| Bit4| Bit5≠0;LED turn on;

Bit7=0, LED turn off;

Bit0|Bit1| Bit2| Bit3| Bit4| Bit5=0, LED turn off;

Bit0, Bit1, Bit2, used to control Blue LED, it has three levels.

Bit3, Bit4, Bit5, used to control Red LED, it has three levels.

LED status	Bit7	Bit5 Bit4 Bit3	Bit2 Bit1 Bit0
Blue LED level 1	1	000	001
Blue LED level 2	1	000	011
Blue LED level 3	1	000	111
Red LED level 1	1	001	000
Red LED level 2	1	011	000
Red LED level 3	1	111	000
Both LED level 1	1	001	001
Both LED level 2	1	011	011
Both LED level 3	1	111	111
Both LED turn off	0	----	----

Intensity: Daylight intensity to indicate day time or night time.

Voltage: Test Power supply voltage.

Verify Byte: Check sum 8 with all bytes in front of the Verify Byte.

- When Host receive command byte is 0xA2, then Host will send back these data.

Response command	Wind speed	Wind direction	Light status	Intensity	Voltage	Verify Byte
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Address: 0x88      0x89      0x8a      0x8b      0x8c      0x8d      0x8e

Command: 0xA2

Wind speed: System current wind speed.

If (0 < Speed cal < 200)

Wind speed = count \* 2.453 \* 1.069 \* 1000 / 3600 \* Speed cal / 100 (m/s);

Else

Wind speed = count \* 2.453 \* 1.069 \* 1000 / 3600 (m/s);

Wind direction: 16 directions,

1=N 2=NNE, 3=NE, 4=NEE, 5=E, 6=EES, 7=ES, 8=ESS,

9=S, 10=SSW, 11=SW, 12=SWW, 13=W, 14=WWN,

15=WN, 16=WNN

Light status: Bit7 =1, LED on,  
 Bit7 =0, LED off  
 Bit0, 1, 2 for LED/upper intensity  
 Bit3, 4, 5 for LED/downer intensity

Intensity: Daylight intensity to indicate day time or night time.

Voltage: Test Power supply voltage.

Verify Byte: Check sum 8 with all bytes in front of the Verify Byte.

3. When Host receive command byte is 0xA0, 0xA3, 0xA4, then Host will send back these data.

Response command	Light model	Speed cal	Direction cal	Light threshold	Nop	Verify Byte
Address: 0x88	0x89	0x8a	0x8b	0x8c	0x8d	0x8e

Back command: The same with the receive command 0xA0, 0xA3, 0xA4.

Light model: When Light mode =0, system LED run with PC control.

When Light mode =1...6, system LED run with auto mode.

Speed cal: Calibration factor for wind speed measurement (default=100)

Direction cal: System current wind direction calibration setting value.

Light threshold: System current Light threshold setting value.

Nop: Bytes reserved.

Verify Byte: Check sum 8 with all bytes in front of the Verify Byte.

Notice: When Host can receive the whole command successfully, but it can not be control, then the back command will be 0xAF.

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## **appendix:**

### **1. How to use check sum 8 ?**

**The check sum8 function is:**

```
char check_sum8(char * data, char length)  
{  
    char i;  
    char check_sun_data;  
    check_sun_data = 0;  
    for( i=0; i<length; i++ )  
    {  
        check_sun_data = check_sun_data + data[i];  
    }  
    return check_sun_data;  
}
```