Revision Log

By	Ver	Date	Remark
	V1.0	2016.9.7	Initial release
	V1.2.1	2018.8.20	
	V1.4.5	2019.3.15	
	V1.4.6	2019.3.27	CMD_READ_SENSOR_ID CMD_WRITE_SENSOR_ID added
	V1.4.7		
	V1.4.8	2019.07.06	*CMD_GET_MulCH_OFFSET = 0x2C,* *CMD_SET_MulCH_OFFSET = 0x2D,* *CMD_GET_PM25_OFFSET = 0x2E,* *CMD_SET_PM25_OFFSET = 0x2F,* added
	V1.4.9	2019.07.29	
	V1.5.0	2019.08.16	Add usr_path[128]
	V1.5.1	2019.08.20	eWH57_SENSOR, eWH55_SENSORCH1, eWH55_SENSORCH2, eWH55_SENSORCH3, eWH55_SENSORCH4, #define ITEM_LEAK_CH1 0x58//for Leak_ch1 #define ITEM_LEAK_CH2 0x59//for Leak_ch2 #define ITEM_LEAK_CH3 0x5A//for Leak_ch3 #define ITEM_LEAK_CH4 0x5B//for Leak_ch4 #define ITEM_THUNDERDISTANCE 0x60 added
	V1.5.2	2020.04.30	Add ITEM_RAINEVENT data output
	V1.5.3	2020.05.06	#define ITEM_TF_USR1 0x63//Temperature(℃) 3Byte #define ITEM_TF_USR2 0x64//Temperature(℃) 3Byte #define ITEM_TF_USR3 0x65//Temperature(℃) 3Byte #define ITEM_TF_USR4 0x66//Temperature(℃) 3Byte #define ITEM_TF_USR5 0x67//Temperature(℃) 3Byte #define ITEM_TF_USR6 0x68//Temperature(℃) 3Byte #define ITEM_TF_USR7 0x69//Temperature(℃) 3Byte #define ITEM_TF_BATT 0x6B//ff temperature batt #define ITEM_TF_USR8 0x6A//Temperature(℃) 3Byte

	V1.5.4	2020.05.07	New Command added: CMD_READ_SENSOR_ID_NEW
	1.5.5	2020.06.12	One extra byte battery voltage data added at ITEM_TF_USRch(ch=1…9). #define ITEM_TF_USR1 0x63//Temperature(℃) 4Byte #define ITEM_TF_USR2 0x64//Temperature(℃) 4Byte #define ITEM_TF_USR3 0x65//Temperature(℃) 4Byte #define ITEM_TF_USR4 0x66//Temperature(℃) 4Byte #define ITEM_TF_USR5 0x67//Temperature(℃) 4Byte #define ITEM_TF_USR6 0x68//Temperature(℃) 4Byte #define ITEM_TF_USR7 0x69//Temperature(℃) 4Byte #define ITEM_TF_USR8 0x6A//Temperature(℃) 4Byte
	1.5.6	2020.06.22	Correct typing error： CMD_READ_SSSS = 0x30,//read system info CMD_WRITE_SSSS= 0x31,//write system info
	1.5.7	2020.07.16	Update CMD_READ_SENSOR_ID CMD_READ_SENSOR_ID_NEW
	1.5.8	2020.07.20	Newly added sensor type: #define ITEM_SENSOR_CO2 0x70
	V1.5.9	2020.08.13	CMD_GET_CO2_OFFSET = 0x53, CMD_SET_CO2_OFFSET = 0x54,
	V1.6.0	2021.01.05	With GW1000_Firmware V1.6.5 {leaf wetness sensor} ITEM ("ITEM_LEAF_WETNESS_CHx"(x=1~8)) #define ITEM_LEAF_WETNESS_CH1 0x72 #define ITEM_LEAF_WETNESS_CH2 0x73 #define ITEM_LEAF_WETNESS_CH3 0x74 #define ITEM_LEAF_WETNESS_CH4 0x75 #define ITEM_LEAF_WETNESS_CH5 0x76 #define ITEM_LEAF_WETNESS_CH6 0x77 #define ITEM_LEAF_WETNESS_CH7 0x78 #define ITEM_LEAF_WETNESS_CH8 0x79
	V1.6.1	2021.8.17	Correct CMD_READ_SENSOR_New description error for sensor voltage
	V1.6.2	2021.11.4	Define WS90sensor id. CMD_READ_RSTRAIN_TIME = 0x55, CMD_WRITE_RSTRAIN_TIME = 0x56,
	V1.6.3	2021.11.4	Change wn34 sensor data size from 4 byte to 3 byte
	V1.6.4	2022.03.05	CMD_READ_RAIN = 0x57, CMD_WRITE_RAIN = 0x58,

1. Data exchange format：

Fixed header, CMD, SIZE, DATA1, DATA2, … , DATAn, CHECKSUM

Fixed header: 2 bytes, header is fixed as 0xffff

CMD: 1 byte, Command

SIZE: 1 byte, packet size，counted from CMD till CHECKSUM

DATA: n bytes, payloads，variable length

CHECKSUM: 1 byte, CHECKSUM=CMD+SIZE+DATA1+DATA2+…+DATAn

2. Command and data structure definition:

typedef enum {

//

CMD_WRITE_SSID	= 0x11,// send SSID and Password to WIFI module
CMD_BROADCAST	= 0x12,// UDP cast for device echo，answer back data size is 2 Bytes
CMD_READ_ECOWITT	= 0x1E,// read aw.net setting
CMD_WRITE_ ECOWITT	= 0x1F, //write back awt.net setting
CMD_READ_WUNDERGROUND	= 0x20,// read Wunderground setting
CMD_WRITE_WUNDERGROUND	= 0x21, //write back Wunderground setting
CMD_READ_WOW	= 0x22, // read WeatherObservationsWebsite setting
CMD_WRITE_WOW	= 0x23, // write back WeatherObservationsWebsite setting
CMD_READ_WEATHERCLOUD	= 0x24,// read Weathercloud setting
CMD_WRITE_WEATHERCLOUD	= 0x25, //write back Weathercloud setting
CMD_READ_SATION_MAC	= 0x26,// read MAC address
CMD_READ_CUSTOMIZED	= 0x2A,// read Customized sever setting
CMD_WRITE_CUSTOMIZED	= 0x2B, // write back Customized sever setting
CMD_WRITE_UPDATE	= 0x43,// firmware upgrade
CMD_READ_FIRMWARE_VERSION	= 0x50,// read current firmware version number
CMD_READ_USR_PATH	= 0x51,
CMD_WRITE_USR_PATH	= 0x52,

// the following command is only valid for GW1000, WH2650 and wn1900 支持：

CMD_GW1000_LIVEDATA	= 0x27, // read current data，reply data size is 2bytes.
CMD_GET_SOILHUMIAD	= 0x28,// read Soilmoisture Sensor calibration parameters
CMD_SET_SOILHUMIAD	= 0x29, // write back Soilmoisture Sensor calibration parameters
CMD_GET_MulCH_OFFSET	= 0x2C, // read multi channel sensor offset value
CMD_SET_MulCH_OFFSET	= 0x2D, // write back multi channel sensor OFFSET value
CMD_GET_PM25_OFFSET	= 0x2E, // read PM2.5OFFSET calibration data
CMD_SET_PM25_OFFSET	= 0x2F, // writeback PM2.5OFFSET calibration data
CMD_READ_SSSS	= 0x30,// read system info
CMD_WRITE_SSSS	= 0x31,// write back system info
CMD_READ_RAINDATA	= 0x34,// read rain data
CMD_WRITE_RAINDATA	= 0x35, // write back rain data
CMD_READ_GAIN	= 0x36, // read rain gain

FOS

```
        CMD_WRITE_GAIN                   = 0x37, // write back rain gain
        CMD_READ_CALIBRATION             = 0x38,// read sensor set offset calibration value
        CMD_WRITE_CALIBRATION            = 0x39,// write back sensor set offset value
        CMD_READ_SENSOR_ID               = 0x3A,// read Sensors ID
        CMD_WRITE_SENSOR_ID              = 0x3B, // write back Sensors ID
        CMD_READ_SENSOR_ID_NEW            = 0x3C,//// this is reserved for newly added sensors
        CMD_WRITE_REBOOT                 = 0x40,// system restart
        CMD_WRITE_RESET                  = 0x41,// reset to default
        CMD_READ_CUSTOMIZED_PATH         = 0x51,
        CMD_WRITE_CUSTOMIZED_PATH        = 0x52,

        CMD_GET_CO2_OFFSET               = 0x53,//读取 CO2 OFFSET 参数
        CMD_SET_CO2_OFFSET               = 0x54,//改写 CO2 OFFSET 参数

        CMD_READ_RSTRAIN_TIME            = 0x55,// read rain reset time
        CMD_WRITE_RSTRAIN_TIME           = 0x56,// write back rain reset time

    CMD_LIST_UNKNOW,
}CMD_LT;
//********************************************************************************************
#define SOIL_CH_MAX              8
#define WH31_CHANNEL             8
#define PM25_CH_MAX              4
#define LEAK_CH_MAX              4
#define LEAF_CH_MAX              8
typedef enum
{
    //eWH24_SENSOR = 0x00,
    eWH65_SENSOR = 0x00,
    //eWH69_SENSOR,
    eWH68_SENSOR,
    eWH80_SENSOR, //80H
    （eWH40_SENSOR,
    eWH25_SENSOR,
    eWH26_SENSOR,

    eWH31_SENSORCH1,
    eWH31_SENSORCH2,
    eWH31_SENSORCH3,
    eWH31_SENSORCH4,
    eWH31_SENSORCH5,
    eWH31_SENSORCH6,
    eWH31_SENSORCH7,
```

FOS

```
        eWH31_SENSORCH8,
        eWH51_SENSORCH1,
        eWH51_SENSORCH2,
        eWH51_SENSORCH3,
        eWH51_SENSORCH4,
        eWH51_SENSORCH5,
        eWH51_SENSORCH6,
        eWH51_SENSORCH7,
        eWH51_SENSORCH8,
        eWH41_SENSORCH1,
        eWH41_SENSORCH2,
        eWH41_SENSORCH3,
        eWH41_SENSORCH4,
        //-------------
        eWH57_SENSOR,
        eWH55_SENSORCH1,
        eWH55_SENSORCH2,
        eWH55_SENSORCH3,
        eWH55_SENSORCH4,

        eWH34_SENSORCH1 = 31
        eWH34_SENSORCH2 = 32
        eWH34_SENSORCH3 = 33
        eWH34_SENSORCH4 = 34
        eWH34_SENSORCH5 = 35
        eWH34_SENSORCH6 = 36
        eWH34_SENSORCH7 = 37
        eWH34_SENSORCH8 = 38,
        eWH45_SENSOR = 39,
        // GW1000 Firmware V1.5.6 之后加入的
        eWH35_SENSORCH1 = 40,
        eWH35_SENSORCH2 = 41,
        eWH35_SENSORCH3 = 42,
        eWH35_SENSORCH4 = 43,
        eWH35_SENSORCH5 = 44,
        eWH35_SENSORCH6 = 45,
        eWH35_SENSORCH7 = 46,
        eWH35_SENSORCH8 = 47,
        eWH90_SENSOR = 48,


        // the sensor sequence can not be altered!!




        //-------------
        eMAX_SENSOR
}SENSOR_IDT;
```

```
//.................................................................................................................
#define ITEM_INTEMP            0x01//Indoor Temperature (℃)          2
#define ITEM_OUTTEMP           0x02//Outdoor Temperature (℃)         2
#define ITEM_DEWPOINT          0x03//Dew point (℃)                   2
#define ITEM_WINDCHILL         0x04//Wind chill (℃)                  2
#define ITEM_HEATINDEX         0x05//Heat index (℃)                  2
#define ITEM_INHUMI            0x06//Indoor Humidity (%)             1
#define ITEM_OUTHUMI           0x07//Outdoor Humidity (%)            1
#define ITEM_ABSBARO           0x08//Absolutely Barometric (hpa)     2
#define ITEM_RELBARO           0x09//Relative Barometric (hpa)       2
#define ITEM_WINDDIRECTION     0x0A//Wind Direction (360°)           2
#define ITEM_WINDSPEED         0x0B//Wind Speed (m/s)                2
#define ITEM_GUSTSPEED         0x0C//Gust Speed (m/s)                2
#define ITEM_RAINEVENT         0x0D//Rain Event (mm)                 2
#define ITEM_RAINRATE          0x0E//Rain Rate (mm/h)                2
#define ITEM_RAINHOUR          0x0F//Rain hour (mm)                  2
#define ITEM_RAINDAY           0x10//Rain Day (mm)                   2
#define ITEM_RAINWEEK          0x11//Rain Week (mm)                  2
#define ITEM_RAINMONTH         0x12//Rain Month (mm)                 4
#define ITEM_RAINYEAR          0x13//Rain Year (mm)                  4
#define ITEM_RAINTOTALS        0x14//Rain Totals (mm)                4
#define ITEM_LIGHT             0x15//Light (lux)                     4
#define ITEM_UV                0x16//UV (uW/m2)                      2
#define ITEM_UVI               0x17//UVI (0-15 index)                1
#define ITEM_TIME              0x18//Date and time                  6
#define ITEM_DAYLWINDMAX       0X19//Day max wind(m/s)               2
#define ITEM_TEMP1             0x1A//Temperature 1(℃)                2
#define ITEM_TEMP2             0x1B//Temperature 2(℃)                2
#define ITEM_TEMP3             0x1C//Temperature 3(℃)                2
#define ITEM_TEMP4             0x1D//Temperature 4(℃)                2
#define ITEM_TEMP5             0x1E//Temperature 5(℃)                2
#define ITEM_TEMP6             0x1F//Temperature 6(℃)                2
#define ITEM_TEMP7             0x20//Temperature 7(℃)                2
#define ITEM_TEMP8             0x21//Temperature 8(℃)                2
#define ITEM_HUMI1             0x22//Humidity 1, 0-100%              1
#define ITEM_HUMI2             0x23//Humidity 2, 0-100%              1
#define ITEM_HUMI3             0x24//Humidity 3, 0-100%              1
#define ITEM_HUMI4             0x25//Humidity 4, 0-100%              1
#define ITEM_HUMI5             0x26//Humidity 5, 0-100%              1
#define ITEM_HUMI6             0x27//Humidity 6, 0-100%              1
#define ITEM_HUMI7             0x28//Humidity 7, 0-100%              1
#define ITEM_HUMI8             0x29//Humidity 8, 0-100%              1
```

FOS

#define ITEM_PM25_CH1	0x2A//PM2.5 Air Quality Sensor(μg/m3)	2
#define ITEM_SOILTEMP1	0x2B//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE1	0x2C//Soil Moisture(%)	1
#define ITEM_SOILTEMP2	0x2D//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE2	0x2E//Soil Moisture(%)	1
#define ITEM_SOILTEMP3	0x2F//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE3	0x30//Soil Moisture(%)	1
#define ITEM_SOILTEMP4	0x31//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE4	0x32//Soil Moisture(%)	1
#define ITEM_SOILTEMP5	0x33//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE5	0x34//Soil Moisture(%)	1
#define ITEM_SOILTEMP6	0x35//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE6	0x36//Soil Moisture(%)	1
#define ITEM_SOILTEMP7	0x37//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE7	0x38//Soil Moisture(%)	1
#define ITEM_SOILTEMP8	0x39//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE8	0x3A//Soil Moisture(%)	1
#define ITEM_SOILTEMP9	0x3B//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE9	0x3C//Soil Moisture(%)	1
#define ITEM_SOILTEMP10	0x3D//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE10	0x3E//Soil Moisture(%)	1
#define ITEM_SOILTEMP11	0x3F//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE11	0x40//Soil Moisture(%)	1
#define ITEM_SOILTEMP12	0x41//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE12	0x42//Soil Moisture(%)	1
#define ITEM_SOILTEMP13	0x43//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE13	0x44//Soil Moisture(%)	1
#define ITEM_SOILTEMP14	0x45//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE14	0x46//Soil Moisture(%)	1
#define ITEM_SOILTEMP15	0x47//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE15	0x48//Soil Moisture(%)	1
#define ITEM_SOILTEMP16	0x49//Soil Temperature(℃)	2
#define ITEM_SOILMOISTURE16	0x4A//Soil Moisture(%)	1
#define ITEM_LOWBATT	0x4C//All sensor lowbatt 16 char	16
#define ITEM_PM25_24HAVG1	0x4D//for pm25_ch1	2
#define ITEM_PM25_24HAVG2	0x4E//for pm25_ch2	2
#define ITEM_PM25_24HAVG3	0x4F//for pm25_ch3	2
#define ITEM_PM25_24HAVG4	0x50//for pm25_ch4	2
#define ITEM_PM25_CH2	0x51//PM2.5 Air Quality Sensor(μg/m3)	2
#define ITEM_PM25_CH3	0x52//PM2.5 Air Quality Sensor(μg/m3)	2

```
#define ITEM_PM25_CH4              0x53//PM2.5 Air Quality Sensor(μg/m3)        2

#define ITEM_LEAK_CH1              0x58//for Leak_ch1                            1
#define ITEM_LEAK_CH2              0x59//for Leak_ch2                            1
#define ITEM_LEAK_CH3              0x5A//for Leak_ch3                            1
#define ITEM_LEAK_CH4              0x5B//for Leak_ch4                            1

#define ITEM_LIGHTNING            0x60 // lightning distance  （1~40KM）          1
#define ITEM_LIGHTNING_TIME       0x61// lightning happened time(UTC)           4
#define ITEM_LIGHTNING_POWER      0x62// lightning counter for the ay           4
```

#define ITEM_TF_USR1   0x63//Temperature(℃)   3
#define ITEM_TF_USR2   0x64//Temperature(℃)   3
#define ITEM_TF_USR3   0x65//Temperature(℃)   3
#define ITEM_TF_USR4   0x66//Temperature(℃)   3
#define ITEM_TF_USR5   0x67//Temperature(℃)   3
#define ITEM_TF_USR6   0x68//Temperature(℃)   3
#define ITEM_TF_USR7   0x69//Temperature(℃)   3
#define ITEM_TF_USR8   0x6A//Temperature(℃)   3

//the data packet in this sequence, and it should be followed strictly this data sequence
#define ITEM_SENSOR_CO2   0x70   16
/*_____Ecowitt_____
  1 tf_co2   short   C   x10
  2 humi_co2   unsigned char   %
  3 pm10_co2   unsigned short   ug/m3   x10
  4 pm10_24h_co2   unsigned short   ug/m3   x10
  5 pm25_co2   unsigned short   ug/m3   x10
  6 pm25_24h_co2   unsigned short   ug/m3   x10
  7 co2   unsigned short   ppm
  8 co2_24h   unsigned short   ppm
  9 co2_batt   u8   (0~5)
  --- */
//--
#define ITEM_PM25_AQI   0x71 //only for amb
// ITEM_PM25_AQI   length(n*2)(1byte) 1-aqi_pm25 2-aqi_pm25_24h .... n-aqi
/*
aqi_pm25   AQI derived from PM25 int
aqi_pm25_24h   AQI derived from PM25, 24 hour running average int
aqi_pm25_in   AQI derived from PM25 IN int
aqi_pm25_in_24h   AQI derived from PM25 IN, 24 hour running average int
aqi_pm25_aqin   AQI derived from PM25, AQIN sensor int
aqi_pm25_24h_aqin   AQI derived from PM25, 24 hour running average, AQIN sensor int
```

*FOS*

```
.... n
*/
//..................................................................................................
#define ITEM_LEAF_WETNESS_CH1    0x72//                                    1
#define ITEM_LEAF_WETNESS_CH2    0x73//                                    1
#define ITEM_LEAF_WETNESS_CH3    0x74//                                    1
#define ITEM_LEAF_WETNESS_CH4    0x75//                                    1
#define ITEM_LEAF_WETNESS_CH5    0x76//                                    1
#define ITEM_LEAF_WETNESS_CH6    0x77//                                    1
#define ITEM_LEAF_WETNESS_CH7    0x78//                                    1
#define ITEM_LEAF_WETNESS_CH8    0x79//                                    1

//..................................................................................................
```

```
//------------------------------------------------------------------------------------------
#define ITEM_Piezo_Rain_Rate          0x80//                    2
#define ITEM_Piezo_Event_Rain         0x81//                    2
#define ITEM_Piezo_Hourly_Rain        0x82//                    2
#define ITEM_Piezo_Daily_Rain         0x83//                    4
#define ITEM_Piezo_Weekly_Rain        0x84//                    4
#define ITEM_Piezo_Monthly_Rain       0x85//                    4
#define ITEM_Piezo_yearly_Rain        0x86//                    4

#define ITEM_Piezo_Gain10             0x87//                    2*10
#define ITEM_RST_RainTime        0x88//              3
```

```
//..................................................................................................
#if 0 // GW1000 Firmware V1.6.5 or after stop using this entity. CMD_READ_SENSOR_ID_NEW interpret each
sensor for battery status .
#if 1
typedef union //1 low bat 0 bat normal
{
    unsigned char batt;
    struct
    {
        unsigned char wh41        : 4; /* bit 0~3 */ // 0~5
        unsigned char wh40        : 1; /* bit 4 */
        unsigned char wh26        : 1; /* bit 5 */
        unsigned char wh25        : 1; /* bit 6 */
        unsigned char wh24        : 1; /* bit 7 */ //65, 69
    } bits;
} _sig_sen;

typedef union //1 low batt 0 batt normal
{
    unsigned char batt;
    Struct {
        unsigned char ch1 : 1; /* bit 0 */ unsigned
        char ch2 : 1; /* bit 1 */ unsigned char ch3 :
        1; /* bit 2 */ unsigned char ch4 : 1; /* bit
        3 */ unsigned char ch5 : 1; /* bit 4 */
```

```c
        unsigned char ch6 : 1; /* bit 5 */ unsigned
        char ch7 : 1; /* bit 6 */
        unsigned char ch8 : 1;/* bit 7 */
    } bits;
```

```
} _wh31_ch;

typedef union //val
{
    unsigned short batt;
    struct        {
        unsigned char ch1     : 4;/* bit 0~3     */ // 0~5
        unsigned char ch2     : 4;/* bit 4~7     */ // 0~5
        unsigned char ch3     : 4;/* bit 8~11   */ // 0~5
        unsigned char ch4     : 4;/* bit 12~15 */ // 0~5
    } bits;
} _wh41_ch;
typedef union //1 low 0 normal
{
    unsigned short  batt;
    struct        {
        unsigned char    ch1 : 1;/* bit 0 */
        unsigned char    ch2    : 1;     /* bit 1 */
        unsigned char    ch3    : 1;     /* bit 2 */
        unsigned char    ch4    : 1;     /* bit 3 */
        unsigned char    ch5    : 1;     /* bit 4 */
        unsigned char    ch6    : 1;     /* bit 5 */
        unsigned char    ch7    : 1;     /* bit 6 */
        unsigned char    ch8 : 1;/* bit 7 */

        unsigned char    ch9     : 1;     /* bit 8   */
        unsigned char    ch10   : 1;     /* bit 9   */
        unsigned char    ch11   : 1;     /* bit 10 */
        unsigned char    ch12   : 1;     /* bit 11 */
        unsigned char    ch13   : 1;     /* bit 12 */
        unsigned char    ch14   : 1;     /* bit 13 */
        unsigned char    ch15   : 1;     /* bit 14 */
        unsigned char    ch16   : 1;     /* bit 15 */
    } word;
} _wh51_ch;
// battery voltage and low battery correlation
typedef union _sensor_batt
{
    unsigned char all_batt[16];
    // represented with battery voltage
    struct
    {
        _sig_sen single;
```

~~_wh31_ch wh31;~~

~~_wh51_ch wh51;~~

~~unsigned char wh57; // 0~5~~

~~unsigned char wh68; // 0.02V * val(received val) = wh68(current voltage);~~

~~unsigned char wh80; // 0.02V * val(received val) = wh80(current voltage);~~

~~unsigned char wh45; // 0~5~~

~~_wh41_ch wh41;   // batter level 0~5, <=1 for low battery~~

~~unsigned char wh55[LEAK_CH_MAX]; //~~

~~} val;~~

~~} sensor_batt;//~~

~~// type AP_SSID~~

~~typedef AP_SSID~~

~~{~~

~~Size byte   // ssid size~~

~~SSID n   // n max 32~~

~~}~~

~~#endif~~

~~//V1.5.9 introduced:~~

~~unsigned char wh34[TF_CH_MAX];//0.02V * val(received val) = wh34(current voltage);~~

~~//~~

3. Wi-Fi configuration and looking for device within the local network

Wifi configuration 1 : APP side use took port 49123 and setup a TCP Server. WIFI module side works with station+AP

mode and setup a TCP Client to be connected with APP side server. If WIFI module connected successfully to APP side TCP server, APP side TCP Server send CMD_WRITE_SSID command！

Wifi configuration 2: WIFI module works at station+AP mode, and setup a TCP Server at port 45000, waiting APP side for connection. When APP side connected to WIFI moule's TCP Server，CMD_WRITE_SSID can be issued.

Description	Length（Bytes）	Note
Fixed header	2	Fixed as 0xffff
CMD_WRITE_SSID	1	0x11
Size	1	Packet size
SSID Size	1	SSID length
SSID	n	Max 32
Password Size	1	Password length
Password	n	Max 64
Checksum	1	Checksum

WIFI answer back：

description	length（byte）	notes
Fixed header	2	Fixed as 0xffff

FOS

CMD_WRITE_SSID	1	0x11
Size	1	Packet size
Result	1	0x00: set success，0x01: set fail
Checksum	1	checksum

When console and APP device are on the same WLAN network, connected to a same router, APP side will send a command via UDP casting, after this command received, console wifi will reply back its MAC, IP, Port and AP's SSID to APP device side. (port 46000).

Description	Length	Notes
Fixed header	2	Fixed as 0xffff
CMD_BROADCAST	1	0x12
Size	1	Packet size
Checksum	1	Checksum

WIFI replied：

Description	Length	Notes
Fixed header	2	Fixed as 0xffff
CMD_BROADCAST	1	0x12
Size	2	Packet size (size is 2 Bytes)
MAC	6	Wifi module STA MAC
IP1	1	Eg. 192.168.100.1 中的 192
IP2	1	Eg. 192.168.100.1 中的 168
IP3	1	Eg. 192.168.100.1 中的 100
IP4	1	Eg. 192.168.100.1 中的 1
Port1	1	Eg. 0x1194(45000)中的 0x11
Port2	1	Eg. 0x1194(45000)中的 0x94
AP SSID	n	Wifi module's AP SSID
Checksum	1	checksum

Console WIFI module setup TCP server at port 45000, waiting for APP side to be connected. If connection established, use the following command:

1) Read ambietweather.net setting

Description	Length	Notes
Fixed header	2	Fixed as 0xffff
CMD_READ_ECOWITT	1	0x1E
Size	1	Packet size
Checksum	1	checksum

Console WIFI return：

Description	Length	Notes
Fixed header	2	Fixed as 0xffff
CMD_READ_ECOWITT	1	0x1E
Size	1	Packet size
Uplaod interval	1	0~5min (0: mean is OFF)

FOS

Checksum	1	checksum

2) Rewrite ambientweatehr.net setting

Description	Length	Notes
Fixed header	2	Fixed as 0xffff
CMD_WRITE_ECOWITT	1	0x1F
Size	1	Packet size
Uplaod interval	1	0~5min (0: mean is OFF)
Checksum	1	checksum

Console WIFI module return data:

Description	Length	Notes
Fixed header	2	Fixed as 0xffff
CMD_WRITE_ECOWITT	1	0x1F
Size	1	Packet size
Result	1	0x00:success，0x01: fail
Checksum	1	checksum

3) Read back Wunderground setting:

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_WUNDERGROUND	1	0x20
Size	1	Packet size
Checksum	1	checksum

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_WUNDERGROUND	1	0x20
Size	1	Packet size
ID Size	1	ID Size
ID	n	ASCII , max 32
Password Size	1	Password Size
Password	n	ASCII , max 32
Fix	1	1
Checksum	1	checksum

4) Rewrite Wunderground setting

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_WUNDERGROUND	1	0x21
Size	1	Packet size
ID Size	1	ID Size
ID	n	ASCII , max 32

FOS

Password Size	1	Password Size
Password	n	ASCII , max 32
Fix	1	1
Checksum	1	checksum

Console WIFI module return data：

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_WUNDERGROUND	1	0x21
Size	1	Packet size
Result	1	0x00:sucess，0x01: fail
Checksum	1	checksum

5) Read WeatherObservationsWebsite setting

Description	Length	Notes
Fixed header	2	固定 0xffff
CMD_READ_WOW	1	0x22
Size	1	包长度
Checksum	1	checksum

Console return：

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_WOW	1	0x22
Size	1	Packet size
ID Size	1	ID Size
ID	n	ASCII , max 39
Password Size	1	Password Size
Password	n	ASCII , max 32
StationNum Size（unused）	1	StationNum size（unused）
StationNum（unused）	n	ASCII , max 32（unused）
Fix	1	1
Checksum	1	checksum

6) Rewrite WeatherObservationsWebsite setting:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_WOW	1	0x23
Size	1	Packet size
ID Size	1	ID Size
ID	n	ASCII , max 39
Password Size	1	Password Size
Password	n	ASCII , max 32
StationNum Size（unused）	1	StationNum size（unused）

FOS

StationNum（unused）	32	ASCII , max 32（unused）
Fix	1	1
Checksum	1	checksum

Console return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_WOW	1	0x23
Size	1	Packet size
Result	1	0x00:sucess，0x01: fail
Checksum	1	checksum

7) Read Weathercloud setting:

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_WEATHERCLOUD	1	0x24
Size	1	
Checksum	1	checksum

Console return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_WEATHERCLOUD	1	0x24
Size	1	
ID Size	1	ID Size
ID	n	ASCII , max 32
Key Size	1	Key Size
Key	n	ASCII , max 32
Fix	1	1
Checksum	1	checksum

8) Write back Weathercloud setting

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_WEATHERCLOUD	1	0x25
Size	1	
ID Size	1	ID Size
ID	n	ASCII , max 32
Key Size	1	Key Size
Key	n	ASCII , max 32
Fix	1	1
Checksum	1	checksum

Console return：

Description	Length	Notes

FOS

Fixed header	2	0xffff
CMD_WRITE_WEATHERCLOUD	1	0x25
Size	1	
Result	1	0x00: success，0x01: fail
Checksum	1	checksum

9) Read customer server setting

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_CUSTOMIZED	1	0x2A
Size	1	
Checksum	1	checksum

Console return :

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_CUSTOMIZED	1	0x2A
Size	1	
ID Size	1	ID Size
ID	n	ASCII , max 40
Password Size	1	Password Size
Password	n	ASCII , max 40
Server Size	1	Server Size
Server	n	ASCII , max 64
Port	2	0-65535
Interval	2	16-600
Type	1	0:EC 1WU
Active	1	0:Disable 1:Enable
Checksum	1	checksum

10) Write back customer server setting:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_CUSTOMIZED	1	0x2B
Size	1	
ID Size	1	ID Size
ID	n	ASCII , max 40
Password Size	1	Password Size
Password	n	ASCII , max 40
Server Size	1	Server Size
Server	n	ASCII , max 64
Port	2	0-65535
Interval	2	16-600

FOS

Type	1	0:EC 1WU
Active	1	0:Disable 1:Enable
Checksum	1	checksum

Console WiFi return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_CUSTOMIZED	1	0x2B
Size	1	
Result	1	0x00:sucess，0x01: fail
Checksum	1	checksum

11) Read customer usr_path setting:

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_USRPATH	1	0x51
Size	1	
Checksum	1	checksum

Console WIFI return：

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_USRPATH	1	0x51
Size	1	
Ecowitt Path	64	ASCII , max 64
WU Path	64	ASCII , max 64
Checksum	1	checksum

12) Write back customer usr_path setting:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_USRPATH	1	0x52
Size	1	
Ecowitt Path	64	ASCII , max 64
WU Path	64	ASCII , max 64
Checksum	1	checksum

Console WIFI return：

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_USRPATH	1	0x52
Size	1	
Result	1	0x00:sucess，0x01: fail
Checksum	1	checksum

13)   Read Soilmoisture Sensor calibration parameter:

Description	Length	Notes
Fixed header	2	0xffff
CMD_GET_SOILHUMIAD	1	0x28
Size	1	
Checksum	1	checksum

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_GET_SOILHUMIAD	1	0x29
Size	1	
Channel	1	Channel number
Current humidity	1	Send by sensor
Current ad	2	Send by sensor
Customize Calibration Option	1	=1 enable, =0 default by sensor
Min ad	1	Customize Mode 0% AD(70~200)
Max ad	2	Customize Mode 100% AD(80~1000)
...	...	
Checksum	1	checksum

14)   Write back Soilmoisture Sensor calibration setting

Description	Length	Notes
Fixed header	2	0xffff
CMD_SET_SOILHUMIAD	1	0x29
Size	1	
Channel	1	Channel number
Customize Calibration Option	1	=1 enable, otherwise =0
Min ad	1	Customize Mode 0% ADd(70~200)
Max ad	2	Customize Mode 100% ad(80~1000)
...	...	
Checksum	1	checksum

Console WIFI return：

Description	Length	Notes
Fixed header	2	0xffff
CMD_SET_SOILHUMIAD	1	0x29
Size	1	
Result	1	0x00: sucess，0x01: fail
Checksum	1	checksum

15)   Read multi channel temp sensor OFFSET setting

Description	Length	Notes

FOS

Fixed header	2	0xffff
CMD_GET_MulCH_OFFSET	1	0x2C
Size	1	
Checksum	1	checksum

Console return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_GET_MulCH_OFFSET	1	0x2C
Size	1	
Channel	1	
humidity offset	1	Range: -10 ~ 10, default: 0
Temperature offset	1	Range: -100~100, default: 0 Note: (-10.0℃~10.0℃)x10
......	....	
WH31_CHANNEL-1	1	0~7
humidity offset	1	
Temperature offset	1	Range: -100~100, default: 0 Note: (-10.0℃~10.0℃)x10
Checksum	1	checksum

16) Write back multi channel temp sensor OFFSET setting:

Description	Length	Notes
Fixed header	2	0xffff
CMD_SET_MulCH_OFFSET	1	0x2D
Size	1	
Channel	1	
humidity offset	1	Range: -10 ~ 10, default: 0
Temperature offset	1	Range: -100~100, default: 0 Note: (-10.0℃~10.0℃)x10
......	....	
WH31_CHANNEL-1	1	0~7
humidity offset	1	
Temperature offset	1	Range: -100~100, default: 0 Note: (-10.0℃~10.0℃)x10
Checksum	1	checksum

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_SET_MulCH_OFFSET	1	
Size	1	
Result	1	0x00: success , 0x01: fail
Checksum	1	checksum

FOS

17)   Read multi channel PM2.5OFFSET calibration setting:

Description	Length	Notes
Fixed header	2	0xffff
CMD_GET_PM25_OFFSET	1	0x2E
Size	1	
Checksum	1	checksum

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_GET_PM25_OFFSET	1	0x2E
Size	1	
Channel	1	
PM25offset	2	Range: -200 ~ 200, default: 0 Note: (-20~20 ug/m3)x10
......	....	
PM25_CH_MAX-1	1	0~3
PM25offset	1	
Checksum	1	checksum

18)   Write back multi channel PM2.5OFFSET calibration:

Description	Length	Notes
Fixed header	2	0xffff
CMD_SET_PM25_OFFSET	1	0x2F
Size	1	
Channel	1	
PM25offset	2	Range: -200 ~ 200, default: 0 Note: (-20~20 ug/m3)x10
......	....	
PM25_CH_MAX-1	1	0~3
PM25offset	1	
Checksum	1	checksum

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_SET_PM25_OFFSET	1	0x2F
Size	1	
Result	1	0x00:sucess，0x01: fail
Checksum	1	checksum

19)   Read back CO2 OFFSET calibration

field	bytes	Notes

FOS

Fixed header	2	0xffff
CMD_GET_CO2_OFFSET	1	0x53
Size	1	
Checksum	1	checksum

WIFI reply：

Field	Bytes	Notes
Fixed header	2	0xffff
CMD_GET_CO2_OFFSET	1	0x53
Size	1	
CO2 offset	2	Range: -600 ~ 10000, default: 0
PM25offset	2	Range: -200 ~ 200, default: 0 Note: (-20~20 ug/m3)x10
PM10offset	2	Range: -200 ~ 200, default: 0 Note: (-20~20 ug/m3)x10
Checksum	1	checksum

20) Update CO2 OFFSET calibration

field	bytes	Note
Fixed header	2	fixed 0xffff
CMD_SET_CO2_OFFSET	1	0x54
Size	1	Packet size
CO2 offset	2	Range: -600 ~ 10000, default: 0
PM25offset	2	Range: -200 ~ 200, default: 0 Note: (-20~20 ug/m3)x10
PM10offset	2	Range: -200 ~ 200, default: 0 Note: (-20~20 ug/m3)x10
Checksum	1	checksum

WIFI return：

field	bytes	notes
Fixed header	2	Fixed 0xffff
CMD_SET_CO2_OFFSET	1	0x54
Size	1	Packet size
Result	1	0x00:success，0x01: fail
Checksum	1	checksum

21）读取 Rain 相关的参数

字 段	长度（字节）	说 明
Fixed header	2	固定 0xffff
CMD_READ_RAIN	1	0x57
Size	1	包长度
Checksum	1	checksum

WIFI模块返回数据：

字 段	长度（字节）	说 明
Fixed header	2	固定 0xffff
CMD_READ_RAIN	1	0x57
Size	2	包长度
ITEM_RAINRATE	2	任意选择其中几个都可
ITEM_RAINDAY	4	
ITEM_RAINWEEK	4	

字 段	长度（字节）	说 明
ITEM_RAINMONTH	4	
ITEM_RAINYEAR	4	
ITEM_RAINEVENT	2	
ITEM_RAINHOUR	2	
ITEM_Piezo_Rain_Rate	2	
ITEM_Piezo_Event_Rain	2	
ITEM_Piezo_Hourly_Rain	2	
ITEM_Piezo_Daily_Rain	4	
ITEM_Piezo_Weekly_Rain	4	
ITEM_Piezo_Monthly_Rain	4	
ITEM_Piezo_yearly_Rain	4	
ITEM_Piezo_Gain10(gain0 ~ gain9: Gain0 to gain4 are used, and gain5 ~ gain9 are reserved)	2x10	
ITEM_RST_RainTime （1、rstRainDayTime Range: 0 ~ 23, 2、rstRainWeekTime Range: 0 or 1, Sunday=0, 1:Monday=0; 3、rstRainYearTime Range: 0 ~ 11, 0:January ~ 11:December. By default all are 0)	3	
Checksum	1	checksum

22）改写 Rain 相关的参数

字 段	长度（字节）	说 明
Fixed header	2	固定 0xffff
CMD_READ_RAIN	2	0x58
Size	1	包长度
ITEM_RAINRATE	2	任意改写其中几个都可
ITEM_RAINDAY	4	
ITEM_RAINWEEK	4	
ITEM_RAINMONTH	4	
ITEM_RAINYEAR	4	
ITEM_RAINEVENT	2	
ITEM_RAINHOUR	2	
ITEM_Piezo_Rain_Rate	2	
ITEM_Piezo_Event_Rain	2	
ITEM_Piezo_Hourly_Rain	2	
ITEM_Piezo_Daily_Rain	4	
ITEM_Piezo_Weekly_Rain	4	
ITEM_Piezo_Monthly_Rain	4	
ITEM_Piezo_yearly_Rain	4	
ITEM_Piezo_Gain10(gain0 ~ gain9: Gain0 to gain4 are used, and gain5 ~ gain9 are reserved)	2x10	
RST_RainTime （1、rstRainDayTime Range: 0 ~ 23, 2、rstRainWeekTime Range: 0 or 1, Sunday=0, 1:Monday=0; 3、rstRainYearTime Range: 0 ~ 11, 0:January ~ 11:December.	3	

By default all are 0)		
Checksum	1	checksum

WIFI模块返回数据：

字 段	长度（字节）	说 明
Fixed header	2	固定 0xffff
CMD_READ_RAIN	1	0x58
Size	1	包长度
Result	1	0x00:成功，0x01: 失败
Checksum	1	checksum

23）Read MAC

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_SATION_MAC	1	0x26
Size	1	
Result	1	0x00:sucess，0x01: fail
Checksum	1	checksum

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_SATION_MAC	1	0x26

FOS

Size	1	
Sta_mac[6]	6	sta_mac[0];sta_mac[1];sta_mac[2]; sta_mac[3];sta_mac[4];sta_mac[5];
Checksum	1	checksum

24） Read current sensor data. Note: returned packet size for data payload is 2 bytes.

Description	Length	Notes
Fixed header	2	0xffff
CMD_GW1000_LIVEDATA	1	0x27
Size	1	
Checksum	1	checksum

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_GW1000_LIVEDATA	1	0x27
Size	2	Size is2 Byte
ITEM_PM25		
Value		Unsigned short (valuex10)
ITEM_PM10		
Value		Unsigned short (valuex10)
ITEM_CH1_SOil_H		
Value		0~99
ITEM_CH2_TEMP		
Value	2	signed short (valuex10)
... ...		
ITEM_CH7_TEMP		
Value		
ITEM_CH1_HUMI		
Value		0~99
ITEM_CH2_HUMI		
ITEM_LOWBATT		
Value	16	typedef union _sensor_batt
... ...		
ITEM_CH7_HUMI		
Value		
ITEM_TF_USR1		
Temperature Value		signed short (valuex10)
Battery Value		0.02V * val
....	......	
ITEM_TF_USR8		
Temperature Value		signed short (valuex10)

FOS

FINE OFFSET ELECTRONICS CO.,LTD.
深圳市欧赛特电子技术开发有限公司

Battery Value	1	0.02V * val
....	......	
ITEM_SENSOR_CO2	1	
tf_co2 value	2	signed short (valuex10)
humi_co2 value	1	
pm10_co2 value	2	unsigned short(valuex10)
pm10_24h_co2 value	2	unsigned short(valuex10)
pm25_co2 value	2	unsigned short(valuex10)
pm25_24h_co2 value	2	unsigned short(valuex10)
Co2 value	2	unsigned short
co2_24h value	2	unsigned short
co2_batt value	1	0～5
Checksum	1	checksum

25） Read system parameter:

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_SSSS	1	0x30
Size	1	
Checksum	1	checksum

WIFI 模块返回数据：

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_SSSS	1	0x30
Size	1	
Frequency（注）	1	Wireless Receive Frequency(Only read)
Sensor Type	1	0:WH24 1:WH65
UTC TIME	4	Unsigned long(Only read)
Timezone Index	1	Local time zone index
DST Status	1	True or False
Checksum	1	checksum

```
typedef enum
{
        RFM433M = (unsigned  char) 0,// 433MHz
        RFM868M = (unsigned  char) 1,// 868MHz
        RFM915M = (unsigned  char) 2,// 915MHz
        RFM920M = (unsigned char) 3 // 920MHz
} freq_t;
extern freq_t Frequency;
```

FOS

26） Write back system parameter

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_SSSS	1	0x31
Size	1	
Frequency		(Only read)Can't be rewritten.
Sensor Type		0:WH24 1:WH65
UTC TIME		Unsigned long(Only read)
Timezone Index		Local time zone index
DST Status		True or False
Checksum	1	checksum

Console WIFI return

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_SSSS	1	0x31
Size	1	
Result	1	0x00:sucess，0x01: fail
Checksum	1	checksum

27） Read rainfall data

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_RAINDATA	1	0x34
Size	1	
Checksum	1	checksum

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_RAINDATA	1	0x34
Size	1	
RainRate	4	Range: 0~60000 Note: (0mm ~6000.0mm)x10
RainDay	4	Range: 0~99999 Note: (0mm ~9999.9mm)x10
RainWeek	4	Range: 0~99999 Note: (0mm ~9999.9mm)x10
RainMonth	4	Range: 0~99999 Note: (0mm ~9999.9mm)x10
RainYear	4	Range: 0~99999 Note: (0mm ~9999.9mm)x10
Checksum	1	

FOS

Write back rainfall:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_RAINDATA	1	0x35
Size	1	
RainDay	4	Range: 0~99999 Note: (0mm ~9999.9mm)x10
RainWeek	4	Range: 0~99999 Note: (0mm ~9999.9mm)x10
RainMonth	4	Range: 0~99999 Note: (0mm ~9999.9mm)x10
RainYear	4	Range: 0~99999 Note: (0mm ~9999.9mm)x10
Checksum	1	

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_RAINDATA	1	0x35
Size	1	
Resulte	1	0x00:sucess，0x01: fail
Checksum	1	checksum

28） Read sensor array calibration

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_GAIN	1	0x36
Size	1	
Checksum	1	checksum

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_GAIN	1	0x36
Size	1	
Fixed	2	1267
uvGain	2	Range: 10~500, default: 100 Note: (0.10 ~5.00)x100
solarRadGain	2	Range: 10~500, default: 100 Note: (0.10 ~5.00)x100
windGain	2	Range: 10~500, default: 100 Note: (0.10 ~5.00)x100
rainGain	2	Range: 10~500, default: 100 Note: (0.10 ~5.00)x100

FOS

| Reserved | 2 | Reserved |
| Checksum | 1 | |

Write back calibration setting:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_ GAIN	1	0x37
Size	1	
Reserved	2	1267(x 10)
uvGain	2	Range: 10~500, default: 100 Note: (0.10 ~5.00)x100
solarRadGain	2	Range: 10~500, default: 100 Note: (0.10 ~5.00)x100
windGain	2	Range: 10~500, default: 100 Note: (0.10 ~5.00)x100
rainGain	2	Range: 10~500, default: 100 Note: (0.10 ~5.00)x100
Reserved	2	Reserved
Checksum	1	

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_ GAIN	1	0x37
Size	1	
Resulte	1	0x00:sucess，0x01: fail
Checksum	1	checksum

29）Read sensor array offset setting:

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_CALIBRATION	1	0x38
Size	1	
Checksum	1	checksum

Console WIFI return：

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_CALIBRATION	1	0x38
Size	1	
inTempOffset	2	Range: -100~100, default: 0 Note: (-10.0℃~10.0℃)x10
inHumiOffset	1	Range: -10~10, default: 0
AbsOffset	4	Range: -800~800, default: 0

FOS

Description	Length	Notes
		Note: (-80.0hpa~80.0hpa)x10
RelOffset	4	Range: -800~800, default: 0
		Note: (-80.0hpa~80.0hpa)x10
outTempOffset	2	Range: -100~100, default: 0
		Note: (-10.0℃~10.0℃)x10
outHumiOffset	1	Range: -10~10, default: 0
windDirOffset	2	Range: -180~180, default: 0
Checksum	1	

30） Write back array offset setting:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_CALIBRATION	1	0x39
Size	1	
inTempOffset	2	Range: -100~100, default: 0
		Note: (-10.0℃~10.0℃)x10
inHumiOffset	1	Range: -10~10, default: 0
AbsOffset	4	Range: -800~800, default: 0
		Note: (-80.0hpa~80.0hpa)x10
RelOffset	4	Range: -800~800, default: 0
		Note: (-80.0hpa~80.0hpa)x10
outTempOffset	2	Range: -100~100, default: 0
		Note: (-10.0℃~10.0℃)x10
outHumiOffset	1	Range: -10~10, default: 0
windDirOffset	2	Range: -180~180, default: 0
Checksum	1	

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_CALIBRATION	1	0x39
Size	1	
Resulte	1	0x00:sucess，0x01: fail
Checksum	1	checksum

31） Read Sensors ID parameter:

typedef enum

{

　　//eWH24_SENSOR = 0x00,

　　eWH65_SENSOR = 0x00,// 1: BATT low, 0: normal

　　//eWH69_SENSOR,

　　eWH68_SENSOR,// voltage=val*0.02V if <=1.2V BAT is low

　　eWH80_SENSOR,// 0.02V * val(received val) = wh80;

FOS

```
eWH40_SENSOR,// 0.1v * val
eWH25_SENSOR,// 1: BATT low, 0: normal
eWH26_SENSOR,// 1: BATT low, 0: normal


eWH31_SENSORCH1,// 1: BATT low, 0: normal
eWH31_SENSORCH2,// 1: BATT low, 0: normal
eWH31_SENSORCH3,// 1: BATT low, 0: normal
eWH31_SENSORCH4,// 1: BATT low, 0: normal
eWH31_SENSORCH5,// 1: BATT low, 0: normal
eWH31_SENSORCH6,// 1: BATT low, 0: normal
eWH31_SENSORCH7,// 1: BATT low, 0: normal
eWH31_SENSORCH8,// 1: BATT low, 0: normal
eWH51_SENSORCH1,// val * 0.1v
eWH51_SENSORCH2,// val * 0.1
eWH51_SENSORCH3,// val * 0.1
eWH51_SENSORCH4,// val * 0.1
eWH51_SENSORCH5,// val * 0.1
eWH51_SENSORCH6,// val * 0.1
eWH51_SENSORCH7,// val * 0.1
eWH51_SENSORCH8,// val * 0.1
eWH41_SENSORCH1,// level0~6，<=1 for BATT low, 6 = dc power supply
eWH41_SENSORCH2,// level0~6，<=1 for BATT low 6 = dc power supply
eWH41_SENSORCH3,// level0~6，<=1 for BATT low 6 = dc power supply
eWH41_SENSORCH4,// level0~6，<=1 for BATT low 6 = dc power supply
//...............
eWH57_SENSOR, // level0~5， <=1 for BATT low
eWH55_SENSORCH1,// level0~5， <=1 for BATT low
eWH55_SENSORCH2,// level0~5， <=1 for BATT low
eWH55_SENSORCH3,// level0~5， <=1 for BATT low
eWH55_SENSORCH4,// level0~5， <=1 for BATT low
    eWH34_SENSORCH1 = 3// v=val*0.02V   if v<=1.2V BATTlow
    eWH34_SENSORCH2 = 3// v=val*0.02V   if v<=1.2V BATTlow
    eWH34_SENSORCH3 = 3// v=val*0.02V   if v<=1.2V BATTlow
    eWH34_SENSORCH4 = 3// v=val*0.02V   if v<=1.2V BATTlow
    eWH34_SENSORCH5 = 3// v=val*0.02V   if v<=1.2V BATTlow
    eWH34_SENSORCH6 = 3// v=val*0.02V   if v<=1.2V BATTlow
    eWH34_SENSORCH7 = 3// v=val*0.02V   if v<=1.2V BATTlow
    eWH34_SENSORCH8 = 3// v=val*0.02V if v<=1.2V BATT low

  eWH45_SENSOR     = 39,// 0~5 6 = dc power supply
// command 0x3A reads the above data. Newly added sensor data won't be read out with 0x3A command.


    eWH35_SENSORCH1 = 40,//电压=val*0.02V   当<=1.2V 时显示低电压
    eWH35_SENSORCH2 = 41,//电压=val*0.02V   当<=1.2V 时显示低电压
```

FOS

eWH35_SENSORCH3 = 42,//电压=val*0.02V　当<=1.2V 时显示低电压
eWH35_SENSORCH4 = 43,//电压=val*0.02V　当<=1.2V 时显示低电压
eWH35_SENSORCH5 = 44,//电压=val*0.02V　当<=1.2V 时显示低电压
eWH35_SENSORCH6 = 45,//电压=val*0.02V　当<=1.2V 时显示低电压
eWH35_SENSORCH7 = 46,//电压=val*0.02V　当<=1.2V 时显示低电压
eWH35_SENSORCH8 = 47,//电压=val*0.02V　当<=1.2V 时显示低电压

//command 0x3c reads all the data from 0x3A, plus new sensor wh35 can be read. So 0x3C command should be used

//instead of 0x3A if needs to read more sensors to be added.

//fixed sensor data sequence, not allowed for any order change.

eWH90_SENSOR = 48, ,// 0.02V * val(received val)

//...............

eMAX_SENSOR

}SENSOR_IDT;

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_SENSOR_ID	1	0x3A
Size	1	
Checksum	1	checksum

Console return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_SENSOR_ID	1	0x3A
Size	1	
WH65_SENSOR		0x01
WH65_ID		unsigned long
Battery		
Wh65_signal		0~4
WH68_SENSOR		0x02
WH68_ID		unsigned long
battery		
WH68_signal		0~4
...SENSOR		..
..._ID		...
battery		
..._signal	1	0~4
Checksum	1	

32） Read Sensors Status

Description	Length	Notes

FOS

Fixed header	2	0xffff
CMD_READ_SENSOR_ID_NEW	1	0x3C
Size	1	
Checksum	1	checksum

Console return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_SENSOR_ID_NEW	1	0x3C
Size	2	
WH65_SENSOR		0x01
WH65_ID		unsigned long
battery		
Wh65_signal		0~4
WH68_SENSOR		0x02
WH68_ID		unsigned long
battery		
WH68_signal		0~4
...SENSOR		..
..._ID		...
battery		
..._signal	1	0~4
Checksum	1	

33） Write back Sensors ID:

Description	Length	Notes
Fixed header	2	固定 0xffff
CMD_WRITE_SENSOR_ID:	1	0x3B
Size	1	包长度
WH65_SENSOR		0x01
WH65_ID		Unsigned long
WH68_SENSOR		0x02
WH68_ID		Unsigned long
...SENSOR		SENSOR_IDT
..._ID		Unsigned long
Checksum	1	

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_SENSOR_ID	1	0x3B
Size	1	

FOS

Resulte	1	0x00:success , 0x01: fail
Checksum	1	checksum

Note：if written ID = 0xFFFFFFFF, tell console to re-learn sensor by force. If written ID = 0xFFFFFFFE, tell console to disable this sensor by force.

34）Read firmware version info:

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_FIRMWARE_VERSION	1	0x50
Size	1	
Checksum	1	

Console WIFI return：

Description	Length	Notes
Fixed header	2	0xffff
CMD_READ_FIRMWARE_VERSION	1	0x50
Size	1	包长度
Versoin length	1	Max value 23Bytes
Version buffer		For example: "EasyWeatherV1.2.0"
Checksum	1	checksum

35）Firmware upgrade

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_UPDATE	1	0x43
Size	1	
ServerIP	4	0xc0a80063 //"192.168.0.99"
ServerPort	2	1~65535
Checksum	1	

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_ UPDATE	1	0x43
Size	1	
Resulte	1	0x00:sucess，0x01: fail
Checksum	1	checksum

If user choose "Update firmware"，app side send server IP and port number to the module. Console wifi setup a connection with server:

connect success

sent "user1.bin" or "user2.bin"

sent firmware data size (eg: 33334566 bytes)

sent "start"

FOS

sent　packet(1) //(packet size 1460bytes)

sent "continue"

.....

......

sent　packet(n)

sent "continue"

sent　packet (n+1)

sent "end"

1. client connected with server, and send filename, server respond with file length；

2. client have file length received, send server with start，server return with 1st packet of firmware data

3. client have 1st packet firmware data received, send server with continue，server reply with 2nd packet firmware data
……

4. client have (n-1)th firmware data packet received, send server with continue，server reply with nth packet firmware data

5. client have nth packet firmware data received, if all ok, send server with end.

36）Console reboot:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_REBOOT	1	0x40
Size	1	
Checksum	1	

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_REBOOT	1	0x40
Size	1	
Resulte	1	0x00:sucess，0x01: fail
Checksum	1	checksum

37） Reset to default

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_RESET	1	0x41
Size	1	
Checksum	1	

Console WIFI return:

Description	Length	Notes
Fixed header	2	0xffff
CMD_WRITE_RESET	1	0x41
Size	1	
Resulte	1	0x00:sucess，0x01: fail

FOS

Checksum	1	checksum