
TA Series Communication Protocols

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I. Communication interface

The lower computer is connected to PC via USB, using HID batch transmission mode, where VID = 0x2f81, PID = 0x5721, production_str = class name, such as "TA622 Temperature and Humidity Meter" "TA632 Illuminance Meter" "TA642 Anemometer";

TA612C connects to PC via USB and uses serial port for communication, baud rate 9600, 1 stop bit, 8 data bits, no parity.

II. Realization of functions

- 2.1 PC sends command (0x01) to the lower computer to start transmitting real-time data.
- 2.2 PC sends command (0x00) to the lower computer to stop transmitting data and return the model and version number.
- 2.3 PC sends command (0x02) to the lower unit to start transmitting recorded data.
- 2.4 The PC sends a command (0x03) to the lower unit to synchronize the timestamp.
- 2.5 PC sends command (0x04) to the lower unit to realize function setting.
- 2.6 The lower unit sends real-time temperature data to the PC (only once)
- 2.7 The lower unit sends the recorded temperature data to PC (until it is finished, up to 64 bytes at a time, the extra bytes are divided into two frames)
- 2.8 The lower computer sends the model and version number data.

III. Communication protocols

Header	Command	Frame Length	Timestamp	Data	...	Sum Checksum
16bits (low byte first)	8bits	8bits (length of a frame of data, excluding the header, in bytes (8bits), up to a maximum of 62 bytes)	32bits Unix timestamp in seconds (sent as low byte first)	16bits Actual data expanded by a factor of 10 (sent as if low byte came first)	...	8bits (counting from the frame header, keeping the last 8 bits)

3.1 Special data interpretation

3.1.1 TA612

Temperature data for the remaining 3 channels

3.1.2 TA622

Humidity data 16bits expanded 100 times

3.1.3 TA632

None

3.1.4 TA642

Temperature data: 16bits expanded 100 times

3.1.5 TA652

1. Weighting unit: 8bits

0x00: A-weighted

0x01: B-weighted

0x02: C-weighted

0x03: Z-weighting

2. Temperature data: 16bits expanded 100 times

3.2 Upper computer frame data

3.2.1.Command frame to start real-time sending

Header	Command	Frame length	Sum
0x55AA	0x01	0x03	0x03

3.2.2.Stop command frame

Header	Command	Frame length	Sum
0x55AA	0x00	0x03	0x02

3.2.3.Command frame to start sending logged data

Header	Command	Frame length	Sum
0x55AA	0x02	0x03	0x04

3.2.4.Time synchronization command frame

Header	Command	Frame length	Timestamp	Sum
0x55AA	0x03	0x07	7*8bits	x

The timestamps are BCD codes and are sent to the host computer in the order of seconds, minutes, hours, weeks, days, months and years. "day", "month", "year" to the host computer.

3.2.5.Function setting data frame

Header	Command	Frame length	Setup Parameter	...	Sum
0x55AA	0x04	8bits	x	...	8bits

1. Setting Parameters

This data frame is only used by TA652 for the time being.

1.1 TA612

1.2 TA622

1.3 TA632

1.4 TA642

1.5 TA652

Header	Command	Frame length	Weighted unit parameter	filter parameter	Sum
0x55AA	0x04	8bits	8bits	8bits 0x00 fast 0x01 slow	8bits

3.3 Lower unit data frame details

3.3.1 TA612 Data Detail

1. Real-time data frame

Header	Command	Frame length	Channel Data	Sum
0xAA55	0x01	x	16bits * 4channel	x

Arranged in the order of channel 1, channel 2, channel 3 and channel 4.

2. Model and version number frames

Header	Command	Frame length	Model	version number	Sum
0xAA55	0x00	0x06	16bits	16bits	0x06

2.1 Model Number Explanation

TA612: Decimal 0D612 that is hex 0x264

TA622: Decimal 0D622 that is hex 0x26E

TA632: Decimal 0D632 that is hex 0x277

TA642: Decimal 0D642 is hex 0x282

TA652: Decimal 0D652 is hex 0x28C.

2.2 Version Number Explained

Version number: 16bits, expanded 100 times, 0 is no version number.

For example: V1.00 is decimal 100.

3. Record data frames

Header	Command	Frame length	Channel Data	Sum
0xAA55	0x02	N	16bits * 4channel	X

3.3.2 TA622 Data Detail

1.Real-time data frame

Header	Command	Frame length	Timestamp	Temperature data	Humidity data	...	Sum
0xAA55	0x01	x	32bits	16bits	16bits	...	x

2.Model and version number frames

Header	Command	Frame length	Model	Version number	Sum
0xAA55	0x00	0x06	16bits	16bits	0x06

2.1Model details

TA612: Decimal 0D612 or hex 0x264

TA622: Decimal 0D622 or hex 0x26E

TA632: Decimal 0D632 is hex 0x277

TA642: Decimal 0D642 is hex 0x282

TA652: Decimal 0D652 is hex 0x28C

2.2 Version number details

Version number: 16bits, expanded 100 times, 0 is no version number.

Example: V1.00 is decimal 100

3.Record data frames

Header	Command	Frame length	Timestamp	Temperature data	Humidity data	...	Sum
0xAA55	0x02	N	32bits	16bits	16bits	...	X

3.3.3 TA632 Data Detail

1.Real-time data frame

Header	Command	Frame length	Illumination data	Sum
0xAA55	0x01	x	32bits Illumination raw data lux	x

1.1 Illumination data detail

The lower computer screen displays the value, expanding it 100 times.

For example: If 1234.5lux is displayed, the data sent will be 123450lux.

If 1234.5lux is displayed, the data sent will be 123450 lux, and if 12456 lux is displayed, the data sent will be 123456 lux.

2.Model and version number frame

Header	Command	Frame length	Model	Version number	Sum
0xAA55	0x00	0x06	16bits	16bits	0x06

2.1Model details

TA612: Decimal 0D612 or hex 0x264

TA622: Decimal 0D622 or hex 0x26E

TA632: Decimal 0D632 is hex 0x277

TA642: Decimal 0D642 is hex 0x282

TA652: Decimal 0D652 is hex 0x28C

2.2 Version number details

Version number: 16bits, expanded 100 times, 0 is no version number.

Example: V1.00 is decimal 100

3.3.4 TA642 Data Detail

1.Real-time data frame

Header	Command	Frame length	Wind speed data	Temperature data	Sum
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0xAA55	0x01	x	16bits	16bits	x
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2. Model and version number frame

Header	Command	Frame length	Model	Version number	Sum
0xAA55	0x00	0x06	16bits	16bits	0x06

2.1 Model details

TA612: Decimal 0D612 that is hex 0x264

TA622: Decimal 0D622 that is hex 0x26E

TA632: Decimal 0D632 that is hex 0x277

TA642: Decimal 0D642 is hex 0x282

TA652: Decimal 0D652 is hex 0x28C.

2.2 Version Number Explained

Version number: 16bits, expanded 100 times, 0 is no version number.

For example: V1.00 is decimal 100.

3. Record data frames

Header	Command	Frame length	Wind speed data	Temperature data	...	Sum
0xAA55	0x02	N	16bits	16bits	...	X

3.3.5 TA652 Data Detail

1. Real-time data frame

Header	Command	Frame length	Timestamp	Noise data	Weighted data	Temperature data	Sum
0xAA55	0x01	x	32bits	16bits	16bits	16bits	x

1.1 Noise data details

The lower computer displays the value, if it is a decimal, then expand it 100 times.

If 123.4 db is displayed, the data sent is 12340 db.

If 1 db is displayed, then 100 db is sent.

1.2 Weighted data in detail

0x00: A-weighted

0x01: B-weighted

0x02: C-weighted

0x03: Z-weighted

2. Model and version number frame

Header	Command	Frame length	Model	Version number	Sum
0xAA55	0x00	0x07	16bits	16bits	

2.12.1 Model details

TA612: Decimal 0D612 or hex 0x264

TA622: Decimal 0D622 or hex 0x26E

TA632: Decimal 0D632 is hex 0x277

TA642: Decimal 0D642 is hex 0x282

TA652: Decimal 0D652 is hex 0x28C

2.2 Version number details

Version number: 16bits

Example: V1.00 is decimal 100

3. Record data frames

Header	Command	Frame length	Timestamp	噪 声 数据	加 权 数据		...	Sum
0xAA55	0x02	N	32bits	16bits	16bits		...	X

V. Examples

Take TA612 as an example, connect TA612 through XCOM serial assistant on computer side, the connection parameters are baud rate 9600, 1 stop bit, 8 data bits, no parity.

1. Get device information

Send hexadecimal data through XCOM: AA 55 00 03 02.

TA612 return: 55 AA 00 07 64 02 22 01 8F.

where 0x64 and 0x02 form 0x0264, decimal 612, representing TA612; where 0x22 and 0x01 form 0x0264, decimal 612, representing TA612; where 0x22 and 0x01 form 0x0264, decimal 612, representing TA612.

where 0x22 and 0x01 form 0x0122; decimal 290, representing V2.90.



1. Get real-time data

Send hexadecimal data via XCOM: AA 55 01 03 03;

TA612 returns: 55 AA 01 0B 13 01 0D 01 0C 01 0D 01 48.

Where 0x13 and 0x01 to form 0x0113, decimal 275, reduced by a factor of 10, 27.5, the default unit of °C; the rest of the bytes in turn to form 0x010, decimal 275, reduced by a factor of 10, 27.5, the default unit of °C; the default unit of °C.

The remaining bytes are 0x010D, 0x010C, 0x010D, representing the temperature value of channel 2, channel 3 and channel 4.

六、 Revision Record

Time	Revision record	Revision person
2021/08/05	First edition completed	
2021/09/08	Add detailed explanation of TA652.	
2021/09/10	TA642 and TA652 add temperature transfer. TA632 fix data description Timestamp is 32bits	
2021/09/22	TA632 remove Timestamp	
2021/09/27	Version number changed from 8bits to 16bits TA652 Weighted data changed to 16bits Upload data description added	
2021/10/13	Modify connection method	
2021/11/24	Timestamp does not use 32bits, but follows year, month, day, week, hour, minute, and second, communication	
2022/07/25	Modify TA642 communication protocol content, Add communication protocol example	