Hub communication protocol V1.1

1. Communication parameters

It adopts MODBUS/RTU mode and CRC16/Modbus x16 +x15 +x2 +1.

Default serial port configuration: baud rate 38400, one start bit, eight data bit, no parity check, two stop bit

Default equipment address: 80H

2. Communication protocol

1） Read internal parameter protocol

Host command 80 03 02 00 00 04 5B A0		Hub response 80 03 08 00 80 00 02 00 00 00 10 C1 2D	
Address code	80H	Address code	80H
Function code	03H	Function code	03H
Head address for storage	02H	Head address for storage	08H
	00H	Data word 1 high 8 bits	00H
Data word length	00H	Data word 1 low 8 bits	01H
	04H	Data word 2 high 8 bits	00H
CRC(low 8 bits)	5BH	Data word 2 low 8 bits	02H
CRC(high8bits)	A0H	Data word 1 high 8 bits	00H
		Data word 1 low 8 bits	00H
		Data word 2 high 8 bits	00H
		Data word 2 low 8 bits	04H
		CRC(low 8 bits)	C1H
		CRC(high8bits)	2DH

Instruction：

1.0001H in data byte 1 means equipment address 01.

2.0002H in data byte 2 means baud rate 38400（0000H means 9600 while 0001H means 19200）.

3.0000H in data byte 3 means no parity, two stop bit(0001H odd parity, one stop bit. 0002H means even parity and one stop bit).

2)Read the four-way hub data protocol

Host command 80 03 00 00 00 08 5A 1D		Hub response 80 03 10 01 00 12 39 00 00 13 A1 01 00 14 19 00 00 14 B9 6A 65	
Address code	80H	Address code	80H

Function code	03H	Function code	03H		
Head address for storage	00H	Data word length	10H		
	00H	Data word 1 high 8 bits	01H	Displacement sensor1 data	Sign symbol
Data word length	00H	Data word 1 low 8 bits	00H		Data measurement (16-base)
	08H	Data word 2 high 8 bits	12H		
CRC(low 8 bits)	5AH	Data word 2 low 8 bits	39H		
CRC(high8bits)	1DH	Data word 3 high 8 bits	00H	Displacement sensor2 data	Sign symbol
		Data word 3 low 8 bits	00H		Data measurement (16-base)
		Data word 4 high 8 bits	13H		
		Data word 4 low 8 bits	A1H		
		Data word 5 high 8 bits	01H	Displacement sensor3 data	Sign symbol
		Data word 5 low 8 bits	00H		Data measurement (16-base)
		Data word 6 high 8 bits	14H		
		Data word 6 low 8 bits	19H		
		Data word 7 high 8 bits	00H	Displacement sensor4 data	Sign symbol
		Data word 7 low 8 bits	00H		Data measurement (16-base)
		Data word 8high 8 bits	14H		
		Data word 8 low 8 bits	B9H		
		CRC(low 8 bits)	6AH		
		CRC(high8bits)	65H		

instruction：

1、 The measured date is 4 bytes and the first byte is sign bit.,01H represents negative sign while 00H presents positive sign. The 2-4 byte are measured date of 16-base.

2、The measured date（1239H） in the case is converted into 10-base 4665. The sign bit 01H is negative number. The high precision dimi displacement sensor and the actual displacement length of the dimi displacement sensor is -0.4665mm. The high precision percentile displacement sensor and the actual displacement length of the percentile displacement sensor is -4.665mm.

3、The multiplex, single-channel protocol is read in Appendix I.

3)Setting of displacement sensor function protocol

Host command 80 06 08 00 AB 56 6A B5		Hub response80 06 08 00 AB 56 6A B5	
Address code	80H	Address code	80H
Function code	06H	Function code	06H
Head address for storage	08H	Head address for storage	08H
	00H		00H
Write data	ABH	Write data	ABH
	56H		56H
CRC(low 8 bits)	6AH	CRC(low 8 bits)	6AH
CRC(high8bits)	B5H	CRC(high8bits)	B5H

Instruction：

1.It means data zero clearing function when writing data ABH and 56H.

4)Modify equipment address protocol

Host command 80 06 02 00 00 02 17 A2		Hub response80 06 02 00 00 02 17 A2	
Address code	80H	Address code	01H
Function code	06H	Function code	06H
Head address for storage	02H	Head address for storage	02H
	00H		00H
Write data	00H	Write data	00H
	02H		02H
CRC(low 8 bits)	17H	CRC(low 8 bits)	17H
CRC(high 8 bits)	A2H	CRC(high 8 bits)	A2H

Instruction: User should write storage address 0200H and write data 0002H in the case. It shows the modification of the equipment address to 02(set range base 1-254).

5)Modify baud rate protocol

Host command 80 06 02 01 00 02 46 62		Hub response80 06 02 00 00 02 46 62	
Address code	80H	Address code	80H
Function code	06H	Function code	06H
Head address for storage	02H	Head address for storage	02H
	01H		01H
Write data	00H	Write data	00H
	02H		02H
CRC(low 8 bits)	46H	CRC(low 8 bits)	46H
CRC(high 8	62H	CRC(high 8	62H

bits)		bits)	

Instruction：

1.User should write data 0002H in the case and modify Baud rate 38400.

2.User should write 0001H and modify Baud rate 19200.

3.User should write data 0000H and modify Baud rate 9600.

4.User should write storage address 0201H.

6)Modify check stop bit protocol

Host command 80 06 02 02 00 02 B6 62		Hub response80 06 02 00 00 02 B6 62	
Address code	80H	Address code	80H
Function code	06H	Function code	06H
Head address for storage	02H	Head address for storage	02H
	02H		02H
Write data	00H	Write data	00H
	02H		02H
CRC(low 8 bits)	B6H	CRC(low 8 bits)	B6H
CRC(high 8 bits)	62H	CRC(high 8 bits)	62H

Instruction：

1.User should write data 0002H. It means even parity and one stop bit.

2.User should write 0001H. It means odd parity and one stop bit.

3.User should write 0000H. It means no parity and two stop bits.

4.User should write storage address 0202H.

Appendix 1:

Read the multi-channel data protocol

Read the 4 channels data: 80 03 00 00 00 08 5A 1D

Read the 8 channels data: 80 03 00 00 00 10 5A 17

Read the 12 channels data: 80 03 00 00 00 18 5B D1

Read the 16 channels data: 80 03 00 00 00 20 5A 03

Read the 32 channels data: 80 03 00 00 00 40 5A 2B

Read the 56 channels data: 80 03 00 00 00 70 5A 3F

Instruction：

Each sensor data occupies 4 bytes, or 2 word addresses, so the 5th, 6th bytes = query channel data / 2,The sensor data storage start address starts at 0000H, so the 3rd and 4th bytes are 00H

Read the single-channel data protocol

XX 03 00 XX 00 02 XX XX

(The first XX is the address of the hub, and the second XX is the first sensor (XX= sensor serial number * 2-2))

Read the channel 1 data：80 03 00 00 00 02 DA 1A

Read the channel 2 data：80 03 00 02 00 02 7B DA

Read the channel 3 data：80 03 00 04 00 02 9B DB

Read the channel 4 data：80 03 00 06 00 02 3A 1B
Read the channel 5 data：80 03 00 08 00 02 5B D8
Read the channel 6 data：80 03 00 0A 00 02 FA 18
Read the channel 7 data：80 03 00 0C 00 02 1A 19
Read the channel 8 data：80 03 00 0E 00 02 BB D9

Single Channel Setup functional protocol
XX 06 00 XX ab 56 XX XX
(The first XX is the address of the hub, and the second XX is the first sensor (XX= sensor serial number * 2-2))
Taking the reset function as an example, data is written to the first address of a specific sensor ab56H
Zero up the value of channel 1：80 06 00 00 AB 56 68 D5
Zero up the value of channel 2：80 06 00 02 AB 56 C9 15
Zero up the value of channel 3：80 06 00 04 AB 56 29 14
Zero up the value of channel 4：80 06 00 06 AB 56 88 D4
Zero up the value of channel 5：80 06 00 08 AB 56 E9 17
Zero up the value of channel 6：80 06 00 0A AB 56 48 D7
Zero up the value of channel 7：80 06 00 0C AB 56 A8 D6
Zero up the value of channel 8：80 06 00 0E AB 56 09 16