Protocollo WT901WIFI

Register table

ADDR (Hex)	ADDR (Dec)	REGISTER NAME	FUNCTION	SERIAL I/F	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit0
00	00	SAVE	Save/restart/factory restore	R/W	SAVE[15:0]															
01	01	CALSW	Calibration mode	R/W													CALSW[3:0]			
05	05	AXOFFSET	Acceleration X zero bias	R/W	AXOFFSET[15:0]															
06	06	AYOFFSET	Acceleration Y zero bias	R/W	AYOFFSET[15:0]															
07	07	AZOFFSET	Acceleration Z zero offset	R/W	AZOFFSET[15:0]															
08	08	GXOFFSET	Angular velocity X zero deviation	R/W	GXOFFSET[15:0]															
09	09	GYOFFSET	Angular velocity Y zero deviation	R/W	GYOFFSET[15:0]															
0A	10	GZOFFSET	Angular velocity Z zero deviation	R/W	GZOFFSET[15:0]															
0B	11	HXOFFSET	Magnetic field X zero bias	R/W	HXOFFSET[15:0]															
0C	12	HYOFFSET	Magnetic field Y zero bias	R/W	HYOFFSET[15:0]															

0D	13	HZOFFSET	Magnetic field Z zero bias	R/W	HZOFFSET[15:0]															
1C	28	MAGRANGX	Magnetic field X calibration range	R/W	MAGRANGX[15:0]															
1D	29	MAGRANGY	Magnetic field Y calibration range	R/W	MAGRANGY[15:0]															
1E	30	MAGRANGZ	Magnetic field Z calibration range	R/W	MAGRANGZ[15:0]															
1F	31	BANDWIDTH	Bandwidth	R/W													BANDWIDTH[3:0]			
20	32	GYRORANGE	Gyroscope range	R/W													GYRORANGE[3:0]			
21	33	ACCRANGE	Acceleration range	R/W													ACCRANGE[3:0]			
23	35	ORIENT	Installation direction	R/W																ORIENT
24	36	AXIS6	algorithm	R/W																AXIS6
25	37	FILTK	Dynamic filtering	R/W	FILTK[15:0]															
26	38	Q0	Quaternion 0	R	Q0[15:0]															
27	39	Q1	Quaternion 1	R	Q1[15:0]															
28	40	Q2	Quaternion 2	R	Q2[15:0]															
29	41	Q3	Quaternion 3	R	Q3[15:0]															
2A	42	ACCFILT	Acceleration filtering	R/W	ACCFILT[15:0]															

2D	45	WIFIMODE	WIFI mode	R												WIFIMODE[3:0]
2E	46	VERSION	Version number	R	VERSION[15:0]											
30	48	YYMM	Years	R/W	MOUTH[15:8]										YEAR[7:0]	
31	49	DDHH	Date	R/W	HOUR[15:8]										DAY[7:0]	
32	50	MMSS	Minutes and seconds	R/W	SECONDS[15:8]										MINUTE[7:0]	
33	51	MS	Millisecond	R/W	MS[15:0]											
34	52	AX	AccelerationX	R	AX[15:0]											
35	53	AY	AccelerationY	R	AY[15:0]											
36	54	AZ	AccelerationZ	R	AZ[15:0]											
37	55	GX	Angular velocityX	R	GX[15:0]											
38	56	GY	Angular velocityY	R	GY[15:0]											
39	57	GZ	Angular velocityZ	R	GZ[15:0]											
3A	58	HX	Magnetic field X	R	HX[15:0]											
3B	59	HY	Magnetic field Y	R	HY[15:0]											
3C	60	HZ	Magnetic field Z	R	HZ[15:0]											
3D	61	Roll	Roll angle	R	Roll[15:0]											
3E	62	Pitch	Pitch angle	R	Pitch[15:0]											
3F	63	Yaw	Yaw angle	R	Yaw[15:0]											

40	64	TEMP	Temperature	R	TEMP[15:0]
42	66	BAT	Power	R	BAT[15:0]
43	67	TCPIP0	TCPIP	R	TCPIP0[15:0]
…					
4A	74	TCPIP7	TCPIP	R	TCPIP7[15:0]
4B	75	TCPPORT	TCP port	R	TCPPORT[15:0]
4C	76	UDPIP0	UDPIP	R	UDPIP0[15:0]
…					
53	83	UDPIP7	UDPIP	R	UDPIP7[15:0]
54	84	UDPPORT	UDP port	R	UDPPORT[15:0]
5D	93	RSSI	WIFI signal	R	RSSI[15:0]
60	96	LOCALPORT	local port	R	LOCALPORT[15:0]
68	104	RATE	Sending rate	R/W	RATE[15:0]
75	117	TCP/UDP	Connection method	R/W	TCP/UDP
78	120	SSID0	WIFI account	R	SSID0[15:0]
…					
87	135	SSID15	WIFI account	R	SSID15[15:0]
88	136	PASSWORD0	WIFI password	R	PASSWORD0[15:0]

...					
A7	167	PASSWORD31	WIFI password	R	PASSWORD31[15:0]

Protocol format

Read format

data analysis

The data is sent in hexadecimal format, not ASCII code.

Each data is divided into low byte and high byte and transmitted sequentially, and the two are combined into a signed short type data. For example, data DATA1, where DATA1L is the low byte and DATA1H is the high byte. The conversion method is as follows: Assume that DATA1 is the actual data, DATA1H is its high byte part, and DATA1L is its low byte part, then: DATA1=(short)((short)DATA1H<<8|DATA1L). It must be noted here that DATA1H needs to be forced to be converted to a signed short type data before shifting, and the data type of DATA1 is also a signed short type, so that negative numbers can be represented.

Serial number	HEX code	ASCII code	Illustrate
1	0x57	W	Fixed and cannot be changed
2	0x54	T	Fixed and cannot be changed
3	0x35	5	Fixed and cannot be changed
4	0x35	5	Fixed and cannot be changed

5	ID		Set by the original factory: ID: 0x30~0x39
6	ID		Set by the original factory: ID: 0x30~0x39
7	ID		Set by the original factory: ID: 0x30~0x39
8	ID		Set by the original factory: ID: 0x30~0x39
9	ID		Set by the original factory: ID: 0x30~0x39
10	ID		Set by the original factory: ID: 0x30~0x39
11	ID		Set by the original factory: ID: 0x30~0x39
12	ID	Set when produced by the original factory: ID: 0x30~0x39, the device ID is 12, for example, WT5500001234	Set when produced by the original factory: ID: 0x30~0x39, the device ID is 12, for example, WT5500001234
13	YY		Year
14	MM		moon
15	DD		Day
16	HH		Hour
17	MM		point
18	SS		Second
19	MSL		millisecond low

20	MSH		Millisecond high bit, millisecond =(MSH <<8)|MSL
21	AXL		Acceleration X is low
22	AXH		Acceleration X high bit, acceleration X=((AXH<<8)|AXL)/32768*16(g)
23	AYL		Acceleration Y is low
24	AYH		Acceleration Y high bit, acceleration Y=((AXH<<8)|AXL)/32768*16(g)
25	AZL		Acceleration Z is low
26	AZH		Acceleration Z high position, acceleration Z=((AZH<<8)|AZL)/32768*16(g)
27	GXL		Angular velocity X is low
28	GXH		Angular velocity X low position, angular velocity X=((GXH<<8)|GXL)/32768*2000 (°/s)
29	GYL		Angular velocity Y is low
30	GYH		Angular velocity Y low position, angular velocity Y=((GYH<<8)|GYL)/32768*2000(°/s)
31	GZL		Angular velocity Z is low
32	GZH		Angular velocity Z low position, angular velocity

			Z=((GZH<<8)|GZL)/32768*2000 (°/s)
33	HXL		Magnetic field X is low
34	HXH		Magnetic field X is high, magnetic field X =((HXH<<8)|HXL)*100/1024 (uT)
35	HYL		Magnetic field Y is low
36	HYH		Magnetic field Y is high, magnetic field Y =((HYH<<8)|HYL)*100/1024 (uT)
37	HZL		Magnetic field Z is low
38	HZH		Magnetic field Z is high, magnetic field Z =((HZH<<8)|HZL)*100/1024 (uT)
39	AgXL		X angle low position
40	AgXH		Angle X is high, angle X=((AgXH<<8)|AgXL)/32768*180(°)
41	AgYL		Y angle low position
42	AgYH		Angle Y high position, angle Y=((AgYH<<8)|AgYL)/32768*180(°)
43	AgZL		Z angle low position
44	AgZH		Angle Z high position, angle Z=((AgZH<<8)|AgZL)/32768*180(°) low temperature
45	TEMPL		low temperature

46	TEMPH		Temperature high position, temperature=((TEMPH <<8)| TEMPL)/100(℃)
47	BATL		Not enough power
48	BATH		High power level, power=((BATH <<8)| BATL)/100(V)
49	RSSIL		low signal
50	RSSIH		Signal high bit, signal = (RSSIH <<8) | RSSIL (dBm)
51	VERSIONL		Low version number
52	VERSIONH		High bit of version number, version number = (VERSIONH <<8)| VERSIONL
53		0x0D	Newline character
54		0x0A	Newline character

Read register return value

Used to read the value of the user-specified register. If REG1 is read, the values of the 4 registers REG1~REG4 will be returned. The protocol must return 4 registers.

Send command: FF AA 27 REG 00

Returns as follows:

0x55	0x5F	REG1L	REG1H	REG2L	REG2H	REG3L	REG3H	REG4L	REG4H	SUM

name	Describe	Remark
REG1L	Register 1 lower 8 bits	REG1[15:0]=((REG1H<<8)|REG1L)
REG1H	Register 1 high 8 bits	
REG2L	Register 2 lower 8 bits	REG2[15:0]=((REG2H<<8)|REG2L)
REG2H	Register 2 high 8 bits	
REG3L	Register 3 lower 8 bits	REG3[15:0]=((REG3H<<8)|REG3L)
REG3H	Register 3 high 8 bits	
REG4L	Register 4 lower 8 bits	REG4[15:0]=((REG4H<<8)|REG4L)

REG4H	Register 4 high 8 bits	
SUM	Checksum	SUM=0x55+0x5F+REG1L+REG1H+REG2L+REG2H+REG3L+REG3H+REG4L+REG4H

For example:

Reading register "AXOFFSET" returns: 0x55 0x5F AXOFFSET[7:0] AXOFFSET[15:8] AYOFFSET[7:0] AYOFFSET[15:8] AZOFFSET[7:0] AZOFFSET[15:8] GXOFFSET[7:0] GXOFFSET[15:8] SUM

write format

ASCII setting format

Function V	instructions	Illustrate
Calibration time	WTTIME:20230728125959001\r\n	Calibrate sensor time Year: 2023 Month: 07 Day: 28 Hours: 12 Points: 59 Seconds: 59 milliseconds:

		001
UDP Broadcast IP	WIT192.168.4.2\r\n	192.168.4.2: Determined according to the user's computerGo to IP: 255.255.255.255, port 9250 to broadcast the IP. After the sensor searches for the IP, it immediately switches the IP.
Set up WIFI	WITWIFI:"WIT_A","wtznwtzn"\r\n	WIT_A: User WIFI name wtznwtzn: User WIFI password WIFI must be in the 2.4GHz frequency band. After setting, it will automatically switch to STA mode (WIFIMODE register)
Specified	TCPIP:192.168.4.2,1399\r\n	192.168.4.2:

user TCP (STA mode TCP)		Determined by user 1399: Depends on user decision This function is only supported in STA mode, so after setting, it will automatically switch to STA mode TCP communication (WIFIMODE register), and the data is sent to the server specified by the user. In STA mode, the user's routing WIFI (2.4GHz frequency band) must be connected.
Specify user UDP (STA mode UDP)）	UDPIP:192.168.4.2,1399\r\n	192.168.4.2: Determined by user 1399: Depends on user decision This function is

		only supported in STA mode, so after setting, it will automatically switch to STA mode UDP communication (WIFIMODE register), and the data is sent to the server specified by the user. In STA mode, the user's routing WIFI (2.4GHz frequency band) must be connected.
Vit TCP	WITTCP\r\n	Connecting to the cloud platform of Witte Intelligence
AP mode TCP	WITAPTCP\r\n	After setting, it automatically switches to TCP communication in AP mode. The sensor generates WIFI, and the computer can

		connect to the WIFI. The WIFI name is the device ID.
AP mode UDP	WITAPUDP\r\n	After setting, it automatically switches to UDP communication in AP mode. The sensor generates WIFI, and the computer can connect to the WIFI. The WIFI name is the device ID.
Set up TCPIP and WIFI at the same time	IPWIFI:"WIT_A","wtznwtzn";TCP192.168.4.2,1399\r\n	Set IP and WIFI at the same time. If the user changes IP or WIFI remotely, it is recommended to use this command to avoid WIFI and IP settings being issued separately. Otherwise, it will appear that the changed IP takes effect and

		the data is sent to other places and cannot be modified remotely. So it is recommended to use this command
Set up TCPIP and WIFI at the same time	IPWIFI:"WIT_A","wtznwtzn";UDP192.168.4.2,1399\r\n	Set IP and WIFI at the same time. If the user changes IP or WIFI remotely, it is recommended to use this command to avoid WIFI and IP settings being issued separately. Otherwise, it will appear that the changed IP takes effect and the data is sent to other places and cannot be modified remotely. So it is recommended to use this command

Write register format (HEX code format)

This method is more flexible, and each register can be operated, but it is easy to set it incorrectly. You need to understand each register before setting it, and it only supports a single setting. For multiple settings (account password), you need to send multiple registers, which is a waste A lot of time for data interaction

The following data all use Hex code hexadecimal

All settings require first operating the unlock register (KEY)

Protocol header	Protocol header	Register	Lower 8 bits of data	High 8 bits of data
0xFF	0xAA	ADDR	DATAL[7:0]	DATAH[15:8]

The data is sent in hexadecimal format, not ASCII code.

Each data is divided into low byte and high byte and transmitted sequentially, and the two are combined into a signed short type data. For example, data DATA, where DATAL is the low byte and DATAH is the high byte. The conversion method is as follows: Assume that DATA is actual data, DATAH is its high-byte part, and DATAL is its low-byte part, then: DATA=(short)((short)DATAH<<8|DATAL). It must be noted here that DATAH needs to be forced to be converted to a signed short type data before shifting, and the data type of DATA is also a signed short type, so that negative numbers can be represented.

For example:

Acceleration calibration (acceleration calibration must place the module on the front for calibration. If the module is placed on the reverse side for calibration, it will cause abnormal acceleration and thus abnormal angle)

1. Enter calibration: FF AA 01 01 00 (calibration uses register 0x01, which will be discussed later)

2. Delay 5 seconds

3. Exit calibration: FF AA 01 00 00

4. Save calibration: FF AA 00 00 00

SAVE (save/restart/factory restore)

Register name: SAVE

Register address: 0 (0x00)

Reading and writing direction: R/W

Default value: 0x0000

Bit	NAME	FUNCTION

15:0	SAVE[15:0]	Save: 0x0000 Restart: 0x00FF Factory reset: 0x0001
Example: FF AA 00 FF 00 (restart) Example: FF AA 00 00 00 (save) Example: FF AA 00 01 00 (factory reset)		

CALSW (calibration mode)

Register name: CALSW

Register address: 1 (0x01)

Reading and writing direction: R/W

Default value: 0x0000

Bit	NAME	FUNCTION
15:4		
3:0	CAL[3:0]	Set calibration mode: 0000(0x00): normal working mode 0001 (0x01): Automatic addition calibration 0011(0x03): Clear height (this version does not have this function) 0100(0x04): Set heading angle to zero

		0111(0x07): Magnetic field calibration (spherical fitting method) 1000(0x08): Set angle reference 1001(0x09): Magnetic field calibration (bi-plane mode, this version does not have this function)

Example: FF AA 01 04 00 (heading angle set to zero)

Addition calibration example:

FF AA 01 01 00 (to enter the addition calibration, please make sure it is placed horizontally)

Wait 5 seconds for automatic calibration to complete

FF AA 01 00 00 (Exit totaling calibration)

FF AA 00 00 00 (save)

Magnetic field calibration example:

FF AA 01 07 00 (enter magnetic field calibration)

Rotate 1~2 times around north around each axis. Please refer to the magnetic field calibration video.

FF AA 01 00 00 (Exit magnetic field calibration)

FF AA 00 00 00 (save)

AXOFFSET~HZOFFSET (zero offset setting)

Register name: AXOFFSET~HZOFFSET

Register address: 5~13 (0x05~0x0D)

Reading and writing direction: R/W

Default value: 0x0000

Bit	NAME	FUNCTION
15:0	AXOFFSET[15:0]	Acceleration X-axis zero offset, actual acceleration zero offset=AXOFFSET[15:0]/10(LSB)
15:0	AYOFFSET[15:0]	Acceleration Y-axis zero offset, actual acceleration zero offset=AYOFFSET[15:0]/10(LSB)
15:0	AZOFFSET[15:0]	Acceleration Z-axis zero offset, actual acceleration zero offset=AZOFFSET[15:0]/10(LSB)
15:0	GXOFFSET[15:0]	Angular velocity X-axis zero offset, actual angular velocity zero offset=GXOFFSET[15:0]/10(LSB)
15:0	GYOFFSET[15:0]	Angular velocity Y-axis zero offset, actual angular velocity zero offset=GYOFFSET[15:0]/10(LSB)
15:0	GZOFFSET[15:0]	Angular velocity Z-axis zero offset, actual angular velocity zero

		offset=GZOFFSET[15:0]/10(LSB)
15:0	HXOFFSET[15:0]	Magnetic field X-axis zero offset
15:0	HYOFFSET[15:0]	Magnetic field Y axis zero offset
15:0	HZOFFSET[15:0]	Magnetic field Z axis zero offset

Example: FF AA 05 E8 03 (set acceleration X-axis zero offset 0.0488g), 0x03E8=1000, 1000/10=100 (LSB), the user can automatically add the calibration; if you want to set it yourself, read the basis of the original acceleration Go up, multiply it by 10 times and then send it out.

MAGRANGX~MAGRANGZ（Magnetic field calibration range）

Register name: MAGRANGX~MAGRANGZ

Register address: 28~30 (0x1C~0x1E)

Reading and writing direction: R/W

Default value: 0x01F4

Bit	NAME	FUNCTION
15:0	MAGRANGX[15:0]	Magnetic field calibration X-axis range
15:0	MAGRANGY[15:0]	Magnetic field calibration Y-axis range
15:0	MAGRANGZ[15:0]	Magnetic field calibration Z-axis range

Example: FF AA 1C F4 01 (set the magnetic field calibration X-axis range to 500)

BANDWIDTH（Bandwidth）

Register name: BANDWIDTH

Register address: 31 (0x1F)

Reading and writing direction: R/W

Default value: 0x0004

Bit	NAME	FUNCTION
15:4		
3:0	BANDWIDTH[3:0]	Set bandwidth 0000(0x00): 256Hz 0001(0x01): 188Hz 0010(0x02): 98Hz 0011(0x03): 42Hz 0100(0x04): 20Hz 0101(0x05): 10Hz 0110(0x06): 5Hz

Example: FF AA 1F 01 00 (set bandwidth to 188Hz)

GYRORANGE（Gyroscope range）

Register name: GYRORANGE

Register address: 32 (0x20)

Reading and writing direction: R/W

Default value: 0x0003

Bit	NAME	FUNCTION
15:4		
3:0	GYRORANGE[3:0]	Set gyroscope range 0011(0x00): 250°/s 0011(0x01): 500°/s 0011(0x02): 1000°/s 0011(0x03): 2000°/s（Default）

Example: FF AA 20 03 00 (set the gyroscope range to 2000°/s)

ACCRANGE（Accelerometer range）

Register name: ACCRANGE

Register address: 33 (0x21)

Reading and writing direction: R/W

Default value: 0x0000

Bit	NAME	FUNCTION
15:4		
3:0	ACCRANGE[3:0]	Set accelerometer range

		0000(0x00): ±2g 0000(0x01): ±4g 0000(0x02): ±8g 0011(0x03): ±16g（Default）
Example: FF AA 21 00 00 (set acceleration measurement range 2g）		

ORIENT（Installation direction）

Register name: ORIENT

Register address: 35 (0x23)

Reading and writing direction: R/W

Default value: 0x0000

Bit	NAME	FUNCTION
15:1		
0	ORIENT	Set installation direction 0(0x00): Horizontal installation 1(0x01): Vertical installation (the Y-axis arrow of the coordinate axis must be pointing upward)
Example: FF AA 23 01 00 (set for vertical mounting)		

AXIS6（Algorithm）

Register name: AXIS6

Register address: 36 (0x24)

Reading and writing direction: R/W

Default value: 0x0000

Bit	NAME	FUNCTION
15:1		
0	AXIS6	Set algorithm 0 (0x00): 9-axis algorithm (magnetic field calculation navigation angle, absolute heading angle) 1(0x01): 6-axis algorithm (integral calculation of navigation angle, relative heading angle）

Example: FF AA 24 01 00 (set 6-axis algorithm mode)

FILTK（K Value filter）

Register name: FILTK

Register address: 37 (0x25)

Reading and writing direction: R/W

Default value: 0x001E

Bit	NAME	FUNCTION

15:0	FILTK[15:0]	Range: 1~10000, default 30 (not recommended to modify, once modified, if the angle does not meet the usage requirements, please modify it to 30) The smaller FILTK[15:0] is, the more trustful the angular velocity data is, the seismic performance is enhanced, and the real-time performance is weakened. All angular velocities are taken and set to 1. The larger the FILTK[15:0], the more the acceleration data is believed, the seismic performance is weakened, and the real-time performance is enhanced. If all acceleration is taken, set it to 10000.
Example: FF AA 25 1E 00 (set the K value filter to 30)		

Q0~Q3（Quaternion）

Register name: Q0~Q3

Register address: 38~41 (0x26~0x29)

Reading and writing direction: R

Default value: 0x0000

Bit	NAME	FUNCTION
15:0	Q0[15:0]	Quaternion 0=Q0[15:0]/32768
15:0	Q1[15:0]	Quaternion 1=Q1[15:0]/32768

15:0	Q2[15:0]	Quaternion 2=Q2[15:0]/32768
15:0	Q3[15:0]	Quaternion 3=Q3[15:0]/32768

ACCFILT（Acceleration filtering）

Register name: ACCFILT

Register address: 42 (0x2A)

Reading and writing direction: R/W

Default value: 0x0000

Bit	NAME	FUNCTION
15:0	ACCFILT[15:0]	Range: 1~10000, default 500 (modification is not recommended, once modified, if the angle does not meet the usage requirements, please modify it to 0) The smaller the ACCFILT[15:0], the better the seismic performance and the weaker the real-time performance. The larger the ACCFILT[15:0], the weaker the seismic performance and the stronger the real-time performance. This parameter is an empirical value and needs to be adjusted according to different environments. In the tractor environment, ACCFILT[15:0] can be adjusted to 300, because the tractor shakes seriously and the anti-seismic performance needs to be improved.

Example: FF AA 2A F4 01 (set acceleration filter 500)

WIFIMODE（WIFI model）

Register name: WIFIMODE

Register address: 45 (0x2D)

Reading and writing direction: R

Default value: 0x0002

Bit	NAME	FUNCTION
15:4		
3:0	WIFIMODE	Others: STA mode (needs to connect to WIFI in the 2.4G frequency band) 0010(0x02): AP mode (sensor broadcasts WIFI, equivalent to routing)

VERSION（version number）

Register name: VERSION

Register address: 46 (0x2E)

Reading and writing direction: R

Default value: 0x32D3(13011)

Bit	NAME	FUNCTION
15:0	VERSION[15:0]	13011

Example:

Send: FF AA 27 2E 00 (read the version number, 0x27 means reading, 0x2E is the version number register)

Return: 55 5F VL VH XX XX XX XX XX XX SUM

VERSION[15:0]=(short)(((short)VH<<8)|VL)

YYMM~MS（On-screen time）

Register name: YYMM~MS

Register address: 48~51 (0x30~0x33)

Reading and writing direction: R/W

Default value: 0x0000

Bit	NAME	FUNCTION
15:8	YYMM[15:8]	Moon
7:0	YYMM[7:0]	Year
15:8	DDHH[15:8]	Hour
7:0	DDHH[7:0]	Day
15:8	MMSS[15:8]	Second
7:0	MMSS[7:0]	Point
15:0	MS[15:0]	millisecond

Example:

FF AA 30 16 03 (set year and month 22-03)

FF AA 31 0C 09 (set date and time 12-09)

FF AA 32 1E 3A (set minutes and seconds 30:58)

FF AA 33 F4 01 (set milliseconds 500)

Example:

Send: FF AA 27 30 00 (read the version number, 0x27 means reading, 0x30 is the year and month register)

Return: 55 5F YYMM[7:0] YYMM[15:8] DDHH[7:0] DDHH[15:8] MMSS[7:0] MMSS[15:8] MS[7:0] MS[15: 8] SUM

AX~AZ（Acceleration）

Register name: AX~AZ

Register address: 52~54 (0x34~0x36)

Reading and writing direction: R

Default value: 0x0000

Bit	NAME	FUNCTION
15:0	AX[15:0]	Acceleration X=AX[15:0]/32768*16g (g is the acceleration of gravity, which can be 9.8m/s2)
15:0	AY[15:0]	Acceleration Y=AY[15:0]/32768*16g (g is the acceleration of gravity, which can be 9.8m/s2)

15:0	AZ[15:0]	Acceleration Z=AZ[15:0]/32768*16g (g is the acceleration of gravity, which can be 9.8m/s2)
The 16 in the formula is determined according to the range set by the user. The default is 16g.		

GX~GZ（Angular velocity）

Register name: GX~GZ

Register address: 55~57 (0x37~0x39)

Reading and writing direction: R

Default value: 0x0000

Bit	NAME	FUNCTION
15:0	GX[15:0]	Angular velocity X=GX[15:0]/32768*2000°/s
15:0	GY[15:0]	Angular velocity Y=GX[15:0]/32768*2000°/s
15:0	GZ[15:0]	Angular velocity Z=GX[15:0]/32768*2000°/s
The 2000 in the formula is determined according to the range set by the user. The default is 2000°/s.		

HX~HZ（Magnetic field）

Register name: HX~HZ

Register address: 58~60 (0x3A~0x3C)

Reading and writing direction: R

Default value: 0x0000

Bit	NAME	FUNCTION
15:0	HX[15:0]	Magnetic field X=HX[15:0]*100/1024 (unit: uT)
15:0	HY[15:0]	Magnetic field Y=HY[15:0] *100/1024 (unit: uT)
15:0	HZ[15:0]	Magnetic field Z=HZ[15:0] *100/1024 (unit: uT)

Roll~Yaw（Angle）

Register name: Roll~Yaw

Register address: 61~63 (0x3D~0x3F)

Reading and writing direction: R

Default value: 0x0000

Bit	NAME	FUNCTION
15:0	Roll[15:0]	Roll angle X=Roll[15:0]/32768*180°
15:0	Pitch[15:0]	Pitch angle Y=Pitch[15:0]/32768*180°
15:0	Yaw[15:0]	Heading angle Z=Yaw[15:0]/32768*180°

TEMP（Temperature）

Register name: TEMP

Register address: 64 (0x40)

Reading and writing direction: R

Default value: 0x0000

Bit	NAME	FUNCTION
15:0	TEMP[15:0]	Temperature =TEMP[15:0]/100℃

BAT（Power）

Register name: BAT

Register address: 66 (0x42)

Reading and writing direction: R

Default value: 0x0000

Bit	NAME	FUNCTION
15:0	BAT[15:0]	Power =BAT[15:0]/100(V)

TCPIP0~TCPIP7（TCPIP）

Register name: TCPIP0~TCPIP7

Register address: 67~74 (0x43~0x4A)

Reading and writing direction: R

Default value: 0x0000

Bit	NAME	FUNCTION
63:0	TCPIP[63:0]	Default：192.168.4.2

TCPPORT（TCP Remote port）

Register name: TCPPORT

Register address: 75 (0x4B)

Reading and writing direction: R

Default value: 0x0577

Bit	NAME	FUNCTION
15:0	TCPPORT[15:0]	Default port：1399

UDPIP0~UDPIP7（UDPIP）

Register name: UDPIP0~UDPIP7

Register address: 76~83 (0x4C~0x53)

Reading and writing direction: R

Default value: 0x0000

Bit	NAME	FUNCTION
63:0	UDPIP[63:0]	Default：192.168.4.2

UDPPORT（UDP Remote port）

Register name: UDPPORT

Register address: 84 (0x54)

Reading and writing direction: R

Default value: 0x0577

Bit	NAME	FUNCTION
15:0	UDPPORT[15:0]	Default port：1399

RSSI（WIFI Signal）

Register name: RSSI

Register address: 93 (0x5D)

Reading and writing direction: R

Default value: 0x0000

Bit	NAME	FUNCTION
15:0	BAT[15:0]	Temperature =BAT[15:0]/10(V)

LOCALPORT（local port）

Register name: LOCALPORT

Register address: 96 (0x60)

Reading and writing direction: R

Default value: 0x2422

Bit	NAME	FUNCTION
15:0	LOCALPORT[15:0]	Default port：9250

RATE（Transmission rate）

Register name: RATE

Register address: 104 (0x68)

Reading and writing direction: R/W

Default value: 0x0064

Bit	NAME	FUNCTION
15:0	RATE[15:0]	Default：100ms，1000/100ms = 10Hz

Example (set 200Hz)：

FF AA 68 05 00，1000/5ms=200Hz

TCP/UDP（Connection method）

Register name: TCP/UDP

Register address: 104 (0x68)

Reading and writing direction: R/W

Default value: 0x0064

Bit	NAME	FUNCTION
15:1		
0	TCP/UDP	0:UDP（Default） 1:TCP

SSID0~SSID15（WIFI Account）

Register name: SSID0~SSID15

Register address: 120~135 (0x78~0x87)

Reading and writing direction: R

Default value: 0x0000

Bit	NAME	FUNCTION
127:0	SSID[128:0]	

PASSWORD0~PASSWORD31（WIFI password）

Register name: PASSWORD0~PASSWORD31

Register address: 136~167 (0x88~0xA7)

Reading and writing direction: R

Default value: 0x0000

Bit	NAME	FUNCTION
255:0	PASSWORD[255:0]	