WT61 Communication protocol

Instructions for use：

Enter commands that need to modify settings or read data

Read Format

- Data is sent in hexadecimal, not ASCII.
- Each data is transmitted in sequence by low byte and high byte, and the two are combined into a signed short type of data. For example, for data DATA1, DATA1L is the low byte and DATA1H is the high byte. The conversion method is as follows:

suppose DATA1 is the actual data, DATA1H is its high-byte part, DATA1L is its low-byte part

Then: DATA1=(short)((short)DATA1H<<8|DATA1L). It must be noted here that DATA1H needs to be coerced into a signed short type of data before shifting, and the data type of DATA1 ise also a signed short type, so that negative numbers can be represented.

Protocol header	Data content	Data lower 8 bits	Data higher 8 bits	Data lower 8 bits	Data higher 8 bits	Data lower 8 bits	Data higher 8 bits	Data lower 8 bits	Data higher 8 bits	SUMCRC
0x55	TYPE【1】	DATA1L[7:0]	DATA1H[15:8]	DATA2L[7:0]	DATA2H[15:8]	DATA3L[7:0]	DATA3H[15:8]	DATA4L[7:0]	DATA4H[15:8]	SUMCRC【2】

【1】TYPE(Data content):

TYPE	Remark

0x51	Acceleration
0x52	Angular velocity
0x53	Angle

【2】SUMCRC (Data and Checksum):

SUMCRC=0x55+TYPE+DATA1L+DATA1H+DATA2L+DATA2H+DATA3L+DATA3H+DATA4L+DATA4H

SUMCRC is a char type, taking the lower 8 bits of the checksum

Acceleration output

0x55	0x51	AxL	AxH	AyL	AyH	AzL	AzH	TL	TH	SUM

Name	Description	Remark
AxL	Acceleration X low 8 bits	Acceleration X=((AxH<<8)|AxL)/32768*16g
AxH	Acceleration X high 8 bits	(g is the acceleration of gravity, preferably 9.8m/s2)
AyL	Acceleration Y low 8 bits	Acceleration Y=((AyH<<8)|AyL)/32768*16g
AyH	Acceleration Y high 8 bits	(g is the acceleration of gravity, preferably 9.8m/s2))
AzL	Acceleration Z low 8 bits	Acceleration Z=((AyH<<8)|AyL)/32768*16g
AzH	Acceleration Z high 8 bits	(g is the acceleration of gravity, preferably 9.8m/s2)
TL	8-bit lower temperature	Temperature calculation formula:
TH	8-bit high temperature	temperature=((TH<<8)|TL) / 32768 * 96.38 + 36.53
SUM	Checksum	SUM=0x55+0x51+AxL+AxH+AyL+AyH+AzL+AzH+TL+Th

Angular velocity output

0x55	0x52	WxL	WxH	WyL	WyH	WzL	WzH	VolL	VolH	SUM

Name	Description	Remark
WxL	Angular velocity X low 8 bits	Angular velocity X=((WxH<<8)|WxL)/32768*2000°/s
WxH	Angular velocity X high 8 bits	
WyL	Angular velocity Y low 8 bits	Angular velocity Y=((WyH<<8)|WyL)/32768*2000°/s
WyH	Angular velocity Y high 8 bits	
WzL	Angular velocity Z low 8 bits	Angular velocity Z=((WzH<<8)|WzL)/32768*2000°/s
WzH	Angular velocity Z high 8 bits	
VolL	Voltage lower 8 bits	(For non-Bluetooth products, this data is invalid)

VolH	Voltage high 8 bits	Voltage calculation formula: Voltage=((VolH<<8)|VolL) /100 ℃
SUM	Check sum	SUM=0x55+0x52+WxL+WxH+WyL+WyH+WzL+WzH+VolH+VolL

Angle output

0x55	0x53	RollL	RollH	PitchL	PitchH	YawL	YawH	VL	VH	SUM

Name	Description	Remarks
RollL	Roll angle X lower 8 bits	Roll angle X=((RollH<<8)|RollL)/32768*180(°)
RollH	Roll angle X high 8 bits	
PitchL	Pitch angle Y low 8 bits	Pitch angle Y=((PitchH<<8)|PitchL)/32768*180(°)
PitchH	Pitch angle Y high 8 bits	
YawL	Yaw angle Z low 8 bits	Yaw angle Z=((YawH<<8)|YawL)/32768*180(°)
YawH	Yaw angle Z high 8 bits	
VL	The lower 8 bits of the	Version number calculation formula: (Note: no version number data)

	version number	
VH	Version number high 8 bits	
SUM	checksum	SUM=0x55+0x53+RollH+RollL+PitchH+PitchL+YawH+YawL+VH+VL

Write format

- The following data, all use Hex code hexadecimal

protocol header	protocol header	command
0xFF 0xAA CMD	0xFF 0xAA CMD	0xFF 0xAA CMD

- The Data is sent in hexadecimal, not ASCII.

Z-axis angle to zero

Instruction	0xFF	0xAA	0x52
Remark	Z axis angle to zero		
Example	FF AA 52（Z axis angle to zero）		

Addition calibration

Instruction	0xFF	0xAA	0x67
Remark	Acceleration calibration		
Example	FF AA 67（Acceleration calibration）		

Sleep and Unsleep

Instruction	0xFF	0xAA	0x60
Remark	Switch sleep mode and work mode		
Example	Currently in working mode, send FF AA 60 to enter sleep mode, currently in sleep mode, send FF AA 60 to enter working mode		

Serial port mode

Instruction	0xFF	0xAA	0x61
Remark	Use serial port, disable IIC		
Example	FF AA 61（Use serial port）		

IIC Mode

Instruction	0xFF	0xAA	0x62
Remark	Using IIC, disable serial port		
Example	FF AA 62（IIC mode）		

Baud rate115200

Instruction	0xFF	0xAA	0x63
Remark	The serial port baud rate is 115200, and the return rate is 100Hz		
Example	FF AA 63（Baud rate 为 115200，return rate 为 100Hz）		

Baud rate9600

Instruction	0xFF	0xAA	0x64
Remark	The serial port baud rate is 9600, and the return rate is 20Hz		
Example	FF AA 64（Baud rate is 9600，return rate is 20Hz）		

Horizontal installation

Instruction	0xFF	0xAA	0x65
Remark	Modules are placed horizontally		
Example	FF AA 65（Horizontal installation）		

Vertical installation

Instruction	0xFF	0xAA	0x66
Remark	Modules are placed vertically		
Example	FF AA 66（vertical installation）		