

YG-Lite Protocol

Abstract

This document defines the data input and output protocols for the YG-Lite product.

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Revision History

Version	Date	Description
1	2022 年 3 月	定制数据协议第一版

1 Input data

All input configuration commands are in decimal format.

1.1 Common Configuration Commands

- Query Current Configuration

50 42 E3 01 00 00 00 00

Response: a string in the format: \$PBCFG,FA,1,X

where X ranges from 0 to 8, corresponding to 8 different configurations.

- GNSS Sleep Mode Entry and Exit

Enter Sleep: 50 42 E9 01 00 01 01 00

Exit Sleep: 50 42 E9 01 00 00 00 00

note: The state is not retained after power-off.

- Debug Messages

Close: 50 42 **E7** 01 00 81 81 00

Open: 50 42 **E7** 01 00 80 80 00

- Baud Rate

115200: 50 42 **EA** 01 00 80 80 00

230400: 50 42 **EA** 01 00 84 84 00

- Order of External Input NMEA Messages

Last GLL: 50 42 **EE** 01 00 80 80 00

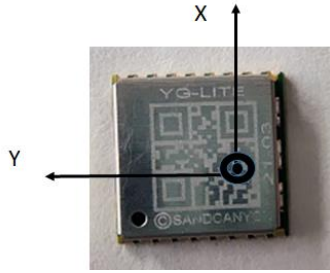
Last GGA: 50 42 **EE** 01 00 81 81 00

Last RMC: 50 42 **EE** 01 00 82 82 00

Last GSV: 50 42 **EE** 01 00 83 83 00

1.2 Fixed-Axis Installation Configuration

The physical axes of the YG-Lite are as follows.



Observe the actual installation axis of the module from the rear to the front of the vehicle in the horizontal direction. Send the following configuration according to the actual installation axis. The input configuration commands are in hexadecimal. The commands are saved after power cycling.

Actual Installation Axis on the Vehicle			Configuration Command	Remarks
X	Y	Z		
Forward	Left	Up	50 42 E2 01 00 80 80 00	default
Right	Forward	Up	50 42 E2 01 00 82 82 00	
Back	Right	Up	50 42 E2 01 00 83 83 00	
Left	Back	Up	50 42 E2 01 00 84 84 00	
Forward	Right	Down	50 42 E2 01 00 85 85 00	
Right	Back	Down	50 42 E2 01 00 86 86 00	
Back	Left	Down	50 42 E2 01 00 87 87 00	
Left	Forward	Down	50 42 E2 01 00 88 88 00	

2. Output Data

The output data includes a checksum, with the checksum character separated from the preceding data by an asterisk '*'. Checksum Calculation Method:

The checksum is calculated by performing an XOR operation on all characters from \$ up to (but not including) * (excluding both \$ and *). The result is represented in hexadecimal, as shown below.

```
void NMEACheckSum(char *pBuf)
{
    unsigned char ckSum = 0;

    pBuf++; /* skip the $ sign */

    while (*pBuf != '\0')
    {
        ckSum ^= *pBuf++;
    }
}
```

Figure 3.1 Checksum Algorithm

<i>Field</i>	<i>Type</i>	<i>Description</i>
Message ID	String	\$PBSOL
Message sub-ID	Integer	1
UTC Year	Integer	
UTC Month	Integer	
UTC Day	Integer	
UTC Hour	Integer	
UTC Minute	Integer	
UTC Millisecond	Integer	
Time Stamp	Integer	Unit: ms
GPS Week	Integer	
Time of Week	Integer	Unit: ms
Navigation Mode	Integer	0x00: invalid; bit 0: Reserved bit 1: GNSS only; bit 2: IMU only bit 3: Combined; bit 4~11 Reserved bit 12: DGNSS bit 13: RTK Fixed bit 14: RTK Float bit 15 ~31: Reserved
Latitude	Integer	Unit: degree, scaled by 10 ⁷
Longitude	Integer	Unit: degree, scaled by 10 ⁷
Ellipsoid Alt	Integer	Unit: cm
Mean Sea Level	Integer	Unit: cm
North Velocity	Integer	Unit: cm/s
East Velocity	Integer	Unit: cm/s
Down Velocity	Integer	Unit: cm/s
Ground Speed	Integer	Unit: cm/s
Distance	Integer	Unit: cm
Roll	Integer	Unit: degree, scaled by 100

Pitch	Integer	Unit: degree, scaled by 100
Heading	Integer	Unit: degree, scaled by 100
Reserved	Integer	
Reserved	Integer	
North Est. Error (1σ)	Integer	Unit: cm
East Est. Error (1σ)	Integer	Unit: cm
Down Est. Error (1σ)	Integer	Unit: cm
North Vel Est. Err (1σ)	Integer	Unit: cm/s
East Vel Est. Err (1σ)	Integer	Unit: cm/s
Down Vel Est. Err (1σ)	Integer	Unit: cm/s
Roll Est. Err (1σ)	Integer	Unit: degree, scaled by 100
Pitch Est. Err (1σ)	Integer	Unit: degree, scaled by 100
Heading Est. Err (1σ)	Integer	Unit: degree, scaled by 100
Misalignment Roll	Integer	Unit: degree, scaled by 100
Misalignment Pitch	Integer	Unit: degree, scaled by 100
Misalignment Yaw	Integer	Unit: degree, scaled by 100