DIYDrones Custom Binary Sentence Specification

V 1.1

Approve： **Check：** **Design：**

Version History

History			
Date	**Rev.**	**Author**	**Description**
2010/05/17	1.0	Hector Su	First Release
2010/05/18	1.1	Hector Su	Second Release
2010/07/08	1.2	Hector Su	Third Release
2010/07/27	1.3	Hector Su	Fourth Release

1. Purpose

Output custom binary sentence for customer。

2. Development Environment & Software

- Real View Suite3.1
- C language

3. Provide Function

3.1

To output Binary sentence. Format shown in table 1.

3.2

Support for custom command to switch output mode between standard NMEA and Binary, Format shown in the table 2.

3.3

Modification of Latitude、Longitude、Altitude MSL、Ground Speed、Heading、Time. To swap the byte order. The example is show in below.

Latitude(**Before**)	0xCC	4bytes
	0x74	Low byte
	0x60	to
	0x01	Hi byte

Latitude(**After**)	0x01	4bytes
	0x60	Hi byte
	0x74	to
	0xCC	Low byte

Customize Data Format Table-1

Name	**Example**	**Units**	**Description**
Preamble	0xB5,0x62	2bytes	Header, always the same
Class and MSG ID	0x01,0x05	2bytes	Message ID, always the same
Latitude	0x01 0x60 0x74 0xCC	4bytes Hi byte to Low byte	Latitude (in decimal degrees) The original value will be converted Example:23.098572*(10^6)=23098572
Longitude	0x07 0x2B 0x64 0xDF	4bytes Hi byte to Low byte	Latitude (in decimal degrees) The original value will be converted Example:120.284383*(10^6)=120284383
Altitude MSL	0x00 0x00 0x0D 0x9A	4 bytes Hi byte to Low byte	Altitude MSL(cm) The original value will be converted Example:34.82(m)*(10^2)=3482 (cm)
Ground Speed	0x00 0x00 0x00 0x09	4 bytes Hi byte to Low byte	Ground Speed(cm/s) The original value will be converted Example:0.324(km/hr)=>0.324*100000/3600=9(cm/s)

Heading	0x07 0x56 0xB7 0x00	4 bytes Hi byte to Low byte	Heading(degrees) The original value will be converted Example:123.123456=>123.123456*1000000=123123456(degrees)
Satellites	0x09	1byte	The value of satellites in viewed
Fix Type	0x03	1byte	GPS fix type Example:0x01=>no fix、0x02=>2D fix、0x03=>3D fix
Time	0x00 0x00 0x82 0xF3	4 bytes Hi byte to Low byte	It shows a part of UTC Time Exapmle:2010/5/18 **03:35:23:999** **=>33523(HHMMSSMS)**
CK_ A	0x47	1byte	Checksum_A Refer to (1)
CK_B	0xF8	1byte	Checksum_B Refer to (1)

Example: 0xB5,0x62,0x01,0x05,0x01,0x60,0x74,0xCC,
0x07,0x2B,0x64,0xDF,0x00,0x00,0x0D,0x9A,0x00,0x00,0x00,0x01,0x00,
0x00,0x00,0x00, 0x0B,0x03,0x00,0x00,0x82,0xF3,0x47,0xF8 or

0xB5,0x62,0x01,0x05, 0x00,0x00,0x00,0x00,0x00, 0x00,0x00, 0x00,0x00,
0x00,0x00,0x00,0x00,0x00, 0x00,0x00, 0x00,0x00, 0x00, 0x00,0x00,
0x00,0x00, 0x00, 0x00,0x00, 0x06,0xA3

Customize Command Format **Table 2**

Name	Example	Units	Description
Message ID	$PGCMD		Customize command header
Command Number	16		This number represents which command is used
Parameter 1:RMC	1		Period of RMC, 0~5. 0 mean to disable output
Parameter 2:VTG	1		Period of VTG, 0~5. 0 mean to disable output
Parameter 3:GSA	1		Period of GSA, 0~5. 0 mean to disable output
Parameter 4:GSV	1		Period of GSV, 0~5. 0 mean to disable output

Parameter 5:GGA	1	Period of GGA, 0~5. 0 mean to disable output
Checksum	*6B	
<CR> <LF>		End of message termination

Example：$PGCMD,16,1,1,1,1,1*6B or $PGCMD,16,0,0,0,0,0*6A(2)

4.

Note

1. The checksum CK_A and CK_B. It be calculated from all bytes sent except for the preamble bytes(0xB5,0x62)
CK_A = 0, CK_B = 0

```
For(I=0;I<N;I++)
{
    CK_A = CK_A + Buffer[I]
    CK_B = CK_B + CK_A
}
```

2.Use this command for switching output mode. When input command "$PGCMD,16,0,0,0,0,0*6A", then switch to binary mode. Otherwise for NMEA mode.

end