Customize Function Specification

3D Robotics

V 1.6
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Author	Hector Su	**Date**	2010/11/25	**Ver.**	1.6

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
2010/09/01	1.4	Hector Su	Fifth Release.
2010/11/23	1.5	Hector Su	Sixth Release
2010/11/23	1.6	Hector Su	Seventh Release. Please refer to 2.4~2.5

1. Purpose

It supports custom function for customer。

2. Provide Function

2.1

It supports to output custom sentence. It provides two modes:

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1. Binary Sentence
2. Standard NMEA Sentence (default)

The format is shown in table 1.

2.2

It supports custom command for mode switch

The format is shown in the table 2.

2.3

The system can leave the values with last valid information when user lost satellite reception.

2.4

It changes the preamble header from "0xB5,0x62" to "0xD0,0xDD". And it removes the item "Class and MSG ID". Please refer to table 1.

2.5

The format of UTC time, it uses extra two digits for milliseconds. Please refer to table 1.

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Customize Data Format			Table-1
Name	**Example**	**Units**	**Description**
Preamble	0xD0,0xDD	2 bytes	Preamble header
Payload	0x20	1 byte	The count of item from "Latitude" to "HDOP"
Latitude	0xF9 0x8F 0xC4 0x0D	4 bytes Low byte to Hi byte	Latitude (in decimal degrees) The original value will be converted Example:23.0985721*(10^7)=230985721
Longitude	0xB8 0xF0 0xB1 0x47	4 bytes Low byte to Hi byte	Longitude (in decimal degrees) The original value will be converted Example:120.2843832*(10^7)=1202843832
MSL Altitude	0x9A 0x0D 0x00 0x00	4 bytes Low byte to Hi byte	MSL Altitude (meter) The original value will be converted Example:34.82*(10^2)=3482
Ground Speed	0x09 0x00 0x00 0x00	4 bytes Low byte to Hi byte	Ground Speed(m/s) The original value will be converted Example:0.324(km/hr) ➔ 0.324*1000/3600 =0.09 (m/s)➔ 0.09*100=9
Heading	0x18 0x30 0x00 0x00	4 bytes Low byte to Hi byte	Heading(degrees) The original value will be converted Example:123.12➔123.12*(10^2)=12312
Satellites	0x09	1 byte	The value of satellites in viewed

Fix Type	0x03	1 byte	GPS fix type 0x01 ➔ GPS no fix 0x02 ➔ GPS 2D fix 0x03 ➔ GPS 3D fix
Date	0xC6 0x86 0x03 0x00	4 bytes Low byte to Hi byte	DDMMYY Example:2010/11/23 =>231110
UTC Time	0xF6 0x26 0x33 0x00	4 bytes Low byte to Hi byte	It shows a part of UTC Time Example: 03:35:23.10 ➔ 33523.10 ➔33523.10*(10^2)➔3352310
HDOP	0x73 0x00	2 bytes Low byte to Hi byte	Horizontal Dilution of Precision Example:1.15 ➔ 1.15*(10^2)=115
CK_ A	0x47	1 byte	Checksum_A Refer to **(1)**
CK_B	0xF8	1 byte	Checksum_B Refer to **(1)**

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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)

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3. **Note**

1. The checksum CK_A and CK_B. It be calculated from all bytes sent except for the preamble bytes(0xD0),0xDD)
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. This command for mode switching. When user inputs command "$PGCMD,16,0,0,0,0,0*6A", then switch to binary mode. Otherwise for standard NMEA mode.