Document	Global Top Custom-made Function Specification				
Author	Hector Su	**Date**	2012/10/15	**Ver.**	1.0

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tinkerforge
V 1.0

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Version History

History			
Date	**Rev.**	**Author**	**Description**
2012/10/15	1.0	Hector Su	First Release

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1. Function Overview

1.1

It supports to output custom-made sentence for default setting. The format is shown in **Table 1**.

1.2

It supports **Last Position Retention** function. It means the GPS module still can output last coordinates (latitude and longitude) when lost GPS signal.

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Table 1 Custom-made Data Format

Name	Example	Units	Description
Preamble header	0x04 0x24	2 bytes	Preamble header
UTC Time	0x03 0xDF 0x12 0xD8	4 bytes MSB to LSB	UTC Time (hhmmss.sss) Example:064951.000*1000=64951000➔ 0x03DF13D8
Date	0x00 0x01 0x3C 0x72	4 bytes MSB to LSB	Date (ddmmyy) Example:20101008 ➔81010 ➔ 0x00013C72
Latitude	0x01 0x60 0x74 0xCC	4 bytes MSB to LSB	Latitude (in decimal degrees) Example:23.098572*(10^6)=23098572➔0x01 6074CC
N/S Indicator	0x01	1 byte	0x01➔North or 0x02 ➔South
Longitude	0x07 0x2B 0x64 0xDF	4 bytes MSB to LSB	Longitude (in decimal degrees) Example:120.284383*(10^6)=120284383➔0x 072B64DF
E/W Indicator	0x01	1 byte	0x01➔East or 0x02 ➔West
Fix Type	0x03	1 byte	0x01 ➔GPS No Fix 0x02 ➔2D GPS Fix 0x03 ➔3D GPS Fix

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Fix Mode	0x01	1 byte	0x00 ➔GPS No Fix 0x01 ➔GPS Fix without DGPS mode 0x02 ➔GPS Fix with DGPS mode
MSL Altitude	0x00 0x00 0x0F 0x8B	4 bytes MSB to LSB	Antenna Altitude above/below mean-sea –level (meter) Example:39.95➔39.95*100=3995➔ 0x00000F8B
Geoidal Separation	0x00 0x00 0x03 0x43	4 bytes MSB to LSB	Geoidal Separation (meter) Example:8.35➔8.35*100=835➔ 0x00000343
Course over ground	0x00 0x00 0x16 0xB8	4 bytes MSB to LSB	Course over ground (in degree) Example:58.16➔58.16*100=5816➔ 0x000016B8
Speed over ground	0x00 0x00 0x00 0x3E	4 bytes MSB to LSB	Ground Speed (km/hr) Example:0.62➔0.62*100=62➔ 0x0000003E
Satellites in viewed	0x0A	1 byte	Number of satellite in viewed
Satellites in used	0x09	1 byte	Number of satellite in used
PDOP	0x00 0x86	2 bytes MSB to LSB	Position Dilution of Precision Example:1.34 ➔ 1.34*100=134➔0x0086
HDOP	0x00 0x55	2 bytes MSB to LSB	Horizontal Dilution of Precision Example:0.85 ➔ 0.85*100=85➔0x0055

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VDOP	0x00 0x69	2 bytes MSB to LSB	Vertical Dilution of Precision Example:1.05 ➜ 1.05*100=105➜0x0069
EPE	0x01 0x0D	2 bytes MSB to LSB	Estimated position error (meter) Example:2.69 ➜2.69*100=269➜0x010D
Asterisk	0x2A	1 byte	
Checksum	0x47	1 byte	(Note 2.1)
End Word	0x0D 0x0A	2 bytes	End of message termination (ASCII 13, ASCII 10)

2. Note

2.1

The checksum will be calculated by **Xor** all bytes between **Preamble header** and **Asterisk**.