Gps Packet Structure

This packet outcoming from TSIP Trimble protocol have the same structure. The packet has 31 bytes or more.

 Description:

Two bytes heading <0x10 0xFF> <Data String Bytes> Two end bytes <0x10 0x03>

The bytes between Start and End delimiters can have any value. To prevent confusion with the frame sequences 0x10 0xFF and 0x10 0x03, every 0x10 byte in the data string is preceded by an extra 0x10 byte ('stuffing'). These extra 0x10 bytes must be added ('stuffed') before sending a packet and removed after receiving the packet. Notice that a simple 0x10 0x03 sequence does not necessarily signify the end of the packet, as these can be bytes in the middle of a data string.

Multiple-byte numbers (integer, float) follow the ANSI/IEEE Std. 754 IEEE Standard for binary Floating-Point Arithmetic. They are sent most-significant byte first. This may involve switching the order of the bytes as they are normally stored in Intel based machines. Specifically:

• UINT8 = Byte: An 8 bit unsigned integer.

• Single — Float, or 4 byte REAL has a precision of 24 significant bits, roughly 6.5 digits.

0x10 0xFF XXXX XXXX XXXX XXXX XXXX XXXX X   X   X 0x10 0x03

Lat.   Lon.   Time   East S. North S.   Alt.   IDN Status Checksum

X Data byte

**Ex : 0x10 0xFF……………0x20 0x10 <u>0x10</u> 0x44………………………..0x10 0x03**

Stuffing byte

Packet >= 31 bytes

Decoding :

Latitude	Radians: East side positive, West side negative
Longitude	Radians: North side positive, South side negative
Time	Second of the week. Starting Sunday 00H00M00S
East S .	Meters/second: East direction positive, West direction negative
North S.	Meters/Second: North direction positive, South direction negative
Altitude	Meters above sea level

Are coding with 4 bytes XXXX each under IEEE 754 float form.

32 bits : 1 sign bit, 8 exponent bits sign (-127…+128), 23 significand precision bits
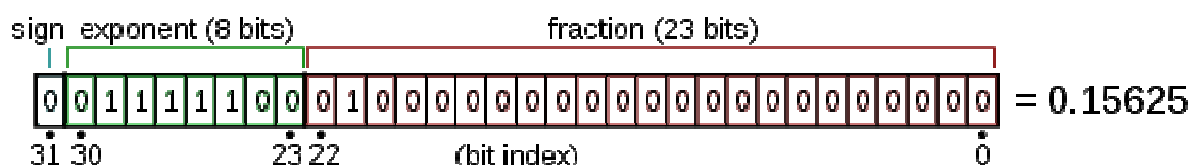
IDN	Id number of the GPS 1 byte integer between 0x01 and 0x0F
Status	GPS receiver state 1 byte integer
	0x00 3D mode

0x01 waiting GPS time
0x02 to hight PDOP
0x03 no usable satellite
0x04 receive only 1 satellite
0x05 receive only 2 satellites
0x06 2D mode

Checksum   1 byte XoR of all data bytes (except 0x10 0xFF Checksum 0x10 0x03 **before stuffing**)

Each packet is transmit one time per second and are multiplex under one RS232 line (9600Bd,8,N,1)