MLR protocol (01/2001)

Tracklog output

The serial port is originally set to 4800bps, 1 stop, 8 data, no parity (NMEA 4800bps).

To start transfer of the tracklog, send the following sentence:

`$PMLR,24,02,0100,0398[CR][LF]` start transfer at 19200bps.
`$PMLR,24,02,0101,0399[CR][LF]` start transfer at 38400bps.

Transfer is done at the requested speed (19200 or 38400 bps), 8 data, 1 stop, no parity and starts after a one second delay.

The transfer is continuous, to stop it, send the following sentence (at 4800 bps):

`$PMLR,06,00,02A9[CR][LF]`.

The format of the tracklog is the following:

Le format de la sortie série est le suivant :

- First sentence :
  `[$8B][cc]T[$01]DEBUT[aa][bb][$0D][$0A]`.
- One or more senteces (depending on the number of points in the tracklog) like :
  `[$8B][cc]T[$01][$00][dd][ee..ee][ff..ff]...[gg..gg][hh][ii][$0D][$0A]`.
- Last sentence :
  `[$8B][cc]T[$01]FIN[jj][kk][$0D][$0A]`.

`[$xx]` = hexadecimal value of the byte, Example : ASCII letter 'A' = [$41].
`[aa]` or **`[hh]`** or **`[jj]`** = MSB of the checksum.
`[bb]` ou **`[ii]`** ou **`[kk]`** = LSB of the checksum.

The checksum is the sum (modulo 65536) of all bytes before the checksum.

`[cc]` = sentence number (modulo 256). This number start at 1 for the first sentence, and is then incremented for each new sentence.

`[dd]` = number of points in the sentence (between 1 and 27).

`[ee..ee]` or **`[ff..ff]`** or **`[gg..gg]`** = one point in the tracklog defined by :

- 2 bytes for the point number in the tracklog (between 1 and 65535).
- 4 bytes for the timestamp (number of seconds since midnigth on January the 6th 1980 **GMT**).
- 4 bytes for the latitude (map datum is WGS84), MSB first. To get the degree value, multiply by 360 and divide by 2^32.
- 4 bytes for the longitude (same format as latitude).
- 3 bytes for the altitude (mean sea level). Divide by 10 to get the altitude in meters.
- 1 byte for the flags : $00 = normal, $01 = start of recording

Example : Tracklog with only 2 points :

[$8B][$01]T[$01]DEBUT[$02][$55][$0D][$0A]

[$8B][$02]T[$01][$00][$02]

[$00][$01][$26][$7B][$8C][$E0][$21][$6C][$16][$C1][$FF][$49][$F4][$9F][$00][$03][$20][$00]

Point #1 : 47°N, 1°W, 80 m, June 21 2000 at 14:00:00 GMT.
47°N = 47 / 360 * 2^{32} = 560731841 = $216C16C1.
1°W = 359° = 359 / 360 * 2^{32} = 4283036831 = $FF49F49F.
June 21 2000 at 14:00:00 GMT = $267B8CE0.
80 m = 800 dm = $000320.

[$00][$02][$26][$7B][$8C][$E5][$21][$6C][$1E][$86][$FF][$49][$EE][$69][$00][$03][$25][$00]

Point #2 : 47°00.010'N, 1°00.008'W, 80.5 m, June 21 2000 at 14:00:05 GMT.
47°00.010'N = (47 + 10 / 60000) / 360 * 2^{32} = 560733830 = $216C1E86.
1°00.008'W = 358°59.992' = (358 + 59.992 / 60) / 360 * 2^{32} = 4283035241 = $FF49EE69.
June 21 2000 at 14:00:05 GMT = $267B8CE5.
80.5 m = 805 dm = $000325.

[$0D][$60][$0D][$0A]
[$8B][$03]T[$01]FIN[$01][$C0][$0D][$0A]

Serial number request

To request transfer of the serial number of the unit, send the following sentence at NMEA 4800bps (1 stop, 8 data, no parity):

$PMLR,26,01,01,0339[CR][LF].

The serial number is then transmitted continuously at the same speed with the following format :

$PMLR,IDGPS,01,aaaaaa,bbbbbbbbb,ccccccccc,d.ddeeeeeeeff/ff/ff*gg[CR][LF].
Where :
[aaaaaa] = model type
[bbbbbbbbb] = name entered by the user in the GPS (9 chars).
[ccccccccc] = serial number (10 chars).
[d.dd] = software version.
[eeeeeee] = language and options (7 chars).
[ff/ff/ff] = software revision date day/month/year.
[gg] = checksum (NMEA 183 compliant)

To stop the continuous transmission of the serial number, send the following sentence:

$PMLR,06,00,02A9[CR][LF].